



Compact safety relays PNOZsigma

pilz
more than automation
safe automation

Monitoring of E-STOP, safety gates,
light curtains, light barriers and two-hand control
Safe timer relay application

Maximum functionality in minimum width.



▶ Pilz – Products and services

Sensor technology	Safety switches		Mechanical	PSENmeh	◆					
			Non-contact, magnetic	PSENmag	◆					
			Non-contact, coded	PSENcode	◆					
	Optoelectronic protection devices		Light curtains Light barriers	PSENopt		◆				
Control and communication	Electronic monitoring relays			S-Range						
	Motion control		Automation systems Drive-integrated automation systems	PMCprimo 16+ PMCprimo Drive						
			Servo amplifiers Servo motors	PMctendo DD PMctendo AC						
	Safety relays		Compact	PNOZ X PNOZsigma PNOZelog	◆	◆	◆	◆	◆	◆
			Modular	PNOZmulti PNOZpower	◆	◆	◆	◆	◆	◆
	Programmable control systems		Modular controllers	PSSmodular	◆	◆	◆	◆	◆	◆
			Compact controllers	PSScompact	◆	◆	◆	◆	◆	◆
		Decentralised periphery	PSSuniversal SafetyBUS p	◆	◆	◆	◆	◆	◆	
Operating and monitoring	E-STOP pushbuttons			PITestop						
	Muting lamps			PITsign						
	Operator terminals			PMImicro diag					Diagnostics	
	Operator terminals with touchscreen		With PMI-PRO software	PMIvisu						Diagnostics and visualisation
Open hardware platform			PMIopen						Visualisation	
Consulting	Plant assessment Risk assessment Safety concept CE services									
Engineering	Safety design Safety sign-off									
Training	Seminars and courses									

▶ Safe automation



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Family-owned company with customer value

Pilz has a tradition as a family-run company stretching back over 50 years. Real proximity to customers is visible in all areas, instilling confidence through individual consultation, total flexibility and reliable service.

Heading into the future together

Pilz rigorously pursues clearly defined goals, which at the same time represent the route to a successful future. Our focus is to complete our safe automation range and dovetail this core competency with the expansion of standard solutions.

Solution supplier for safety and standard

Solutions from Pilz protect man, machine and the environment. That's why all our competency goes into innovative individual products, system solutions that are well thought through plus appropriate services.

You can find more details about Pilz and our products and services on the Internet:



▶ www.pilz.com

Technical support round the clock:



▶ +49 711 3409-444



▶ The new PNOZ® – PNOZsigma

PNOZ – Leading technology from Pilz

In 1987 Pilz set a milestone in safety technology with the world's first safety relay, PNOZ. In constant contact with customers, the technology has since been developed continually for numerous applications. Today, PNOZ safety relays are the most widely used safety relays in the world.

