

COSI-NXCT

Optical Current Transformer

Our comprehensive COSI range (Compact Optical Sensor Intelligence) includes innovative digital instrument transformers for AC and DC applications.

The COSI-NXCT optical current sensor brings a new level of accuracy to sensing over the range between 1 A rms and 63 kA rms.

The reduced size and weight are attractive benefits compared to conventional oil-filled equipment, allowing placement in compact substations or in retrofit applications where space may be limited.

A lightweight dry-type insulator and window head design allow pedestal mounting or suspension from a rigid bus.

Its broad dynamic range makes this CT particularly suited for both high-precision metering and protection applications at the same time.

The accurate measurement of DC and AC to the 100th harmonic and the measurement of phase angle is a must for new Smart Grid applications.

The standard digital interface will ensure smooth integration of COSI-NXCT in the digital substation application.



Performance features

- Accuracy exceeds ANSI/IEEE Class 0.15S/IEC Class 0.2S for metering and IEC Class 5P/IEEE 10% for protection
- Wide dynamic range
- Bandwidth from DC to 100th harmonic
- No magnetic core saturation
- Excellent phase accuracy
- Digital Interface and analog output

Intrinsically safe, environmental friendly

- No oil, gas or SF₆
- No hazardous open secondaries
- No violent failure

Customer Benefits

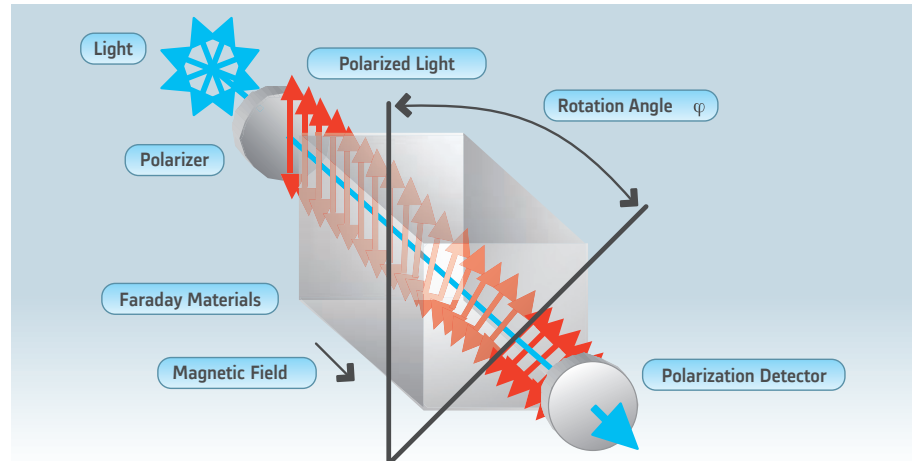
- Improved measurement performance
- Significant system cost reduction
- Environmentally friendly
- World-wide standard for Interconnection
- Reliability, availability, safety
- Light weight

Smart Solutions for Smart Grid

Basic Faraday effect

In Faraday Effect current sensors; the current flowing through a conductor induces a magnetic field that affects the propagation of light traveling through an optical fiber encircling the conductor.

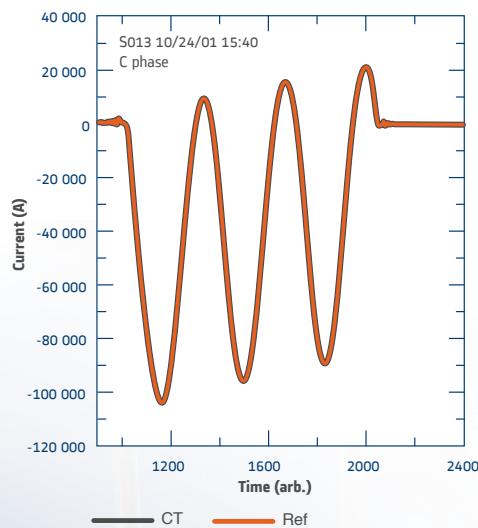
A linear state of polarization rotates in the presence of a magnetic field because the field produces a circular birefringence in the glass. Birefringence refers to an optical material with two indices of refraction.



Metering and protection accuracy

The COSI-NXCT design permits measurements to be made with the highest possible accuracy and stability. To address stringent revenue metering applications, its performance exceeds IEC Class 0.02S and IEEE Class 0.3 accuracy (optional 0.15%) with a dynamic range that extends from 1 A to 4800 A.

The COSI-NXCT has ultra-accurate and stable phase measurement, which is critical for intertie metering. For protection applications, the COSI-NXCT exceeds IEC Class 5P accuracy ratings and IEEE 10% accuracy ratings.



Fast fault response

- Extreme fast and accurate response
- COSI-NXCT actually measures the dynamic current
- No distortion due to core saturation, no need for TPY - TPZ specs, yet no danger for secondary equipment.





Wide dynamic range

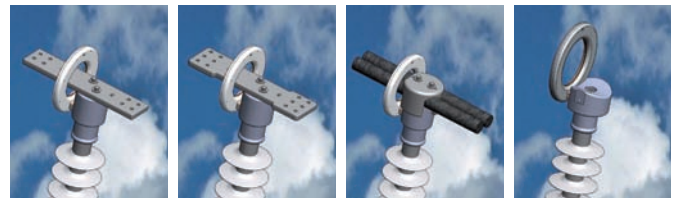
Accuracy specification is maintained over a broad dynamic range - from 0.2% to 150% of rated current (extended metering range sensor) and up to 171 kA (protection range sensor). Broad dynamic range allows elimination of separate high and low range CT's.

Wide bandwidth

Accurate waveform reproduction up to 6 kHz allows full power quality analysis of harmonics and transients with no sensor-imposed limitations.

