Features

- Galvanically separated contacts
- Screw terminals with self-lifting clamps for easy wiring
- Positive Opening of NC contacts
- 4 x 90° actuator positions
- Horizontal or Vertical Operation

Definitions of Operating Characteristics

OF	Operating Force
RF	Releasing Force
OT	Overtravel
TT	Total Travel
PT	Pretravel
MD	Movement Differential
OP	Operating Position
PO	Travel to Positive Opening

Specifications

Operating Speed	0.05mm-0.5m/s
Operating Frequency	Mechanical: 120ops/min Electrical: 30 ops/min
Insulation Resistance	>100MΩ@500V DC
Contact Resistance	<25mΩ (initial value)
Rated Current/Voltage	10A/600V AC (EN60947-5-1)
	AC15 A600 / DC13 Q300
Dielectric Strength	1000VAC for 1 min between current carrying parts 2500VAC for 1 min between non-current carrying parts
Service Life	Mechanically 1.0 x10^7 (operations) Electrically 5 x10^5 (operations)
Operating Temperature	-25~+80°C (-13~176°F)
Humidity	< 95%
Degree of Protection	IP67/ IP66(SMN4)

Plastic-Bodied Interlock Safety Switch

Selection Guide

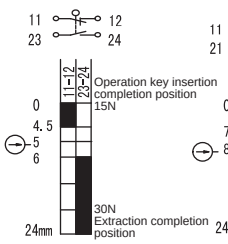
SND2191 — Body Type
- SND2191 Mini Plastic Body, 2 Conduit
- SMN4191 Plastic Body, 1 Conduit
- SND4191 Plastic Body, 1 Conduit
- SND6191 Large Plastic Body, 1 Conduit
- SN6191 Metal Body, 1 Conduit
- SN6291 Metal Body, 1 Conduit
- SN6391 Metal Body, 3 Conduit

SL
- SL: 1NO/1NC Slow Action Changeover
- SL2: 2NC Slow Action
- SL6: 2NC/1NO Slow Action Changeover
- SL7: 2NC/1NO Slow Action Overlapping

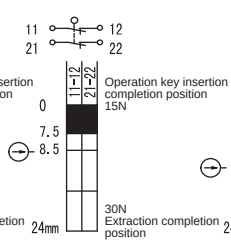
C — Conduit
- A: 1/2"NPT
- B: PG13.5
- C: M20
- D: M16
- B1: PG11

SND2191

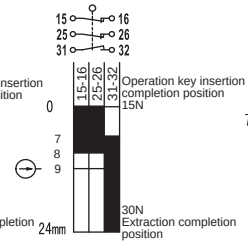
SND2191-SL
Slow Action
(Changeover)
1NO/1NC

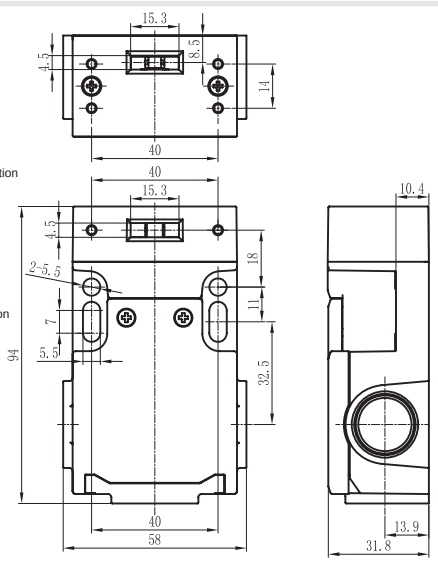


SND2191-SL2
Slow Action
2NC



SND2191-SL7
Slow Action
(Overlapping)
2NC/1NO



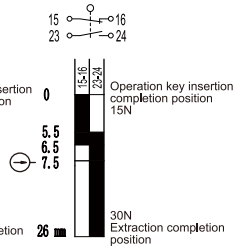


Order Code	Contact block			
SND2191-SL- _	SL	→	slow action	1NO+1NC BBM
SND2191-SL2- _	SL2	→	slow action	2NC
SND2191-SL7- _	SL7	→	slow action	2NC/1NO MBB

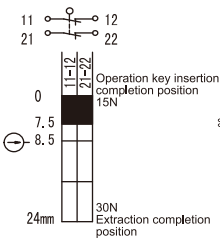
SMN4191

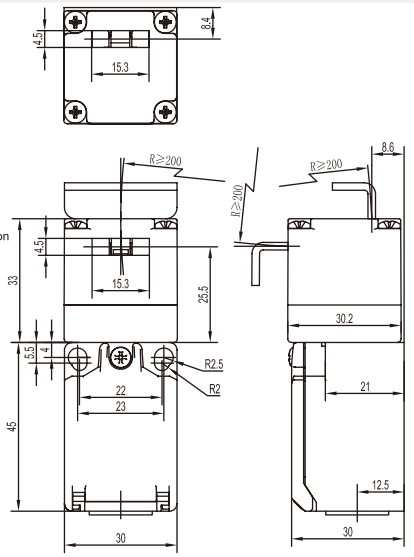
SMN4191-SL
slow action
(Changeover)
1NO/1NC

SMN4191-SL1
slow action
(Changeover)
1NC/1NO



SMN4191-SL2
slow action
(Overlapping)
2NC



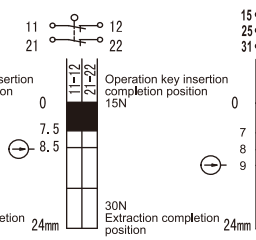


Order Code	Contact block			
SMN4191-SL-_	SL	slow action	1NO+1NC	BBM
SMN4191-SL1-_	SL1	slow action	1NC/1NO	
SMN4191-SL2-_	SL2	slow action	2NC	

