elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100



eloFlex 471EFR...

eloFlex 471 EFR... is a configurable safety relay with 4 independent safety inputs (2-channel) and up to 4 safety outputs as well as 4 control outputs.

The internal logic link is configured specifically for each customer.

Product characteristics

- Up to 4 safety functions can be implemented in one device
- The number of safety outputs (relays) can be set according to the individual requirement, making this a cost-effective solution.
- Increased functionality using less space in the switch cabinet.
- The units are tamper-proof as are pre-configured during ordering.
- Cost-effective and reliable by unique identification of configuration for maintenance, commissioning and service
- Can be perfectly adapted to your application through various configuration options, offering maximum flexibility
- Additional sensors can be connected via elobau interfaces for input expansion

The following logic and safety functions are available:

Logic link:	**Safety functions:**
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.

elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

Technical drawing

IMAGE 1/4

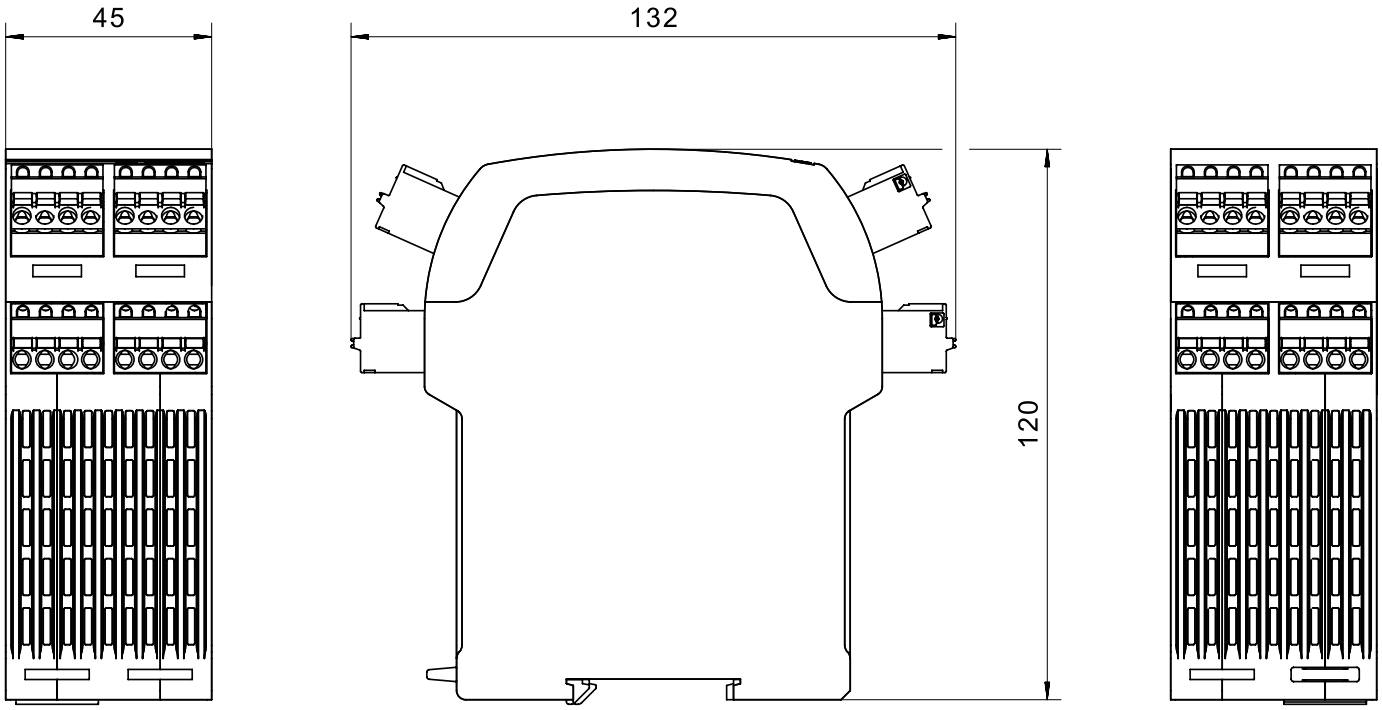
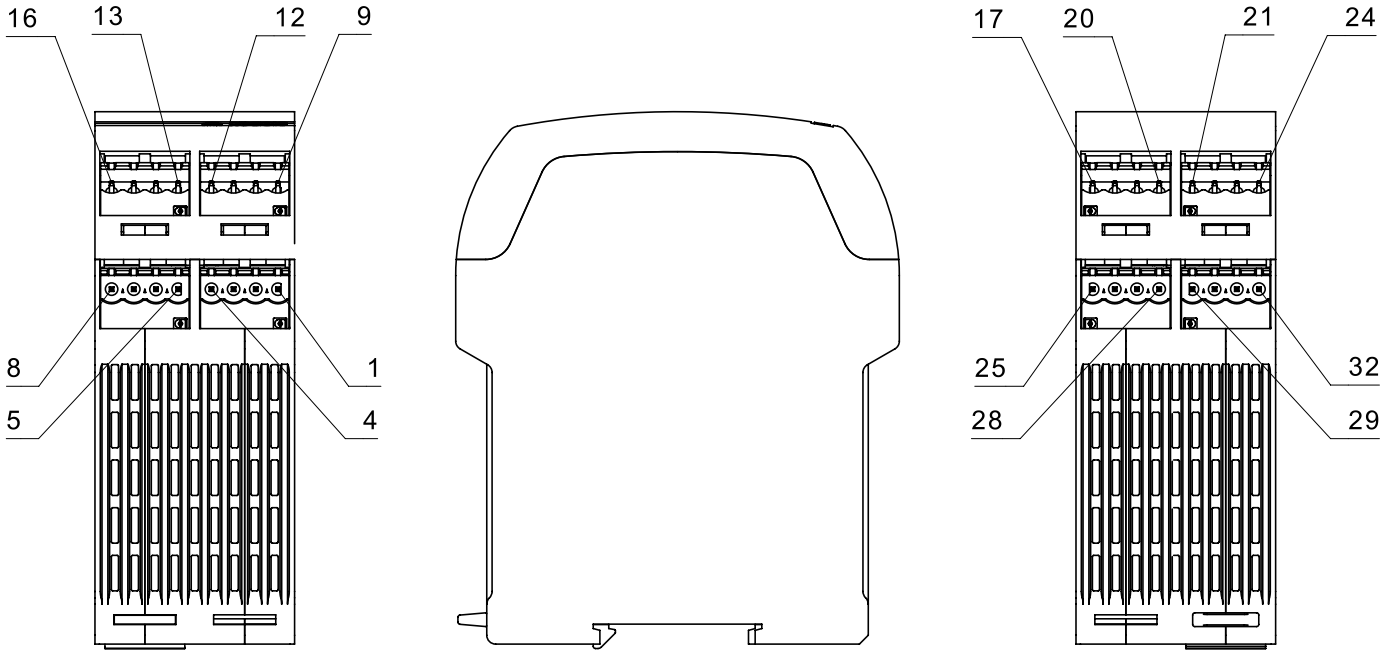


