High voltage products

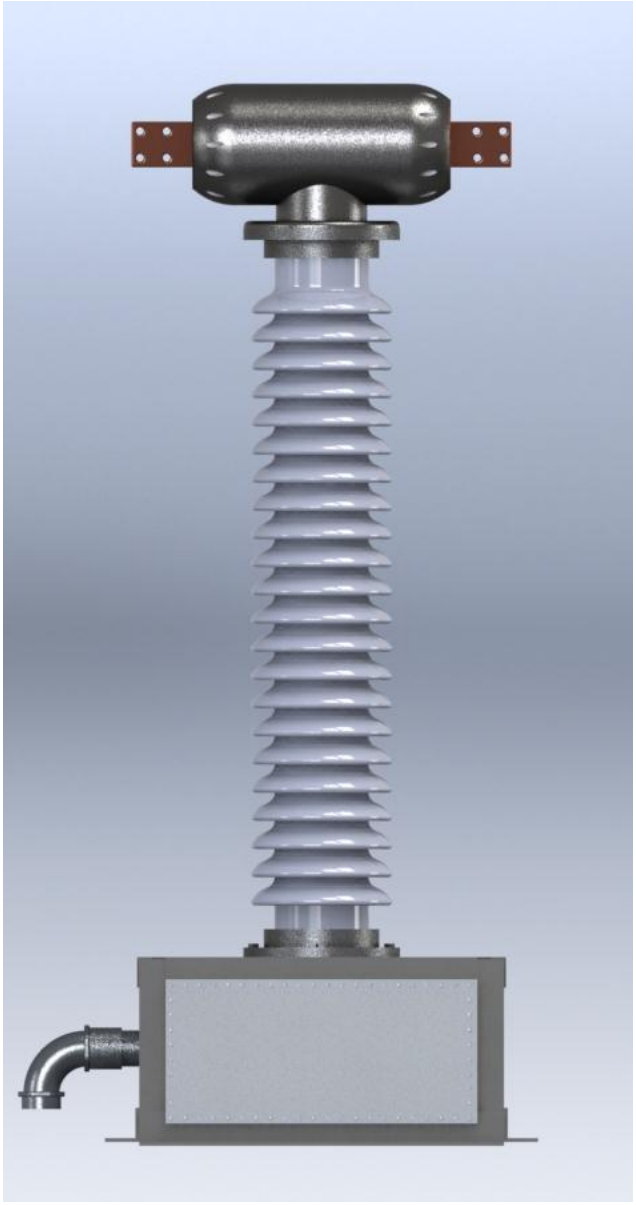
Passive Optical CT/PT

EPC Intensity Modulated Optical Power Monitoring System

SmartSenseCom INCORPORATED

EPC Optical Power Monitoring System

The EPC (Electrical Phenomena Cluster) is SmartSenseCom's core grid monitoring system for revenue-grade power flow measurements and relay protection in high and medium voltage networks. Within each unit, the EPC measures current, voltage, and conductor temperature with extremely high accuracy and at speeds well within one cycle. The EPC has none of the inherent safety issues associated with typical CT's and PT's. The optical sensors measure fields without being electrically coupled to the primary circuit, they do not require ground connections, they have no polarity, and there is no risk of an open secondary. These systems also do not require any oil or SF_6 for insulation.



Advantages

Intensity Modulated Optical Measurements offer numerous advantages as compared to typical CT's and PT's

- Exceeds .15 Class metering grade accuracy at all levels of voltage and current
  - <0.1% ratio error from 0V – 4x V_n
  - <0.1% ratio error from 0.5% I_n – 20x I_n
  - <.053° phase error
  - Full wave form reproduction through entire operating range
- Highly reliable and stable with no temperature or EMI sensitivity.
- Explosion proof design
- 100% remote calibration
- Secondaries and related safety concerns are eliminated
- Maintenance free. No oil or gas required.

The integration of current and voltage measurements in one piece of equipment provides additional benefits in terms of

- Cost of the equipment
- Space required
- Packaging dimensions
- Time for erection/commissioning
- Cables for interconnection
- Foundations and structures

This combination of stable optical measurements and physical optimization creates a high performance instrument that delivers significantly more accurate, relay and meter ready information within a 50/60 Hz cycle. All delivered at a cost that is less than any CT/PT instrument in its class.

Technical features

- Suitable for both metering and protection
- Relay signal available in less than 50 µsec
- Current and voltage measurements to the 64th harmonic
- Exceeds 30 year life
- Completely passive in the switch yard. All electronics remotely located in the control hut.
- Wide area communications ready. Ideal for use with synchrophasors and other network management systems

EPC features

Type	Passive Optical
Standard applied	IEEE C57.13 – 2008 IEEE C57.13.6 – 2005
Installation	Outdoor
Current Measurement	Passive optical
Voltage Measurement	Passive optical
Insulation	Solid filled
Highest voltage for equipment	115kV
Voltage factor (V_f)	4x
Insulators	RG porcelain
Creepage distance	107.00" (2717.8mm)
Ambient temperature	-60°C to + 60°C
Design altitude	unlimited