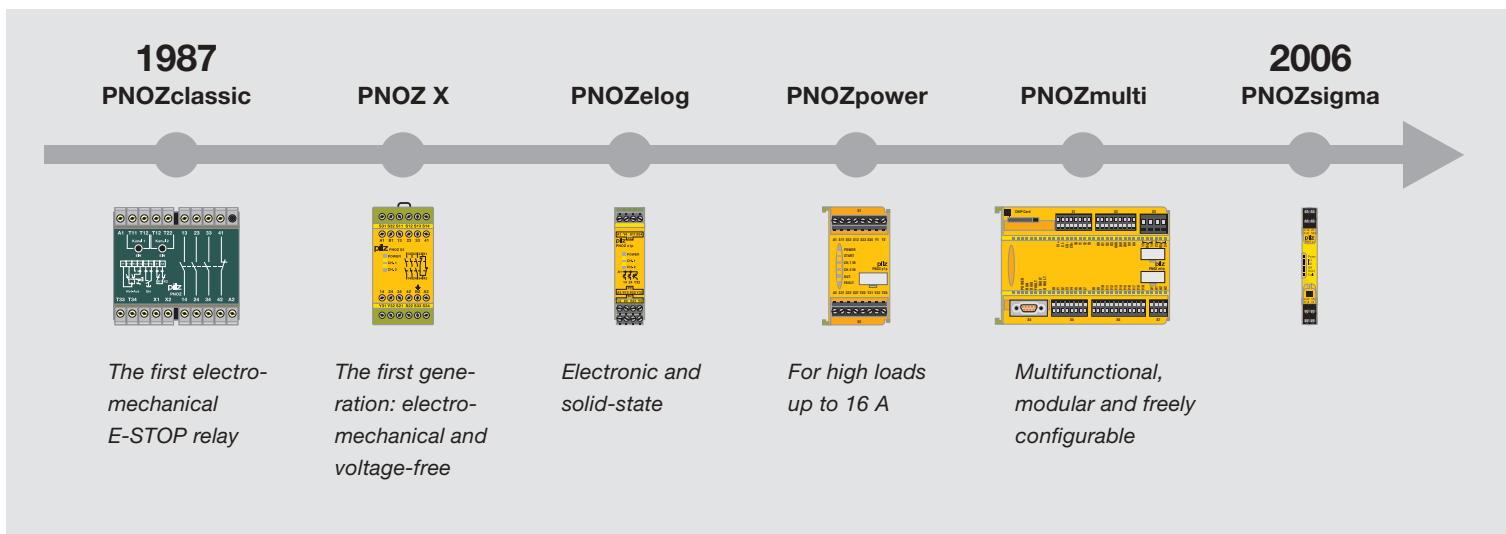
It pays to use safety technology

Safe monitoring of the interface between man and machine in automation processes

- ▶ Prevents accidents and downtimes
- ▶ Ensures a smooth production process
- ▶ Secures long-term productivity

Machinery safety – Standard-compliant and economical

PNOZ safety relays comply with international standards and are approved by BG and international certification bodies. They provide maximum safety up to and including Category 4 in accordance with EN 954-1, Performance Level e in accordance with prEN ISO 13849-1 and SIL3 in accordance with IEC 62061.

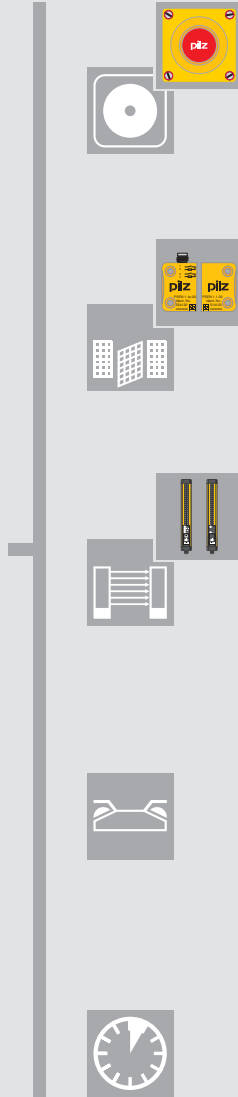


EN 954-1

IEC 62061



PNOZsigma –
Maximum functionality
in minimum width



PNOZsigma – The new PNOZ for today’s demands

The new compact safety relays PNOZsigma combine many years of experience with today’s very latest safety technology: you can achieve maximum safety and cost-effectiveness with minimum effort.

All-round efficiency – From planning to service

Housing widths are particularly narrow and multifunctionality is compressed into each unit, so PNOZsigma provides maximum functionality in minimum width. As of now, safety technology can be implemented

- ▶ In less space
- ▶ More flexibly
- ▶ More quickly and therefore
- ▶ More efficiently

The safe, complete solution

PNOZsigma monitors safety functions such as E-STOP, safety gate, light curtain or two-hand control on small, stand-alone machines.

