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## Contact Details

Kuhnke sales and service in the UK

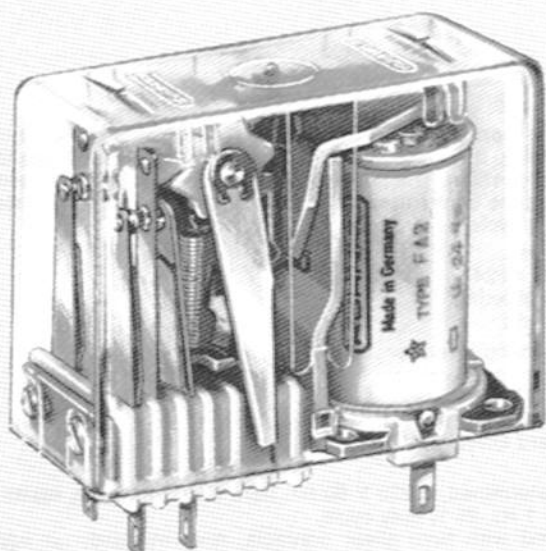
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# Industrial Impulse Latching Relay

Ⓢ design possible

please state design required when ordering

## Order Code

**FA 2 - 24 V DC**

Impulse Latching Relay

Type

- A plug-in type for base or push-on connector A 2.8 DIN 46247 for solder connection
- G for printed circuit

Contact arrangement

- 2 c/o contacts

Contact material

Hard silver (no code letter)

Nominal operating coil voltage

Coil current type

- DC
- AC 50 Hz (other frequencies on request)

Additional options

- B quick-action fastening for rail EN 50022 - 35 x 7.5 or 15

Order code for:

- Impulse Latching Relay with special winding FA2-XXX XXX = coil number
- Impulse Latching Relay of special design RS XXXX XXXX = 4-digit reference number

## Accessories (dimensions pages 139 to 141)

relay	sockets* for						
	solder connection	screw connection		printed circuit	sockets A 2.8 DIN 46 247	retaining clip	fastening bracket
		screw fastening	with quick-action fastening**				
FA 2	Z 381	Z 382	Z 382.02	Z 388	Z 381 with Z 391	Z 482	Z 582

\* We recommend using retaining clips.

\*\* For rail EN 50 022, 35 x 7.5 or 15.

# Industrial Impulse Latching Relay

**Application** Within the Industrial Relay system the Industrial Impulse Latching Relay assumes the function of the Latching or Impulse Latching Relay. It is used where a current impulse ( $\geq 50$  ms) is to be transformed into a sustained contact position. The contact position changes in each case when the coil power is connected and remains unchanged on disconnection of power. The standard windings are designed for 100 % duty cycle.

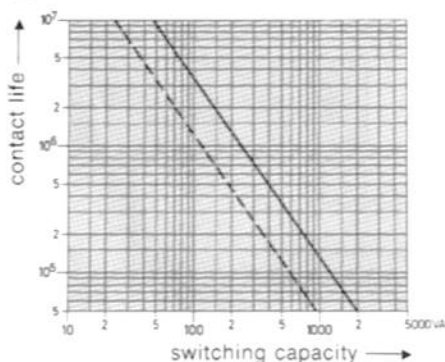
**Types** A plug-in, suitable for relay bases  
push-on connectors A 2.8 DIN 46 247  
solder connection for direct soldering  
G for printed circuit of 2.5 mm grid

**Contact data** Number and type of contacts 2 changeover contacts  
Nominal contact current 6 A  
Making current  $\leq 20$  A  
Nominal contact voltage 250 V AC  
Contact material Hard silver  
Dual contacts not possible

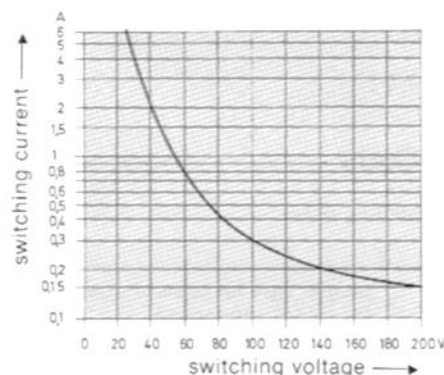
AC switching capacity reliability: determined at 220 V 50 Hz, hard silver contacts, resistive and inductive load, switching frequency 1 Hz, 25 % duty cycle.

