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## Installing an ALPHA<sup>®</sup> Meter / Internal Cellular Modem

### General

ABB's ALPHA meter is available with options that allow communicating over the Advanced Mobile Phone System (AMPS) and the Public Switched Telephone Network (PSTN). This leaflet contains procedures for installing an ALPHA meter with the Internal Cellular Modem (ICM) option to provide a standard interface for data communications using the AMPS / PSTN. For information on installing the meter itself, see the instructional leaflet that pertains to the type of meter you have.

#### **▲ WARNING**

Use authorized utility procedures to install and service metering equipment. Dangerous voltages are present. Personal injury, death, or equipment damage can result if safety precautions are not followed.

Use circuit closing devices on any current transformer secondaries (Form 35S (5S), 35A (5A), 36S (6S), 36A (6A), 9S, 10A meters). Personal injury, death, or equipment damage can result if circuit closing devices are not used.

The remotely-readable ALPHA meter with the ICM option does not normally require any wiring for meter communications. The use of an external antenna does require additional wiring; however, when using the internal antenna, no wiring to support communications is required.

For more information on remote operation of ALPHA meters, see ALPHA Meter Options: Enhanced Metering Functions, Relays, and Modems (TM42-2181B or later), ALPHA Plus Meter Technical Manual (TM42-2182C or later), or A3 ALPHA Meter Technical Manual (TM42-2190A or later). These manuals include instructions on retrofitting a meter to operate with a landline modem and information on programming, reading, and testing the meter for remote operation over the telephone lines.

### Regulatory Information

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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If you experience trouble with this equipment, please contact ABB's RMR Department at +1 919 212 4700. Do not attempt to repair this equipment yourself unless you are replacing an entire module.

## Performing a BER Test on the ICM Connection

Once the Alpha Meter with ICM is installed, it is recommended that the meter installer perform an installation test using ABB's metercat software (rev 1.2 or later). This test validates the quality of the communication link using a combination of two measurements:

- The measured Received Signal Strength Indicator (RSSI).
- A Bit Error Rate (BER) measurement with a remote digital loop back device using the V.54 Standard.

The thresholds related to those measurements (successful RSSI threshold, successful BER threshold, duration of the BER measurement...) can be changed from the recommended default values in the ABB metercat software. If both measurements are successful according to the pre-defined set of thresholds, the installation test will be reported as being successful.

The test procedure is as follows:

1. Connect the optical probe to the meter under test, and select the optical probe connection in metercat. This test will be performed via optical connection only
2. The pre-defined function named "Test ICM" must be selected
3. A window called "Test Cellular Modem Task Run Time Overrides" will be shown on the screen displaying all the parameters values related to this test. Depending on the test set-up, some of those parameters can be overridden at program execution time. Please consult the Metercat user guide for more details. Once the user selects OK on this window the test will run
4. A completion report will be displayed with "passed" or "failed" as well as additional test results (RSSI measured, BER measured...)

## Connecting an External Antenna to the ALPHA Meter / ICM For Use With An External Antenna

At times the meter may be installed in a service cabinet, or in a location where the RF signal is greatly attenuated due to physical obstructions, or simply the distance from the nearest cellular tower is too great to achieve sufficient signals for reliable data communications. The ALPHA meter provides a means such that an external antenna can be used to enhance communications between the tower and the meter while providing 4 kV of voltage isolation at 60 hertz.

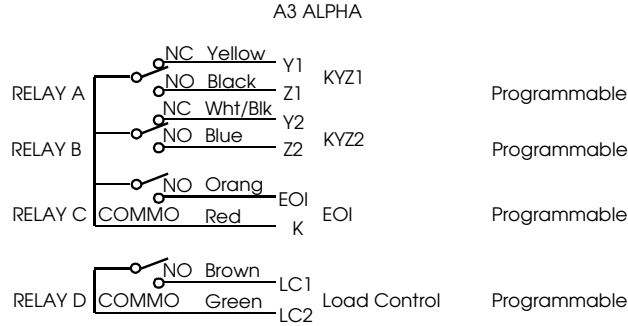
### **⚠ WARNING**

To ensure compliance with FCC RF exposure requirements, the antenna used for this device must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or radio transmitter. Installers and end-users must follow the installation instructions provided in the users guide.

The external antenna option for the A3 meter is accomplished by installing the A3 External Antenna Option Kit. This option is not part of the Alpha Meter / ICM, and must be obtained separately as a user installed option. Instructions for the meter modification, assembly, and installation are included with the External Antenna Option Kit.

## Relay Connections

The ICM option board can be equipped with four relays. When equipped with four relays, an 8-lead output cable (Reference Figure 1) is included. See the *Metercat Program Development Guide* (TM42-2204B or later) for more information on configuring relays for A3 ALPHA meters.



**Figure 1**

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