Choice of connection option

New window head design allows a variety of connection options including standard NEMA pads, up to 300 mm rigid bus, or flexible cable pass thru, allowing optimal selection for ease of installation and reliability.



Dry type insulator seismic stable

Field-proven lightweight composite insulator reduces transportation costs, substation support structure requirements, and installation equipment demands. The lightweight design also allows location in seismically active areas.



Green design

The COSI-NXCT insulator contains no oil, SF₆ or other gas. There is no internal mechanism for violent failure to endanger personnel or adjacent equipment. There are no environmental concerns or gas to recycle. With an optical design there are also no open secondary concerns.

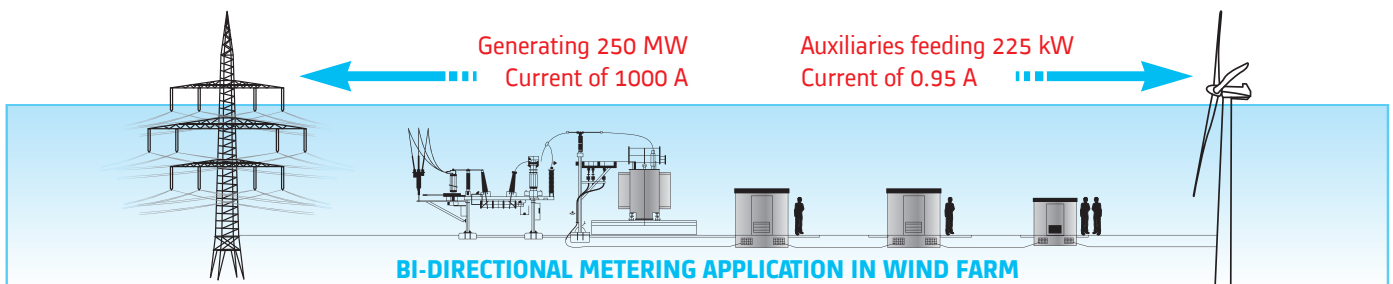
Low maintenance

The COSI-NXCT has no active components at line potential, eliminating the need for costly outages to maintain the electronics. Since there is no insulating oil or paper there are no complex maintenance procedures. The polymeric insulating column employs silicone rubber sheds that do not require liveline washing.



Smart grid ready with digital interface

The standard digital interface will ensure smooth integration of COSI-NXCT into digital substation applications the accurate measurement of harmonics and phase angle is a must for new Smart Grid applications.



Specifications



Column mechanical & electrical ratings									
NXCT Type		72.5	123	145	245	362	420	550	800
Maximum system Voltage (Um)	kV	72.5	121	145	245	362	420	550	800
Impulse test voltage (BIL)	kV	350	550	650	1050	1300	1550	1800	2100
Minimum creepage distance	in	57	115	115	193	285	562	562	562
	mm	1400	2900	2900	4900	7240	14280	14280	14280
Height	in	54.7	54.7	77.91	107.44	127.13	204.71	204.71	204.71
	mm	1389.4	1389.4	1978.9	2729	3229.1	5199.6	5199.6	5199.6
Weight	lbs	75	88	88	111	124	177	177	177
	kg	34	40	40	50	56	80	80	80
Static Withstand	lbs	675	675	675	900	900	Suspension application only		
	N	3000	3000	3000	4000	4000	Suspension application only		

Ratings and dimensions for IEC pollution Class 2. Other ratings are available.

Environmental	
Operating Temperature Range	- 40° C to 55° C (- 40° F to 131° F) Outdoor Service Conditions
Opto-Electronic Module	- 5° C to 40° C (23° F to 104° F) Indoor Service Conditions
Seismic Capability	0.5 g

Mechanical	
Standard Pollution Withstand	IEC Level II, other ratings available
Insulation	Solid composite insulator
Electronics Dimensions	19" x 18" x 8.75" (482 mm x 457 mm x 222 mm) (includes high energy metering interface)

Electronics

Packaged in 2 modules:	Low Energy Analog Interfaces ¹	4 V _{rms} metering 200 mV _{rms} protection
 <p>Sensor Electronics</p>	Dynamic Range	< 0.2% error at rated current for 4V output, < 0.5% error at rated current for 200 mV output < 2% error at 108 kA _{peak} (using protection sensor)
	Bandwidth	0.5 Hz to 6 kHz DC available
	High Energy Analog Interfaces ¹	1 A _{rms} [2 ohm burden] or 5 A _{rms} [B0.1 (2.5 VA) burden] nominal at power 0.9 for metering
 <p>Current Amplifier/Power Supply</p>	Dynamic Range	< 0.2% error from 1 A to 4000 A (using extended metering range sensor)
	Bandwidth	10 Hz to 6 kHz for 1 A metering output
	Input Power Requirements	70 V _{dc} to 150 V _{dc} Typical power 60 W
	Electronic Turns Ratio	User selectable
	Alarms Contacts	Data invalid / Maintenance required

Electrical Performance

Type I ² :	Metering Accuracy	IEC Class 0.2S, IEEE Class 0.3, 0.15S
	Protection Accuracy	IEC Class 5P, IEEE 10%
Type II ³ :	Extended Range Std Metering Accuracy	0.2% (0.2% to 150% of rated current) ²
	Extended Range High Metering Accuracy	0.15% (0.2% to 150% of rated current) ²
Type III ³ :	Continuous Current	4800 A Max (4800 A, RF = 1; or 3000 A, RF = 1.33; or 2500 RF = 1.5)
	Rated Current	User specified for up to 4000 A
	Short-time Thermal Current	63 kA _{rms} for 1 s

¹ Scales linearly with primary voltage and current. / ² Accuracy window moves with selected ratio. / ³ Other ratings available, consult Alstom Grid.

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