



## eloFlex - 471EFR...

eloFlex 471 EFR... é um relé de segurança configurável que oferece 4 entradas de segurança independentes (2 canais) e até 4 saídas de segurança, bem como 4 saídas de controle.

A programação da lógica de segurança é feita individualmente para cada cliente/aplicação.

### Especificação Técnica

- até 4 funções de segurança podem ser implementadas neste controlador programável
- o número de saídas de segurança (relés) pode ser definido de acordo com a necessidade individual de cada cliente/aplicação, fazendo desse controlador um ótimo custo-benefício
- maior funcionalidade com menor espaço de montagem
- as unidades são à prova de adulteração, pois são configuradas pela elobau durante a produção
- econômico e confiável, graças à sua exclusiva configuração
- maior flexibilidade devido a grande variedade de configurações disponíveis, adaptando-se às suas necessidades
- sensores adicionais podem ser conectados através de interfaces elobau para expansão de entrada

**As seguintes lógicas de segurança estão disponíveis neste controlador:**

Lógica:	Funções de segurança:
AND	$t_{ON} / t_{OFF}$
OR	Safetyfunction
XOR	2-hand
NAND	Safetygate
NOR	E-stop
XNOR	N.O./N.O.
NOT	or N.O./N.C.

## Desenho técnico

IMAGE 1/4

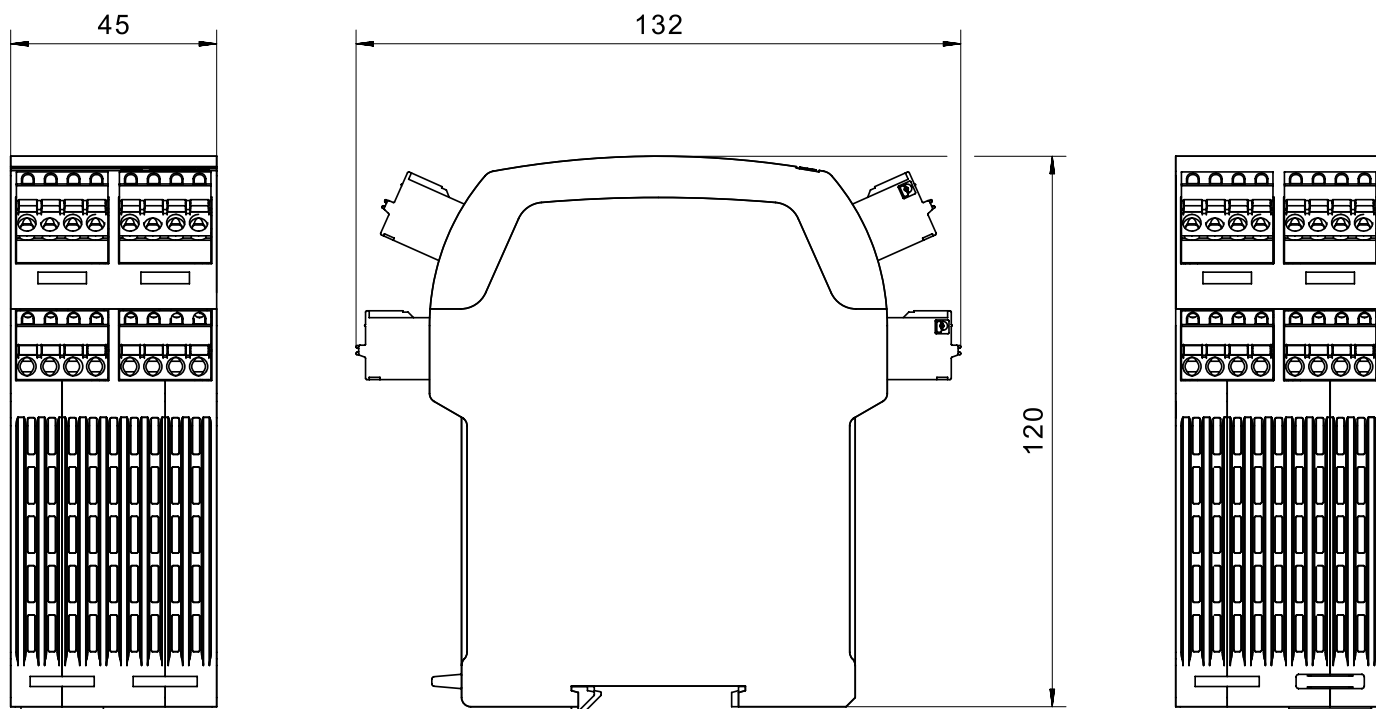


IMAGE 2/4

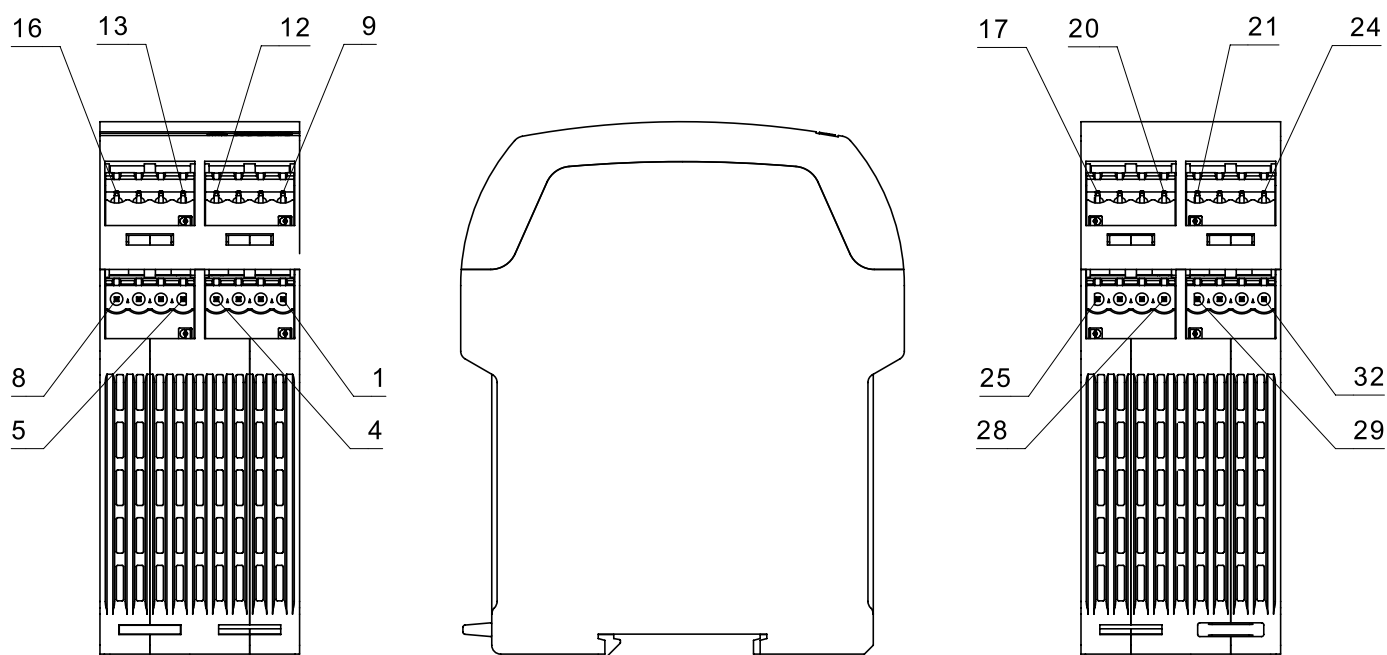


IMAGE 3/4

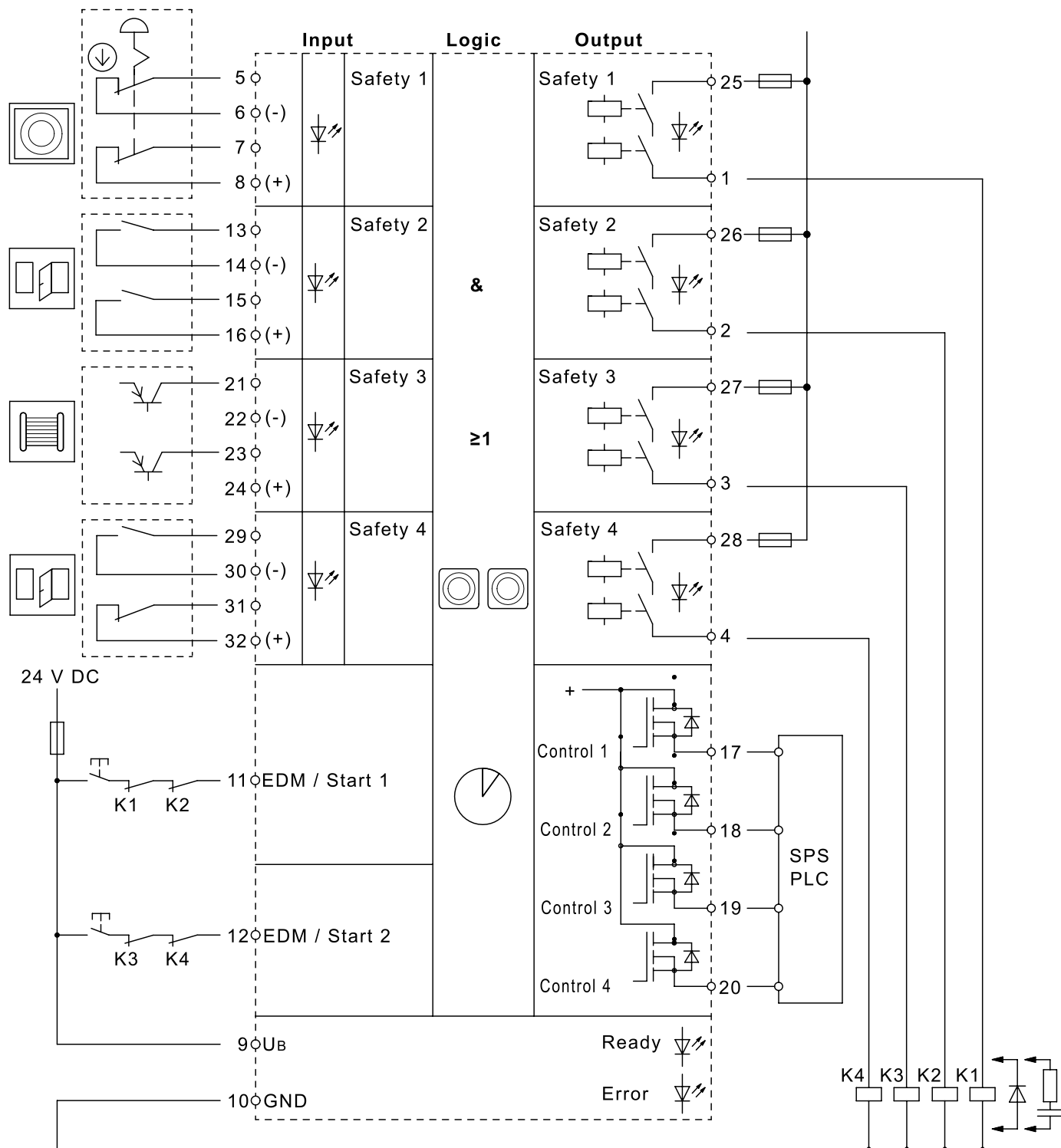
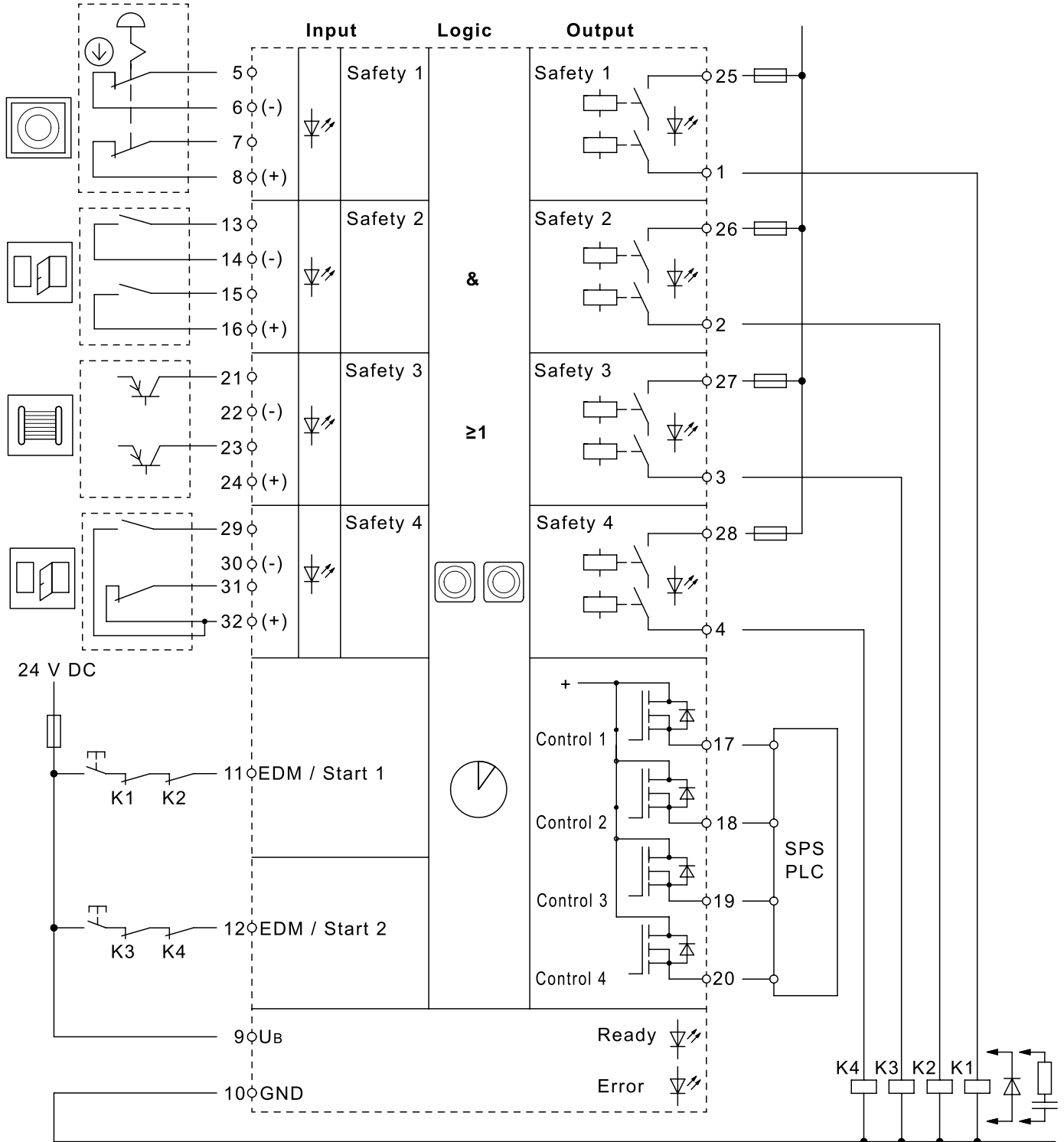


