



Excellence in Compliance Testing

Certification Exhibit

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IC: 5294A-EG0R3S2**

**FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210**

ACS Report Number: 07-0243-15C

**Manufacturer: Cellnet Technology, Inc.
Model(s): 25-1075, 25-1080, 25-1081**

Manual
(Part 3 of 4)





CHAPTER 7 CELLNET PULSE RECORDER METER MODULE INSTALLATION

TOOLS AND EQUIPMENT

This section outlines the necessary tools and equipment for installing a Cellnet Pulse Recorder.

Equipment

The following table contains all required equipment:

<u>Image</u>	<u>Description</u>
	CPR (External View)
	CPR (Internal View)
	Badger Field Splice Kit 62084-001 <ul style="list-style-type: none">• Splice Enclosure• Tiewraps• 3M Scotchloks, Model UY2 or Equivalent
	Dow Corning 4 Electrical Insulating Compound (or equivalent) MSDS available at www.dowcorning.com .

Image

Description



Dow Corning OS-2 Silicone Cleaner (or equivalent)
MSDS available at www.dowcorning.com.



PIN-IN-TORX
Requires a TORX driver size T10 with a hole for the PIN



Additional cable
Specification: 22-AWG Solid Copper
Colors: Red/Green/Black
PVC Jacket

Wall-mount Kit PN: 45-0090
or
2-3" Pipe-Mount Kit 45-0080

Screws for meter indexes

Tools

The following table contains all required tools:

Table 7.2 Tools

<u>Image</u>	<u>Description</u>
 <p>Magnet located on top left</p>	<p>RF Buster Magnet p/n 26-1050</p>
	<p>Screwdrivers (flat and Phillips)</p>
	<p>Wire Cutter and Stripper</p>
	<p>Scotchlok® E-9Y Crimping Tool or Equivalent www.3M.com</p>
	<p>Safety Goggles</p>
	<p>HandHeld Computer www.dap.com</p>
	<p>1-Way Module Programming Cable</p>

SAFETY AND ENVIRONMENT

Prerequisite Training

Installers should be instructed in the following safety elements as well as any site-specific safety issues:

- Hazard Communication (Employee Right to Know)
- Lifting
- Safe driving
- Use of hand tools
- Confined space

Preliminary Checks

The installer should already be able to operate the HandHeld computer. Additionally, the installer should already have route information and the required number of endpoints.

- Verify that you are at the correct site, specified on the handheld computer or work order.
- Verify that the site is safe for you and your equipment.
- Notify the customer of your presence. Tell the customer that you must have access to the meter. If necessary, have the customer sign the work order.
- When installing meters, follow any guidelines issued by your company in addition to those given in this guide.
- Never perform an installation during a lightning storm or under excessively wet conditions.

Site Requirements

The site must comply with the following criteria:

- There is no chance that another object will be set over the antenna.
- Some instances may require additional cable.
- Maximum cable length is always 200 feet.

FCC INFORMATION

See [Appendix E](#), *CPR Information*, for more information.

INSTALLING THE CELLNET PULSE RECORDER

The following includes information about installing the CPR endpoint.

Mounting the CPR

The CPR endpoint should be mounted above ground, outdoors, facing the nearest concentrator.

Identifying the Register for Installation

Refer to the Gas Module Compatibility Chart for compatibility and specific parts needed.

Connecting the PRECO Switch to the CPR

- 1 Install the PRECO switch on the gas meter index according to the instructions included with the PRECO kit.
- 2 Route the cable from the PRECO switch to the CPR mounting location. Splice the additional cable as necessary. When using additional cable, always match colors: PRECO blue to CPR white (via green extension wire), PRECO red to CPR red, PRECO white to CPR black (via black extension wire).
- 3 If you need to add cable for a remote wall-mounted CPR, follow the instructions here for removing the Molex connectors (if present) and splicing additional cable. Prepare cable ends for crimping:
 - a Using the cutting blade portion of the Wire Cutter and Stripper tool, cut the wire at the Molex connector (if present) coming from the PRECO switch. The wire attached to the PRECO switch contains three wires.

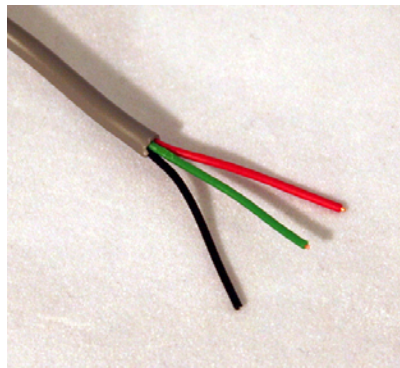


Figure 7.1 3-Wire Cable



Do not damage internal wire insulation when removing external insulation.



CPR ships with a female Molex connector at the loose end of the communication cable.

- b Before proceeding with splicing, use the Wire Cutter and Stripper to cut the Molex connector off of the CPR Pulse Input Connector (identified by white wire).







CPR Pulse Input Connector
with white wire →



Figure 7.2 Molex Connector (as shipped)

- c Splice wires from CPR to PRECO switch. Match colors carefully, according to the table below.

Table 7.3 Wire Color Matching

<u>Encoder Register</u>	<u>PRECO Wire color/CPR Wire Color</u>	
PRECO blue to green extension to CPR white	 blue	 white
PRECO red to red extension to CPR red	 red	 red
PRECO white to black extension to CPR black	 white	 black



Connect only three wires using the color matching above.

- See [Appendix A: Crimping Wires](#), for instructions on crimping wires.

Programming CPR Endpoint for Operation with PRECO Switch

You must program the CPR with the HandHeld computer (the “HandHeld”).

- Connect the CPR Programming Cable to the CPR Serial/Power Connector (yellow wire) below.

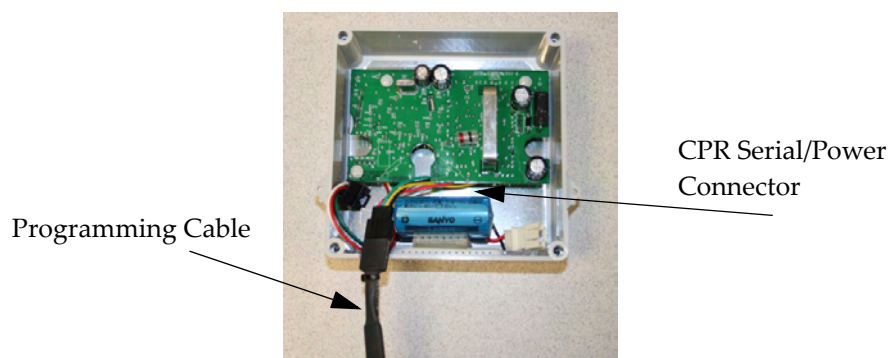


Figure 7.3 CPR Programming Cable Attached

- Follow the HandHeld prompts to program the endpoint.
- When programming is complete, disconnect the programming cable from the CPR.

- 4 Connect the battery to the CPR.
- 5 Dress the wires and crimp inside the CPR enclosure as shown.