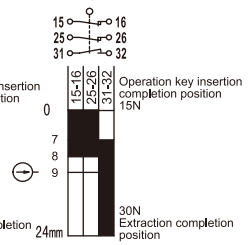
SND4191

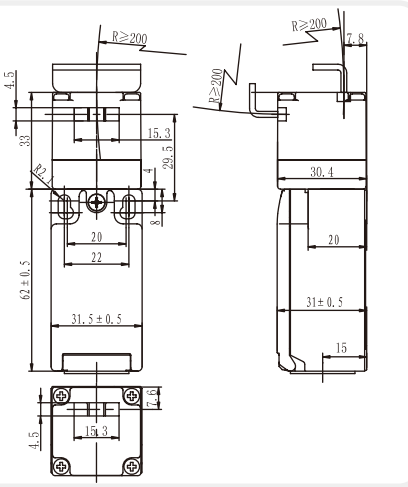
SND4191-SL
Slow Action
(Changeover)
1NO/1NC

SND4191-SL2
Slow Action
2NC



SND4191-SL7
Slow Action
(Overlapping)
2NC/1NO

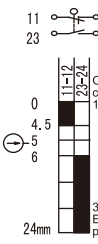




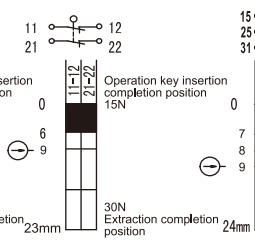
Order Code	Contact block			
SND4191-SL-_	SL	slow action	1NO+1NC	BBM
SND4191-SL2-_	SL2	slow action	2NC	
SND4191-SL7-_	SL7	slow action	2NC/1NO	MBB

SND4191(S)

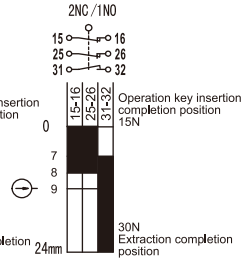
SND4191-SL_(S)
Slow Action
(Changeover)
1NO/1NC

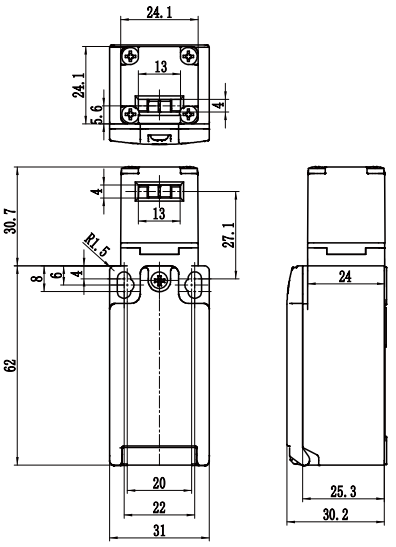


SND4191-SL2_(S)
Slow Action
2NC



SND4191-SL7_(S)
Slow Action
(Overlapping)
2NC/1NO



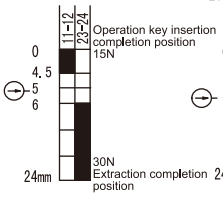


Order Code	Contact block			
SND4191-SL-_	SL	slow action	1NO+1NC	BBM
SND4191-SL2-_	SL2	slow action	2NC	
SND4191-SL7-_	SL7	slow action	2NC/1NO	

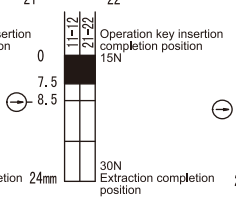
INTERLOCKING SAFETY SWITCHES

SND6191

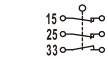
SND6191-SL
slow action
(Changeover)
1NO/1NC

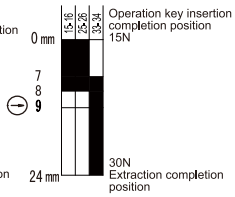


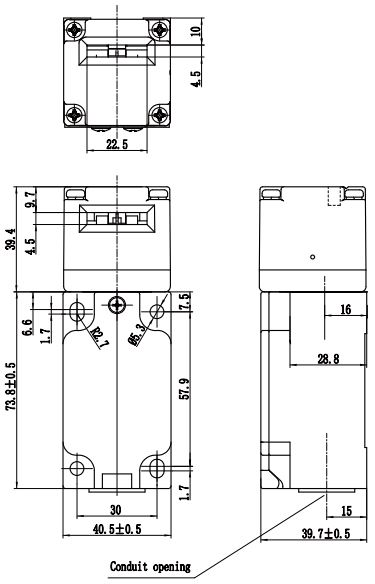
SND6191-SL2
slow action
2NC



SND6191-SL7
slow action
(Overlapping)
2NC/1NO



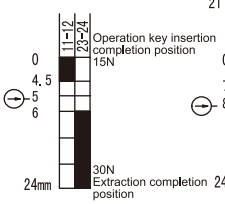




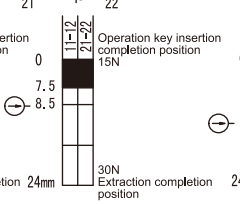
Order Code	Contact block			
SND6191-SL-_	SL	slow action	1NO+1NC	BBM
SND6191-SL2-_	SL2	slow action	2NC	
SND6191-SL7-_	SL7	slow action	2NC/1NO	

SN6191 Metal Enclosure, Metal Head

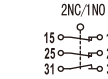
SN6191-SL
slow action
(Changeover)
1NO/1NC

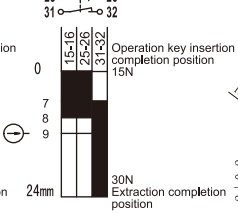


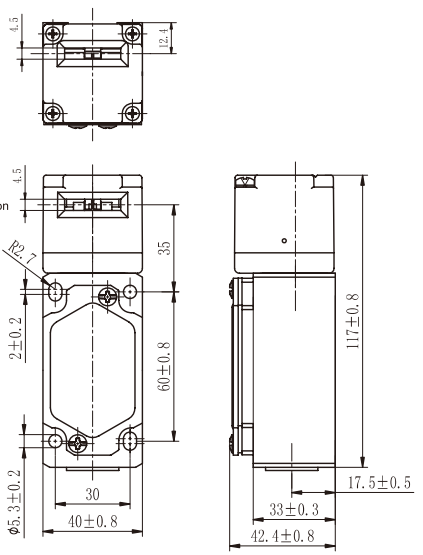
SN6191-SL2
slow action
(Overlapping)
2NC



