



## Non-intercepting DC current measurement with 10 microamps resolution

To measure:

- Return ground currents, DC and AC
- Leakage currents, DC and AC
- Sum of currents
- Small difference of high currents
- Low current at high voltage
- Power tube electrode currents
- Electrostatic corona discharges
- Electrochemically induced currents
- Standby systems charging currents

### Main features

The IPCT is a current transformer capable of measuring DC currents

Large aperture 82 mm (3.23")

Widely used for Xray installations periodic recalibration

Full scale from  $\pm 1$  mA to  $\pm 20$  A factory preset

$\pm 10$  V analog output

DC to 3.8 kHz (-3 dB) response

Accuracy independent of primary conductor position

Withstands 100 kA discharges during 4  $\mu$ s to 10  $\mu$ s

Considerably more precise than Hall effect devices

Increased sensitivity with multiple primary turns

### Operating principle

The IPCT works on the principle of the DCCT, invented at CERN, the European Particle Physics Laboratory, by K.Unser in 1969. The DC component of the current flowing through the toroid sensor is detected by a magnetic modulator, also called fluxgate or second harmonic detector. The AC component is detected by an active Hereward transformer. The two circuits are cascaded in a common feedback loop to generate a magnetic flux which always cancels the primary current magnetic flux. The IPCT output is the voltage developed by the feedback current passing through a precision resistor.

#### MANUFACTURER

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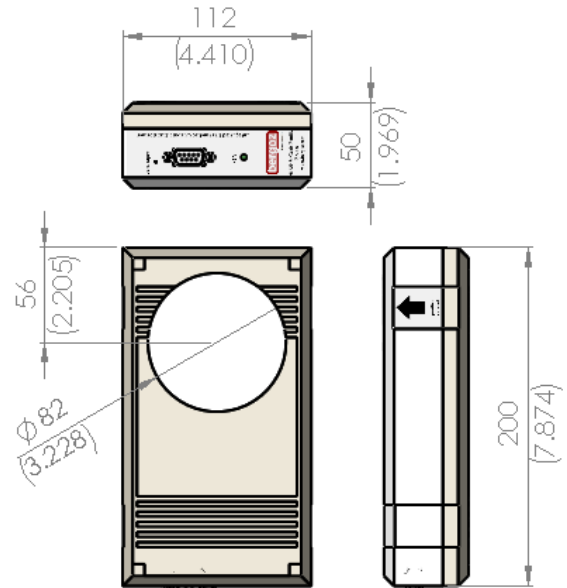
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**Specifications**

Full scale range	Any value from $\pm 1$ mA to $\pm 20$ A, factory preset
Over range	120 % full scale permanently
Saturation	>120 % full scale
Damage level	DC: > 20 A, AC: > 20 Arms Discharge: > 100 kA, 4 $\mu$ s to 10 $\mu$ s
Voltage isolation	5 kV current conductor to ground
Resolution	See "Resolution" table below
Linearity error	<0.1 % FS
Absolute accuracy	$\pm 0.2$ % FS
Calibration	External current can be applied
Ripple	7 kHz and even harmonics See "Ripple" table below
Bandwidth	DC to 3.8 kHz (-3 dB), See "Bandwidth" table below
Output	$\pm 10$ V, buffered, 20 mA max stands permanent short circuit
Zero adjust	20-turn front-panel potentiometer
Power supply	$\pm 15$ V, 100 mA
Connection	DB-9 male on front panel
Temperature drift	<5 $\mu$ A/K
Stabilization after overload	10 ms max.
Magnetic field	50 $\mu$ A/Gauss typ. sensitivity
Mass	0.5 Kg

**Dimensions**



**Order codes**

IPCT-XXXmA      Integrated Parametric Current Transformer. Factory-preset Any range XXXmA up to  $\pm 20$  A

**Options**

IPCT-0.01%      Linearity error < 0.01 % Full Scale  
 IPCT-CALCERT      IPCT initial certificate of Calibration with test report  
 IPCT-PS-BNC-2      90-245 Vac power supply & BNC output for IPCT

**Resolution, bandwidth and ripple**

Range	Resolution (1 s integr.)	Bandwidth -3 dB	Ripple (7 kHz)
$\pm 1$ mA	1 $\mu$ A	> 150 Hz	< 80 mV rms
$\pm 10$ mA	10 $\mu$ A	> 800 Hz	< 70 mV rms
$\pm 100$ mA	10 $\mu$ A	> 3 kHz	< 70 mV rms
$\pm 2$ A	30 $\mu$ A	> 3.8 kHz	< 12 mV rms
$\pm 20$ A	200 $\mu$ A	> 2 kHz	< 12 mV rms

**Connections**

Function	Pin
Power supply -15 V	4
Power supply +15 V	9
Power supply ground	5
Output (-10 V to +10 V)	2
Output ground	7
Optional external resistor	1
Optional external resistor	6
Calibration winding +	8
Calibration winding -	3



**IPCT-PS-BNC-2** (on option): Power supply & BNC output for IPCT

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