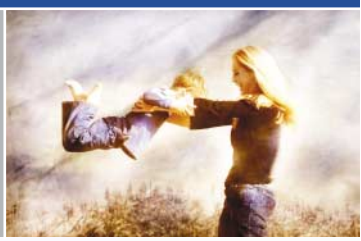
제어기기종합

ISO 9001 : 2000/KS A 9001 : 2001

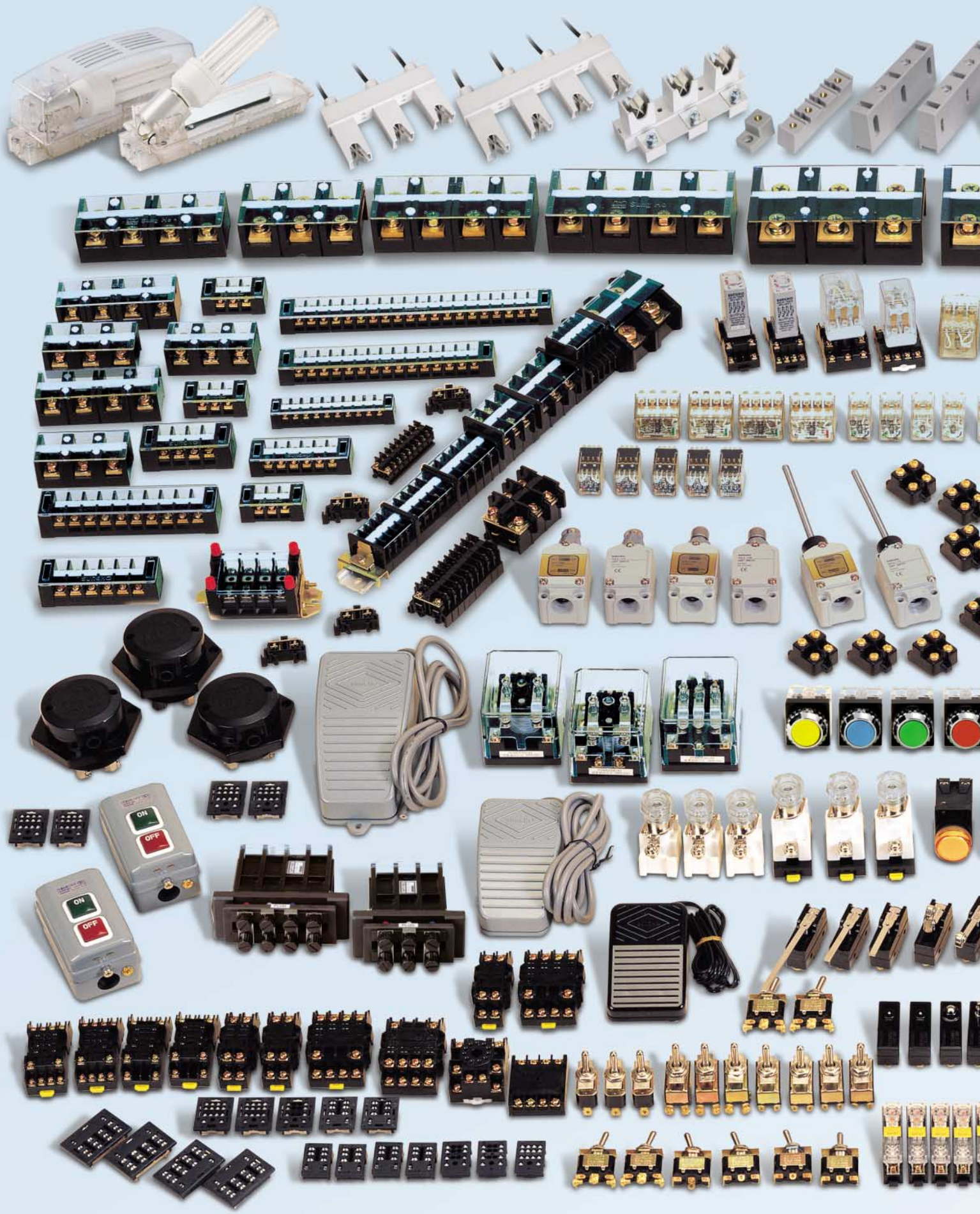
http://www.controlswitch.com



SUNGHO components for control, signaling & detection

성호제어기기(주)
SUNGHO CONTROLS CO., LTD.

제어기기의 No.1



성호제어기기 가 또 한 번 앞서갑니다!

성호제어기기류 목차
General Contents

Rotary CAM Switches

캠스위치

Ratary CAM Switches

한국전기연구원 개발시험합격

- 단자보호카바 장착형으로 안전합니다.
- 전면조각은 소비자가 원하는 사양대로 가능합니다.

핸들의 종류
Types of Handles

유럽형
ET Type
- 적색/백색/흑색
  Red/White/Black

지침형
Compass
- 흑색
  Black

국화형
Chrysanthemum
- 흑색
  Black

계란형
Egg
- 흑색
  Black

지팡이형
Stick
- 흑색
  Black

방습형
Dampproof
- 흑색
  Black

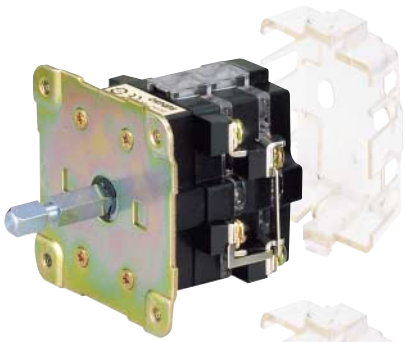
표시판의 종류
Types of Front Plates

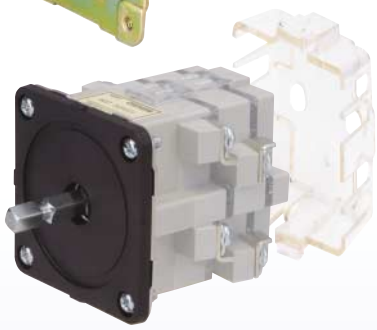
Square Type
- 적색/황색/
  백색/청색/흑색
  Red/Yellow/
  White/Blue/Black

Square Type
- 회색
  Grey

Circular Type
- ϕ25, ϕ30
- 방습구조
  Dampproof

접점블록
Base/Contact Block





취부간격의 종류
Types of Panle cutouts
- 40×40-S
- 48×48-M

절환단수: 2~12단
Swith Position upto 12 Steps

연결블록수: 1~10련
Contact Block upto 10 Poles

캠스위치

Rotary CAM Switches

유럽형
SHCS-ET type

주문형식
Catalog No. structure
(Ordering Information)

SHCS-ET-R • **M** • **A332**

전면구조 *Type of head* | 취부간격 *Panel Cutouts* | 접점블록종류 *Base/contact block*

핸들
Handle

핸들종류 *Operating head*	핸들색상 *Color handle*	표시판색상 *Front plate*	형식 *Type of head*
유럽형 표준핸들 (수동복귀식) *Compass with square plate stay-put*	적색 *Red*	적색 *Red*	SHCS-ETR
	황색 *Yellow*	황색 *Yellow*	SHCS-ETY
	백색 *White*	백색 *White*	SHCS-ETW
	청색 *Navy blue*	청색 *Navy blue*	SHCS-ETN
	흑색 *Black*	흑색 *Black*	SHCS-ETB

Code	*Panel Cutouts*
S	40×40
M	48×48

표준회로의 예는 아래와 같으며
상세회로도는 17 page부터 참조 바랍니다.
See page 17 for selection

Code	*Description*
A332	3φ 3W 2CT
A333	3φ 3W 3CT
A343	3φ 4W 3CT
V332	3φ 3W 2PT
V333	3φ 3W 3PT
V343	3φ 4W 3PT
24FR2	단상4극 정역스위치
40IS	운전선택형산업기계용
40FR	4극 정역스위치
40S	ON/OFF스위치
24FR	단상4극 정역스위치
48S	4P/8P극 전환스위치

유럽형 지팡이 핸들 (자동복귀식) *Stick with square plate spring return*	흑색 *Black*	흑색 *Black*	2단 중앙복귀식 *Spring return to center* 	SHCS-ETB-M-CS 기본형
				SHCS-ETB-M-CSP 당긴 후 조작 *Pull to swing*

접점블록, *Base/contact block*

절환단수 : 2~12단
Switch position upto 12 steps

핸들절환각도
Switching angle of the handle for each step

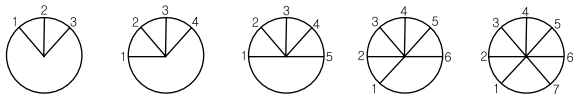
2~7단 : 45도
45 degrees upto 7 step-switch

8~12단 : 30도
30 degrees from 8 to 12 step-switch

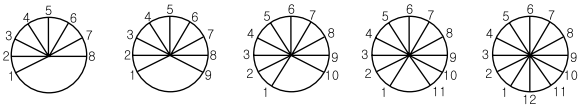
연결블록수 : 1~10련
Contact block upto 10 poles

복귀방법 : 수동복귀식
Stay-put operation as standard

• 45°



• 30°



복귀방법 및 핸들절환각도는 주문에따라 변경이 가능합니다. (16page참조)
Switches with spring return and other angles are avlaibale on request. See 16 pages

기본형
SHCS-S type

주문형식
Catalog No. structure
(Ordering information)

SHTG-SH-B • **M** • **A332**

전면구조 *Type of head* | 취부간격 *Panel Cutouts* | 접점블록종류 *Base/contact block*

핸들종류 *Operating head*	핸들색상 *Color handle*	표시판색상 *Front plate*	형식 *Type of head*
지침형 *Compass with square plate*	흑색 *Black*	회색 *Grey*	SHCS-SHB
국화형 *Chrysanthemum with square plate*	흑색 *Black*	회색 *Grey*	SHCS-SRB
계란형 *Egg with square plate*	흑색 *Black*	회색 *Grey*	SHCS-SEB
지팡이형 (자동복귀식) *Stick with square plate spring return*	흑색 *Black*	회색 *Grey*	2단 중앙복귀식 *Spring return to center* 

Code	Panel Cutouts
S	40×40
M	48×48

표준회로의 예는 아래와 같으며
상세회로도는 17 page부터 참조 바랍니다.
See page 17 for selection

Code	Description
A332	3φ3W 2CT
A333	3φ3W 3CT
A343	3φ4W 3CT
V332	3φ3W 2PT
V333	3φ3W 3PT
V343	3φ4W 3PT
24FR2	단상4극 정역스위치
40IS	운전선택형산업기계용
40FR	4극 정역스위치
40S	ON/OFF스위치
24FR	단상4극 정역스위치
48S	4P/8P극 전환스위치

SHCS-SHB-M-CS
기본형

SHCS-SHB-M-CSP
당긴 후 조작
Pull to swing

접점블록, *Base/contact block*

절환단수 : 2~12단
Switch position upto 12 steps

핸들절환각도
Switching angle of the handle for each step

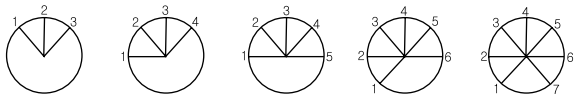
2~7단 : 45도
45 degrees upto 7 step-switch

8~12단 : 30도
30 degrees from 8 to 12 step-switch

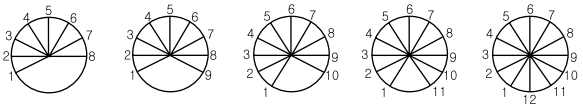
연결블록수 : 1~10련
Contact block upto 10 poles

복귀방법 : 수동복귀식
Stay-put operation as standard

• 45°



• 30°



복귀방법 및 핸들절환각도는 주문에따라 변경이 가능합니다. (16page참조)
Switches with spring return and other angles are avlaibale on request. See 16 pages

캠스위치

Rotary CAM Switches

방습형
Dampproof

핸들
Handle

주문형식
Catalog No. structure
(Ordering information)

SHCS-2H-B • **A2101**

전면구조
Type of head

접점블록종류
Base/contact block

상세회로도는 17 page참조 바랍니다.
See page 17 for selection

핸들종류 *Operating head*	핸들색상 *Color handle*	표시판색상 *Front plate*	형식 *Type of head*
방습형구조 지침형핸들 *Dampproof type with compass handle*	흑색 *Black*	ϕ25mm	SHCS-2HB
		ϕ30mm	SHCS-3HB

접점블록, *Base/contact block*

절환단수 : 2~12단
Switch position upto 12 steps

핸들절환각도
Switching angle of the handle for each step

2~7단 : 45도
45 degrees upto 7 step-switch

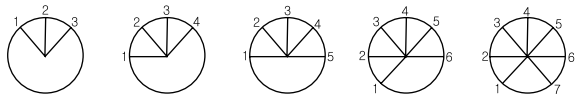
8~12단 : 30도
30 degrees from 8 to 12 step-switch

연결블록수 : 1~10련
Contact block upto 10 poles

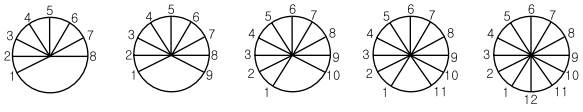
복귀방법 : 수동복귀식
Stay-put operation as standard

복귀방법 및 핸들절환각도는 주문에따라 변경이 가능합니다. (16page참조)
Switches with spring return and other angles are avlaibale on request. See 16 pages

• 45°



• 30°



정격 및 성능
Characteristics

특징
Features

- 엄격한 실험을 통하여 획득한 한국전기연구원 개발시험 합격및 CE,안전인증으로 우수성이 인정되었습니다
- 회로의 다양화로 산업용개폐장치의 용도에 맞게 설계되었습니다.
- 자동개폐기 조작과 각종 전기회로의 절환장치로 사용하기 편리합니다.
- 전류및 전압등 계기류에 사용되는 제품은 기본품으로 공급하고 있습니다.
- 표준화된 회로에 따라 엄격한 실험과 철저한 품질관리로 제품 품질을 향상시켰습니다.
- 사용자의 용도에 맞게 접점Unit의 단수와 조작용 핸들을 선택 주문 하실수 있습니다.
- 사각형(40×40, 48×48)과 원형(ϕ25, ϕ30)으로 Panel부착형입니다.
- 유럽형 핸들은 고정주문시 색상을 자유롭게 선택할수 있습니다.
- 접점 정격이 기본형은 10A이며 250VAC 20A/30A, 125VDC 20A인 캠스위치는 주문에 의하여 제작합니다
- *ApprovedtheexcellencebyqualifiedCE,TUVstandardthroughrigidtest.*
- *Withvariouscircuitformation,designedforindustrialswitchgearuse.*
- *Convenientusingfortransferofeachelectricalcircuitforautoon-offcontrolmachines.*
- *Supportthebasisproductusingindustrialinstrumentslikeavoltage,current.*
- *Improvedproductionqualityaccordingtorigid-managementofqualitysystemand strictttestingbystandardizationcircuit.*
- *Usercanselectstage-numberofcontactunit,andoperatinghandleofuser'schoice.*
- *Itisstickedpanelformofsquareandcircle(ϕ25, ϕ30).*
- *Usercanselectanycolorofeurope-typehandleincaseofregularorder.*
- *ProducingaCam-Switchof20A(contactrating)byspecialorderonly.*

접점용량
Contact ratings

접점통전전류 (일반형) *Rated thermal current*			정격전압 *Rated voltage*		250V	440V
	10A	AC	정격전류 *Rated current*	저항부하 *Rated load*	10A	6A
				유도부하 *Inductive load*	3A	1.5A
		DC	정격전압 *Rated voltage*		125V	250V
			정격전류 *Rated current*	저항부하 *Rated load*	4.4A	2.5A
				유도부하 *nductive load*	0.75A	0.5A
	20A	AC	정격전압 *Rated voltage*		250V	440V
			정격전류 *Rated current*	저항부하 *Rated load*	20A	12A
				유도부하 *Inductive load*	6A	3A
		DC	정격전압 *Rated voltage*		125V	250V
			정격전류 *Rated current*	저항부하 *Rated load*	8.5A	5A
				유도부하 *Inductive load*	1.5A	1A
	30A	AC	정격전압 *Rated voltage*		250V	440V
			정격전류 *Rated current*	저항부하 *Rated load*	30A	15A
				유도부하 *Inductive load*	10A	5A
		DC	정격전압	Rated voltage	125V	250V
			정격전류 *Rated current*	저항부하 Rated load	8.8A	5A
				유도부하 *Inductive load*	2.1A	1.2A
	20A	DC	정격전압 *Rated voltage*		125V	220V
			정격전류 *Rated current*	저항부하 *Rated load*	20A	10A
				유도부하 *Inductive load*	3.5A	2A

기타특성
Other characteristics

수명	전기적 *Electrical*	10만회이상 *0.1mil.operations*
	기계적 *Mechanical*	50만회이상 *0.5mil.operations*
접촉저항 *Contact resistance*		20mΩ(초기치) *Max.20mΩ*
절연저항 *Insulation resistance*		100MΩ이상(DC500V메가) *Min.100MΩ at DC500V*
내전압 *Dielectric strength*		AC1,500V 50/60Hz 1Min
내진동 *Vibration protection*		10~55Hz 복진폭 1.5mm
내충격 *Mechanicalshook protection*		30m/S(약30G)
사용주위온도 *Ambient temperature*		-20℃ ~ +70℃
작동에 필요한힘 *Handle operating force*		약600g *About 0.6kgf*

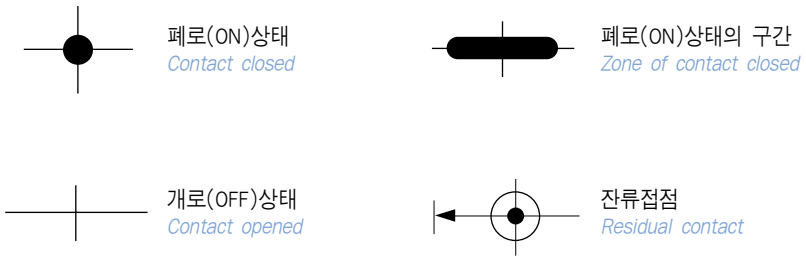
캠스위치

Rotary CAM Switches

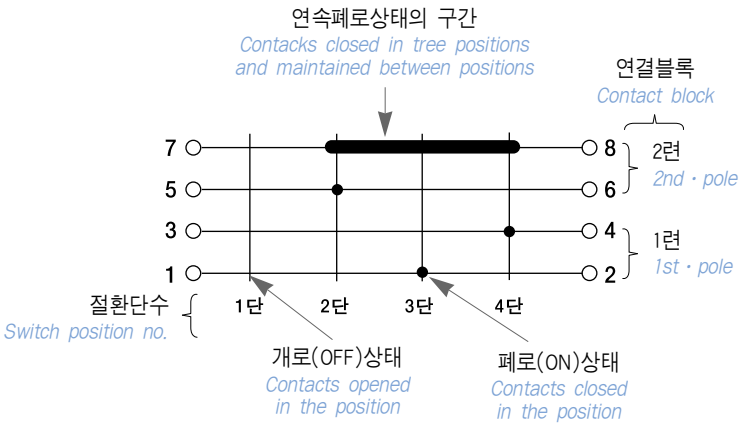
접점기호 및 동작 설명

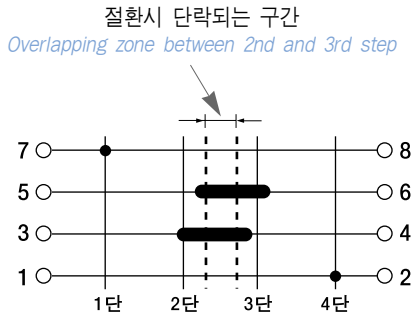
Symbols in switching programs

접점기호
Contact symbols

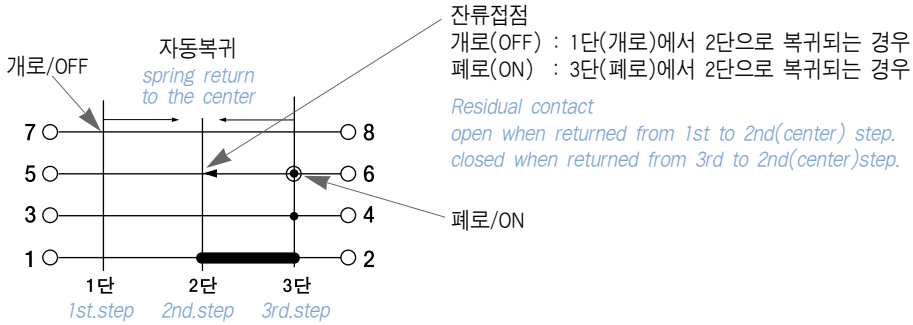


동작설명(예)
Examples of switching programs





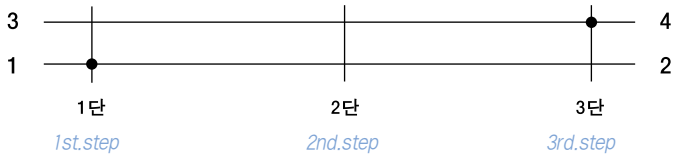
2단과 3단간 핸들 절환시 폐로(ON)가
중복되는 구간을 갖는 구조의 회로입니다.
즉, 3~4번 단자와 5~6번 단자는 2단과 3단 사이에
순간적으로 동시에 폐로(ON) 상태가 됩니다.



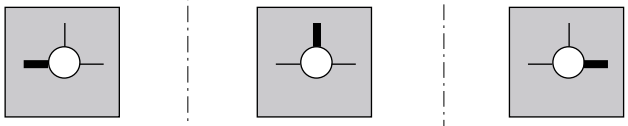
핸들위치와 구조설명
Example of operation

90도 3단의 예
Switching angle 90°
Switch position 3 steps

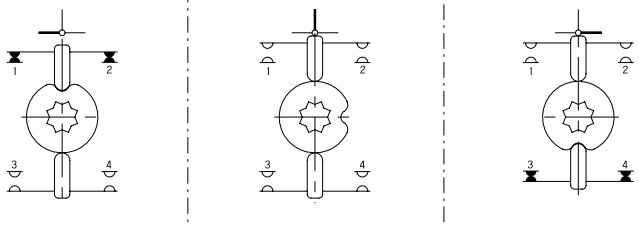
회로전개도
Switching program



핸들위치
Handle position

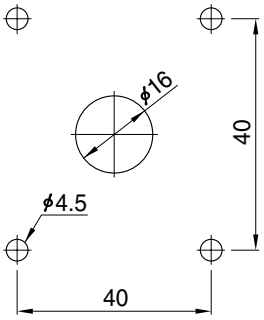


접점과 캠의 동작
Contact block operation

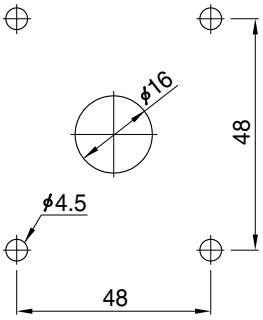


판넬가공치수
Panel cutouts

유럽형 및 기본형
SHCS-ETB-S type
SHCS-SHB-S type

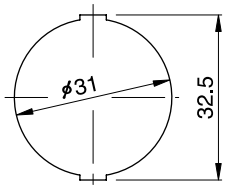


SHCS-ETB-M type
SHCS-SHB-M type



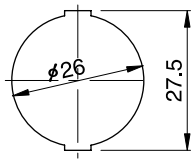
방습형
Dampproof type

SHCS-3HB



ϕ 30

SHCS-2HB



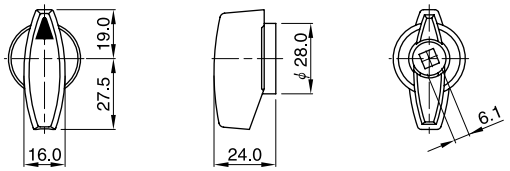
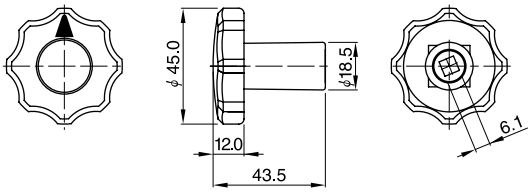
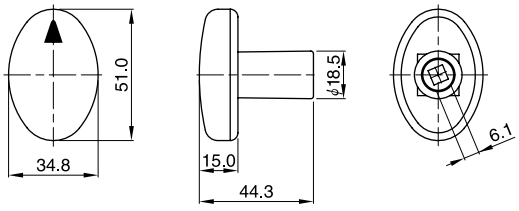
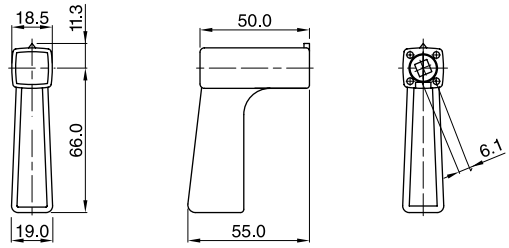
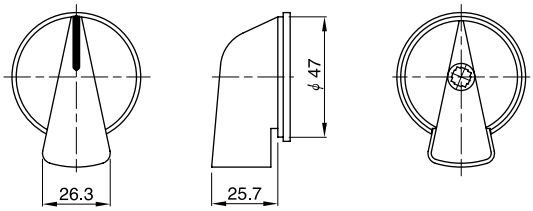
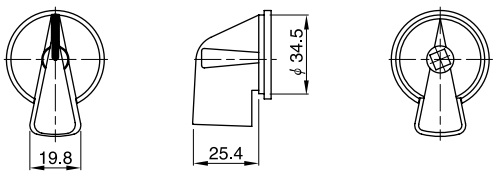
ϕ 25

캠스위치

Rotary CAM Switches

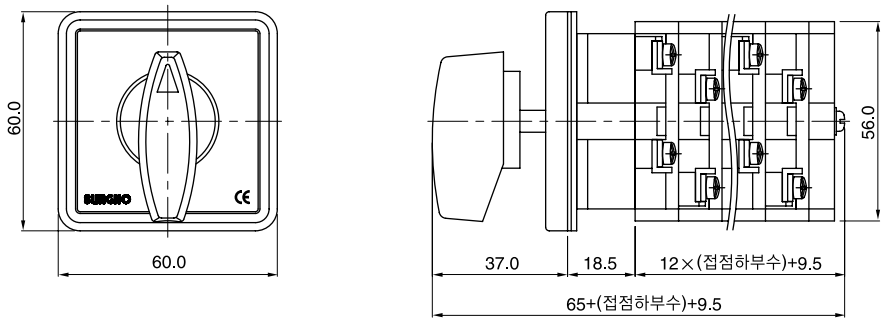
핸들치수

Handle dimensions

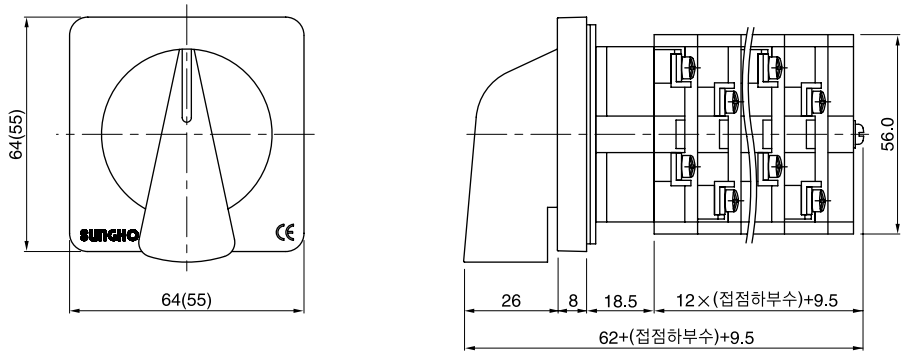
핸들종류 *Handle Type*	외형치수 *Dimension*
지침형 *Compass type*	 
국화형 *Chrysanthemum type*	 
계란형 *Egg*	 
지팡이형 *Stick*	 
유럽형 48x48 *Et 48X48 type*	 
유럽형 40X40 *Et 40X40 type*	 

외형치수
Dimensions

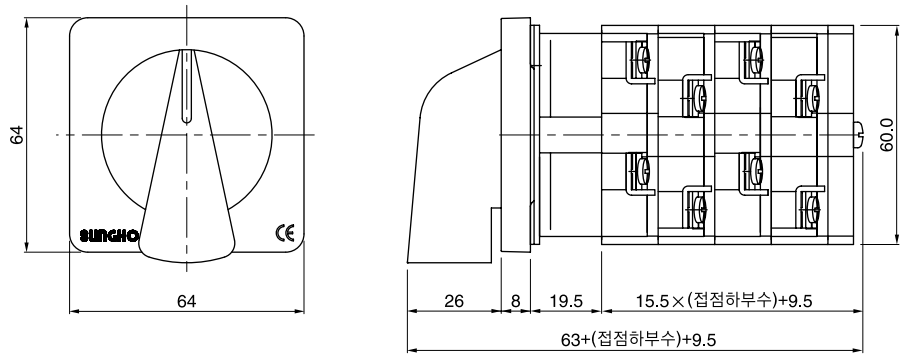
기본형 (600VAC3A, 600VAC6A)
SHCS-S type



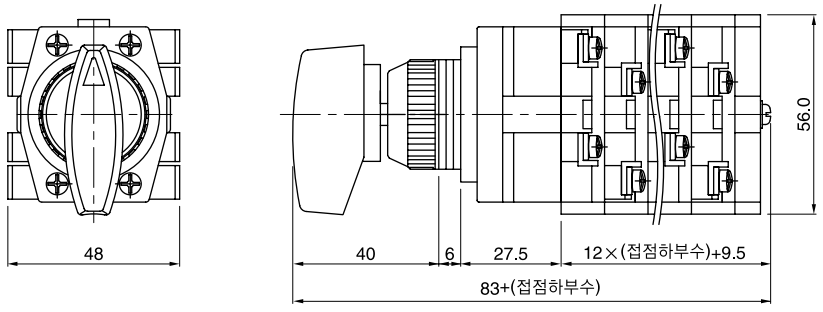
유럽형 (600VAC3A, 600VAC6A)
SHCS-ET type



유럽형(600VAC10A, 125VDC20A)
SHCS-ET type



방습형 (600AAC3A, 600VAC6A)
SHCS-S type

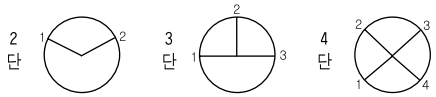
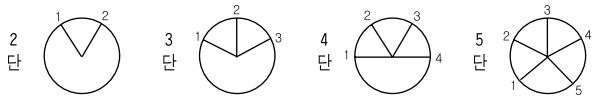
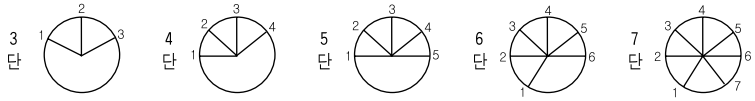
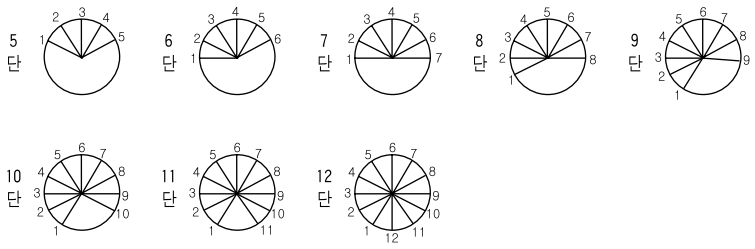
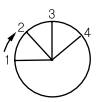
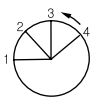


캠스위치

Rotary CAM Switches

핸들절환각도의 종류

Switching angle of the handle

수동복귀식 90° *Manual return*	90°	
	60°	
	45°	
	30°	
자동복귀식 *Spring return*	45°	 1, 2단에서 중앙으로 자동복귀 *Spring return to center*
		 중앙에서 당긴후 1, 2단으로 조작 1, 2단에서는 중앙으로 자동 복귀 *Pull to swing to step 1 or 2 from center* *Spring return to center*
혼합복귀식		 1단에서 2단 : 자동복귀 3단에서 2단 : 수동복귀 *Spring return from 1st to 2nd only*
		 1단에서 2단 : 수동복귀 3단에서 2단 : 자동복귀 *Spring return from 3rd to 2nd only*
		 1단에서 2단 : 자동복귀 기타는 수동복귀 *Spring return from 1st to 2nd only*
		 4단에서 3단 : 자동복귀 기타는 수동복귀 *Spring return from 4th to 3rd only*

접점블록 회로도
Base/contact block

주문형식
Catalog No. structure
(Ordering information)

SHCS- ET-R • **A332**

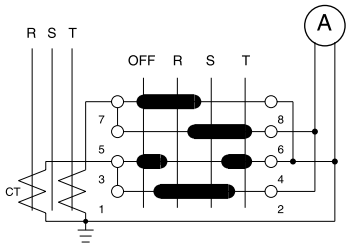
전면구조
Type of head

8~10 page참조
See page 6~8

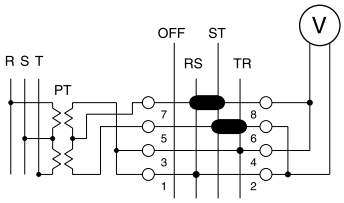
접점블록종류
Base/contact block

아래의 회로도에서 선택
Select contact block programs from this page.

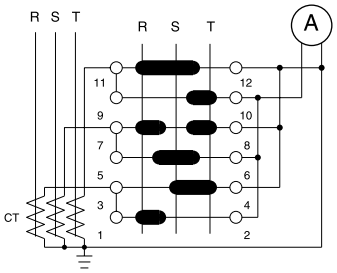
Code : A332
3φ3W 2CT



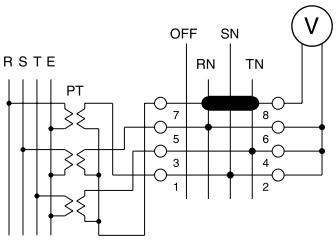
Code : V332
3φ3W 2PT



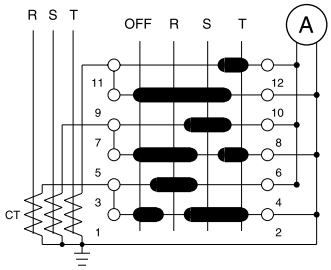
Code : A333
3φ3W 3CT



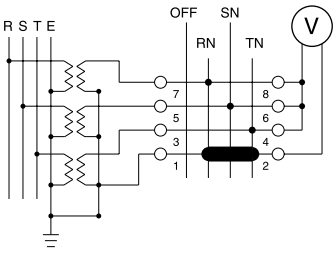
Code : V333
3φ3W 3PT



Code : A343
3φ4W 3CT



Code : V343
3φ4W 3PT



캠스위치

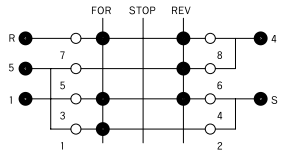
Rotary CAM Switches

접점블록 회로도

Base/contact block

Code : 24FR2

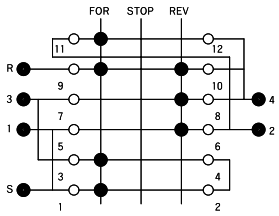
단상 4P 정역스위치



・용도 : 단상전동기 220V 정역에서만 사용

Code : 24FR

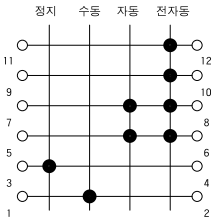
단상 4P 정역스위치



・용도 : 단상전동기 110/220V 겸용

운전선택형산업기계용

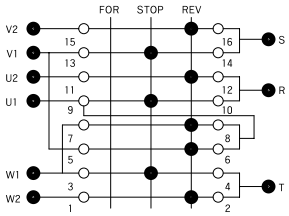
단상 4P 정역스위치



・용도 : 산업기계, 사출기

Code : 48S

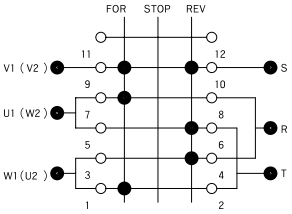
4P, 8P극 전환스위치



・용도 : 삼상전동기 극전환 및 좌우 회전용

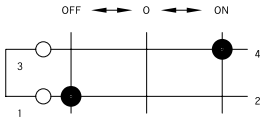
Code : 40FR

4P 정역스위치



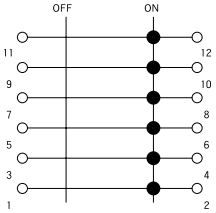
・용도 : 삼상전동기 극전환 및 좌우회전용

Code : CS



Code : 40S

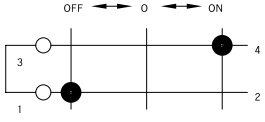
단상 4P 정역스위치

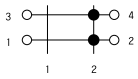
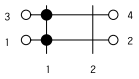
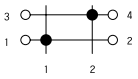
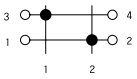
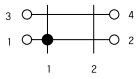
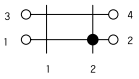
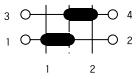
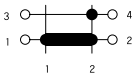
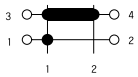
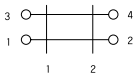
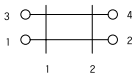
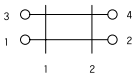
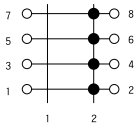
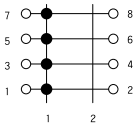
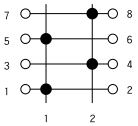
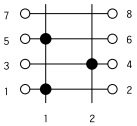
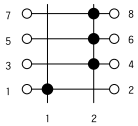
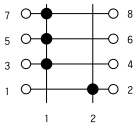
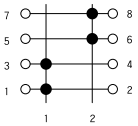
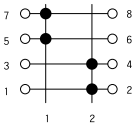


・용도 : 단상, 삼상 ON, OFF용

Code : CSP

핸들걸림식



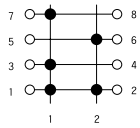
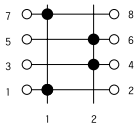
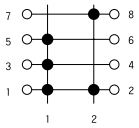
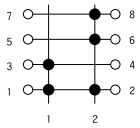
Code : 2101	Code : 2102	Code : 2103	Code : 2104
			
Code : 2105	**Code : 2106**	**Code : 2107**	**Code : 2108**
			
Code : 2109			
			
Code : 2201	**Code : 2202**	**Code : 2203**	**Code : 2204**
			
Code : 2205	**Code : 2206**	**Code : 2207**	**Code : 2208**
			

캠스위치

Rotary CAM Switches

접점블록 회로도

Base/contact block

Code : 2209	Code : 2210	Code : 2211	Code : 2212
			
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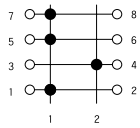	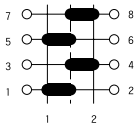	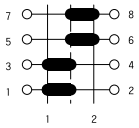	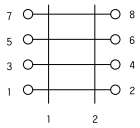
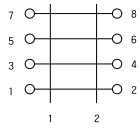	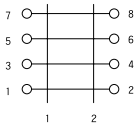	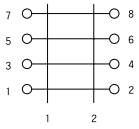	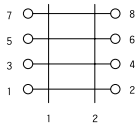
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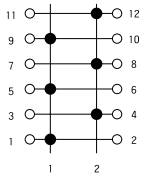	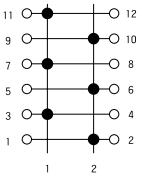	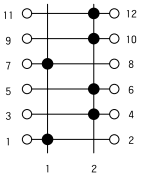	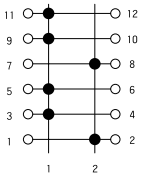
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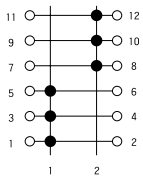	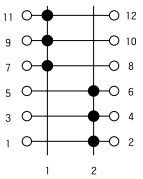	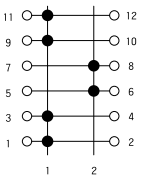	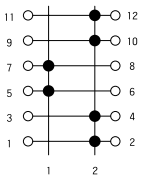

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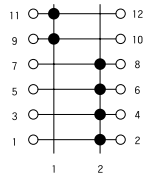	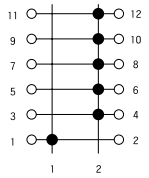	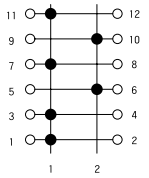	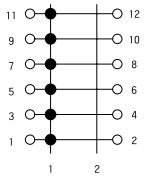
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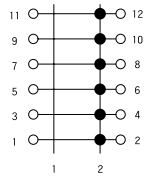	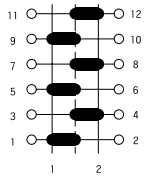	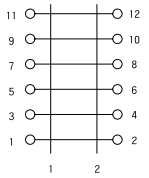	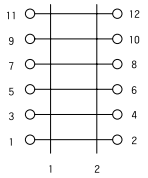
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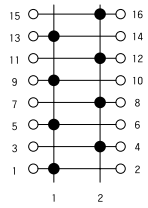	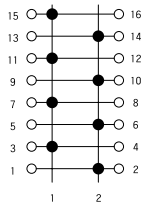	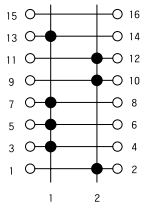	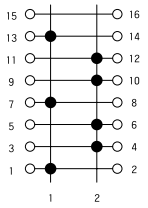
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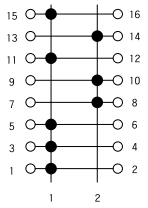	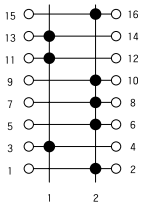	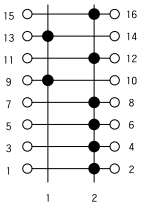	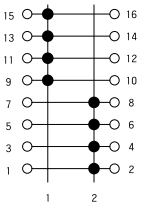
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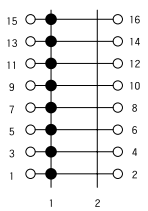
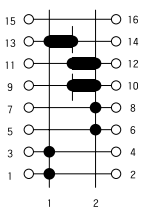
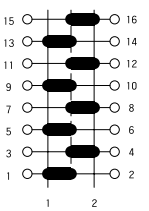
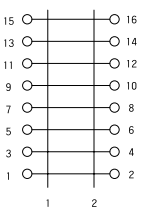
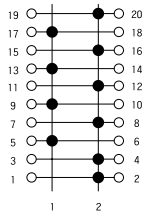
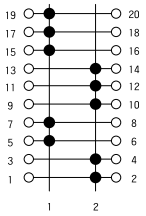
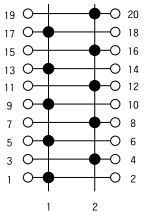
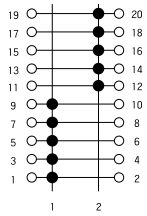
			

접점블록 회로도
Base/contact block

Code : 2501	Code : 2502	Code : 2503	Code : 2504
			
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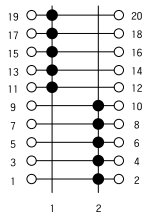	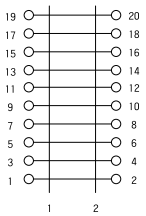	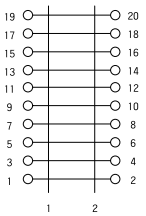	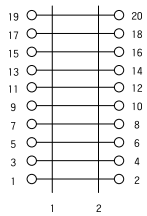
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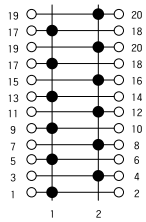	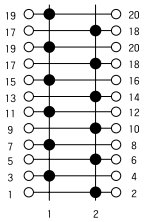	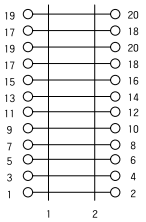	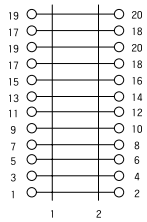
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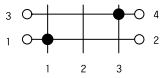	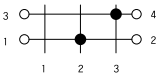	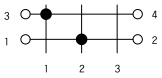	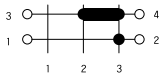
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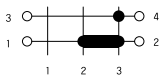	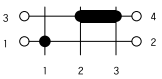	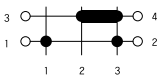	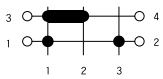

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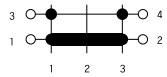	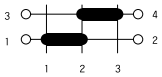	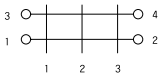	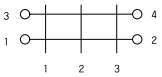
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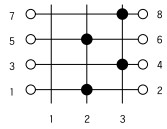	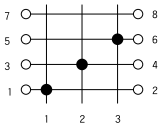	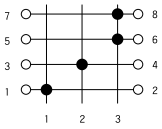	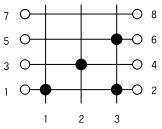
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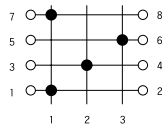	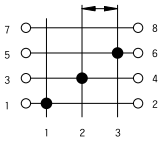	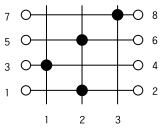	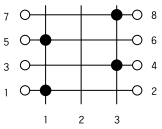
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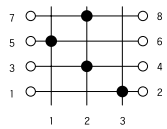	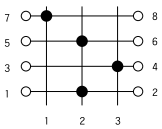	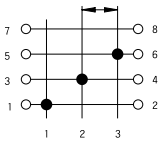	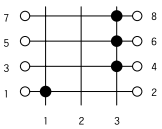
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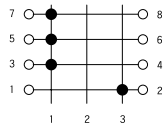	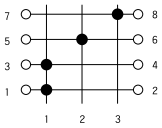	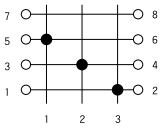	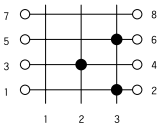

접점블록 회로도
Base/contact block

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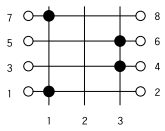	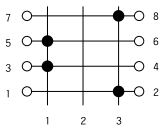	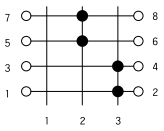	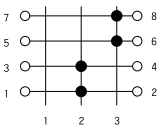
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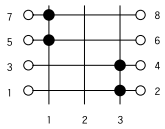	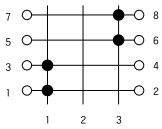	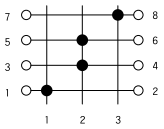	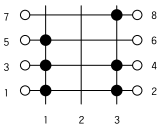
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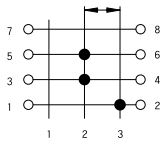	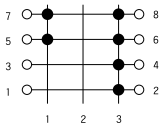	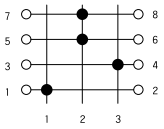	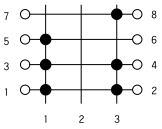
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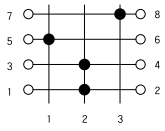	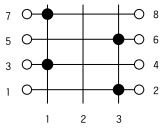	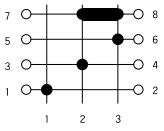	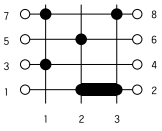
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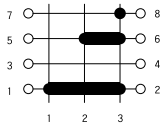	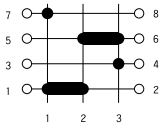	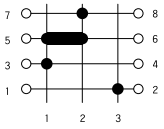	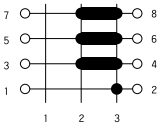

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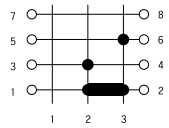	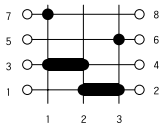	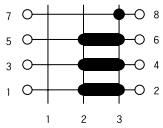	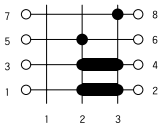
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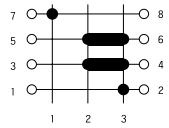	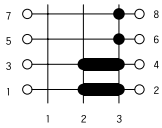	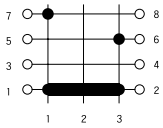	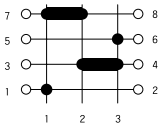
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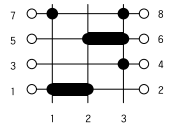	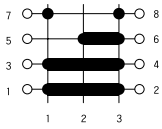	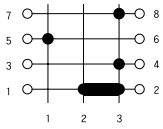	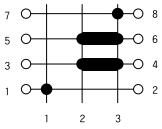
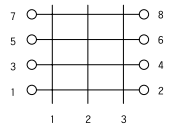	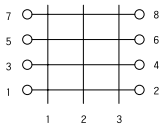	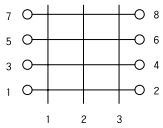	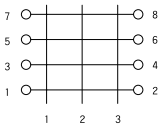
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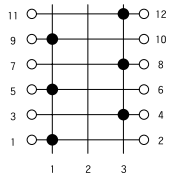	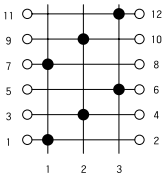	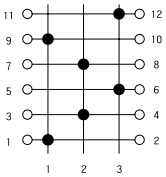	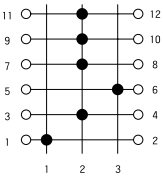

접점블록 회로도
Base/contact block

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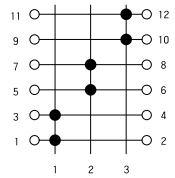	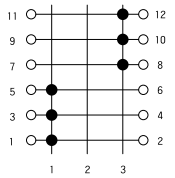	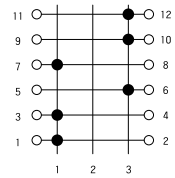	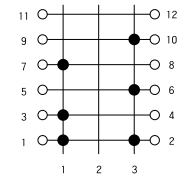
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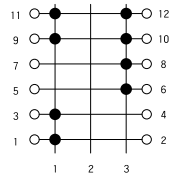	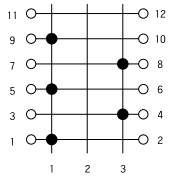	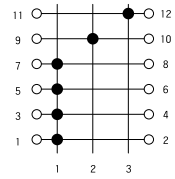	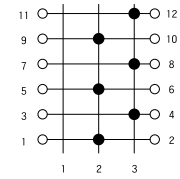
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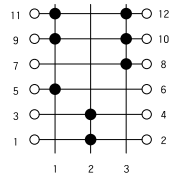	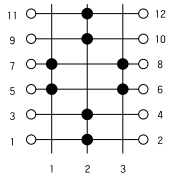	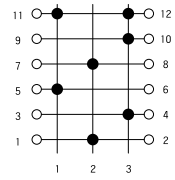	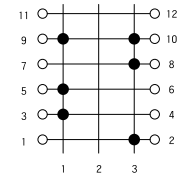
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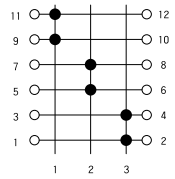	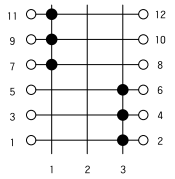	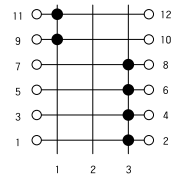	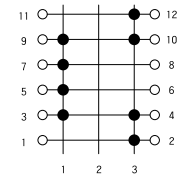
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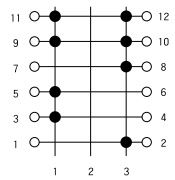	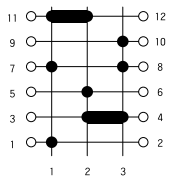	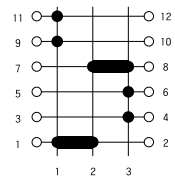	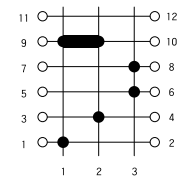

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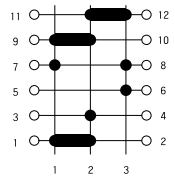	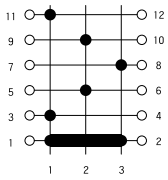	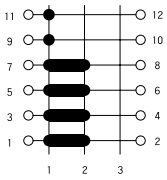	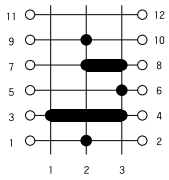
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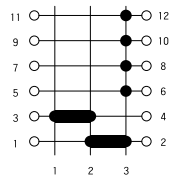	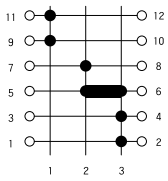	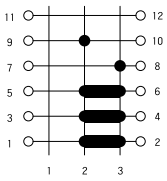	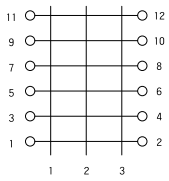
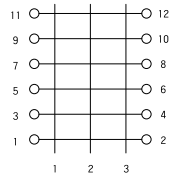	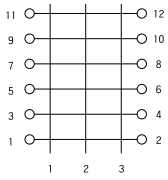	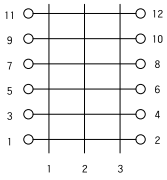	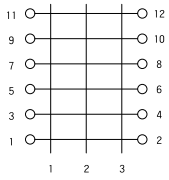
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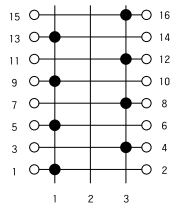	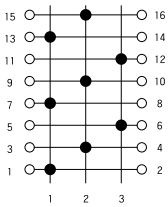	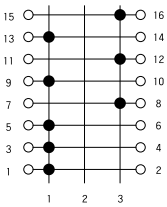	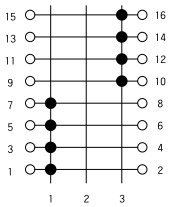
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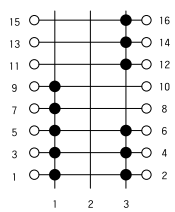
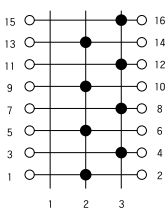
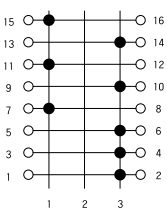
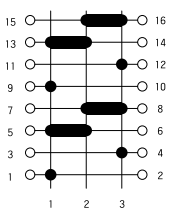
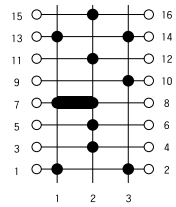
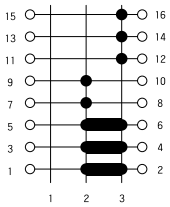
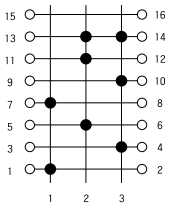
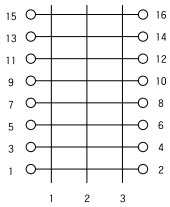
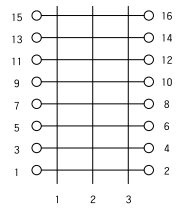
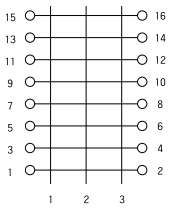
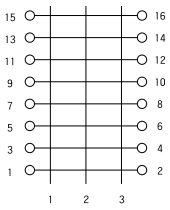
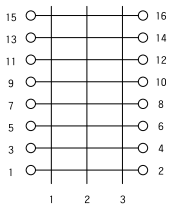
			

캠스위치

Rotary CAM Switches

접점블록 회로도

Base/contact block

Code : 3409	Code : 3410	Code : 3411	Code : 3412
			
			
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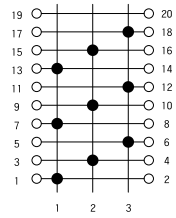	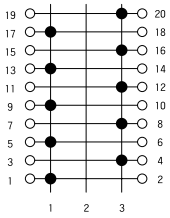	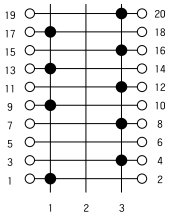	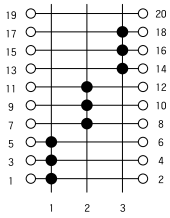
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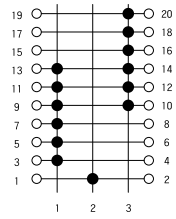	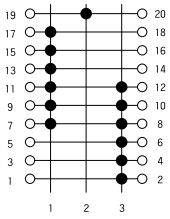	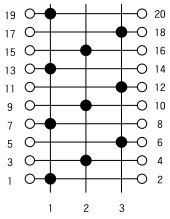	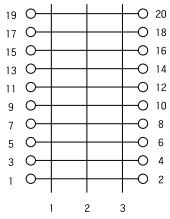
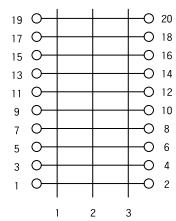	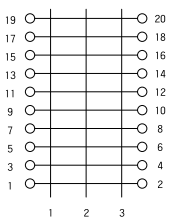	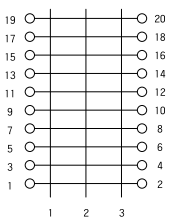	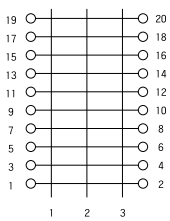

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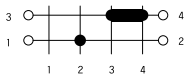	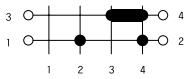	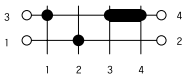	
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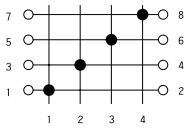	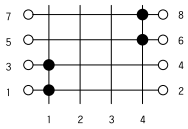	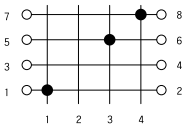	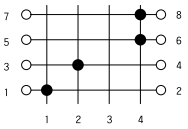
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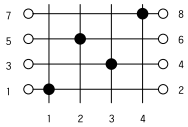	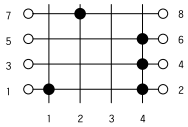	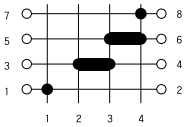	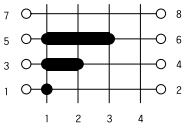
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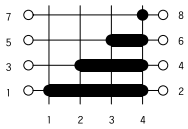	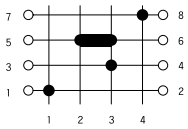	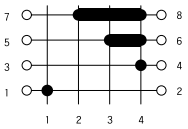	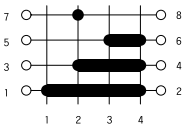
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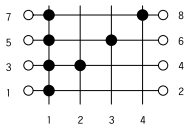	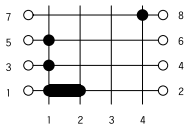	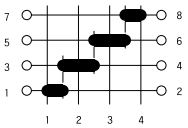	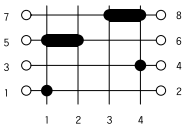

접점블록 회로도
Base/contact block

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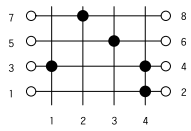	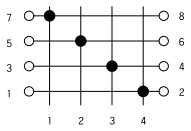	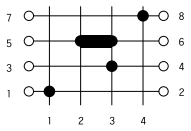	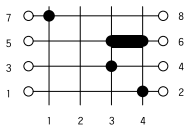
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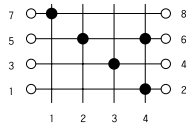	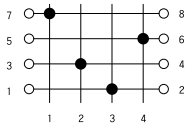	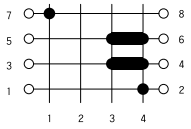	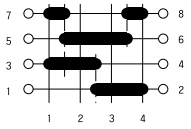
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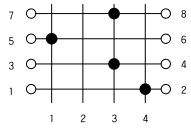	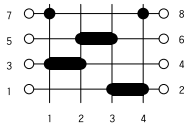	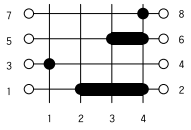	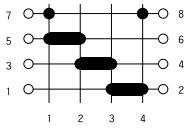
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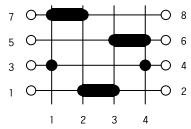	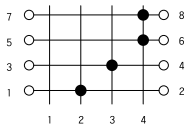	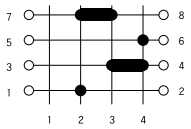	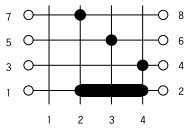
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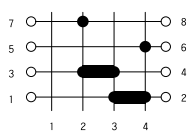	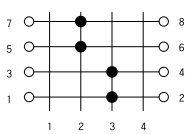	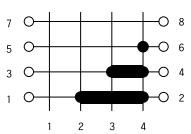	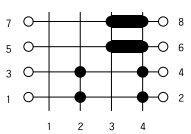

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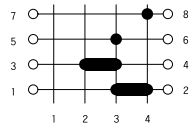	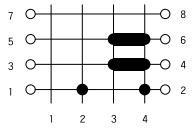	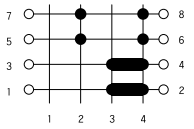	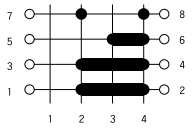
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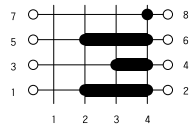	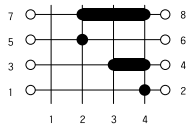	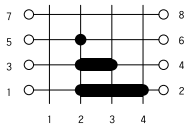	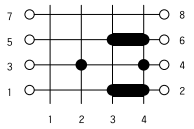
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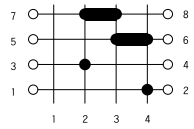	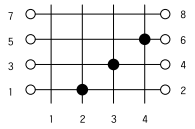	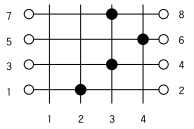	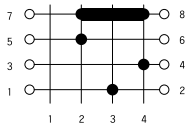
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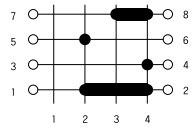	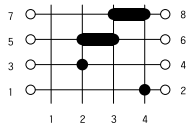	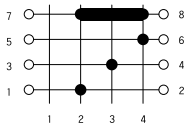	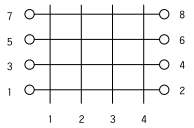
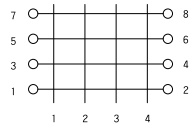	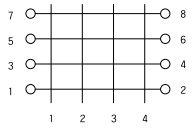	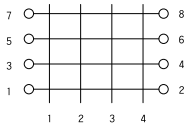	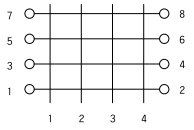

접점블록 회로도
Base/contact block

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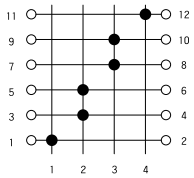	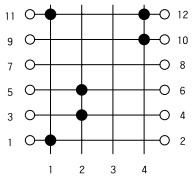	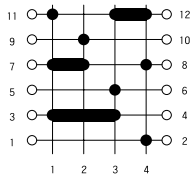	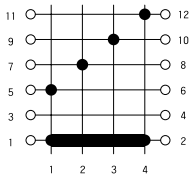
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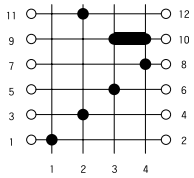	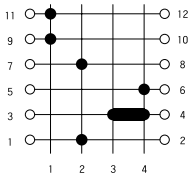	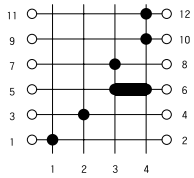	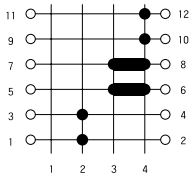
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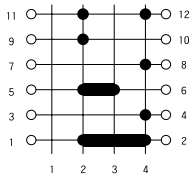	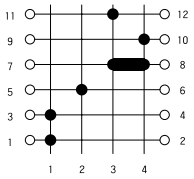	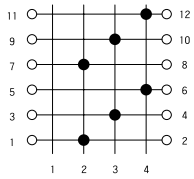	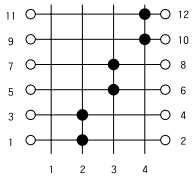
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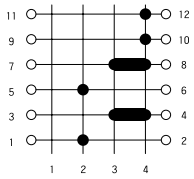	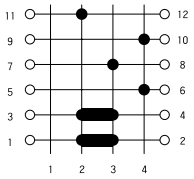	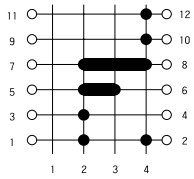	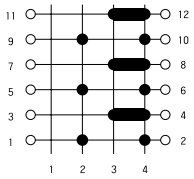
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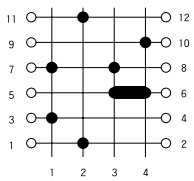	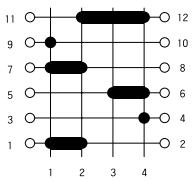	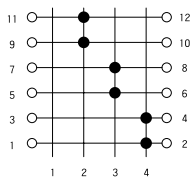	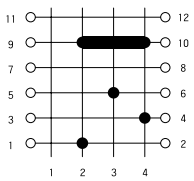

