

# Safety relays - PSR-SPP- 24DC/ESD/5X1/1X2/0T 5 - 2981130

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Safety relay for emergency stop and safety door monitoring up to SIL 3 or Cat. 4, PL e according to EN ISO 13849, automatic or manual activation, 3 N/O contacts, 1 N/C contact, 2 N/O contacts with fixed 0.5 s dropout delay, plug-in spring-cage connection terminal blocks

## Product Features

- Manually monitored and automatic activation
- Up to Cat. 3/4 and PL d/e according to ISO 13849-1, SILCL 3 according to IEC 62061, SIL 3 according to IEC 61508
- For emergency stop and safety door monitoring, plus evaluation of light grids (suitable light grids available on request)
- 3 undelayed and 2 dropout delay contacts
- Single and two-channel control
- Fixed delay times of 0.5 s ... 30 s



## Key commercial data

package_quantity	1
GTIN	4017918953003

## Technical data

Note:

Utilization restriction	EMC: class A product, see manufacturer's declaration in the download area
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### Dimensions

Width	45 mm
Height	112 mm
Depth	114.5 mm

### Ambient conditions

Ambient temperature (operation)	-20 °C ... 55 °C
Ambient temperature (storage/transport)	-40 °C ... 70 °C

### Input data

Nominal input voltage $U_N$	24 V DC
Input voltage range in reference to $U_N$	0.85 ... 1.1
Typical input current at $U_N$	150 mA DC
Voltage at input/start and feedback circuit	approx. 24 V DC
Typical response time	70 ms (manual start)

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### Input data

Typical response time	600 ms (Auto-start)
Typical release time	20 ms (undelayed contacts)
Concurrence input 1/2	Infinite
Recovery time	1 s
Max. permissible overall conductor resistance	11 Ω (Input and start circuits at U <sub>N</sub> )
Delay time	0.5 s ±20 %

### Output data

Contact type	3 enabling current paths undelayed
Contact type	2 enabling current paths delayed
Contact type	1 signaling current path undelayed
Contact material	AgSnO <sub>2</sub>
Maximum switching voltage	250 V AC/DC
Minimum switching voltage	15 V AC/DC
Limiting continuous current	6 A
Maximum inrush current	6 A
Inrush current, minimum	25 mA
Sq. Total current	$55 \text{ A}^2 (I_{TH}^2 = I_1^2 + I_2^2 + I_3^2 + I_4^2 + I_5^2)$
Interrupting rating (ohmic load) max.	144 W (24 V DC, τ = 0 ms)
Interrupting rating (ohmic load) max.	288 W (48 V DC, τ = 0 ms)
Interrupting rating (ohmic load) max.	110 W (110 V DC, τ = 0 ms)
Interrupting rating (ohmic load) max.	88 W (220 V DC, τ = 0 ms)
Interrupting rating (ohmic load) max.	1500 VA (250 V AC, τ = 0 ms)
Maximum interrupting rating (inductive load)	42 W (24 V DC, τ = 40 ms)
Maximum interrupting rating (inductive load)	42 W (48 V DC, τ = 40 ms)
Maximum interrupting rating (inductive load)	42 W (110 V DC, τ = 40 ms)
Maximum interrupting rating (inductive load)	42 W (220 V DC, τ = 40 ms)
Switching capacity min.	0.4 W
Output fuse	6 A fast blow (undelayed)
Output fuse	C6 (24 V AC/DC) automatic device (undelayed)
Output fuse	10 A gL/gG NEOZED (delayed)

### General

Relay type	Electromechanically forcibly guided, dust-proof relay.
Mechanical service life	Approx. 10 <sup>7</sup> cycles
Mounting position	Any
Category according to EN 13849-1	3 (For delayed contacts)
Category according to EN 13849-1	4 (For non-delayed contacts)
Stop category	0 (For non-delayed contacts)
Stop category	1 (For delayed contacts)
Name	Air and creepage distances between the power circuits
Standards/regulations	DIN EN 50178/VDE 0160

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### Technical data

#### General

<b>Rated surge voltage / insulation</b>	4 kV / basic isolation, (safe isolation, reinforced insulation and 6 kV between the enabling current paths (13/14, 23/24, 33/34) and the remaining current paths and between 13/14, 23/24, 33/34 between each other.)
<b>Rated insulation voltage</b>	250 V
<b>Pollution degree</b>	2
<b>Surge voltage category</b>	III

#### Connection data

<b>Conductor cross section solid min.</b>	0.2 mm <sup>2</sup>
<b>Conductor cross section solid max.</b>	1.5 mm <sup>2</sup>
<b>Conductor cross section stranded min.</b>	0.2 mm <sup>2</sup>
<b>Conductor cross section stranded max.</b>	1.5 mm <sup>2</sup>
<b>Conductor cross section AWG/kcmil min.</b>	24
<b>Conductor cross section AWG/kcmil max</b>	16
<b>Stripping length</b>	8 mm
<b>Connection method</b>	Spring-cage conn.

