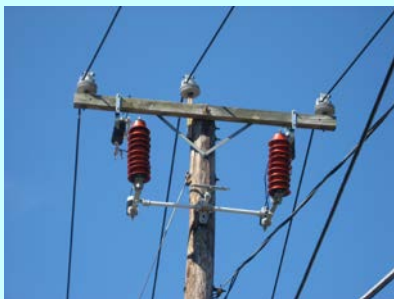


## Distributed Generation Transfer Trip Protection

Amperion's Distributed Generation Transfer Trip Protection (DG-TTP) system uses Power Line Carrier (PLC) communications technology and is the industry's most cost effective solution for DG interconnections. The DG-TTP system uses PLC modems and MV PLC couplers that were specifically designed and built to meet the requirements of this application.



Differential Coupling



DG Recloser Unit



Pole Mounted PLC Modem

### Features and Benefits

#### One-Step Solution

Amperion's DG-TTP combines islanding detection and transfer trip protection in one single operation providing significant savings in equipment and maintenance costs.

#### Standards Compliance

With a DG-TTP solution IPP's (DG owners) and integrating utilities can meet the grid interconnection requirements of the IEEE 1547 standard.

#### Flexibility and Scalability

The DG-TTP solution supports multiple DG Sites per circuit, multiple line reclosers and multiple substations. For ease of use, each substation is identified by a unique signature at the DG Site recloser. Signal reach can be extended using regenerator units for long distribution lines.

#### Redundancy & High Availability

To maximize performance Amperion developed a patent protected differential technology that enables the PLC signal to travel on two phases. With this option distances and performance are significantly increased with a higher SNR margin, and communications is maintained through a loss of a single phase.

#### Installation Simplicity

The overhead capacitive couplers are mounted directly on an energized line. The installation process is straight forward and no special training is required.

#### Complete DG-TTP Solution

The PLC Coupler together with the PLC Modem make up a complete solution set for DG-TTP applications.

#### Amperion Warranty

Amperion's standard factory warranty is three years on all hardware and software components. Extended warranty and spares can be purchased from Amperion at a discounted price.

## Technical Specification:

### PLC Coupler

#### Electrical:

- Operating Voltage 15KV
- Attenuation (pair) 6dB Average
- Frequency Range 50KHz to 525KHz
- Power Line Frequency 48Hz to 62Hz
- Input impedance 50 Ohms
- Connector N-Type Female

#### Packaging:

- Dimensions 22" x 4" x 4"  
(55.88cm x 10.16cm x 1016cm)
- weight 14.6lbs (6.6kg)

#### Mounting Options:

- Line mounted – fixed (pole supported on cross arm)  
Note: RF coax cables with N-Type connectors can be ordered from Amperion or utility supplied

#### Environmental:

- Operating Temperature - -40° to 70°C
- Storage Temperature -40° to 85°C
- Humidity 10% to 80% non-condensing

#### Compliance:

- Doble BIL Certificate (Feb. 2013) Report # 22350
- IEEE 1675-2008
- IEEE C57.13-1993

#### Ordering Information:

- PLC Coupler:  
120 - 1601 - 015 - 00 15KV PLC Coupler

### PLC Modem

#### Electrical:

- Operating Voltage 110VAC (60Hz)  
110VDC  
24VDC
- Power Consumption 25Watts
- Frequency Range 50KHz to 525KHz
- Output impedance 50 Ohms
- RF ports (2 phases) TNC female connector  
Note: TNC to N-Type jumper cables can be ordered from Amperion
- Note: RF ports are configured for 2-phase operation (factory default mode). Contact Amperion if single phase operation is required to change the factory configuration.
- Control port (TX/RX only) 2 Form C dry contacts: NO/NC
- Signature settings (identifies substation) switch selected
- Preamble settings (identifies link) switch selected
- Operating mode (TX,RX,RG) switch selected
- Power level settings switch selected  
Note: switch settings are configured at the factory but can be changed in the field if necessary
- LED Indicators: Power ON; Master; NTS (Network Sense)
- Signature 7 Segment LED ("0" to "7") – (TX/RX only)

#### Packaging:

- Dimensions 11.31"x9.31"x5.43"  
(28.73cm x23.65cmx13.79cm)
- Weight 8.5lbs (3.8kg)
- Mounting Pole Mount on bracket
- NEMA 4 Fiberglass reinforced polyester enclosure rated for IP66
- Two padlock latches for physical security
- Note: Mounting bracket hardware can be ordered from Amperion
- Telecom Box option The modem can be packaged inside a large Telecom box as an added option

#### Environmental:

- Operating Temperature -40° to 70°C
- Storage Temperature -40° to 85°C
- Humidity 10% to 80% non-condensing

#### Compliance:

- Emissions/Immunity FCC Part 15 Class A  
EN55022 Class A, EN50065-1
- Safety CENELEC EN 60950-1  
ANSI/UL 60950-1  
CSA C22.2 60950-1

#### Ethernet Port:

- 10/100 BASE-TX - 1 Port
- Connector RJ45
- Auto-Negotiating IEEE 802.3u

#### Serial Port:

- RS-232 - 1 Port
- Connector RJ45
- Data Rates: 115,200 baud

#### Ordering Information:

- PLC Modem:  
120 - 6000 - 125 - 00 TX Unit  
120 - 6001 - 125 - 00 RX Unit  
120 - 6002 - 125 - 00 RG Unit