

## DC current sensors, dc current transducers, dc current probes

Converting dc current to an isolated 0-100mV, 0-1V, 0-2V, 0-5V, 0-10V, 0-20mA, 4-20mA or 5-25mA

The CTH sensors convert dc current to an isolated voltage output with the ability to track ac waveshapes. The CTH output is a faithful reproduction of the measured current, whether ac or dc. All popular process control voltage and current loop outputs are available. Through hole or split core options mean that connection is non-intrusive and straightforward. The available input range of the CTH sensors is any value from 1A to 40000Adc. Optional dc offset control allows nulling of residual dc current to ensure best use of the output span. The sensor power input is designed to operate over a wide voltage range associated with process control and sub-station auxiliary dc supply systems. Active Hall Effect sensor technology allows measurement from DC-150kHz (depending on the sensor type) along with fast step response. The CTH can be used to provide an instantaneous output for ac currents. Typical applications are found in process control systems like PLC or SCADA, transportation, telecommunications, dc drives, welding and circuit breaker trip coils. For all CTH models, a NIST/NPL (UKAS) traceable calibration certificate and certificate of conformance is supplied.

### CTH split core Type 5

Hole diameter 21mm (0.90") Overall size 204mm (8.03") x 65mm (2.55") x 38mm (1.5")  
Current ranges: 20A / 30A / 40A / 50A / 100A / 200A / 300A / 400A split core models.



Type 5 split core DC-25kHz (internal filter 1500Hz).  
As standard the sensor is supplied connected via a 30cm (12" cable)

### CTH through hole core Type 1

Type 1: Hole: 13.5mm (0.53") x 10mm (0.39")  
Overall size 145mm (5.71") x 95mm (3.74") x 38mm (1.50")  
Type 1 current ranges: 10A / 20A / 30A / 40A / 50A / 100A

### CTH Type 2: Hole 24.5 diameter

Type 2 current ranges: Any range from 0-5A to 0-600A



Type 1 through hole DC-100kHz (internal filter 1500Hz)  
Sensor is box mounted



Type 2 - 24.5mm through hole DC-150kHz (internal filter 1500Hz)  
As standard the sensor is supplied connected via a 30cm (12" cable)

### CTH split core Type 6

Hole: 104 (4.09") x 40 mm (1.57")

Outer: 159mm (6.26") x 85mm (3.35")

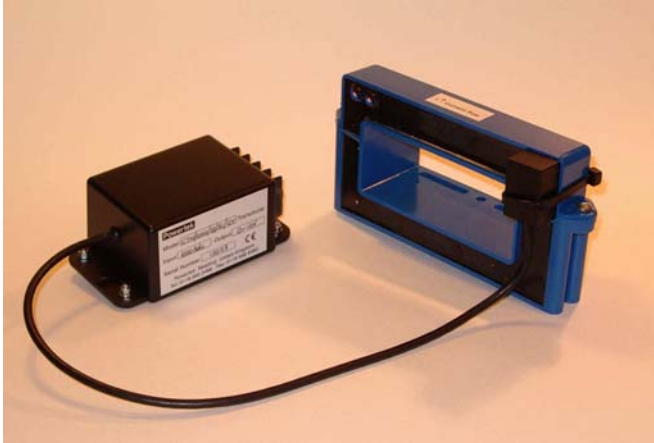
Current ranges: CTH 250 / 500 / 800 / 1000 / 2000 / 3000A

### CTH split core Type 7

Hole: 163mm (6.42") x 50mm (2")

Outer: 233mm (9.17") x 95mm (3.74")

Current ranges: 500 / 1000 / 2000 / 2500 / 3000A



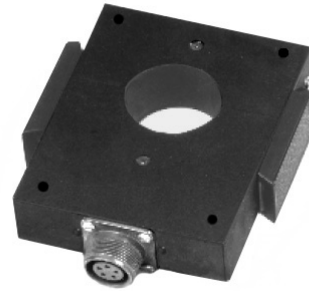
Type 6: DC-10kHz Type 7: DC-4kHz (internal filter 1500Hz).  
As standard the sensor is supplied connected via a 30cm (12" cable)

