Safety relays from riese

Edition 2005/2006

Applications	Type	Approvals	Housing (mm)	Safety category	Page
Emergency stop	SAFE 1 / 1.1	CE, TÜV, UL, C-UL	22,5 mm	(2) 3	6
..+ safety gate monitoring relays	SAFE 2 / 2.1	CE, TÜV, UL, C-UL	22,5 mm	4	6
	SAFE S.6	CE, TÜV, UL, C-UL	45 mm	4	7
	SAFE S.10	CE, TÜV, UL, C-UL	45 mm	4	7
	SAFE 4 / 4.1	CE, TÜV, UL, C-UL	22,5 mm	4	7
	SAFE 5 /5.1	CE, TÜV, UL*, C-UL*	22,5 mm	(2) 3	8
	SAFE C 1	CE, TÜV*, UL*, C-UL*	22,5 mm	4	8
	RS-NAGP	CE, TÜV, UL, C-UL	100 mm	3	9
	RS-NAGMP/MP.1	CE, TÜV, UL*, C-UL*	100 mm	3/4	9
	RS-NAGV	CE, TÜV, UL, C-UL	100 mm	4	10
	RS-NAGA	CE, TÜV, UL, C-UL	45 mm	4	12
..+ time-delay function	SAFE T..	CE, TÜV, UL, C-UL	35 mm	4	10
	RS-NAGT / T.1	CE, TÜV, UL, C-UL	45 mm	3 + 4	11
..+ mat-,edges- control relays **	RS-NAGAO	CE, TÜV, UL, C-UL	45 mm	4	12
	SAFE IL1	CE, TÜV	73 mm	4	13
Mat-,edges- control relays **	SAFE 2.2	CE, TÜV, UL, C-UL	22,5 mm	3	12
	SAFE M	CE, TÜV, UL*, C-UL*	22,5 mm	3	13
Control devices for	SAFE L / L.1	CE, UL, C-UL	22,5 mm	4	14
safety light barriers	SAFE L.2	CE, TÜV, UL, C-UL	22,5 mm	4	14
	RS-NAGL	CE, TÜV, UL, C-UL	100 mm	4	15
	RS-NAGL.1	CE, TÜV, UL, C-UL	100 mm	4	15
	SAFE IL L	CE, TÜV	73 mm	4	15
Two hand control relays	SAFE Z	CE, TÜV, UL, C-UL	22,5 mm	4	16
	SAFE Z.2	CE, TÜV, UL, C-UL	22,5 mm	4	16
	RS-NAGZ	CE, TÜV, UL, C-UL	100 mm	3	17
	SAFE IL Z	CE*, TÜV*	73 mm	4	17
Expansion modules	SAFE IRZ.2	CE	22,5 mm	Ⓐ	18
	SAFE X4 / SAFE X4.1	CE, TÜV, UL, C-UL	22,5 mm	4	18
	RS-NAGX 5	CE, TÜV, UL*, C-UL*	22,5 mm	4	19
	SAFE IL2	CE, TÜV	63 mm	4	19
Muting	RS-NAGU.12	CE, TÜV	90 mm	2	20
	RS-NAGU.1	CE, TÜV, UL, C-UL	90 mm	4	20
	RS-NAGU.2f	CE, UL, C-UL	90 mm	4	20
	RS-NAGU.1b	CE, TÜV*	90 mm	4	21
	RS-FA1	CE	22,5 mm	-	21
	RS-FI1	CE	22,5 mm	-	22
Safety on bus	SAFE IL1 / SAFE ILL	CE, TÜV / CE, TÜV	73 / 73 mm	4	13/15
	SAFE ILZ / SAFE IL2	CE, TÜV* / CE, TÜV	73 / 63 mm	4	17/19
	RS-NAGU.1b + FA1 / FI1	CE, TÜV* / CE	90 +22,5 mm	4/-	21/22

* approvals pending

** short-circuit-based mats

Ⓐ suitable up to risk category max. 4

INTERBUS **ASI-Bus** CANopen **ETHERNET** **Device-Net** **Profi-Bus**

Four housing lines - the big diversity at market

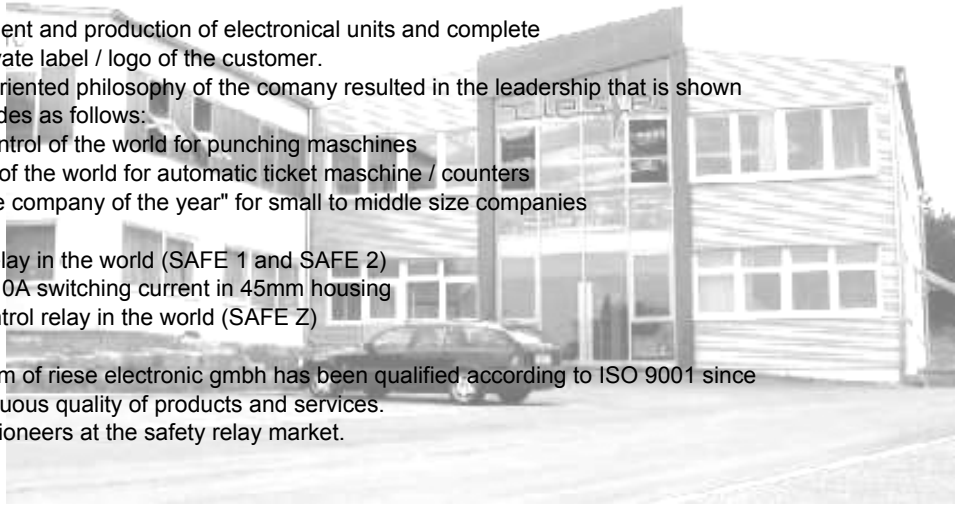
The smallest size safety relays in the world - for example: SAFE 1, 2, 2.2, L, Z...!

All operating instructions will be found under http://www.riese-electronic.de

Who is riese electronic:

riese electronic gmbh has been founded in 1958. Approximately 100 employees are working in Horb (Baden-Württemberg) and Zeulenroda /Thuringia).
Offering the following product lines...

- safety relays (since 1990)
- time and measuring relays
- customer oriented development and production of electronical units and complete products which carry the private label / logo of the customer.



The innovation and customer oriented philosophy of the comany resulted in the leadership that is shown through developments and grades as follows:

- 1963: first programmable control of the world for punching maschines
- 1966: first electronic control of the world for automatic ticket maschine / counters
- 1979: award "best innovative company of the year" for small to middle size companies
- 1990: First safety relays
- 1998: smallest size safety relay in the world (SAFE 1 and SAFE 2)
- 1998: first safety relay with 10A switching current in 45mm housing
- 2000: smallest two hand control relay in the world (SAFE Z)

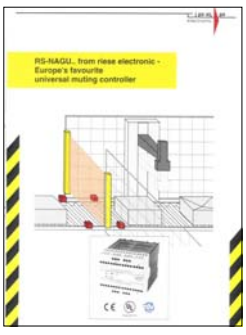
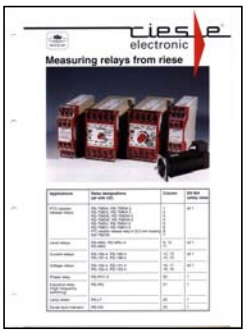
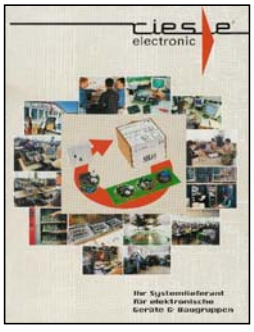
The quality management system of riese electronic gmbh has been qualified according to ISO 9001 since 1995, thus guaranteeing continuous quality of products and services.
Riese electronic is one of the pioneers at the safety relay market.

riese - safety relays

With a wide product range (40 Products at the moment), you are on the "safe side", with the newest safety technology from descendant of "Adam Riese". You will find detailed technical data and applications of examples with data to the safety category of safety control devices and muting controller in the user`s handbook from riese electronic. The handbook covers approximately 139 sides and contains over 181 different sample applications with descriptions and explanations to the most important standards in the safety engineering. Request our user's manual on CD-Rom.
Please ask for phone: 0049- 7451 5501-53 / fax. -70,
or write us e-mail: relay@riese-electronic.de or visit us on our web-site: www.riese-electronic.de.

For complete list of user guides and operating instructions please see:
http://www.riese-electronic.de

Additional catalogues from riese electronic:

application guide of machinery and technical equipment (CD)	muting	time-delay-relays	measuring relays	Other division of riese: EMS / CEM Interest in our electronic services
				
- free -	- free -	- free -	- free -	www.riese-electronic.de

Standards

EN 292 safety of machinery

This regulation describes the basic safety concepts and provides general
design guide lines for safety relevant functions. The following steps are to be considered during the development and construction:

* specify the limits of the machine
* identify the hazards and assess potential risk
* reduce the hazards or limit the risk as far as possible
* design of safeguards against remaining risks
* inform and warn the user about any residual risks
* consider any other precaution

EN 1050 safety of machinery, risk assessment
This standard defines how to prepare the risk assessment, guiding the designer to achieve the highest possible level of safety, according to the state of the art covering the requirement of application.

The standard also mentions some standard technique to work with:
* "What if" method
* FMEA (Failure mode and effect analysis)
* Delphi technique

The necessary documentation for the CE certification is also described in this standard.

EN 954 - 1 safety related control systems

This regulation defines the specifications of safety functions and design principles of safety related control systems. But there are also definitions for programming, operation, maintenance and repair of safety related control systems. There are lists of possible faults of parts of the control. The basic idea is that two independent faults do not occur at the same time, but if more parts fail because of one fault, it is defined as one fault.

IEC 61508 SIL Level (safety integrity level)

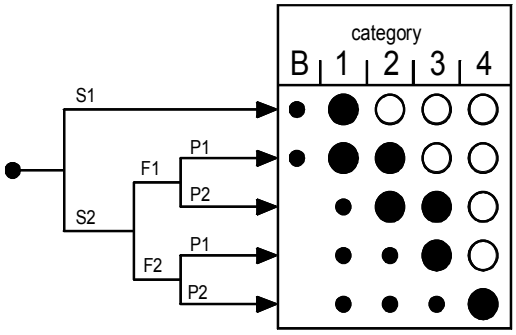
This international standard regulates the safety in level (SIL), which originally came from the United States. Nowaday the SIL are more and more common in Europe, too. The IEC 61508 defines characteristics of safety functions. With statistic methods the safety level of a machine could be evaluated (statistic methods).

Safety category DIN EN954-1	Request classes DIN 19250	DIN EN 61508 SIL	Description
B/1	1	---	Control units according to the technology standard
2	2/3	1	Permanent self test
3	4	2	One failure safety with partial er-ror detection
4	5/6	3	Self control of the safety unit
---	7/8	4	In the machine protection not im-portant

Risk assessment

By following the chart below, all relevant safety functions of a machine can be checked.
The result is the necessary safety category, according to EN 954, which can be used to choose the appropriate safety devices.

S - Severity of injury
S1 - Slight (reversible) injury
S2 - Serious (non-reversible) injury, including death
F - Frequency and exposure times
F1 - Seldom and/or long exposure
F2 - Frequent to continuous and/or long exposure
P - Possibility of avoiding the hazard
P1 - Possible under specific conditions
P2 - Less possible



● Preferred category. You have chosen a risk level which offers two selection possibilities. If the equipment is clean and dry and the levels of maintenance and inspection of the safety related system are high, select the lower category. Otherwise select the higher.
● Possible lower category. In some applications, the designer can select a lower category by using other safeguard measures.
○ More than required for the relevant risk.

Product navigator

Type	CONTACTS				OPERATING VOLTAGE							Housing width	Start-circuit control	Circuit capacity	Approvals	RISK CATEGORIES****				Page
	NO	Auxiliary contacts NC	Auxiliary contacts other	safety semicond. output	12 V DC	24 V DC	24 V AC	24 V AC/DC	48 V AC	110 V AC	230 V AC					B/1	2	3	4	
Emergency stop / safety gate monitoring relays																				
SAFE 1 / 1.1	3	1	-	-	-	-	-	o	-	-	-	22.5 mm	1.1 : yes	5A	CE, TÜV, UL, C-UL	√	√	***** √	-	6
SAFE 2 / 2.1	2	-	-	-	-	-	-	o	-	-	-	22.5 mm	2 : yes	6A	CE, TÜV, UL, C-UL	√	√	√	√	6
SAFE S.6	2	-	-	-	o	o	o	o	o	o	o	45 mm	-	6A	CE, TÜV, UL, C-UL	√	√	√	√	7
SAFE S.10	2	-	-	-	-	o	o	o	o	o	o	45 mm	-	10A	CE, TÜV, UL, C-UL	√	√	√	√	7
SAFE 4 / 4.1	3	1	-	-	-	-	-	o	o	o	o	22.5 mm	4 : yes	5A	CE, TÜV, UL, C-UL	√	√	√	√	7
SAFE 5 / 5.1	2	-	-	-	-	-	-	o	-	-	-	22.5 mm	5:yes	6A	CE, TÜV,UL**,C-UL**	-	√	*****√	-	8
SAFE C1	-	-	1	3	-	o	-	-	-	-	-	22,5 mm	-	1-2,5A	CE, TÜV** or BG**	√	√	√	√	8
RS-NAGA	3	1	-	-	-	o	o	o	o	o	o	45 mm	yes	6A	CE, TÜV, UL, C-UL	√	√	√	√	12
RS-NAGP	3	1	1	-	-	o	o	o	o	o	o	100 mm	choose-able	8A	CE, UL, C-UL (*1)	√	√	√	-	9
RS-NAGMP/MP.1	3	1	-	-	o	o	o	o	o	o	o	100 mm	-	8A	CE, TÜV, UL**, C-UL**	√	√	√	-/ √	9
RS-NAGV	6	4	-	-	-	o	o	o	o	o	o	100 mm	-	4A	CE, TÜV, UL, C-UL	√	√	√	√	10
Emergency stop / safety gate monitoring relays with time-delay																				
SAFE T	2+2	1	-	-	-	-	-	o	-	-	-	35 mm	choose-able	6A	CE, TÜV, UL, C-UL	√	√	√	√	10
RS-NAGT / T.1	2+1	-	-	-	-	* o	o	-	o	o	o	45 mm	-	6A	CE, TÜV, UL, C-UL	√	√	√	√***	11
Mat-, edges- control relays																				
SAFE 2.2	2	-	-	-	-	-	-	o	-	-	-	22.5 mm	-	6A	CE, TÜV, UL, C-UL	√	√	√	√	12
SAFE M	3	1	-	-	-	-	-	o	-	-	-	22.5 mm	-	6A	CE, TÜV, UL**, C-UL**	√	√	√		13
Emergency stop / safety gate monitoring relays for function: ...mat-, edges- control relay																				
RS-NAGAO	3	1	-	-	-	o	o	o	o	o	o	45 mm	-	6A	CE, TÜV, UL, C-UL	√	√	√	√	12
SAFE IL1	1	-	-	-	-	o	-	-	-	-	-	73 mm	choose-able	4A	CE, TÜV	√	√	√	√	13
Emergency stop for safety light barriers																				
SAFE L / L.1	2	-	-	-	-	-	-	o	-	-	-	22.5 mm	L : yes	6A	CE, UL, C-UL	-	√ x	-	√	14
SAFE L.2	3	-	-	-	-	-	-	o	-	-	-	22.5 mm	choose-able	6A	CE, TÜV, UL, C-UL	-	√ x	-	√	14
RS-NAGL	2	1	1	-	-	o	o	o	o	o	o	100 mm	-	6A	CE, TÜV, UL, C-UL	-	√ x	-	√	15
RS-NAGL.1	2	1	1	-	-	o	-	-	-	-	-	100 mm	-	6A	CE, TÜV, UL, C-UL	-	√ x	-	√	15
SAFE IL L	1	-	-	-	-	o	-	-	-	-	-	73 mm	choose-able	4A	CE, TÜV	-	√ x	-	√	15

(*1) For the existing BG/TÜV certificate was from riese requested by giant no extension.
Since that no substantial changes were made.

