data sheet

NXVT Optical Voltage Sensor

The NxtPhase Optical Voltage Sensor is a unique optical sensor available for voltage measurement over the range of transmission voltages up to 550 kV. The sensor employs an array of optical Pockels cells within an advanced hollow core composite insulator. The wide separation of the high-voltage and ground electrodes reduces dielectric stresses and eliminates the need for mineral oil, cellulose insulation or SF_6 gas.

Reduced size and weight compared to conventional oil-filled equipment allows placement in compact substations, or in retrofit applications where space may be limited.

Metering and Protection Accuracy

The NXVT 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 NXVT also exceeds IEC Class 3P protection accuracy allowing the same device to be used for relaying and metering applications.

Adjustable Turns Ratio

The sensor is highly linear and features an electronically adjustable turns ratio spanning several voltage classes, enabling a single sensor to address a range of calibration applications.

Wide Bandwidth

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

Lightweight Composite Insulator

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

Intrinsically Safe, Environmentally Friendly Design

The column contains no oil or SF_6 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 is no ferro-resonance issue.

Low Maintenance

The NXVT 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 diagnostic capability. The composite insulating column employs silicone rubber sheds that do not require cleaning.

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NXVT
Specifications

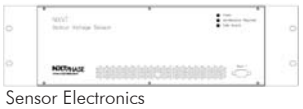
Column Mechanical & Electrical Ratings	Maximum Voltage	**121 kV**	**145 kV**	**245 kV**	**362 kV**	**420 kV**	**550 kV**
	BIL	550 kV	650 kV	1050 kV	1300 kV	1550 kV	1800 kV
	Column Height	79″	79″	125″	153″	153″	174″
		2.01 m	2.01 m	3.16 m	3.89 m	3.89 m	4.42 m
	Creep Distance	126″	126″	211″	252″	252″	405″
		3.22 m	3.22 m	5.36 m	6.39 m	6.39 m	10.29 m
	Weight	290 lbs	290 lbs	395 lbs	615 lbs	615 lbs	1500 lbs
		132 kg	132 kg	178 kg	279 kg	279 kg	682 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
	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 Dimensions	19″ x 18″ x 10.5″ (482 mm x 457 mm x 267 mm)

Electronics

Packaged in 3 modules:


Sensor Electronics


Power Supply


Voltage Amplifier

Low Energy Analog Interfaces[1]:	4 V_{rms}; 5 kΩ burden 4 V_{rms} protection
Dynamic Range	<0.2% error at 50% to 200% of rated voltage <3% error at 2% of rated voltage
Bandwidth	0.5 Hz to 6 kHz
High Energy Analog Interfaces[1]:	69 V_{rms} (1 VA) or 120 V_{rms} (2.5VA)
Dynamic Range	<0.2% error at 80% to 120% of rated voltage
Bandwidth	10 Hz to 3 kHz
Input Power Requirements	70 V_{dc} to 150 V_{dc} Typical power 60 W
Electronic Turns Ratio	Not applicable
Alarms Contacts	Data invalid Maintenance required

Electrical Performance	Metering Accuracy	IEC Class 0.2 IEEE Class 0.3
	Protection Accuracy	IEC Class 3P IEEE Class 0.3
	Overload Factor	Typically 1.2 (continuous), 2.0 (30 seconds)

[1] Scales linearly with primary voltage.

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