Hall Effect Current Sensor HE055PV1

Features
- Low Amplitude Error & Phase Error.
- Isolated plastic case recognized according to UL 94-V0.

Advantage
- Excellent accuracy
- Very good linearity
- Low temperature drift
- Optimized response time
- Wide frequency bandwidth
- No insertion losses
- High immunity to external interference
- Current overload capability.

Applications
- AC variable speed drives and servo motor drives
- Static converters for DC motor drives
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Switched Mode Power Supplies (SMPS)
- Power suppliers for welding applications.

Application domain
- Commercial
- Industrial

Maximum ratings

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum supply voltage (working) -40 to 85°C</td>
<td>±Uc</td>
<td>±15V</td>
<td>V</td>
</tr>
<tr>
<td>Primary conductor temperature</td>
<td>Tp</td>
<td>85°C</td>
<td></td>
</tr>
<tr>
<td>maximum steady state primary current -40 to 85°C</td>
<td>Ipn</td>
<td>50 A</td>
<td></td>
</tr>
<tr>
<td>Rms Voltage For Ac Insulation Test, 50Hz, 1 Min</td>
<td>Um</td>
<td>3.0 KV</td>
<td></td>
</tr>
<tr>
<td>Insulation Resistance</td>
<td>Rs</td>
<td>NA</td>
<td>MΩ</td>
</tr>
</tbody>
</table>

Electrohms reserves the right to carry out modifications on its sensors, in order to improve them, without prior notice.
## Electrical data

### Primart Nominal Rms Current
- **Symbol**: $I_{pn}$
- **Condition**: 
  - $-70$ A
  - $+70$ A
- **Min**: 50 A
- **Typ**: 50 A
- **Max**: 50 A
- **Unit**: A

### Primary Current, Measuring Range
- **Symbol**: $I_p$
- **Condition**: 
  - with $+/-12V @ +/50A$ (max)
    - 60 $\Omega$
  - with $+/-12V @ +/70A$ (max)
    - 42 $\Omega$
  - with $+/-15V @ +/50A$ (max)
    - 140 $\Omega$
  - with $+/-15V @ +/70A$ (max)
    - 85 $\Omega$
- **Min**: 50 A
- **Typ**: 50 A
- **Max**: 50 A
- **Unit**: A

### Burden Resistance
- **Symbol**: $R_b$
- **Condition**: 
  - with $+/-12V @ +/50A$ (max)
    - 65 $\Omega$
  - with $+/-12V @ +/70A$ (max)
    - 42 $\Omega$
  - with $+/-15V @ +/50A$ (max)
    - 140 $\Omega$
  - with $+/-15V @ +/70A$ (max)
    - 85 $\Omega$
- **Min**: 50 A
- **Typ**: 50 A
- **Max**: 50 A
- **Unit**: A

### Secondary Nominal Rms Current
- **Symbol**: $I_{sn}$
- **Min**: 25 mA
- **Typ**: 25 mA
- **Max**: 25 mA
- **Unit**: mA

### Resistance Of Secondary Winding
- **Symbol**: $R_s$
- **Condition**: 
  - $R_s(TA) = R_s x (1+0.004x(TA+\Delta temp-25))$ Est temp increase @ $I_{pn}$ is $\Delta temp = 15^\circ C$
  - 65 $\Omega$
- **Min**: 50 A
- **Typ**: 50 A
- **Max**: 50 A
- **Unit**: A

### Conversion Ratio
- **Symbol**: $K$
- **Min**: 1000:1
- **Typ**: 1000:1
- **Max**: 1000:1
- **Unit**: K

### Current Consumption at $I_{sn}$
- **Symbol**: $I_{con}$
- **Min**: 11 + $I_{con}$
- **Typ**: 11 + $I_{con}$
- **Max**: 11 + $I_{con}$
- **Unit**: mA