### CTH Type 4 mini and CTH split core Type 8 mini

Hole: 28.5mm (1.125") round hole

Outer: 102 mm (4") x 80mm (3.125") x 19mm (0.75")

Current ranges: 100 / 200 / 300 / 400A



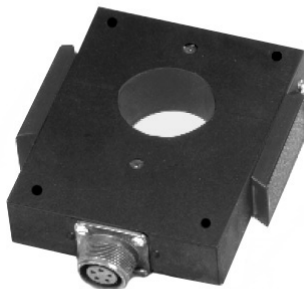
Type 8 mini split core DC-400Hz

### CTH Type 4 and CTH split core Type 8

Hole: 50mm (2") round hole

Outer: 127mm (5") x 105mm (4.125") x 31.75mm (1.25")

Current ranges: CTH / 200 / 500 / 800 / 1000 / 1500 / 2000 / 2500A



Type 8 split core DC-400Hz

### CTH split core Type 10

CTH Hole size 140mm (5.5") x 203mm (8").

Outer 254 (10") x 350 (13.75")

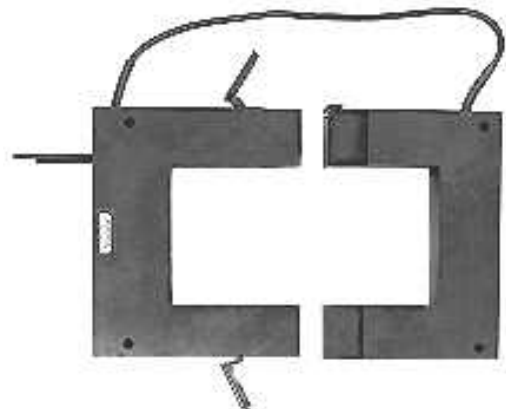
Current ranges 5000A / 6000A / 7000A / 8000A / 9000A / 10000A / 15000A / 20000A

### CTH split core Type 11

CTH aperture 330mm (13") x 330mm (13").

Outer 534mm (21") x 534mm (21")

Current ranges 25000A / 30000A / 35000A / 40000A<sub>dc</sub>



Type 10 & 11 split core DC-1kHz

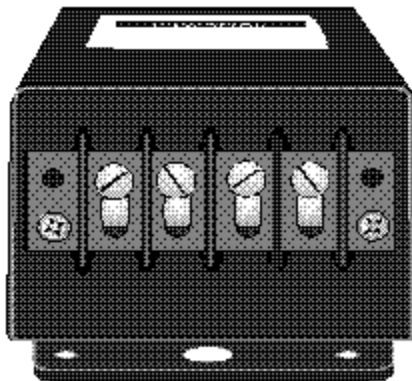
**IRF-rms converts instantaneous output sensors to a dc signal proportional to the rms. Suitable with dc and complex dc+ac signals**

Bandwidth: DC-75kHz. Waveform crest factors: 1 - 5

Input range: 2mV to 50V input, Wide range of dc outputs:  
0-100mV, 0-1V, 0-2V, 0-5V, 0-10V, 0-20mA, 4-20mA and 5-25mA  
12, 24, 48 or 110Vdc power