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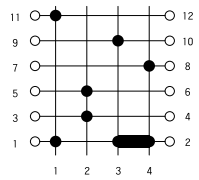	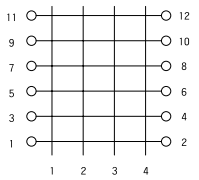	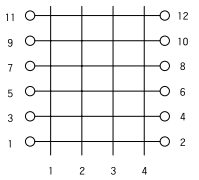	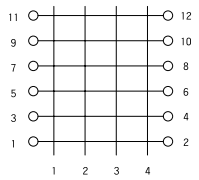
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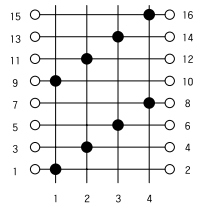	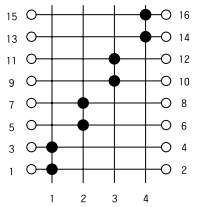	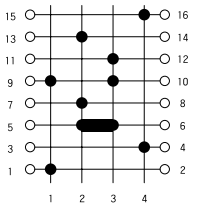	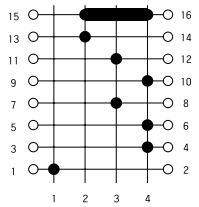
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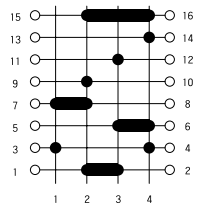	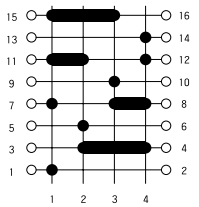	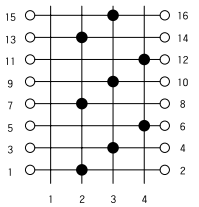	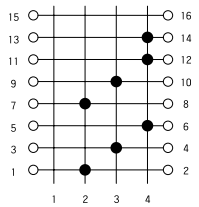
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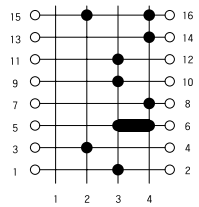	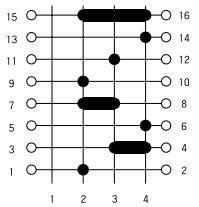	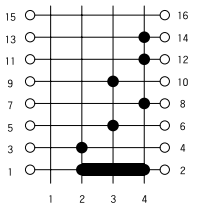	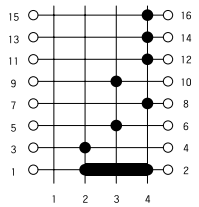
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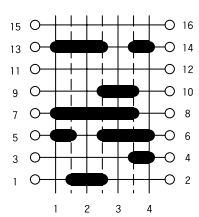
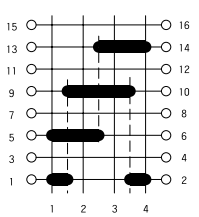
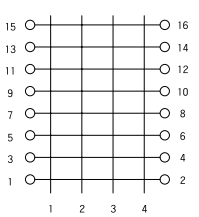
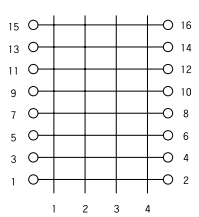
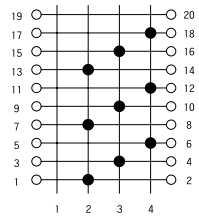
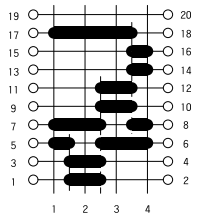
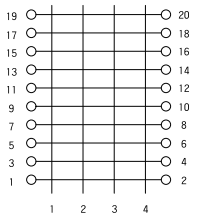
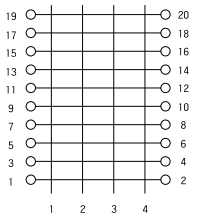
			

캠스위치

Rotary CAM Switches

접점블록 회로도

Base/contact block

Code : 4501	Code : 4502		
			
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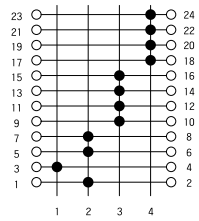	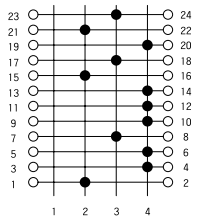	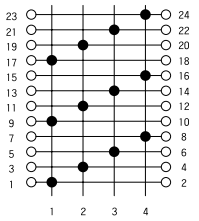	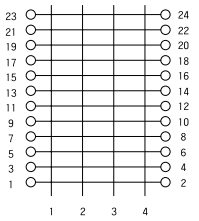
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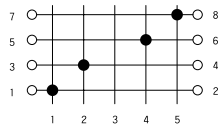	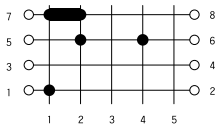	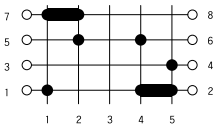	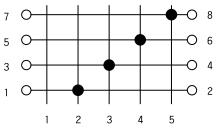
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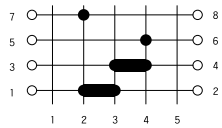	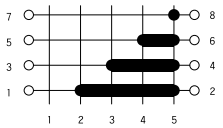	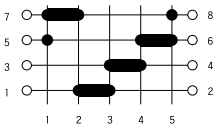	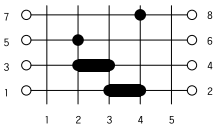
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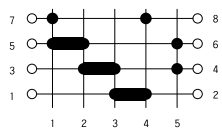	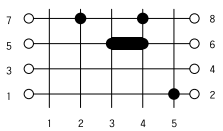	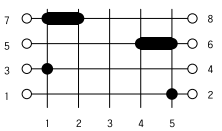	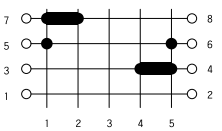

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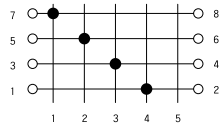	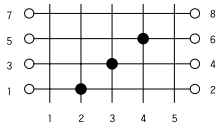	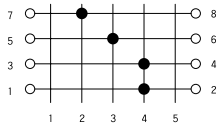	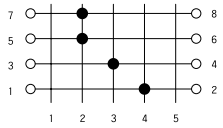
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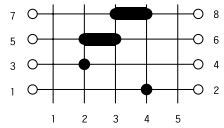	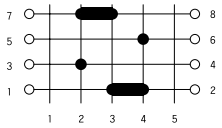	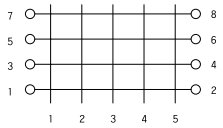	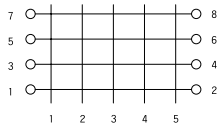
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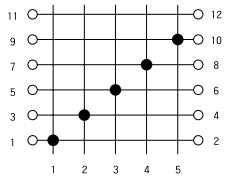	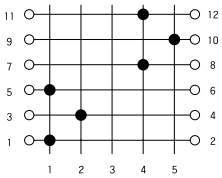	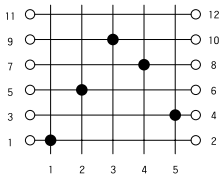	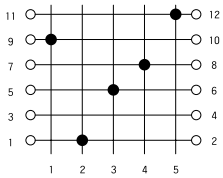
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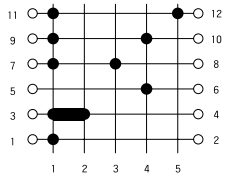	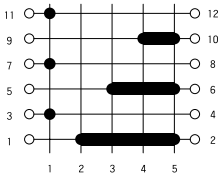	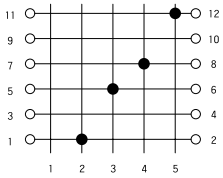	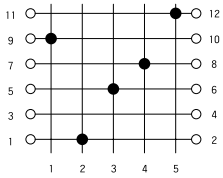
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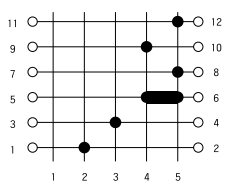	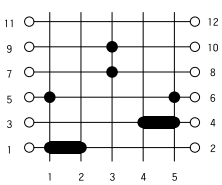	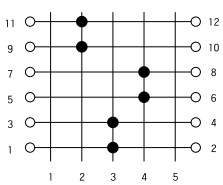	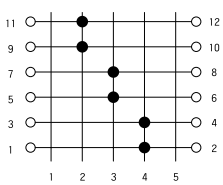

접점블록 회로도
Base/contact block

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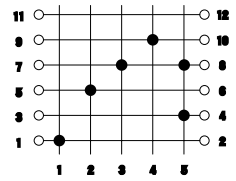	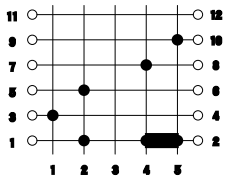	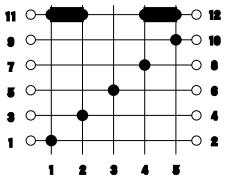	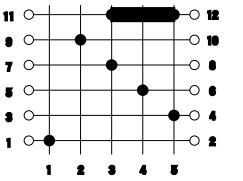
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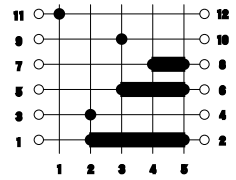	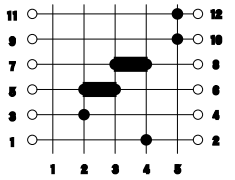	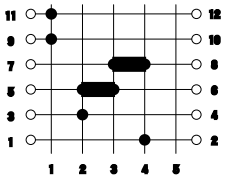	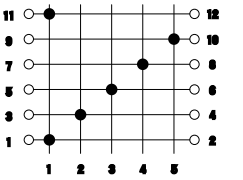
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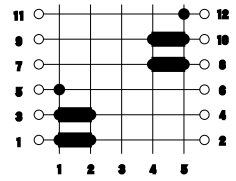	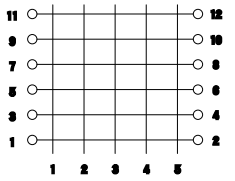	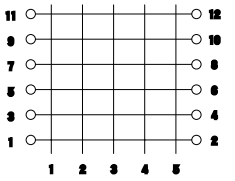	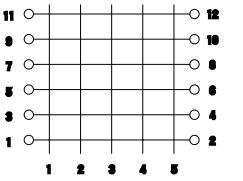
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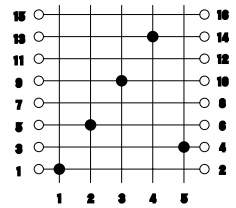	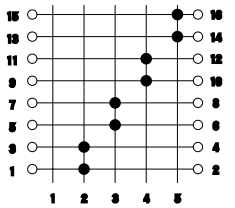	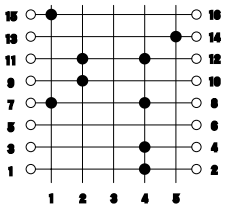	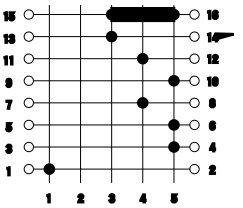
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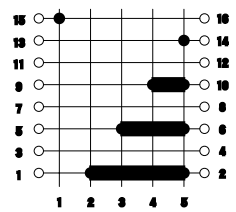	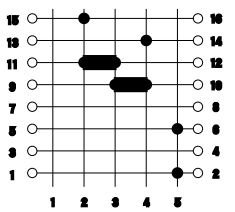	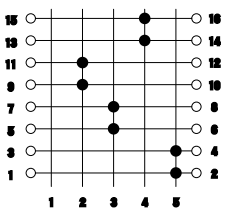	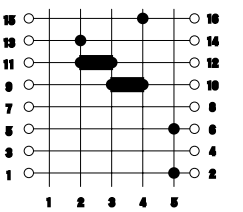

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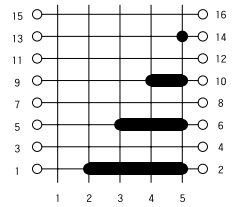	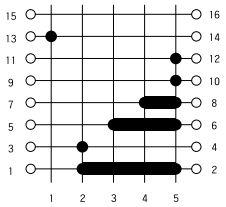	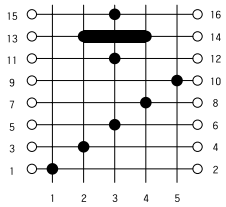	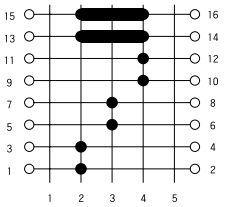
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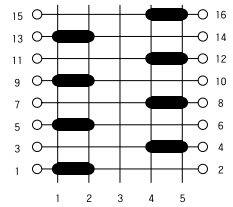	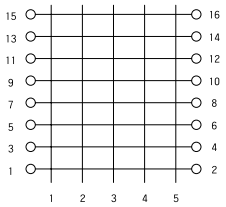	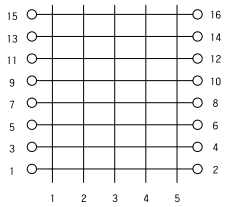	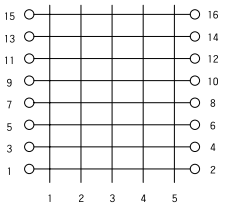
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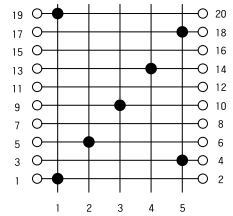	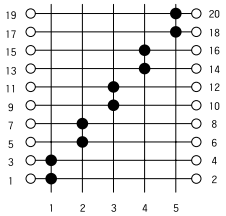	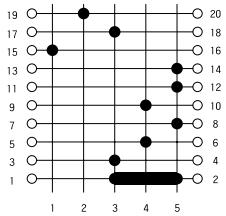	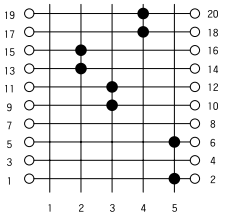
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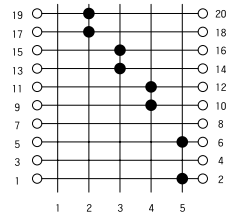	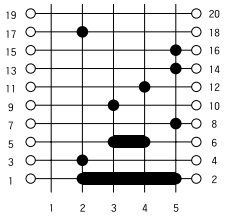	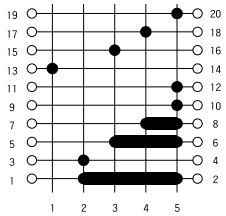	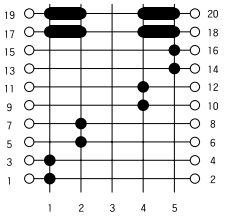
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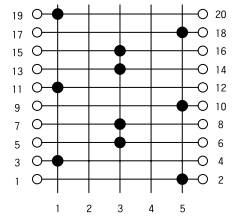
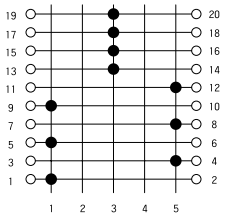
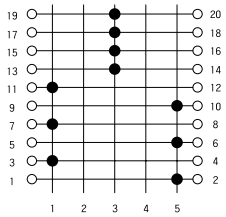
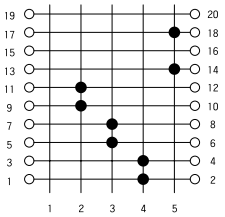
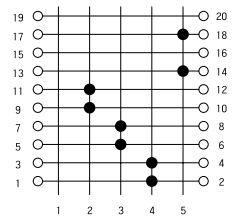
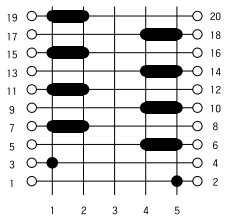
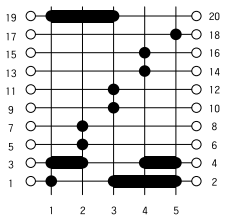
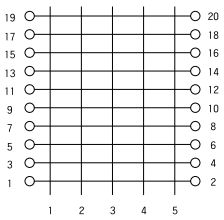
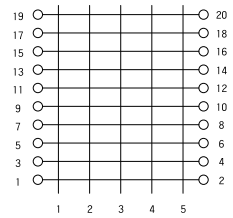
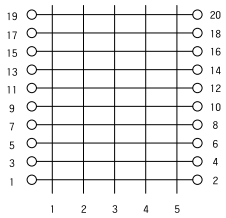
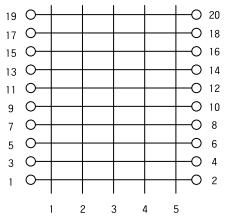
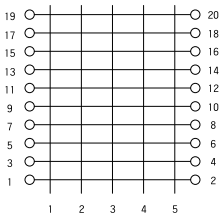
			

캠스위치

Rotary CAM Switches

접점블록 회로도

Base/contact block

Code : 5513	Code : 5514	Code : 5514	
			
			
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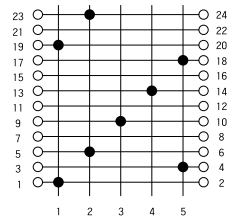	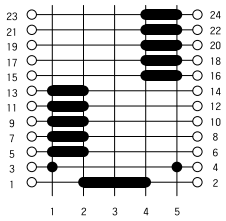	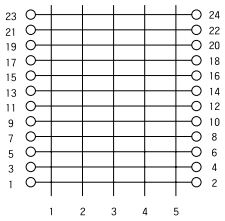	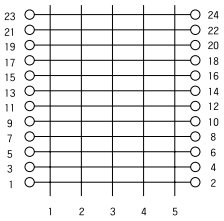
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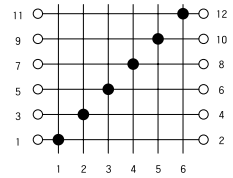	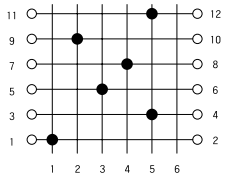	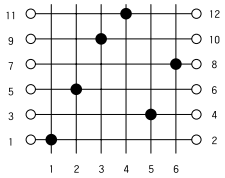	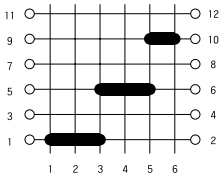
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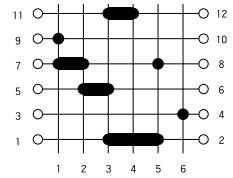	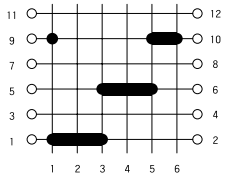	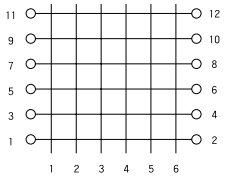	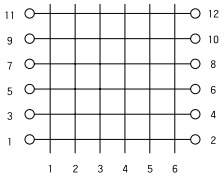

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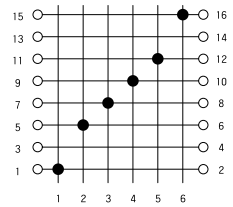	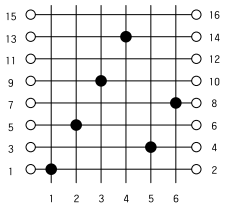	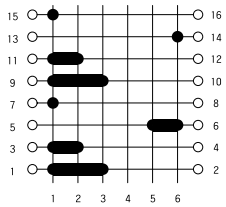	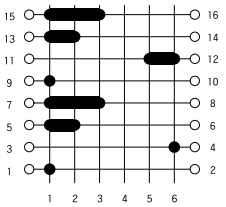
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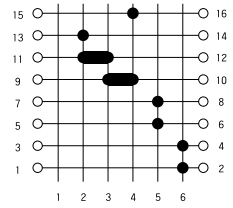	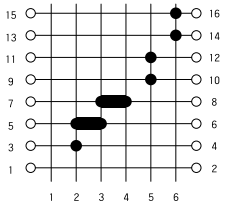	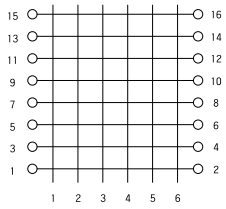	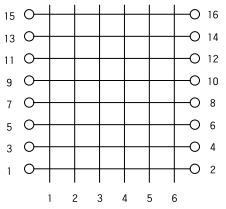
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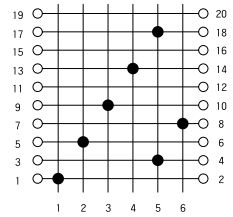	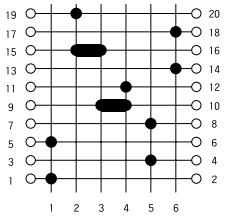	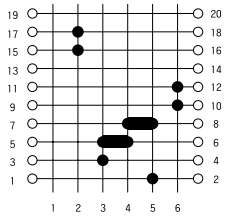	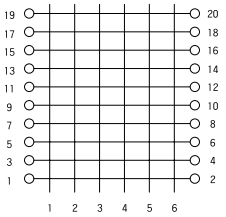
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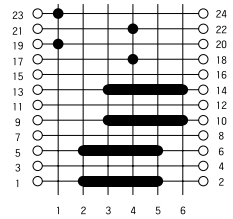	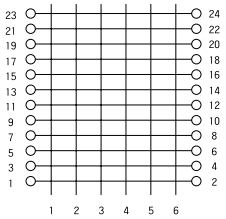	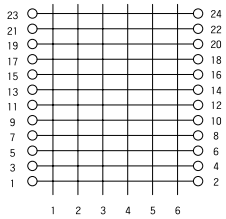	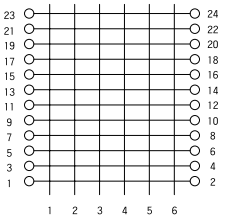
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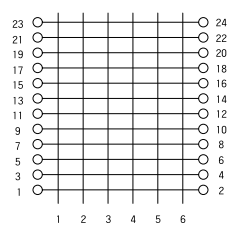
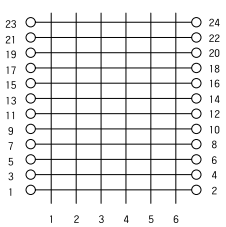
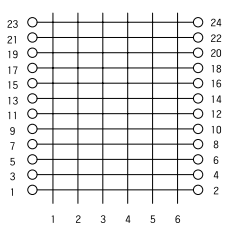
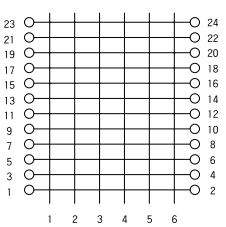
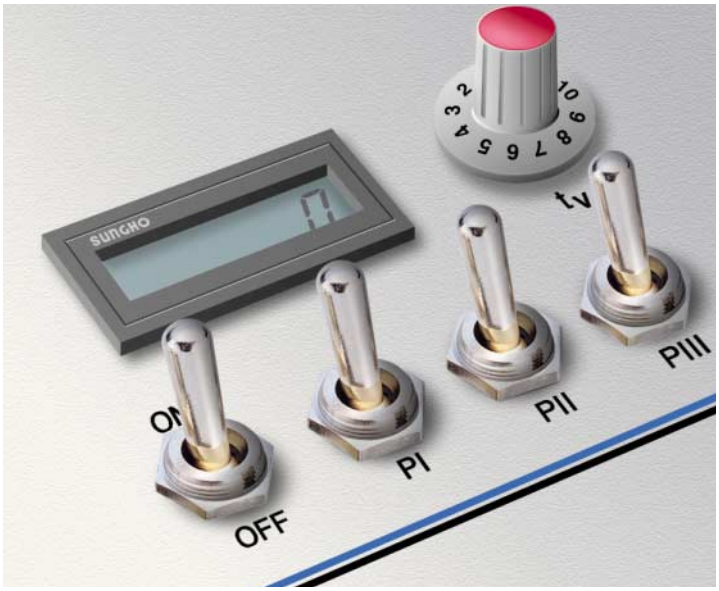
			

Toggle Switches

토글스위치

Toggle Switches



단투(2단자)형
Single Throw Switches
With two Positions
a접점으로 구성

- 1극형 *Single Pole*
  - 납땜형 *Solder*
  - 볼트형 *Screw*
- 2극형 *Double Pole*
  - 납땜형 *Solder*
  - 볼트형 *Screw*

쌍투(3단자)형
Double Throw Switches
c접점으로 구성

- 2-위치형
  With Two Positions
  a-b
- 3-위치형
  Three Positions
  a(ON)-OFF-b(ON)
  - 수동형
    Stay Put
  - 한쪽자동복귀형
    Momentary Function
    a or b Spring Returning to OFF
  - 양쪽자동복귀형
    Momentary Function
    a and b Spring Returning to OFF

정격용량 : 3A, 6A, 10A 250V AC
Rating

토글스위치

Toggle Switches

정격 및 성능
Characteristics

특징 *Features*	■ 간편한 조작과 부드러운 촉감을 갖춘 높은 정밀도의 토글 스위치 입니다. ■ 다양한 종류의 부하용량을 갖고 있어 소비자의 선택폭이 넓어졌습니다. ■ 내열, 내연 및 내아크성 재질의 구조로 되어 있어 절연성이 우수합니다. ■ 단자는 납땜형과 볼트형으로 분류되어 있습니다. ■ 명판은 한글은 물론 영문으로도 가능합니다. ■ *Toggle switch of high detailed drawing having easy operation, and feel soft to the touch.* ■ *With various load capacity, can be widening selected by user.* ■ *Excellent in insulation property with high structure of heat resistance, oil resistance, insulation corrosion resistance.* ■ *Terminal is divided into solder and screw type.* ■ *Nameplate can produced by English, not to speak of Korean.*		
용도 *Application*	■ 산업용기계, 공작기계, 배전반, 자동제어기기 등 ■ *Industrial machine, building machine, panel board, automatic control instruments, and so on.*		
성능 *Characteristics*	허용동작빈도 *Characteristics*	기계적 *Max. operating cycles mechanical*	240회/분 *240cycles/min*
		전기적 *Elctrical*	20회/분 *20cycles/min*
	접촉저항 *Contact resistance*		50mΩ 이하 (초기치) *Max. 50mΩ at the beginning*
	절연저항 *Insulation resistance*		100㏁이상 (DC500V메가) *Min. 100㏁ at DC500V*
	내전압 *Dielectric strength*	충전부간 *Between live parts*	AC 1,500V 50/60Hz 1min
		비충전부간 *Between non-live parts*	AC 2,000V 50/60Hz 1min
	내진동 *Vibration protection*		10 ~ 55Hz 복진폭 1.5mm
	내충격 *Mechanical shock protection*	내구	1000m/s²(약 100G)
		오동작	200m/s²(약 20G)이상
	수명 *Lifetimes*	전기적 *Electrical*	10만회이상 *0.1 mil .operations*
		기계적 *Mechanical*	100만회이상 *1 mil .operations*

2위치형 – 단투(2단자) 및 쌍투(3단자)

Single & double throw switches with two positions

주문형식
Catalog No. structure
(Ordering information)

SHTG-2203S

접점방식 *Contact type*	극수 *Pole*	단자방식 *Terminals*	정격용량 *Rating*	주문형식 *Type*
단투(2단자)형 *Single throw*	1극 *1a, Single pole*	납땜형 *Solder*	3A / 250V	SHTG-2203S
			6A / 250V	SHTG-2206S
			10A / 250V	SHTG-2210S
		볼트형 *Screw*	3A / 250V	SHTG-2203C
			6A / 250V	SHTG-2206C
			10A / 250V	SHTG-2210C
	2극 *2a, Double pole*	납땜형 *Solder*	6A / 250V	SHTG-2406S
			10A / 250V	SHTG-2410S
		볼트형 *Screw*	6A / 250V	SHTG-2406C
			0A / 250V	SHTG-2410C
쌍투(3단자)형 *Double throw*	1극 *1c, Single pole*	납땜형 *Solder*	3A / 250V	SHTG-2303S
			6A / 250V	SHTG-2306S
			10A / 250V	SHTG-2310S
		볼트형 *Screw*	3A / 250V	SHTG-2303C
			6A / 250V	SHTG-2306C
			10A / 250V	SHTG-2310C
	2극 *2c, Double pole*	납땜형 *Solder*	3A / 250V	SHTG-2603S
			6A / 250V	SHTG-2606S
			10A / 250V	SHTG-2610S
		볼트형 *Screw*	3A / 250V	SHTG-2603C
			6A / 250V	SHTG-2606C
			10A / 250V	SHTG-2610C

토글스위치

Toggle Switches

3위치 쌍투형

Double throw switches with center-OFF - three positions

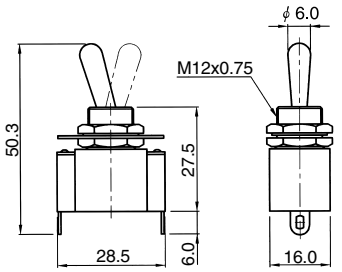
주문형식
Catalog No. structure
(Ordering information)

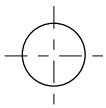
SHTG-3303S

접점방식 *Contact type*	극수 *Pole*	단자방식 *Terminals*	정격용량 *Rating*	주문형식 *Type*
중간위치쌍투형 *Double throw with Center-OFF ON-OFF-ON three positions*	1극 *Single pole*	납땜형 *Solder*	3A / 250V	SHTG-3303S
			6A / 250V	SHTG-3306S
			10A / 250V	SHTG-3310S
		볼트형 *Screw*	3A / 250V	SHTG-3303C
			6A / 250V	SHTG-3306C
			10A / 250V	SHTG-3310C
	2극 *Double pole*	납땜형 *Solder*	3A / 250V	SHTG-3603S
			6A / 250V	SHTG-3606S
			10A / 250V	SHTG-3610S
		볼트형 *Screw*	3A / 250V	SHTG-3603C
			6A / 250V	SHTG-3606C
			10A / 250V	SHTG-3610C
중간위치쌍투형 -한쪽자동복귀식 *ON-OFF-ON(순시) Double throw with Center-OFF and momentary on one side ON-OFF-ON (momentary) three positions*	1극 *Single pole*	납땜형 *Solder*	3A / 250V	SHTG-3303SA
			6A / 250V	SHTG-3306SA
			10A / 250V	SHTG-3310SA
		볼트형 *Screw*	3A / 250V	SHTG-3303CA
			6A / 250V	SHTG-3306CA
			10A / 250V	SHTG-3310CA
	2극 *Double pole*	납땜형 *Solder*	3A / 250V	SHTG-3603SA
			6A / 250V	SHTG-3606SA
			10A / 250V	SHTG-3610SA
		볼트형 *Screw*	3A / 250V	SHTG-3603CA
			6A / 250V	SHTG-3606CA
			10A / 250V	SHTG-3610CA

외형치수
Dimensions, mm

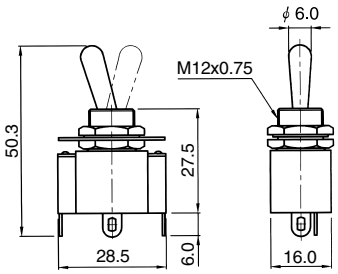
SHTG-2203S
SHTG-2206S
SHTG-2210S

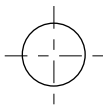




Cutout ϕ 12.3mm

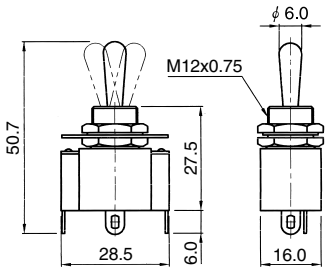
SHTG-2303S
SHTG-2306S
SHTG-2310S

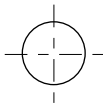




Cutout ϕ 12.3mm

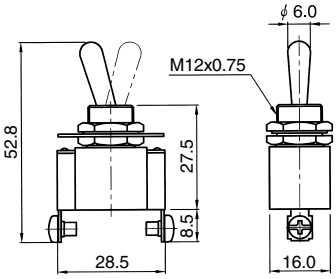
SHTG-3303S
SHTG-3306S
SHTG-3310S
SHTG-3303SA
SHTG-3306SA
SHTG-3310SA
SHTG-3303SB
SHTG-3306SB
SHTG-3310SB

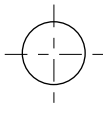




Cutout ϕ 12.3mm

SHTG-2203C
SHTG-2206C
SHTG-2210C





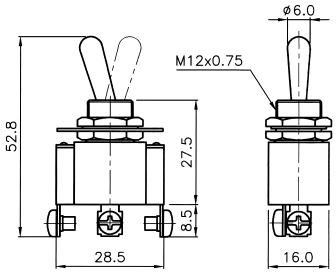
Cutout ϕ 12.3mm

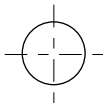
토글스위치

Toggle Switches

외형치수
Dimensions, mm

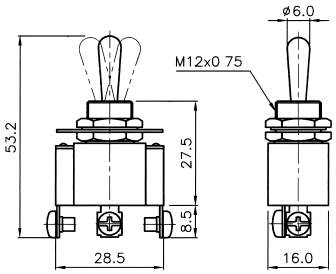
SHTG-2303C
SHTG-2306C
SHTG-2310C

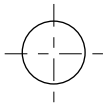




Cutout ϕ12.3mm

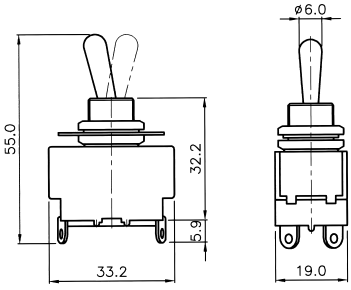
SHTG-3303C
SHTG-3306C
SHTG-3310C
SHTG-3303CA
SHTG-3306CA
SHTG-3310CA
SHTG-3303CB
SHTG-3306CB
SHTG-3310CB

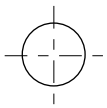




Cutout ϕ12.3mm

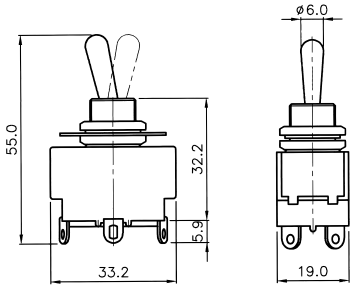
SHTG-2403S
SHTG-2406S
SHTG-2410S

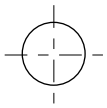




Cutout ϕ12.3mm

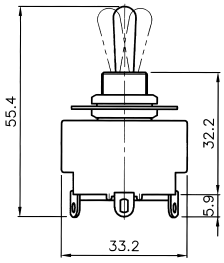
SHTG-2603S
SHTG-2606S
SHTG-2610S

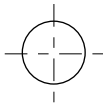




Cutout ϕ12.3mm

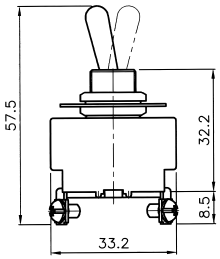
SHTG-3603S
SHTG-3606S
SHTG-3610S
SHTG-3603SA
SHTG-3606SA
SHTG-3610SA
SHTG-3603SB
SHTG-3606SB
SHTG-3610SB

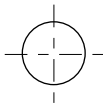




Cutout ϕ12.3mm

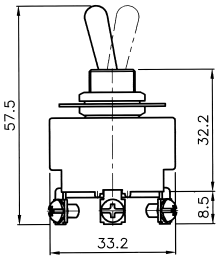
SHTG-2403C
SHTG-2406C
SHTG-2410C

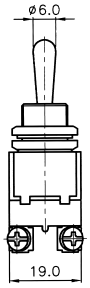


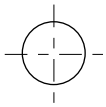


Cutout ϕ12.3mm

SHTG-2603C
SHTG-2606C
SHTG-2610C

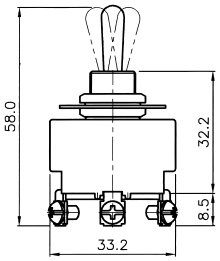


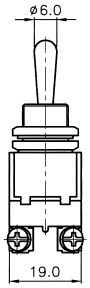


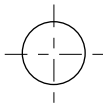


Cutout ϕ12.3mm

SHTG-3603C
SHTG-3606C
SHTG-3610C
SHTG-3603CA
SHTG-3606CA
SHTG-3610CA
SHTG-3603CB
SHTG-3606CB
SHTG-3610CB







Cutout ϕ12.3mm

Limit Switches

리미트스위치

Limit Switches

조작부종류
Shapes of Operating Heads

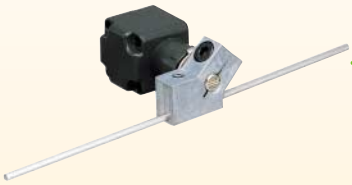
본체종류
Shapes of Main Bodies

가변레바형
With Adjustable Swing Roller

고정레바형
With Swing Roller
1a1b (1NO+1NC)
AC480V/DC250V

스프링레바형
With Flexible Spring Rod

가변핀레바형
With Adjustable Swing Roller



롤러푸시형
With Roller Plunger

볼푸시형
With Ball Plunger

일반형 : 램프기능없음
Without a Indicating Lamp

램프기능형
With a Indicating Lamp

리미트 스위치

Limit Switches

정격 및 성능
Characteristics

특징
Features

- 알루미늄 다이캐스팅의 견고한 케이스로 되어 있어 외부의 충격에도 긴수명을 유지합니다.
- 내장 스위치는 2회로 쌍단 기본스위치로 구성되어 있으며, 열에강한 Phenol재질로 되어 있습니다.
- 내열, 내유 및 방진의 견고한 구조이며 특히 기계적강도가 우수한 재질을 사용하였습니다.
- 레버의 과동작방지와 긴 수명유지를 위한 설정위치표시가 부착되어 있어 장기간 안전사용이 가능합니다.
- 어떠한 장치에서도 사용할 수 있도록 다양한 레바를 제공합니다.
  - 가변레바형, 가변핀레바형, 스프링레바형, 롤러푸시형, 볼푸시형
- 램프부착형카바는 내열성수지를 사용하여 용접시 비산되는 슬래그 및 금속입자로부터 보호가 가능합니다.
- 보호구조는 IP67로 제작되었습니다.
- *Maintain long-life by aluminum Die-casting housing in spite of outside impact.*
- *High temperature components throughout by Phenol made, and internal switch has 2 circuit, 2 step.*
- *With heat resistance, oil resistance, and protection against dust, especially designed by material with high mechanical strength.*
- *To use safely for long time is possible by stick to set up indicating valve for maintain long-life and prevent to over-working of lever.*
- *It has a diversity of lever for use in variety instrument.*
  - with adjustable swing roller, swing roller, flexible spring rod, roller plunger, adjustable swing rod, ball plunger.
- *Cover with indicating lamp is consist of heat-resistance material, so to protect against slag and metal piece dispersed from welding in welding line.*
- *Protective structure is manufactured IP67.*

용도
Application

- 각종 공작기계의 위치결정
- 하역운반기계의 통과확인 및 방향제어
- 기타 일반 산업용기계
- *Determine a position of all sorts of machine tool.*
- *Operation (certification of passage and operation of direction) of cargo handling machine.*
- *And many general industrial machine.*

접점용량
Contact ratings

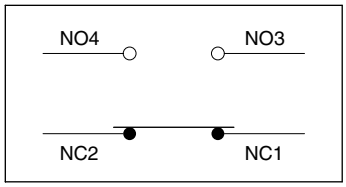
AC정격 *AC supply*	유도성부하 *Inductive load*	전동기부하 *Motors*	125V	250V	480V		
			5A(NC)	3A(NC)	1.5A(NC)		
			2.5A(NO)	1.5A(NO)	0.8A(NO)		
		전동기이외의 부하 *Others*	10A	6A	3A		
	무유도성부하 *Non-inductive load*	저항부하 *Resistive loads*	10A	6A	4A		
		전동기이외의 부하 *Lamps*	3A(NC)	2A(NC)	1.5A(NC)		
			1.5A(NO)	1A(NO)	0.8A(NO)		
DC정격 *DC supply*			8V	14V	30V	125V	250V
	유도성부하 *Inductive load*	전동기부하 *Motors*	6A	6A	4A	0.2A	0.1A
		전동기이외의 부하 *Others*	10A	10A	6A	0.8A	0.1A
	무유도성부하 *Non-inductive load*	저항부하 *Resistive loads*	10A	10A	6A	0.8A	0.4A
		전동기이외의 부하 *Lamps*	6A(NC)	6A(NC)	4A(NC)	0.2A(NC)	0.1A(NC)
			3A(NC)	3A(NC)	3A(NC)	0.2A(NC)	0.1A(NC)

성능
Other characteristics

허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	최대 120회/분 *120 cycles/Min.*
	전기적 *Electrical*	최대 30회/분 *30 cycles/Min.*
허용조작속도 *Max. operating speed*		1mm~1m/s (SHLS-102경우) **Swing Roller type only*
절연저항 *Insulation resistance*		100㏁이상 (DC500V메가) *Min. 100㏁ at DC500V*
접촉저항 *Contact resistance*		25mΩ 이하 (초기치) *Max. 25mΩ at the begininng*
내전압 *Dielectric strength*	충전부간 *Between live parts*	AC 1,500V 50/60Hz 1min
	비충전부간 *Between non-live parts*	AC 2,500V 50/60Hz 1min
내진동 *Vibration protection*		10~55Hz 복진폭 1.5mm (스프링레바형제외)
내충격 *Mechanical shock protection*	내구	1000m/s²이상
	오동작	300m/s²이상
수명 *Lifetimes*	전기적 *Electrical*	50만회이상 *0.5 mil .operations*
	기계적 *Mechanical*	500만회이상 *5 mil .operations*
사용주위온도 *Ambient temperature for operation*		-10 ~ +80℃
사용주위습도 *Ambient humidity*		95%RH이하
보호구조 *Degree of protection*		IP67

내부접점회로도
Circuit diagrams

기본형
Without a indicating lamp



내장 스위치
Built-in switch

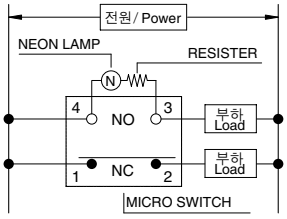
전면

후면

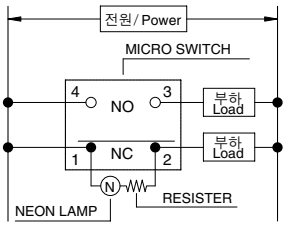
수분침투 방지 처리함

램프기능형
Without a indicating lamp

NC일때 lamp "On"

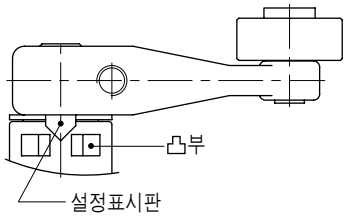


NO일때 lamp "On"



설정위치 표시부착
Stick to set up indicating valve

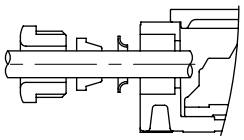
설정표시판의 지침은 레바와 함께 회전하며 헤드의 凸부 지역에 설정지침을 설정하여 레바를 지나치게 밀거나 밀어 넣는 부족이 없어지고, 장기간 안전되게 사용할 수 있도록 만든 장치입니다.
The pointer of set up indicating valve is revolve with lever, set up the pointer in position for prevent to over-working, and maintain long-life.



취급시 주의사항
Matters that require attention in handling

1. Lead선 처리방법(결합방법)
How to handling with Lead line (combination method)

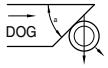
· 콘넥타 사용시 결합방법 *Combination method with use of connector*
케이블 외경에 맞추어 밀봉형 고부를 선정하십시요. 기름, 물이 비산되는 장소나 실외에 사용할 경우에는 반듯이 콘넥타를 사용하시고 보호카바를 취부하여 주십시요.
Please use sealing up rubber as cable external diameter.
If you use where outdoor or wet place, should stick to connector and protective cover.



주) 사용되는 케이블의 외경은 8.8 ~ 10.5φ로 하십시요.

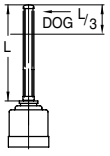
2. DOG의 형상
The shape of DOG

일반 DOG *General DOG*



DOG각도는 조작 속도에 맞추어 45°이하로 선정하십시오.
the angle of DOG should settled below 45° as operation speed.

특수 DOG *Special DOG*



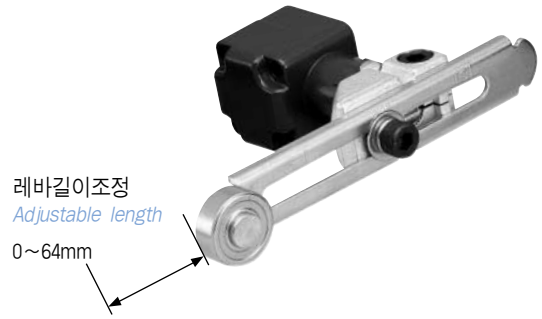
특수 DOG의 경우는 레바 전체길이 L의 L/3까지 닿도록 해주십시오.
special DOG should settled as L/3 of general length L.

3. 일반적 주의 사항
General Attention

각 체결부의 나사는 완전히 잠길 때까지 체결하여 주십시요. 절삭물, 먼지, 이물질이 많은 장소에는 보호카바를 사용하여 주십시요. 특수한 조건에서 사용할 경우는 당사에 문의하여 주십시요.
Please screw up completely in conclusion part. Please use protective cover in place there is many cutting tools, dusts, motes. Please contact to us in case of use in special condition.

가변레바형

With adjustable swing roller

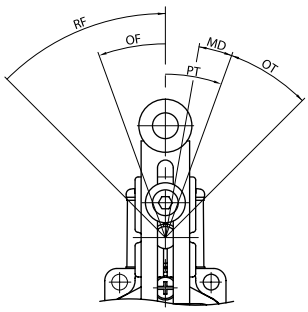


동작표시램프 *Indicator*	**접점구성** *Contacts*	**주문형식** *Type ordering code*
일반형 *- 램프기능없음* *Without a indicating lamp*	1a1b *1NO+1NC*	SHLS-101
램프기능형 *- 네온(LED)램프부착* *With a indicating lamp*	1a1b *1NO+1NC*	SHLS-101L

램프동작

제품출고시 "레바동작전 켜짐", "레바동작후 꺼짐"으로 조립되어 있으며, 설치시 반대로도 변경이 가능합니다.

The lamp is "ON" when the lever is released.
It is changebale to the other position when wiring.



동작에 필요한 힘, OF *Operating force, max*	최대 1.0kgf
복귀되는 힘, RF *Recovering force, min*	최소 0.227kgf
동작까지의 움직임, PT *Swing stroke to complete switching ON, max*	최대 15° ±5°
동작후의 움직임, OT *Extra swing stroke after switching ON, min*	최소 30°
응차의 움직임, MD *Swing stroke to maintain contact pressure, max*	최대 12°

고정레바형
With Swing Roller

동작표시램프 *Indicator*	접점구성 *Contacts*	주문형식 *Type* *Ordering code*
일반형 *- 램프기능없음* *Without a indicating lamp*	1a1b *1NO+1NC*	SHLS-102
램프기능형 *- 네온(LED)램프부착* *With a indicating lamp*	1a1b *1NO+1NC*	SHLS-102L

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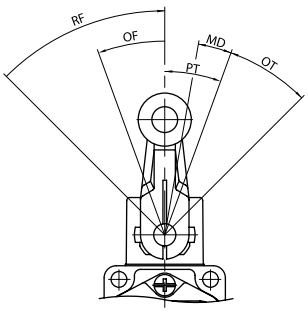
It is changebale to the other position when wiring.



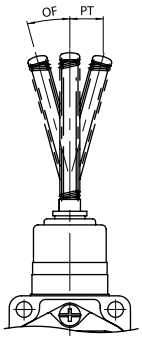
동작에 필요한 힘, OF *Operating force, max*	최대 1.0kgf
복귀되는 힘, RF *Recovering force, min*	최소 0.227kgf
동작까지의 움직임, PT *Swing stroke to complete switching ON, max*	최대 15°±5°
동작후의 움직임, OT *Extra swing stroke after switching ON, min*	최소 30°
응차의 움직임, MD *Swing stroke to maintain contact pressure, max*	최대 12°

리미트 스위치

Limit Switches

스프링레바형

With fiexible spring rod



동작표시램프 *Indicator*	접점구성 *Contacts*	주문형식 *Type ordering code*
일반형 *- 램프기능없음* *Without a indicating lamp*	1a1b *1NO + 1NC*	SHLS-103
램프기능형 *- 네온(LED)램프부착* *With a indicating lamp*	1a1b *1NO + 1NC*	SHLS-103L

램프동작

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The lamp is "ON" when the lever is released.
It is changebale to the other position when wiring.

동작에 필요한 힘, OF *Operating force, max*	최대 0.15kgf
동작까지의 움직임, PT *Swing stroke to complete switching ON, max*	최대 20° ±10mm

롤러푸시형
With roller plunger

동작표시램프 *Indicator*	접점구성 *Contacts*	주문형식 *Type ordering code*
일반형 *- 램프기능없음* *Without a indicating lamp*	1a1b *1NO+1NC*	SHLS-104
램프기능형 *- 네온(LED)램프부착* *With a indicating lamp*	1a1b *1NO+1NC*	SHLS-104L

램프동작
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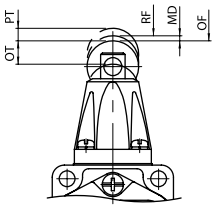


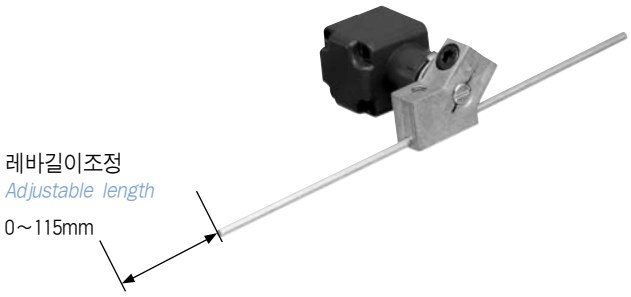
동작에 필요한 힘, OF *Operating force, max*	최대 2.72kgf
복귀되는 힘, RF *Recovering force, min*	최소 0.91kgf
동작까지의 움직임, PT *Swing stroke to complete switching ON, max*	최대 1.7mm
동작후의 움직임, OT *Extra swing stroke after switching ON, min*	최소 5.6mm
응차의 움직임, MD *Swing stroke to maintain contact pressure, max*	최대 1mm

리미트 스위치

Limit Switches

가변핀레바형

With adjustable swing rod



동작표시램프 *Indicator*	접점구성 *Contacts*	주문형식 *Type ordering code*
일반형 *- 램프기능없음* *Without a indicating lamp*	1a1b *1NO + 1NC*	SHLS-105
램프기능형 *- 네온(LED)램프부착* *With a indicating lamp*	1a1b *1NO + 1NC*	SHLS-105L

램프동작

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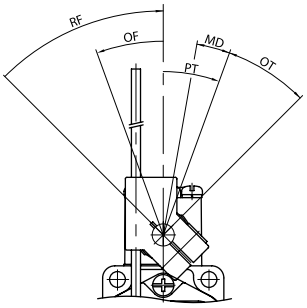

동작에 필요한 힘, OF *Operating force, max*	최대 1.0kgf
복귀되는 힘, RF *Recovering force, min*	최소 0.227kgf
동작까지의 움직임, PT *Swing stroke to complete switching ON, max*	최대 15° ±5°
동작후의 움직임, OT *Extra swing stroke after switching ON, min*	최소 30°
응차의 움직임, MD *Swing stroke to maintain contact pressure, max*	최대 15°

볼푸시형
With ball plunger

동작표시램프 *Indicator*	접점구성 *Contacts*	주문형식 *Type ordering code*
일반형 *- 램프기능없음* *Without a indicating lamp*	1a1b 1NO+1NC	SHLS-106
램프기능형 *- 네온(LED)램프부착* *With a indicating lamp*	1a1b *1NO+1NC*	SHLS-106L

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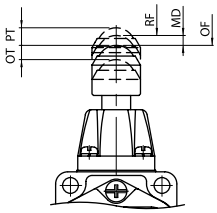


동작에 필요한 힘, OF *Operating force, max*	최대 2.72kgf
복귀되는 힘, RF *Recovering force, min*	최소 0.91kgf
동작까지의 움직임, PT *Swing stroke to complete switching ON, max*	최대 1.7mm
동작후의 움직임, OT *Extra swing stroke after switching ON, min*	최소 4mm
응차의 움직임, MD *Swing stroke to maintain contact pressure, max*	최대 1mm

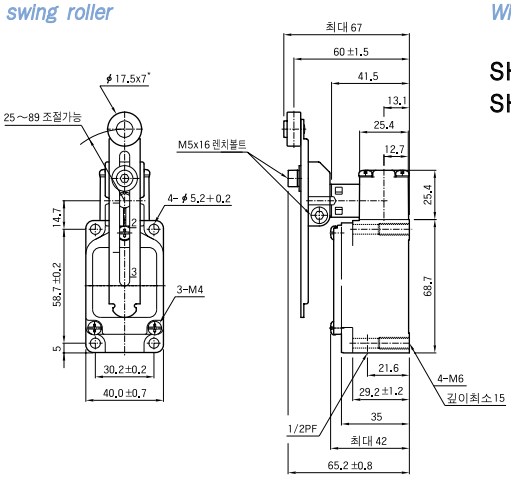
리미트 스위치

Limit Switches

외형치수
Dimensions, mm

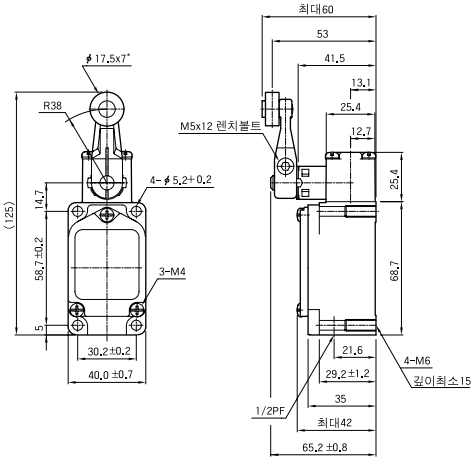
가변레바형
With adjustable swing roller

SHLS-101
SHLS-101L



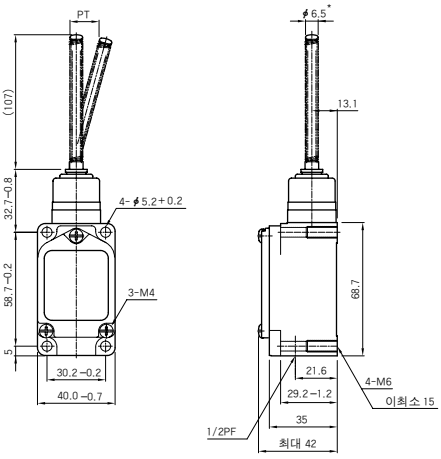
고정레바형
With swing roller

SHLS-102
SHLS-102L



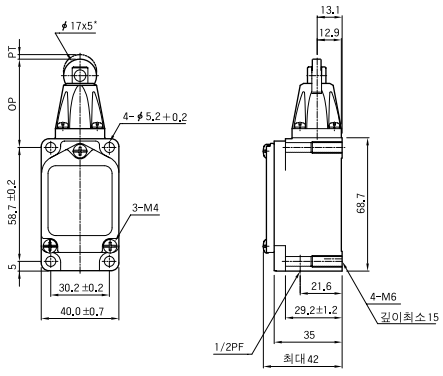
스프링레바형
With flexible spring rod

SHLS-103
SHLS-103L



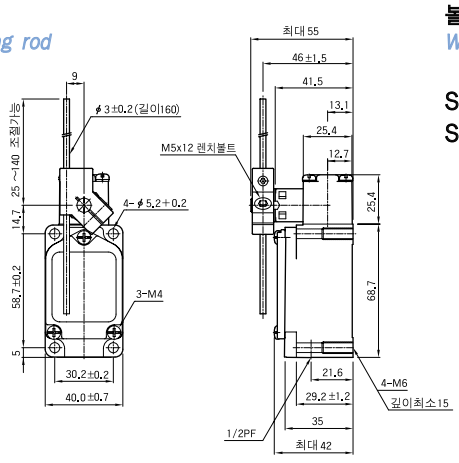
롤러푸시형
With roller plunger

SHLS-104
SHLS-104L



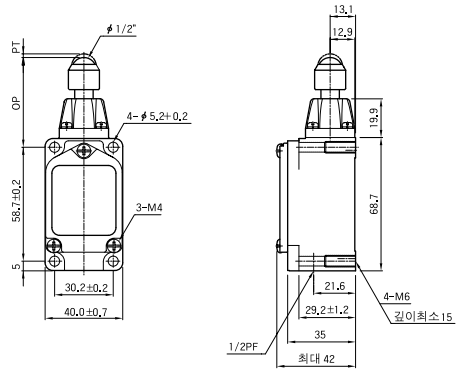
가변핀레바형
With adjustable swing rod

SHLS-105
SHLS-105L



볼푸시형
With ball plunger

SHLS-106
SHLS-106L



V형 마이크로 스위치

V type micro switch

핀눌름버튼
Pin plunger

- 0.1A~16A
- 35g~400g
- SPDT(1c), SPST(1a,1b)

힌지레바
Hing lever

- 힌지레바
  Hinge lever
- 힌지롱레바
  Hinge long lever
- 0.1A~16A
- 35g~400g
- SPDT(1c), SPST(1a,1b)

힌지롤러레바
Hinge roller lever

- 힌지롤러쇼트레바
  Hinge roller short lever
- 힌지롤러레바
  Hinge roller lever
- 0.1A~16A
- 35g~400g
- SPDT(1c), SPST(1a,1b)

특수레버
Specical lever

- 0.1A~16A
- 35g~400g
- SPDT(1c), SPST(1a,1b)

눌름버튼
Push button

- 눌름버튼
  Push button
- 철눌름버튼
  Iron push button
- 철쌍눌름버튼
  Iron double push button

조작부종류
Shapes of operating heads

Z형 마이크로 스위치

Z type micro switch

눌름버튼

Push button

- 장눌름버튼
  Long Push button
- 단눌름버튼
  Short Push button
- 핀눌름버튼
  Pin Push button
- 눌름버튼
  Push button
- 롤라눌름버튼
  Roller Push button

힌지레바

Hing lever

- 힌지단레바
  Hinge short lever
- 힌지중레바
  Hinge medium lever
- 힌지장레바
  Hinge long lever
- 힌지특장레바
  Hinge special long lever

힌지롤라레바

Hinge roller lever

- 힌지롤라단레바
  Hinge roller short lever
- 힌지롤라중레바
  Hinge roller medium lever
- 힌지롤라장레바
  Hinge roller long lever
- 힌지롤라특장레바
  Hinge roller special long lever

리프스프링

Specical lever

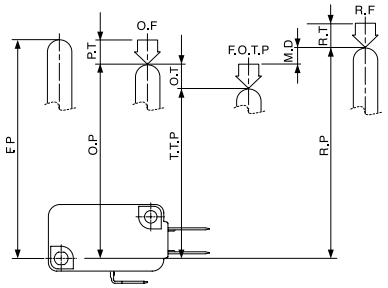
- 리프스프링
  Sensitive lever
- 롤라리프스프링
  Sensitive roller lever

조작부종류

Shapes of operating heads

동작 특성
Definitions and operating characteristics

본 카다로그에서 사용하는 중요한 용어의 도해와 의미는 아래와 같습니다.
The explanatory diagram and the meaning of important words used in this catalogue are as follows.



용어 *terms*	기호 *period*	단위 *unit*	정의 *definition*
동작에 필요한 힘 *Operating force*	OF	gf kgf gf-mm	자유위치에서 동작위치로 엑츄에이터를 움직이고, 가동접점을 반전 시키는데 필요한 힘. *The force required to move from free to operating position, and turns over of operating contact.*
돌아가는힘 *Releasing force*	RF		복귀위치에서 가동접점을 반전시키는데 필요한 힘. *The force required to turns over of operating position, and turns over of operating.*
동작까지의 움직임 *Pretravel*	PT		엑튜에이터의 자유위치에서 동작위치까지의 이동거리. *Moving distance from actuator's free position to position.*
동작후의 움직임 *Overtravel*	OT	mm,度	엑튜에이터의 동작위치에서 동작한도위치까지의 이동거리. *Moving distance from actuator's operating positing position.*
응차의 움직임 *Movement differential*	MD		엑튜에이터의 동작위치에서 복귀위치까지의 이동거리. *Moving distance from actuator's sperating position to release position.*
자유위치 *Free position*	FP		스위치 구멍 중심으로부터 엑튜에이터 상단까지의 이동거리. *The distance from the center of switch's hole to actuator's upper position.*
동작위치 *Operating position*	OP		엑튜에이터에 힘이 가해지고 가동접점이 자유 위치의 상태에서 반전 할때의 위치. *The position when the operating contact turns over soon by giving force to actuator in position state.*
돌아가는 위치 *Releasing position*	RP		엑튜에이터의 힘을 감소시켜 가동접점이 동작위치의 상태에서 자유위치의 상태로 반전할때의 위치. *Actuator's position when operating contact turns over from operating position to free with reducing actuator's outer force.*
동작한도위치 *Total travel position*	TTP		엑튜에이터가 움직이지 않게 될때까지 밀었을때의 위치. *Actuatpr's the difinition of Maximum and Minimum in operating-character regulations.*

Note : **동작특성상의 규정에 있어서 최대 최소의 해석**

스위치 동작 특성을 설명할 때에 자주 최대, 최소의 가치를 이용하고 있습니다. 이것은 어디까지나 스위치 자체가 갖는 특정치로서의 규정 방법입니다.예를들면 SHV-16-3D5의 OF는 최대 200g으로 규정되어 있습니다. 이것은 엑튜에이터에 가해지는 힘을 0에서 서서히 가해져 가고 200g에 이를때는 더 이상의 힘은 의미가 없습니다. 어느 스위치를 특성상으로 사용하는 최대, 최소의 의미는 스위치를 사용하는 기계측의 조건에서 보면 거꾸로 최소,최대가 되므로 주의 하십시오.

The definition of maximum and minimum in operating-character regulations

Make use frequently of the maximim and minimum's value for explain operating-character of switch. This is method for regulation as switch's own character. For example, OF(Operating Force)of SHV-16-3D5 is prescribed max.200g plase note that the meaning of max. and min. generally be contary concept with mechanical conditions.

마이크로 스위치

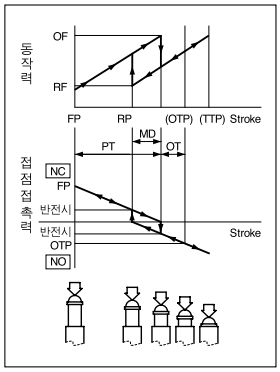
Micro switch

기계적인 주의사항

Mechanical Care

동작력, 스트로크, 접촉특성

Operating force, stroke and contact



- 마이크로 스위치가 고성능을 얻기 위해서는 스트로크 설정이 중요합니다.
- 옆의 그림은 동작력 스트로크 접점 접촉력의 관계를 나타냅니다.
  고신뢰성을 얻기 위해서는 적절한 접촉범위내에서 사용해야 합니다.
- 상시폐로(NC)사용시는 조작체를 에튜에이터가 자유 위치에 오도록 해야 합니다.
- 상시개로(NO)사용시는 동작후의 움직임(OT)규격치의 70~100%까지 눌러 지도록 설정해야 합니다.
- 스트로크의 설정이 동작위치(OP)의 근처나 동작한도위치(TTP)로 되었을 경우,
  접촉 불안정의 원인이 됩니다.

- The setting of stroke is important to getting higher performance.
- Right figure showsthe relations of stroke contact. For getting higher performance,
should be used in proper contact range.
- For using NC, operation parts should be located for actuator to get back free position easily.
- For using NO, should be set up for pushing 70~100% of OT.
- If the stroke setting is near to OP, or be TTP, it can be the cause of unstable touch and break.

기계적 조건과 스위치 선정

Mechanical conditions and selection of switch

- 조작체에 맞는 액튜에이터의 선정이 필요합니다.
- 동작속도, 빈도 등을 성능표와 비교 확인해야 합니다. (허용동작빈도를 초과하면 접점 전환이 안됩니다.)
- 충격적인 동작은 파손의 원인이 됩니다.
- 동작속도가 극단적으로 느린경우 접점 전환이 불안정하여 접촉불량이나 용착의 원인이 됩니다.
- OR, RP점으로 스트로크를 설정할 경우 불안정한 접촉이 되므로 진동이나 충격에 약한곳은 피해 주시기 바랍니다.

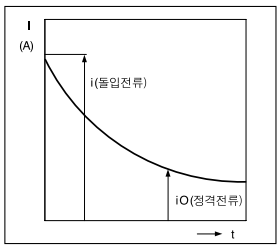
- Proper selection of actuator for operation type needed.
- The speed and frequency of operations should be checked with performance table.
(If exceed to permissible operating frequency, not to turnover of contact.)
- Given impacted operating is caused breakdown.
- If the operation speed is getting quite slow, on and off speed of contact is unstable, and contact can be melt.
- In the case of set up the stroke to OP, RP position, it can be unstable contact,
so please avoid the vibrations, and the weak-place against impact.

전기적인 주의사항

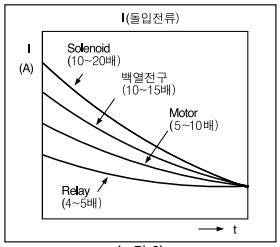
Electrical care

전기적 조건과 스위치 선정

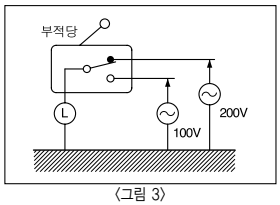
Electrical conditions and selection of switch



〈그림 1〉



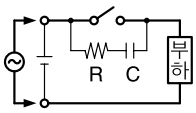
〈그림 2〉



〈그림 3〉

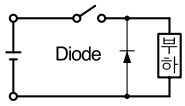
- 전원이 AC, DC에 따라 접점차단 능력이 서로 다르므로 정격표를 반드시 확인하여 주십시요.
- 돌입전류, 정상전류, 돌입시간을 확인하여 주십시요.
- 각 형명의 성능, 항목중 접촉저항은 DC6~8V, 1A의 전압강하법으로 측정합니다.〈그림1〉
- 부하종류에 따라 정상전류와 돌입전류의 차이가 크기 때문에 허용돌입전류치를 확인하십시요.
- 직류회로에서 시정수(L/R)에 특히 영향이 크므로 주의 하십시요.〈그림2〉
- 회로간 전압이 서로 상이하면 혼촉에 의한 용착이 발생 합니다.〈그림3〉

- The specification of AC and DC is different, so please refer to ratings.
- Check theInrush current, rate current, and rush time.
- The contact resistance of "performance"category in each type is measured
by drop method of electric pressure ranged in DC6~8V, 1A〈plase refer to Figure 1〉
- The difference rated current and Irush current can be big by the load type,
so please should check the value of permitted Inrush current.
- Especially, the effect by LR in DC circuit is big, so please attention.〈Figure 2〉
- If the voltage between circuits are different, can be melted.〈Figure 3〉



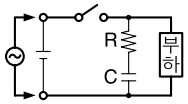
주로 직류로 사용할 때 사용하며
R은 수Ω이상이 필요합니다.
교류로 사용할 경우 부하용량이
작아야 합니다.
R : 수10Ω ~100Ω
C : 0.05~0.1㎌

Normall being used in DC, and "r" need more than several Ω.
R : Several10Ω ~100Ω
C : 0.05~0.1㎌



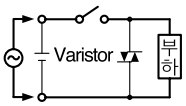
직류에만 사용 가능
충분한 Diode를 선정하여
사용하십시요.

Only being used in DC.
Plase use elected enough Diode.



교류, 직류 적용이 가능합니다.
R : 수10Ω
C : 0.1~0.2㎌

Normally being used in AC and DC.
R : Several10Ω
C : 0.1~0.2㎌



교류, 직류 적용 가능합니다.
전원전압의 1.5배 이상의
Varistor를 사용 하십시요.

