

# NXVCT Optical Voltage & Current Sensor



The NxtPhase Optical Voltage and Current Sensor combines the advantages of both the NxtPhase optical voltage and current sensors in one instrument over the range of transmission voltages up to 550 kV.

Reduced size and weight compared to conventional oil-filled equipment allows placement in compact substations, or in retrofit applications where space may be limited. This combined instrument replaces several conventional devices and allows flexibility in substation design.

### Metering and Protection Accuracy

The NXVCT design permits measurements to be made with the highest possible accuracy and stability. Performance exceeds IEC Class 0.2 and IEEE Class 0.3 accuracy requirements to address stringent revenue metering requirements. The NXVCT also exceeds IEC and IEEE protection accuracy requirements.

### Wide Dynamic Range

The accuracy specification is maintained over a broad dynamic range – from 1 A to 3000 A with a user selectable turns ratio. Protection variants are available for peak currents up to 171 kA<sub>peak</sub>.

### Wide Bandwidth

Accurate wide waveform reproduction allows full power quality analysis of harmonics and transients with no sensor-imposed limitations.

### Lightweight Composite Insulator

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.

### Intrinsically Safe, Environmentally Friendly Design

The column contains no oil or SF<sub>6</sub> gas. High voltage and ground electrodes are widely separated at the top and bottom of the column, significantly reducing the probability of violent failure. There are no environmental concerns or gas to recycle. With an optical design there are also no issues with open CT secondaries or VT ferroresonance.

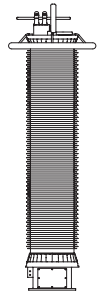
### Low Maintenance

The NXVCT has no active components at line potential and no need for periodic dissipation factor testing. The electronics located in the control building feature advanced self-dianostic capability. The composite insulating column employs silicone rubber sheds that do not require cleaning.

# NXVCT

## Specifications

### Column Mechanical & Electrical Ratings



	Maximum Voltage	121 kV	145 kV	245 kV	362 kV	420 kV	550 kV
BIL		550 kV	650 kV	1050 kV	1300kV	1550kV	1800kV
Column Height		105.55"	105.55"	138.25"	166.59"	166.59"	200.84"
		2.681 m	2.681 m	3.511 m	4.231 m	4.231 m	5.101 m
Creep Distance		142.7"	142.7"	241.14"	454.72"	454.72"	541.34"
		3.625 m	3.625 m	6.125 m	11.55 m	11.55 m	13.75 m
Weight		353 lbs	353 lbs	625 lbs	825 lbs	825 lbs	1200 lbs
		160 kg	160 kg	285 kg	374 kg	374 kg	544 kg
Static Withstand		675 lbs	675 lbs	900 lbs	900 lbs	900 lbs	1350 lbs
		3000 N	3000 N	4000 N	4000N	4000N	6000N

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

### Environmental

Operating Temperature Range	-40°C to 50°C (-40°F to 122°F) Outdoor Service Conditions (-50°C Available)
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	Nitrogen gas

### Electronics

Packaged in 3 modules:



Sensor Electronics



Current Amplifier/Power Supply



Voltage Amplifier

	Voltage Sensor	Current Sensor
Low Energy Analog Interfaces <sup>1</sup> :	4 V <sub>rms</sub> metering 4 V <sub>rms</sub> protection	4 V <sub>rms</sub> metering 200 mV <sub>rms</sub> protection
Dynamic Range	<0.2% error at 50% to 200% of rated voltage <3% error at 2% of rated voltage	Multiple types available. See Electrical Performance below.
Bandwidth	0.5 Hz to 6 kHz	0.5 Hz to 6 kHz
High Energy Analog Interfaces <sup>1</sup> :	69 V <sub>rms</sub> 115 V <sub>rms</sub> or 120 V <sub>rms</sub> nominal	1 A <sub>rms</sub> or 5 A <sub>rms</sub> nominal, B-0.1 (2.5 VA) burden at power factor 0.9 for metering
	2.5 VA burden at power factor 0.9	2.5 VA burden at power factor 0.9
Dynamic Range	<0.2% error at 50% to 120% of rated voltage	<0.2% error from 1 A to 3000A (using extended metering range sensor)
Bandwidth	30 Hz to 5 kHz	10 Hz to 6 kHz
Input Power Requirements	70 V <sub>dc</sub> to 150 V <sub>dc</sub> Typical power 60 W	70 V <sub>dc</sub> to 150 V <sub>dc</sub> Typical power 50 W
Electronic Turns Ratio	Not applicable	User selectable
Alarms Contacts	Data invalid Maintenance required	Data invalid Maintenance required

### Electrical Performance

Thermal Current	Not applicable	3000 A
Overload Factor	1.2 (continuous), 2.0 (30 seconds)	1.5
Short-time Mechanical Current	63 kA <sub>rms</sub> for 1 s	
Short-time Thermal Current		63 kA <sub>rms</sub> for 1 s
Accuracy	IEC Class 0.2 IEEE Class 0.3 IEC Class 3P	Type I <sup>3</sup> : Metering Accuracy IEC Class 0.2S, IEEE Class 0.3 Protection Accuracy IEC Class 5P, IEEE 10%
		Type II <sup>3</sup> : Extended Range Std Metering Accuracy 0.2% (0.2% to 150% of rated current) <sup>2</sup>
		Type III <sup>3</sup> : Extended Range High Metering Accuracy 0.15% (0.2% to 150% of rated current) <sup>2</sup>

<sup>1</sup> Scales linearly with primary voltage and current.

<sup>2</sup> Accuracy window moves with selected ratio.

<sup>3</sup> Other ratings available, consult NxtPhase.