All devices which are signed with this symbol are paned to be producted and manufactured exfactory conformal to 01.07.06 ROHS.
The exact conversion information (if and when) dates find you in the Internet under:
www.riese-electronic.de/englisch/startsich.htm

Product navigator

Type	CONTACTS: NO	Auxiliary contacts: NC	Auxiliary contacts: other	safety semicond. output	OPERATING VOLTAGE: 12 V DC	24 V DC	24 V AC	24 V AC/DC	48 V AC	110 V AC	230 V AC	Housing width	Start-circuit control	Circuit capacity	Approvals	RISK CATEGORIES****: B/1	2	3	4	Page
two hand control relay																				
SAFE Z	2	1	-	-	-	o	-	-	-	-	-	22.5 mm	-	6A	CE, TÜV, UL, C-UL	√	√	√	√	16
SAFE Z.2	2	1	1	-	-	-	-	o	o	o	o	22.5 mm	-	6A	CE, TÜV , UL, C-UL	√	√	√	√	16
RS-NAGZ	2	1	1	-	-	o	o	-	o	o	o	100 mm	-	6A	CE, TÜV, UL, C-UL	√	√	√	-	17
SAFE IL Z	1	-	-	-	-	o	-	-	-	-	-	73mm	-	4A	CE, TÜV**	√	√	√	√	17
expansion module																				
SAFE IRZ.2	-	-	2 W	-	-	-	-	o	-	-	-	22.5 mm	-	5A	CE	Ⓐ	Ⓐ	Ⓐ	Ⓐ	18
SAFE X4 / SAFE X4.1	4	1	-	-	-	-	-	o	o	o	o	22.5 mm	-	6A	CE, TÜV, UL, C-UL	√	√	√	√	18
RS-NAGX 5	5	1	-	-	-	-	-	o	-	-	-	22.5 mm	-	6A	CE, TÜV**, UL**, C-UL**	√	√	√	√	19
SAFE IL2	3	1	-	-	-	o	-	-	-	-	-	63 mm	-	12A	CE, TÜV	√	√	√	√	19
muting																				
RS-NAGU.12	-	-	2	3	-	o	-	-	-	-	-	90 mm	yes	0,7 - 1,5 A DC	CE, TÜV	-	√ x	-	-	20
RS-NAGU.1	-	-	2	3	-	o	-	-	-	-	-	90 mm	yes	0,7 - 1,5 A DC	CE, TÜV, UL, C-UL	-	-	-	√	20
RS-NAGU.2f	3	-	4	-	-	o	-	-	-	-	-	90 mm	yes	3,5 - 6A AC/DC	CE, UL, C-UL	-	-	-	√	20
RS-NAGU.1b	-	-	2	3	-	o	-	-	-	-	-	90 mm	yes	0,7 - 1,5 A DC	CE, TÜV**	-	-	-	√	21
RS-FA1	-	-	-	-	-	o	-	-	-	-	-	22.5 mm	-	-	CE	-	-	-	-	21
RS-FI1	-	-	-	-	-	o	-	-	-	-	-	22.5 mm	-	-	CE	-	-	-	-	22
Safety on bus																				
SAF IL1	1	-	-	-	-	o	-	-	-	-	-	73 mm	choose-able	4A	CE, TÜV	√	√	√	√	13
SAFE ILL	1	-	-	-	-	o	-	-	-	-	-	73 mm	choose-able	4A	CE, TÜV	-	√ x	-	√	15
SAFE ILZ	1	-	-	-	-	o	-	-	-	-	-	73mm	-	4A	CE, TÜV**	√	√	√	√	17
SAFE IL2	3	1	-	-	-	o	-	-	-	-	-	63 mm	-	12A	CE, TÜV	√	√	√	√	19
RS-NAGU.1b + FA1 /FI1	-	-	2	3	-	o	-	-	-	-	-	90 / 22,5mm	ja	0,7 - 1,5 A DC	CE	-	-	-	-	21/22
Outlook																				
SAFE CL/CM/CZ	-	-	1	3	-	o	-	-	-	-	-	22,5 mm	-	1-2,5A	CE,TÜV** oder BG**	√	√	√	√	22

* voltage option 24V DC integrated into all devices
** approvals pending
*** undelayed terminals only
**** according to EN 954-1
***** according up to safety category 3 with two-phase off-switching of power supply and protected wiring
x useable only with safety light barriers with integrated selftest
Ⓐ suitable up to risk category max. 4

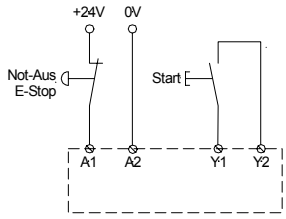
√ → suitable up to risk category
o → available
- → not available
NO → normally open contact
NC → normally closed contact
W → change over contact

For complete list of user guides and operating instructions please see: www.riese-electronic.de
Allmost all of our products are certified by:

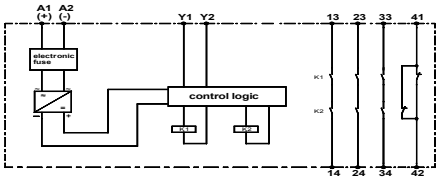
DEVICE	**SAFE 1 / SAFE 1.1**	see P. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	3 normally open (safety), 1 normally closed (auxiliary) LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Safety cat. 2 or cat. 3 ***** (see Product Navigator Page 5) SAFE 1.1 with and SAFE 1 without start control	
LED	Power indication, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 2,5 VA / 2,5 W	
START UP DELAY / FALLBACK TIME	< 50 ms / < 80 ms	
CONTACT CAPACITY max.	5 A AC, 5 A DC	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1250 VA (resistive load)	
CONTACT SECURITY	6,3 A quick acting or 4 A time lag	
OPERATION MODE	A supply voltage must be applied via emergency stop button to terminals A1 and A2. Power LED illuminates if the emergency stop is closed. To start the unit terminals Y2 and Y1 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, contact 41-42 is opened. The LEDs channel 1 and channel 2 illuminate. In series to this start button an external contactor can be monitored.	

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**SAFE 2 / SAFE 2.1**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	2 normally open (safety) LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Safety category 4 according to EN 954, opposite polarity between chanels SAFE 2 with and SAFE 2.1 without start control	
LED	Power indication, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 2,5 VA / 2,5 W	
START UP DELAY / FALLBACK TIME	< 50 ms / < 30 ms	
CONTACT CAPACITY max.	6 A AC, 6 A DC	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY	Simultaneous protective door contacts: ca. 40 ms	
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6,3 A quick acting or 4 A time lag	
OPERATION MODE	A supply voltage must be applied to terminals A1 and A2. Power LED illuminates and 24V 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 and 23-24 are closed. The LEDs channel 1 and channel 2 illuminate. In series to this start button an external contactor can be controlled.	

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min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
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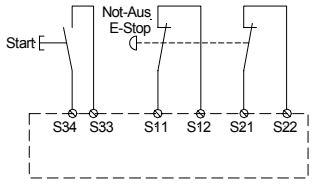
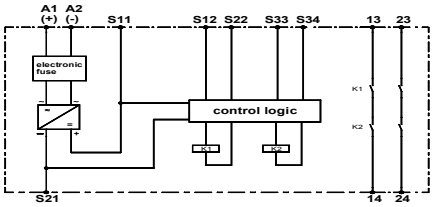


FUNCTION CIRCUIT DIAGRAM



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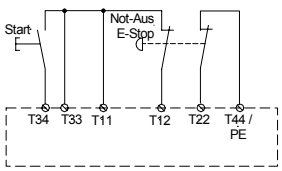
DEVICE	**SAFE S.6 / SAFE S.10**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	2 normally open safety contacts LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Selectable opposite polarity between channels	
LED	Power, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (without galvanic disconnection, but with a fuse F1) 24 V DC (without galvanic disconnection, but with an electronic fuse) 24, 48, 110-127, 230 V AC (with galvanic disconnection/transformer)	
POWER CONSUMPTION	ca. 3 VA	
START UP DELAY / FALLBACK TIME	< 150 ms / < 50 ms	
CONTACT CAPACITY max.	SAF S.6 6 A AC/DC SAFE S.10 10A AC/DC	
CONTACT CAPACITY min. at 24V DC*	100 mA*	
SIMULTANEITY	Simultaneous protective door contacts : ca. 65 ms	
ENVIRONMENTAL TEMPERATURE	SAFE S.6 -25°C to + 55°C , SAFE S.10 -25°C to 40°C	
SWITCHING CAPACITY	SAFE S.6 1300 VA (resistive load) SAFE S.10 2300VA (resistive load)	
CONTACT SECURITY	SAFE S.6 6A quick acting or 4A time lag SAFE S.10 10A quick acting or 6A time lang	

A supply voltage must be applied at terminals A1 and A2 in order to operate the device. If this is done there is a voltage of 24V DC at terminal T11. Terminals T12 and T22 must be wired as shown in the application examples. To start the unit terminal T11 must be bridged with terminal T34 by means of a closing contact or terminal T34 must receive a 24V DC impulse (short time bridging of the connection terminals T11-T34). If this is down contacts 13-14 and 23-24 close. The LEDs channel 1 and channel 2 illuminate. In series with the start button and terminals T11 / T34 the function of an external contactor can be monitored. *We offer all devices which have a contact capacity of min. 100mA at 24V DC with hard gold-plated contacts. In this way you get a contact capacity of 4mA.

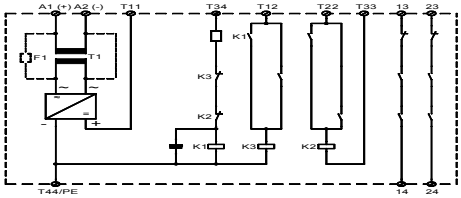
OPERATION MODE

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**SAFE 4 / SAFE 4.1**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	3 normally open safety, 1 normally auxiliary closed LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Safety category 4 according to EN 954, Opposite polarity between chanels SAFE 4 with and SAFE 4.1 without start control	
LED	Power, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse) 110-127, 230 V AC (with galvanic disconnection/transformer)	
POWER CONSUMPTION	24V AC: ca. 5VA, 24V DC:3W, 110/230V AC:3,7VA	
START UP DELAY / FALLBACK TIME	< 50 ms / < 30 ms (24V AC < 50ms), ready after time delay <1s	
CONTACT CAPACITY max.	5 A AC, 5 A DC	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1250 VA (resistive load)	
CONTACT SECURITY	6,3 A quick acting or 4 A time lag	

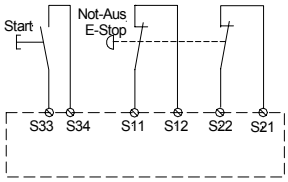
A supply voltage must be applied to terminals A1 and A2. Power LED illuminates and 24V DC is available at terminal S11. Terminals S12 and S22 must be connected according to the application example selected to meet the application requirements. To start the unit terminals S33 and S34 must be bridged with 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.

OPERATION MODE

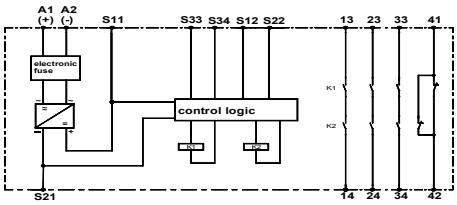
For version with detachable clamps (screw - or cage clamps) ...
pleas ask our sales team!

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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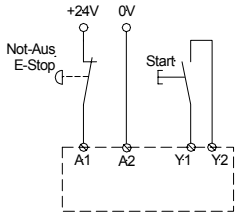
DEVICE	**SAFE 5 / SAFE 5.1**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay	
APPROVALS	CE, TÜV (UL, C-UL pending)	
CONTACTS	2 normally open safety LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Safety cat. 2, cat. 3 ***** (see Product Navigator Page 5) SAFE 5 with and SAFE 5.1 without start control	
LED	Power, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 2,5 VA / 2,5 W	
START UP DELAY / FALLBACK TIME	< 50 ms / < 80 ms	
CONTACT CAPACITY max.	6 A AC, 6 A DC	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1250 VA (resistive load)	
CONTACT SECURITY	6,3 A quick acting or 4 A time lag	
OPERATION MODE	A supply voltage must be applied via emergency stop to terminals A1 and A2. Power LED illuminates if the emergency stop is closed. To start the unit terminals Y2 and Y1 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 are closed. The LEDs channel 1 and channel 2 illuminate. In series to this start button an external contactor can be controlled.	

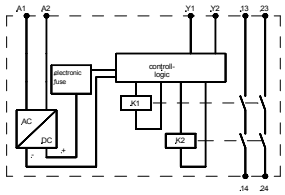
For version with detachable clamps (screw - or cage clamps) ...
pleas ask our sales team!

