



## Safe monitoring and processing



Machines and systems rely on potentially dangerous motion sequences whose safety needs to be ensured by technical means. Safety devices such as emergency-stop buttons, protective doors, light curtains and operating elements for safe commissioning must be checked, monitored and, if necessary, set to a safe state. Eaton offers two different products for this purpose, the ESR5 electronic safety relay and the easySafety ES4P safety-related control relay.

Eaton's safety products are approved by TÜV Rheinland and ensure the necessary level of personal and process protection, in both simple and complex machines:

- Performance Level PL e to EN ISO 13849-1
- Safety Integrity Level SILCL 3 according to IEC 62061



### Safe design of logic processing

The ESR5 safety relays provide reliable monitoring of safety device signals and switch off quickly and reliably in an emergency. The internal logic of the safety relays monitors the safety circuits and activates the enabling paths if no fault is present.

The safety-related easySafety control relay monitors all common safety devices and also performs the necessary machine control tasks. Each EasySafety device is equipped with a wide range of classic safety relays in the form of safety function blocks, and thus integrates safety as well as standard functions in a single device – all in one.



### Cost-effective monitoring with the ESR5 safety relay

- Multiple safety switching contacts with up to 5 enabling and 2 signal current paths
- Immediate (stop category 0) or delayed (stop category 1) stop
- Can be duplicated by means of contact expansion modules
- Maximum space savings thanks to the sleek 22.5 mm wide design
- Plug-in screw terminals for fast and fault-free replacement
- Multi-voltage versions with 24-230 V AC/DC for flexible applications
- Suitable for global use with UL, cUL and TÜV Rheinland certifications









### All in one – safety and control relay in a single device

- Safety circuit diagram and standard circuit diagram integrated in the same device
- TÜV-approved safety function blocks
- 14 safety inputs
- 4 safety transistor outputs and 1 redundant relay output, or 4 safety relay outputs
- 4 test signals
- Can be locally expanded via the integrated easyLink interface
- Can be expanded remotely via the integrated easyNet interface
- With or without display
- An additional stand-alone display can be connected via the integrated RS232 interface

# Functional safety

## Monitoring and processing

	Emergency stop	Protective door	OSSD input	Contact expansion module	Feedback circuit	Reset button monitoring	Single-channel	Two-channel	Non-delayed enable current paths	Delayed enable current paths	Non-delayed signal current path	PL / category according to EN ISO 13849	SILCL according to EN62061	Part no. Article no.
<b>ESR5</b>														
Width: 22.5 mm or 45 mm														
	✓	✓	-	-	✓	-	✓	✓	2	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-21-24VAC-DC</b> 118700
	✓	✓	-	-	✓	-	✓	✓	2	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-31-24VAC-DC</b> 118702
	✓	✓	-	-	✓	✓	✓	✓	3	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-31-230VAC</b> 119380
	✓	✓	✓	-	✓	✓	✓	✓	3	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NO-31-UC</b> 191796
	✓	✓	-	-	✓	-	✓	-	4	-	1	PL c / Cat. 1	SILCL 1	<b>ESR5-NO-41-24VAC-DC</b> 118701
	✓	✓	-	-	✓	-	✓	-	3	-	1	PL c / Cat. 1	SILCL 1	<b>ESR5-NOS-31-230VAC</b> 153152
	✓	✓	✓	-	✓	✓	✓	✓	2	2	-	PL e / Cat. 4	SILCL 3	<b>ESR5-NV3-30</b> 118705
	✓	✓	✓	-	-	-	✓	✓	3	2	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NV3-300</b> 171858
	-	✓	-	-	✓	-	-	✓	2	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NZ-21-24VAC-DC</b> 118703
	-	-	-	✓	-	-	✓	-	5	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-NE-51-24VAC-DC</b> 118707
	-	-	-	✓	-	-	✓	-	-	4	2	PL d / Cat. 3	SILCL 3	<b>ESR5-VE3-42</b> 118706
with light curtain functionality														
	✓	✓	-	-	✓	✓	-	-	3	-	1	PL e / Cat. 4	SILCL 3	<b>ESR5-BWS-31-24VAC-DC</b> 180413

	Transistor outputs	Relay outputs	Display + keypad	Part no. Article no.
<b>ES4P</b>				
<ul style="list-style-type: none"> <li>- Stopping in the event of an emergency</li> <li>- Protective door</li> <li>- ESPE with muting function</li> <li>- Two-hand control</li> <li>- Highest speed monitoring</li> <li>- Zero speed monitoring</li> <li>- Safety timing relay</li> <li>- Mode selection</li> <li>- Enabling switch</li> <li>- Feedback circuit</li> <li>- Width: 107.5 mm</li> <li>- 14 (safety) inputs 24 V DC</li> <li>- Rated operational voltage: 24 V DC</li> </ul>				
Safety parameters				
- Performance Level according to EN ISO 13849-1 PL e / Cat. 4				
- Safety integrity level claim limit (according to EN62061): SILCL 3				
	4	1 (redundant)	✓	<b>ES4P-221-DMXD1</b> 111017
	-	4	✓	<b>ES4P-221-DRXD1</b> 111019
	4	1 (redundant)	-	<b>ES4P-221-DMXX1</b> 111016
	-	4	-	<b>ES4P-221-DRXX1</b> 111018
Description				Part no. Article no.
<b>ES4P add-on functions</b>				
Programming software				
	easySoft-Safety Selection menu in German, English, French, and Italian Operating systems: Windows XP SP3, Windows 7 (32 bit + 64 bit), Windows 8 (32 bit + 64 bit)			<b>ESP-SOFT</b> 111460
Memory card				
	256 kB module			<b>ES4A-MEM-CARD1</b> 111461
Function	Description	Length m	Part no. Article no.	
<b>Programming cables</b>				
	For downloading the user program from a PC to the device For use with easy800, MFD-...-CP8, MFD-...-CP10, ES4P	SUB-D, 9-pole, serial 2	<b>EASY800-PC-CAB</b> 256277	
	For downloading the user program from a PC to the device For use with easy800, MFD-...-CP8, MFD-...-CP10, EC4P, ES4P	USB 2	<b>EASY800-USB-CAB</b> 106408	