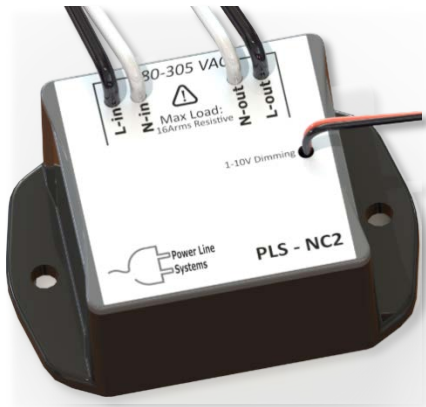


# PLS-NC2

## Lighting Controller



### Applications

Upgrade of existing street lights for control, dimming and energy monitoring from a remote SCADA terminal using existing power lines without the need for any new wired or wireless infrastructure.

### Architecture

- Power Line Systems network, based on G3-PLC (ITU-T G.9903) architecture, consists of multiple NC2 (or NC1) network nodes and a single network data concentrator- DC1.
- The network nodes can exist on any of the three phases of the low voltage (80 – 305VAC) side of the power grid.
- The network automatically installs and is self-healing; there is no field installation necessary other than mounting and wiring of the NC1 node.
- Each NC2 can be as far as 3 miles out from the nearest NC1 and maintain network connectivity.
- The data concentrator, DC1, connects to all three phases of the power grid – again on the low voltage side, at a suitable location. This is typically either the substation for the neighborhood or a pole mount medium voltage to low voltage transformer.
- The data communications can jump medium voltage to low voltage transformers allowing communications to take place between nodes that are not all on the same side of the low voltage transformer
- Each DC1 can support up to 255 network nodes.
- Each DC1 has the capability to communicate with the central SCADA terminal via secure ethernet, WIFI or LTE /CDMA/GSM cellular network.

### Key Features

- Lighting control, 0-10V dimming and energy monitoring up to 4KVA without the use of any new wired or wireless infrastructure
- Open source API – allowing end users to write their own front-end SCADA or modify existing ones.
- Server independent – allowing users to connect directly to a terminal using local Ethernet from the DC – independent of external networks.
- Removes the need for any new wired or wireless infrastructure and works over long distances and in areas where installing regular wired or wireless networks would be cost prohibitive.
- Industry leading 256-bit Elliptic Curve Cryptographic security, along with the isolation from the internet, provides a very secure, private control and communications network

### Technical

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| Network | <ul style="list-style-type: none"><li>G3-PLC (ITU-T G.9903) standards based and certified.</li><li>OFDM based IPV6 Auto Connect / Auto Healing Mesh network</li><li>98.4 - 121.9KHz CENELEC Band</li><li>40Kbps minimum data rate</li><li>3-mile range between nodes</li><li>255 nodes per cluster with one DC1 data concentrator</li><li>PLS-DC2 can connect directly to the SCADA system via local Ethernet</li><li>Alternative Cellular or WIFI connection supported by PLS-DC1</li></ul> |
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| Security | <ul style="list-style-type: none"><li>256-bit Elliptic Curve Cryptographic security between nodes and data concentrator</li><li>Secure TLS/SSL based connection between data concentrator and operator terminal (SCADA)</li><li>Biometric and two factor authentications at the operator terminal</li></ul> |
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| Power | <ul style="list-style-type: none"><li>80 – 305VAC, 50-60Hz, Single phase via screw terminal block</li><li>ANSI C136.37 surge requirements compliant</li><li>Fully protected against transients and brownouts with EN55022 Class B isolation</li><li>12AWG wires for Line in and Load out connections</li></ul> |
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| Load Control & Metering | <ul style="list-style-type: none"><li>IEC 600335-1 compliant latching relay</li><li>Nominal switching capacity: 16A, 277VAC, inrush capable</li><li>Max switching power (resistive load): 4.432KVA</li><li>Single phase line &amp; neutral screw terminal block</li><li>0.1% accurate energy metering</li><li>Active power, true RMS current, RMS voltage, Line frequency and power factor metering</li></ul> |
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| Lighting Control | <ul style="list-style-type: none"><li>0/1-10V analog dimming output</li><li>Built-in energy metering of connected lighting load</li></ul> |
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| Mechanical | <ul style="list-style-type: none"><li>2.05 x 2.05 x 1.08 in [52 x 52 x 27.5mm]</li><li>IP66 protection level</li><li>-40°C to +75°C Operating temperature</li></ul> |
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