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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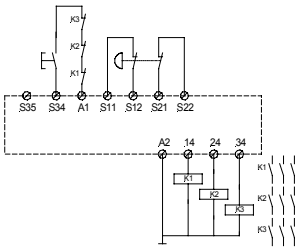
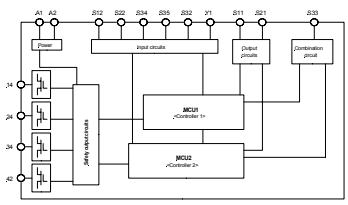
DEVICE	**SAFE C1**	siehe S. 4
APPLICATIONS	Safety controller for e-stop and gate monitoring applications	
APPROVALS	CE, (TÜV, UL, C-UL pending)	
CONTACTS	3 safety semiconductor outputs, 1 auxilary (semiconductor output)	
	LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	wearless contacts, connection of two or more SAFE C1 possible	
LED	Power, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V DC	
POWER CONSUMPTION	ca. 2,6 VA	
START UP DELAY / FALLBACK TIME	< 30 ms	
CONTACT CAPACITY max.	up to 2,5 A	
CONTACT CAPACITY min. at 24V DC*		
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	60 VA (resistive load)	
CONTACT SECURITY	4 A quick acting or 3 A time lag	
OPERATION MODE	2-channel e-stop application with monitoring of reset circuit, opposite channels polarity and contact expansion. The release button must be attached to the e-stop circuits (S11/S12, S21/S22) and the start button must be attached to the reset-circuit (S34/A1). The activation of the semiconductors safety outputs takes place after closing of the reset circuit (pressing the start button). By linkage more SAFE C1 with one another safety applications also complicated, with which different components are to be differently supervised, can be realized. For monitoring of the external cunductors, the NC contacts of the force guided contactors must be attached in series to the reset circuit. Safety category: 4	

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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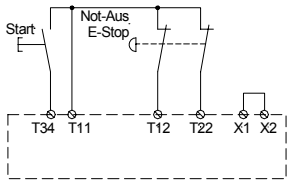
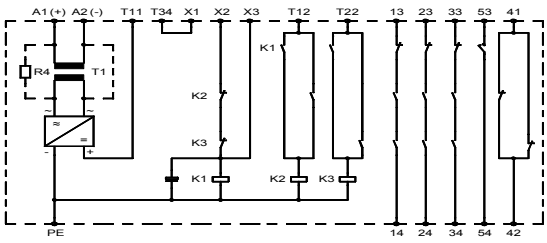
DEVICE	**RS-NAGP**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate relay (the device-system isn´t guide positive for the "start" push button)	
APPROVALS	CE, UL, C-UL	
CONTACTS	3 normally open safety, 1 wiping contact, 1 normally auxiliary closed	
SPECIAL CHARACTERISTICS	LED indicators for status and supply diagnostic	
LED	Channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (safety resistor) 24 V DC (without galvanic disconnection/with electronic fuse) 24, 48, 110-127, 230 V AC (with galvanic disconnection/transformer)	
POWER CONSUMPTION	ca. 3,5 VA	
START UP DELAY / FALLBACK TIME	< 150 ms / < 50 ms	
CONTACT CAPACITY max.	8 A AC, 8 A DC	
CONTACT CAPACITY min. at 24V DC*	10 mA	
SIMULTANEITY	No simultaneous protective door contacts required	
ENVIRONMENTAL TEMPERATURE	- 25°C to + 50°C	
SWITCHING CAPACITY	2000 VA (resisted load)	
CONTACT SECURITY	10 A quick acting or 6 A time lag.	
OPERATION MODE	A supply voltage needs to be applied at terminals A1 and A2 in order to operate the device. If this is done there is a voltage of 24V DC at terminal T11. Terminals T12 and T22 must be wired as shown in the application examples. To start the unit terminal T11 must be bridged with terminal T34 by means of a closing contact or terminal T34 must receive a 24V DC impulse (short time bridging of the connection terminals T11-T34). If this is done contacts 13-14, 23-24 and 33-34 close and 41-42 open and the wiping contact 53-54 gives a transient contact. The LEDs channel 1 and channel 2 illuminate. Terminals X1 and X2 must be bridged in order to operate the device. Terminal X3 can be used for the extended internal contact monitoring. The use of this terminal ensures a higher safety level.	

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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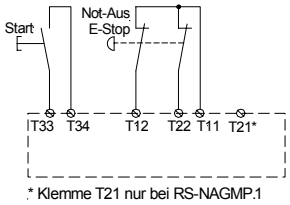
DEVICE	**RS-NAGMP / NAGMP.1** siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay
APPROVALS	CE, TÜV, (UL, C-UL pending)
CONTACTS	3 normally open safety, 1 normally auxiliary closed LED indicators for status and supply diagnostic
SPECIAL CHARACTERISTICS	NAGMP.1 with choosable opposite polarity between channels, NAGMP without
LED	Power, Channel 1 and channel 2
OPERATIONG VOLTAGE	24 V AC / DC (without galvanic disconnection, but with a safety resistor) 24 VDC / 12VDC (without galvanic disconnection, but with an electronic fuse) 24, 110-127, 230 V AC (with galvanic disconnection/transformer)
POWER CONSUMPTION	ca. 3,5 VA
START UP DELAY / FALLBACK TIME	< 20 ms / 300 ms
CONTACT CAPACITY max.	8 A AC, 8 A DC
CONTACT CAPACITY min. at 24V DC*	10 mA
SIMULTANEITY	Simultaneous protective door contacts : ca. 75 ms
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C
SWITCHING CAPACITY	2000 VA (resistive load)
CONTACT SECURITY	6 A quick acting or 4 A time lag
OPERATION MODE	A supply voltage must be applied at the terminals A1 and A2 in order to operate the device. If this is done there is a voltage of 24V DC at the terminal T11. Terminals T12, T21, T22 and T23 have to be wired as it is shown in the application examples. To start the unit terminal T33 has to bridged with terminal T34 or terminal T34 has to get a 24V DC impulse (short time bridging of the connection terminals T33-T34). If this is done the safety-contacts 13-14, 23-24 and 33-34 are closed and 41-42 are open. The LEDs channel 1 and channel 2 illuminate. Through terminals X1 and X2 the function of an external contactor can be monitored. Terminals X1 and X2 have to be bridged in order to operate the device.

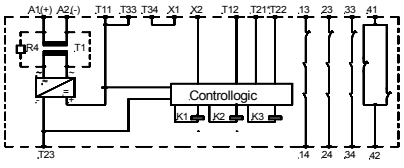
*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



* Klemme T21 nur bei RS-NAGMP.1

FUNCTION CIRCUIT DIAGRAM



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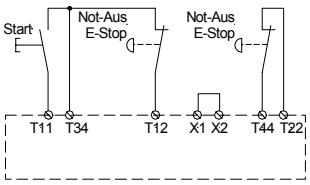
DEVICE	**RS-NAGV** siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay
APPROVALS	CE, TÜV, UL, C-UL
CONTACTS	6 normally open safety, 4 normally auxiliary closed Opposite polarity between channels
SPECIAL CHARACTERISTICS	Cyclial monitoring of the function LED indicators for status and supply diagnostic
LED	Channel 1 and channel 2
OPERATIONG VOLTAGE	24 V AC / DC (without galvanic disconnection/ safety resistor) 24 V DC (without galvanic disconnection / electronic fuse), 24, 48, 110-127, 230 V AC (with galvanic disconnection/transformer)
POWER CONSUMPTION	ca. 6 VA
START UP DELAY / FALLBACK TIME	< 150 ms / ca. 100 ms
CONTACT CAPACITY max.	4 A AC, 4 A DC
CONTACT CAPACITY min. at 24V DC*	10 mA
SIMULTANEITY	Simultaneous protective door contacts : ca. 75 ms
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C
SWITCHING CAPACITY	1000 VA (resistive load)
CONTACT SECURITY	4 A quick acting

OPERATION MODE

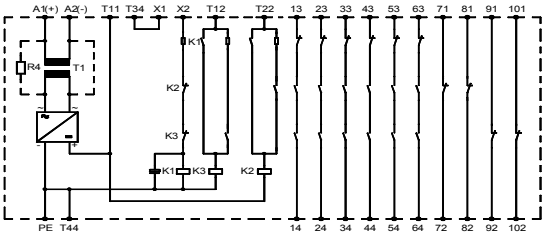
A supply voltage must be applied at terminals A1 and A2 in order to operate the device. If this is done there is a voltage of 24V DC at terminals T11, T12 and T22 must be wired as shown in the application examples. To start the unit terminal T11 must be bridged with terminal T34 by means of a closing contact or terminal T34 must receive a 24V DC impulse (short time bridging of the connection terminals T11-T34). If this is done contacts 13-14, 23-24, 33-34, 43-44, 53-54 and 63-64 close and 71-72, 81-82, 91-92 and 101-102 open. The LEDs channel 1 and channel 2 illuminate. Through terminal X1 and X2 the function of an external contactor can be monitored. Terminals X1 and X2 must be bridged in order to operate the device.

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**SAFE T..**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay with time-delayed safety outputs	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	2 normally open safety, 2 normally open time-delayed safety output, 1 auxiliary n.c. short circuit protection between channels	
SPECIAL CHARACTERISTICS	Time delay 0,05s - 600s in 64 steps, automatic start or start with	
LED	Power, channel 1, cannel 2, channel 1 and channel 2time-delayed	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 6.5 W / 13 VA	
START UP DELAY / FALLBACK TIME	after time delay 0,5-0,6 s / <50 ms (non delayed contacts)	
CONTACT CAPACITY max.	6 A AC / 6 A DC	
CONTACT CAPACITY min. at 24V DC*	10 mA	
SIMULTANEITY	SAFE TN: 1s / SAFE TA,TR: 3s / TU: infinite	
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55 °C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6 A quick acting or 4 A time lag	

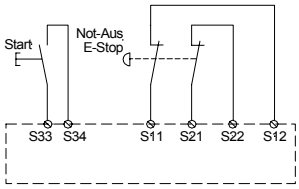
When releasing of the emergency stop or opening the safety gate (emergency circuits will be opened). The terminals 13-14 and 23-24 open the release current circuit. The terminals 47-48 and 57-58 open after adjusted delay on de-energisation time.

OPERATION MODE

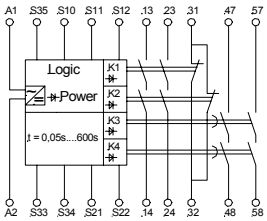
*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts. In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA Please ask our sales team!

Variant	simult.	notice
Safe TN	1sec.	Time for restart 0,5-0,6sec. Reset of "emergency off" is not possible in time delay
Safe TA	3sec.	Time for restart 0,5-0,6sec. Reset of "emergency off" is possible in time delay
Safe TR	3sec.	Reset of "emergency off" is possible in this time
Safe TU	infinite	Time for restart 0,5-0,6sec. Reset of "emergency off" is possible in time delay

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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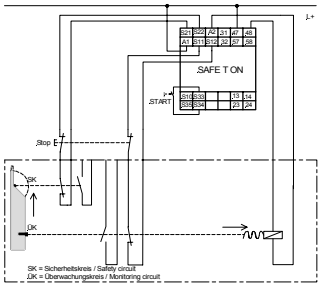
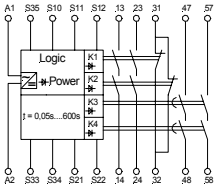
DEVICE	**SAFE T ON**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay with time-delayed pulse-on safety outputs	
APPROVALS	CE, (TÜV, UL, C-UL pending)	
CONTACTS	2 normally open, 2 normally open time-delayed-on energisation contacts 1 normally auxiliary contact	
SPECIAL CHARACTERISTICS	Time delay 0,05s - 600s in 64 steps, automatic or manually start with start button	
LED	Power, channel 1, cannel 2, delayed-on energisation channel1 and 2	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 6,5 W / 13 VA	
START UP DELAY / FALLBACK TIME	Appr. 1,5s (on energisation) or 0.5s on starting / < 50ms	
CONTACT CAPACITY max.	6 A AC / 6 A DC	
CONTACT CAPACITY min. at 24V DC*	10 mA	
SIMULTANEITY	Infinite	
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55 °C	
SWITCHING CAPACITY	1500 VA (ohm load)	
CONTACT SECURITY	6 A brisk or 4A lag	
OPERATION MODE	If the input circuits S11, S12 and S21, S22 are closed and the start button is released, the safety circuits 13-14, 23-24 will close. By pressing the stop button, the safety circuits 13-14 and 23-24 open. After the set time period has clapsed, the relay K3 and K4 energise. The safety gate switch is released and the safety gate can be opened. By pressing the start button the relay K3 and K4 are energise, K1 and K2 energised and close the safety circuits 13-14 and 23-24.	

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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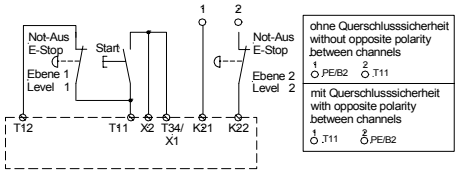
DEVICE	**RS-NAGT / RS-NAGT.1**	siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay with time-delayed safety output	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	2 normally open safety, 1 normally open time-delayed safety output Selectable opposite polarity between channels	
SPECIAL CHARACTERISTICS	NAGT : 0,1s - 10s ; NAGT.1 : 0,3 - 30s (ask for the odering number) Ask for special versions	
LED	Power, channel 1, channel 2 and fault	
OPERATIONG VOLTAGE	Devices has two voltages : 1 voltage fixed : 24 V DC; Selectable : 24 or 48 or 110-127 or 230 V AC (with galvanic disconnection/transformer)	
POWER CONSUMPTION	ca. 3 VA	
START UP DELAY / FALLBACK TIME	<150 ms/< 50 ms(non delayed contacts),delay.contacts:depending on time selection	
CONTACT CAPACITY max.	6 A AC, 6 A DC	
CONTACT CAPACITY min. at 24V DC*	100 mA*	
SIMULTANEITY	Simultaneous protective door contacts : ca.75 ms	
ENVIRONMENTAL TEMPERATURE	- 25°C to + 50°C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6 A quick acting or 4 A time lag	

A supply voltage must be applied to terminals A1 and A2 (for AC supplies) or terminals B1 and B2 (for DC supplies). Once the supply voltage is applied, 24V DC is available at terminal T11; power LED illuminates. Terminals T12, K21 and K22 must be connected according to the application example selected to meet the application requirements. Feed back monitoring of external devices is accomplished by a connection between terminals T34 / X1 and X2. If the application does not require external monitoring, T34 / X1 and X2 must be bridged. To start the unit, terminal T11 and T34 / X1 must be bridged (automatic reset) or a momentary bridging of T11 and T34 / X1 must take place. With all of the above in place safety contacts 13-14, 23-24 and 77-78 close. Channel 1 (K2 energized) and channel 2 (K3 energized) green LEDs illuminate to show channel status. Fault LED illuminates when a short circuit takes place, at the input stage or internally. Special edition with hard gold-plated contacts is also available. Connecting the ground wire to PE - see page 24.

OPERATION MODE

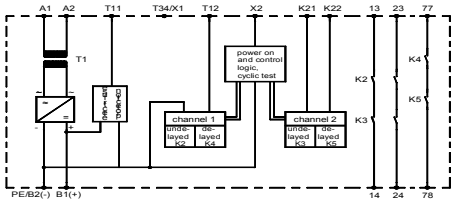
*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



B1(+), PE/B2(-) : 24V DC-Anschluss oder A1, A2 : AC-Anschluss

FUNCTION CIRCUIT DIAGRAM



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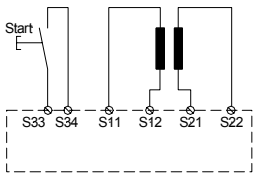
DEVICE	**SAFE 2.2**	siehe S. 4
APPLICATIONS	Mat and contact edges control relay	
APPROVALS	CE, TÜV ,UL, C-UL	
CONTACTS	2 normally open safety contacts	
	LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Safety category 4, opposite polarity between channels	
	without start control	
LED	Power, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 2,5 VA / 2,5 W	
START UP DELAY / FALLBACK TIME	< 50 ms / < 30 ms	
CONTACT CAPACITY max.	6 A AC, 6 A DC	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY	Simultaneous protective door contacts : ca.40 ms	
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6,3 A quick acting or 4 A time lag	

OPERATION MODE

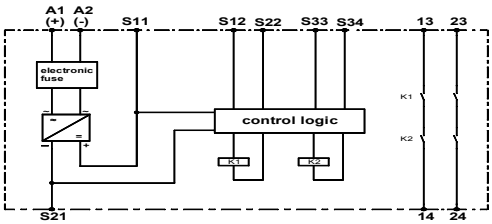
A supply voltage must be applied to terminals A1 and A2. Power LED illuminates and 24V DC is available at terminal S11. Terminals S12 and S22 must be connected according to the application example selected to meet the application requirements. To start the unit terminals S33 and S34 must be bridged with a normally open contact. The unit works if you close this contact. At this time the contacts 13-14 and 23-24 are closed. The LEDs channel 1 and channel 2 illuminate. In series to this start button an external contactor can be controlled. SAFE 2.2 can be used as control relay for safety mats and safety contact edges. These mats and edges must work like a normally opened contact. If someone steps on the mats or presses the contact edges the normally opened contact closes and SAFE 2.2 detects this.

