

# Safety Relays - SCR-1

## SCR-1 Emergency Stop Relay 2NC Outputs

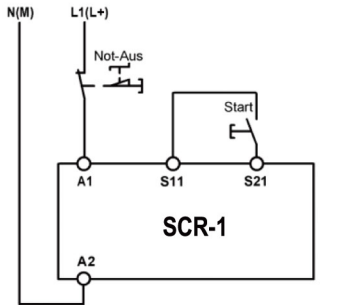
The SCR-1 is a low cost all purpose Safety Relay that ensures the quick and safe deactivation of the moving parts of a machine in case of danger. Internal fault monitoring takes place during restart via the start button.

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

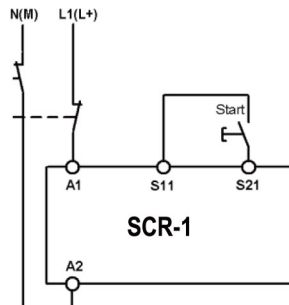
### Features:

- 2 safe, redundant safety output contacts
- Standards: EN 60204-1, EN954-1, ISO13849-1, EN62061
- Up to Category 3 to EN 954-1
- Up to PLd to ISO13849-1 SILCL 2 EN62061
- Single or Dual Channel input – LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors or expansion modules
- 22mm Din Rail Mounting

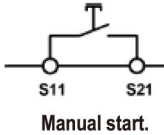
### Applications:



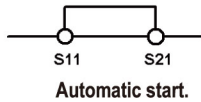
Single channel Interlocking to PLc ISO13849-1 and Cat.1.



Dual channel Interlocking to PLd ISO13849-1 Cat.3.



Manual start.

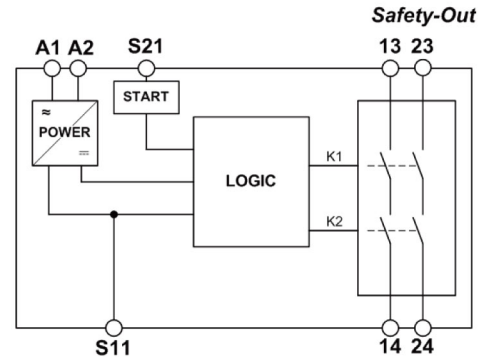
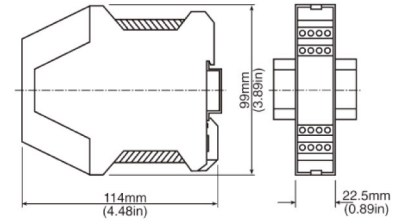


Automatic start.

SCR-1

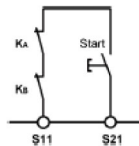
Standards EN60204-1, EN 292, EN 418, EN60204-1  
EN 954-1, ISO13849-1, EN 1088 EN62061

Monitored Safety Inputs Circuits	2 NC or 1NC
Safety Switching Outputs	2 NC positively guided
Operating voltage	AC/DC24V 3VA approx.
Supply deviation	+ / - 10%
Control voltage at S11	24V.dc
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	LED 1 internal relay K1 energised LED 2 internal relay K2 energised LED 1 and 2 OSSD closed
Contact service life	Mechanical 1 x 10 <sup>7</sup> Electrical 1 x 10 <sup>5</sup>
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	90 ms
Rated insulation voltage	250V
Degree of protection	IP20
Rated impulse withstand voltage	4 kV
Operating temperature	-15°C to +40°C
IP Protection	IEC529
Mounting	Terminals IP20
Weight	35mm DIN rail 0-23kg approx.



Block diagram and electrical connection

A1 A2	Power
S11	24V.dc control voltage
S21	Control line
13-14	Safety Output Contact 1
23-24	Safety Output Contact 2



### Feedback circuit.

The feedback circuit monitors machine contactors or expansion modules.

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

ISO 13849-1:	
Performance level	d
Category (ISO13849-1 / EN 954-1)	3
MTTFd	848 years
DC (avg.)	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
EN 62061:	
SILCL	2
Proof Test Interval (Life)	20 years
Hardware fault tolerance	1
DC (avg.)	96.6%
Safe Failure Fraction SFF	99.6%
PFHd	2.70 x 10 <sup>-11</sup>

Sales Number	Type	Supply Voltage	EN 954-1 Category	Switch Input Circuits	Output Contacts
180009	SCR-1	24V.ac/dc	Up to Cat.3	2 NC	2NC

# Safety Relays - SCR-2

## SCR-2 Safety Monitoring Relay 2NC Outputs

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: EN 60204-1, EN954-1, ISO13849-1, EN62061

Stop Category: 0

Up to Category 4 to EN 954-1

Up to PLe to ISO13849-1

SILCL 3 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

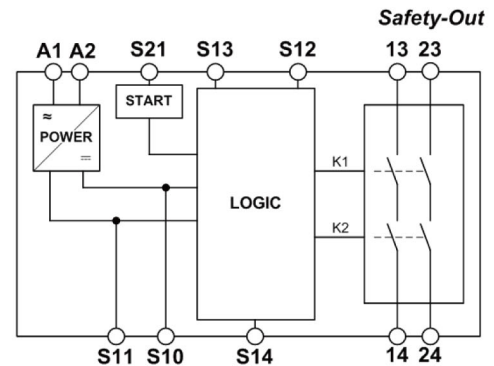
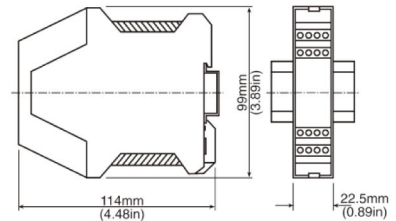
22mm Din Rail Mounting

### Function:

The SCR-2 is designed in accordance with EN 60204-1 for safety circuits and they may be applied for up to PLe ISO13849-1 or Cat.4 EN954-1.

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 E 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.