SN6191-SL7
slow action
2NC/1NO



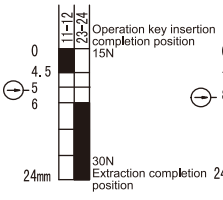




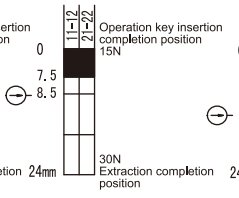
Order Code	Contact block			
SN6191-SL-_	SL	slow action	1NO+1NC	BBM
SN6191-SL2-_	SL2	slow action	2NC	
SN6191-SL7-_	SL7	slow action	2NC/1NO	

SN6291 Metal Enclosure, Metal Head

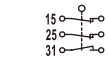
SN6291-SL
slow action
(Changeover)
1NO/1NC

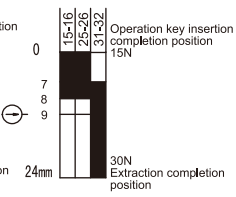


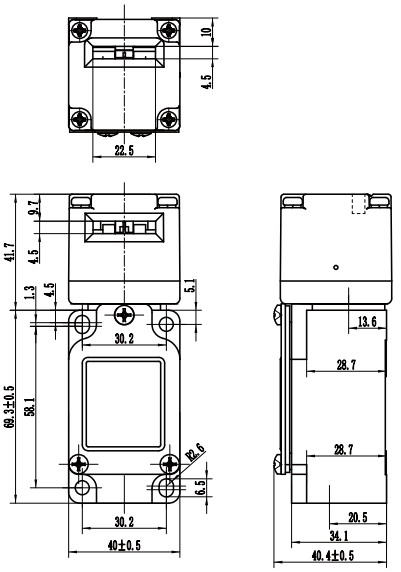
SN6291-SL2
slow action
(Overlapping)
2NC



SN6291-SL7
slow action
2NC/1NO



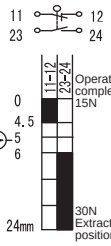




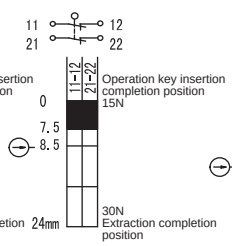
Order Code	Contact block			
SN6291-SL-_	SL	slow action	1NO+1NC	BBM
SN6291-SL2-_	SL2	slow action	2NC	
SN6291-SL7-_	SL7	slow action	2NC/1NO	

SN6391 Metal Enclosure, Metal Head

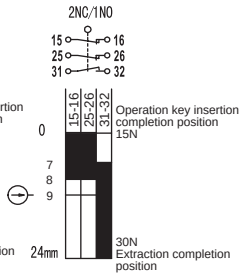
SN6391-SL
slow action
(Changeover)

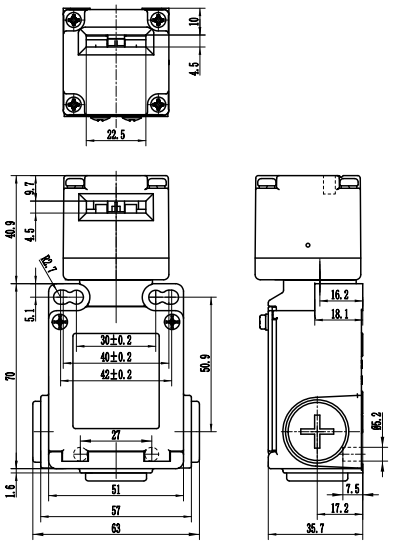


SN6391-SL2
slow action
(Overlapping)



SN6391-SL7
slow action

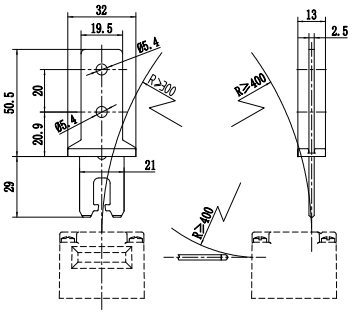




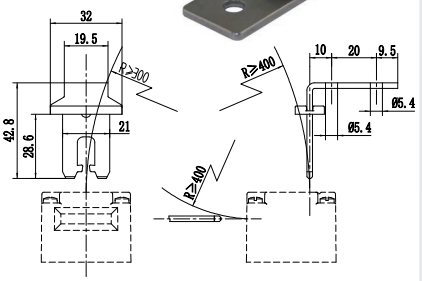
Order Code	Contact block			
SN6391-SL- _	SL	slow action	1NO+1NC	BBM
SN6391-SL2- _	SL2	slow action	2NC	
SN6391-SL7- _	SL7	slow action	2NC/1NO	

