# Tantalus

## TANTALUS SYSTEMS CORP.

# TC-2200
# Installation Manual

Notice
The information contained in this document is subject to change without notice.

Tantalus makes no warranty of any kind with regard to this material, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose. Tantalus shall not be liable for errors contained herein or incidental consequential damages in connection with the furnishing, performance, or use of this material.

## FCC COMPLIANCE STATEMENT

Changes or modifications not expressly approved by Tantalus Systems Corp. may void your authority to operate the equipment described in this manual.

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, you are encouraged to try and correct the interference by one of 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.

## Product Description

The TC-2200, is an electromechanical meter reader and 433 MHz transceiver, designed to fit under-the-glass of single-phase electricity meters. As part of the 433 MHz Local Area Network (LAN), the TC-2200 transmits and receives data to and from other TC modules and devices within a controlled area. It then connects to the Network Controller (via Tantalus' Wide Area Network module), which is the central control point between the network and the utility.



### GENERAL INFORMATION

Tantalus provides two-way, real-time data communications networks to monitor and control electric utilities. Our long-range wireless networks unite a utility's applications, making meter reading, load management, and distribution automation cost-effective and practical throughout urban and rural service areas.

The Tantalus Utility Network uses long-range 220 MHz spectrum to deliver valued applications such as outage management, power quality monitoring, meter reading, load management, and distribution automation to utilities. The Network provides robust two-way communications throughout a utility's diverse service territory – including residential, commercial, and industrial.

### TC-2200 PRODUCT SPECIFICATIONS

#### Functional

- Shaded optical sensor counts meter disk rotations to determine meter reading
- Transmits meter readings on a regular schedule or on request
- Supports LAN routing and proxy services
- Provides optical interface for data transfer to 220 WAN
- Outage reporting: optional
- Non-volatile memory maintains data during outages

- Power supply: 240 VAC from AC line mains
- Operating temperature: -40° - +85°C
- Operating humidity: 5 – 95% non-condensing relative humidity

Radio
- Frequency: 433 – 435 MHz dual channel, license exempt
- Frequency-agile wide-band FSK
- Transmission rate: 40 kbps
- Antenna: under-the-meter glass

Meter Compatibility
- ABB AB1
- GE I-70
- Landis & Gyr

Standards
- FCC Title 47 Part 15c & Part 15b (unintentional radiators and EMI)
- Industry Canada RSS-210 (intentional radiators and EMI)
- CSA C22.2 No. 0-M91 (product safety)

# 2

## Installing the TC-2200

1. Assemble the necessary equipment: Tantalus TC-2200 Module Installation Kit and required tools and materials.

TC-2200 MODULE INSTALLATION KIT

Each kit for installing a Tantalus TC-2200 module includes the following items:

- One TC-2200 module
- One IR serial interface

In addition to the retrofit kit the following items are required:

- Mounting screws for GE I-70-S meter: UNF 4-48 x ¾" (Two required per meter)
- Mounting screws for ABB AB-1 meter: UNF 6-40 x ¾" (Two required per meter)
- Power clips to attach to bus bars (Two required per meter): Part number dependant on bus bar diameter.

| Tantalus P/N | Bus Bar Diameter |
|---|---|
| 13811300003A | 0.20" – 0.22" |
| 13811300003B | 0.18" |
| 13811300003C | 0.26" – 0.28" |
| 13811300003D | 0.32" – 0.36" |

REQUIRED TOOLS AND MATERIALS

- 3/8" electric hand drill and 3/8" drill bit
- Drill alignment jig (recommended for GE meters)
- Needle nose pliers
- #2 Phillips screwdriver
- Rubbing alcohol
- Soft cloth or paper towels
- Disk marking template and paint pen
- Anti-static wrist strap
- Computer for programming TC-2200 module (Desktop, laptop or handheld computer)
- Tantalus TC-2200 module programming software
- DC power supply, 6 – 8 VDC, for powering the module for programming
- TC-2200 Programming Cable

CAUTION: The TC modules contain electrostatic sensitive devices. You must work with the modules at a protected workstation. Persons handling the modules must be grounded with a protective wrist strap. When you remove the modules from their packaging, place them on antistatic foam. When handling the modules, hold them only by the edge of the plastic holder.

DRILL THE METER BASE

GE I-70-S
1. Remove the glass cover from the meter and place the meter face down into a fixture for holding the meter.

2. Using a 3/8″ electric hand drill and 3/8″ bit, position the drill alignment jig over the meter base as shown in Figure 1a.

3. Drill a hole in the meter base as shown in Figure 1b.

4. Make sure the meter is clear of any debris by cleaning it with compressed air.



**Figure 1a**                                          **Figure 1b**

Figure 1: Drill alignment jig

ABB AB-1
ABB meters usually have venting holes at the bottom center of the meter base. These can be used as a guide for drilling a 3/8" hole in the meter base. The vent holes are typically covered with a metal screen and a fiber filter that can be removed with needle nose pliers. These vent holes are usually circular but smaller than 3/8" and are sometimes octagonal with "crosshairs" inside as shown in Figure 2.

1. Using a 3/8" electric hand drill and 3/8" bit, drill the size of the circular hole to 3/8" in diameter.

2. Limit the drill insertion to ½ inch so that the drill tip does not contact the meter frame.

3. For the octagonal shape, remove the "crosshairs" with needle nose pliers.



Figure 2: ABB AB-1 Vent hole with "crosshairs".