Pilz safety switches, light curtains and E-STOP push-buttons are perfectly compatible with the original PNOZ safety relays – the ideal, complete solution from one source!

PNOZsigma brings maximum efficiency – from planning to service

Further information on the original PNOZ safety relays:

 Webcode 0199

Online information at www.pilz.com



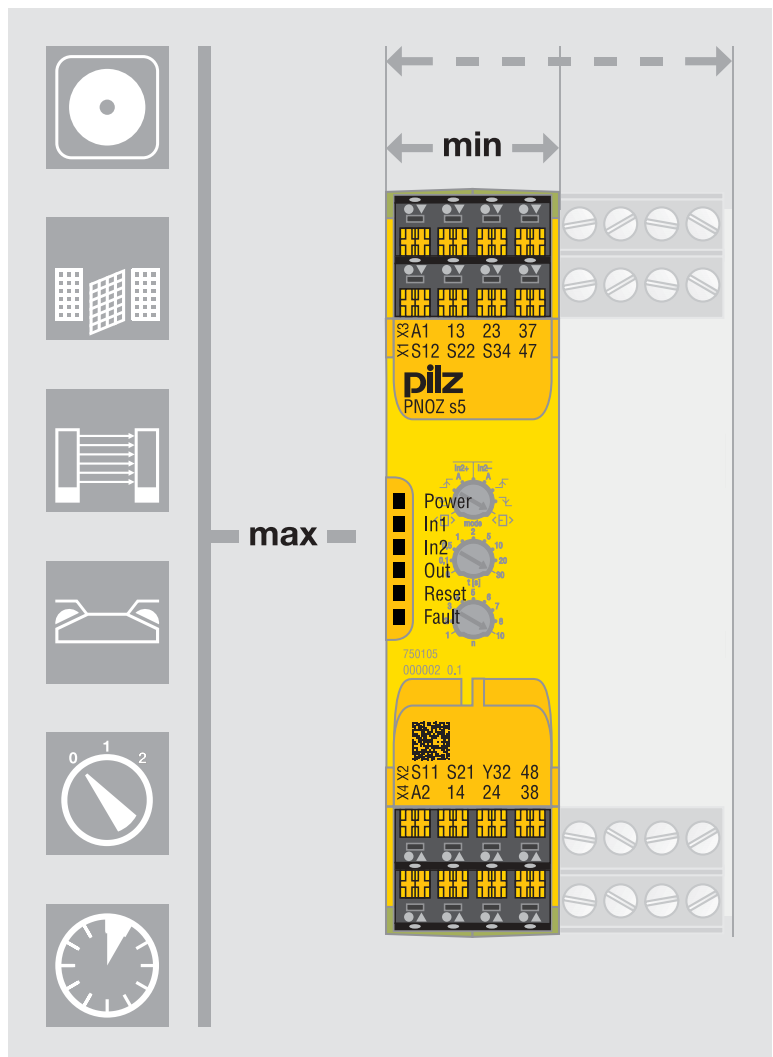
▶ Maximum functionality in minimum width –

Up to 50% space saving

- ▶ Widths from 12.5 mm
- ▶ Housings up to 50% narrower with the same functionality*
- ▶ Reduced space requirement in the control cabinet saves costs

Fewer types – Suitable for a variety of uses

- ▶ Selectable operating modes and timers enable each unit to be flexible in its application
- ▶ A single unit type monitors different safety functions
- ▶ Your stockholding can be reduced to a few unit types

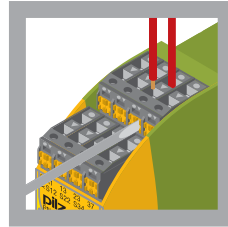
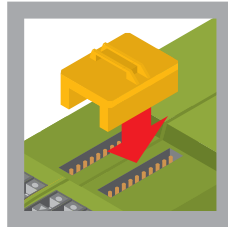