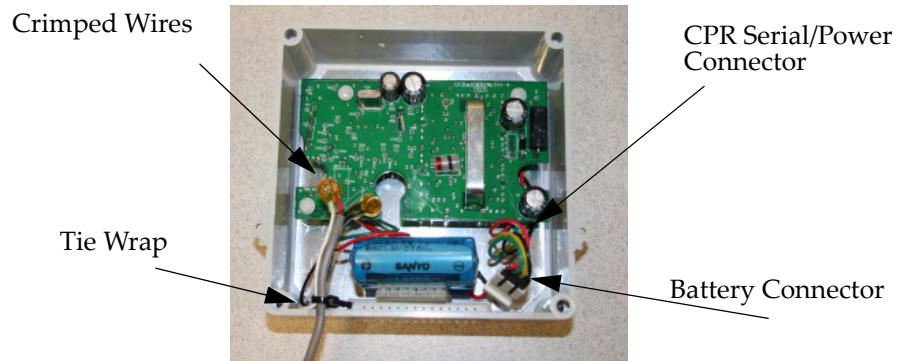


Figure 7.4 CPR Battery Connector Connected to CPR

Proceed to "Testing the Endpoint" on page 7-8.

TESTING THE ENDPOINT

After you have completed the installation process, test the installation by passing an RF Buster magnet near the CPR's sensor. The RF Buster detects the transmission, beeps and lights the LED.

- 1 Activate the CPR by passing the RF Buster magnet against the side of the CPR housing as shown.

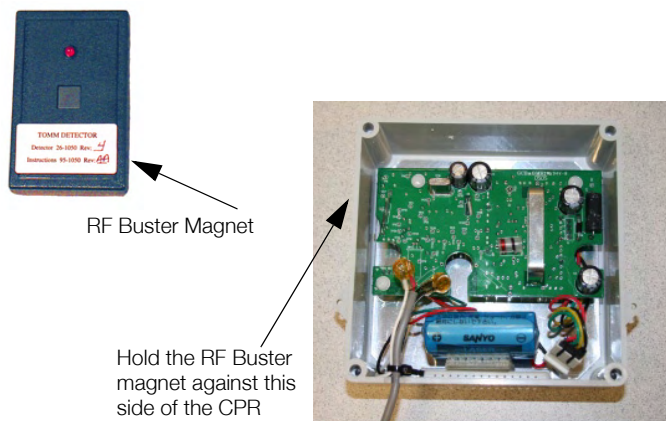


Figure 7.5 CPR Activation Using RF Buster

- 2 Press and hold the button on the RF Buster. Position the RF Buster less than six inches away from the left side of the CPR. The RF Buster makes audible beeps and the LED flashes to confirm transmission of the RF packets from the endpoint.



Do not use a cell phone or any other RF device while conducting this test.

- 3 If the RF Buster detects packets within one minute, the installation is good. If the RF Buster does not beep, refer to "Troubleshooting" on page 7-9.
- 4 Attach the cover using the four screws included in the hardware kit.
- 5 Clean the area and remove all disposable materials.

ENDPOINT REPLACEMENT

Please follow the instructions below to replace an endpoint:

- 1 Open the face of the CPR.
- 2 Write down the color translation.
- 3 Carefully cut any tie wraps.
- 4 Cut off Scotchlocks near the crimp.
- 5 Unmount the CPR.
- 6 Disconnect the battery.

Proceed to "Connecting the PRECO Switch to the CPR" on page 7-5.

TROUBLESHOOTING

RF Buster Does Not Beep When Testing

- 1 First, verify that the battery is properly connected, red wire to red wire.
- 2 Does the RF Buster beep and light the LED when the switch is initially pressed? If not, the battery in the RF Buster is dead. Replace the RF Buster battery, or use another RF Buster.
- 3 After activating the magnetic switch on the CPR, hold the RF Buster switch on continuously. Point the LED end of the RF Buster toward the front of the CPR. Hold the RF Buster between 6" and 12" from the front of the CPR. Wait ten seconds. If the RF Buster does not beep, replace the CPR battery.

Customer Support

To reach Customer Support at Cellnet:

Email: customersupport@cellnet.com

Telephone: 1-800-791-2567.

Hours of operation - 8:00 a.m. ET to 5:00 p.m. ET

CHAPTER 8 METER EXCHANGE OR MODULE RETROFIT CONCLUSION

Prior to leaving the premise, verify that all debris from the retrofit and/or exchange process is cleaned and removed. Leave a door hanger tag with any appropriate information filled in.

RETURNING MATERIAL

At the end of the day, installers will return to the Cross Dock with all equipment and any new meters or modules that were not installed. Each installer must account for every meter they were assigned. Turn in inventory of unused, defective, or broken gas Meter Modules. You must reconcile any discrepancies in changeout data before the check-in process can be completed. Meters and modules will not be checked out to an installer who has not completed the previous day's check-in process.

Notes:

CHAPTER 9 GAS METER PREPARATION PROGRAM (GPREP)

The Gas Meter Preparation Program (GPrep) is a software tool that facilitates Cellnet processes. It also runs with water CPR modules. The data captured by GPrep is sent to RIMS to update the Cellnet and utilities databases. GPrep was developed for ResGas, C&I Gas (Diaphragm), C&I Gas (Rotary), and CPR (gas and water) modules to:

- Disassociate Module IDs from Meter IDs - “MRB (Material Repair Board) Mode” This feature most commonly captures the record of disassociation when removing a module from the field.
- Validate the programmed LAN Address with the Power LAN Address label and verify that the operational programmed parameters match those required. - “Inspect Mode”.
This feature is most commonly used when receiving meters from the factory with Cellnet modules already installed (OEM Meters) or when receiving Cellnet retrofit modules directly from Cellnet’s manufacturer. Different utilities use different sampling procedures. The meter shop should verify a percentage of inbound modules to ensure that the LAN Address that is programmed into the gas module and matches the LAN Address on the label outside of the module housing. The modules can also be inspected to verify that the correct Meter ID format was used, that the rollover point is correct, and that the meter constant is correct.
- Program the module with operational parameters, including the meter-specific values such as meter ID, rollover point, meter constant, and dial index reading (which for gas meters can be non-zero) - “Program New or Re-Program Old Mode”.
This feature is used when assembling Cellnet modules on meters in the meter shop and in the field (for the O&M Processes).
- Save the inspection, programming, MRB disassociation record and index read results in separate files for delivery to Cellnet and the utility.
This can be an automatic process or you can turned it off for a particular feature when it is not necessary to save the results.



Each of these functions are steps in Cellnet processes. You should fully understand how data flows within the Cellnet network and what data needs to be captured from or programmed into a module before using this software.

You can use GPrep in a meter shop, at a fixed location, or in the field. You can use a PC or laptop computer. Closely monitor GPrep usage, and make the data files easily accessible. GPrep is often used with operations and maintenance (O&M)

processes. This chapter assumes that the user fully understands these O&M processes, and at which steps in these processes GPrep captures data and programs it into Cellnet modules.

