

## MINITIMER Contact Protection Relay BA 7961



### Your Advantages

- High electrical life of control contacts
- Longer maintenance intervals

### Features

- According to IEC/EN 61812-1
- Galvanic separation between control contact and supply voltage
- Wide auxiliary range
- Adjustable operate delay
- 2 changeover contacts delayed
- LED-indicator for power and contact position
- Width: 45 mm

### Product Description

The contact protection relay BA 7961 protects sensitive control contacts of e.g. digital plc outputs, limit contacts on measuring devices, low load reed contacts against early wearing.

It has a low input consumption on B1-B2 control input and a high switching capacity of the output using a robust relay for mains voltage with 2 changeover contacts. Unintended switching caused by contact bouncing or vibrations are suppressed by an adjustable on delay and a fixed off delay.

The auxiliary supply A1/A2, the control input B1/B2 and the output contacts are galvanically separated. The control input must be voltage free, no external voltage must be connected. 2 LEDs show connected power supply and status of the output relay.

### Approvals and Marking



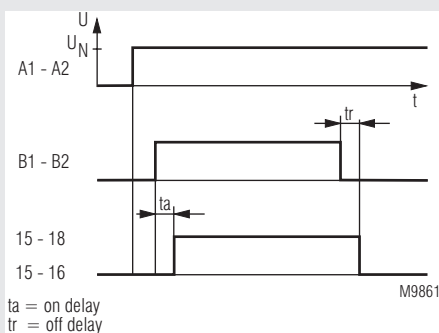
### Applications

For protection of sensitive contacts e. g. limit value switches to measuring instruments such as thermometers, manometers and hygrometers

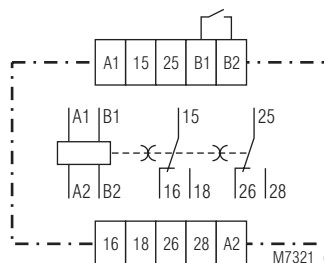
### Indicators

- green LED: on, when supply connected
- yellow LED: on, when corresponding output relay is active

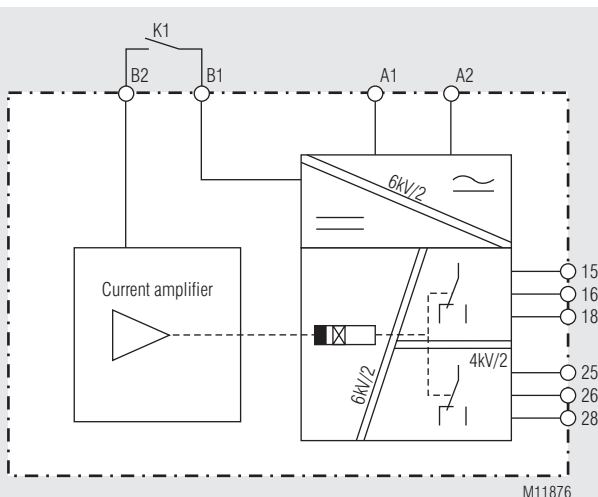
### Function diagram



### Circuit Diagrams



### Block diagram



### Connection Terminals

Terminal designation	Signal description
A1 / A2	Auxiliary voltage
B1, B2	Control contact
15, 16, 18	1. changeover contact
25, 26, 28	2. changeover contact

## Technical Data

### Input

Nominal voltage  $U_N$ : AC/DC 24 ... 80 V,  
AC/DC 80 ... 230 V

Nominal voltage	Voltage range	Frequency range
AC/DC 24 ... 80 V	AC 18 ... 100 V	45 ... 400 Hz; DC 48 % W
	DC 18 ... 130 V	W ≤ 5 %
AC/DC 80 ... 230 V	AC 40 ... 265 V	45 ... 400 Hz; DC 48 % W
	DC 40 ... 300 V	W ≤ 5 %

### Nominal consumption:

AC 230 V: ≤ 4.2 VA  
DC 230 V: ≤ 1.5 W

### Current over control contact

Contact open: < DC 20 V  
Contact close: 0.5 mA

### Max. resistance of control wire:

25 kΩ

Min. insulating resistance: 100 kΩ

Recovery time: 0.5 s

Repeat accuracy: < ± 2 % vom Skalenendwert

### Operating time t1

(on delayed): 0.1 ... 10 s

### Accuracy at potentiometer set clockwise (10s):

12 s ± 30 %

### Release time t2

(release delay): 0.5 s (≤ 600 ms)  
0.35 s (≤ 450 ms)  
without t2 (≤ 40 ms)

