ACCT
AC Current Transformer

Precise waveform measurement of long pulses and macropulses, up to several milliseconds, with minimal droop and noise.

±10mA up to ±2A full scale current range
Output ±1V or ±10V depending on version

Dynamic range >10⁴
Bandwidth 3 Hz up to 1 MHz
Output signal droop < 2 %/ms

Two versions are available:
High-resolution (-HR):
<1μArms wideband noise
Wideband (-WB):
Up to 1 MHz

Three packaging types for the sensor:
• Toroid for in-air installation over the vacuum chamber
• Inside an optional magnetic shield for high-resolution measurement in noisy environment
• In-flange for in-line UHV installation

Cable from sensor to electronics up to 100m long.

Operating principle
The ACCT is an evolution of the active transformer first proposed by Hereward in 1960. Compared to the Hereward transformer, the ACCT presents much lower noise, a DC offset of the output reduced to a very small value and excellent long-term stability. The sensor is built with a single winding, which requires only one wire pair between sensor and electronics; this allows much better EMI rejection when long cables are used. The electronics circuit is multistage, implementing the best low-noise operational amplifier available for this application.
Specifications

Full scale range  Any value from ±10mA to ±2A, factory preset electronics.
Connectors  Sensor: BNO (bipolar BNC)
Electronic input: BNO (bipolar BNC)
Electronic output: BNC
Sensor cable  RG108 recommended, up to 100 meters
Version  High-resolution  Wideband
Output full scale  +10V  +1V
Lower cutoff (-3dB)  3 Hz  3 Hz
Droop  <2%/ms  <2%/ms
Upper cutoff (-3dB)  300 kHz  1 MHz
Risetime  Slew rate limited
Slew rate dV/dt  1.5 V/µs  2 V/µs
Output offset  0.2 mV typ.  0.2 mV typ.
Noise at 10mA F.S.  <1µArms  <5µArms
Noise at 100mA F.S.  <5µArms  <20µArms
Power supply  ±15Vdc, 100mA ±5Vdc, 100mA

Order codes

Sensors
In-air:  ACCT-S-XXX (ID= XXXmm)
In-air shielded:  ACCT-S-XXX-MSH
In-flange:
ACCT-CF3"/3/8-22.2-40-UHV (1” pipe)
ACCT-CF4"/1/2-34.9-40-UHV (1.5” pipe)
ACCT-CF6"-60.4-40-UHV (2.5” pipe)
ACCT-CF6"/3/4-96.0-40-UHV (4” pipe)
ACCT-CF8"-96.0-40-UHV (4” pipe)
Rad-hard option  ACCT-H (6E7 Gy max)
Electronics
High-resolution  ACCT-E-XXXmA-HR (XXXmA full scale)
Wideband  ACCT-E-XXXmA-WB
Cable  BNO-BNO twisted pair  ACCT-C-XX (XX meters, max.100 meters)

Dimensions

ACCT-S- [ID (min)  OD (max)  H (max)  Mass [g]]

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<th>ID (min)</th>
<th>OD (max)</th>
<th>H (max)</th>
<th>Mass [g]</th>
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In-flange models, see "In-flange" data sheet

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