INTERLOCKING SAFETY SWITCHES KEY

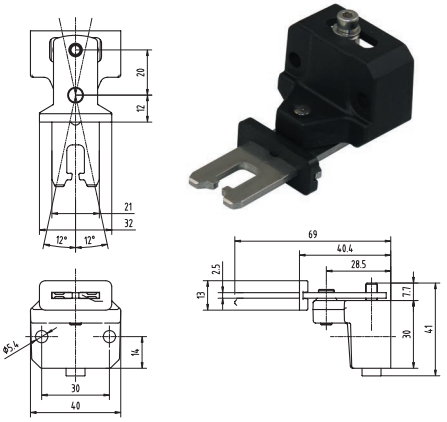
SN6-K1



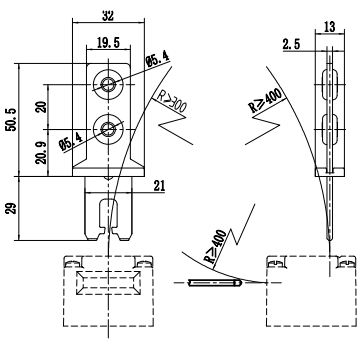
SN6-K2



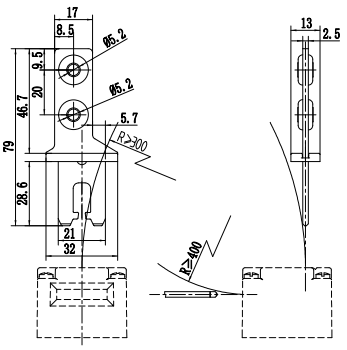
SN6-K3



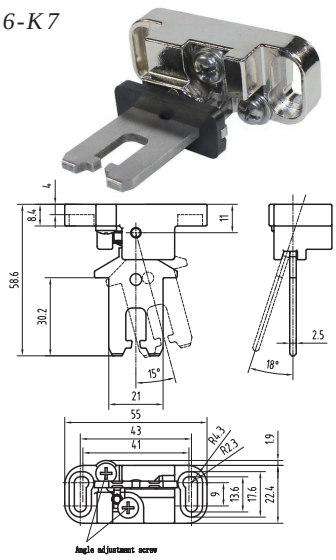
SN6-K4



SN6-K5



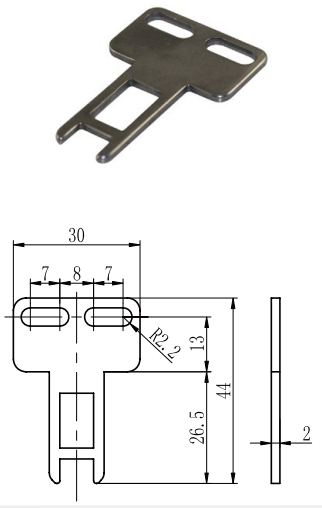
SN6-K7



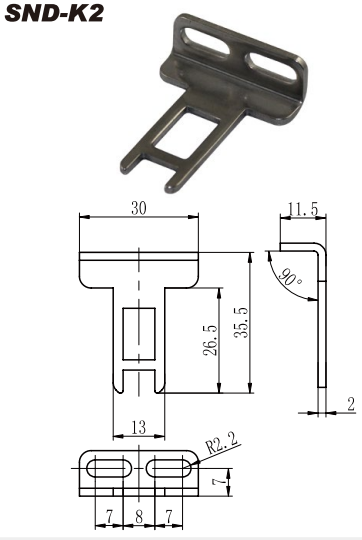
. For use with SN6,SS6191 and SSD6191 (Material: stainless steel)

INTERLOCKING SAFETY SWITCHES KEY

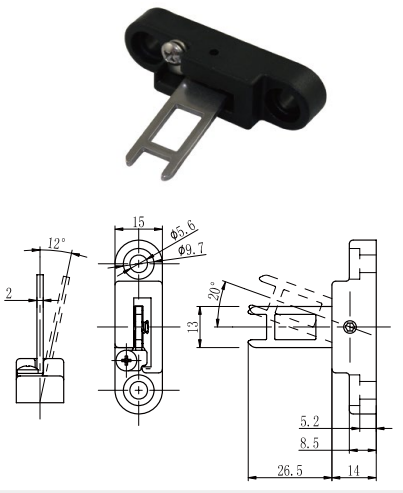
SND-K1



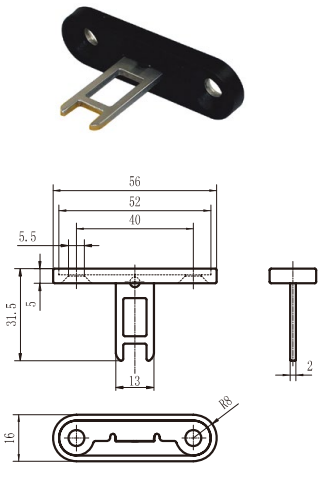
SND-K2



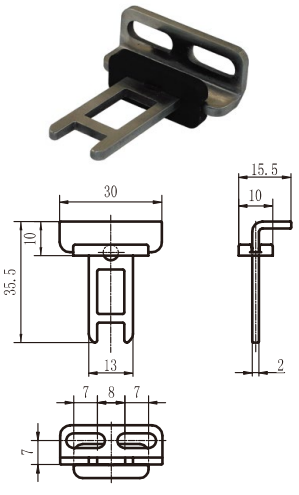
SND-K3



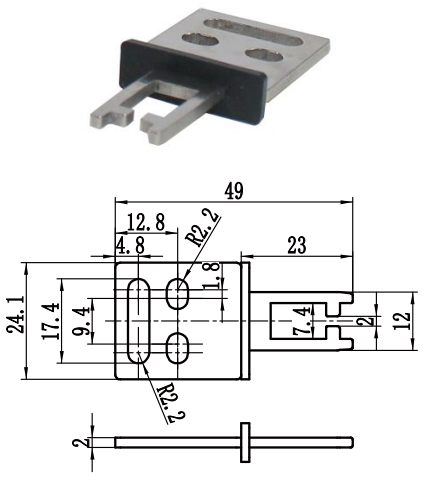
SND-K4



SND-K5



SND-K6



. For use with SND2, SND4, SMN4 and SND6 (Material: stainless steel)

Compact Safety Interlock Switches (Modular Design, Plastic Body, IP67)

SM31N Series

Specification

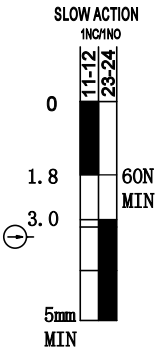
Operating Frequency	Mechanical: 120ops/min Electrical: 30 ops/min
Insulation Resistance	>100MΩ@500V DC
Contact Resistance	<25mΩ (initial value)
Rated Voltage	300V AC (EN60947-5-1)
Rated Thermal Current	5A
Electrical Rating	AC15 B300 DC13 R300
Dielectric Strength	1000VAC for 1 min between current carrying parts 2500VAC for 1 min between non-current carrying parts
Operating Temperature	-25~+85°C without formation of ice
Humidity	< 95%
Degree of Protection	IP67

Selection Guide:

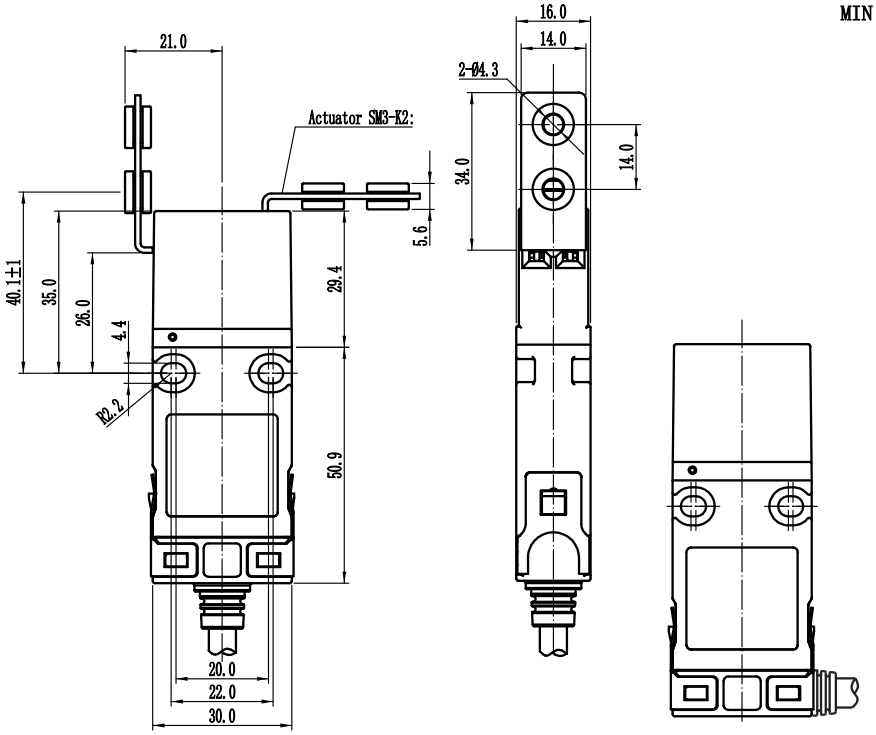
SM31N-S- [11] - 91 - [A2]

11	1NO/1NC
12	1NO/2NC
02	2NC
22	2NO/2NC

A2	side exit 2 meter cable
B2	bottom exit 2 meter cable



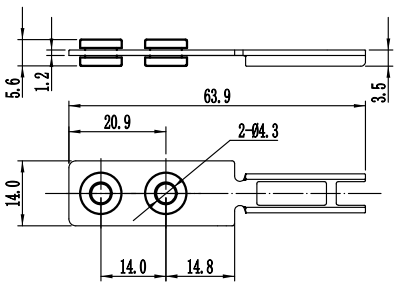
Dimensions (mm)



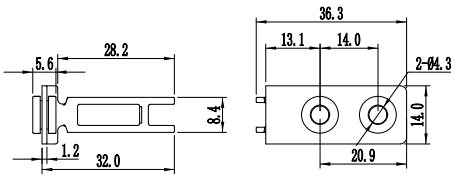
(-B: Cable Exit from Bottom)

(-A: Cable Exit from Side)

SM3-K1



SM3-K2



DOOR INTERLOCK SWITCHES FOR ELEVATORS

Features

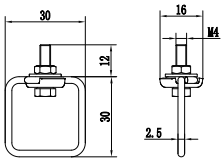
- Glass fiber reinforced plastic body
- Galvanically separated contacts
- Positive opening of NC contacts
- Cable entry available: M20, PG13.5 and 1/2"NPT

Specifications

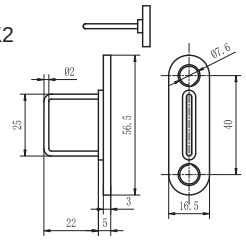
Operating Speed	0.05mm-2m/sec
Operating Frequency	Mechanical: 120ops/min Electrical: 30 ops/min
Insulation Resistance	>100MΩ@500V DC
Contact Resistance	<15mΩ (initial value)
Rated Current/Voltage	10A/600V AC (EN60947-5-1) AC15 A600 / DC13 Q300
Dielectric Strength	1000VAC for 1 min between current carrying parts 2500VAC for 1 min between non-current carrying parts
Service Life	Mechanically 1 x10^7 (operations) Electrically 2 x10^6 (operations)
Operating Temperature	-25~+80°C (-13~176°F) with no icing
Degree of Protection	IP67

Keys:

K1

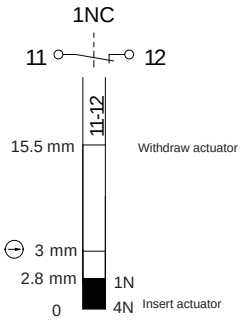


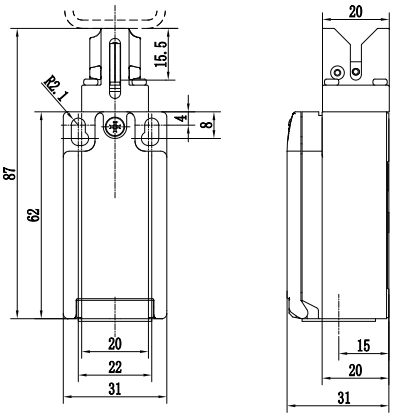
K2



SND4121

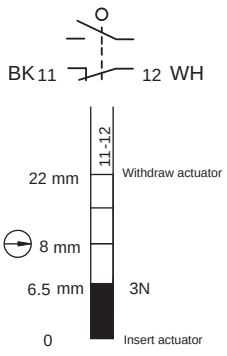
1NC

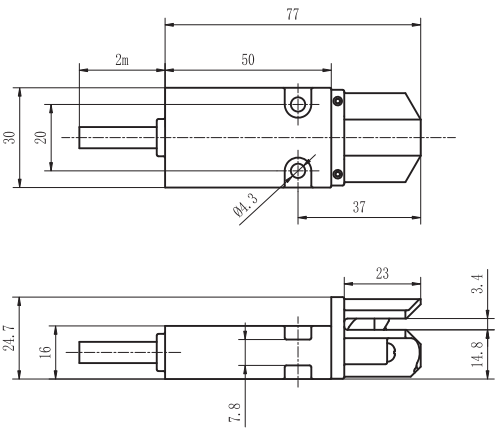




Order Code	Contact block			Conduit Type
SND2191-SL-A	SL	slow action	1NC	1/2"NPT Conduit
SND2191-SL-B	SL	slow action	1NC	PG13.5 Conduit
SND2191-SL-C	SL	slow action	1NC	M20 Conduit

SMN31N-S11-91





Order Code	Contact block			Conduit Type
SM31N-S11-91-B2 TY	SL	slow action	1NC	Bot. Exit 2m Cable

Multi-Entry Trapped Key-Operated Safety Interlock Switch

SS6/SSD6 SERIES

DESCRIPTION

SUNS SS/SSD6191 trapped key safety interlock switch is designed for holding a door or gate closed while a hazard still exists. This is particularly important where there is momentum in the machine. In other words, even when the machine is signaled to stop, parts of the machine are still moving. This could pose an injury risk if the access gate or door is not held closed.

