NY2 Intrinsically safe relays and DC/AC converters

General characteristics

An intrinsically safe relay would normally serve as an interface between a control system, situated within a safe zone, and an input device (conventional mechanical contact or NAMUR type proximity detector), situated within a hazardous area. This unit may be mounted within a flameproof enclosure.

Environment

Conformity to standards	EN 50020, NF C 23-520/BS 5501-7 (as a complete system), approved by LCIE, n° 83.6106X [EExia] IIC 83.8004X [EExia] I
Protective treatment	Standard version: "TH"
Ambient temperature	Storage: – 40 to + 85 °C. Operating: – 25 to + 50 °C (see page 110)
Resistance to vibration	0 to 25 Hz, amplitude 2 mm, conforming to NI 122 E Bureau Veritas
Resistance to shock	2,51 g
Degree of protection	IP 20

Electrical characteristics

Intrinsically safe relays	
Supply	**AC** ~: 50/60 Hz, 24/48 V, 110/220 V, 120/240 V (+ 10/– 15%). **DC** ⎓: 24/48 V (± 15%)
Consumption	4 VA
Protection by "quick-blow" fuse 5 x 20 mm	630 mA at 24/48 V ~ and 250 mA at 110/220 V and 120/240 V ~, this fuse is mounted on the voltage selector of the I.S. relay
SUPPLY TO INPUT DEVICES	Conforming to NAMUR recommendations
I.S. supply voltage	7.7 to 9 V DC ⎓ (to input device)
Internal resistance	1000 Ω ± 5%
I.S. supply current	0.2 mA < I off < 1.2 mA; 2.1 mA < I on < 10 mA
Maximum current per channel	10 mA
Line characteristics	Maximum resistance: with NAMUR proximity detector, 50 Ω, with mechanical contact, 2500 Ω **For surface (class IIC) use** — **For underground (class I) use** Maximum capacitance 0.8 µF — 24 µF Maximum inductance 18 mH — 160 mH Output functions and line O/C detection see truth table on page 107
Response time	5 ms with relay output, 0.2 ms with transistor output
OUTPUT CIRCUITS	With LED indicators
Relay output Types NY2-A and NY2-B	Mechanical life: 10 million operations Breaking capacity of contacts (conforming to EN 50-020) **AC**: V ⩽ 250 V RMS, I ⩽ 5 A RMS; P ⩽ 100 VA at 110/220 V, 120/240 V ~; P ⩽ 50 VA at 24/48 V ~; Cos φ ⩾ 0.3; 2.5 million operations at upper limits; Typical response times: Closing: 10 ms; Opening: 30 ms; Maximum operating frequency: 10 Hz **DC**: 24 ⩽ V ⩽ 110 V; I ⩽ 0.4 A; P ⩽ 24 W; L/R ⩽ 40 ms; 50 000 operations at upper limits; Minimum switching capacity 0.1 A at 24 V (inrush, if load is inductive)
Transistor output Type NY2-F	Output transistors controlled by opto-isolators and protected against overvoltage and reverse polarity Vceo ⩽ 30 V ⎓; Ic ⩽ 0.1 A; L/R = 0 Typical response times: turn-on: 0.3 ms; turn-off: 0.7 ms Maximum operating frequency: 500 Hz
Electrical characteristics of converter NY2-K10	
Supply	24 or 48 V DC ⎓ ± 15%
Maximum output current	800 mA at 24 and 48 V
Maximum load	3 NY2-•11 at 24 V or 4 NY2-•11 at 48 V

Selection guide

Enclosure

Glass reinforced nylon, IRC > 300 V/cm
Dimensions conforming to DIN 43-660 and EN 50-020
Fixings conforming to DIN 46-121 and DIN 46-277
May be mounted onto backplate, or DIN rail (symmetrical or asymmetrical)
Terminals fitted with captive screws, capacity: 1 x 2.5 mm² or 2 x 1.5 mm²
Min. cable capacity, 0.6 mm², with DZ5-CE005 cable ends

Intrinsically safe relays

Function	Max. operating frequency Hz	Supply (1) V	Reference	Weight kg
Single channel **Output: 2 relays**	10	24/48 V ~	**NY2-A11**	0.375
		110/220 V ~	**NY2-A21**	0.375
		24/48 V ⎓	**NY2-A11 + Converter ⎓/~**	
2 channel **Output: 1 relay per channel**	10	24/48 V ~	**NY2-B11**	0.380
		110/220 V ~	**NY2-B21**	0.380
		120/240 V ~	**NY2-B31**	0.380
		24/48 V ⎓	**NY2-B11 + Converter ⎓/~**	
2 channel **Output: 1 transistor per channel**	500	24/48 V ~	**NY2-F11**	0.340
		110/220 V ~	**NY2-F21**	0.340
		120/240 V ~	**NY2-F31**	0.340
		24/48 V ⎓	**NY2-F11 + Converter ⎓/~**	

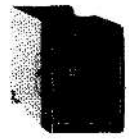
NY2-A21

NY2-B21

NY2-F21

Converter

DC/AC (⎓/~)		24/48 V ⎓	**NY2-K10**	0.180
Maximum load: 3 or 4 NY2-●10 (see facing page)				



NY2-K11

(1) The fuse carrier on the relay also acts as a voltage selector, and should be positioned to suit the supply voltage being used. (See page 110.)

When ordering

an I.S. relay
Please state the exact reference. Example: NY2-A11
Also include the converter reference if required.