

6

제어용 스위치류 CONTROL SWITCHES

■  For use on a flat surface of a type 1 enclosure
File No. E242380

■ 

6-1	조광형 누름 버튼 스위치	6-1	Illuminated Push Button Switch
6-2	로타리 스위치(A-Type)	6-2	Rotary Switch(A-Type)
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6-4	비상 누름 버튼 스위치(A-Type)	6-4	Emergency Push Button Switch(A-Type)
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6-9	보조 스위치	6-9	Auxiliary Switch
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6-11	로타리 동작 스위치	6-11	Rotary Momentary Switch

6-1

조광형 누름 버튼 스위치 Illuminated Push Button Switch

■  File No. E242380

■ 

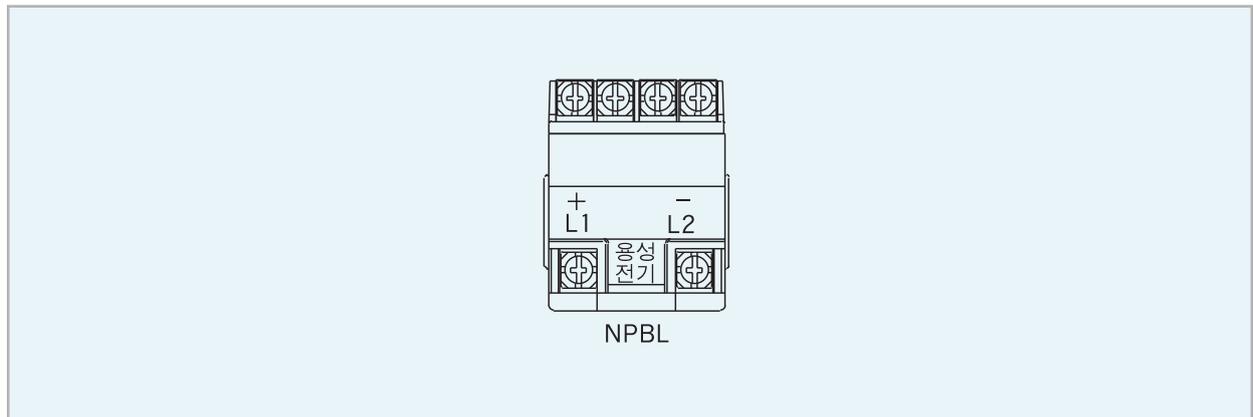
특징 | Features |

- 스위치부의 개폐가 스프링에 의하여 동작되므로 개폐가 정확하고 저전류에도 사용할 수 있도록 되어 있습니다.
- 측면에서 램프의 점등상태를 확인할 수 있도록 조각형링을 사용하였습니다.
- A,B접점을 일체형으로 하여 전선연결이 보다 쉬워졌습니다. (2A 및 2B는 제작이 불가합니다.)
- 스위치 회로확인 작업시 개폐부를 육안으로 확인할 수 있어 시간이 단축됩니다.
- By spring switching operation, exact switching and use at low current are possible.
- Carven type ring used for checking lamp lighting state from side.
- Easier wire connection with one switching type of A, B contact. (2A and 2B are not manufactrued.)
- Shortened checking time of switch circuit due to visual checking of switching part.

부품 재질 | Part Materials |

부 품 (Part)	재 질 (Materials)
몸 체 (Body)	PC 수지 (Poly Carbonate Resin)
홀 다 (Holder)	ABS 내열 (Heat resistance ABS) Resin
접 점 (Contact)	은접점 (Silver)
단 자 (Terminal)	황 동 (Brass)
볼 트 (Bolt)	탄소강 (Carbon Steel)
캡 (CAP)	AS 수지 (AS Resin)

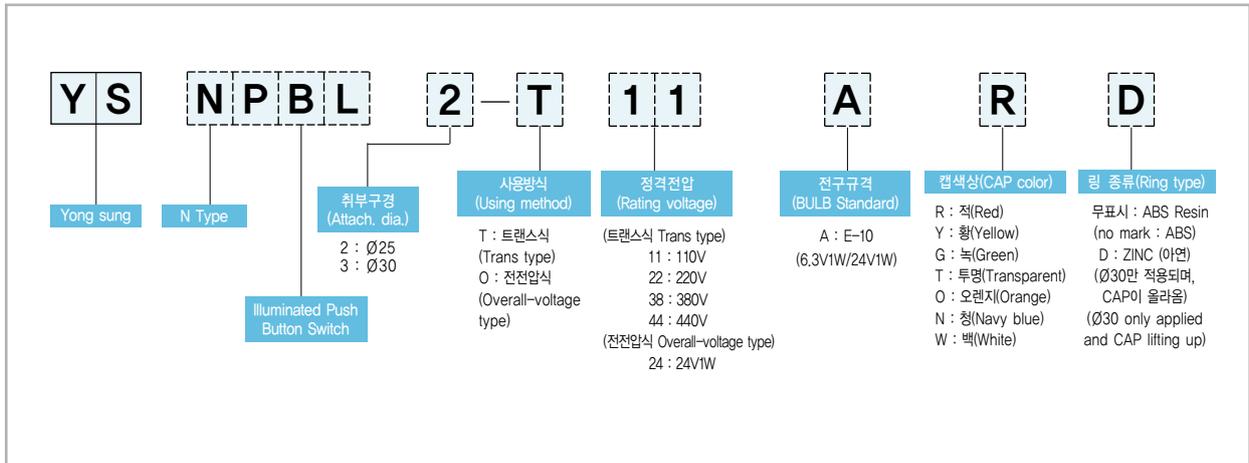
단자 극성 | Terminal Polarity |



성능 개요 | Performance Summary |

형식 (Type)	트랜스식 (Trans type)	전전압식 (Overall-voltage type)	LED type
정격전압 (Rating voltage)	AC110V,220V,380V,440V	AC/DC 24V	AC/DC 24V, 48V, 110V, 220V, DC 125V
2차전압 (2nd voltage)	5.5V	-	24V
램프정격 (Lamp rating)	6.3V1W	24V1W	20mA/40mA (PL Ø80 only)
접점정격 (Contact rating)	AC250V6A		
절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)		
접촉저항 (Contact resistance)	below 50mΩ (initial value)		
내전압 (Withstand voltage)	AC 2,500V/min (50~60Hz)		
기계적 수명 (Mechanical lifetime)	above 500,000 times (20times/min)		
전기적 수명 (Electrical lifetime)	above 100,000 times (20times/min)		
사용주위온도 (Ambient temperature)	-25°C ~ +40°C		
상대습도 (Relative humidity)	45 ~ 85%		

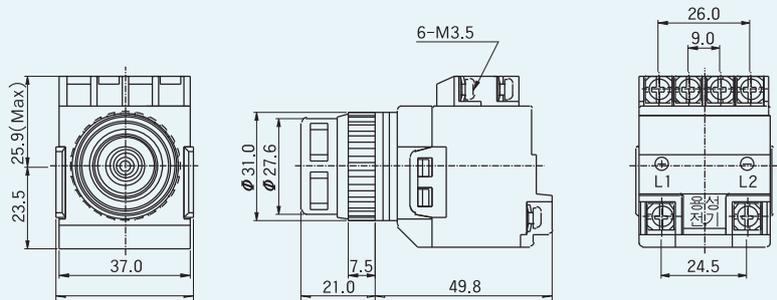
형식 구분도 | Type Classification Diagram - BULB Type



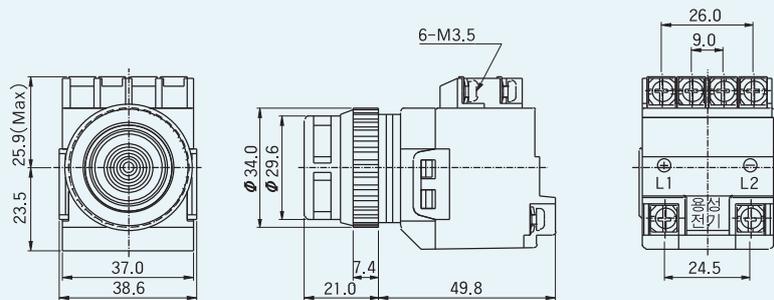
외형 / 치수도 | Shape / Dimension Drawing

(unit : mm)

Ø25 (NPBL Type)



Ø30 (NPBL Type)



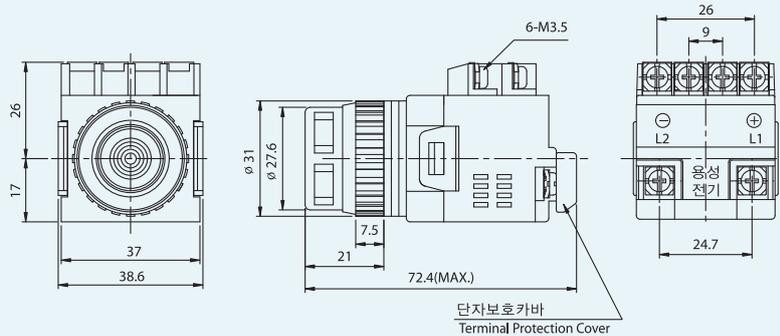
형식 구분도 | Type Classification Diagram - LED Type



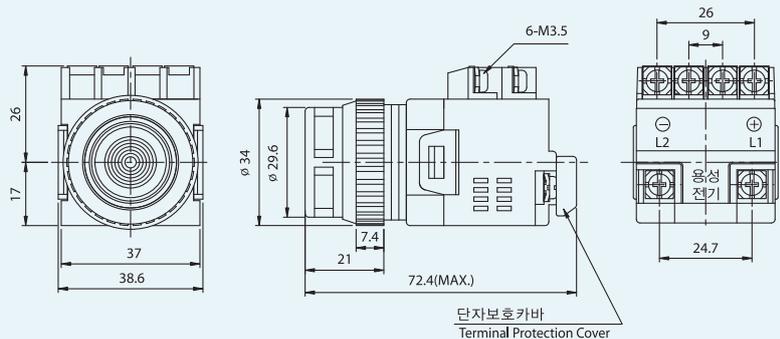
외형 / 치수도 | Shape / Dimension Drawing

(unit : mm)

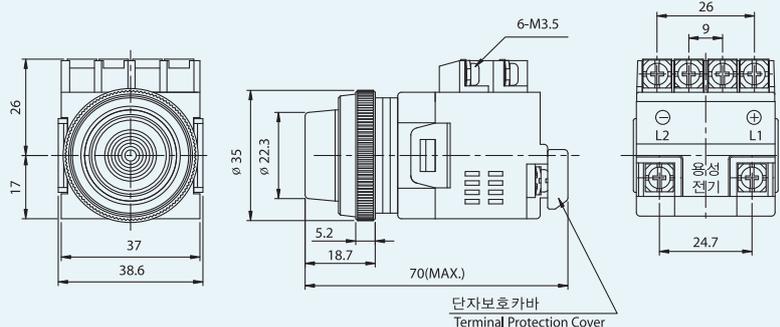
Ø25 (NPBL Type)



Ø30 (NPBL Type)



Ø30 (Ring Aluminum Type)

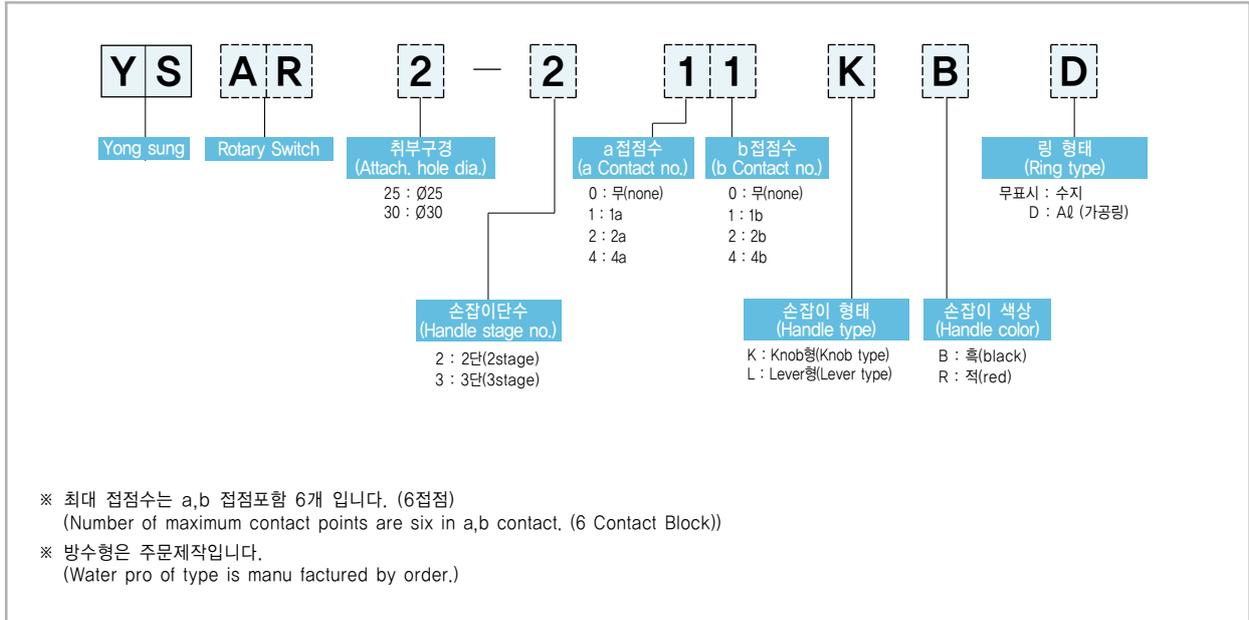


6-2

로타리 스위치 (A-Type) Rotary Switch (A-Type)

 File No. E242380

형식 구분도 | Type Classification Diagram



특징 | Features

- 금속부분을 특수합금처리 또는 도금처리하였기 때문에 수명이 매우 깁니다.
- 판넬부착 Ring은 보통 내열성 ABS로 되어 있으나 주문시에는 다이캐스팅 알루미늄으로 대체할 수 있습니다.
- Special alloying or plating treatment on metal parts makes longer life.
- Normal panel attachment ring is heat resistance ABS, but also replaceable by diecasting aluminum upon request.

