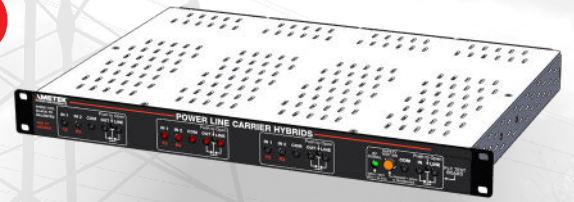


# PLC TEST BOARD

## CASE STUDY

### American Electric Power (AEP)



AMETEK Power Instruments recently worked with American Electric Power (AEP), one of the largest electric companies in the U.S. with 5.6 million customers and 17,000 employees. AEP is a user of the 1-RU PLC Hybrid and supplemental PLC Test Board to monitor their service territory of approximately 200,000 square miles.

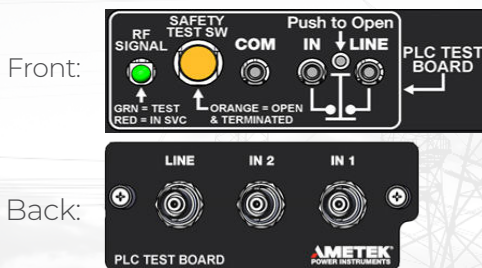
#### Project Overview

AEP approached AMETEK Power Instruments with the need for a product that works in unison with the 1-RU PLC Hybrid to add more testing functionality and convenience, while also saving space. Power Instruments created the PLC Test Board, which slides into an unused slot of the panel and features elements such as a safety test switch.

#### Challenge

In using the 1-RU PLC Hybrid over time, AEP recognized that installing a coax grounding knife switch in the panel or using the line tuner grounding knife switch for testing was inconvenient. They saw opportunity for a simpler testing procedure. Several other customers agreed this functionality could be enhanced. To solve this, AEP searched for:

- A trusted partner with extensive knowledge of their needs and a demonstrated ability to meet all the required specifications
- A supplier who could update and/or replace existing devices to be fit for the PLC Test Board
- A manufacturer with a long-standing reputation in the industry



#### Solution

AEP chose AMETEK Power Instruments to incorporate the panel's coax ground knife switch inside the 1-RU PLC Hybrid chassis as a slide-in board for testing and convenience. To meet and exceed these needs, Power Instruments replaced the typical panel knife switch with a Safety Test Switch. This switch turns orange when it is pressed and opens the coax path between the IN and LINE test points, and simultaneously terminates either side of the opening with an appropriate wattage 50  $\Omega$  resistor. The test board can then easily be used to calibrate the Transmitter and the line tuner receives a proper termination replacing the carrier set. It also provides a quick way to verify if the line tuner is affecting the TX level/reflected power. It is equipped with a RF signal bi-color LED, green light when in test and red light when in service, that lights brightly for 10 Watt signal level and dimly for 1 Watt signal level. The brightness is adjustable up to 20 Watts.

In RX only applications with no Transmitters connected, the Jumper allows the 50  $\Omega$  termination to be permanently connected across the high impedance receivers to terminate the line. The rear coax connectors are available to connect up to two receivers without a BNC T-connector.

#### Results

The PLC Test Board is simple to use and includes all of AEP's specifications. After various tests, they are very pleased with how easy it is to start up, use and understand. The most useful aspects of the PLC Test Board, according to AEP, include:

- Its ability to isolate one end from the remote end. With this, the remote end can go through testing while troubleshooting takes place up to that switch
- Its quick pushbutton switch which inserts a 50  $\Omega$  resistor allowing us to calibrate the transmitter, instead of having to disconnect cables behind the unit
- Its fast response indicator light which makes it easier to see what state the unit is in

|| The PLC Test Board is much simpler to use and cuts out several steps."

|| The dummy load on the board is something helpful that we weren't expecting. And the test switch helps with taking reflective power."

- PLC Test Board Users at AEP