

ITEM 090820 ESM-BT421

Description	Technical data	Accessories	Downloads
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Features

- › Usage up to category 4 according to EN ISO 13849-1
- › LED status indicators
- › 1-channel or 2-channel control
- › 4 redundant safety contacts of which 1 contact time-delayed
- › Delay time-range 1 s - 30 s
- › Short circuit and earth fault/ground fault monitoring

Relay outputs

The outputs are electrically decoupled and of redundant design.

Connection options

By using suitable wiring the following functions can be selected:

- › Relay start with automatic start, a start button or a monitored start button
- › Monitoring of downstream relays or contactors
- › Simultaneity monitoring to monitor safety components over time
- › Relay start using a monitored start button
- › Short circuit monitoring to detect short circuits between the connection cables and to shut down the outputs or prevent relay starting if necessary

- › Earth fault/ground fault monitoring to detect short circuits between the connection cables and earth or ground and to shut down the outputs or prevent relay starting if necessary.

Time-delayed shutdown

The release time for the time-delay contacts can be set as required using a potentiometer on the safety relay.

Approvals



Mechanical values and environment

Housing material	Polyamide PA6.6
Weight	Net 0,25 kg
Ambient temperature	-15 ... 40 °C
Degree of protection	IP20
Mechanical life	operating cycles 10 x 10 ⁶
Contact material	AgSnO ₂
Mounting method	Mounting rail 35mm according to DIN EN 60715 TH35
Connection	Connection terminals
Length of control cable	
With conductor cross-section 0.75mm ²	1000 m
	Safety contacts 13/14, 23/24, 33/34, 47/48
Number of safety contacts	4

Electrical connection ratings

Operating voltage	AC/DC 24 V -10% ... +10% [1]
Power consumption (apparent power)	At 24V AC 5,3 VA
Rated insulation voltage U _i	250 V
Rated impulse withstand voltage U _{imp}	
Leakage path/air gaps	4 kV
Reverse polarity protection	
On version U _B =24V DC	
Rated supply frequency	50 ... 60 Hz

Power consumption		
	at 24V DC	4,7 W
Degree of contamination (external, according to EN 60947-1)		2
Connection cross-section		0,14 ... 2,5 mm ²
Test voltage		
	Control system/contacts	2,5 kV
Control voltage		
	On S11	18,6 ... 24 V 26 V Start button
Control current		190 mA
Drop-out delay		
	at 24V DC	Emergency stopmax.30 ms
	At 24V AC	Emergency stopmax.20 ms
LED indicator		4 status displays (green) for relays K1, K2, K3, K4
		Safety contacts 13/14, 23/24, 33/34, 47/48
Type of output		
	NO	Relay contacts positively driven (redundant) [2]
Switching voltage		
	AC	max.250 V
	DC	max.50 V
Switching current		at 24Vmin.5 mA
Cumulative current		For all contactsmax.15 A [3]
Fusing		
	External contact fuses (safety circuit) according to IEC 60269-1	10A gG (T6A / F8A)
Utilization category according to EN 60947-5-1		
	AC-15	3A, 250V
	DC-13	3A, 24V
	AC-12	8A ohmic load, 250V
	DC-12	8A ohmic load, 50V
Breaking capacity according to UL		8A 250V AC / 3A 24V DC per contact
Switching characteristics		3 safety contacts non-delayed, 1 safety contact time-delayed [4]
Delay time		
	Continuously adjustable	1 ... 30 s

Miscellaneous

in compliance with	EN 60439-1: 1999 + A1: 2004; EN 60947-1: 2007; EN 60947-5-1: 2004; EN 60947-7-1: 2002; EN 61000-6-2: 2005; EN 61000-6-3: 2007; EN ISO 13849-1: 2015; EN 62061: 2005 + AC: 2010 + A1: 2013 + A2: 2015; EN 60204-1: 2007
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Reliability values acc. to EN ISO 13849-1