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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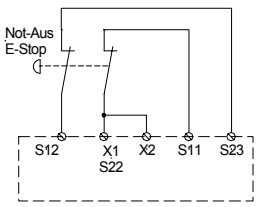
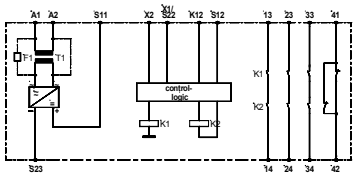
DEVICE	**RS-NAGA / RS-NAGAO** siehe S. 4
APPLICATIONS	Emergency stop and safety gate and mat control relay
	(the device-system isn´t guide positive for the "start" push button)
APPROVALS	CE, TÜV, UL, C-UL
CONTACTS	3 normally open safety, 1 normally auxiliary closed
	LED indicators for status ans supply diagnostic
SPECIAL CHARACTERISTICS	Selectable opposite polarity between channels, selectable reset monitoring
	RS-NAGA with and RS-NAGAO without monitoring of the "start" push button
LED	Power, channel 1 and channel 2
OPERATIONG VOLTAGE	24 V DC (with electronic fuse)
	24, 48, 110-127, 230 V AC (with galvanic disconnection/transformer)
	24 V AC / DC (fuse F1) not useable for safety mats
POWER CONSUMPTION	ca. 3,5 VA
START UP DELAY / FALLBACK TIME	< 150 ms / < 50 ms
CONTACT CAPACITY max.	6A
CONTACT CAPACITY min. at 24V DC*	10 mA
SIMULTANEITY	Simultaneous protective door contacts : ca.75 ms
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C
SWITCHING CAPACITY	1500 VA (resistive load)
CONTACT SECURITY	6 A quick acting
OPERATION MODE	A supply voltage must be applied to terminals A1 and A2. Once the supply voltage is applied, 24V DC is available at terminal S11; power LED illuminates. Terminals S12, K12 and X1/S22 must be connected according to the application example selected to meet the application requirements. To start the unit, terminal X2 and X1/S22 must be bridged. At the variation "with reset-monitoring" (RS-NAGA) the relay reacts after removing the bridge X2 to X1/S22. At the variation "without reset-monitoring" (RS-NAGAO) the function starts after bridging X2 and X1/S22. With all of the above in place safety contacts 13-14, 23-24, 33-34 closed and 41-42 open. Channel 1 and channel 2 LEDs illuminate. In series to the reset-button at terminals X2 and X1/S22 an external device can be monitored.

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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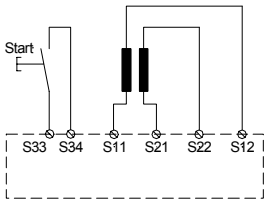
DEVICE	**SAFE M / SAFE M.1** siehe S. 4
APPLICATIONS	mat and contact eydges control relay with a max. mats-resistance of 200 ohms
APPROVALS	CE, TÜV, (UL, C-UL pending)
CONTACTS	3 normally open safety, 1 normally auxiliary closed
	LED indicators for status and supply diagnostic
SPECIAL CHARACTERISTICS	Safety category 3 according to EN 954, Opposite polarity between chanels
	SAFE M with automatic start. SAFE M.1 without automatic start
LED	Power, channel 1 and channel 2
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)
POWER CONSUMPTION	24V AC: ca. 5VA, 24V DC:3W
START UP DELAY / FALLBACK TIME	< 50 ms / < 30 ms (24V AC < 50ms)
CONTACT CAPACITY max.	5 A AC, 5 A DC
CONTACT CAPACITY min. at 24V DC*	1 mA
SIMULTANEITY	
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C
SWITCHING CAPACITY	1250 VA (resistive load)
CONTACT SECURITY	6,3 A quick acting or 4 A time lag
OPERATION MODE	A supply voltage must be applied to terminals A1 and A2. Power LED illuminates and 24V 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, or bridge for automatically start 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.

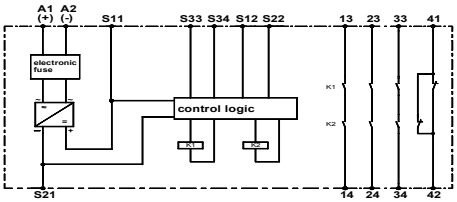
*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

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

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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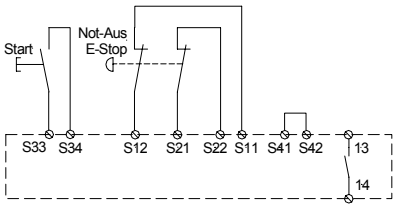
DEVICE	**SAFE IL 1** siehe S. 4
APPLICATIONS	Emergency stop and safety gate monitoring relay mat and contact edges control relay
APPROVALS	CE, TÜV
CONTACTS	1 normally open safety contacts diagnostic with fieldbus
SPECIAL CHARACTERISTICS	integration in the inline sytem Optical status and supply indication over LED´s
LED	channel 1, channel 2, US, UM, diagnostic
OPERATIONG VOLTAGE	24VDC
POWER CONSUMPTION	1,7 W
START UP DELAY / FALLBACK TIME	-- / < 20ms
CONTACT CAPACITY max.	4A AC, 24V
CONTACT CAPACITY min. at 24V DC*	100mA
SIMULTANEITY	
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C
SWITCHING CAPACITY	120 W
CONTACT SECURITY	4 A time lag

OPERATION MODE

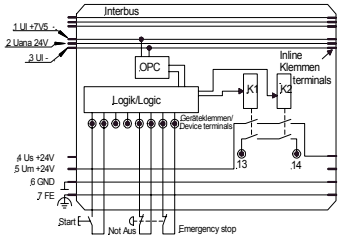
For the operation of the device the device must be connected into a Inline station. The voltage supply is taken over the Inlinesystem. The LED "UM" illuminates. For starting the terminal S33 with S34 must be bridged with a start button. Afterwards the contact 13-14 is closed and the segment circuit is switched on. The LED's 1, 2 and US light up.
If the input set is opened, the safety contacts 13-14 are open and the LED's 1, 2 and US goes out. The following segment circuit of the Inline system is safety-relatedly switched off. The device is again activated, if the input sets close and the start button is pressed. The LED's 1 and 2 and US light up again.
With the corresponding bus terminal, the operation of the Inlinesystems is also possible with profi bus, can, ethernet, asi, Devicenet or Interbus.
The device status can be monitored over the interface to the interbus inline system. The main circuit is interrupted in the device SAFE IL1.

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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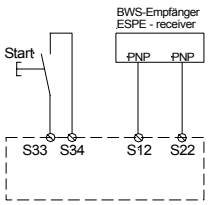
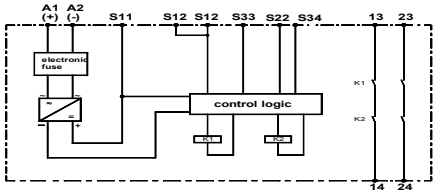
DEVICE	**SAFE L / L.1**	siehe S. 4
APPLICATIONS	CE, UL, C-UL for safety light curtains / barriers	
APPROVALS	CE, UL, C-UL	
CONTACTS	2 normally open safety	
SPECIAL CHARACTERISTICS	LED indicators for status and supply diagnostic Without opposite channel polarity SAFE L with and SAFE L.1 without start control	
LED	Power indication, channel 1, channel 2 and restart interlock	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 3 VA	
START UP DELAY / FALLBACK TIME	< 50 ms / < 30 ms	
CONTACT CAPACITY max.	6 A AC, 6 A DC	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY	Simultaneous: ca.40 ms	
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6 A quick acting	
OPERATION MODE	A supply voltage must be applied to terminals A1 and A2. Power LED and LED "restart interlock" illuminate and 24V 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, the LED "restart interlock" expires. In series to this start button an external contactor can be controlled if connected to unit terminal S33 and S34.	

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**SAFE L.2**	siehe S. 4
APPLICATIONS	Emergency stop relay for safety light curtains / barriers	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	3 normally open safety LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Without opposite channel polarity start control choosable by a extern brige	
LED	Power indication, channel 1, channel 2 and restart interlock	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse)	
POWER CONSUMPTION	ca. 3 VA	
START UP DELAY / FALLBACK TIME	< 50 ms / < 30 ms	
CONTACT CAPACITY max.	6 A AC, 6 A DC	
CONTACT CAPACITY min. at 24V DC*	10 mA	
SIMULTANEITY	Simultaneous: ca. 40ms	
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6 A quick acting	

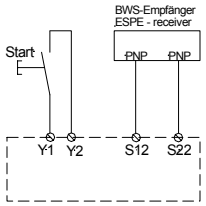
OPERATION MODE

A supply voltage must be applied to terminals A1 and A2. The "Power" and "restart interlock" LED´s illuminate. If this is done, a voltage of 24 V DC is be available on the terminal S11. Terminals S12 and S22 must be wired as shown in the application examples. To start the module, the terminals Y1 and Y2 must be bridged over normally open contact. In the following the contacts 13-14, 23-24 and 33-34 are closed.
The LED´s of channel 1, channel 2 are illuminate and "restart interlock" must be switched off. In series to the start-button, wired on terminals Y1 and Y2, an external contactor can be controlled. Monitoring of the reset circuit can be configured by external bridge between terminals BR1 an BR2.

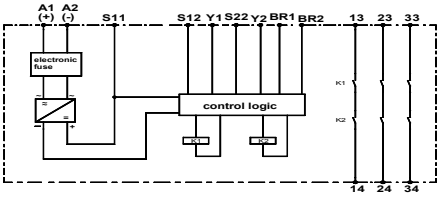
For version with detachable clamps (screw - or cage clamps) ...
pleas ask our sales team!

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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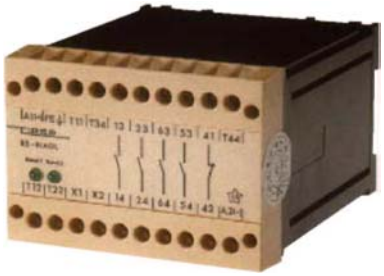


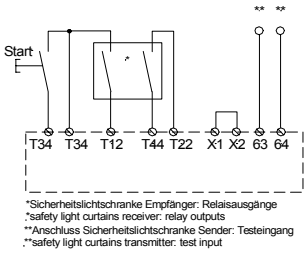
DEVICE	**RS-NAGL / RS NAGL.1** siehe S. 4
APPLICATIONS	Emergency stop relay for safety light curtains / barriers
APPROVALS	CE, TÜV, UL, C-UL,
CONTACTS	2 normally open safety, 1 normally auxiliary closed, signal transmitter on According up to safety category 3 with two-phase off-switching of
SPECIAL CHARACTERISTICS	power supply and protected wiring undelayed terminals only
LED	Channel 1 and channel 2
OPERATIONG VOLTAGE	24 V DC (without galvanic disconnection, but with an electronic fuse) 24, 48, 110-127, 230 V AC (with galvanic disconnection/transformer) 24 V AC / DC (without galvanic disconnection, but with a safety resistor)
POWER CONSUMPTION	ca. 4,5 VA
START UP DELAY / FALLBACK TIME	< 150 ms / < 30 ms
CONTACT CAPACITY max.	6 A AC, 6 A DC
CONTACT CAPACITY min. at 24V DC*	10 mA
SIMULTANEITY	
ENVIRONMENTAL TEMPERATURE	- 25°C to + 50°C
SWITCHING CAPACITY	1500 VA (resistive load)
CONTACT SECURITY	6 A quick acting or 4 A time lag

A supply voltage must be applied at terminals A1 and A2 in order to operate the device. If this is done there is a voltage of 24V DC at terminal T11. T12 and T22 must be wired as shown in the application examples. Contacts 13-14, 23-24 and 63-64 open and contact 41-42 closes. In some cases, the transmitter from the light curtains / barrier requires a test input and is connected to output 63-64. If 63-64 does not close, the transmitter and the receiver will not work. This output ensures that a complete system is created. To start the unit terminal T11 must be bridged with terminal T34 through a normally open contact (reset) or the terminal T34 must receive a 24V DC impulse (short time bridging of the connection terminals T11-T34). If the light curtains is aligned properly and the protection zone is free, the receiver switches. At terminal T12 there is a of voltage 24V DC and at T22 is ground. After releasing the on button or interrupting the connection between T11 and T34 the relays K1 and K4 deenergize. Safety outputs 13-14 and 23-24 close. Contacts 53-54 and 63-64 remain closed, contacts 41-42 open.

OPERATION MODE

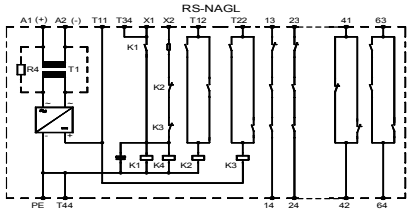
*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



*Sicherheitslichtschranke Empfänger: Relaisausgänge
*safety light curtains receiver: relay outputs
**Anschluss Sicherheitslichtschranke Sender: Testeingang
**safety light curtains transmitter: test input

FUNCTION CIRCUIT DIAGRAM



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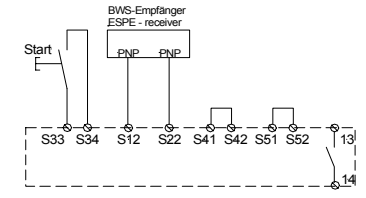
DEVICE	**SAFE IL L**	siehe S. 4
APPLICATIONS	Emergency stop relay for safety light curtains / barriers	
APPROVALS	CE, TÜV	
CONTACTS	1 normally open safety diagnostic with fieldbus	
SPECIAL CHARACTERISTICS	integration in the inline system Optical status and supply indication over LED´s	
LED	Channel 1 and channel 2, US, UM, diagnostic and restart interlock	
OPERATIONG VOLTAGE	24VDC	
POWER CONSUMPTION	ca. 1,7W	
START UP DELAY / FALLBACK TIME	-- / < 20ms	
CONTACT CAPACITY max.	4A DC, 24V	
CONTACT CAPACITY min. at 24V DC*	100mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C	
SWITCHING CAPACITY	120W	
CONTACT SECURITY	4A time lag	

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

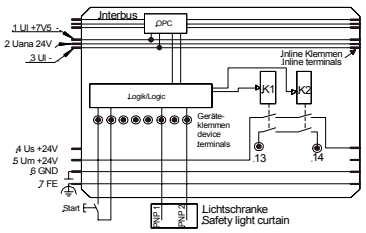
OPERATION MODE

For the operation of the device the device must be connected into a Inline station. The voltage supply is taken over the Inlinesystem. The LED "UM" and the LED "restart interlock" light up. For the start the terminal S33 with S34 must be bridged with a start button. Afterwards the contact 13-14 is closed and the segment circuit is switched on. The LED's 1, 2 and US light up.
If the input set is opened, the safety contacts 13-14 are open, the LED's 1, 2 and US go out and the "restart interlock" lights up. The following segment circuit of the Inline system is safety-relatedly switched off. The device is again activated, if the input sets close and the start button is pressed. The LED's 1 and 2 and US light up again.
With the corresponding bus terminal, the operation of the Inlinesystems is also possible with profi bus, can, ethernet, asi, devicenet or interbus.
The device status can be monitored over the interface to the interbus inline system. The main circuit in the device SAFE ILL is interrupted. For automatic start the contacts S51-S52 must be bridged.