Features

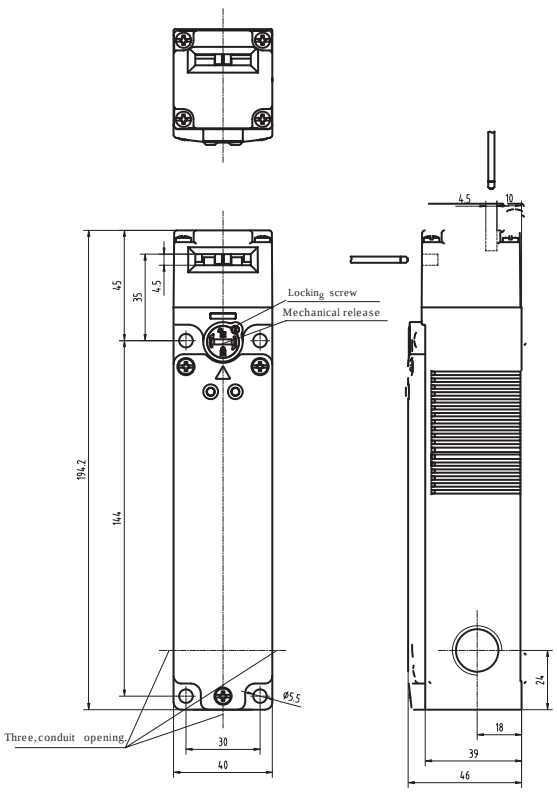
- Robust zinc die cast head assembly with glass fiber reinforced plastic or zinc die cast body
- Three solenoids voltages: 24Vac/dc, 120Vac and 240Vac
- Power-to-lock or power-to-unlock types for key trap (2500N holding force)
- Flexible switching arrangement
- 24 V, 110 Vac, and 230 Vac coil voltages
- Override mechanism in cover
- Head may be rotated into 4 different positions
- Three conduit openings (knock-out style)
- Switch position provides status
- Choice of different contact blocks
- Indicators for switch and solenoid status (optional)
- Positive Opening of NC contacts
- Cable entry available: M20, and 1/2"NPT
- Approval: CE, cULus

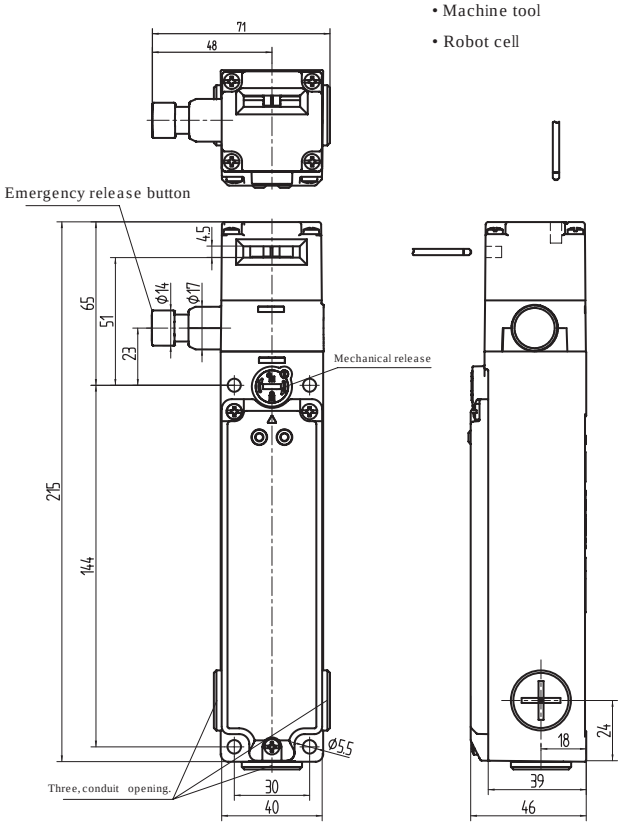
BENEFITS

- Product may be applied to most applications worldwide
- Tough, cost-effective, double-insulated enclosure
- Choice of key trapping methodology
- Four contacts that can be arranged in any configuration1
- Multiple voltages provide for every geography
- Has a method to open door (in case of power loss, etc.)
- One part number may be used for multiple applications
- Flexible wiring options
- Can diagnose status of gate/door (gate/door closed and locked, gate/door closed and unlocked, gate/door open)

POTENTIAL APPLICATIONS

- Woodworking machinery
- Printing/paper finishing equipment
- Plastic molding equipment
- Packaging machinery
- Bailing
- Pumping equipment
- Semiconductor manufacturing equipment
- Packaging wrapping
- Specialty equipment
- Machine tool
- Robot cell





Multi-Entry Trapped Key-Operated Safety Interlock Switch

SS6/SSD6 SERIES

SPECIFICATIONS

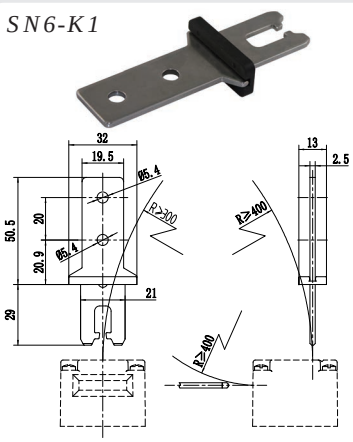
Designation and Utilization Category		Rated Operational Current Ie (A) at Rated Operational Voltage Ue (V)					
		24Vdc	125Vdc	250Vdc	120Vac	240Vac	600Vac
AC15	A600	-	-	-	6A	3A	1.2A
DC13	Q300	4A	0.55A	0.27A	-	-	-

