

### INTERLOCKING SAFETY SWITCHES

#### 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	Overtavel
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 <sup>7</sup> (operations) Electrically 5 x10 <sup>5</sup> (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
SL7: 2NC/1NO Slow Action Overlapping

###### C

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

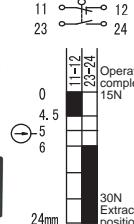
###### SND2191



###### SND2191-SL

Slow Action  
(Changeover)

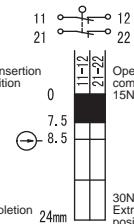
1NO/1NC



###### SND2191-SL2

Slow Action

2NC

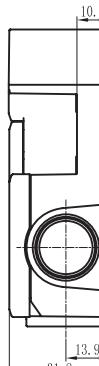
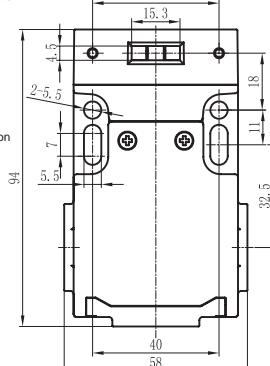
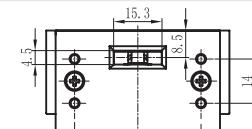
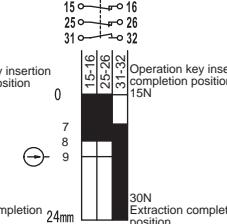


###### SND2191-SL7

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

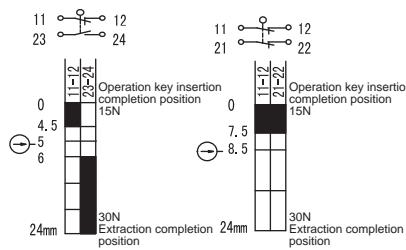
### INTERLOCKING SAFETY SWITCHES

#### SMN4191



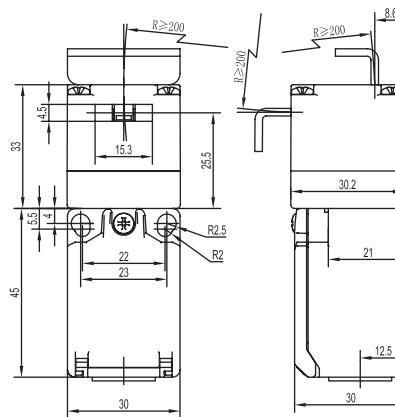
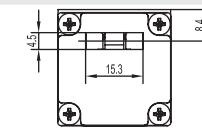
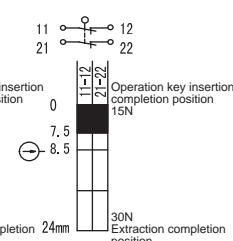
**SMN4191-SL**  
slow action  
(Changeover)

1NO/1NC



**SMN4191-SL2**  
slow action  
(Overlapping)

2NC



#### Order Code

#### Contact block

<b>SMN4191-SL-</b>	SL	slow action	1NO+1NC	BBM
<b>SMN4191-SL2-</b>	SL2	slow action	2NC	

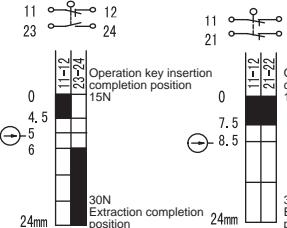
#### SND4191



**SND4191-SL**

Slow Action  
(Changeover)