* Compared with standard
electromechanical safety
relays on the market

PNOZsigma

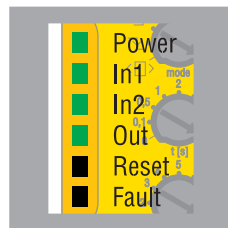
Rapid commissioning and expansion thanks to innovative connection technology

- ▶ Just “click” to expand the contacts via a plug-in connection
- ▶ Plug-in connection terminals
- ▶ Innovative spring-loaded technology
- ▶ Reduces wiring by up to 20 %

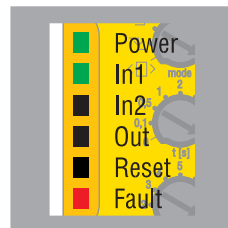


High plant availability and long service life

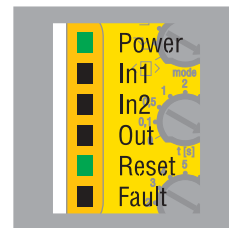
- ▶ Rapid diagnostics at a glance
- ▶ 6 descriptive LEDs
- ▶ High switching capabilities up to 12 A
- ▶ Safe switching even of the smallest loads from 10 mA



*Power o.k.,
 input circuits o.k.,
 safety contacts closed,
 reset/feedback loop
 closed*



*Power o.k.,
 short across the
 contacts on input
 circuit 2*



*Power o.k.,
 input circuits open,
 reset/feedback loop
 closed*



More information
 on PNOZsigma:

 Webcode 0994

Online information
 at www.pilz.com



▶ The sum of our experience – PNOZsigma

Selectable operating modes for maximum flexibility

- ▶ Selectable reset modes: manual reset, automatic reset, monitored reset or reset with start-up test
- ▶ Selectable operating mode: with or without detection of shorts across contacts
- ▶ Selectable time delay: from 0 ... 300 seconds – via value and factor
- ▶ Selectable timer function: delay-on energisation, delay-on de-energisation, pulsing

6 LEDs for diagnostics in seconds

- ▶ Display switch and fault status: Power, In1, In2, Out, Reset and Fault
- ▶ Identical on each PNOZsigma
- ▶ No external measuring devices are required

Homogenous functional setup for rapid engineering

- ▶ Standardised operator elements on each PNOZsigma
- ▶ Identical terminal designation and positioning
- ▶ Rapid allocation during configuration, installation and diagnostics

Contact expansion via connectors

- ▶ Quick and easy
- ▶ No wiring involved whatsoever

New spring-loaded technology

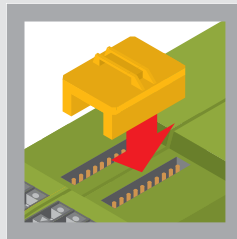
- ▶ Proven screwless terminal technology
- ▶ With 2 terminal chambers per terminal point
- ▶ For rapid wiring and a secure hold through the cage clamp
- ▶ The opening for the two terminal chambers may be separate or joint
- ▶ Wire may be removed individually

Spring clip for top-hat rail assembly

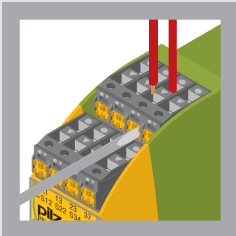
- ▶ Rapid assembly, housing simply clips on and off
- ▶ No need for tools



Wiring reduced by 20%:
contact expansion via
connectors



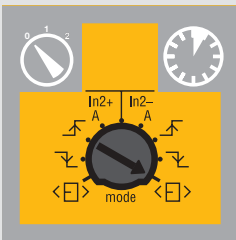
Rapid installation:
new – innovative spring-
loaded terminals, chambers
operated individually