성능 개요 | Performance Summary

절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)	below 50mΩ (initial value)
내전압 (Withstand voltage)	AC 2,500V/min
기계적 수명 (Mechanical lifetime)	above 500,000 times (20 times/min)
전기적 수명 (Electrical lifetime)	above 100,000 times (20 times/min)
사용주위온도 (Ambient temperature)	-25 ~ +40°C
상대습도 (Relative humidity)	45 ~ 85%

접점 구성도 (기본 접점) | Contact Form Drawing (Basic Contact)

접점구성번호 (Contact No.)	접점구성 (Contact form)	단자부호 (Terminal Code)	2단(2stage)		접점구성번호 (Contact No.)	접점구성 (Contact form)	단자부호 (Terminal Code)	3단(3stage)		
			Left	Right				Left	Center	Right
11	1a1b	NO		●	11	1a1b	NO	●		
		NC	●				NC			●
20	2a	NO		●	20	2a	NO	●		
		NO		●			NO	●		
22	2a2b	NO		●	22	2a2b	NO	●		
		NC	●				NC			●
		NO		●			NO	●		
		NC	●				NC			●
40	4a	NO		●	40	4a	NO	●		
		NO		●			NO	●		
		NO		●			NO	●		
		NO		●			NO	●		

손잡이 동작 방향도 | Directional Diagram of Handle Action

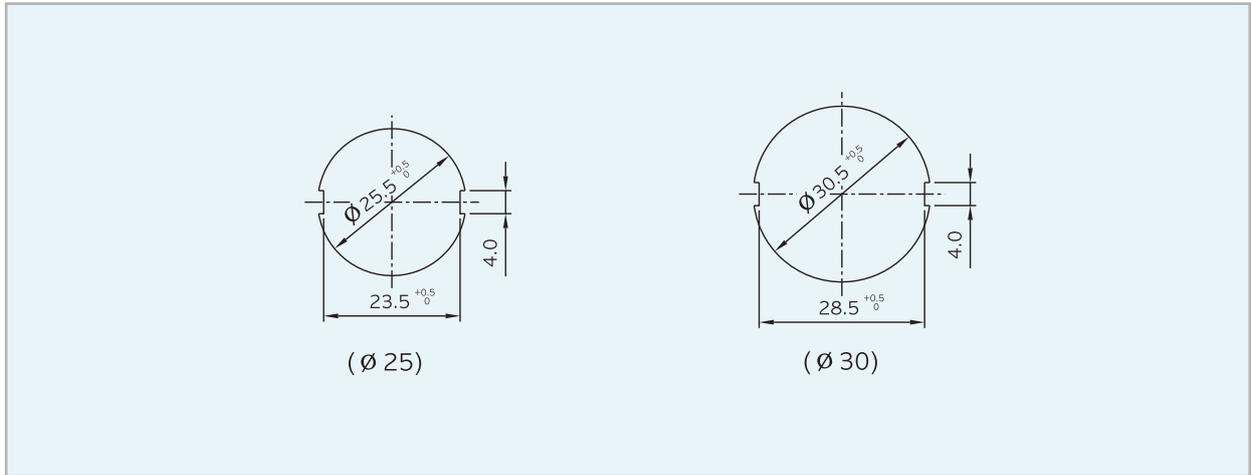
2단 (2 stage)	3단 (3 stage)

손잡이 종류 | Handle Type

Knob type	Lever type

패널 가공 치수 | Cut-out Dimension |

(unit : mm)



부품 재질 | Part Materials |

부 품 (Part)	재 질 (Materials)
하 부 (Contact Block)	PC 수지 (Poly Carbonate Resin)
홀 다 (Holder)	ABS 내열수지 (Heat resistance ABS Resin)
접 점 (Contact)	은접점 (Silver Contact)
단 자 (Terminal)	황동 (Brass)
볼 트 (Bolt)	탄소강 (Carbon Steel, Stainless Steel)
핸 들 (Handle)	ABS 수지 (ABS Resin)
스프링 (Spring)	스테인레스 (Stainless Steel)
링 (Ring)	ABS 수지, 알루미늄 (ABS Resin, Al)

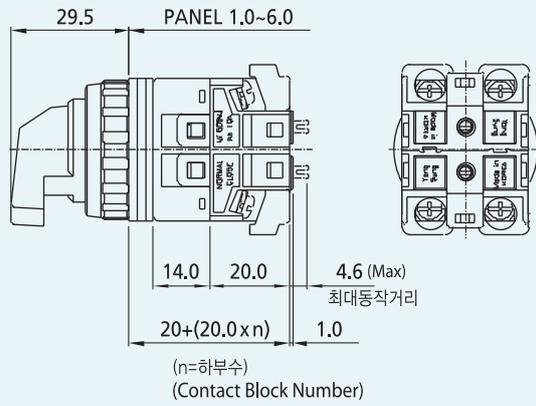
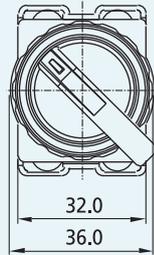
접점 정격 | Contact Rating |

정격절연전압 (Rating insulation voltage)		AC600V, DC250V		
정격통전전류 (Thermal continuous test current)		10A		
AC	정격사용전압 (Rated voltage)	110V	220V	440V
	저항부하 (Resistive load)	10A	6A	3A
	유도부하 (Inductive load)	5A	2.5A	1.2A
DC	정격사용전압 (Rated voltage)	110V	125V	220V
	저항부하 (Resistive load)	2.2A	1.9A	1.1A
	유도부하 (Inductive load)	1.1A	1.0A	0.6A

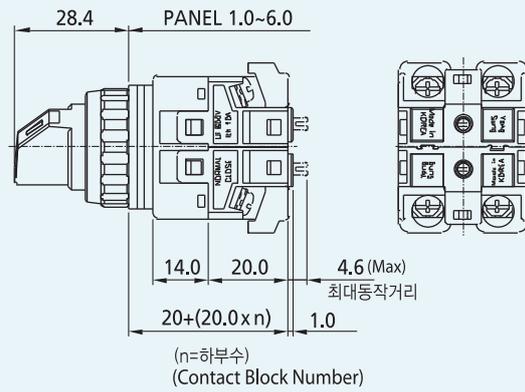
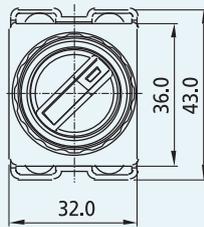
외형 / 치수도 | Shape / Dimension Drawing

(unit : mm)

Lever Type (Ø30)



Knob Type (Ø25)

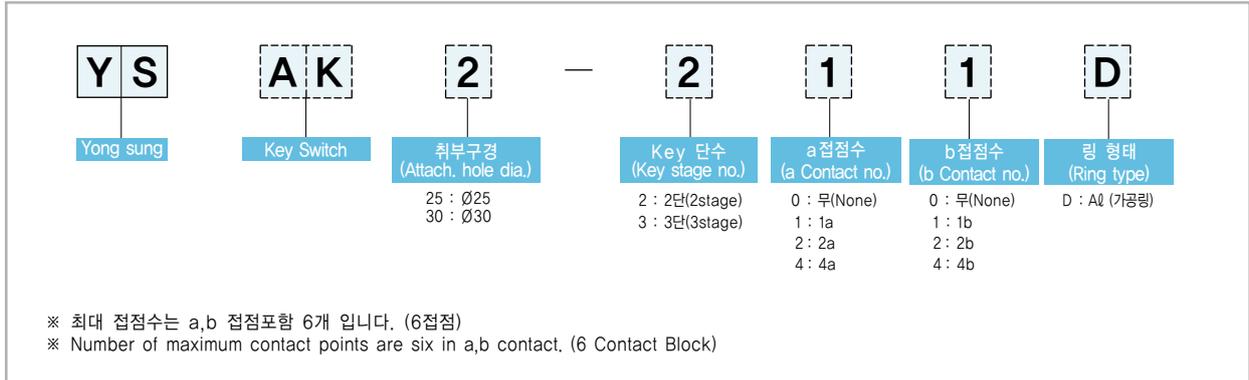


6-3

키 스위치 (A-Type) Key Switch (A-Type)

 File No. E242380

형식 구분도 | Type Classification Diagram



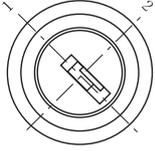
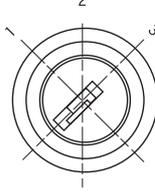
성능 개요 | Performance Summary

절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)	below 50mΩ (Initial value)
내전압 (Withstand voltage)	AC 2,500V/min (60Hz)
기계적수명 (Mechanical lifetime)	above 500,000 times (20times/min)
전기적수명 (Electrical lifetime)	above 100,000 times (20times/min)
사용주위온도 (Ambient temperature)	-25 ~ +40℃
상대습도 (Relative humidity)	45 ~ 85%

접점 정격 | Contact Rating

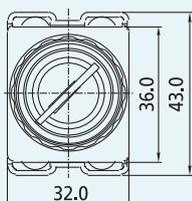
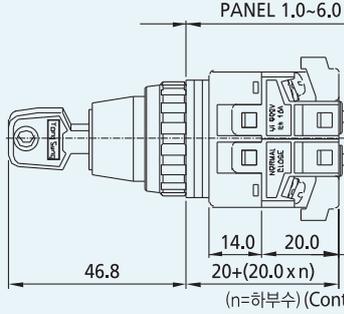
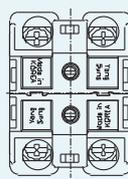
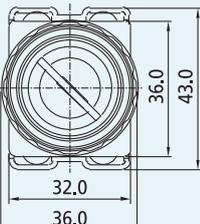
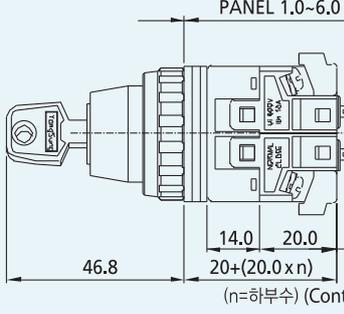
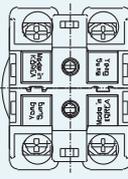
정격절연전압 (Rating insulation voltage)		AC600V, DC250V		
정격통전전류 (Thermal continuous test current)		10A		
AC	정격사용전압 (Rated voltage)	110V	220V	440V
	저항부하 (Resistive load)	10A	6A	3A
	유도부하 (Inductive load)	5A	2.5A	1.2A
DC	정격사용전압 (Rated voltage)	110V	125V	220V
	저항부하 (Resistive load)	2.2A	1.9A	1.1A
	유도부하 (Inductive load)	1.1A	1.0A	0.6A

Key 동작 방향 | Key Operating Direction

2단 (2 stage)	3단 (3 stage)
	

외형 / 치수도 | Shape / Dimension Drawing

(unit : mm)

Ø25			
 <p style="text-align: center;">CUS</p>		 <p style="text-align: center;">PANEL 1.0~6.0</p> <p style="text-align: center;">(n=하부수) (Contact Block Number)</p>	
Ø30			
 <p style="text-align: center;">CUS</p>		 <p style="text-align: center;">PANEL 1.0~6.0</p> <p style="text-align: center;">(n=하부수) (Contact Block Number)</p>	

