

# Line Post Sensors

Current, Voltage and Current/Voltage  
Molded, Outdoor Type - 15, 25 and 35KV

## MOUNTING RECOMMENDATIONS

The sensor is constructed in the configuration of a post type line insulator with a mechanical conductor clamp that is configured for swing link operation. No maintenance is required because all electrical sensing elements are sealed in a homogeneous casting of cycloaliphatic epoxy and the conductor of the sensor is provided with 50 long clamp is cast in 356-T6 aluminum with stainless steel bolts.

The swing link style conductor clamp is reversible. The small groove has a conductor range of .19 inches through

.69 inches and the large groove configuration, it is recommended that the sensor be in a non-tensioned lead. This sensor is not intended for dead-end use. Recommended primary bolt torque equals 28 ft-lbs. The sensor output leads do not require short-circuiting when installing or removing a burden. The sensor is provided with 50 long #18 AWG color-coded output leads for installation. If the leads should be twisted and shielded, they should be #18 AWG minimum.

attaching the primary conductor to the leads should be twisted and shielded, they should be #18 AWG minimum.



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## APPLICATION

Designed for Distribution Automation

- ✘ Compact, Economical Power-line Sensors
- ✘ Accurate Performance
- ✘ No Line Cutting
- ✘ Non-hazardous Voltage on Output
- ✘ Not for Dead-end Use
- ✘ Completely Sealed Against Moisture
- ✘ Linear Outputs up to Fault Levels



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## OPERATION

### Current Sensor Performance Ratio

$I_p = K \times E_{si}$   
 Where:  $I_p$  = Primary Amperes  
 $K$  = Conductor Diameter Formula  
 $E_{si}$  = Secondary Output Voltage  
 For "100:1" Standard Ratio Performance  
 $K = (O.D. \times 17.52) + 77.81$

Where: O.D. = Primary conductor outside diameter in inches over bare conductor or over armor rod.

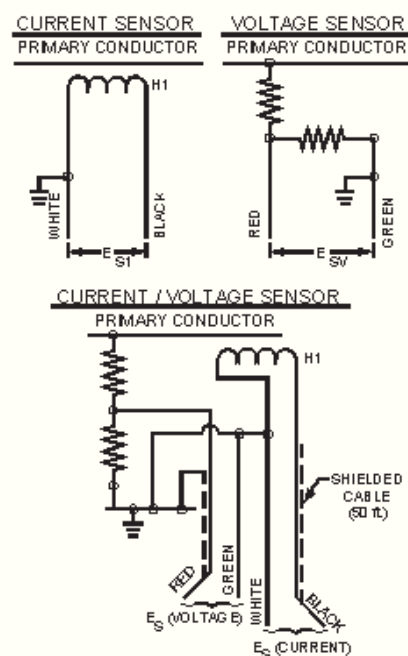
Current sensor has additive polarity and the output will have a nominal 90° lagging phase shift from primary current waveform.

### VOLTAGE SENSOR PERFORMANCE RATIO

The voltage sensor uses a highly reliable precision, non-conductive, resistive divider that provides a low voltage AC output signal proportional to primary line to ground voltage. The resistive divider is internally connected to one of the clamp inserts. The performance ratio of the voltage sensing, whether in the LSV voltage sensor, or LSCV current/voltage sensor is:

$$E_p = 10,000 \times E_{sv}$$

The voltage output waveform is in phase with the primary waveform.