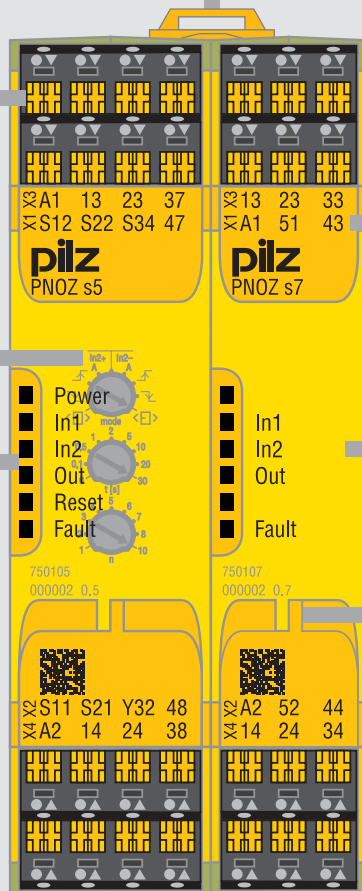
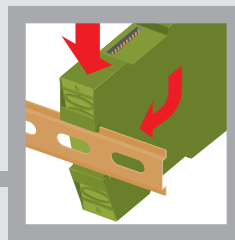
Simple configuration:
designation and
position of the terminals
is the same on all unit
types



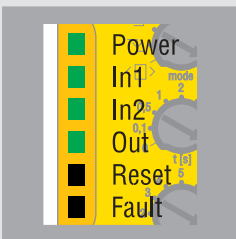
Maximum flexibility:
operating modes and
timer functions are
selectable



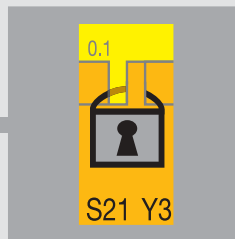
Rapid assembly via
spring clips:
no need for tools



Diagnostics in seconds:
via 6 LEDs –
no external measuring
devices required



Safe from manipulation:
setting elements have a
lockable cover





► The ideal solution – From planning to service

PNOZsigma – The ideal solution for simple configuration

- ▶ Fast product selection from a uniform product range
- ▶ Widths are particularly narrow, saving space in the control cabinet
- ▶ Flexible application options through selectable operating modes
- ▶ Technical documentation and product macros in 2D and 3D

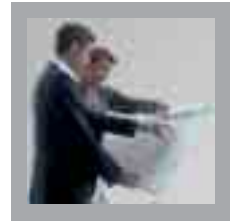
PNOZsigma – The ideal solution for rapid commissioning

- ▶ Rapid installation through plug-in terminals
- ▶ Wiring reduced by up to 20 % thanks to new spring-loaded technology and contact expansion via jumpers

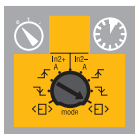
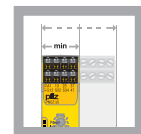
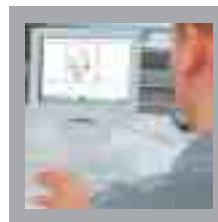
PNOZsigma – The ideal solution for high availability

- ▶ High switching capabilities up to 12 A
- ▶ Universal power supplies from 48 ... 240 VAC/DC
- ▶ Rapid diagnostics via descriptive LEDs
- ▶ Latest technology
- ▶ Approval in accordance with the latest standards

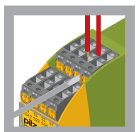
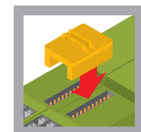
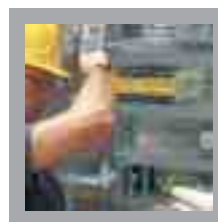
Pilz – Your competent partner



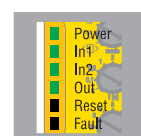
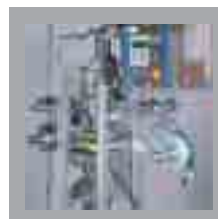
Simple configuration

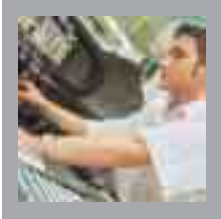


Rapid commissioning



Rapid maintenance and diagnostics





Safe operation of plant and machinery worldwide in compliance with the standards – back a competent partner