### classifications

#### eCl@ss

<b>eCl@ss 4.0</b>	27371102
<b>eCl@ss 4.1</b>	27371102
<b>eCl@ss 5.0</b>	27371901
<b>eCl@ss 5.1</b>	27371901
<b>eCl@ss 6.0</b>	27371819
<b>eCl@ss 7.0</b>	27371819
<b>eCl@ss 8.0</b>	27371819

#### ETIM

<b>ETIM 2.0</b>	EC001449
<b>ETIM 3.0</b>	EC001449
<b>ETIM 4.0</b>	EC001449
<b>ETIM 5.0</b>	EC001449

#### UNSPSC

<b>UNSPSC 6.01</b>	30211901
<b>UNSPSC 7.0901</b>	39121501
<b>UNSPSC 11</b>	39121501
<b>UNSPSC 12.01</b>	39121501
<b>UNSPSC 13.2</b>	39121501

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## approvals

UL Listed / GOST / cUL Listed / Functional Safety / UL Listed / GOST / cUL Listed / Functional Safety / cULus Listed /

### Approval details

UL Listed

GOST

cUL Listed

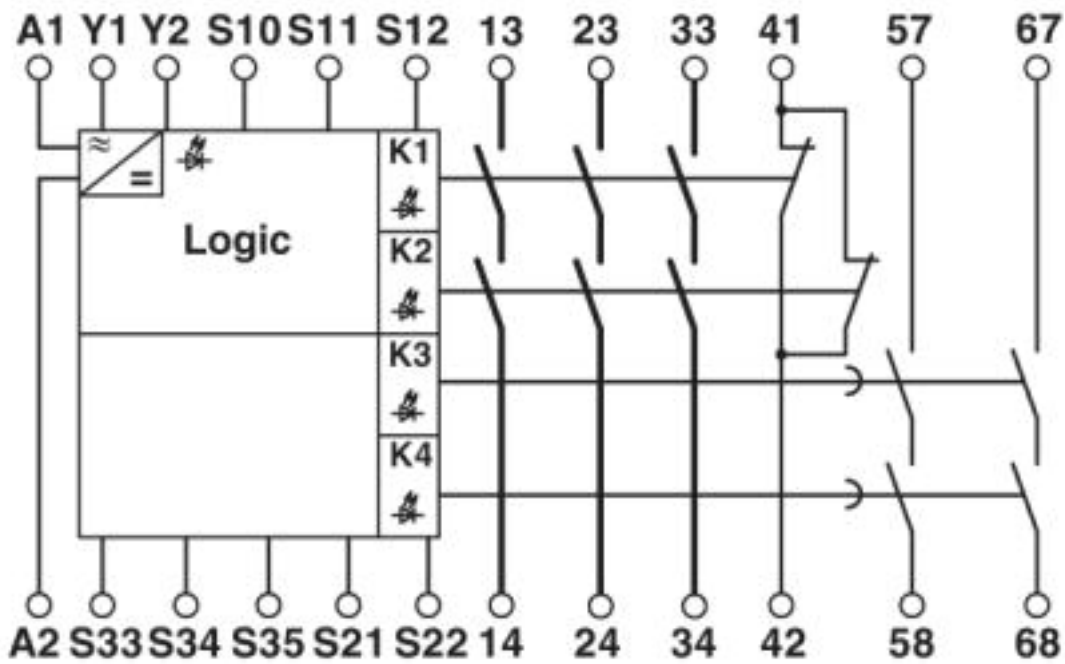
Functional Safety

cULus Listed

### Drawings

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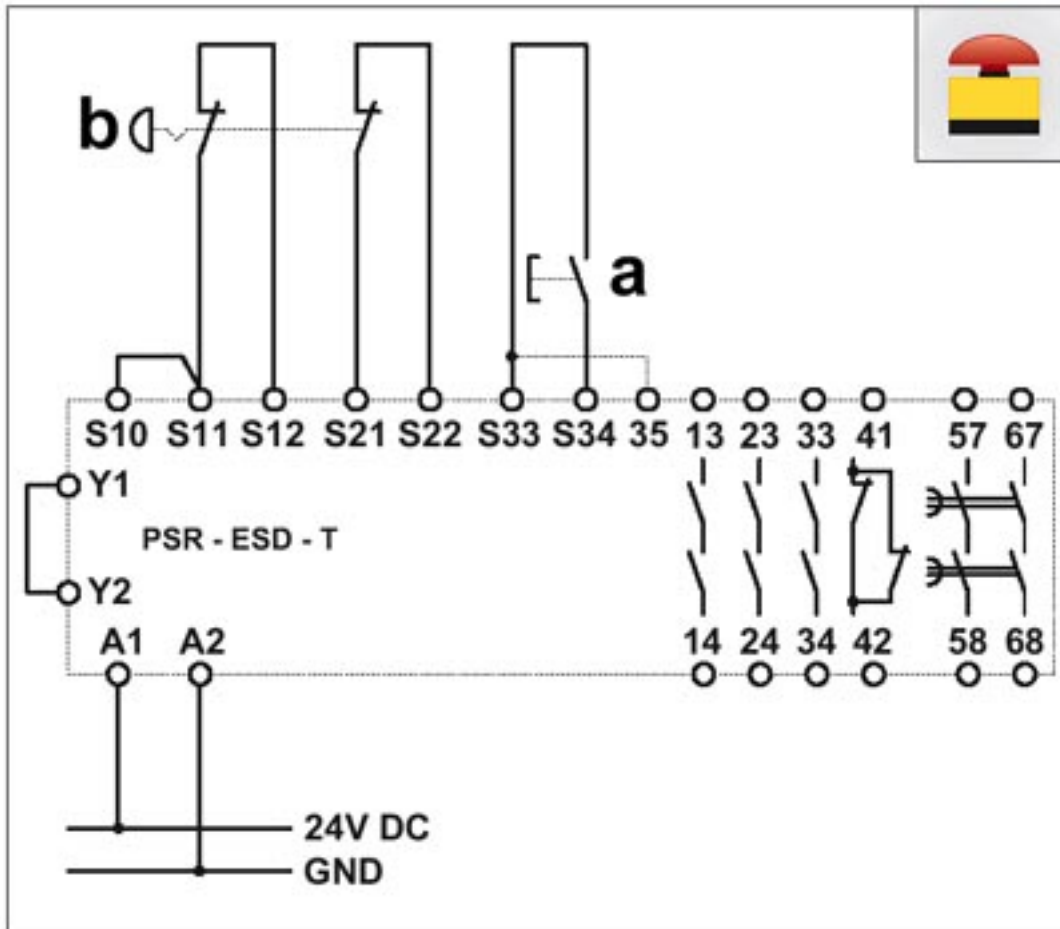
Circuit diagram



