



# SPECIFICATIONS

## PhonRead®

For the Automatic Meter Reading System  
Call Inbound Meter Interface Unit (MIU)

### General

The following specification describes the requirements for a telephone-based call inbound automatic meter reading (AMR) system. The specification will cover the meter interface unit (MIU). If meters and other supporting equipment are included in this proposal or bid, they will be covered under separate specifications.

### Call Inbound System Description

The call inbound AMR system will have the ability to read meters equipped with absolute encoder registers using the local telephone network. The encoder registers will be connected to an MIU that will provide the interface between the meter and the telephone network.

Upon installation, the MIU will be programmed with the phone number of the utility's call inbound system computer. A call-in time will also be programmed. At the programmed time, the call-in MIU will check the phone line and verify that it is not in use and will call-in to the central computer. Once the communications link with the computer is made, the MIU will transfer the meter reading data to the computer memory for processing. After the transfer of the meter reading data the computer will provide the MIU with instructions for the next call-in session.

### Meter Interface Unit Functions

The MIU is the interface between the meter and the telephone network. The MIU will power up at a predetermined time to make a call or upon a demand signal from the utility office. A two-way communications link will be established between the MIU and utility computer at the time of call-in to insure system integrity and reliability.

**Connection Ports:** The MIU will incorporate a two-port design to provide for the connection of two meters, or use of the second port as an optional tamper connection port. Each port will provide a built-in interface splitter to permit backup reading via the Sensus TouchRead system TouchPad in the case of telephone service disconnect.

There will be a telephone connection port which will permit connection of the MIU to the customer's telephone line. The telephone connection port will be a 6-position RJ-11 connector jack. The MIU shall be tip-ring polarity insensitive and capable of operation over the standard 48-volt telephone network.

A programming port consisting of a 4-position RJ-11 connector jack will also be a part of the MIU. The programming port will permit connection of a MIU tester to activate the programming features of the MIU.

**Encoder Compatibility:** The MIU will have the capability to connect to a Sensus ECR II type absolute encoder register. Connection to other types of encoder registers will be considered upon request of the MIU vendor.

**Identification Number:** The MIU will have a fixed identification number that cannot be changed. The MIU will also provide for an optional programmable port identification number that will identify each meter port.

**Phone Number:** The MIU will be capable of being programmed with three call-in phone numbers; one primary number and two alternate numbers.

**Demand Readings:** For demand readings such as high bill complaints and final reads, the MIU will be capable of being accessed through the telephone network whether or not anybody is present at the MIU location.

**Customer Priority:** The MIU must give the utility's customer priority usage of the phone line at all times. If the phone line is in use when the MIU is scheduled to call-in, a retry algorithm shall be part of the operating software so that the MIU can initiate a procedure to complete the meter reading data transfer at a later time.

### Power Supply

The MIU shall contain no battery for normal operation. For unusual applications, a back-up battery connector will be supplied to allow a back-up battery to be used.

### FCC Regulations

The MIU shall be in full compliance with FCC rules and regulations Part 68 and Part 15. The MIU shall follow labeling guidelines of the FCC rules.

### Electrical Protection

The MIU shall provide protection for the circuit board against external electrical shocks. Transient electrical protection shall be provided at the telephone interface to the MIU. In addition, isolation barriers shall be provided for the meter connection ports of the MIU. The MIU should not false alert as a result of electrical storm activity.

### Signaling

The MIU will utilize Bell Standard modem signaling protocols with the MIU operating in the originate-only mode. The data communications protocol shall support CRC error checking and the retransmission of corrupted messages. The MIU shall default to Dual tone multi-frequency (DTMF) dialing signals. The MIU shall determine if DTMF dialing is accepted on the connected telephone line and, if not, automatically switch to pulse dialing.

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### Hardware

The MIU will be housed in a two-piece UV stable molded plastic enclosure with the capability of being installed outdoors or indoors using the same enclosure. The housing will have the option of being wall mounted or wire tied to existing fixtures.

The two halves of the MIU enclosure will be secured by means of a tamper-resistant locking screw so that the enclosure cannot be opened by non-utility personnel. The internal parts of the MIU can only be accessed by utility personnel using a manufacturer supplied field tool. The field tool must not be commercially available. Seal wiring or a frangible head seal screw is not acceptable.

All material shall be suitable for service and shall not corrode. The MIU electronics shall be designed and constructed so as to provide long service life.

The MIU shall operate within a temperature range of between minus 20 degrees F to plus 140 degrees F and to a humidity level of 95 percent.

The exterior of the housing shall display the following information, either molded into the housing or printed on an attached label:

- name of manufacturer
- product name
- unit model number
- unit serial number
- date of manufacture
- required FCC labeling

### Meter Interface Unit Tester

The MIU tester will provide the utility the capability to modify the programmable parameters of the MIU in the field. The MIU tester will be able to read the encoder register to insure proper operation.

### Installation And Training

Complete installation and operating instructions will be included for all of the supplied hardware and software. Proposals must include any additional costs for training, installation assistance and start-up of the inbound system. The vendor will also inform the customer of pre-installation activities that are to be completed and what support materials will be needed for initial installations.

### Performance Warranties

In evaluating proposal submittals, warranty coverage will be considered. The vendor shall be required to state its warranty and/or guarantee policy for each item of proposed equipment. The procedure for submitting warranty claims must also be provided.

### System Maintenance And Support

Vendors are required to supply information on required or optional maintenance programs that apply beyond the initial warranty period for both hardware and software. Features of those programs shall be included along with any additional charges such as an hourly rate for on-site and/or remote support. The location of, and procedures for, obtaining such support shall be stated.

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