DC switching capacity: determined with hard silver contacts, resistive load, no additional quenching aid for arc rupture, switching frequency 1 Hz, 25 % duty cycle.

**AC switching capacity reliability**  
90 % survival



**DC switching capacity**



— = resistive load    - - - = inductive load  $\cos \varphi = 0.4-0.7$

**Operating times**

Pull-in time DC excitation 15 – 25 ms AC excitation 5 – 20 ms  
max. switching frequency 2 Hz 2 Hz

**Insulation classification**

C 250, VDE 110 b 2.79

**Life expectancy**

Mechanical life expectancy: tested at 4 Hz with 50 % duty cycle. The values given represent 90 % of relays tested.

DC excitation approx.  $2 \times 10^6$  cycles AC excitation approx.  $10^6$  cycles

**Test voltage, climatic classification, operating range** for DC see Industrial Switching Relay, p. 122.

Operating range for AC: 90 – 100 % of nominal voltage, other data as p. 123.

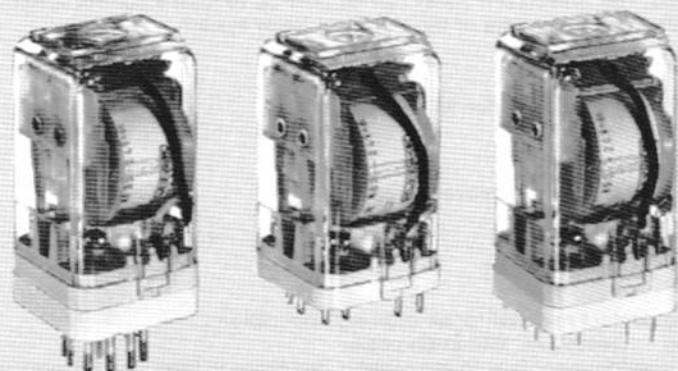
## Standard coils

DC			AC 50 Hz		
Pull-in power approx.		1.4 W	Pull-in current		1.5 x nominal current
Nominal power approx.		3.3 W	Nominal power approx.		6.5 VA
Pull-in voltage 80 % of nominal voltage			Pull-in voltage 90 % of nominal voltage		
Relay designation Nominal voltage	Nominal resistance $\Omega$	Nominal current mA	Relay designation Nominal voltage	Nominal resistance $\Omega$	Nominal current mA
F..2- 12 V DC	47	260	F..2= 12 V AC	4.8	460
- 24 V DC	164	150	- 24 V AC	19	250
- 40 V DC	458	87	- 42 V AC	59	140
- 60 V DC	1 060	57	- 60 V AC	130	95
- 110 V DC	4 030	27	- 110 V AC	430	52
- 220 V DC	12 800	17	- 220 V AC	1 850	26

Connection diagram see page 141

Dimensions as for IA 4 – see page 124.

Weight (minus base): approx. 160 g.



# Universal H Relay

## Order code

**H F 3 - 24 V DC**

H Relay

Types

- F plug-in type, international 8-pin or 11-pin base
- A plug-in type, with special bases, for push-on connection A 2.8 in accordance with DIN 46247 for solder connection
- G for printed circuits

Contact arrangement

- 2 C/O contacts for 6 A
- 3 C/O contacts for 6 A

Contact material

- Hard silver (no code letter)
- C AgCdO
- P AgPd

Nominal coil voltage

Coil current type  
DC

Order code for:

