



Troubleshooting Guide

PhonRead® Meter Interface Unit (MIU)

General

The following information is a guide to troubleshooting a malfunctioning meter interface unit (MIU). These procedures should be reviewed prior to replacing an MIU after initial installation and returning it to the plant for evaluation.

This is a general guide for troubleshooting the MIU. For detailed MIU installation procedures, please refer to installation bulletin AMR-971 as most recently revised. For programming information, refer to the MIU programming manual AMR-400.

Necessary Tools and Materials

The following should be available when troubleshooting an MIU:

- SRI® security socket with 1/4" nut driver or ratchet wrench
- Small screw driver for terminal strip (standard head)
- MIU programmer unit (HHD or RFHHD) with programming module and cable
- Extra MIU, phone line cables and encoder wire

Procedures

Programming an MIU:

These procedures will review the basic steps involved with programming a PhonRead MIU.

1. Insert programming cable from programmer into programming jack of MIU.
2. Turn on programmer by pressing the "VIEW" button.
3. Press the "Sensus" key on the programmer.
4. Choose "Option 1" on the programmer to initiate Automatic Program mode.

Programmer will automatically program the MIU based on the default settings loaded. The programmer will load the default information into the MIU automatically only stopping for the "Port ID" to be entered if the mode selection has been enabled.

If "Port ID" is enabled, the programmer will pause until an ID is entered or skipped over. It is suggested that if an encoder register is connected to a port, the encoder register ID number should be entered as the "Port ID". If the port is to be used as a "Tamper Loop" or with a "Tamper Latch Module", the "Port ID" is required to be programmed with the register ID number.

After programming is complete, the operator will get a MIU PROGRAMMED message and then the programmer will go into a MONITORING MIU mode. If the Call-BACK ELAPSED TIME is set to 0 or the INSTALL call option is set to "YES", the MIU will attempt an immediate call. The Monitor MIU mode allows the programmer to monitor the call by the MIU. When the MIU calls into the utility computer the programmer will display:

MIU CALLING
CONNECTED

Then, if the MIU makes a successful call to the utility office, the programmer will display "CALL COMPLETE".

Troubleshooting

If, at any time, the operator receives an error, "T/O waiting for MIU response," this means that the programmer did not receive a valid response from the MIU within its programmed time-out period. It is recommended that the operator press the CLEAR button until the Hang-up command is initiated. If this error persists, disconnect the programming cable from the MIU and unplug the phone line from the MIU. Then retry the option you were attempting.

If the programmer times out in the Monitor Mode it will display, "Monitor Time-out." This may not mean that the call didn't complete. It just means that the call didn't complete within the allotted time allowed by the programmer. Also, a list of monitor error codes are on the back of this sheet. If any of these errors occur, it is suggested that the operator check the MIU STATUS.

To view MIU STATUS, follow the instructions below:

- Insert programming cable from programmer into programming jack of MIU.
- Turn on programmer by pressing the "VIEW" button.
- Press the "SHIFT" key and then the "Sensus logo" key on the programmer.
- Choose Option 2 – MIU COMMANDS
- Use the DOWN ARROW key to scroll down to the VIEW MIU STATUS option.
- Press the "ENTER" key to activate this option.

The MIU STATUS should be a string of 16 zeroes (0's). If this is valid, the MIU did complete its call correctly to the designated utility computer.

If the MIU STATUS string has a (1) in the right-most position, this indicates that the MIU is programmed to make a time-based call using its retry algorithm. The first two retries are at 16 second intervals. Therefore, it is suggested that the operator disconnect the programming cable, wait a few minutes, and then view the MIU STATUS again.

Miscellaneous Information

Another common installation problem has been that operators have not checked the integrity of the register connection to the MIU port.

Note: For the Schlumberger ARB (ProRead) encoder, the color coded wire connections are not standard. For ProRead, connect the MIU red to ProRead black, MIU black to ProRead green, and MIU green to ProRead red.