Pilz is an accredited inspection body and can provide individually tailored safety concepts:

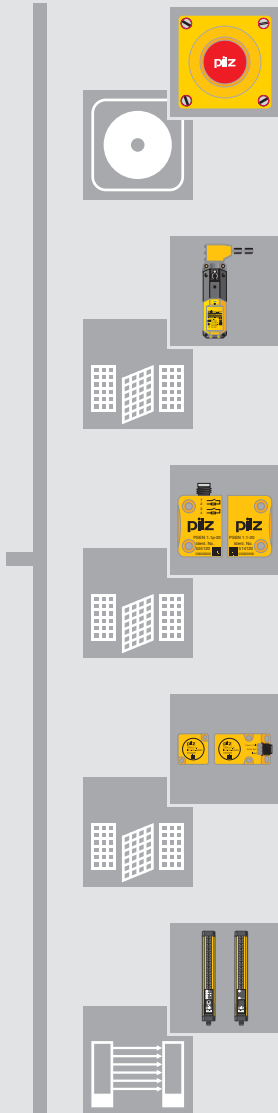
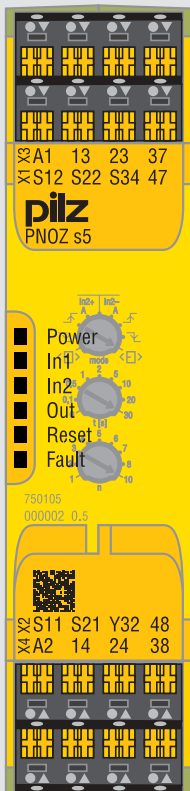
- ▶ From risk analysis to engineering
- ▶ From consultancy to training
- ▶ From inspection to approval

Efficient, future-proof safety management – with a complete solution that’s approved and coordinated

Pilz provides safe automation solutions from one source – from sensor technology to programmable control systems, through to motion control. Compatible safety components are the ideal supplement for the PNOZsigma:

- ▶ Control and signal devices such as E-STOP pushbuttons
- ▶ Safe sensors such as safety switches and light curtains/barriers
- ▶ Operator terminals for diagnostics and visualisation






Back Pilz as your competent partner. More information at www.pilz.com.









▶ Selection guide – PNOZsigma

Compact safety relays PNOZsigma

Type	Application					Category (in accordance with EN 954-1)	Performance Level PL (prEN ISO 13849-1)
							
PNOZ s1	◆	◆				2	d
PNOZ s2	◆	◆				3	d
PNOZ s3	◆	◆	◆			4	e
PNOZ s4	◆	◆	◆			4	e
PNOZ s5	◆	◆	◆		◆	4	e
PNOZ s6				◆		EN 574, Type IIIC	e
PNOZ s6.1				◆		EN 574, Type IIIA	e
PNOZ s7	Contact expansion					Depends on base unit	Depends on base unit
PNOZ s8	Contact expansion					Depends on base unit	Depends on base unit
PNOZ s9	Contact expansion or safe timer					Depends on base unit, as timer Cat. 4	Depends on base unit, as timer PL e
PNOZ s10	Contact expansion					Depends on base unit	Depends on base unit

Safety Integrity Level SIL CL (claim limit in accordance with IEC 62061)	Output contacts				Universal power supply 48 ... 240 VAC/DC	Housing width in mm
	Safe		Auxiliary contacts			
						
2	2			1		12.5
3	3		1	1		17.5
3	2			1		17.5
3	3		1	1	◆	22.5
3	2	2		1	◆	22.5
3	3		1	1	◆	22.5
3	3		1	1	◆	22.5
Depends on base unit	4		1			17.5
Depends on base unit	2			1		12.5
Depends on base unit, as timer SIL3		3	1			17.5
Depends on base unit	4		1			45.0