Block diagram and electrical connection

A1 A2	Power
S11	24V.dc control voltage
S10 S13 S14 S12	Control lines
S21	Start Control Line
13-14	Safety Output Contact 1
23-24	Safety Output Contact 2

### SCR-2

Standards EN60204-1, EN 292, EN 418, EN60204-1  
EN 954-1, ISO13849-1, EN 1088 EN62061

Monitored Safety Inputs Circuits	2 NC or 1NC
Safety Switching Outputs	2 NC positively guided
Operating voltage	AC/DC 24V
Supply deviation	+ / - 10%
Control voltage at S11	24V.dc
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	LED 1 internal relay K1 energised LED 2 internal relay K2 energised LED 1 and 2 OSSD closed
Contact service life	Mechanical 1 x 10 <sup>7</sup> Electrical 1 x 10 <sup>5</sup>
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	90 ms
Rated insulation voltage	250V
Degree of protection	IP20
Rated impulse withstand voltage	4 kV
Operating temperature	-15°C +40°C
IP Protection	IEC529 Terminals IP20
Mounting	35mm DIN rail
Weight	0.23kg approx.

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

ISO 13849-1:	
Performance level	e
Category (ISO13849-1 / EN 954-1)	4
MTTFd	848 years
DC (avg.)	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

EN 62061:	
SILCL	3
Proof Test Interval (Life)	20 years
Hardware fault tolerance	1
DC (avg.)	99%
Safe Failure Fraction SFF	99.6%
PFHd	2.70 x 10 <sup>-11</sup>

Sales Number	Type	Terminal Type	Supply Voltage	Switch Input Circuits	Output Contacts
180001	SCR-2	Standard Screw Terminals	24V.ac/dc	2 NC	2NC
180001-P	SCR-2	Pluggable Screw Terminals	24V.ac/dc	2 NC	2NC

# Safety Relays - SCR-3

## SCR-3 Safety Monitoring Relays 3NC 1NO Outputs

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:

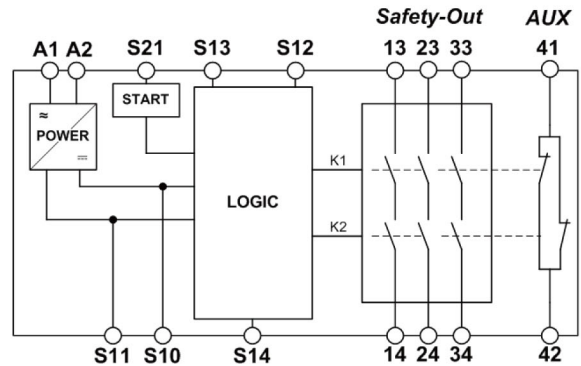
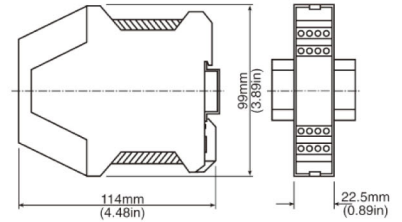
- 3 Force guided safety output contacts
- 1 Auxiliary output contact
- Standards: EN 60204-1, EN954-1, ISO13849-1, EN62061
- Stop Category: 0
- Up to Category 4 to EN 954-1
- Up to PLe to ISO13849-1
- SILCL 3 EN62061
- Single or Dual Channel input – LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors or expansion modules
- Short circuit and earth fault monitoring
- 22mm Din Rail Mounting
- Choice of 24Vac/dc, 110Vac or 230Vac supply (by part number)

### Function:

The SCR-3 is designed in accordance with EN 60204-1 for safety circuits and they may be applied for up to PLe ISO13849-1 or Cat.4 EN954-1.

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 E 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.



Block diagram and electrical connection

A1 A2	Power
S11	24V.dc 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

SCR-3	Standards	EN60204-1, EN 292, EN 418, EN60204-1 EN 954-1, ISO13849-1, EN 1088 EN62061
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Monitored Safety Inputs Circuits	2 NC or 1NC from Safety Switches
Safety Switching Outputs	3 NC positively guided
Auxiliary outputs	1 NO
Operating voltage	AC230V AC110V AC/DC24V by part number
Supply deviation	+ / - 10%
Control voltage at S11	24V.dc
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	LED 1 internal relay K1 energised LED 2 internal relay K2 energised LED 1 and 2 OSSD closed
Contact service life	Mechanical 1 x 10 <sup>7</sup> Electrical 1 x 10 <sup>5</sup>
Safety Contact breaking capacity	AC 250V, 2000VA, 8A. ohmic 230V, 3A for AC15 DC 24V, 48W, 2.0A. DC13 (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	90 ms
Rated insulation voltage	250V
Degree of protection	IP20
Rated impulse withstand voltage	4 kV
Operating temperature	-15°C +40°C.
IP Protection	IEC529 Terminals IP20
Mounting	35mm DIN rail
Weight	0.23kg approx.

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

ISO 13849-1:	
Performance level	e
Category (ISO13849-1 / EN 954-1)	4
MTTFd	567 years
DC (avg.)	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
EN 62061:	
SILCL	3
Proof Test Interval (Life)	20 years
Hardware fault tolerance	1
DC (avg.)	99%
Safe Failure Fraction SFF	99.6%
PFHd	4.10 x 10 <sup>-11</sup>

Sales Number	Type	Terminal Type	Supply Voltage	Switch Input Circuits	Output Contacts
180002	SCR-3	Standard	24V.ac/dc	2 NC	3NC 1NO
180003	SCR-3	Screw	230V.ac	2 NC	3NC 1NO
180004	SCR-3	Terminals	110V.ac	2 NC	3NC 1NO
180002-P	SCR-3	Pluggable	24V.ac/dc	2 NC	3NC 1NO
180003-P	SCR-3	Screw	230V.ac	2 NC	3NC 1NO
180004-P	SCR-3	Terminals	110V.ac	2 NC	3NC 1NO

# Safety Relays with combined Time Delay SCR-4 -TD

## SCR-4-TD Safety Monitoring Relays

The SCR-4-TD are all purpose Safety Monitoring Relays that 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 still be supplied with voltage for up to 30 seconds (adjusted on the SCR-4-TD by a potentiometer).