Normally being used in AC and DC.
Please use more than 1.5 times varistor comparing with source voltage.

- 유도부하 개폐회로에서는 개폐시에 역기전력(Surge)이나 돌입전류(Inrush)가 발생 하므로 접촉장애가 발생합니다.
그러므로 상기표의 회로와 같은 보호회로 설치를 적극 권장합니다.

The switching circuit of induction load can make serge, or inrush current when switching.
So, encourage to install the protective circuit like the above table.

마이크로 스위치

Micro switch

V형 마이크로 스위치

V type micro switch

형명분류

Type classification diagram

SHV — 16 3 — 1 D 5 L C

정 격 *Rating*

01	0.1A
3	3A
6	6A
11	11A
16	16A
21	21A

엑츄에이터 *Actuators*

표시 없음	핀눌름버튼 *Pin plunger*
1	힌지쇼트레바 *Hinge short lever*
2	힌지레바 *Hing lever*
3	힌지롱레바 *Hinge long lever*
4	힌지 R 레바 *Hinge R lever*
5	힌지롤라쇼트레바 *Hinge roller short lever*
6	힌지롤라레바 *Hinge roller lever*
7↑	특수레바 *Specical lever*

접점사양 *Contact configuration*

1	1c
2	1b
3	1a

단자사양 *Terminal*

A	#187 tap
B	#187 tap 0.8mm
C	#250 tap
D	Solder or #187 tap
F	6° bending #250 tap

동작력 *Operating postion*

E	30g
1	50g
3	100g
4	120g
5A	150g
5	200g
6A	300g
6	400g

레버위치 *Lever point*

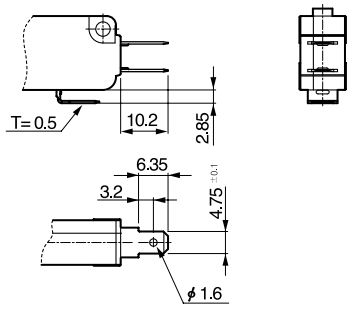
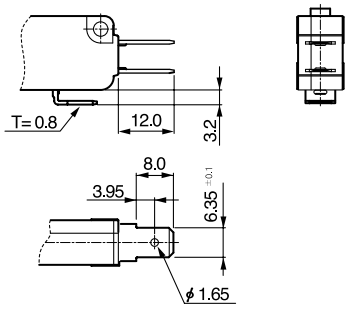
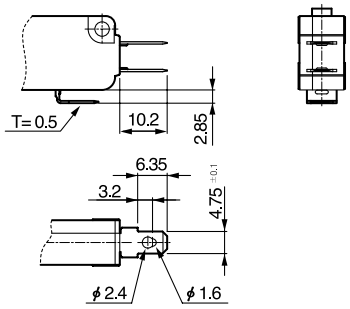
표시없음	표준형 *Standard type*
L	앞면조립형 *Front type*

특수형 *Pecial type*

S	상업용 *Commerce*
R	Rodund 금접점 *Round gold contact*
C	레버코팅 *Lever coatting*
B	ϕ4 접점 *4ϕ contact*

단자종류

Terminal type

#187 단자(A) *#187 tap (A)*	#250 단자(A) *#250 tap (A)*	납땜, tap 공용단자 (D) *Solder and #187 tap (D)*
		

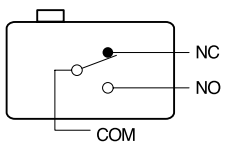
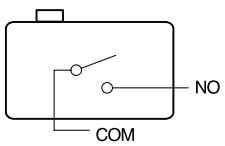
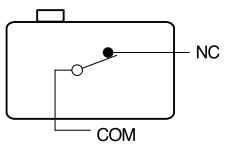
특징 *Features*	■ 0.1A부터 최대 21A까지 개폐 가능한 소형 스위치입니다. ■ 종래의 V형을 완전히 개선하여 사용이 편리 합니다. ■ 적재 적소에 따른 다양한 액츄에이터가 준비되어 있습니다. ■ 각종 자동화 기기에는 물론 가전제품 용에도 적합한 범용 스위치입니다. ■ C-UL, VDE, CCC,전기용품 안전인증을 획득하였습니다. ■ *Wide switching capacity range from 0.1A to 21A.* ■ *Convenient utility though improvement of existing V type.* ■ *Variety of actuators and contact configuration.* ■ *Fitness from automatic equipments to electric equip.* ■ *C-UL, VDE, CCC approved.*
용도 *Application*	■ 전자레인지 ■ 자동판매기, 복사기 ■ 전산기, 주변단말기 ■ 의료기기, 통신기기 ■ 가전제품등 ■ *Microwave ovens.* ■ *Autormatic vending machines, copy machines.* ■ *Monitors related to computer.* ■ *Medical instruments, communication machines.* ■ *Electric equipments, etc.*

마이크로스위치 생산품 현황표
Micro switch products status

정 격 *Rating*	형 식 *Model*	접점간격 *Contact gap*	단 자 *Terminal*			동작에 필요한 힘 *Operating force(OF)*				
		1mm	위 치 *Position*	형 상 *Type*		30g	50g	100g	200g	400g
				A, D(#187)	C(#250)					
250V AC 21A	SHV-21	●	Below		●					●
250V AC 16A	SHV-16	●	Below	●	●				●	●
250V AC 11A	SHV-11	●	Below	●	●			●	●	
250V AC 6A	SHV-6	●	Below	●	●		●	●	●	
250V AC 3A	SHV-3	●	Below	●		●	●	●	●	

Note : 상기표의 "OF"는 핀눌름버튼형의 값입니다.
The "OF" shown in the chart above is the for the type of pin push button switchs.

접촉형식
Contact configuration

단극쌍투형(SPDT)	상시개로형(SPST-No, 1a)	상시폐로형(SPST-Nc, 1b)
		

마이크로 스위치

Micro switch

V형 마이크로 스위치

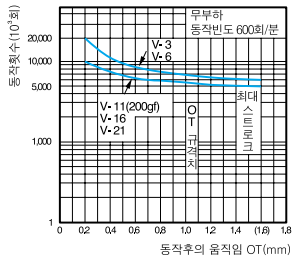
V type micro switch

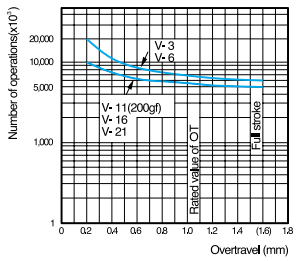
성능 *Characteristics*		SHV-21	SHV-16	SHV-11	SHV-6	SHV-3
허용 조작속도 *Operating speed*		0.1mm~1m/sec(핀눌름버튼인경우) *0.1mm~1m/sec(at plunger)*				
허용동작빈도 *Operating cycle*		기계적:600회/1분 , 전기적:20회/1분 *Machanically:600 operation/Min, Electrically:20 operation/Min*				
절연저항 *Insulation resistance*		100MΩ 이상(DC 500V 절연저항계) *100MΩ min(at 500VDC)*				
접촉저항 *Contact resistance*		최대 15mΩ(초기치) *15mΩ max(Initial)*			최대 30mΩ(초기치) *30mΩ max(Initial)*	
내전압 *Dielectric strength*		비연속단자간 AC 1,000V 50/60Hz 1분간견딤 *1,000VAC, 50/60Hz for 1minute between noncontinuous terminal* 각 단자와 비충전부간, 각 단자와 AC1,500V 50/60Hz 견딤 *1,500VAC, 50/60Hz for 1minute between current-carrying and non-current-carrying and between each terminal and ground*				
진동 *Vibration protection*		10~60Hz 진동폭 1.5mm *Malfunction durability:10~60Hz 1.5mm double amplitude*				
충격 *Shock*	내구 *Mechanical durability*	1,000m/s2(약100G) *Approz. 400m/s2(approx.40G)*				400m/s2(약40G) *Approz. 400m/s2(approx.40G)*
	오동작 *Malfunction durability*	300m/s2(약30G) *Approz. 300m/s2(approx.30G)*		200m/s2(약20G) *Approz. 200m/s2(approx.20G)*		100m/s2(약10G) *Approz.100m/s2(approx.10G)*
수명 *Life times*	기계적 *Mechanical*	1,000만회이상 *10,000,000 operations min*				
	전기적 *Electric*	10만회 이상 *10,000 operations min*				50만회 이상 *500,000 operations min*
중량 *Weight*		6.2g(핀눌름버튼형) *Approx.6.2g(General-purpose pin plunger type)*				

특성자료

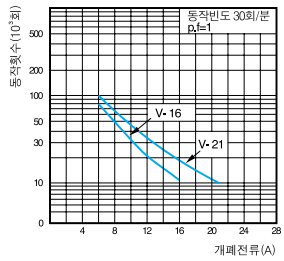
Characterstic data

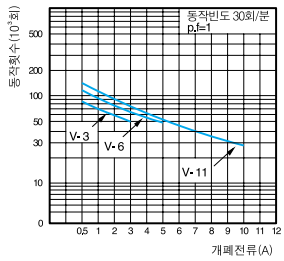
기계적수명곡선 *Mechanical service life*

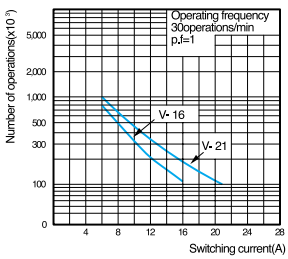


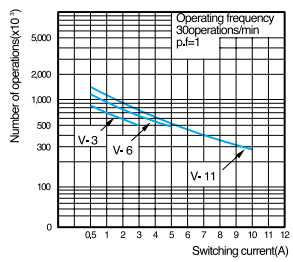


전기적수명곡선 *Electrical service life*





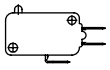
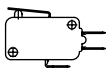
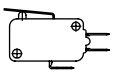
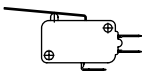
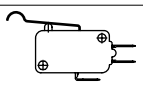
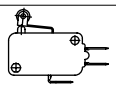
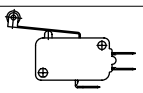




정격
Rating

Item / type	정격전압 Rated voltage	무유도부하(A) Non-inductive load(A)				유도부하(A) Inductive load(A)			
		저항부하 Resistive load		램프부하 Lamp load		유도부하 Inductive load		전동기부하 Motor load	
		상시폐로NC	상시개로NO	상시폐로NC	상시개로NO	상시폐로 NC	상시개로NO	상시폐로NC	상시개로NO
21A	250VAC	21.0		3.0		12.0		4.0	
	30VDC	14.0		5.0		12.0		5.0	
	125VDC	0.6		0.1		0.6		0.1	
	250VDC	0.3		0.05		0.3		0.05	
16A	250VAC	16.0		2.0		10.0		3.0	
	30VDC	10.0		4.0		10.0		4.0	
	125VDC	0.6		0.1		0.6		0.1	
	250VDC	0.3		0.05		0.3		0.05	
11A	250VAC	11.0		1.5		6.0		2.0	
	30VDC	6.0		3.0		6.0		3.0	
	125VDC	0.6		0.1		0.6		0.1	
	250VDC	0.3		0.05		0.3		0.05	
6A	250VAC	6.0		0.5		4.0			
	30VDC	6.0		3.0		4.0			
	125VDC	0.4		0.1		0.4			
	250VDC	0.3		0.05		0.2			
3A	250VAC	3.0							
	30VDC	3.0							
	125VDC	0.2							
	250VDC	0.1							

종류
Type

엑츄에이터 종류 Actuator	형상 Description	정격 Rating				
		21A	16A	11A	6A	3A
단자형식 Terminal		C	D	D	D	D
핀눌름버튼 Pin pluge		SHV-21-1C6	SHV-16-1D5	SHV-11-1D3	SHV-6-1D1	SHV-3-1D1
힌지쇼트레버 Hinge short lever		SHV-211-1C6	SHV-161-1D5	SHV-111-1D3	SHV-61-1D1	SHV-31-1D1
힌지레버 Hinge lever		SHV-212-1C6	SHV-162-1D5	SHV-112-1D3	SHV-62-1D1	SHV-32-1D1
힌지롱레바 Hinge long lever		SHV-213-1C6	SHV-163-1D5	SHV-113-1D3	SHV-63-1D1	SHV-33-1D1
힌지R레버 Hinge R lever		SHV-214-1C6	SHV-164-1D5	SHV-114-1D3	SHV-64-1D1	SHV-34-1D1
힌지롤라쇼트레버 Hinge roller short lever		SHV-215-1C6	SHV-165-1D5	SHV-115-1D3	SHV-65-1D1	SHV-35-1D1
힌지롤라레바 Hing roller lever		SHV-216-1C6	SHV-166-1D5	SHV-116-1D3	SHV-66-1D1	SHV-36-1D1

마이크로 스위치

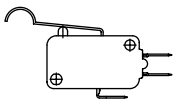
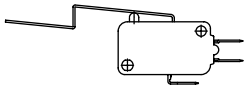
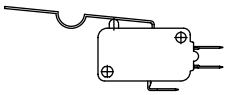
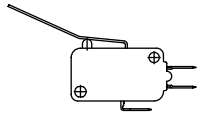
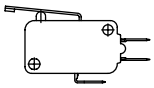
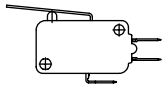
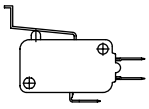
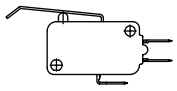
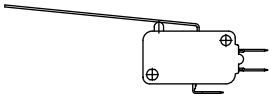
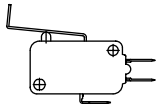
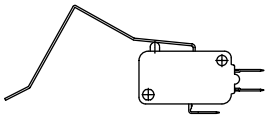
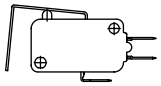
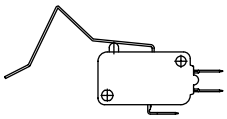
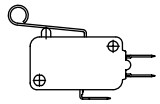
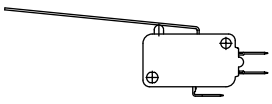
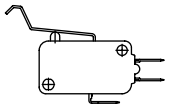
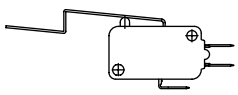
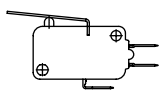
Micro switch

V형 마이크로 스위치

V type micro switch

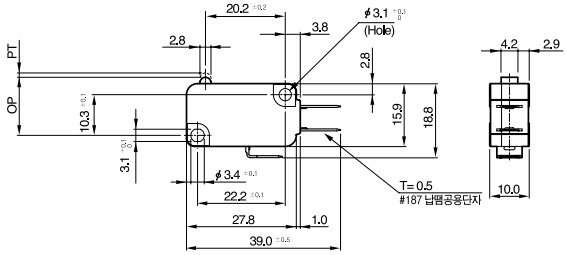
특수제작 액츄에이터

Special lever(Actuatros)

형 명 *Type*	형 상 *Shape*	Lever (mm)	형 명 *Type*	형 상 *Shape*	Lever (mm)
Lever(7)		27.3	Lever(16)		45.1
Lever(8)		50.2	Lever(17)		27.5
Lever(9)		22.8	Lever(18)		27.5
Lever(10)		25.7	Lever(19)		28.3
Lever(11)		61.0	Lever(20)		22.8
Lever(12)		72.0	Lever(21)		15.0
Lever(13)		66.0	Lever(23)		16.1
Lever(14)		70.0	Lever(24)		33.5
Lever(15)		43.3	Lever(25)		39.5

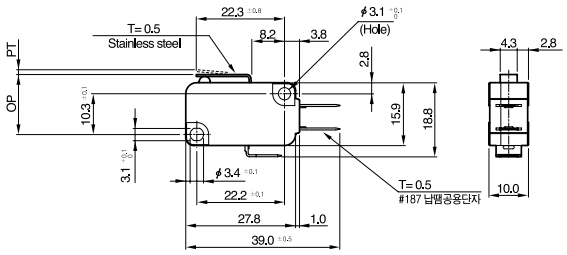
외형치수 및 특성
Demension and operating characteristics

핀눌름버튼형
Pin plunger



주문형식 *Ordering information*		SHV-3-□□□	SHV-6-□□□	SHV-11-□□□	SHV-16-□□□
OF Max	*Operating position*	50g	50g	100g	200g
RF Min	*Rlleasing force*	10g	10g	25g	50g
PT Max	*Pretravel*	1.6mm			
OT Min	*Overtravel*	0.8mm			
MD Max	*Movement differential*	0.4mm			
OP	*Operating position*	14.8±0.4mm			

힌지쇼트레버
Hinge short lever



주문형식 *Ordering information*		SHV-31-□□□	SHV-61-□□□	SHV-111-□□□	SHV-161-□□□
OF Max	*Operating position*	50g	50g	100g	200g
RF Min	*Rlleasing force*	6g	6g	15g	50g
PT Max	*Pretravel*	1.6mm			
OT Min	*Overtravel*	0.8mm			
MD Max	*Movement differential*	0.4mm			
OP	*Operating position*	15.2±0.5mm			

마이크로 스위치

Micro switch

V형 마이크로 스위치

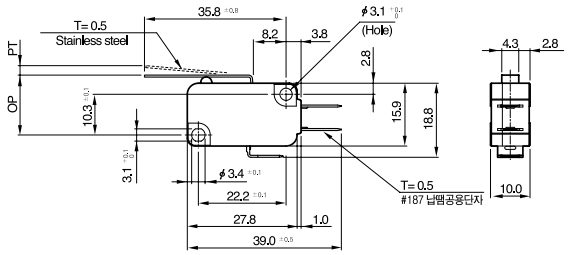
V type micro switch

외형치수 및 특성

Demension and operating characteristics

힌지레버

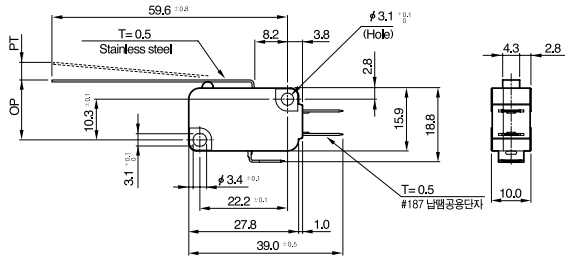
Hinge lever



주문형식 *Ordering information*		SHV-32-□□□	SHV-62-□□□	SHV-112-□□□	SHV-162-□□□
OF Max	*Operating position*	30g	30g	60g	125g
RF Min	*Rlleasing force*			6g	14g
PT Max	*Pretravel*	4.0mm			
OT Min	*Overtravel*	1.6mm			
MD Max	*Movement differential*	1.5mm			
OP	*Operating position*	15.2±1.2mm			

힌지롱레버

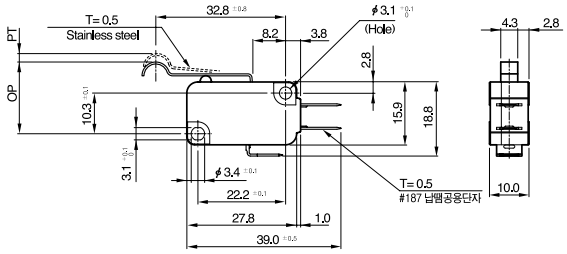
Hinge long lever



주문형식 *Ordering information*		SHV-33-□□□	SHV-63-□□□	SHV-113-□□□	SHV-163-□□□
OF Max	*Operating position*	20g	20g	35g	70g
RF Min	*Rlleasing force*				6g
PT Max	*Pretravel*	9.0mm			
OT Min	*Overtravel*	2.0mm			
MD Max	*Movement differential*	2.8mm			
OP	*Operating position*	15.2±3.0mm			

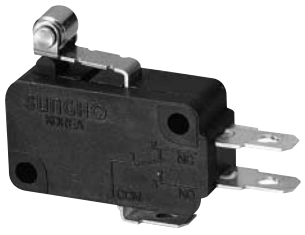
외형치수 및 특성
Demension and operating characteristics

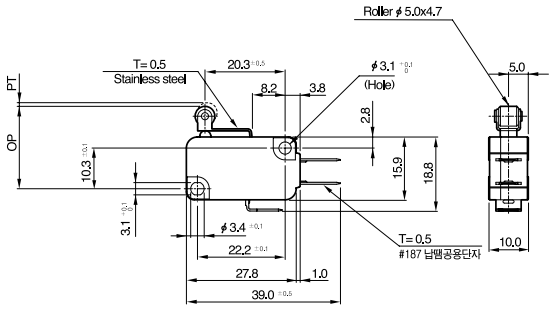
힌지 R 레버
Simulated hinge lever



주문형식 *Ordering information*		SHV-34-□□□	SHV-64-□□□	SHV-114-□□□	SHV-164-□□□
OF Max	*Operating position*	30g	30g	60g	125g
RF Min	*RIleasing force*			6g	14g
PT Max	*Pretravel*	4.0mm			
OT Min	*Overtravel*	1.6mm			
MD Max	*Movement differential*	1.5mm			
OP	*Operating position*	18.7±1.7mm			

힌지롤라쇼트레버
Hinge roller short lever





주문형식 *Ordering information*		SHV-35-□□□	SHV-65-□□□	SHV-115-□□□	SHV-165-□□□
OF Max	*Operating position*	60g	60g	120g	240g
RF Min	*RIleasing force*	6g	6g	15g	5g
PT Max	*Pretravel*	1.6mm			
OT Min	*Overtravel*	0.8mm			
MD Max	*Movement differential*	0.6mm			
OP	*Operating position*	20.7±0.8mm			

마이크로 스위치

Micro switch

V형 마이크로 스위치

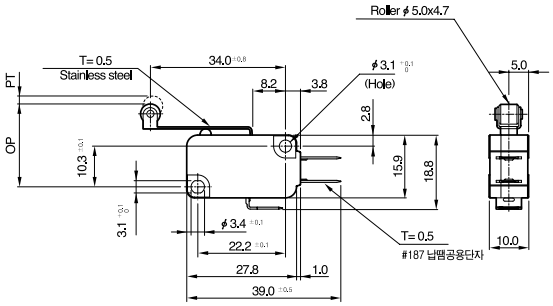
V type micro switch

외형치수 및 특성

Demension and operating characteristics

힌지롤라레바

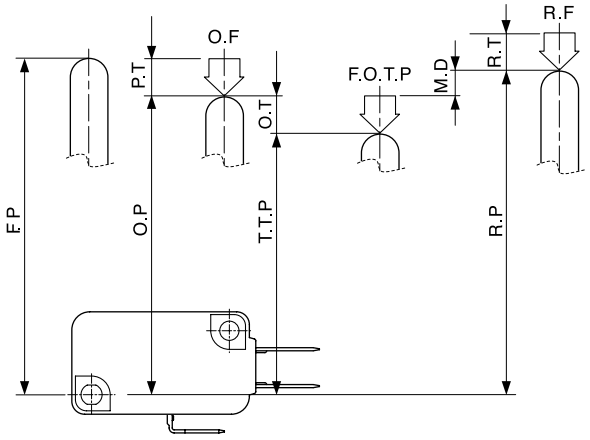
Hinge roller lever



주문형식 *Ordering information*		SHV-36-□□□	SHV-66-□□□	SHV-116-□□□	SHV-166-□□□
OF Max	*Operating position*	30g	30g	60g	125g
RF Min	*Rlleasing force*			6g	14g
PT Max	*Pretravel*	4.0mm			
OT Min	*Overtravel*	1.6mm			
MD Max	*Movement differential*	1.5mm			
OP	*Operating position*	20.7±1.6mm			

동작 특성

Definitions and operating characteristics



눌름버튼형 마이크로 스위치
Push button type micro switch

형명분류
Type classification diagram

SHV — 16 P — 1 D 5 R

정 격 *Rating*	
3	3A
6	6A
11	11A
16	16A
21	21A

엑츄에이터 *Actuators*	
P	눌름버튼형 *Push button*
IP	철눌름버튼형 *Iron push button*
IDP	철쌍형눌름버튼형 *Iron double push button*

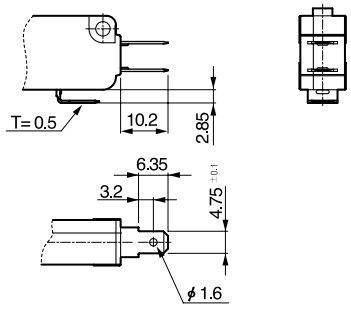
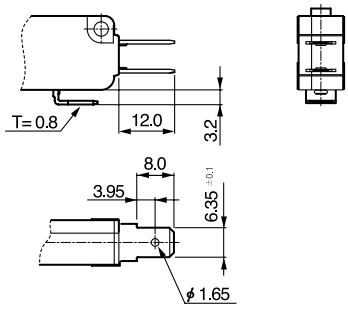
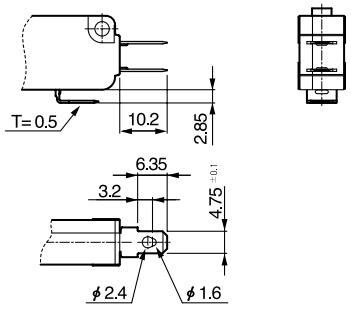
접점사양 *Contact configuration*	
1	1c
2	1b
3	1a

단자사양 *Terminal*	
A	#187 tap
B	#187 tap 0.8mm
C	#250 tap
D	Solder or #187 tap

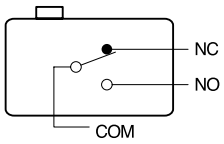
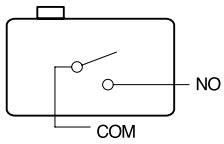
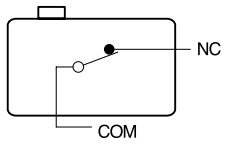
동작력 *Operating postion*	
5A	150g
5	200g
6A	300g
6	400g
7	600g

버튼색상 *Button color*	
R	Red
N	Navy blue
Y	Yellow
B	Black
G	Green

단자종류
Terminal type

#187 단자(A) *#187 tap (A)*	#250 단자(A) *#250 tap (A)*	납땜, tap 공용단자 (D) *Solder and #187 tap (D)*
		

접촉형식
Contact configuration

단극쌍투형(SPDT)	상시개로형(SPST-No,1a)	상시폐로형(SPST-Nc,1b)
		

마이크로 스위치

Micro switch

눌름버튼형 마이크로 스위치

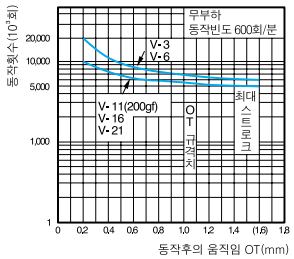
Push button type micro switch

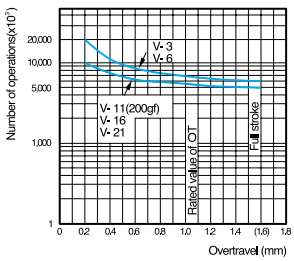
성능 *Characteristics*		SHV-21	SHV-16	SHV-11	SHV-6	SHV-3
허용 조작속도 *Operating speed*		0.1mm~1m/sec(핀눌름버튼인경우) *0.1mm ~1m/sec(at plunger)*				
허용동작빈도 *Operating cycle*		기계적:600회/1분, 전기적:20회/1분 *Machanically:600 operation/Min, Electrically:20 operation/Min*				
절연저항 *Insulation resistance*		100MΩ 이상(DC 500V 절연저항계) *100MΩ min(at 500VDC)*				
접촉저항 *Contact resistance*		최대 15mΩ(초기치) *15mΩ max(Initial)*			최대 30mΩ(초기치) *30mΩ max(Initial)*	
내전압 *Dielectric strength*		비연속단자간 AC 1,000V 50/60Hz 1분간견딤 *1,000VAC, 50/60Hz for 1minute between noncontinuous terminal* 각 단자와 비충전부간, 각 단자와 AC1,500V 50/60Hz 견딤 *1,500VAC, 50/60Hz for 1minute between current -carrying and non-current-carrying and between each terminal and ground*				
진동 *Vibration protection*		10~60Hz 진동폭 1.5mm *Malfunction durability :10~60Hz 1.5mm double amplitude*				
충격 *Shock*	내구 *Mechanical durability*	1,000m/s2(약100G) *Approx. 400m/s2(approx.40G)*				400m/s2(약40G) *Approx. 400m/s2(approx.40G)*
	오동작 *Malfunction durability*	300m/s2(약30G) *Approx. 300m/s2(approx.30G)*		200m/s2(약20G) *Approx. 200m/s2(approx.20G)*		100m/s2(약10G) *Approx. 100m/s2(approx.10G)*
수명 *Life times*	기계적 *Mechanical*	1,000만회이상 *10,000,000 operations min*				
	전기적 *Electric*	10만회 이상 *10,000 operations min*				50만회 이상 *500,000 operations min*
중량 *Weight*		약 6.2g(핀눌름버튼형) *Approx.6.2g(General-purpose pin plunger type)*				

특성자료

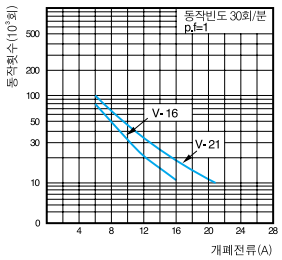
Characterstic data

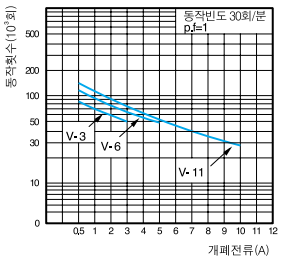
기계적수명곡선 *Mechanical service life*

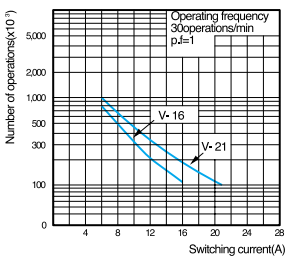


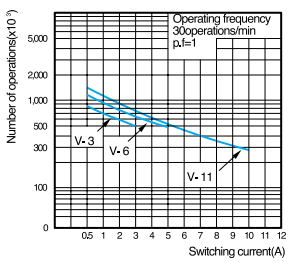


전기적수명곡선 *Electrical service life*









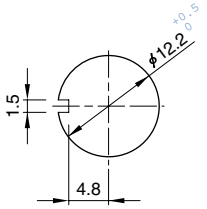
정격
Rating

Item / type	정격전압 Rated voltage	무유도부하(A) Non-inductive load(A)				유도부하(A) Inductive load(A)			
		저항부하 Resistive load		램프부하 Lamp load		유도부하 Inductive load		전동기부하 Motor load	
		상시폐로NC	상시개로NO	상시폐로NC	상시개로NO	상시폐로 NC	상시개로NO	상시폐로NC	상시개로NO
21A	250VAC	21.0		3.0		12.0		4.0	
	30VDC	14.0		5.0		12.0		5.0	
	125VDC	0.6		0.1		0.6		0.1	
	250VDC	0.3		0.05		0.3		0.05	
16A	250VAC	16.0		2.0		10.0		3.0	
	30VDC	10.0		4.0		10.0		4.0	
	125VDC	0.6		0.1		0.6		0.1	
	250VDC	0.3		0.05		0.3		0.05	
11A	250VAC	11.0		1.5		6.0		2.0	
	30VDC	6.0		3.0		6.0		3.0	
	125VDC	0.6		0.1		0.6		0.1	
	250VDC	0.3		0.05		0.3		0.05	
6A	250VAC	6.0		0.5		4.0			
	30VDC	6.0		3.0		4.0			
	125VDC	0.4		0.1		0.4			
	250VDC	0.3		0.05		0.2			
3A	250VAC	3.0							
	30VDC	3.0							
	125VDC	0.2							
	250VDC	0.1							

종류
Type

엑츄에이터 종류 Actuator	형상 Description	정격 Rating				
		21A	16A	11A	6A	3A
단자형식 Terminal		C	D	D	D	D
눌름버튼형 Push button		SHV-21P-1C6	SHV-16P-1D5	SHV-11P-1D3	SHV-6P-1D1	SHV-3P-1D1
철눌름버튼형 Iron push button		SHV-21IP-1C6	SHV-16IP-1D5	SHV-11IP-1D3	SHV-6IP-1D1	SHV-3P-1D1
철쌍형눌름버튼형 Iron double push button		SHV-21IDP-1C6	SHV-16IDP-1D5	SHV-11IDP-1D3	SHV-6IDP-1D1	SHV-3IDP-1D1

판넬가공치수
Panel cutouts



SHV-16P

SHV-16IP
SHV-16IDP

마이크로 스위치

Micro switch

눌름버튼형 마이크로 스위치

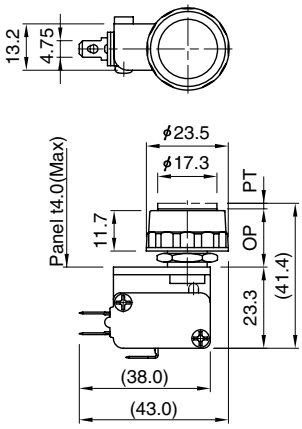
Push button type micro switch

외형치수 및 특성

Demension and operating characteristics

눌름버튼형

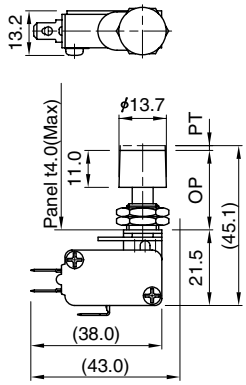
Push button



주문형식 *Ordering information*		SHV-16P-1D6A(Standard)
OF Max	*Operating position*	300gf
RF Min	*Rlleasing force*	50gf
PT Max	*Pretravel*	1.6mm
OT Min	*Overtravel*	0.8mm
MD Max	*Movement differential*	0.4mm
OP	*Operating position*	16.5±0.7mm

철 눌름버튼형

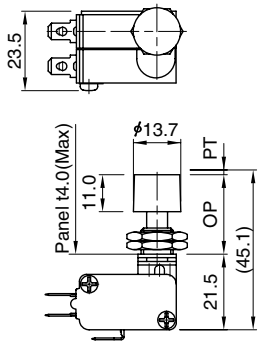
Iron push button



주문형식 *Ordering information*		SHV-16lP-1D6A(Standard)
OF Max	*Operating position*	300gf
RF Min	*Rlleasing force*	50gf
PT Max	*Pretravel*	1.6mm
OT Min	*Overtravel*	0.8mm
MD Max	*Movement differential*	0.4mm
OP	*Operating position*	22±0.7mm

외형치수 및 특성
Demension and operating characteristics

철쌍형눌름버튼형
Iron double push button



주문형식 *Ordering Information*		SHV-16IDP-1D7(Standard)
OF Max	*Operating position*	600gf
RF Min	*RIleasing force*	50gf
PT Max	*Pretravel*	1.6mm
OT Min	*Overtravel*	0.8mm
MD Max	*Movement differential*	0.4mm
OP	*Operating position*	22±0.7mm

마이크로 스위치

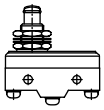
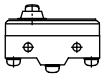
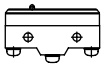
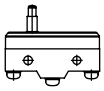
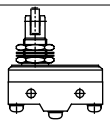
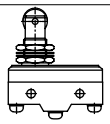
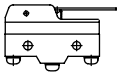
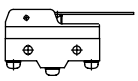
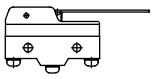
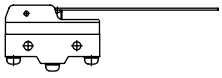
Micro switch

Z형 마이크로 스위치

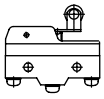
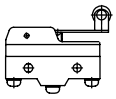
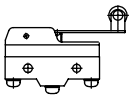
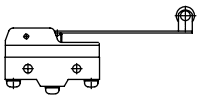
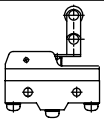
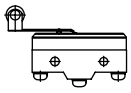
Z type micro switch

종류별 형식구분

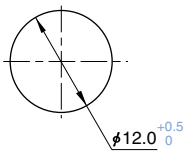
Actuator type

분류명 *Classified type*	형상 *Shape*	주문형식 *Type*	특성 및 사용예 *Characteristics & Application*
장눌름 버튼형 *Long push button*		SHZM-P503A-15GA	수동을 요하는 기계적 동작일때 저속 CAM과 함께 사용 가능합니다. *It is possible to use with low-speed CAM when passive mechanical movement.*
단눌름 버튼형 *Short push button*		SHZM-P503B-15GA	버튼 길이가 짧고 직경이 넓어 작동이 편리하며 플런져의 지름이 넓은 것을 사용 하십시요. *The length of button is short, and diameter is wide. Please use of wide-diameter plunger.*
핀눌름 버튼형 *Pin push button*		SHZM-P503C-15GA	짧은 직선 Stroke의 장소에 적합하며 예민하고 작동거리가 적어 확실한 stopper가 필요합니다. *It is suited to short straight-stroke, and because of sharp, operation range is short, so need certain stopper.*
눌름버튼형 *Push button*		SHZM-P503D-15GA	동작이 예민하면서도 버튼의 지름이 크므로 편심된 하중을 피해 주십시요. *Because of the movement is sharp, but the dia-meter is wide, so please avoid one-side load.*
로라눌름버튼형(세로) *Vertically roller push button*		SHZM-P504A-15GA	장눌름 버튼형에 로라를 부착한것으로 사용위치에 따라 Roller 회전면을 가로, 세로 방향으로 선택하여 사용합니다. *As it is long push button type with roller, can select of length and width by position.*
로라눌름버튼형(가로) *Horizontal roller push button*		SHZM-P504B-15GA	
힌지단레바형 *Hinge short lever*		SHZM-L502A-15GA SHZM-L502A-10FD	저속캠에 사용하며 동작력, 수명, 정확도에 따라 선택이 가능하며 내진동성, 내충격성이 뛰어납니다. *It is in use of low-speed CAM with resisting-vibration, resisting-impact.* *It is possible to select as lifetime, accuracy, movement capacity.*
힌지중레바형 *Hinge medium lever*		SHZM-L502B-15GA SHZM-L502B-10FD	
힌지장레바형 *Hinge long lever*		SHZM-L502C-15GA SHZM-L502C-10FD	
힌지 특장레바형 *Hinge special long lever*		SHZM-L502D-15GA SHZM-L502D-10FD	

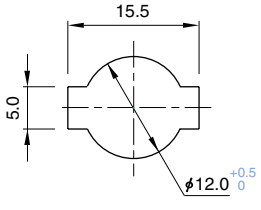
종류별 형식구분
Actuator type

분류명 *Classified type*	형상 *Shape*	주문형식 *Type*	특성 및 사용예 *Characteristics & Application*
힌지로라단레바형 *Hinge roller leve*		SHZM-R501A-15GA SHZM-R501A-10FD	고속회전의 짧은 직선운동에 적합하며, Cam 동작에 사용되며 자유 상태에서의 내 진동성, 내 충격성이 우수합니다. *With suit a short rectilineal movement of high-speed revolutions, and the Cam movement.* *Excellent property with resistance-vibration, resistance-shock in the free condition.*
힌지로라중레바형 *Hinge roller medium lever*		SHZM-R501B-15GA SHZM-R501B-10FD	
힌지로라장레바형 *Hinge roller long lever*		SHZM-R501C-15GA SHZM-R501C-10FD	
힌지로라 특장레바형 *Hinge roller special long leve*		SHZM-R501D-15GA SHZM-R50C-10FD	
이단롤라 레바형 *2 stage roller lever*		SHZM-R501W-15GA SHZM-R501W-10FD	역방향에서의 동작을 방지시키며 한쪽 방향으로만의 동작이 가능한 곳에 사용합니다. *It prevent to movement by opposite-direction.* *It should be use of movement in one-side only.*
리프스프링형 *Sensitive lever*		SHZM-L505A-15GA SHZM-L505A-10FD	
롤라리프스프링형 *Sensitive roller lever*		SHZM-R505B-15GA SHZM-R505B-10FD	

판넬가공치수
Panel cutouts



P503A



P504A
P504B

마이크로 스위치

Micro switch

Z형 마이크로 스위치

Z type micro switch

형명분류

Type classification diagram

SHZM — R501A — 15 G A — B

엑튜에이터 종류 *Actuators*

R501A	힌지로라단레바형 *Hinge roller lever*
R501B	힌지로라중레바형 *Hinge roller medium leve*
R501C	힌지로라장레바형 *Hinge roller long lever*
R501D	힌지로라 특장레바형 *Hinge roller special long lever*
R501W	이단롤라 레바형 *2 stage roller lever*
L502A	힌지단레바형 *Hinge short lever*
L502B	힌지중레바형 *Hinge medium lever*
L502C	힌지장레바형 *Hinge long lever*
L502D	힌지 특장레바형 *Hinge special long lever*
P503A	장눌름 버튼형 *Long push button*
P503B	단눌름 버튼형 *Short push button*
P503C	핀눌름 버튼형 *Pin push button*
P503D	눌름버튼형 *Push button*
PR504A	로라눌름버튼형(세로) *Vertically roller push button*
PR504B	로라눌름버튼형(가로) *Horizontal roller push button*
L505A	리프스프링형 *Sensitive lever*
R505B	롤라리프스프링형 *Sensitive roller lever*

정격용량 *Rating capacity*

15	15A
10	10A

접점간격 *Contact interval*

G	0.5mm
F	1.0mm

전압 *Voltage*

A	AC
D	DC

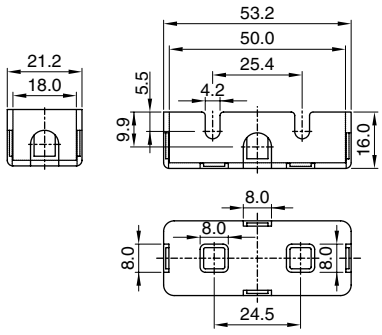
단자구조 *Terminal type*

표시 없음	나사조임단자 *Bolt tightening*
S	납땜단자 *Solder*

터미날카바(납땜단자용)

Terminal cover(Solder type)

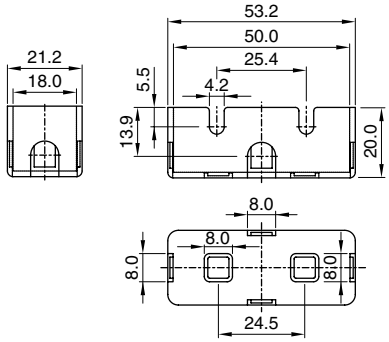
SHZM-CA



터미날카바(나사조임단자용)

Terminal cover(Bolt type)

SHZM-CB



교류용 마이크로 스위치(Z형)

Alternating cyrrent micro switch(Z type)

특징 *Features*

- 기종이 풍부하여 제품적용 선택의 폭이 넓어졌습니다.
- 15A의 높은 개폐용량을 가지고 있습니다.
- 구조가 내아크성, 내연, 내열 재질로서 절연성이 우수 합니다.
- 엑츄에이터는 눌름버튼, 힌지레버, 롤라 레바등으로 종류가 다양합니다.
- 높은 접촉 신뢰성을 갖고 있습니다.
- 부착은 국제규격을 적용 했습니다.
- *With types of switch is various, can be widening select in the application of product*
- *With high switching capacity of 15A*
- *Excellent in insulation property with high structure of heat resistance,oil resistance, insulation corrosion resistance.*
- *Actuator's types are various with Pin Plunger, Hinge roller lever.*
- *With high contact performance.*
- *Application of international standards.*

용도 *Application*

- 산업용기계.
- 공작기계.
- 압력,온도, 액면, 중량, 시간등의 제어용및 자동제어 부품.
- 배전반
- *Industrial machine*
- *Machine tool*
- *Controller and auto-controller's parts of pressure, temperature, weight, time, etc.*
- *Controll panel*

성능 *Characteristics*

허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	240회/분 *240 cycles/Min*
	전기적 *Electical*	20회/분 *20 cycles/Min*
허용조작속도 *Max. operating speed*		0.1mm~1mm
절연저항 *Insulation resistance*		100MΩ 이상(DC500V절연저항계) *Min. 100MΩ at DC500V*
접촉저항 *Contact resistance*		15mΩ 이하 *Max. 15mΩ at the begining*
내전압 *Dielectic strength*	충전부간 *Between live parts*	AC 1,000V 50/60Hz 1분간 *AC 1,000V 50/60Hz 1min*
	비충전부간 *Between non-live parts*	AC 2,000V 50/60Hz 1분간 *AC 2,000V 50/60Hz 1min*
내진동 *Vibration protection*		10~55Hz, 진동폭 : 1.5mm *10~55Hz, vibration range:1.5mm*
내충격 *Mechanical shock protection*	내구 *Endurance*	1,000m/s²이상(약 100G이상) *Min. 1,000m/s2(approx.100G)*
	오동작 *Malfunction*	50m/s²이상(약5G이상) *Min. 50m/s2(approx.5G)*
수명 *Lifetimes*	전기적 *Electrical*	10만회 이상 *0.1 mill operations min*
	기계적 *Mechanical*	1,000만회 이상 *10 mill operations min*
사용주위온도 *Ambient temperature for operation*		-10 ~ +80℃
사용주위습도 *Ambient humidity*		96%RH이하 *Max. 96%*

마이크로 스위치

Micro switch

교류용 마이크로 스위치(Z형)

Alternating cyrrent micro switch(Z type)

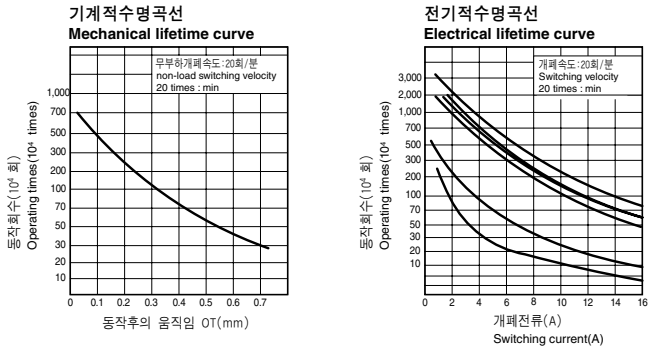
정격

Rating

정격전압(V) *Rating voltage(v)*		무유도부하(A) *Non-inductive load(A)*				유도부하(A) *Inductive load(A)*			
		저항부하 *resistance load* cos ϕ = 1		램프부하 *Lamp load*		유도부하 *Inductive load* cos ϕ = 1		전동기부하 *Motor load*	
		상시폐로 *normally closed*	상시개로 *normally closed*	상시폐로 *normally closed*	상시개로 *normally closed*	상시폐로 *normally closed*	상시개로 *normally closed*	상시폐로 *normally closed*	상시개로 *normally closed*
AC	125	15		2	1	7		2.5	2
	250	15		1	0.5	5		1.5	1
DC	8	15		2	1	7		3	1.5
	14	15		2	1	7		3	1.5
	30	2		2	1	1		1	0.5
	125	0.4		0.4	0.4	0.03		0.03	0.03
	250	0.2		0.2	0.2	0.02		0.02	0.02

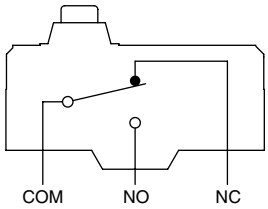
수명곡선

Lifetime curve



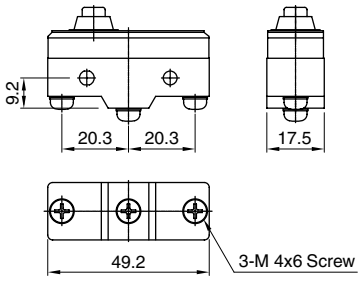
접점 회로도

Circuit diagram



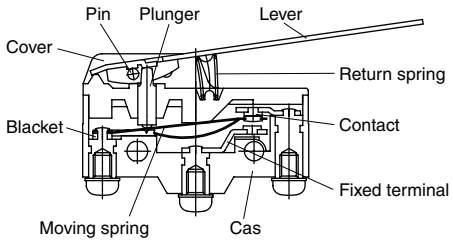
단자종류

Terminal types



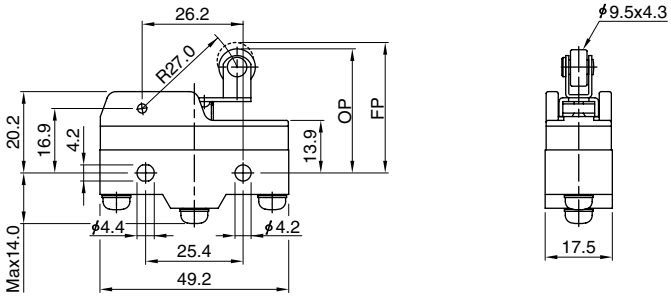
내부구조

Inside structure diagram



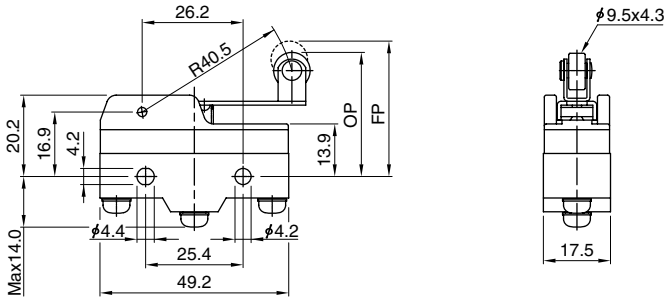
외형치수 및 특성
Demension and operating characteristics

힌지로라단레바형
Hinge roller lever



주문형식 *Ordering information*		SHZM-R501A-15GA
OF Max	*Operating position*	160gf
RF Min	*Rlleasing force*	42gf
PT Max	*Pretravel*	5.0mm
OT Min	*Overtravel*	2.4mm
MD Max	*Movement differential*	1.2mm
FP Max	*Free Position*	32.9mm
OP	*Operating position*	30.2±0.4mm

힌지로라중레바형
Hinge roller medium lever



주문형식 *Ordering information*		SHZM-R501B-15GA
OF Max	*Operating position*	120gf
RF Min	*Rlleasing force*	22gf
PT Max	*Pretravel*	8.0mm
OT Min	*Overtravel*	4.0mm
MD Max	*Movement differential*	2.0mm
FP Max	*Free position*	35.0mm
OP	*Operating position*	30.2±0.8mm

마이크로 스위치

Micro switch

교류용 마이크로 스위치(Z형)

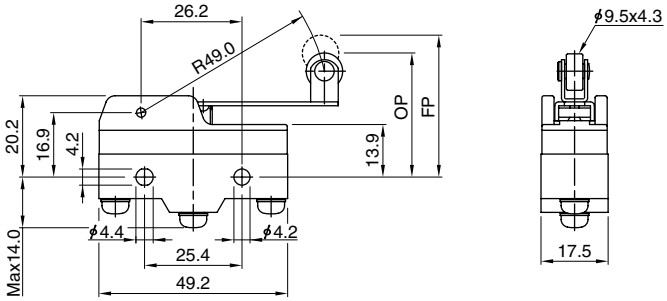
Alternating cyrrent micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

힌지로라장레바형

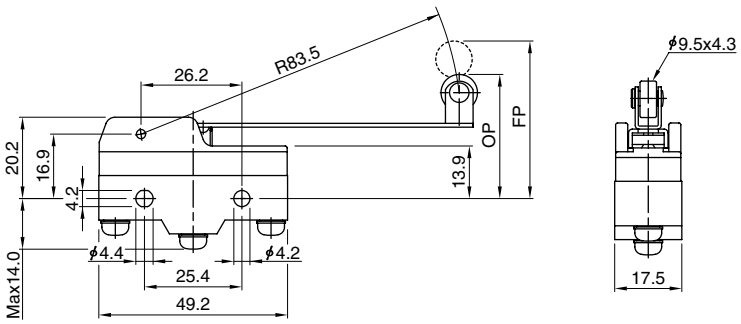
Hinge roller long lever



주문형식 *Ordering information*		SHZM-R501C-15GA
OF Max	*Operating position*	90gf
RF Min	*Rlleasing force*	10gf
PT Max	*Pretravel*	5.0mm
OT Min	*Overtravel*	2.0mm
MD Max	*Movement differential*	2.4mm
FP Max	*Free Position*	36.5mm
OP	*Operating position*	30.2±1.0mm

힌지로라 특장레바형

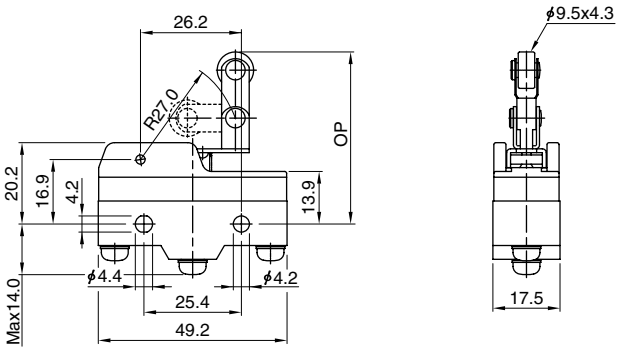
Hinge roller special long lever



주문형식 *Ordering information*		SHZM-R501D-15GA
OF Max	*Operating position*	75gf
RF Min	*Rlleasing force*	14gf
PT Max	*Pretravel*	14.0mm
OT Min	*Overtravel*	13.0mm
MD Max	*Movement differential*	5.0mm
FP Max	*Free Position*	46.6mm
OP	*Operating position*	30.2±1.6mm

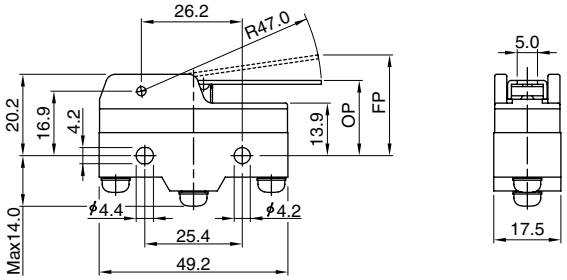
외형치수 및 특성
Demension and operating characteristics

이단롤라 레바형
2 stage roller lever



주문형식 *Ordering information*		SHZM-R501W-15GA
OF Max	*Operating position*	160gf
RF Min	*Rlleasing force*	40gf
PT Max	*Pretravel*	2.7mm
OT Min	*Overtravel*	2.4mm
MD Max	*Movement differential*	0.5mm
FP Max	*Free position*	45.0mm
OP	*Operating position*	43.2±0.8mm

힌지단레바형
Hinge short lever



주문형식 *Ordering information*		SHZM-L502A-15GA
OF Max	*Operating position*	95gf
RF Min	*Rlleasing force*	25gf
PT Max	*Pretravel*	6.0mm
OT Min	*Overtravel*	4.0mm
MD Max	*Movement differential*	2.0mm
FP Max	*Free position*	24.8mm
OP	*Operating position*	19.0±0.8mm

마이크로 스위치

Micro switch

교류용 마이크로 스위치(Z형)

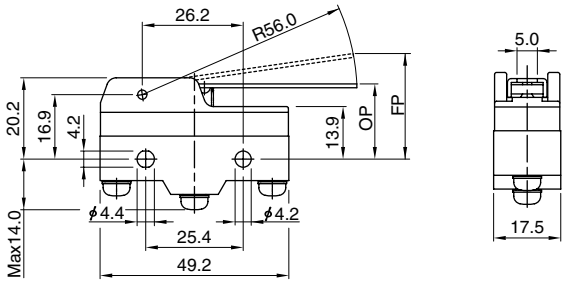
Alternating cyrrent micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

힌지중레바형

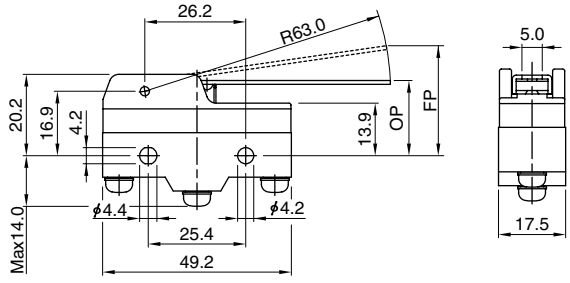
Hinge medium lever



주문형식 *Ordering information*		SHZM-L502B-15GA
OF Max	*Operating position*	90gf
RF Min	*Rlleasing force*	40gf
PT Max	*Pretravel*	8.0mm
OT Min	*Overtravel*	8.0mm
MD Max	*Movement differential*	3.0mm
FP Max	*Free position*	26.4mm
OP	*Operating position*	19.0±0.8mm

힌지장레바형

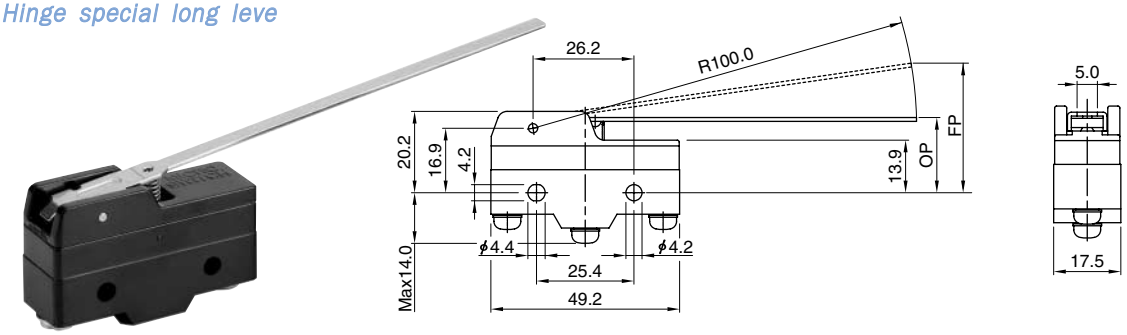
Hinge long lever



주문형식 *Ordering information*		SHZM-L502C-15GA
OF Max	*Operating position*	85gf
RF Min	*Rlleasing force*	25gf
PT Max	*Pretravel*	10.0mm
OT Min	*Overtravel*	6.0mm
MD Max	*Movement differential*	2.4mm
FP Max	*Free position*	29.0mm
OP	*Operating position*	19.0±0.8mm

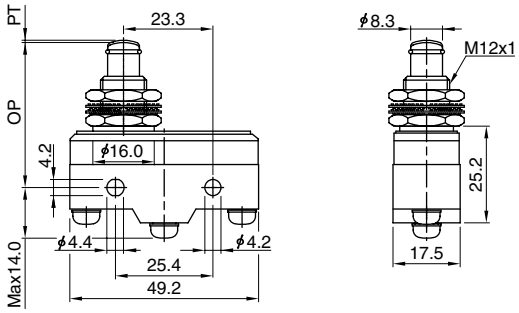
외형치수 및 특성
Demension and operating characteristics

힌지 특장레바형
Hinge special long leve



주문형식 *Ordering information*		SHZM-L502D-15GA
OF Max	*Operating position*	80gf
RF Min	*Rlleasing force*	14gf
PT Max	*Pretravel*	14.0mm
OT Min	*Overtravel*	13.0mm
MD Max	*Movement differential*	5.0mm
FP Max	*Free position*	34.9mm
OP	*Operating position*	19.0±1.6mm

장눌름 버튼형
Long push button



주문형식 *Ordering information*		SHZM-P503A-15GA
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	5.8mm
MD Max	*Movement differential*	1.0mm
OP	*Operating position*	21.8±0.8mm

마이크로 스위치

Micro switch

교류용 마이크로 스위치(Z형)

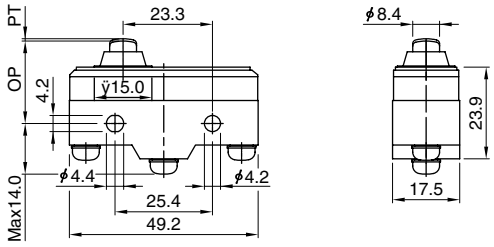
Alternating cyrrent micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

단눌름 버튼형

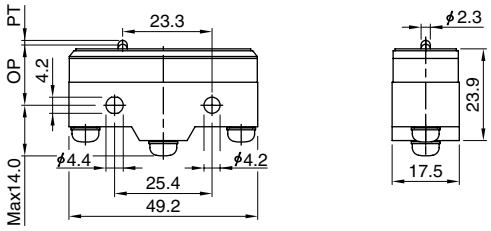
Short push button



주문형식 *Ordering information*		SHZM-P503B-15GA
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	21.5±0.5mm

핀눌름 버튼형

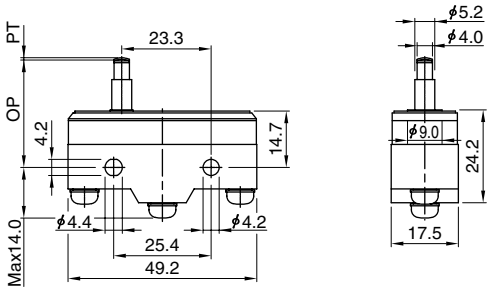
Pin push button



주문형식 *Ordering information*		SHZM-P503C-15GA
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	16.0±0.4mm

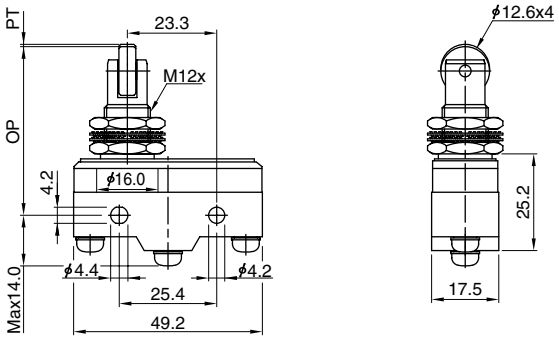
외형치수 및 특성
Demension and operating characteristics

눌름버턴형
Push button



주문형식 *Ordering information*		SHZM-P503D-15GA
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	28.2±0.5mm

로라눌름버튼형(세로)
Vertically roller push button



주문형식 *Ordering information*		SHZM-P504A-15GA
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	3.6mm
MD Max	*Movement differential*	1.0mm
OP	*Operating position*	33.4±1.2mm

마이크로 스위치

Micro switch

교류용 마이크로 스위치(Z형)

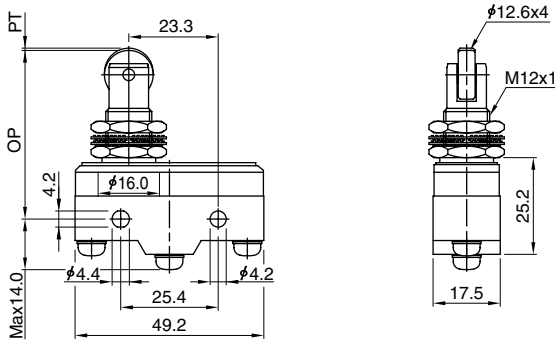
Alternating cyrrent micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

로라눌름버튼형(가로)

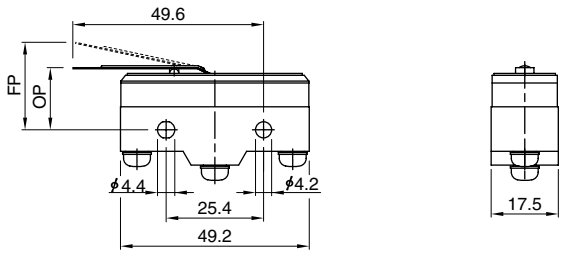
Horizontal roller push button



주문형식 *Ordering information*		SHZM-P504B-15GA
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	3.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	33.4±1.2mm

리프스프링형

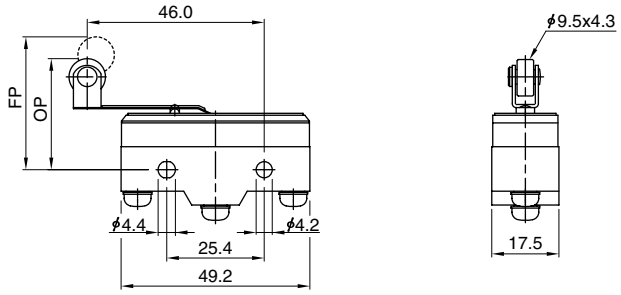
Sensitive roller lever



주문형식 *Ordering information*		SHZM-P505A-15GA
OF Max	*Operating position*	141gf
RF Min	*Rlleasing force*	14gf
PT Max	*Pretravel*	4.0mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	1.3mm
FP Max	*Free Position*	21.4mm
OP	*Operating position*	17.4±0.8mm

외형치수 및 특성
Demension and operating characteristics

롤라리프스프링형
Sensitive roller lever



주문형식 *Ordering information*		SHZM-R505B-15GA
OF Max	*Operating position*	141gf
RF Min	*Rlleasing force*	14gf
PT Max	*Pretravel*	4.0mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	1.3mm
FP Max	*Free position*	30.6mm
OP	*Operating position*	26.6±0.8mm

마이크로 스위치

Micro switch

직류용 마이크로 스위치(Z형)

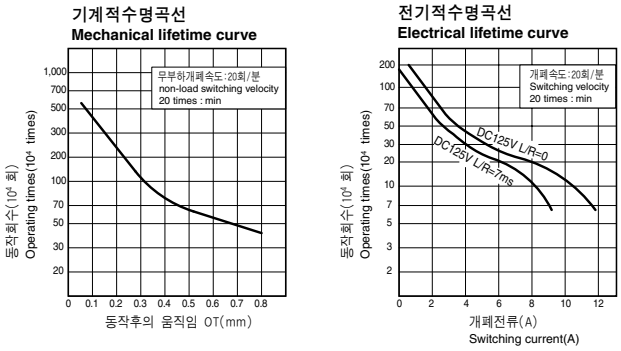
Direct current micro switch(Z type)