GPrep requires selective functionality depending on the site where it is in use, so there are administrative privileges for configuring options during software installation and setup.

REQUIRED TOOLS

The following is a list of required tools to operate GPrep, along with a PC / operating system recommendation:

- Desktop PC with Windows 2000 or higher (Windows NT is not recommended when using a laptop computer since there are sometimes problems configuring the ports)
- Copy of GPrep v. 2.3 or most recent version on a required tools CD
- Shooter Box with AC power cord, part number 26-3500 and gas shooter cable
or
1-Way Module Programming Cable PN 26-1179
- Battery, part number 40-1032 or 40-1590
- Laptop/PC
- DB9 to DB9 cable (male on one end female on the other) straight through (RS232).

Roles

- **GPrep Administrator** - is the local expert on GPrep. The Administrator is familiar with the entire functionality of GPrep. The Administrator knows how to configure all internal files, and how to grant certain permissions. The Administrator knows how to clean all files of bad records and supersedes. How to archive all files and e-mail them to the appropriate database administrator or RIMS analyst and how to train the day to day users of GPrep. This person has the daily task of maintaining GPrep and its files.
- **GPrep User** - needs to know the fundamentals of GPrep. They need to know how to log in, how to marry a meter with a module, and how to inspect a module to ensure that it is properly programmed, and what to do if it is not.

PROCEDURES FOR GPREP ADMINISTRATOR

- 1 Verify your tools. GPrep does not operate without all of the tools listed in the Required Tools section.
- 2 Unzip GPrep files to your PC or laptop.



Before copying files go to “View” on the menu bar of your PC, select “Folder Options”. Under a section titled “Advanced Settings” there is a folder called “Hidden files”, under that folder choose “show all files”, then click on the OK button.

- a Customize GPrep.
The GPrep installation folder contains a file named GPREP.INI. This file defines all configuration parameters in its [Control] section and maintains settings from the last GPrep run in its [Default] section.
 - If this is a new installation, GPREP.INI must be copied to the GPrep installation directory.

- If this is an upgrade, then you can use the existing GPREP.INI file to modify any configuration parameters as necessary.
- b Edit the GPREP.INI file using Notepad or any other ASCII file editor.
- c Follow the instructions in that file to specify the required pattern for Meter IDs, file(s) for logging operations, menu selections that are available to the operator and the maximum memory used to track previous log file associations.



If you run GPrep in different modes and/or it requires different configuration settings at the same operator station, then install multiple copies of GPrep in different directories.

Following is an example of a GPREP.INI file.

```
; The Default section remembers GPrep settings from the last run.  These
should
; not be changed manually.
; -----
-----

[Default]

; The Control section contains GPrep operational parameters.
; -----
-----

; Operator Meter Type selections are controlled by variables:
;
;   RGAS for ResGas
;   CIGD for C&I Gas (Diaphragm)
;   CIGR for C&I Gas (Rotary)
;   CPRG for CPR Gas (Rotary)
;
; Setting any of these to "No" disables the menu item.  The default is
"Yes".
;
; Example:
;   RGAS=No
;   CIGR=Yes
; Disables "ResGas" selection, leaving both C&I and CPR selections enabled.
; -----
-----

; Operator Mode selections are controlled by variables:
;
;   Inspect
;   ProgramNew
;   ProgramOld
;   IndexRead
;   MRBMode
;
; Setting any of these to "No" disables the menu item.  The default is
"Yes".
;
; Example:
;   ProgramOld=No
;   Inspect=Yes
;   MRBMode=No
```

```

; Disables "Re-Program Old" and "MRB" selections, leaving "Inspect",
; "Program New" and "Index Read" modes enabled.
; -----
-----
; Operator Port selections are controlled by variables:
;
;   COM1, COM2, COM3 and COM4
;
; Setting any of these to "No" disables the menu item.  The default is
"Yes".
;
; Example:
;   COM4=No
;   COM3=No
;   COM1=Yes
; Disables "COM3" and "COM4" selections, leaving "COM1" and "COM2" enabled.
; -----
-----
; MeterID is a pattern string for scanned (or entered) Meter IDs.  The
length
; of the pattern gives the number of characters required and each character
; in the pattern corresponds to a character in the Meter ID; if it's:
;
;   # - The character must be a decimal digit (0 - 9)
;   $ - The character must be alphabetic (A - Z)
;   _ - The character must be a blank
;   ? - The character may be anything
;   All other characters must match exactly.
;
; Note: If MeterID is not given then no pattern matching is done.
;
; Examples:
;   MeterID=ABC###      - IDs must be 6 characters long, and start with
;                       "ABC" followed by 3 digits
;   MeterID=Q???##_$$### - IDs must be 12 characters long, start with a "Q",
;                       followed by any 3 characters, then 2 digits, a
space,
;                       2 alphabetic characters, and end with 3 digits.
;   MeterID=- IDs are not checked against a prototype, only for
;                       valid characters.
; -----
-----
; ProgramLog is the full path and file name for logging each time a module
is
; programmed.  If not given, then no program log file is written.
;
; Examples:
;
;   ProgramLog=c:\gprep\program.txt - program.txt in the gprep directory on
drive C:
;   ProgramLog=program.txt          - program.txt in the GPrep program
directory
;   ProgramLog=program              - program.txt in the GPrep program
directory
;   ProgramLog=- Do not write a program log file
; -----
-----
; InspectLog is the full path and file name for logging each time a module
is
; inspected.  If not given, then no inspection log file is written.

```

```

;
; Examples:
;
; InspectLog=c:\gprep\inspect.txt - inspect.txt in the gprep directory on
drive C:
; InspectLog=inspect.txt          - inspect.txt in the GPrep program
directory
; InspectLog=inspect              - inspect.txt in the GPrep program
directory
; InspectLog=- Do not write an inspection log file
; -----
-----
; MRBLog is the full path and file name for logging each time a module is
; inspected in MRB Mode.  If not given, then no MRB log file is written.
;
; Examples:
;
; MRBLog=c:\gprep\mrblog.txt - mrblog.txt in the gprep directory on drive C:
; MRBLog=mrblog.txt         - mrblog.txt in the GPrep program directory
; MRBLog=mrblog             - mrblog.txt in the GPrep program directory
; MRBLog=- Do not write an MRB log file
; -----
-----
; ReadLog is the full path and file name for logging each time a module is
; inspected in Index Read Mode.  If not given, then no read log file is
written.
;
; Examples:
;
; ReadLog=c:\gprep\readdlog.txt - readdlog.txt in the gprep directory on
drive C:
; ReadLog=readdlog.txt         - readdlog.txt in the GPrep program
directory
; ReadLog=readdlog            - readdlog.txt in the GPrep program directory
; ReadLog=- Do not write an inspection log file
; -----
-----
; MaxAssociations is the maximum number of LANAddress / Meter ID
associations
; checked from the log file to assure that duplications are not assigned.
; This requires 24 bytes of memory per association.  Set to 0 to disable.
;
; Examples:
;
; MaxAssociations=1000 - Previous 1000 records are checked (memory =
24,000)
; MaxAssociations=10000 - Previous 10000 records are checked (memory =
240,000)
; MaxAssociations=0     - Disables duplication association checking.
; -----
-----
Mode=ReProgram
ModuleClass=1
RolloverPoint1=1000000
MeterConstant1=0.050000
SerialPort=1
Operator=Bill
Location=xdcsu
Utility=SCG
RolloverPoint0=10000