### Features:

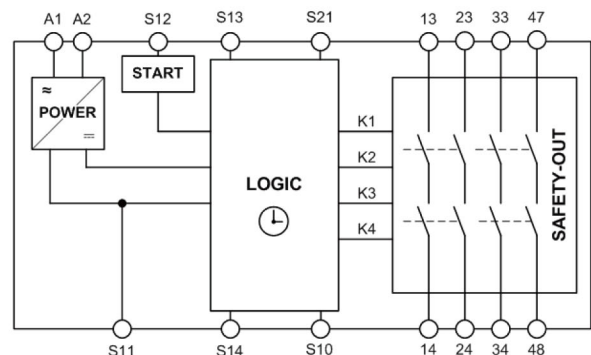
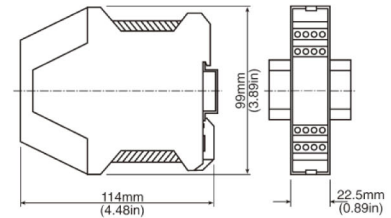
Force guided safety output contacts – available in 3 variants

- Standards: EN 60204-1, EN954-1, ISO13849-1, EN62061
- Stop Category: 0 (non time delayed) 1 (time delayed)
- Up to Category 4 to EN 954-1
- Up to PLe to ISO13849-1 SILCL 3 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
- 22mm 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 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.

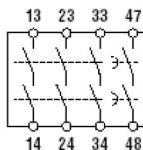


Block diagram and electrical connection SCR-4-TD-1

- A1 A2 Power
- S11 24V.dc control voltage
- S10 S13 S14 S21 Control lines
- S12 Start Control Line

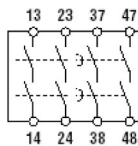
### Variants:

#### SCR-4-TD-1



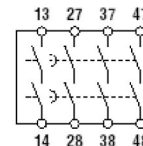
Instant 3NC  
Delayed 1NC

#### SCR-4-TD-2



Instant 2NC  
Delayed 2NC

#### SCR-4-TD-3



Instant 1NC  
Delayed 3NC

#### SCR-4-TD

Standards EN60204-1, EN 292, EN 418, EN60204-1  
EN 954-1, ISO13849-1, EN 1088 EN62061

- Monitored Safety Inputs Circuits 2 NC or 1NC
- Safety Switching Outputs 4 NC
- Delayed time 1-30 seconds continuously adjustable
- Operating voltage AC/DC24V
- Supply deviation +/- 10%
- Control voltage at S11 24V.dc
- 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
- LED 1 internal relay K1 energised
- LED 2 internal relay K2 energised
- LED 1 and 2 OSSD closed
- Contact service life Mechanical 1 x 10<sup>7</sup> Electrical 1 x 10<sup>5</sup>
- 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 90 ms
- Rated insulation voltage 250V
- Degree of protection IP20
- Rated impulse withstand voltage 4 kV
- Operating temperature -15°C +40°C.
- IP Protection IEC529 Terminals IP20
- Mounting 35mm DIN rail
- Weight 0.25kg approx.

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

- ISO 13849-1:
  - Performance level e
  - Category (ISO13849-1 / EN 954-1) 4 Non delayed 3 Delayed
  - MTTFd 73.36 years
  - DC (avg.) 99% Non delayed 90% Delayed
  - Proof Test Interval (Life) 10 years
  - Safety Data Annual usage 261 days per year  
16 hours per day  
Test cycle 180 seconds  
Low Load AC1
- EN 62061:
  - SILCL 3 3 Non delayed
  - Proof Test Interval (Life) 20 years
  - Hardware fault tolerance 1
  - DC (avg.) 99% Non delayed 90% Delayed
  - Safe Failure Fraction SFF 96.44%
  - PFHd Non delayed 5.59 x 10<sup>-8</sup>
  - PFHd Delayed 6.85 x 10<sup>-8</sup>

Sales Number	Type		Supply Voltage	Switch Input Contacts	Instant Output Contacts	Delayed Output Contacts
180005	SCR-4-TD-1	Standard	24V.ac/dc	2NC	3NC	1NC
180006	SCR-4-TD-2	Screw	24V.ac/dc	2NC	2NC	2NC
180007	SCR-4-TD-3	Terminals	24V.ac/dc	2NC	1NC	3NC
180005-P	SCR-4-TD-1	Pluggable	24V.ac/dc	2NC	3NC	1NC
180006-P	SCR-4-TD-2	Screw	24V.ac/dc	2NC	2NC	2NC
180007-P	SCR-4-TD-3	Terminals	24V.ac/dc	2NC	1NC	3NC

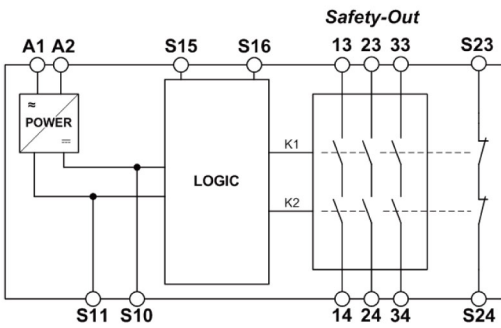
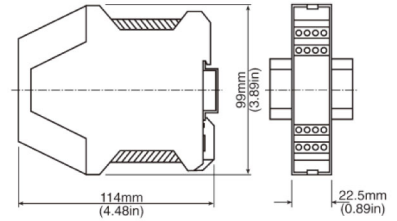
# SEU-1 Expansion Module - for use with SCR-2 and SCR-3

## SEU-1 Safety Expansion Relay offering 3NC Outputs

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 relay.

