



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  $< 2\%/ms$

End-to-end solution with our dedicated digitizer: the MDS-ACCT

Single range or 3-selectable-ranges\* electronics  
 \* includes: -  $50\Omega$ ,  $1\text{M}\Omega$  and differential outputs  
 - On-board calibration source

## Features

The ACCT sensor uses a single multiturn winding and requires only a single differential wire pair connecting sensor and electronics. Like this, EMI is effectively rejected. The ACCT electronics implements amplification using very low noise operational amplifiers.

This results in excellent noise performance, with negligible DC offset and remarkable long-term stability. It is available in a single-range version, or in a more versatile electronics including three selectable measurement ranges, three outputs and an embedded calibrated pulse source.

## 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-3R-RC Range Controller



ACCT-E-RM Single range

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

## MANUFACTURER

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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: 32mA 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 250mA (if range $\geq 500\text{mA}$ )
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
MDS-ACCT	Digitizer for two ACCTs (see datasheet for specifications)
<b>Power supply</b> ACCT-PS-1515	Power supply, DIN-rail mount
<b>Cable</b> ACCT-Cxxx ACCT-RHCxxx	BNO-BNO twisted pair Standard RG108 cable in PVC Radiation-tolerant Siltem cable
<b>Accessories</b> ACCT-E-3R-RC	ACCT-E-RM-3R Range Controller

## 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
-BKxxxC	In-flange only, available bakeout temperature: 150°C (300°F), 185°C (365°F), 200°C (392°F)
-VAC	In-air sensor degassing for vacuum $>10^{-4}$ mbar
-SHxL	2-layers or 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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