Key 빠지는 위치 | Key Release Position

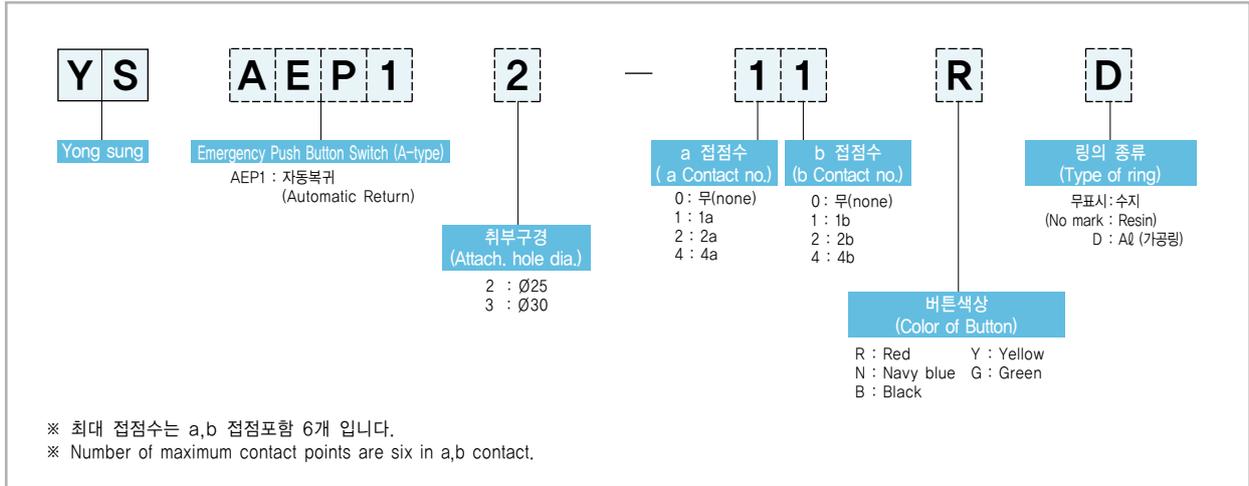
2단 (2 stage)		3단 (3 stage)		
<p>Left</p> 	<p>Right</p> 	<p>Left</p> 	<p>Center</p> 	<p>Right</p> 

6-4

비상 누름 버튼 스위치 (A-Type) Emergency Push Button Switch (A-Type)

 File No. E242380

형식 구분도 | Type Classification Diagram



성능 개요 | Performance Summary

절연저항 (Insulation resistance)	above 100MΩ (DC 500V, Meg)
접촉저항 (Contact resistance)	below 50mΩ (Initial value)
내전압 (Withstand voltage)	AC 2,500V/min (60Hz)
기계적수명 (Mechanical lifetime)	above 500,000 times (20times/min)
전기적수명 (Electrical lifetime)	above 100,000 times (20times/min)
사용주위온도 (Ambient temperature)	-25℃ ~ 40℃
상대습도 (Relative humidity)	45% ~ 85%

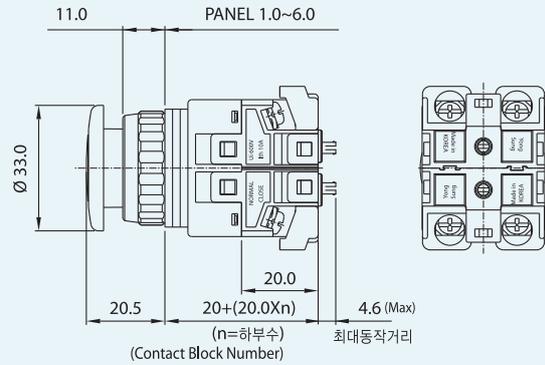
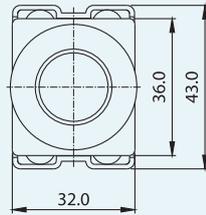
접점 정격 | Contact Rating

정격절연전압 (Rating insulation voltage)		AC600V, DC250V		
정격통전전류 (Rating conductive current)		10A		
AC	정격전압 (Rated voltage)	110V	220V	440V
	저항부하 (Resistive load)	10A	6A	3A
	유도부하 (Inductive load)	5A	2.5A	1.2A
DC	정격전압 (Rated voltage)	110V	125V	220V
	저항부하 (Resistive load)	2.2A	1.9A	1.1A
	유도부하 (Inductive load)	1.1A	1.0A	0.6A

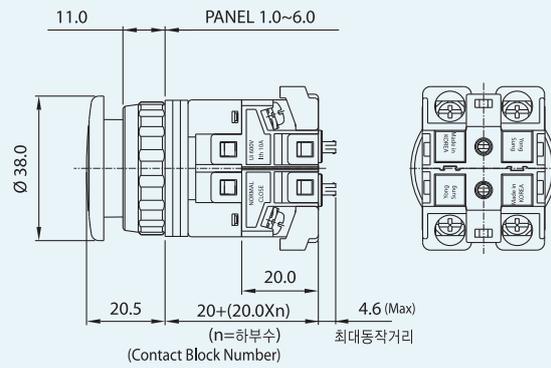
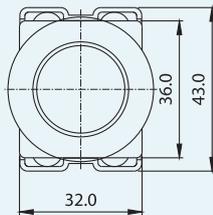
외형 / 치수도 | Shape / Dimension Drawing

(unit : mm)

Ø25

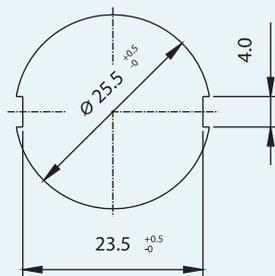


Ø30

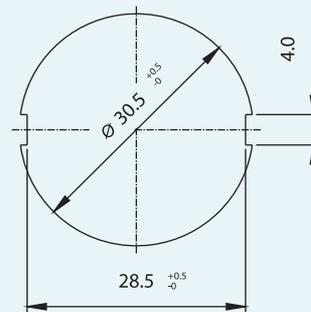


판넬 가공 치수 | Cut-out Dimension

(unit : mm)



(Ø25)



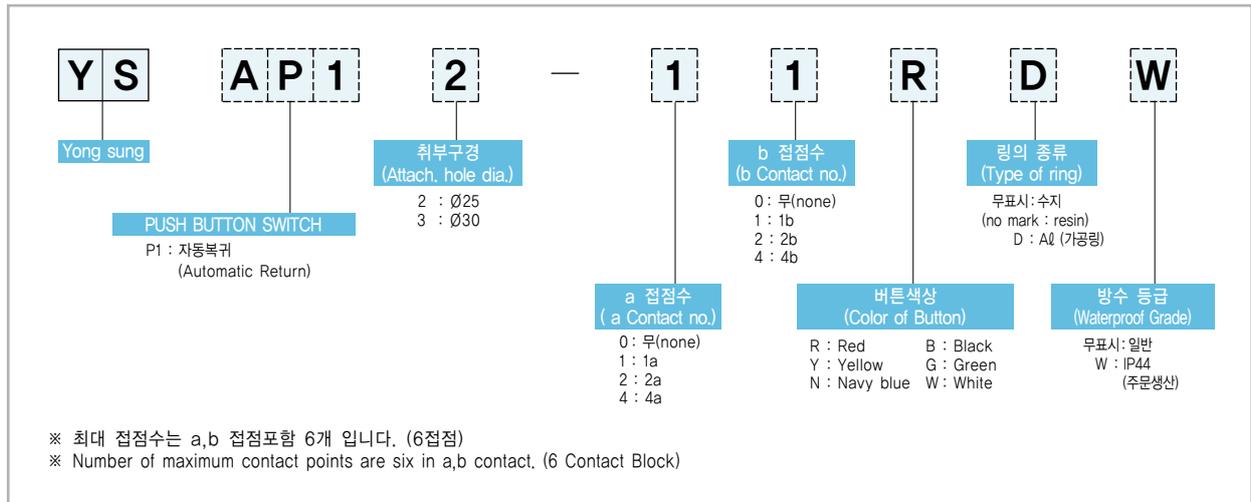
(Ø30)

6-5

누름 버튼 스위치 (A-Type) Push Button Switch (A-Type)

 File No. E242380

형식 구분도 | Type Classification Diagram

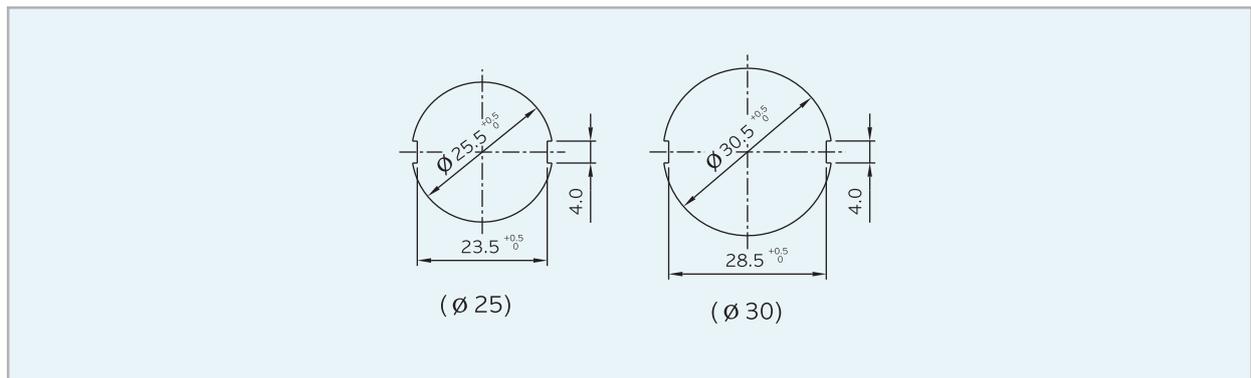


성능 개요 | Performance Summary

절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)	below 50mΩ (Initial value)
내전압 (Withstand voltage)	AC 2,500V/min (60Hz)
기계적수명 (Mechanical lifetime)	above 500,000 times (20times/min)
전기적수명 (Electrical lifetime)	above 100,000 times (20times/min)
사용주위온도 (Ambient temperature)	-25 ~ +40℃
상대습도 (Relative humidity)	45 ~ 85%

판넬 가공 치수 | Panel Cut-out Dimension

(unit : mm)



접점 정격 | Contact Rating |

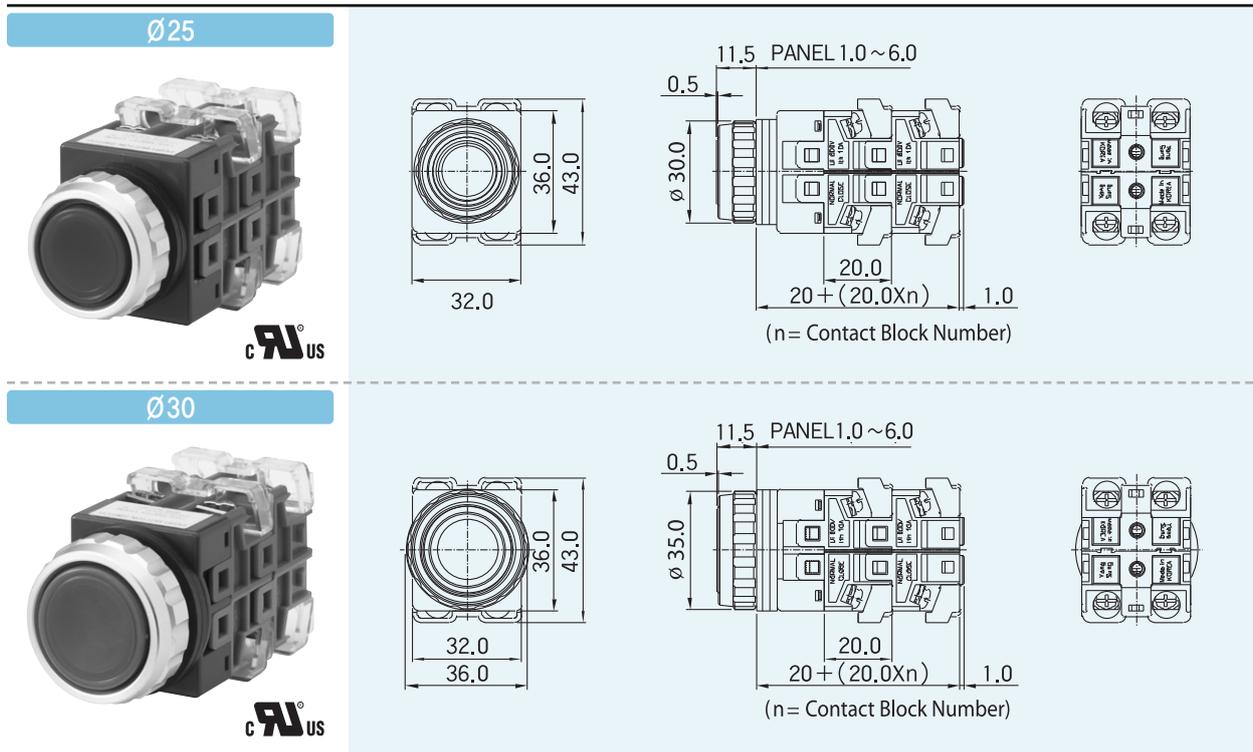
정격절연전압 (Rating insulation voltage)		AC600V, DC250V		
정격통전전류 (Rating conductive current)		10A		
AC	정격전압 (Rated voltage)	110V	220V	440V
	저항부하 (Resistive load)	10A	6A	3A
	유도부하 (Inductive load)	5A	2.5A	1.2A
DC	정격전압 (Rated voltage)	110V	125V	220V
	저항부하 (Resistive load)	2.2A	1.9A	1.1A
	유도부하 (Inductive load)	1.1A	1.0A	0.6A

