



**riese**<sup>®</sup>  
automation  
& safety



Global  
innovation

**SAFE 4 eco**  
safety relays

## What is EuP/ErP?

The ecodesign directive was established in 2005 by the European Union (EU). It was intended as a concept for the design of products in an ecological responsible way (ecodesign). At this, all life cycles of a product are examined, starting with the choice of the raw materials, the production and the lifetime up to the disposal of the product.

The first ecodesign directive only focused on Energy-using Products (EuP).

Its successor, the directive 2009/125/EG, was modified to focus on Energy-related Products (ErP) as well. This category additionally includes e.g. windows, insulating materials and shower heads.

The ecodesign directive was put into national legislation (EVPG). Because of that, some of the aftermath affect us, e.g. the marking of household appliances with their energy-efficiency-class or the prohibition of sale of bulbs with the energy-efficiency-class G.

Furthermore the EU wants the ecodesign directive to find ones's way into the electric control cabinet. That means, bit by bit, all industrial products shall be included, inclusive the safety relays.

## Improvements

Forward-looking on the upcoming stringent directive riese electronic decided voluntarily a widespread redesign for their devices to match the ecodesign directive.

Therefore the wishes of the customers as well as of the developers were considered:

1. The highest priority was to improve the environmental balance,
2. Reducing the price,
3. Increasing the functionality,
4. Similar housing and terminal configuration (partial compatible in terminals and functionality),
5. Reduced energy consumption

## Global innovation

The devices SAFE 4 eco, SAFE 4.1 eco as well as the new devices SAFE 4.2 eco and SAFE 4.3 eco were developed from the previous safety relays.

As a result of this redesign, an improvement of the environmental balance on an average of 50% is given as well as an improvement in price.

Overview:

**SAFE 4 eco:** Compatible in terminals and functionality to the existing SAFE 4.

**SAFE 4.1 eco:** Compatible in terminals and functionality to the existing SAFE 4.1.

**SAFE 4.2 eco:** This new device includes a possibility to switch between controlled start and not controlled start.

**SAFE 4.3 eco:** This device is adapted for gate monitoring with antivalent contacts. It's also a special development to support reed-contacts.

## The Highlights

Besides a better functionality and general enlarged tolerances, the SAFE 4 eco devices impress with their highly reduced energy consumption, which amounts about 65€ per device over 20 years of use.



## DEVICE

### APPLICATIONS

### CERTIFICATIONS

### CONTACT-ALLOCATION

### CHARACTERISTICS

### LED

### SUPPLY VOLTAGE

### POWER CONSUMPTION

### START UP DELAY / FALLBACK TIME

### CONTACT RATING max.

### CONTACT RATING min. with 24 V DC (\*)

### OPERATING TEMPERATURE

### SWITCHING POWER

### CONTACT SECURITY

### MODE OF OPERATION

### CONNECTION DIAGRAM

### FUNCTIONAL DIAGRAM

### CERTIFICATION:

tested in accordance with the characteristics (Information about SIL, PL, Cat. are addict to the wiring. Specified are the maximum reachable levels.

Existing Relay:



Without ErP

## SAFE 4 / SAFE 4.1

Emergency stop

and safety gate monitoring relay

CE, TÜV, UL, C-UL

3 normally safety open, 1 auxiliary closed

LED indicators for status and supply diagnostic

Opposite polarity between channels

With (SAFE 4) and without (SAFE 4.1) start control

Power, channel 1 and channel 2

24 V AC / DC (electronic fuse)

110, 230 V AC

(with galvanic disconnection / transformer)

24 V AC: ca. 5 VA, 24 V DC: 3 W, 110 / 230 V AC: 3,7 VA

<50 ms / <30 ms (24 V AC <50ms)

ready after time delay <0,5 s

5 A, 240 V AC, 24 V AC / DC

AC15 230 V / 5 A, DC13 24 V / 5 A

6 mA

-25°C bis + 55°C

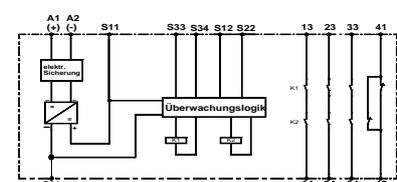
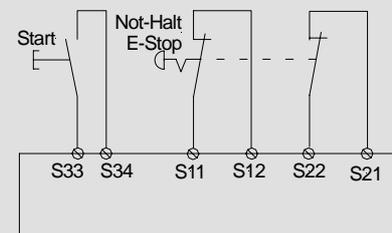
1200 VA (resistive load)

6,3 A quick acting or 4 A time lag

A supply voltage must be applied to terminals A1 and A2. Power LED illuminates and 24 V DC is available at terminal S11. Terminals S12 and S22 must be connected according to the application example selected to meet the application requirements. To start the unit terminals S33 and S34 must be bridged with a normally open contact. The unit works if you close this contact. At this time the contacts 13-14, 23-24 and 33-34 are closed. The LEDs channel 1 and channel 2 illuminate. In series to this start button an external contactor can be controlled.