1 = logics

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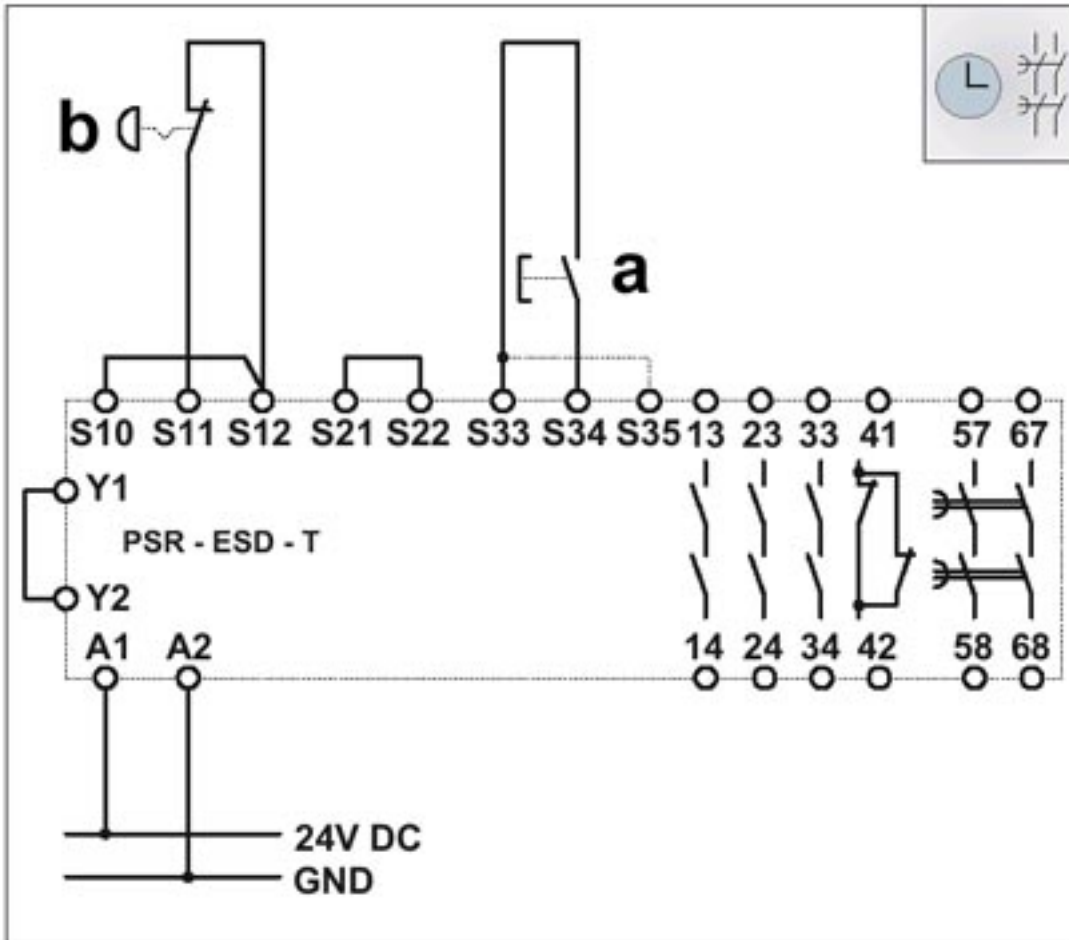
Circuit diagram



a = RESET  
b = Emergency stop  
Two-channel emergency stop circuit with cross circuiting detection