Performance Level	PL e [5]
Category	
Safety contacts non-time-delay	4 [6]
Safety contacts time-delay	3 [7]
PFHD	
Safety contacts non-time-delay	4.22×10^{-8} [8]
Safety contacts time-delay	8.84×10^{-8} [9]
Number of switching cycles	
≤ 0.1 A at 24 V DC	500000 1/Jahr
≤ 1 A at 24 V DC	300000 1/Jahr
≤ 2 A at 24 V DC	100000 1/Jahr
Mission time	20 y [10]

[1] All the electrical connections must either be isolated from the mains supply by a safety transformer according to EN 61558-2-6 with limited output voltage in the event of a fault, or by other equivalent isolation measures.

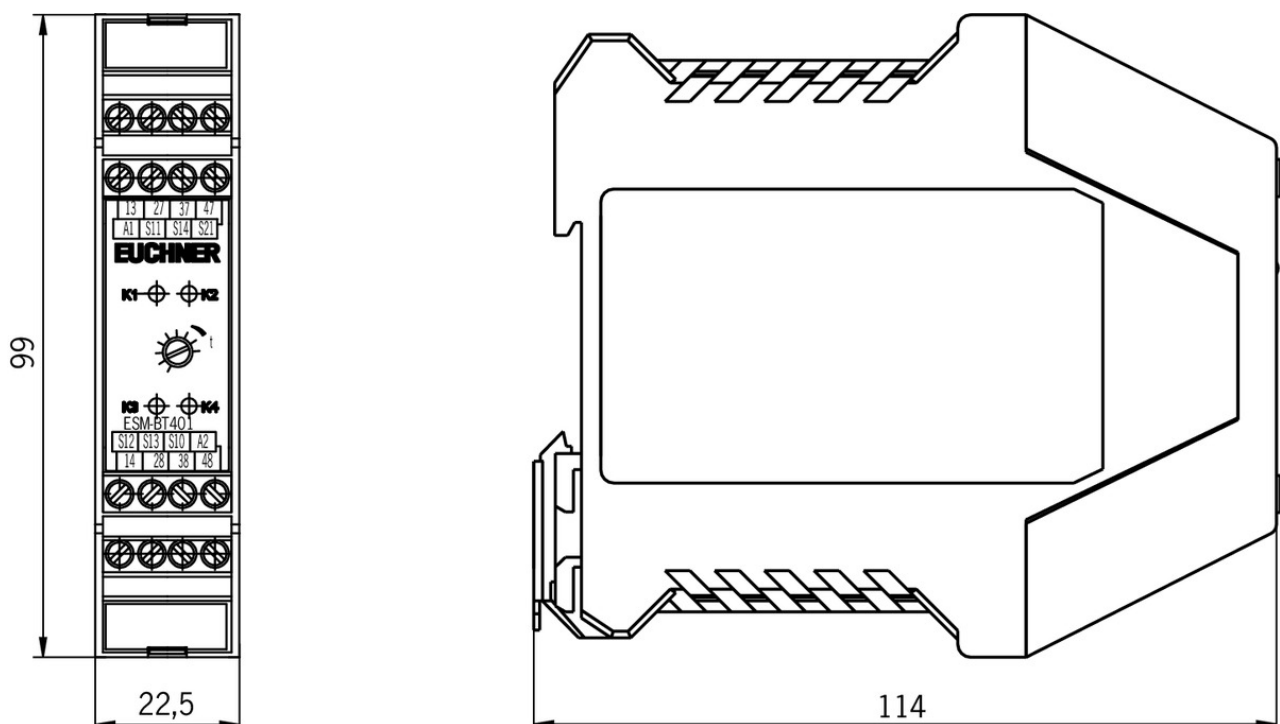
[2] Positively driven relay according to EN 50205

[3] Cumulative current at an ambient temperature of T= 20° C: 9A ;T= 30° C: 3A ;T= 40° C: 1A. If these currents are exceeded, a spacing of 5 mm between the devices must be observed.