```

```
MeterConstant0=0.020000
RolloverPoint3=100000
MeterConstant3=1.000000
RolloverPoint2=100000
MeterConstant2=0.100000
MeterConstant4=0.250000
ProgramMode=Yes
ProgramDial=Yes
RolloverPoint=100000
MeterConstant=1.000000
LastFile=WCPR.SET
```

```
[Control]
```

```
meterID=?????????
DeviceID=?????
RGAS=yes
CIGD=yes
CIGR=yes
CPRANT=yes
CPRAWT=yes
CPRCWT=yes
WCPR=yes
Inspect=yes
ProgramNew=yes
ProgramOld=yes
MRBMode=yes
IndexRead=N
ProgramLog=c:\programlog.txt
inspectLog=c:\inspectlog.txt
MRBLog=c:\MRBLog.txt
ReadLog=c:\readlog.txt
wProgramLog=c:\wprogramlog.txt
winspectLog=c:\winspectlog.txt
wMRBLog=c:\wMRBLog.txt
```

```
[RGAS]
```

```
MeterConstantCount=4
MeterConstant1=.01
MeterConstant2=.0112
MeterConstant3=.02
MeterConstant4=.0225
RollOverPointCount=5
RollOverPoint1=100
RollOverPoint2=1,000
RollOverPoint3=10,000
RollOverPoint4=100,000
RollOverPoint5=100000000
```

```
[CPRAWT]
```

```
MeterConstantCount=9
MeterConstant1=.01
MeterConstant2=.01121
MeterConstant3=.02
MeterConstant4=.0225
MeterConstant5=.05
MeterConstant6=.0562
MeterConstant7=.1
```

```
MeterConstant8=.112
MeterConstant9=1.0
RollOverPointCount=6
RollOverPoint1=100
RollOverPoint2=1,000
RollOverPoint3=10,000
RollOverPoint4=100,000
RollOverPoint5=100,00000
RollOverPoint6=100,000000
```

[CPRANT]

```
MeterConstantCount=10
MeterConstant1=.01
MeterConstant2=.01121
MeterConstant3=.02
MeterConstant4=.0225
MeterConstant5=.05
MeterConstant6=.0562
MeterConstant7=.1
MeterConstant8=.112
MeterConstant9=1.0
MeterConstant10=2.0
RollOverPointCount=5
RollOverPoint1=100
RollOverPoint2=1,000
RollOverPoint3=10,000
RollOverPoint4=100,000
RollOverPoint5=100,000,000
```

[CPRCWT]

```
MeterConstantCount=9
MeterConstant1=.01
MeterConstant2=.01121
MeterConstant3=.02
MeterConstant4=.0225
MeterConstant5=.05
MeterConstant6=.0562
MeterConstant7=.1
MeterConstant8=.112
MeterConstant9=1.0
RollOverPointCount=5
RollOverPoint1=100
RollOverPoint2=1,000
RollOverPoint3=10,000
RollOverPoint4=100,000
RollOverPoint5=9999999
```

[CIGR]

```
MeterConstantCount=5
MeterConstant1=.05
MeterConstant2=.0562
MeterConstant3=.1
MeterConstant4=.112
MeterConstant5=1.0
RollOverPointCount=5
RollOverPoint1=100
RollOverPoint2=1,000
RollOverPoint3=10,000
RollOverPoint4=100,000
```

```
RollOverPoint5=100,0000

[CI GD]
MeterConstantCount=5
MeterConstant1=.05
MeterConstant2=.0562
MeterConstant3=.1
MeterConstant4=.112
MeterConstant5=1.0
RollOverPointCount=5
RollOverPoint1=100
RollOverPoint2=1,000
RollOverPoint3=10,000
RollOverPoint4=100,000
RollOverPoint5=100,0000

[WCPR]
MeterConstantCount=1
MeterConstant1=1
RollOverPointCount=5
RollOverPoint1=100
RollOverPoint2=1,000
RollOverPoint3=10,000
RollOverPoint4=100,000
RollOverPoint5=100,0000
```

Save your updates to the GPrep.ini file. GPrep is ready to use.

DATA TRANSFER

A local RIMS analyst performs this process. The RIMS Analyst uploads MRB and Program files to the server via FTP.

Server Side Process

The person using GPrep, or the local administrator, posts the program log and MRB files to Cellnet's FTP Server. You can use any SFTP Tool to post files from gas and water processes. The GPREP.ini file determines the name and path of the files generated in the local machine. Each Utility shop location can post multiple files, as long as each file is uniquely identified . The local site can use any logic to name these files, preferably to include date and time.

Once these files are posted, the DES server validates file format and cleanup activities by eliminating duplicate entries and storing the program logs and MRB data in staging tables . The server emails subscribers from source location . RIMS CRON runs nightly, processing meters and updating the latest associations to OCDB.

USING GPREP

This section details the steps taken by the end user to operate GPrep on a daily basis. This set of procedures assumes the following:

- Your GPrep administrator has configured the .ini file.
- You have basic knowledge of the process that you are trying to perform and understand at which step of the process you need to use GPrep.
- Shooter box or 1-way programming cable

If you are using the programming cable (usually in the field):

- 1 Install drivers and set up the cable per instructions in the *1-Way Module Programming Cable Getting Started Guide*.
- 2 Plug one end of the cable into the module.
- 3 Plug the USB into the laptop or PC.

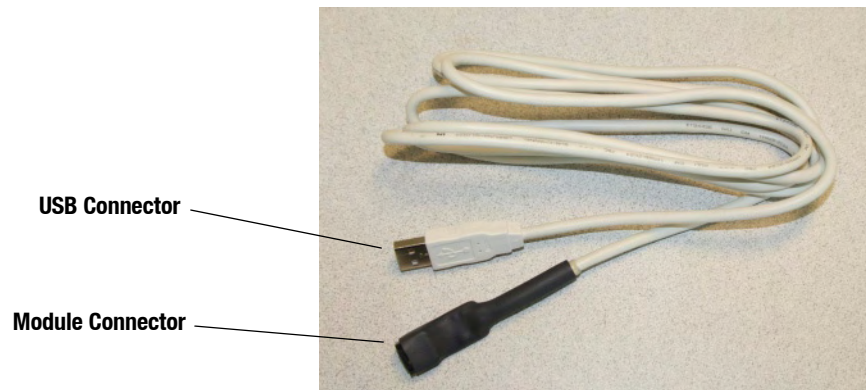


Figure 9.1 1-Way Programming Cable

If you are using the shooter box (usually in the office or shop):

- 1 Plug the battery into the shooter cable.
- 2 Power the shooter box.
- 3 Connect the shooter box to a COM port on your PC, and choose the correct COM port from the dropdown menu on GPrep (or it defaults to that port).
- 4 Plug the shooter cable into the shooter box and the module.