and monitored reset button (bridge on S33/S35: Automatic activation), suitable up to safety category 4.

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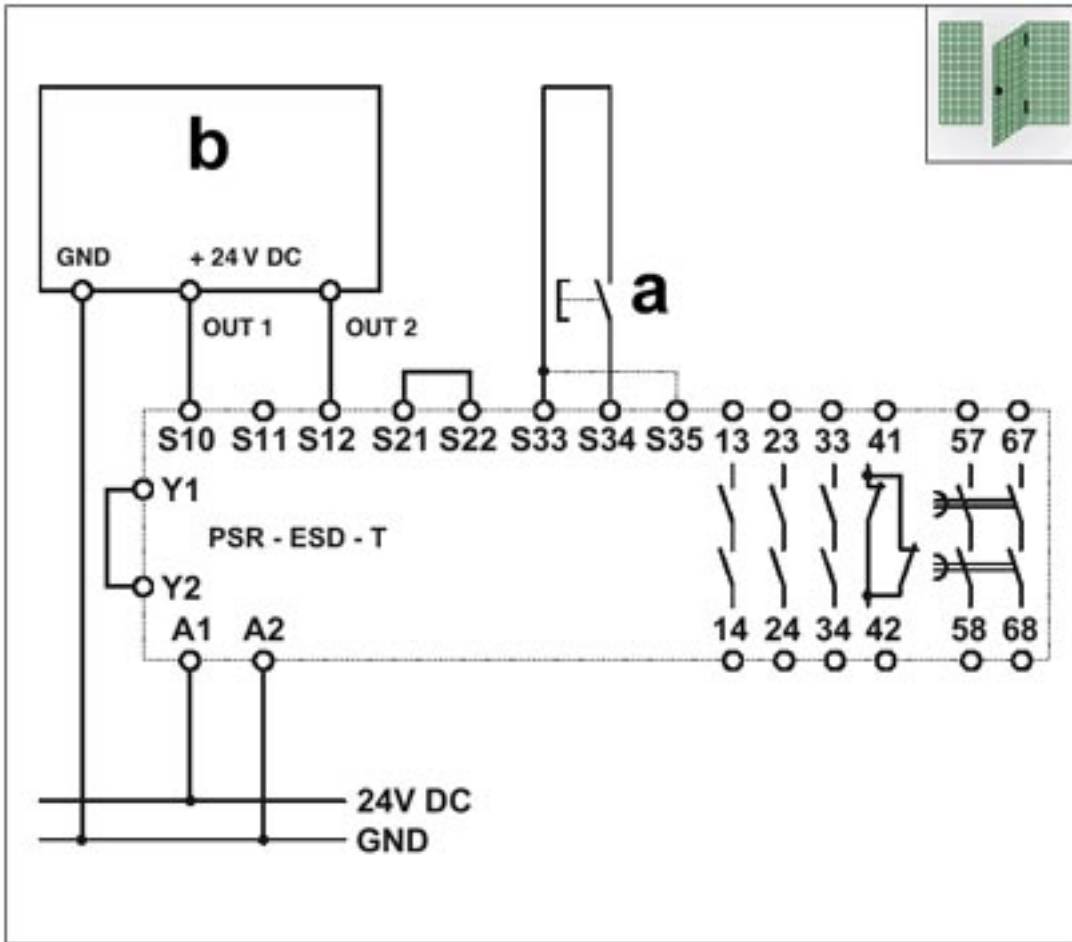
Circuit diagram



