**TRIAD 2 Range**

Programmable digital transducers with 1 to 4 analogue outputs
Programmable accuracy class

**Main specifications**

- **Quantities measured:** 1, 2, 3, 4 to be chosen from I, V, U, F, P, Q, S, cos ϕ, sin ϕ, tan ϕ, U, V, tan ϕ
- **Configuration of TRIAD 2:** in factory or by the user with the TRIADJUST 2 software
- **Accuracy (programmable):** Class 0.1 / 0.15 / 0.2 / 0.5 / 1
- **Current inputs:** 1 A and 5 A
- **Voltage inputs:** 100 to 480 V (ph-ph) or 100 / √3 to 480 / √3 V (ph-N)
- **Transfer curves:** linear, 2 slopes or quadratic
- **Output signals:** ± 1 mA, ± 5 mA, ± 20 mA, ± 1 V, ± 10 V
- **Response time in Class 0.2:** 200 ms
- **Operating frequency:** 50 or 60 Hz
- **Auxiliary power supply with wide dynamic range:** 80 to 265 V ac/dc or 19 to 58 V dc
- **Compliance with CE directive**
- **Digital technology**
TRIAD 2
Programmable model

- **Factory-programmable**
  - The transducer delivered is ready to operate and can be connected to the electrical network in order to deliver output signals tailored for your installation.
  - To benefit from this, you simply need to know the exact specifications of your electrical installation:
    - Type of network: single-phase, balanced or unbalanced three-phase, 3 or 4 wires.
    - Type of electrical connections.
    - Number of electrical quantities to be measured: 1, 2, 3 or 4.
  - Precise measurement ranges of the input/output quantities to be measured.
  - Users can modify a factory configuration at any time with the TRIADJUST 2 software if the specifications of the electrical network change.

- **Programmable via TRIADJUST 2**
  - With the TRIADJUST 2 software and one of the 3 communication modes available (Ethernet, RS485 or optical head) you can program all the parameters characterizing a TRIAD 2 transducer.
  - To do so, simply choose a model which suits your electrical installation:
    - Type of network: single-phase, balanced or unbalanced three-phase, 3 or 4 wires.
    - Number of analogue outputs required (1, 2, 3 or 4).
    - Value of the auxiliary source.
  - You are then free to configure the TRIAD 2 transducer delivered as you wish and to print out the stickers corresponding to the parameters programmed.

### Environment and standards

<table>
<thead>
<tr>
<th>EMC IMMUNITY</th>
<th>(standard of reference: IEC 60688, IEC 61326-1, IEC 61000-6-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock voltage as per IEC 61000-4-5</td>
<td>2 kV in differential mode</td>
</tr>
<tr>
<td>Oscillating wave as per IEC 61000-4-12</td>
<td>2 kV in differential mode</td>
</tr>
<tr>
<td>Fast electrical transients in bursts as per IEC 61000-4-4</td>
<td>2 kV on power supply</td>
</tr>
<tr>
<td>Electrostatic discharge as per IEC 61000-4-2</td>
<td>8 kV in the air</td>
</tr>
<tr>
<td>EM radiated field as per IEC 61000-4-3</td>
<td>10 V/m (80 MHz to 3 GHz)</td>
</tr>
<tr>
<td>Voltage dips as per IEC 61000-4-11</td>
<td>30% reduction during 20 ms</td>
</tr>
<tr>
<td>Voltage interruptions as per IEC 61000-4-11</td>
<td>100% reduction during 100 ms</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>EMC emissions</th>
<th>Radiated and conducted</th>
<th>As per CISPR11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Climate specifications</td>
<td>(IEC 60068 2-12/2-2/2-30)</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>-10°C to +55°C</td>
<td></td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-40°C to +70°C</td>
<td></td>
</tr>
<tr>
<td>Relative humidity</td>
<td>≤ 95% to 55°C</td>
<td></td>
</tr>
<tr>
<td>Safety specifications</td>
<td>(IEC 61010-1)</td>
<td></td>
</tr>
<tr>
<td>Installation category</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pollution level</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Fire resistance</td>
<td>UL94, severity V0</td>
<td></td>
</tr>
<tr>
<td>Mechanical specifications</td>
<td>(IEC 60068 2-6/2-27/2-32/2-63)</td>
<td></td>
</tr>
<tr>
<td>Protection rating</td>
<td>IP 20</td>
<td></td>
</tr>
<tr>
<td>Mechanical shocks</td>
<td>IEC 60068-2-27</td>
<td></td>
</tr>
<tr>
<td>Vibrations</td>
<td>IEC 60068-2-6</td>
<td></td>
</tr>
<tr>
<td>Drop test with packaging</td>
<td>NF 0042-1</td>
<td></td>
</tr>
</tbody>
</table>