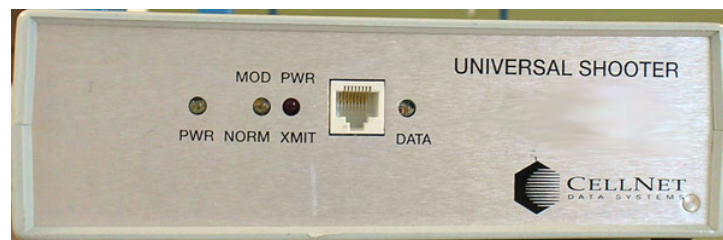


Figure 9.2 Shooter box

Logging On

The Log On window displays when you launch the program.

Enter your name and location in the appropriate fields. All tasks you perform for a given meter type (module inspection, new module programming and old module reprogramming, MRB and index read) will be recorded.

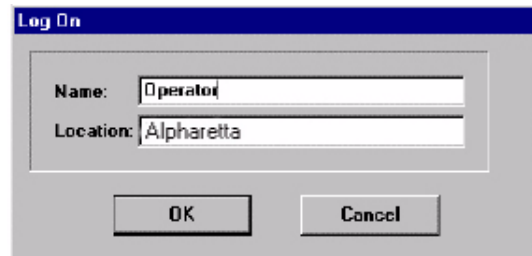


Figure 9.3 Log On screen

Accessing the Main Menu

The main menu screen displays after you log on.

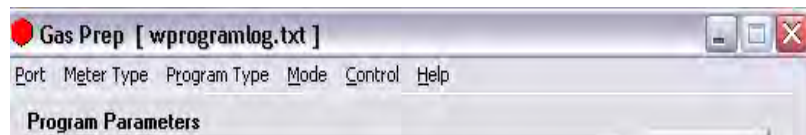


Figure 9.4 GPrep Menu Bar

The GPrep menu bar includes the following options:

Port: enables the operator to select the PC port (usually COM: 1).

Meter type: Enables the operator to select meter type from drop down list. The options consist of ResGas, C&I Gas (Diaphragm), C&I (Rotary), CPR Form A No Tamper, CPR Form B Tamper, CPR Form C Tamper, and CPR Water.



Certain sites may not utilize all options.

Program Type: Select Interval or Consumption type data.

Mode: provides the following choices:

- **Inspect:** Verifies that the programmed LAN Address has the same value as the Power LAN Address label. In addition, “Inspect” permits validating the other pre-configured operational parameters. Discrepancies are noted through message windows and the results of inspections are captured in associated files.



The unique meter ID format for a given utility is defined in the “.ini” file. Any discrepancy in the meter ID format is noted in a message window, which prompts the operator to re-enter the meter ID prior to module programming. The association record of meter ID, module LAN Address, date, operator’s name, and result of operation is captured in the file “programlog.txt”.

- **Program New:** provides the capability to program a new meter for a specified rollover point and a meter constant for a specific utility meter ID format.
- **Re-Program Old:** provides the capability to program a meter with a non-zero index. This option was designed for utility meter shops to reprogram meter-modules pulled from the field or program a non-zero index read. All other features for this option are similar to the Program New mode. The “programlog.txt” file also includes the index read entered during the programming step as the field “opening read”.
- **MRB:** captures the disassociation record for meters returned from the field. This option is mainly designed for meter shop use during the O&M phase.

The following screens show how the operator has the option of choosing inspect, program new, and index read when ResGas is chosen as the Meter Type.

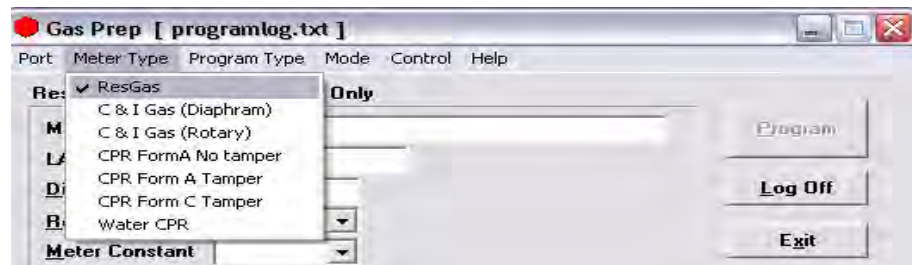


Figure 9.5 Choose ResGas as the meter type

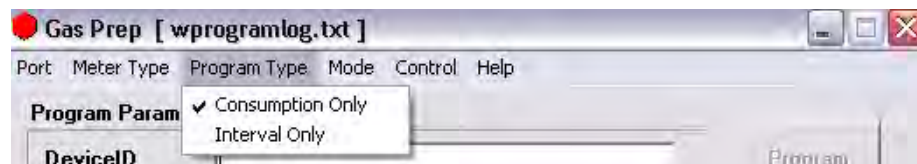


Figure 9.6 Indicate the Program Type



Figure 9.7 Modes to choose from are “Inspect” or “Program New”

- **Control:** provides the capability to log on and off. The program setting remains the same when a new operator logs on.
- **Help:** provides a description of GPrep functionality for each mode of operation (not yet fully implemented).

MODULE INSPECTION

This feature is most commonly used when receiving meters from the factory with Cellnet modules already installed (OEM Meters) or when receiving Cellnet modules from Cellnet’s manufacturer. Different utilities use different sampling procedures. Cellnet recommends that the meter shop verify a percentage of inbound modules to ensure that the LAN Address that is programmed into the module matches the LAN Address on the outside of the module housing. The modules can also be inspected to verify that the correct Meter ID format was used, that the rollover point is correct, and that the meter constant is correct.



Different modes of operation for ResGas modules are provided in detail. All other meter/module types follows the identical functionality and operations, except as noted for Water CPR.

- 1 Select **Inspect** from the Mode drop down window in the main menu. The following screen displays.



Figure 9.8 GPrep “Inspect Mode” screen

There are two distinct sections on the screen. The top section is the LAN Address field where the module power LAN label is either scanned or typed.



The program automatically truncates the leading zeros and any blank spaces in the LAN Address field. GPrep left justifies the value in this field.

The lower section, “current parameters”, displays the operational parameters and module programmed values.

- 2 Connect the shooter cable to the module programming port. The following screen displays.

