

Current and Voltage Controls 3-Phase Over/Under Voltage Type EUB

CARLO GAVAZZI



- Monitoring relay and 3-phased measuring relay for over/under phase-phase voltage control (closed circuit)
- Measures if all 3 phase-phase voltages are within set limits
- Measures on own power supply
- Operates irrespective of phase sequence
- Upper and lower limits separately adjustable
- 2 separately adjustable time functions (0.1-10 s)
- Output: 2 x 5 A SPDT relays (one relay for each level)
- For mounting on DIN-rail in accordance with DIN/EN 50 022
- 45 mm Euronorm housing
- LED-indication for relay and power supply ON
- Two LED's indicating fault and/or status of the 2 relay outputs (flashing when timing)

Product Description

3-phase monitoring relay for separate over and under voltage control with built-in time function. Often used in appli-

cations where the generated electrical power is unstable in order to secure voltage sensitive equipment.

Ordering Key

EUB C 220

Housing _____
Function _____
Type _____
Output _____
Power supply _____

Type Selection

| Mounting | Output | Supply: 220 VAC | Supply: 400 VAC | Supply: 480 VAC | Supply: 600 VAC |
|--------------|----------|-----------------|-----------------|-----------------|-----------------|
| For DIN-rail | 2 x SPDT | EUB C 220 | EUB C 400 | EUB C 480 | EUB C 600 |

Input Specifications

| | | | |
|--|-------|--|-------------|
| Input U, V, W | | L1 - L2 - L3 measures on own supply arbitrary phase sequence | |
| Measuring ranges | 220 | 224-242 VAC | 198-216 VAC |
| | 400 * | 408-440 VAC | 360-392 VAC |
| | 480 | 490-528 VAC | 432-470 VAC |
| | 600 | 612-660 VAC | 540-588 VAC |
| Range | | 102 - 110% 90 - 98% | |
| Upper level (sep. adjustable) | | | |
| Lower level (sep. adjustable) | | | |
| * Only EUB C 400 selectable in (rotary switch) | | 380 V, 400 V, 415 V | |

Output Specifications

| | |
|---------------------------------|--|
| Output | 2 x SPDT relay |
| Rated insulation voltage | 250 VAC (contact/elect.) |
| Upper limit | Terminals 25/26/28 |
| Lower limit | Terminals 15/16/18 |
| Contact ratings (AgCdO) | μ (micro gap) |
| Resistive loads | AC 1 5 A, 250 VAC |
| | DC 1 5 A, 24 VDC |
| Small inductive loads | AC 15 2 A, 250 VAC |
| | DC 13 3 A, 24 VDC |
| Mechanical life | ≥ 40 x 10 ⁶ operations |
| Electrical life | ≥ 10 ⁵ operations (at max. load) |
| Operating frequency | ≤ 7200 operations/h |
| Dielectric strength | |
| Dielectric voltage | 2 kVAC (rms) |
| Rated impulse withstand volt. | 4 kV (1.2/50 μs) |

Supply Specifications

| | |
|---------------------------------|----------------------------------|
| Power supply | Overvoltage cat. III (IEC 60664) |
| Rated operational voltage | (IEC 60038) |
| Through term. U, V, W 220 | 220 VAC, $\pm 10\%$ |
| 400 | 50/60 Hz, -5/+5 Hz |
| 480 | 400 VAC, $\pm 10\%$ |
| 600 | 50/60 Hz, -5/+5 Hz |
| | 480 VAC, $\pm 10\%$ |
| | 50/60 Hz, -5/+5 Hz |
| | 600 VAC, $\pm 10\%$ |
| | 50/60 Hz, -5/+5 Hz |
| Voltage interruption | ≤ 40 ms |
| Dielectric voltage | None |
| Rated impulse withstand voltage | 4 kV (1.2/50 μ s) |
| up to 480 VAC | 6 kV (1.2/50 μ s) |
| up to 600 VAC | |
| Rated operational power | 3 VA |
| Supplied from | L1 & L3 |

General Specifications

| | |
|------------------------|--|
| Power ON delay | 5 s |
| Reaction time | $\tau < 200$ ms worst case reaction time may be up to $5 \times \tau$ |
| Accuracy | |
| Range | $\pm 2\%$ |
| Delay (u/I level) | 10 s, -2/+3 s on max. < 0.1 s on min. |
| Temperature drift | $\leq 0.1\%/^{\circ}\text{C}$ ($\leq 0.06\%/^{\circ}\text{F}$) |
| Hysteresis | $< 2\%$ rms value |
| Indication for | |
| Power supply ON | LED, green |
| Output ON | LED, yellow (flashing when timing) |
| Environment | |
| Degree of protection | IP 20 |
| Pollution degree | 3 |
| Operating temperature | -20° to $+50^{\circ}\text{C}$ (-4° to $+122^{\circ}\text{F}$) |
| Storage temperature | -50° to $+85^{\circ}\text{C}$ (-58° to $+185^{\circ}\text{F}$) |
| Weight | 280 g |
| Screw terminals | |
| Tightening torque | Max. 0.5 Nm acc. to IEC 60947 |
| Approvals | UL, CSA |

Mode of Operation

Connected to 3 phases, the EUB measures sinusoidal voltages. The phase sequence is arbitrary.

The EUB operates as long as all 3 phase-phase voltages are within the set upper and lower levels. This means that the two output relays are energized, which is indicated by the two built-in yellow LED's.

If one or more of the phase-phase voltages rises above the adjusted upper level then the centre yellow LED starts to flash, and the output relay (terminals 25/26/28) releases after the set time period.

If one or more of the phase-phase voltages drops below the adjusted lower level, then the left yellow LED starts to flash, and the output relay (ter-

minals 15/16/18) releases after the set time period. There will be no LED-indication after the time delay has expired.

Example 1

Mains monitoring

A mains quality monitoring relay measures if the phase voltage is within the set upper and lower levels. The levels are adjusted on the two built-in potentiometers.

Example 2

Load monitoring

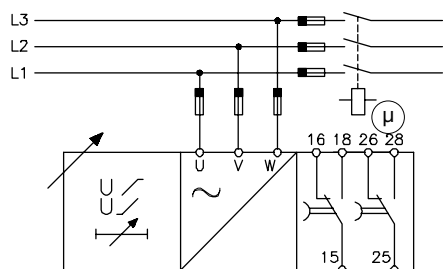
Ohmic loads such as heating elements etc. can be monitored by this module.

Note:

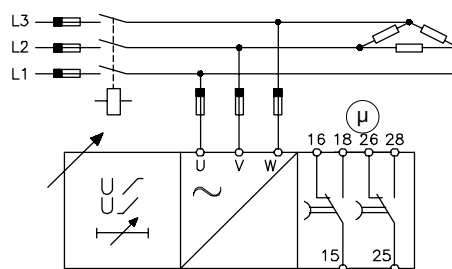
The relay cannot be used for load monitoring if the load is a motor, as the regenerated phase voltage at e.g. fuse breakdown is indefinable and dependent on the mechanical performance when the failure occurs.

Wiring Diagrams

Example 1



Example 2



Range/Level/Time Setting

Range setting

Upper right knob:

Selection of measuring range:
380 V, 400 V, 415 V.

Only available on EUB C 400.

Level setting

Upper left knob:

Setting of upper limit on relative scale (102% to 110%).

Lower left knob:

Setting of lower limit on relative scale (90% to 98%).

Time setting upper level

Centre right knob:

Setting of time delay on absolute scale (0.1-10 s).

Time setting lower level

Lower right knob:

Setting of time delay on absolute scale (0.1-10 s).

Operation Diagram