### Mounting accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate mounting for T1xy</td>
<td>ACCT 1007</td>
</tr>
<tr>
<td>Plate mounting for T3xy</td>
<td>ACCT 1006</td>
</tr>
</tbody>
</table>

### Casing

<table>
<thead>
<tr>
<th>Weight</th>
<th>320 g (T1xy) / 700 g (T3xy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting</td>
<td>DIN rail 43700 or plate mounting</td>
</tr>
<tr>
<td>Connection</td>
<td>Terminals with mobile stirrup clamp with screw for 4 single-wire 6 mm² conductors or 2 multi-wire 4 mm² conductors</td>
</tr>
</tbody>
</table>
## Hardware Identification

The TRIAD 2 T1xy and T3xy are fully configurable with the TRIADJUST 2 software which allows users to modify the characteristics of their products right up to the last minute.

### Model

- 1 = small model
- 3 = large model

### Communication Module

- 0 = optical head
- 1 = optical head + RS485
- 2 = optical head + Ethernet

### Number of analogue outputs

- 0 = none
- 1 = 1 output

**Example:** T314 = Large-model TRIAD 2 with optical head and RS485 + 4 analogue outputs

### Network

<table>
<thead>
<tr>
<th>Function</th>
<th>T1xy model</th>
<th>T3xy model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FN</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cosφ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tanφ</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Single-phase

- U12, U23, U31
- I1, I2, I3
- F
- Pt
- Qt
- St
- FPt
- Tamp
- Cosφ
- tanφ
- \( q_1 \), \( q_2 \), \( q_3 \), \( q_4 \)

#### Balanced 3-phase, 3 wires

- U12, U23, U31
- I1, I2, I3
- F
- Pt
- Qt
- St
- FPt
- Tamp
- Cos(\( q_1 \), \( q_2 \), \( q_3 \))
- Cos(\( q_1 \), \( q_2 \), \( q_3 \), \( q_4 \))

#### Balanced 3-phase, 4 wires

- U12, U23, U31
- I1, I2, I3
- F
- Pt
- Qt
- St
- FPt
- Tamp
- Cos(\( q_1 \), \( q_2 \), \( q_3 \))
- \( q_1 \), \( q_2 \), \( q_3 \), \( q_4 \)

#### Unbalanced 3-phase, 3/4 wires

- U12, U23, U31
- I1, I2, I3
- F
- Pt
- Qt
- St
- FPt
- Tamp
- Cos(\( q_1 \), \( q_2 \), \( q_3 \))
- \( q_1 \), \( q_2 \), \( q_3 \), \( q_4 \)

- (U12/U23, U23/U31, U31/U12)

- \( q_1 \), \( q_2 \), \( q_3 \), \( q_4 \)

- \( q_1 \), \( q_2 \), \( q_3 \), \( q_4 \)
TRIAD 2
Programmable model

Electrical specifications

| Voltage input | Rated value | T1: from 57.7 Vac to 276 Vac max. |
| | T3: from 57.7 Vac to 480 Vac max. |
| Frequency | 50 Hz; 42.5...57.5 Hz |
| | 60 Hz; 51...69 Hz |
| Max. measured voltage on primary | 650 V (ph-ph) |
| Acceptable overloads | T1: 300 Vac permanent - 460 Vac / 10s |
| | T3: 520 Vac permanent - 800 Vac / 10s |
| Consumption | < 0.2 A |
| Input impedance | 400 kΩ |

Current inputs

| Rated value | 0 to 10 A max. |
| Max. measured current on primary | 25,000 A |
| Acceptable overload | 50 In / 1 s |
| Consumption | < 0.15 VA |

Auxiliary power supply

| High level | 80 / 265 Vac (50/60 Hz) — 80 / 265 Vdc |
| Low level | 19 / 58 Vdc |
| Consumption | T1: 0.5 VA max. T1: 5 W max. |
| | T3: 20 VA max. T3: 10 W max. |

