Current Transducer HAT 200 .. 1500-S

For the electronic measurement of currents: DC, AC, pulsed, with galvanic separation between the primary circuit and the secondary circuit.

### Electrical data

<table>
<thead>
<tr>
<th>Type</th>
<th>Primary nominal rms current</th>
<th>Primary current, measuring range 1)</th>
<th>RoHS since date code</th>
</tr>
</thead>
<tbody>
<tr>
<td>HAT 200-S</td>
<td>200</td>
<td>± 600</td>
<td>47143</td>
</tr>
<tr>
<td>HAT 400-S</td>
<td>400</td>
<td>± 1200</td>
<td>46115</td>
</tr>
<tr>
<td>HAT 500-S</td>
<td>500</td>
<td>± 1500</td>
<td>46129</td>
</tr>
<tr>
<td>HAT 600-S</td>
<td>600</td>
<td>± 1800</td>
<td>46115</td>
</tr>
<tr>
<td>HAT 800-S</td>
<td>800</td>
<td>± 2400</td>
<td>46115</td>
</tr>
<tr>
<td>HAT 1000-S</td>
<td>1000</td>
<td>± 2500</td>
<td>46097</td>
</tr>
<tr>
<td>HAT 1200-S</td>
<td>1200</td>
<td>± 2500</td>
<td>77271</td>
</tr>
<tr>
<td>HAT 1500-S</td>
<td>1500</td>
<td>± 2500</td>
<td>46158</td>
</tr>
</tbody>
</table>

- **$U_C$** Supply voltage (± 5 %) 1) ± 15 V
- **$I_C$** Current consumption ± 15 mA
- **$R_{IS}$** Insulation resistance @ 500 V DC > 1000 MΩ
- **$V_{out}$** Output voltage (Analog) @ ± $I_{PN}$, $R_L = 10 \text{ kΩ}$, $T_A = 25 \degree C$ ± 4 V
- **$R_{out}$** Output internal resistance 100 Ω
- **$R_L$** Load resistance > 10 kΩ

### Accuracy - Dynamic performance data

- **$X$** Accuracy @ $I_{PN}$, $T_A = 25 \degree C$ (excluding offset) ≤ ± 1 % of $I_{PN}$
- **$\varepsilon_L$** Linearity error 2) (0 .. ± $I_{PN}$) ≤ ± 1 % of $I_{PN}$
- **$V_{OE}$** Electrical offset voltage @ $T_A = 25 \degree C$ < ± 20 mV
- **$V_{OH}$** Hysteresis offset voltage @ $I_p = 0$, after an excursion of 1 x $I_{PN}$ < ± 10 mV
- **$TCV_{OE}$** Temperature coefficient of $V_{OE}$ @ - 40 °C .. + 80 °C < ± 1 mV/K
- **$TCV_{out}$** Temperature coefficient of $V_{out}$ (% of reading) @ 40 °C .. + 105 °C < ± 0.1 mV/K
- **$t_r$** Step response time to 90 % of $I_{PN}$ < 5 μs
- **$\frac{dV}{dt}$** $dV/dt$ accurately followed > 50 V/μs
- **$BW$** Frequency bandwidth 3) (- 3 dB) DC .. 25 kHz

### General data

| $T_A$ | Ambient operating temperature | - 40 .. + 105 °C |
| $T_S$ | Ambient storage temperature   | - 40 .. + 105 °C |
| $m$   | Mass                          | 300 g           |

**Notes:**

1) Operating at ± 12 V ≤ $U_C$ ≤ ± 15 V will reduce the measuring range

2) Linearity data exclude the electrical offset

3) Please refer to derating curves in the technical file to avoid excessive core heating at high frequency

4) UL conform is only applicable @ $T_A = - 40 \degree C .. + 85 \degree C$. 

$\quad I_{PN} = 200 .. 1500 \ A$

$\quad V_{out} = ± 4 \ V$

### Features

- Hall effect measuring principle
- Insulating plastic case recognized according to UL 94-V0.

### Advantages

- Easy installation
- Low power consumption
- Small size and space saving
- Only one design for wide current ratings range
- High immunity to external interference.

### Applications

- DC motor drives
- Switched Mode Power Supplies (SMPS)
- AC variable speed drives
- Uninterruptible Power Supplies (UPS)
- Battery supplied applications
- Power supplies for welding applications.

### Application domain

- Industrial.
Current Transducer HAT 200 .. 1500-S

Insulation coordination

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>$U_{d}$</td>
<td>4.9 kV</td>
<td></td>
</tr>
<tr>
<td>$\dot{U}_{w}$</td>
<td>&gt; 9.9 kV</td>
<td></td>
</tr>
<tr>
<td>$d_{c_1}$</td>
<td>11 mm</td>
<td></td>
</tr>
<tr>
<td>$d_{c_2}$</td>
<td>11 mm</td>
<td></td>
</tr>
<tr>
<td>CTI</td>
<td>275</td>
<td></td>
</tr>
</tbody>
</table>

Applications examples

According to EN 50178 and IEC 61010-1 standards and following conditions:

- Over voltage category III
- Pollution degree PD2
- Non-uniform field

<table>
<thead>
<tr>
<th>EN 50178</th>
<th>IEC 61010-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>$d_{c_1}$, $d_{c_2}$, $\dot{U}_{w}$</td>
<td>Rated insulation voltage</td>
</tr>
<tr>
<td>Basic insulation</td>
<td>1100 V</td>
</tr>
<tr>
<td>Reinforced insulation</td>
<td>550 V</td>
</tr>
</tbody>
</table>

Safety

This transducer must be used in limited-energy secondary circuits according to IEC 61010-1.

Caution, risk of electrical shock

When operating the transducer, certain parts of the module can carry hazardous voltage (eg. primary busbar, power supply). Ignoring this warning can lead to injury and/or cause serious damage. This transducer is a build-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used. Main supply must be able to be disconnected.
Dimensions HAT 200 .. 1500-S (in mm)

Mechanical characteristics
- General tolerance ± 1 mm
- Transducer fastening By base-plate or on busbar with M4 screws
- Recommended fastening torque 1.2 N·m (± 10 %)
- Connection of secondary Molex 5045-04A

Remarks
- $V_{out}$ is positive when $I_p$ flows in the direction of the arrow.
- Temperature of the primary conductor should not exceed 105 °C.
- Installation of the transducer must be done unless otherwise specified on the datasheet, according to LEM Transducer Generic Mounting Rules. Please refer to LEM document N°ANE120504 available on our Web site: Products/Product Documentation.