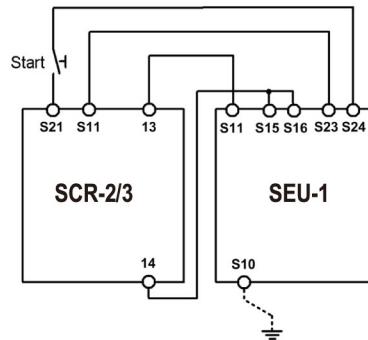
### Features:

- 3NC relay outputs
- 1NO auxiliary contact – (fault monitoring)
- Standards: EN 60204-1, EN954-1, ISO13849-1, EN62061
- Stop Category : 1
- Up to Category : 4 EN 954-1
- Up to : PLe ISO13849-1
- Force Guided Contacts : 3
- Fault Monitoring by basic SCR device.

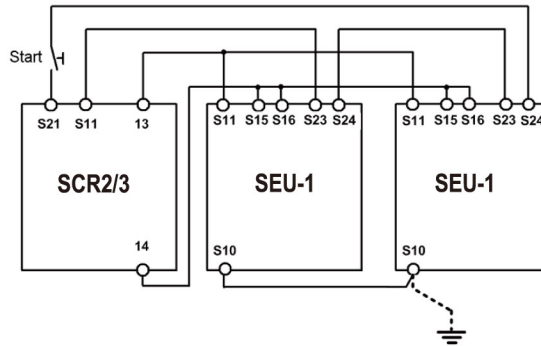


Block diagram and electrical connection SEU-1

- A1 A2 Power
- S11 24V.dc 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.

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

Standards	SEU-1 EN60204-1, EN 292, EN 418, EN60204-1 EN 954-1, ISO13849-1, EN 1088 EN62061
Safety Switching Outputs	3 NC
Auxiliary Contact	1 NO
Operating voltage	AC/DC24V AC110V AC230V by part number
Supply deviation	+/- 10%
Control voltage at S11	24V.dc
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	LED 1 and 2 OSSD closed
Contact service life	Mechanical 1 x 10 <sup>7</sup> Electrical 1 x 10 <sup>5</sup>
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	4 kV
Operating temperature	-15°C +40°C
IP Protection	IEC529 Terminals IP20
Mounting	35mm DIN rail
Weight	0.25kg approx.

ISO 13849-1:	
Performance level	e
Category (ISO13849-1 / EN 954-1)	4
MTTFd	567 years
DC (avg.)	99%
Proof Test Interval (Life)	20 years
Safety Data Annual usage	365 days per year 24 hours per day 3600 seconds/ cycle Full Load AC15
EN 62061:	
SILCL	3
Proof Test Interval (Life)	20 years
Hardware fault tolerance	1
DC (avg.)	99%
Safe Failure Fraction SFF	99.6%
PFHd	4.10 x 10 <sup>-8</sup>

Sales Number	Type	Terminal Type	Supply Voltage	Output Contacts	Auxiliary Output Contacts
180010	SEU-1	Standard	24V.ac/dc	3NC	1NO
180011	SEU-1	Screw	110V.ac	3NC	1NO
180012	SEU-1	Terminals	230V.ac	3NC	1NO
180010-P	SEU-1	Pluggable	24V.ac/dc	3NC	1NO
180011-P	SEU-1	Screw	110V.ac	3NC	1NO
180012-P	SEU-1	Terminals	230V.ac	3NC	1NO

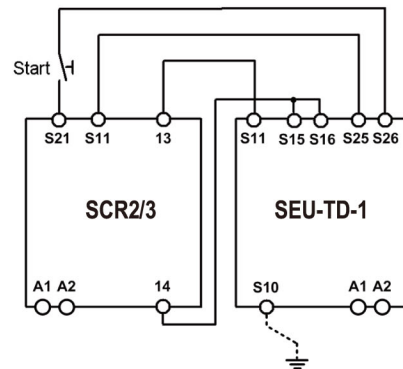
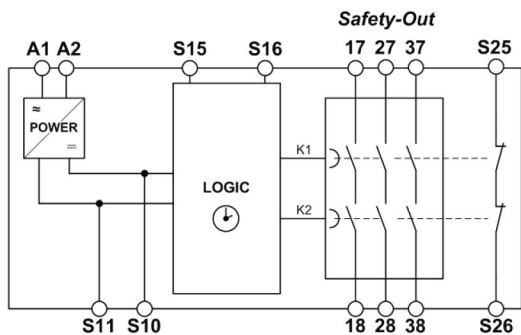
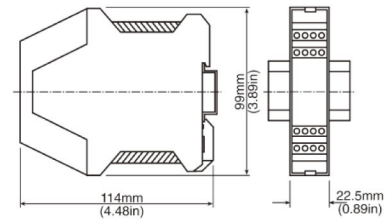
# SEU-TD-1 Expansion Module with Time Delay - for use with SCR-2 and SCR-3

## SEU-TD-1 Safety Expansion Relay offering delayed outputs

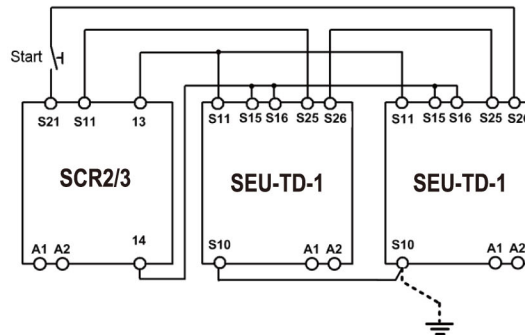
The SEU-TD-1 is an expansion unit which can be used with an existing system using SCR-2 or SCR-3 to allow delayed shutdown or timing to a safety application. Time Delay is variable 1-30s. The safety actuation is achieved from the basic SCR-2 or SCR-3 relay.

### Features:

- 3NC relay outputs
- 1NO auxiliary contact
- Standards: EN 60204-1, EN954-1, ISO13849-1, EN62061
- Stop Category : 1
- Up to Category : 3 EN 954-1
- Up to : PLd ISO13849-1
- Force Guided Contacts : 3
- Fault Monitoring by basic SCR device.



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.