부품 재질 | Part Materials |

부 품 (Part)	재 질 (Materials)
하 부 (Contact Block)	PC 수지 (Poly Carbonate Resin)
홀 다 (Holder)	ABS 내열수지 (Heat Resistance ABS Resin)
접 점 (Contact)	은접점 (Silver Contact)
단 자 (Terminal)	황동 (Brass)
볼 트 (Bolt)	탄소강, 스테인레스 (Carbon Steel, Stainless Steel)
버 턴 (Button)	아세탈 (Acetal Resin)
스프링 (Spring)	스테인레스 (Stainless Steel)

외형 / 치수도 | Shape / Dimension Drawing |

(unit : mm)

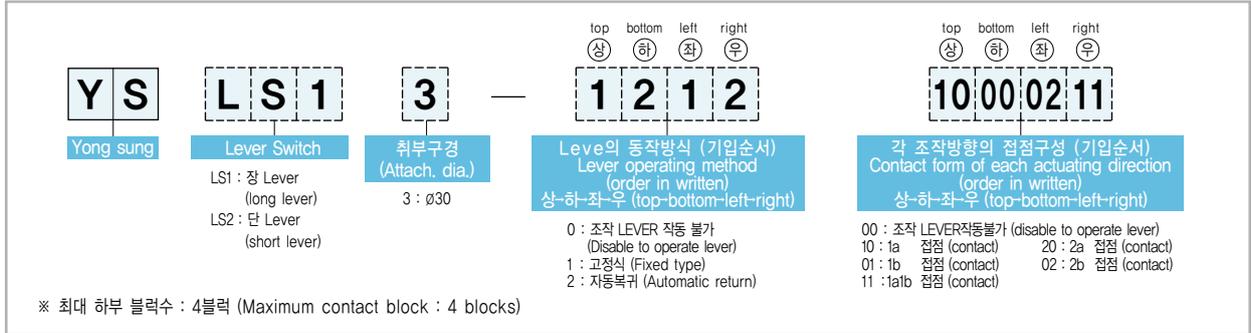


6-6

레버 스위치 Lever Switch



형식 구분도 | Type Classification Diagram



특징 | Features

- 4개의 동작을 1개의 Lever로 자유자재로 Control되는 4방향 조작스위치
- 1개의 Lever로 4방향의 동작을 Control하는 4방향 스위치입니다.
- Lever를 쓰러지는 방향과 같은 방향의 접점이 작동하므로, 공작기기와 산업기계를 상하좌우로 빈번히 방향전환시킬 때 좋습니다.
- 4 directional operating switch which can control 4 directional actions by one lever.
- 4 directional operating switch in which 4 directional actions is controlled by only one lever.
- Useful for machine tool and industrial machine which need 4 direction control due to operating as lever controlled.

조작 기구부 | Actuating System Part

- 조작 Lever는 중심이 중심위치로, 각 방향에 약 30° 기울이면 Lock Pin을 통하여 2방향의 접점이 작동합니다.
- Lever의 동작에는 4방향, 3방향, 2방향의 것이 있고, 어느 방향의 낫치에 대해서도 작동위치 정지동작과 자동복귀 동작을 자유로 선택하는 것이 가능합니다.
- As the center of actuating lever is the central position, if about 30 inclines to each direction, 2 directional contacts are operated via Lock Pin.
- Lever operation is of 4, 3, 2 directional and it is possible to freely choose operating position stop action and automatic return action against any directional notch.

접점 정격 | Contact Rating

교 류 (AC)	정격전압 (Rating voltage)	125V	250V	440V	
	정격전류 (Rating current)	10A	6A	3A	
	차단전류 (Breaking current)	폐로차단전류 = 정격전류×2.2 (Closed breaking current = Rating current×2.2)			
직 류 (DC)	정격전압 (Rating voltage)	24V	110V	220V	
	저 항 (Resistance)	정격전류 (Rating current)	10A	2.2A	1.1A
		차단전류 (Breaking current)	폐로차단전류 = 정격전류×1.1 (Closed breaking current = Rating current×1.1)		
	유 도 (Induction)	정격전류 (Rating current)	5A	1.1A	0.6A
		차단전류 (Breaking current)	폐로차단전류 = 정격전류×1.1 (Closed breaking current = Rating current×1.1)		
정격통전전류 (Rating conductive current)	10A				

부품 재질 | Part Materials |

부 품 (Part)	재 질 (Materials)
몸 체 (Body)	PC 수지 (Poly Carbonate Resin)
홀 다 (Holder)	ABS 내열 수지 (Heat resistance ABS Resin)
접 점 (Contact)	은접점 (Silver)
단 자 (Terminal)	황 동 (Brass)
볼 트 (Bolt)	탄소강 (Carbon Steel)
스프링 (Spring)	스테인레스 (Stainless Steel)
링 (Ring)	알루미늄 (Aluminum (Al))

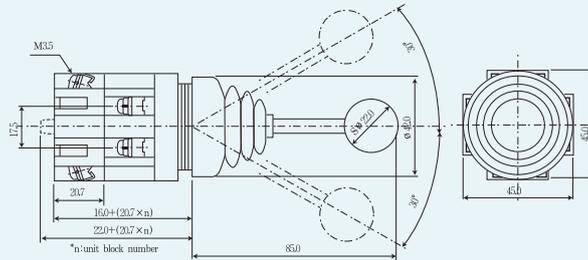
성능 개요 | Performance Summary |

절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)	below 50mΩ (Initial value)
내전압 (Withstand voltage)	AC 2,500V/min (50~60Hz)
기계적 수명 (Mechanical lifetime)	above 500,000 times (20 times/min)
전기적 수명 (Electrical lifetime)	above 100,000 times (20 times/min)
사용주위온도 (Ambient temperature)	-25℃ ~ +40℃
상대습도 (Relative humidity)	45 ~ 85%

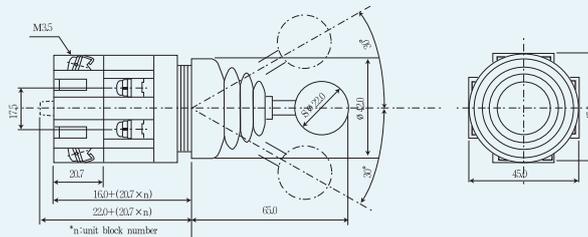
외형 / 치수도 | Shape / Dimension Drawing |

(unit : mm)

YLS1 Type (Long Lever)

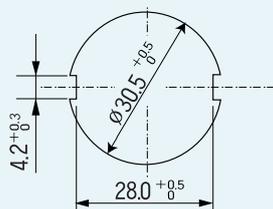


YLS2 Type (Short Lever)



패널 가공 치수 | Cut-out Dimension |

(unit : mm)

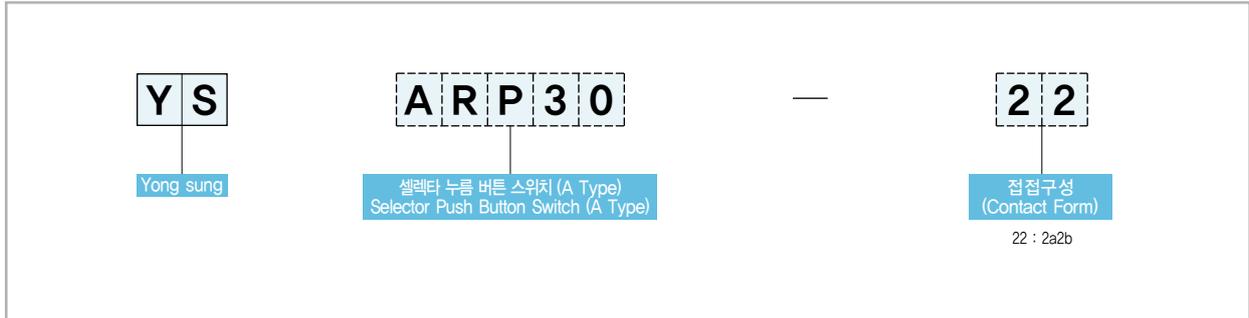


6-7

셀렉타 누름 버튼 스위치 (A-type) Selector Push Button Switch (A-type)

 File No. E242380

형식 구분도 | Type Classification Diagram



특징 | Features

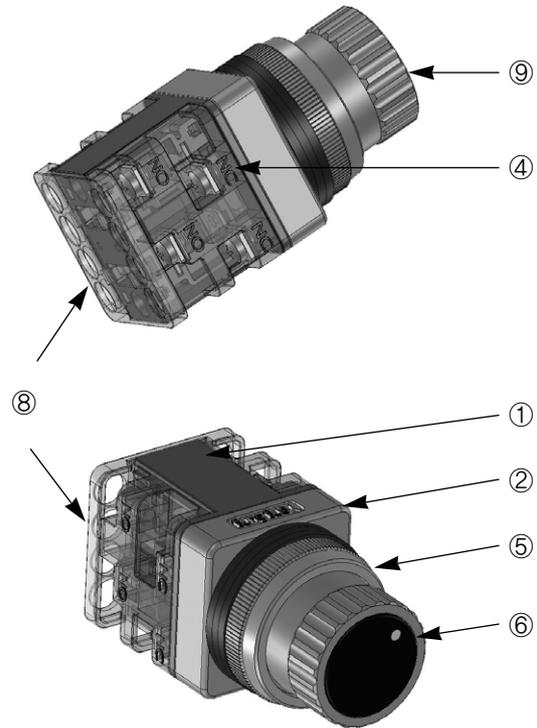
- 회로를 절환 선택하여 Push Button 조작을 필요로 하는 공작기계등에 사용하도록 설계된 스위치입니다.
- 90° 절환시에만 동작 가능한 구조로 오동작을 방지할 수 있습니다.
- 단자카바 사용으로 감전으로부터 인체보호 구조를 적용하였습니다.
- Switch designed for the application of machine tools etc. requiring Push Button actuation, with transfer selection of circuit
- It could be operated at 90 transfer angle to prevent malfunction.
- Applying for the human body protection structure using a terminal protection cover.

성능 개요 | Performance Summary

절연저항 (Insulation Resistance)	above 100MΩ (DC500V. Meg)
접촉저항 (Contact Resistance)	below 20mΩ (Initial value)
내전압 (Withstand Voltage)	AC 2,500V/min
기계적 수명 (Mechanical Lifetime)	above 250,000 times (20 times/min)
전기적 수명 (Electrical Lifetime)	above 150,000 times (20 times/min)
작동에 필요한 힘 (Operating Force)	about 600g
사용주위온도 (Ambient Temperature)	-25℃ ~ +40℃
상대습도 (Relative Humidity)	45 ~ 85%

부품 재질 | Part Materials |

No	부 품 (Part)	재 질 (Materials)
1	몸체 (Body)	ABS 내열수지 (Heat resistance ABS resin)
2	홀더 (Holder)	아연합금 (Zn Diecasting)
3	접점 (Contact)	은접점 (Silver Contact)(내부)
4	단자 (Terminal)	황동 (Brass)
5	링 (Ring)	아연합금 (Zn Diecasting)
6	버튼 (Button)	ABS 내열수지 (Heat resistance ABS resin)
7	스프링 (Spring)	스테인레스 (Stainless Steel)(내부)
8	카바 (Cover)	PC 수지 (PC resin)
9	핸들 (Handle)	알루미늄 (Aluminum)