For version with detachable clamps (screw - or cage clamps) ...

please ask our sales team!



EN ISO 13849-1: PL, Cat. 4

MTTfd: 154 years / high, DC: 99% / high,

CCF: achieved

New:



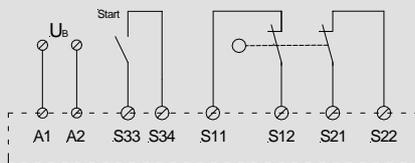
### SAFE 4 eco / SAFE 4.1 eco

Emergency stop and safety gate monitoring relay  
CE, (TÜV, UL, C-UL pending)  
3 normally open safety, 1 normally auxiliary closed LED indicators for status and supply diagnostic  
Opposite polarity between channels  
With (SAFE 4 eco) and without (SAFE 4.1 eco) start control

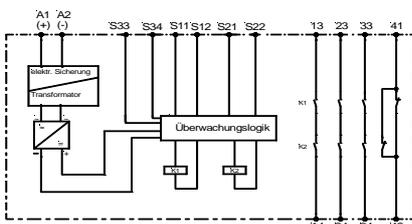
Power, channel 1 and channel 2  
24 V AC / DC (electronic fuse)  
115, 230 V AC  
(with galvanic disconnection / transformer)  
24 V DC: 1,5 W / AC: 3,6 VA  
200 ms / <10 ms  
ready after time delay <0,5 s  
5 A, 240 V AC, 24 V AC / DC

10 mA  
-25°C bis + 55°C  
1200 VA (resistive load)  
6,3 A quick acting or 4 A time lag  
A supply voltage must be applied at terminals A1 and A2. The 'Power' LED lights. Terminals S11, S12, S21 and S22 have to be wired up as shown in the application examples. To start the unit, follow the examples described in the start applications section. In series to the start-button an external contactor can be controlled (see application example). After activation the contacts 13-14, 23-24 and 33-34 are closed, contact 41-42 is opened. The LEDs 'Channel 1' and 'Channel 2' are lit.

For version with detachable clamps (screw - or cage clamps) ... please ask our sales team!



Dual channel safety gate monitoring with cross circuit monitoring and monitored start button



EN ISO 13849-1 / DIN EN 61508 / DIN EN 62061:  
Specific values in progress

New:



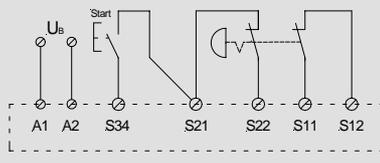
### SAFE 4.2 eco

Emergency stop and safety gate monitoring relay  
CE, (TÜV, UL, C-UL pending)  
3 normally open safety, 1 normally auxiliary closed LED indicators for status and supply diagnostic  
Opposite polarity between channels  
With and without start control (selectable)

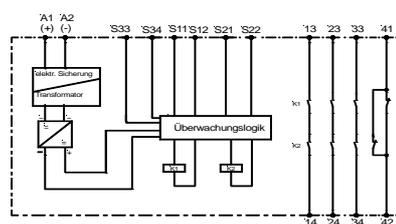
Power, channel 1 and channel 2  
24 V AC / DC (electronic fuse)  
115, 230 V AC  
(with galvanic disconnection / transformer)  
24 V DC: 1,5 W / AC: 3,6 VA  
200 ms / <10 ms  
ready after time delay <0,5 s  
5 A, 240 V AC, 24 V AC / DC

10 mA  
-25°C bis + 55°C  
1200 VA (resistive load)  
6,3 A quick acting or 4 A time lag  
A supply voltage must be applied at terminals A1 and A2. The 'Power' LED lights. Terminals S11, S12, S21 and S22 have to be wired up as shown in the application examples. To start the unit, follow the examples described in the start applications section. In series to the start-button an external contactor can be controlled (see application example). After activation the contacts 13-14, 23-24 and 33-34 are closed, contact 41-42 is opened. The LEDs 'Channel 1' and 'Channel 2' are lit.

For version with detachable clamps (screw - or cage clamps) ... please ask our sales team!



Dual channel e-stop monitoring with cross circuit monitoring and monitored start button.



