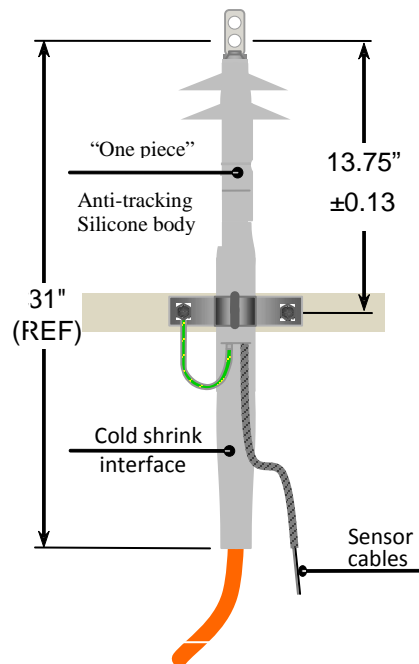


3M™ Sensored Termination (15 kV) QX-T15I-vi1-E

Data Sheet

May 2016



Kit Contents: Each kit contains sufficient quantities of the following materials to make three single-phase terminations.

- Sensor Termination Final Assembly 15 kV
- Mounting Bracket Kit with Adapter Belt
- 3M Shear Bolt Connecting System with Instruction Sheet
- Constant Force Springs
- Scotch® Rubber Mastic Tape 2228
- 3M Red Compound P55/R
- Scotch® Electrical Semi-conducting Tape 13
- Scotch® Super 33+™ Vinyl Electrical Tape
- Instruction Sheet

Product Description

Medium Voltage indoor termination (15 kV) QX-T15I-vi1-E with integrated voltage and current sensors (MV Sensored Termination).

⚠ WARNING

Working around energized systems may cause serious injury or death. To prevent electrical damage to equipment, as well as possible fire and serious injury or death to personnel:

- Installation should be performed by personnel familiar with good safety practice in handling electrical equipment;
- De-energize and ground all electrical systems before installing product;
- Follow your company's safety guidelines and procedures when working in the area of the device during installation, as well as after installation;
- For use by trained professionals only.

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Applications

Suitable for :

15 kV IEEE class polymeric cables 1/0-350 kcmil Aluminum or 1/0-250 kcmil Copper.

Application Range			
Kit no.	Cable Dimensions		
	Diameter over Cable Jacket max. in" (mm)	Diameter over Primary Insulation in" (mm)	Conductor Size Range (AWG & kcmil)
			15 kV
QX-T15I-vi1-E	1.8" (46 mm)	.75"-1.5" (19,1 – 38,0 mm)	1/0 - 350/Al (95-300 mm ²) 1/0 - 250/Cu (95-150 mm ²)

Performance Test

Typical Results, IEEE Standard 48 Short-Term Test Sequence

Insulation Class Test	15 kV	
	Requirements	Results
Partial Discharge Extinction Voltage @ 3pC	13 kV	Passed
Power Frequency Voltage 1 min. Dry Withstand	50 kV	Passed
Power Frequency Voltage 6 hour Dry Withstand	35 kV	Passed
Direct Voltage 15 min. Dry Withstand	75 kV	Passed
Lightning Impulse Voltage Withstand (BIL)	110 kV	Passed
Partial Discharge Extinction Voltage @ 3 pC	13 kV	Passed

Typical Results, IEEE Standard 48 Long-Term Test Sequence

Insulation Class Test	15 kV	
	Requirements	Results
Partial Discharge Extinction Voltage @ 3pC	13 kV	Passed
Cyclic Aging (30 days, 130°C cond. temp.) Power frequency Voltage Withstand	26 kV	Passed
Partial Discharge Extinction Voltage @ 3 pC	13 kV	Passed
Lightning Impulse Voltage Withstand (BIL)	110 kV	Passed

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Voltage Sensor

Physical and Electrical Properties	Typical Value
Type	Capacitive Divider
Rated Voltage Class	15 kV
Rated Frequency	50 Hz / 60 Hz
Nominal Voltage Sensor Transformation Ratio ₁	10,000/1
Actual Transformation Ratio	See Calibration Data Included in Kit
Sensor Ratio Accuracy	± 1.0%
-5° to 0°C	± 0.5%
0° to 35°C	± 1.0%
35° to 40°C	
Nominal Rated Phase Offset at line frequency	1.2° (see calibration data in kit for actual value)
Temperature Category	-5°C to +40°C
Secondary Circuit Impedance for rated accuracy.	1MΩ, +/- 2%
Secondary Circuit Capacitance for rated accuracy.	≤ 50pF
Sensor output	3 meters of shielded, twisted pair, with drain wire, all conductors 24AWG

