# VARIMETER
## Short-time Voltage Drop Relay
## BC 9190N

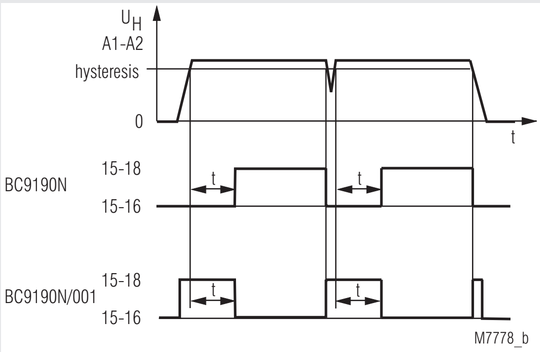
**Translation of the original instructions**

DOLD

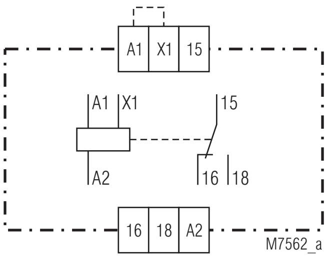
0233921

- According to IEC/EN 60255-1
- Fast detection of undervoltage and phase failure in AC voltage systems
- Detects voltage drops (reaction time ≤ 20 ms)
- Response value 0.8 or 0.7 $U_N$ selectable by wire link
- Without auxiliary supply
- De-energized on trip
- LED indicator for contact position
- Adjustable operate delay after return of voltage
- As option adjustable fleeting on make pulse after return of voltage (variant BC 9190N.11/001)
- 1 changeover contact
- Wire connection: also 2 x 1.5 mm² stranded ferruled (isolated),<br>DIN 46228-1/-2/-3/-4 or<br>2 x 2.5 mm² stranded ferruled DIN 46228-1/-2/-3/-4
- Width 22.5 mm

## Function Diagram




## Circuit Diagram




## Connection Terminals

| Terminal designation | Signal description |
|---|---|
| A1, A2 | Voltage supply / Measuring input |
| A1, X1 | Setting of response value<br>A1, X1 bridged: 0.7 $U_N$<br>A1, X1 not bridged: 0.8 $U_N$ |
| 15, 16, 18 | Changeover contact (output relay) |

## Approvals and Markings

CE

## Applications

Monitoring of voltage systems to detect auto reclosing as e.g. generated by the energy supplier in the case of flash-overs or switching procedures. It is possible that in control circuits some of the devices are resetted during auto reclosing and some not. Because of this uncontrollable situations may occur.
By detecting these fast auto reclosings and addition of a certain time delay at reclosing the OFF-time is lengthened and every device has the time to reset. The circuit goes into a defind OFF-state and is automatically resetted after the adjusted time delay or by manual reset if the automatic reset is disabled by an external circuit (see Connection Examples).

## Function

If the BC 9190N detects a voltage drop below 0.8 or 0.7 of $U_N$ the yellow LED goes off and the relay de-energises (fault condition). The setting of the response value 0.7 $U_N$ is done by linking terminal X1 to A1. Without link the response value is 0.8 $U_N$.
If the voltage returns to normal (2 % Hysteresis above response value) the output relay energises after the time delay t and the yellow LED switches on (good condition).
The BC 9190N.11/001 energises the output relay immediately after the voltage returns for an adjustable pulse time. After the time delay the relay is de-energized.

## Indicators

| | |
|---|---|
| LED: | On when output relay activated (contacts 15-18 are closed) |

## Notes

The BC 9190N is designed for mains frequency of 50 Hz. It can also be operated on 60 Hz but the response values are reduced to approx. 0.75 and 0.65 $U_N$.