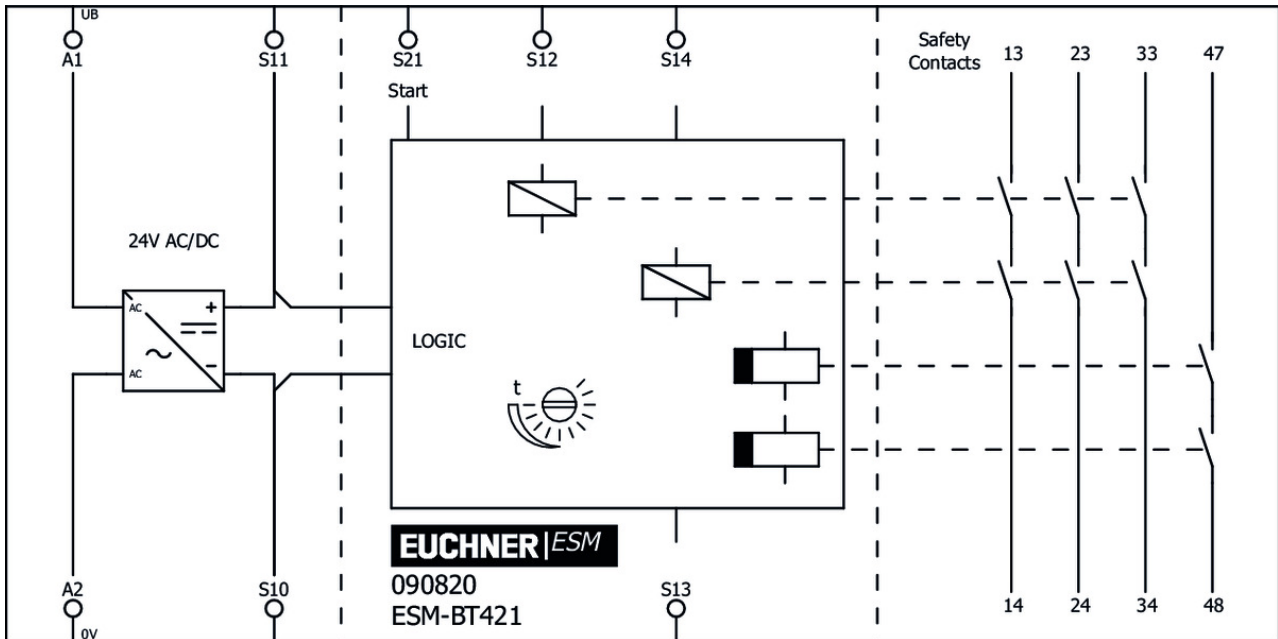
[4] Contact switching behavior: n.d.: non-delayed d.: delayed

[5, 6, 7, 8, 9, 10] This value is dependent on the number of switching cycles and the switching current.

Dimension drawing



ESM-BT421



Instructions

▼ Basisgerät Baureihe ESM-BT4..

	Doc. no.	Version	Language	Download
Basisgerät Baureihe ESM-BT4..	109074	07-04/15		0.9 MB
Safety Relay, Series ESM-BT4..	109074	07-04/15		0.9 MB

Catalogs

▼ Sicherheitsrelais ESM Safety Relays ESM Relais de sécurité ESM 安全继电器 ESM

	Doc. no.	Version	Language	Download
Sicherheitsrelais ESM	110650	05-02/13		6.7 MB
Relais de sécurité ESM	110652	05-02/13		6.8 MB
Safety Relays ESM	110651	05-02/13		6.7 MB
安全继电器 ESM	155884	05-02/13		4.6 MB

Declaration of conformity

▼ EU-Konformitätserklärung

	Doc. no.	Version	Language	Download
EU-Konformitätserklärung Declaración UE de conformidad Déclaration UE de conformité Dichiarazione di conformità EU declaration of conformity	2090791	15-04/17	 	0.3 MB