

2. ORDER ITEMS

| | | |
|---------------------------------------|--------------|--------------|
| ComatReleco 3-Phase Monitoring Device | SSU31/AC208V | SSU32/AC208V |
| ComatReleco 3-Phase Monitoring Device | SSU31/AC400V | SSU32/AC400V |
| ComatReleco 3-Phase Monitoring Device | | SSU32/AC500V |

Other voltage rates and 400Hz version on request.

Accessories to the pluggable design SSU31:

| | |
|--|-------------------|
| - Transparent front cover (in the supply): | FS-24 |
| - Relay holder with screw connections 11-pole: | CS-11, EC11, C11A |
| - Retention clip: | HF-24 |
| - Front insert: | FZ-23 |

3. FUNCTION

The three phases of the AC circuit are monitored according to the following criteria:

- Phase sequence
- Undervoltage
- Phase failure

SSU31: The undervoltage limit value is pre-set and cannot be modified.

SSU32: The undervoltage limit value can be set.

Procedure:

An error is immediately signalized as soon as it is detected:

- The red LED lights
- The green LED turns off
- The relay is released

If the mains voltage and the phase sequence are correct, then

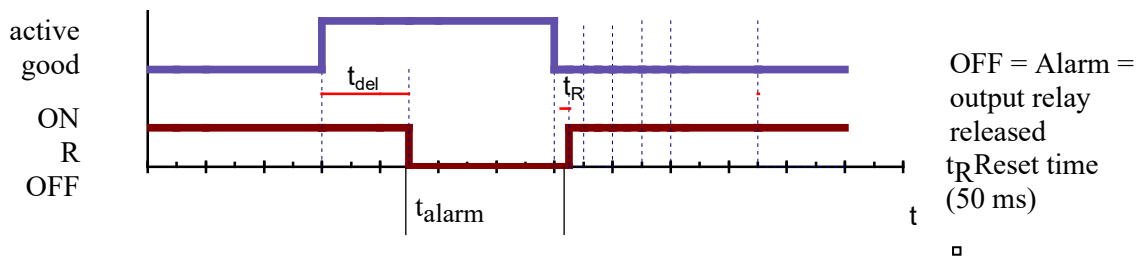
- the red LED turns off

and after approx. 150 ms, the normal condition is restored:

- The green LED lights back on
- The relay is pulled up

FUNCTION DIAGRAM

Fault signal



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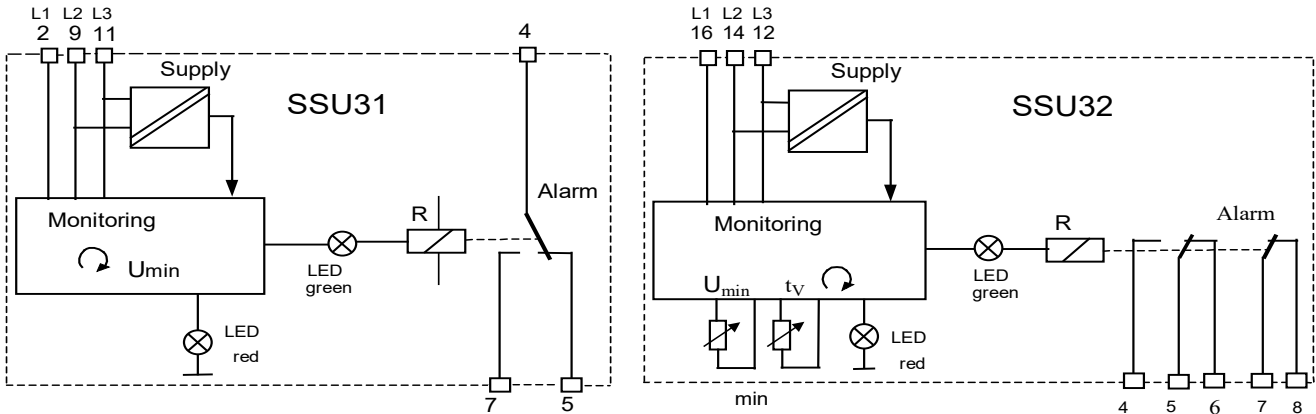
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4. BLOCKDIAGRAMM



5. TECHNICAL DATA

5.1. General data

5.1.1. Mechanical data

Case:

SSU31/AC ...V

S2 pluggable, 11-pole
W38, H72, D92 mm

SSU32/AC ...V

CN case
W50, H75, D110 mm

Type of protection:

Case IP40 Terminals IP20

Shock resistance:

TW80 (20 g min.)