Rated thermal current (Ith)	10A
Sealing	SSD6191 IP65; NEMA 1, 4, 12, 13 SS6191 IP67; NEMA 1, 4, 6, 12, 13
Rated impulse withstand (Uimp)	2500 V
Pollution degree	3 (macro-environment, installation environment)
Rated insulation voltage (Ui)	600 V
Operating temperature range	-25 °C to 50 °C [-13 °F to 122 °F]
Storage temperature range	-40 °C to 85 °C [-40 °F to 185 °F]
Short-circuit protective device (type/maximum rating)	Class J fuse (10 A/600 Vac)
Expected mechanical life	1,000,000 operations
Conditional short-circuit current	1000 A
Solenoid operating voltage and power	24 Vac: +10 %, -15 %, 4 W 240 Vac: +10 %, -15 %, 9 W 120 Vac: +10 %, -15 %, 8 W 48 Vdc: +10 %, -20 %, 7 W

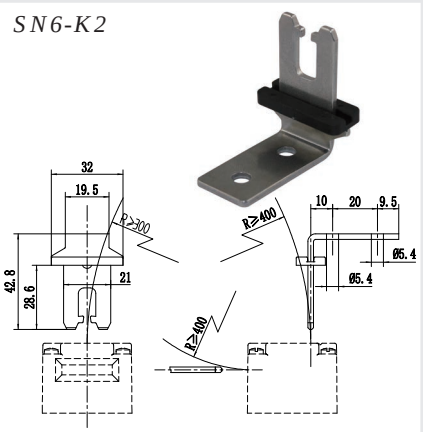
Complies with:
Low Voltage Directive 73/23/EEC, as amended by directive 93/68/EEC.
Machinery Directive 98/37/EEC only as the directives relate to the components being used in a safety function.
IEC/EN60947-5-1

Choice of Actuating Keys

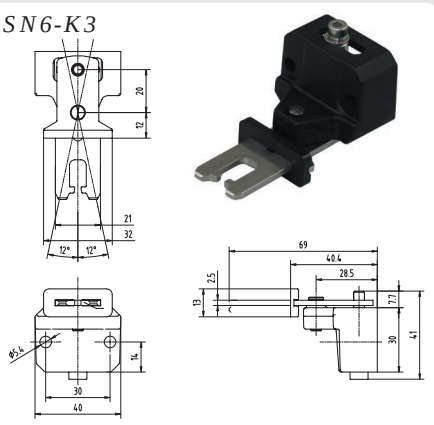
SN6-K1



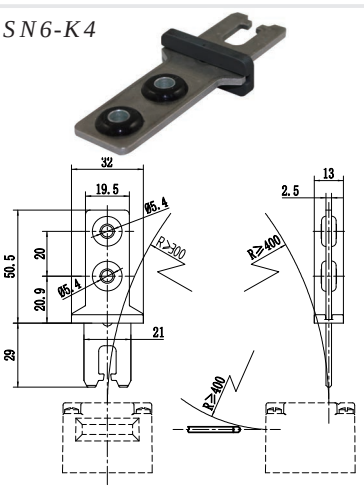
SN6-K2



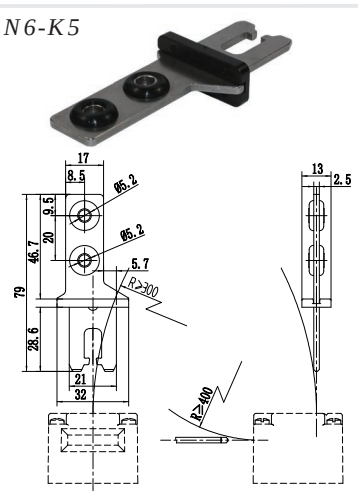
SN6-K3



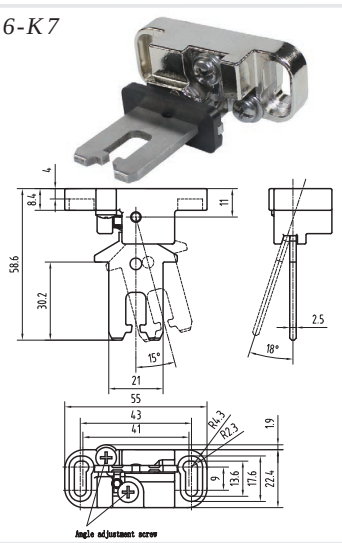
SN6-K4



SN6-K5



SN6-K7



. For use with SN6,SS6191 and SSD6191 (Material: stainless steel)

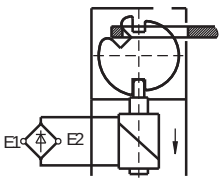
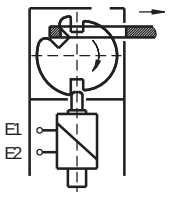
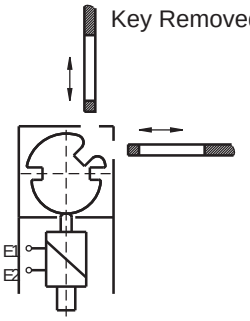
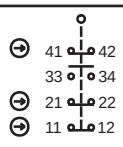
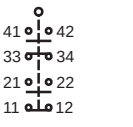
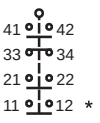
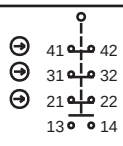
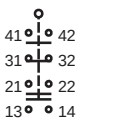
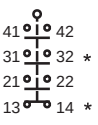
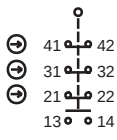
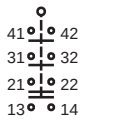
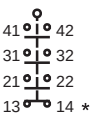
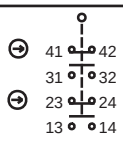
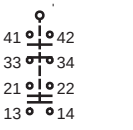
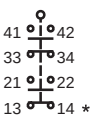
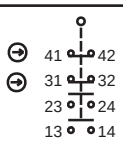
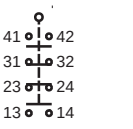
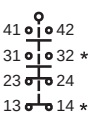
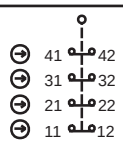
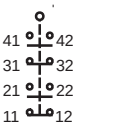
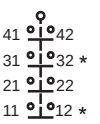
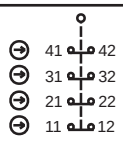
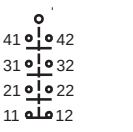
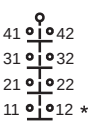
Multi-Entry Trapped Key-Operated Safety Interlock Switch
SS6/SSD6 SERIES

