

Safety Relays

SAFETY RELAY FUNCTION:

The SCR range of Safety Relays have been designed in accordance with EN60204-1 for safety circuits and they may be used in conjunction with Mechanical Interlock Guard Switches, Emergency Stop Switches, Non Contact Guard Switches or Light Curtains to achieve redundant monitoring and fault checking up to PLe/Cat4 ISO13849-1.

When dual circuit monitoring is used they can check the switch contacts for correct opening and re-closing, monitor for wiring short circuits and can be configured to check for correct opening of external machine contactors. For applications requiring time controlled delay after opening of the guard switch, versions with time delayed output contacts are available (variable 0 to 30 seconds).

FEATURES:

- Dual force guided relay output contacts - internally monitored - high current outputs up to 8A.
- Up to PLe Category 4 to ISO13849-1 and SILCL 3 EN62061
- Single or Dual Channel input - LED indication of input status
- Feedback loop for monitoring contactors
- Short circuit and earth fault monitoring
- DIN Rail Mounting - either 22.5mm or 45mm wide housings
- Automatic or Manual Start



STANDARD SAFETY RELAYS:

SCR-1



2 Safety Output Contacts
24Vac/dc Supply

SCR-2



2 Safety Output Contacts
24Vac/dc Supply

SCR-3



3 Safety Output Contacts
1 Auxiliary Output Contact
Choice of 24Vac/dc, 110Vac or
230Vac Supply (by Sales Number)

SCR-7



7 Safety Output Contacts
4 Auxiliary Output Contacts
2 Auxiliary Transistor Outputs
24Vac/dc Supply

SAFETY RELAYS WITH TIME DELAYED CONTACTS:

SCR-4-TD-1



1 Delayed Safety Output Contact (variable 0-30s)
3 Instant Safety Output Contacts
24Vac/dc Supply

SCR-4-TD-2



2 Delayed Safety Output Contacts (variable 0-30s)
2 Instant Safety Output Contacts
24Vac/dc Supply

SCR-4-TD-3



3 Delayed Safety Output Contacts (variable 0-30s)
1 Instant Safety Output Contact
24Vac/dc Supply

EXPANSION MODULES FOR USE WITH STANDARD RELAYS:

SEU-1



3 Safety Output Contacts
1 Auxiliary Output Contact
Choice of 24Vac/dc, 110Vac or 230Vac Supply
(by Sales Number)

SEU-TD-1



3 Delayed Safety Output Contacts
1 Delayed Auxiliary Output Contact
Choice of 24Vac/dc, 110Vac or 230Vac Supply
(by Sales Number)

2 HAND CONTROL RELAYS:

SCR-2H



2 Safety Output Contacts
Choice of 24Vac/dc, 110Vac or 230Vac Supply
(by Sales Number)
Complies with EN574, Type IIIC and is intended
for use with 2 hand palm buttons

Safety Relays Type: SCR-1

OVERVIEW:

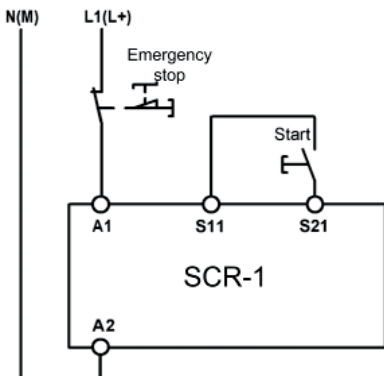
The SCR-1 is a low cost all purpose Safety Relay that ensures the quick and safe deactivation of the moving parts of a machine in case of danger. Internal fault monitoring takes place during restart via the start button.

Applications include single and dual channel emergency stop circuits or dual channel safety guard monitoring using Tongue Switches.

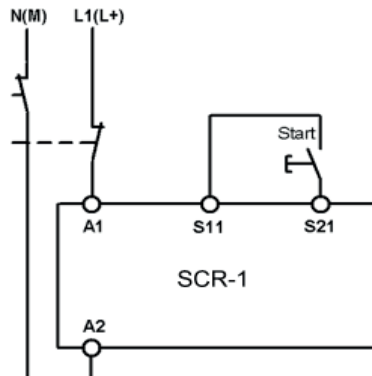
FEATURES:

- 2 Safe, redundant safety output contacts
- Standards: EN60204-1, ISO13849-1, EN62061
- Up to Category 3 to ISO13849-1
- Up to PLd to ISO13849-1 SILCL2 EN62061
- Single or Dual Channel input - LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors or expansion modules
- 22.5mm Din Rail Mounting

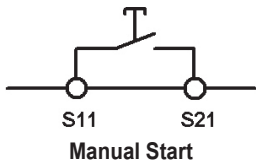
APPLICATIONS:



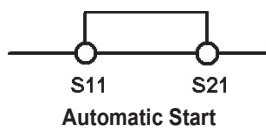
Single Channel Interlocking to PLC ISO13849-1 and Cat1



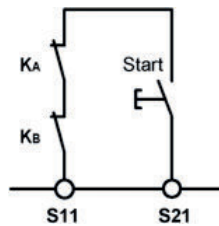
Dual Channel Interlocking to PLd ISO13849-1 and Cat3



Manual Start



Automatic Start



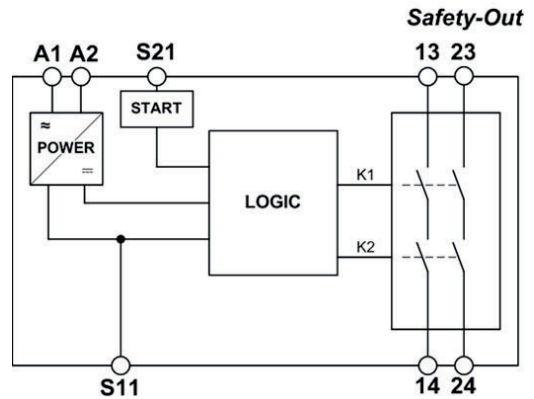
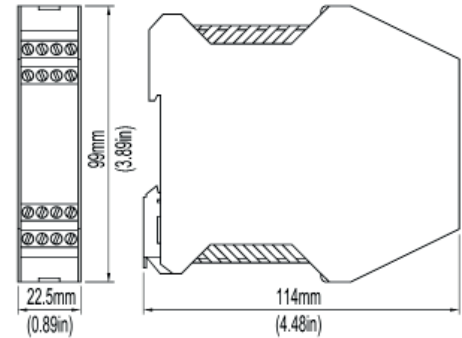
Feedback Circuit