특징 *Features*	■ 형태 및 일반적 성능은 교류용 마이크로 스위치와 동일 합니다 ■ 직류전류 개폐용으로 접점기구에 아크를 끊어주기 위해 영구자석을 내장 하였습니다. ■ 구조가 내아크성, 내연, 내열 재질로서 절연성이 우수 합니다. ■ 엑츄에이터는 눌름버튼, 힌지레버, 롤라 레바등으로 종류가 다양합니다. ■ 높은 접촉 신뢰성을 갖고 있습니다. ■ 부착은 국제규격을 적용 했습니다. ■ *The shape and general charcteristics are identical to alternating current micro switch.* ■ *As a direct current switching, permanent magnet is built-in contact device in order to cut arc.* ■ *Excellent in insulation property with high structure of heat resistance,oil resistance, insulation corrosion resistance.* ■ *Actuator's types are various with Pin Plunger, Hinge roller lever.* ■ *With high contact performance.* ■ *Application of international standards.*		
용도 *Application*	■ 산업용기계. ■ 공작기계. ■ 압력,온도, 액면, 중량, 시간등의 제어용및 자동제어 부품. ■ 배전반 ■ *Industrial machine* ■ *Machine tool* ■ *Controller and auto-controller's parts of pressure, temperature, weight, time, etc.* ■ *Controll panel*		
성능 *Characteristics*	허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	240회/분 *240 cycles / Min*
		전기적 *Electical*	20회/분 *20 cycles / Min*
	허용조작속도 *Max. operating speed*		0.1mm~1mm
	절연저항 *Insulation resistance*		100MΩ 이상(DC500V절연저항계) *Min. 100MΩ at DC500V*
	접촉저항 *Contact resistance*		15mΩ 이하 *Max. 15mΩ at the begining*
	내전압 *Dielectic strength*	충전부간 *Between live parts*	AC 1,000V 50/60Hz 1분간 *AC 1,000V 50/60Hz 1min*
		비충전부간 *Between non-live parts*	AC 2,000V 50/60Hz 1분간 *AC 2,000V 50/60Hz 1min*
	내진동 *Vibration protection*		10~55Hz, 진동폭 : 1.5mm *10~55Hz, vibration range:1.5mm*
	내충격 *Mechanical shock protection*	내구 *Endurance*	1,000m/s²이상(약 100G이상) *Min. 1,000m/s2(approx.100G)*
		오동작 *Malfunction*	50m/s²이상(약5G이상) *Min. 50m/s2(approx.5G)*
	수명 *Lifetimes*	전기적 *Electrical*	10만회 이상 *0.1 mill operations min*
		기계적 *Mechanical*	1,000만회 이상 *10 mill operations min*
	사용주위온도 *Ambient temperature for operation*		-10 ~ +80℃
	사용주위습도 *Ambient humidity*		96%RH이하 *Max. 96%*

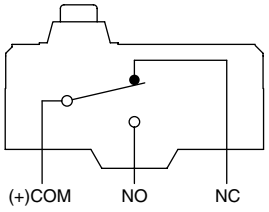
정격
Rating

정격전압(V) *Rating voltage(v)*		무유도부하(A) *Non-inductive load(A)*			유도부하(A) *Inductive load(A)*			
		저항부하 *resistance load* cos ϕ = 1		램프부하 *Lamp load*		유도부하 *Inductive load* cos ϕ = 1		전동기부하 *Motor load*	
		상시폐로 *normally closed*	상시개로 *normally closed*	상시폐로 *normally closed*	상시개로 *normally closed*	상시폐로 *normally closed*	상시개로 *normally closed*	상시폐로 *normally closed*	상시개로 *normally closed*
DC	8	15		3	3	15	15	10	10
	14	15		3	3	15	10	10	10
	30	15		3	3	10	10	10	6
	125	10		3	1.5	6	6	6	4
	250	3		1.5	0.75	2	1.5	2	1

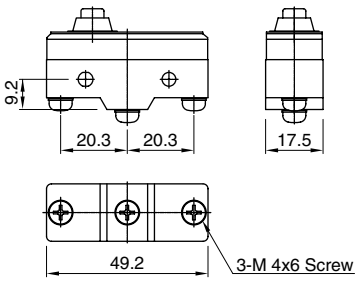
수명곡선
Lifetime curve



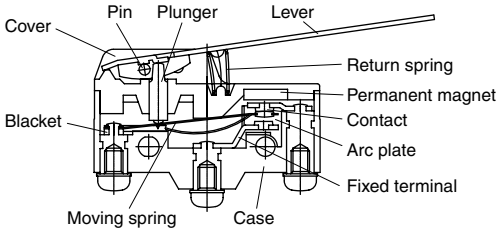
접점 회로도
Circuit diagram



단자종류
Terminal types



내부구조
Inside structure diagram



마이크로 스위치

Micro switch

직류용 마이크로 스위치(Z형)

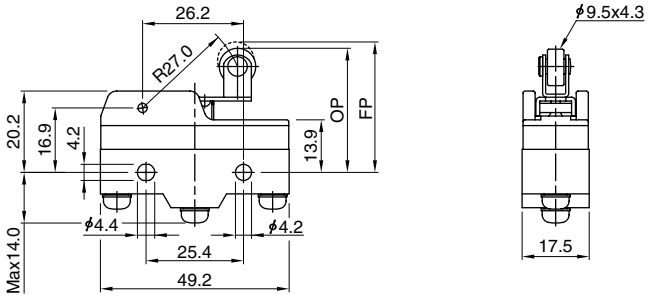
Direct current micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

힌지로라단레바형

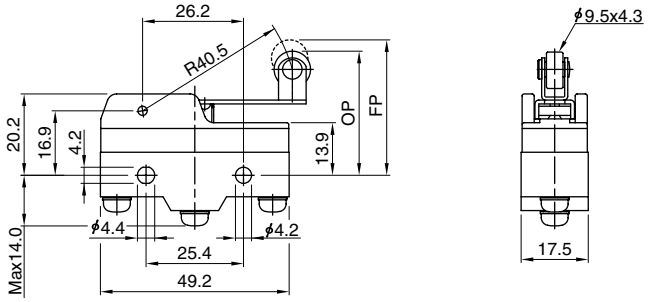
Hinge roller lever



주문형식 *Ordering information*		SHZM-R501A-10FD
OF Max	*Operating position*	160gf
RF Min	*Rlleasing force*	42gf
PT Max	*Pretravel*	5.0mm
OT Min	*Overtravel*	2.4mm
MD Max	*Movement differential*	1.2mm
FP Max	*Free position*	32.9mm
OP	*Operating position*	30.2±0.4mm

힌지로라중레바형

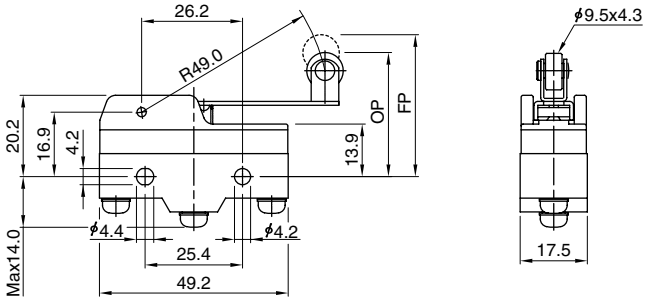
Hinge roller medium lever



주문형식 *Ordering information*		SHZM-R501B-10FD
OF Max	*Operating position*	120gf
RF Min	*Rlleasing force*	22gf
PT Max	*Pretravel*	8.0mm
OT Min	*Overtravel*	4.0mm
MD Max	*Movement differential*	2.0mm
FP Max	*Free position*	35.0mm
OP	*Operating position*	30.2±0.8mm

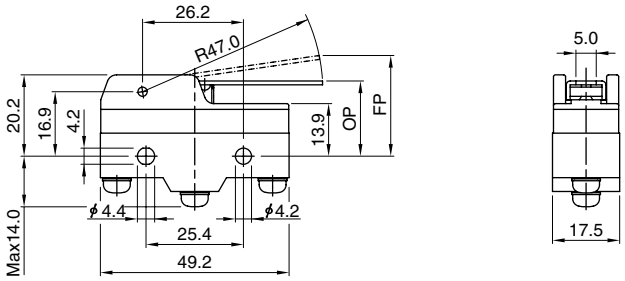
외형치수 및 특성
Demension and operating characteristics

힌지로라장레바형
Hinge roller long lever



주문형식 *Ordering information*		SHZM-R501C-10FD
OF Max	*Operating position*	90gf
RF Min	*Rlleasing force*	10gf
PT Max	*Pretravel*	5.0mm
OT Min	*Overtravel*	2.0mm
MD Max	*Movement differential*	2.4mm
FP Max	*Free position*	36.5mm
OP	*Operating position*	30.2±1.0mm

힌지단레바형
Hinge short lever



주문형식 *Ordering information*		SHZM-L502A-10FD
OF Max	*Operating position*	95gf
RF Min	*Rlleasing force*	25gf
PT Max	*Pretravel*	6.0mm
OT Min	*Overtravel*	4.0mm
MD Max	*Movement differential*	2.0mm
FP Max	*Free position*	24.8mm
OP	*Operating position*	19.0±0.8mm

마이크로 스위치

Micro switch

직류용 마이크로 스위치(Z형)

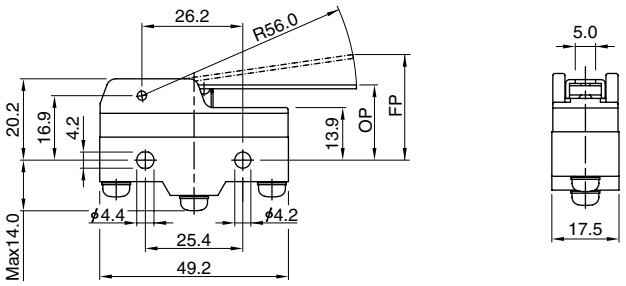
Direct current micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

힌지중레바형

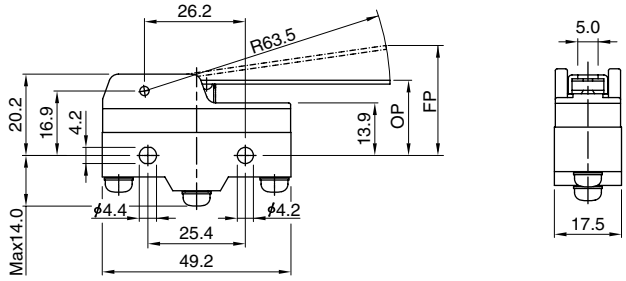
Hinge medium lever



주문형식 *Ordering information*		SHZM-L502B-10FD
OF Max	*Operating position*	90gf
RF Min	*Rlleasing force*	40gf
PT Max	*Pretravel*	8.0mm
OT Min	*Overtravel*	8.0mm
MD Max	*Movement differential*	3.0mm
FP Max	*Free position*	26.4mm
OP	*Operating position*	19.0±0.8mm

힌지장레바형

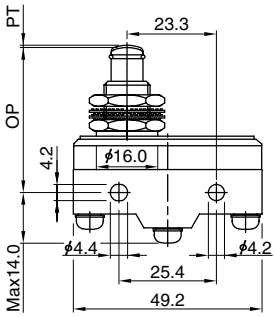
Hinge long lever

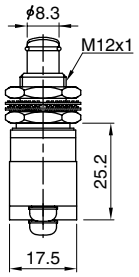


주문형식 *Ordering information*		SHZM-L502C-10FD
OF Max	*Operating position*	85gf
RF Min	*Rlleasing force*	25gf
PT Max	*Pretravel*	10.0mm
OT Min	*Overtravel*	6.0mm
MD Max	*Movement differential*	2.4mm
FP Max	*Free position*	29.0mm
OP	*Operating position*	19.0±0.8mm

외형치수 및 특성
Demension and operating characteristics

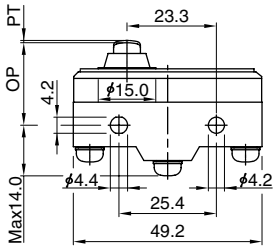
장눌름 버튼형
Long push button

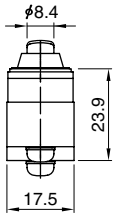




주문형식 *Ordering information*		SHZM-P503A-10FD
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	5.8mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	21.8±0.8mm

단눌름 버튼형
Short push button





주문형식 *Ordering information*		SHZM-P503B-10FD
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	21.5±0.5mm

마이크로 스위치

Micro switch

직류용 마이크로 스위치(Z형)

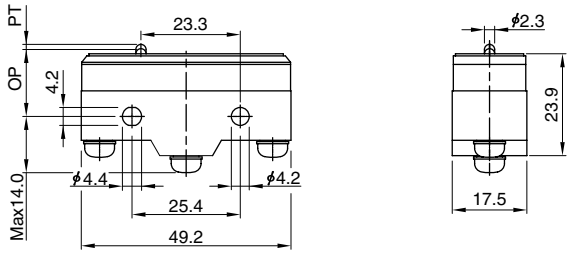
Direct current micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

핀눌름 버튼형

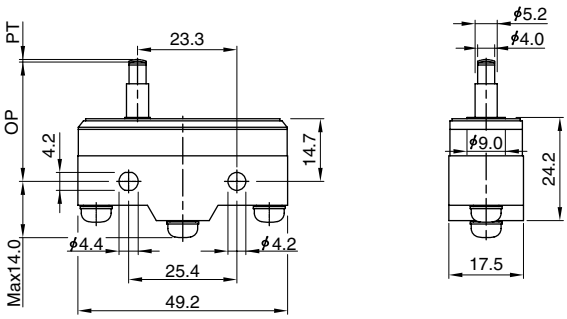
Pin push button



주문형식 *Ordering information*		SHZM-P503C-10FD
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	16.0±0.4mm

눌름 버튼형

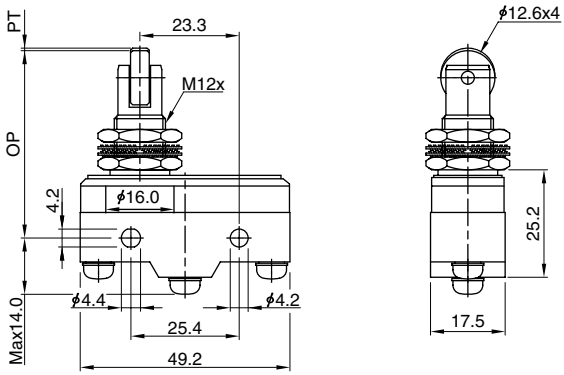
Push button



주문형식 *Ordering information*		SHZM-P503D-10FD
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	28.2±0.5mm

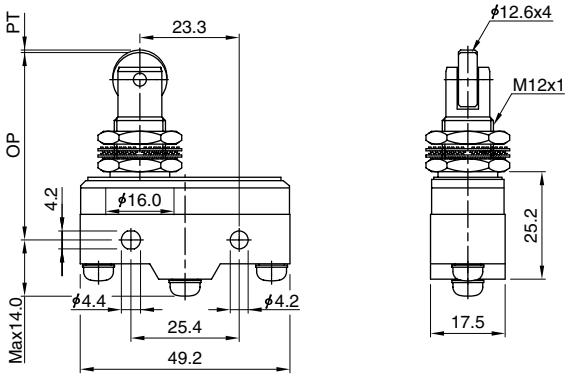
외형치수 및 특성
Demension and operating characteristics

로라눌름버튼형(세로)
Vertically roller push button



주문형식 *Ordering information*		SHZM-P504A-10FD
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	3.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	33.4±1.2mm

로라눌름버튼형(가로)
Horizontal roller push button



주문형식 *Ordering information*		SHZM-P504B-10FD
OF Max	*Operating position*	350gf
RF Min	*Rlleasing force*	114gf
PT Max	*Pretravel*	0.4mm
OT Min	*Overtravel*	3.6mm
MD Max	*Movement differential*	0.1mm
OP	*Operating position*	33.4±1.2mm

마이크로 스위치

Micro switch

직류용 마이크로 스위치(Z형)

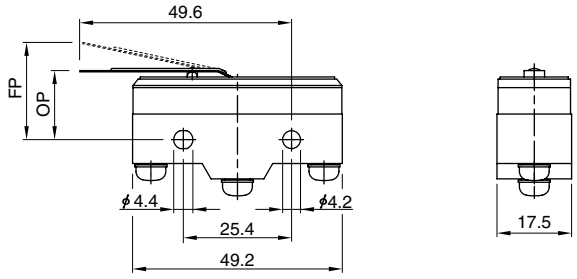
Direct current micro switch(Z type)

외형치수 및 특성

Demension and operating characteristics

리프스프링형

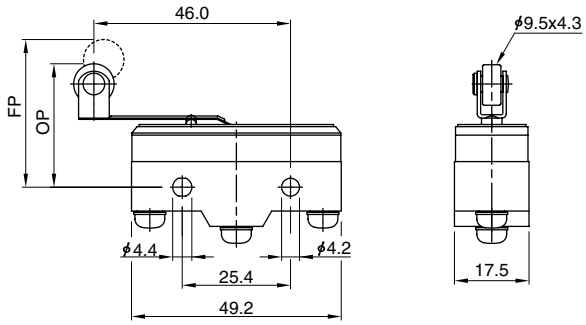
Sensitive roller lever



주문형식 *Ordering information*		SHZM-L505A-10FD
OF Max	*Operating Position*	141gf
RF Min	*RIleasing Force*	14gf
PT Max	*Pretravel*	4.0mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement Differential*	1.3mm
OP	*Operating position*	17.4±0.8mm

롤라리프스프링형

Sensitive roller lever



주문형식 *Ordering information*		SHZM-R505B-10FD
OF Max	*Operating Position*	141gf
RF Min	*RIleasing Force*	14gf
PT Max	*Pretravel*	4.0mm
OT Min	*Overtravel*	1.6mm
MD Max	*Movement Differential*	30.6mm
OP	*Operating position*	26.6±0.8mm

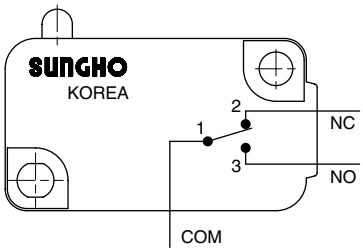
발판 스위치

Foot Switch

특징 *Features*	■ 정밀도가 높은 V형 마이크로 스위치가 내장되어 있어 동작이 확실하고 신뢰성이 우수합니다. ■ 접점용량이 크면서 차단속도가 빠르며 긴 수명을 갖습니다. ■ 프라스틱용은 가벼우며 충격에도 강한 포리카보네이트를 사용 하였습니다. ■ 2a2b 접점 생산도 가능합니다. ■ 접점용량은 250V 16A입니다. ■ *Excellent in the movement and the reliability with exact V-type micro switch.* ■ *Lifetime is long, contact capacity and isolation speed is high.* ■ *Plastic-type is made of polycarbonate of light, resistance-impact.* ■ *It's possible to produce of 2a2b contact.* ■ *Contact capacity is 250V 16A.*
용도 *Application*	■ 소형공작기계, 용접기계, 의료기기, 사무기기등.. ■ *Light machine tool, Welding machine, Business machine, etc.*

형명 *Features*	SHFS-M1	SHFS-D1	SHFS-D2
접점용량(저항부하시)	250V 16A		
내장스위치형명	SHV-16-1D5		
외관재질	포리카보네이트 *Polycabonate*	알루미늄 다이캐스팅 *Aluminum die-casting*	
배선길이	1.5m		
중량	120g	175g	360g

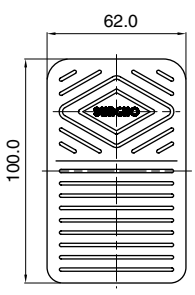
회로도
Circuit detail

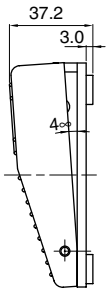


주문형식
Type

SH로-M1

외형치수
Dimensions





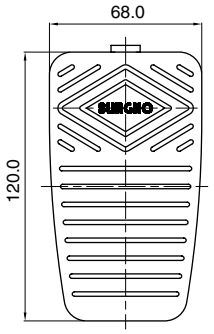
발판 스위치

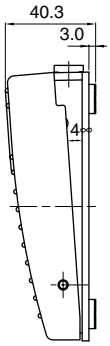
Foot Switch

주문형식
Type

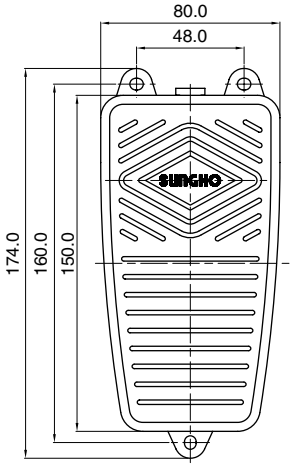
외형치수
Dimensions

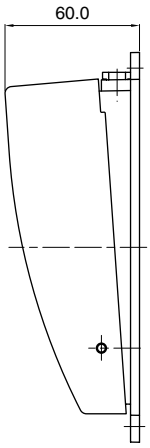
SH로-D1





SH로-D2





근접스위치

Proximity Sensors

원주형
Cylindrical Housing

φ12, φ18, φ30

고주파발진형
Inductive Sensors

정전용량형
Capacitive Sensors

전원
Power Supply

DC 12~24V

AC 110~220V

출력
Switching Function

AC NO, NC

DC NPN NO, NPN NC, PNP NO

검출거리
Nominal Sensing Distance

4mm
5mm
8mm
10mm
15mm
20mm

사각형
Rectangular Housing

□18, □25, □30, □40

- 고주파발진형
  Inductive Sensors

근접스위치

Proximity Sensors

DC 고주파발진형

DC inductive sensors

사각형

Rectangular housing

외형치수 *Dimension*	검출거리 *Sensing distance*	설정거리 *Sensing range*	표준검출체 *Sensing object*	응답주파수 *Switching frequency*	출력 *Switching version*	주문형식 *Type*
□ 18mm	5mm±10%	0~3.5mm	철/Iron *25×25×1mm*	500Hz	직류NPN a접점 *NPN normal open*	SHP-S18-5NO
					직류NPN b접점 *NPN normal close*	SHP-S18-5NC
					직류NPN a접점 윗면검출 *NPN normal open sensing upside*	SHP-S18-5NOU
□ 25mm	5mm±10%	0~3.5mm	철/Iron *30×30×1mm*	350Hz	직류NPN a접점 *NPN normal open*	SHP-S25-5NO
					직류PNP a접점 *PNP normal open*	SHP-S25-5PO
□ 30mm	10mm±10%	0~7mm	철/Iron *40×40×1mm*	250Hz	직류NPN a접점 *NPN normal open*	SHP-S30-10NO
					직류NPN b접점 *NPN normal close*	SHP-S30-10NC
					직류PNP a접점 *PNP normal open*	SHP-S30-10PO
□ 40mm	20mm±10%	0~14mm	철/Iron *60×60×1mm*	250Hz	직류NPN a접점 *NPN normal open*	SHP-S40-20NO
					직류NPN b접점 *NPN normal close*	SHP-S40-20NC
					직류PNP a접점 *PNP normal open*	SHP-S40-20PO

일반특성

Other characteristics

전원전압(사용전압범위) *Supply voltage*	DC 12~24V (DC10~30V)
제어출력 *Output current*	200mA 저항성부하 / Resistive load 100mA 유도성부하 / Inductive load
소비전류 *Current consumption*	Max. 10mA 이하
잔류전압 *Residual voltage*	Max. 1.5V 이하
표시등 *Signal indicator*	LED, Red
특징	■ 금속물체를 고속으로 검출 가능 ■ 마이크로스위치, 리미트대용으로 사용 가능 ■ *Sensing of metal at high speed.* ■ 긴 수명과 높은 신뢰성 ■ 금속에 직접 설치 가능 ■ *Long-life and high reliability.* ■ *Set up with metal directly.*

원주형
Cylindrical housing

외형치수 *Dimension (diameter)*	검출거리 *Sensing distance*	설정거리 *Sensing range*	표준검출체 *Sensing object*	응답주파수 *Switching frequency*	출력 *Switching version*	주문형식 *Type*
ϕ12mm *M12 threaded*	4mm±10%	0~2.8mm	철/Iron *12×12×1mm*	400Hz	직류NPN a접점 *NPN normal open*	SHP-R12-4NO
					직류NPN b접점 *NPN normal close*	SHP-R12-4NC
					직류PNP a접점 *PNP normal open*	SHP-R12-4PO
ϕ18mm *M18 threaded*	5mm±10%	0~3.5mm	철/Iron *18×18×1mm*	350Hz	직류NPN a접점 *NPN normal open*	SHP-R18-5NO
					직류NPN b접점 *NPN normal close*	SHP-R18-5NC
					직류PNP a접점 *PNP normal open*	SHP-R18-5PO
	8mm±10%	0~5.6mm	철/Iron *25×25×1mm*	200Hz	직류NPN a접점 *NPN normal open*	SHP-R18-8NO
					직류NPN b접점 *NPN normal close*	SHP-R18-8NC
					직류PNP a접점 *PNP normal open*	SHP-R18-8PO
ϕ30mm *M30 threaded*	10mm±10%	0~7mm	철/Iron *30×30×1mm*	250Hz	직류NPN a접점 *NPN normal open*	SHP-R30-10NO
					직류NPN b접점 *NPN normal close*	SHP-R30-10NC
					직류PNP a접점 *PNP normal open*	SHP-R30-10PO
	15mm±10%	0~10.5mm	철/Iron *45×45×1mm*	100Hz	직류NPN a접점 *NPN normal open*	SHP-R30-15NO
					직류NPN b접점 *NPN normal close*	SHP-R30-15NC
					직류PNP a접점 *PNP normal open*	SHP-R30-15PO

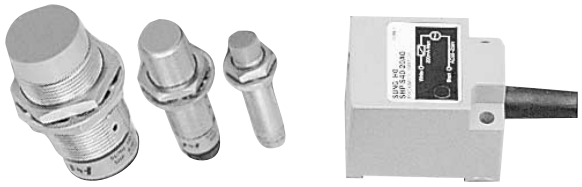
일반특성
Other characteristics

전원전압(사용전압범위) *Supply voltage*	DC 12~24V (DC10~30V)
제어출력 *Output current*	200mA 저항성부하 / Resistive load 100mA 유도성부하 / Inductive load
소비전류 *Current consumption*	10mA
잔류전압 *Residual voltage*	Max. 1.5V 이하
표시등 *Signal indicator*	LED, Red
특징	■ 금속물체를 고속으로 검출 가능 ■ 각종 리미트 및 계수제어에 적합 ■ *Sensing of metal at high speed.* ■ *Suitable to calculate control and all sorts of limit switch.* ■ 긴 수명과 높은 신뢰성 ■ 금속에 직접 설치 가능 ■ *Long-life and high reliability.* ■ *Set up with metal directly.*

근접스위치

Proximity Sensors

AC 고주파발진형
AC inductive sensors



외형모양 *Housing type*	외형치수 *Dimension*	검출거리 *Sensing distance*	설정거리 *Sensing range*	표준검출체 *Sensing object*	출력 *Switching version*	주문형식 *Type*
원주형 *Cylindrical*	ϕ18mm *M18 threaded*	5mm±10%	0~3.5mm	철/Iron *18×18×1mm*	교류 a접점 *AC normal open*	SHP-R18-5AO
					교류 b접점 *AC normal close*	SHP-R18-5AC
	ϕ30mm *M30 threaded*	10mm±10%	0~7mm	철/Iron *30×30×1mm*	교류 a접점 *AC normal open*	SHP-R30-10AO
					교류 b접점 *AC normal close*	SHP-R30-10AC
		15mm±10%	0~10.5mm	철/Iron *45×45×1mm*	교류 a접점 *AC normal open*	SHP-R30-15AO
					교류 b접점 *AC normal close*	SHP-R30-15AC
사각형 *Rectangular*	□ 25mm	5mm±10%	0~3.5mm	철/Iron *30×30×1mm*	교류 a접점 *AC normal open*	SHP-S25-5AO
					교류 b접점 *AC normal close*	SHP-S25-5AC
	□ 30mm	10mm±10%	0~7mm	철/Iron *40×40×1mm*	교류 a접점 *AC normal open*	SHP-S30-10AO
					교류 b접점 *AC normal close*	SHP-S30-10AC
	□ 40mm	20mm±10%	0~14mm	철/Iron *60×60×1mm*	교류 a접점 *AC normal open*	SHP-S40-20AO
					교류 b접점 *AC normal close*	SHP-S40-20AC

일반특성
Other characteristics

전원전압(사용전압범위) *Supply voltage*	AC110~220V (AC90~250V)
제어출력 *Output current*	200mA 저항성부하 / Resistive load 100mA 유도성부하 / Inductive load
소비전류 *Current consumption*	Max. 2.5mA 이하
잔류전압 *Residual voltage*	Max. 10V 이하
응답주파수 *Switching frequency*	20Hz
표시등 *Signal indicator*	LED, Red
특징	■ 금속물체를 고속으로 검출 가능 ■ 각종 리미트 및 계수제어에 적합 ■ *Sensing of metal at high speed.* ■ *Suitable to calculate control and all sorts of limit switch.* ■ 긴 수명과 높은 신뢰성 ■ 금속에 직접 설치 가능 ■ *Long-life and high reliability.* ■ *Set up with metal directly.*

정전용량형
Capacitive sensors

원주형
Cylindrical housing

외형치수 *Dimension (Diameter)*	검출거리 *Sensing distance*	설정거리 *Sensing range*	표준검출체 *Sensing object*	전원전압 *Supply voltage*	출력 *Switching version*	주문형식 *Type*
ϕ30mm *M30 threaded*	15mm±10%	0~10.5mm	철/Iron *50×50×1mm*	DC12~24V	직류NPN a접점 *NPN normal open*	SHC-R30-20NO
					직류NPN b접점 *NPN normal close*	SHC-R30-20NC
					직류PNP a접점 *PNP normal open*	SHC-R30-20PO
				AC110~220V	교류 a접점 *AC normal open*	SHC-R30-20AO
					교류 b접점 *AC normal close*	SHC-R30-20AC

일반특성
Other characteristics

전원 *Type of voltage*	DC	AC
소비전류 *Current consumption*	Max. 15mA	Max. 2.2mA
잔류전압 *Residual voltage*	Max. 1.5V 이하	Max. 20V 이하
응답주파수 *Switching frequency*	50Hz	20Hz
제어출력 *Output current*	200mA 저항성부하 / Resistive load 100mA 유도성부하 / Inductive load	
표시등 *Signal indicator*	LED, Red	
특징	■ 금속뿐아니라 비금속도 검출이 가능합니다. - 금속, 플라스틱, 물, 돌, 분체등 모든 유전체 ■ 긴 수명과 높은 신뢰성 ■ 조정용 볼륨부착으로 검출거리조정이 용이합니다. ■ *Sensing of metal as well as nonmetal.* *- metal, plastic, water, stone, and the like all dielectric.* ■ *Long-life and high reliability.*	

근접스위치

Proximity Sensors

고주파발진형/원주형

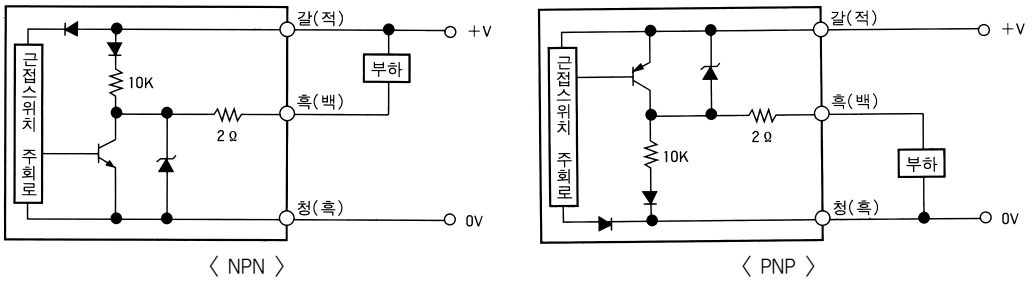
Inductive sensors/cylindrical housing

회로도

Circuit diagram

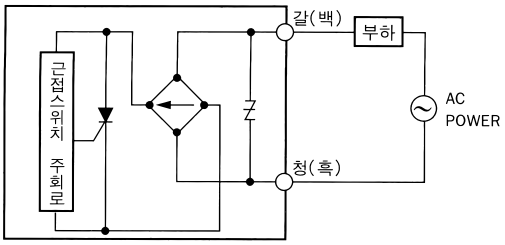
직류개폐형

DC inductive sensors



교류개폐형

AC inductive sensors



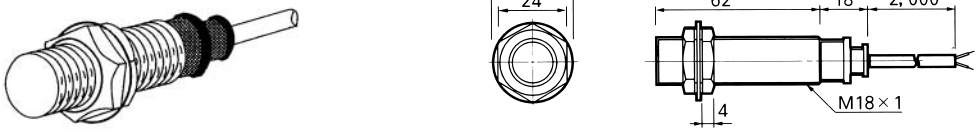
외형치수

Dimensions, mm

교류개폐형

AC inductive sensors

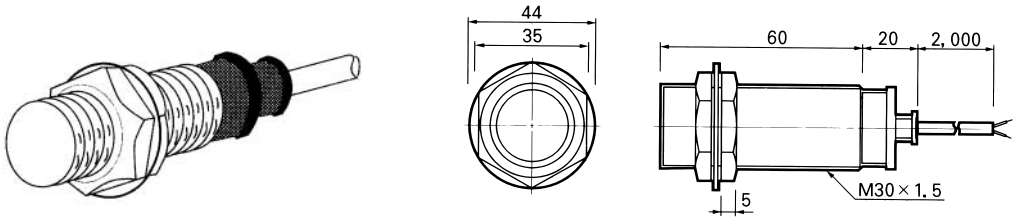
SHP-R18-5AO
SHP-R18-5AC



교류개폐형

AC inductive sensors

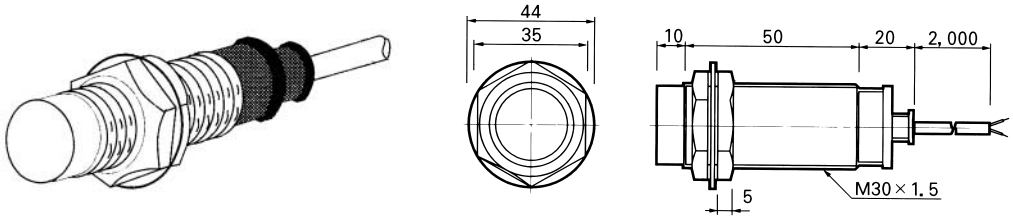
SHP-R30-10AO
SHP-R30-10AC



교류개폐형

AC inductive sensors

SHP-R30-20AO
SHP-R30-20AC



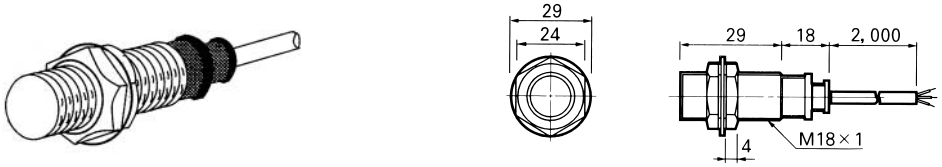
외형치수
Dimensions, mm

직류개폐형
DC inductive sensors

SHP-R12-4NO
SHP-R12-4NC
SHP-R12-4PO

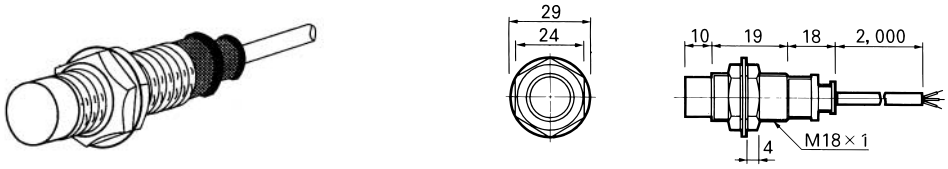
직류개폐형
DC inductive sensors

SHP-R18-5NO
SHP-R18-5NC
SHP-R18-5PO



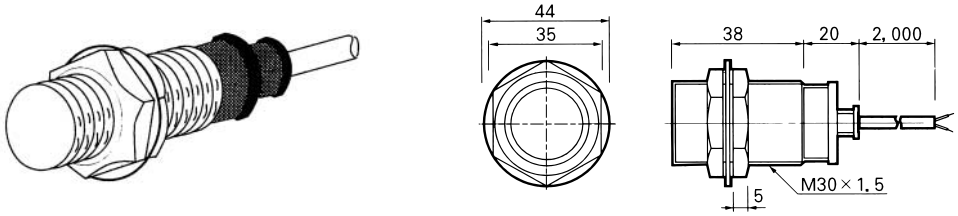
직류개폐형
DC inductive sensors

SHP-R18-8NO
SHP-R18-8NC
SHP-R18-8PO



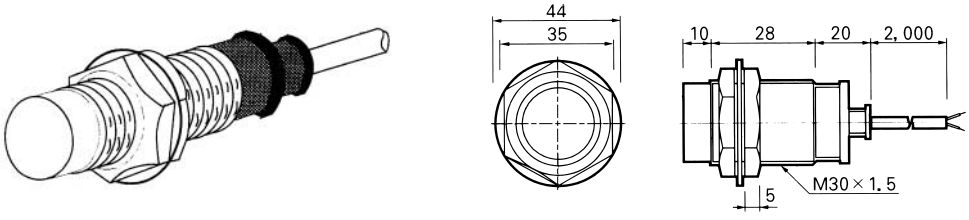
직류개폐형
DC inductive sensors

SHP-R30-10NO
SHP-R30-10NC
SHP-R30-10PO



직류개폐형
DC inductive sensors

SHP-R30-15NO
SHP-R30-15NC
SHP-R30-15PO



근접스위치

Proximity Sensors

고주파발진형/사각형

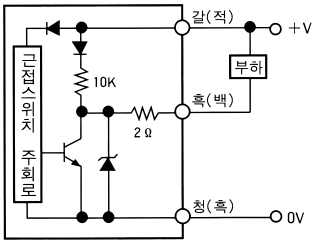
Inductive sensors/rectangular housing

회로도

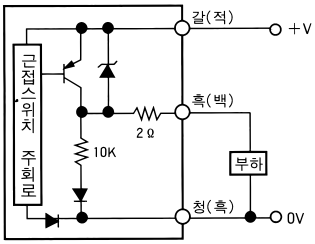
Circuit diagram

직류개폐형

DC inductive sensors



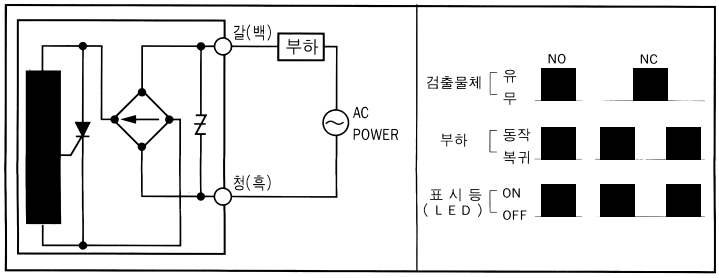
〈 NPN 〉



〈 PNP 〉

교류개폐형

AC inductive sensors



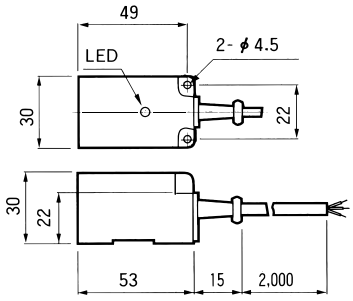
외형치수

Dimensions, mm

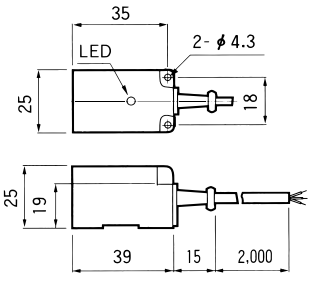
직류개폐형

DC inductive sensors

SHP-S18-5NO
SHP-S18-5NO(U)
SHP-S18-5NC



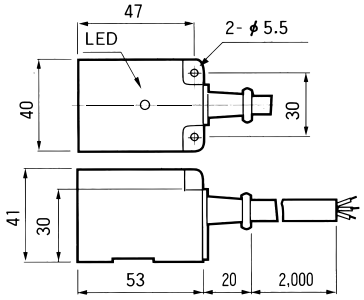
SHP-S25-5NO
SHP-S25-5PO



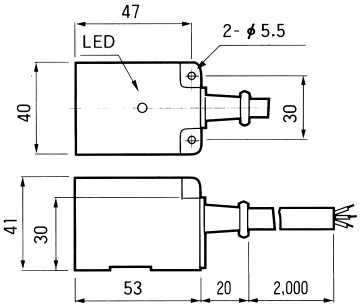
직류개폐형

DC inductive sensors

SHP-S30-10NO
SHP-S30-10NC
SHP-S30-10PO



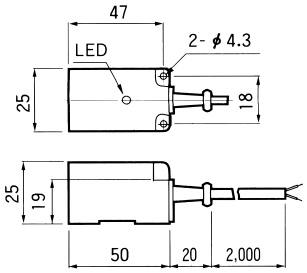
SHP-S40-20NO
SHP-S40-20NC
SHP-S40-20PO



외형치수
Dimensions, mm

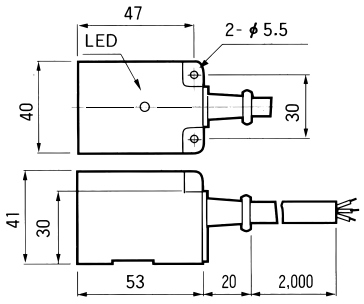
교류개폐형
AC inductive sensors

SHP-S25-5AO
SHP-S25-5AC

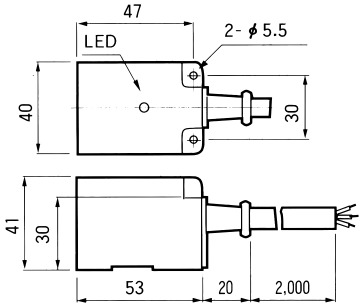


교류개폐형
AC inductive sensors

SHP-S30-10AO
SHP-S30-10AC

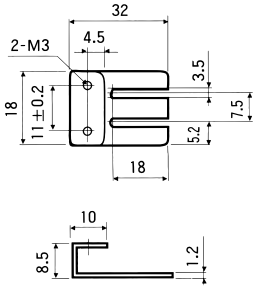


SHP-S40-20AO
SHP-S40-20AC

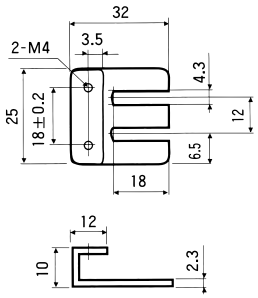


고정용 브라켓
Mounting bracket

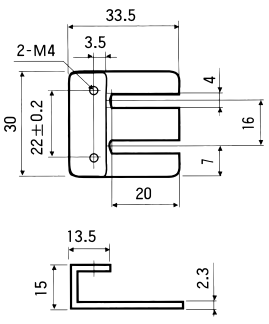
IP-18B



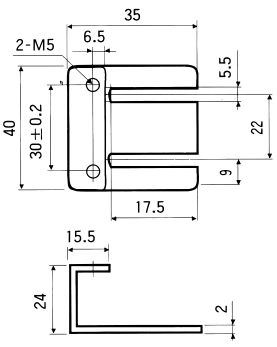
SHP-25B



IP-30B



SHP-40B



근접스위치

Proximity Sensors

정전용량형

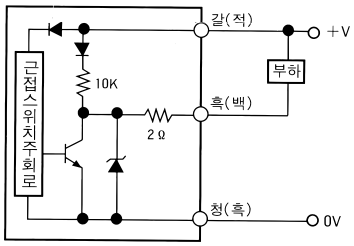
Capacitive sensors

회로도

Circuit diagram

직류개폐형

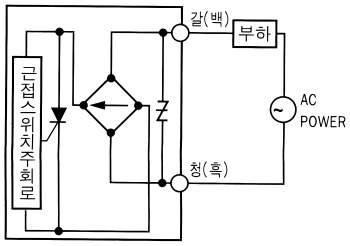
DC inductive sensors



〈 NPN 〉

교류개폐형

AC inductive sensors



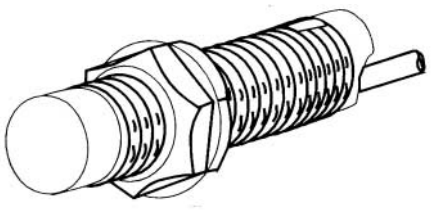
외형치수

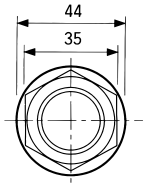
Dimensions, mm

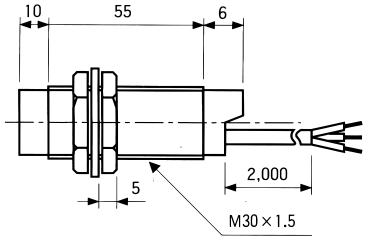
직류개폐형

DC inductive sensors

SHC-R30-20NO
SHC-R30-20NC
SHC-R30-20PO
SHC-R30-20AO
SHC-R30-20AC



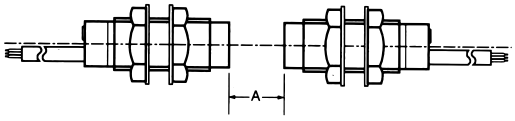


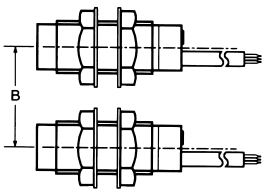


설치시 주의사항

상호간섭

2개 이상의 스위치를 아래와 같이 마주보거나 병렬로 취부하는 경우, 주파수 간섭에 의해 오동작의 원인이 되므로 그림에 표기된 치수 이상의 간격을 유지해야 합니다 .

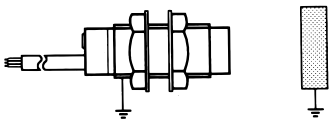




접지

표준검출체와 스위치 본체의 접지 상태에따라 동작거리가 변화합니다.

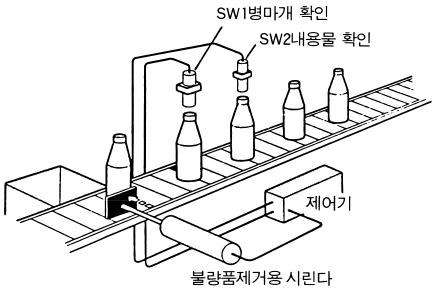
접지 조건	스위치 a	ON	OFF	ON	OFF
	스위치 b	ON	ON	OFF	ON
동작거리(mm)		15	18	6	6



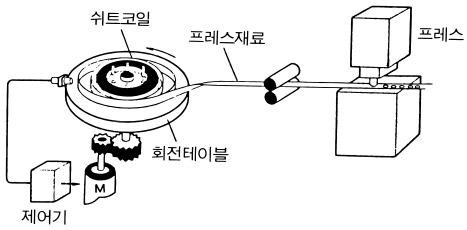
적용되는 검출장치 사용예
Applications

고주파발진형/금속검출
Inductive sensors

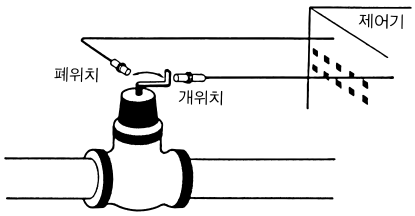
병마개 검출



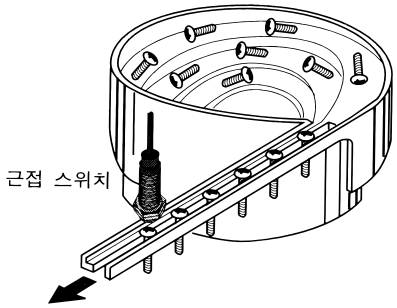
프레스제어



개폐위치 검출

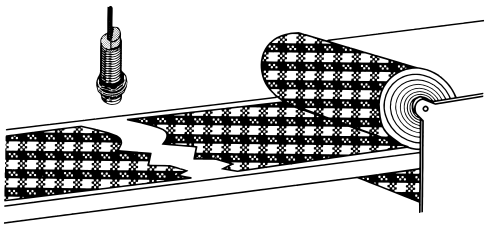


볼트의 수량검출

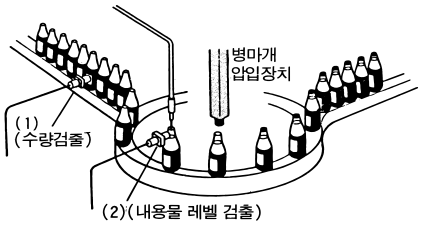


정전용량형/금속 및 비금속 검출
Capacitive sensors

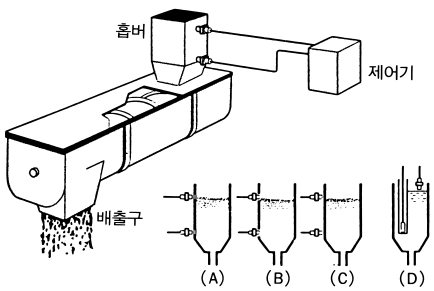
밴드의 유무이상 검출



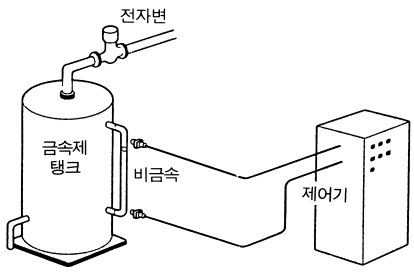
병의 유무와 내용물의 레벨검출



호퍼의 레벨검출



액체의 레벨검출



Control and Signalling Devices

ϕ22 & ϕ25

제어용스위치, 표시등

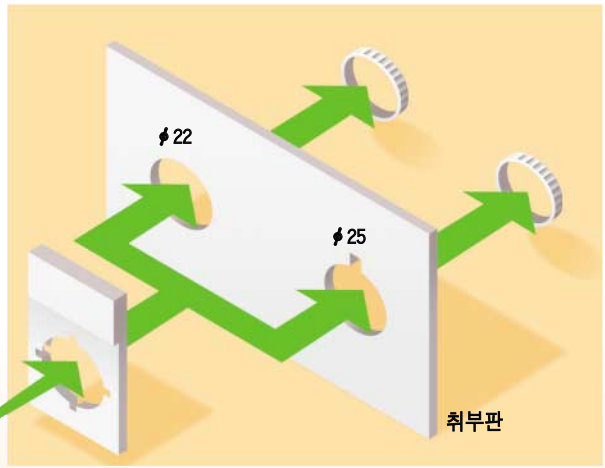
Control and Signalling Devices, ϕ22 & 25 Common Use
Type PG... ϕ22, ϕ25 공용

눌름보턴스위치
Pushbutton

- 조광형
  Illuminated
- 비조광형
  Non-Illuminated

표시등
Pilot Lights

- 백열전구방식
  With Incandescent Bulb
- LED방식
  With LED



ϕ22, ϕ25 공용조각판

셀렉터스위치
Selector Switches

- 조광형
  Illuminated
- 비조광형
  Non-Illuminated
- 키형
  Key Operated

비상정지눌름보턴스위치
Emergency Stop Switches

- 자기복귀형
  Push-pull
- 푸쉬록 턴리셋방식
  Turn to Release
- 푸쉬록 키리셋방식
  Key Release

제어용스위치, 표시등

Control and signalling devices, ϕ22 & ϕ25 common use

정격 및 성능
Characteristics

특징 *Features*

- 조작부와 접점부가 분리형으로 되어 있어 결합 또는 분리가 간단합니다.
- 접점부의 분리시 별도의 공구가 필요치 않으며 파손될 염려가 없습니다.
- 취부홀이 ϕ22, ϕ25겸용입니다.
- 색상 및 기능의 다변화로 사용자 선택의 폭이 넓어졌습니다.
- 판넬 전면의 상부는 IP64 내유형으로 어떠한 방향에서의 기름방울, 물거품으로도 해로운 영향을 받지 않습니다.
- *To combinate and separate is simple, because operation part and contact part are consist of separate type.*
- *In case of separate the contact part, don't need any tools, and nothing to worry about damage.*
- *For both ϕ22 and ϕ25.*
- *As diversify the color and function, user's option become wider.*
- *The upper part of the front side in panel is formed by IP64, don't affected by drop of oil, bubble, and the likes on all sides.*

접점용량 *Contact ratings*

주) 정격설정기준
주위온도 20±2℃
주위습도 65±5%
조작속도 20회/분

정격통전전류 *Thermal current*			10A				
AC정격 *AC supply*			24V	110V	220V	380V	440V
	유도성부하 *Inductive load*		10A	6.5A	4A	2.5A	2A
	저항성부하 *Resistive load*		10A	10A	7A	5.5A	5A
DC정격 *DC supply*			24V	110V			
	유도성부하 *Inductive load*		1.5A	0.5A			
	저항성부하 *Resistive load*		10A	2A			

램프정격 *Light ratings*

백열램프 *Incandescent*	정격전압 *Rated voltage*		6.3V	14V	28V
	사용전압 *Operated voltage*		5.7V	12V	24V
	정격전류 *Rated current*		150mA	80mA	40mA
LED램프 *LED*	정격전압 *Rated voltage*		DC24V		
	사용전압 *Operated voltage*		DC24 ± 5%		
	정격전류 *Rated current*		18mA		

성능 *Other characteristics*

허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	최대 60회/분 *60 cycles/min.*	
	전기적 *Electrical*	최대 30회/분 *30 cycles/min.*	
절연저항 *Insulation resistance*		100㏁이상(DC500V메가) *min.100㏁ at DC500V*	
내전압 *Dielectric strength*		AC 2,500V 50/60Hz 1min	
내진동 *Vibration protection*		10~55Hz 복진폭 1.5mm	
내충격 *Mechanical shock protection*		60G(600m/s²)	
수명 *Lifetimes*	전기적 *Electrical*	10만회이상 *0.1 mil .operations*	
	기계적 *Mechanical*	눌름보턴스위치 *Pushbuttons*	150만회이상 *1.5 mil .operations*
		비상정지용 눌름보턴스위치 *Pushbuttons for emergency*	15만회이상 *0.1 mil .operations*
		세렉타스위치 *Selector switches*	10만회이상 *0.1 mil .operations*
주위온도 *Ambient temperature*	사용시 *Operation*	조광형 *Iluminated types*	-20 ~ +55℃
		비조광형 *Non-illuminated types*	-20 ~ +70℃
	보관시 *Storage*	-40 ~ +70℃	
사용주위습도 *Ambient humidity*		35 ~ 85%RH	
보호구조 *Degree of protection*		IP64	

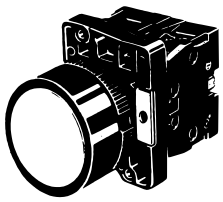
눌름보턴스위치– 비조광형 PGF types

Pushbutton, non-illuminated

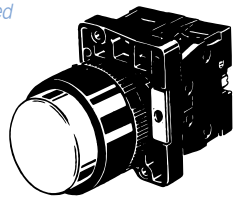
자동복귀방식

Spring return

평형
Flush



돌출형
Extended



(생산예정)

주문형식
Catalog No. structure
(Ordering information)

PGF-F10 • **R**

Type *Color code*

형 상 *Shape*	접점구성 *Contacts*	형 식 *Type*
평형 *Flush*	1a	PGF-F10
	1b	PGF-F20
	1a1b	PGF-F12
	2a	PGF-F11
	2b	PGF-F22
돌출형 *Extended*	1a	PGF-P10
	1b	PGF-P20
	1a1b	PGF-P12
	2a	PGF-P11
	2b	PGF-P22

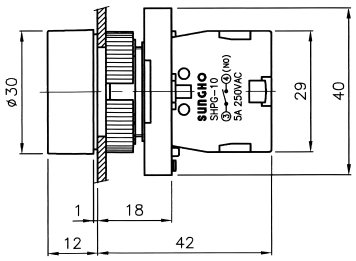
Code	*Color*
R	적색/Red
Y	황색/Yellow
B	흑색/Black
G	녹색/Green
BU	청색/Blue
W	백색/White

외형치수

Dimensions

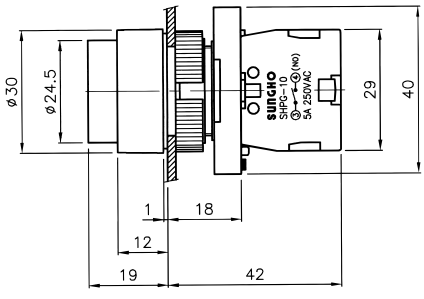
평형
Flush

PGF-F



돌출형
Extended

PGF-P



눌름보턴스위치– 조광형 PGX types

Pushbutton, illuminated

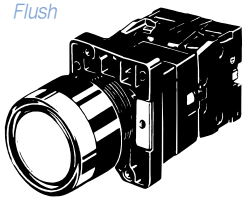
자동복귀방식

Spring return

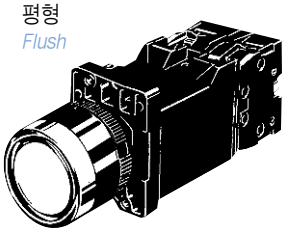
주문형식 *Catalog No. structure (Ordering information)*

PGX-F10 *Type* • **R** *Color code*

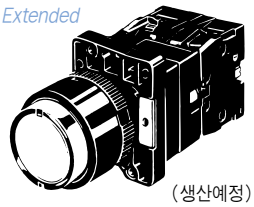
평형 *Flush*



평형 *Flush*

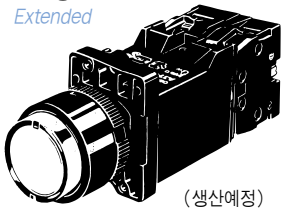


돌출형 *Extended*



(생산예정)

돌출형 *Extended*



(생산예정)

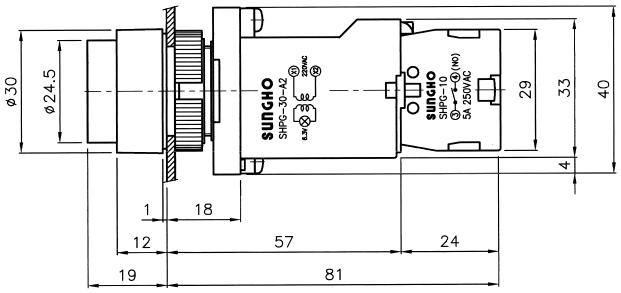
형 상 *Shape*	조작전압 *Voltage*	조광방식 *Illumination*	접점구성 *Contacts*	형 식 *Type*
평형 *Flush*	DC24V	백열전구 *Incandescent w/o transformer*	1a	PGX-G10B24
			1b	PGX-G20B24
			1a1b	PGX-G12B24
			2a	PGX-G11B24
			2b	PGX-G22B24
		LED *w/o transformer*	1a	PGX-G10L24
			1b	PGX-G20L24
			1a1b	PGX-G12L24
			2a	PGX-G11L24
			2b	PGX-G22L24
	AC110V	백열전구 트랜스내장 *Incandescent w/ transformer*	1a	PGX-G10A1
			1b	PGX-G20A1
			1a1b	PGX-G12A1
			2a	PGX-G11A1
			2b	PGX-G22A1
	AC220V	백열전구 트랜스내장 *Incandescent w/ transformer*	1a	PGX-G10A2
			1b	PGX-G20A2
			1a1b	PGX-G12A2
			2a	PGX-G11A2
			2b	PGX-G22A2
돌출형 *Extended*	DC24V	백열전구 *Incandescent w/o transformer*	1a	PGX-P10B24
			1b	PGX-P20B24
			1a1b	PGX-P12B24
			2a	PGX-P11B24
			2b	PGX-P22B24
		LED *w/o transformer*	1a	PGX-P10L24
			1b	PGX-P20L24
			1a1b	PGX-P12L24
			2a	PGX-P11L24
			2b	PGX-P22L24
	AC110V	백열전구 트랜스내장 *Incandescent w/ transformer*	1a	PGX-P10A1
			1b	PGX-P20A1
			1a1b	PGX-P12A1
			2a	PGX-P11A1
			2b	PGX-P22A1
	AC220V	백열전구 트랜스내장 *Incandescent w/ transformer*	1a	PGX-P10A2
			1b	PGX-P20A2
			1a1b	PGX-P12A2
			2a	PGX-P11A2
			2b	PGX-P22A2

Code	*Color*
R	적색/Red
Y	황색/Yellow
G	녹색/Green
BU	청색/Blue
W	백색/White

외형치수
Dimensions

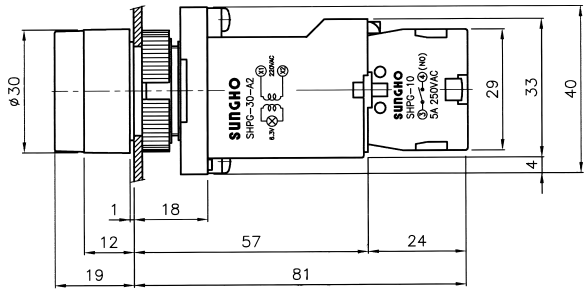
돌출형
Extended

PGX-P12A



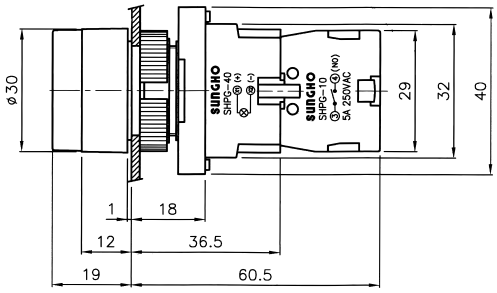
평형
Flush

PGX-G12A



평형
Flush

PGX-G12B



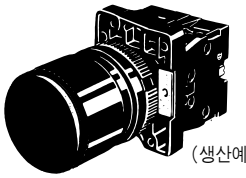
눌름보턴스위치- 비상정지용 PGF types

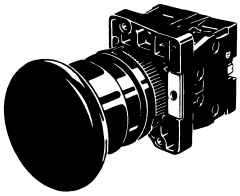
Pushbutton with mushroom head for emergency stop

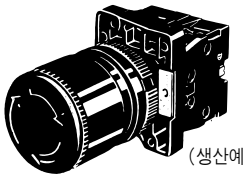
주문형식
Catalog No. structure
(Ordering information)

PGE-3B20 • **R**

Type / *Color code*

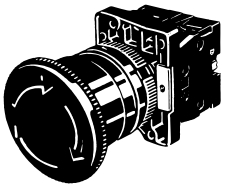

(생산예정)

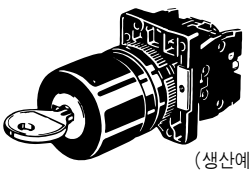


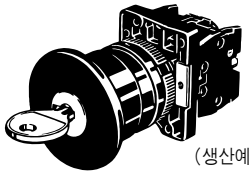

(생산예정)

복귀방식 *Type of return*	버튼외경 *Diameter of head*	접점구성 *Contacts*	형 식 *Type*
자기복귀 *spring return*	30mm	1b	PGE-3B20
		1a1b	PGE-3B12
		2b	PGE-3B22
	40mm	1b	PGE-4B20
		1a1b	PGE-4B12
		2b	PGE-4B22
잠금방식 *push to latch turn to release*	30mm	1b	PGE-3R20
		1a1b	PGE-3R12
		2b	PGE-3R22
	40mm	1b	PGE-4R20
		1a1b	PGE-4R12
		2b	PGE-4R22
키잠금방식 *push to latch key release*	30mm	1b	PGE-3K20
		1a1b	PGE-3K12
		2b	PGE-3K22
	40mm	1b	PGE-4K20
		1a1b	PGE-4K12
		2b	PGE-4K22

Code	Color
R	적색/Red
Y	황색/Yellow
B	흑색/Black
G	녹색/Green
BU	청색/Blue

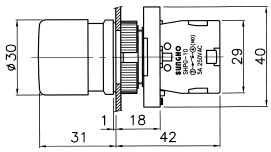



(생산예정)

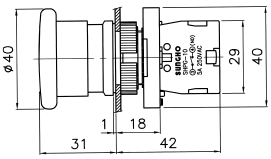

(생산예정)

외형치수
Dimensions

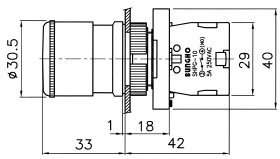
PGE-3B



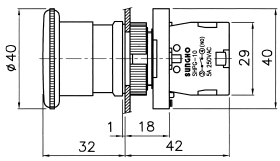
PGE-4B



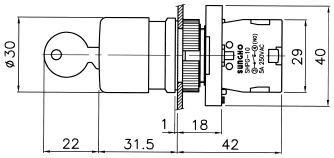
PGE-3R



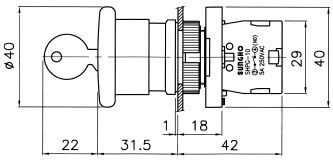
PGE-4R



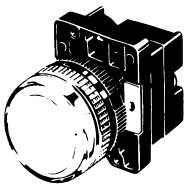
PGE-3k

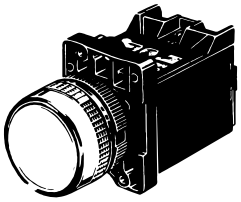


PGE-4K



표시등– PGP types
Pilot lights





주문형식
Catalog No. structure
(Ordering information)

PGP-B16F ● **R**

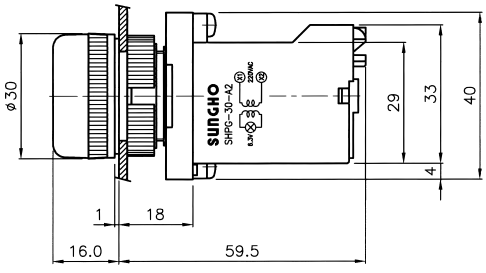
Type *Color code*

표면상태 *Lense type*	조작전압 *Voltage*	조광방식 *Bulb type*	형 식 *Type*
기본형 *standard lense*	DC6V 직접인가 *Direct supply*	백열전구 *Incandescent*	PGP-B6F
	DC24V 직접인가 *Direct supply*	백열전구 *Incandescent*	PGP-B24F
		LED	PGP-L24F
	AC110V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PGP-A1F
		LED	PGP-LA1F
	AC220V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PGP-A2F
		LED	PGP-LA2F
로렛트형 *Grooved lense*	DC6V 직접인가 *Direct supply*	백열전구 *Incandescent*	PGP-B6R
	DC24V 직접인가 *Direct supply*	백열전구 *Incandescent*	PGP-B24R
		LED	PGP-L24R
	AC110V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PGP-A1R
		LED	PGP-LA1R
	AC220V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PGP-A2R
		LED	PGP-LA2R

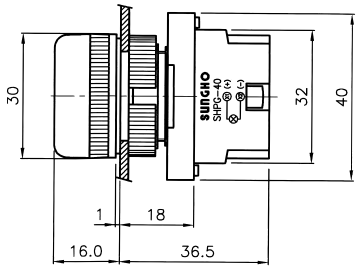
Code	Color
R	적색/Red
Y	황색/Yellow
G	녹색/Green
BU	청색/Blue

외형치수
Dimensions

PGP-A



PGP-B



제어용스위치

제어용스위치, ϕ22-25

Control and signalling devices, ϕ22-25

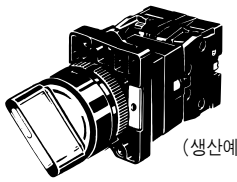
세렉타스위치- 조광형 PGZ types

Selector switches, illuminated

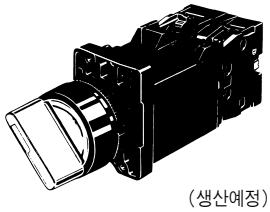
주문형식
Catalog No. structure
(Ordering information)