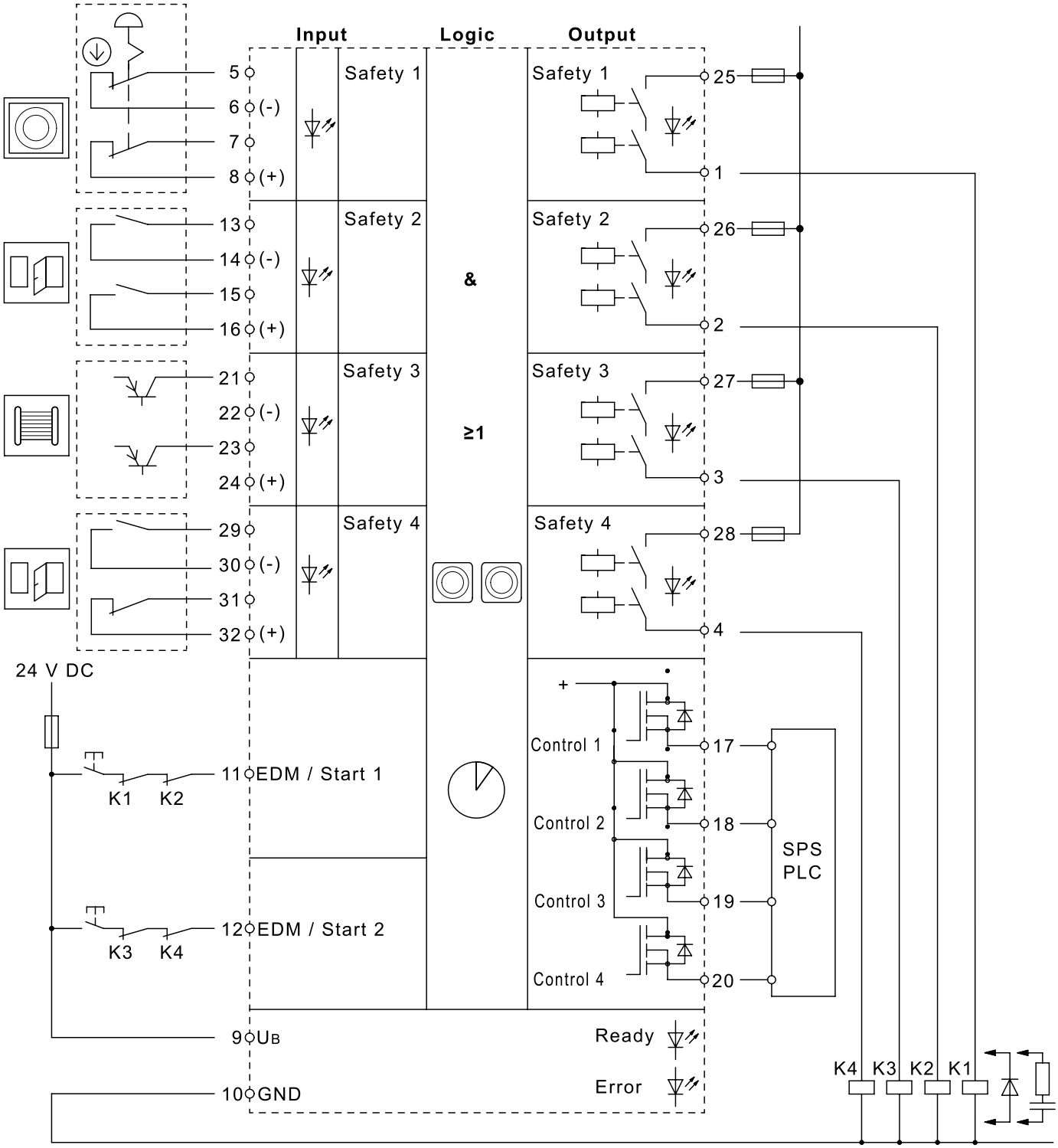
IMAGE 2/4



elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

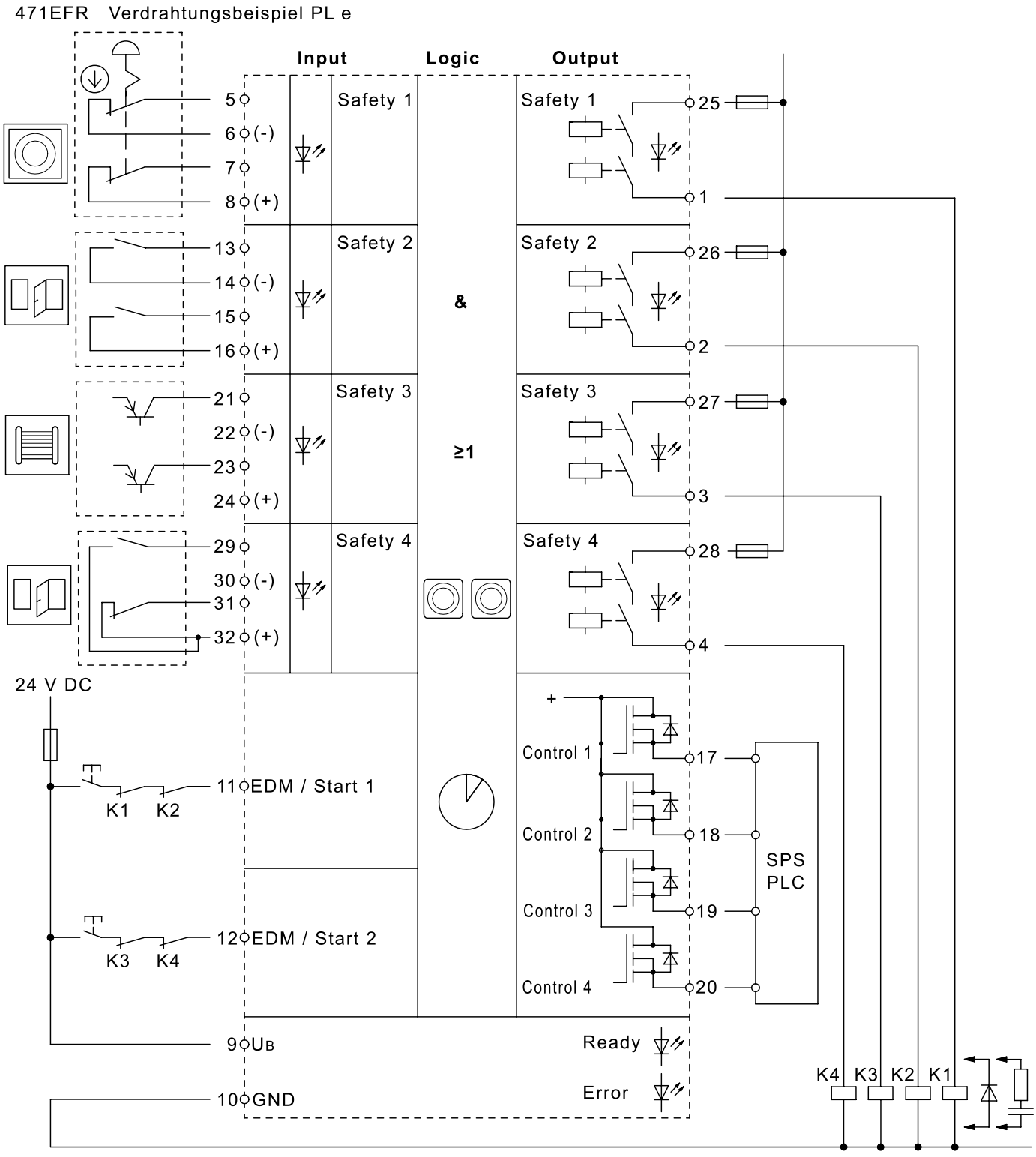
IMAGE 3/4



elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

IMAGE 4/4



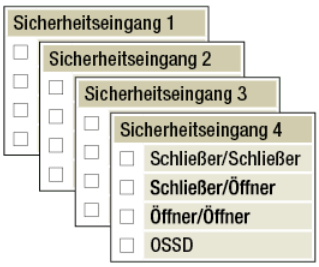
elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

Product options

IMAGE 1/1

1. Define safety function and contact form of inputs

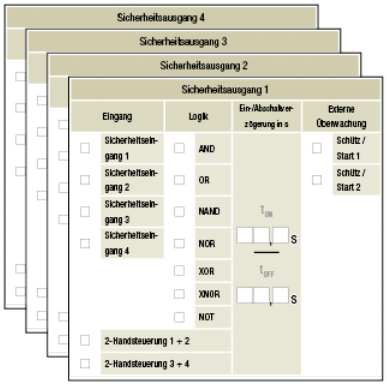


- Max. 4 different safety functions are possible
- Already defined: performance level d or e

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

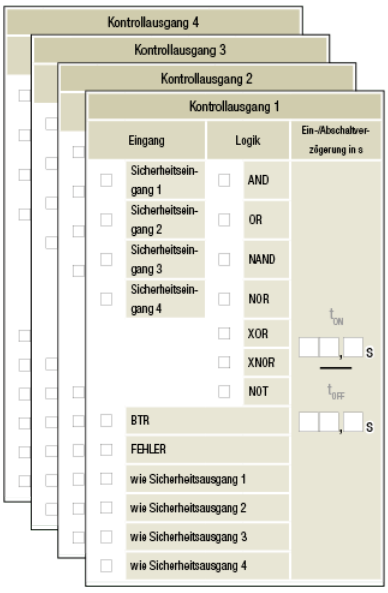
2. Define and allocate logic safety inputs (1-4) for safety outputs (1-4)



AND
OR
NAND
NOR
XOR
XNOR
NOT
2-hand control
Definition of switch-on and switch-off delay 0...99.9s – resolution 0.1s

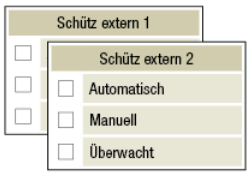
Note: Only one logic possible per control and safety output

3. Logic of control outputs (1-4)



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



Assignment of external contactors to safety outputs
Manual
Automatic
Monitored
For definition of switch-on and switch-off delay, see step 2 and 3

elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

Article characteristics

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					

elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

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^-8 1/h	3,28x10^-9 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					

elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

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					

elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

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		
Number of configurable relay safety outputs	2	3	4
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		
Min. switching voltage at control output	21.6 V DC		

elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

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^-9 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)		
Housing material	PA, PC		
Housing colour	schwarz		
Protection class	IP30 IEC60529		
Operating temperature min.	-15 °C		
Max. operating temperature	55 °C		
Min. storage temperature	-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		
Vibration resistance (Norm)	10 ... 55 Hz		
Air pressure	860 - 1060 hPa		
Delta tmax	0.5 °C/min		

elobau GmbH & Co. KG
Zeppelinstr. 44
88299 Leutkirch, Germany

Tel.: +49 (0) 7561 970-0
Fax: +49 (0) 7561 970-100

Attribute	471EFR3E12K_	471EFR3E13K_	471EFR3E14K_
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		