### Theoretical Sensitivity
- **Symbol**: $G_{th}$
- **Min**: 0.05 A
- **Typ**: 0.05 A
- **Max**: 0.05 A
- **Unit**: A

### Supply Voltage
- **Symbol**: $\pm U_c$
- **Min**: $\pm 12 V$
- **Typ**: $\pm 12 V$
- **Max**: $\pm 12 V$
- **Unit**: V

### Offset Current, Referred To Primery
- **Symbol**: $I_o$
- **Min**: $\pm 0.20 mA$
- **Typ**: $\pm 0.20 mA$
- **Max**: $\pm 0.20 mA$
- **Unit**: mA

### Temperature Variation Of $I_o$, Referred To Primary
- **Symbol**: $I_{ot}$
- **Min**: $-0.6 mA$
- **Typ**: $+0.6 mA$
- **Max**: $+0.6 mA$
- **Unit**: mA

### Linearity Error
- **Symbol**: $\Sigma_l$
- **Min**: $25 to 70$ to $85^\circ C$
- **Typ**: $-0.65$
- **Max**: $+0.65$
- **Unit**: % of $I_{sn}$

### Overall Accuracy At $I_{sn}$
- **Symbol**: $X_c$
- **Min**: $1Hz to 20KHz fig 4$
- **Typ**: $-0.65$
- **Max**: $+0.65$
- **Unit**: % of $I_{sn}$

### Reaction Time @ 90% Of $I_{sn}$
- **Symbol**: $t_r$
- **Min**: $0 to 1KA, 200A/\mu s$
- **Typ**: $<1.0 \mu s$
- **Max**: $<1.0 \mu s$
- **Unit**: µs

### Frequency Bandwidth
- **Symbol**: $BW$
- **Min**: $-3dB, small signal bw$
- **Typ**: $0$
- **Max**: $200 KHz$
- **Unit**: KHz

### di/dt accurately followed
- **Symbol**: $di/dt$
- **Min**: $>200 A/\mu s$
- **Typ**: $>200 A/\mu s$
- **Max**: $>200 A/\mu s$
- **Unit**: A/µs

### Ambient Operating Temperature
- **Symbol**: $T_a$
- **Min**: $-40^\circ C$
- **Typ**: $+85^\circ C$
- **Max**: $+85^\circ C$
- **Unit**: ºC

### Ambient Storage Temperature
- **Symbol**: $T_s$
- **Min**: $-50^\circ C$
- **Typ**: $90^\circ C$
- **Max**: $90^\circ C$
- **Unit**: ºC

### Mass
- **Symbol**: $m$
- **Min**: 22 g
- **Typ**: 22 g
- **Max**: 22 g
- **Unit**: g
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Connection Diagram

Input & Output Characteristics

![Graph showing input and output characteristics with a linear relationship between IP and Iout.]
Mechanical dimensions in mm

- Pin 1: +VCC (+V)
- Pin 2: -VCC (-V)
- Pin 3: OUTPUT (O/P)

Tolerance: ±0.5mm
Safety

- This Current Transformer must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the manufacturer’s operating instructions.

- Caution, risk of electrical shock
  When operating the Current Transformer, certain parts of the module can carry hazardous voltage (e.g., primary busbar, power supply).
- Ignoring this warning can lead to injury and/or cause serious damage.
- A protective housing or additional shield could be used.
- Main supply must be to be disconnected.
- If IP flows in the direction of the Arrow I_{sek} is positive
- Over currents (\( I_{PN} \)) or the missing of the supply voltage can cause an additional remaining magnetic offset
- The temperature of the primary conductor may not exceed 100 °C
- This Sensors may only be used in electrical or electronic systems which fulfill the relevant regulations (Standards, EMC Requirements…)
- Pay attention to protect non-isolated high-voltage current carrying parts against direct contact (e.g. with a protective housing)
- When installing this sensor, you must ensure that the safe separation (between primary circuit and secondary circuit) is maintained over the whole circuits and their connections
- Disconnecting the main power must be possible