The feedback circuit monitors machine contactors or expansion modules



Emergency Stop Relay 2NC Outputs

DIMENSIONS:



Block Diagram and Electrical Connection

- A1 A2 Power
- S11 24Vdc Control Voltage
- S21 Control Line
- 13-14 Safety Output Contact 1
- 23-24 Safety Output Contact 2

Standards: EN60204-1 EN292 ISO13849-1 EN954-1 EN1088 ISO14119 EN62061

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

Monitored Safety Inputs Circuits	2NC or 1NC
Safety Switching Outputs	2NC positively guided
Operating Voltage	24Vac/dc 3VA approx.
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	40mA approx.
Monitored Reset Circuit Loop	Auto or Monitored Manual Reset
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	1000m with 0.75 sq mm
Contact Material	AgNi
Indication - Green	LED1 internal relay K1 energised LED2 internal relay K2 energised LED1 and 2 OSSD closed
Contact Service Life	Mechanical 1x10 ⁷ Electrical 1x10 ⁵
Safety Contact Breaking Capacity	AC 250V, 1500VA, 6A, ohmic 230V, 4A for AC15 DC 24V, 30W, 1.25A, ohmic 24V, 30W, 2.0A for DC-13
External Fuse Protection - Safety Outputs	4A slow blow or 6A quick blow
Minimum Voltage and Current	24V, 20mA dc
Response Time on Output Opening	90ms
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection IEC529	Terminals IP20
Mounting	35mm DIN rail
Weight	160g approx.

ISO13849-1	
Performance Level	d
Category (ISO13849-1)	3
MTTFd	848 years
DC (average)	96.6%
Proof Test Interval (Life)	20 years
Safety Data Annual Usage	365 days per year 24 hours per day Test cycle 3600 seconds/cycle Full load AC15

EN62061	
SILCL	2
Proof Test Interval (life)	20 years
Hardware Fault Tolerance	1
DC (average)	96.6%
PFHd	1.03 x 10 ⁻⁷

SALES NUMBER	TYPE	SUPPLY VOLTAGE	ISO13849-1 CATEGORY	SWITCH INPUT CIRCUITS	OUTPUT CONTACTS
180009	SCR-1	24Vac/dc	Up to Cat3	2NC	2NC

Safety Relays Type: SCR-2

OVERVIEW:

The SCR-2 is an all purpose Safety Monitoring Relay that ensures the quick and safe deactivation of the moving parts of a machine in case of danger.

Applications include single and dual channel emergency stop circuits or dual channel safety guard monitoring using Tongue Switches or Non Contact Switches.

FEATURES:

- 2 Force guided safety output contacts
- Standards: EN60204-1, ISO13849-1, EN62061
- Stop Category: 0
- Up to PLe to ISO13849-1
- SILCL3 EN62061
- Single or Dual Channel input - LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors or expansion modules
- Short circuit and earth fault monitoring
- 22.5mm Din Rail Mounting

FUNCTION:

The SCR-2 is designed in accordance with EN60204-1 for safety circuits and they may be applied for up to PLe ISO13849-1 or SILCL3 to EN62061.

The internal logic system closes the relay safety outputs when the start button is pressed.

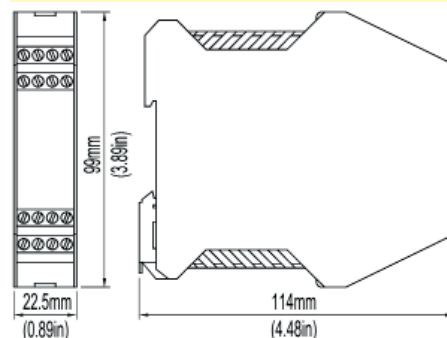
If the control lines are opened by operation of a Safety Switch or Emergency Stop button then the safety output contacts are opened and safely switch off the supply to the machine.

It is ensured that a single fault does not lead to the loss of the safety function and that cyclic monitoring means that any fault is detected no later than the next start up.

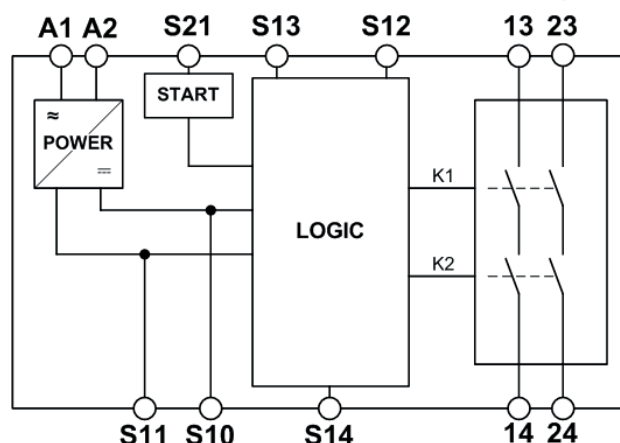


**Safety Monitoring Relay
2NC Outputs**

DIMENSIONS:



Safety-Out



Block Diagram and Electrical Connection

A1 A2	Power
S11	24Vdc Control Voltage
S10 S13 S14 S12	Control Lines
S21	Start Control Line
13-14	Safety Output Contact 1
23-24	Safety Output Contact 2

Standards: EN60204-1 ISO13849-1 EN62061

Monitored Safety Inputs Circuits	2NC or 1NC
Safety Switching Outputs	2NC positively guided
Operating Voltage	24Vac/dc
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	40mA approx.
Monitored Reset Circuit Loop	Auto or Monitored Manual Reset
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	1000m with 0.75 sq mm
Contact Material	AgNi
Indication - Green	LED1 internal relay K1 energised LED2 internal relay K2 energised LED1 and 2 OSSD closed
Contact Service Life	Mechanical 1x10 ⁷ Electrical 1x10 ⁵
Safety Contact Breaking Capacity	AC 250V, 1500VA, 6A, ohmic 230V, 4A for AC15 DC 24V, 30W, 1.25A, ohmic 24V, 30W, 2.0A for DC-13
External Fuse Protection - Safety Outputs	4A slow blow or 6A quick blow
Minimum Voltage and Current	24V, 20mA dc
Response Time on Output Opening	90ms
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection IEC529	Terminals IP20
Mounting	35mm DIN rail
Weight	170g approx.