### Block diagram and electrical connection SEU-TD-1

- A1 A2 Power
- S11 24V.dc 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

### SEU-TD-1

Standards EN60204-1, EN 292, EN 418, EN60204-1  
EN 954-1, ISO13849-1, EN 1088 EN62061

- Safety Switching Outputs 3 NC 1-30 seconds continuously adjustable
- Auxiliary contact 1 NO monitoring contact for basic device
- Operating voltage AC/DC24V AC110V AC230V by part number
- Supply deviation +/- 10%
- Control voltage at S11 24V.dc
- 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 LED 1 and LED2 OSSD closed
- Contact service life Mechanical 1 x 10<sup>7</sup> Electrical 1 x 10<sup>5</sup>
- 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 4 kV
- Operating temperature -15°C +40°C
- IP Protection IEC529
- Terminals IP20
- Mounting 35mm DIN rail
- Weight 0-25kg approx.

### Safety Classification and Reliability Data:

The specified PL or SILCL were determined under worst case conditions:

- ISO 13849-1:
  - Performance level d
  - Category (ISO13849-1 / EN 954-1) 3
  - MTTFd 487 years
  - DC (avg.) 92.1%
  - Proof Test Interval (Life) 20 years
  - Safety Data Annual usage 365 days per year  
24 hours per day  
3600 seconds / cycle  
Full Load AC1
- EN 62061:
  - SILCL 2
  - Proof Test Interval (Life) 20 years
  - Hardware fault tolerance 1
  - DC (avg.) 92.1%
  - Safe Failure Fraction SFF 94%
  - PFHd 3.68 x 10<sup>-10</sup>

Sales Number	Type	Terminal Type	Supply Voltage	Delayed Output Contacts
180015	SEU-TD-1	Standard	24V.ac/dc	3NC 1NO
180016	SEU-TD-1	Screw	110V.ac	3NC 1NO
180017	SEU-TD-1	Terminals	230V.ac	3NC 1NO
180015-P	SEU-TD-1	Pluggable	24V.ac/dc	3NC 1NO
180016-P	SEU-TD-1	Screw	110V.ac	3NC 1NO
180017-P	SEU-TD-1	Terminals	230V.ac	3NC 1NO

# 2 Hand Safety Relay SCR-2H

## SCR-2H 2 Hand Control Safety Monitoring Relay

The SCR-2H is a compact, universal 2 hand control safety relay.

It complies with EN574, Type IIC and is intended for use in safety circuits designed in accordance with EN60204-1.

### Features:

2 Force guided safety output contacts

Standards: EN 574, EN 60204-1, EN954-1, ISO13849-1, EN62061

Stop Category: 0

Up to Category 4 EN954-1 and IIC EN574

Up to PLe ISO13849-1 SILCL 3 EN62061

Redundancy and cycle monitoring

Short circuit monitoring

22mm Din Rail Mounting

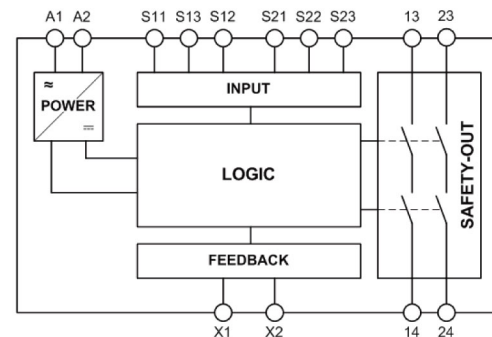
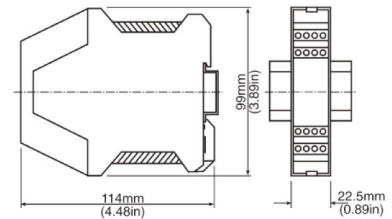
### Principle of operation:

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.

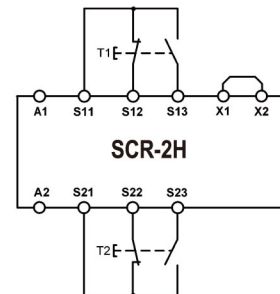
It is important to arrange the buttons such that accidental operation or easy bypass cannot be achieved, and in accordance with EN574 and EN999.

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.



Block diagram and electrical connection



### SCR-2H

Standards EN60204-1, EN60204-1, EN54-1, ISO13849-1, EN 574 , EN62061

Safety Switching Outputs 2 NC positively guided  
 Operating voltage AC230V AC110V AC/DC24V by part number  
 Supply deviation + / - 10%  
 Control voltage at S12-S13 24V.dc  
 Control current to buttons 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 LED 1 internal relay K1 energised  
 LED 2 internal relay K2 energised  
 LED 1 and 2 OSSD closed  
 Contact service life Mechanical 1 x 10<sup>7</sup> Electrical 1 x 10<sup>5</sup>  
 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 4 kV  
 Operating temperature -15°C +40°C  
 IP Protection IEC529 Terminals IP20  
 Mounting 35mm DIN rail  
 Weight 0-23kg approx.

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

ISO 13849-1:  
 Performance level e  
 Category (ISO13849-1 / EN 954-1) 4  
 MTTFd 96.6 years  
 DC (avg.) 99%  
 Proof Test Interval (Life) 10 years  
 Safety Data Annual usage 261 days per year  
 16 hours per day  
 7.6 seconds / cycle  
 Low Load AC1

EN 62061:  
 SILCL 3  
 Proof Test Interval (Life) 10 years  
 Hardware fault tolerance 1  
 DC (avg.) 99%  
 Safe Failure Fraction SFF 99.8%  
 PFHd 2.56 x 10<sup>-08</sup>

Sales Number	Type	Terminal Type	Supply Voltage	Output Contacts
180030	SCR-2H	Standard	24V.ac/dc	2NC
180031	SCR-2H	Screw	230V.ac	2NC
180032	SCR-2H	Terminals	110V.ac	2NC
180030-P	SCR-2H	Pluggable	24V.ac/dc	2NC
180031-P	SCR-2H	Screw	230V.ac	2NC
180032-P	SCR-2H	Terminals	110V.ac	2NC

