According to IEC/EN 61557-8
- For rooms used for medical purposes according to IEC 60364-7-710, DIN VDE 0100-710
- For three-phase and A.C. power systems with 0 ... 500 V and 10 ... 1000 Hz (IT power systems)
- Adjustable alarm value for ground fault \( R_{AL} \) of 50 ... 500 k\( \Omega \)
- Measuring circuit with broken wire protection
- As option, programmable for storing or non-storing of errors
- With reset and test button
- Additional external reset and test buttons can be connected
- LED indicators for operation, insulation fault, and interruption of Measuring circuit
- 2 changeover contacts
- With LED chain for indication of the current insulation status
- IP 5880/711 for connection of the test and display panel UP 5862
- 52.5 mm width

For insulation monitoring of the IT system of rooms used for medical purposes according to VDE 0100-710:
The terminals L/L' and PE/PE' are connected to the respective lines of the IT power system. If the IT transformer has a centre tapping or a star point, the terminals L / L' are preferably connected to this point. The terminals L' and PE' should be connected with separate lines and possibly not in the same place (at least not at the same terminal) of the IT power system to allow for safe recognition of an interruption in the measuring circle.

The insulation resistance of the IT power system against ground is measured between the terminals L / L' and PE / PE'. If the ground fault resistance \( R_E \) falls below the pickup value \( R_{AL} \) of the line isolation monitor, the red LED "AL" will be illuminated, and the two changeover contacts fall back into normal position. On interruption of the Measuring circuit, the two changeover contacts will likewise fall back into normal position, and the red LED "MK" will be illuminated.

After correction of the error (\( R_E > R_{AL} \), Measuring circuit connected) and jumpered terminals LT1 – LT2 (= error not stored), the changeover contacts will change into work position (correct status), and the red error LEDs will stop lighting.

If you wish to store errors, remove the jumper LT1 – LT2. In this way, short-lived errors as e.g. a temporary deterioration of insulation, for example by touching of a line or unreliable contact making in the Measuring circuit may trigger a stored alarm: The output contacts remain open also after the error has been corrected. The type of the error can be seen in retrospect from the illuminated error LED "AL" or "MK". The error memory can be reset by pressing the internal or external reset key, or by switching off the auxiliary voltage.

By pressing the internal or external "Test" key, a deterioration of insulation is simulated in the Measuring circuit (= \( R_E \) approx. 40 k\( \Omega \)); thus, the correct response of the isolation monitor is checked.

The IN 5880/711 comprises an 11-stage LED chain for indication of the current insulation resistance of the power system. By means of differently colored LEDs, the insulation status in the range of 20 k\( \Omega \) ... 1 M\( \Omega \) is indicated. In this way, deterioration of insulation can be detected even before an alarm is triggered.

The IP 5880/711 includes a 11 step LED indicator to monitor the actual state of the insulation, an additional power supply and relays to connect a test and indicator unit UP 5862. The width is 70 mm.
**WARNING**

Risk of electrocution!
Danger to life or risk of serious injuries.

- Disconnect the system and device from the power supply and ensure they remain disconnected during electrical installation.
- The terminals of the control input PT, LT1 und LT2 have no galvanic separation to the measuring circuit L and are electrically connected together, therefore they have to be controlled by volt free contacts or bridge. These contacts ore bridges must provide a sufficient separation depending on the mains voltage on L.
- No external potentials may be connected to external control terminals PT, LT1 und LT2.

**Attention!**

- Before checking insulation and voltage, disconnect the insulation monitor IN 5880, IP 5880 from the power source!
- In one voltage system only one insulation monitor can be used. This has to be observed when interconnecting two separate systems.

**Attention!**

- The Insulation monitors IN 5880, IP 5880 are designed to monitor AC-voltage systems. Overlayed DC voltage does not damage the instrument but may change the conditions in the measuring circuit.
- Line capacitance \( C_E \) to ground does not influence the insulation measurement, as the measurement is made with DC-voltage. It is possible that the reaction time in the case of insulation time gets longer corresponding to the time constant \( R_E \times C_E \).
- When monitoring 3-phase IT systems it is sufficient to connect the insulation monitor only to one phase. The 3-phases have a low resistive connection (approx. 3 - 5 \( \Omega \)) via the feeding transformer. So failures that occur in the non-connected phases will also be detected.