IMAGE 4/4

# 471EFR Verdrahtungsbeispiel PL e



## Product options

IMAGE 1/1

### 1. Define safety function and contact form of inputs

Sicherheitseingang 1	
<input type="checkbox"/>	Sicherheitseingang 2
<input type="checkbox"/>	Sicherheitseingang 3
<input type="checkbox"/>	Sicherheitseingang 4
<input type="checkbox"/>	<input type="checkbox"/> Schließer/Schließer
<input type="checkbox"/>	<input type="checkbox"/> Schließer/Öffner
<input type="checkbox"/>	<input type="checkbox"/> Öffner/Öffner
<input type="checkbox"/>	<input type="checkbox"/> OSSD

- Max. 4 different safety functions are possible
- Already defined: performance level d or e

For example

Guard door = N.O./N.O. or N.O./N.C.  
Emergency stop = N.C./N.C.  
Light barrier with PNP output = OSSD

### 2. Define and allocate logic safety inputs (1-4) for safety outputs (1-4)

Sicherheitseingang 1			
Eingang	Logik	Ein-/Abschaltverzögerung in s	Externe Überwachung
<input type="checkbox"/> Sicherheitseingang 1	<input type="checkbox"/> AND	<input type="checkbox"/> $t_{ON}$	<input type="checkbox"/> Schutz / Start 1
<input type="checkbox"/> Sicherheitseingang 2	<input type="checkbox"/> OR		<input type="checkbox"/> Schutz / Start 2
<input type="checkbox"/> Sicherheitseingang 3	<input type="checkbox"/> NAND	<input type="checkbox"/> $t_{OFF}$	
<input type="checkbox"/> Sicherheitseingang 4	<input type="checkbox"/> NOR		
	<input type="checkbox"/> XOR		
	<input type="checkbox"/> XNOR		
	<input type="checkbox"/> NOT		
<input type="checkbox"/> 2-Handsteuerung 1 + 2			
<input type="checkbox"/> 2-Handsteuerung 3 + 4			

