

Telemetric Solutions for the Electric Utility Industry

Lindsey Smart Pin and ElbowCap Sensors



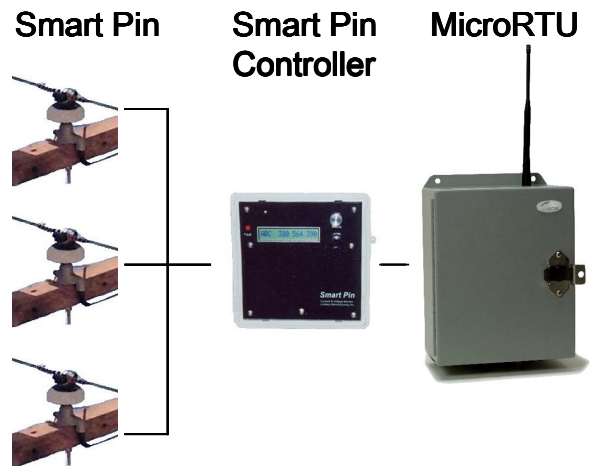
Integration of the Telemetric MicroRTU with the Lindsey SmartPin or ElbowCap, provides users with a total outage and fault detection solution. The combined solution notifies systems operators of the exact location and time of a detected fault or voltage loss before dispatching a repair crew, thus reducing outage time.

The Lindsey devices provide 3-phase current outputs, voltage presence/absence indications and faulted circuit indication. The Telemetric MicroRTU links this critical information in the field to system operators via SCADA or a secure Intelligent Web Server. The Web Server can be configured to send alarms via email, pager or cell phone, for text messaging enabled devices.

Features

- Four analog inputs monitor the phase currents and the neutral current outputs
- Four digital inputs monitor the dry contact closures that indicate a faulted circuit and the 3-phase voltage status contacts
- Relay output remotely resets the Fault LED on the controller
- Combined hardware, communication and user interface in a single solution – no special software or airtime contracts required
- Access via the www.telemetric.net Web Server or SCADA
- Units are powered by 120 VAC, an optional solar power supply is available with a 12 V battery charging system
- Lindsey controller powered by Telemetric device
- MicroRTU AC Line Voltage Monitor reports under and over voltage conditions as well as momentary and continuing power outages (AC powered models only)

The MicroRTU communicates using the cellular data network. This provides coverage to over 98% of the population in the U.S., Canada, and Mexico. Airtime and data access fees begin at \$6 per month.



Smart Pin Current and Voltage Sensors

Electrical Ratings:

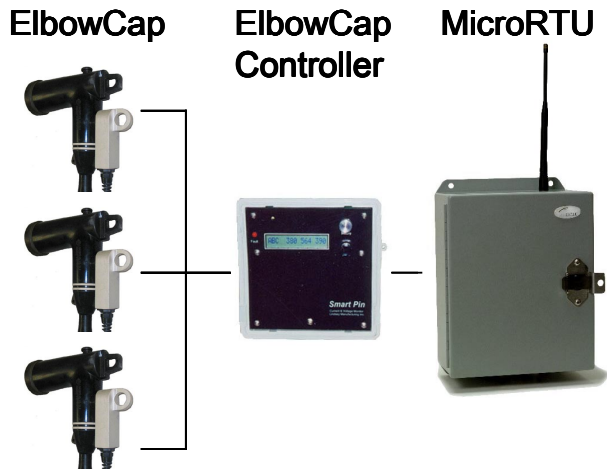
Insulation Class determined by the pin insulator, 4kV to 69kV

Current Signal Output

- *Ratio:* 600 Amps; 5 Volts DC
- *Standard Range:* 0-600 Amps (fault alarm settable to 50-720 Amps). High range 0-1200 Amps. Fault alarm settable to 50-1440 Amps
- *Phase Shift:* 0 degrees nominal, ± 1.5 degrees
- *Output Burden/Load:* Buffered output signal calibrated for a 10,000-Ohm or greater termination
- *Accuracy:* $\pm 6\%$ when calibrated by measuring conductor height (inches or mm) above the cross-arm, $\pm 2\%$ when calibrated by an external current measurement. Initial calibration of current signals may be affected by your choice of pin insulator, conductor size, tie wires, adjacent phases, temperature and line angle. Once calibrated, the readings will be very repeatable. Fault current threshold may be set using the display unit, faults are indicated by a red LED and relay contact closure.