### Output

Contacts: 2 changeover contacts

Contact material: AgNi + 0.2 μm Au

Measured nominal voltage: AC 250 V

Thermal current  $I_{th}$ : 2 x 5 A

### Switching capacity to AC 15

NO contact: 2 A / AC 230 V IEC/EN 60947-5-1

NC contact: 1 A / DC 24 V IEC/EN 60947-5-1

to DC 13 at 0.1 Hz: 1 A / DC 24 V IEC/EN 60947-5-1

### Electrical life

to AC 15 at 3 A, AC 230 V 5 x 10<sup>5</sup> switch. cycles IEC/EN 60947-5-1

### Short-circuit strength

max. fuse rating: 6 A gG / gL IEC/EN 60947-5-1

Mechanical life: 50 x 10<sup>6</sup> switching cycles

### General Data

Operating mode: Continuous operation

### Temperature range

Operation: - 40 ... + 60°C  
(higher temperature with limitations on request)

Storage: - 40 ... + 70°C

Altitude: < 2000 m

### Clearance and creepage distances

rated impulse voltage / pollution degree

A1, A2 / B1, B2: 6 kV / 2 IEC 60664-1

A1, A2, B1, B2 / contacts: 6 kV / 2 IEC 60664-1

15, 16, 18 / 25, 26, 28: 4 kV / 2 IEC 60664-1

### EMC

Electrostatic discharge: 8 kV (air) IEC/EN 61000-4-2

HF irradiation

80 MHz ... 6 GHz: 20 V / m IEC/EN 61000-4-3

Fast transients: 4 kV IEC/EN 61000-4-4

Surge voltages

between wires for power supply: 2 kV IEC/EN 61000-4-5

between wire and ground: 4 kV IEC/EN 61000-4-5

HF wire guided: 10 V IEC/EN 61000-4-6

Interference suppression: Limit value class B EN 55011

### Degree of protection

Housing: IP 40 IEC/EN 60529

Terminals: IP 20 IEC/EN 60529

Housing: Thermoplastic with V0 behaviour

according to UL subject 94

## Technical Data

### Vibration according to

Duration per direction: 78 min  
Frequency range: 10 ... 150 Hz  
Transition frequency: 60 Hz  
< 60 Hz: with constant amplitude  
± 0,15 mm  
> 60 Hz: with constant acceleration 2 g

### Shock according to

Shock form: IEC 60068-2-27  
half sine wave  
Peak acceleration: 15 g<sub>n</sub>  
Shock duration: 11 ms

Number of shocks per direction and polarity: 3

Climate resistance: 40 / 060 / 04

IEC/EN 60068-1

DIN EN 50005

### Terminal designation:

Wire connection: 2 x 2.5 mm<sup>2</sup> solid or  
2 x 1.5 mm<sup>2</sup> stranded wire with sleeve  
DIN 46228-1/-2/-3/-4

### Wire fixing:

Plus-minus terminal screws M3.5 with self-lifting clamping piece IEC/EN 60999-1

### Stripping length:

10 mm

### Fixing torque:

0.8 Nm

### Mounting::

DIN-rail

IEC/EN 60715

### Weight:

200 g

### Dimensions

Width x height x depth: 45 x 75 x 120 mm

### Standard Type

BA 7961.82 AC 80 ... 230 V 0.1 ... 10 s 0.5 s

Article number: 0067745

• Output: 2 changeover contacts

• Nominal voltage  $U_N$ : AC 80 ... 230 V

• Operating time t1: 0.1 ... 10 s

• Release time t2: 0.5 s

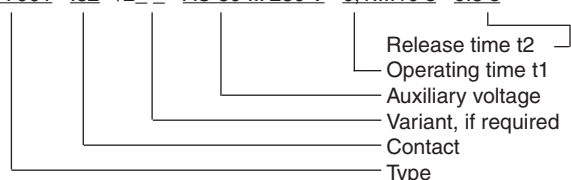
• Width: 45 mm

### Variant

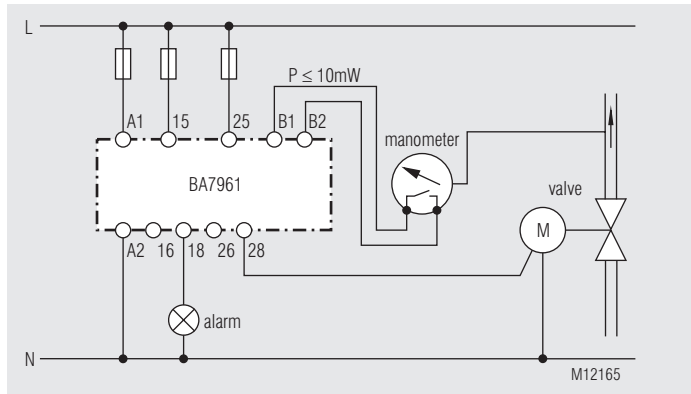
BA 7961.82/2\_ \_ : for secure electrical insulation according to IEC/EN 61140

### Ordering example for variants

BA 7961 .82 /2\_ \_ AC 80 ... 230 V 0.1...10 s 0.5 s



### Connection Example



Flow control with pressure valve and manometer:

The contact protection relay protects the contacts of the manometer.