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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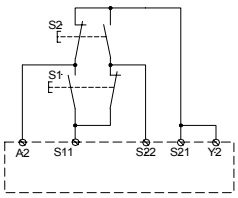
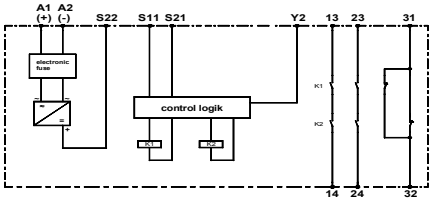
DEVICE	**SAFE Z**	siehe S. 4
APPLICATIONS	Two hand control relay for type I-III c	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	2 normally open safety, 1 normally auxiliary closed LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Two hand control relay according ZH 1 / 456 and DIN EN 574	
LED	Power indication, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V DC (electronic fuse)	
POWER CONSUMPTION	ca. 3 VA	
START UP DELAY / FALLBACK TIME	< 50 ms / < 25 ms	
CONTACT CAPACITY max.	6 A AC, 6 A DC	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY	Simultaneous: 0,5 s	
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6 A quick acting	
OPERATION MODE	After supply voltage was applied to terminals A1 and A2, the SAFE Z.2 will be ready for operation. The power LED illuminates. If the button S1 is pressed and within 0,5 sec. the button S2 is also pressed, the outputs 13-14, 23-24 are closed and 31-32 will be opened. The machine will be started. If one or both buttons are released, the outputs 13-14 and 23-24 open immediately.The output 31-32 closes. Only after releasing the both buttons S1 and S2, a new cycle can be started. If the time for pressing the buttons S1 and S2 will be longer as 0,5 sec., the outputs were not released. The outputs 13-14 and 23-24 keep open. The machine cannot be started. On the terminals Y1 and Y2 machinereleasecircuits (repeating contactor control) can be connected.	

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**SAFE Z.2**	siehe S. 4
APPLICATIONS	Two hand control relay for type I-III c	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	2 normally open safety, 1 normally auxiliary closed, 1 PLC-output	
SPECIAL CHARACTERISTICS	LED indicators for status and supply diagnostic Two hand control relay according ZH 1 / 456 and DIN EN 574	
LED	Power indication, channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (electronic fuse) 48, 110-127, 230 V AC (with galvanic disconnection/transformer)	
POWER CONSUMPTION	ca. 4VA	
START UP DELAY / FALLBACK TIME	< 50ms / <25ms	
CONTACT CAPACITY max.	6 A AC / 6 A DC	
CONTACT CAPACITY min. at 24V DC*	1mA	
SIMULTANEITY	Simultaneous: 0,5s	
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1500 VA (resistive load)	
CONTACT SECURITY	6,3 A quick acting or 4 A time lag	
OPERATION MODE	After supply voltage was applied to terminals A1 and A2, the SAFE Z will be ready for operation. The power LED illuminates. If the button S1 is pressed and within 0,5 sec. the button S2 also pressed, the outputs 13-14, 23-24 are closed and 31-32 will be opened. The machine will be started. The PLC-output (34) is connected with 24 V supply voltage. If one or both buttons are released, the outputs 13-14 and 23-24 open immediately. The output 31-32 closes. Only after releasing of both buttons S1 and S2, a new cycle can be started. If the time for pressing the buttons S1 and S2 will be longer than 0,5 sec., the outputs were not released. The outputs 13-14 and 23-24 keep open. The machine cannot be started. On the terminals Y1 and Y2 machinereleasecircuit (repeating contactor control) or a bridge can be connected.	

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min. 100 mA at 24 V DC with hard gold-plated contacts.
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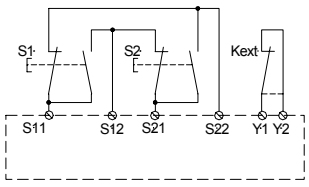
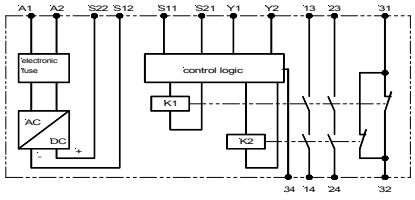
Please ask our sales team!

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

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**RS-NAGZ** siehe S. 4
APPLICATIONS	Two hand control relay for type I-III b
APPROVALS	CE, TÜV, UL, C-UL
CONTACTS	2 normally open safety, 1 auxiliary normally closed
SPECIAL CHARACTERISTICS	Safety relay according VDE 0113. Two hand control relay according ZH 1 / 456 and DIN EN 574
LED	Channel 1 and channel 2
OPERATIONG VOLTAGE	24 V AC (without galvanic disconnection) 24 V DC (without galvanic disconnection, but with an electronic fuse) 24, 48, 110-127, 230 V AC (with galvanic disconnection/transformer)
POWER CONSUMPTION	ca.4,6 VA
START UP DELAY / FALLBACK TIME	0,5 s / < 30 ms
CONTACT CAPACITY max.	6 A AC, 6 A DC
CONTACT CAPACITY min. at 24V DC*	10 mA
SIMULTANEITY	Simultaniousness: ca. 0,5 s
ENVIRONMENTAL TEMPERATURE	- 25°C to + 50°C
SWITCHING CAPACITY	1500 VA (resistive load)
CONTACT SECURITY	6 A quick acting or 4 A time lag
OPERATION MODE	There must be installed an auxiliary voltage at the terminal A1 and A2 in order to operate the device. If the button S1 is pressed and within 0,5 sec the button S2 is also pressed and both are held, the outputs 13-14 and 23-24 are closed and 41-42 is opened. The machine will be started. If one or both buttons are released, the outputs 13-14 and 23-24 open immediately, the output 41-42 is closed immediately. Only after releasing S1 and S2 a new cycle can be started. At times longer than .5 sec the outputs will not be released. The outputs 13-14 and 23-24 stay open, and the output 41-42 is closed. The machine cannot be started. There can be connected machine-release-circuits at the terminals T11 and X2 in series to the buttons S1 and S2.

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
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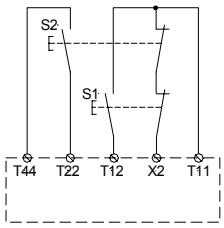
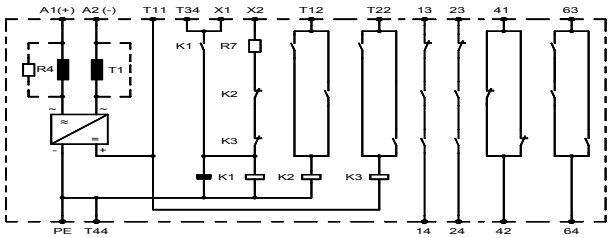
CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**SAFE IL Z**	siehe S. 4
APPLICATIONS	Two hand control relay for type I-III c	
APPROVALS	CE, (TÜV pending)	
CONTACTS	1 normally open safety	
	LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Two hand control relay according ZH 1 / 456 and DIN EN 574	
	diagnostic with fieldbus and integration in the inline system	
LED	Channel 1 and channel 2, US, UM, diagnostics	
OPERATIONG VOLTAGE	24 V DC	
POWER CONSUMPTION	ca. 1,7 W	
START UP DELAY / FALLBACK TIME	< 20ms	
CONTACT CAPACITY max.	4A DC, 24V	
CONTACT CAPACITY min. at 24V DC*	100 mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	120 W	
CONTACT SECURITY	4A time lag	

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min. 100 mA at 24 V DC with hard gold-plated contacts.
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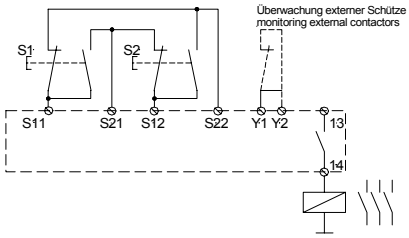
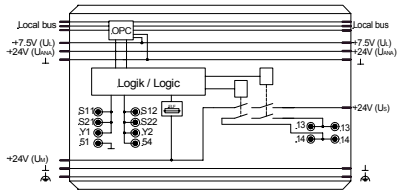
OPERATION MODE

For the operation of the device the device must be connected into a Inline station. The voltage supply is taken over the Inlinesystem. The LED "UM" lights up. If the button S1 is pressed and within 0,5 sec. the button S2 also pressed, the contact 13-14 is closed and the segment circuit is switched on. The LED's 1, 2 and US light up.
If the input set is opened, the safety contacts 13-14 are open and the LED's 1, 2 and US go out. The following segment circuit of the Inline system is safety-relatedly switched off. The device is activated again, if both buttons are let off and are pressed again within 0,5s. The LED's 1 and 2 and US light up again. With times 0,5s the device is not activated. On the terminals Y1 and Y2 the circuit for releasing the machine (repeating contactor control) can be connected.
With the corresponding bus terminal, the operation of the Inlinesystems is also possible with profi bus, can, ethernet, asi, devicenet or interbus.
Over the interface to the Interbus Inline local bus the device status can be transferred. The main circuit is interrupted in the device SAFE ILZ.

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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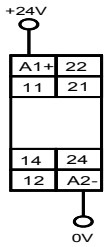
DEVICE	**SAFE IRZ.2**	siehe S. 4
APPLICATIONS	Industrial relay with positive guided contacts	
APPROVALS	CE	
CONTACTS	2 change over contacts LED indicators for status and supply diagnostic	
SPECIAL CHARACTERISTICS	Initializing input	
LED	Power indication	
OPERATIONG VOLTAGE	24 V AC / DC	
POWER CONSUMPTION	1 W, 1 VA	
START UP DELAY / FALLBACK TIME	< 25 ms / < 25 ms	
CONTACT CAPACITY max.	5 A AC, 5 A DC	
CONTACT CAPACITY min. at 24V DC*	100 mA*	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to + 55°C	
SWITCHING CAPACITY	1250 VA	
CONTACT SECURITY	5 A quick acting	

The device is an industrial relay with positive guidance for high switching cycles. The delay on and delay off times are smaller than 25 ms. After connecting the power supply on terminals A1 and A2 the relay activates immediately. If the power on terminals A1 and A2 is removed, the relay drops into the initial state. *We offer all devices which have a contact capacity of min. 100mA at 24VDC with hard gold-plated contacts. In this way you get a contact capacity of 4mA. If you want such a relay please write for example "AR.1632.2010 hard gold-plated contacts".

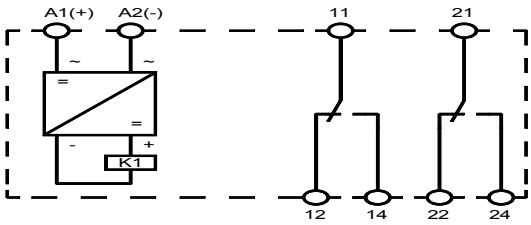
OPERATION MODE

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts. In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**SAFE X4 / SAFE X4. 1**	siehe S. 4
APPLICATIONS	Expansion module for emergency stop relay according to VDE 0113	
APPROVALS	CE, TÜV, UL, C-UL	
CONTACTS	4 normally open safety and 1 normally safety closed (feedback) SAFE X4 with / SAFE X4.1 without opposite polarity between channels	
SPECIAL CHARACTERISTICS	Easy way to increase the number of contacts Compact housing	
LED	Channel 1, channel 2 and fault	
OPERATIONG VOLTAGE	48, 110-127, 230 V AC (with galvanic disconnection/transformer) 24 V AC / DC (without galvanic disconnection, but with a safety resistor)	
POWER CONSUMPTION	ca. 4 VA	
START UP DELAY / FALLBACK TIME	-- / < 50 ms	
CONTACT CAPACITY max.	6 A AC, 6 A DC, sum of currents <16A	
CONTACT CAPACITY min. at 24V DC*	1mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55 °C	
SWITCHING CAPACITY	2000 VA	
CONTACT SECURITY	10 A quick acting or 6 A time lag	

OPERATION MODE

The expansion module is used to increase the number of outputs of a safety relay according to VDE 0113. Several expansion modules can be connected to one safety relay. A supply voltage must be applied at terminals A1 and A2 in order to operate the device. If this is done there is a voltage of 24V DC at terminal U1. Terminals K21 and K1 must be wired as shown in the application examples. To start the module, closed safety circuits from the safety relay must be connected with K21 and K1 and contacts 13-14,
23-24, 33-34, 43-44, 53-53, 63-64, 73-74 and 83-84 close. The LED´s channel 1 and 2 illuminate. The fault LED illuminates if one or more safety circuits are open. The fault LED will be illuminated while the expansion module relay is operational.

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min. 100 mA at 24 V DC with hard gold-plated contacts.
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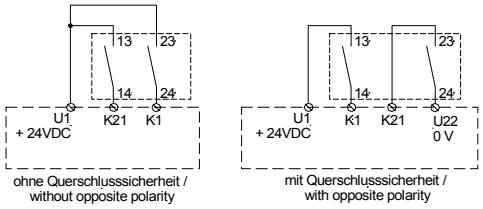
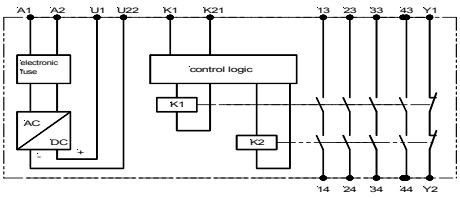
Please ask our sales team!

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

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**RS-NAGX 5**	siehe S. 4
APPLICATIONS	Expansion module for emergency stop relay according to VDE 0113	
APPROVALS	CE, TÜV (UL, C-UL pending)	
CONTACTS	5 normally open safety and 1 normally safety closed (feedback)	
SPECIAL CHARACTERISTICS	Optical indication of segment circuit over LED Easy way to increase the number of contacts Compact housing	
LED	Channel 1 and channel 2	
OPERATIONG VOLTAGE	24 V AC / DC (without galvanic disconnection, but with a safety resistor)	
POWER CONSUMPTION	ca. 2,4VA	
START UP DELAY / FALLBACK TIME	< 30ms	
CONTACT CAPACITY max.	6A 250VAC / 24VDC, sum of currents <16A	
CONTACT CAPACITY min. at 24V DC*	1 mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55 °C	
SWITCHING CAPACITY	1500 VA	
CONTACT SECURITY	6 A quick acting or 4 A time lag	
OPERATION MODE	Input circuit A1 is to be con-nected with one of the redundant safety outputs (13-14). Errors of the expansion unit will be an-nounced over the feedback con-trol loop (Y1-Y2) and the next activation will be disabled. In case of protected wiring (short current circuit exclusion) and regularly tests, for example dur-ing maintenance, up to safety category 4.	