# Safety Relays - SCR-7

## SCR-7

## Safety Monitoring Relay

## 7NC Relay Outputs

## 4NO Auxiliary Relay Outputs

## 2 Auxiliary Transistor Outputs

The SCR-7 is an all purpose Safety Monitoring Relay with seven relay outputs that ensure 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:

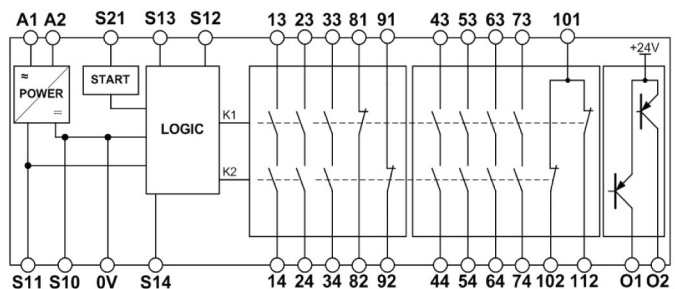
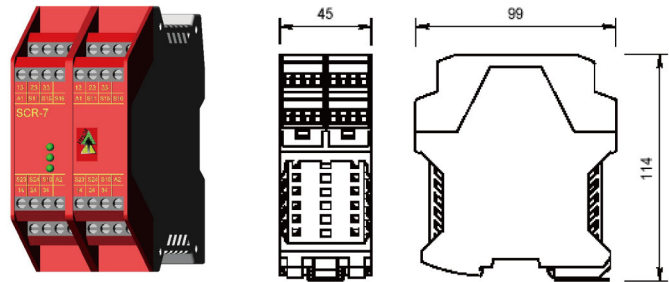
- 7 Force guided safety output contacts
- 4 Auxiliary output contacts
- 2 Auxiliary transistor outputs
- Standards: EN 60204-1, EN954-1, ISO13849-1, EN62061
- Stop Category: 0
- Up to Category 4 to EN 954-1
- Up to PLe to ISO13849-1
- SILCL 3 EN62061
- Single or Dual Channel input – LED indication of input status
- Redundancy and cycle monitoring
- Feedback loop for monitoring contactors
- Short circuit and earth fault monitoring
- 22mm Din Rail Mounting

### Function:

The SCR-7 is designed in accordance with EN 60204-1 for safety circuits and they may be applied for up to PLe ISO13849-1 or Cat.4 EN954-1.

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 E 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.



Block diagram and electrical connection

A1 A2	Power
S11	24V.dc 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: The specified PL or SILCL were determined under worst case conditions:

ISO 13849-1:	
Performance level	e
Category (ISO13849-1 / EN 954-1)	4
MTTFd	96 years
DC (avg.)	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
EN 62061:	
SILCL	3
Proof Test Interval (Life)	20 years
Hardware fault tolerance	1
DC (avg.)	99%
Safe Failure Fraction (SFF)	99.5%
PFHd	$2.64 \times 10^{-11}$

Standards	SCR-7 EN60204-1, EN 292, EN 418, EN60204-1 EN 954-1, ISO13849-1, EN 1088 EN62061
Monitored Safety Inputs Circuits	2 NC or 1NC from Safety Switches
Safety Switching Outputs	7 NC positively guided
Auxiliary outputs	4 NO
Auxiliary transistor outputs O1 O2	24V dc 30mA (overcurrent protection)
Operating voltage	AC/DC24V +/- 10%
Control voltage at S11	24V.dc
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	AgSnO2
Indication - Green	PWR Power ON
	LED 1 internal relay K1 energised
	LED 2 internal relay K2 energised
Contact service life	Mechanical $1 \times 10^7$ Electrical $1 \times 10^5$
Safety Contact breaking capacity	AC 250V, 2000VA, 8A. ohmic 230V, 3A for AC15 DC 24V, 3.0A. DC13 (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	90 ms
Rated insulation voltage	250V
Degree of protection	IP20
Rated impulse withstand voltage	4 kV
Operating temperature	-15°C to +40°C
IP Protection	IEC529
Mounting	35mm DIN rail
Weight	0.35kg approx.

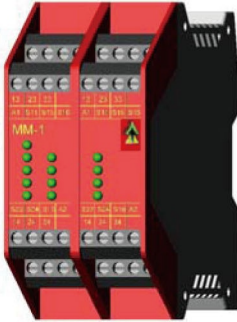
Sales Number	Type	Terminal Type	Switch Input Circuits	Output Contacts
180040	SCR-7	Standard Screw Terminals	2NC	7NC 4NO
180040-P	SCR-7	Pluggable Screw Terminals	2NC	7NC 4NO

# Modus - Plug and Expand Safety Control Modules for Safety Switches

## Expandable Safety Modules for use with Interlock Switches and Rope Switches

### MM-1 Basic Module

Basic unit with 2 Dual Channel Safety Inputs for connection of switches, 3NC Safety Outputs and signal and communication functions. Extendable with all MODUS modules.



Safety Category 4  
 2NC Safety Inputs (Dual NC/NC)  
 3 Relay Outputs  
 6 Semi-conductor Monitoring Outputs  
 Short circuit and earth fault monitoring  
 Diagnostic LED's  
 Manual or Automatic activation  
 RS 485 interface

Operating Voltage: 24V.dc +/- 10%  
 Relay Outputs : 250V.ac 8A. AC12  
 24V.dc 3A. DC13

### IPM2G Input Module

Standard input module with 2 Dual Channel Safety Inputs for connection of switches, 2 monitoring outputs, diagnostic LED's and MODUS bus connection. Outputs for establishing Safety Groups.



Safety Category 4  
 2NC Safety Inputs (Dual NC/NC)  
 2 Semi-conductor Monitoring Outputs  
 Short circuit and earth fault monitoring  
 Diagnostic LED's  
 Output Group Connection  
 Only in combination with Basic Module MM-1  
 MODUS Bus connection

### IPM3 Input Module

Input module with 3 Dual Channel Safety Inputs for connection of switches, 3 monitoring outputs and diagnostic LED's.