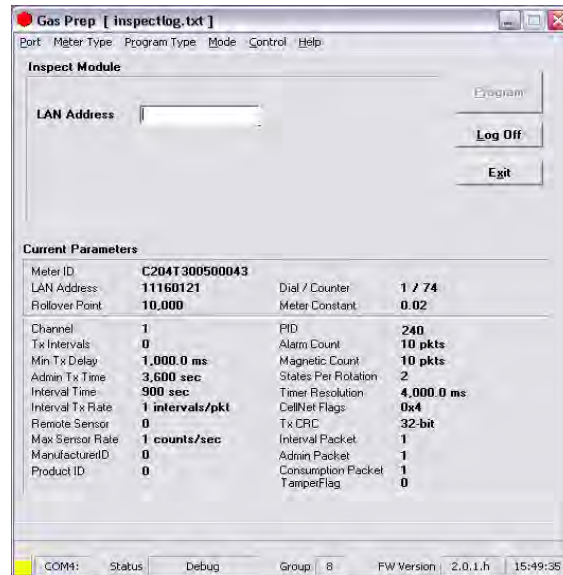


Figure 9.9 “Inspect Mode” Screen With Module Plugged In

GPrep automatically reads and displays the current parameters programmed into the module.



If the Meter Type selected does not match the module under test, GPrep displays a dialog box indicating “wrong module Type” along with a blinking “Module reject” message. GPrep does not allow the operator to continue with this function.



If the current parameters do not match the predetermined values, a warning message displays. (This is normal for new modules because a module coming from the manufacturer is programmed with test parameters).



Module PCB ID (board ID) is populated during manufacturing. Upon verification of module inspection, this value is saved in combination with the module Power LAN Address in the Inspect file along with date, operator’s name and location of inspection.

- 3 Scan (enter) the Module ID in LAN Address field.



Figure 9.10 “Inspect Mode” With Power LAN Scanned In

GPrep compares the Module ID entered in this field with the LAN Address programmed into the module. If the populated field matches the programmed value, a message displays “address verified”. If the entered value does not match the programmed value a dialog box displays, stating the “LAN Address does not match the programmed value” and instructs the operator to reenter the power LAN label value, due to a misinterpretation or mis-entered value. GPrep instructs the operator to route the module to MRB for further disposition if the entered values do not match again.



If the result of the inspection is verified, a record in the “inspect file” is created showing that the module inspection is successful. It also captures the PCB ID of the module in the same record.

If the power LAN value does not match the programmed value, a record is also generated in the “inspect file” showing the inspection has failed. Modules that fail inspection must be segregated and routed to MRB.

MODULE PROGRAMMING

There are two modes for programming the modules. **Program New** is used when a module is installed on a new meter with an index that reads zero, and **Re-program old** is used for programming a module that is being installed on a meter that has an index with a value other than zero. This value is programmed into the module to log in the starting read for a meter to be installed.

(An example of this is a periodic meter check in which a meter is taken from a residence, inspected and then re-deployed again into another residence).

Program New

- 1 Select **Program new** from the mode drop down window in the main menu. The following screen displays.

There are two distinct sections in this screen as well. The top section contains the following fields which can be modified by the user:

- Meter ID field



If you are programming a Water CPR module, Device ID replaces Meter ID. A CPR module is programmed with 10-digit left-justified(zero) Module ID as MeterID. Water CPR programming also captures optional Encoder ID information.

- LAN Address
- Roll-over point
- Meter constant.

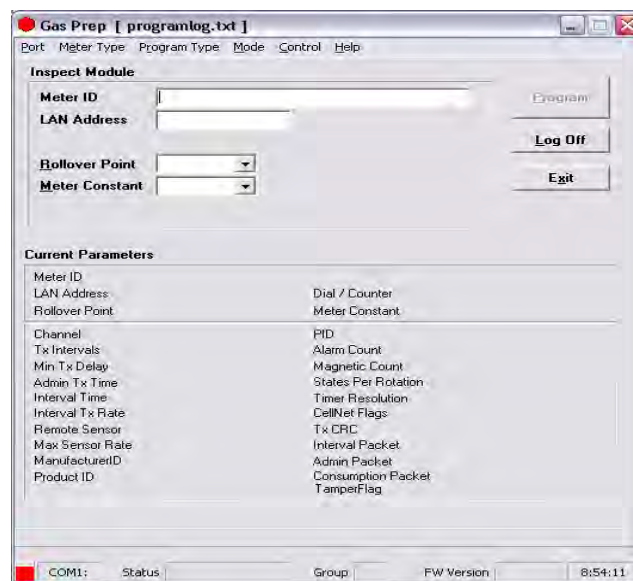


Figure 9.11 “Program New” Screen

- 2 Connect the 1-Way Programming Cable or shooter cable to the module programming port. The following screen displays.



Figure 9.12 “Program New” Screen with Module Plugged In

GPrep automatically reads and displays the current parameters programmed into the module.



If the Meter Type selected on the menu bar does not match the module type under test, GPrep displays a dialog box indicating “wrong module type” and a blinking “Module reject” message. GPrep does not allow the operator to resume the programming function.



If the current parameters do not match the predetermined value, a warning message, “reject parameters” displays. Upon successful completion of module programming, GPrep populates the “current parameter” fields with correct operational values.

- 3 Scan or enter the meter ID in appropriate field.

Since the meter ID field is utility specific, there are provisions within GPrep to specify the meter ID format. Therefore, if the meter ID format entered in this field does not match the specified utility format, a dialog window displays indicating “meter ID field contains invalid characters” and the operator is instructed to

either rescan or re-enter the meter ID value in this field. Module programming can not be resumed until the meter ID field populated matches the utility specific format.



Figure 9.13 Error Message Displayed when The Wrong Meter ID Format Is Entered

4 Scan (enter) the power LAN label in the LAN Address field. “GPrep” compares the value entered in this field with the LAN Address programmed in the module. Similar to the inspection section, any discrepancies in the values are rejected.

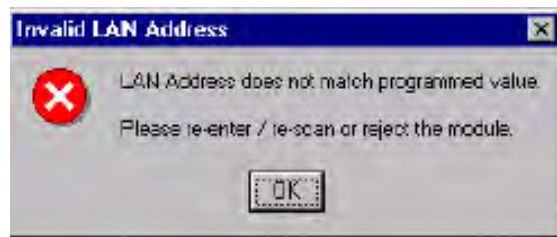


Figure 9.14 Error Message Displayed if The Scanned Power LAN Does Not Match Programmed

Select the Rollover Point and Meter Constant (meter specific values) prior to programming the module from the drop down windows. GPrep displays a message window verifying that the operator intends to change the Rollover point and meter constant. GPrep keeps the last value entered in the rollover point and meter constant fields as the default value.



If you do not know what to enter for the Rollover Point or Meter Constant STOP! Contact someone that does know or contact Cellnet Customer Support. The wrong data entered in these fields significantly affects the billing read provided to the utility.

Upon successful programming, a message “program verified” displays. GPrep also displays a green square indicator at the lower left corner of the screen showing programming has been successful.



Figure 9.15 Display when parameters are verified

A record of the meter and module association is automatically captured in the “program file” including the date and the operator’s name.

The “Programlog” only compiles the records when successful programming is verified. If a Meter ID record already exists in programlog, the following message displays..

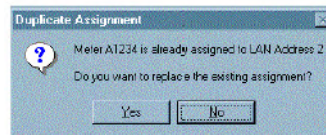


Figure 9.16 Error Message Indicating that a Meter ID Already Exists in the Programlog

- If you select "Yes", a new record is inserted with a timestamp. It is a valid new record if the program indicates "successful". If you select "No", the old record remains.