**Signal conditioner terminal connections**



**Terminals from left to right:  
output + / output - / power input ground -ve / power input positive +ve**

Input and output grounds are isolated 250Vdc

**Signal conditioner overall size 145mm (5.71") x 65mm (2.56") x 38mm (1.50")**

DC current transducer general specifications	
<b>Ranges</b>	Depending on core type: 1A / 2A / 5A / 10A / 20A / 30A / 40A / 50A / 100A / 200A / 500A / 1000A / 2000A / 3000A / 4000A / 5000A / 6000A / 10000A / 20000A / 25000A / 30000A / 35000A / 40000A Amps peak
<b>Outputs</b>	0-100mV, 0-1V, 0-2V, 0-5V, 0-10V or 0-20mA, 4-20mA or 5-25mA outputs. All CTH outputs can be bipolar / instantaneous. Non-standard outputs are available.
<b>Core type</b>	Through hole or split core clamp type, based on dc Hall Effect sensing
<b>Insulation voltage rating</b>	Type 1, 2 & 5 rated insulation (Galvanic) 2.5kVpk 1 min 50/60Hz. Type 6 & 7 3kVpk 1 min 50/60Hz. Type 4 & 8 5kVpk 1 min 50/60Hz
<b>Power input</b>	12Vdc / 24Vdc / wide range 9-36Vdc / 48Vdc / 72Vdc / 110Vdc / 125Vdc / 250Vdc / 115Vac / 230Vac - fuse and surge protected
<b>Accuracy</b>	±0.5% for a non split core, ±1.0% for a split core. Conditions +23°C ±5°C, traceable to UKAS NPL/NIST USA
<b>Working temperature range</b>	Typically -20°C - 50°C (can be extended, check for exact model). Functional temp range > -20°C - 70°C (check for each model)
<b>Protection</b>	Input fuse, output fuse, power input polarity diode, spike suppression
<b>Frequency response</b>	Depending on sensor type/model. Type 1 & 2 DC- 150kHz max, split cores are DC- 10kHz max. Standard filter is 1.5kHz
<b>Adjustment</b>	Internal dc offset and gain controls
<b>Mounting</b>	All signal conditioners and sensors have fixing points. Current sensors up to 400A can be mounted on the signal conditioner case or via a cable.
<b>Approvals</b>	CE Marked, IEC1010 cat II & IEC348, UL/CSA rated materials. Self extinguishing materials to UL94V0
<b>Warranty</b>	2 year warranty

### Available through hole sizes (some not pictured above)

Type 1: 13.5 x 10mm rectangular 1A – 100A – Supplied attached or separate to conditioner  
Type 2: 24.5mm diameter 5A - 600A – supplied with 30cm / 12" cable from sensor - signal conditioner  
Type 4: 50mm diameter 1000A – Sensor has integral signal conditioner supplied with 2M cable

### Available split core hole sizes

Type 5: 21mm dia 20A - 400A supplied with 30cm / 12" cable from sensor - signal conditioner  
Type 6: 104 x 40mm 500A - 3000A supplied with 30cm / 12" cable from sensor - signal conditioner  
Type 7: 163 x 50mm 500A - 3000A supplied with 30cm / 12" cable from sensor - signal conditioner  
Type 8 mini: 28.5mm dia 100A - 400A Sensor has integral signal conditioner supplied with 2M cable  
Type 8: 50mm / 2" dia 400A - 1000A Sensor has integral signal conditioner supplied with 2M cable  
Type 10: 140mm (5.5") x 203mm (8") 5000A - 20000A Sensor connects to signal conditioner via 2M cable  
Type 11: 330mm (13") x 330mm (13") 25000A - 40000Adc Sensor connects to signal conditioner via 2M cable

Longer cable lengths available - on request

### Current transducer order codes

The order code is based on:-

#### CTH / amps input / output / SC or TH / power input + core type

SC = split core, TH = through hole (non-split core)

230Vac/dc & 115Vac/dc adapters are available (in this case the CTH will be supplied with 9-36Vdc input and ac adapter)

### Options - Environmental

All models self extinguishing materials to UL94V0 and CSA  
Extended temperature range -40°C - 85°C (not available for all sensor types)

### Options – noise rejection and offset

Non standard input current  
Non standard output voltage or current  
User can specify upper or lower –3db point

### Order code examples

CTH / 50A / 4-20 / TH / 24Vdc type 1	50Adc input, 4-20mA output, through hole, 24V aux power input, core type 1 (13.5 x 10mm)
CTH / 400A / 10 / TH / 72Vdc type 4	400Adc input, 0-10V output, through hole, 72Vdc aux power input core type 4 (50mm hole dia)
CTH / 2000A / 10 / SC / 110Vdc type 7	2000Adc input, 0-10V output, split core, 110Vdc aux power input, type 7 core (163 x 50mm)