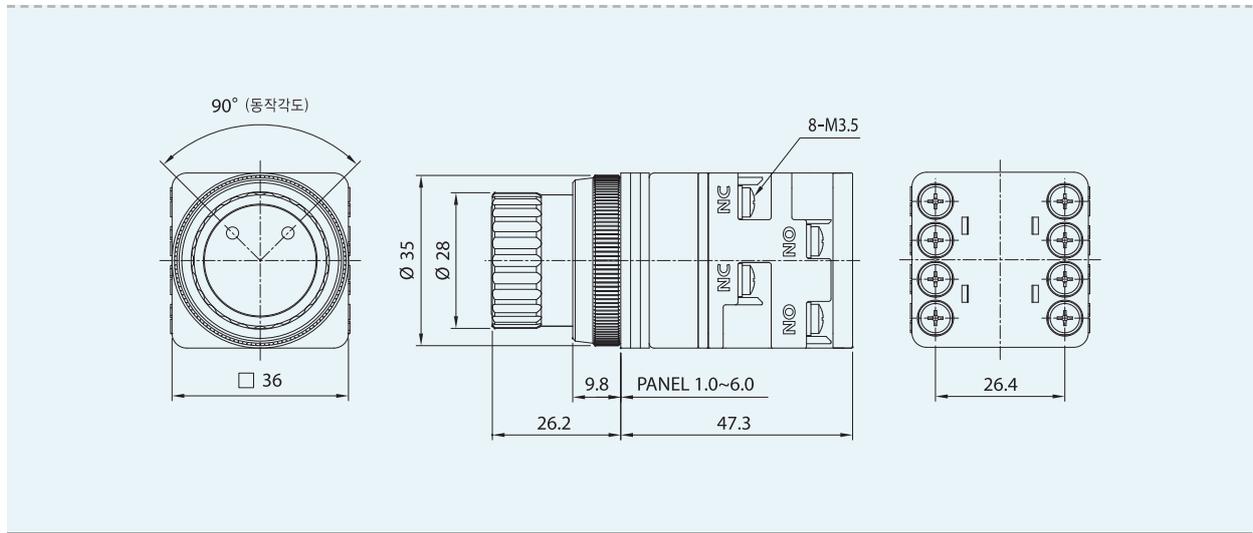
접점 정격 | Contact Rating |

정격절연전압 (Rating insulation voltage)		AC600V, DC250V		
정격통전전류 (Rating conductive current)		10A		
AC	정격전압 (Rated voltage)	110V	220V	440V
	저항부하 (Resistive load)	10A	6A	3A
	유도부하 (Inductive load)	5A	2.5A	1.2A
DC	정격전압 (Rated voltage)	110V	125V	220V
	저항부하 (Resistive load)	2.2A	1.9A	1.1A
	유도부하 (Inductive load)	1.1A	1.0A	0.6A

외형 / 치수도 | Shape / Dimension Drawing |

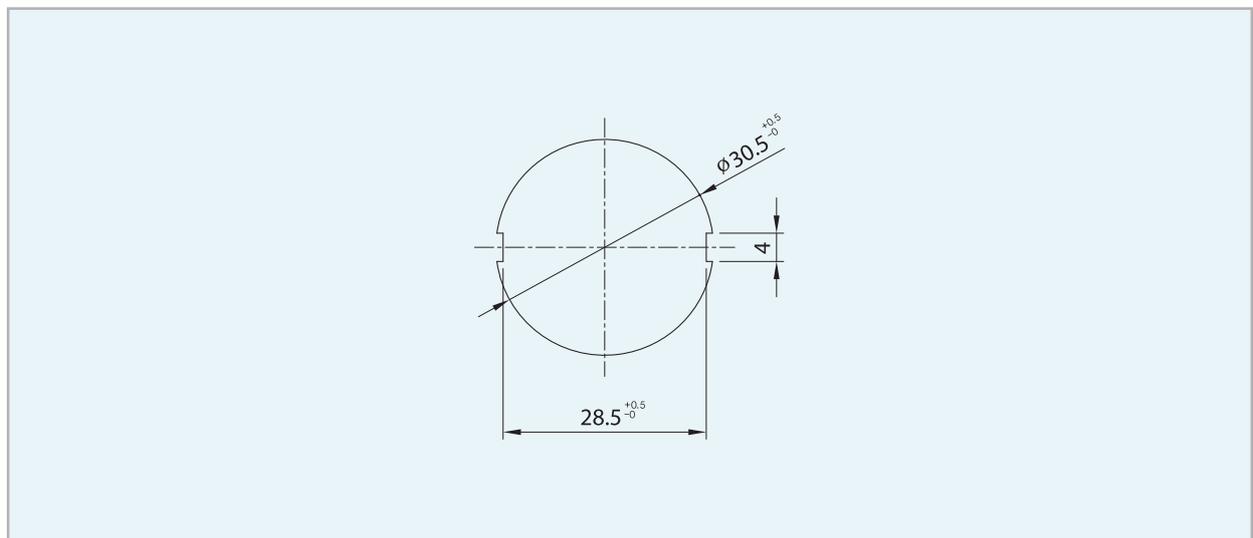
(unit : mm)

셀렉타 누름 버튼 스위치 (A Type) / Selector Push Button Switch (A Type)

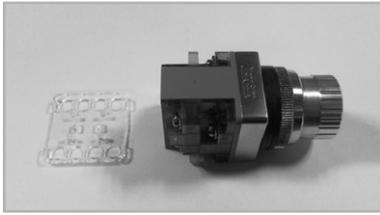


판넬 가공 치수 | Cut-out Dimension |

(unit : mm)



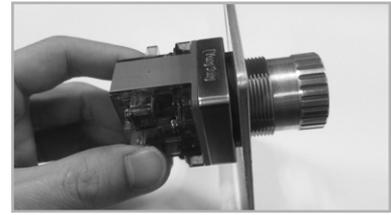
제품 부착 및 배선 방법 | Panel Attachment Method |



- 1) 제품 포장박스에서 분리.
(스위치 본체, 단자카바)
- 1) Separate product from packing box
(body, cover)



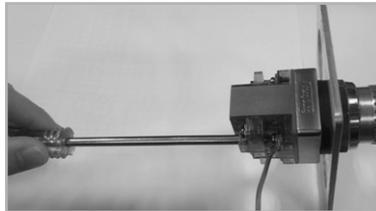
- 2) 스위치 본체에서 링을 분리.
- 2) Separate ring from body



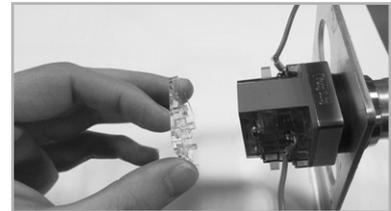
- 3) 판넬 두께에 따라 고무링 제거 후 판넬 뒷면에서 제품 삽입.
- 3) Insert body into back of panel after removing rubber-ring upon thickness of panel



- 4) 전면에서 링 체결.
(부착완료)
- 4) Connect ring at front of panel
(attachment completed)



- 5) 회로에 따라 a,b 접점 배선 작업
(단자볼트 체결식)
- 5) Wire upon circuit
(method to connect bolt)



- 6) 배선 완료 후 보호카바 체결.
- 6) Connect cover after wiring completed



- 7) 제품 부착 및 배선 완료.
- 7) Product attachment and wiring completed

사용시 주의사항 | Remark in Use |

- 배선시 동작회로를 확인바랍니다.
- 핸들 동작 방향을 확인바랍니다.
- 버튼 동작 시 핸들위치 확인 후 동작바랍니다. (핸들 정위치로 가지 않으면 버튼동작이 안됩니다.)
- 안전보호 필요시 반드시 단자카바를 부착 사용하십시오.
- Make sure to check circuit during wiring.
- Make sure to check moving direction of handle.
- Operate button after checking position of handle. (button wouldn't be operated unless handle has right position.)
- Should use cover if you need safety

6-8

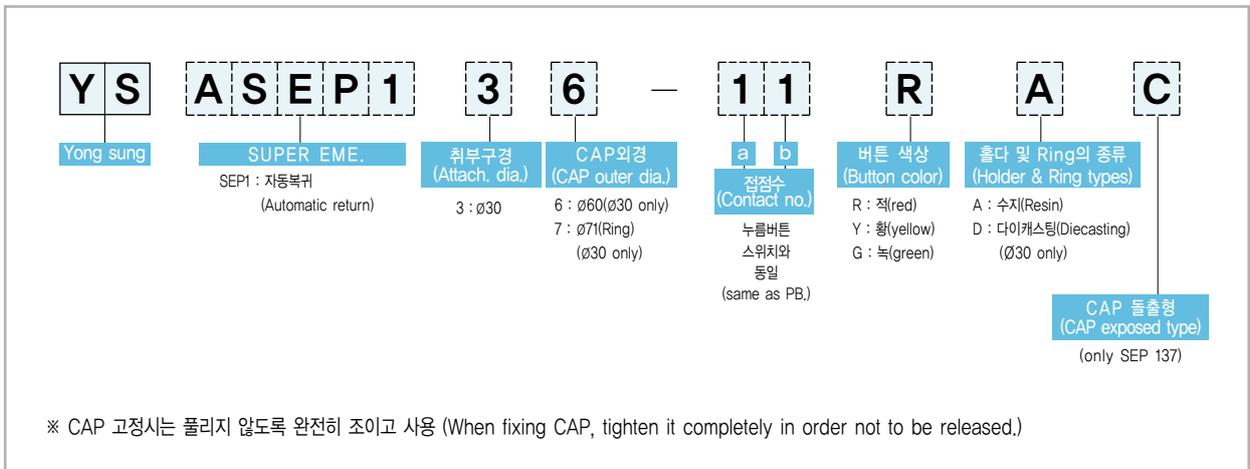
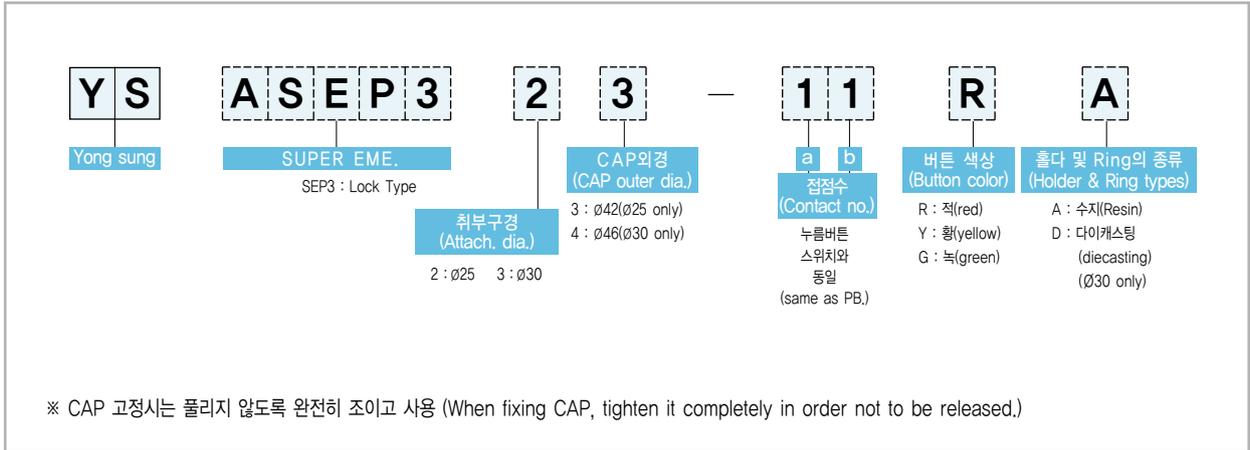
슈퍼 비상 누름 버튼 스위치 Super Emergency Push Button Switch



File No. E242380

IP44

형식 구분도 | Type Classification Diagram



성능 개요 | Performance Summary

절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)	below 50mΩ (Initial value)
내전압 (Withstand voltage)	AC 2,500V/min (50~60Hz)
기계적 수명 (Mechanical lifetime)	above 500,000 times (20 times/min)
전기적 수명 (Electrical lifetime)	above 100,000 times (20 times/min)
작동에 필요한 힘 (Operating force)	200 ~ 350g
사용주위온도 (Ambient temperature)	-25℃ ~ +40℃
상대습도 (Relative humidity)	45 ~ 85%

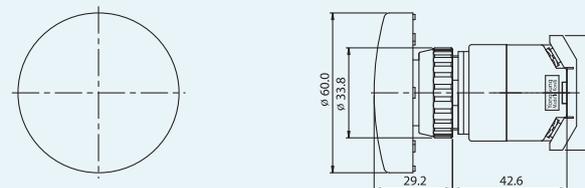
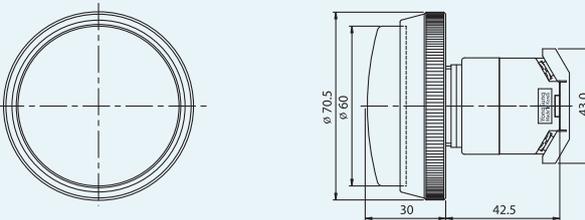
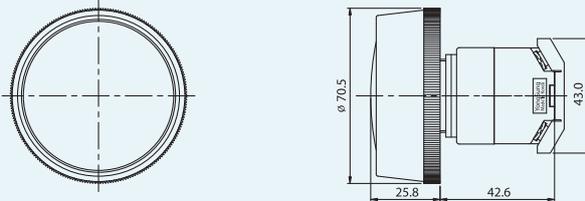
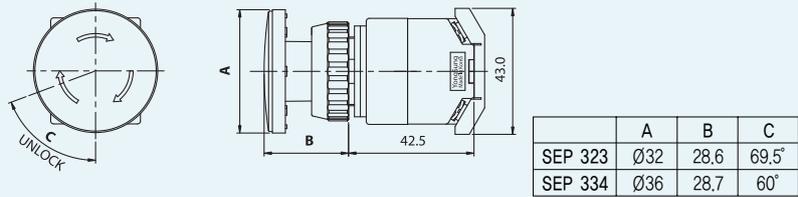
접점 정격 | Contact Rating |

교 류 (AC)	정격전압 (Rating voltage)	125V	250V	440V	
	정격전류 (Rating current)	10A	6A	3A	
	차단전류 (Breaking current)	폐로차단전류 = 정격전류×2.2 (closed breaking current=rating current×2.2)			
직 류 (DC)	정격전압 (Rating voltage)	24V	110V	220V	
	저 항 (Resistance)	정격전류 (Rating current)	10A	2.2A	1.1A
		차단전류 (Breaking current)	폐로차단전류 = 정격전류×1.1 (closed breaking current=rating current×1.1)		
	유 도 (Induction)	정격전류 (Rating current)	5A	1.1A	0.6A
		차단전류 (Breaking current)	폐로차단전류 = 정격전류×1.1 (closed breaking current=rating current×1.1)		
정격통전전류 (Rating conductive current)	10A				

외형 / 치수도 | Shape / Dimension Drawing |

(unit : mm)

Push lock & Turn Reset Type



6-9

보조 스위치 Auxiliary Switch

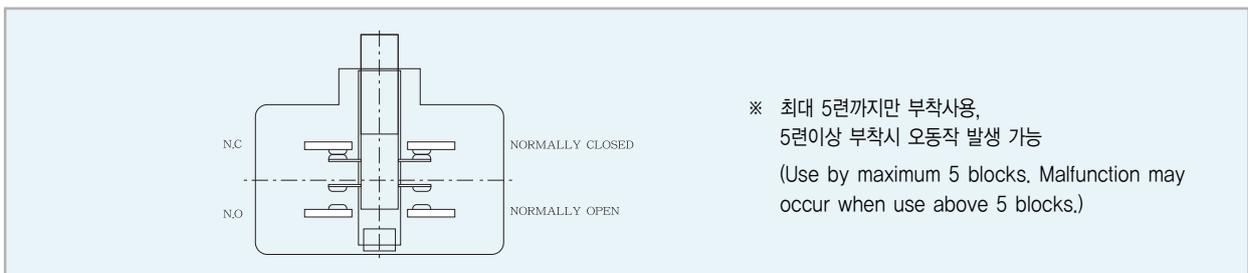
형식 구분도 | Type Classification Diagram |



특징 | Features |

- 소형 5A용 보조스위치는 누름형으로 다목적으로 사용할 수 있게 제작되어 편리합니다.
- 폭이 좁고 외형이 작아서 단독부착 뿐 아니라 단열로 수개를 부착하여 사용할 수 있게 제작되어 있습니다.
- 각종 차단기에도 사용하며 자동제어기기, 기계, 일반용으로 사용하기에 편리합니다.
- Mini 5A type auxiliary switch is manufactured as push type and convenient for multi-purpose.
- With narrow width and small shape, multiple attachments as well as single one can be made.
- Applied to various breaker. It is also conveniently used for automatic controller, machines and general purpose.

접점 구성도 | Contact Form Diagram |



성능 개요 | Performance Summary |

정격용량 (Rating capacity)	AC250V 5A	AC250V 10A
절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)	
접촉저항 (Contact resistance)	below 20mΩ (Initial value)	
내진동 (Withstand vibration)	double amplitude 1.5mm	
내충격 (Withstand impact)	about 30G (300m/s ²)	
내전압 (Withstand voltage)	AC 1,500V/min	
기계적 수명 (Mechanical lifetime)	above 1,000,000 times (20 times/min)	
전기적 수명 (Electrical lifetime)	above 500,000 times (20 times/min)	
사용주위온도 (Ambient temperature)	-25℃ ~ +40℃	
상대습도 (Relative humidity)	45 ~ 85%	

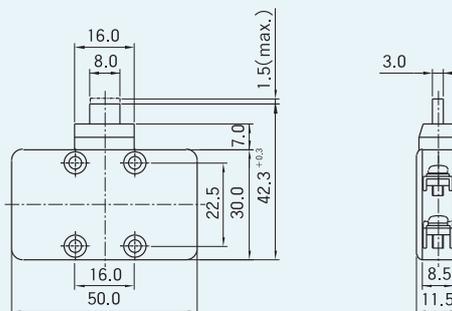
부품 재질 | Part Materials

부 품 (Part)	재 질 (Materials)	
	5A	10A
몸 체 (Body)	PBT수지 (PBT resin)	페놀수지 (Phenol resin)
유 동 (Moving)	아세탈수지 (Asental resin)	페놀수지 (Phenol resin)
단 자 (Terminal)	황 동 (Brass)	
접 점 (Contact)	은접점 (Silver)	은산화 카드뮴합금 (Silver-cadmium oxide alloy)
볼 트 (Bolt)	탄소강 (Carbon Steel)	
스프링 (Spring)	스테인레스 (Stainless steel)	

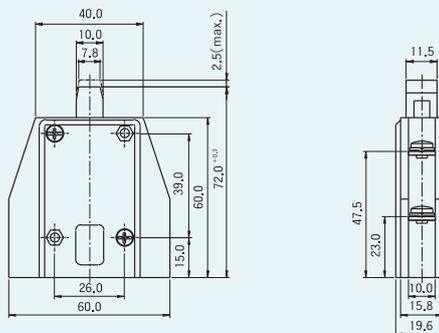
외형 / 치수도 | Shape / Dimension Drawing

(unit : mm)

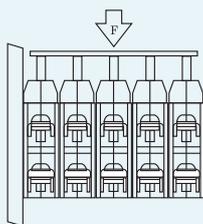
5A



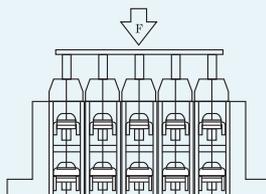
10A



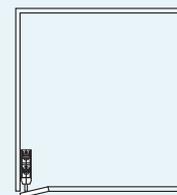
사용법의 보기 | Example of Using Method



어느 한곳의 측면을 사용하여 수개를 부착하여 회로를 개(OFF)폐(ON)하는 장치의 보기
Example of ON/OFF operation of circuit with several attachment using any one side

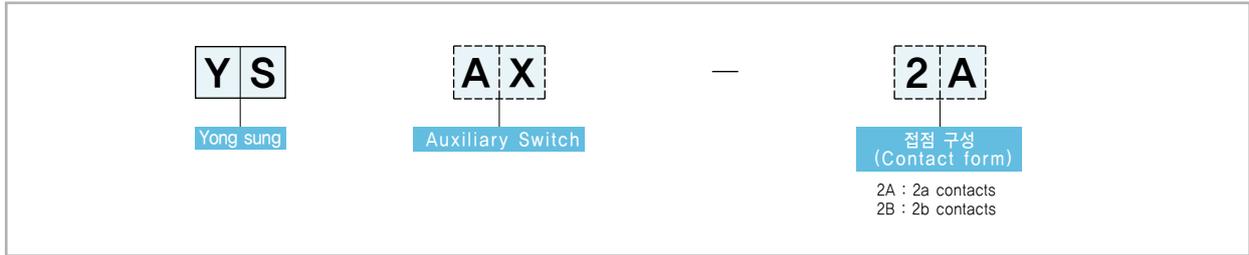


위치를 선정하여 앵글사용으로 수개를 부착하여 회로를 개(OFF)폐(ON)하는 장치의 보기
Example of ON/OFF operation of circuit with several attachment using angle after positioning



Door에 사용한 예, 문을 열고 닫을 때 회로를 개(OFF)폐(ON)하는 장치의 보기
Example applied to door. Example of ON/OFF operation of circuit in opening/closing door

형식 구분도 | Type Classification Diagram



제품 특징 및 구조 | Features and Structure of Product

- 누름형으로 다목적으로 사용할 수 있게 제작되어 편리합니다.
- 카바 재질이 투명 재질로 되어있어, 내부 동작여부를 육안으로 쉽게 확인할 수 있습니다.
- 용도에 맞게 사용할 수 있도록 2a 또는 2b 구조로 구분되어 있습니다.
- Convenient to be made for multipurpose usage as push type.
- Internal operation can easily be seen with naked eye due to transparent material for cover.
- 2a or 2b structure.

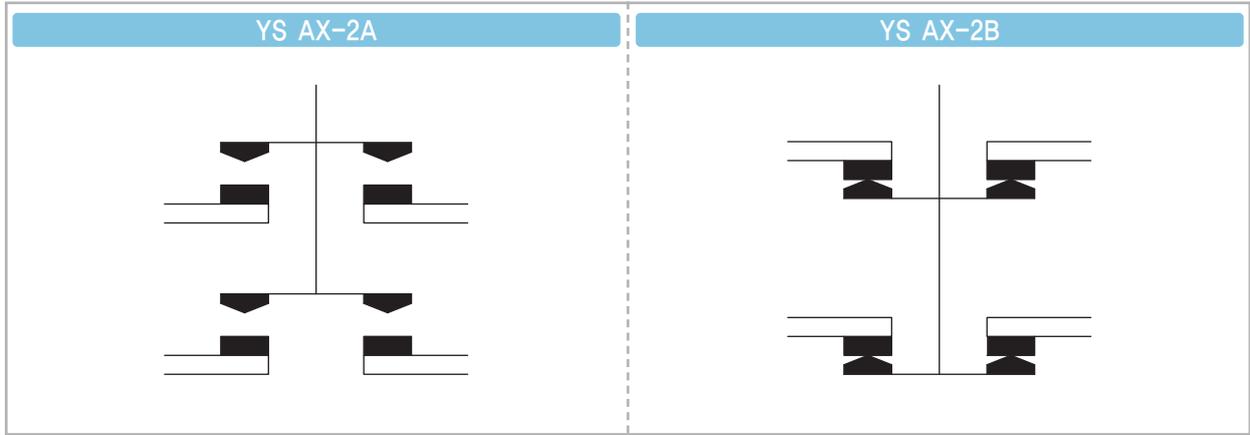
부품 재질 | Part Materials

부 품 (Part)	재 질 (Materials)
카 바 (Cover)	PC 수지 (PC Resin)
유 동 (Moving)	PC 수지 (PC Resin)
단 자 (Terminal)	황동 (Brass)
접 점 (Contact)	은접점 (Silver Alloy)
볼 트 (Bolt)	탄소강 (Carbon steel)

성능 개요 | Performance Summary

정격용량(Rating capacity)	AC220V 5A
절연 저항(Insulation resistance)	above 100MΩ (DC 500V meg)
접촉 저항(Contact resistance)	below 50mΩ (initial value)
내전압(Withstand voltage)	AC 1,500V/min
기계적 수명(Mechanical life time)	above 500,000 (20time/min)
전기적 수명(Electrical life time)	above 100,000 (20time/min)
사용주위온도(Ambient temperature)	-25℃ ~ +40℃
상대 습도(Relative humidity)	45 ~ 85%

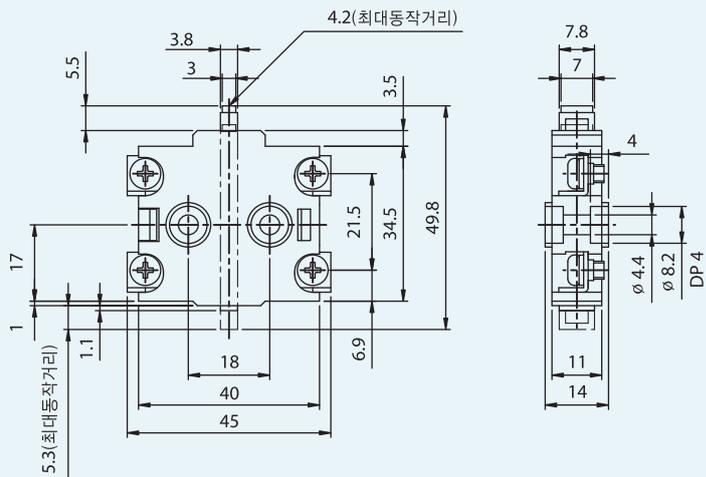
접점 구성도 | Contact Form Diagram |



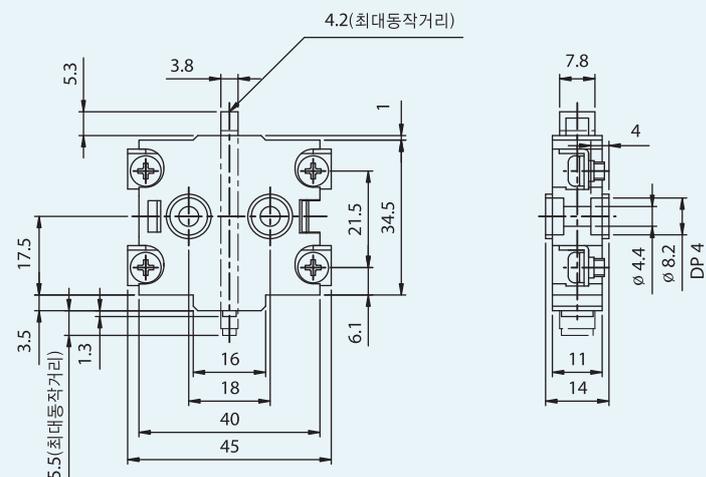
외형 / 치수도 | Shape / Dimension Drawing |

(unit : mm)

YS AX-2A



YS AX-2B



형식 구분도 | Type Classification Diagram



특징 | Features

- 투명 재질로 제작하여 접점 상태를 육안으로 확인할 수 있습니다.
- Contact block can be seen with naked eye due to transparent material for cover.