Safety Category 4  
 3NC Safety Inputs (Dual NC/NC)  
 3 Semi-conductor Monitoring Outputs  
 Short circuit and earth fault monitoring  
 Diagnostic LED's  
 Only in combination with Basic Module MM-1  
 MODUS Bus connection

### OPM4 Output Module

Standard output module with 3NC 1NO Safety Relay Outputs. Only in combination with Basic Module MM-1 MODUS Bus connection



Stop Category : 0  
 Safety Category: 4  
 3NC 1NO Relay Outputs  
 Diagnostic LED's

Relay Outputs : 250V.ac 8A. AC12  
 24V.dc 3A. DC13

### OPM4D Output Module

Output module with 4 Delayed Safety Relay 2 1 Semi-conductor Monitoring Output Only in combination with Basic Module MM-1 MODUS Bus connection



Stop Category : 1  
 Safety Category: 4  
 4NC RelayOutputs – Delayed – variable 1-30s,  
 Diagnostic LED's

Relay Outputs : 250V.ac 8A. AC12  
 24V.dc 3A. DC13

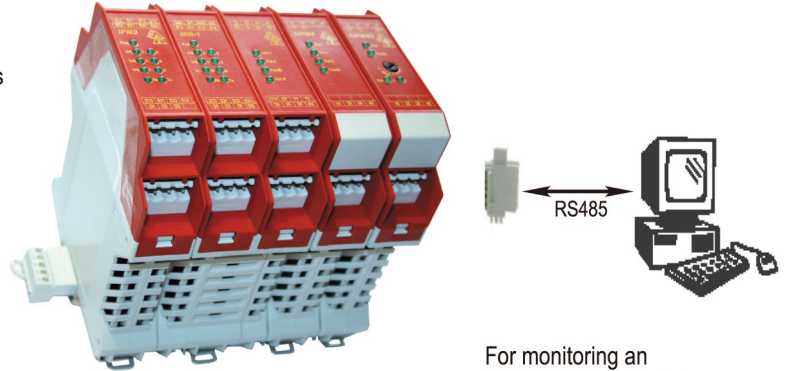
Sales Number	Type	Supply Voltage
Basic Module		
181001	MM-1	24V.dc
Input Modules		
181002	IPM2G	MODUS
181003	IPM3	MODUS
Output Modules		
181010	OPM4	MODUS
181011	OPM4D	MODUS

**MODUS is still growing for details contact [sales@idemsafety.com](mailto:sales@idemsafety.com)**

# Modus - Plug and Expand Safety Control Modules for Safety Switches

## Expandable Safety Modules for use with Interlock Switches and Rope Switches

- Pluggable and expandable Modules - 35mm rail pluggable system
- Satisfy up to EN 954-1 Cat.4
- SIL 3 EN61508
- Up to PLe ISO13849-1
- Dual channel NC inputs for use with all Safety Interlock Switches
- Compact 22mm enclosures - DIN rail mounting
- Add Switch Input Modules easily – no programming
- Add Output Switching Modules easily – no programming
- Manage Machine Stop hierarchy by grouping inputs
- High operational life
- Monitored or Auto reset
- LED diagnostics
- Time delayed output Module



For monitoring an installation by PC, PLC or Text Display, an RS485 interface is integrated within the Modus system.

The MODUS 'Plug and Expand' relay system is ideal for the prevention of dangerous states at small, medium and large installations.

For these applications you often have to consider various requirements and tasks regarding the safety function. If several emergency stop or interlock switches simultaneously have to be supervised some parts of the machine may have to stop immediately while others have to stop with delay. In a few cases of danger you have to stop only one part of the installation while the other functions can continue.

The solution for all these applications is MODUS, the modular Plug & Play Safety System.

The Master Module itself is a complete safety monitoring relay with 2 dual-channel input contacts and 3 force guided safety output contacts, like a traditional Safety Relay.

Later individual expansion is possible at anytime by adding (plugging) either additional input modules (for connection of extra switches) or additional output modules (for the addition of output switching circuits).

Modus grows according to your installation - just insert a new input or output module and the installation runs.

The system is self-configuring with no programming and the highest safety category PLe ISO13849-1 and SIL3 EN61508 is maintained at all times.

Input Modules can be grouped to enable designated sub-sections of the machine safety function to be shut off e.g.

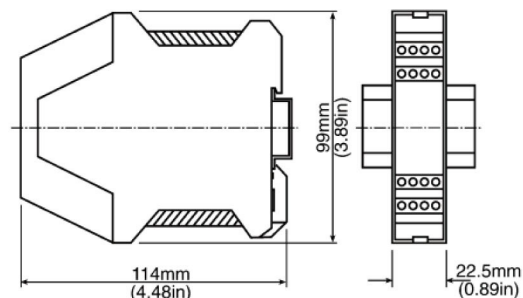
Group 1 E-Stops (Rope switches)	Power off all Drives
Group 2 Tongue switches	Power off Drives in Group 2 Guard area only
Group 3 Non Contact switches	Power off Drives in Group 3 Guard area only

The modules communicate with each other via a bus connection within the 35mm DIN-rail.

The system can be integrated with a PLC or Computer by a serial communication interface which offers perfect diagnostic and fault detection.

All you have to learn:

1. Plug switch input modules to the left of the Base module.
2. Plug relay output modules to the right of the Base module.
3. If desired specify the end of a group with connection cable.
4. Configuration is automatic.