Vibration resistance:

IEC 571

Case material:

Noryl SE1 or similar

Weight:

approx. 300 g

350 g

Fastening:

plugged

DIN Rail TS 35

Connections:

11-pole plug IEC67-I-18a
2 x 1.5 mm² / 1 x 4 mm²

Screw terminals removable
2 x 1.5 mm² / 1 x 4 mm²; M3

Connection configuration

1 ---
2 L1
3 ---
4 changeover contact
5 normally-closed contact
6 ---
7 normally-open contact
8 ---
9 L2
10 ---
11 L3

1 ---
2 ---
3 ---
4 normally-open contact
5 changeover contact
6 normally-closed contact
7 ---
8 normally-closed contact
9 normally-closed contact
10 ---
11 ---
12 L3
13 ---
14 L2
15 ---
16 L1

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5.1.2. Environmental conditions

| | |
|-----------------------------|------------------------------|
| Storage temperature range | -40°C ... +85°C |
| Operating temperature range | -25°C ... +60°C |
| Relative humidity | 10% ... 95% non-condensing |
| Transient protection | IEC 255 Appendix E Class III |

5.1.3. Lifetime

| | |
|-------------------|--------------|
| Expected lifetime | >> 100 000 h |
|-------------------|--------------|

5.2. **Electrical Data**

5.2.1. Supply

| | <u>SSU31/32/208V</u> | <u>SSU31/32/400V</u> | <u>SSU32/500V</u> |
|--------------------|----------------------|----------------------|-------------------|
| $U_{rated \Delta}$ | 208 V | 400 V | 500 V |
| $U_{Operation}$ | 160V ... 235 V | 360 V ... 470 V | 450 V ... 575 V |
| Net frequency | 45 ... 65 Hz | 45 ... 65 Hz | 45 ... 65 Hz |
| Power consumption | < 10 VA/1.5 W | < 10 VA/1.5 W | < 15 VA/1.5 W |

The supply is simultaneously a measuring input.

The internal supply of the devices is provided by L2/L3.

5.2.2. Inputs L1, L2, L3

| | <u>SSU3X/AC208V</u> | <u>SSU3X/400V</u> | <u>SSU32/500</u> |
|---|---|-----------------------|-----------------------|
| Nominal input voltage U_{Δ} | 3 x 208 V | 3 x 400 V | 3 x 500 V |
| Input current max. | 25 mA | 25 mA | 25 mA |
| Permissible input voltage L1, L2, L3: | U_{max} : 240 V AC | U_{max} : 460 V AC | U_{max} : 600 V AC |
| Measuring criteria: Undervoltage L2-L3: | $\leq 166VAC \pm 5\%$ | $\leq 320VAC \pm 5\%$ | $\leq 400VAC \pm 5\%$ |
| | Hyst. 5V | Hyst. 10V | Hyst. 20V |
| | SSU31: The limit values are fixed. | | |
| | SSU32: The limit values can be set between $-0\% / -30\% \times U_N$. | | |
| Phase sequence: | L1, L2, L3: ↻ | | |
| | Alarm is triggered if two phases are exchanged. | | |
| Phase failure: | If one or more phases fail, alarm is triggered with a time delay, the output relay is released. | | |
| Undervoltage : | 40% of U_N | | |

5.2.3. Time behavior

| | | |
|----------------------|-----------------------------------|--------------------------|
| Alarm delay t_v | Relay off , phase sequence error | 30 ms ^{+0/-25%} |
| | Voltage failure (L1 \leq 30 ms) | 150 ms ÷ 250 ms |
| | Undervoltage SSU31 fixed (L2,3) | 150 ÷ 250 ms |
| | Undervoltage SSU32 can be set | 20 ms ÷ 5 s |
| Alarm reset | Relay on | 50 ms |
| Minimum alarm signal | Relay released | 100 ms ÷ 200 ms |