Selection Guide:

SS6191 - SL13 - U - 24 - L1 - A - R - Z2

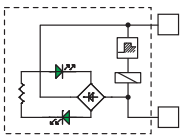
- **SS6191 / SSD6191** — Body Style
  - SS6191: Metal body
  - SSD6191: Plastic Body
- **SL13** — Contact Configuration (see below)
- **U** — Locking Type
  - U: Power to unlock
  - N: Power to lock
- **24** — Solenoid Voltage and Power
  - 24: 20-26VAC 20-28VDC
  - 120: 100-120VAC
  - 240: 200-240VAC
- **L1** — LED Indicators
  - None: No LED
  - L1: see below
  - L2: see below
- **A** — Conduits
  - A: 1/2"NPT
  - C: M20
- **R**
  - Blank
  - R:with emergency release
- **Z2** — Head Orientation
  - Blank: Front
  - Z2: Left
  - Z3: Back
  - Z4: Right

CIRCUIT AND TRAVEL DIAGRAMS

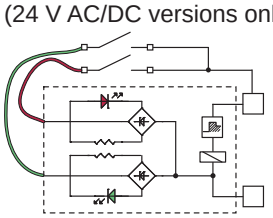
Contact block Code	Key inserted & Locked	Key inserted & Unlocked	Key Removed
			
SL13A 2NC/1NO (1NC)*			
SL13B 2NC (1NC/1NO)*			
SL13C 3NC (1NO)*			
SL22A 2NC/1NO (1NO)*			
SL22B 1NC/1NO (1NC/1NO)*			
SL04A 2NC (2NC)*			
SL04B 3NC (1NC)*			

* Door monitor contacts

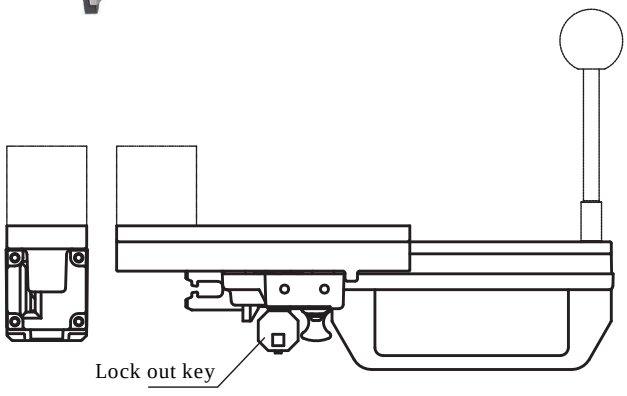
LED option L1:
Two green LEDs are switched ON directly by the solenoid power supply (24 V AC/DC versions only). Wiring is not necessary.

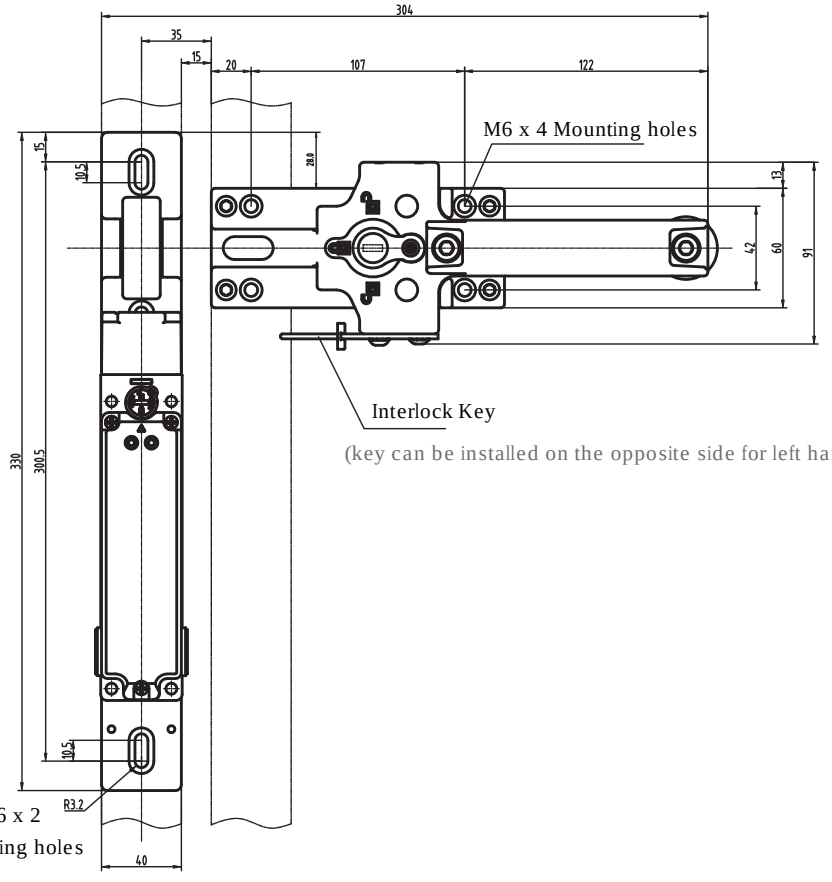


LED option L2:
Two LED connection wires are available, one green and one red. Through suitable connections to the contact block, it is possible to control the different states of the switch (24 V AC/DC versions only).



Key-Operated Safety Interlock Switch Mounting Hardware
SS6-SHK





(key can be installed on the opposite side for left hand installation)

Key-Operated Safety Interlock Switch Mounting Hardware

SS6-HLK