Analogue outputs

| Rated values | Current | ± 1 mA, ± 5 mA, ± 20 mA |
| | ± 1 V, ± 10 V |
| Acceptable resistive load | 15 V / Io (1) |
| Acceptable capacitive load | 0.1 μF |
| Overrun | 1.2 Io (1) |
| Peak-peak residual wave | ± 0.2% of Io (1) |
| Programmable response time | 50 ms — 100 ms — 200 ms — 500 ms — 1 s |
| Transfer curve | Linear, 2 slopes or quadratic |

Communication

| Optical head | Ethernet | RS485 |
| | USB (PC) Optical (product) | RJ45 | 2 wires Half-duplex |
| Protocol | MODBUS RTU mode | MODBUS / TCP RTU mode | MODBUS / JBUS RTU mode |
| Speed | 38,400 baud | 10 base T | 2,400 to 115,200 baud |
| Parity | - | - | Even, odd or none |
| Bus addresses | - | - | 1 to 247 |
| Transmission length | 2 m | 100 m | 1.2 km as EIA 485 |

Metrological specifications

| Measurements | Accuracy classes over measurement range (as per IEC 60688) |
| | RT = 50 ms RT = 100 ms RT = 200 ms RT = 500 ms RT = 1s |
| V, U, I, F, P, Q, S, PF, Tanδ, Cosδ, ϕ, qV, qU, qΨ | ± 1% ± 0.5% ± 0.2% ± 0.15% ± 0.1% |
| RT | Response time for F = 50 Hz |
| Phase angle between voltages | **
TRIAD 2 Range

Electrical connections
Single-phase network
Balanced 3-phase, 3-wire network

Phase rotation authorized
Balanced 3-phase, 4-wire network

\[ V_1, V_2, V_3, U_{12}, U_{23}, U_{31} \]

**Programmable digital transducers**

**Measurement and instrumentation**
Balanced 3-phase, 4-wire network

- V1, V2, V3, U12, U23, U31,
- I1, I2, I3, P1, P2, P3, P4,
- S1, S2, S3, S4,
- Q1, Q2, Q3, Q4,
- F1, F2, F3, F4,
- TANϕ1, Cosϕ1, Cosϕ2, Cosϕ3,
- Cosϕ4, q1, q2, q3, q4:

![Diagram TD223]

![Diagram TD224]

![Diagram TD225]

Unbalanced 3-phase, 3-wire network

- U12, U23, U31, F,

![Diagram TD226]

![Diagram TD227]

![Diagram TD227D]

V1, V2, V3, U12, U23, U31, F,

- Angle (V1/V2, V2/V3, V3/V1),
TRIAD 2 Range

Unbalanced 3-phase, 3-wire network (continued)
Unbalanced 3-phase, 4-wire network

Dimensions (in mm)

Panel drilling diagram for plate mounting

Accessory for plate mounting with screw (option)
TRIAD 2 Range

TRIAD 2 programmable via TRIADJUST 2

To simplify the procedure when ordering you can send us the form on page 207.

1 Model
   T1: small model — 1 analogue output
   T3: large model — 1 to 4 analogue output(s)

2 Communication
   0: Without
   1: RS485
   2: Ethernet

3 Number of analogue outputs
   0: Without (Choice of a minimum communication)
     1: 1 output
     2: 2 outputs (T3 model only)
     3: 3 outputs (T3 model only)
     4: 4 outputs (T3 model only)

4 Frequency
   0: 50 Hz
   1: 60 Hz

5 Supply
   0: 80-265 V AC/DC
   1: 19-58 V DC

6 Tropicalization
   0: Without
   1: With

7 Analogue output calibres
   0: -20 mA to +20 mA
   1: -5 mA to +5 mA
   2: -1 mA to +1 mA
   3: -10 V to +10 V
   4: -1 V to +1 V

8 Network
   0: Single-phase
   1: Balanced 3-phase, 3 wires
   2: Balanced 3-phase, 4 wires
   3: Unbalanced 3-phase, 3 wires
   4: Unbalanced 3-phase, 4 wires

9 Connection configuration
   Indicate the diagram number. E.g. TD204

10 Voltage input
   Indicate direct voltage to be measured or the VT ratio

11 Current input
   Indicate direct current to be measured or the CT ratio

12 Analogue output
   Indicate for each output:
   a: Quantity to be measured
   b: Transfer curve
   c: Input signal: Min — Breaking point — Max
   d: Input unity
   e: Output signal: Min — Breaking point — Max