Current Sensor

Physical and Electrical Properties	Typical Value
Type	Rogowski Coil
Rated Frequency	50 Hz /60 Hz
Rated Primary Current	300A
Nominal Current Sensor Converting Ratio ₂	1,000A/31 mV @ 50 Hz 1,000A/39 mV @ 60 Hz
Actual Primary Current and Secondary Voltage Ratio	See Calibration Data Included in Kit
Coil Mutual Inductance	See Calibration Data Included in Kit
Sensor Accuracy	Ratio Error (%), Phase Displacement (Degree)
3 A	+/- 5%, +/-2°
15 A	+/- 1%, +/-2°
300 A	+/- 1%, +/-2°
6,000 A	+/- 5%, +/-2°
External Integrator Primary Time Constant for Transient Performance	40 ms
Rated Short-time Thermal Current	16 kA
Rated Dynamic Current	31.5 kA
Sensor output	3 meters of shielded, twisted pair, with drain wire, all conductors 24AWG

1. Sample calculation for a 15kV 3 phase system.

$$\text{Phase to GND} = 8.66\text{kV}_{\text{peak}}$$

$$8.66\text{kV}_{\text{peak}}/10000 = 0.866\text{V}_{\text{peak}} \text{ output from sensor } (0.612\text{V}_{\text{RMS}})$$

2. Sample calculation for a max continuous 300A_{RMS} load.

$$0.039\text{V}_{\text{RMS}}/1000\text{A}_{\text{RMS}} = 39\mu\text{V}_{\text{RMS}} \text{ per Amp}$$

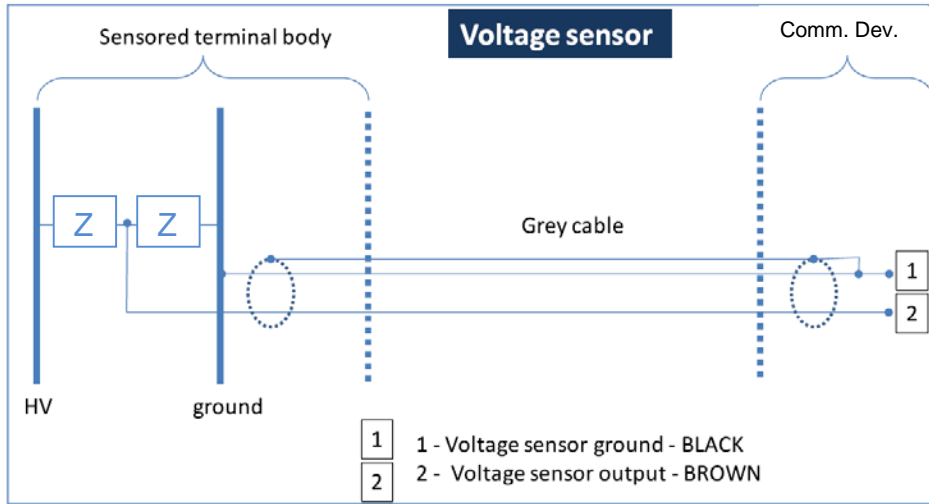
$$300\text{A}_{\text{RMS}} * 39\mu\text{V}_{\text{RMS}}/\text{A}_{\text{RMS}} = 11.7\text{mV}_{\text{RMS}}$$

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Installation

Connection to Communication Device

Voltage Sensor (Gray Cable)



Z = Impedance

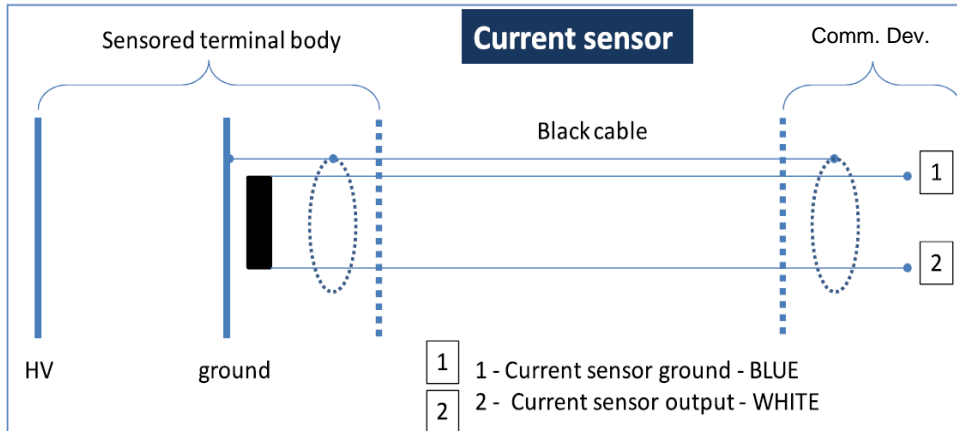
⚠ WARNING

To prevent electrical damage to equipment, as well as possible fire and serious injury or death to personnel:

- Equipment into which this device is attached must be protected against possible high surge voltages created by lightning or other transient sources.

Connection to Communication Device

Current Sensor (Black Cable)



3M™ Sensored Termination (15 kV) QX-T15I-vi1-E

Shelf-Life This product has a 3-year shelf life from date of manufacture when stored in a humidity controlled storage (10°C / 50°F to 27°C / 80 °F and <75% relative humidity).

Availability Please contact your 3M Sales Representative to order 3M™ Sensored Termination.

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