H Relay with special winding  
H Relay of special design

e.g. HA3-XXX  
RS XXXX

XXX = coil number  
XXXX = 4-digit reference number

## Accessories (dimensions see pages 112 to 118)

relays	sockets* for						solder connection	printed circuit	retaining clip	retaining plate
	screw connection		push-on connection 6.3**		push-on connection 2.8**					
	for screw fastening	with quick action fastening***	for screw fastening	with quick action fastening***	for screw fastening	with quick action fastening***				
HF 2	Z 332	Z 332.02 Z 392 Z 392.12****	Z 332.01	Z 332.03	Z 332.11	Z 332.13	Z 331		Z 434 Z 434 with Z 553	
HF 3	Z 342	Z 342.02 Z 345 Z 393 Z 393.12****	Z 342.01	Z 342.03	Z 342.11	Z 342.13	Z 341		Z 434 Z 434 with Z 553	
HA	Z 352	Z 352.02					Z 351	Z 354	Z 441	

\* We recommend using retaining clips.

\*\* For push-on connectors DIN 46247.

\*\*\* Quick-action fastening for rails EN 50022-35 x 7.5 or 15

\*\*\*\* With protection diode.

# Universal H Relay

## Application

Within the Universal Relay system the Universal H Relay is a switching relay with increased pull-in sensitivity. It is used where with long control lines an excessive voltage drop should be prevented or only low control power is available. By virtue of the contact materials and the contact complement of a maximum of three changeover contacts available, adaptation is possible to the switching functions required. The Universal H Relay can be built up to form a control system of uniform design with the other function relays of the Universal Relay system.

## Types

- F plug-in, international 8-pin or 11-pin
- A plug-in with special bases  
push-on connectors A 2.8 in accordance with DIN 46 247  
for solder connection :
- G for printed circuits

## Contact data

Number and type of contacts 2 or 3 changeover contacts  
 Nom. op. contact current 6 A  
 Switch-on current  $\leq 20$  A  
 Nom. op. contact voltage 250 V AC

### Contact material

Hard silver, standard contact material for all ordinary applications.

C AgCdO for switching, increased AC switch-on peaks.

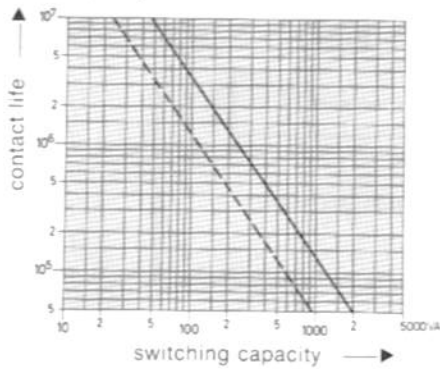
P AgPd 70/30, for use in sulphur-containing atmosphere, tendency to form a non-conducting deposit with low contact load.

AC switching reliability: determined at 220 V/50 Hz, with hard silver contacts, resistive or inductive load, switching frequency 1 Hz, 25 % duty cycle.

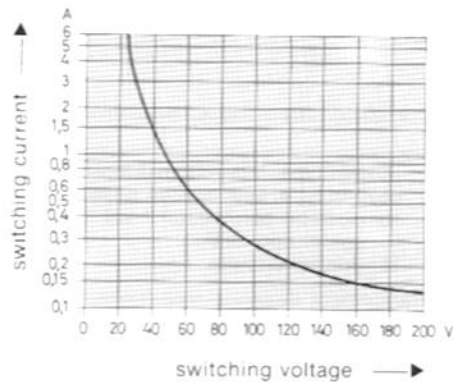
DC switching capability: determined with hard silver contacts, resistive load, no additional spark quenching, switching frequency 1 Hz, 25 % duty cycle.

### AC switching reliability

90 % working



### DC switching capability



— = resistive load,  
 - - - = inductive load,  $\cos. \varphi = 0.4 \dots 0.7$

## Operating times

Pull-in time DC excitation 12 – 18 ms  
 Drop-out time 4 – 10 ms

## Insulation classification

HF: C 250  
 HA, HG: coil C 60, B 250; contacts C 250 } VDE 0110 b.2.79

## Test voltage

2500 V (rms) coil and contacts to frame.

## Life expectancy

Mechanical life expectancy: approx.  $50 \times 10^6$  cycles, tested at 4 Hz and 50 % duty cycle. This value represents 90 % of tested relays.