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

ISO13849-1	
Performance Level	e
Category (ISO13849-1)	4
MTTFd	848 years
DC (average)	99%
Proof Test Interval (Life)	20 years
Safety Data Annual Usage	365 days per year 24 hours per day Test cycle 3600 seconds/cycle Full load AC15

EN62061	
SILCL	3
Proof Test Interval (life)	20 years
Hardware Fault Tolerance	1
DC (average)	99%
PFHd	1.2 x 10 ⁻⁸

SALES NUMBER	TYPE	TERMINAL TYPE	SUPPLY VOLTAGE	SWITCH INPUT CIRCUITS	OUTPUT CONTACTS
180001	SCR-2	Standard Screw Terminals	24Vac/dc	2NC	2NC
180001-P	SCR-2	Pluggable Screw Terminals	24Vac/dc	2NC	2NC

Safety Relays Type: SCR-3

OVERVIEW:

The SCR-3 is an all purpose Safety Monitoring Relay that ensures the quick and safe deactivation of the moving parts of a machine in case of danger.

Applications include single and dual channel emergency stop circuits or dual channel safety guard monitoring using Tongue Switches or Non Contact Switches.

FEATURES:

- 3 Force guided safety output contacts
- 1 Auxiliary output contact
- Standards: EN60204-1, ISO13849-1, EN62061
- Stop Category: 0
- Up to PLe to ISO13849-1
- SILCL3 EN62061
- Single or Dual Channel input - LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors or expansion modules
- Short circuit and earth fault monitoring
- 22.5mm Din Rail Mounting
- Choice of 24Vac/dc, 110Vac or 230Vac supply (by Sales No.)

FUNCTION:

The SCR-3 is designed in accordance with EN60204-1 for safety circuits and they may be applied for up to PLe ISO13849-1 or SILCL3 to EN62061.

The internal logic system closes the relay safety outputs when the start button is pressed.

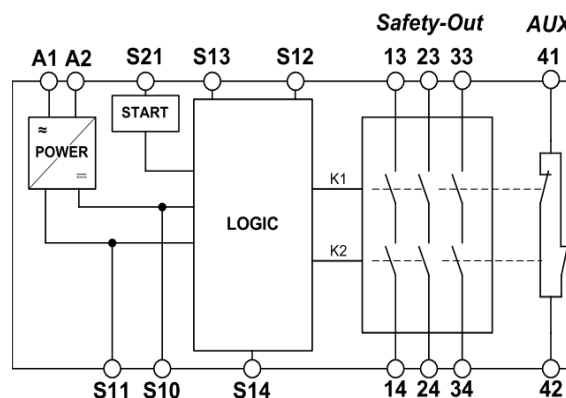
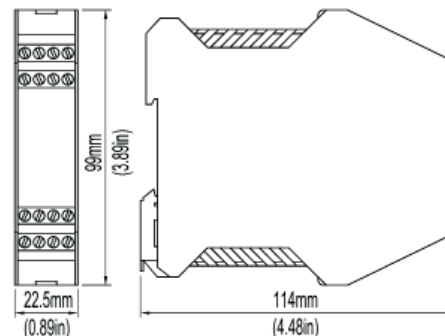
If the control lines are opened by operation of a Safety Switch or Emergency Stop button then the safety output contacts are opened and safely switch off the supply to the machine.

It is ensured that a single fault does not lead to the loss of the safety function and that cyclic monitoring means that any fault is detected no later than the next start up.



**Safety Monitoring Relay
3NC 1NO Outputs**

DIMENSIONS:



Block Diagram and Electrical Connection

A1 A2	Power
S11	24Vdc Control Voltage
S10	Control Line
S21	Start Control Line
S13 S14 S12	Control Lines
13-14	Safety Output Contact 1
23-24	Safety Output Contact 2
33-34	Safety Output Contact 3
41-42	Auxiliary Output Contact

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

ISO13849-1	
Performance Level	e
Category (ISO13849-1)	4
MTTFd	567 years
DC (average)	99%
Proof Test Interval (Life)	20 years
Safety Data Annual Usage	365 days per year 24 hours per day Test cycle 3600 seconds/cycle Full load AC15

EN62061	
SILCL	3
Proof Test Interval (life)	20 years
Hardware Fault Tolerance	1
DC (average)	99%
PFHd	1.2×10^{-8}

Standards: EN60204-1 ISO13849-1 EN62061

Monitored Safety Inputs Circuits	2NC or 1NC from safety switches
Safety Switching Outputs	3NC positively guided
Auxiliary Outputs	1NO
Operating Voltage	24Vac/dc 110Vac or 230Vac
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	40mA approx.
Monitored Reset Circuit Loop	Auto or Monitored Manual Reset
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	1000m with 0.75 sq mm
Contact Material	AgNi
Indication - Green	LED1 internal relay K1 energised LED2 internal relay K2 energised LED1 and 2 OSSD closed
Contact Service Life	Mechanical 1×10^7 Electrical 1×10^5
Safety Contact Breaking Capacity	AC 250V, 2000VA, 8A, ohmic 230V, 3A for AC15 DC 24V, 48W, 2.0A DC-13 (Max. total current 15A)
Auxiliary Contact Breaking Capacity	AC 250V, 500VA, 2A DC 50V, 30W, 1.25A ohmic
External Fuse Protection - Safety Outputs	4A slow blow or 6A quick blow
Minimum Voltage and Current	24V, 20mA dc
Response Time on Output Opening	90ms
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection IEC529	Terminals IP20
Mounting	35mm DIN rail
Weight	160g approx.

