PRODUCT ADVISORY LETTER (PAL)

PRODUCT ADVISORY LETTER NUMBER: CU46-14002

(Release of V4.01 firmware)

DATE: April 8, 2014

AFFECTED PRODUCT(S): UPLC

AFFECTED MODULE(S): All UPLC Transceiver modules (CU20-XVRMN-001) with version 4.00 or lower (PPC) firmware.

SYMPTOM(s): There were a few non-critical symptoms that did not affect existing protective relaying functionality as detailed in the release notes for version 4.01 firmware, otherwise this is a feature upgrade.

RECOMMENDATION: This is not a mandatory upgrade. However Ametek recommends that all customers do this upgrade at their next regularly scheduled outage if they wish to take advantage of the following significant features. The full list of all the features are in the release notes for version 4.01 firmware, and a more detailed explanation of these 4 major features are given at the end of this PAL.

1. **Protective Relaying Security/Dependability Improvements**

2. **Management User Interface** – To allow an IT manager to write a routine to automate changing/authenticating passwords and checking firmware/hardware versions via Ethernet.

The following extra features are also available but only with hardware upgrade to UPLC-II and supported by this new version 4.01 firmware. (There is a cost for this hardware upgrade portion.)
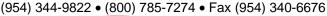
3. **Front Ethernet Port for PC Interface** – To allow 100X faster connection speed

4. **Frequency Selectivity for the TX Reflected Power Meter** – To allow continuous accurate monitoring/alarming for high reflected power for use in system early warning problem detection

CORRECTIVE ACTION: This is an upgrade for the latest version of firmware, which is version 4.01. Customers with UPLC versions 2.00 to 4.00 (PPC) firmware can download the firmware update files from the ametekpower.com website and follow the directions in the release notes to upgrade themselves. Directions on downloading files were included in the email sent to all UPLC customers on record. Should you need additional details, please call our customer service at phone # 800-785-7274.
Units which have version 1.xx (PPC) firmware or have older hardware Transceiver boards CU20-XVRMN-001 rev. 4 will require sending the UPLC Transceiver modules (CU20-XVRMN-001) in for updating by Ametek. If needed, advance replacements can be supplied on a limited basis and the affected modules can be returned using the same packaging. Call Ametek at phone # 800-785-7274 (customer service) and reference this PAL to obtain an RMA number. This modification to the Transceiver board, if needed, is available at no charge and will not affect any applicable warranty.

TECHNICAL DETAILS: This is a major feature firmware upgrade as detailed in this PAL and in the release notes. Upgrading one end prior to the other end should not present any problems other than those as outlined in the known firmware issues at the end of the release notes. (Note: This is the first full customer release since V3.07. Firmware releases version 3.08 and 4.00 were for specific customers and not a general release to the full customer base.)
You can identify version numbers from the front panel keypad [Press Set, enter password (4050 default) then set again, enter "2" for configure, enter "4" for view revisions, Power PC ver.___] or from the web-browser interface (Admin page, software/firmware tab, PPC ver.___ and Transceiver board hardware revision_.).

ADDED FEATURE DETAILS:

The following 2 features are available free of charge by simply doing this firmware upgrade to any UPLC.

1. **Protective Relaying Security/Dependability Improvements** - Several months of engineering effort were put into redesigning noise detection, optimizing filters, removing unnecessary delays and other items to give maximum security and dependability. Then thorough testing was done to compare the following three products against each other using the same test set up.

   - TCF-10B
   - UPLC with V3.07 and lower firmware
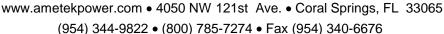   - UPLC-II with V3.08 – V4.01 firmware

   For **protective relaying security**, there was a significant **increase of 5X to 100X better** security with the UPLC-II versus the prior industry state of the art performance of the UPLC or TCF-10B. When comparing any power line carrier equipment protective relaying security it is important to note the settings of two parameters, added pre-trip time delay and receiver filter bandwidth, or else the data is meaningless. Several suppliers do not adequately specify this making comparison of specifications impossible without actually testing.

   For **protective relaying dependability** the significant improvement came as a result of getting a TRIP through the channel faster under high noise conditions. This means the TRIP is there when it is supposed to be and does not miss it's time window to be considered a valid trip. We did this by eliminating the noise clamp that blocks Trip and Guard outputs during a high noise event. With earlier UPLC V3.07 and lower firmware, when the UPLC was used for DTT applications this noise clamp block lasted 50 msec and for UB/POTT applications it lasted 10 msec. There also could be multiple cascading noise clamp blocks that occurred when there were several closely spaced noise bursts extending the block of the Trip and Guard outputs for much longer than these times. So with the new firmware the **Trip time is greatly sped up during high noise,** which effectively improves dependability.

2. **Management User Interface** – Allows an IT manager to write a routine to automate changing/authenticating passwords and checking firmware/hardware versions via Ethernet. This interface requires adding a new user to the settings called ''Management User'' which can log into the unit while another user is simultaneously accessing the unit if desired. As a ''Management User'' you must use certain web browser address line commands to interact with the UPLC.

The following extra features are also available but only with hardware upgrade to UPLC-II and supported by this new version 4.01 firmware. (There is a cost for this hardware upgrade.)

3. **Front Ethernet Port for PC Interface** – In addition to allowing 100X faster connection speed compared to the RS232/USB ports, this provides for an easier PC set up. Also it gives the option to make the 2 rear Ethernet ports operate in the redundant mode, as previously, or in a new daisy chain mode where other UPLCs or any Ethernet connected device can be daisy chained to the UPLC with the UPLC acting like a switch. This is a new software setting now. (Note**:** The front Ethernet port is completely isolated and is intended solely for PC interface. The rear Ethernet ports can be used for PC interface or other features such as DNP3 or IEC61850 communication.) There is an upgrade available for adding this feature that requires sending the unit back to the factory and changing the Ethernet daughter board (mounted on the Transceiver board), changing the front door, changing the display board if less than rev 9, and adding a ribbon cable. Consult sales for pricing.

4. **Frequency Selectivity for the TX Reflected Power Meter** – Allows continuous and highly accurate monitoring/alarming for high reflected power even though other interfering transmitters are

transmitting on the same power line. This is similar to the more modern reflected power meters with built-in frequency selectivity made by test equipment companies. The customer can now use the UPLC-II reflected power meter along with its associated settable high reflected power alarm to indicate that something (such as a bad coax, bad line tuner, bad coupling cap, or bad line trap) has caused an impedance mismatch at that end of the power line. Because the meter is built-in and always monitoring the line it is very helpful in catching problems before they disable the PLC system, as well as giving direction to which end of the line has a problem. There is an upgrade available for adding this feature that requires sending the unit back to the factory and changing the Power Amp board and the Transceiver board, and adding 2 wires to the backplane. Consult sales for pricing.