a = RESET  
 b = Emergency stop  
 Single-channel emergency stop circuit with monitored reset button (bridge on S33/S35: Automatic activation), suitable up to safety category 2, safety category 4 only when automatically disconnecting switches are used and cables are installed in separate plastic sheaths.

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Circuit diagram

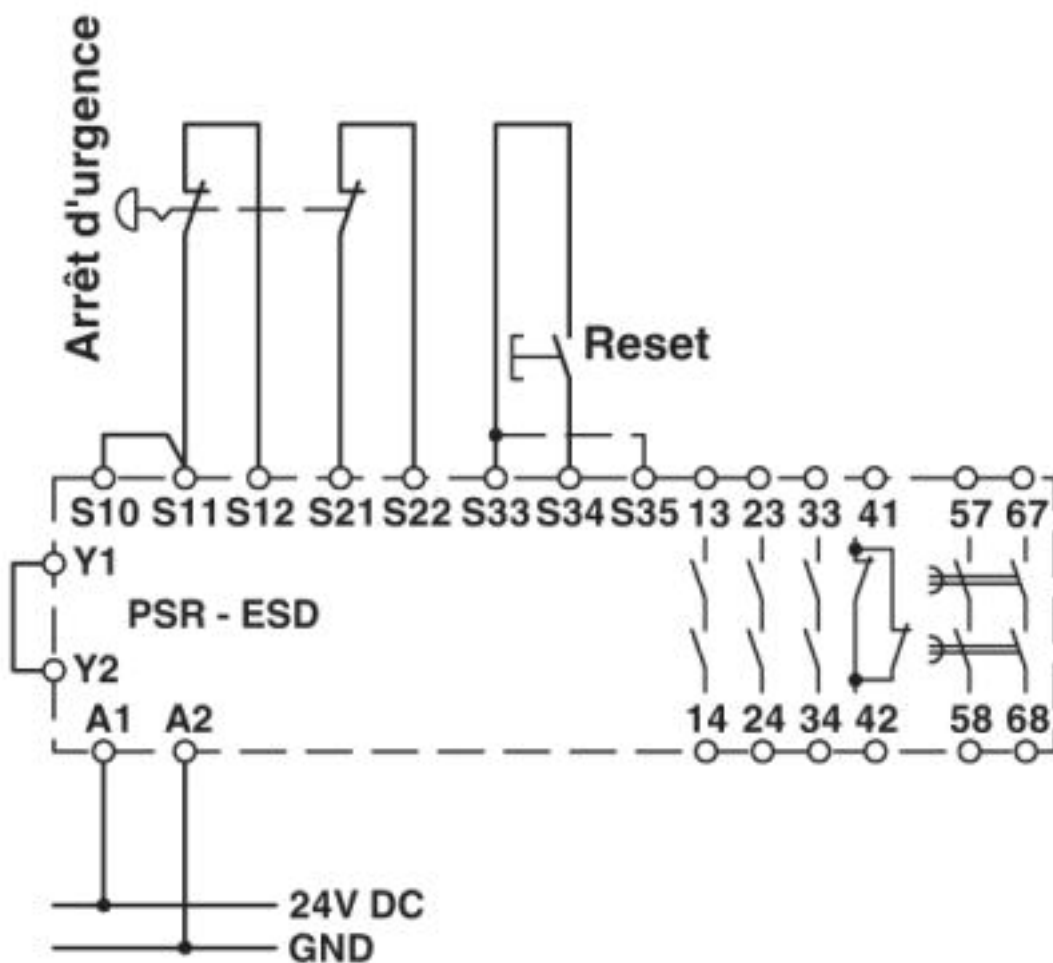


a = RESET  