T1 — SMALL MODEL (60 x 81 x 120.5 mm)

Without tropicalization  With tropicalization

<table>
<thead>
<tr>
<th>Link</th>
<th>Output</th>
<th>Supply</th>
<th>Number of input</th>
<th>Number of input</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Optical</td>
<td>± 20 mA 80-265 V AC/DC</td>
<td>P01380001</td>
<td>P01380002</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-58 V DC</td>
<td>P01380003</td>
<td>P01380004</td>
</tr>
<tr>
<td></td>
<td></td>
<td>± 10 V 80-265 V AC/DC</td>
<td>P01380005</td>
<td>P01380006</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-58 V DC</td>
<td>P01380007</td>
<td>P01380008</td>
</tr>
</tbody>
</table>

T3 — LARGE MODEL (120 x 81 x 120.5 mm)

Without tropicalization  With tropicalization

<table>
<thead>
<tr>
<th>Link</th>
<th>Output</th>
<th>Supply</th>
<th>Number of input(s)</th>
<th>Number of output(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Optical</td>
<td>± 20 mA 80-265 V AC/DC</td>
<td>P01380101, P01380103, P01380105, P01380107</td>
<td>P01380102, P01380104, P01380106, P01380108</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-58 V DC</td>
<td>P01380109, P01380111, P01380113, P01380115</td>
<td>P01380110, P01380112, P01380114, P01380116</td>
</tr>
<tr>
<td></td>
<td></td>
<td>± 10 V 80-265 V AC/DC</td>
<td>P01380117, P01380119, P01380121, P01380123</td>
<td>P01380118, P01380120, P01380122, P01380124</td>
</tr>
<tr>
<td></td>
<td></td>
<td>19-58 V DC</td>
<td>P01380125, P01380127, P01380129, P01380131</td>
<td>P01380126, P01380128, P01380130, P01380132</td>
</tr>
</tbody>
</table>

TRIAD 2 factory-programmable
Factory-programmed TRIAD 2: order form

1 - Model / Hz
- T1 or T2
- 50 Hz or 60 Hz

2 - Network
- Single-phase
- 3-wire balanced three-phase
- 3-wire unbalanced three-phase
- 4-wire balanced three-phase
- 4-wire unbalanced three-phase

3 - Options / Connection
- Ethernet or KS485
- Tropicalization
- Connection diagram: TD

4 - Power supply
- 0 to 265 Vac (50/60 Hz) / 0 to 265 Vdc or
- 19 to 58 Vdc

5 - Inputs

Current
- With current transformer or Direct

Available quantities
- V1, V2, V3, U12, U23, U31, I1, I2, I3, F, P1, P2, P3, Pt, Q1, Q2, Q3, Qt, S1, S2, S3, S4

Output 1
- Quantity and measurement range (x)
- Indicate quantity to be measured
- Transfer curve
- Linear
- 2 slopes
- Quadratic
- Output signal (y)
- Accuracy class
- 50 Hz
- 50 Hz
- 60 Hz
- 60 Hz
- 60 Hz
- 60 Hz

Output 2
- Quantity and measurement range (x)
- Indicate quantity to be measured
- Transfer curve
- Linear
- 2 slopes
- Quadratic
- Output signal (y)
- Accuracy class
- 50 Hz
- 50 Hz
- 60 Hz
- 60 Hz
- 60 Hz
- 60 Hz

Output 3
- Quantity and measurement range (x)
- Indicate quantity to be measured
- Transfer curve
- Linear
- 2 slopes
- Quadratic
- Output signal (y)
- Accuracy class
- 50 Hz
- 50 Hz
- 60 Hz
- 60 Hz
- 60 Hz
- 60 Hz

Output 4
- Quantity and measurement range (x)
- Indicate quantity to be measured
- Transfer curve
- Linear
- 2 slopes
- Quadratic
- Output signal (y)
- Accuracy class
- 50 Hz
- 50 Hz
- 60 Hz
- 60 Hz
- 60 Hz
- 60 Hz

Please indicate the unit of the measurement range, e.g. W, kW or MW.
**TRIADJUST 2 software**

Designed for quick configuration and display of all the parameters of your TRIAD 2 transducers

---

**Configuration**
- Inputs / Outputs
- Communication
- Connection diagram
- Response time

**Diagnosis**
- Voltage inputs
- Current inputs
- Cabling
- Phase order
- Analogue outputs
- Fresnel

**Display**
- Instantaneous quantities (in digital or analogue form)

**Recording**
- In real time in exported file

---

**Description**

The **TRIADJUST 2** software allows quick, unlimited programming of all your TRIAD 2's parameters.