PGZ-Z10B24 • **R**

Type / *Color code*



(생산예정)



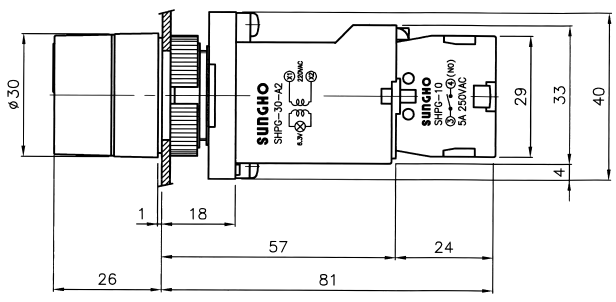
(생산예정)

절환수 *Positions*	조작전압 *Voltage*	조광방식 *Illumination*	접점구성 *Contacts*	형 식 *Type*
2단/수동 *2-stay put*	DC24V	백열전구 *Incandescent w/o transformer*	1a	PGZ-Z10B24
			1a1b	PGZ-Z12B24
			2a	PGZ-Z11B24
		LED *w/o transformer*	1a	PGZ-Z10L24
			1a1b	PGZ-Z12L24
			2a	PGZ-Z11L24
	AC110V	백열전구 트랜스내장 *Incandescent w/ transformer*	1a	PGZ-Z10A1
			1a1b	PGZ-Z12A1
			2a	PGZ-Z11A1
	AC220V	백열전구 트랜스내장 *Incandescent w/ transformer*	1a	PGZ-Z10A2
			1a1b	PGZ-Z12A2
			2a	PGZ-Z11A2

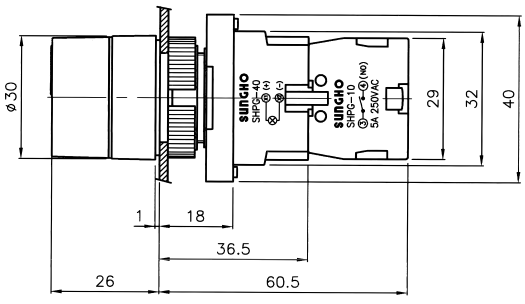
Code	*Color*
R	적색/Red
Y	황색/Yellow
G	녹색/Green
BU	청색/Blue

외형치수
Dimensions

PGZ-212A

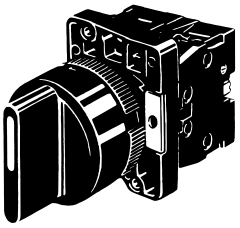


PGZ-212B



세렉타스위치– 비조광형 PGS types

Selector switches, non-illuminated



주문형식
Catalog No. structure
(Ordering information)

PGS-S210 • **B**

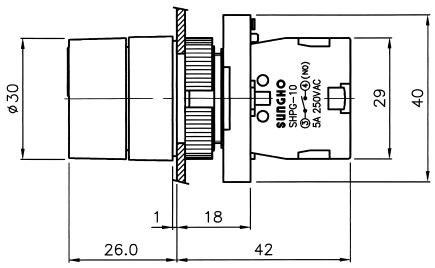
Type *Color code*

절환수 *Positions*		접점구성 *Contacts*	형 식 *Type*
2단/수동 *2-stay put*		1a	PGS-S210
		1a1b	PGS-S212
		2a	PGS-S211
2단/右자동 (右→左) *2-spring return from right to left*		1a	PGS-S2A10
		1a1b	PGS-S2A12
		2a	PGS-S2A11
3단/수동 *3-stay put*		2a	PGS-S311
3단/右자동 (右→中) *3-spring return from right to center*		2a	PGS-S3A11
3단/左자동 (左→中) *3-spring return from left to center*		2a	PGS-S3B11
3단/左右자동 (左右→中) *3-spring return to center*		2a	PGS-S3AB11

Code	*Color*
B	흑색/Black

외형치수
Dimensions

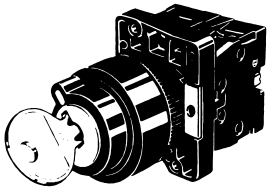
PGS-S



제어용스위치

세렉타스위치- 키형 PGK types

Selector switches, key operated



주문형식
Catalog No. structure
(Ordering information)

PGK-210L • **W**

Type / *Color code*

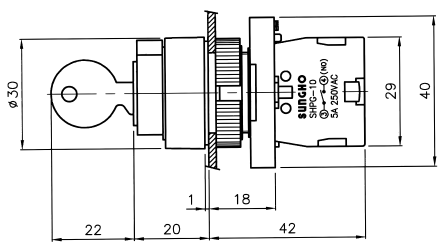
절환수 *Positions*		접점구성 *Contacts*	형 식 *Type*
2단/수동 *2-stay put*		1a	PGK-210L
		1a1b	PGK-212L
		2a	PGK-211L
2단/右자동 (右→左) *2-spring return from right to left*		1a	PGK-2A10L
		1a1b	PGK-2A12L
		2a	PGK-2A11L
3단/수동 *3-stay put*		2a	PGK-311C
3단/右자동 (右→中) *3-spring return from right to center*		2a	PGK-3A11C
3단/左자동 (左→中) *3-spring return from left to center*		2a	PGK-3B11C
3단/左右자동 (左右→中) *3-spring return to center*		2a	PGK-3AB11C

Code	Color
W	백색/White

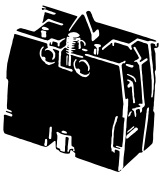
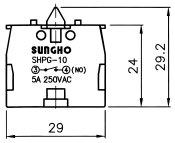
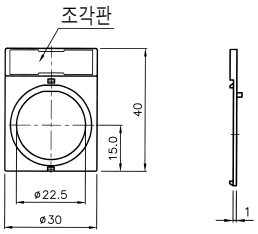
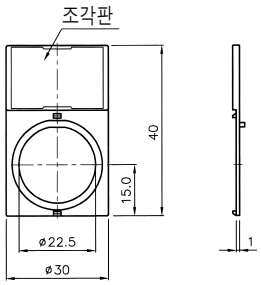
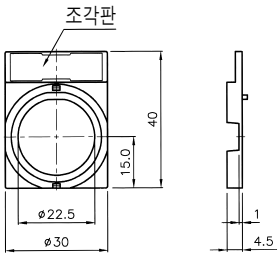
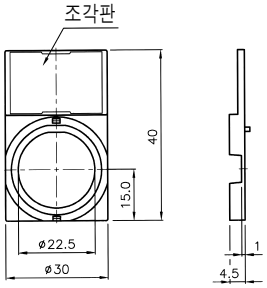
● 는 키를 뺄 수 있는 위치입니다.
Indicates the key withdrawal positio

외형치수
Dimensions

PGK-210L

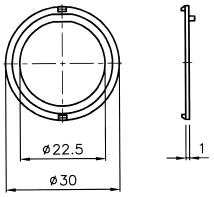
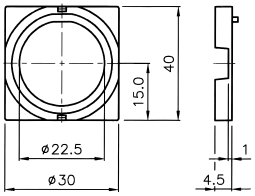
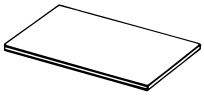
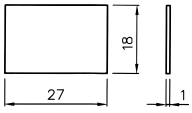
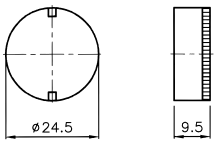
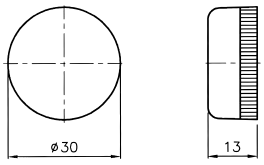


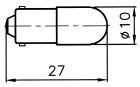
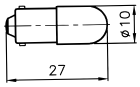
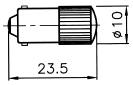
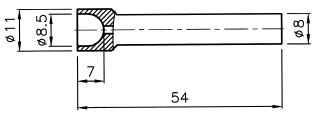
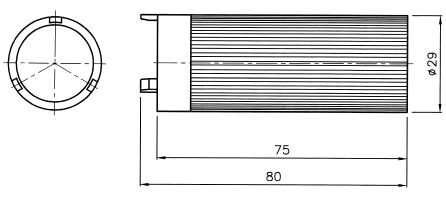
조립용 부품
Spare parts

명 칭 Name	형상 및 치수 Shape & Dimensions	내 용 Specification	형 식 Type	비 고 Remarks
스위치유니트 Contact blocks	 	1a 1NO	PGF-F10	흑색 Black
		1b 1NC	PGF-F20	적색 Red
명판 Marking strip holders	 		PG-51	
	 		PG-52	
	 		PG-53	
	 		PG-54	

조립용 부품

Spare parts

명 칭 *Name*	형상 및 치수 *Shape & Dimensions*	내 용 *Specification*	형 식 *Type*	비 고 *Remarks*
회전방지링 *Fixing rings*			PG-55	
			PG-56	
조각판 *Marking strips*			PG-57	
			PG-58	
투명캡 *Pushbutton caps*			PG-61	
			PG-62	

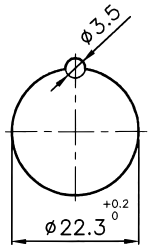
명 칭 Name	형상 및 치수 Shape & Dimensions	내 용 Specification	형 식 Type	비 고 Remarks
백열전구 Incandescent bulbs	 	6.3V	PG-3016	BA 9s base
		12V	PG-8112	
		24V	PG-8124	
네온전구 Neon bulbs	 	AC 220V	PG-8222	BA 9s base
LED전구 LED	 	DC24V		BA 9S base
		적색/Red	PG-83LR	
		황색/Yellow	PG-83LY	
		녹색/Green	PG-83LG	
전구교환공구 Bulb extractor	 		PG-71	
너트조임공구 Tightening tool	 		PG-72	

판넬가공치수

Panel cutout

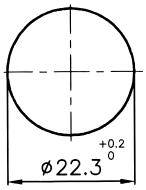
ϕ22 사용

ϕ22 Use



회전멈춤 사용

Rotating-stop Use

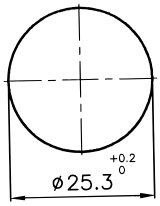


일반적 사용

General Use

ϕ25 사용

ϕ25 Use

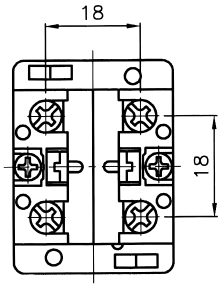


단자배치 및 결선도

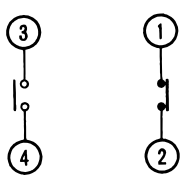
Terminal layout and diagram

일반형

Non-illuminated

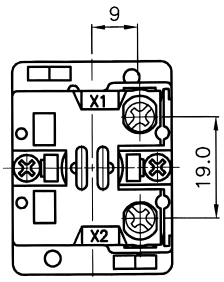


Bottom view

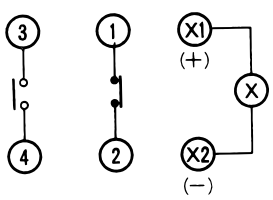


직접인가형

Illuminated w/o transformer

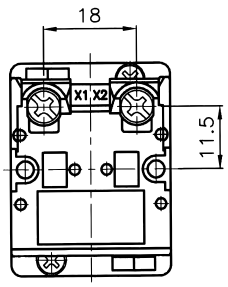


Bottom view

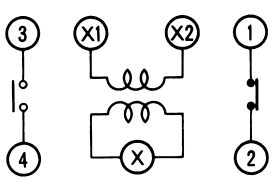


트랜스인가형

Illuminated with transformer

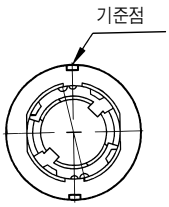


Bottom view

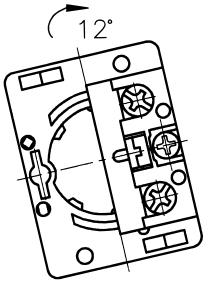


상하부 조립 및 분해 방법
Assembling or disassembling of upper[lower] part

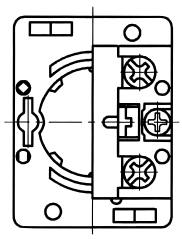
상하부 조립 및 분해
Assembling or disassembling of upper[lower] part.



① 상부도면
Drawing of upper part

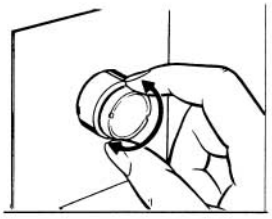


② 하부도면
Drawing of lower part



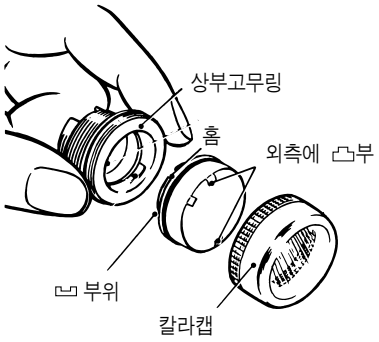
③ 조립완성도
Assembly finished drawing

칼라캡의 교환 및 조립
Replacement and assembling of color cap



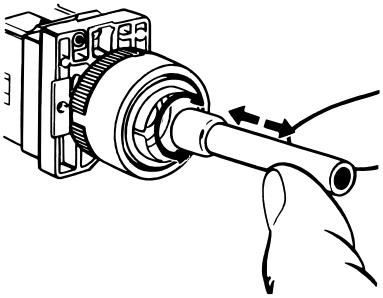
분해방법
Disassembling methods

조광캡 조립
Assembling of pushbutton cap

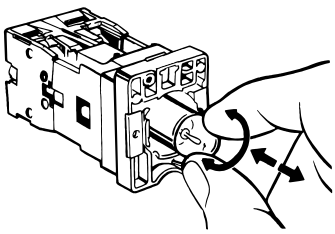


표시등캡 조립
Assembling of pilot lamp cap

전구의 교환방법
Lamp replacement method



(판넬 전면에서의 교환)
(Replacement in the front side)



(판넬 내부에서의 교환)
(Replacement in the inside)

Control and Signalling Devices

ϕ25 & ϕ30

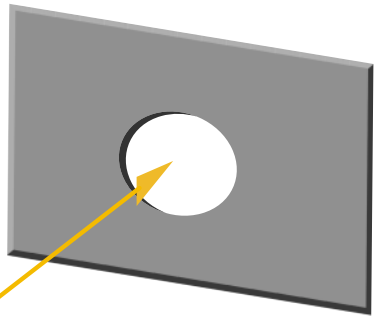
제어용스위치, 표시등

Control and Signalling Devices, ϕ25 & ϕ30
Type PR... ϕ25 및 30

"스위치 단자부에 안전카바 부착"

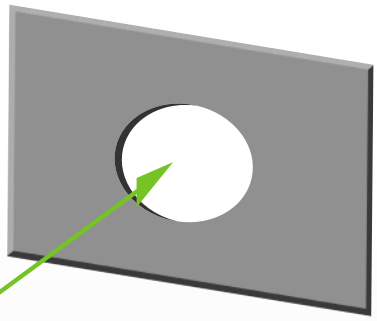
눌름보턴스위치
Pushbutton

- 조광형
  illuminated
- 비조광형
  Non-illuminated



표시등
Pilot Lights

- 백열전구방식
  With Incandescent Bulb
- LED전구방식
  With LED lamp



조광형눌름보턴스위치
Pushbutton illuminated

- 백열전구방식
  With Incandescent Bulb
- LED전구방식
  With LED lamp

셀렉터스위치
Selector Switches

- 비조광형
  Non-illuminated

비상정지눌름보턴스위치
Emergency Stop Switches

- 자기복귀형
  Spring Return
- 수동복귀형
  Push to latch
  Turn to release

제어용스위치, 표시등

Control and signalling devices, ϕ25 & ϕ30

"스위치 단자부에 안전카바 부착"

정격 및 성능
Characteristics

특징 *Features*

- 조작부와 접점부가 일체형으로 되어 있고, 경제성, 견고성 및 내환경성을 지닌 장수명 제품입니다.
- 슬라이드형 접점 접촉구조로 저전압에서도 접촉 신뢰성을 유지합니다.
  또한 접촉부의 주변이 투명 플라스틱 구조로 되어 있어 필요시 동작 확인을 쉽게 할 수 있습니다.
- 취부홀이 ϕ25, ϕ30 두 가지가 있습니다.
- 보턴(Button) 및 캡(Cap)의 색상이 다양하여 사용자 선택의 폭이 넓어졌습니다.
- 조광형은 멀리서도 빛이 선명하게 보이도록 설계되었으며 트랜스와 접점부가 일체형으로 되어 있습니다.
- AI 너트도 생산가능합니다.
- 단자보호카바가 있어 제품안전성이 있습니다.
- *Operating part and contact part are integration, and long-life and economical product with solid design.*
- *Consist of slide contact structure, contact with reliability in low tension*
- *For both ϕ25 and ϕ30.*
- *As diversify the color of button and cap, user's option become wider.*
- *Illuminated type is designed that can see as clear color from a distance also, and trans part and contact part are integration.*

접점용량 *Contact ratings*			5A, 250V AC		
램프정격 *Light ratings*	백열램프 *Incandescent*	정격전압 *Rated voltage*	6.3V	14V	28V
		사용전압 *Operated voltage*	5.7V	12V	24V
		정격전류 *Rated current*	150mA	80mA	40mA
	LED램프 *LED*	정격전압 *Rated voltage*	DC24V		
		사용전압 *Operated voltage*	DC24±5%		
		정격전류 *Rated current*	20mA		
성능 *Other characteristics*	조작전압 *Control voltage*		AC 110V, 220V, 380V, 440V ±10% 50/60HZ		
			DC 110V, 125V ±10% 50/60HZ		
	허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	최대 60회/분 *60 cycles/min.*		
		전기적 *Electrical*	최대 30회/분 *30 cycles/min.*		
	절연저항 *Insulation resistance*		100㏁이상(DC500V메가) *min.100㏁ at DC500V*		
	내전압 *Dielectric strength*	충전부간 *Between live parts*	AC 1,500V 50/60Hz 1min		
		충전부간 *Between non-live parts*	AC 2,500V 50/60Hz 1min		
	내진동 *Vibration protection*		10 ~ 55Hz 복진폭 1.5mm		
	내충격 *Mechanical shock protection*		30G(300m/s²)		
	수명 *Lifetimes*	전기적 *Electrical*	10만회이상 *0.1 mil .operations*		
		기계적 *Mechanical*	비조광형 눌름보턴스위치 *Non-illuminated pushbuttons*	100만회이상 *1 mil .operations*	
			조광형 눌름보턴스위치 *Illuminated pushbuttons*	15만회이상 *0.15 mil .operations*	
			세렉타스위치 *Selector switches*	10만회이상 *0.1 mil .operations*	
	주위온도 *Ambient temperature*	사용시 *Operation*	-5 ~ +40℃		
		보관시 *Storage*	-15 ~ +50℃		
	사용주위습도 *Ambient humidity*		45 ~ 85%RH		

눌름보턴스위치– 비조광 평형 및 비상정지용 PR types

Pushbuttons, non-illuminated
··· flush type and mushroom head emergency stop

자동복귀방식
Spring return

주문형식
Catalog No. structure
(Ordering information)

PR-25B-1 • **R** **F** (난연)

Type *Color code* *Flame resistance*

형 상 *Shape*	홀치수 *Diameter for panel*	버튼외경 *Diameter of head*	접점구성 *Contacts*	형 식 *Type*
평형 *Flush*	ø25	30mm	1a1b	PR-25B-1
			2a2b	PR-25B-2
	ø30	35mm	1a1b	PR-30B-1
			2a2b	PR-30B-2

Code	*Color*
R	적색/Red
Y	황색/Yellow
B	흑색/Black
G	녹색/Green
BU	청색/Blue
W	백색/White

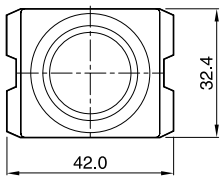
방수보호커버

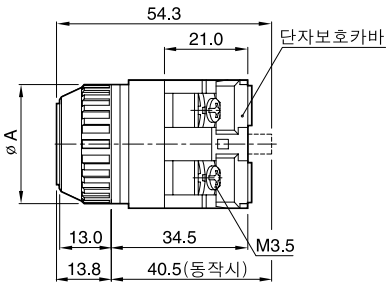
• PR-10(ø25)

• PR-20(ø30)

외형치수
Dimensions

PR-25B
PR-30B





기호	PR-25B	PR-30B
A	30.0	35.0

눌름보턴스위치– 비조광 비상눌름보턴스위치 PR types

자동복귀방식
Spring return

수동복귀방식
Push to latch
Turn to release

주문형식
Catalog No. structure
(Ordering information)

PR-25E-1 • **R** **F** (난연)

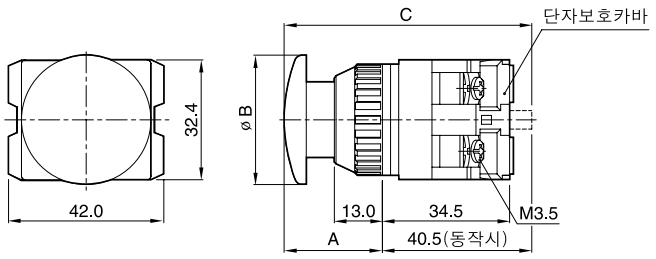
Type / *Color code* / *Flame resistance*

형 상 *Shape*	홀치수 *Diameter for panel*	버튼외경 *Diameter of head*	접점구성 *Contacts*	형 식 *Type*
평형 *Flush*	ϕ25	35mm	1a1b	PR-25E-1
			2a2b	PR-25E-2
	ϕ30	40mm	1a1b	PR-30E-1
			2a2b	PR-30E-2
비상정지용 *Mushroom head*	ϕ25	40mm	1a1b	PR-25ER-1
			2a2b	PR-25ER-2
	ϕ30	46mm	1a1b	PR-30ER-1
			2a2b	PR-30ER-2

Code	*Color*
R	적색/Red
Y	황색/Yellow
B	흑색/Black
G	녹색/Green
BU	청색/Blue
W	백색/White

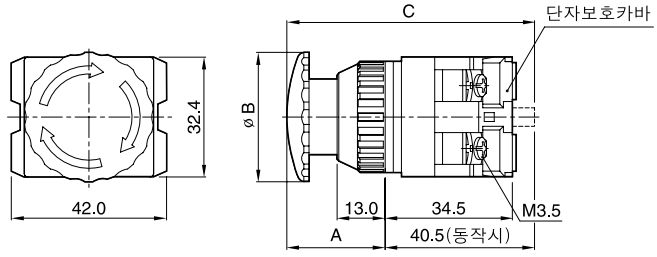
외형치수
Dimensions

PR-25E
PR-30E



기호	PR-25E	PR-30E
A	24.5	26.5
B	35.0	40.0
C	65.0	67.0

PR-25ER
PR-30ER



기호	PR-25ER	PR-30ER
A	24.5	26.5
B	40.0	46.0
C	65.0	67.0

눌름보턴스위치– 조광형 PR types

Pushbutton, illuminated

자동복귀방식
Spring return

주문형식
Catalog No. structure
(Ordering information)

PR-25L-1 • **R** **F** (난연)

Type *Color code* *Flame resistance*

형 상 *Shape*	홀치수 *Diameter for panel*	조작전압 *Voltage*	조광방식 *Illumination*	접점구성 *Contacts*	형 식 *Type*
평형 *Flush*	ø25	AC110V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	1a1b	PR-25L-1
		AC220V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	1a1b	PR-25L-2
		DC24V 직접인가 *Direct supply*	백열전구 *Incandescent*	1a1b	PR-25L-5
	ø30	AC110V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	1a1b	PR-30L-1
		AC220V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	1a1b	PR-30L-2
		DC24V 직접인가 *Direct supply*	백열전구 *Incandescent*	1a1b	PR-30L-5

Code	*Color*
R	적색/Red
Y	황색/Yellow
G	녹색/Green
BU	청색/Blue
W	백색/White

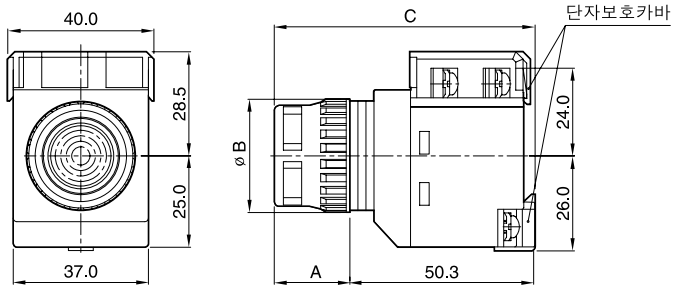
방수보호커버

• PR-30(ø25)

• PR-40(ø30)

외형치수
Dimensions

PR-25L
PR-30L



기호	PR-25L	PR-30L
A	20.7	21.2
B	31.0	34.0
C	71.0	71.5
소비전력 *Power consumption*	1.0W	

눌름보턴스위치– 조광형 PR series (LED type)

Pushbutton, illuminated

DC용은 Surge 전압발생 우려가 있는 곳에 사용시 사전대책이 필요합니다.
As use for DC can exist to surge voltage, protective action is necessary before use.
회로상 반불이 나타나는 경우 반불을 제거시키는 부품을 별도 주문하십시요.

자동복귀방식
Spring return

주문형식
Catalog No. structure
(Ordering Information)

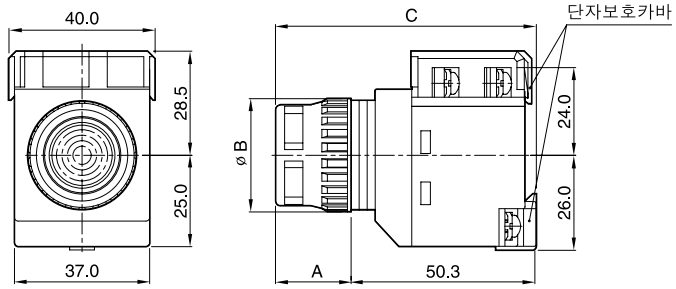
PR-25L-2L • **R** **F** (난연)
Type *Color code* *Flame resistance*

형 상 *Shape*	홀치수 *Diameter for panel*	조작전압 *Voltage*	조광방식 *illumination*	접점구성 *Contacts*	형 식 *Type*
평형 *Flush*	ϕ25	AC220V 직접인가 *Direct supply*	LED	1a1b	PR-30L-2L
		AC380V 직접인가 *Direct supply*	LED	1a1b	PR-25L-3L
		AC440V 직접인가 *Direct supply*	LED	1a1b	PR-25L-4L
		DC24V 직접인가 *Direct supply*	LED	1a1b	PR-25L-5L
		DC110V 직접인가 *Direct supply*	LED	1a1b	PR-25L-7L
		DC125V 직접인가 *Direct supply*	LED	1a1b	PR-25L-8L
	ϕ30	AC220V 직접인가 *Direct supply*	LED	1a1b	PR-30L-2L
		AC380V 직접인가 *Direct supply*	LED	1a1b	PR-30L-3L
		AC440V 직접인가 *Direct supply*	LED	1a1b	PR-30L-4L
		DC24V 직접인가 *Direct supply*	LED	1a1b	PR-30L-5L
		DC110V 직접인가 *Direct supply*	LED	1a1b	PR-30L-7L
		DC125V 직접인가 *Direct supply*	LED	1a1b	PR-30L-8L

Code	*Color*
R	적색/Red
Y	황색/Yellow
G	녹색/Green
BU	청색/Blue
W	백색/White

외형치수
Dimensions

PR-25L(LED)
PR-30L(LED)



기호	PR-25L	PR-30L
A	20.7	21.2
B	31.0	34.0
C	71.0	71.5
소비전력 *Power consumption*	20mA	

표시등– PR types
Pilot lights

주문형식
Catalog No. structure
(Ordering information)

PR-25P-1 • **R** **F** (난연)

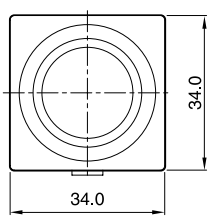
Type *Color code* *Flame resistance*

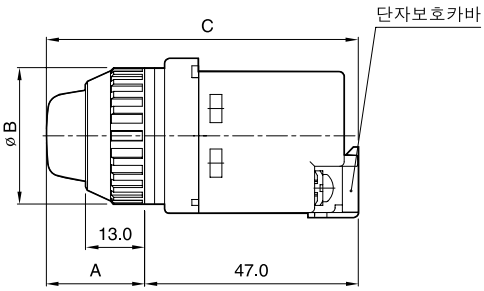
형상 *Shape*	홀치수 *Diameter for panel*	조작전압 *Voltage*	조광방식 *Bulb type*	형 식 *Type*
반구형 *Dome*	ϕ25	AC110V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PR-25P-1
		AC220V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PR-25P-2
		DC24V 직접인가 *Direct supply*	백열전구 *Incandescent*	PR-25P-5
	ϕ30	AC110V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PR-30P-1
		AC220V 트랜스내장형 *Via transformer included*	백열전구 *Incandescent*	PR-30P-2
		DC24V 직접인가 *Direct supply*	백열전구 *Incandescent*	PR-30P-5

Code	*Color*
R	적색/Red
Y	황색/Yellow
G	녹색/Green
BU	청색/Blue
W	백색/White

외형치수
Dimensions

PR-25P
PR-30P





기호	PR-25P	PR-30P
A	21.5	24.0
B	30.0	35.0
C	68.5	71.0
소비전력 *Power consumption*	1.0W	

표시등– PR series (LED type)

Pilot lights

DC용은 Surge 전압발생 우려가 있는 곳에 사용시 사전대책이 필요합니다.
As use for DC can exist to surge voltage, protective action is necessary before use.
회로상 반불이 나타나는 경우 반불을 제거시키는 부품을 별도 주문하십시요.

주문형식
Catalog No. structure
(Ordering information)

PR-25P-2L • **R** **F** (난연)

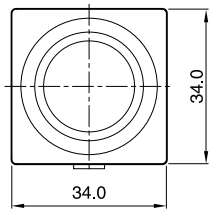
Type / *Color code* / *Flame resistance*

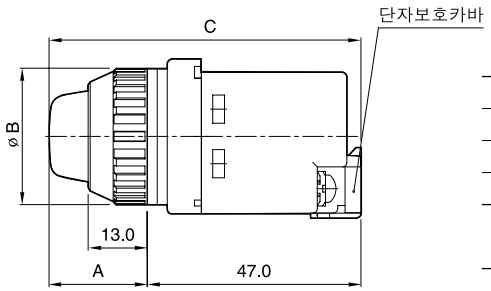
형상 *Shape*	홀치수 *Diameter for panel*	조작전압 *Voltage*	조광방식 *Bulb type*	형 식 *Type*
반구형 *Dome*	ϕ25	AC110V 직접인가 *Direct supply*	LED	PR-25P-1L
		AC220V 직접인가 *Direct supply*	LED	PR-25P-2L
		AC380V 직접인가 *Direct supply*	LED	PR-25P-3L
		AC440V 직접인가 *Direct supply*	LED	PR-25P-4L
		DC24V 직접인가 *Direct supply*	LED	PR-25P-5L
		DC110V 직접인가 *Direct supply*	LED	PR-25P-7L
		DC125V 직접인가 *Direct supply*	LED	PR-25P-8L
	ϕ30	AC110V 직접인가 *Direct supply*	LED	PR-25P-1L
		AC220V 직접인가 *Direct supply*	LED	PR-30P-2L
		AC380V 직접인가 *Direct supply*	LED	PR-30P-3L
		AC440V 직접인가 *Direct supply*	LED	PR-30P-4L
		DC24V 직접인가 *Direct supply*	LED	PR-30P-5L
		DC110V 직접인가 *Direct supply*	LED	PR-30P-7L
		DC125V 직접인가 *Direct supply*	LED	PR-30P-8L

Code	*Color*
R	적색/Red
Y	황색/Yellow
G	녹색/Green
BU	청색/Blue
W	백색/White

외형치수
Dimensions

PR-25P(LED)
PR-30P(LED)





기호	PR-25P	PR-30P
A	21.5	24.0
B	30.0	35.0
C	68.5	71.0
소비전력 *Power consumption*	20mA	

제어용스위치, ϕ25-30

Control and signalling devices, ϕ22-25

세렉타스위치- 비조광형 PR types

Selector switches, non-illuminated

주문형식
Catalog No. structure
(Ordering information)

PR-25S2-1 • **S** • **B** **F** (난연)

Type *Color code* *Flame resistance*

홀치수 *Diameter for panel*	절환수 *Positions*	접점구성 *contacts*	형 식 *Type*
ϕ25	2단/수동 *2-stay put*	1a1b	PR-25S2-1
		2a2b	PR-25S2-2
	3단/수동 *2-stay put*	1a1b	PR-25S3-1
		2a2b	PR-25S3-2
ϕ30	2단/수동 *2-stay put*	1a1b	PR-30S2-1
		2a2b	PR-30S2-2
	3단/수동 *3-stay put*	1a1b	PR-30S3-2
		2a2b	PR-30S3-2

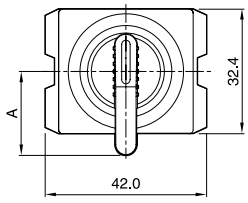
무기호	장레바 *Long lever*
S	단레바 *Short lever*

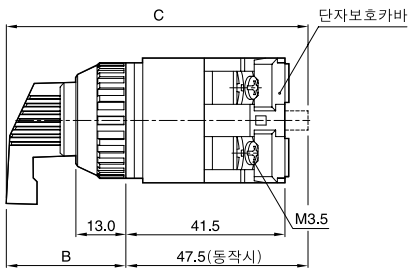
Code	*Color*
B	흑색/Black

제어용스위치

외형치수
Dimensions

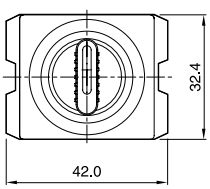
PR-25S
PR-30S

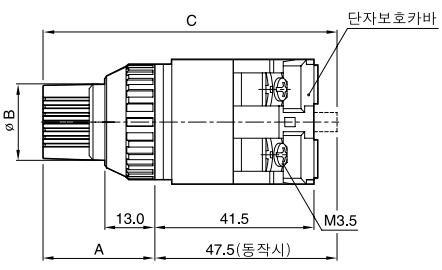




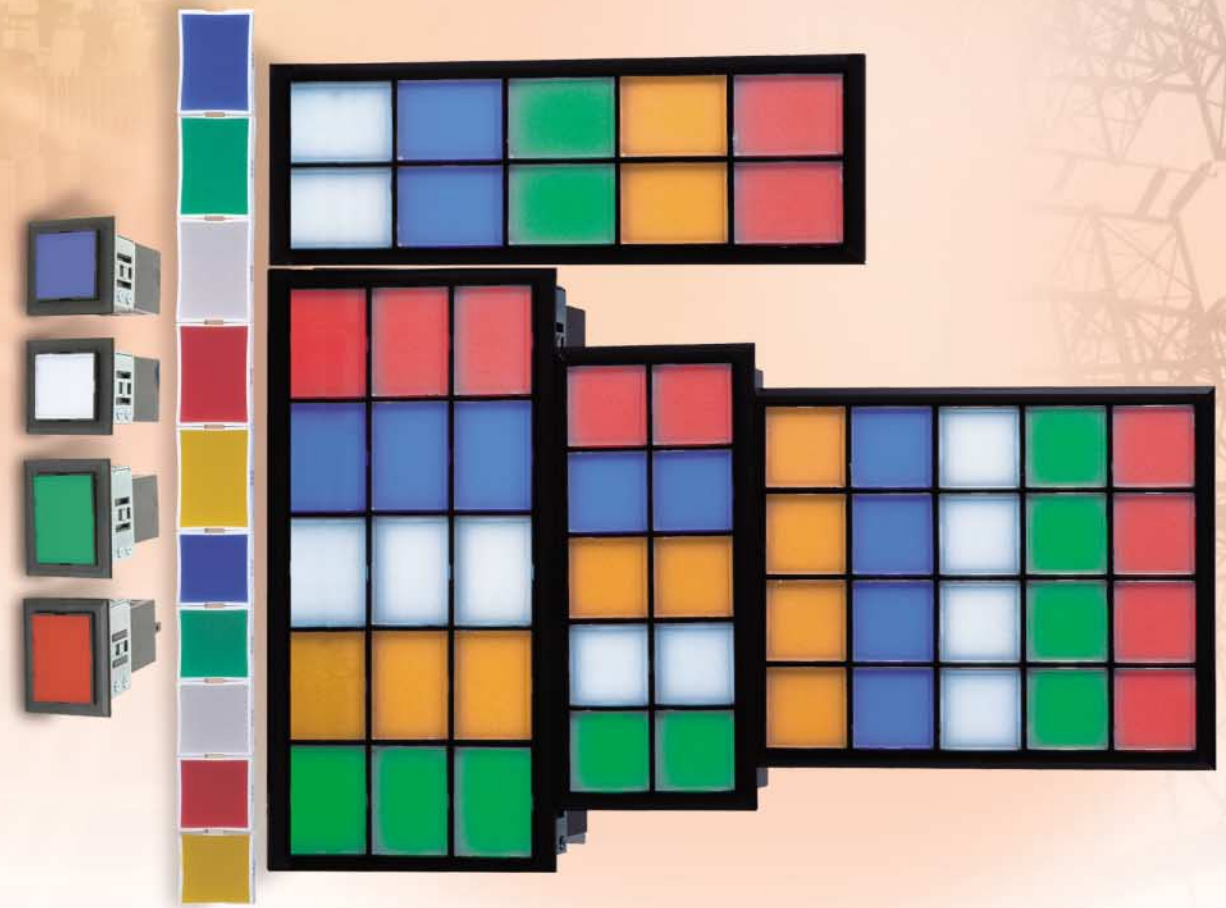
기호	PR-25S	PR-30S
A	22.0	26.0
B	31.0	32.0
C	78.5	79.5

PR-25S-1S
PR-30S-1S





기호	PR-25S-1S	PR-30S-1S
A	20.0	20.0
B	20.5	25.5
C	67.5	67.5



Square Light

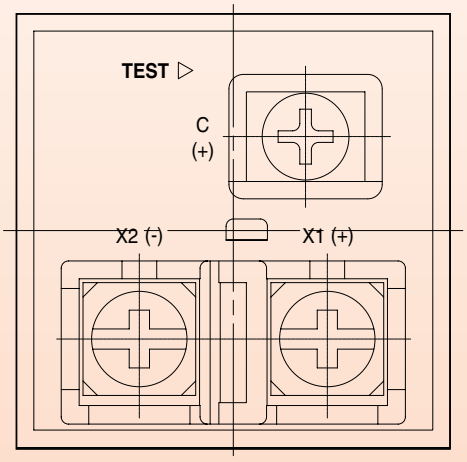
집합표시등

Square Light

정격 및 성능
Characteristics

특징 *Features*	■ 표시등 전면이 LED로 되어있어 일정한 색상을 유지합니다. ■ LED LAMP는 소비전력이 적으며 고휘도 소자를 사용하여 조도가 밝습니다. ■ 조립이 간단하여 색상조립,변경이 현장에서 가능합니다. ■ 내장되어 있는 문자표시판과 LED LAMP의 탈부착이 간단하게 되어 있어 작업성이 우수합니다. ■ 연결 몸체가 일체형으로 되어있어 다량의 조합에도 흔들림이 없습니다. ■ 판넬두께는 1~6mm까지 가능합니다. ■ 색상은 적,황,녹,청,백색의 5종입니다. ■ DC LAMP는 CHECK TERMINAL을 사용하여 전면부 점등유무를 간단히 확인가능합니다. ■ 표시면의 외부규격은 30×30(mm), 30×40(mm)2종류입니다. ■ 후면에는 단자보호카바가 있어 안전합니다.(실용 및 디자인등록 출원)		
램프정격 *Light ratings*	정격전압 *Rated voltage*		DC24V
	사용전압 *Operated voltage*		DC24±10%
	정격전류 *Rated current*		20mA
	표시색상 *Illuminating color*		적색, 황색, 녹색, 청색, 백색 *red,yellow,green,blue,white*
성능 *Other characteristics*	조작전압 *Control voltage*		DC24V, 110V, 125V AC110V, 220V
	절연저항 *Insulation resistance*		100MΩ이상(DC500V메가) *min.100MΩ at DC500V*
	내전압 *Dielectric strength*	충전부간 *Between live parts*	AC 1,500V 50/60Hz 1min *Between live parts*
		비충전부간 *Between non-live parts*	AC 2,500V 50/60Hz 1min *Between non-live parts*
	사용주위온도 *Ambient temperature*	사용시 *Operation*	-20 ~ +40°C
		보관시 *Storage*	-25 ~ +55°C
	사용주위습도 *Ambient humidity*		45~85%
주의사항	■ AC용은 Check 단자가 없습니다. ■ Check terminal 사용시 부가회로를 사용하지 마십시요. 램프체크시 역전압이 발생됩니다. ■ LED Unit 분해시는 반듯이 전원을 차단 하십시요. ■ 판넬부착시 집합표시등 본체의 중량, 배선에 의한 전선의 중량등을 고려하여 판넬두께를 결정하십시요.		

단자극성표시



집합표시등

Square Light

형명분류

Type classification diagram

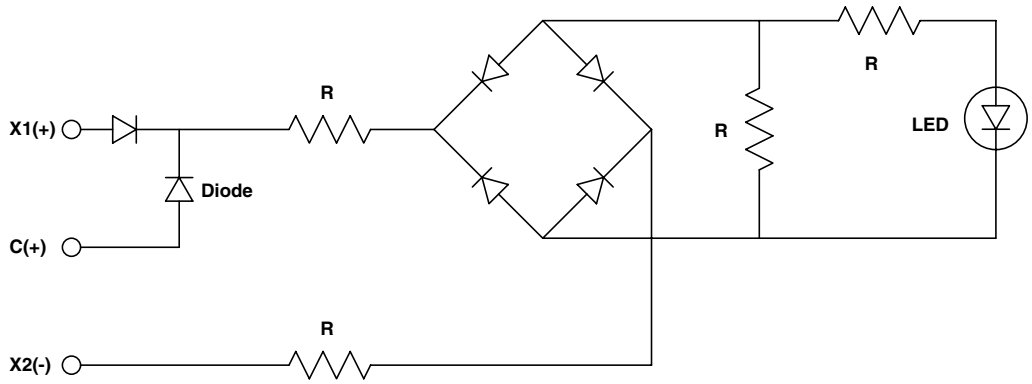
①	②	③	④	⑤	⑥	⑦	⑧	⑨
SHPR	SL	33	A	11	3	4	R	F

①	기본형명 *Standard type*	성호PR SERIES	
②	표시면형상 *Shape*	SL	정사각형 *Square*
		RL	직사각형 *Bulletin rectangle*
③	외형치수 *Shape dimrnsion*	33	30×30mm
		34	30×40mm
④	입력전압방식 *Using method*	AL	AC LED
		DL	DC LED
⑤	정격전압 *Rated voltage*	24	24V
		48	48V
		11	110V
		12	125V
		22	220V

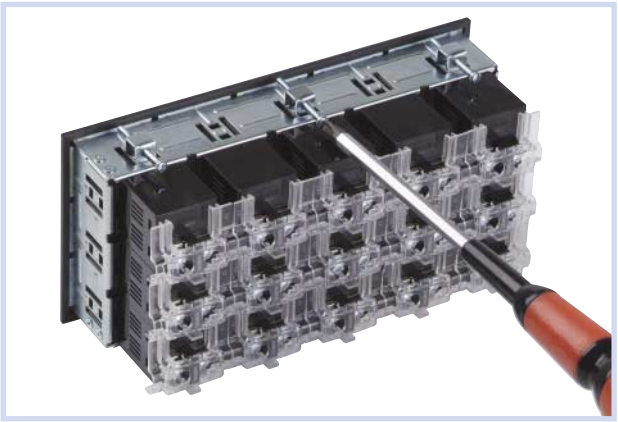
⑥	단의수 *Grade no*	1~n	1단~n단
⑦	열의수 *Raw no*	1~n	1열~n열
⑧	LED 색상 *LED color*	R	Red
		Y	Yellow
		G	Green
		Bu	Blue
		W	White
⑨	난연방식 *Flame retardance*	무기호 *None*	비난연 *Non-flame resistance*
		F	난연 *Flame resistance*

CHECK TERMINAL 회로도

Check terminal circuit diagram



집합 표시등의 취부방법
Attachment method of square light

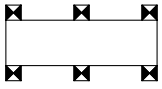
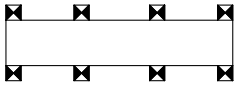
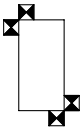
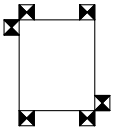
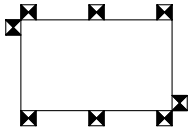
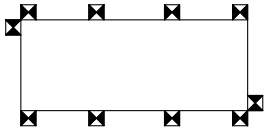
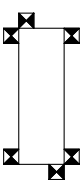
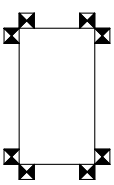
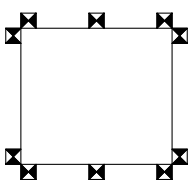
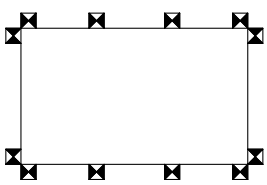


- 조립된 집합표시등을 판넬에 끼운후 좌측 그림과 같이 취부대를 찬넬 구멍에 걸고 볼트를 체결합니다.
- 찬넬취부대는 조립된 집합체 수량에 따라 아래 표의 수량으로 체결합니다.
- 체결 및 분해시는 반듯이 전원을 차단하여 주십시요.

집합 표시등의 취부방법
Number of jointing part

열 Row / 단 Grade	1~2	3~8	9~15	16~20
1~2	2	4	6	8
3~6	4	6	8	10
7~10	6	8	10	12

찬넬 고정대 적용예
Example of attachment

열 Row / 단 Grade	1~2	3~8	9~15	16~20
1~2				
3~6				
7~10				

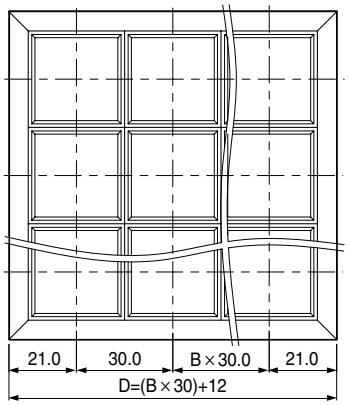
집합표시등

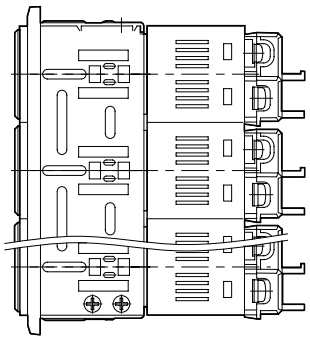
Square Light

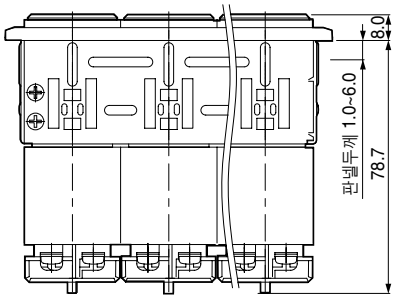
정사각형 표시등 외형 및 치수

Square lamp / dimension drawing

단의수 Grade no A	외형치수 Dimension C	판넬가공치수 Panel cutouts	열의 수 Raw no B	1	2	3	4	5	6	7	8	9	10
			D	42	72	102	132	162	192	222	252	282	312
				35	65	95	125	155	185	215	245	275	305
1	42	35											
2	72	65											
3	102	95											
4	132	125											
5	162	155											
6	192	185											
7	222	215											
8	252	245											
9	282	275											
10	312	305											

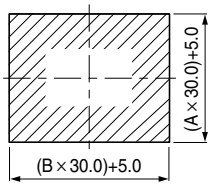


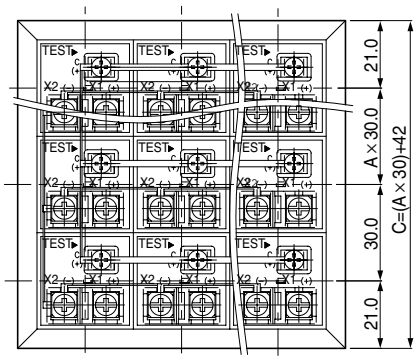




■ 판넬가공치수

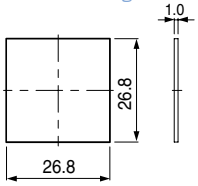
Panel cutouts





■ 조각면치수

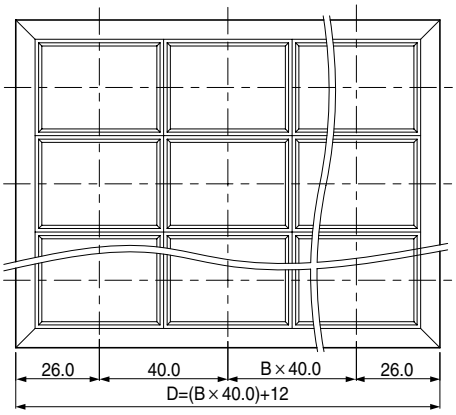
Size of marking

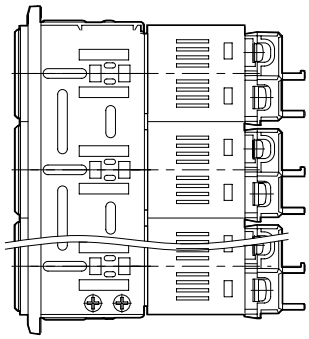


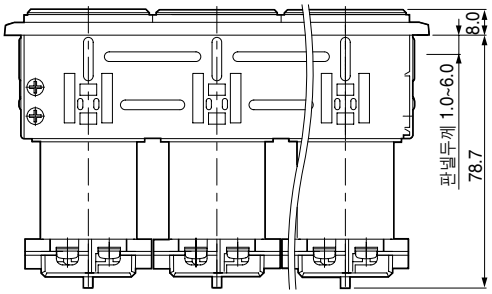
직사각형 표시등 외형 및 치수

Bulletin rectangle lamp / dimension drawing

단의수 Grade no A	외형치수 Dimension C	판넬가공치수 Panel cutouts	열의 수 Raw no B	1	2	3	4	5	6	7	8	9	10
			외형치수 Dimension D	52	92	132	172	212	252	292	332	372	412
			판넬가공치수 Panel cutouts	45	85	125	165	205	245	285	325	365	405
1	42	35											
2	72	65											
3	102	95											
4	132	125											
5	162	155											
6	192	185											
7	222	215											
8	252	245											
9	282	275											
10	312	305											

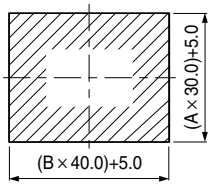


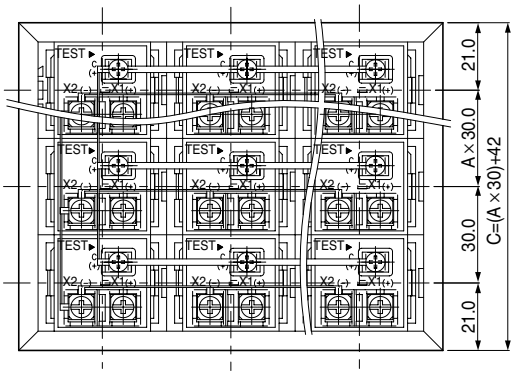




■ 판넬가공치수

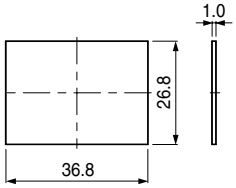
Panel cutouts





■ 조각면치수

Size of marking



Control station

강력눌름보턴스위치

Control station

Descriprion

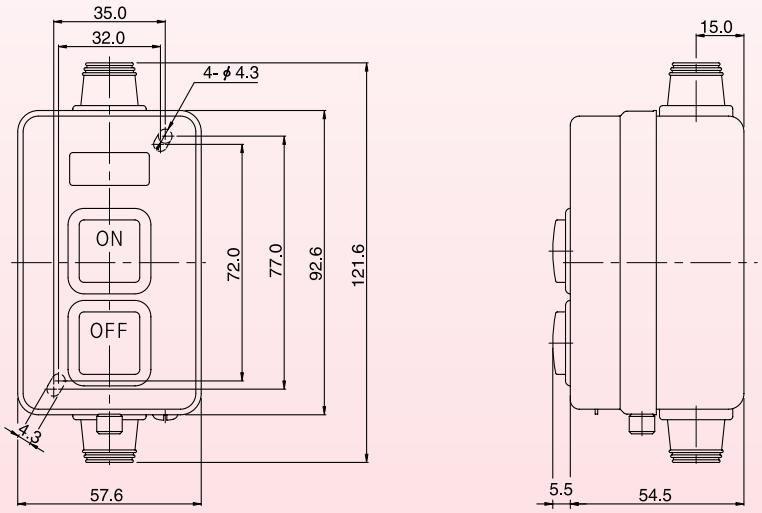
Type SHPP-40

전동기 기동용 및 3상전원 개폐용으로 사용 가능합니다.
내구성이 우수한 특수접점을 사용하였으며, 정격용량은 15A 250V AC입니다.
보턴동작이 부드러워 개폐가 용이합니다.
취부구멍을 범용화하여 기존 제품의 대체가 용이합니다.

- *2 Spring Return Pushbuttons Marked "ON" and "OFF" are Built in the Enclosure.*
- *Consists of 3 NO Contacts Inside.*
- *The Rating is 15A, 250V AC.*

보턴사양 *Buttons*	*Marking*	접점구성 *Contacts*	주문형식 *Type*
자동복귀식 ON/OFF보턴	ON표시 : 녹색버튼 OFF표시 : 적색버튼	3a	SHPP-401
2 spring Return Pushbuttons	*"ON" for 1 Flush Green* *"OFF" for 1 Flush Red*	*3NO*	

외형치수
Dimensions



Analogue Timers

아날로그타이머

Analogue Timers

미니타이머, MT
Miniature Timer

- 제어시간범위, *Ranges*
  0.05sec to 3hrs (12 ranges)
- 출력접점, *Contacts*
  1c, 2c, 4c
- 노출형/소켓접속
  Surface Mount Via Socket

노출형
Surface Mount

타이머, L/M/N
On-delay Timer

- 제어시간범위, *Ranges*
  1sec to 48hrs (16 ranges)
- 출력접점, *Contacts*
  1a+1c
- 취부 : 노출 및 매입형
  Surface or Flush Mount

매입형
Flush Mount

TWIN타이머, T
Twin Timer
On-Off Delay

- 제어시간범위, *Ranges*
  3sec to 3hrs (10 ranges)
- 출력접점, *Contacts*
  1c
- 취부 : 노출 및 매입형
  Surface or Flush Mount

Flicker 타이머, F
Flicker Timer

- 제어시간범위, *Setting Range*
  0.2 to 12 sec
- 출력접점, *Contacts*
  1c
- 취부 : 노출 및 매입형
  Surface or Flush Mount

아날로그타이머

Analogue Timers

미니타이머 MT … 최대3시간

Miniature timer, SHT-MT
On-delay
max. range 3hrs

주문형식
Catalog No. structure
(Ordering information)

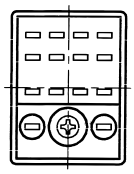
SHT-MT1-1S • **24D**

Type

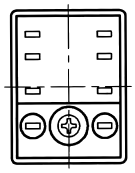
조작전압
Control voltage code

Code	*Voltage*
110A	AC110V
220A	AC220V
12D	DC12V
24D	DC24V

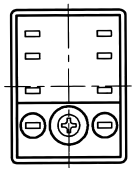
출력접점구성 및 정격 *Output contacts Configuration*	*Rating*	제어시간범위 *Setting range* Min.		Max.	형 식 *Type*
4c *4 Changeover* *4NO+NC*	3A, AC250V 저항부하 *at resistive load*	0.05sec	~	1sec	SHT-MT1-1S
		0.1sec	~	3sec	SHT-MT1-3S
		0.4sec	~	6sec	SHT-MT1-6S
		0.5sec	~	10ec	SHT-MT1-10S
		1.5sec	~	30sec	SHT-MT1-30S
		2sec	~	60sec	SHT-MT1-60S
		0.1min	~	3min	SHT-MT1-3M
		0.2min	~	6min	SHT-MT1-6M
		0.5min	~	10min	SHT-MT1-10M
		1min	~	30min	SHT-MT1-30M
		2min	~	60min	SHT-MT1-60M
		6min	~	3hrs	SHT-MT1-3H
2c *2 Changeover* *2NO+NC*	5A, AC250V 저항부하 *at resistive load*	0.05sec	~	1sec	SHT-MT2-1S
		0.1sec	~	*3sec*	*SHT-MT2-3S*
		0.4sec	~	6sec	SHT-MT2-6S
		0.5sec	~	10sec	SHT-MT2-10S
		1.5sec	~	30sec	SHT-MT2-30S
		2sec	~	60sec	SHT-MT2-60S
		0.1min	~	3min	SHT-MT2-3M
		0.2min	~	6min	SHT-MT2-6M
		0.5min	~	10min	SHT-MT2-10M
		1min	~	30min	SHT-MT2-30M
		2min	~	60min	SHT-MT2-60M
		6min	~	3hrs	SHT-MT2-3H
	10A, AC250V 저항부하 *at resistive load*	0.05sec	~	1sec	SHT-MT3-1S
		0.1sec	~	*3sec*	*SHT-MT3-3S*
		0.4sec	~	6sec	SHT-MT3-6S
		0.5sec	~	10sec	SHT-MT3-10S
		1.5sec	~	30sec	SHT-MT3-30S
		2sec	~	60sec	SHT-MT3-60S
		0.1min	~	3min	SHT-MT3-3M
		0.2min	~	6min	SHT-MT3-6M
		0.5min	~	10min	SHT-MT3-10M
		1min	~	30min	SHT-MT3-30M
		2min	~	60min	SHT-MT3-60M
		6min	~	3hrs	SHT-MT3-3H
1c *1 Changeover* *1NO+NC*	10A, AC250V *저항부하* *at resistive load*	0.05sec	~	1sec	SHT-MT4-1S
		0.1sec	~	3sec	SHT-MT4-3S
		0.4sec	~	6sec	SHT-MT4-6S
		0.5sec	~	10sec	SHT-MT4-10S
		1.5sec	~	30sec	SHT-MT4-30S
		2sec	~	60sec	SHT-MT4-60S
		0.1min	~	3min	SHT-MT4-3M
		0.2min	~	6min	SHT-MT4-6M
		0.5min	~	10min	SHT-MT4-10M
		1min	~	30min	SHT-MT4-30M
		2min	~	60min	SHT-MT4-60M
		6min	~	3hrs	SHT-MT4-3H



※적용소켓(별도주문품)
Applicable socket(optional)
SH-RS-MY4



※적용소켓(별도주문품)
Applicable socket(optional)
SH-RS-MY2



※적용소켓(별도주문품)
Applicable socket(optional)
SH-RS-LY2

미니타이머 SHT-MT series

Miniature timer, SHT-MT

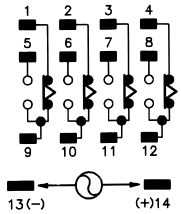
정격 및 성능

Characteristics

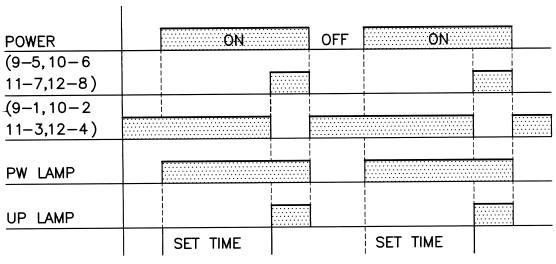
특징 *Features*	■ 초소형 전용IC를 내장한 분주방식 입니다. ■ 소형이면서 시간 사양이 광범위 합니다 (0.05초 ~ 3시간까지) ■ 동작표시 LED(적색)가 장착되어 있어 식별이 용이합니다. ■ PW LED : 전원(Power) 표시, UP LED : 동작(Timer ON)표시 ■ 소비전력이 매우 작습니다. (1VA, 1.2W) ■ *This is frequency divide method using timer micro-mini exclusive IC.* ■ *This is small size, but wide time specification of 0.05 sec.~3 hours.* ■ *With indicating(Timer On, OFF) movement LED(Red color), identification is easy.* ■ *PW LED : indicating Power, UP LED : indicating movement(Timer ON)* ■ *Power consumption is little. (1VA, 1.2W)*				
동작 *Operation mode*			ON-delay		
접점용량 *Contact ratings*	Types	접점구성/Contacts	Amp.	Volt	Load
	SHT-MT1	4c(4NO+NC)	3A	250V AC	저항부하(Resistive)
	SHT-MT2	2c(2NO+NC)	5A	250V AC	저항부하(Resistive)
	SHT-MT3	2c(2NO+NC)	10A	250V AC	저항부하(Resistive)
	SHT-MT4	1c(1NO+NC)	10A	250V AC	저항부하(Resistive)
정격전압 *Rated voltage*			AC 250V		
조작전압 *Control voltage*			AC 110V, 220V ± 10% DC 12V, 24V, 48V ± 10%		
동작시간정도 *Accuracy*	전압오차 (Error by voltage) 설정오차 (Error by setting) 온도오차 (Error by ambient temp.)		within ±0.5%이내 within ±10%이내 within ±4%이내		
소비전력 *Power consumption*			AC 약 1VA, DC 약 1.2W		
내전압 *Dielectric strength*			AC 1,500V 50/60Hz 1min 충전부와 비충전금속부간 *Between live part and dead metal part*		
사용주위온도 *Ambient temperature for operation*			-10 ~ +50℃		
사용주위습도 *Ambient humidity*			40 ~ 85%RH		

회로도

Circuit diagram

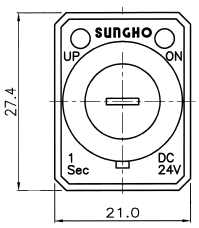


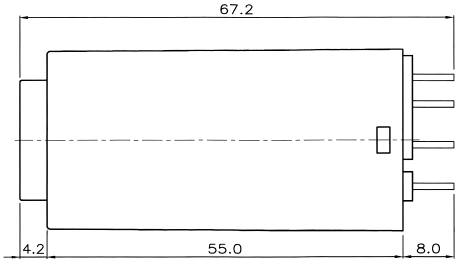
Timing chart



외형치수

Dimensions





아날로그타이머

Analogue Timers

타이머 L … 최대48시간
50x62mm 직사각단면형

On-delay timer, SHT-L
Max. range 48 hours
50x62mm rectangular type

주문형식
Catalog No. structure
(Ordering information)

SHT-LE-1S • **24D**

Type / 조작전압 *Control voltage code*

취부방식 *Mount*	제어시간범위 *Setting range* min.		max.	형 식 *Type*
노출형 *Surface mount*	0sec	~	1sec	SHT-LE-1S
	0sec	~	3sec	SHT-LE-3S
	0sec	~	6sec	SHT-LE-6S
	0sec	~	10sec	SHT-LE-10S
	0sec	~	30sec	SHT-LE-30S
	0sec	~	60sec	SHT-LE-60S
	0.1sec	~	3min	SHT-LE-3M
	0.2sec	~	6min	SHT-LE-6M
	0.4sec	~	10min	SHT-LE-10M
	1.5sec	~	30min	SHT-LE-30M
	3sec	~	60min	SHT-LE-60M
	5sec	~	3hrs	SHT-LE-3H
	10sec	~	6hrs	SHT-LE-6H
	20sec	~	12hrs	SHT-LE-12H
	40sec	~	24hrs	SHT-LE-24H
	80sec	~	48hrs	SHT-LE-48H
매입형 *Flush mount*	0sec	~	1sec	SHT-LP-1S
	0sec	~	3sec	SHT-LP-3S
	0sec	~	6sec	SHT-LP-6S
	0sec	~	10sec	SHT-LP-10S
	0sec	~	30sec	SHT-LP-30S
	0sec	~	60sec	SHT-LP-60S
	0.1sec	~	3min	SHT-LP-3M
	0.2sec	~	6min	SHT-LP-6M
	0.4sec	~	10min	SHT-LP-10M
	1.5sec	~	30min	SHT-LP-30M
	3sec	~	60min	SHT-LP-60M
	5sec	~	3hrs	SHT-LP-3H
	10sec	~	6hrs	SHT-LP-6H
	20sec	~	12hrs	SHT-LP-12H
	40sec	~	24hrs	SHT-LP-24H
	80sec	~	48hrs	SHT-LP-48H

Code	Voltage
120A	AC110/220V
12D	DC12V
24D	DC24V
48D	DC48V

※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS1

※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS2

타이머 M … 최대48시간
48x48mmw 정사각단면형

On-delay timer, SHT-M
Max. range 48 hours
48x48mm rectangular type

주문형식 *Catalog No. structure (Ordering information)*

SHT-ME-1S • **24D**

Type / 조작전압 *Control voltage code*

취부방식 *Mount*	제어시간범위 *Setting range* min.	~	max.	형 식 *Type*
노출형 *Surface mount*	0sec	~	1sec	SHT-ME-1S
	0sec	~	3sec	SHT-ME-3S
	0sec	~	6sec	SHT-ME-6S
	0sec	~	10sec	SHT-ME-10S
	0sec	~	30sec	SHT-ME-30S
	0sec	~	60sec	SHT-ME-60S
	0.1sec	~	3min	SHT-ME-3M
	0.2sec	~	6min	SHT-ME-6M
	0.4sec	~	10min	SHT-ME-10M
	1.5sec	~	30min	SHT-ME-30M
	3sec	~	60min	SHT-ME-60M
	5sec	~	3hrs	SHT-ME-3H
	10sec	~	6hrs	SHT-ME-6H
	20sec	~	12hrs	SHT-ME-12H
	40sec	~	24hrs	SHT-ME-24H
	80sec	~	48hrs	SHT-ME-48H
매입형 *Flush mount*	0sec	~	1sec	SHT-MP-1S
	0sec	~	3sec	SHT-MP-3S
	0sec	~	6sec	SHT-MP-6S
	0sec	~	10sec	SHT-MP-10S
	0sec	~	30sec	SHT-MP-30S
	0sec	~	60sec	SHT-MP-60S
	0.1sec	~	3min	SHT-MP-3M
	0.2sec	~	6min	SHT-MP-6M
	0.4sec	~	10min	SHT-MP-10M
	1.5sec	~	30min	SHT-MP-30M
	3sec	~	60min	SHT-MP-60M
	5sec	~	3hrs	SHT-MP-3H
	10sec	~	6hrs	SHT-MP-6H
	20sec	~	12hrs	SHT-MP-12H
	40sec	~	24hrs	SHT-MP-24H
	80sec	~	48hrs	SHT-MP-48H

Code	Voltage
120A	AC110/220V
12D	DC12V
24D	DC24V
48D	DC48V

※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS1

※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS2

브라켓(Braket)을 별도로 구입하여 노출형에 조립하면 매입형으로 사용할 수 있습니다.
단, 소켓은 매입형SH-TS2를 사용해야 합니다.
Surface mount type can be flush mounted with the optional bracket.
However socket SH-TS2 for flush mount should be used.