## ELECTRICAL AND MECHANICAL INFORMATION

PRODUCT	CURRENT SENSORS			VOLTAGE SENSORS			CURRENT/VOLTAGE SENSORS		
Ratio Designation	100A : 1V			10,000 : 1			100 : 1 / 10,000 : 1		
Catalog No. for 15kV	LSC-110-122			LSV-110-12			**LSCV-110-122-23		
Catalog No. for 25kV	LSC-150-122			LSV-150-12			**LSCV-150-122-13		
Catalog No. for 35kV	LSC-200-122			LSV-200-12			**LSCV-200-122-13		
Nominal Rating kV	15	25	35	15	25	35	15	25	35
Max. Line to Ground kV	8.95	16.0	22.0	8.95	16.0	22.0	8.95	16.0	22.0
Withstand Test Voltage kV									
a. 60 Hz Dry	34	50	70	34	50	70	34	50	70
b. 60 Hz Wet	34	50	70	34	50	70	34	50	70
c. Positive Impulse 1.2 x 50 kV	110	150	200	110	150	200	110	150	200
Leakage Distance Inches	15.4	25.7	35.5	15.4	25.7	35.5	15.4	25.7	35.5
Dry Arcing Distance Inches	9.0	13.2	17.3	9.0	13.2	17.3	9.0	13.2	17.3
Partial Discharge Test Voltage									
a. Test Voltages kV (rms to grd)	11.2	20.0	27.5	11.2	20.0	27.5	11.2	20.0	27.5
b. Maximum Pico coulomb	2 pC @ PD Test Voltage								
Temperature Range	- 40° to + 80° C *								
Cantilever Rating	2800	2800	2000	2800	2800	2000	2800	2800	2000
Output & Accuracy – Current Sensor									
a. Output 60 Hz Esi	See "Operation"						See "Operation"		
b. Ratio Accuracy	± 1%, ±2%, ±3% of Reading						± 1%, ±2%, ±3% of Reading		
c. Phase Shift	90° Lagging						90° Lagging		
d. Phase Accuracy	± 2°						± 2°		
e. Output Impedance 60 Hz	434 + J432= 612 Ohms						434 + J432= 612 Ohms		
f. Thermal Current Rating	30 kA RMS						30 kA RMS		
g. Current Sensor Output (60 Hz) @ Thermal Current Rating	298.2 Volts @ 0.517 Amps						298.2 Volts @ 0.517 Amps		
Output & Accuracy – Voltage Sensor									
a. Output 60 Hz Esv	Esv = (Ep / 10,000)								
b. Output Volts Maximum	.895	1.6	2.2	.895	1.6	2.2			
c. Ratio Accuracy	±1%, ± 2%, ± 3% of Reading								
d. Phase Accuracy	+ 2° / - 0°								
e. Output Impedance	60 Hz 20,000 Ohms								
Color	ANSI 70 Gray								
Insulator Material	Cycloaliphatic Epoxy								

\*Per ANSI C29.7 –Recommended maximum working strength is 40% of cantilever rating

\*\*Available with standard 50 ft secondary shielded cable

## FEATURES

**Line post insulator configuration-** 3/4" tapped mounting hole in base for sensor mounting onto cross arms or insulator brackets

**No line cutting or primary taps-** Lay-in primary conductor groove and swing-link primary clamp allows installation without line cutting or primary taps, and can be installed without customer interruptions.

**No dead ending-** Sensor installation does limit primary conductor strength, or electrical rating.

**Fault level current measurements-** Linear output voltages proportional to current flow in the primary conductor up to 30 kA rms, without saturation effects.

**Accurate voltage measurements-** Shielded, non-inductive resistive divider provides linear output voltages proportional to primary voltage to ground

over temperature, aging proximity effect, or weather conditions.

**Swing-link primary conductor clamp-** Reversible swing-link, range-taking clamp allows installation without removal of primary hardware. Anodized 356-T6 cast aluminum clamp will accept conductor sizes from #6 AWG to 954 MCM.

**Reliable dielectric system-** Single, homogeneous insulation system of Cycloaliphatic Epoxy provides improved dielectric control and long term UV resistant and track-resistant performance.

**Single pour, completely encapsulated design-** Seals internal components against moisture entry and degradation. Improves mechanical strength and minimizes maintenance needs.

**Permanent markings-** Molded into surface nameplate and "H1" primary

polarity marking molded into surface of the sensor.

**Inherently safe outputs-** Low voltage AC outputs can be open-circuited, or shorted without damage, and sensor is designed to keep high voltages from being impressed onto secondary leads.

**Partial Discharge tested-** In addition to the standard tests required on each sensor, every PBI sensor is tested for partial discharge up to 125% of maximum operating voltage to insure that the insulation system meets the stringent PBI specification (2 picocou-lombs or less at 125% of maximum operating voltage). This ensures the sensor is a solid, void-free structure and ensures long, trouble-free life.

**Certified test reports-** A test card identifying ratio and phase accuracy is provided with every serialized unit.