Using a PC and the optical lead supplied in each kit, connect your product’s auxiliary power supply to dialogue with total security. Depending on your TRIAD 2’s configuration, remote communication is possible via RS485 or Ethernet. In the Windows™ environment, initialize or simply modify the quantities measured, the measurement ranges and the analogue outputs on the transducers installed. **TRIADJUST 2** also offers other functions such as **DIAGNOSIS** of your network, instantaneous **DISPLAY** of the electrical quantities and **REAL-TIME RECORDING** of the measurements in an exported file.

You can also print labels indicating the configurations and connections of your products.

---

**Minimum configuration**

- **Platform:** PC
- **Operating system:** Windows 2000 or XP
- **Processor:** Pentium-compatible
- **RAM:** 128 MB
- **Hard disk:** 40 GB
- **Drive:** CD-ROM
- **Communication port:**
  - Local: USB 1.1 minimum
  - Remote: RS485 and/or Ethernet
KIT TRIADJUST 2

The TRIADJUST 2 configuration kit comprises:
- The TRIADJUST 2 software
- An optical / USB lead
- 30 sheets of blank labels
- A 230 x 185 x 45 mm carrying case

TRIADJUST 2 “PREMIER”

This module is a complete tool designed for distributors or any user needing to program a large number of transducers.

The TRIADJUST 2 “PREMIER” configuration workstation comprises:
- The TRIADJUST 2 software
- An optical / USB lead
- A benchtop power-supply base
- 210 sheets of blank labels
- A 500 x 400 x 270 mm carrying case

Labels common to both kits

A sheet contains two labels, one for the configuration of the inputs/outputs and the other for the programmed connection diagram. The labels can be printed on all types of laser printers.

<table>
<thead>
<tr>
<th>Model</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRIADJUST 2 kit</td>
<td>P01380410</td>
</tr>
<tr>
<td>TRIADJUST 2 “PREMIER” workstation</td>
<td>P01380420</td>
</tr>
</tbody>
</table>

Accessories

- Set of 30 sheets of blank labels: P01380400
- Optical/USB lead: P01330403

Associated product

TRIAD 2 programmable with TRIADJUST 2

Page 197
TSP 2 Range

Self-powered version for applications requiring the conversion of a single AC current or voltage quantity. 1 analogue output class 0.2 for all type of electrical network.

PRODUCT ADVANTAGES

+ SELF-POWERED
+ CLASS 0.2
+ WIDE CHOICE OF INPUTS CALIBRED
+ RESPONSE TIME of 100 ms for TSPI and 200 ms for TSPU

Main specifications

TSPU
Quantity measured: Vac, Uac
Accuracy: Class 0.2
Inputs: AC voltage: 57.5 V to 400 V (fixed calibres)
Analogue output calibres: 0-10 mA, 0-20 mA, 0-5 V, 0-10 V
Operating frequency: 45 to 65 Hz

TSPI
Quantity measured: Iac
Accuracy: Class 0.2
Inputs: AC current: 1 A or 5 A (fixed calibres)
Analogue output calibres: 0-10 mA, 0-20 mA
Operating frequency: 45 to 65 Hz
### Functions

<table>
<thead>
<tr>
<th>Network</th>
<th>Function</th>
<th>TSPI model</th>
<th>TSPU model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single phase</td>
<td>V</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td>Balanced 3-phase 3 wires</td>
<td>U12 or U23 or U31</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I1 or I2 or I3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Balanced 3-phase 4 wires</td>
<td>V1 or V2 or V3 or U12 or U23 or U31</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I1 or I2 or I3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unbalanced 3-phase 3 wires</td>
<td>U12 or U23 or U31</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I1 or I2 or I3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unbalanced 3-phase 4 wires</td>
<td>V1 or V2 or V3 or U12 or U23 or U31</td>
<td>•</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I1 or I2 or I3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Electrical connections

**TSPU**

![TSPU connection diagram](image1)

**TSPI**

![TSPI connection diagram](image2)

⚠️ The terminal 1 can be connected either on the neutral or on one phase of the electrical network.
TSP 2 Range

- Dimensions (in mm)

