SUW 3001
Alternating current voltage monitor without auxiliary voltage

- Low voltage detection of one, two or all three phases
- Low voltage detection of 285 to 360 V adjustable
- Phase failure detection of one, two or all three phases
- Alternating current nominal voltage 3 AC 400 V without neutral conductor connector and auxiliary voltage
- Reaction time 35 ms
- Standby current principle
- Contact allocation: 2 changers

### Applications

- Monitoring for alternating current - low voltage fault and phase failure in machines or installations, e.g.:
  - machines with rotation direction reversal (cranes, robots, pumps, excavators, conveyance technology ...)
  - chemical processes
  - test/calibration benches

### Function

The SUW 3001 monitors the external conductor voltages (its own voltage supply) L1, L2, L3 for low voltage and phase failure. It operates without a neutral conductor connector and auxiliary voltage.

After application of the external conductor voltages L1, L2, L3 in which the voltage is above the voltage limit value, the SUW toggles to the operating position (standby current principle). The green LED lights up. If the voltage undershoots the set voltage limit value, then the relay toggles to the Standby position. The green LED goes out.

The nominal voltage for alternating current grids is 3 AC 400 V, with a large operating voltage range. Analogous to this, the target value of the low voltage (285 to 360 V) is preselectable with a potentiometer.

When an error occurs, the relay toggles to the Standby position with a reaction time of 35 ms; the green LED goes out. After remedy of the fault, the SUW toggles automatically to the operating position; in this process, the fixed 10 V hysteresis setting is effective. The green LED lights up.

Error recognition occurs upon:
- Phase failure of one, two or all three phases
- Low voltage recognition of one, two or all three phases, based on the set voltage (3 AC 285 V to +360 V).

### Setting ranges

The alternating current low voltage range of 3 AC 285 V to +360 V for all three phases is infinitely adjustable with the built-in potentiometer.

### Wiring diagram

![Wiring diagram for SUW 3001](image)
**Application example**

**Monitoring of an installation**

The SUW 3001 monitors the alternating current grid for a preselected low voltage or a phase failure in an installation. If the SUW 3001 reports an error, the relay K2 toggles to Standby position. The installation is powered off; the SPS then analyzes the alerts based on the specific installation.

**Function diagram**

SUW 3001

- Supply voltage
- Phases L1, L2, L3
- Fallback value = V
- Response delay = U
- Min. value
- LED TRAPPED green
- 15/16, 25/28
- 15/16, 25/26
- $I_a = \text{Response delay}$
- $I_f = \text{Fallback value}$
- $t = \text{Response time}$
- $I_f = \text{Fallback value}$

**Dimensional drawing**

S 7-5

For exp. call EN 60222

Dimensions:

- Width: 105.8 mm
- Height: 112.5 mm
- Depth: 45 mm

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**Note:** New release: 04 December 2013 / previous release: 2010 / datasheet SUW 3001 / Subject to change without further notice.
Technical Data

**Function type** according to DIN EN 60255-6:11.94
Alternating current voltage monitor without auxiliary voltage, standby current principle

**Function check**
1 LED green

**Function diagram**
FD 0134 W1

**Supply circuit**

<table>
<thead>
<tr>
<th>Nominal voltage $U_N$</th>
<th>3 AC</th>
<th>400 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated output at 50 Hz and $U_N$ (AC)</td>
<td>3.8 VA</td>
<td></td>
</tr>
<tr>
<td>Rated output at 50 Hz and $U_N$ (AC)</td>
<td>3.6 W</td>
<td></td>
</tr>
<tr>
<td>Nominal frequency</td>
<td>50 to 60 Hz</td>
<td></td>
</tr>
<tr>
<td>Operating voltage range</td>
<td>0.65 to 1.15 x $U_N$</td>
<td></td>
</tr>
</tbody>
</table>

**Measurement circuit**

- Galvanic separation from the supply circuit: no
- Setting: analog
- Setting range of low voltage recognition: 3 AC 285 to 360 V
- Scatter: $\leq \pm 0.5\%$
- Influence of the supply voltage: $\leq \pm 0.02\% / \% \Delta U_N$
- Influence of the ambient temperature: $\leq \pm 0.05\% / K \Delta T$

**Output circuit**

- Contact allocation: 2 changers
- Contact material: Ag alloy, gold-plated
- Switching nominal voltage $U_n$:
  - AC/DC 230/230 V
- max. steady current $I_n$ per current path: 5 A
- Usage category according to EN 60947-5-1:1991:
  - AC-15: $U_e$ 230 V AC, $I_e$ 3 A
  - DC-13: $U_e$ 24 V DC, $I_e$ 2 A
- Short circuit safeguard, max. fuse insert Class gG: 6 A
- Permissible frequency of operation: $\leq 6000$ switching cycles/h
- Mechanical service life: $30 \times 10^6$ switching cycles
- Operate time $t_A$: $\leq 25\ms \pm 10\ms$ according to phase position
- Fallback interval $t_R$: $< 100\ms$
- Hysteresis at low voltage recognition: $\approx 10\ \text{V}$

**General Data**

- Air and creep sections between the electric circuits: according to DIN VDE 0110-1:04.97
- Rated surge voltage: 6 kV
- Excess voltage category: III
- Degree of contamination: 3 exterior, 2 interior
- Rated voltage: 500 V AC
- Rated voltage $U_{eff}$ 50 Hz according to DIN VDE 0110-1, Table A.1: 3.25 kV
- Safety class for casing / terminals according to DIN VDE 0470 Section 1:11.92: IP 30 / IP 20
- Interference resistance according to IEC 61000-4: Test acuity 3
- Ambient temperature, work area: $-20$ to $+60 \degree C$
- Dimensional drawing: S 7-5
- Wiring diagram: KS 0236/1
- Connector sections, fine wire / single core or fine wire with wire end ferrules:
  - 2 x 0.75 to 1.5 mm² / 2 x 0.75 to 2.5 mm²
  - 1 or 2 x 0.5 to 1.5 mm²
- Permissible tightening torque: 0.8 to 1 Nm
- Weight: 0.26 kg
- Accessories: –

**Device overview / Order numbers**

<table>
<thead>
<tr>
<th>Type</th>
<th>Rated voltage</th>
<th>Order number</th>
</tr>
</thead>
<tbody>
<tr>
<td>SUW 3001</td>
<td>3 AC 400 V 50-60 Hz</td>
<td>R3.184.0039.0</td>
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</tbody>
</table>