## Climatic classification

With reference to DIN 40040 – Application Class and Reliability Data for Components in Communication and Electronics – the Universal M Relay is suitable for the following climatic classification:



Further tests according to DIN IEC 68 – Environmental Tests for Electronic Products – were carried out on relays not connected to power, see page 21.

## Operating range (see TNR page 20)

	Type of coil current DC
Operating range	class 1 0.8 – 1.1 $U_N$
Pull-in – coil pre-excited with $U_N$ at ambient temp. of:	class a 20° C
Drop-out	> 0.05 $U_N$

Ambient air temperature  $-5^\circ$  C to  $+40^\circ$  according to VDE 0435.

Depending on contact configuration, higher ambient temperatures may be permissible, as long as the maximum permissible temperature of  $120^\circ$  C is not exceeded.

# Universal H Relay

## Standard coils

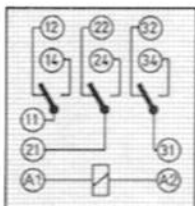
Number of contacts 2				Number of contacts 3			
Pull-in power approx.		210 mW		Pull-in power approx.		330 mW	
Nominal power approx.		350 mW		Nominal power approx.		600 mW	
Relay designation Nom. voltage	Nominal resistance $\Omega$	Nominal current mA	U* max. V	Relay designation Nom. voltage	Nominal resistance $\Omega$	Nominal current mA	U* max. V
H..2- 12 V =	442	27	37	H..3- 12 V =	268	45	29
- 24 V =	1 540	16	69	- 24 V =	1 030	23	57
- 40 V =	4 970	8,1	124	- 40 V =	3 010	13	97
- 60 V =	9 270	6,5	170	- 60 V =	7 710	7,8	155
-110 V =	29 400	3,7	303	-110 V =	19 400	5,7	246
** -125 V =	46 900	2,7	382	-220 V =	46 900	4,7	382

\* at  $\leq 40^\circ \text{C}$  ambient temperature  
 \*\* for use up to 220 V DC  
 Other nominal voltages 6 V DC, 48 V DC. Special higher resistance windings are available on request.

## Connection diagrams

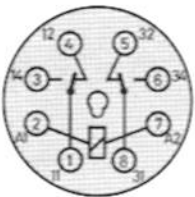
viewed on terminals

Types A and G

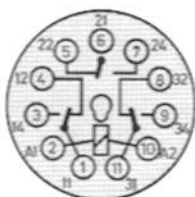


With two changeover contacts, terminals 11-12-14 and 31-32-34 are occupied.

**Type F:**  
2 changeover contacts  
viewed on connector pins



**Type F:**  
3 changeover contacts

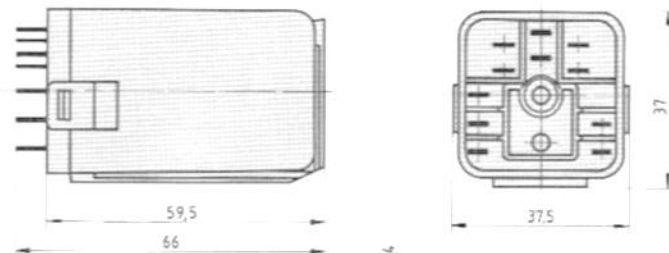


The numbers on the inner circle correspond to bases Z 331 or Z 341, the outer numbers to Z 332 and Z 342.

