

Panel Mounted, Closed Loop, Hall Effect Current Sensor

The HCS-C5 Series of panel mounted, closed loop, Hall Effect current sensors are designed for application requiring the measurement of AC current, DC current and DC current pulses.

The HCS-C5 current sensor design is based upon the principle that a magnetic field applied perpendicular to an electric current will create a proportional Hall voltage perpendicular to the two fields. The closed loop design incorporates a second magnetic field which is used to offset the primary conductor magnetic field. The zeroing of the magnetic flux provides a highly accurate representation of the primary conductor current.



The technology allows;

- Contactless, non-intrusive current sensing and
- Current sensing of DC current, DC current pulses and AC electric current.

The Hall Effect technology features high accuracy, high primary to secondary electrical isolation and extended frequency detection bandwidth.

Features:

- Rated Primary (I_{nominal}): from 50A to 300A.
- Output: mA current (optional VDC).

Specifications:

- Frequency: 0 to 100kHz.
- Dielectric withstand voltage between Primary and Secondary: 3,000V RMS @ 50HZ for 1 minute.
- Operating Temperature: -40°C to +85°C.
- Supply Voltage: +5VDC ($\pm 5\%$)
- Supply Consumption: 10mA plus I_M (I_M internal compensating magnetic field current).

- Opening: 25mm/ 0.98"
- Construction:
 - Epoxy encapsulated housing.
 - Case material – UL flame retardant rating 94 V-0.
- RoHS compliant.



Performance:

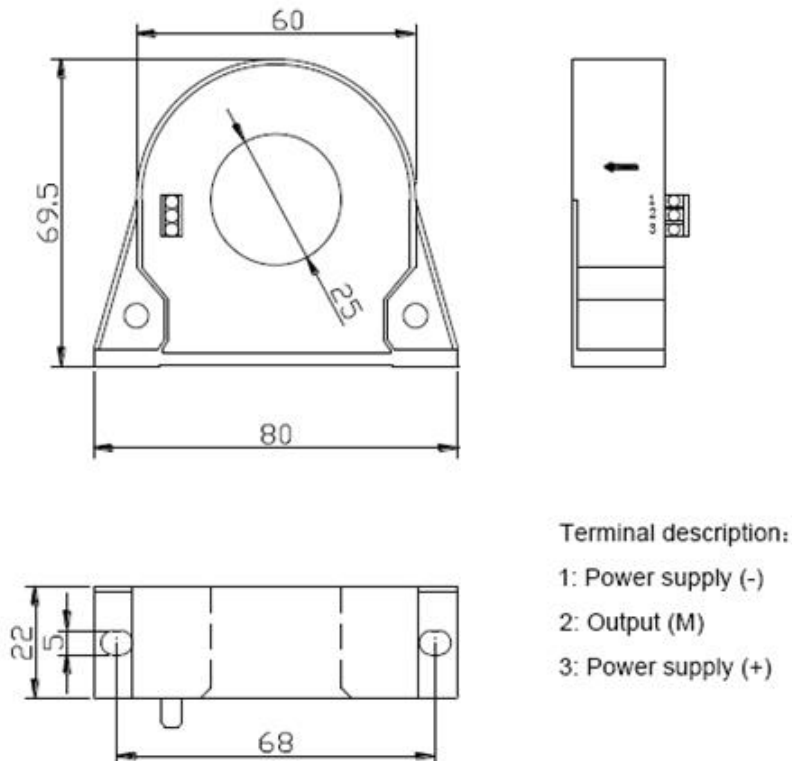
- Accuracy: $\pm 0.5\%$, $\pm 0.8\%$ of I_{nominal} @ 25°C
- Linearity: $\leq 0.1\%$
- Response Time: $\leq 1 \mu\text{Second}$
- Offset Current (@ +25°C): $\pm 0.1\text{mA}$ maximum primary current $I_{\text{nominal}} = 0$.
- Temperature Drift: $\pm 0.5\text{mA}/^\circ\text{C}$ maximum (-25 °C to +85 °C)

Configuration Options:

Model	Rated Current (RMS)	Measurement Range	Secondary Output @ Rated Current
HCS-50C5	50A	0 to $\pm 100A$	50mA
HCS-100C5	100A	0 to $\pm 150A$	100mA
HCS-200C5	200A	0 to $\pm 300A$	100mA
HCS-300C5	300A	0 to $\pm 450A$	150mA

Optional Secondary Output: +0.5VDC to 4.5VDC where +2.5VDC represents zero Primary Current.

Outline Drawing (mm):



Connection Definitions:

PIN 1	PIN 2	PIN 3
Power supply input	Secondary signal output (positive or negative value is dependent upon direction of primary current)	Power supply input
-12VDC	Signal output	+12VDC
-15VDC	Signal output	+15VDC

NOTE:

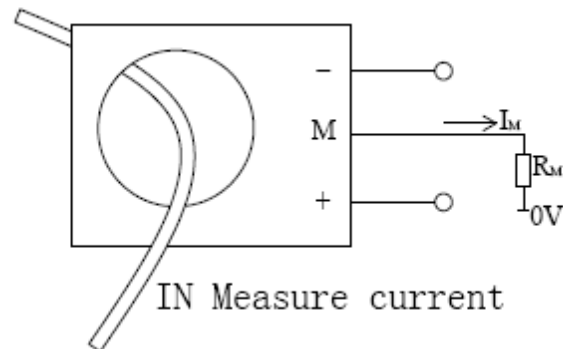
1. Secondary output is positive when direction of primary flow is from side with terminals to side without terminals/ direction of the arrow.

Application Example HCS-300C5:

$I_M = 150\text{mA} @ I_N = 300\text{A}$

$R_M @ \pm 12\text{VDC} - 0 \text{ ohm to } 30 \text{ ohm maximum}$

$R_M @ \pm 15\text{VDC} - 20 \text{ ohm to } 40 \text{ ohm maximum}$



2. **Power supply options:** + 5VDC, ±12V, ±15V (power supply option to be used should be specified at time of purchase).

Custom Hall Effect current sensor designs are available to meet the specific application requirements. For a no obligation technical evaluation, please provide the specific performance requirements to engineering@tichenassociates.com or the address below.