## Technische Daten

### Time Circuit

| | | | |
|---|---|---|---|
| **Time ranges:** | 0.05 ... 1 s | 15 ... 300 s | |
| | 0.15 ... 3 s | 1.5 ... 30 min. | |
| | 0.5 ... 10 s | 0.15 ... 3 h | |
| | 1.5 ... 60 s | 0.5 ... 10 h | |
| **Time setting:** | Stepless 1:20 | | |
| **Recovery time:** | ≤ 20 ms | | |
| **Repeat accuracy:** | ≤ 0.5 % + 10 ms | | |
| **Voltage influence:** | ≤ 1 % | | |
| **Temperature influence:** | ≤ 0.25 % / K | | |

### Input

| | |
|---|---|
| **Nominal voltage $U_N$:** | AC 110 V, AC 230 V |
| **Overload:** | 1.15 $U_N$ |
| **Nominal consumption:** | 2.5 VA |
| **Nominal frequency:** | 50 Hz |
| **Frequency range:** | ± 5 % $f_N$ |
| **Response value** | |
| Without bridge X1-A1: | 0.8 $U_N$ |
| With bridge X1-A1: | 0.7 $U_N$ |
| Hysteresis: | Approx. 2 % |

### Output

| | | |
|---|---|---|
| **Contacts:** | | |
| BC 9091N.11: | 1 changeover contact | |
| **Thermal current $I_{th}$:** | 4 A | |
| **Switching capacity** | | |
| To AC 15 | | |
| NO contact: | 3 A / AC 230 V | IEC/EN 60947-5-1 |
| NC contact: | 1 A / AC 230 V | IEC/EN 60947-5-1 |
| To DC 13 | | |
| NO contact: | 1 A / DC 24 V | IEC/EN 60947-5-1 |
| NC contact: | 1 A / DC 24 V | IEC/EN 60947-5-1 |
| **Electrical life** | | IEC/EN 60947-5-1 |
| at 3 A, AC 230 V cos φ = 1: | 2 x $10^5$ switching cycles | |
| **Short circuit strength** | | |
| **max. fuse rating:** | 4 A gG / gL | IEC/EN 60947-5-1 |
| **Mechanical life:** | $10^8$ switching cycles | |

### General Data

| | | |
|---|---|---|
| **Operating mode:** | Continuous operation | |
| **Temperature range** | | |
| Operation: | - 25 ... + 60 °C | |
| Storage: | - 20 ... + 60°C | |
| **Altitude:** | ≤ 2000 m | |
| **Clearance and creepage distances** | | |
| Rated impulse voltage / pollution degree | 4 kV / 2 | IEC 60664-1 |
| **EMC** | | |
| Electrostatic discharge: | 8 kV (air) | IEC/EN 61000-4-2 |
| HF irradiation | | |
| 80 MHz ... 2.7 GHz: | 10 V/m | IEC/EN 61000-4-3 |
| Fast transients: | 2 kV | IEC/EN 61000-4-4 |
| Surge voltages | | |
| Between | | |
| wires for power supply: | 1 kV | IEC/EN 61000-4-5 |
| Between wire and ground: | 2 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 | |
| **Vibration resistance:** | Amplitude 0.35 mm frequency 10 ... 55 Hz | IEC/EN 60068-2-6 |
| **Climate resistance:** | 20 / 060 / 04 | IEC/EN 60068-1 |

## Technische Daten

| | | |
|---|---|---|
| **Terminal designation:** | EN 50005 | |
| **Wire connection:** | 1 x 4 mm² solid or<br>1 x 2.5 mm² stranded ferruled (isolated) or<br>2 x 1.5 mm² stranded ferruled (isolated) DIN 46228-1/-2/-3/-4 or<br>2 x 2.5 mm² stranded ferruled DIN 46228-1/-2/-3/-4 | |
| Insulation of wires or sleeve length: | 10 mm | |
| **Wire fixing:** | Flat terminals with self-lifting clamping piece | IEC/EN 60999-1 |
| **Fixing torque:** | 0.8 Nm | |
| **Mounting:** | DIN rail | IEC/EN 60715 |
| **Weight:** | 80 g | |

### Dimensions

**Width x height x depth:** 22.5 x 84 x 97 mm

### Standardtype

BC 9190N.11 AC 230 V 0.5 ... 10 s

Article number:

- Adjustable operate delay: 0.5 ... 10 s
- Output: 1 changeover contact
- Nominal voltage $U_N$: AC 230 V
- Time range: 0.5 ... 10 s
- Width: 22.5 mm

### Variant

BC 9190N.11/001 With fleeting on make function

**Ordering example for variant**

BC 9091N .11 /_ _ _ AC 230 V 50 Hz 0.5 ... 10 s

- 0.5 ... 10 s: Time delay
- 50 Hz: Nominal frequency
- AC 230 V: Nominal voltage
- /_ _ _: Variant, if required
- .11: Contacts
- BC 9091N: Type