4. Make sure there is no debris in the meter by cleaning it with compressed air.

Mark the disk

1. If the disk is not already marked, remove the meter nameplate and set the original nameplate mounting screws aside. (you will need longer screws to mount the module under the nameplate).

2. Align the disk marking template on the disk, with the upper left corner of the template opening aligned with the left side of the timing mark on the disk, as shown in Figure 3.

3. Mark the inside edges of the template opening with a pencil.

4. Remove the template and carefully fill in the area between the pencil-marked lines with the disk marking paint pen. (Note: do not substitute the paint pen with any other type of permanent marker as this may make the mark undetectable).
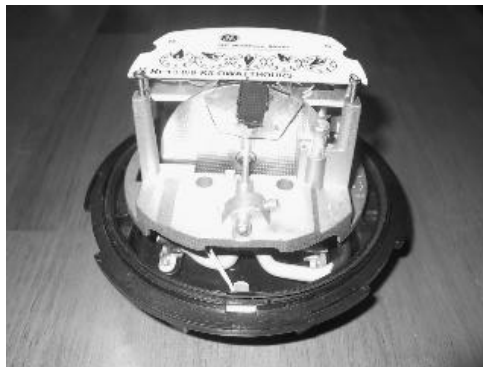


Figure 3: Disk marking template aligned on disk

Mount the IR Serial Interface Adapter

1. Clean the flat area on the external side of the meter base between the lower power pins with rubbing (isopropyl) alcohol.

2. Wait until the surface is dried or dry it with a clean cloth or paper towel.

3. Peel the red liner from the adhesive tape on the IR interface adapter.

4. Insert the IR interface cable through the drilled hole from outside to inside the meter.

5. Arrange the IR interface so that the flat side of the sensor is toward the center of the meter. The legs of the meter will guide the sensor positioning.

6. Make sure you position the sensor in place as straight as possible. The split cylindrical protrusion on the adhesive side of the sensor will fit into the 3/8" drilled hole.

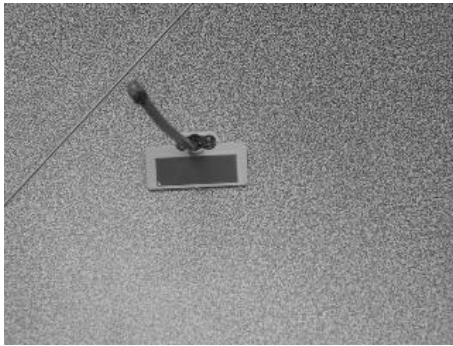7. Apply pressure gently for one minute over the flat side of the interface adapter.
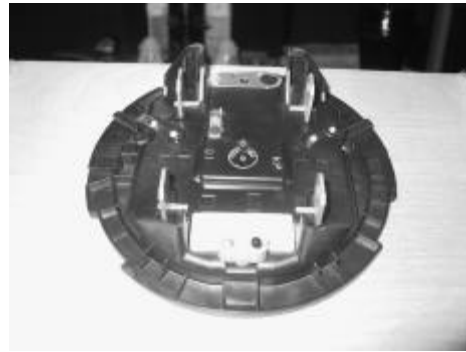


**Figure 4a**                                              **Figure 4b**

Figure 4: IR Serial Interface Adapter

Attach Module Power Leads to Meter Bus Bars

1. Select the appropriate power clips for the size of the bus bars in the meters.

2. Using needle nose pliers, attach a pair of power clips to the Fast-on tabs on the ends of the power leads of the TC-2200 module.

3. With the needle nose pliers attach the power clips to the bus bars at the top side of the meter as shown in Figure 5.
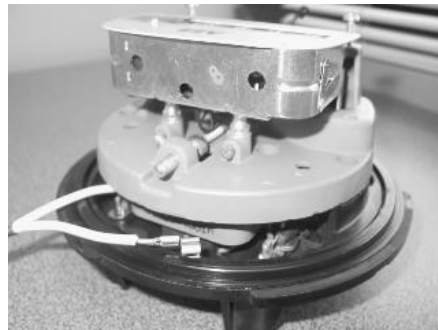


Figure 5: Connecting the module power leads to the meter power bus bars

Mount the TC-2200 Module

1. Once the power leads are attached to the meter bus bars, press the power leads together around the left side of the meter.

2. Attach the connector of the IR serial interface to the mating connector on the TC-2200 module.

3. Position the module over the mounting posts on the meter.

4. Position the nameplate over the module.

5. Using the appropriate ¾" mounting screws, secure the module to the mounting posts taking care not to interfere with the meter disk.

The module is now ready for initial programming.

### Program the TC-2200 Module

Before placing the meter and module into service, the module must be programmed with initial operating parameters. Refer to the *Guide to Programming Tantalus UTG Meter Modules.*

1. Using the software provided, program the module with the following minimum parameters:

- Meter serial number or utility identification number
- Meter Kh constant
- Tantalus assigned Utility Business ID
- Initial kWh (meter face) reading
- Initial AMR reporting interval
- Additional parameters which may be programmed include power outage reporting and PQM parameters:
- Blink period threshold
- Swell and Sag alarm voltage threshold and time threshold
- Initial PQM reporting interval
- After the TC-2200 module is programmed replace the glass cover. The meter is ready for final calibration and service.

### Final Calibration

Prior to placing the meter into service, you must calibrate and seal it.