부품 재질 | Part Materials

부 품 (Part)	재 질 (Materials)	
	YS AX-02, 20	YS AX-11
유 동 (Moving)	폴리카보네이트 (PC Resin)	66 나일론 (PA66)
몸 체 (Body)	폴리카보네이트 (PC Resin)	폴리카보네이트 (PC Resin)
단 자 (Terminal)	황 동 (Brass)	황 동 (Brass)
접 점 (Contact)	은 (Silver)	은 (Silver)
스프링 (Spring)	탄소강 (Carbon Steel)	탄소강 (Carbon Steel)
볼 트 (Bolt)	탄소강 (Carbon Steel)	탄소강 (Carbon Steel)

접점 정격 | Contact Rating

정격절연전압 (Ui) (Rating insulation voltage)		AC600V, DC250V			
정격통전전류 (Ith) (Rating conductive current)		5A			
AC	정격사용전압 (Rated votage)	110V	220V	440V	
	정격전류 (Ie) (Rating current)	저항부하 (Resistive load) $\cos\phi = 1$	5A	5A	2.5A
		유도부하 (Inductive load) $\cos\phi = 4$	5A	3A	1.5A
DC	정격사용전압 (Rated votage)	110V	125V	220V	
	정격전류 (Ie) (Rating current)	저항부하 (Resistive load)	2A	1.7A	1A
		유도부하 (Inductive load) $T_{0.95} = 7ms$	1A	0.8A	0.5A

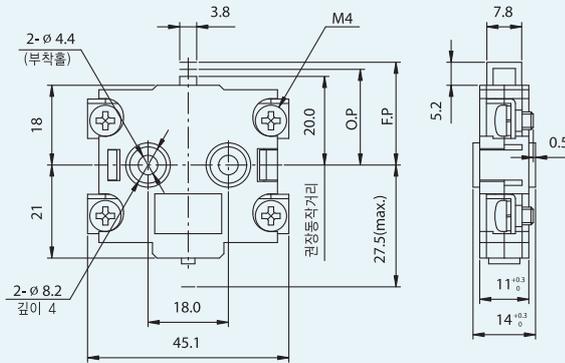
성능 개요 | Performance Summary

절연저항 (Insulation resistance)		above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)		below 50mΩ (Initial value)
내전압 (Withstand voltage)		AC 2,500V/min
수명 (lifetime)	기계적 수명 (Mechanical lifetime)	500,000 times (20 times/min)
	전기적 수명 (Electrical lifetime)	100,000 times (20 times/min)
사용주위온도 (Ambient temperature)		-25°C ~ +55°C (결로되지 않는 조건) (When condensation is not)
상대습도 (Relative humidity)		45 ~ 85% RH

동작 자료의 용어 | Term of Operation Data

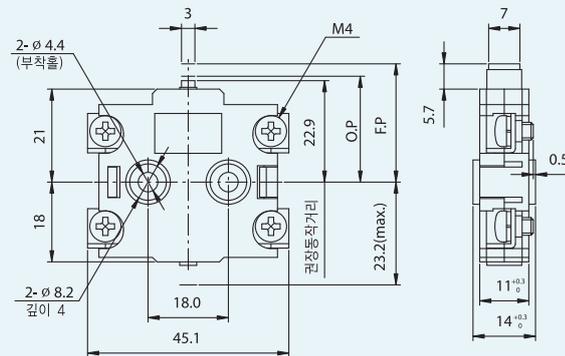
- F.P : 자유 위치 (Free Positon) – 외부에서 힘이 가해지지 않는 자유상태의 위치
- O.P : 동작 위치 (Operating Position) – 액추에이터가 움직여 접점이 반전되는 위치
 - b접점 : 통전상태에서 차단상태로 변경되는 위치
 - a접점 : 차단상태에서 통전상태로 변경되는 위치
 - 1a1b접점 : b접점이 차단된 후, a 접점이 통전상태로 변경되는 위치
- O.F : 조작력 (Operating Force) : 액추에이터가 자유 위치에서 권장 동작거리까지 움직이는데 필요한 힘
- F.P : Free Position – Actuator's position when no external force is given.
- O.P : Operating Position – Given force to actuator required to move from free position to operating one.
 - b contact : position to change into cut-off situation from conductive situation.
 - a contact : position to change into conductive situation from cut-off situation.
 - 1a1b contact : after cut-off b contact, a contact will be changed into conductive situation.
- O.F : Operating Force – Given force to actuator required to move from free position to operating one.

YS AX-02



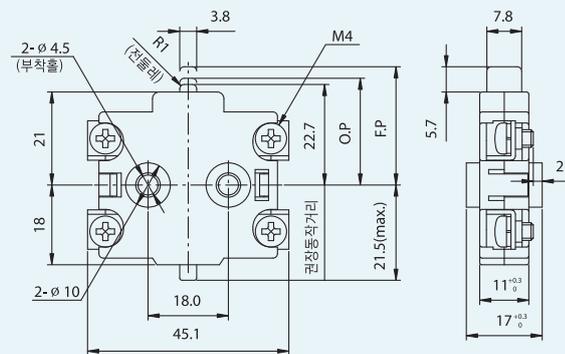
- F.P : 23.2 ± 0.4 mm
- O.P : 21.6 ± 0.4 mm
- O.F : 4.1 ~ 4.7 N
(420~480 gf)

YS AX-20



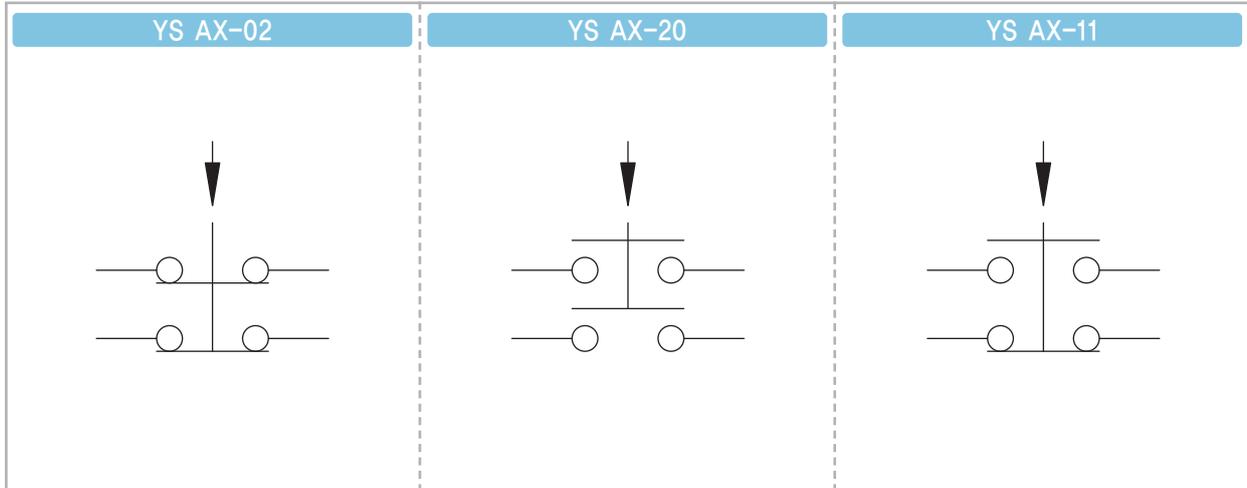
- F.P : 26.7 ± 0.4 mm
- O.P : 23.9 ± 0.4 mm
- O.F : 6.0 ~ 6.9 N
(620 ~ 700 gf)

YS AX-11



- F.P : 26.7 ± 0.4 mm
- O.P : 24.1 ± 0.4 mm
- O.F : 5.5 ~ 6.2 N
(570 ~ 630 gf)

접점 구성 | Contact Form |



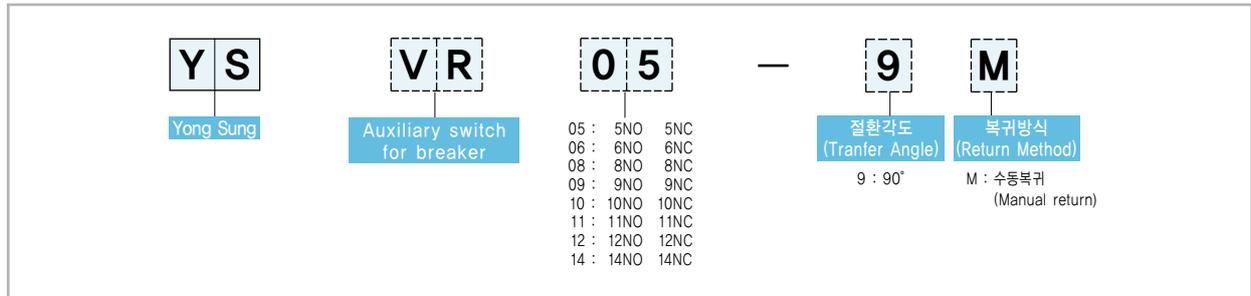
사용시 주의사항 | Remark in Use |

- 접점구성을 확인하여 결선하여 주십시오. 오결선 시 사고의 원인이 될 수 있습니다.
- 패널에 제품을 직접 부착하는 경우 단자볼트(M4볼트)와 패널사이의 거리가 가까우면 제품과 패널사이에 추가 절연을 보완하여 주십시오.
- 권장 동작거리를 확인하여 동작시켜 주십시오. 동작거리가 부족하면 접점의 오동작이 발생될 수 있습니다.
- 최대 동작거리는 유동바의 돌출 높이보다 작게 동작시켜 주십시오. 유동바의 돌출 높이와 같거나 이상으로 동작시키면 제품 파손의 원인이 됩니다.
- 단자볼트(M4볼트)는 적정 토크(1.2N.m)를 초과하여 과하게 조이는 경우 볼트파손이 발생될 수 있으므로 주의하여 주십시오.
- Do wiring with checking contact structure. Wrong wiring may cause accident.
- In case of attach product directly to panel, if contact bolt(M4 bolt) is close to panel additional insulation is necessary between product and panel.
- Do operating with checking recommended operation distance. Lack of operation distance may cause malfunction of contact.
- Maximum operation distance should be lower than projecting height of moving-bar. Operating above projecting height of moving-bar may cause damage of product.
- In case of tightening contact bolt (M4 bolt) in excess of standard torque (1.2N.m), it may cause damage of bolt.

6-10

차단기용 보조 스위치 Auxiliary Switch for Breaker

형식 구분도 | Type Classification Diagram



성능 개요 | Performance Summary

전기적수명 (Electrical lifetime)	above 10,000 times (Switch freq : 20times/min)
기계적수명 (Mechanical lifetime)	above 50,000 times (Switch freq : 20times/min)
절연저항 (Insulation resistance)	above 100MΩ (DC 500V. Meg)
접촉저항 (Contact resistance)	below 50mΩ (Initial value)
내전압 (Withstand voltage)	AC 2,000V/min

접점 정격 | Contact Rating

정격절연저압 (Ui)-(Rating insulation voltage)	AC 250V, DC 250V				
정격통전전압 (Ith)-(Rating conductive current)	20A				
정격전압 (Ue)-(Rating voltage)	20V	110V	220V		
정격전류 (Ue) (Rating current)	교류 AC	저항부하 (AC12)-Resistive load	20A	20A	10A
		유도부하 (AC15)-Inductive load	20A	4A	2A
	직류 DC	저항부하 (DC12)-Resistive load	13A	3A	1.5A
		유도부하 (DC13)-Inductive load	10A	2A	1A

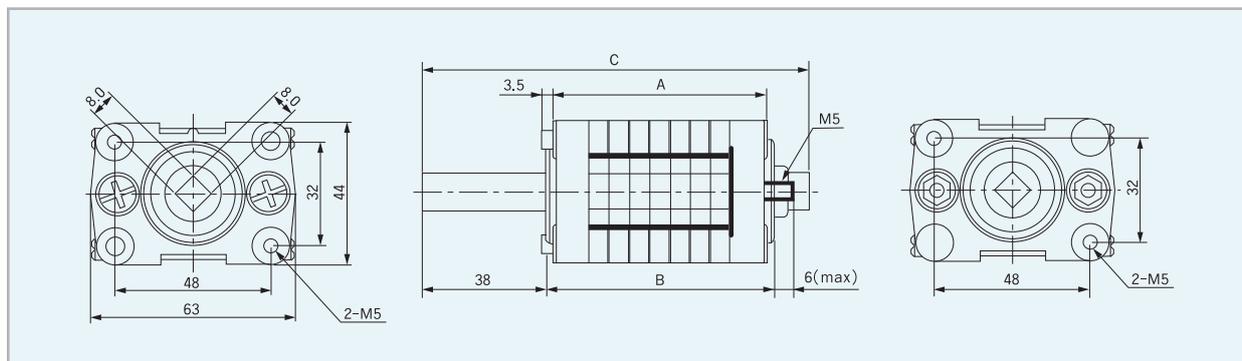
교류유도부하 ----- COSØ=0.4 직류유도부하 ----- T_{0.95} = 300ms
 적용규격 ----- IEC 60947-5-1, KSC 4516 Switch 조작속도 20ms 이하 특성.

