Metering For Tomorrow …Today

Technologies To Be, Incorporated

MSU 102 Field Installation Guide

METERING FOR TOMORROW ....TODAY

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Important Information

Compliance Statement

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 a 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 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 or TV technician for help.

This device complies with Subpart C of Part 15 of FCC Rules. Operation of this device is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference that may cause undesirable operation

This device complies with Part 15.247 of the FCC rules governing spread spectrum devices. The device operates in the 900 MHz unlicensed band at a maximum peak power level of 1 watt with a transmission duration that will not exceed 400 milliseconds.

This device must be permanently mounted such that it retains a distance of 20 centimeters (7.9 inches) from all persons in order to comply with FCC RF exposure levels

Modifications and Repairs

To ensure FCC compliance and system performance, this device shall not be changed or modified without the express approval of Technologies To Be, Incorporated. Any modification may void the user's authority to use the equipment.

Warning! This device contains no user serviceable parts. Attempts to repair this device by unauthorized personnel may subject the person to shock hazard if removal of protective covers is attempted. Unauthorized repair may void the warranty and/or maintenance contract with your company.

Meter Installation/Removal

In the event of malfunction, all repairs should be performed by Technologies To Be, Incorporated. It is the responsibility of users requiring service to report the need for service to Technologies To Be, Incorporated.

Warning! The installation of this device may subject the installer to hazardous conditions, including the possibility of electrical shock. Trained professionals should install this device. This instruction manual should be considered supplemental and used in addition to and in accordance with your company's meter installation and removal procedures and all related safety regulations.

Customer Service

If you have questions, comments or suggestions contact Technologies To Be, Incorporated as follows:

E-mail: AMR@ttbi.com

Introduction

Purpose Of The Document

This document describes the installation and configuration of the MSU-101 and MSU-102 automatic reading and control device.

Audience

This document is intended for utility field personnel and others associated with the installation and maintenance of the meter side unit of an automatic reading and control system. Installers should have had previous training and experience in the following:

Installation and maintenance of utility meters of the type being monitored by the ARC system

Electrical wiring and related skills

All utility-specific OSHA regulations and procedures

Getting Started

Getting To Know Your ARC Meter Side Unit

The Technologies To Be, Incorporated Automatic Reading and Control (ARC) system is a radio based meter reading and control system that transmits utility meter readings through a radio based communications network to a central data collection system, and allows utility personnel to enter commands at the central station to control meter-side equipment. Examples of equipment that can be controlled are electrically activated water valves and electrical relays.

Each MSU is given a unique identification. The unique ID is electronically stamped into the memory of the MSU, and is transmitted with each meter reading. The reading also contains the meter ID of the meter read, the current meter reading, and any data flags provided by the meter. Examples of these data flags are tamper indicators and back-flow indicators.

The default setting of each MSU is capable of reading several different manufacturer's meters. Because each MSU contains a tiny computer, and those computers may be dynamically reprogrammed, there is almost no limit to the number of different meters that the MSU can be made to read.

MSU Specifications

Power Source:	3.6V Lithium Battery
Operating Temperature:	-40° F to 160° F
Storage Temperature:	-40° F to 100° F
Operating Humidity:	Any
Receive and Transmit Frequency Range:	ISM Band (902 MHz to 928 MHz)
Communications Mechanism:	Frequency Hopping Spread Spectrum

Input and Output

Each MSU contains a vertically polarized antenna. This is an antenna that radiates its power generally upward. As a result, in order to achieve maximum range, each device should be mounted with the bottom down (the flat plate that seals the unit should be down).

Each MSU unit also possesses a battery lead and two meter leads. These leads should be connected to their perspective connection devices.

MSU Installation

Installation Preparation

In pit installations, the MSU installation location will depend upon the type of lid used at the pit. In pits with metal lids, the MSU will be installed on top of the lid. In pits with plastic lids, the MSU may be installed on top of or below the pit lid.

In northern climates, where meters are in basements, the MSU is installed on the side of the building.

Select the installation housing (ordered separately) appropriate to the install location (Top of Lid, Under Lid or House Side). Follow the mounting installations for the particular installation housing.

Installation of MSU

Follow the installation directions for the particular installation housing selected.

For a pit mounted MSU, be sure to bury the power pack in the ground next to the meter. Bury the power pack with either a horizontal or vertical alignment.

Warning! Whenever a pit cover is drilled, there is a chance that the structural integrity of the cover will be compromised. TTBI disclaims all responsibility for damages due to meter pit cover modification.

Meter-MSU Wiring

If the MSU is going to be installed below the lid, it is possible to pre-wire the MSU to the meter. If the MSU is going to be installed on top of the meter lid, or on the side of a building, pre-wiring is not an option.

In order to increase the quality and reliability of the meter-MSU connection, an IP68 rated connector is available to attach the MSU to the meter. This connector is rated by the manufacturer for total submersion and complete isolation from dust and particulate matter. We can coordinate with your meter manufacturer to pre-wire your meters with these connectors.

If connectors are not selected, it is necessary to use the proper splicing technique and equipment when connecting the MSU to a meter.

Configuring the MSU

The MSU will come from the factory with the ability to interface to several meter types, including the meter that your organization has selected. Because the MSU contains a long-range two-way radio, the MSU behavior can be altered from the central collector station. See the software documentation for the central collector station for more detail.