# Modus - Plug and Expand Safety Control Modules for Safety Switches

**Applications:** Expandable Safety Modules for use with Interlock Switches and Rope Switches

**A. Monitoring of 3 guard doors and 2 emergency stop buttons, interruption of 3 drives.**

**Press with 2 Guard Doors**

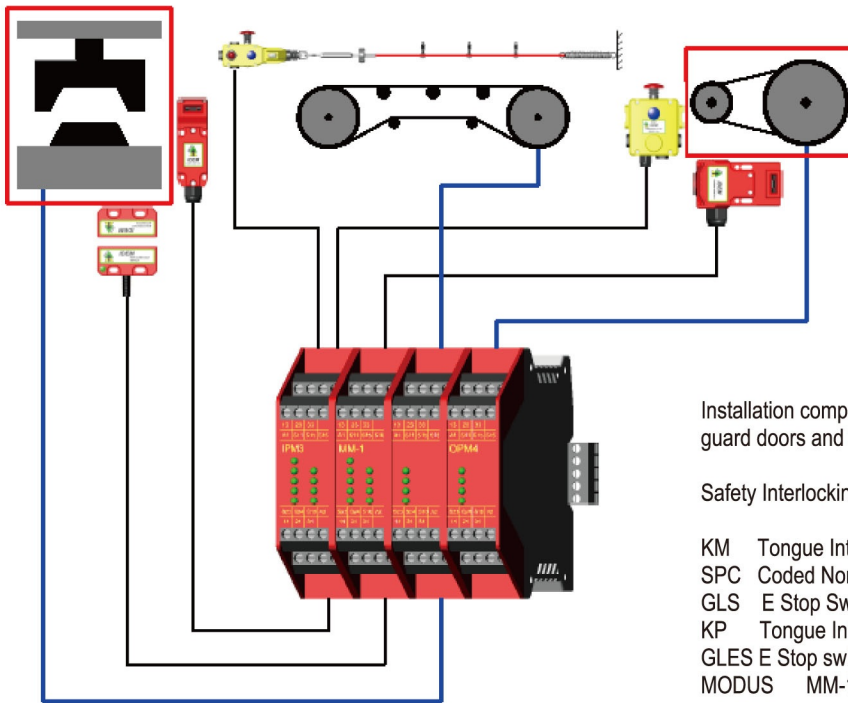
**Conveyor**

**Motor with 1 Guard Door**

KM Tongue Switch  
SPC Coded Non Contact Switch

GLS Rope - E Stop Switch

GLES – E Stop Switch  
KP Tongue Switch

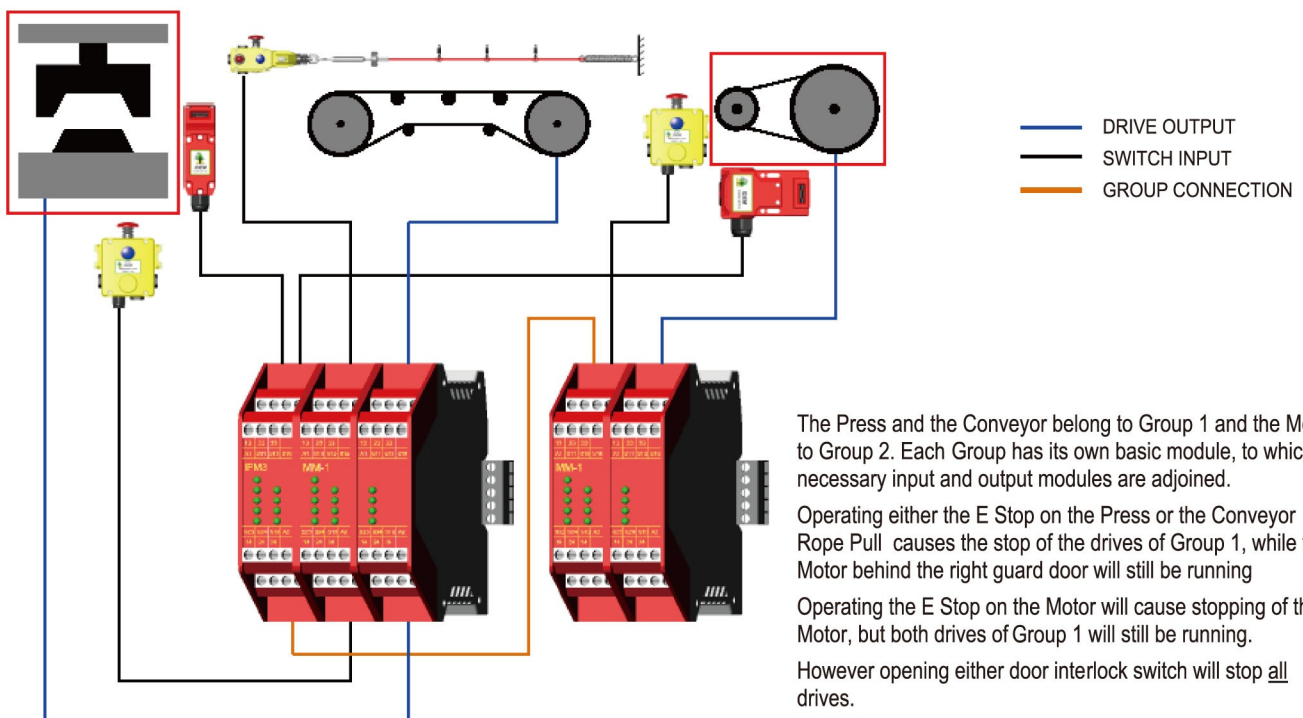


Installation comprising of a Press, Conveyor and Motor is protected by 3 guard doors and 2 Emergency Stop devices.

Safety Interlocking and E Stop functions are provided by:

KM Tongue Interlock Switch  
SPC Coded Non Contact Interlock Switch  
GLS E Stop Switch  
KP Tongue Interlock Switch  
GLES E Stop switch  
MODUS MM-1 IPM3 OPM4

**B. Monitoring of 2 guard doors and 3 emergency stop buttons, interruption of 3 drives, grouping in 2 groups with higher-level stop switch**



The Press and the Conveyor belong to Group 1 and the Motor to Group 2. Each Group has its own basic module, to which the necessary input and output modules are adjoined.

Operating either the E Stop on the Press or the Conveyor Rope Pull causes the stop of the drives of Group 1, while the Motor behind the right guard door will still be running

Operating the E Stop on the Motor will cause stopping of the Motor, but both drives of Group 1 will still be running.

However opening either door interlock switch will stop all drives.