부품 재질 | Part Materials

부 품 (Part)	재 질 (Materials)
몸 체 (Body)	알루미늄 합금 다이캐스팅 (Aluminum alloy diecasting)
하 부 (Contact block)	PBT Resin
베어링 (Bearing)	6 NYLON
고정단자 (Fixed terminal)	황동 (Brass)
가동단자 (Working terminal)	인천동 (Phosphorus bronze)
심 보 (Shaft)	탄소강 (Carbon steel)
볼 트 (Bolt)	탄소강 (Carbon steel)

외형 / 치수도 | Shape / Dimension Drawing |

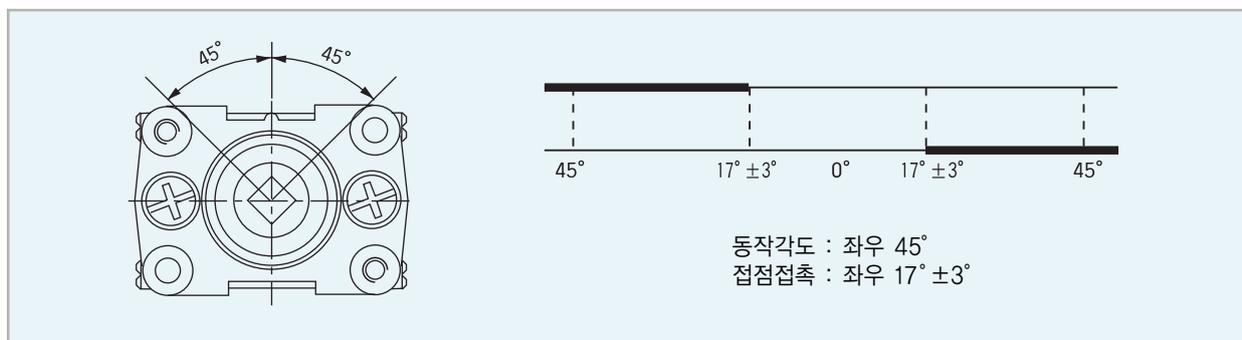
(unit : mm)



치수도 (Dimension Table)

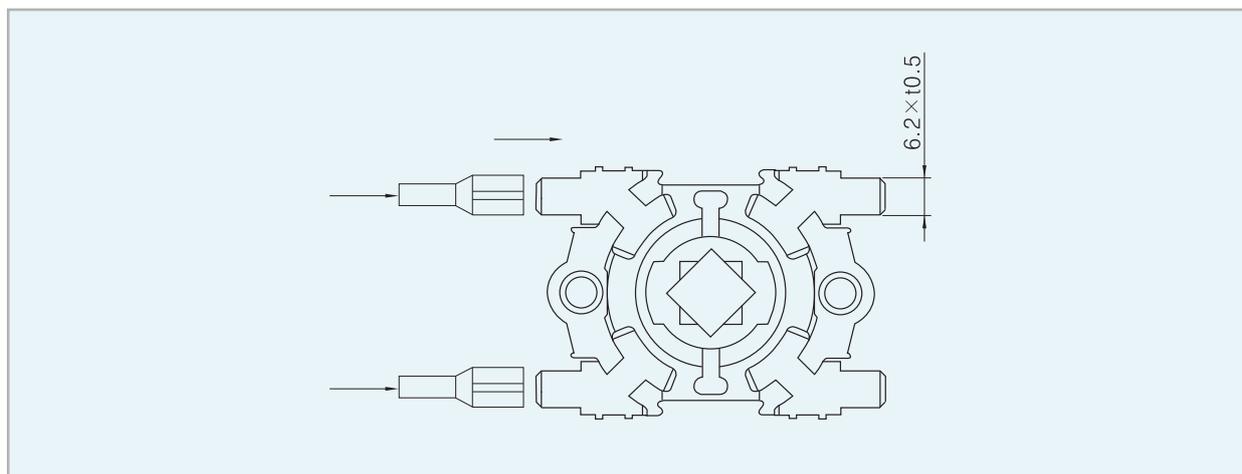
구 분	VR 05	VR 06	VR 08	VR 09	VR 10	VR 12	VR 14
A	59.5	65.8	78.4	84.7	91.0	103.6	116.2
B	63.8	70.1	82.7	89.0	95.3	107.9	120.5
C	113.0	119.0	131.5	138.0	144.5	157.0	169.5

동작 각도 | Operating Angle |



내부 구조도 | Inside Structure Diagram |

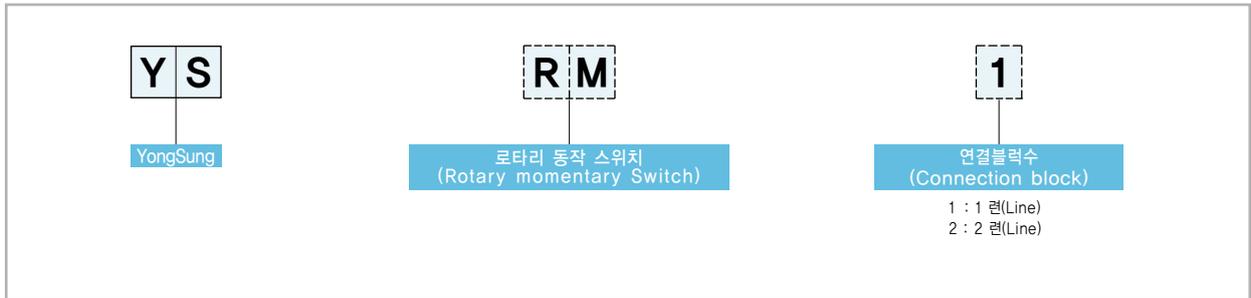
(unit : mm)



6-11

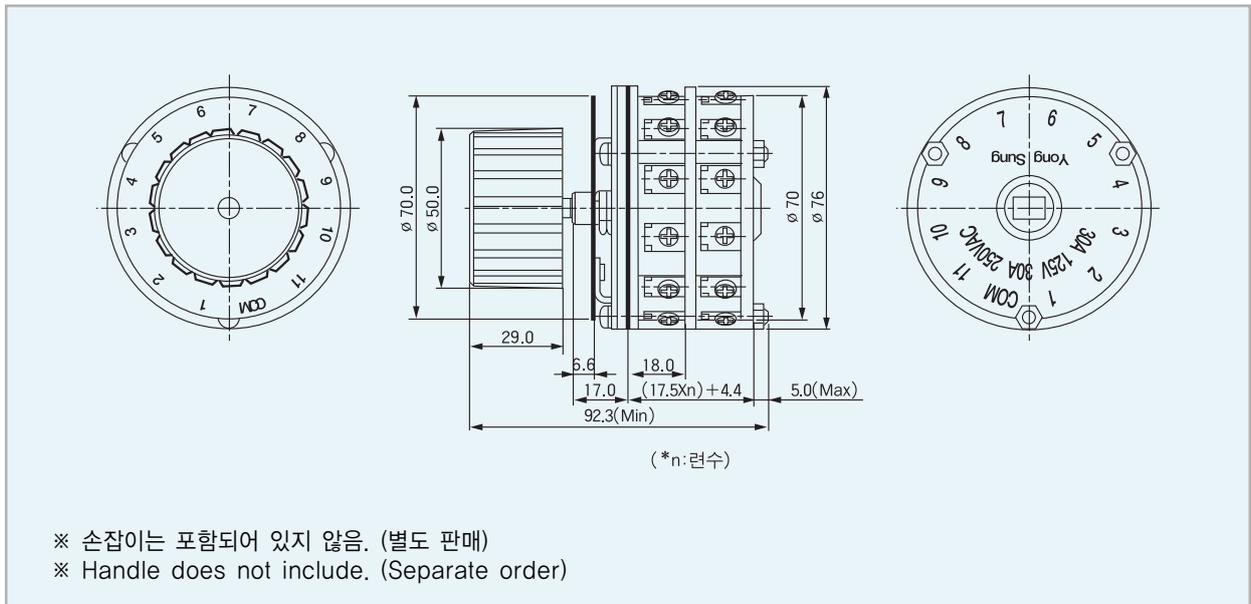
로타리 동작 스위치 Rotary Momentary Switch

형식 구분도 | Type Classification Diagram



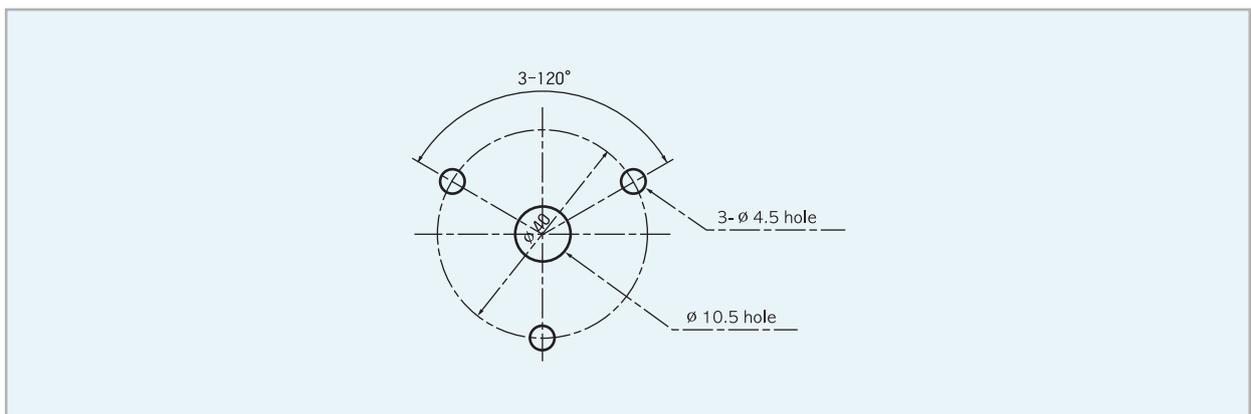
외형 / 치수도 | Shape / Dimension Drawing

(unit : mm)



패널 가공 치수 | Cut-out Dimension

(unit : mm)



접점 정격 | Contact Rating |

정격절연저압(Ui) (Rating insulation voltage)		AC 250V, DC 250V			
정격통전전압(Ith) (Rating conductive current)		40A			
정격전압(Ue) (Rating voltage)		24V	110V	220V	
정격전류 (Ue) (Rating current)	교류 AC	저항부하 (AC12)-Resistive load	40A	40A	30A
		유도부하 (AC15)-Inductive load	40A	20A	10A
	직류 DC	저항부하 (DC12)-Resistive load	40A	10A	5A
		유도부하 (DC13)-Inductive load	10A	2A	1A

폐로차단전류 = 정격전류 × 1.1 (Closed breaking current=rating current×1.1)

교류유도부하 (AC Inductive Load) ----- COSØ=0.4

직류유도부하 (DC Inductive Load) ----- T_{0.95} = 300ms

적용규격 (Applied standard) ----- IEC 60947-5-1, KSC 4516

성능 개요 | Performance Summary |

접촉저항 (Contact resistance)		below 50mΩ (Initial value)
절연저항 (Insulation resistance)		200MΩ (500V, Meg)
내전압 (Withstand voltage)		AC 1,500V/1Min
절환각도 (Transfer angle)		30°
수명 (Life time)	기계적 수명 (Mechanical lifetime)	above 10,000 times
	전기적 수명 (Electrical lifetime)	above 5,000 times

부품 재질 | Part Materials |

부품 (Part)	재질 (Materials)
부착판 (Attachment plate)	냉간 압연 강판 (Cold Rolled Steel Sheet)
기판 (Base)	페놀 수지 (Phenol Resin)
덮개 (Cover)	페놀 수지 (Phenol Resin)
가동단자 (Movable terminal)	인청동 (Phosphor Bronze, Ag Plating)
고정단자 (Fixed terminal)	황동 (Brass, Ag Plating)