아날로그타이머

Analogue Timers

타이머 N … 최대48시간
38x48mm 직사각단면형

On-delay timer, SHT-N
Max. range 48 hours
38x48mm rectangular type

주문형식
Catalog No. structure
(Ordering information)

SHT-NE1-1S • **24D**

Type / 조작전압 *Control voltage code*

Code	Voltage
120A	AC110/220V
12D	DC12V
24D	DC24V
48D	DC48V

취부방식 *Mount*	제어시간범위 *Setting range* min.		max.	형 식 *Type*
노출형 *Surface mount*	0sec	~	1sec	SHT-NE-1S
	0sec	~	3sec	SHT-NE-3S
	0sec	~	6sec	SHT-NE-6S
	0sec	~	10sec	SHT-NE-10S
	0sec	~	30sec	SHT-NE-30S
	0sec	~	60sec	SHT-NE-60S
	0.1sec	~	3min	SHT-NE-3M
	0.2sec	~	6min	SHT-NE-6M
	0.4sec	~	10min	SHT-NE-10M
	1.5sec	~	30min	SHT-NE-30M
	3sec	~	60min	SHT-NE-60M
	5sec	~	3hrs	SHT-NE-3H
	10sec	~	6hrs	SHT-NE-6H
	20sec	~	12hrs	SHT-NE-12H
	40sec	~	24hrs	SHT-NE-24H
	80sec	~	48hrs	SHT-NE-48H
매입형 *Flush mount*	0sec	~	1sec	SHT-NP-1S
	0sec	~	3sec	SHT-NP-3S
	0sec	~	6sec	SHT-NP-6S
	0sec	~	10sec	SHT-NP-10S
	0sec	~	30sec	SHT-NP-30S
	0sec	~	60sec	SHT-NP-60S
	0.1sec	~	3min	SHT-NP-3M
	0.2sec	~	6min	SHT-NP-6M
	0.4sec	~	10min	SHT-NP-10M
	1.5sec	~	30min	SHT-NP-30M
	3sec	~	60min	SHT-NP-60M
	5sec	~	3hrs	SHT-NP-3H
	10sec	~	6hrs	SHT-NP-6H
	20sec	~	12hrs	SHT-NP-12H
	40sec	~	24hrs	SHT-NP-24H
	80sec	~	48hrs	SHT-NP-48H

※적용소켓(별도주문품)
Applicable socket(optional)
SH-RS8

※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS2

브라켓(Braket)을 별도로 구입하여 노출형에 조립하면 매입형으로 사용할 수 있습니다.
단, 소켓은 매입형 SH-TS2를 사용해야 합니다.

Surface mount type can be flush mounted with the optional bracket.
However socket SH-TS2 for flush mount should be used.

타이머 SHT-L, M, N series

On-delay timer,
SHT-L, M, N series

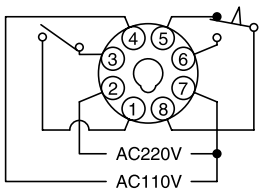
정격 및 성능
Characteristics

특징
Features

- 전용 IC를 내장한 분주방식입니다.
- 취부방식이 다양합니다.
- 노출형/ 매입형, □ 48x48, 40x50, 50x62
- 동작표시 LED(적색)가 장착되어 있어 식별이 용이합니다.
  PW LED : 전원(Power) 표시, UP LED : 동작(Timer ON) 표시
- 소비전력이 매우 작습니다. (2.5VA이하)
- *This is frequency divide method using timer exclusive IC.*
- *This can be applied in a various devices.*
- *Exposure type / Within type*
- *With indicating(Timer On, OFF) movement LED(Red color), identification is easy.*
- *PW LED : indicating Power, UP LED : indicating movement(Timer ON)*
- *Power consumption is little. (below 2.5VA)*

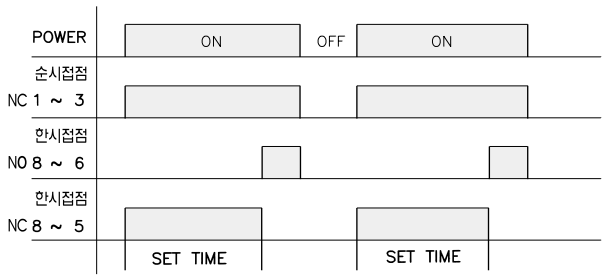
동작 *Operation mode*		ON-delay
접점구성 *Contact configuration*		1a+1c 1NO+1C/O
접점용량/정격전압 *Contact ratings/Rated voltage*		Amp. / Volt / Load 10A / 125V AC / 저항부하(Resistive) 5A / 250V AC 8A / 30V DC
조작전압 *Control voltage*		AC 110V/220V 겸용(common use) ±10% DC 12V, 24V, 48V ±10%
동작시간정도 *Accuracy*	전압오차 (Error by voltage) 설정오차 (Error by setting) 온도오차 (Error by ambient temp.) 반복도오차 (Error by repeat)	within ±0.5%이내 within ±3%이내 within ±2%이내 within ±0.3%이내
소비전력 *Power consumption*		AC 2.5VA, DC 1W (after time up)
내전압 *Dielectric strength*		AC 2,000V 50/60Hz 1min 충전부와 비충전금속부간 *Between live part and dead metal part*
사용주위온도 *Ambient temperature for operation*		-10 ~ +55℃
사용주위습도 *Ambient humidity*		40 ~ 85%RH

회로도
Circuit diagram



순시 한시
Timer

Timing chart



아날로그타이머

아날로그타이머

Analogue Timers

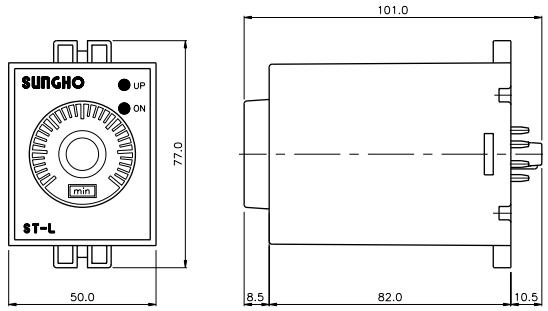
타이머 SHT-L, M, N series

On-delay timer,
SHT-L, M, N series

외형치수
Dimensions

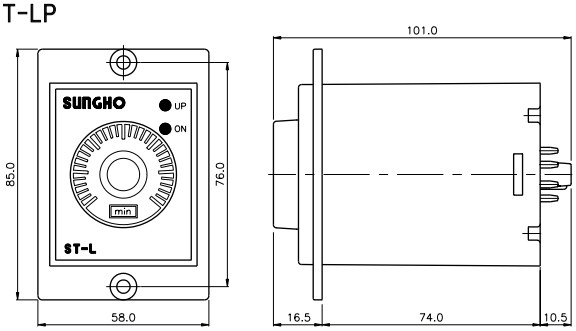
노출형
Surface mount

SHT-LE

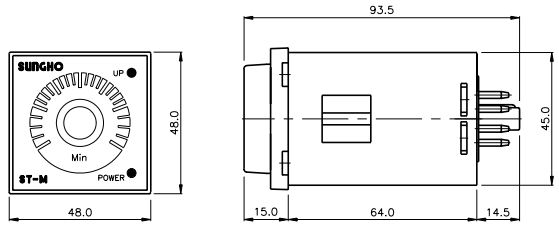


매입형
Flush mount

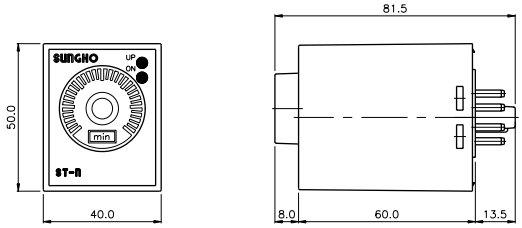
SHT-LP



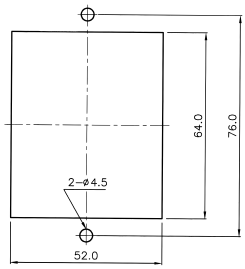
SHT-M



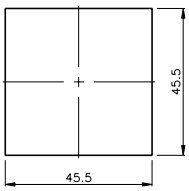
SHT-N



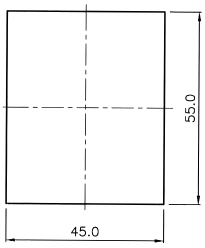
판넬가공
Cutouts



SHT-LP, TP



SHT-MP



SHT-NP

트윈타이머 T … 최대3시간
50x62mm 직사각단면형

Twin timer, SHT-T
Max. range 3hrs ON-OFF delay
50x62mm rectangular type

주문형식 *Catalog No. structure (Ordering information)*

SHT-TE-3S • **24D**

Type / 조작전압 *Control voltage code*

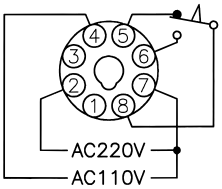
취부방식 *Mount*	제어시간범위 *Max. Setting range* ON delay	OFF delay	형 식 *Type*
노출형 *Surface mount*	3sec	3sec	SHT-TE-3S
	6sec	6sec	SHT-TE-6S
	10sec	10sec	SHT-TE-10S
	30sec	30sec	SHT-TE-30S
	60sec	60sec	SHT-TE-60S
	3min	3min	SHT-TE-3M
	6min	6min	SHT-TE-6M
	10min	10min	SHT-TE-10M
	30min	30min	SHT-TE-30M
	60min	60min	SHT-TE-60M
	3hrs	3hrs	SHT-TE-3H
매입형 *Flush mount*	3sec	3sec	SHT-TP-3S
	6sec	6sec	SHT-TP-6S
	10sec	10sec	SHT-TP-10S
	30sec	30sec	SHT-TP-30S
	60sec	60sec	SHT-TP-60S
	3min	3min	SHT-TP-3M
	6min	6min	SHT-TP-6M
	10min	10min	SHT-TP-10M
	30min	30min	SHT-TP-30M
	60min	60min	SHT-TP-60M
	3hrs	3hrs	SHT-TP-3H

Code	Voltage
120A	AC110/220V
12D	DC12V
24D	DC24V
48D	DC48V

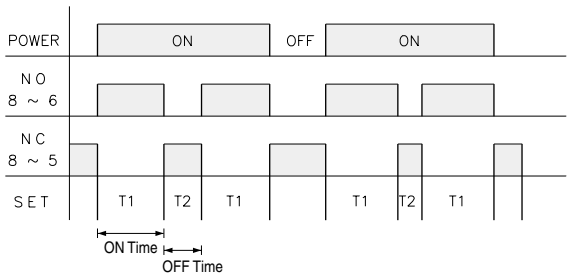
※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS1

※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS2

회로도 *Circuit diagram*



Timing chart



아날로그타이머

Analogue Timers

트윈타이머 T … 최대3시간
50x62mm 직사각단면형
Twin timer, SHT-T

정격 및 성능
Characteristics

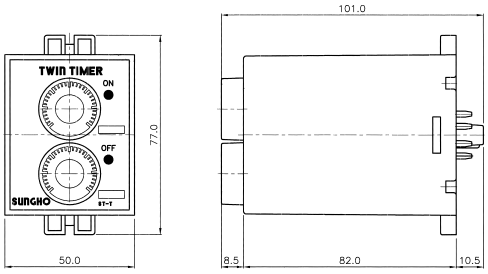
특징 *Features*	■ 전용IC를 내장한 분주방식 입니다. ■ 취부방식이 다양합니다. - 노출형/ 매입형 ■ 동작표시 LED(적색)가 장착되어 있어 식별이 용이합니다. ■ 소비전력이 작은 절전형입니다. (2.5VA이하) ■ *This is frequency divide method using timer exclusive IC.* ■ *This can be applied in a various devices.* ■ *Exposure type / Within type* ■ *With indicating(Timer On, OFF) movement LED(Red color), identification is easy.* ■ *Power consumption is little. (below 2.5 VA)*

동작 *Operation mode*		ON-OFF delay
접점구성 *Contact configuration*		1c 1C/O(1NO+NC)
접점용량/정격전압 *Contact ratings/Rated voltage*		Amp. / Volt / Load 10A / 125V AC / 저항부하(Resistive) 5A / 250V AC 8A / 30V DC
조작전압 *Control voltage*		AC 110V/220V 겸용(common use) ± 10% DC 12V, 24V, 48V ± 10%
동작시간정도 *Accuracy*	전압오차 (Error by voltage) 설정오차 (Error by setting) 온도오차 (Error by ambient temp.) 반복도오차 (Error by repeat)	within ±0.5%이내 within ±3%이내 within ±2%이내 within ±0.3%이내
소비전력 *Power consumption*		AC 2.5VA, DC 1W (after time up)
내전압 *Dielectric strength*		AC 2,000V 50/60Hz 1min 충전부와 비충전금속부간 *Between live part and dead metal part*
사용주위온도 *Ambient temperature for operation*		-10 ~ +55℃
사용주위습도 *Ambient humidity*		40 ~ 85%RH

외형도
Dimensions

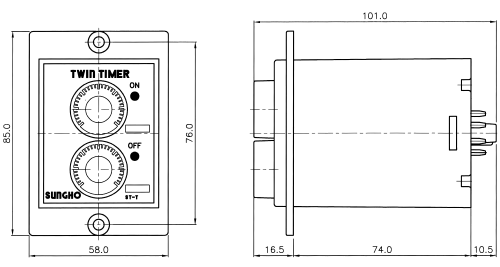
노출형
Surface mount

SHT-T1E



매입형
Flush mount

SHT-T1P



주) 판넬가공 치수는 98page 참조 *See 98 page for Cutout*

Flicker 타이머 F
50x62mm 직사각단면형

Flicker timer, SHT-F
Max. range 12 sec.
50x62mm rectangular type
Contact : 1C/O 5A 125VAC

주문형식 *Catalog No. structure (Ordering information)*

SHT-FEA-1S • **24D**

Type / 조작전압 *Control voltage code*

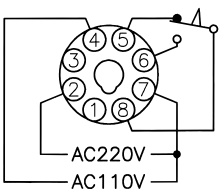
취부방식 *Mount*	제어시간범위 *Setting range* min.		max.	형 식 *Type*
노출형 *Surface mount*	0.2sec	~	6sec	SHT-FEA
	0.4sec	~	12sec	SHT-FEB
매입형 *Flush mount*	0.2sec	~	6sec	SHT-FPA
	0.4sec	~	12sec	SHT-FPB

Code	*Voltage*
120A	AC110/220V
12D	DC12V
24D	DC24V
48D	DC48V

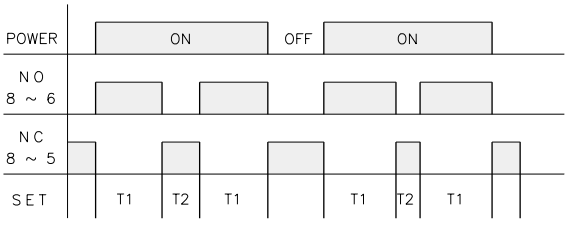
※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS1

※적용소켓(별도주문품)
Applicable socket(optional)
SH-TS2

회로도 *Circuit diagram*

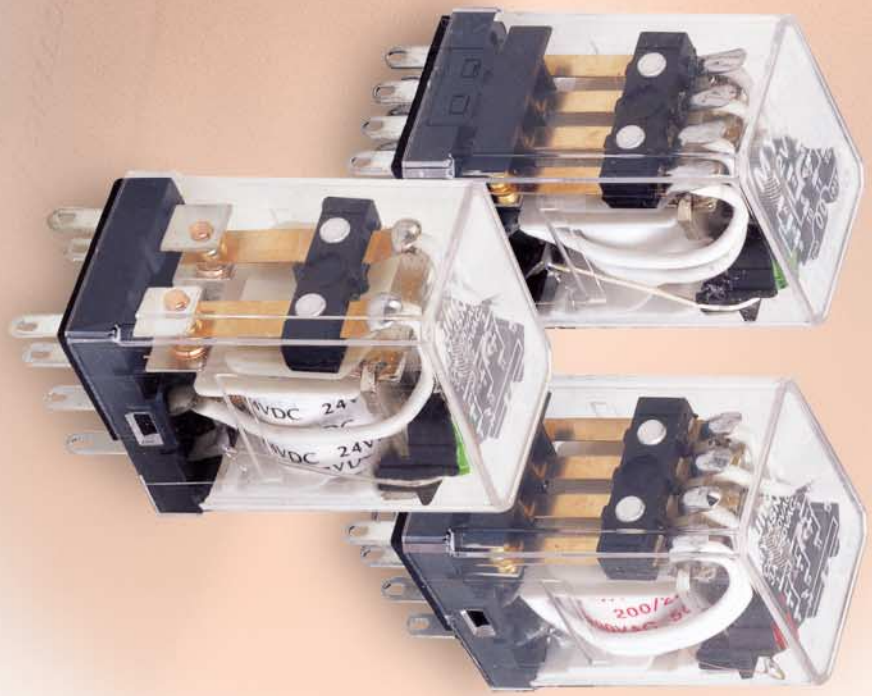


Timing chart



T1 Set Time (ON) Time
T2 OFF Time (고정) 250ms

아날로그타이머



Industrial Relays

제어용릴레이

Industrial Relays
Type SHR

신호전달용, MY
Sequence Relay

- 3, 5A
- 2 & 4 Pole
- Plug-in/PCB Terminals
- Switching AC240V & DC110V max.

소켓취부용
Mount to Socket

파워용, LY
Power Relay

- 10, 15A
- 1,2 & 4 Pole
- Plug-in/PCB Terminals
- Switching AC240V & DC110V max.

PCB취부용
Mount to PCB

소형파워용, MP
Miniature Power Relay

- 5, 7.5A
- 2 & 3 Pole
- Plug-in Terminals
- Switching AC220V & DC100V max.

소켓취부용
Mount to Socket

강력파워용
Large Power Relay

- 30A
- 2 & 3 Pole
- Panel Mount
- Switching AC380V & DC100V max.

신호전달용, MY
Sequence relay

정격
Ratings

형식 *Type of relay*		SHR-MY-2		SHR-MY-4	
		2pole		4pole	
최대개폐전압	*Rated voltage*	AC220V, DC125V			
정격통전전류	*Rated continuous current*	5A		3A	
정격전류	*Rated opearting current*	AC220V	DC24V	AC220V	DC24V
	저항부하 *Resist* (cos∮=1)	5A	5A	3A	3A
	유도부하 *Induct* (cos∮=0.4, L/R=7ms)	2A	2A	0.8A	1.5A

주문형식
Catalog No. structure
(Ordering information)

SHT-MY-2SN • **24A** • **XI**

Type

조작코일전압
Coil voltage code

서지방지형

극 수 *Poles contacts*	단자구조 *Terminal*	동작표시 *Indicator*	형 식 *Type*
2극 *2 pole 2 changeover DPDT*	소켓형 *Plug-in*	없음 *Without*	SHR-MY-2S
		있음 *With LED*	SHR-MY-2SN
	PCB형 *PCB terminal*	없음 *Without*	SHR-MY-2P
		있음 *With LED*	SHR-MY-2PN
4극 *4 pole 4 changeover*	소켓형 *Plug-in*	없음 *Without*	SHR-MY-4S
	4PDT	있음 *With LED*	SHR-MY-4SN
	PCB형 *PCB terminal*	없음 *Without*	SHR-MY-4P
		있음 *With LED*	SHR-MY-4PN

Code	Voltage
6A	AC6V
12A	AC12V
24A	AC24V
48A	AC48V
110A	AC110
220A	AC220V
6D	DC6V
12D	DC12V
24D	DC24V
110D	DC110V

접속소켓 *Socket for plug-in*		
	2극 *2pole*	SH-RS-MY2
	4극 *4pole*	SH-RS-MY4

정격 및 성능
Characteristics

특징 Features

- 동작표시등 내장으로 제품신뢰성이 높습니다.
- 소비전력이 적으며 응답속도가 예민합니다.
- 2극형은 5A, 4극형은 3A의 부하를 개폐할 수 있는 소형 릴레이입니다.
- 아크를 차단하는 아크베리어를 부착하였습니다.
- CUL, CCC승인품으로 제품의 안전도를 해외에서도 인정 받았습니다.
- 서지방지용도 생산됩니다.
- *The reliability of product is high with indicating pilot lamp.*
- *Power consumption is little, respond speed is rapid.*
- *As even with mini type relay can switching of 5A(2 pole) load, 3A(3 pole) load.*
- *It is installed arc-barrier for arc prevention.*
- *Approved the quality around the world by passing the UL test.*

용도 Application

- 일반 제어회로, 전원장치, 성형기, 산업기계 및 업무용기기
- 자판기, 의료기, 로보트 등.
- *General control circuit, Power supply device, Molding machine, Industrial machine, Instrument for business use*
- *Vending machine, Medical instrument, Robot, etc.*

조작코일정격 Operating coil ratings

주) 설정기준
주위온도 23℃
전류오차 ±15℃
저항오차 ±10℃

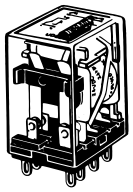
AC코일 AC supply	전압, Rated voltage		6V	12V	24V	50V	110V	220V	240V
	전류 Current	50Hz	229mA	114mA	57.8mA	27.7mA	14.4mA	7.2mA	6mA
		60Hz	190mA	95mA	48mA	23mA	12mA	6mA	5mA
	저항 Resistiance		12.2Ω	46Ω	180Ω	788Ω	3,750Ω	12,950Ω	18,790Ω
DC코일 DC supply	전압, Rated voltage		6V	12V	24V	48V	110V		
	전류 Current		150mA	75mA	36.9mA	18.5mA	10mA		
	저항 Resistiance		40Ω	160Ω	650Ω	2,600Ω	11,000Ω		
사용전압 Operating(Pick-up)voltage			코일정격전압의 80~110% *80~110% of the coil rated voltage*						
복귀전압 Release voltage		AC	코일정격전압의 30%이하 *Less than 30% of the coil rated voltage*						
		DC	코일정격전압의 10%이하 *Less than 10% of the coil rated voltage*						
소비전력 Power consumption		AC	약 0.9~1.3W (60Hz) *About 0.9~1.3W at 60Hz*						
		DC	약 0.9VA *About 0.9VA*						

기타특성 Other characteristics

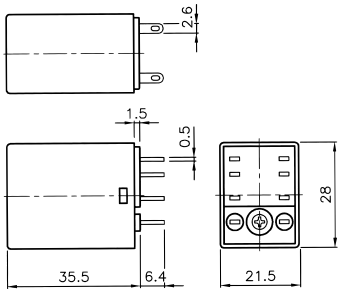
허용동작빈도 Max. operating cycles	기계적 Mechanical		18,000회/시 *18,000 cycles/hr.*
	전기적 Electricall		1,800회/시 *1,800 cycles/hr.*
동작시간 Operating(Pick-up) time			20ms이하 *Max. 20ms*
복귀시간 Release time			20ms이하 *Max. 20ms*
접촉저항 Contact resistance			50mΩ 이하 *Max. 50mΩ*
절연저항 Insulation resistance			100MΩ이상(DC500V절연저항계) *Min. 100MΩ at DC500V*
내전압 Dielectric strength	충전부간 Between contacts in the same pole		AC 1,000V 50/60Hz 1min
	비충전부간 Between other parts		AC 2,000V 50/60Hz 1min
내진동 Vibration protection			10~55Hz 복진폭 1.0mm
내충격 Mechanical shock protection		내구	1000m/s²(약 100G)
		오동작	200m/s²(약 20G)이상
수명 Lifetimes	전기적 Electricall		20만회이상 *0.2 mil .operations*
	기계적 Mechanical		500만회이상 *5 mil .operations*

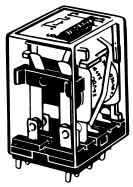
신호전달용, MY-2
Sequence relay, MY-2

외형치수
Dimensions

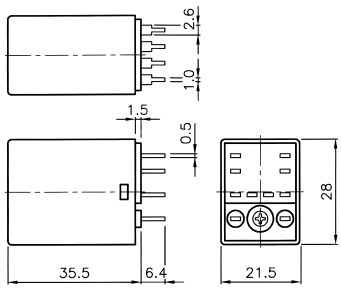


MY-2S
MY-2SN
MY-2SN-X1

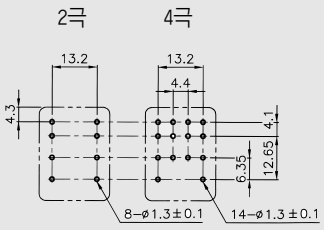




MY-2P
MY-2PN
MY-2PN-X1

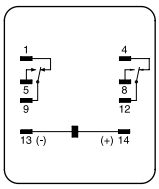


PCB가공치수
PCB drilling



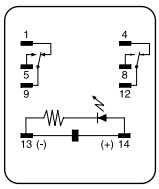
접속도
Circuit diagrams

MY-2S



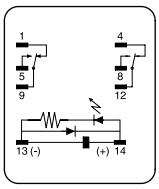
2극
2pole

MY-2SN



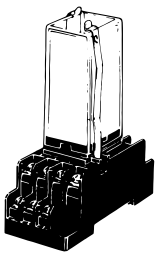
2극(LED부착)
2pole with LED

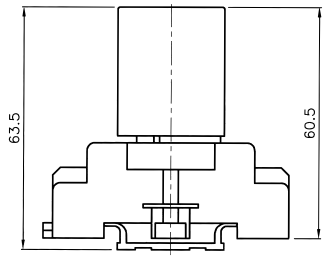
MY-2SN-X1



서지방지형

소켓설치시 치수
진동에 의한 탈락이 생기지 않도록 릴레이 고정쇠로 확실하게 고정, 사용하여 주시기 바랍니다.





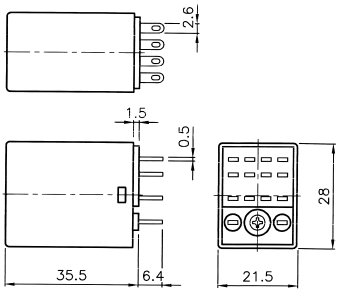
신호전달용, MY-4

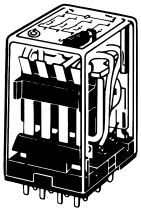
Sequence relay, MY-4

외형치수

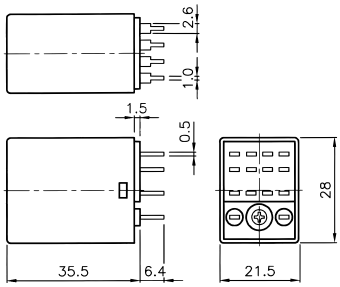
Dimensions

MY-4S
MY-4SN
MY-4SN-X1





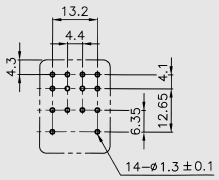
MY-4P
MY-4PN
MY-4PN-X1



PCB가공치수

PCB drilling

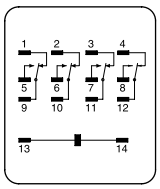
3, 4극



접속도

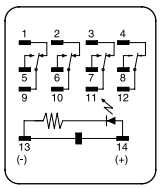
Circuit diagrams

MY-4S



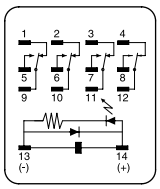
2극
2pole

MY-4SN



2극(LED부착)
4pole with LED

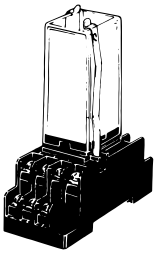
MY-4SN-X1

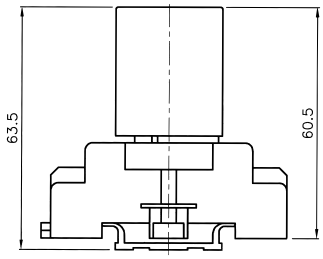


서지방지형

소켓설치시 치수

진동에 의한 탈락이 생기지 않도록 릴레이 고정쇠로 확실하게 고정, 사용하여 주시기 바랍니다.





파워용, LY
Power relay

정격
Ratings

형식 *Type of relay*		SHR-LY-1		SHR-LY-2, 4	
		1pole		2, 4pole	
최대개폐전압 *Rated coltage*		AC220V, DC125V			
정격통전전류 *Rated continuous current*		15A		10A	
정격전류 *Rated opearting current*		AC220V	DC24V	AC220V	DC24V
	저항부하 *Resist* (cos∮=1)	15A	15A	10A	10A
	유도부하 *Induct* (cos∮=0.4, L/R=7ms)	10A	7A	7.5A	5A

주문형식
Catalog No. structure (Ordering information)

SHT-LY-2SN • **24A** • **XI**

Type / 조작코일전압 *Coil voltage code* / 서지방지형

극 수 *Poles contacts*	단자구조 *Terminal*	동작표시 *Indicator*	형 식 *Type*
1극 *1 pole 1 changeover SPDT*	소켓형 *Plug-in*	없음 *Without*	SHR-LY-1S
		있음 *With LED*	SHR-LY-1SN
	PCB형 *PCB terminal*	없음 *Without*	SHR-LY-1P
		있음 *With LED*	SHR-LY-1PN
2극 *2 pole 2 changeover DPDT*	소켓형 *Plug-in*	없음 *Without*	SHR-LY-2S
		있음 *With LED*	SHR-LY-2SN
	PCB형 *PCB terminal*	없음 *Without*	SHR-LY-2P
		있음 *With LED*	SHR-LY-2PN
4극 *4 pole 4 changeover 4PDT*	소켓형 *Plug-in*	없음 *Without*	SHR-LY-4S
		있음 *With LED*	SHR-LY-4SN
	PCB형 *PCB terminal*	없음 *Without*	SHR-LY-4P
		있음 *With LED*	SHR-LY-4PN

Code	Voltage
6A	AC6V
12A	AC12V
24A	AC24V
48A	AC48V
110A	AC110
220A	AC220V
6D	DC6V
12D	DC12V
24D	DC24V
110D	DC110V

접속소켓 *Socket for plug-in*		
	1극 *1pole*	SH-RS-LY2
	2극 *2pole*	SH-RS-LY2
	4극 *4pole*	SH-RS-LY4

정격 및 성능
Characteristics

특징
Features

- 동작표시등 내장으로 제품신뢰성이 높습니다.
- 소비전력이 적으며 응답속도가 예민합니다.
- 1극형은 15A, 2극형은 10A의 부하를 개폐할 수 있는 소형 릴레이 입니다.
- 아크를 차단하는 아크베리어를 부착하였습니다.
- UL, CCC승인품으로 제품의 안전도를 해외에서도 인정 받았습니다.
- 서지방지용도 생산됩니다.
- *The reliability of product is high with indicating pilot lamp.*
- *Power consumption is little, respond speed is rapid.*
- *As even with mini type relay can switching of 15A(1 pole) load, 10A(2 pole) load.*
- *It is installed arc-barrier for arc prevention.*
- *Approved the quality around the world by passing the UL test.*

용도
Application

- 일반 제어회로, 전원장치, 성형기, 산업기계 및 업무용기기
- 자판기, 의료기, 로보트등.
- *General control circuit, Power supply device, Molding machine, Industrial machine, Instrument for business use*
- *Vending machine, Medical instrument, Robot, etc.*

조작코일정격
Operating coil ratings

주) 설정기준
주위온도 23℃
전류오차 ±15℃
저항오차 ±10℃

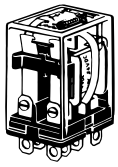
AC코일 *AC supply*	전압 *Rated voltage*		6V	12V	24V	50V	110V	220V	240V
	전류 *Current*	50Hz	229mA	114mA	57.8mA	27.7mA	14.4mA	7.2mA	6mA
		60Hz	190mA	95mA	48mA	23mA	12mA	6mA	5mA
	저항 *Resistance*		12.2Ω	46Ω	180Ω	788Ω	3,750Ω	12,950Ω	18,790Ω
DC코일 *DC supply*	전압 *Rated voltage*		6V	12V	24V	48V	110V		
	전류 *Current*		150mA	75mA	36.9mA	18.5mA	10mA		
	저항 *Resistance*		40Ω	160Ω	650Ω	2,600Ω	11,000Ω		
사용전압 *Operating(Pick-up)voltage*			코일정격전압의 80~110% *80~110% of the coil rated voltage*						
복귀전압 *Release voltage*		AC	코일정격전압의 30%이하 *Less than 30% of the coil rated voltage*						
		DC	코일정격전압의 10%이하 *Less than 10% of the coil rated voltage*						
소비전력 *Power consumption*		AC	약 0.9~1.3W (60Hz) *About 0.9~1.3W at 60Hz*						
		DC	약 0.9VA *About 0.9VA*						

기타특성
Other characteristics

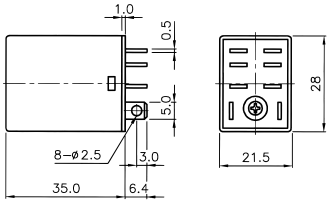
허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	18,000회/시 *18,000 cycles/hr.*
	전기적 *Electricall*	1,800회/시 *1,800 cycles/hr.*
동작시간 *Operating(Pick-up) time*		25ms이하 *Max. 25ms*
복귀시간 *Release time*		25ms이하 *Max. 25ms*
접촉저항 *Contact resistance*		100mΩ이하 *Max. 100mΩ*
절연저항 *Insulation resistance*		100MΩ이상(DC500V절연저항계) *min.100MΩ at DC500V*
내전압 *Dielectric strength*	충전부간 *Between contacts in the same pole*	AC 1,000V 50/60Hz 1min
	비충전부간 *Between other parts*	AC 2,000V 50/60Hz 1min
내진동 *Vibration protection*		10~55Hz 복진폭 1.0mm
내충격 *Mechanical shock protection*	내구	1000m/s²(약 100G)
	오동작	200m/s²(약 20G)이상
수명 *Lifetimes*	전기적 *Electricall*	20만회이상 *0.2 mil .operations*
	기계적 *Mechanical*	500만회이상 *5 mil .operations*

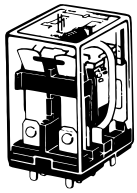
파워용, LY-2
Power relay, LY-2

외형치수
Dimensions

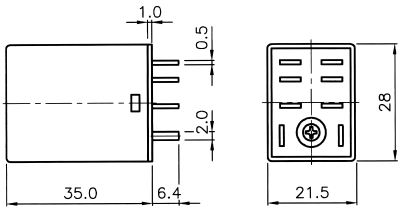


LY-2S
LY-2SN
LY-2SN-X1

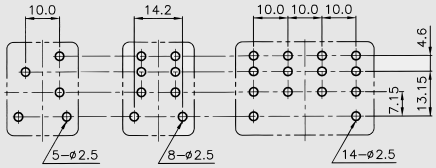




LY-2P
LY-2PN
LY-2PN-X1

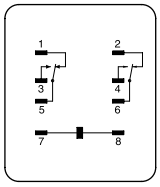


PCB가공치수
PCB drilling



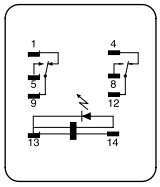
접속도
Circuit diagrams

LY-2S



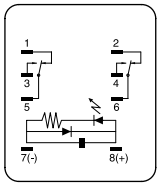
2극
2pole

LY-2SN



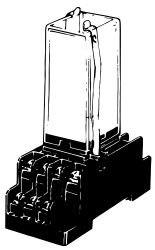
2극(LED부착)
2pole with LED

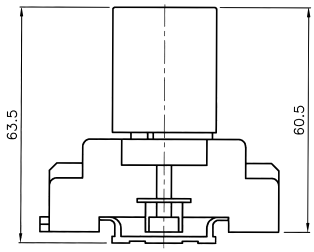
LY-2SN-X1



서지방지형

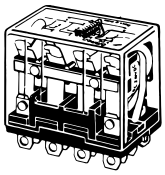
소켓설치시 치수
진동에 의한 탈락이 생기지 않도록 릴레이 고정쇠로 확실하게 고정, 사용하여 주시기 바랍니다.



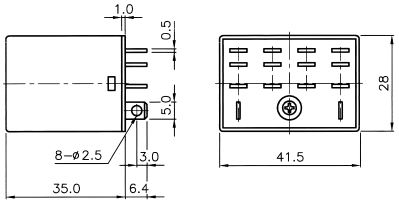


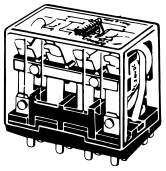
파워용, LY-4
Power relay, LY-4

외형치수
Dimensions

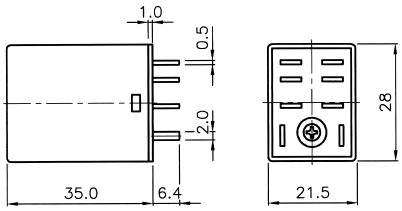


LY-4S
LY-4SN
LY-4SN-X1

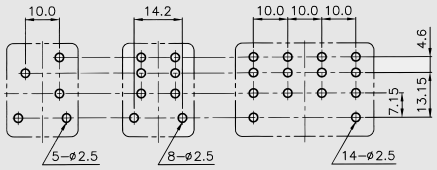




LY-4P
LY-4PN
LY-4PN-X1

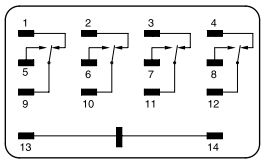


PCB가공치수
PCB drilling



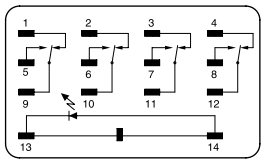
접속도
Circuit diagrams

LY-4S



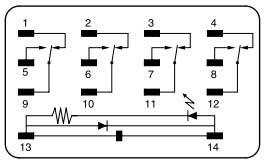
4극
4pole

LY-4SN



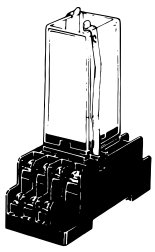
4극(LED부착)
4pole with LED

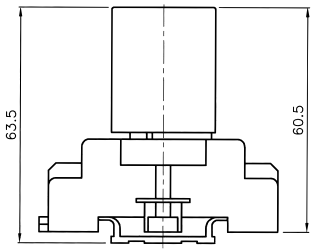
LY-4SN-X1



서지방지형

소켓설치시 치수
진동에 의한 탈락이 생기지 않도록 릴레이 고정쇠로 확실하게 고정, 사용하여 주시기 바랍니다.





소형파워용, MP
Miniature power relay

정격
Ratings

형식 *Type of relay*		SHR-MP-2 2pole		SHR-MP-3 3pole	
최대개폐전압 *Rated Coltage*		AC220V, DC125V			
정격통전전류 *Rated continuous current*		7.5A		5A	
정격전류 *Rated opearting current*		AC220V	DC24V	AC220V	DC24V
	저항부하 *Resist* ($\cos\phi=1$)	7.5A	5A	5A	3A
	유도부하 *Induct* ($\cos\phi=0.4$, L/R=7ms)	3A	4A	5A	2.5A

주문형식
Catalog No. structure (Ordering information)

SHT-MP-2 Type • **24A** 조작코일전압 *Coil voltage code*

극 수 *Poles contacts*	단자구조 *Terminal*	동작표시 *Indicator*	형 식 *Type*
2극 *2 pole 2 changeover DPDT*	소켓형 *Plug-in*	없음 *Without*	SHR-MP-2
		있음 *With LED*	
	PCB형 *PCB terminal*	없음 *Without*	
		있음 *With LED*	
3극 *3 pole 3 changeover 3PDT*	소켓형 *Plug-in*	없음 *Without*	SHR-MP-3
		있음 *With LED*	
	PCB형 *PCB terminal*	없음 *Without*	
		있음 *With LED*	

Code	Voltage
66A	AC6V
12A	AC12V
24A	AC24V
48A	AC48V
110A	AC110
220A	AC220V
6D	DC6V
12D	DC12V
24D	DC24V
110D	DC110V

접속소켓 *socket for plug-in*		
	2극 *2pole*	SH-RS-8
	3극 *3pole*	SH-RS-11

정격 및 성능
Characteristics

특징
Features

- 소형이면서도 2, 3극 2종으로 되어 있으며, 10A의 부하를 개폐할 수 있는 고용량 파워 릴레이 입니다.
- 소비전력이 적으며 응답속도가 예민합니다.
- 정격전압선택의 폭이 넓어 회로구성이 용이합니다.
- 기계적 수명이 500만회이상의 장수명 제품입니다.
- 교환 및 유지보수가 쉬운 구조로 되어 있습니다.
- *As even with mini relay have 2 type of 2 pole and 3 pole. And a relay with large capacity for possible switching of 10A load.*
- *Power consumption is little, respond speed is rapid.*
- *Consist of circuit is easy, because range of rating voltage selection is wide.*
- *With above 5 million times of mechanical lifetime, it can be long used.*
- *Consist of structure that replacement and maintenance, repair.*

용도
Application

- 일반 제어회로, 전원장치, 공작기계
- 의료기, 로보트 및 기타 범용기계
- *General control circuit, Power supply device, Machine tool*
- *Medical instrument, Robot, and the like general-purpose machine.*

조작코일정격
Operating coil ratings

주) 설정기준
주위온도 23℃
전류오차 ±15℃
저항오차 ±10℃

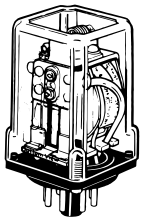
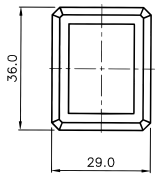
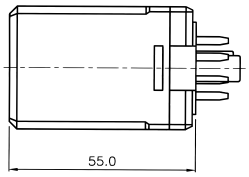
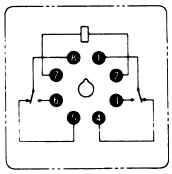
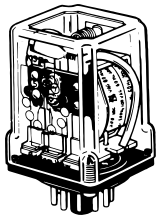
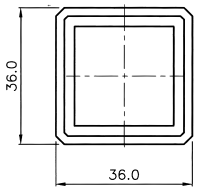
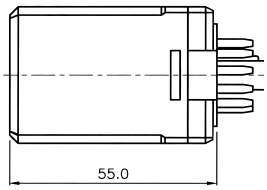
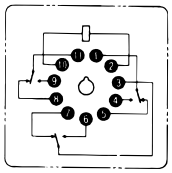
AC코일 *AC supply*	전압 *Rated voltage*		6V	12V	24V	50V	110V	220V
	전류 *Current*	50Hz	404mA	202mA	98mA	43.6mA	24.7mA	12.9mA
		60Hz	360mA	180mA	88mA	39mA	21mA	11mA
	저항 *Resistance*		5.3Ω	21.5Ω	91Ω	420Ω	1,620Ω	7.100Ω
DC코일 *DC supply*	전압 *Rated voltage*		6V	12V	24V	48V	110V	
	전류 *Current*		255mA	126mA	56mA	29.5mA	14.7mA	
	저항 *Resistance*		23.5Ω	95Ω	430Ω	1,630 Ω	6,800Ω	
사용전압 *Operating(pick-up)voltage*			코일정격전압의 80~110% *80~110% of the coil rated voltage*					
복귀전압 *Release voltage*		AC	코일정격전압의 30%이하 *Less than 30% of the coil rated voltage*					
		DC	코일정격전압의 10%이하 *Less than 10% of the coil rated voltage*					
소비전력 *Power consumption*		AC	약 1.9~2.8W (60Hz) *About 1.9~2.8W at 60Hz*					
		DC	약 1.5VA *About 1.5VA*					

기타특성
Other characteristics

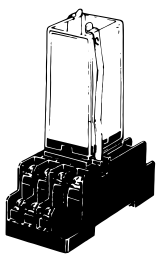
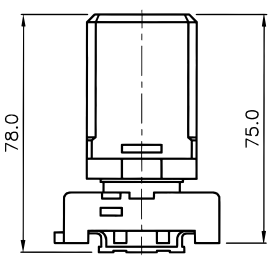
허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	18,000회/시 *18,000 cycles/hr.*
	전기적 *Electrical*	1,800회/시 *1,800 cycles/hr.*
동작시간 *Operating(Pick-up) time*		AC 조작시 : 20ms이하, DC 조작시 : 30ms이하 *AC supply : Max. 20ms, DC supply : Max. 25ms*
복귀시간 *Release time*		20ms이하 *Max. 20ms*
접촉저항 *Contact resistance*		100mΩ 이하 *Max. 100mΩ*
절연저항 *Insulation resistance*		100MΩ이상(DC500V절연저항계) *min.100MΩ at DC500V*
내전압 *Dielectric strength*	충전부간 *Between contacts in the same pole*	AC 1,000V 50/60Hz 1min
	비충전부간 *Between other parts*	2 pole : AC 2,000V 50/60Hz 1min 3 pole : AC 1,500V 50/60Hz 1min
내진동 *Vibration protection*		10~55Hz 복진폭 1.0mm
내충격 *Mechanical shock protection*	내구	1000m/s²(약 100G)
	오동작	200m/s²(약 20G)이상
수명 *Lifetimes*	전기적 *Electricall*	20만회이상 *0.2 mil .operations*
	기계적 *Mechanical*	500만회이상 *5 mil .operations*

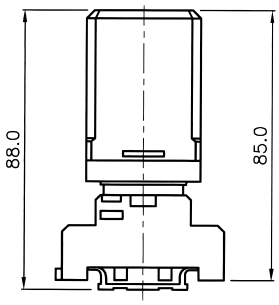
소형파워용, MP
Miniature power relay

외형치수 및 접속도
Dimensions & circuit diagrams

Dimensions	*Circuit diagrams*
SHR-MP2   	 2극 2 pole
SHR-MP3   	 3극 3 pole

소켓설치시 치수
리레이를 확실하게 고정하여 진동충격에 의하여 탈락등을 막는데 사용하여 주십시요.



강력파워용
Large power relay

정격
Ratings

최대개폐전압	*Rated voltage*	AC220V , DC125V			
정격통전전류	*Rated continuous current*	30A			
정격전류	*Rated opearting current*	AC110V	AC220V	DC24V	DC110V
	저항부하 *Resist* (cos∮=1)	30A	5A	15A	1.2A
	유도부하 *Induct* (cos∮=0.4,L/R=7ms)	20A	15A	7.5A	0.6A

주문형식
Catalog No. structure (Ordering information)

SHR-201 • **24A**

전면구조 *Type of head*

접점블록종류 *Bsae/Contact block*

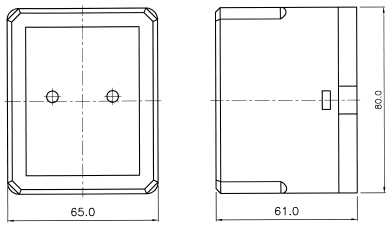
극 수 *Poles*	접점구성 *Contacts (main)*	보조접점 *Aux. Contact*	형 식 *Type*
2극 *2 pole*	2a *2NO DPST*	없음 *Without*	SHR-201
		있음 *1a1b(1NO+NC)*	SHR-201S
	2c *2 changeover DPDT*	없음 *Without*	SHR-202
		있음 *1a1b(1NO+NC)*	SHR-202S
3극 *3 pole*	3a *3NO 3PST*	없음 *Without*	SHR-203

보조접점정격 : 5A (저항부하)

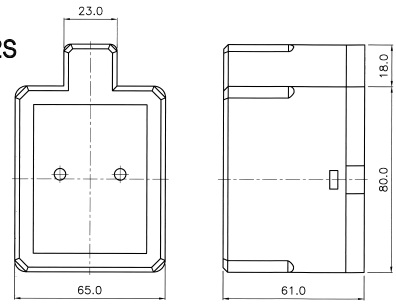
Code	*Voltage*
12A	AC12V
24A	AC24V
110A	AC110
220A	AC220V
12D	DC12V
24D	DC24V
110D	DC110V

외형치수
Dimensions

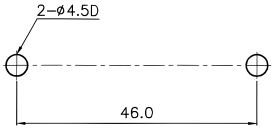
SHR-201, 202, 203



SHR-201S, 202S



판넬가공치수
Drilling



제어용릴레이

제어용릴레이

Industrial Relays

강력파워용

Large Power Relay

정격 및 성능

Characteristics

특징 *Features*

- 25A까지 전류를 개폐할 수 있어 다용도로 사용할 수 있습니다.
- 동작음이 적고 절연성이 우수하며 대용량 전력회로의 개폐가 가능한 인지형 계전기 입니다.
- 가동부에는 보호카바가 있어 동작이 안전합니다.
- 용량에 비해 가격이 저렴한 우수 제품입니다.
- *A relay with large capacity for possible switching of 25A load, it can be wide use.*
- *Widely used for mass device with action sound is quiet, insulation is excellent.*
- *A moving part with protection cover is act safely.*
- *As even with mass capacity, low priced and excellent product.*

용도 *Application*

- 냉동차, 전기온수기, 단상모타기동용, 항온장치의 히타개폐
- 펌프, 환풍기모터제어용, 기타 산업용기계.
- *Freezer car, Electric water heater, Starter motor, Heater switchgear of pyrostat.*
- *Pump, Control device of ventilating fan motor, and the like industrial machines.*

조작코일정격 *Operating coil ratings*

주) 설정기준
주위온도 23℃
전류오차 ±15℃
저항오차 ±10℃

AC코일 *AC supply*	전압 *Rated voltage*		24V	110V	220V	380V
	전류 *Current*	50Hz	500mA	116mA	58mA	28mA
		60Hz	410mA	96mA	48mA	23mA
	저항 *Resistiance*		48Ω	948Ω	3800Ω	Ω
DC코일 *DC supply*	전압 *Rated voltage*		12V	24V	100V	
	전류 *Current*		218mA	104mA	25mA	
	저항 *Resistiance*		55Ω	230Ω	4,000Ω	
사용전압 *Operating(Pick-up)voltage*			코일정격전압의 80~110% *80~110% of the coil rated voltage*			
복귀전압 *Release voltage*		AC	코일정격전압의 30%이하 *Less than 30% of the coil rated voltage*			
		DC	코일정격전압의 10%이하 *Less than 10% of the coil rated voltage*			
소비전력 *Power consumption*		AC	약 9~10.6W (60Hz) *About 9~10.6W at 60Hz*			
		DC	약 1.5VA *About 1.5VA*			

기타특성 *Other characteristics*

허용동작빈도 *Max. operating cycles*	기계적 *Mechanical*	18,000회/시 *18,000 cycles/hr.*
	전기적 *Electricall*	1,800회/시 *1,800 cycles/hr.*
동작시간 *Operating(Pick-up) time*		AC 조작시 : 30ms이하, DC 조작시 : 40ms이하 *AC supply : Max. 30ms, DC supply : Max. 40ms*
복귀시간 *Release time*		AC 조작시 : 30ms이하, DC 조작시 : 50ms이하 *AC supply : Max. 30ms, DC supply : Max. 50ms*
접촉저항 *Contact resistance*		50mΩ 이하 *Max. 50mΩ*
절연저항 *Insulation resistance*		100MΩ이상(DC500V절연저항계) *min.100MΩ at DC500V*
내전압 *Dielectric strength*	충전부간 *Between contacts in the same pole*	AC 1,000V 50/60Hz 1min
	비충전부간 *Between other parts*	AC 2,000V 50/60Hz 1min
내진동 *Vibration protection*		10~55Hz 복진폭 1.0mm
내충격 *Mechanical shock protection*	내구	1000m/s²(약 100G)
	오동작	50m/s²(약 5G)이상
수명 *Lifetimes*	전기적 *Electricall*	20만회이상 *0.2 mil .operations*
	기계적 *Mechanical*	500만회이상 *5 mil .operations*

사용시 주의사항

- 접속 : 각 단자는 나사식 접속방식이므로 적당한 압착단자(M4)를 사용하시며 나사조임시 무리한 힘을 가하지 마십시요.
- 부착방법 : 가능한 수평부착을 하되 수직부착의 경우는 접점부분을 밑으로 향하게 부착하시고 부착장소는 습기, 먼지, 기름등이 없는 장소에 부착하여 주십시요.
- 보수 : 사용중 떨림현상이 있을시는 고정철심사이에 이 물질이 끼어 있으므로 깨끗한 공기로 품어내거나 깨끗한 종이나 헝겁으로 닦아 주십시요.

용어설명
Terms Explanation

(1) 일반용어
General Terms

■ **힌지형 전자계전기**
Hinge type electromagnetic relay

힌지형 전자계전기란 조작코일에 조작입력을 인가하거나 또는 제거함에 따라서 전자석의 접촉자가 지지점을 중심으로 회전 운동을 하고, 그 움직임에따라 직접또는 간접으로 접점의 개폐를 하는 기구의 계전기로 일반적으로 릴레이라고 부릅니다.
The device which opens or closes contact directly or in directly according to the movement, which the contact pole of electromagnet does rotational movement with centering the supporting point, as actuation input is given to coil or removed.

■ **신호전달**
Signal transmission

조작코일의 소비전력이 자기와 거의 같은 값의 다른리레이를 제어해서 전기신호를 제어하는 것입니다.
This is that the consuming power of coil controls other relay with almost same value as itself and transmits electric signal.

(2) 조작코일 관계
Relation of operation coil

■ **조작코일**
Operating coil

리레이를 동작시키기 위하여 전압 또는 전류를 가하는 회로로서, 주로 권선으로 구성되는 부분입니다.
Operation coil is current, voltage supplying part for operating state of relay, it is composed of mainly winding.

■ **조작입력**
Operating input

조작코일에 가하여지는 전압 또는 전류.
Current or voltage for operation coil.

■ **조작코일 정격전압**
Rated voltage of operating coil

릴레이를 통상상태로 사용하는 경우, 조작코일에 가하는 기준이 되는 전압을 말합니다.
Reference voltage given to operation coil for general use of relay.

■ **조작코일의 정격전류(교류정격전압사양)**
Rated current of operating coil

특정조건 23℃중에서 정격전압을 인가한때의 수치로, 일반적으로 +15~-20%입니다.
The numerical value of supply a rating voltage in special condition 23°C. Generally +15 ~ -20%.

■ **동작상태**
Operating state

조작코일에 전압 또는 전류가 가해지고, 접점의 개폐가 완료된 상태입니다.
This is that condition of finished the opened or closed of contacts as supply current or voltage for operation coil.

■ **복귀상태**
Return state

조작코일의 전압 또는 전류가 제거되고, 접점의 개폐가 완료된 상태입니다.
This is that condition of finished the opened or closed of contacts as isolate current or voltage for operation coil.

■ **동 작**
Operating

리레이가 복귀상태에서 동작상태로 이행되는 것입니다.
This is that a relay is carried out from return state to operating one.

■ **복 귀**
Return

리레이가 동작상태에서 복귀상태로 이행되는 것입니다.
This is that a relay is carried out from operating state to return one.

■ **코일저항(직류 정격전압 사양에 한함)**
Coil resistance (limited direct rated voltage)

측정조건 23℃중에서의 값이고, 공차는 ±10% 입니다.
This value is that condition of measurement is 23°C, and common difference is ±10%.

■ **정격소비전력**
Rating consumption electric power

코일에 정격전압을 가할때 코일에서 소비되는 전력의 수치로 표시합니다. 교류의 경우는, 주파수 60Hz에 있어서의 수치입니다.
This is defined that using electric power in coil, as rating voltage given to coil.

■ **동작전압**
Operating voltage

복귀상태의 릴레이 코일에 입력을 차차 증가시켜 릴레이가 동작하는 전압치로 주위온도가 23℃인 조건입니다.
The voltage when relay becomes operating state with increasing actuation input of relay in return state, and the condition is 23°C in surrounding temperature.

■ **복귀전압**
Return voltage

리레이 코일 정격전압 입력을 점증시켜 리레이가 복귀하는 전압치로 주위온도가 23℃인 것의 조건입니다.
The voltage when relay becomes return state with increasing actuation input of relay in operating state, and the condition is 23°C in surrounding temperature.

■ **최대허용전압**
Maximum permissible voltage

리레이 코일의 조작전원 전압허용 변동 범위의 최대치입니다.
This is defined that maximum value of range of operating voltage change in the relay coil.

용어설명
Terms Explanation

(3) 접점회로 관계
Relation of contact circuit

■ **개폐부**
Switching part
리레이에 의하여 개폐되는 외부회로에 접속되는 도전 부분 전체를 리레이의 개폐부라하고,개폐부는 접점, 접촉스프링, 내부 도선, 단자등으로 구성됩니다.
Relay's switching part includes the entire conductive parts of relay which is connected to outer circuit switched by relay, and is composed of contact, contact spring, inside leading wire, terminal etc.

■ **접점구성**
Contact structure
접점구성이란, 접점접촉 기구를 말합니다.
The part of interface in the contact.

■ **접점극수**
Contact pole
접점극수란, 접점 회로수를 말합니다.
The number of contact circuit.

■ **상시 개로접점**
Normally open contact
복귀상태에서 개로되고, 동작상태에서 폐로되는 접점, a 접점, 메이크 접점이라고도 합니다.
The contact which opening in return state while closed in operating and keeping state. It is also called as 'make contact' or 'a contact'.

■ **상시 폐로접점**
Normally closed contact
복귀상태에서 폐로되고, 동작상태에서 개로되는 접점, b접점, 브레이크 접점이라고도 합니다.
The contact which opening in return state while opened in operating and keeping state. It is also called as 'brake contact' or 'a contact'.

■ **절환접점**
Transfer contact
a접점, b접점을 모두 갖춘 접점구조로서, 가동 접점축또는 고정 접점축의 도전부가 공통인 것. c접점 트랜스 퍼 접점이라고도 합니다.
As all equipped contact structure of a, b contact, the conductive part of movable contact side or fixed contact side is in common. Also called as C contact, transfer contact.

■ **무개로 절환접점**
No opened circuit transfer contact
상시폐로 접점과 상시개로 접점이 각각 속하는 개폐부의 일부를 공유하는 구조로서, 리레이가 동작및 복귀될 때 개로 하는 접점의 개로보다 먼저 폐로되는 접점이 폐로하고, 일시적으로 쌍방의 접점이 폐로상태를 유지할 때의 절환접점 CI접점, 콘티뉴어스 접점, 메이크 비포어 브레이크 접점이라고도 합니다.
As a structure sharing some switching part to which normally closed and open contacts are belonged resp., this is the switching contacts when the closing contact, closed before the opening of opening contact when relay operates and returns, and both contact keep the closed state temporary. Also, called as CI contact, continuous contact, make before break contact.

■ **정격부하**
Rated load
개폐부(접점)의 성능을 결정하는 기준이 되는 수치로접점 전압과 접점전류의 조합으로 표현합니다.
Reference value to decide switching function in switchgear part. It is expressed by check up contact voltage and contact current.

■ **정격통전전류**
Rated continuous current
접점을 개폐하는 일 없고 동시에 온도 상승한도를 넘는 일 없이 연속해서 접점에 통전할 수 있는 전류입니다.
Continuously conductible current to switching part without switching contact and without exceeding temperature rise limit.

■ **정격사용전류**
Rated operating current
개폐부의 성능을 정하는 기준이 되는 통전전류 이하의 전류입니다.
Reference current to decide switching function in switchgear part, it is decided below conductive current.

■ **정격 사용전압**
Rated operating voltage
개폐부의 성능을 정하는 기준이 되는 전압입니다.
Reference voltage to decide switching function in switchgear part.

■ **개폐빈도**
Switching frequency
리레이의 단위시간에 대한 동작회수 입니다.
Relay's operation frequency per unit time.

■ **정격부하 개폐빈도**
Rated load switching frequency
개폐부에 정격 부하를 인가하고, 연속하여 동작 및 복귀를 하여 전기적 수명을 만족할 수 있는 최대의 개폐빈도를 말합니다.
Maximum switchgear frequency that satisfy the electric life-time with supply a rating load in switchgear part, and operating and returning continuously.

■ **무부하 개폐빈도**
Non-load switching frequency
개폐부에 부하를 가하지 않고, 연속으로 동작 및 복귀를 하여 기계적 수명을 만족할 수 있는 최대의 개폐빈도를 말합니다.
Maximum switchgear frequency that satisfy the mechanical life-time without supply a rating load in switchgear part, and operating and returning continuously.

■ **접점전압**
Contact voltage
개폐부(접점)의 성능을 결정하는 기준이 되는 전류입니다. 이 수치는 정격 통전전류를 넘는일은 없습니다. 사용시에는 접점전류의 최대치를 넘지 않도록 주의하십시요.
Reference current to decide switching function. This value is not exceed of rating conductive current. Please attention that don't exceed of maximum value in contact current in use.

■ **개폐 용량의 최대치**
Maximum value of switchgear capacity
실제 사용상, 지장없이 개폐할 수 있는 부하용량의 최대치입니다.
Maximum value of load capacity could open and close without difficulty in actual use.

(4) 전기적 성능
Electric capacity

■ **동작시간**
Operating time

주위온도 23℃일때 릴레이의 코일에 코일정격전압을 가한 시점에서 a접점이 폐로상태로 되기까지의 시간을 말합니다.

As surround temperature is 23?C, operating time means that the time from supply coil rating voltage in coil of relay to closed condition of 'a' contact.

■ **복귀시간**
Release time

주위온도 23℃중 릴레이 코일의 코일정격전압을 제거한 시점에서 b접점이 폐로상태로 되기까지의 시간을 말합니다.

As surround temperature is 23?C, release time means that the time from remove coil rating voltage in coil of relay to closed condition of 'a' contact.

■ **절연저항**
Insulation resistance

접점 코일간이나 전기회로, 철심테, 철심과 같은 접지 비도전 금속부 사이 혹은 접점 상호간의 저항을 말합니다.

Between the contact coil, or between the connected non-conduction metal like electric circuit, metal supporting frame, or resistance by mutually contact.

■ **내전압**
Dielectric strength

절연저항의 측정과 동일 장소에 60Hz의 정현파에 가까운 전압으로 시험을 하였을때 절선파괴가 일어나지 않는 한계치를 나타내며 처음에는 규정전압치의 1/3이하의 전압을 인가하고 이후 규정치에 이를때까지 전압을 읽으면서 급속하게 상승시킵니다. 가압시간은 전압이 규정치에 도달한후 1분간으로 합니다.

- 도전부 단자와 노출된 비충전 금속부 사이
- 독립한 도전부 단자 사이
- 동극 접점 단자 사이

It present limited value that line isn't cutting off when test in current near to Sine Curve of 60Hz in the same place with measurement of insulation resistance. Supply to voltage below the 1/3 of regulation voltage value in the first, and then make increasing rapidly with recognize the voltage until reach the regulation value.

- *Between contact of electric conduction part and other exposed metal parts*
- *Between independent contact of electric conduction part*
- *Between same pole contact*

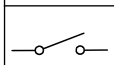
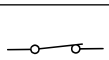
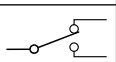
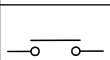
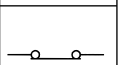
■ **진 동**
Vibration

운반시, 취부시에 발생하는 비교적 큰 진동에 의한 특성변화와 파손에 대해 규제된 내구진동과 사용상태에서의 진동에 의한 오동작을 규제하는 오동작 진동으로 구분됩니다.

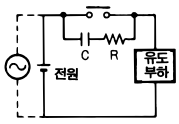
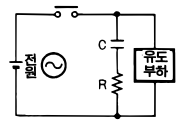
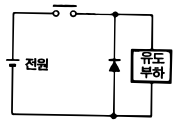
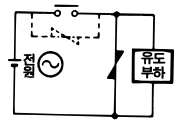
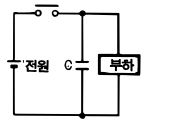
Vibration is classified into three types significantly. It is change of character by comparatively large vibration from transport and combine, and restricted vibration protection for damage, and vibration for error in action in use state.

접점에 관한 사항
The Matter Affecting Contact

■ **접점기호**
Symbol of contact

a접점 *a contact*	b접점 *b contact*	c 접점 *c contact*	2중차단 a접점 *Double breaking A contact*	2중차단 b접점 *Double breaking B contact*
				

■ **접점보호회로**
Contact protective circuit

회 로 예 *Circuit example*	적용 *Application*		특징 · 기타 *Special feature, and the others*
	AC	DC	
	* △	○	* AC 전압에서 사용하는 경우 부하의 인피더스가 CR의 인피던스 보다 훨씬 작은점 *When using AC voltage, induction load impedance smaller than CR's*
	○	○	AC, DC 모두적용 *Both AC, DC applied.*
	×	○	코일에 저장된 에너지를 병렬 디이오드에 따라 전류의 형태로 코일에 흐르게 하고 유도부하의 저항분으로 주울열로서 소비시킵니다. *Make stored energy flow as AC diagram, and flow as Joule's law heat method in resistance of inductive load.*
	○	○	바리스터 정전압 특성을 이용해 접점간에 그다지 높은 전압이 가해지지 않도록 하는 방식입니다. *The method is to prevent supply to high voltage between contacts by use the feature of varistor regulator.*
	×	×	차단시의 아크소호에는 굉장히 효과가 있지만 접점투입시에는 C로의 충전전류가 흐르므로 접점이 용착되기 쉽습니다. *When projecting contact, contact is melted / attached due to the charged current flow of condenser.*

접점에 관한 사항
The Matter Affecting Contact

유도부하를 개폐할 경우 앞 도표의 회로를 참고하면 접점의 수명을 연장하고, 잡음방지 및 아크에 의한 접촉장해를 방지하기 위하여 불꽃제거 회로로 보완하십시요. 또 불꽃제거 회로를 사용한 경우에 복귀시간(차단시간)이 다소 늦어지는 경우가 있으므로 주의해 주십시요.

When switching the inductive load, Please refer to the circuit in the diagram below. The reliability of contact is increased and lifetime longer. In case of using relay in inductive load (relay, solenoid, buzzer, etc.)switching, please compensate by frame removing circuit in order to prevent contact obstacle due to Arc. In this case please note return time can be delayed.