SALES NUMBER	TYPE	TERMINAL TYPE	SUPPLY VOLTAGE	SWITCH INPUT CIRCUITS	OUTPUT CONTACTS
180002	SCR-3	Standard	24Vac/dc	2NC	3NC 1NO
180003	SCR-3	Screw	230Vac	2NC	3NC 1NO
180004	SCR-3	Terminals	110Vac	2NC	3NC 1NO
180002-P	SCR-3	Pluggable	24Vac/dc	2NC	3NC 1NO
180003-P	SCR-3	Screw	230Vac	2NC	3NC 1NO
180004-P	SCR-3	Terminals	110Vac	2NC	3NC 1NO

Safety Relay with combined Time Delay Type: SCR-4-TD

OVERVIEW:

The SCR-4-TD Range of all purpose Safety Monitoring Relays combine time delayed and non time delayed contacts in a compact 22.5mm housing.

This permits dangerous components of a system to be switched off quickly and safely, whilst at the same time other circuits are still supplied with voltage for up to 30 seconds (adjustable on the SCR-4-TD by a potentiometer).

FEATURES:

- Force guided safety output contacts - available in 3 variants
- Standards: EN60204-1, ISO13849-1, EN62061
- Stop Category: 0 (non time delayed) 1 (time delayed)
- Up to PLe to ISO13849-1
- SILCL3 EN62061
- Single or Dual Channel input - LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors or expansion modules
- Short circuit and earth fault monitoring
- 22.5mm Din Rail Mounting

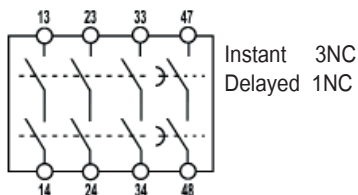
FUNCTION:

If the application requires time delayed opening of a safety circuit following activation of the stop signal then the SCR-4-TD range will provide a combination of instant and variable delayed contacts.

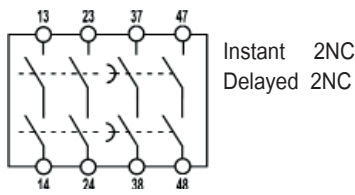
This may be useful for applications that rely on PLC control to provide an initial controlled shutdown but ultimately requires a delayed opening of a safety circuit.

VARIANTS:

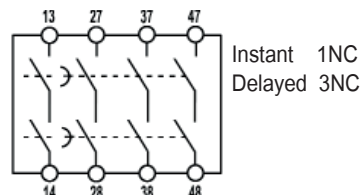
SCR-4-TD-1



SCR-4-TD-2



SCR-4-TD-3



Standards: EN60204-1 ISO13849-1 EN62061

Monitored Safety Inputs Circuits	2NC or 1NC
Safety Switching Outputs	4NC
Delayed Time	1-30 seconds continuously adjustable
Operating Voltage	24Vac/dc
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	190mA approx.
Monitored Reset Circuit Loop	Auto or Monitored Manual Reset
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	1000m with 0.75 sq mm
Contact Material	AgNi
Indication - Green	LED1 internal relay K1 energised LED2 internal relay K2 energised LED1 and 2 OSSD closed
Contact Service Life	Mechanical 1x10 ⁷ Electrical 1x10 ⁵
Safety Contact Breaking Capacity	AC 250V, 1500VA, 6A, ohmic 230V, 4A for AC15 DC 24V, 30W, 1.25A, ohmic 24V, 30W, 2.0A for DC-13
External Fuse Protection - Safety Outputs	4A slow blow or 6A quick blow
Minimum Voltage and Current	24V, 20mA dc
Response Time on Output Opening	90ms
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection IEC529	Terminals IP20
Mounting	35mm DIN rail
Weight	250g approx.

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

ISO13849-1

Performance Level	e
Category (ISO13849-1)	Non Delayed: 4 Delayed: 3
MTTFd	73.36 years
DC (average)	Non Delayed: 99% Delayed: 90%
Proof Test Interval (Life)	10 years
Safety Data Annual Usage	261 days per year 16 hours per day Test cycle 180 seconds/cycle Low load AC1

EN62061

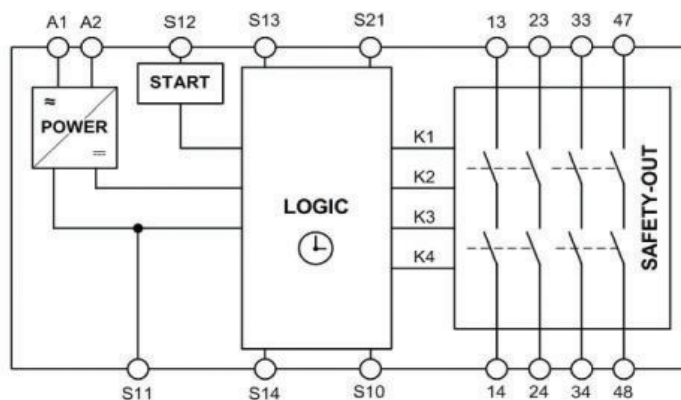
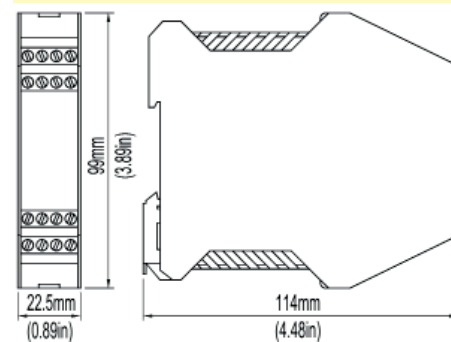
SILCL	Non Delayed: 3
Proof Test Interval (life)	20 years
Hardware Fault Tolerance	1
DC (average)	Non Delayed: 99% Delayed: 90%
PFFhd	Non Delayed: 4.22 x 10 ⁻⁸
PFFd	Delayed: 8.84 x 10 ⁻⁸

SALES NUMBER	TYPE	TERMINAL TYPE	SUPPLY VOLTAGE	SWITCH INPUT CIRCUITS	INSTANT OUTPUT CONTACTS	DELAYED OUTPUT CONTACTS
180005	SCR-4-TD-1	Standard	24Vac/dc	2NC	3NC	1NC
180006	SCR-4-TD-2	Screw	24Vac/dc	2NC	2NC	2NC
180007	SCR-4-TD-3	Terminals	24Vac/dc	2NC	1NC	3NC
180005-P	SCR-4-TD-1	Pluggable	24Vac/dc	2NC	3NC	1NC
180006-P	SCR-4-TD-2	Screw	24Vac/dc	2NC	2NC	2NC
180007-P	SCR-4-TD-3	Terminals	24Vac/dc	2NC	1NC	3NC



Safety Monitoring Relay

DIMENSIONS:



Block Diagram and Electrical Connection SCR-4-TD-1

A1 A2	Power
S11	24Vdc Control Voltage
S10 S13 S14 S21	Control Lines
S12	Start Control Line

Expansion Module for use with SCR-2 or SCR-3 Type: SEU-1

OVERVIEW:

The SEU-1 is an expansion unit which offers 3 additional NC Safety Output Contacts.

An existing system using SCR-2 or SCR-3 can be expanded modularly.

The safety actuation is achieved from the basic SCR-2 or SCR-3 Safety Relay.

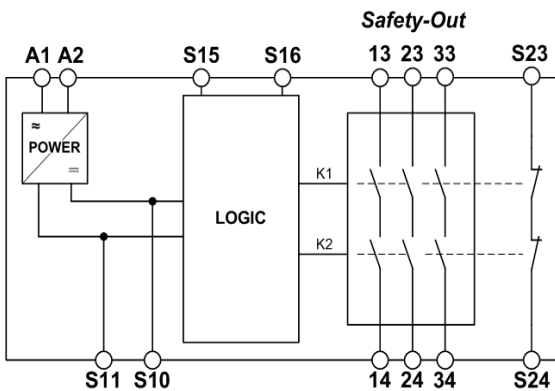
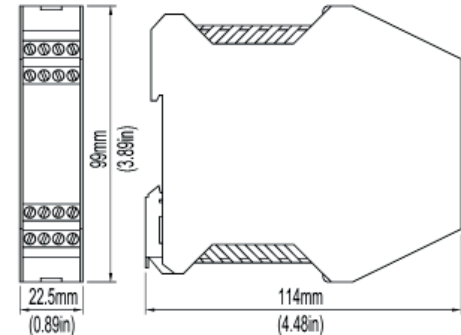
FEATURES:

- 3NC Relay outputs
- 1NO Auxiliary contact (fault monitoring)
- Standards: EN60204-1, ISO13849-1, EN62061
- Stop Category: 1
- Up to PLe to ISO13849-1
- SILCL3 EN62061
- 3 Force guided contacts
- Fault monitoring by basic SCR device



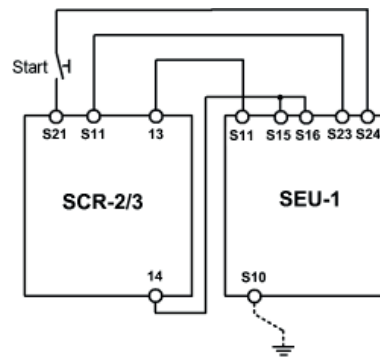
**Safety Expansion Relay
3NC Outputs**

DIMENSIONS:

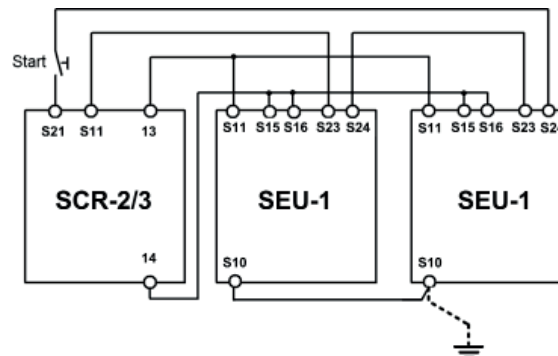


Block Diagram and Electrical Connection SEU-1

A1 A2	Power
S11	24Vdc Control Voltage
S10 S15 S16	Control Lines
S23 S24	Fault Monitoring
13-14	Safety Contact 1
23-24	Safety Contact 2
33-34	Safety Contact 3



Connection of an SEU-1 to a basic device SCR-2 or SCR-3



Connection of several SEU-1 to a basic device SCR-2 or SCR-3

Standards: EN60204-1 ISO13849-1 EN62061

Safety Switching Outputs	3NC
Auxiliary Contact	1NO
Operating Voltage	24Vac/dc 110Vac or 230Vac
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	40mA approx.
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	1000m with 0.75 sq mm
Contact Material	AgNi
Indication - Green	LED1 and LED2 OSSD closed
Contact Service Life	Mechanical 1x10 ⁷ Electrical 1x10 ⁵
Safety Contact Breaking Capacity	AC 250V, 1500VA, 6A, ohmic 230V, 4A for AC15 DC 24V, 30W, 1.25A ohmic 24V, 30W, 2.0A for DC-13
External Fuse Protection - Safety Outputs	4A slow blow or 6A quick blow
Minimum Voltage and Current	24V, 20mA dc
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection IEC529	Terminals IP20
Mounting	35mm DIN rail
Weight	170g approx.

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

ISO13849-1	
Performance Level	e
Category (ISO13849-1)	4
MTTFd	567 years
DC (average)	99%
Proof Test Interval (Life)	20 years
Safety Data Annual Usage	365 days per year 24 hours per day Test cycle 3600 seconds/cycle Full load AC15

EN62061	
SILCL	3
Proof Test Interval (life)	20 years
Hardware Fault Tolerance	1
DC (average)	99%
PFHd	1.2 x 10 ⁻⁸

SALES NUMBER	TYPE	TERMINAL TYPE	SUPPLY VOLTAGE	OUTPUT CONTACTS	AUXILIARY OUTPUT CONTACTS
180010	SEU-1	Standard	24Vac/dc	3NC	1NO
180011	SEU-1	Screw	110Vac	3NC	1NO
180012	SEU-1	Terminals	230Vac	3NC	1NO
180010-P	SEU-1	Pluggable	24Vac/dc	3NC	1NO
180011-P	SEU-1	Screw	110Vac	3NC	1NO
180012-P	SEU-1	Terminals	230Vac	3NC	1NO

Expansion Module with Time Delay for use with SCR-2/3 SEU-TD-1

OVERVIEW:

The SEU-TD-1 is an expansion unit which can be used with an existing system using SCR-2 or SCR-3 Safety Relays to allow delayed shutdown or timing to a safety application. Time delay is variable from 1 to 30 seconds.

The safety actuation is achieved from the basic SCR-2 or SCR-3 Safety Relay.

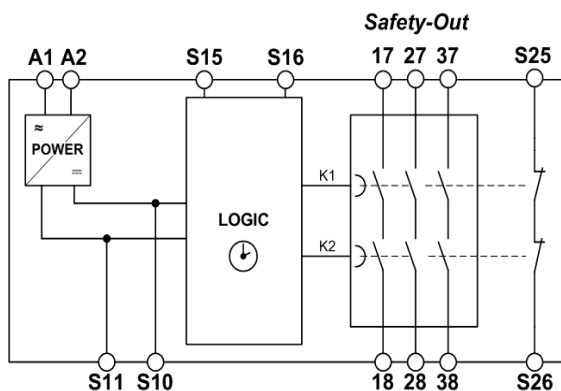
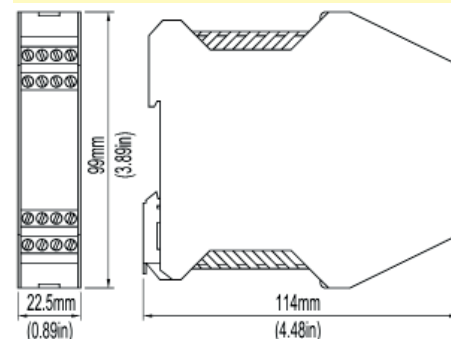
FEATURES:

- 3NC Relay outputs
- 1NO Auxiliary contact
- Standards: EN60204-1, ISO13849-1, EN62061
- Stop Category: 1
- SILCL2 EN62061
- Up to PLd to ISO13849-1
- 3 Force guided contacts
- Fault monitoring by basic SCR device



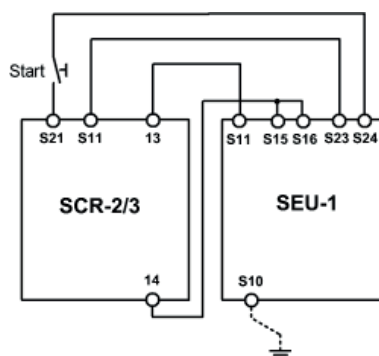
Safety Expansion Relay offering Delayed Outputs

DIMENSIONS:

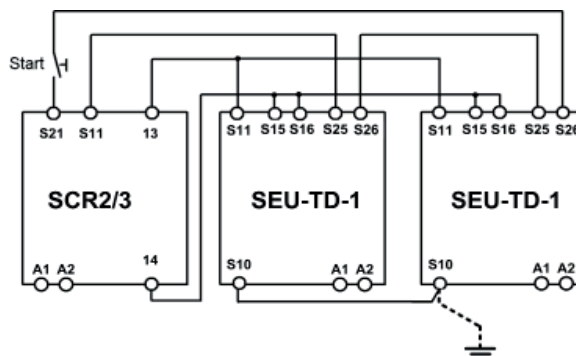


Block Diagram and Electrical Connection SEU-TD-1

A1 A2	Power
S11	24Vdc Control Voltage
S10 S15 S16	Control Lines
S25 S26	Fault Monitoring
17-18	Safety Contact 1
27-28	Safety Contact 2
37-38	Safety Contact 3



Connection of an SEU-TD-1 to a basic device SCR-2 or SCR-3



Connection of several SEU-TD-1 to a basic device SCR-2 or SCR-3

Standards: EN60204-1 ISO13849-1 EN62061

Safety Switching Outputs	3NC 1-30 secs continuously adjustable
Auxiliary Contact	1NO monitoring contact for basic device
Operating Voltage	24Vac/dc 110Vac or 230Vac
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	40mA approx.
Monitored Reset Circuit Loop	Auto or monitored, manual reset
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	1000m with 0.75 sq mm
Contact Material	AgNi
Indication - Green	LED1 and LED2 OSSD closed
Contact Service Life	Mechanical 1x10 ⁷ Electrical 1x10 ⁵
Safety Contact Breaking Capacity	AC 250V, 1500VA, 6A, ohmic 230V, 4A for AC15 DC 24V, 30W, 1.25A ohmic 24V, 30W, 2.0A for DC-13
External Fuse Protection - Safety Outputs	4A slow blow or 6A quick blow
Minimum Voltage and Current	24V, 20mA dc
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection	IEC529
Mounting	35mm DIN rail
Weight	0.25kg approx.

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

ISO13849-1	
Performance Level	d
Category (ISO13849-1)	3
MTTFd	487 years
DC (average)	92.1%
Proof Test Interval (Life)	20 years
Safety Data Annual Usage	365 days per year 24 hours per day Test cycle 3600 seconds/cycle Full load AC1

EN62061	
SILCL	2
Proof Test Interval (life)	20 years
Hardware Fault Tolerance	1
DC (average)	92.1%
PFHd	1.03 x 10 ⁻⁷

SALES NUMBER	TYPE	TERMINAL TYPE	SUPPLY VOLTAGE	DELAYED OUTPUT CONTACTS
180015	SEU-TD-1	Standard Screw Terminals	24Vac/dc	3NC 1NO
180016	SEU-TD-1		110Vac	3NC 1NO
180017	SEU-TD-1		230Vac	3NC 1NO
180015-P	SEU-TD-1	Pluggable Screw Terminals	24Vac/dc	3NC 1NO
180016-P	SEU-TD-1		110Vac	3NC 1NO
180017-P	SEU-TD-1		230Vac	3NC 1NO

Safety Relay 2 Hand Type: SCR-2H

OVERVIEW:

The SCR-2H is a compact, universal 2 hand control safety relay. It complies with EN574, Type IIIC and is intended for use in safety circuits designed in accordance with EN60204-1.



FEATURES:

- 2 Force guided safety output contacts
- Standards: EN574, EN60204-1, ISO13849-1, EN62061
- Stop Category: 0
- Up to IIIC EN574
- Up to PLe to ISO13849-1
- SILCL3 EN62061
- Redundancy and cycle monitoring
- Short circuit monitoring
- 22mm Din Rail Mounting
- Choice of 24Vac/dc, 110Vac or 230Vac supply (by Sales No.)

PRINCIPLE OF OPERATION:

The SCR-2H is suitable for connection of two hand buttons with one normally closed contact and one normally open contact.

When the operating voltage is applied to A1 and A2 and the feedback loop X1 and X2 is closed the SCR-2H is ready for use.

The output contacts only close when the 2 hand buttons T1 and T2 are operated simultaneously (within 0.5s). The output contacts do not close if only one button is operated or the feedback loop is open. Short or open circuits are detected. In order to trigger a new operation both buttons must have been released and the feedback loop closed.

It is important to arrange the buttons such that accidental operation or easy bypass cannot be achieved, and in accordance with EN574 and EN999.

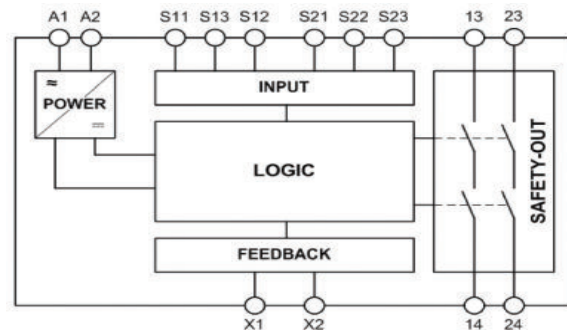
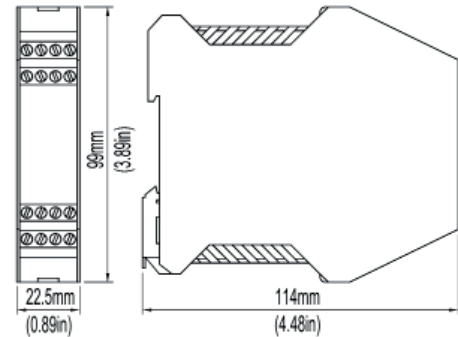
EN574 - the buttons must be arranged such that operation of both buttons using one hand is prevented i.e. a minimum distance apart of 260mm but also so as to prevent actuation by other parts of the body (forearm, elbow, hip, etc.).

EN999 - it is necessary to maintain a minimum distance between the 2 hand buttons and the hazard on the machine.

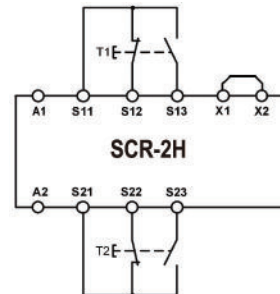


Safety Monitoring Relay 2 Hand Control

DIMENSIONS:



Block Diagram and Electrical Connection SCR-2H



Standards:	EN60204-1 ISO13849-1 EN574 EN62061
Safety Switching Outputs	2NC positively guided
Operating Voltage	24Vac/dc 110Vac or 230Vac
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	20mA approx.
Release Time for the NC Contacts after Release of Buttons	<20ms
Synchronisation Time	<0.5s
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	1000m with 0.75 sq mm
Contact Material	AgNi
Indication - Green	LED1 internal relay K1 energised LED2 internal relay K2 energised LED1 and 2 OSSD closed
Contact Service Life	Mechanical 1x10 ⁷ Electrical 1x10 ⁵
Safety Contact Breaking Capacity	AC 250V, 1500VA, 6A, ohmic 230V, 4A for AC15 DC 24V, 30W, 1.25A, ohmic 24V, 30W, 2.0A for DC-13
Auxiliary Contact Breaking Capacity	AC 250V, 500VA, 2A DC 50V, 30W, 1.25A ohmic
External Fuse Protection - Safety Outputs	4A slow blow or 6A quick blow
Minimum Voltage and Current	24V, 20mA dc
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection IEC529	Terminals IP20
Mounting	35mm DIN rail
Weight	200g approx.

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

ISO13849-1	
Performance Level	e
Category (ISO13849-1)	4
MTTFd	96.6 years
DC (average)	99%
Proof Test Interval (Life)	10 years
Safety Data Annual Usage	261 days per year 16 hours per day Test cycle 7.6 seconds/cycle Low load AC1

EN62061	
SILCL	3
Proof Test Interval (life)	10 years
Hardware Fault Tolerance	1
DC (average)	99%
PFHd	1.2 x 10 ⁻⁸

SALES NUMBER	TYPE	TERMINAL TYPE	SUPPLY VOLTAGE	OUTPUT CONTACTS
180030	SCR-2H	Standard Screw Terminals	24Vac/dc	2NC
180031	SCR-2H		230Vac	2NC
180032	SCR-2H		110Vac	2NC
180030-P	SCR-2H	Pluggable Screw Terminals	24Vac/dc	2NC
180031-P	SCR-2H		230Vac	2NC
180032-P	SCR-2H		110Vac	2NC

Safety Relays Type: SCR-7

OVERVIEW:

The SCR-7 is an all purpose Safety Monitoring Relay with 7 relay outputs that ensure the quick and safe deactivation of the moving parts of a machine in case of danger.

Applications include single or dual channel emergency stop circuits or dual channel safety guard monitoring using Tongue Switches or Non Contact Switches.

FEATURES:

- 7 Force guided safety output contacts
- 4 Auxiliary output contacts
- 2 Auxiliary transistor outputs
- Standards: EN60204-1, ISO13849-1, EN62061
- Stop Category: 0
- Up to PLe to ISO13849-1
- SILCL3 EN62061
- Single or Dual Channel input - LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors
- Short circuit and earth fault monitoring
- 45mm Din Rail Mounting

FUNCTION:

The SCR-7 is designed in accordance with EN60204-1 for safety circuits and they may be applied for up to PLe ISO13849-1.

The internal logic system closes the relay safety outputs when the start button is pressed.

If the control lines are opened by operation of a Safety Switch or Emergency Stop button then the safety output contacts are opened and safely switch off the supply to the machine.

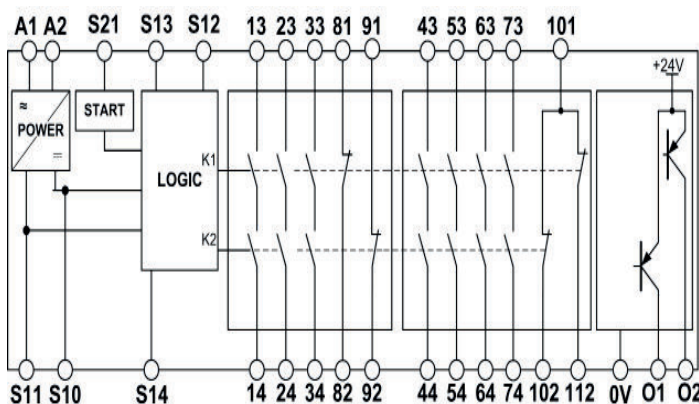
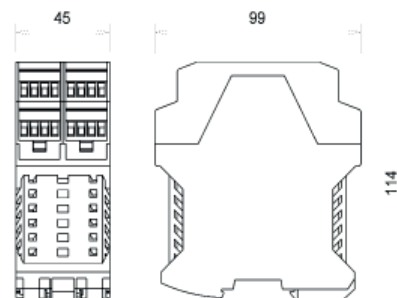
It is ensured that a single fault does not lead to the loss of the safety function and that cyclic monitoring means that any fault is detected no later than the next start up.

Standards: EN60204-1 ISO13849-1 EN62061

Monitored Safety Inputs Circuits	2NC or 1NC from Safety Switches
Safety Switching Outputs	7NC positively guided
Auxiliary Outputs	4NO
Auxiliary Transistor Outputs	2Vdc 30mA (over-current protection)
Operating Voltage	24Vac/dc
Supply Deviation	+/-10%
Control Voltage at S11	24Vdc
Control Current S11 to S14	250mA approx.
Monitored Reset Circuit Loop	Auto or Monitored Manual Reset
Maximum Line Conductor Cross Section	2.5 sq mm
Maximum Length of Control Line	2 x 500m with 0.75 sq mm
Contact Material	AgSnO ₂
Indication - Green	PWR Power ON
Contact Service Life	LED1 internal relay K1 energised
Safety Contact Breaking Capacity	LED2 internal relay K2 energised
	Mechanical 1x10 ⁷ Electrical 1x10 ⁵
	AC 250V, 2000VA, 8A, ohmic
	230V, 3A for AC15
	DC 24V, 3.0A DC-13
	(Max. total current 20A)
Auxiliary Contact Breaking Capacity	AC 250V, 500VA, 8A, ohmic
External Fuse Protection - Safety Outputs	6A slow blow or 8A quick blow
Minimum Voltage and Current	24V, 20mA dc
Response Time on Output Opening	90ms
Rated Insulation Voltage	250V
Degree of Protection	IP20
Rated Impulse Withstand Voltage	4kV
Operating Temperature	-15C to +40C
IP Protection IEC529	Terminals IP20
Mounting	35mm DIN rail
Weight	300g approx.



DIMENSIONS:



Block Diagram and Electrical Connection

A1 A2	Power
S11	24Vdc Control Voltage
S21	Start Control Line
S10 S13 S14 S21	Control Lines
13-14	Safety Output Contact 1
23-24	Safety Output Contact 2
33-34	Safety Output Contact 3
43-44	Safety Output Contact 4
53-54	Safety Output Contact 5
63-64	Safety Output Contact 6
73-74	Safety Output Contact 7
81-82	Auxiliary Output Contact
91-92	Auxiliary Output Contact
101-102	Auxiliary Output Contact
101-112	Auxiliary Output Contact
O1 O2	Auxiliary Outputs (Transistor)
0V	Reference Common O1 O2

Safety Classification and Reliability Data: Specified PL or SILCL were determined under worst case conditions

ISO13849-1	Performance Level	e
	Category (ISO13849-1)	4
	MTTFd	96 years
	DC (average)	99%
	Proof Test Interval (Life)	20 years
	Safety Data Annual Usage	365 days per year
		24 hours per day
		Test cycle 3600 seconds/cycle
		Full load AC15

EN62061	SILCL	3
	Proof Test Interval (life)	20 years
	Hardware Fault Tolerance	1
	DC (average)	99%
	PFHd	2.27 x 10 ⁻⁸

SALES NUMBER	TYPE	TERMINAL TYPE	SWITCH INPUT CIRCUITS	OUTPUT CONTACTS
180040	SCR-7	Standard Screw Terminals	2NC	7NC 4NO
180040-P	SCR-7	Pluggable Screw Terminals	2NC	7NC 4NO