### Circuit Diagrams

#### Connection Terminals

<table>
<thead>
<tr>
<th>Terminal designation</th>
<th>Signal description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1, A2</td>
<td>Auxiliary voltage</td>
</tr>
<tr>
<td>L / L'</td>
<td>Connection for monitored IT-systems</td>
</tr>
<tr>
<td>PE / PE'</td>
<td>Connection for protective conductor</td>
</tr>
<tr>
<td>PT</td>
<td>Connection for external test button</td>
</tr>
<tr>
<td>LT1, LT2</td>
<td>Connections for external reset or manual and auto reset: LT1/LT2 bridged: Hysteresis function LT1/LT2 not bridged: Manual reset</td>
</tr>
<tr>
<td>X1, X2, X5 * )</td>
<td>Connections for external Test and indication panel UP 5862 * )</td>
</tr>
<tr>
<td>11, 12, 14 21, 22, 24</td>
<td>Alarm signal relay (2 changeover contact)</td>
</tr>
</tbody>
</table>

* At IP 5880/711 only

### Indicators

- **Green LED "ON":** Is illuminated when auxiliary voltage has been applied (operability)
- **Red LED "AL":** Is illuminated when an insulation failure is present, \( R_e < R_{AL} \) (value has fallen below alarm level)
- **Red LED "MK":** Is illuminated when one of the lines of the Measuring circuit is interrupted (L, L', PE, PE')

11-stage LED chain:
- **Green LEDs:** At \( \geq 1 \text{ M\(\Omega\)}, 750 \text{ k\(\Omega\)}, 550 \text{ k\(\Omega\)} \)
- **Yellow LEDs:** At 400 \( \text{k\(\Omega\)}, 300 \text{ k\(\Omega\)}, 220 \text{ k\(\Omega\)}, 160 \text{ k\(\Omega\)}, 110 \text{ k\(\Omega\)}, 75 \text{ k\(\Omega\)} \)
- **Red LEDs:** At 40 \( \text{k\(\Omega\)}, \leq 20 \text{ k\(\Omega\)} \)
Technical Data

Insulation Measuring Circuit

**Nominal voltage** $U_N$: AC 0 ... 500 V

**Voltage range:** 0 ... 1.1 $U_N$

**Frequency range:** 10 ... 1000 Hz

**Alarm value** $R_{AL}$: Adjustable from 50 ... 500 kΩ

**Internal testing resistor:** Corresponds to an $R_L$ of approx. 40 kΩ

**AC internal resistance:** > 250 kΩ

**DC internal resistance:** > 250 kΩ

**Measuring voltage:** Approx. DC 15 V (generated internally)

**Max. measuring current** ($R_E = 0$): < 50 µA

**Response inaccuracy:** ± 15 % + 1.5 kΩ IEC 61557-8

**Internal testing resistor:** Corresponds to an RE of approx. 40 kΩ

**AC internal resistance:** > 250 kΩ

**DC internal resistance:** > 250 kΩ

**Measuring voltage:** Approx. DC 15 V (generated internally)

**Max. measuring current** ($R_E = 0$): < 50 µA

**Response inaccuracy:** ± 15 % + 1.5 kΩ IEC 61557-8

**Auxiliary Circuit**

**Auxiliary voltage** $U_H$: AC 220 ... 240 V

**Voltage range:** 0.85 ... 1.1 $U_H$

**Nominal consumption** IN 5880/711: Approx. 2.5 VA

**Nominal frequency:** 45 ... 400 Hz

**Output**

- **Contacts:** 2 changeover contacts
- **Thermal current** $I_{TH}$: 4 A
- **Switching capacity** Acc. to AC 15
  - NO contact: 5 A / AC 230 V IEC/EN 60947-5-1
  - NC contact: 2 A / AC 230 V IEC/EN 60947-5-1
- **Contact life**
  - To AC 15 with 1 A, AC 230V: 5 x 10⁶ operating cycles IEC/EN 60947-5-1
- **Short circuit strength**
  - max. fuse rating: 4 A gG / gL IEC/EN 60947-5-1
  - > 30 x 10⁶ operating cycles
- **Mechanical life:** > 30 x 10⁶ operating cycles