► Technical details – PNOZsigma

Compact safety relays PNOZsigma



PNOZ s1



PNOZ s3



PNOZ s5



PNOZ s10

Type	Dimensions (H x W x D) in mm	Supply voltage (U _B)
PNOZ s1	95 x 12.5 x 122	► 24 VDC
PNOZ s2	95 x 17.5 x 122	► 24 VDC
PNOZ s3	95 x 17.5 x 122	► 24 VDC
PNOZ s4	95 x 22.5 x 122	► 24 VDC ► 48 ... 240 VAC/DC
PNOZ s5	95 x 22.5 x 122	► 24 VDC ► 48 ... 240 VAC/DC
PNOZ s6	95 x 22.5 x 122	► 24 VDC ► 48 ... 240 VAC/DC
PNOZ s6.1	95 x 22.5 x 122	► 24 VDC ► 48 ... 240 VAC/DC
PNOZ s7	95 x 17.5 x 122	► 24 VDC
PNOZ s8	95 x 12.5 x 122	► 24 VDC
PNOZ s9	95 x 17.5 x 122	► 24 VDC
PNOZ s10	95 x 45.0 x 122	► 24 VDC

Utilisation category DC1	Features	Order numbers	
		Spring-loaded terminals	Plug-in screw terminals
▶ 3 A	▶ 1-channel wiring ▶ Manual/automatic reset	▶ 24 VDC 751 101	▶ 24 VDC 750 101
▶ 8 A	▶ 1-channel wiring ▶ Monitored reset ▶ Manual/automatic reset ▶ Safe separation	▶ 24 VDC 751 102	▶ 24 VDC 750 102
▶ 8 A	▶ 1-channel wiring ▶ 2-channel wiring ▶ Detects shorts across contacts ▶ Monitored reset ▶ Manual/automatic reset ▶ Start-up testing	▶ 24 VDC 751 103	▶ 24 VDC 750 103
▶ 8 A	▶ 1-channel wiring ▶ 2-channel wiring	▶ 24 VDC 751 104	▶ 24 VDC 750 104
▶ 6 A	▶ Detects shorts across contacts ▶ Monitored reset ▶ Manual/automatic reset ▶ Start-up testing	▶ 48 ... 240 VAC/DC 751 134	▶ 48 ... 240 VAC/DC 750 134
▶ 6 A	▶ 1-channel wiring ▶ 2-channel wiring	▶ 24 VDC 751 105	▶ 24 VDC 750 105
▶ 6 A	▶ Detects shorts across contacts ▶ Monitored reset ▶ Manual/automatic reset ▶ Start-up testing	▶ 48 ... 240 VAC/DC 751 135	▶ 48 ... 240 VAC/DC 750 135
▶ 8 A	▶ 2-channel wiring ▶ Detects shorts across contacts	▶ 24 VDC 751 106	▶ 24 VDC 750 106
▶ 6 A		▶ 48 ... 240 VAC/DC 751 136	▶ 48 ... 240 VAC/DC 750 136
▶ 8 A	▶ 2-channel wiring ▶ Detects shorts across contacts	▶ 24 VDC 751 126	▶ 24 VDC 750 126
▶ 6 A		▶ 48 ... 240 VAC/DC 751 156	▶ 48 ... 240 VAC/DC 750 156
▶ 8 A	▶ Safe separation	▶ 24 VDC 751 107	▶ 24 VDC 750 107
▶ 3 A		▶ 24 VDC 751 108	▶ 24 VDC 750 108
▶ 8 A	▶ Safe separation ▶ Timer functions: - delay-on energisation - delay-on de-energisation - pulsing - retriggerable	▶ 24 VDC 751 109	▶ 24 VDC 750 109
▶ 12 A	▶ Safe separation	▶ 24 VDC 751 110	▶ 24 VDC 750 110



* Pending

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▶ ...

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