 b = semiconductor output  
 Two-channel limit switch monitoring with semiconductor output and monitored reset button (bridge on S33/S35: Automatic activation), suitable up to safety category 4 depending on the limit switch.



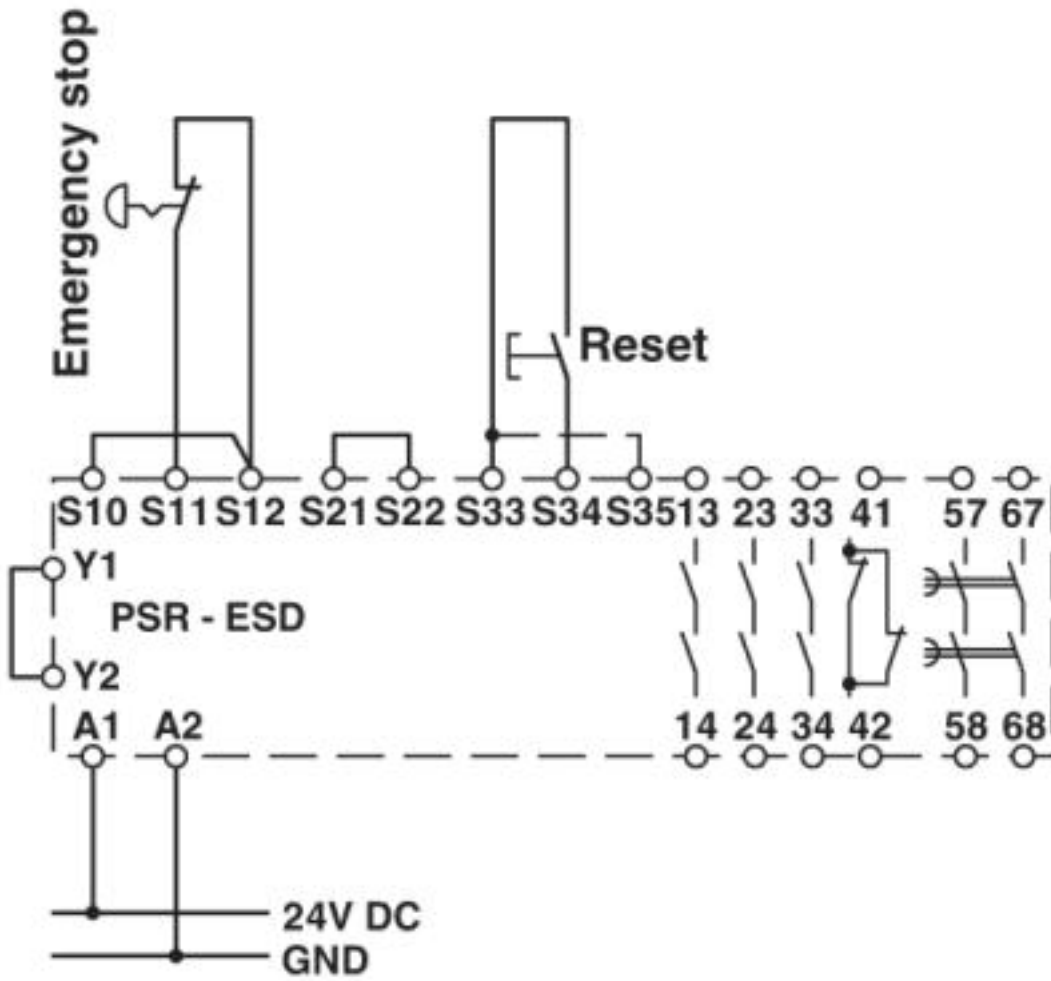
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Circuit diagram



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Circuit diagram

## Semiconductor output