## Dimensions and grid matrix

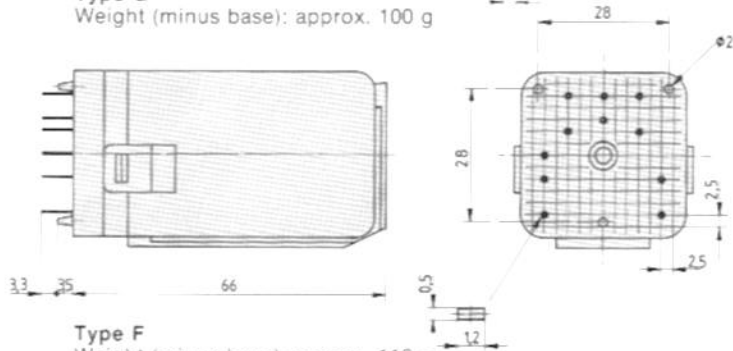
**Type A**

Weight (minus base): approx. 100 g



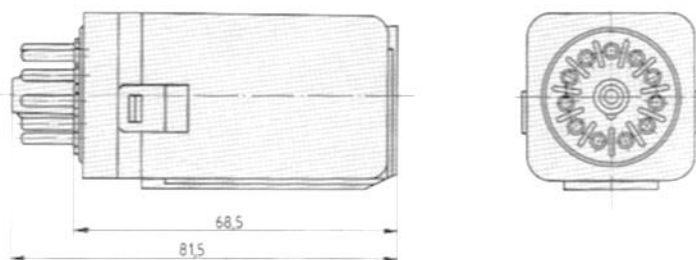
**Type G**

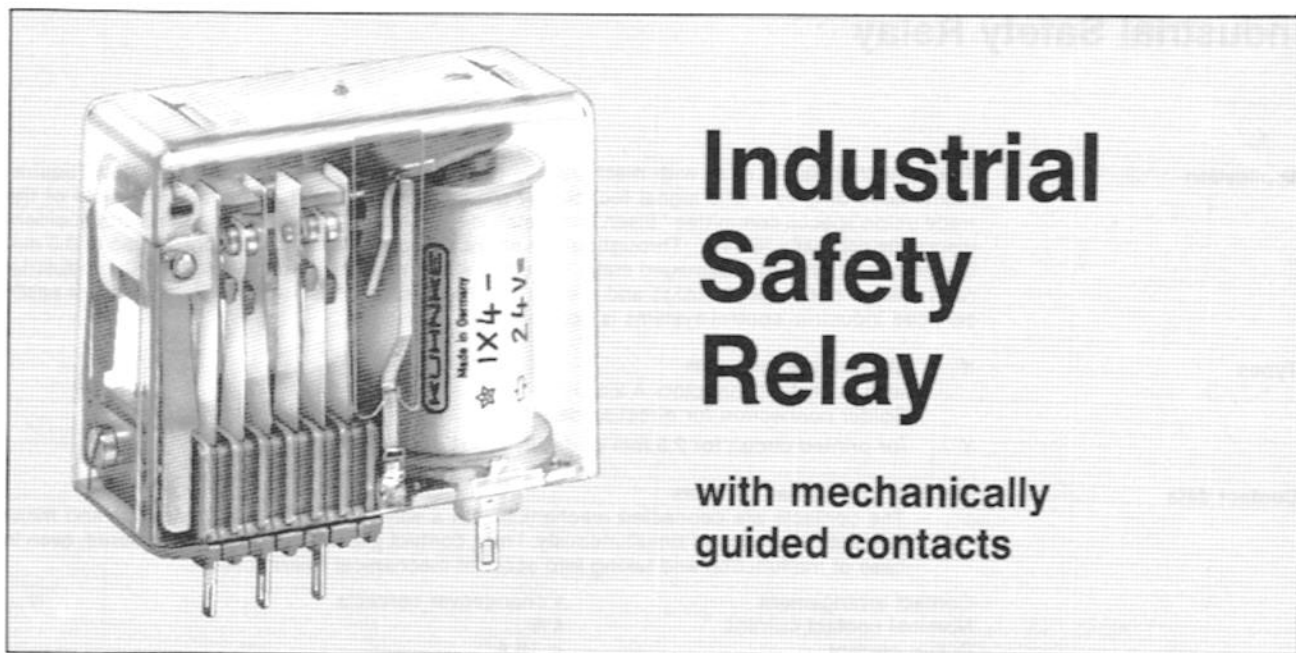
Weight (minus base): approx. 100 g



**Type F**

Weight (minus base): approx. 110 g



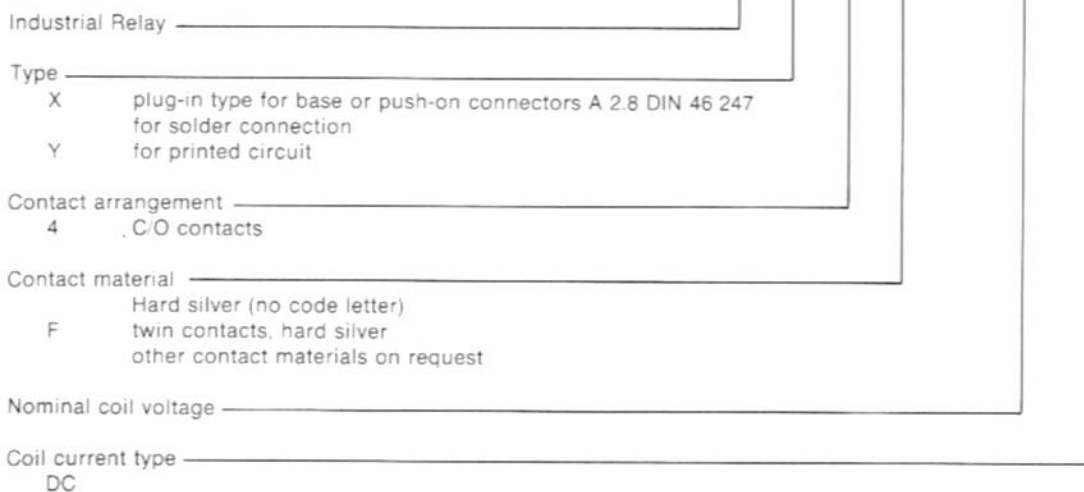


# Industrial Safety Relay

with mechanically guided contacts

## Order code

**I X 4 F - 24VDC**



## Accessories (dimensions pages 139 to 141)

relay	sockets* for					retaining clips	fastening bracket
	solder connection	screw connection		printed circuit	push-on connectors A 2.8 DIN 46 247		
		screw-type fastening	quick-action fastening**				
IX	Z 381	Z 382	Z 382.02	Z 388	Z 381 mit Z 391	Z 482	Z 582

\* We recommend using retaining clips

\*\* For rail EN 50 022 - 35 x 7.5 or 15.

# Industrial Safety Relay

## Application

The Industrial Safety relay with mechanically guided contact complies with the safety requirements according to traffic signal technology requirements, as well as the requirements of the trade union special committee "Eisen und Metall III – Sachgebiet Pressen" and the Swiss accident insurance company "SUVA". Throughout the entire service life a minimum contact gap of 0.5 mm is maintained even in a damaged state. Together with the other function relays of the industrial relay system of the same design and the easy to install accessories rational installation of easily serviced industrial control systems is possible.

## Types

- X plug-in type for bases  
with push-on connectors A 2.8 DIN 46 247  
Solder connection for direct soldering
- Y for printed circuit for 2.5 mm grid, DIN 40801

## Contact data

### Mechanically guided contacts

The contacts are connected mechanically in a way to prevent break contacts and make contacts to be closed simultaneously. Thus, contact gaps of  $> 0.5$  mm are ensured, even in case of malfunction and taking into account mechanical tolerances.

- Contact arrangement 4 changeover contacts
- Nominal contact current 4 A
- Pull-in current  $< 10$  A
- Nom. op. coil voltage 250 V AC
- Switching power AC 1: 1000 VA per contact  
AC 11: 500 VA per contact  
DC 1: 0.5 A, 24 V DC
- Life expectancy see switching capability diagrams
- Contact design Main contacts, hard silver, for contact loads  $> 20$  V/100 mA,  
no code letter
- F control contacts, hard silver, twin contact construction, suitable for contact loads 20 V/20 mA.