■ 접점회로의 전압(AC, DC)
Voltage of contact circuit

접점회로의 전압은 회로에 유도를 포함할 때에는 굉장히 높은 역기전압이 발생하고 전압이 높을수록 에너지가 커져 접점을 파손시키며 이로인해 접점의 소모량, 이전량이 증대되므로 리레이의 제어용량에 주의할 필요가 있습니다. 이것은 DC의 경우 AC 전류와 같이 제로점이 없고 한번 아크를 발생시키면 잘 꺼지지 않아 아크시간이 길어지는 것이 주된 원인입니다.

Voltage of contact circuit with inducement is created exclusive high opposite voltage, the more voltage, the more energy is large. In this case, because of consumption, transference is increased, please note for control capacity of relay. In case of DC, the chief cause is that there is not zero-point differently with AC, maintain-time of arc is long.

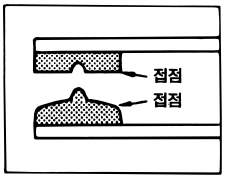
■ 접점회로의 전류
Current of contact circuit

접점의 폐로 및 개로시의 전류는 접점에 중요한 영향을 줍니다. 예를 들면 부하가 모터나 램프일때는 폐로시의 돌입전류가 클수록 접점의 소모량 이전량이 증대되고 또한 접점의 용착, 이전에 의한 접점개리 불능이라는 지장을 일으킵니다.

Current of opening and closing of contact is important affect to contact. For example, according to rush current of closing is getting larger, consumption and transference of contact is getting larger, and lead to trouble of incapacity in contact if load is motor or lamp.

■ 직류 부하 개폐
DC load switching

- 직류 부하 개폐에서는 접점을 직렬로 접속하면 등가적으로 접점 간격을 넓히게 되고 아크의 차단이 보다 확실하게 됩니다.
- *If connect DC with contact in DC load switching, can intercept arc effectively.*

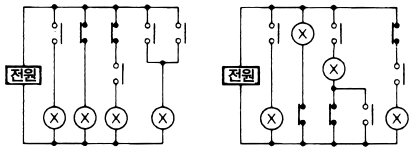


- 직류 부하 개폐에서는 접점의 전이가 발생하며 凸 凹의 연루로 접점이 복구되지 않는 경우가 있습니다. 이것은, 접점의 접촉부에 발생하는 열때문에 국부적으로 접점용적, 증발과 화학적 변화에 의해서 접점의 일부가 현저하게 소모되고 凹부가 되며, 다른쪽은 凸가 나오게 되는것에 기인합니다. 릴레이 접점의 정격전류 이하의 부하전류에도 일어나는 경우가 있으므로 실기로 확인이 필요합니다.
- *In DC load switching, come into transition of contact, and contact can be not returned caused by implication of 凸, 凹. It means that one side contact is melted or evaporated to transfer to other contacts and the uneven phenomenon is appeared as shown in the fig. So, please checking at any time.*

■ 전위차 회로
Potential difference circuit

다극 리레이의 부하접속은 전위차 회로로 되지 않도록 아래 그림 ①의 방법으로 접속해 주십시요.

Load connection of multipolar relay is that please connect as method of picture ① to prevent potential difference circuit.



① 좋은접속 ② 나쁜접속

또한, 부하회로 전압이 20V 이하인 경우 및 개폐에 의해 아크발생이 없는 경우는 그림 ②의 접속으로도 사용가능합니다. 또 모터가 정역전인 경우도 똑같이 전위차 회로가 되므로 주의해 주십시요.

Moreover, if load circuit voltage is the below 20V, or if the occurrence of arc by switching is not exist, can use as method of picture ②. And, if the motor is reversed (backlashing), please note for potential difference circuit.

코일 입력에 관한 사항

리레이의 동작을 확실히 행하기 위해 정격전압을 인가하는 것은 가장 기본적인 것입니다. 전원의 종류, 전압변동, 온도상승에 의한 코일저항의 변화등을 고려하면 코일에는 정격전압을 인가하는 것이 필요합니다. 또 최대연속 인가전압 이상의 전압을 가하면 화재등을 일으키는 경우도 있으므로 주의가 필요합니다.

■ 코일 온도상승
Coil temperature rise

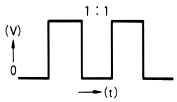
코일에 전류가 흐르면 코일 열동선, 교류 전원에는 철심등 자기재료의 철손이 부가되고 열이 발생하여 온도상승이 일어납니다. 또한 접점에 전류를 흐르게 하면 접점부에 열이 발생하여 코일의 온도상승에 영향을 줍니다.

If flowing current to coil, coil copper loss(heat) and the iron loss of magnetic materials like iron core in AC power source are added and temperature is gone up due to heat occurrence. Moreover, if flowing current to contact, heating is occurred on contact part and gives very much influence on coil temperature rise.

■ 맥동 전압에 의한 온도상승
Temperature rise by ripple voltage

ON시간 2분이하의 맥동전압으로 사용한 경우, 코일온도 상승치는 ON시간에 관계없이 ON, OFF 비율에 따라 다르고, 연속통전시와 비교해 상당히 작아집니다.

In case of using to ripple voltage below 2 min of on time, coil temperature rise value is related to ON time and there is difference depending on ON, OFF ratio. Also in continuous conducting there are some difference depending on ratio.



통전시간	%
연속통전의경우	온도상승치 100%로 한다
ON:OFF = 3:1	약 80%
ON:OFF = 1:1	약 50%
ON:OFF = 1:3	약 35%

■ 코일온도 상승에 의한 동작전압의 변화
Operation voltage change by coil temperature increasing

- 직류 조작 리레이에서는 코일에 연속통전한 후 한번 OFF하고 즉시 다시 ON하는 경우에는 코일의 온도상승에 따라 코일 저항이 증가하고 동작전압이 약간 높아지게 됩니다.
- 동선의 저항계수는 1℃부근 약 0.4%이고 이 비율로 코일저항이 증가합니다. 즉 리레이를 동작시키는데는 동작전류 이상의 전류가 필요하고 저항치의 증가에 관계없이 높아지게 되는 것입니다.

- *If immediately OFF and ON after continuously conducting to direct type current relay, operation voltage becomes a little higher due to coil resistance increased by coil temperature rise. Furthermore, when using in higher ambient temperature, operation voltage also goes up.*
- *resistance temperature coefficient of copper wire is approx 0.4% at 1?C and with this ratio coil resistance increase. Therefore, in order to operate relay, the current over operating current is required and it gets higher depending on the rise of resistance value.*

■ 직류입력용 전원
Power source for DC input

- DC 코일방법은 코일극성(+ , -)를 확인하십시요.
- 직류 리레이의 조작전류는 밧데리 전원 또는 리플율 50%이하의 직류전원을 원칙으로 하지만 정류회로를 통해 조작하는 경우 리플율의 대소에 따라 동작 복귀전압이 다르기 때문에 사용전에 확인하십시오. 또 맥류가 극단적으로 커지면 맥놀이를 일으키는 경우가 있으므로 아래 그림과 같이 평활콘덴서의 삽입을 권합니다.

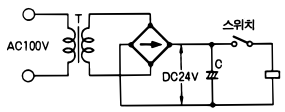
- *Please note coil polarity in DC coil methods.*
- *Operation current of DC input relay is battery power supply or DC power supply below the 50% of reply rate as a rule, but in case of operation through commutation circuit, please note before use, because operating, return voltage is different as degree of reply rate.*

■ 교류코일의 인가전압
AC Coil's Applied Voltage

1. 리레이가 안정된 동작을 하도록 기본적으로 정격전압의 +10%, -20%의 범위내에서 정현파 전압을 인가하여 주십시오.
2. 리레이 조작회로의 전원과 같은 라인에 모터, 솔레노이드, 트랜스등이 접속되어 있어서 그것들이 동작되었을때 전원전압이 저하되고 이 때문에 리레이가 바이브레이션을 일으켜 접점을 소손시키는 경우가 있습니다. 특히 소형트랜스를 끼웠을때나 트랜스용량에 여유가 없을때 배선이 긴 경우 혹은 배선이 가는 경우등도 이러한 사용방법이 되므로 통상의 전압변동과 맞추어 주십시오.

1. *Please apply Sine Curve voltage within +10%, -15% of rating voltage in order for relay to do stable operation.*
2. *Motor, Solenoid, Transformer is connected in same position with switching of relay operation circuit, in case of its operation, switching voltage getting lowering, and it cause vibration of relay, can be damaged contact.*

〈콘데서를 이용한 전압변동흡수회로〉



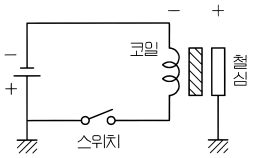
■ 코일선의 전식(電食)
Coil's electrolytic corrosion

고온, 다습한 환경에서 리레이 코일에 직류전압을 장시간 인가할 경우 회로에 따라서는 코일이 전기적으로 부식되어 전선이 되는일이 있습니다. 이 전식(電食)을 방지하기 위하여 다음 사항을 유의하여 주십시오.

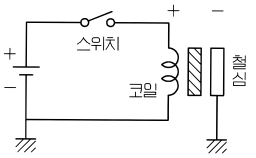
When relay's coil voltage circuit is high (especially above DC 48V), if DC relay conducts long or continuously in the place with higher temperature and humidity, wire can be disconnected by occurred electrolytic corrosion, the phenomenon which coil is corroded electrically. In order to protect this, please note the following points.

코일 입력에 관한 사항

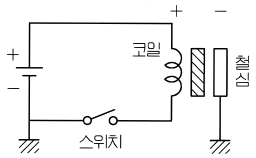
1. 전원은 +측을 접지합니다.
Please power source ground on +side.



2. +측의 접지가 불가능할 경우 스위치를 +측에 연결하여 코일과 철심 사이에 전위차가 생기지 않도록 하십시오.
If impossible ground on +side, please connect the switch to +side for prevent to potential difference between coil and iron core.



3. 전원의 -측을 접지하고, -측에 접점을 넣는 것을 피해주십시오.
Please avoid grounding -side of power source and switching in.



■ 돌입전류(부하특성)
Rush current (feature of load)

부하의 종류 및 전류 특성은 개폐에 관련하여 접점에 상당한 영향을 줍니다. 솔레노이드 부하, 모터부하, 경광등부하등은 투입시에 정상 전류의 수배~수십배까지의 돌입전류가 흘러 접점 용착의 큰원인이 되기 때문에 이것을 충분히 고려하여 여유있는 리레이를 선택하여 주시기 바랍니다.

With reference to switching, load types and current features give big influence on contact. Please note and checking as input with solenoid load, motor load, several times~several ten times of rush current can be flowed.

1. 저항부하 : 돌입전류 / 정격전류 = i/io = 1배
2. 백렬등 : i/io = 10~15배(약 1/3초)
3. 수은등 : i/io = 3배(3~5분)
4. 모-터부하 : i/io = 5~10배(0.2~0.5초)
5. 솔레노이드부하 : i/io = 10~20배(0.07~1초)
6. 전자접촉기 부하 : i/io = 3~10배(1/60~1/30초)
7. 콘덴사 부하 : i/io = 20~40배(1/120~1/30초)

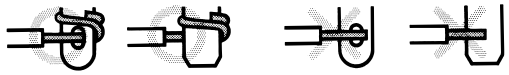
1. Resistance load : rush current/rated current=i/io=1time
2. Incandescent electric lamp : i/io=10~15times (approximate 1/3sec.)
3. Mercury lamp : i/io=3times (3~5 min.)
4. Motor load : i/io=5~10times (0.2~0.5 sec.)
5. Solenoid load : i/io=10~20times (0.07~1sec.)
6. Electronic contactor load : i/io=3~10times (1/60~1/30 sec.)
7. Condenser load : i/io=20~40times (1/120~1/30 sec.)

■ 리드선 접속방법
How to connect lead wire

1. 접속시에 부하전류의 크기에 따라 아래표에 지시한 단면적 이상의 리드선을 사용하십시오.
When connecting lead wire, depending on the size of load current, please use above size of the section area in table.

허용전류(A) *Allowable current(A)*	단면적(㎟) *Cross-sectional Area*
2	0.2
3	0.3
5	0.5
7.5	0.75
12.5	1.25
15	2
20	2
30	3.5

2. 리드선의 리레이 단자의 걷어올림을 충분히 행하여 주십시오.
Please take up relay contact of lead wire sufficiently.



〈좋은예〉 〈나쁜예〉

■ 프린트 기판에의 납땜
Soldering of print substrate

(1) 납땜작업시 다음사항에 유의하여 주십시오.
Please note for following points in soldering

1. 단자의 납땜시에는 가능한한 신속하게 작업하여 주십시오. 30W 정도의 인두끝의 온도는 약 300~350℃ 정도로 2~3초간이 적당합니다.
2. 납의양은 단자의 2/3이내가 적당합니다.

1. Please operate quickly as possible in contact soldering. Temperature of tip of 30W soldering iron is approximate 300~350?C, and 2~3 sec. is proper time.
2. The amount of solder is proper in below the 2/3 of contact.

(2) Dip Soldering시에는 다음사항에 유의해 주십시오.
Please note for following points in Dip Soldering.

1. Flox는 필요한 이상이 되지 않도록 액면관리를 통하여 균일하면서도 얇게 도포해 주십시오.
2. Flox는 송진계의 부식성이 없는것을 사용하여 주십시오.
3. Flox 도포후는 반드시 예비가열을 하여 주십시오.
4. Dip Soldering 공정에서는 온도관리에 충분히 주의하여 주십시오.

1. Please equalize supply the Flox through manage the surface.
2. Please use the Flox without corrosiveness of pine resin.
3. Should be preparatory heated after supply Flox.
4. Please note the management of temperature sufficiently in Dip Soldering work.

수위조절기/전극봉 홀더

Floatless Level Switches and Electrode Holders

수위조절기

Floatless Level Switches
Type SHF-60 series

LED동작표시
Operation LED Indicator

소형, 8핀소켓방식
Compact and Mountable on Socket

- 저감도형
  With Low Sensitivity
- 기본형
  With Medium Sensitivity
- 고감도형
  With High Sensitivity
- 가변식
  With Adjustable Sensitivity

전극봉

Electrode

1, 2m Length and 5mm Diameter

전극봉홀더

Electrode Holder
Type SH-H series

3, 4, 5 Pole

수위조절기

Floatless Level Switches

수위조절기

Floatless level switches
Type SHF-60 series

LED동작표시
Operation indicated via LED

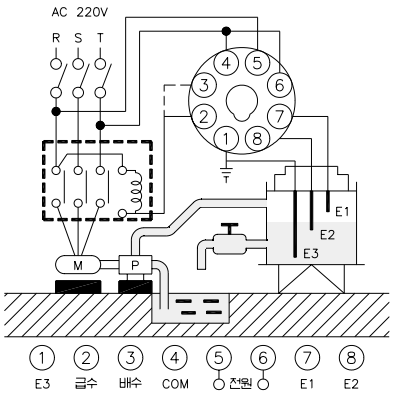
소형, 8핀소켓방식
Compact and mountable on socket

종류 *Description distance*	도달거리 *Sensing resistance*	동작저항 *Operating resistance*	복귀저항 *Release between electrodes*	전극간전압 *2nd. voltage*	주문형식 *Type*
저감도형 *With low sensitivity*	Max. 2km	0 ~ 4 ㏀		10V AC	SHF-60L
기본형 *With medium sensitivity*	Max. 1km	0 ~ 7㏀	Min. 15㏀	10V AC	SHF-60M
고감도형 *With high sensitivity*	Max. 50m	15 ~ 70㏀	Min. 100㏀	24V AC	SHF-60H
가변식 *With adjustable sensitivity*	Max. 80m *(Adjuatable)*	0 ~ 100㏀	Min. 120㏀	10V AC	SHF-60LH

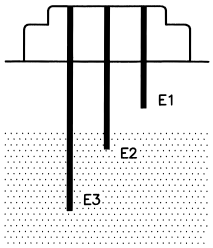
공통사양
General specification

정격전압 / *Rated voltage*	AC 220V 60Hz, AC 230V 50/60Hz
전극간 전류 / *Current between electrodes*	Max. AC 1mA
소비전력 / *Power consumption*	Max. 3.2VA
접점용량 / *Contact rating*	5A, 250V AC (저항부하, Resistive load)
내전압 / *Dielectric Strength*	1500V AC for 1min (충전부와 비충전부간)
사용주위온도 / *Ambient temp.*	-10˚C ~ +60˚C
사용주위습도 / *Humidity*	45 ~ 80%RH
응답속도 / *Response time*	20ms이하
취부용소켓 / *Mountable socket*	SH-TS1 (214 page참조)

결선도
Example of wiring diagram



제어범위
The range of control

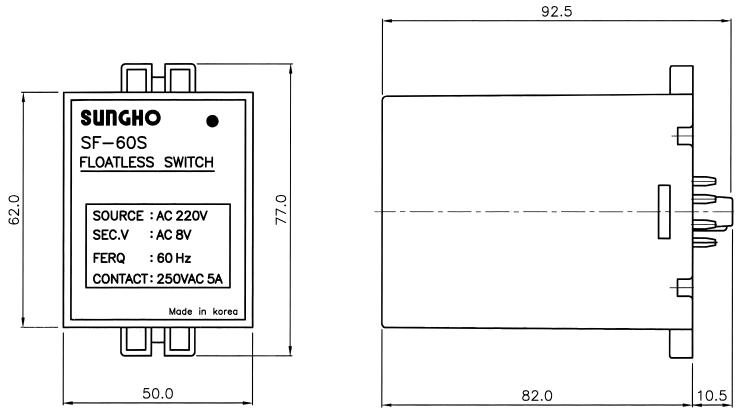


동작
action

1. E1에 도달하면 모타가 정지됩니다.
2. E2 이하가 되면 모터가 동작됩니다.
3. 배수로 사용하는 경우는 3번 단자로 결선하여 주십시오.
4. E3 전극봉 튜브 탈피(E1위치, E2위치)감도개선

1. As reach to E1, motor turns stop.
2. As below the E2, motor turns stop.
3. Please connect no. 3 contact in case of use the water supply.
4. Improved sensitivity in break from E3 electrode tube. (position of E1, E2)

외형치수
Dimensions



LED표시상태
LED Indicating condition

	모터	POWER ON	UP
급수로	가동	ON	OFF
	정지	OFF	ON
배수로	가동	OFF	ON
	정지	ON	OFF

*수조에 액 흐름 상태표시

물의 종류별 고유저항
Native resistance as kind of water

종류	고유저항	적용 Model
수도수	7~12KΩ Cm	SF-60M, SF-60H, SF-60LH
천수	5~17KΩ Cm	
정수	7~15KΩ Cm	
해수	0.04KΩ Cm	
보일러수	60~80KΩ Cm	SF-60H, SF-60LH
증류수	110KΩ Cm 이상	

수위조절기

Floatless Level Switches

전극봉 홀더

Electrode holders type SH-H series

- 봉은 가능한 스탠레스봉(5)을 사용하십시오.
- 봉의 TIP부는 장기간 사용하면 스케일이 생겨 도전성이 떨어질 우려가 있으니 6개월 주기로 닦아주십시오.
- 봉의 TIP부분은 최소한 100mm이상 피복이 되어 있으면 오동작을 할 수 있습니다.
- *Please use stainless steel electrode in possible.*
- *Please clean tip of electrode periodically (6 months) for conductivity.*
- *If covering min. 100mm in tip of electrode, can make an error in action.*

극수 및 외관 *Poles & appearance*	주문형식 *Type*	외형치수 *Dimensions*
3 pole	SH-H3P	
4 pole	SH-H4P	
5 pole	SH-H5P	

전극봉

Electrodes

길이 *Length*	주문형식 *Type*	사양 *Specification*
1m	SH-S01	*Stainless steel SUS304, ϕ5"*
2m	SH-S02	

휴즈홀더

Fuse Holders

LED 램프 표시형 휴즈홀더

LED Lamp type fuse holder

특징
Features

- 휴즈의 단락과 동시에 LED의 발광으로 휴즈의 시기를 바로 알려 줍니다
- 사용자의 입장에서 설계되어 개별적인 탈부착이 가능 합니다.
- 연결대(OPTION)를 이용하여 연결사용이 가능하므로 2련 3련의 재고가 필요 없습니다.
- 카바 손잡이(발광부)에 돌출된 부분이 있어 휴즈 교환이나 점검시 휴즈관의 탈부착이 가능합니다.
- 취부구멍은 범용으로 설계되어 있습니다.
- DIN레일의 취부가 가능 합니다.
- *The visual indication lamp (LED light) provided when the fuse blows and reduces downtime.*
- *User friendly designed for individual attach/detachment of holders. (patent pending)*
- *As may use the connector(option),for sequent use,don't have to wor about 2 or 3 ryon stock.*
- *Each fuse block is self-contained with a lever that holds, simply inse extracs the fuse from the circuit.*
- *The holes are designed for general use.*
- *Possible to Mount on DIN RAIL.*

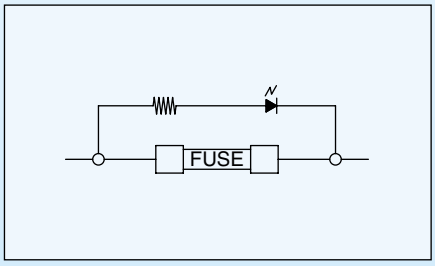
용도
Application

- 공작기계, 배전반, 자동제어기기 등
- *Machine tool, Supply of electric power, Auto control devices, etc.*

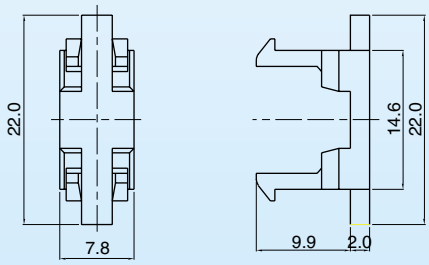
사양
Characteristics

		SHFH-15A(AC) SHFH-15D(DC)	SHFH-30A SHFH-30D
회로전압 *Voltage*	A C	100 ~ 220V	
	D C	12 ~ 28V	
회로전류 *Current*	A C	최대15A ,연속10A *15A Max, 10A Repeat*	최대30A ,연속20A *30A Max, 20A Repeat*
	D C	최대7.5A, 연속5A *7.5A Max, 5A Repeat*	최대15A, 연속10A *15A Max, 10A Repeat*
본체고정 *Terminal screw*		M4볼트& 찬넬장착 *M4&Channel attachment*	M5볼트& 찬넬장착 *M5&Channel attachment*
적합휴즈 *Compatible fuse*		ϕ6.4 x 30	
발광램프 *Indication lamp*		LED	
램프전류 *lamp current*		1 ~ 4mA	

회로도
Circuit detail



연결대(SHFH-JP10)
Connector(Option)

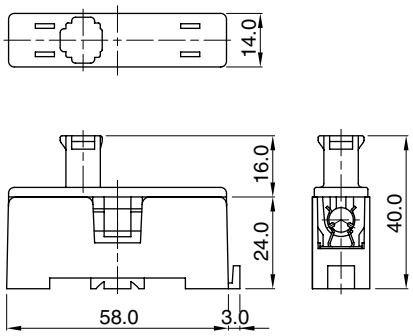
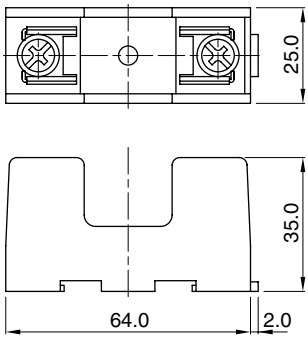


휴즈홀더

Fuse Holders

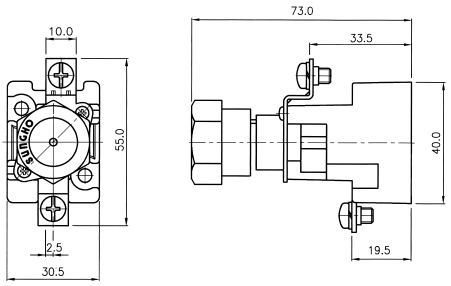
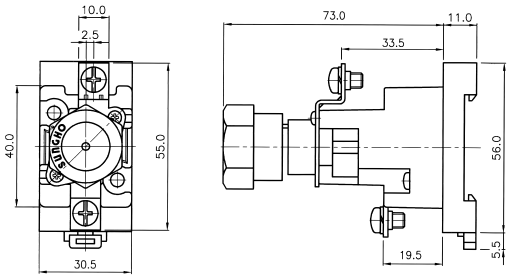
LED 램프 표시형 휴즈홀더

LED Lamp type fuse holder

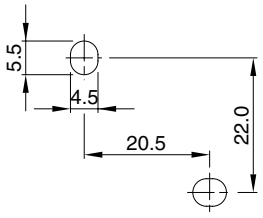
외관 *Appearance*	주문형식 *Type*	외형치수 *Dimensions*
	SHFH-15A(AC) SHFH-15A(DC)	
	SHFH-30A(AC) SHFH-30D(DC)	

사기휴즈형 휴즈홀더
LED Lamp type fuse holder

특징 *Features*	■ 볼트 또는 찬넬취부 선택이 가능하며 주변 다른 기기와 조화가 용이 합니다. ■ 난연성 폴리카보네이트 재질을 사용하여 내구성이 좋고 열에 강합니다. ■ 디자인과 사용자의 안전성이 뛰어 납니다. ■ *Screw or DIN mountable.* ■ *Nonflammable polycarbonate resin user for the frame.* ■ *Designed for the safety to use.*	
용도 *Application*	■ 공작기계, 배전반, 자동제어기기등 ■ *Machine tool, Supply of electric power, Auto control devices, etc.*	
사양 *Characteristics*	전압 *Voltage*	AC 250V
	전류 *Current*	최대15A *15A Max*
	본체고정 *Terminal screw*	M4볼트& 찬넬장착 *M4&Channel attachment*

취부방식 *Mount*	**외관** *Appearance*	**주문형식** *Type*	**외형도** *Dimensions*
볼트취부형 *Screw Mount*		**SHFH-30C**	
찬넬취부형 *Rail Mount*		**SHFH-30CH**	

취부홀 가공도
Cutout



Terminal Blocks and Sockets

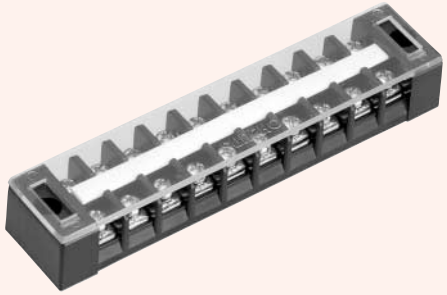
단자대/소켓

Terminal Blocks and Sockets

고정식단자대

SHT - 10 to 400
Terminal Blocks Factory Built Type

- 10...400A, 600VAC
- 3 to 20 pole
- Screw Terminal
- Screw Mount



조립식단자대

TB- 15 to 200
Terminal blocks User Assembly Type

- 15...200A, 600VAC
- poles Unlimited
- Screw Terminal
- DIN Rail Terminal

단락회로부단자대

Terminal blocks with Short Circuit

- 40A 250VAC
- Shaft Assembly
- Rail Assembly
- Standard Products

조인트터미널 블록

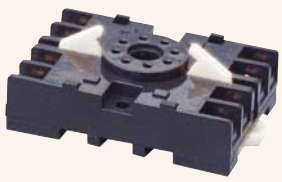
SHJT - 20
Joint Terminal Blocks

- 20A 250VAC
- Plug-in Terminal

소켓

Sockets

- 릴레이, 타이머등 취부
  For use With Relays, Timers and etc.
- 찬넬 및 나사취부 겸용
  DIN Rail or Screw Mountable
- 정격전류7A, 10A
  Rating 7A, 10A 250VAC



단자대

Terminal Blocks

고정식단자대

Terminal block factory built typ

60A 이상 고용량 BODY는 난연등급과 충격에 강한 재질을 사용하여 깨지지 않습니다.

특징 *Features*	■ 전류별 종류가 다양하여 용도에 따른 선택의 폭이 넓어 졌습니다. ■ 절연성과 강도가 우수한 재질을 사용 하였습니다. ■ 단자대 카바는 투명하며 깨지지 않는 재질로 되어있어 견고하며 번호판 문자의 식별이 용이합니다. ■ 선박용 및 화학 제품용등 부식성이 강한곳에 에서 사용할수 있는 스테인레스 볼트도 생산이 가능합니다. ■ *With various kind by electric current, can be widening selected by user.* ■ *High non-conductivity and strength material use.* ■ *Terminal block's cover is consist of transparent materials, the letter number plate becomes easier.* ■ *It is possible to use in easy-corrode place as ship and chemical prod*	
용도 *Application*	■ 공작기계, 배전반, 자동제어기기 등 ■ *Machine tool, Supply of electric power, Auto control devices, etc.*	
성능 *Characteristics*	정격절연전압 *Rated insulation voltage*	AC 600V
	정격전류 *Rated current*	10~400A (9종)
	절연저항 *Insulation resistancemin.*	100㏁이상 (DC500V 절연저항계) *100㏁ at DC500V*
	내전압(비충전부간) *Dielectric strength between non-live parts*	AC 2,000V 50/60Hz 1min
	내진동 *Vibration protection*	10~55Hz 복진폭 1.5mm
	온도상승 *Temperature rise*	Max. 45℃

부품재질

Part materials

부품 *Part*	**재 질** *Materials*
몸체 *Body*	난연 P.C , 열경화성 수지 *Flame retardant ABS resin*
단자 *Terminal*	황 동 *brass*
볼트 *Bolt*	SWRM-3, STS(Option)
카바 *Cover*	포리카보네이트 *Polycarbonate resin*

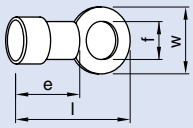
10A 고정식단자대

10A Terminal block factory built type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

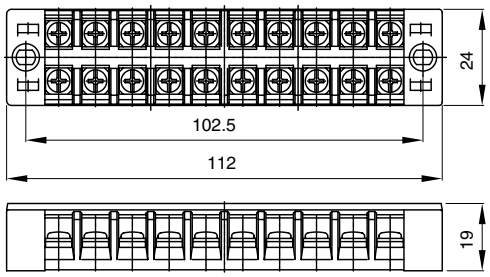
형식 *Type*		SHT-10-10	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 10A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	2.0mm²	
단자나사	*Terminal screw size*	M3	
연결단자 *Terminal*	e	Min 10.0mm	
	f	Min ϕ3.1	
	w	Max 6.8mm	
	l	Min 20.6mm	



주문형식
Type

SHT-10-10

외형치수
Dimensions



Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

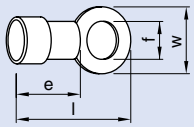
20A 고정식단자대

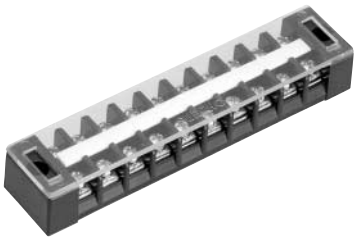
20A Terminal block factory built type

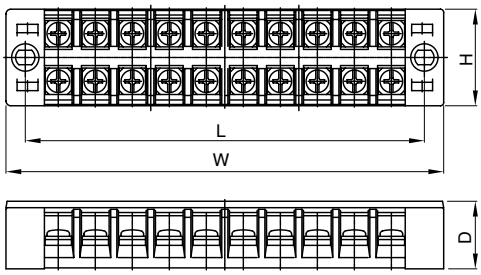
전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-20	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 20A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	3.5mm²	
단자나사	*Terminal screw size*	M4	
연결단자 *Terminal*	e	Min 10.0mm	
	f	Min ϕ4.1	
	w	Max 8.3mm	
	l	Min 21.5mm	







주문형식 *Type*	극수 *Pole*	치수 (Dimensions, mm) 가로 *W*	세로 *H*	높이 *D*	취부간격 *L*	취부구멍 *Hole*
SHT-20-3	3P	56	30	21	45	ϕ4.5
SHT-20-4	4P	68			57	
SHT-20-6	6P	89			78	
SHT-20-10	10P	136			127	
SHT-20-12	12P	162			151	
SHT-20-15	15P	198			187	
SHT-20-20	20P	251			242	

Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

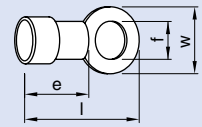
30A 고정식단자대

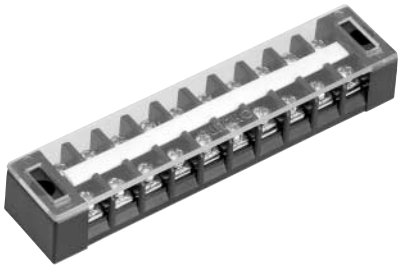
30A Terminal block factory built type

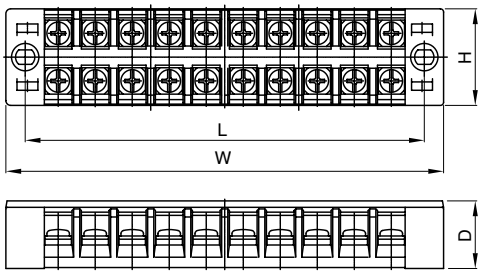
전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-30	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 30A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	5.5mm²	
단자나사	*Terminal screw size*	M4	
연결단자 *Terminal*	e	Min 14.5mm	
	f	Min ϕ4.6	
	w	Max 9.8mm	
	l	Min 21.5mm	







주문형식 *Type*	극수 *Pole*	치수 (Dimensions, mm) 가로 *W*	세로 *H*	높이 *D*	취부간격 *L*	취부구멍 *Hole*
SHT-30-3	3P	66	35	28	56	ϕ6.1
SHT-30-4	4P	83			64	
SHT-30-6	6P	100			90	
SHT-30-10	10P	154			144	

Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

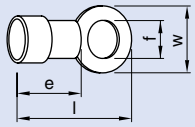
60A 고정식단자대

60A Terminal block factory built type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

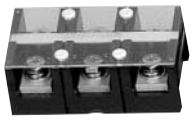
형식 *Type*		SHT-60-3	SHT-60-4
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 60A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	22mm²	
단자나사	*Terminal screw size*	M6	
연결단자 *Terminal*	e	Min 14.5mm	
	f	Min ϕ6.1	
	w	Max 14.5mm	
	l	Min 35.5mm	



주문형식

Type

SHT-60-3

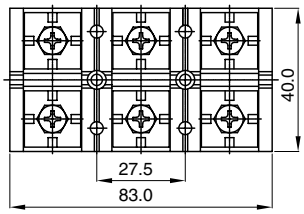


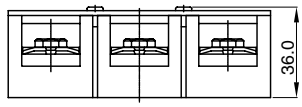
SHT-60-4

외형치수

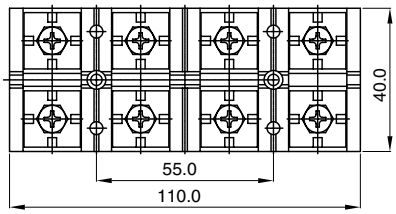
Dimensions

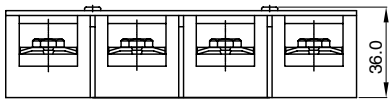
SHT-60-3





SHT-60-4





Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

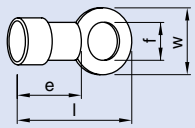
100A 고정식단자대

100A Terminal block factory built type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

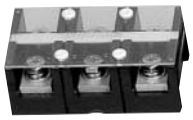
형식 *Type*		SHT-100-3	SHT-100-4
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 100A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	38mm²	
단자나사	*Terminal screw size*	M7	
연결단자 *Terminal*	e	Min 20.5mm	
	f	Min ϕ8.1	
	w	Max 19.5mm	
	l	Min 50.5mm	



주문형식

Type

SHT-100-3

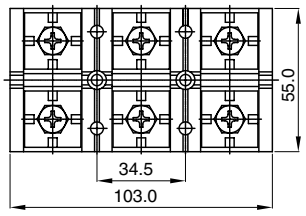


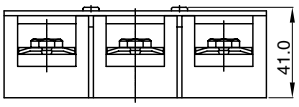
SHT-100-4

외형치수

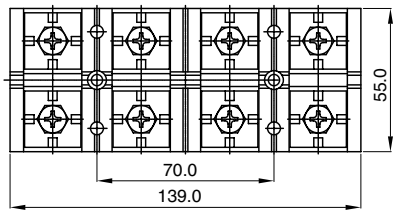
Dimensions

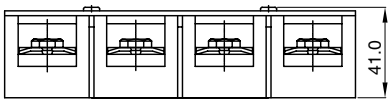
SHT-100-3





SHT-100-4





Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

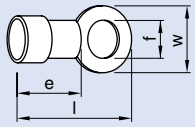
150A 고정식단자대

150A Terminal block factory built type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

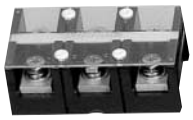
형식 *Type*		SHT-150-3	SHT-150-4
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 150A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	60mm²	
단자나사	*Terminal screw size*	M9	
연결단자 *Terminal*	e	Min 20.5mm	
	f	Min ϕ10.1	
	w	Max 22.0mm	
	l	Min 55.5mm	



주문형식

Type

SHT-150-3

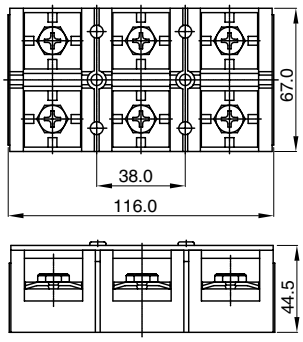


SHT-150-4

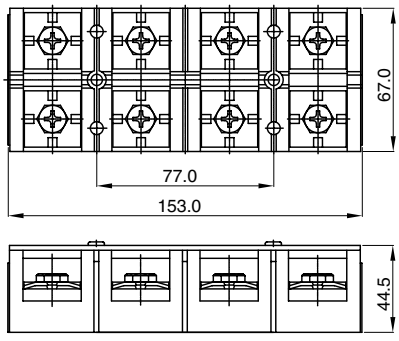
외형치수

Dimensions

SHT-150-3



SHT-150-4



Note : 단자나사의 재질은 스테인레스도 가능합니다.

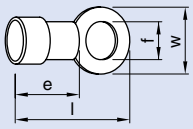
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

200A 고정식단자대

200A Terminal block factory built type

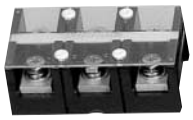
전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-200-3	SHT-200-4
정격절연전압 정격전류	*Rating insulation voltag* *Rating current*	Max 600V 250VAC 200A	
절연저항 내전압	*Insulation resistance* *Dielectic strength*	100㏁ 이상(DC500V 절연저항계) AC 2500V 50/60Hz 1min	*min 100㏁ at DC500V*
적용적합전선 단자나사	*Rating suitable wire* *Terminal screw size*	60mm² M9	
연결단자 *Terminal*	e	Min 20.5mm	
	f	Min ϕ10.1	
	w	Max 28.5mm	
	l	Min 55.5mm	

주문형식
Type

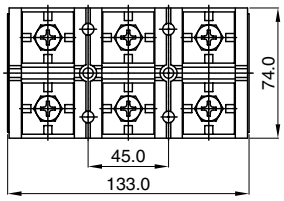
SHT-200-3

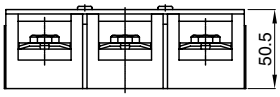


SHT-200-4

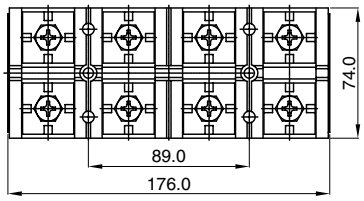
외형치수
Dimensions

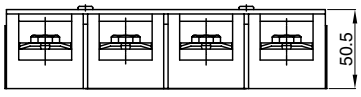
SHT-200-3





SHT-200-4





Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

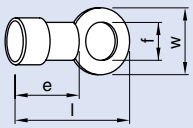
Terminal Blocks

300A 고정식단자대

300A Terminal block factory built type

전기적특성/적용압착단자

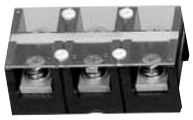
Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-300-3	SHT-300-4
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 300A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	150mm^2	
단자나사	*Terminal screw size*	M10	
연결단자 *Terminal*	e	Min 25.5mm	
	f	Min ϕ12.2	
	w	Max 36.0mm	
	l	Min 55.5mm	

주문형식

Type

SHT-300-3

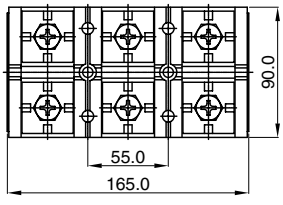


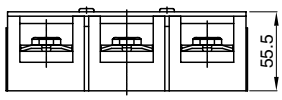
SHT-300-4

외형치수

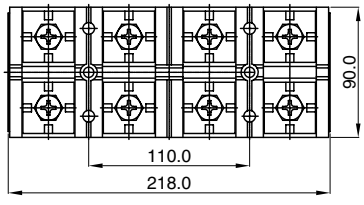
Dimensions

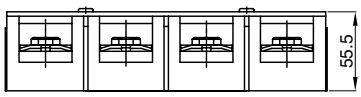
SHT-300-3





SHT-300-4





Note : 단자나사의 재질은 스테인레스도 가능합니다.

The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

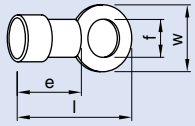
400A 고정식단자대

400A Terminal block factory built type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

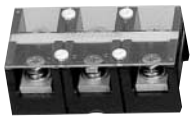
형식 *Type*		SHT-400-3	SHT-400-4
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 400A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	150mm²	
단자나사	*Terminal screw size*	M10	
연결단자 *Terminal*	e	Min 25.5mm	
	f	Min ϕ12.2	
	w	Max 36.0mm	
	l	Min 55.5mm	



주문형식

Type

SHT-400-3

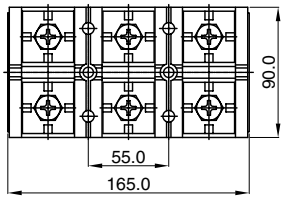


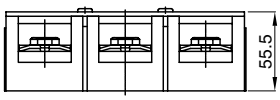
SHT-400-4

외형치수

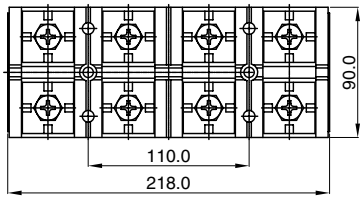
Dimensions

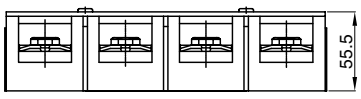
SHT-400-3





SHT-400-4





Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

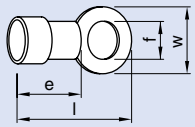
500A 고정식단자대

500A Terminal block factory built type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

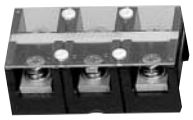
형식 *Type*		SHT-500-3	SHT-500-4
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 500A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2500V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	200mm²	
단자나사	*Terminal screw size*	M12	
연결단자 *Terminal*	e	Min 30.0mm	
	f	Min ϕ12.2	
	w	Max 44.0mm	
	l	Min 65.5mm	



주문형식

Type

SHT-500-3

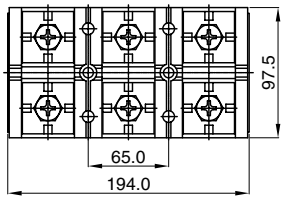


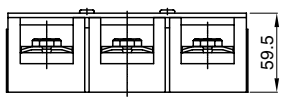
SHT-500-4

외형치수

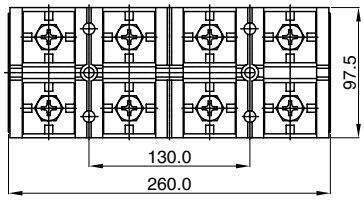
Dimensions

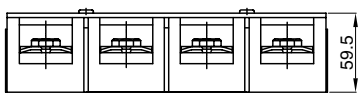
SHT-500-3





SHT-500-4

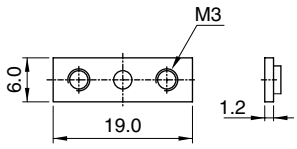




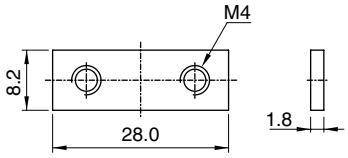
Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자 외형치수
Terminal dimensions

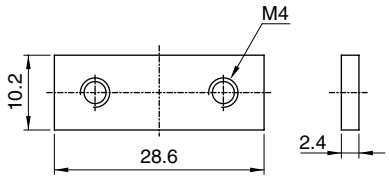
SHT-10



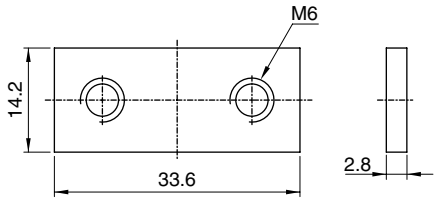
SHT-20



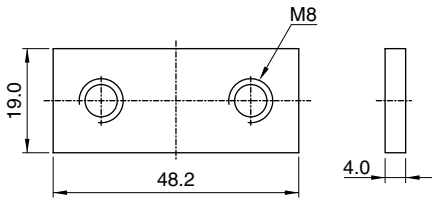
SHT-30



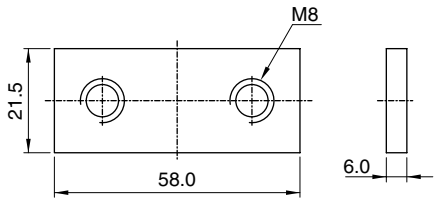
SHT-60



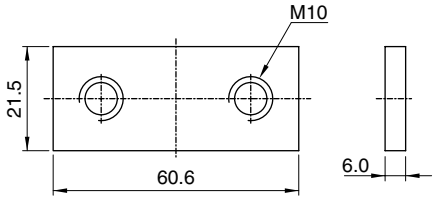
SHT-100



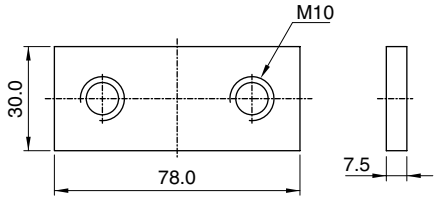
SHT-150



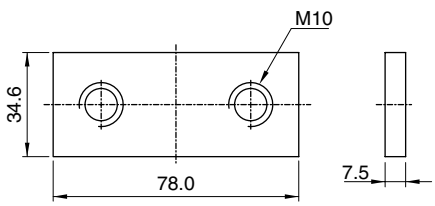
SHT-200



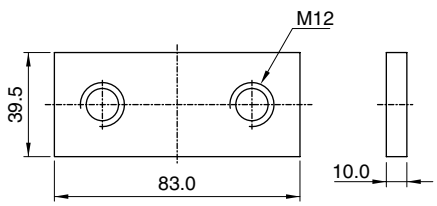
SHT-300



SHT-400



SHT-500



단자대

Terminal Blocks

조립단자대, TB-15 to 200

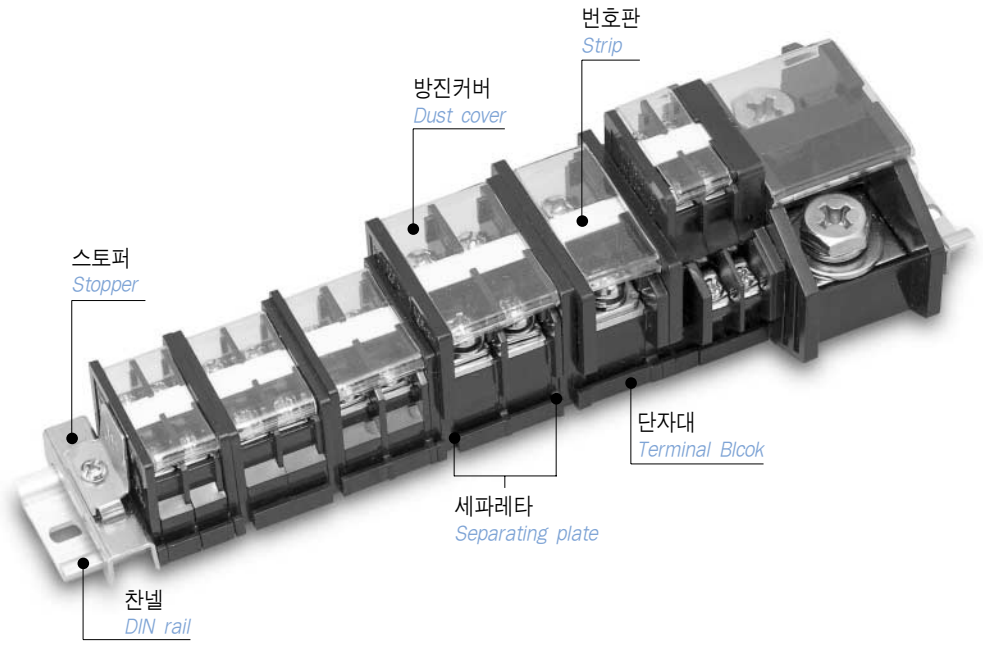
Assembly terminal block type

특징 *Features*	■ 충분한 전류용량을 가진 다양한 종류로 용도에 따라 선택이 용이합니다. ■ 한 개의 찬넬에 용량이 다른 여러종류의 단자를 필요한 순서와 개수로 조립할 수 있습니다. ■ 찬넬은 타이머, 릴레이소켓을 병행하여 사용할수 있어 취부시간 및 면적이 적습니다. ■ 배선 작업시 임의위치에서 분해가 가능합니다. ■ 내부 스프링에 의해 단자의 나사가 따라 올라 오므로 배선시 작업 시간이 단축되며 경제적입니다. ■ 몸체 재질은 난연성을 지닌 포리카보네이트로 되어 있어 내구성 및 열에 강합니다. ■ 찬넬은 알루미늄 피막으로 되어 있어 절연성이 우수합니다. ■ *With various kind by sufficient electric current, can be widening selected by user.* ■ *Channel can use with timer relay socket, so corporate time is short, and used space are small.* ■ *It is possible to disassemble in any position when wiring work.* ■ *As contact of bolt get on with the inside spring, working hours get shorter, and is economical.* ■ *Body material is consist of polycarbonate with heat resistance.* ■ *Channel plated aluminum has excellent insulating properties.*	
용도 *Application*	■ 공작기계, 배전반, 자동제어기기등 ■ *Machine tool, Supply of electric power, Auto control devices, etc.*	
성능 *Characteristics*	정격절연전압 *Rated insulation voltage*	AC600V(Max)
	정격전류 *Rated current*	10~200A
	절연저항 *Insulation resistancemin.*	100㏁이상,(DC500V절연저항계) *100㏁ at DC500V*
	내전압(비충전부간) *Dielectric strength between non-live parts*	AC 2000V 50/60Hz 1min
	내진동 *Vibration protection*	10~55Hz 복진폭 1.5mm
	온도상승 *Temperature rise*	Max. 45℃

부품재질

Part materials

부품 *Part*	**재 질** *Materials*
몸체 *Body*	난연 P.C , 열경화성 수지 *Flame retardant ABS resin*
단자 *Terminal*	황동 *brass*
볼트 *Bolt*	SWRM-3, STS(Option)
카바 *Cover*	포리카보네이트 *Polycarbonate resin*



부속품
Other accessories

형명 *Model*	주문형식 *Type*	적용모델 *Applied*	형상 *Description*
세파레타 *Separater*	SHNO-10	SHT-TB-10	
	SHNO-15	SHT-TB-15	
		SHT-TB-25	
	SHNO-35	SHT-TB-35	
	SHNO-60	SHT-TB-60	
	SHNO-100	SHT-TB-100	
	SHNO-15AW	SHT-TB-15AW	

단자대

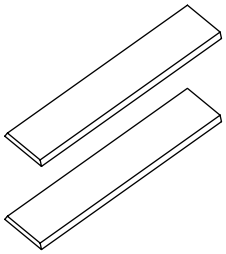
Terminal Blocks

조립단자대, TB-15 to 200

Assembly terminal block type

부속품

Other accessories

형명 *Model*	주문형식 *Type*	적용모델 *Applied*	외관 *Appearance*
스토파 *Stopper*	SH-SN-10	SHT-TB-10	
	SH-SN	SHT-TB-15	
		SHT-TB-25	
		SHT-TB-35	
		SHT-TB-60	
		SHT-TB-100	
		SHT-TB-150	
		SHT-TB-200	
		SHT-TB-15AW	
찬넬 *Din rail*	SH-C-10	SHT-TB-10	
	SH-C	SHT-TB-15	
		SHT-TB-25	
		SHT-TB-35	
		SHT-TB-60	
		SHT-TB-100	
		SHT-TB-150	
		SHT-TB-200	
		SHT-TB-15AW	
방진카바 *Dust cover*	SH-SC-10	SHT-TB-10	
	SH-1C	SHT-TB-15	
		SHT-TB-15AW	
		SHT-TB-25	
		SHT-TB-35	
	SH-2C	SHT-TB-60	
		SHT-TB-100	
		SHT-TB-150	
		SHT-TB-200	
번호판 *Strip*	SH-NN-10	SHT-TB-10	
	SH-NN	SHT-TB-15	
		SHT-TB-25	
		SHT-TB-35	
		SHT-TB-60	
		SHT-TB-100	
		SHT-TB-150	
		SHT-TB-200	
		SHT-TB-15AW	

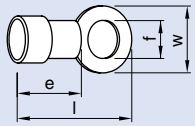
10A 조립식단자대

10A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-TB-10	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 10A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	1.25mm²	
연결단자 *Terminal*	e	Min 4.5mm	
	f	Min ϕ3.1	
	w	Max 6.0mm	
	l	Min 15.7mm	



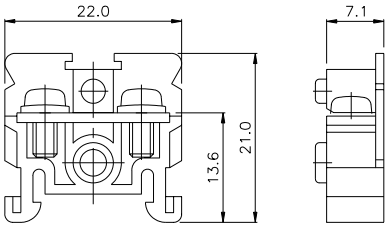
주문형식

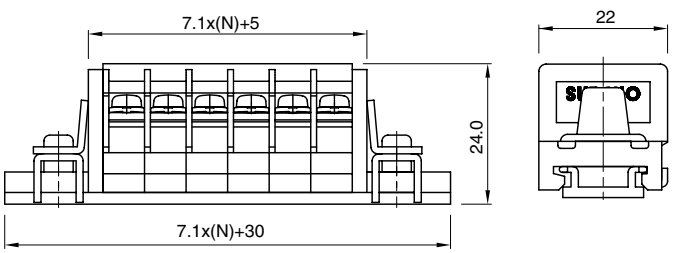
Type

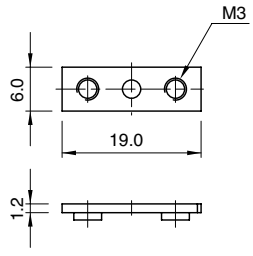
SHT-TB-10

외형치수

Dimensions







Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

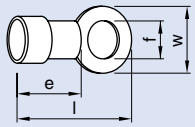
15A 조립식단자대

15A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

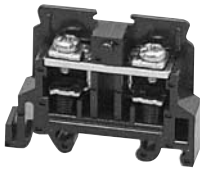
형식 *Type*		SHT-TB-15	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 15A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	2.0mm²	
연결단자 *Terminal*	e	Min 8.0mm	
	f	Min ϕ3.6	
	w	Max 6.8mm	
	l	Min 20.0mm	



주문형식

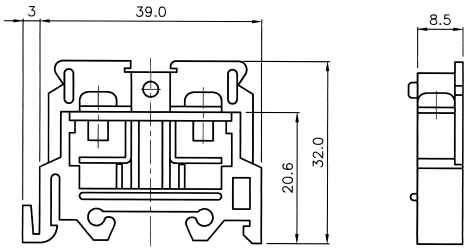
Type

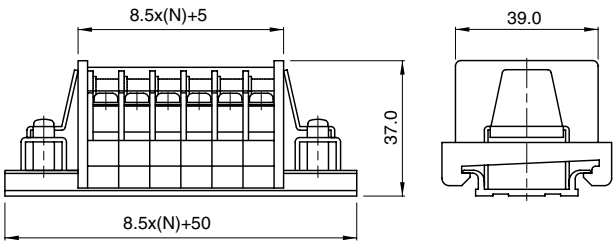
SHT-TB-15

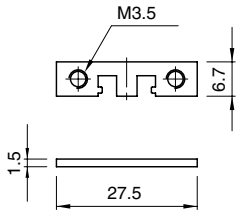


외형치수

Dimensions







Note : 단자나사의 재질은 스테인레스도 가능합니다.

The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

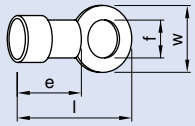
15A 조립식 2단 단자대

15A Assembly terminal block in 2 stage-type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

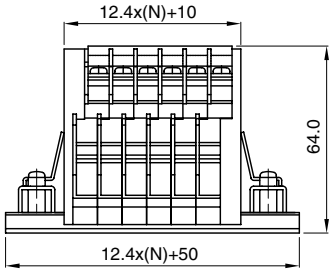
형식 *Type*		SHT-TB-15AW	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 15A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	2.0mm²	
연결단자 *Terminal*	e	Min 8.0mm	
	f	Min ϕ3.6	
	w	Max 6.8mm	
	l	Min 20.0mm	

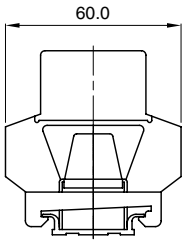


주문형식

Type

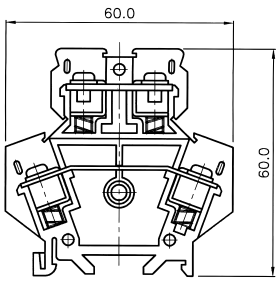
SHT-TB-15AW

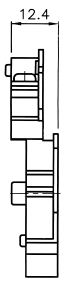




외형치수

Dimensions





Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

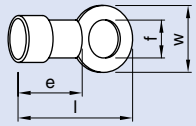
25A 조립식단자대

25A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

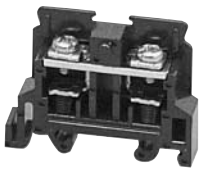
형식 *Type*		SHT-TB-25	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 25A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	5.5mm²	
연결단자 *Terminal*	e	Min 14.0mm	
	f	Min ϕ4.1	
	w	Max 8.7mm	
	l	Min 27.0mm	



주문형식

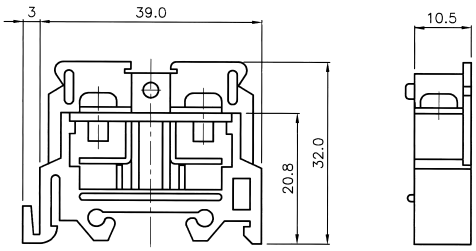
Type

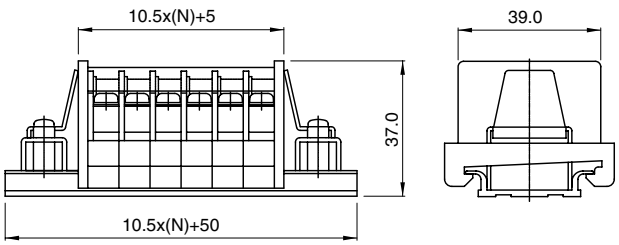
SHT-TB-25

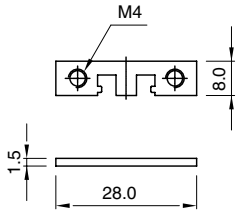


외형치수

Dimensions







Note : 단자나사의 재질은 스테인레스도 가능합니다.

The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

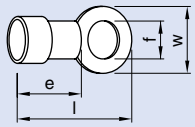
35A 조립식단자대

35A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

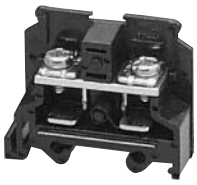
형식 *Type*		SHT-TB-35	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 35A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	8.0mm²	
연결단자 *Terminal*	e	Min 14.0mm	
	f	Min ϕ4.1	
	w	Max 9.6mm	
	l	Min 27.0mm	



주문형식

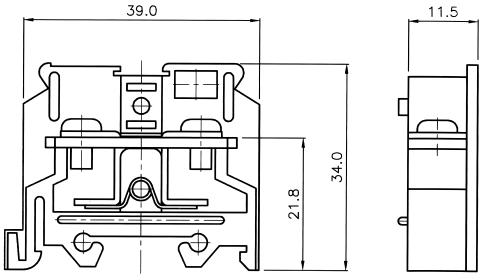
Type

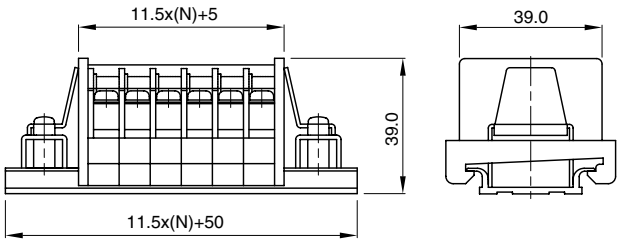
SHT-TB-35

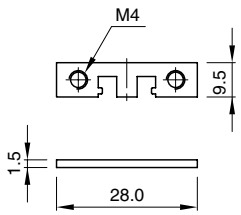


외형치수

Dimensions







Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

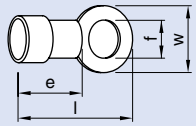
60A 조립식단자대

60A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

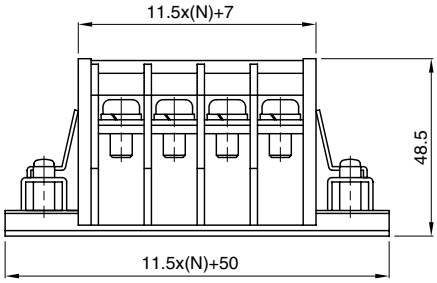
형식 *Type*		SHT-TB-60
정격절연전압	*Rating insulation voltag*	Max 600V
정격전류	*Rating current*	250VAC 60A
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계) *min 100㏁ at DC500V*
내전압	*Dielectric strength*	AC 2000V 50/60Hz 1min
적용적합전선	*Rating suitable wire*	14mm²
연결단자 *Terminal*	e	Min 14.5mm
	f	Min ϕ6.1
	w	Max 12.4mm
	l	Min 45.0mm

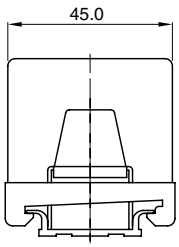


주문형식

Type

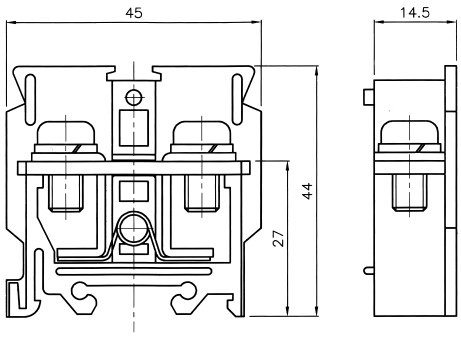
SHT-TB-60

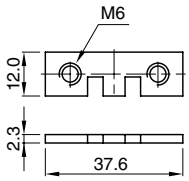




외형치수

Dimensions





Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

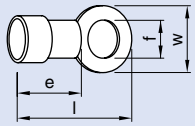
100A 조립식단자대

100A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-TB-100	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 100A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	38mm²	
연결단자 *Terminal*	e	Min 20.5mm	
	f	Min ϕ6.1	
	w	Max 16.5mm	
	l	Min 45.0mm	



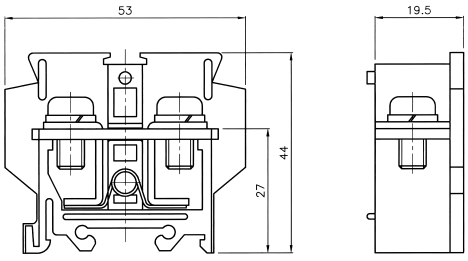
주문형식

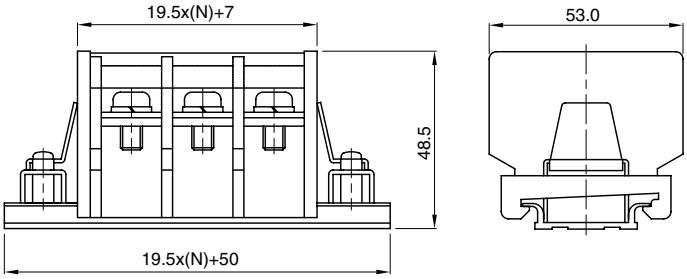
Type

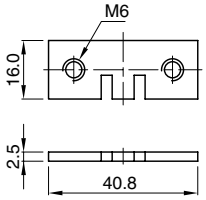
SHT-TB-100

외형치수

Dimensions







Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

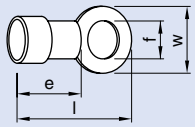
150A 조립식단자대

150A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-TB-150	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 150A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	50mm²	
연결단자 *Terminal*	e	Min 20.5mm	
	f	Min ϕ10.1	
	w	Max 24.5mm	
	l	Min 45.5mm	



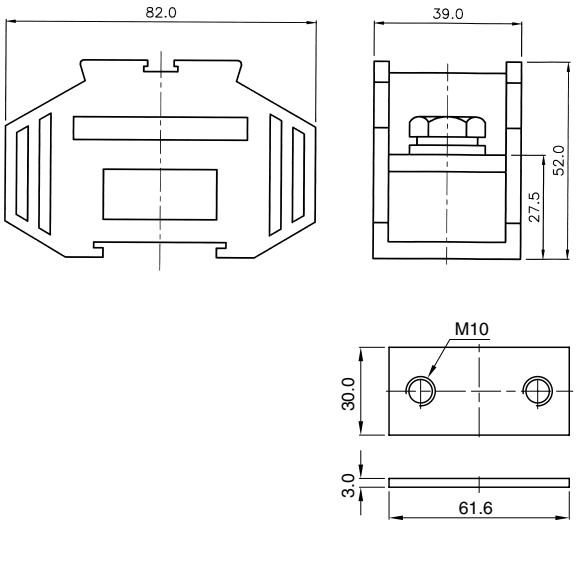
주문형식

Type

SHT-TB-150

외형치수

Dimensions



Note : 단자나사의 재질은 스테인레스도 가능합니다.