In the Automatic Program mode, the programmer attempts to do a read on the port if the port is programmed to be connected to a register. The operator should verify during this mode that there is both an ID number and a reading on the display.

If the operator is not watching the display on the programmer during the programming of the MIU, they may miss the register information. To verify after programming that the register is wired properly, it is suggested that the operator send a Hang-up command by hitting the CLEAR key and then pressing the SHIFT key followed by the LAST key to display the last reading stored by the programmer.

If a MultiRead module is connected to an MIU port or there are two registers connected to each MIU port, the operator can press the "PREV" key on the programmer to scroll through the other readings and ID numbers.

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The operator should then verify that the register ID number and reading match that of the register installed at the location. If this is not correct, it is suggested that the operator initiate an interrogate of the register by the following procedures:

1. Press the SHIFT key, then press the "Sensus logo" key
2. Choose Option 2 – MIU COMMANDS
3. Use the DOWN ARROW to scroll down to the READ PORT option.
4. Select this option and press the ENTER key.

5. Enter the Port number in which the register is connected.
6. Verify that the reading function worked.

An MIU can work fine and call-in fine. However, if there is not a register connected to the MIU, the AutoRead software is unable to determine the account this MIU matches. AutoRead uses the register ID number only for determination of a read. Likewise, if an MIU has a port programmed as a TAMPER LOOP and there is not a PORT ID that matches the register ID connected to the other port, then again the data is useless to AutoRead as a means of identifying a customer using the utility's customer database.

The following is a list of error codes that would appear if there was an error during the automatic programming mode:

Error Code	Error Message	Suggested Solutions
0	Failed on Enquiry	Reconnect MIU programming cable. Reconnect phone line.
1	Failed on view MIU ID number	Attempt ID read with MIU command mode.
2	Failed clear ERAM command	MIU needs more charge time.
3	Failed programming a telephone no. Print/Alt/Emer.	Attempt to program with MIU commands.
4	Failed to set real time counter	Attempt to program with MIU commands.
5	Failed to set modes	Attempt to program with MIU commands.
6	Failed to set Port 1 type	Attempt to program with MIU commands.
7	Failed to set Port 2 type	Attempt to program with MIU commands.
8	Failed to set Port 1 ID	Attempt to program with MIU commands.
9	Failed to set Port 2 ID	Attempt to program with MIU commands.
10	Failed to set callback elapsed time	Attempt to program with MIU commands.
11	Failed to read Port 1	Attempt to program with MIU commands.
12	Failed to read Port 2	Attempt to program with MIU commands.
13	Failed on Hangup command	Press clear to try Hangup again.
14	Failed on Hangup or install test	Try again. If it fails, try new MIU.
15	Failed on set modes after monitor	Attempt to program with MIU commands.

Monitor MIU

After the MIU has been programmed and if the MIU Monitor mode has been enabled in the programming defaults, the MIU programmer will monitor the function of the MIU calling into the utility computer. If the MIU makes a successful call to the utility customer, the programmer will display "Call Complete".

If an error occurs during the monitoring of the MIU call-in, the following is a list of errors that may occur:

Error Code	Error Message	Suggested Solution
133	Mode error	Attempt SET MODE commands using MIU commands
134	Line not available	Makes sure no other device is using phone line
143	No dial tone	Check phone line connection
149	Error, phone number	Check phone number
154	No carrier	Wait for MIU to retry
245	Session error, extension pickup	Wait until customer has hung up and try again
250	Session error, carrier lost	Wait for MIU to retry
255	Session error, MIU time out	Check MIU STATUS to verify call complete

Remember that any error that may occur during monitor mode will put the MIU in its call-back algorithm. Therefore, waiting a few minutes is suggested before attempting to correct any error which may occur in the Monitor Mode.

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P.O. Box 487 • 450 N. Gallatin Avenue
Uniontown, PA 15401
1-800-METER-IT • 1-800-638-3748

Fax: Direct to Factory
Local: 724-439-7729 • Toll Free: 1-800-888-2403

www.sensus.com (select "North America Water")

Email: h2oinfo@sensus.com