## Short circuit resistance

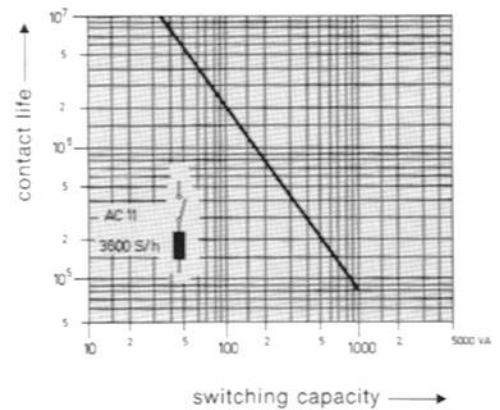
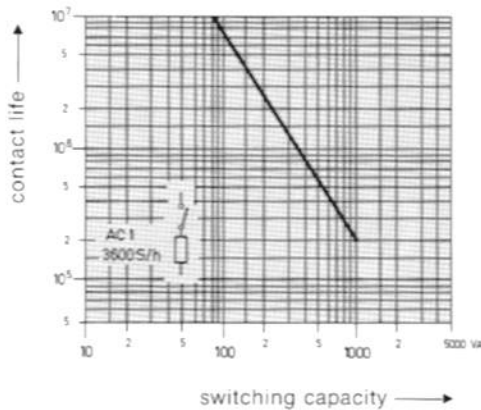
According to VDE 0660 part 200 the short circuit resistance is the capability of a switching device in its normally closed condition to endure on expected short circuit current of 1.000 A. Max. prelocated fuse should be 6 A, fast or slow.

## Switching reliability diagrams

AC switching reliability: determined at 220 V/50 Hz with hard silver main contacts, resistive or inductive load, frequency 1 Hz, 25 % duty cycle.

DC switching capability: determined with hard silver main contacts, resistive load, no additional spark quenching, frequency 1 Hz, 25 % duty cycle.

### AC switching reliability 90 % working



AC 1: in accordance with VDE 0660, part 102, resistive or low inductive AC load  
AC 11: in accordance with VDE 0660, part 200, inductive load,  $\cos \varphi = 0.7$

# Industrial Safety Relay

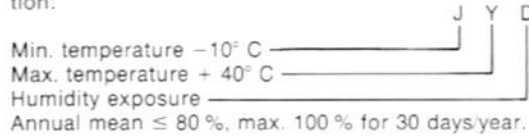
**Operating times** Pull-in time 10–25 ms  
Drop-out time 2–25 ms

**Insulation classification** C 250, VDE 0110 b'2.79

**Test voltage** 2500 V (rms) coil and contacts to frame, contact circuits to each other

**Life expectancy** Mechanical life expectancy: 20 x 10<sup>6</sup> cycles, tested at 4 Hz with 50 % duty cycle. This value represents 90% of relays tested.

**Climatic classification** With reference to DIN 40040 – Application Class and Reliability Data for Components in Communication and Electronics – the Industrial Safety Relay is suitable for the following climatic classification:



Further tests according to DIN IEC 68 – Environmental Tests for Electronic Products – were carried out on relays not connected to power, see p. 21.

**Operating range**  
(see TNR page 20)

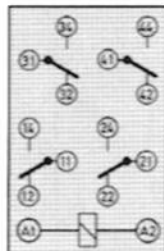
	Type of coil current DC
Operating range	class 1 0,8 – 1,1 U <sub>N</sub>
Pull-in – coil pre-excited with U <sub>N</sub> at ambient temp. of:	class a 20° C
Drop-out	> 0,05 U <sub>N</sub>

Ambient air temperature -5° C to +40° C, according to VDE 0435.

**Coil data** Standard winding 24 V DC  
 Coil resistance approx. 177 Ω  
 Nom. op. coil current approx. 135 mA  
 Pull-in power approx. 1.1 W  
 Nom. op. coil power approx. 3.3 W

## Connection diagram

viewed on terminals

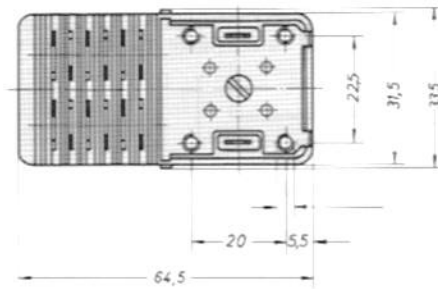


# Industrial Safety Relay

## Dimensions and grid matrix

Weight approx. 155 g

Model X



Model Y