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min. 100 mA at 24 V DC with hard gold-plated contacts.
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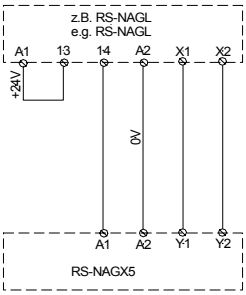
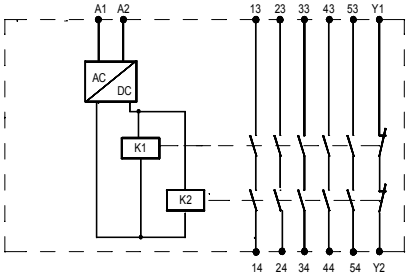


CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM

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DEVICE	**SAFE IL 2**	siehe S. 4
APPLICATIONS	Circuit breaker for main current circuits (e.g. 3-pulse motors)	
	additional to IL1 / IL2 / ILZ	
APPROVALS	CE, TÜV	
CONTACTS	3 normally open ; 1 normally closed	
	Optical indication of segment circuit over LED	
SPECIAL CHARACTERISTICS		
	Switching 3-phase current	
LED	Segmentvoltage Us	
OPERATIONG VOLTAGE	24 V DC (Powersupply from the INLINE station)	
POWER CONSUMPTION	6,3 W	
START UP DELAY / FALLBACK TIME	contactors : < 30ms, following segment circuit (fsc)180ms/ < 40ms, fsc directly	
CONTACT CAPACITY max.	12A 500VAC 45°C	
CONTACT CAPACITY min. at 24V DC*	100 mA	
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C	
SWITCHING CAPACITY	5500 VA	
CONTACT SECURITY	Typ 2 20A gG	

SAFE IL2 is a contact expansion for SAFE IL1 / ILL / ILZ. With SAFE IL2 it is possible to switch high electric currents and for example the motor switches MLR or ELR from Phoenix Contact can be connected. The device has to be connected to the Inline system. Over the 3-phase current- and the segment terminals the supply voltage is taken from the Interbus Inline station. After activating the SAFE IL1 / ILL / ILZ, the 'normally open contact' switches the segment voltage Us and the LED 'Us' illuminates. This causes that the coils on the conductor have a voltage of 24 V DC now and the SAFE IL2 switches. After the SAFE IL1 / ILL / ILZ is switched off, the output terminals go back into their origin possition. The opening contact is used as a feed back circuit for the SAFE IL1 / ILL / ILZ and has to be wired in series to the start button of SAFE IL1 / ILL / ILZ.

OPERATION MODE

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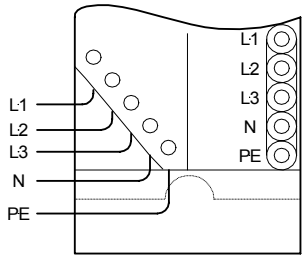
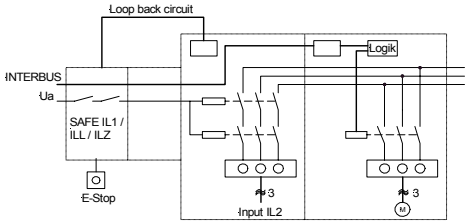
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM



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DEVICE	**RS-NAGU.12**	siehe S. 4
APPLICATIONS	Muting control	
APPROVALS	CE, TÜV	
CONTACTS	3 electronic safety-semiconductor outputs (2 PNP / 1 NPN)	
	4 muting sensors connectable	
SPECIAL CHARACTERISTICS	Control of filament of external muting lamp	
	Suitable for ESPE-2 with selftest	
LED	Power indication, channel 1, channel 2, fault and restart interlock	
OPERATIONG VOLTAGE	24 V DC	
POWER CONSUMPTION	10 W (up to 60W including peripheral devices)	
START UP DELAY / FALLBACK TIME	< 6 ms	
CONTACT CAPACITY max.	0,7 - 1,5A*, 24 V DC	
CONTACT CAPACITY min. at 24V DC*	1mA	
SIMULTANEITY	Simultaneous of the muting sensors : 3 s	
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C	
SWITCHING CAPACITY	17 W	
CONTACT SECURITY	outputs are permanently short circuit proof	

OPERATION MODE

RS-NAGU.12 could be used together with safety light barriers and safety light curtains with safety category 2 which have an selftest. The RS-NAGU.12 is used for muting of safety light barriers and safety light curtains. So that material - transport to or from a machine can be done. Applications can be found in the automotive industry, packaging machines or at highly automated production systems. The differentiation between human beings and material flow is done with up to four muting sensors or two safety light barriers. Inductive sensors or mechanical switches can also be used as muting sensors. After connection as per application guide, the device will be ready as soon as the power LED and channel are illuminated. If LED channel 1 is blinking, a fault exists or a wrong connection has been made. In ready condition the RS-NAGU.12 can be started by pushing the start key. If it cannot be started, then at least one of the muting sensors is blocked or not connected correctly. If a muting sensor is blocked by material supply, a muting can be initiated by actuation of the key switch. If the light barrier is interrupted after a muting cycle, RS-NAGU.12 can be activated by pushing the st as muting sensors 1 and 2, respectively 3 and 4 will be activated within 3 sec., the RS-NAGU.12 will initiate a muting cycle. Interruption of the light barrier will not cause a stop of the machine. If 3 of the 4 muting sensors are deactivated, the muting cycle will end after 0.25 sec.

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM

* 1,5A permanent output (1 output) up to 4,5A start-up cuttent (t<1s, Uv>21,6V) 1A permanent current (2 outputs), 0,7A permanent current (3 outputs)

FUNCTION CIRCUIT DIAGRAM

Notice: please ask for detail documents.

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DEVICE	**RS-NAGU.1 / RS-NAGU.2f** siehe S. 4
APPLICATIONS	Muting control
APPROVALS	RS-NAGU.1: CE, TÜV, UL, C-UL RS-NAGU.2 f: CE, TÜV, UL, C-UL
CONTACTS	RS-NAGU.1: 3 electr. safety-semicond. Outp. RS-NAGU.2 f: 3 normally open safety 4 muting sensors connectable
SPECIAL CHARACTERISTICS	Control of filament of external muting lamp Suitable for ESPE-2 and ESPE-4. With resest monitoring one fault.
LED	Power indication, channel 1, channel 2, fault and restart interlock
OPERATIONG VOLTAGE	24 V DC
POWER CONSUMPTION	10 W (up to 60W including peripheral devices)
START UP DELAY / FALLBACK TIME	RS-NAGU.1 : < 6 ms / RS-NAGU.2f : < 20 ms
CONTACT CAPACITY max.	RS-NAGU.1 : 0,7 - 1,5 A*, 24 V DC / RS-NAGU.2f : 3,5 - 6 A**,24 V AC/DC
CONTACT CAPACITY min. at 24V DC*	RS-NAGU.1: 1 mA / RS-NAGU.2f: 100 mA*
SIMULTANEITY	Simultaneous of the muting sensors : 3 s
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C
SWITCHING CAPACITY	NAGU.1: 17 W, NAGU.2f: 84 W
CONTACT SECURITY	RS-NAGU.1 : outputs are permanently short circuit proof RS-NAGU.2f :4 A brisk or 3,15 A time lag
OPERATION MODE	NAGU is used for muting of safety light barriers and safety light curtains, so that material - transport to or from a machine can be done. Applications can be found in the automotive industry, packaging machines or at highly automated production systems. The differentiation between human beings and material flow is done with up to four muting sensors or two safety light barriers. Inductive sensors or mechanical switches can also be used as muting sensors. After connection as per application guide, the device will be ready as soon as the power LED´s and channel 1 and channel 2 are illuminated. If LED´s channel 1/2 are blinking, a fault exists or a wrong connection has been made. In ready condition the RS-NAGU can be started by pushing the start key. If it cannot be started, then at least one of the muting sensors is blocked or not connected correctly. If a muting sensor is blocked by material supply, a muting can be initiated by actuation of the key switch. If the light barrier is interrupted after a muting cycle, RS-NAGU can be activated by pushing the start key after the failure has been fixed.

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Please ask our sales team!

As soon as muting sensors 1 and 2, respectively 3 and 4 will be activated within 3 sec., the RS-NAGU will initiate a muting cycle. Muting takesplace so long the inputs of both groups of mutingsensors are in active state plus 0,25s time-delay.

RS-NAGU.1 : 3 electronic safety semiconductor outputs.I
RS-NAGU 2f: 3 normally open safety, 3 normally open signal outputs (release, and safety light barrier)
RS-NAGU (housing with detachable terminal strips) also this unit is available

CONNECTION DIAGRAM

* 1,5A permanent current (1 output) up to 4,5A peak current (t<1s,UV>21,6V), 1A permanent current (2outputs), 0,7A permanent current (3 outputs)
** 6A permanent current (1 output), 3,5A permanent current (3 outputs)

FUNCTION CIRCUIT DIAGRAM

Notice: please ask for detail documents.

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DEVICE	**RS-NAGU.1b** siehe S. 4
APPLICATIONS	Mutingcontroller with FIELDBUS by using RS-FA1 or RS-FI1
APPROVALS	CE, TÜV (pending)
CONTACTS	3 electronic safety-semiconductor outputs 4 muting sensors connectable
SPECIAL CHARACTERISTICS	Control of filament of external muting lamp Suitable for ESPE-2 and ESPE-4. With resest monitoring one fault.
LED	Power indication, channel 1, channel 2, fault and restart interlock
OPERATIONG VOLTAGE	24 V DC
POWER CONSUMPTION	10 W (up to 60W including peripheral devices)
START UP DELAY / FALLBACK TIME	< 6 ms
CONTACT CAPACITY max.	0,7 - 1,5A*, 24 V DC
CONTACT CAPACITY min. at 24V DC*	1 mA
SIMULTANEITY	Simultaneous of the muting sensors : 3 s
ENVIRONMENTAL TEMPERATURE	- 25°C to + 55°C
SWITCHING CAPACITY	17 W
CONTACT SECURITY	outputs are permanently short circuit proof
OPERATION MODE	The function of RS-NAGU.1b is the same like RS-NAGU.1 (Function see RS-NAGU.1 Page 15). With RS-NAGU.1b it is possible to make a visualisation and diagnostic on a PC. Therefor RS-NAGU.1b has to be connected with our RS-FA1 or RS-FI1 on a fieldbus system like ASI bus or INTERBUS. All connections are very easy because SUB-D connectors were used. The comunication with the PC is made with the fieldbus systems ASI or INTERBUS. RS-NAGU.1b could also be used without a fieldbus system.

*We offer all devices who have a CONTACT CAPACITY of
min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM

*1,5 A permanent output (1 output) up to
4,5 A start-up cuttent (t<1s, Uv>21,6V)
1 A permanent current (2 outputs),
0,7 A permanent current (3 outputs).

FUNCTION CIRCUIT DIAGRAM

Notice: please ask for detail documents.

back top info

DEVICE	**RS-FA1**	siehe S. 4
APPLICATIONS	ASI - Bus interface module for RS-NAGU.1b	
APPROVALS	CE	
CONTACTS	Status visualisation from the mutingdevice RS-NAGU.1b	
SPECIAL CHARACTERISTICS	with riese electronic visualisation software	
LED	Power indication	
OPERATIONG VOLTAGE	22,5 V DC to 31,5 V DC	
POWER CONSUMPTION	1W	
START UP DELAY / FALLBACK TIME		
CONTACT CAPACITY max.		
CONTACT CAPACITY min. at 24V DC*		
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to +55°C	
SWITCHING CAPACITY		
CONTACT SECURITY		

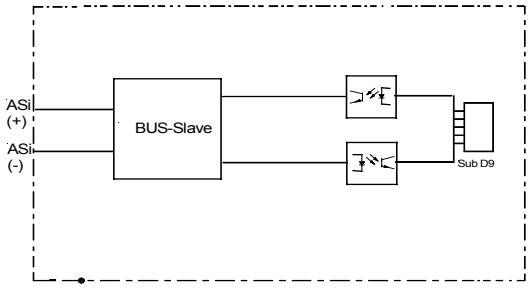
For the operation of the device ASi+ and ASi- the ASi signal line (yellow) must be attached at the clamps. The Sub-D9 plug must be connected with a RS-NAGU.1b . Further links are not necessary.

To realise this application an ASI Master, one RS_NAGU.1b and a FA1 must be used.
With the riese electronic visualisation software ASI-WIN the actuall status of the muting device can be shown on a PC.

OPERATION MODE

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM

Notice: please ask for detail documents.

back top info

DEVICE	**RS-FI1**	siehe S. 4
APPLICATIONS	INTERBUS interface module for RS-NAGU.1b	
APPROVALS	CE	
CONTACTS		
SPECIAL CHARACTERISTICS	Status visualisation from the mutingdevice RS-NAGU.1b with INTERBUS visualisation software	
LED	Power indication, Bus, fault, diagnostics	
OPERATIONG VOLTAGE	24 V DC	
POWER CONSUMPTION	1W	
START UP DELAY / FALLBACK TIME		
CONTACT CAPACITY max.		
CONTACT CAPACITY min. at 24V DC*		
SIMULTANEITY		
ENVIRONMENTAL TEMPERATURE	-25°C to +55°C	
SWITCHING CAPACITY		
CONTACT SECURITY		

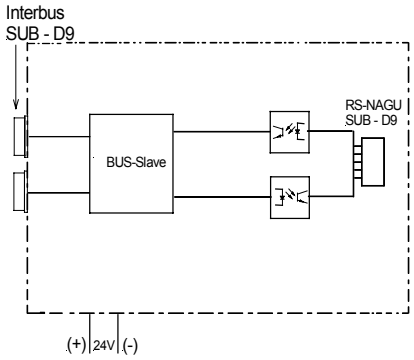
For the operation of the device the RS-NAGU Sub-D9 plug must be connected with a RS-NAGU.1b. The Interbus SUB-D9 plugs must be connected with Interbus. Further links are not necessary.

To realise this application an INTERBUS Master, one RS_NAGU.1b and a FI1 must be used, and also the according cables.
With the INTERBUS visualisation software the actuall status of the muting device can be shown on a PC.

OPERATION MODE

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

CONNECTION DIAGRAM



FUNCTION CIRCUIT DIAGRAM

Notice: please ask for detail documents.

back top info

SAFE CL/CM/CZ

siehe S. 4

DEVICE	
APPLICATIONS	
APPROVALS	
CONTACTS	3 semiconductor outputs short-circuit proof (pnp), 1 output for monitoring
SPECIAL CHARACTERISTICS	Selectable polarity between channels, visual indication of state of operation by LED, AND/OR linkage with different devices of several devices the eintire SAFE C-Series themselves
LED	Power, Channel 1, Channel 2
OPERATIONG VOLTAGE	24VDC (+/-20%)
POWER CONSUMPTION	
START UP DELAY / FALLBACK TIME	> 30ms
CONTACT CAPACITY max.	max. 2,5A
CONTACT CAPACITY min. at 24V DC*	min. 1mA
SIMULTANEITY	
ENVIRONMENTAL TEMPERATURE	-25°C bis +55°C
SWITCHING CAPACITY	max 72 W
CONTACT SECURITY	
	SAFE CL: safety relay for safety light curtains SAFE CM: safety relay for safety mats and safty edges SAFE CZ: two hand control relay
OPERATION MODE	

*We offer all devices who have a CONTACT CAPACITY of min. 100 mA at 24 V DC with hard gold-plated contacts.
In this way the CONTACT CAPACITY of min. 100 mA is only 4 mA
Please ask our sales team!

