



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

Bandwidth 3Hz to 1MHz (3MHz on option)
 $\pm 1\text{mA}$ up to $\pm 2\text{A}$ full scale current range
 Output $\pm 10\text{V}$ in high impedance
 Wideband noise $\leq 1.5\mu\text{Arms}$
 Output signal droop $< 2\%/ms$

Single range or 3-selectable-ranges* electronics

- * includes: - 50 Ω , 1M Ω and differential outputs
- On-board calibration source

Operating principle

The ACCT is an evolution of the active transformer first proposed by H.G. Hereward in 1960. Compared to the Hereward transformer, the ACCT presents much lower noise, a negligible DC offset and excellent long-term stability.

The sensor is built with a single winding, which requires only a single wire pair between sensor and electronics. Like this better EMI rejection is achieved.

The electronics implements multistage feedback and amplification using very low noise operational amplifiers. Optionally, a more versatile electronics is available with three selectable measurement ranges.

Two versions for the ACCT sensor



In-flange UHV installation in the beam line



In-air installation over the vacuum chamber

Two versions of ACCT electronics



ACCT-E-RM-3R
3-selectable ranges



ACCT-E-RM
Single range

MANUFACTURER

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China: Beijing Conveyi Limited
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Specifications

Full scale range	Any value from $\pm 1\text{mA}$ to $\pm 2\text{A}$, factory preset range.
Lower cutoff (-3dB)	<3Hz
Droop	<2%/ms
Upper cutoff (-3dB)	1MHz
Risetime	350ns (10% - 90%)

Single range electronics

Electronics input	BNO (Twin BNC)
1M Ω output full scale	BNC, -10V ... +10V in high impedance
Output offset	0.5mV max.
Output current limit	20mA max.

3-ranges electronics

Electronics input	BNO (Twin BNC)
1M Ω output full scale	BNC, -10V ... +10V in high impedance
50 Ω output full scale	BNC, -1V ... +1V in 50 Ω
Differential output FS	BNO, -4V ... +4V in high impedance
Output offset	50 Ω output: <0.5mV 1M Ω output: <0.5mV Differential output: <1mV
Output current limit	50 Ω output: 70mA max. 1M Ω output: 32mA max. Differential output: 40mA max.
CAL output	BNO, Output pulse amplitude equal to 50% of the full scale of the selected range or 50mA (if range $\geq 100\text{mA}$)
Trigger CAL input	BNC, define calibration pulse length (TTL)
	1-turn calibration winding with BNO connector systematically added on the sensor

Resolution

Ranges	1mA	10mA	100mA	1A
ACCT-E-RM	<1.5 μArms	<1.5 μArms	<5 μArms	<40 μArms
ACCT-E-RM-3R	<5 μArms	<5 μArms	<8 μArms	<25 μArms
With LN option				
ACCT-E-RM	<0.5 μArms	<0.5 μArms	N/A	
ACCT-E-RM-3R	<1.5 μArms	<1.5 μArms		

Others

Power supply	+15Vdc and -15Vdc, 100mA ea.
Power supply unit	ACCT-PS-1515 recommended Mains voltage 95-125Vac / 215-245Vac
Sensor cable	Twinax RG108, up to 20 meters Above 20 meters overshoot may appear and rise time may increase
Destructive level	DC current: Unlimited Spikes >100mC AC current >20Arms
Sensor saturation	External magnetic field: Transverse to sensor axis: 2mT max Collinear with sensor axis: 10mT max Can be exceeded with optional embedded shielding options SH2L/SH4L

Order codes

In-air ACCT sensors

In-air ACCT sensor order code	ID (min)	OD (max)	H (max)
ACCT-S-016	16	42	22
ACCT-S-028	28	64	22
ACCT-S-055	55	91	22
ACCT-S-082	82	118	22
ACCT-S-122	122	156	22
ACCT-S-178	178	226	22

In-flange ACCT sensors

In-flange ACCT sensor order code	Pipe OD	Mating flange	ID (mm)
ACCT-CF3"3/8-22.2-40-UHV	1"	DN/NW50CF	22.2
ACCT-CF4"1/2-34.9-40-UHV	1.5"	DN/NW63CF	34.9
ACCT-CF4"1/2-38.0-40-UHV	40 mm	DN/NW63CF	38.0
ACCT-CF6"-47.7-40-UHV	2"	DN/NW100CF	47.7
ACCT-CF6"-60.4-40-UHV	2.5"	DN/NW100CF	60.4
ACCT-CF6"3/4-96.0-40-UHV	4"	DN/NW130CF	96.0
ACCT-CF8"-96.0-40-UHV	4"	DN160/NW150CF	96.0
ACCT-CF10"-147.6-40-UHV	6"	DN/NW200CF	147.6
ACCT-CF12"-198.4-40-UHV	8"	DN/NW250CF	198.4
		Axial length (mm)	40.0

Electronics

ACCT-E-RM-xxxmA	DIN-rail mount electronics where xxxmA is full scale
ACCT-E-RM-3R-xx/yy/zzmA	DIN-rail mount electronics where xx, yy, zz are the 3 selectable ranges' full scales

Power supply

ACCT-PS-1515	Power supply, DIN-rail mount
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Cable

ACCT-Cxxx	BNO-BNO twisted pair
ACCT-RHCxxx	Standard RG108 cable in PVC Radiation-tolerant Siltem cable

Options (may not be cumulative)

-LN	Low-noise option*
-CAW1_50	1-turn calibration winding, loaded 50 Ω (0.25W), insulated and SMA connector
-316LN	AISI 316LN instead of AISI 304 SS
-ARB#xx	Arbitrary shape aperture
-BK150C	150°C (300°F) bakeable, In-flange only
-BK185C	185°C (365°F) bakeable, In-flange only
-VAC	In-air sensor degassing for vacuum >10 ⁻⁴ mbar
-SH2L	2-layers embedded magnetic shield*
-SH4L	4-layers embedded magnetic shield*
-H	Radiation tolerant sensor
-50R	ACCT output readout in 50ohms
-3M	Bandwidth extension to 3MHz. Sensor cable up to 7m**

* Ask Bergoz Instrumentation for feasible standard dimensions

** Above 7 meters overshoot may appear and rise time may increase.

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