



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  $\leq 1.5\mu\text{Arms}$   
 With Low-noise option  $\leq 0.5\mu\text{Arms}$   
 Output signal droop  $< 2\%/ms$

Single range or 3-selectable-ranges\* electronics  
 \* includes: -  $50\Omega$ ,  $1\text{M}\Omega$  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

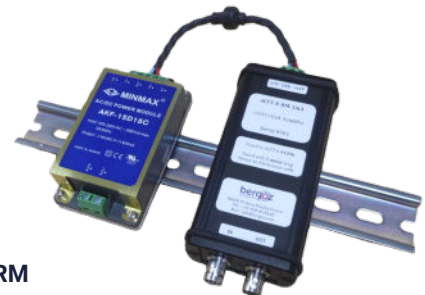


**In-air** installation over the vacuum chamber

### Two versions of ACCT electronics



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



**ACCT-E-RM**  
Single range

### MANUFACTURER

**BERGOZ Instrumentation**  
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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 $\Omega$ 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 $\Omega$ output full scale	BNC, -10V ... +10V in high impedance
50 $\Omega$ output full scale	BNC, -1V ... +1V in 50 $\Omega$
Differential output FS	BNO, -4V ... +4V in high impedance
Output offset	50 $\Omega$ output: <0.5mV 1M $\Omega$ output: <0.5mV Differential output: <1mV
Output current limit	50 $\Omega$ output: 70mA max. 1M $\Omega$ 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 $\mu\text{Arms}$	<1.5 $\mu\text{Arms}$	<5 $\mu\text{Arms}$	<40 $\mu\text{Arms}$
ACCT-E-RM-3R	<5 $\mu\text{Arms}$	<5 $\mu\text{Arms}$	<8 $\mu\text{Arms}$	<25 $\mu\text{Arms}$
<b>With LN option</b>				
ACCT-E-RM	<0.5 $\mu\text{Arms}$	<0.5 $\mu\text{Arms}$	N/A	
ACCT-E-RM-3R	<1.5 $\mu\text{Arms}$	<1.5 $\mu\text{Arms}$		

### 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 $\Omega$ (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 <sup>-4</sup> mbar
-SH2L	2-layers embedded magnetic shield*
-SH4L	4-layers embedded magnetic shield*
-H	Radiation tolerant sensor
-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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