The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

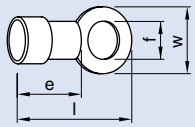
200A 조립식단자대

200A Assembly terminal block type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SHT-TB-200	
정격절연전압	*Rating insulation voltag*	Max 600V	
정격전류	*Rating current*	250VAC 200A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
적용적합전선	*Rating suitable wire*	100mm²	
연결단자 *Terminal*	e	Min 20.5mm	
	f	Min ϕ12.1	
	w	Max 29.0mm	
	l	Min 55.5mm	



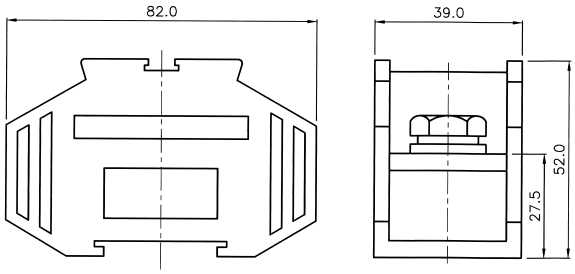
주문형식

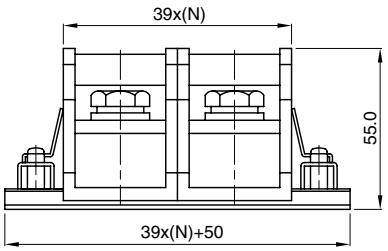
Type

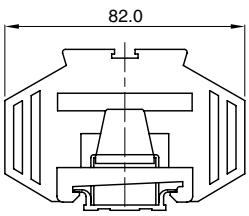
SHT-TB-200

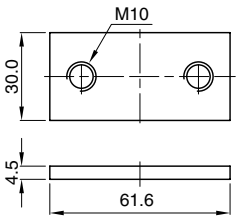
외형치수

Dimensions









Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

단자대

Terminal Blocks

시험용 단자대

Test terminal block

특징 *Features*	■ Test terminal은 회로가 개방되는것을 방지하도록 설계되어 있습니다. ■ 접촉자의 접촉은 스프링에 의해 천천히 작동하므로 신뢰성이 높습니다. ■ 단자는 3P, 4P로 되어 있습니다. ■ 고품질의 플라스틱을 보호재질로 사용함으로써, 높은 절연성, 연소성 그리고 내 충격성을 제공합니다. ■ *Test terminal for CT circuits are designed to prevent the circuit from being opened.* ■ *As contacting of contactor is coasting type by spring, reliability is high.* ■ *Terminal types are divided 3P,4P.* ■ *For the housing material, high-performance engineering plastics is used to provide high insulation, inflammability, and impact resistance.*	
성능 *Characteristics*	정격절연전압 *Rated insulation voltage*	AC, Dc 500V
	정격통전전류 *Rated current*	10A
	절연저항 *Insulation resistance*	100MΩ 이상(DC500V 절연저항계) *min 100MΩ at DC500V*
	내 전 압 *Dielectic strength*	1minute at 2500VAC 50/60Hz
	사용주의온도 *Operating temperature*	-25~50℃
	온도상승 *Temperature rise*	30℃ 이하 *Max. 30℃*
	보존온도 *Storing temperature*	-40~85℃
	최대접속전선 *Rating suitable wire*	Max. 5.5mm2

형명분류

Type classification diagram

STTB — 03 — S

터미날단자수 *Pole no.*

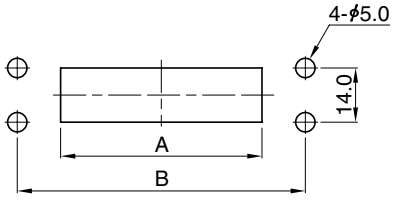
03	3Pole
04	4Pole

구 분 *Section*

P	Plug
C	Consent
S	Set

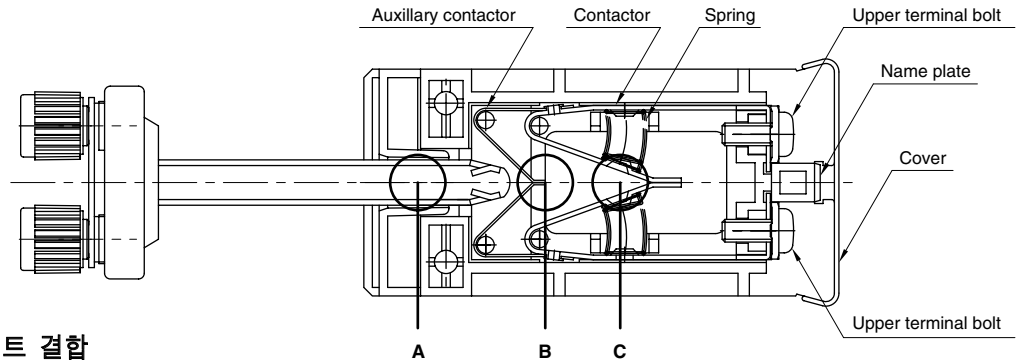
판넬가공치수

Panele cutouts



Symbol	3P	4P
A	52.0	70.0
B	75.0	94.0

구조및 동작설명
Structure explanation



플러그와 콘센트 결합
Combination of Plug and consent

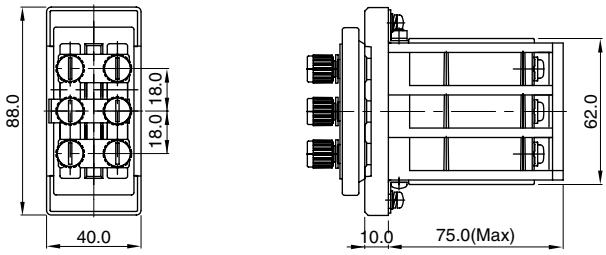
단자는 주요-보조접촉기의 이중 접촉기 구조로 되어 있습니다. 덧붙여 말하면, 플러그는 자체의 끝 부분까지접촉되는 긴 전도체 부분을 가지고 있습니다. 그러므로 플러그가 삽입되면, 단자가 개방되어 (C)부분에서 연결 되기전에 두개의 접촉자(A)와 (B)에서 먼저 작용 합니다. 따라서 이 결합은 회로가 개방되는것을 방지 하는데에 탁월한 기능을 가집니다.

The terminal has a dual-contactor structure consisting of main and auxiliary contactor. In addition, the plug has a long conductive part for contact up to its leading end. Therefore, when the plug is inserted, the contact is completed at two contacts (A) and (B) before the contact (C) of the terminal is opened. Thus, this combination provides excellent function for preventing circuit from being opened.

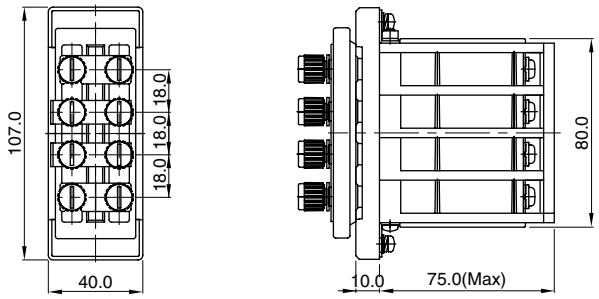
주문형식
Type

외형치수
Dimensions

SHTT-03S



SHTT-04S



단자대

단자대

Terminal Blocks

단락회로부 단자재

Terminal block with short circuit

특징 *Features*	■ Shot bolt 사용에 의하여 단락회로의 단로를 자유롭게 선택 사용할수 있습니다. ■ Shot bolt를 사용하지 않을시는 분실하지 않도록 세파레터에 끼워 보관할수 있도록 되어 있습니다. ■ 엑츄에이터는 누름버튼, 힌지레버, 롤러 레바등으로 종류가 다양합니다. ■ 조립식으로 되어 있기때문에 필요한 회로수에 따라 조립이 가능합니다. ■ 고정식과 찬넬 조립식으로 구성 되어 있습니다. ■ 기본 단자볼트는 철로 생산되며 스테인레스 단자볼트는 주문에 의해 생산됩니다. ■ *It is possible to assembling as circuit-number, because it's the assembling type.* ■ *Free use of short circuit by using shot bolt.* ■ *If not use of shot bolt, can safekeeping with separator for prevent loss.* ■ *Actuator has many type of Pushbutton, Hinge lever, Roller lever, etc.* ■ *The basic terminal bolt is produced steel, and steinless steel terminal bolt is produced* ■ *Machine tool, Supply of electric power, Auto control devices, etc.*	
용도 *Application*	■ 공작기계, 배전반, 자동제어기기등 ■ *Machine tool, Supply of electric power, Auto control devices, etc.*	
성능 *Characteristics*	정격절연전압 *Rated insulation voltage*	250V AC/DC
	정격통전전류 *Rated current*	40A
	절연저항 *Insulation resistance*	100MΩ 이상(DC500V 절연저항계) *min 100MΩ at DC500V*
	내 전 압 *Dielectic strength*	AC 2500V 50/60Hz 1min
	사용주의온도 *Operating temperature*	-25~50℃
	보존온도 *Storing temperature*	-40~85℃
	사용상태(거리) *Service condition(altitude)*	2000m 이하 *Max. 2000m*
	최대접속전선 *Rating suitable wire*	14mm²
	단자나사 *Terminal screw size*	M5 x 10

부속품

Other accessories

● Short bolt

● 세파레타

형명분류
Type classification diagram

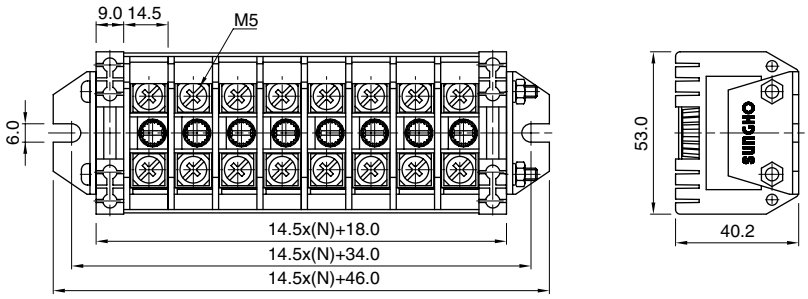
SH — CTB — F S — 04

단락회로단자대 *Common terminal block*	조립방법 *Assembling methode*	볼트재질 *Screw material*		단자블럭수 *Terminal block no.*	
		표시 없음	철 *Fe*	02	2P
		S	스테인레스 *Stainess*	03	3P
				04	4P
				05	5P
				06	6P
				08	8P
				09	9P
				12	12P

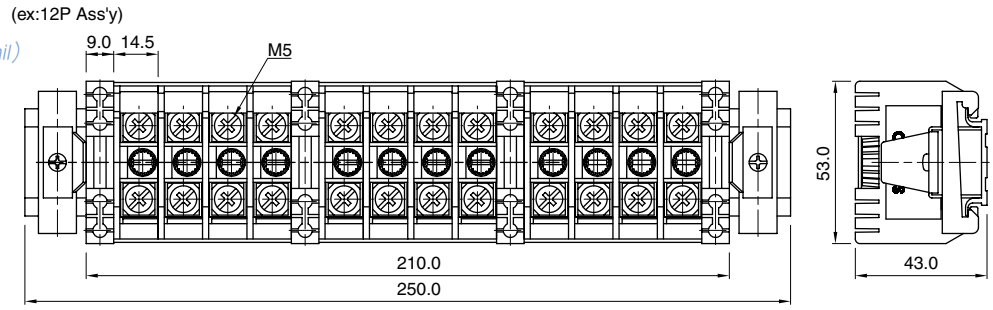
외형치수
Dimension drawing

조립형
Table of assembled dimension

● 고정식
Shaft assembly



● 조립식
Rail assembly(DIN rail)



소켓

Sockets

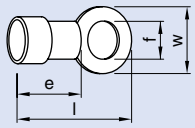
MY 릴레이소켓

Sequence relay socket type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

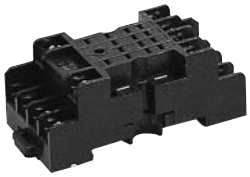
형식 *Type*		SH-RS-MY2	SH-RS-MY4
정격절연전압	*Rating insulation voltag*	AC 250V	
정격전류	*Rating current*	250VAC 7A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
단자나사	*Terminal screw size*	M3	
연결단자 *Terminal*	e	Min 4.5mm	
	f	Min ϕ3.1	
	w	Max 6.0mm	
	l	Min 15.7mm	



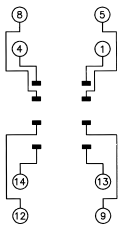
주문형식 *Type*

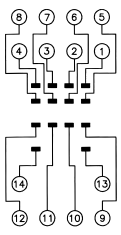
SH-RS-MY2

SH-RS-MY4

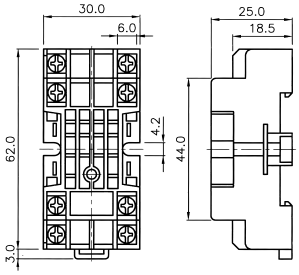


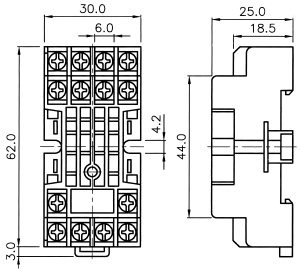
회로접속도 *Diagram*





외형치수 *Dimensions*



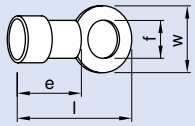


Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

LY 릴레이소켓
Power relay socket type

전기적특성/적용압착단자
Electric characteristics/Applicable terminal sizes

형식 *Type*		SH-RS-LY2	SH-RS-LY4
정격절연전압	*Rating insulation voltag*	AC 250V	
정격전류	*Rating current*	250VAC 10A	
절연저항	*Insulation resistance*	100㏁ 이상(DC500V 절연저항계)	*min 100㏁ at DC500V*
내전압	*Dielectic strength*	AC 2000V 50/60Hz 1min	
단자나사	*Terminal screw size*	M3.5	
연결단자 *Terminal*	e	Min 4.5mm	
	f	Min ϕ3.6	
	w	Max 6.8mm	
	l	Min 15.7mm	

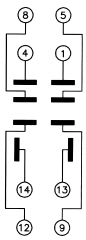


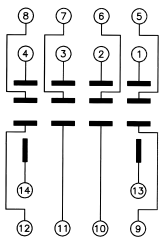
주문형식
Type

SH-RS-LY2

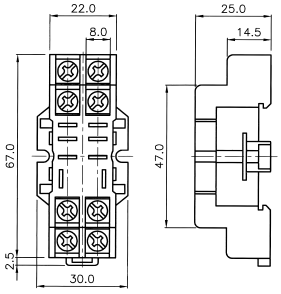
SH-RS-LY4

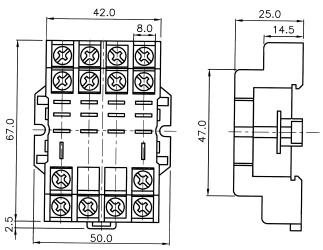
회로접속도
Diagram





외형치수
Dimensions





Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

소켓

Sockets

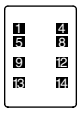
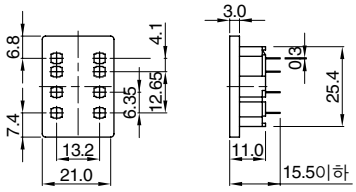
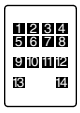
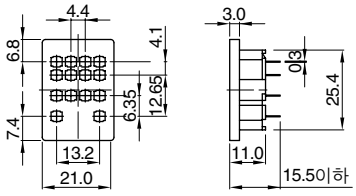
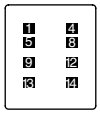
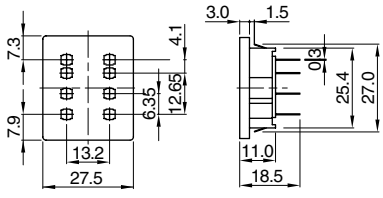
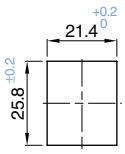
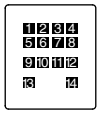
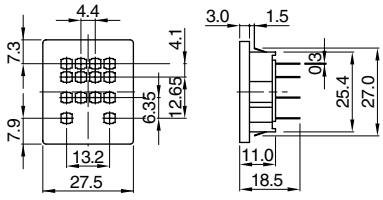
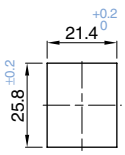
매입형 MY릴레이소켓

Flush mount MY relay socket

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*	SH-RS-MY2P	SH-RS-MY4P	SH-RS-MY2S	SH-RS-MY4S
정격절연전압 *Rating insulation voltag*	AC 250V			
정격전류 *Rating current*	250VAC 7A			
절연저항 *Insulation resistance*	100㏁ 이상(DC500V 절연저항계) *min 100㏁ at DC500V*			
내전압 *Dielectic strength*	AC 2000V 50/60Hz 1min			
단자형식 *Terminal type*	프린트기판 납땜단자형 *PCB Solder type*		납땜단자형 *Solder type*	

주문형식 *Type*	회로접속도 *Diagram*	외형치수 *Dimensions*	판넬가공도 *Panel cutout*
SH-RS-MY2P			
SH-RS-MY4P			
SH-RS-MY2S			
SH-RS-MY4S			

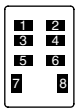
매입형 LY릴레이소켓
Flush mount LY relay socket

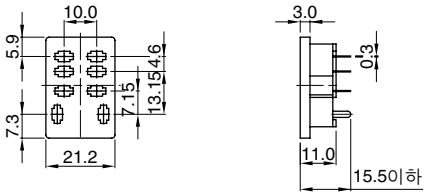
전기적특성/적용압착단자
Electric characteristics/Applicable terminal sizes

형식 *Type*	SH-RS-LY2P	SH-RS-LY4P	SH-RS-LY2S	SH-RS-LY4S
정격절연전압 *Rating insulation voltag*	AC 250V			
정격전류 *Rating current*	250VAC 10A			
절연저항 *Insulation resistance*	100㏁ 이상(DC500V 절연저항계) *min 100㏁ at DC500V*			
내전압 *Dielectic strength*	AC 2000V 50/60Hz 1min			
단자형식 *Terminal type*	프린트기판 납땜단자형 *PCB Solder type*		납땜단자형 *Solder type*	

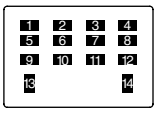
주문형식 *Type* | 회로접속도 *Diagram* | 외형치수 *Dimensions* | 판넬가공도 *Panel cutout*

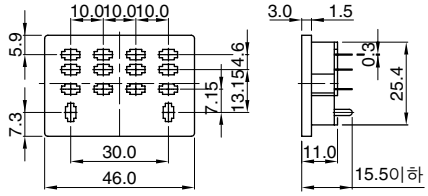
SH-RS-LY2P



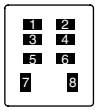


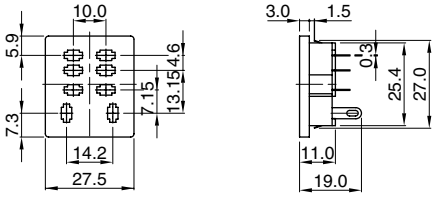
SH-RS-LY4P



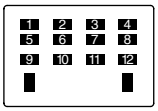


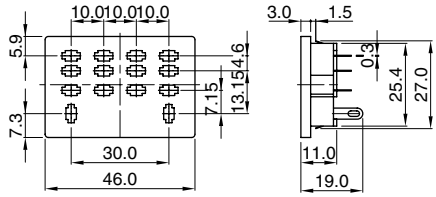
SH-RS-LY2S





SH-RS-LY4S





소켓

Sockets

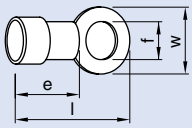
8핀,11핀 소켓

8pin, 11pin relay/timer socket type

전기적특성/적용압착단자

Electric characteristics/Applicable terminal sizes

형식 *Type*		SH-RS-8	SH-RS-11	SH-TS-1	SH-TS-2
정격절연전압 *Rating insulation voltag*		AC 250V			
정격전류 *Rating current*		250VAC 10A			
절연저항 *Insulation resistance*		100㏁ 이상(DC500V 절연저항계) *min 100㏁ at DC500V*			
내전압 *Dielectic strength*		AC 2000V 50/60Hz 1min			
단자나사 *Terminal screw size*		M3.5			
연결단자 *Terminal*	e	Min 4.5mm			
	f	Min ϕ3.6			
	w	Max 6.8mm			
	l	Min 15.7mm			

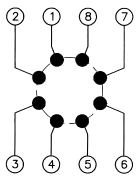


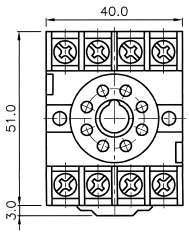
주문형식 *Type*

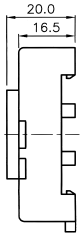
회로접속도 *Diagram*

외형치수 *Dimensions*

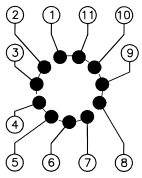
SH-RS-8

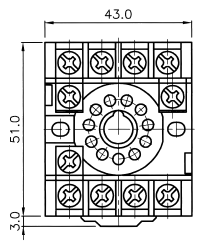


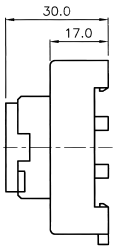




SH-RS-11







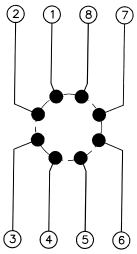
Note : 단자나사의 재질은 스테인레스도 가능합니다.
The material of the terminal screw is mild steel as standard.
Stainless steel screw are available on request.

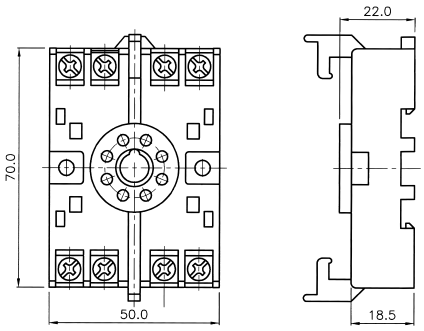
주문형식
Type

회로접속도
Diagram

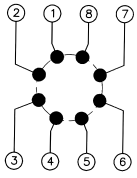
외형치수
Dimensions

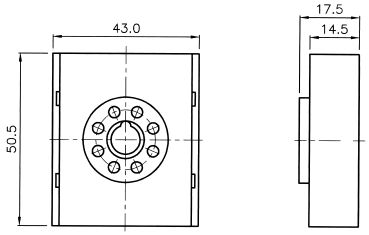
SH-TS-1





SH-TS-2





Ceiling light, Bus bar supporting insulator

직부등
Ceiling light

특징
Features

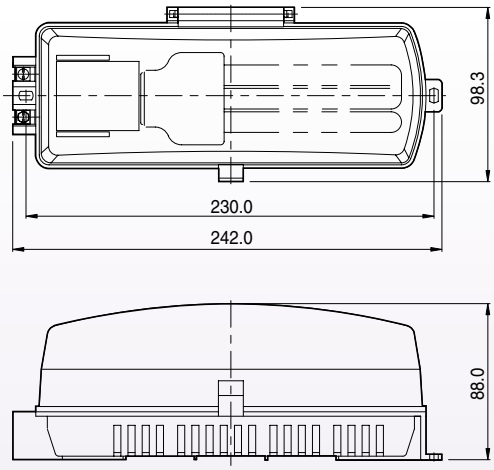
- 전구조립이 간편하게 되어있습니다.
  (실용신안 및 디자인등록 출원)
- 백열전구 및 삼파장 전구 공용으로 사용 가능합니다.
- 반사경이 3면으로 되어있어 빛의 퍼짐이 좋습니다.
- 내열수지를 사용하여 장시간에도 틀어짐이 없습니다.
- 충격에 강한 수지를 사용하였습니다.
- 전기용품안전인증에 대한 승인을 받은 제품입니다.

성능
Other characteristics

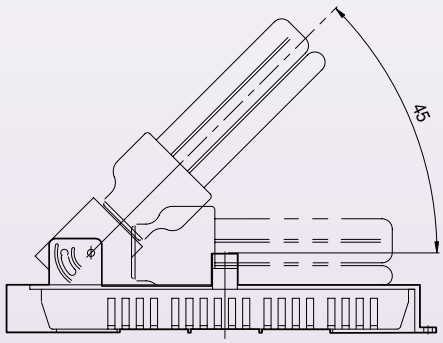
정격소비전력	백열전구	Max 60W
	삼파장전구	23 W
본체고정	M4볼트	

형상 및 외형치수
Dimensions

LC-10



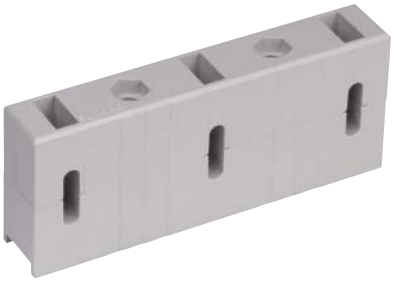
- 전구조립시 소켓 형상



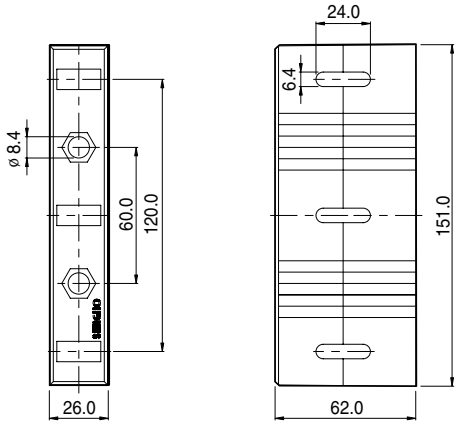
모선지지대

Bus bar supporting insulator

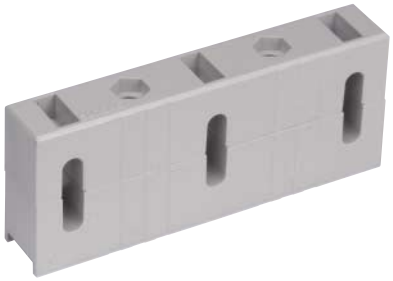
SHBH-60-6



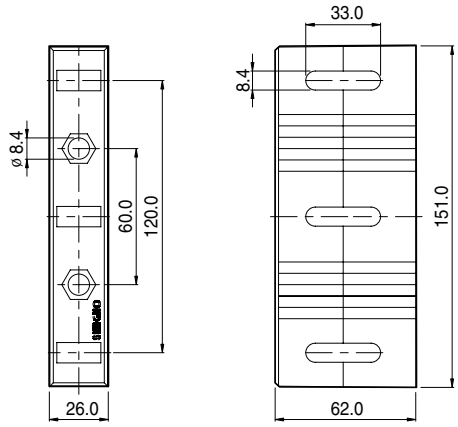
모선지지간격	*Bus bar supporting space*	60mm
모선두께	*Bus bar thickness*	6mm



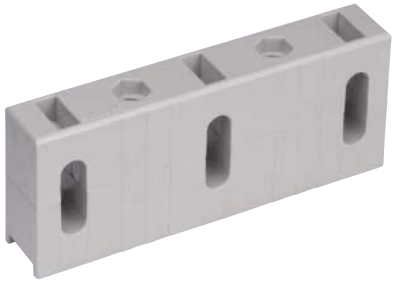
SHBH-60-8



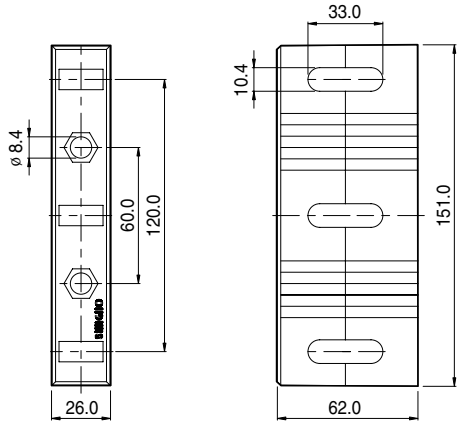
모선지지간격	*Bus bar supporting space*	60mm
모선두께	*Bus bar thickness*	8mm



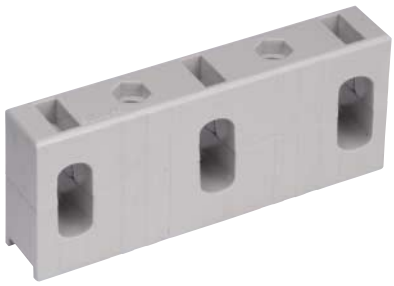
SHBH-60-10

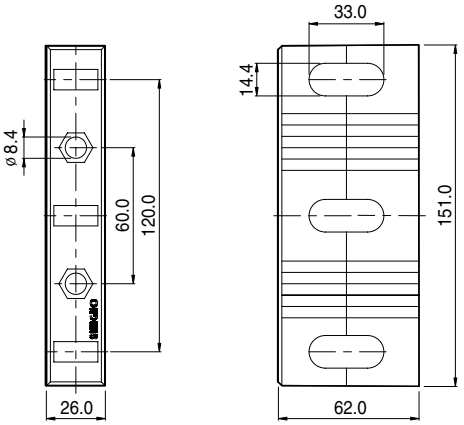


모선지지간격	*Bus bar supporting space*	60mm
모선두께	*Bus bar thickness*	10mm



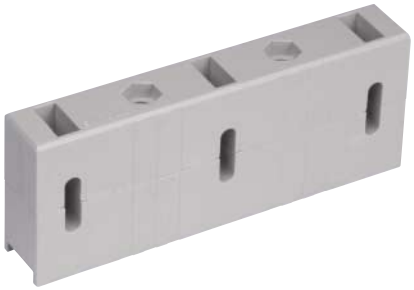
SHBH-60-14

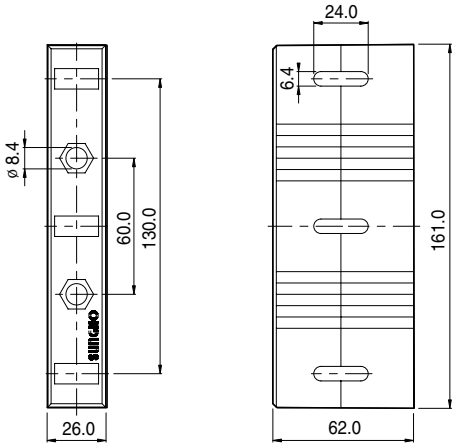




모선지지간격	*Bus bar supporting space*	60mm
모선두께	*Bus bar thickness*	14mm

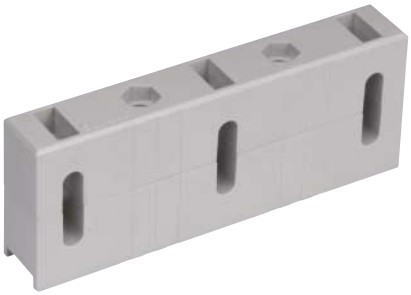
SHBH-65-6

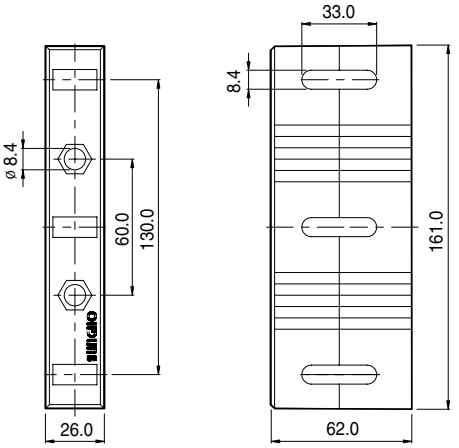




모선지지간격	*Bus bar supporting space*	65mm
모선두께	*Bus bar thickness*	6mm

SHBH-65-8



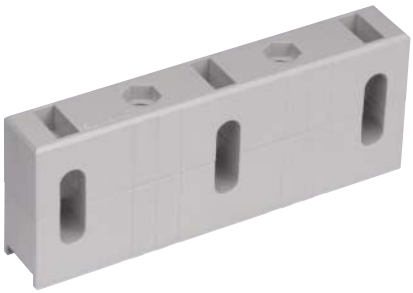


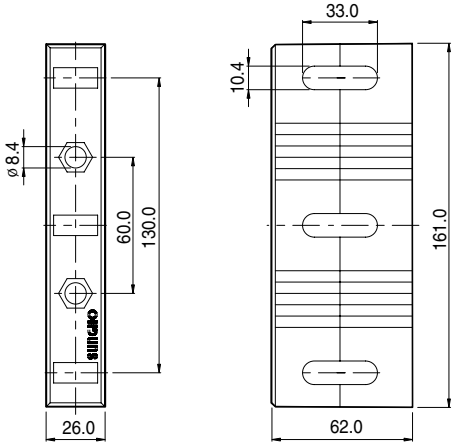
모선지지간격	*Bus bar supporting space*	65mm
모선두께	*Bus bar thickness*	8mm

모선지지대

Bus bar supporting insulator

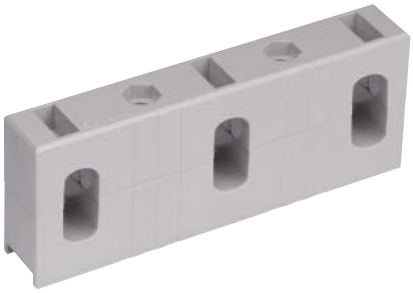
SHBH-65-10

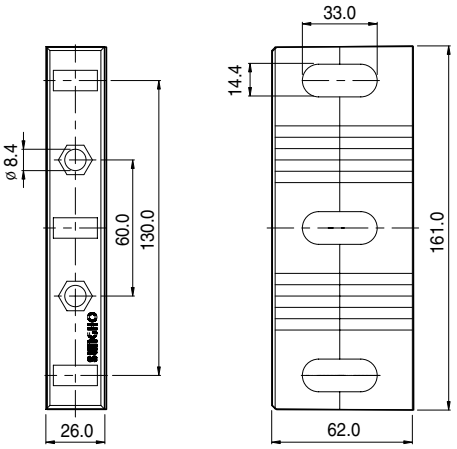




모선지지간격	*Bus bar supporting space*	65mm
모선두께	*Bus bar thickness*	10mm

SHBH-65-14

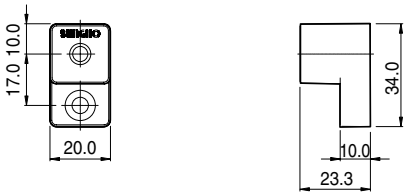




모선지지간격	*Bus bar supporting space*	65mm
모선두께	*Bus bar thickness*	14mm

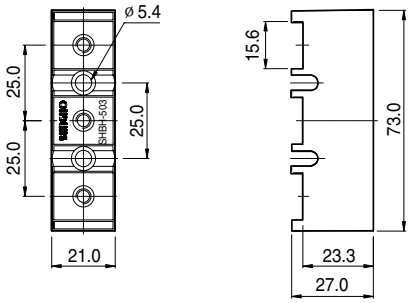
SHBH-1

50A, 100A, 200A



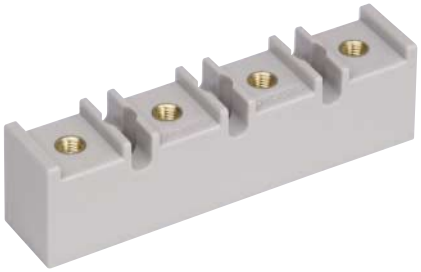
SHBH-503

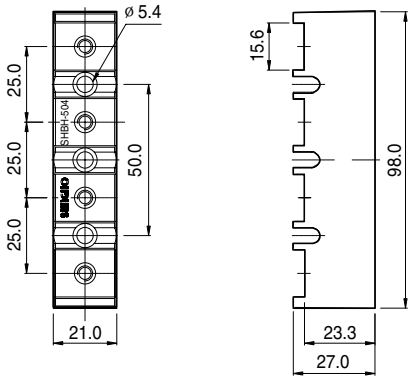
50A 3P



SHBH-504

50A 4P



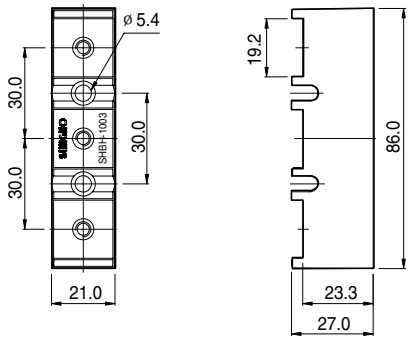


모선지지대

Bus bar supporting insulator

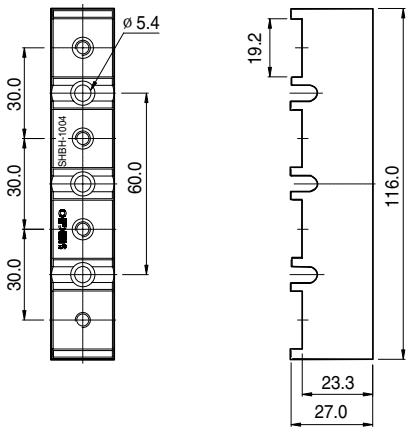
SHBH-1003

100A 3P



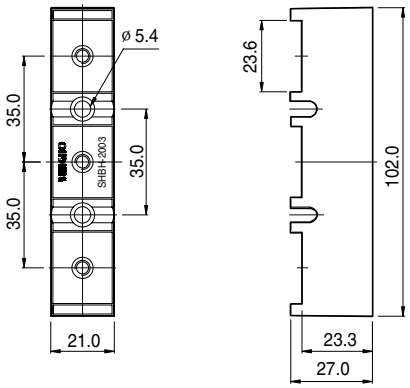
SHBH-1004

100A 4P



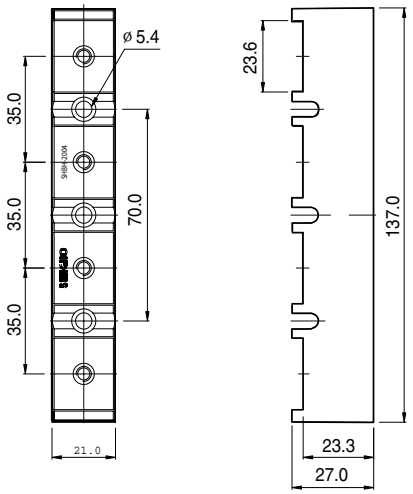
SHBH-2003

200A 3P



SHBH-2004

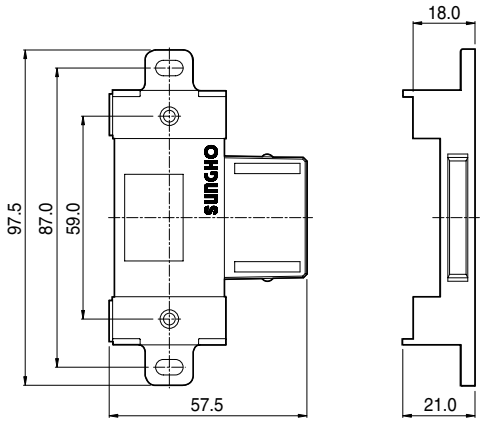
200A 4P



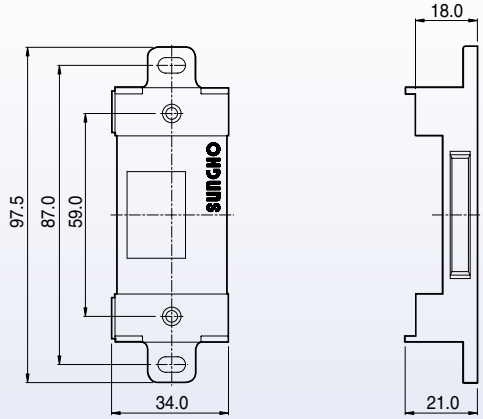
Mounting Board, Thermostats

ELB 지지대
ELB Mountiong Board

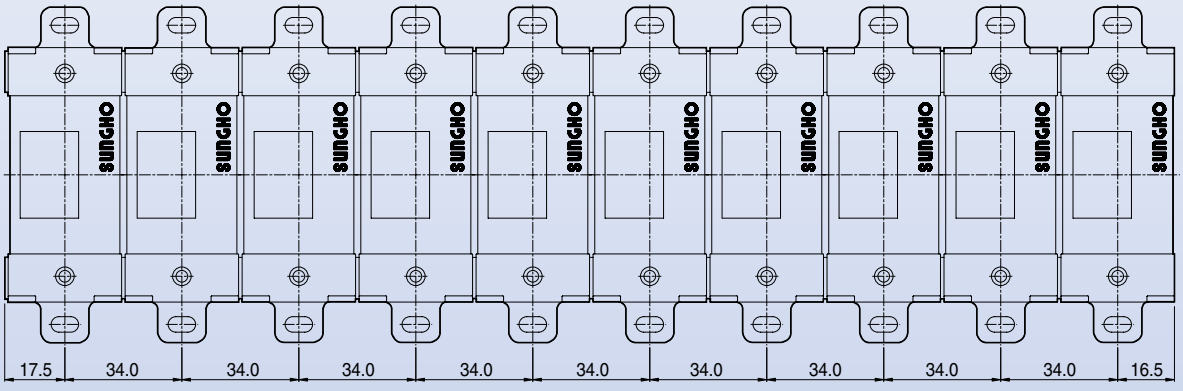
SHELB-205



SHELB-206



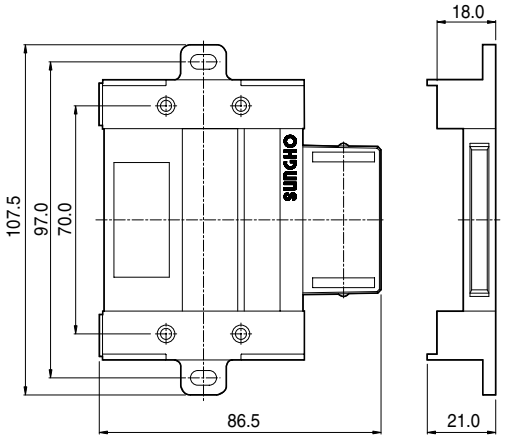
■ 조립 형상



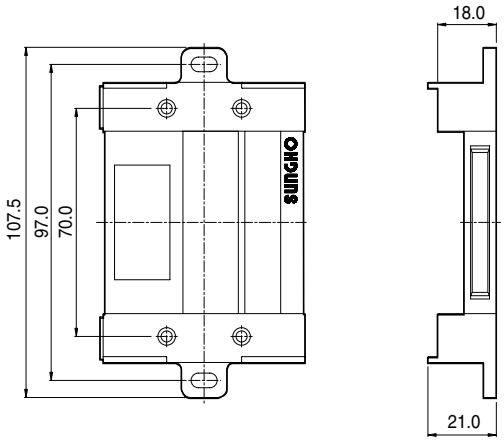
ELB 지지대

ELB Mounting Board

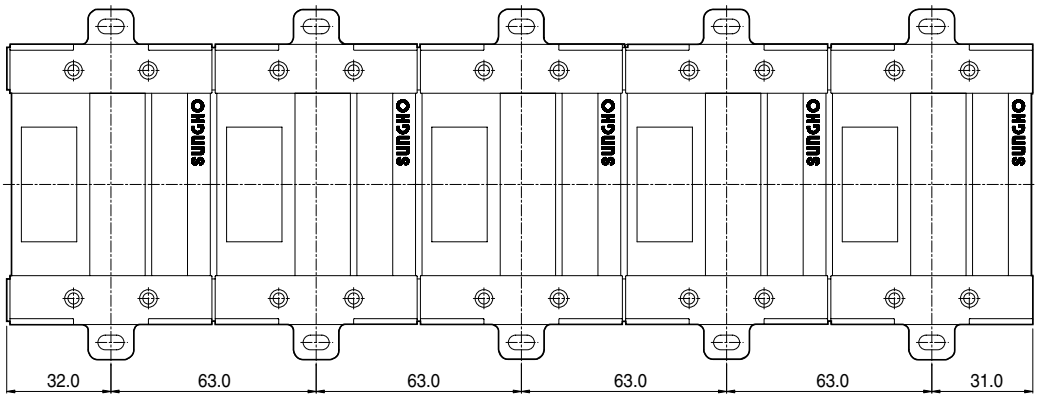
SHELB-207



SHELB-208



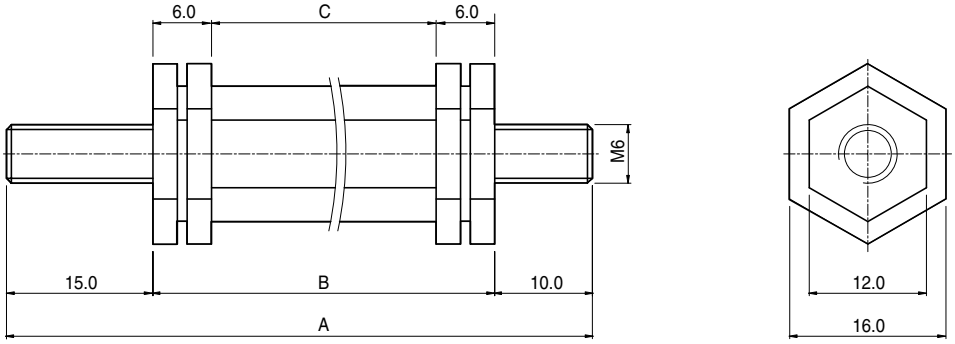
■ 조립 형상



P-COVER 지지대

P-COVER Supportling Bolt

외형치수
Dimensions



모 델 명	A	B	C
SHPC-60	85	60	48
SHPC-70	95	70	58
SHPC-80	105	80	68
SHPC-95	120	95	83
SHPC-103	128	103	91
SHPC-130	155	130	118

스페이스히터용 온도조절기

Space Heater Thermostats

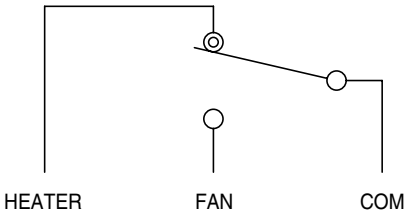
특징
Features

- 15A의 높은 개폐용량을 가지고 있습니다.
- 구조가 내아크성, 내연,내열재질로 절연성이 우수합니다.
- 단자보호카바가 있어 제품안전성이 우수합니다.
- 외관은 작고 가벼우며 충격에 강한 재질을 사용했습니다.

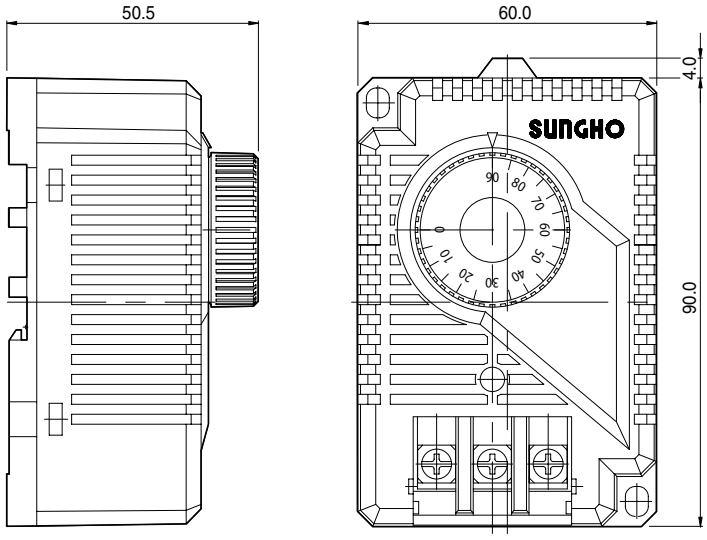
사양
Characteristics

항목	SHTC-50	SHTC-90
온도조절범위	0~50	0~50
온도 허용차	4±2℃	4±3℃
접점용량	250VAC 15A	
본체고정	M4 Bolt 및 Din Rail	

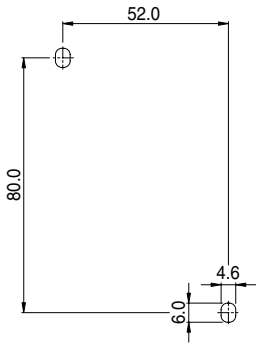
결선도
Example of wiring diagram



외형치수
Dimensions



취부홀



MCCB Operating Handle

MCCB 외부조작핸들

MCCB Operating Handle

특징
Features

- 핸들을 판넬조립시 걸림턱이 있어 판넬에 원터치로 부착할수 있어 작업성이 편리합니다.
- 핸들걸림이 샤프트 타입으로 취부및 탈착이 편리합니다.
- 핸들표시눈금이 MOLDING타입으로 멀리서도 선명하게 볼수 있습니다.
- MCCB중심과 핸들중심이 같기에 조립이 쉽고 가공치수가 상하좌우 일정합니다
- 50A이하의 MCCB는 핸들 1종류로 LS,현대,대륙제품을 사용할수 있어 재고관리가 용이합니다.
- 외관이 현대감각에 맞춰 디자인되어 MCCB판넬조립시 고급스럽습니다.

형명분류
Type classification diagram

SHOP – 90P L – 50A S V

성호 OP핸들 *Sungho OP handle Type no.*

DOOR HOLL 가공치수 *Hole Dia. of Panel*

90P	ø 90
100P	ø 100

샤프트 형태

무기호	표준형
L	확장형

적용 MCCB *"MCCB" Model*

50A	ABS33b, ABS53b, ABS63b, ABH33b ABE53b, ABE63b, ABE103b
100A	ABH53b, ABH103b, ABS103b
200A	ABE203b, ABS203b, ABH203b

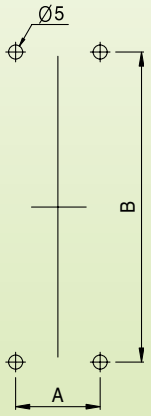
사용 MCCB 회사명 *Applied "MCCB" Brand*

S	LS, 현대, 대륙
B	LS, 대륙
D	동아
DA	대륙
H	현대
L	LS

사용 MCCB 방향 *Applied "MCCB" ???*

V	수 직
H	수 평

MCCB 취부간격
Inserting dimension of MCCB



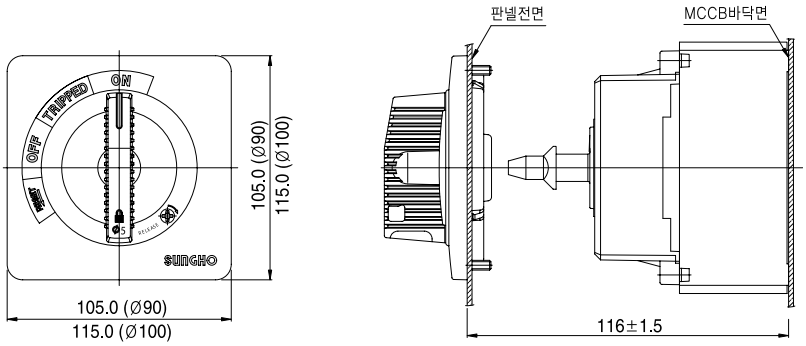
형 명 *Type*	적용 MCCB *"MCCB" Model*	A	B
50A	ABS33b, ABS53b, ABS63b, ABH33b ABE53b, ABE63b, ABE103b	25	110
100A	ABH53b, ABH103b, ABS103b	30	132
200A	ABE203b, ABS203b, ABH203b	35	126

MCCB 외부조작핸들

MCCB Operating Handle

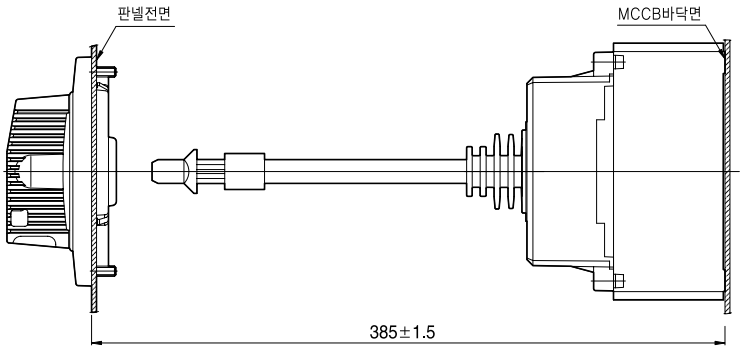
기본형 외관형상 및 치수 (ø90, ø100)

Outer Dimension & Hole Dia. on Panel (ø90, ø100)



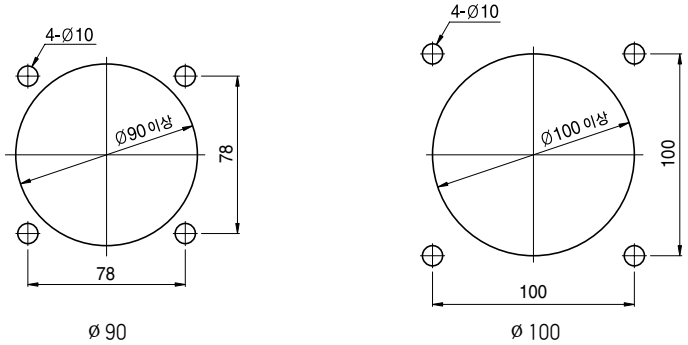
확장형 외관형상 및 치수(가로×세로 표준형과 동일)

Long Type Shaft Outer Dimension (ø90, ø100)

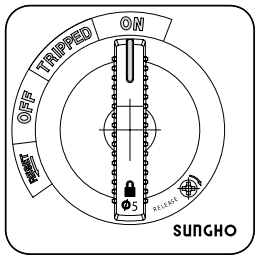


DOOR 가공치수

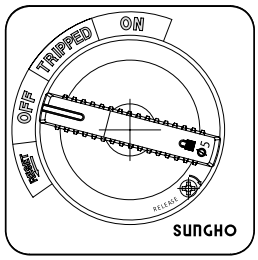
Hole Demesion of Front Panel Door



판넬도아를 닫은상태에서 핸들 조작요령



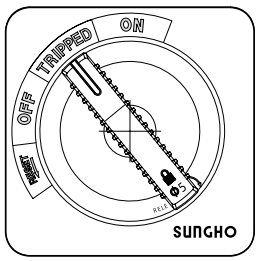
〈그림1〉



〈그림2〉

- MCCB 조작핸들을 ON상태로 하면 MCCB는 켜짐상태로 됩니다. (그림1)
- MCCB 조작핸들을 OFF상태로 하면 MCCB는 꺼짐상태로 됩니다. (그림2)
- MCCB가 자동차단된 경우에는 핸들이 TRIPPER위치를 가르킵니다. (그림3)
- MCCB가 TRIP후 재투입할때는 MCCB 조작핸들을 RESET 방향으로 회전시킨후 ON상태로 복귀해야 합니다.
- MCCB가 ON상태에서 판넬도아를 개방할경우 +자형 드라이버를 사용하여 RELEASE를 표시된방향으로 돌리면 판넬도아를 개방할수 있습니다.

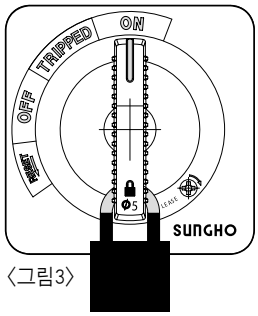
판넬도아의 잠김해제조작



〈그림3〉

- MCCB가 ON, OFF, TRIP된 상태에서 조작핸들은 잠김상태로 열리지 않습니다.
- 차단기가 TRIP, OFF 상태에서는 조작핸들을 RESET방향으로 회전시키면 잠김이 해제되어 판넬도아를 개방할수 있습니다.
- MCCB를 ON상태에서 조작핸들도 ON방향으로 하여 판넬도아를 닫으면 자동적으로 복귀됩니다

판넬도아의 잠김해제조작



〈그림3〉

- MCCB가 ON, OFF, TRIP된 상태에서 조작핸들은 잠김상태로 열리지 않습니다.
- 차단기가 TRIP, OFF 상태에서는 조작핸들을 RESET방향으로 회전시키면 잠김이 해제되어 판넬도아를 개방할수 있습니다.
- MCCB를 ON상태에서 조작핸들도 ON방향으로 하여 판넬도아를 닫으면 자동적으로 복귀됩니다

Note : MCCB와 조작핸들은 항상 ON, OFF, TRIP위치를 일치시킨후 판넬도아를 닫아주십시요.

MCC 1ST Unit Connector

MCC 1차 UNIT 콘넥타

MCC 1ST Unit Connector

특징
Features

- 콘넥타의 접촉저항이 최대치로 설계하여 매우 우수합니다.
- 외관은 충격에 강한 재질을 사용하여습니다.
- 단자와 전선과의 인장력은 45Kg에 견디도록 설계하였습니다.
- 외관이 현대감각에 맞춰 디자인되어 MCCB 판넬조립시 고급스럽습니다.
- 콘넥타는 전면 및 후면취부 어느곳이든 가능하도록 설계 되었습니다.
- 볼트조임타입의 콘넥터는 일체형으로 만들어져 접촉과 관련한 사고위험이 없습니다.

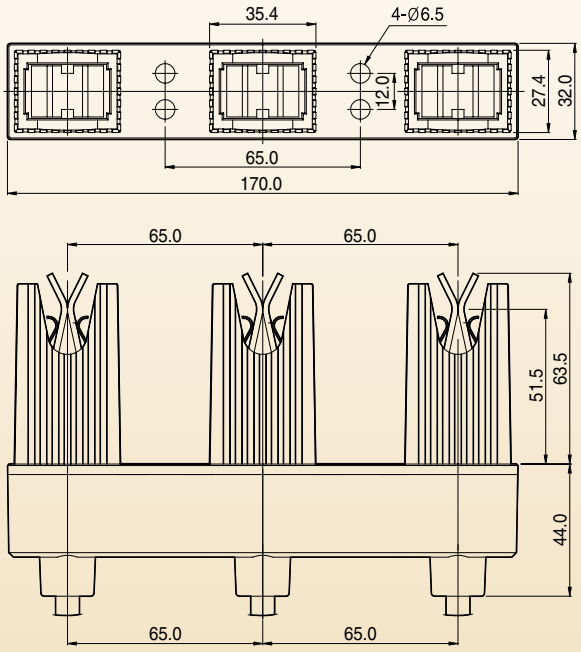
형명분류
Type classification diagram

SC – 65 3P C2 2

성호 1차 콘넥타 *Sungho 1ST Connector*	모선간격 *Distance Btn busbar and busbar*		콘넥타 수량 *no. of connector*	사용 MCCB 회사명 *cable and connector capacity*		전선수량 *no. of cable*	
SC	60	60mm	3P	1	볼트용 125A	1	1P
	65	65mm	4P	2	볼트용 225A	2	2P
				C1	10 mm²	무기호	전선없음
				C2	25 mm²		

외형치수
Outer dimension

SC-653PC1
SC-653PC2
SC-653PC22

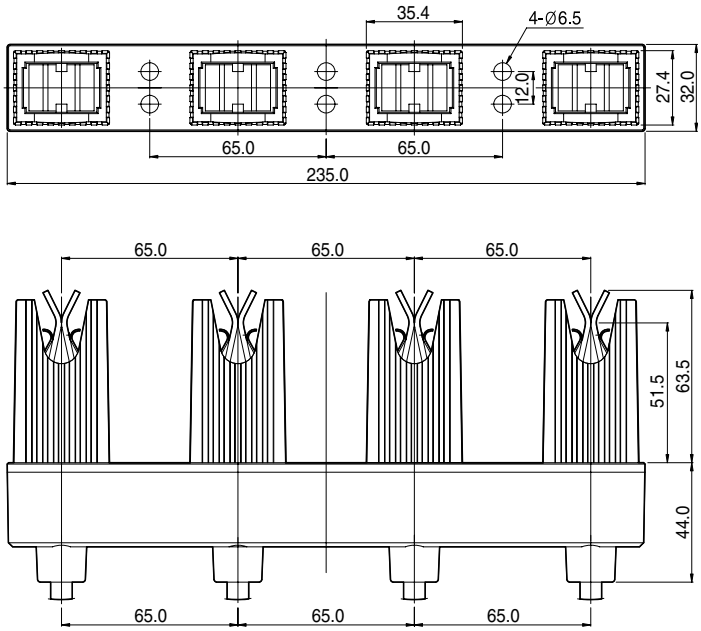


MCC 1차 UNIT 콘넥타

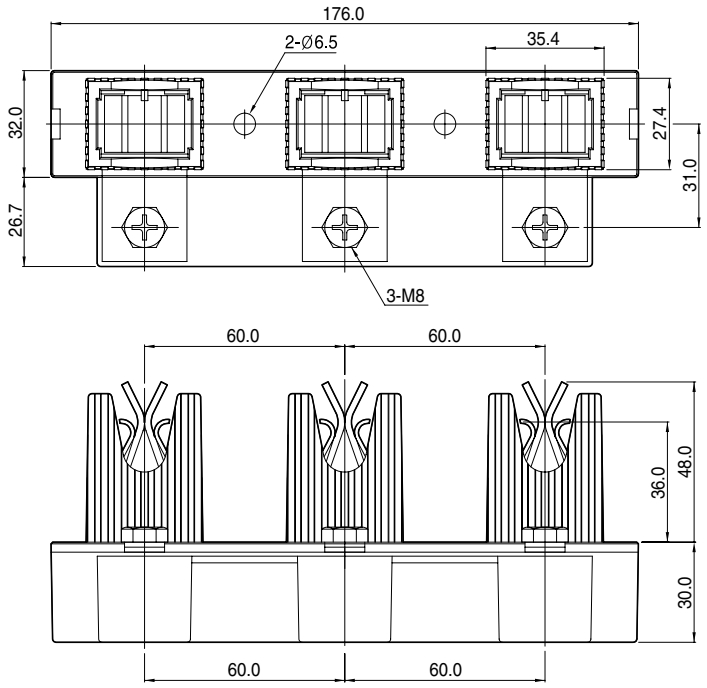
MCC 1ST Unit Connector

외형치수
Outer dimension

SC-654PC1
SC-654PC2
SC-654PC22



SC-603P1(125A)
SC-603P2(225A)



한국전기연구원 개발시험합격

- 단자보호카바 장착형으로 안전합니다.
- 전면조각은 소비자가 원하는 사양대로 가능합니다.

캠스위치
CAM Switches

- 단자보호카바 장착형으로 안전합니다.

제어용스위치, 표시등
Control and Signalling Devices

- 내장되어 있는 문자표시판과 LED LAMP의 탈부착이 간단하게 되어 있어 작업성이 우수합니다.
- 단자보호카바 장착형으로 안전합니다.

집합표시등
Square Light

- 전류별 종류가 다양하여 용도에 따른 선택의 폭이 넓어 졌습니다.
- 절연성과 강도가 우수한 재질을 사용 하였습니다.

단자대
Terminal Blocks

- 전구조립이 간편하게 되어있습니다. (실용신안 및 디자인등록 출원)
- 백열전구 및 삼파장 전구 공용으로 사용 가능합니다.
- 반사경이 3면으로 되어있어 빛의 퍼짐이 좋습니다.

직부등
Celling Light

- 동작표시등 내장으로 제품 신뢰성이 높습니다.
- CUL, CCC승인품으로 제품의 안전도를 해외에서도 인정 받았습니다.

제어용릴레이
Industrial Relays

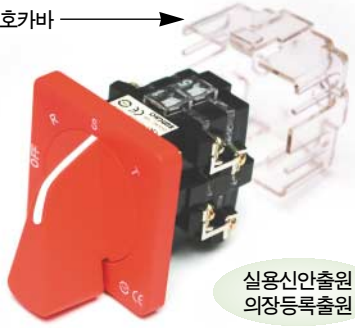
ISO9001:2000/KSA 9001:2001

이보다 더 안전하고 세련된 캠스위치는 없습니다.

대한민국 최초 캠스위치 단자부에 안전카바를 부착한 안전스위치입니다.

한국전기연구원 개발시험 합격

안전보호카바



소형 캠스위치 생산

*전면조각은 소비자가 원하는 사양대로 가능합니다.

Control Swich

Terminal Block Socket

Relay

Timer

Limit Switch

성호제어기기(주)
SUNGHO CONTROLS CO., LTD.

본사 & 공장
인천광역시 부평구 청천동 415-6 / TEL : (032)504-2822 / FAX : (032)504-2825
www.controlswitch.com

주요생산품목

- 범용제어용 스위치 (PR Series)
- 유럽형제어용 스위치 (PG Series)
- 리미트 스위치 (LIMIT Switches)
- 마이크로 스위치 (Micro Switches)
- 토글스위치 (Toggle Switches)
- 캠스위치 (Cam Switch)
- 집합표시등 (Square Light)
- MCC 1차 UNIT 콘넥타 (MCC 1ST Unit Connector)
- 타이머 (Timers)
  - SHT-MT (미니타이머)
  - SHT-L, M, N (OFF 지연타이머)
  - SHT-T (Twin 타이머)
  - SHT-F (후리커 타이머)
- 수위조절기 (Floatless Switchs)
- 직부등 (Ceiling light)
- 고정식 단자대 (Terminal Blocks)
- 조립식 단자대 (Assembly Terminal Blocks)
- 소켓 (Soket)
- 휴즈홀더 (Fuse Holders)
- 강력눌름보턴스위치 (Control Station)
- 조인트 터미날 블록 (Joint Terminal Blocks)
- 모선지지대 (Bus bar supporting insulator)
- 리레이 (RELAY Series)
  - MY Series (신호전달용)
  - LY Series (미니파워용)
  - MP Series (소형파워용)
  - Power Relay (강력파워용)
- 근접스위치 (PROXIMITY Sensors)
- MCCB 외부조작핸들 (MCCB Operating Handle)

http://www.controlswitch.co.kr http://www.controlswitch.com

주요 생산 품목

캠스위치 *CAM SWITCHES*
토글 스위치 *TOGGLE SWITCHES*
리미트 스위치 *LIMIT SWITCHES*
마이크로 스위치 *MICRO SWITCH*
근접스위치 *PROXIMITY SWITCHES*
제어용스위치/표시등 (ø22, ø25, ø30)
(CONTROL & SIGNALLING DEVICES)
집합표시등 *Square Light*
강력눌룸보턴스위치 *CONTROL STATION*

아날로그타이머 *ANALOGUE TIMERS*
제어용릴레이 *INDUSTRIAL RELAYS*
수위조절기 *FLOATLESS LEVEL SWITCHES*
전극봉 홀더 *ELECTRODE HOLDERS*
휴즈홀더 *FUSE HOLDERS*
단자대 및 소켓 *TERMINAL BLOCK & SOCKETS*
직부등 및 모선지지대 *Ceiling light & Bus bar supporting insulator*
MCCB 외부조작핸들 *MCCB Operating Handle*
MCC 1차 UNIT 콘넥타 *MCC 1ST Unit Connector*

⚠ 주의사항

● 모든 기기는 접촉부와 직접 닿지 않도록 하여 주십시오. ● 모든 기기는 임의대로 분해하여 조작하지 말아 주십시오.

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제어기기종합 / 2010년 04월 STAFF