- If a record already exist in the programlog for a scanned module Power LAN Address, GPrep displays the following message:

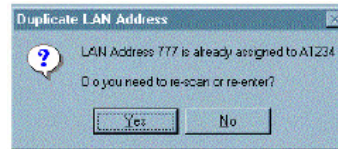


Figure 9.17 Duplicate Power LAN Address

- If you select “yes”, indicating that you entered the wrong module ID, then re-enter the meter ID field and Power LAN Address to correct possible mis-entered values.
- If you select “No”, indicating the module ID has been entered correctly, GPrep displays a blinking message “route to MRB”.

The result of this operation is not captured in the GPrep programlog file.

RE-PROGRAM OLD

The instructions and procedures for **Re-Program Old** are the same as those for **Program New**, with the additional field “Dial”. Populate it with the index reading (dial reading). This mode is mainly utilized during the O&M phase to program meters with non-zero indices.

- 1 Select **Re-Program Old** from the mode drop down window in the main menu. The following screen displays.

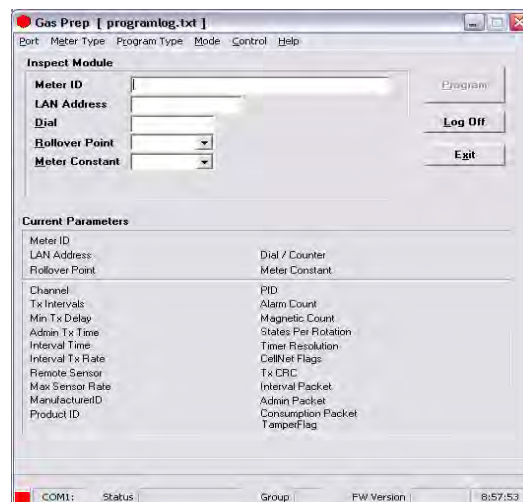


Figure 9.18 “Re-Program Old” Screen

There are two distinct sections in this screen as well. The top section contains the following fields which can be modified by the user:

- Meter ID field
- LAN Address
- Dial
- Roll-over point
- Meter constant



These are the only fields that can be populated.

- 2 Connect the 1-Way Programming Cable or shooter cable to the module programming port. The following screen displays.



Figure 9.19 Re-Program Old With Module Plugged In

GPrep automatically reads and displays the current parameters programmed into the module.



If the current parameters do not match the predetermined value, a warning message, “reject parameters” displays. Upon successful completion of module programming, “GPrep” populates the “current parameter” fields with correct operational values.



If the meter type selected from the “meter type” drop down menu does not match the module type, GPrep displays a message “wrong module type” and a blinking message “reject module”.

This functionality ensures that the correct meter type is chosen for a given meter.

- 3 Scan (enter) the meter ID in appropriate field.
Since the meter ID field is utility specific, there are provisions within GPrep to specify the meter ID format. Therefore, if the meter ID field format entered in

this field does not match the specified utility format, a dialog window displays indicating “meter ID field contain invalid characters” and the operator is instructed to either rescan or re-enter the meter ID value in this field. Module programming can not be resumed until the meter ID field populated matches the utility specific format.

- 4 Scan (enter) the Module ID in LAN Address field.

GPrep compares the value entered in this field with the LAN Address programmed in the module. Similar to inspection section, any discrepancies in the values are rejected.



Select the Rollover point and meter constant (meter specific values) prior to programming the module from the drop down windows. “GPrep” displays a message window verifying if indeed the operator intends to change the Rollover point and meter constant. “GPrep” keeps the last value entered in rollover point and meter constant fields as default value.



If you do not know what to enter for the Rollover Point or Meter Constant STOP! Contact someone that does know or contact Cellnet Customer Support. The wrong data entered in these fields significantly affects the billing read provided to the utility.

- 5 Enter the index dial values by reading the dials and entering the values read from right to left.

The value entered in the dial field is programmed into the module as the starting meter read at installation. Consumption is based on the initial read programmed into the module. It is very important to be accurate on the dial index read. Note also that the dial field requires the number of digits that correspond to the roll over point.



Example: If the roll over point is set at 10,000, then a four digit dial read would need to be entered.

The index must have four dials if the roll over point of 10,000 is correct. Otherwise, the roll over point must be changed accordingly. If the index read number contains more digits than the corresponding rollover point, GPrep displays the following message prompting the operator to reenter the index read and a blinking message in the main screen “dial rejected” is also displayed.

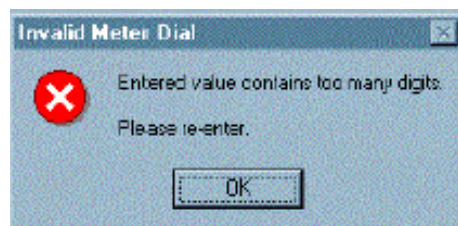


Figure 9.20 Error Message Displayed when Entered Read is too large for the Rollover Point

Select the proper Meter Constant from the drop down box. You can typically determine the Meter Constant from the meter index.

Upon successful programming a message “program verified” displays. GPrep also displays a green square indicator at the lower left corner of the screen showing that the programming has been successful (this is the same as the “verified” screen for Program New). A record of meter and module association is automatically captured in the “programlog” including the index read entered by operator as opening read.

MRB MODE

MRB (Material Repair Board) Mode captures the record of meter-module disassociation disassembly as the modules are removed from the meters.

- 1 Select the meter type from the menu bar corresponding to the meter –module combination.
- 2 Select MRB from mode in the menu bar. The following screen displays.



Figure 9.21 MRB Mode Main Menu

There are two distinct sections on this screen as well. The top section contains the following fields:

- LAN Address
- Dial



These are the only fields that can be populated.

- Connect the 1-Way Programming Cable or shooter cable to the module programming port. The following screen displays.



Figure 9.22 MRB Screen with Module Plugged In



If the Meter Type selected on the menu bar does not match the module type under test, GPrep displays a dialog box indicating “wrong module Type” and a blinking “Module reject” message. GPrep does not allow the operator to resume programming function.



If the current parameters do not match the predetermined value, a warning message, “reject parameters” displays.

- Scan (enter) the Module ID in LAN Address field.
GPrep compares the value entered in this field with the LAN Address programmed in the module.
GPrep rejects any discrepancies in values, and prompts you to re-enter the LAN Address or reject the module.
- Enter the index dial values by reading the dials and entering the values read from right to left.



The value entered in the dial field are be compared with the module’s programmed read. GPrep displays the following screen if there is any discrepancy and provides the option to change the dial read if the operator has entered the wrong value

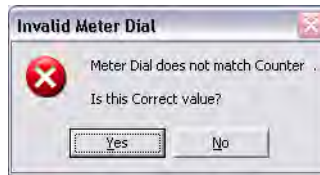


Figure 9.23 Error Message Displayed when Entered Value Does Not Match Programmed Value

If you select “Yes”, GPrep displays a blinking message stating “Dial discrepancy” and the main screen displays that the new dial value has been logged in MRBlog. This is captured in the MRBlog as “dial Entered”. GPrep does not capture the old value that was programmed into the module.

