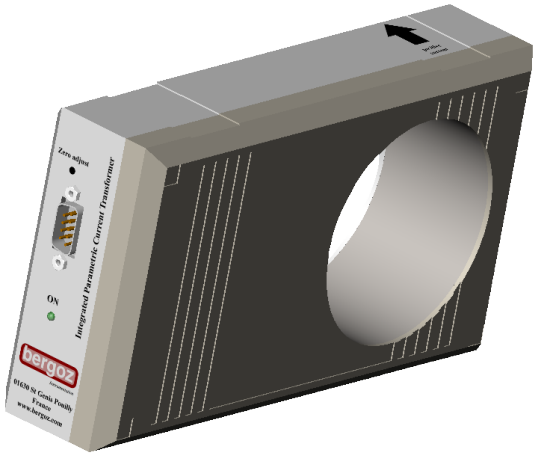
IPCT - Integrated Parametric Current Transformer



Non-intercepting DC current measurement with 10 microamps resolution

To measure:

Return ground currents, DC and AC

Leakage current, DC and AC

Sum of currents

Small difference of high currents

Low current at high voltage

Power tube electrode currents

Electrostatic corona discharge

Electrochemically induced currents

Standby systems charging currents

Main features

The IPCT is a DC Current Transformer

Large aperture 82mm (3.23")

Widely used for Xray installations periodic recalibration

Full scale from ±1 mA to ±20 A factory preset

±10V analog output

DC to 3.8 kHz (-3dB) response

Accuracy independent of primary conductor position

Withstands 100kA 4/10µs discharges

100 times 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 flux. The IPCT output is the voltage developed by the feedback current passing through a precision resistor.

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Specifications

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

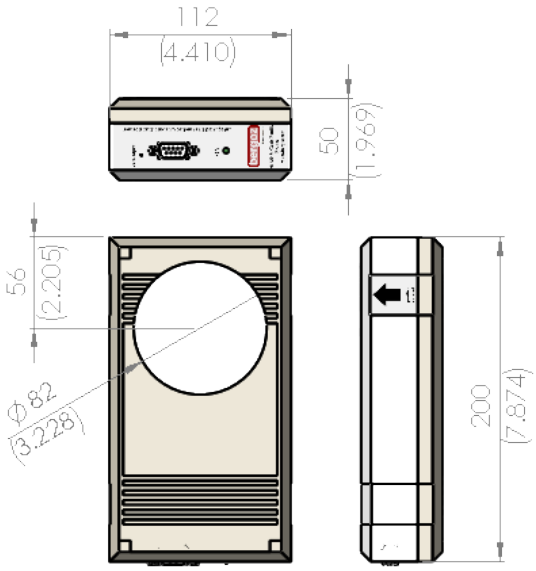
Resolution, bandwidth and ripple

Range	Resolution (Noise)	Bandwidth -3 dB	Ripple (7kHz)
+- 1 mA	1 uA/√Hz	> 150 Hz	< 80 mV rms
+- 10 mA	10 uA/√Hz	> 800 Hz	< 70 mV rms
+- 100 mA	10 uA/√Hz	> 3 kHz	< 70 mV rms
+- 2 A	30 uA/√Hz	> 3.8 kHz	< 12 mV rms
+- 20 A	200 uA/√Hz	> 2 kHz	<12 mV rms

Connections

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

Dimensions



Order codes

IPCT-XXXmA	Integrated Parametric Current Transformer. Factory-preset Any range XXXmA up to ±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	90-245Vac power supply & BNC output for IPCT

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