For further informations please contact our head office.

CONNECTION DIAGRAM

FUNCTION CIRCUIT DIAGRAM

back top info

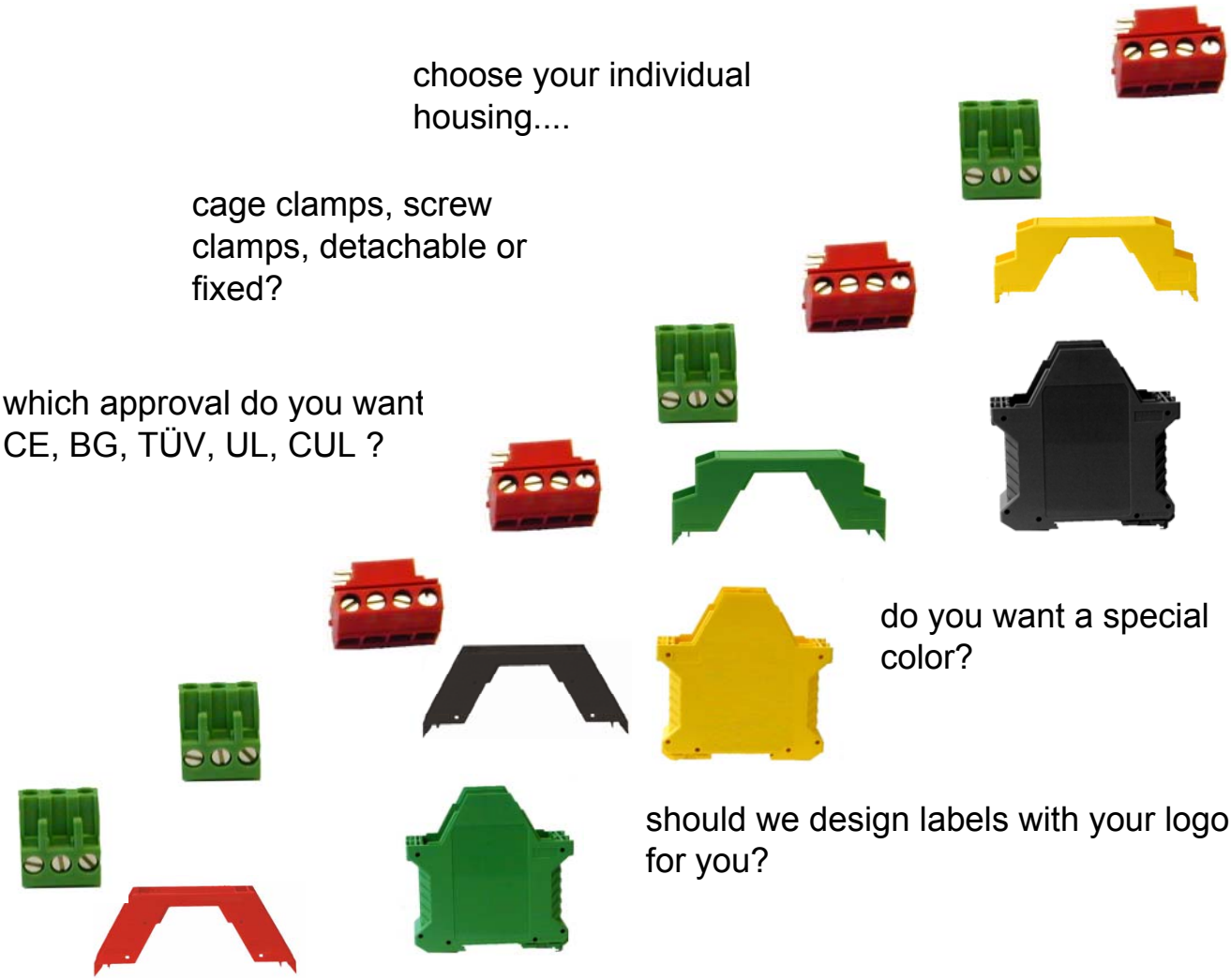
Your personal brand label-relay

You wish to have your brand label on one of your used safety relays? You have certain housing forms which you want to apply?
We offer many years' experience from our customized division. We are able to meet your needs flexibly at any time.
Whether there should be only your logo on the relay, or also a certain color is demanded, we work out a complete brand label project plan, to develop your specific safety relay, fast and with competence.

choose your individual housing....

cage clamps, screw clamps, detachable or fixed?

which approval do you want CE, BG, TÜV, UL, CUL ?



do you want a special color?

should we design labels with your logo for you?

whatever you would like to have...do not hesitate to ask us...

...your riese electronic team

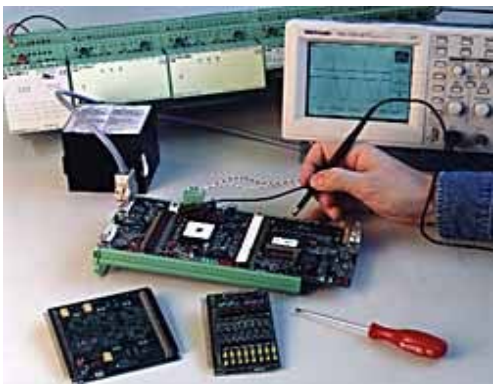
Technical data

► Voltage range	SAFE 1/1.1 / SAFE 2/2.1/2.2 / SAFE S.6 / SAFE S.10 / SAFE 4/4.1 / SAFE M RS-NAGV / RS-NAGT/T.1 / SAFE L/L.1 / SAFE L.2 / SAFE Z / SAFE IRZ.2 RS-NAGU.12 / RS-NAGU.1 / RS-NAGU.2f / RS-NAGU.1b		0,9 to 1,1 UB
	RS-NAGP / RS-NAGMP/P.1 / RS-NAGA/AO / SAFE T / TON SAFE IL1 / SAFE 5/5.1 / RS-NAGL/L.1 / SAFE ILL / SAFE Z.2 / RS-NAGZ / SAFE ILZ SAFE X4/4.1 / RS-NAGX5 / SAFE IL2 / FI1		0,85 to 1,1 UB
	SAFE C1		0,8 to 1,2 UB
	FA1		over ASI-Bus
► Clearance and creeping distance	DIN VDE 0110 part 1 resp. DIN VDE 0160 at pollution grade 2, over voltage category 3 / 250 V SAFE L/L.1, SAFE Z, NAGU.2F, DIN EN 50178		
► max. switching voltage	250 V AC, 60 V DC	RS-NAGU.1, SAFE IL...:	24 V DC
		SAFE C1	24 V DC
		RS-NAGU.2 f:	40 V DC
► max. switching current	SAFE IL2 :		12 A AC, cos φ = 1
	SAFE S.10 :		10 A AC, cos φ = 1;10 A DC, τ = 0
	RS-NAGP, RS-NAGMP/MP.1 :		8 A AC, cos φ = 1; 8 A DC, τ = 0
	SAFE IRZ.2, SAFE 1/ 1.1/ 4/ 4.1/ M/ Z.3 :		5 A AC, cos φ = 1; 5 A DC, τ = 0
	SAFE IL1, SAFE ILL, SAFE ILZ :		4 A AC, cos φ = 1; 4 A DC, τ = 0
	NAGU.2f :		6ADC (1 Contact), τ = 0
	NAGU.1/RS-NAGU.12/RS-NAGU.1b :		1,5 A DC (1 Contact), τ = 0
	SAFE C1		2,5 A DC (1 contact)
	Other :		6 A AC, cos φ = 1; 6 A DC, τ = 0
► Mechanical lifetime	10^7 switches		
► Electronical lifetime	10^5 switches		
► Protection classes:	die space		IP 54
	housing		IP 40
	terminal area		IP 20
► Mounting	DIN EN 50022 [35mm]		

Pay attention to housing with detachable terminal strips: first take the power away, when you wish to detache the terminal strips.

► ** The ground wire has to be connected to terminal PE when an auxillary voltage used (at the terminals A1 and A2)
UB~ / whit galvanic disconnection to connect a protective conductor. By AC/DC or DC - diveces is this not permitted.

All user manuals are available under http://www.riese-electronic.de



Developement

Production

special advantages

► emergency stop according to DIN and DIN EN418
► redundant positiv guided relay
► cyclical monitoring of the function
► housing with detachable terminal strip
(for a quick change of the devices) by the
NAG-line (without RS-NAGU.1 / RS-NAGU.2f /
RS-NAGU.1f / RS-NAGU.12)
► wireless layout
► housing of self extinguishing plastic according to UL 94-V1
► 100% computer assisted check

Test-center

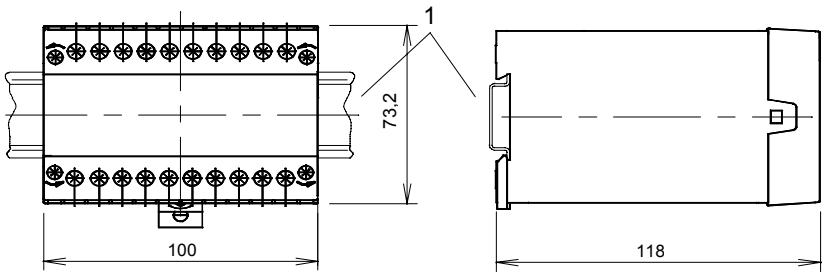
Dimensions

RS-NAGZ

RS-NAGMP/P.1

RS-NAGL

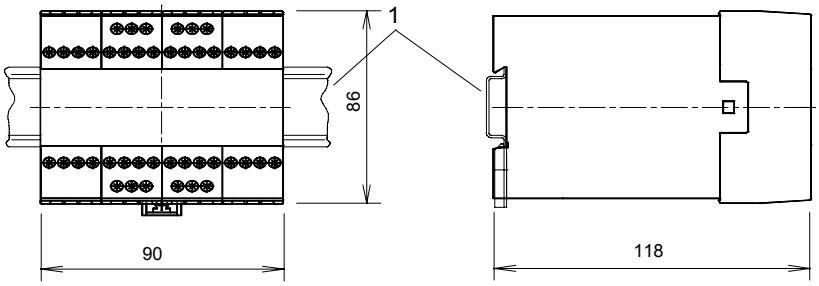
RS-NAGL.1
RS-NAGV
RS-NAGP



RS-NAGU.1

RS-NAGU.2f
(Ⓐ instead of 4 , now 7 terminals)
RS-NAGU.1b

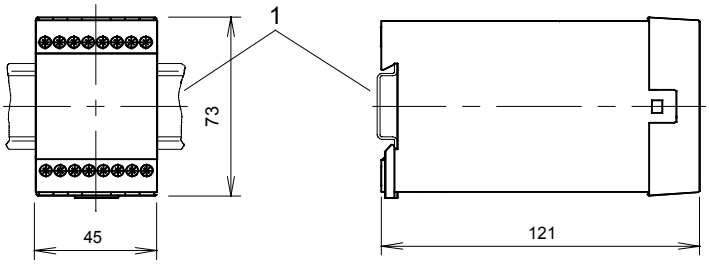
RS-NAGU.12



RS-NAGA

RS-NAGAO

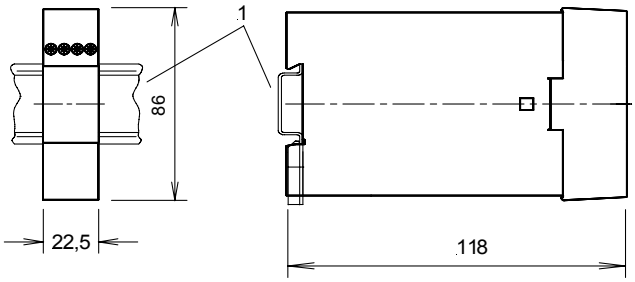
RS-NAGT



FA1

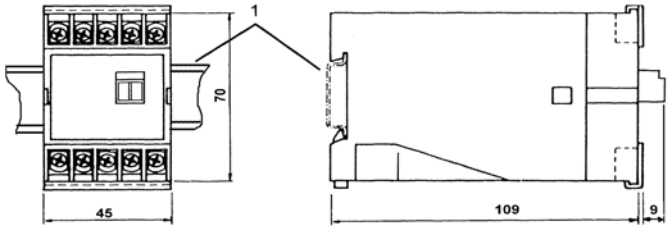
FI1

RS-NAGX5



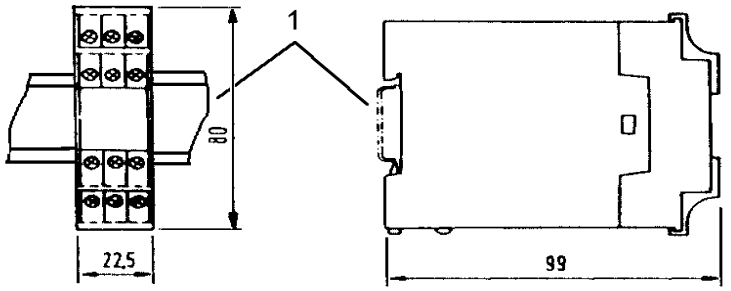
SAFE S.6

SAFE S.10
(additional opening on bottom part for heat discripation)

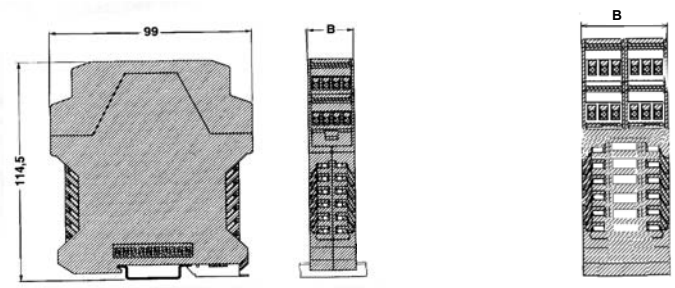


Dimensions

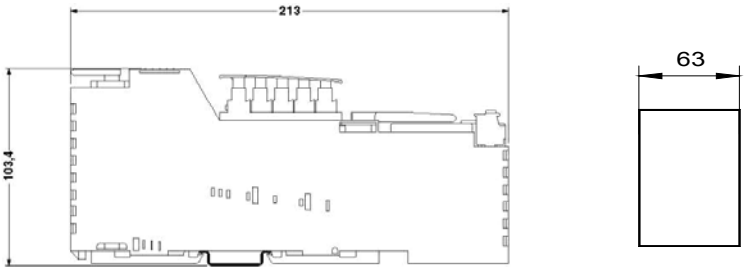
SAFE 1
SAFE 1.1
SAFE 2
SAFE 2.1
SAFE 2.2
SAFE Z
SAFE L
SAFE L.1
SAFE IRZ.2
(8 terminals)



	B [mm]
SAFE 4/4.1	22.5
SAFE 5 /5.1	22.5
SAFE C1	22.5
SAFE M	22.5
SAFE L.2	22.5
SAFE X4	22.5
SAFE Z.2	22.5
SAFE T	35



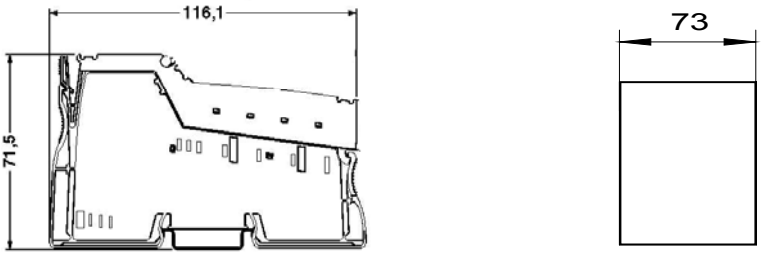
SAFE IL2



SAFE IL 1

SAFE IL L

SAFE IL Z



Legend:

1 - Attachment rail DIN EN50022

Printed 01.04.2005

We reserve the right to make changes to the technical specification.
Not resopnsible for typographical text and drawing errors.
With this prospect all prospects before are no longer valid.
Since text and pictures in this folder only the handling and illustration,
we cannot take over adhesion for possible errors.