Voltage Status

Senses the presence or absence of voltage, indicated on the integral display, LED, and by relay contact closure. A resistive glazed ceramic insulator is recommended for optimal results. Because absolute calibration of voltage signals may be affected by temperature, snow or rain, method of line attachment to the pin insulator and insulator contamination, only voltage presence is indicated.



ElbowCap Current and Voltage Sensors

Electrical Ratings

Insulation class: 15 KV to 38 kV. The ElbowCap will work on any elbow with a voltage test point.

Current Signal Output

- *Ratio:* 600 Amps : 5 Volts AC
- *Standard Range:* 0-600 Amps (fault alarm settable to 50-720 Amps). High range 0-1200 Amps. Fault alarm settable to 50-1440 Amps
- *Phase Shift:* 0 degrees nominal, ± 0.5 degrees
- *Output Burden:* Buffered output signal, for a 10K Ohm or greater termination
- *Accuracy:* $\pm 6\%$ when calibrated by measuring elbow diameter, $\pm 2\%$ when calibrated by an external current measurement. Initial calibration of current signals may be affected by your choice of elbow, conductor

size, adjacent phases, temperature, and alignment. Once calibrated, the readings will be very repeatable. Fault current threshold (50 – 720 Amps) may be set using the display unit; faults are indicated by a red LED and relay contact closure.

Reset Options – Selectable at User Setup

1. User selectable time-out, 1-999 minutes
2. Fault reset upon resumption of normal current
3. Standard manual reset

Voltage Status:

Senses the presence or absence of voltage, indicated on the integral display, LED, and by relay contact closure. Because absolute calibration of voltage signals may be affected by type of elbow, temperature, and contamination, only voltage presence will be reliably indicated.

Installation

Using the 16-pin connector cable, connect the two ends of the wires into the MicroRTU connector and the SmartPin connector. For reference the terminal block wiring is indicated in the table.

16 Pin Connector	Controller Description	MicroRTU
1	I A	ANA1
2	I B	ANA2
3	I C	ANA3
4	I N	ANA4
5	I Common	*GND
6	V A Loss	DRY1
7	V B Loss	DRY2
8	V C Loss	DRY3
9	FAULT	DRY4
10	Status common	†COM
11	Reset	OUT1
12	Reset	OUT2
13	DC+ (100mA)	+12V
14	DC GND	DC GND

* Daisy-chain the *I Common* to each of the ANA *GND* terminals.

† Daisy-chain the *Status Common* to each of the DRY *COM* terminals

Access to the Telemetric MicroRTU is provided from a secure web application. The screen print below depicts an example of how the labels can be configured to support the Lindsey SmartPin.

Current Status Digital Input Change as of 6/10/2002 7:44:38 AM

Device: **6005** Model Configuration: **T441** Description: **Lindsey Demo 3**

Address: 760 N. Georgia Ave Azusa, CA 91702

Note: A Bold indicates the latest change. A red background means that an output change has been requested and is waiting for an acknowledgement from the device. Click on the Refresh link for the latest status.

Digital Inputs

#	Description	Status	Date/Time
1	V-Loss A	Normal	6/10/2002 7:44:38 AM
2	V-Loss B	Normal	6/10/2002 7:44:38 AM
3	V-Loss C	Normal - 1 state change	6/10/2002 7:44:38 AM
4	Fault Alarm	Off	6/10/2002 7:44:38 AM

Digital Outputs

#	Description	Status	Duration	Date/Time
1	Reset Fault Alarm	Off	Permanent	6/10/2002 7:44:38 AM

Analog Inputs

#	Description	Value	Date/Time
1	A Phase Amps	Present: 395 Amps	6/7/2002 5:13:50 PM
2	B Phase Amps	Present: 403 Amps	6/7/2002 5:13:50 PM
3	C Phase Amps	Present: 403 Amps	6/7/2002 5:13:50 PM
4	Neutral Amps	Present: 873 Amps	6/7/2002 5:13:50 PM

Voltage and Outage

Description	Status	Date/Time
AC Voltage	Present: 121.0 Min:112.6 Max:123.9	6/7/2002 1:57:33 AM
Power Outages	None	6/7/2002 1:57:33 AM

[Edit Labels](#) | [Set Output](#) | [Request Status](#) | [Device History](#) | [Edit Device Data](#) | [Event Based Actions](#) | [Refresh](#)

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[Welcome Page](#)