EN ISO 13849-1 / DIN EN 61508 / DIN EN 62061:  
Specific values in progress

New:



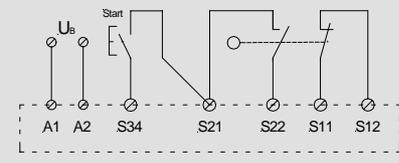
### SAFE 4.3 eco

Safety gate monitoring relay, Safety magnetic switch monitoring. Suitable for release button with reed contact outputs  
CE, (TÜV, UL, C-UL pending)  
3 normally open safety, 1 normally auxiliary closed LED indicators for status and supply diagnostic  
Opposite polarity between channels  
With and without start control (selectable)

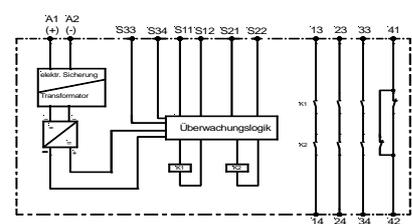
Power, channel 1 and channel 2  
24 V AC / DC (electronic fuse)  
115, 230 V AC antivalent contacts (incl. reed)  
(with galvanic disconnection / transformer)  
24 V DC: 1,5 W / AC: 3,6 VA  
200 ms / <10 ms  
ready after time delay <0,5 s  
5 A, 240 V AC, 24 V AC / DC

10 mA  
-25°C bis + 55°C  
1200 VA (resistive load)  
6,3 A quick acting or 4 A time lag  
A supply voltage must be applied at terminals A1 and A2. The 'Power' LED lights. Terminals S11, S12, S21 and S22 have to be wired up as shown in the application examples. To start the unit, follow the examples described in the start applications section. In series to the start-button an external contactor can be controlled (see application example). After activation the contacts 13-14, 23-24 and 33-34 are closed, contact 41-42 is opened. The LEDs 'Channel 1' and 'Channel 2' are lit.

For version with detachable clamps (screw - or cage clamps) ... please ask our sales team!



Safety gate with monitored start button and anti-valent switching safety gate contacts.

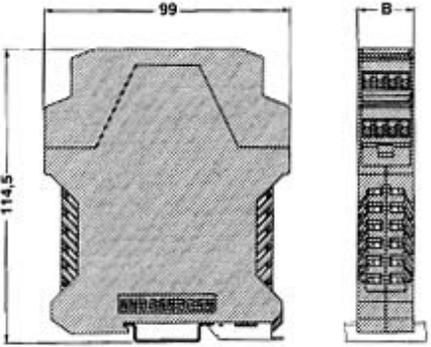


EN ISO 13849-1 / DIN EN 61508 / DIN EN 62061:  
Specific values in progress

## Technical data

▶ <b>Voltage range</b>	SAFE 4/4.1 SAFE 4/4.1 eco / SAFE 4.2 eco / SAFE 4.3 eco	0,9 to 1,1 UB 0,85 to 1,2 UB
▶ <b>Clearance &amp; creepage distance</b>	DIN EN 50178, respectively DIN VDE 0160 for degree of pollution 2, Overvoltage Cat.3 / 300V	
▶ <b>Switching Voltage max.</b>	SAFE 4 / 4.1, SAFE 4 / 4.1 / 4.2 / 4.3 eco:	5 A AC, $\cos \phi = 1$ ; 5 A DC, $\tau = 0$
▶ <b>Protection class</b>	Mounting frame: Housing : Terminal :	IP 54 IP 40 IP 20
▶ <b>Mechanical endurance</b>	10 <sup>7</sup> Switching cycle	
▶ <b>Electrical endurance</b>	10 <sup>5</sup> Switching cycle	
▶ <b>Installation</b>	Top hat rail DIN 46 277 ( 35 mm )	

## Housing measurements

Width in mm			
SAFE 4	22,5		
SAFE 4.1	22,5		
SAFE 4 eco	22,5		
SAFE 4.1 eco	22,5		
SAFE 4.2 eco	22,5		
SAFE 4.3 eco	22,5		

## Article number

Name:	Voltage:	Art.-No.:
SAFE 4	24 V AC/DC	AR.9659.2000
SAFE 4	110-127 V AC	AR.9659.4000
SAFE 4	230 V AC	AR.9659.5000
SAFE 4.1	24 V AC/DC	AR.9660.2000
SAFE 4.1	110-127 V AC	AR.9660.4000
SAFE 4.1	230 V AC	AR.9660.5000
SAFE 4 eco	24 V AC/DC	AA.9675.2000
SAFE 4 eco	115 V AC	AA.9675.4000
SAFE 4 eco	230 V AC	AA.9675.5000
SAFE 4.1 eco	24 V AC/DC	AR.9678.2000
SAFE 4.1 eco	115 V AC	AR.9678.4000
SAFE 4.1 eco	230 V AC	AR.9678.5000
SAFE 4.2 eco	24 V AC/DC	AR.9676.2000
SAFE 4.2 eco	115 V AC	AR.9676.4000
SAFE 4.2 eco	230 V AC	AR.9676.5000
SAFE 4.3 eco	24 V AC/DC	AR.9677.2000
SAFE 4.3 eco	115 V AC	AR.9677.4000
SAFE 4.3 eco	230 V AC	AR.9677.5000

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