AND  
OR  
NAND  
NOR  
XOR  
XNOR  
NOT

2-hand control

Definition of switch-on and switch-off delay 0...99.9s – resolution 0.1s

**Note: Only one logic possible per control and safety output**

### 3. Logic of control outputs (1-4)

Kontrollausgang 1			
Eingang	Logik	Ein-/Abschaltverzögerung in s	
<input type="checkbox"/> Sicherheitseingang 1	<input type="checkbox"/> AND	<input type="checkbox"/> $t_{ON}$	<input type="checkbox"/> S
<input type="checkbox"/> Sicherheitseingang 2	<input type="checkbox"/> OR		
<input type="checkbox"/> Sicherheitseingang 3	<input type="checkbox"/> NAND	<input type="checkbox"/> $t_{OFF}$	<input type="checkbox"/> S
<input type="checkbox"/> Sicherheitseingang 4	<input type="checkbox"/> NOR		
	<input type="checkbox"/> XOR		
	<input type="checkbox"/> XNOR		
	<input type="checkbox"/> NOT		
<input type="checkbox"/> BTR			
<input type="checkbox"/> FEHLER			
<input type="checkbox"/> wie Sicherheitseingang 1			
<input type="checkbox"/> wie Sicherheitseingang 2			
<input type="checkbox"/> wie Sicherheitseingang 3			
<input type="checkbox"/> wie Sicherheitseingang 4			

AND  
OR  
NAND  
NOR  
XOR  
XNOR  
NOT

Control output like  
safety output 1-4  
Further functions  
BTR  
Error

Definition of switch-on and switch-off delay 0...99.9s – resolution 0.1s

**Note: Only one logic possible per control and safety output**

### 4. Safety outputs 1-4

Schütz extern 1	
<input type="checkbox"/>	Schütz extern 2
<input type="checkbox"/>	<input type="checkbox"/> Automatisch
<input type="checkbox"/>	<input type="checkbox"/> Manuell
<input type="checkbox"/>	<input type="checkbox"/> Überwacht

Assignment of external contactors  
to safety outputs

Manual


Automatic

Monitored

For definition of switch-on and  
switch-off delay, see step 2 and 3

## Características do artigo

Attribute	471EFR2D14K...	471EFR3E11K...	471EFR3E12K...	471EFR3E13K...	471EFR3E14K...	471EFR3E11K_ ▶
Max. switching voltage at safety output	30 V DC					
Max. switching voltage at control output	26.4 V DC					
Max. switching voltage at safety output	250 V AC					
Max. switching current at safety output	3 A					
Max. switching current at control output	0.1 A					
Max. switching power at control output	2.64 W					
Max. switching power at safety output	750 VA					
Number of configurable relay safety outputs	4	1	2	3	4	1
Number of electronic control outputs	4					
Number of redundant safety inputs	4					
Stop category 0 (STO) nach IEC 61800-5-2	yes					
Stop category 1 (SS1) nach IEC 61800-5-2	yes					
EDM/start input	yes					
Start function	Depending on the configuration					
Utilization category	AC-15 / DC-13					
Operating voltage min.	21.6 V DC					
Operating voltage max.	26.4 V DC					
Current consumption	800 mA					
Power consumption	21.12 W					
Cross-short detection	yes					
LED display	two-coloured					
Operating time	3000 ms					
Fuse operating voltage	1A fast					
Overvoltage category	III					
Fuse safety output	3A slow blow					