**General Data**

- **Nominal operation:** Permanent operation
- **Temperature range:**
  - Operation: - 20 ... + 60 °C
  - Storage: - 25 ... + 70 °C
- **Betriebshöhe:** ≤ 2000 m
- **Clearance and creepage distances**
  - Overvoltage category/ pollution degree: 4 kV / 2 IEC 60664-1
  - Insulation test voltage Routine test: AC 2.5 kV; 1 s
- **EMC**
  - Static discharge (ESD): 8 kV (air discharge) IEC/EN 61000-4-2
  - HF irradiation 80 MHz ... 1 GHz: 10 V / m IEC/EN 61000-4-3
  - 1 GHz ... 2.5 GHz: 3 V / m IEC/EN 61000-4-3
  - 2.5 GHz ... 2.7 GHz: 1 V / m IEC/EN 61000-4-3
  - Fast transients: 2 kV IEC/EN 61000-4-4
- **Surges**
  - Between supply lines: 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: Thermoplast with V0 behavior according to UL Subject 94
- **Vibration resistance:** Amplitude 0.35 mm
- **Climate resistance:** Frequency 10 ... 55 Hz IEC/EN 60068-2-6
- **Terminal designation:** EN 50005

**Dimensions**

- **Width x height x depth**
  - IN 5880/711: 52.5 x 90 x 59 mm
  - IP 5880/711: 70 x 90 x 59 mm

**Standard types**

IN 5880.12/711 AC 220 ... 240 V

- **Artikelnummer:** 0056884
  - Output: 2 changeover contacts
  - Auxiliary voltage $U_H$: AC 220 ... 240 V
  - Width: 52.5 mm
  - Adjustable alarm value RAL: 50 ... 500 kΩ
  - With 11-stage LED chain for indication of the current insulation value

IP 5880.12/711 AC 220 ... 240 V

- **Artikelnummer:** 0057875
  - Output: 2 changeover contacts
  - Auxiliary voltage $U_H$: AC 220 ... 240 V
  - Width: 70 mm
  - Adjustable alarm value RAL: 50 ... 500 kΩ
  - With 11-stage LED chain for indication of the current insulation value
  - In addition with connection for test and indicator panel UP 5862

**Ordering Example**

IN 5880.12/711 AC 220 ... 240 V 50 ... 500 kΩ

- **Alarm value**
- **Auxiliary voltage**
- **Type**
Connection Examples

**Monitor of a single phase IT power system**

*1) The auxiliary voltage $U_a$ (A1 – A2) can also be drawn from the power system to be monitored. However, the voltage range of the auxiliary voltage must be taken into consideration.

*2) With jumper LT1 – LT2: No storing of error message (hysteresis behavior)

With jumper LT1 – LT2: Storing of error message; can be deleted by pressing the Delete (Reset) key LT

**Flush mounting kit**

Order reference: KU 4087-150/00569

For universal use with:
- I-series devices of 17.5 to 105 mm width
- Easy mounting

**Test and indicator panel UP 5862**

For insulation monitors in medically used rooms according to IEC 60364-7-710, DIN VDE 0100-710

- To mount in flush device boxes ø 60 mm, 35 mm deep;
- Test button to check the function of the device
- With green LED to indicate operation
- Reset button for audible alarm
- With yellow LED to monitor insulation failure

Max. wire length to IN / IP 5880
At wire cross section $A = 0.5 \text{ mm}^2$: 500 m
At wire cross section $A = 1.5 \text{ mm}^2$: 1000 m

Dimensions (width x height): 80 x 80 mm
Article number: 0041706

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