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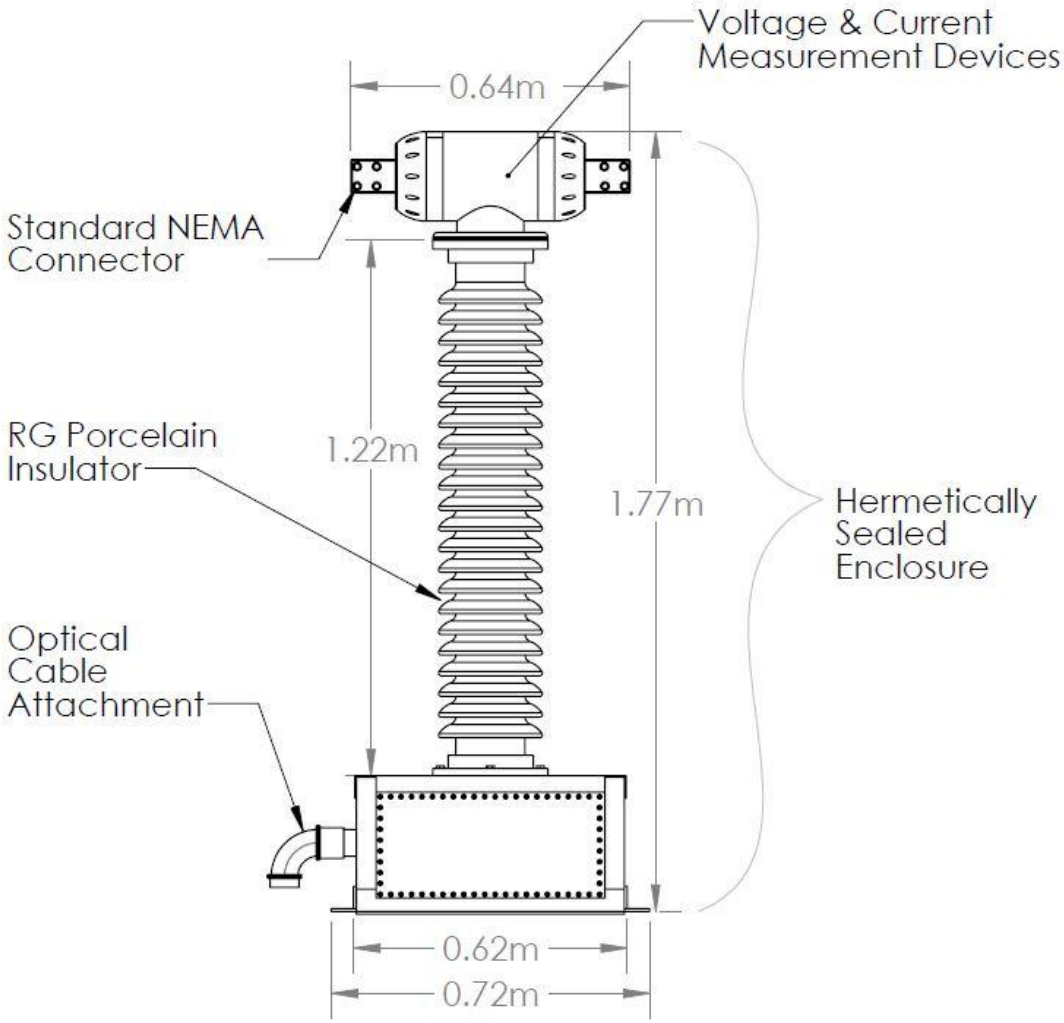
Current Measurement

Model	EPC115
Type	Passive optical
Standard applied	IEEE C57.13 – 2008 IEEE C57.13.6 – 2005
Rated primary current	5 – 2000A
Rated Overcurrent Factor	2x
Rated secondary current	Not applicable
Control Signal	Digital, 1A or 5A analog
Metering Instrumentation	
Burden	Not applicable
Class	Exceeds 0.15S Class
Protection Instrumentation	
Burden	Not applicable
Class	C-type. Ratio error <0.04% at I_n and <0.02% at 20x I_n. Phase error <0.053°
Accuracy Limit Factor	Not applicable
Security factor	Not applicable

Voltage Measurement

Model	EPC115
Type	Passive Optical
Standard applied	IEEE C57.13 – 2008 IEEE C57.13.6 – 2005
Rated primary voltage	$115/\sqrt{3}$ kV
Rated secondary voltage	Not applicable
Control Signal	Digital, 1A or 5A analog
Metering Instrumentation	
Burden	Not applicable
Class	Exceeds 0.15S Class
Protection Instrumentation	
Burden	Not applicable
Class	IEEE group 3[a]. Ratio error ±0.02% - 0.1% from ~0V to 4x V_n. Phase error <0.053°
Thermal Burden	Not applicable



Electrical and mechanical data

Type	Maximum system voltage	Dry Withstand	Impulse Withstand	Min Flashover Distance
EPC Optical	115kV as shown Also available from 10kV to 260 kV and in custom designs >260kV	265kV	550kV	44.00" (1118mm)

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Contact us

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