



Most sensitive & fastest current transformer
Best non-destructive instrument to observe pulsed or CW beams. Yet, not a precise measuring instrument.

Higher sensitivity than a Wall Current Monitor: 5 V/A
Rise time down to 200ps

Up to 10 V/A with limited bandwidth

Technology

Composite* magnetic cores of Cobalt-based amorphous and nanocrystalline alloys provide high permeability and very fast risetime.

Alloys are thermally and magnetically processed in-house, to obtain unequalled performance.

Annealing techniques are the result of 20 years experience with cobalt-based alloy processing. Proprietary multithread winding techniques and numerically analyzed modelling to assure uniform field density in magnetic core.

* Amorphous / nanocrystalline composite cores are made from two or more alloy composition batches.

Alloy batches are individually annealed to give each of them specific characteristics. High-temperature annealing is performed under fixed or 4π -rad rotating magnetic field.

Two packaging types



In-flange FCT is mounted in the beam line. Short axial length, includes a ceramic gap vacuum-brazed to kovar. Does not require bellows, wall current bypass nor electromagnetic shield. UHV compatible.



In-air FCT installation, over the vacuum chamber. Requires installation of a "gap" to prevent the wall current from flowing through the FCT aperture. The gap can be a brazed ceramic ring or an organic material O-ring depending on the vacuum requirements.

Typical installations include bellows, a wall current bypass and an electromagnetic shield enclosing the FCT completely.

DISTRIBUTORS

U.S.A.: GMW Associates
www.gmw.com
sales@gmw.com

Japan: REPIC Corp.
www.repic.co.jp
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India: GEEBEE International
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China: Beijing Conveyi Limited
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MANUFACTURER

BERGOZ Instrumentation
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Specifications

Wideband models (standard)

Technology: Predominantly amorphous

Sensitivity (nominal)	0.25	0.5	1.25	2.5	5.0	V/A
Turns ratio (old reference)	100:1	50:1	20:1	10:1	05:1	
Rise time (typ.)*	0.6	0.30	0.23	0.30	0.39	ns
Droop	<1	<3	<6	<10	<32	%/μs
Upper cutoff frequency -3dB typ.*	0.58	1.17	1.5	1.17	0.9	GHz
Lower cutoff frequency -3dB	<1.6	<5	<9.5	<16	<50	kHz
L/R time constant (min.)	100	35	17	10	5	μs
Max. charge/pulse (pulses <1ns)	2	1	0.4	0.2	0.1	μC
Max. peak current (pulses >1ns)	2	2	0.4	0.2	0.1	kA
Max. rms current (f >10kHz)	14	14	5.6	2.8	1.4	A

For 10V/A sensitivity specifications, please ask Bergoz Instrumentation

* Depends on FCT sensor dimensions and selected options

Low droop (-LD) models on option

Technology: Predominantly nanocrystalline

Sensitivity (nominal)	0.25	0.5	1.25	2.5	5.0	V/A
Turns ratio (old reference)	100:1	50:1	20:1	10:1	05:1	
Rise time (typ.)	1	0.54	0.40	0.50	0.78	ns
Droop	<0.05	<0.2	<1	<3	<8	%/μs
Upper cutoff frequency -3dB typ.	350	650	850	700	450	MHz
Lower cutoff frequency -3dB	<0.08	<0.32	<1.6	<5	<13	kHz
L/R time constant (min.)	2000	500	100	35	12	μs
Max. charge/pulse (pulses <1ns)	3.8	1	0.4	0.2	0.1	μC
Max. peak current (pulses >1ns)	2	2	0.4	0.2	0.1	kA
Max. rms current (f >10kHz)	50	25	10	5	2.5	A

For 10V/A sensitivity specifications, please ask Bergoz Instrumentation

Order codes

In-flange FCT sensors

In-flange FCT sensor order code	Pipe OD	Mating flange	ID (mm)	H (mm)
FCT-CF3"3/8-22.2-40-UHV-xx	1"	DN/NW50CF	22.2	
FCT-CF4"1/2-34.9-40-UHV-xx	1.5"	DN/NW63CF	34.9	
FCT-CF4"1/2-38.0-40-UHV-xx	40	DN/NW63CF	38.0	
FCT-CF6"-47.7-40-UHV-xx	2"	DN/NW100CF	47.7	
FCT-CF6"-60.4-40-UHV-xx	2.5"	DN/NW100CF	60.4	
FCT-CF6"3/4-96.0-40-UHV-xx	4"	DN/NW130CF	96.0	
or FCT-CF8"-96.0-40-UHV-xx		DN160/NW150CF		
FCT-CF10"-147.6-40-UHV-xx	6"	DN/NW200CF	147.6	
FCT-CF12"-198.4-40-UHV-xx	8"	DN/NW250CF	198.4	
FCT-CFXX"-XXX-XX-UHV-5.0 V/A and lower				40.0
FCT-CFXX"-XXX-XX-UHV-10.0 V/A, please ask dimensions to Bergoz Instrumentation				

Options

-LD	Low droop
-316LN	AISI 316LN instead of 304
-ARB#xx	Arbitrary shape aperture
-BK150C	150°C (300°F) bakeable, In-flange only
-BK185C	185°C (365°F) bakeable, In-flange only
-VAC	Degassed in-air sensor
-SH2L	2-layer magnetic shield with limited bandwidth
-SH4L	4-layer magnetic shield with limited bandwidth
-H	Radiation-tolerant sensor

Connector SMA jack 50Ω

Environment

Temperature	
In-air models:	100°C (212°F) any time
In-flange models:	100°C (212°F) any time
On option:	150°C (300°F)
	185°C (365°F)
Core saturation	2 mT radial field
	2A permanent DC current
Radiation damage	
Standard SMA	PTFE: 1E3 Gray max
On option:	
Rad-tolerant SMA	PEEK: 6E7 Gray max
	1E17 n/cm2 max

In-air FCT sensors

In-air FCT sensor order code	ID min (mm)	OD max (mm)	H max (mm)
FCT-016-xx	16	42	
FCT-028-xx	28	64	
FCT-055-xx	55	91	
FCT-082-xx	82	118	
FCT-122-xx	122	156	
FCT-178-xx	178	226	
FCT-XXX-2.5 V/A and lower			22
FCT-XXX-5.0 V/A			35
FCT-XXX-10.0 V/A, please ask dimensions to Bergoz Instrumentation			

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