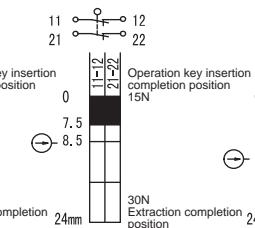
1NO/1NC



**SND4191-SL2**

Slow Action

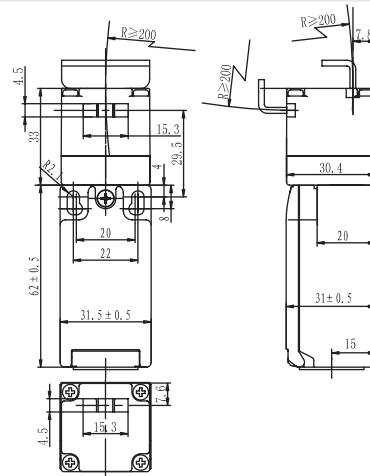
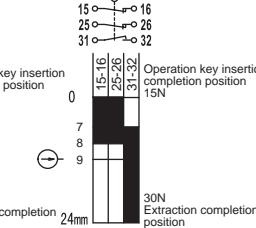
2NC



**SND4191-SL7**

Slow Action (Overlapping)

2NC /1NO



#### Order Code

#### Contact block

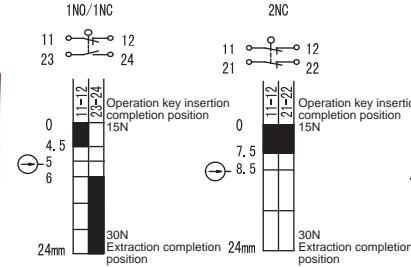
<b>SND4191-SL-</b>	SL	slow action	1NO+1NC	BBM
<b>SND4191-SL2-</b>	SL2	slow action	2NC	
<b>SND4191-SL7-</b>	SL7	slow action	2NC/1NO	MBB

#### SND6191



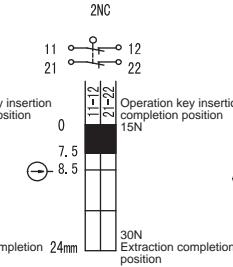
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slow action  
(Changeover)

1NO/1NC



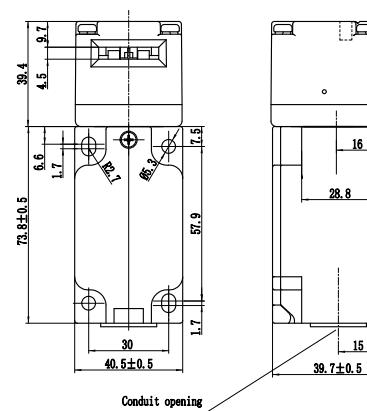
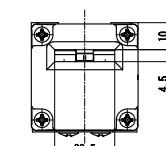
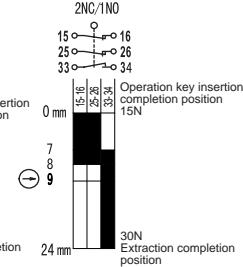
**SND6191-SL2**  
slow action

2NC



**SND6191-SL7**  
slow action  
(Overlapping)

2NC/1NO



#### Order Code

#### Contact block

<b>SND6191-SL-</b>	SL	slow action	1NO+1NC	BBM
<b>SND6191-SL2-</b>	SL2	slow action	2NC	
<b>SND6191-SL7-</b>	SL7	slow action	2NC/1NO	

### INTERLOCKING SAFETY SWITCHES

#### SN6191 Metal Enclosure, Metal Head



SN6191-SL  
slow action  
(Changeover)

1NO/1NC  
11 12  
23 24

0 1/12  
4.5 23/24  
6 30N Extraction completion position  
24mm

Operation key insertion completion position  
15N

SN6191-SL2  
slow action  
(Overlapping)

2NC  
11 12  
21 22

0 1/12  
7.5 23/24  
8.5 30N Extraction completion position  
24mm

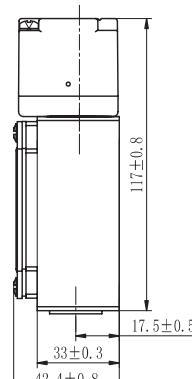
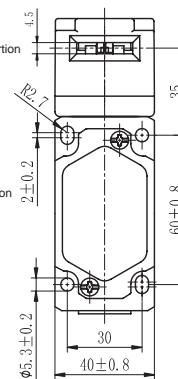
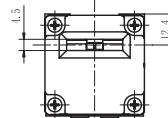
Operation key insertion completion position  
15N

SN6191-SL7  
slow action

2NC/1NO  
15 16  
25 26  
31 32

0 1/12  
7 23/24  
8 30N Extraction completion position  
24mm

Operation key insertion completion position  
15N



#### 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  
11 12  
23 24

0 1/12  
4.5 23/24  
6 30N Extraction completion position  
24mm

Operation key insertion completion position  
15N

SN6291-SL2  
slow action  
(Overlapping)

2NC  
11 12  
21 22

0 1/12  
7.5 23/24  
8.5 30N Extraction completion position  
24mm

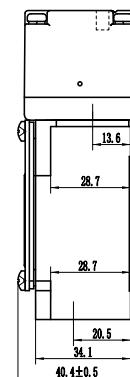
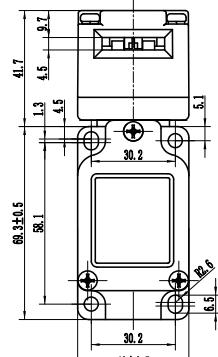
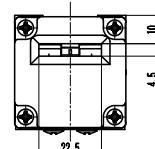
Operation key insertion completion position  
15N

SN6291-SL7  
slow action

2NC/1NO  
15 16  
25 26  
31 32

0 1/12  
7 23/24  
8 30N Extraction completion position  
24mm

Operation key insertion completion position  
15N



#### 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)

1NO/1NC  
11 12  
23 24

0 1/12  
4.5 23/24  
6 30N Extraction completion position  
24mm

Operation key insertion completion position  
15N

SN6391-SL2  
slow action  
(Overlapping)

2NC  
11 12  
21 22

0 1/12  
7.5 23/24  
8.5 30N Extraction completion position  
24mm

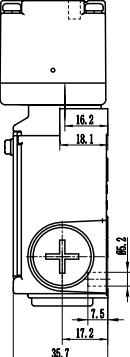
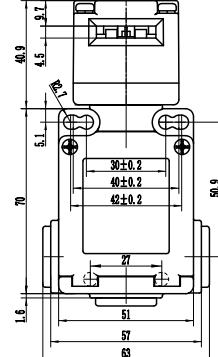
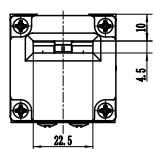
Operation key insertion completion position  
15N

SN6391-SL7  
slow action

2NC/1NO  
15 16  
25 26  
31 32

0 1/12  
7 23/24  
8 30N Extraction completion position  
24mm

Operation key insertion completion position  
15N



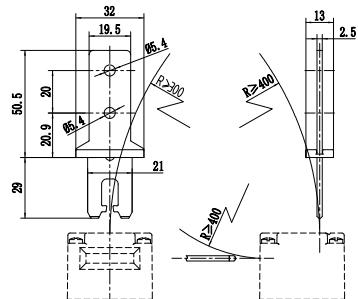
#### Order Code

#### Contact block

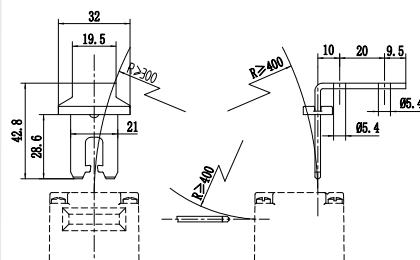
SN6391-SL-	SL		slow action	1NO+1NC BBM
SN6391-SL2-	SL2		slow action	2NC
SN6391-SL7-	SL7		slow action	2NC/1NO

## INTERLOCKING SAFETY SWITCHES KEY

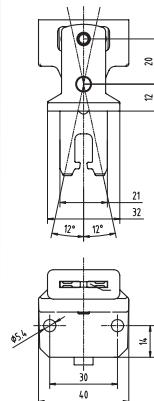
SN6-K1



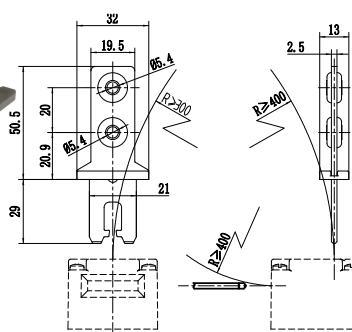
SN6-K2



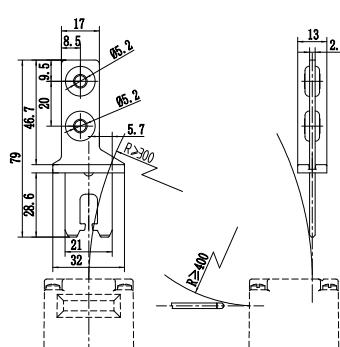
SN6-K3



SN6-K4

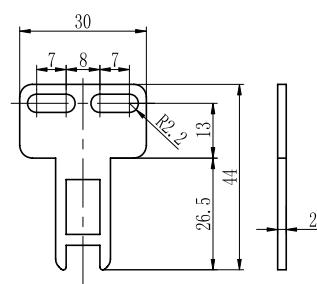


SN6-K5

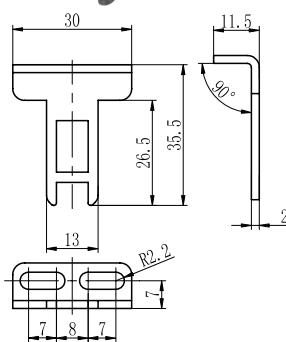


. For use with SN6, SS6191 and SSD6191 (Material: stainless steel)

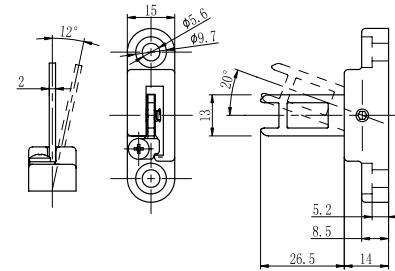
SND-K1



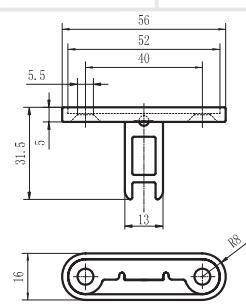
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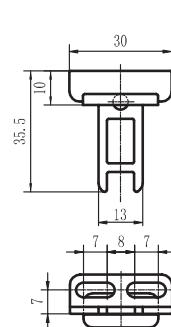
SND-K3



SND-K4



SND-K5



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

## **Compact Safety Interlock Switches (Modular Design, Plastic Body, IP67) SM31N Series**

## Specification

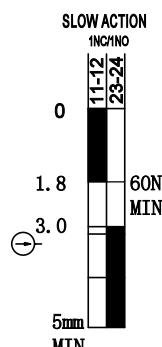
Operating Frequency	Mechanical: 1200ops/min Electrical: 30 ops/min
Insulation Resistance	>100MΩ@500V DC
Contact Resistance	<25mΩ (initial value)
Rated Voltage	300V AC (EN60947-5-1)
Rated Thermal Current	5A
Electrical Rating	AC15 B300 DC13 R300
Dielectric Strength	1000VAC for 1 min between current carrying 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