Attribute	471EFR2D14K...	471EFR3E11K...	471EFR3E12K...	471EFR3E13K...	471EFR3E14K...	471EFR3E11K_ 
Min. switching voltage at control output	21.6 V DC					
Max. switching power at safety output	90 W					
Max no operating cycles at 0.5A switching current (ohmic load)	1000000	3000000				
Max no operating cycles at 3A switching current (ohmic load)	190000	280000				
Contact form	Abhängig von der Konfiguration					
PL acc. to EN ISO 13849-1	d	e				
SIL acc. to IEC 61508	2	3				
SIL CL acc. to IEC 62061	2	3				
PFHD according to IEC 61508	1,26x10 <sup>-8</sup> 1/h	3,28x10 <sup>-9</sup> 1/h				
Operating life	20 Tm					
Category acc. to EN ISO 13849-1	3	4				
Hardware fault tolerance (HFT) according to IEC 61508	1					
Max. switching frequency safety output with load	360 1/h					
Max. switching frequency safety output with load	72000 1/h	18000 1/h				
Dimensions	130 x 45 x 120 mm (H/B/T)					
Housing material	PA, PC					
Housing colour	schwarz					
Protection class	IP30 IEC60529					
Operating temperature min.	-15 °C					
Max. operating temperature	55 °C					
Min. storage temperature	-40 °C	-25 °C				
Max. storage temperature	70 °C					
Relative humidity	5 - 85 %					
Protection class, installation space	IP54 DIN EN 60529					
Shock resistance (Norm)	30 g / 11 ms					
Continuous shock resistance (Norm)	10 g / 16 ms					

Attribute	471EFR2D14K...	471EFR3E11K...	471EFR3E12K...	471EFR3E13K...	471EFR3E14K...	471EFR3E11K_ ►
Vibration resistance (Norm)	10 ... 55 Hz					
Air pressure	860 - 1060 hPa					
Delta tmax	0.5 °C/min					
Mounting type	Mounting rail					
Weight	400 g					
Torque for connection terminals	0.5 N m					
Spring-type terminals	yes					
Screw terminals	Optional					
Double terminals	Optional					
Pluggable connection terminals	yes					
Min. connection cross section	0.2 mm²					
Max. connection cross section	2.5 mm²					
Certified in accordance with	EN ISO 13849-1 IEC 61508 IEC 62061 UL 508 / CSA 22.2					
CE label	yes					

Attribute	471EFR3E12K_	471EFR3E13K_	471EFR3E14K_
Max. switching voltage at safety output	30 V DC		
Max. switching voltage at control output	26.4 V DC		
Max. switching voltage at safety output	250 V AC		
Max. switching current at safety output	3 A		
Max. switching current at control output	0.1 A		
Max. switching power at control output	2.64 W		
Max. switching power at safety output	750 VA		
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Overvoltage category	III		
Fuse safety output	3A slow blow		
Min. switching voltage at control output	21.6 V DC		

Attribute	471EFR3E12K_	471EFR3E13K_	471EFR3E14K_
Max. switching power at safety output	90 W		
Max no operating cycles at 0.5A switching current (ohmic load)	3000000		
Max no operating cycles at 3A switching current (ohmic load)	280000		
Contact form	Abhängig von der Konfiguration		
PL acc. to EN ISO 13849-1	e		
SIL acc. to IEC 61508	3		
SIL CL acc. to IEC 62061	3		
PFHD according to IEC 61508	3,28x10 <sup>-9</sup> 1/h		
Operating life	20 Tm		
Category acc. to EN ISO 13849-1	4		
Hardware fault tolerance (HFT) according to IEC 61508	1		
Max. switching frequency safety output with load	360 1/h		
Max. switching frequency safety output with load	18000 1/h		
Dimensions	130 x 45 x 120 mm (H/B/T)		
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Relative humidity	5 - 85 %		
Protection class, installation space	IP54 DIN EN 60529		
Shock resistance (Norm)	30 g / 11 ms		
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Vibration resistance (Norm)	10 ... 55 Hz		
Air pressure	860 - 1060 hPa		
Delta tmax	0.5 °C/min		

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Torque for connection terminals	0.5 N m		
Spring-type terminals	yes		
Screw terminals	Optional		
Double terminals	Optional		
Pluggable connection terminals	yes		
Min. connection cross section	0.2 mm <sup>2</sup>		
Max. connection cross section	2.5 mm <sup>2</sup>		
Certified in accordance with	EN ISO 13849-1 IEC 61508 IEC 62061 UL 508 / CSA 22.2		
CE label	yes		