5.2.4. Outputs

| | | |
|------------------------|---|---------------------------|
| Outputs | SSU31: contact 1 x U, AgNi | SSU32: 1 x U, 1 x S, AgNi |
| Max. switching voltage | 250 V | |
| Max. switching current | 6 A (15 A, 20 ms) | |
| Switching performance | 1500 VA / ... 210 W | |
| Lifetime | $3 \cdot 10^7$ switching cycles (mech.) | |

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$\geq 10^5$ / 6A 250V, AC1

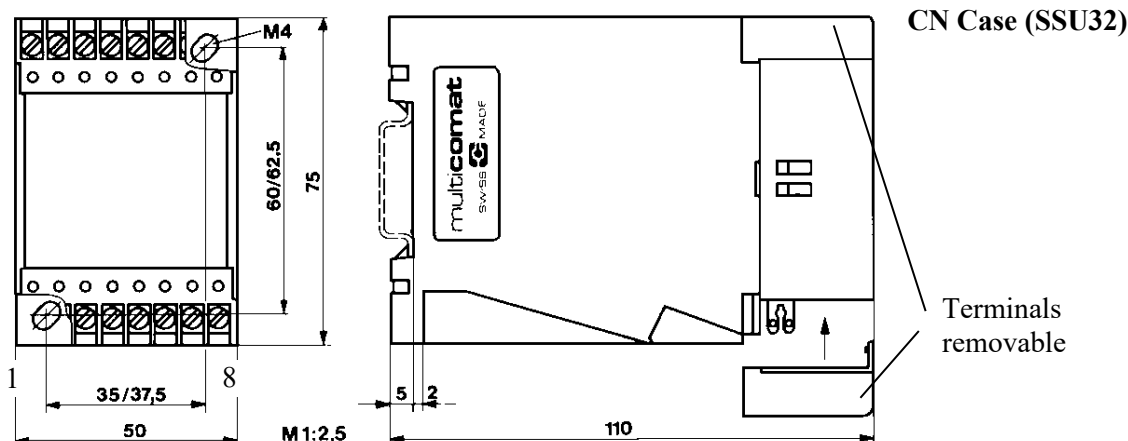
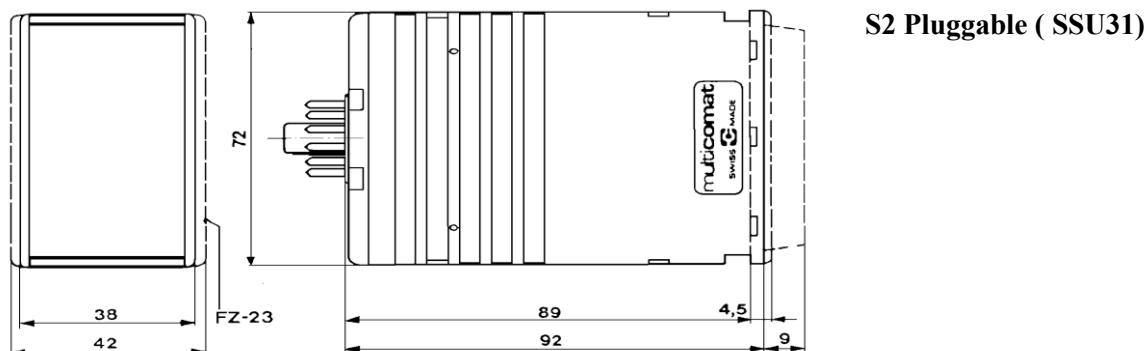
6. OPERATION

The red LED indicates a failure input condition (switches off in case of alarm). The green LED shows the relay condition (relay pulled in, no alarm). Flashing of the red LED while the green LED is illuminated may indicate that the actual voltage is temporarily lower than the set undervoltage threshold. The undervoltage threshold of the SSU32 devices can be set by means of potentiometer setting.

7. STANDARDS, APPROVALS

General regulations: CE
 Vibration safety: IEC 571 ; 68-2-6-FC Resistance to shock: TW80 (20 g)
 EMC: IEC 255.4 Annex Class III, IEC 801-4

8. HOUSING, DIMENSIONS



9. APPLICATION

This device monitors phase sequence and undervoltages. It is particularly suitable for pumps, conveyor belts and other installations protection where the phase sequence of the drive is of critical importance. Particularly in the case of portable installations, there is the risk of mistaken connections of L1, L2, L3 or the risk of undervoltage due long length supply lines. Typical application cases are found in the construction industry, or in open-pit mining for gravel, etc.

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