Order numbers:

type:	voltage:	part -nr.:
FA 1	24 V DC	AR.9668.9000
FI 1	24 V DC	AR.9668.9100
NAGA	24 V AC	AR.9663.8000
NAGA	24 V AC/DC	AR.9663.2000
NAGA	24 V DC	AR.9663.9000
NAGA	48 V AC	AR.9663.3000
NAGA	110-127 V AC	AR.9663.4000
NAGA	230 V AC	AR.9663.5000
NAGAO	24 V AC	AR.9665.8000
NAGAO	24 V AC/DC	AR.9665.2000
NAGAO	24 V DC	AR.9665.9000
NAGAO	48 V AC	AR.9665.3000
NAGAO	110-127 V AC	AR.9665.4000
NAGAO	230 V AC	AR.9665.5000
NAGL	24 V AC	AR.9610.8000
NAGL	24 V AC/DC	AR.9610.2000
NAGL	24 V DC	AR.9610.9000
NAGL	48 V AC	AR.9610.3000
NAGL	110-127 V AC	AR.9610.4000
NAGL	230 V AC	AR.9610.5000
NAGL.1	24 V DC	AR.9610.9003
NAGP	24 V AC	AR.9601.8000
NAGP	24 V AC/DC	AR.9601.2000
NAGP	24 V DC	AR.9601.9000
NAGP	48 V AC	AR.9601.3000
NAGP	110-127 V AC	AR.9601.4000
NAGP	230 V AC	AR.9601.5000
NAGMP	12 V AC	AR.9605.1001
NAGMP	24 V AC	AR.9605.8001
NAGMP	24 V DC	AR.9605.9001
NAGMP	24 V AC/DC	AR.9605.2001
NAGMP	110-127 V AC	AR.9605.4001
NAGMP	230 V AC	AR.9605.5001
NAGMP.1	12 V AC	AR.9605.1002
NAGMP.1	24 V AC	AR.9605.8002
NAGMP.1	24 V DC	AR.9605.9002
NAGMP.1	24 V AC/DC	AR.9605.2002
NAGMP.1	110-127 V AC	AR.9605.4002
NAGMP.1	230 V AC	AR.9605.5002
NAGU.12	24 V DC	AR.9667.9012
NAGU.1	24 V DC	AR.9667.9010
NAGU.2f	24 V DC	AR.9667.9020
NAGU.1b	24 V DC	AR.9667.9011
NAGT	24 V AC / DC	AR.9661.2000
NAGT	110-127VAC / 24VDC	AR.9661.4000
NAGT	230 V AC / 24 V DC	AR.9661.5000
NAGT.1	24 V AC / DC	AR.9661.2005
NAGT.1	110-127VAC / 24VDC	AR.9661.4005
NAGT.1	230 V AC / 24 V DC	AR.9661.5005
NAGX5	24 V AC/DC	AR.9615.2000
NAGV	24 V AC	AR.9640.8000
NAGV	24 V AC/DC	AR.9640.2000
NAGV	24 V DC	AR.9640.9000
NAGV	110-127 V AC	AR.9640.4000
NAGV	230 V AC	AR.9640.5000
NAGZ	24 V AC	AR.9611.8000
NAGZ	24 V DC	AR.9611.9000
NAGZ	110-127 V AC	AR.9611.4000
NAGZ	230 V AC	AR.9611.5000
SAFE 1	24 V AC/DC	AR.9655.2000
SAFE 1.1	24 V AC/DC	AR.9654.2000
SAFE 2	24 V AC/DC	AR.9656.2000
SAFE 2.1	24 V AC/DC	AR.9657.2000
SAFE 2.2	24 V AC/DC	AR.9657.2010
SAFE 4	24 V AC/DC	AR.9659.2000
SAFE 4.1	24 V AC/DC	AR.9660.2000
SAFE 4	110-127 V AC	AR.9659.4000
SAFE 4.1	110-127 V AC	AR.9660.4000
SAFE 4	230 V AC	AR.9659.5000
SAFE 4.1	230 V AC	AR.9660.5000
SAFE 5	24 V AC/DC	AR.9645.2000
SAFE 5.1	24 V AC/DC	AR.9646.2000
SAFE S.6	12 V DC	AR.9650.1000
SAFE S.6	24 V AC	AR.9650.8000
SAFE S.6	24 V AC/DC	AR.9650.2000
SAFE S.6	24 V DC	AR.9650.9000
SAFE S.6	110-127 V AC	AR.9650.4000
SAFE S.6	230 V AC	AR.9650.5000
SAFE S.10	24 V AC	AR.9653.8000
SAFE S.10	24 V AC/DC	AR.9653.2000
SAFE S.10	24 V DC	AR.9653.9000
SAFE S.10	110-127 V AC	AR.9653.4000
SAFE S.10	230 V AC	AR.9653.5000

type:	voltage:	part -nr.:
SAFE IL.1	24 V DC	AR.9625.9000
SAFE IL.2	24 V DC	AR.9626.9000
SAFE IL L	24 V DC	AR.9627.9000
SAFE IL Z	24 V DC	AR.9628.9000
SAFE IRZ.2	24 V AC/DC	AR.1632.2010
SAFE L	24 V AC/DC	AR.9671.2000
SAFE L.1	24 V AC/DC	AR.9671.2010
SAFE L.2	24 V AC/DC	AR.9671.2100
SAFE M	24 V AC/DC	AR.9647.2000
SAFE M.1	24 V AC/DC	AR.9648.2000
SAFE TN	24 V AC/DC	AR.9621.2010
SAFE TA	24 V AC/DC	AR.9621.2011
SAFE TR	24 V AC/DC	AR.9621.2012
SAFE TU	24 V AC/DC	AR.9621.2013
SAFE TON	24 V AC/DC	AR.9621.2100
SAFE X4	24 V AC/DC	AR.9613.2000
SAFE X4.1	24 V AC/DC	AR.9613.2010
SAFE X4	48 V AC	AR.9613.3000
SAFE X4.1	48 V AC	AR.9613.3010
SAFE X4	110-127 V AC	AR.9613.4000
SAFE X4.1	110-127 V AC	AR.9613.4010
SAFE X4	230 V AC	AR.9613.5000
SAFE X4.1	230 V AC	AR.9613.5010
SAFE Z	24 V DC	AR.9672.9000
SAFE Z.2	24 V AC/DC	AR.9673.2000
SAFE Z.2	48 V AC	AR.9673.3000
SAFE Z.2	110-127 V AC	AR.9673.4000
SAFE Z.2	230 V AC	AR.9673.5000

Following devices are still available with some changes

NAGU	24 V DC	AR.9667.9000	detachable clamps

no more in the program **succeding product**

type:	voltage:	part -nr.:	
NAGE	24 V AC	AR.9607.8000	NAGMP/P.1 (see above)
NAGE	24 V AC/DC	AR.9607.2000	NAGMP/P.1 (see above)
NAGE	24 V DC	AR.9607.9000	NAGMP/P.1 (see above)
NAGE	110-127 V AC	AR.9607.4000	NAGMP/P.1 (see above)
NAGE	230 V AC	AR.9607.5000	NAGMP/P.1 (see above)
NAGK	12 V AC/DC	AR.9662.1000	NAGA/ NAGA/O (see above)
NAGK	24 V AC	AR.9662.2000	NAGA/ NAGA/O (see above)
NAGK	110-127 V AC	AR.9662.4000	NAGA/ NAGA/O (see above)
NAGK	230 V AC	AR.9662.5000	NAGA/ NAGA/O (see above)
NAGM	12 V AC/DC	AR.9605.1000	NAGMP/ NAGMP.1 (see above)
NAGM	24 V AC	AR.9605.8000	NAGMP/ NAGMP.1 (see above)
NAGM	24 V AC/DC	AR.9605.2000	NAGMP/ NAGMP.1 (see above)
NAGM	24 V DC	AR.9605.9000	NAGMP/ NAGMP.1 (see above)
NAGM	110-127 V AC	AR.9605.4000	NAGMP/ NAGMP.1 (see above)
NAGM	230 V AC	AR.9605.5000	NAGMP/ NAGMP.1 (see above)
NAGX4	24 V AC	AR.9614.8000	SAFE X.4/ 4.1 or NAGX5 (see above)
NAGX4	24 V AC/DC	AR.9614.2000	SAFE X.4/ 4.1 or NAGX5 (see above)
NAGX4	24 V CD	AR.9614.9000	SAFE X.4/ 4.1 or NAGX5 (see above)
NAGX4	110-127 V AC	AR.9614.4000	SAFE X.4/ 4.1 (see above)
NAGX4	230 V AC	AR.9614.5000	SAFE X.4/ 4.1 (see above)
NAGX8	24 V AC	AR.9618.8000	two SAFE X.4/ 4.1 or NAGX5 (see above)
NAGX8	24 V AC/DC	AR.9618.2000	two SAFE X.4/ 4.1 or NAGX5 (see above)
NAGX8	24 V CD	AR.9618.9000	two SAFE X.4/ 4.1 or NAGX5 (see above)
NAGX8	110-127 V AC	AR.9618.4000	two SAFE X.4/ 4.1 (see above)
NAGX8	230 V AC	AR.9618.5000	two SAFE X.4/ 4.1 (see above)
SAFE S.8	24 V AC	AR.9652.8000	SAFE S.10
SAFE S.8	24 V AC/DC	AR.9652.2000	SAFE S.10
SAFE S.8	24 V DC	AR.9652.9000	SAFE S.10
SAFE S.8	110-127 V AC	AR.9652.4000	SAFE S.10
SAFE S.8	230 V AC	AR.9652.5000	SAFE S.10

relevant information: partly also available with hard gold-plated contacts
Please ask for price and delivery time by hard gold-plated contacts

Operating Instructions: You will find it at http://www.riese-electronic.de

riese electronic gmbh:
Head office
Junghansstr. 16
D-72160 Horb am Neckar
Tel.: 0049 7451 / 5501-18
Fax: 0049 7451 / 5501-70
E-Mail: info@riese-electronic.de
Internet: www.riese-electronic.de

Zeulenroda branch
Schleizer Str. 36-38
D-07937 Zeulenroda
Phone: 0049 36628 / 725 - 0
Fax.: 0049 36628 / 725 - 17
E-Mail: automation.sicherheit@riese-electronic.de
www.automation-sicherheit.de

Please ask for additional information on:

- **time-delay relays**
- **measuring relays**
- **application guide safety**
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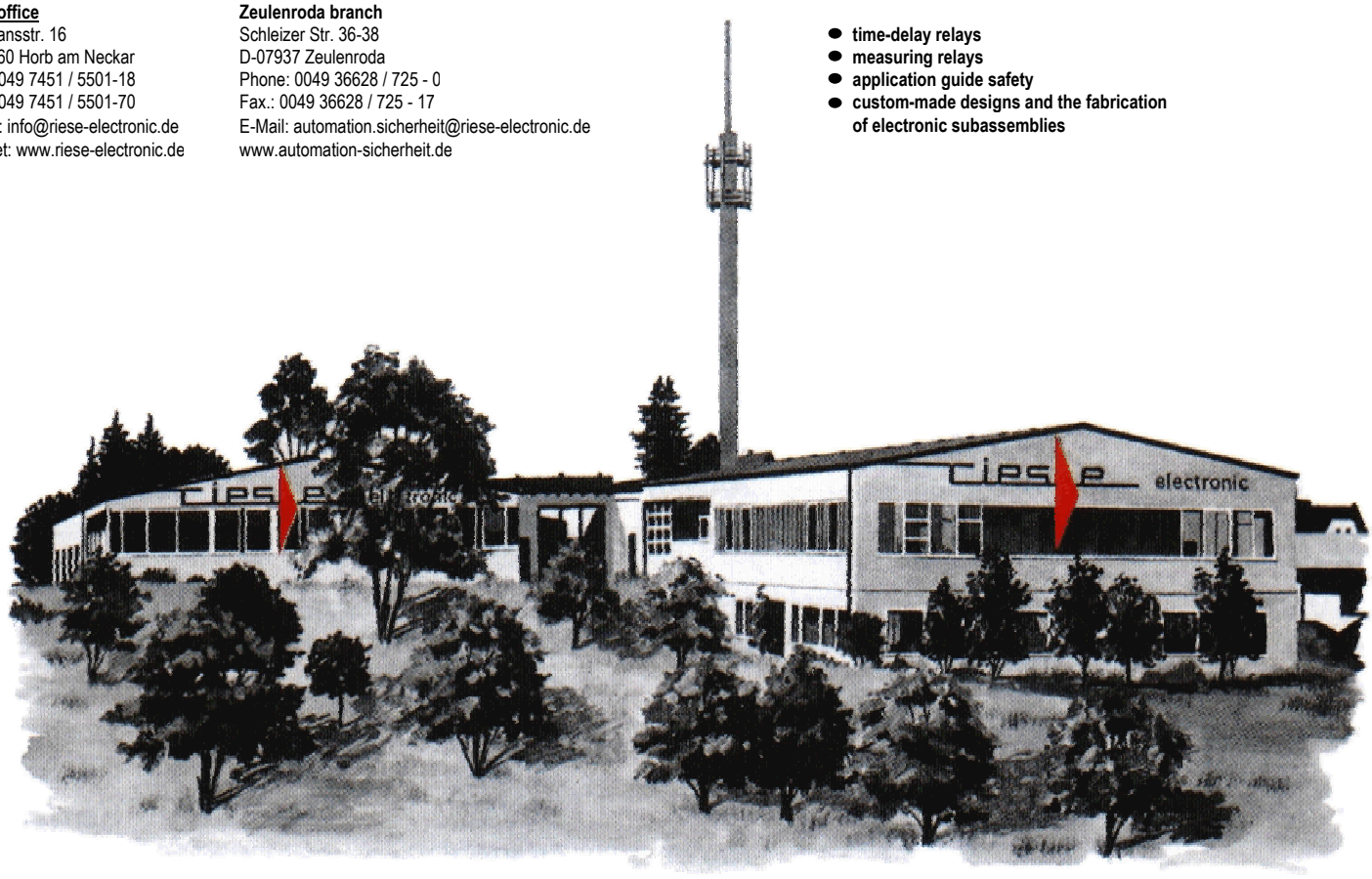

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