- Environment and standards

<table>
<thead>
<tr>
<th>Standard of reference: CEI 60688</th>
<th>Climatic specifications (CEI 60068-2-1 / 2-2 / 2-30)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMC IMMUNITY</td>
<td>Operating temperature -10°C to +55°C</td>
</tr>
<tr>
<td></td>
<td>Storage temperature -40°C to +70°C</td>
</tr>
<tr>
<td></td>
<td>Relative humidity ≤ 95% at 35°C</td>
</tr>
<tr>
<td>Shock voltage IEC 61000-4-5</td>
<td></td>
</tr>
<tr>
<td>Oscillating wave IEC 61000-4-12</td>
<td></td>
</tr>
<tr>
<td>Fast electrical transients in bursts IEC 61000-4-4</td>
<td></td>
</tr>
<tr>
<td>Electrostatic discharge IEC 61000-4-2</td>
<td></td>
</tr>
<tr>
<td>EM radiated field IEC 61000-4-3</td>
<td></td>
</tr>
</tbody>
</table>

- Safety specifications (IEC 61010-1)

| Pollution level 2 | Fire resistance UL94, severity V0 |

- Mechanical specifications

<table>
<thead>
<tr>
<th>Protection rating IP 20</th>
<th>Mechanical shocks IEC 60068-2-27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vibrations IEC 60068-2-6</td>
<td>Drop test with packaging NF H0042-1</td>
</tr>
</tbody>
</table>

- Mounting accessories

<table>
<thead>
<tr>
<th>Model</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plate mounting</td>
<td>ACCT 1007</td>
</tr>
</tbody>
</table>

- Casing

<table>
<thead>
<tr>
<th>Weight 320g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting DIN rail 43700 or plate mounting</td>
</tr>
<tr>
<td>Connection Terminals with mobile stirrup clamp with screw for 4 single-wire 6 mm² conductors or 2 multi-wire 4 mm² conductors</td>
</tr>
</tbody>
</table>
# Electrical and metrological specifications

## Model

<table>
<thead>
<tr>
<th>Model</th>
<th>TSPI</th>
<th>TSPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current or voltage input</td>
<td>I (rms)</td>
<td>U or V (rms)</td>
</tr>
<tr>
<td>Rated value</td>
<td>In = 1 or 5 A</td>
<td>Vn = 100√3, 110√3, 120√3 V</td>
</tr>
<tr>
<td>Frequency Fn</td>
<td>46...65 Hz</td>
<td>46...65 Hz</td>
</tr>
<tr>
<td>Measurement range 0...Xmax</td>
<td>0...100% of ln</td>
<td>0...100% of Un/Vn</td>
</tr>
<tr>
<td>Consumption</td>
<td>2 VA</td>
<td>2 VA</td>
</tr>
<tr>
<td>Maximum overloads</td>
<td>2 In permanent</td>
<td>1.5 Un permanent</td>
</tr>
<tr>
<td></td>
<td>20 In / 1 s</td>
<td>2 Un / 1 s</td>
</tr>
<tr>
<td></td>
<td>40 In / 0.5 s</td>
<td>4 Un / 0.5 s</td>
</tr>
</tbody>
</table>

## Analogue output

<table>
<thead>
<tr>
<th>Transfer curve</th>
<th>Linear</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...Ymax</td>
<td>0...10 mA 0...20 mA</td>
</tr>
<tr>
<td></td>
<td>0...10 mA 0...20 mA 0...5 V 0...10 V</td>
</tr>
<tr>
<td>Accuracy</td>
<td>Class 0.2: 10...100% of ln</td>
</tr>
<tr>
<td></td>
<td>Class 0.2: 50...100% of Vn / Un</td>
</tr>
<tr>
<td>Response time</td>
<td>&lt; 100 ms</td>
</tr>
<tr>
<td></td>
<td>&lt; 200 ms</td>
</tr>
<tr>
<td>Operating resistance</td>
<td>15 V /s</td>
</tr>
<tr>
<td></td>
<td>≥ 1 kΩ</td>
</tr>
<tr>
<td>Peak-peak residual wave</td>
<td>40 μA</td>
</tr>
<tr>
<td></td>
<td>20 mV</td>
</tr>
</tbody>
</table>

## Auxiliary power supply

<table>
<thead>
<tr>
<th>Self-powered</th>
<th></th>
</tr>
</thead>
</table>

Parameters to be indicated when ordering