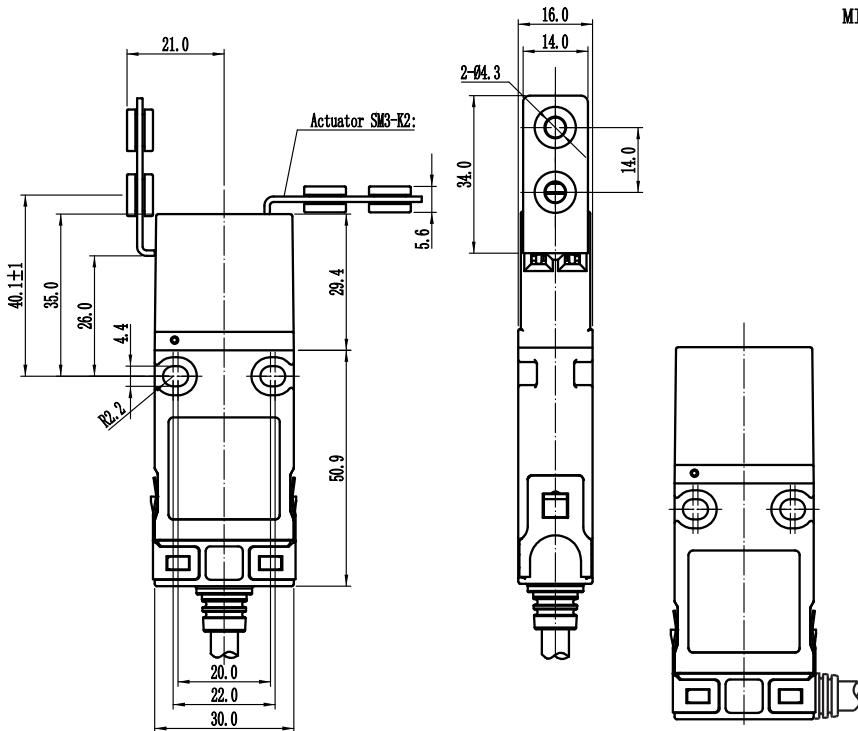
## **Selection Guide:**

**SM31N-S- 11 - 91 - A2**

<b>11</b>	1NO/1NC	<b>A2</b> side exit 2 meter cable
<b>12</b>	1NO/2NC	<b>B2</b> bottom exit 2 meter cable
<b>02</b>	2NC	
<b>22</b>	2NO/2NC	

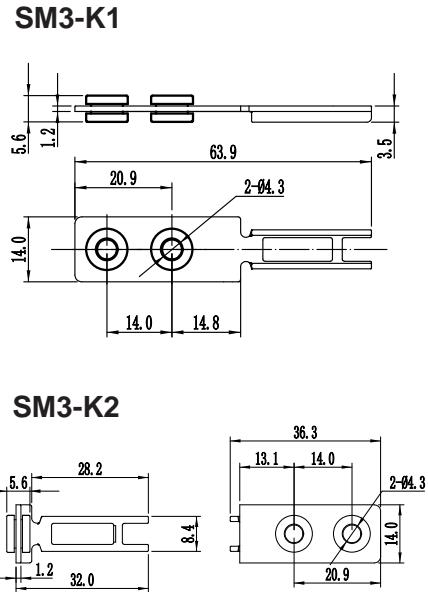


## **Dimensions (mm)**



(-B: Cable Exit from Bottom)

## **(-A: Cable Exit from Side)**



## SND4121 SERIES (SINGLE CONDUIT ENTRY)

## Features

- Glass fiber reinforced plastic body
  - Easily interchangeable contact block
  - Galvanically separated contacts
  - Screw terminals with self-lifting clamps for easy wiring
  - Positive opening of NC contacts
  - 4 x 90° actuator positions
  - Cable entry available: M20, PG13.5 and 1/2"NPT
  - Conform to EN 50047 standard

## Definitions of Operating Characteristics

## OF Operating Force

## RF Releasing Force

## OT Overtravel

TT Total Travel

PT Pretravel

## MD Movemen

OP Operating Position  
PS Test Position S

## PO Travel to Positive



## Specifications

Operating Speed	0.05mm-2m/sec
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 $1 \times 10^7$ (operations) Electrically $5 \times 10^5$ (operations)
Operating Temperature	-25~+80°C (-13~176°F) with no icing
Humidity	< 95%
Weight	50-100g
Degree of Protection	IP65/ IP67