If you select “No”, GPrep prompts the operator to enter the correct value.

Upon acceptance of entered values for LAN Address and dial, GPrep creates a record in the MRB including the closing index read and “Dial Verified” in addition to the association records.

The dial field requires the number of digits that correspond to the roll over point previously programmed into the module. Example: If the roll over point is set at 1,000, then a four digit dial (or less) read would need to be entered. The index must have four dials if the roll over point of 10,000 is correct. If the index read number contains more digits than corresponding rollover point, GPrep displays a message “entered value contains too many digits” prompting the operator to re-enter the index read and a blinking message in the main screen “dial rejected” is also displayed.

MOST COMMONLY ASKED QUESTIONS

- 1 What does GPrep stand for?
Gas TOMM Preparation
- 2 What is GPrep used for?
GPrep is a tool that is used in the Cross Dock or meter shop to program gas or water CPR modules without the use of a handheld. It is also used to disassociate gas or water CPR modules from meters.
- 3 What is programmed into the module?
In the "Program New" and "Re-Program Old" modes, field operating parameters are programmed into the module. Meter ID, Rollover Point, Dial Read, and Meter Constant are the only parameters that can be changed by the operator.
- 4 How does a meter constant work?
A meter constant is a multiplier that converts the pulses/turns of the module into cubic feet. The reason for the meter constant to be .02 on a meter with a 2ft drive is that for every rotation of the drive dog there has passed 2 cubic ft of gas. This is equivalent to 2% or .02 or 2/100ths of 1 point on the smallest of the four dials, which measures hundreds of cubic feet. For every 50 rotations of the 2-ft dog dial 100 cubic feet of gas has passed. For every 50 rotations, the 1,000 dial has increased 1 point (100 cubic feet) and our module (if it happens to transmit at that moment) sends out a packet with a count of 50. OCDB multiplies the 50 by the meter constant .02 to get a read of 1, which we pass on to the utility as a read of 1 for that meter. Therefore, if the meter constant were falsely set to .01 the 50 rotations would be multiplied by .01 and would only show that the meter used 50 cubic feet of gas.
- 5 Why don't you program the meter ID from the front of the meter into the module?
The "Utility Billing ID" gets programmed into the meter; this is not usually the same as the Meter ID.
- 6 What is a rollover point, how is it used, why is it important to make sure that it is right?
The number at which the dials of a meter turn over and start at zero again. For a four dial meter the numbers on the dials cannot go over 9999, therefore, the rollover point is 10000, for 5 dial meters the rollover point is 100,000, etc. It is important to program the correct rollover point into the module so that our system read matches the dial plate.
- 7 What screen should I use in the sampling process?
There are several different types of sampling done by the meter shop. The most common are sampling of Cellnet-ready OEM meters, and sampling modules from a Cellnet manufacturer, which are done using the "inspect" mode.
- 8 Who is responsible for transferring the data files, how often, who writes the scripts to pick up the data from the server?
The local database analyst is usually responsible for transferring the data from GPrep to RIMS. He/she should do this daily (as long as there is data to transfer). Someone in the database group writes the script to automatically pick up this data daily.

- 9 How soon does the data get updated in each system after a module is programmed?
A CRON job runs nightly that picks up the data that is put on the Cellnet server and transfers it to RIMS. At a minimum there is a one day delay.
- 10 Why shouldn't I take GPrep to the field?
Data management becomes difficult when the PC that GPrep is being used on is not at a fixed location. The data that is captured by GPrep is time sensitive, customer account information and should be copied and transferred daily. The equipment that is used to operate GPrep is not made to be used outdoors. If GPrep is taken to the field, it is vital that the data be transferred as soon as possible upon return.
- 11 What data is captured by GPrep?
There is currently no screen that captures both the closing and opening reads on a module (as needed for index changes). MRB mode should be used to disassociate the module from the meter and capture the closing read. Program-old should then be used to re-program the module with the new index read.
- 12 What are some troubleshooting steps if GPrep is not working?
- If you are using the shooter box, check the AC power, module plugged in, shooter box turned on, correct DB9 to DB9 (RS232) cable (Non-Null Modem), correct COM port, ensuring that you are using the correct meter type and mode, ex. ResGas v. commercial.
 - If you are using USB one way programming cable, refer to the *1-Way Module Programming Cable PC/Laptop Getting Started Guide*.
- 13 What are the benefits of using re-program old all of the time as opposed to program new?
While some programs do this, there are no real benefits. It is a little easier to prepare the programlog to send, but involves extra work for the end user.
- 14 What does it mean when a file is superseded?
Someone made a mistake and had to re-enter a meter ID or LAN Address.
- 15 Who is responsible for cleaning these files (removing supersedes, converting into an Excel spreadsheet, etc.)?
Typically someone designated by the utility performs this task before sending these files to the database analyst.
- 16 Who should I contact if there is a problem?
First you should contact a local database analyst. Then try Cellnet Customer Support at customersupport@cellnet.com.
- 17 When using different screens, why does the phrase "parameter reject" flash yellow when I plug in a module that has just come from the manufacturer?
When modules are being made there are test parameters programmed in that allow the manufacturer to make the module transmit more frequently than every 15 minutes, and allows other tests to be run on them for quality reasons. GPrep (or a handheld) replaces these test parameters with field parameters.

APPENDIX A ALIGNING THE NEW AMERICAN METER DRIVE DOG

Cellnet modified the module wiggler in May 2005. The module wiggler now has a slightly different interface to the meter drive dog.

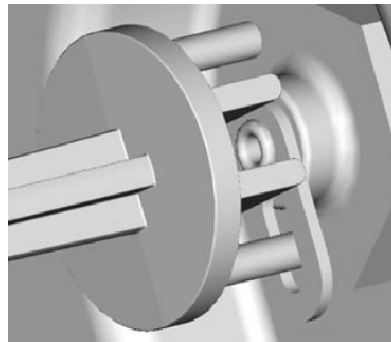


Figure A.1 Meter Drive Dog aligned with 2 ft. module wiggler

Insert one of the new protruding pins through the hole of a 2-foot drive wiggler.

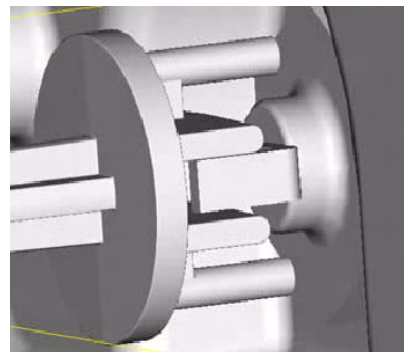


Figure A.2 Meter Drive Dog aligned with 1 ft. module wiggler

Insert one of the new protruding pins through the hole of a 1-foot drive wiggler.

Notes: