

## Diaphragm Meter Installation

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This chapter provides the instructions to install Remote 2.4GZ OpenWay Remote Mount Gas Modules (Itron part number OWG-5001-501 and OWG-5002-501 with 2.5 foot cable and encoder) on the diaphragm gas meters where a direct mount endpoint is not possible. Reference the Itron Gas Endpoint Meter Compatibility List (PUB-0117-002 or the [2.4GZ OpenWay Remote Mount Gas Module Meter Compatibility List](#) on page 3 for compatible diaphragm meters.

### Tools and Materials Supplied By You






**Note** 2.4GZ OpenWay Remote Mount Gas Module installation to a diaphragm meter may require additional tools and materials over those listed in [Installation Prerequisites](#) on page 7.

The following user/installer-supplied tools and materials are required to install, program, and check the 2.4GZ OpenWay Remote Mount Gas Module:

- Medium flat-blade screwdriver for band clamps.
- Medium flat-blade, torque-measuring screwdriver for screws to attach adapter plates to pipe brackets and screws to attach endpoints to adapter plates. (Use torque measured 9 to 12 inch-pounds.)
- Medium Philips screwdriver to attach endpoints to flat surfaces
- Pliers to secure cable ties.
- Side-cutting pliers or similar tool for removing excess cable tie ends.
- 1/4" nut driver or other blunt tool for seating endpoint tamper seals.
- FC200SR handheld with Endpoint-Link or Endpoint-Link Pro (version 5.3 or higher) for programming and checking endpoints.
- 1" putty knife or similar tool to remove old gasket material from the meter and index cover.
- Replacement temperature compensation (TEMP COMP) meter index stickers (if required).




## Materials Available from Itron

The following items are required for each 2.4GZ OpenWay Remote Mount Gas Module installation to a diaphragm gas meter:

Itron Part Number	Description	
OWG-5001-501  OWG-5002-501	2.4GZ OpenWay Remote Mount Module - IPP 2.4GZ OpenWay Remote Mount Module - SEP	
CFG-0081-001	Remote Mount Encoder Kit	
013-1723-112	Encoder Spacing Tool (Use the Encoder Spacing Tool to ensure the encoder mounts the correct distance from the magnet hub on the meter index.)	

## Replacement Gaskets

The Itron replacement index cover gaskets shown below are thicker than standard gaskets and have a special slot to accommodate the encoder cable. Gaskets are specific to Schlumberger/Sprague model 675 and 1000 commercial diaphragm meters.

<b>4-hole front cover gasket: Itron part number FAB-0014-003</b>	<b>2-hole front cover gasket: Itron part number FAB-0014-002</b>	<b>1-hole front cover gasket: Itron part number FAB-0014-001</b>
 <p>The image shows a rectangular, brown, textured gasket with four circular holes. Below it is a photograph of a grey diaphragm meter with the gasket installed on its front cover.</p>	 <p>The image shows a rectangular, brown, textured gasket with two circular holes and a notch on the right side. Below it is a photograph of a grey diaphragm meter with the gasket installed on its front cover.</p>	 <p>The image shows a U-shaped, brown, textured gasket with one circular hole. Below it is a photograph of a grey diaphragm meter with the gasket installed on its front cover.</p>

## Installing the 2.4GZ OpenWay Remote Mount Gas Module

The 2.4GZ OpenWay Remote Mount Gas Module mounts on a pipe using the Remote Mount Installation Kit (Itron part number CFG-0005-003) or a vertical flat (wall) surface. Always mount the 2.4GZ OpenWay Remote Mount Gas Module with the printed label right-side-up (arrow pointing up -1), and the encoder wires (2) and tamper seals (3) at the bottom, as shown.



**Caution** Upright vertical positioning is very important because:

- 2.4GZ OpenWay Remote Mount Gas Module are designed with the antenna in a vertical direction so the antenna is parallel to the reading device (which has a vertical antenna). Matching antenna polarity can greatly affect RF performance and enable easy module reading.
- 2.4GZ OpenWay Remote Mount Gas Module are designed so the tilt tamper is vertical. It is important to maintain vertical positioning in the field to enable tilt tamper stability.

## Installing 2.4GZ OpenWay Remote Mount Gas Module Encoders



**Caution** To insure proper adhesion, the 2.4GZ OpenWay Remote Mount Gas Module encoder must be installed at temperatures between 40° to 95° Fahrenheit.

There are tasks when installing the 2.4GZ OpenWay Remote Mount Gas Module with an encoder on a diaphragm meter:

- Remove the index cover and any gasket residue
- Install the 2.4GZ OpenWay Remote Mount Gas Module encoder on the index
- Program the 2.4GZ OpenWay Remote Mount Gas Module
- Attach the index cover to the meter.

### *To remove the index*



**Note** Properly dispose all unused screws, old index covers, gaskets, tamper seals, and other leftover materials. Do not leave materials on customer premises. Replace any stripped, worn, or corroded mounting screws.

1. Cut and remove any wire seal routed through the index cover screws. Remove the index cover and set aside. Remove the index mounting screws in an alternating fashion.



2. Remove the two index screws in an alternating fashion. Loosen the left index screw two turns, loosen the index screw three to four turns. Hold the index while removing the screws to keep the index from falling. Set the index aside where it will not be damaged.



3. Remove old gasket and any gasket residue from the meter and index cover.



4. Use the FC200SR to read the 2.4GZ OpenWay Remote Mount Gas Module and record the reading for comparison with progressive readings as installation is completed.

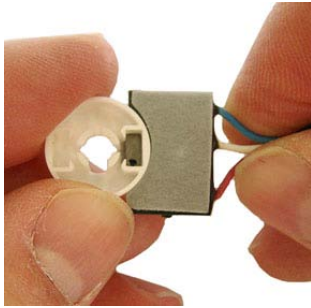
**To install the encoder**

1. Take the magnet hub from the Encoder Installation kit (Itron part number CFG-0081-001).
2. Verify there is only one magnet in the hub.



**NOTE** If there is no magnet or if there are two magnets in the magnet hub, discard the magnet hub and use a hub with one magnet.

3. Briefly place the magnet side of the magnet hub into the curved indentation in the encoder, as shown.



4. Take the magnet hub away from the encoder and set it at least one inch away from the encoder.
5. Use the FC200SR to read the 2.4GZ OpenWay Remote Mount Gas Module. If this reading is higher than the reading taken after removing the index, the 2.4GZ OpenWay Remote Mount Gas Module is counting and working properly.



**NOTE** If the reading is not higher than the previous reading, the 2.4GZ OpenWay Remote Mount Gas Module is not reading. Repeat steps 3, 4, and 5. If the 2.4GZ OpenWay Remote Mount Gas Module is still not counting, replace the 2.4GZ OpenWay Remote Mount Gas Module and perform steps 3, 4, and 5.

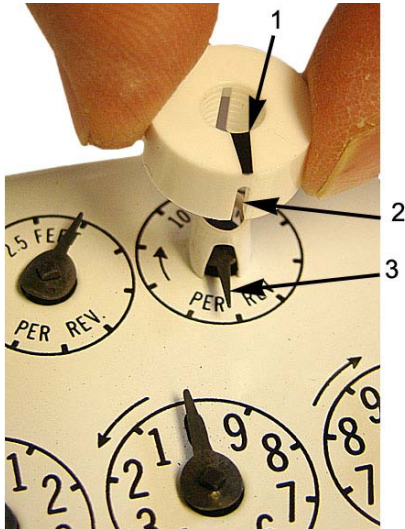
6. Align the large notch in the side of the magnet hub spacer with the needle of the meter drive rate dial (1 foot or 2 foot for residential diaphragm meters; 5, 10, or 100-foot for commercial diaphragm meters).



7. Press the magnet hub spacer down over the dial needle as far as possible. The tip on the bottom of the spacer may touch index face. Turn the dial after hub spacer installation to verify the index dial functions with a smooth, easy rotation.



8. Align the pointer (1) on the top of the magnet hub and the notch (2) in the side of the magnet hub with the needle (3) of the meter drive rate dial.

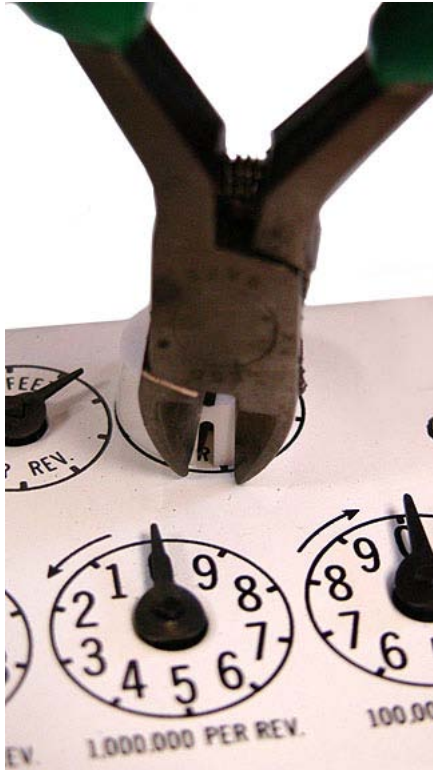


9. Press the magnet hub down over the hub spacer as far as possible. The bottom of the hub spacer may touch the index face. Turn the dial after magnet hub installation to verify the index dial functions with a smooth, easy rotation.





10. If the tip of the dial needle sticks out past the edge of the magnet hub, cut off the end of the dial needle as close as possible to the magnet hub with a sharp, side-cutting pliers.



11. Take the alcohol-saturated cleaning pad from the Remote Encoder Installation Kit (Iron part number CFG-0081-001).

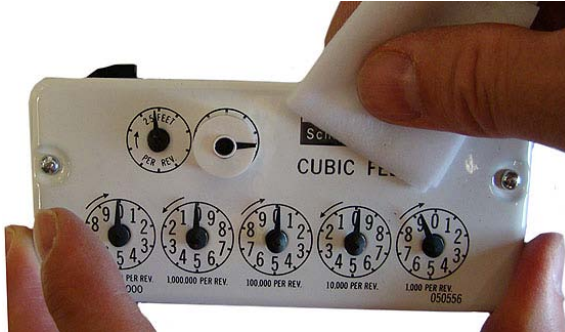


12. Select a location on the index face next to the magnet hub. After encoder installation, the encoder cable must not interfere with the index dials.



**Note** If a TEMP COMP sticker is attached to the index where the encoder cable will mount, remove it before priming. If the sticker (or replacement sticker) must be put back on the register face, place it in a new location on the index face after the encoder is attached.

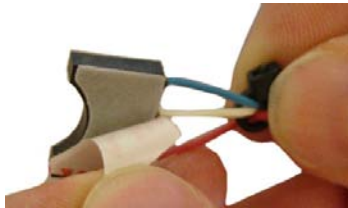
13. Wring out the excess alcohol from the cleaning pad before use. Thoroughly clean the index face where the encoder will mount. Allow the alcohol to completely dry prior to encoder application.
14. Thoroughly prime the area where the encoder will be installed. Do not touch the primed area of the index face before the encoder is installed.



15. Slide the thin end of the encoder spacing tool down over the magnet hub.



16. Peel the strip of protective plastic off the adhesive side of the endpoint's encoder.



**IMPORTANT** Verify the alcohol is dry before completing installation. You must do the next two steps exactly as described or the 2.4GZ OpenWay Remote Mount Gas Module will not work properly.

17. Press the curved side of the encoder firmly against the side of the encoder spacing tool as shown below, with the adhesive side down.



- Slide the encoder down along the side of the encoder spacing tool until it touches the surface of the index (as shown below). Using moderate pressure, hold the encoder firmly against the index, without moving, for 15 seconds to permanently apply the encoder.



The photo below shows how the the encoder spacing tool and encoder will look after the 15 second wait time.



- Remove the encoder spacing tool, set it aside, and lay the index on a flat, horizontal surface, to diminish strain on the encoder cable.
- Program the index reading (with the encoder mounted) into the 2.4GZ OpenWay Remote Mount Gas Module.
- Read the 2.4GZ OpenWay Remote Mount Gas Module. If this reading is the same as the reading programmed into the 2.4GZ OpenWay Remote Mount Gas Module, the module is programmed correctly.

**To install the meter index covers over the 2.4GZ OpenWay Remote Mount Gas Module encoder cable**



**Note** Use the correct replacement index cover gasket for your index (see [Replacement Gaskets](#) on page 55 for Itron 4-hole, 2-hole, or 1-hole gasket part numbers).

1. Remove the gasket center and index cover hole plugs from the new gasket.



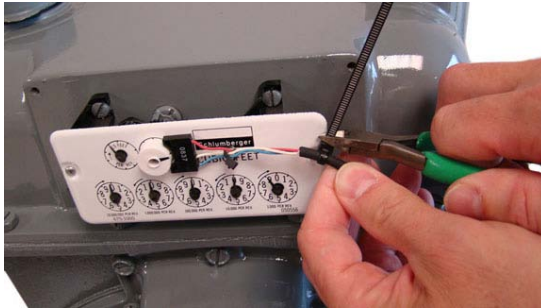
2. Insert the index/encoder assembly through the gasket center. Verify the gasket's adhesive-backed side is facing the meter face.
3. Align the index wiggler with the meter's drive dog. Install the index on the meter using the index mounting screws. Tighten in an alternating fashion.



4. Install a strain-relief cable tie about one 1/4" from the encoder cable's stripped end. (The cable tie must be inside the index cover after the cover is installed on the meter.)



5. Remove the excess cable tie with a side-cutting pliers. Dispose excess cable tie properly.



6. Remove the protective backing on the replacement gasket to expose the adhesive side of the gasket. Align the gasket (1), encoder cable (2), and cable tie (for strain-relief) (3) on the meter as shown.



**Caution** Route the encoder cable inside the index cover to provide strain relief (minimize pulling or twisting on the encoder). Verify the strain-relief cable tie on the encoder cable is inside the index cover when the cover is installed on the meter. The gasket must align with the index cover screw holes and adhere to the meter face to insure a proper seal after the index cover is installed.

7. Install the four index cover screws and tighten them just enough to hold them in place.



8. Verify the encoder cable is in the cable slot of the gasket. Fully tighten the screws in an alternating fashion. If required, install utility-approved security wire seals.



2.4GZ OpenWay Remote Mount Gas Module encoder/index installation is complete.

## Dattus Meter Installation

This section provides the instructions to install the 2.4GZ OpenWay Remote Mount Gas Module with Itron Dattus fM2 and fM3 meters.



**Dattus fM2**



**Dattus fM3**

### Installation Prerequisites

2.4GZ OpenWay Remote Mount Gas Module installation to a Dattus meter requires the following materials:

- 2.4GZ OpenWay Remote Mount Gas Module compatible with the Dattus meter (see the [2.4GZ OpenWay Remote Mount Gas Module Meter Compatibility List](#) on page 3)
- Itron Dattus meter compatible with the 2.4GZ OpenWay Remote Mount Gas Module
- Tools and devices to complete installation and programming (see [Installation Prerequisites](#) on page 7)

### Programming the Dattus Meter

Program the Dattus fM2 or fM3 meter with the correct pulse width and weight. For all Dattus type meters, the pulse width must be set to .050 seconds.

<b>Dattus Meter Pulse Weight Settings</b>	
<b>Meter type</b>	<b>Pulse weight in cubic feet (CF) or cubic meter (CM)</b>
11M or smaller	10 (CF) or 1 CM
16M or greater	100 CF or 1 CM

## Installation Overview

Installing the 2.4GZ OpenWay Remote Mount Gas Module to an Dattus meter involves five tasks:

1. Programming the meter (reference the Itron Dattus programming guide for more information).
2. Installing any necessary Itron retrofit parts. Itron offers installation kits and brackets for endpoint mounting options.
3. Mounting the 2.4GZ OpenWay Remote Mount Gas Module directly on the meter. If direct-mounting is not an option for your installation, the 2.4GZ OpenWay Remote Mount Gas Module may be mounted on a pipe, or flat surface (see [Mounting the 2.4GZ OpenWay Remote Mount Gas Module](#) on page 9).
4. Connecting the 2.4GZ OpenWay Remote Mount Gas Module to the Dattus meter.
5. Programming the 2.4GZ OpenWay Remote Mount Gas Module.

## Installing the 2.4GZ OpenWay Remote Mount Gas Module to Itron Dattus Meters

Dattus meters provide a an electronic pulse output compatible with the 2.4GZ OpenWay Remote Mount Gas Module. The Dattus meter may be wired to the module using the pulse output cable or the module can be directly mounted to the meter.

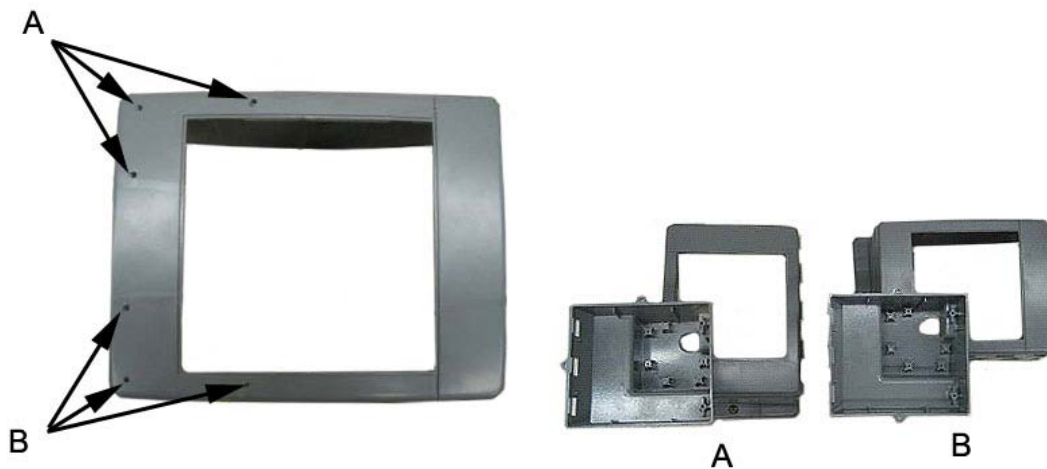
When ordering, customers can have the 2.4GZ OpenWay Remote Mount Gas Modules drop shipped to Itron's Owenton, Kentucky meter factory to have a factory-installed connector attached to the module's bare leads. The connector directly fits the pulse output on the Dattus meter.





### Direct Mounting the 2.4GZ OpenWay Remote Mount Gas Module to the Dattus Meter

2.4GZ OpenWay Remote Mount Gas Modules can be direct mounted to Dattus fM2 and fM3 meters with the Dattus Direct Mount Kit (Itron part number 442491-001). Dattus meter registers can be rotated to accommodate vertical or horizontal meter. Customers may have Itron, Owenton, Kentucky complete the cover modification and bracket attachment or may order the kit to retrofit the Dattus meter. The external cover of the Dattus meter is modified with three holes to mount the module bracket. The modification is dependent on the orientation of the meter installation.



- A Horizontally oriented meter module mounting hole modifications
- B Vertically oriented meter module mounting hole modifications



**Caution** The 2.4GZ OpenWay Remote Mount Gas Module must be mounted in an upright position with the arrow on the label pointing upward.

After the meter cover and bracket are replaced on the meter, the 2.4GZ OpenWay Remote Mount Gas Module is connected to the pulse output of the Dattus meter by the Binder Connector. The module is seated into the bracket to create a secure assembly.



**Vertical installation**



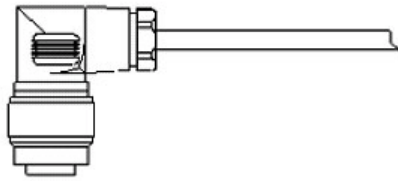
**Horizontal installation**

## Connecting the 2.4GZ OpenWay Remote Mount Gas Module to a Dattus meter

The Dattus fM2 and fM3 meters have three configurable outputs usable as pulse outputs to the 2.4GZ OpenWay Remote Mount Gas Module (Output channel 1 and Output channel 2). Connecting the endpoint following the information in this section requires a pulse output cable, installed at Itron, Owenton, Kentucky. Pulse output cables are available in 10 foot and 20 foot lengths. Factory-installed cables have a Binder connector on one end and six bare wires on the opposite end.

### Dattus Meter Wiring Accessories (available from Itron, Owenton, Kentucky)

Accessory	Itron Part Number
Pulse output cable - 10 ft.	442461-005
Pulse output cable - 20 ft.	442461-006



### Pulse output cable

Pulse Output Cable Pin Descriptions		
Pin	Function	Wire color
1	Output 2 (+)	White
2	Output 4 (+)	Black
3	Ground (-)	Green
4	Output 3 (+)	Orange
5	Output 1 (+)	Red
6	Ground (-)	Blue

**To wire the 2.4GZ OpenWay Remote Mount Gas Module to the Dattus meter**

**Note** The 2.4GZ OpenWay Remote Mount Gas Module has three wires, red, white, and blue. The pulse output cable has six wires; the Binder connector has six pins. You can connect the bare leads to a Binder connector (available from Itron, see [Connecting the 2.4GZ OpenWay Remote Mount Gas Module to a Dattus Meter](#) on page 70) or you can directly wire to the connector.

1. For output 1, connect the red module wire to the red wire on the pulse output cable or to pin 5 of the Binder connector if you are wiring directly to the connector.
2. For output 2, connect the red module wire to the white wire on the pulse output cable or to pin 1 of the Binder connector if you are wiring directly to the connector.
3. Twist or solder the blue and white module wires together.
  - To read from Output 1 on the Dattus meter: connect the blue and white module wires to the red pulse output wire (Binder pin 5).
  - To read from Output 2 on the Dattus meter: connect the blue and white module wires to the white pulse output wire (Binder pin 1).

## Mounting the 2.4GZ OpenWay Remote Mount Gas Module

The 2.4GZ OpenWay Remote Mount Gas Module can be mounted on a pipe or vertical flat surface (wall). Mounting requires the Itron Remote Mount Kit (Itron part number CFG-0005-003). See [Mounting the 2.4GZ OpenWay Remote Mount Gas Module](#) on page 9 for mounting procedure instructions.



## Programming the 2.4GZ OpenWay Remote Mount Gas Module Assembly

Program the 2.4GZ OpenWay Remote Mount Gas Module with a Bluetooth-enabled FC200 handheld computer and ZigBee Belt Clip Radio loaded with Endpoint-Link or Endpoint-Link Pro software version 5.3.1.26 or higher. See the Endpoint-Link Endpoint Programming Guide (TDC-0744) for more complete programming information. An Itron magnet is also required for programming.



**FC200**



**Belt Clip Radio**



**Itron Magnet**



**Caution** The 2.4GZ Remote Mount Gas Module must be programmed before use.

**To program the 2.4GZ OpenWay Remote Mount Gas Module**

1. Program the meter drive rate into the 2.4GZ Remote Mount Gas Module using the FC200 and Belt Clip Radio. Programming parameters are based on the configuration file loaded into the FC200.

During programming, the 2.4GZ Remote Mount Gas Module is set to the nearest 100 cubic feet with the last two digits (tens and units) programmed as zeros (0). After programming is complete, the 2.4GZ Remote Mount Gas Module reads to the nearest cubic foot.

2. The 2.4GZ Remote Mount Gas Module cover design includes two ridges (1) and a stop (2) to ensure the magnet is placed in the correct location to wake-up the module.
3. Place the magnet under the index cover with magnet face (inked Itron logo and part number) against the bottom of the module. The arrow on the magnet must point to the back of the module. Slide the magnet back toward the 2.4GZ Remote Mount Gas Module back plate until it touches the stop on the bottom of the index cover. Hold the magnet in place for 5 seconds and remove it.
4. The LED will blink red three times. This signifies the 2.4GZ Remote Mount Gas Module is searching for a programming device. Within a few seconds of locating the FC200, the red LED will blink five more times. The FC200 will confirm programming success or failure.
5. **Read or Check** the 2.4GZ Remote Mount Gas Module using the FC200 and Belt Clip Radio.
  - If the read result is higher than the number programmed in Step 1, the 2.4GZ Remote Mount Gas Module is counting correctly.
  - If the read result is not higher than the number programmed in Step 1, replace the 2.4GZ Remote Mount Gas Module.



## Sensus Sonix Meters

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**Sensus Sonix Meter**

### Programming the Sensus Sonix Meter

Program the Sensus Sonix meter following the Sensus programming guidelines.

#### Adjusting the Pulse Output for Sonix 600 and 880 Meters

The pulse output sent to the 2.4GZ OpenWay Remote Mount Gas Module may be set (using the SonixCom software) as:

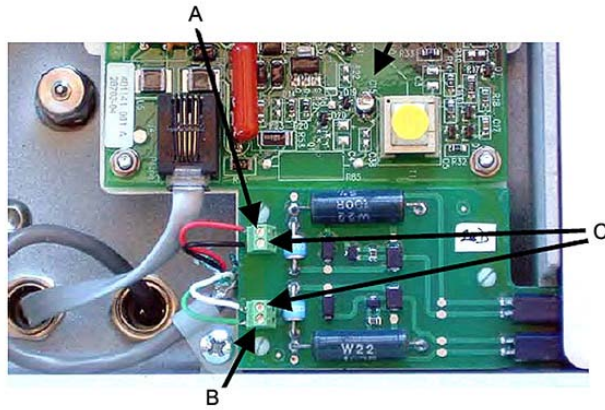
- 1 pulse per 10 cf
- 1 pulse per 100 cf
- 1 pulse per 1000 cf

Contact Sensus North American Gas Customer Service for more information.

### Installing the 2.4GZ OpenWay Remote Mount Gas Module with Sensus Sonix Meters

Sensus Sonix meters provide a standard Form A electronic pulse output compatible with the 2.4GZ OpenWay Remote Mount Gas Module. The Sensus Sonix meter may be connected to the module using the pulse output cable or the module can be directly mounted to the meter.

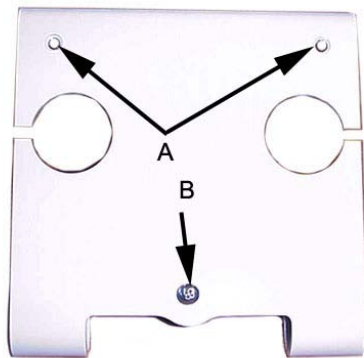
## Sensus Sonix2000 Pulse Output Wiring



Sensus Sonix2000 Pulse Output Options			
Option	(A) Pulse 1 (+)	(B) Pulse 2 (+)	(C) Ground (-)
1	Uncorrected	Corrected	
2	LCD index volume	Alarm	

## Direct Mounting the 2.4GZ OpenWay Remote Mount Gas Module to the Sonix Meter

2.4GZ OpenWay Remote Mount Gas Modules can be direct mounted to Sensus Sonix meters at the Sensus factory (contact Sensus North American Gas Customer Service for mounting specifications and ordering information). This section includes the instructions for customers to mount the module on the Sonix meter using the mounting materials available from Sensus Metering Systems.



- A Top anchor screw positions
- B Bottom anchor position for the endpoint U-shaped mount



**Sensus Sonix Direct Mount Brackets and Mounting Hardware**

Sensus Part Number	Description
60025-063-00000	1 1/2" FTP, 45Lt, #3 Spg, 60Lt, #4 Spg
60025-063-01000	2" - 11BS, 2" FTP
60025-063-02000	30Lt, #1A Spg, 1 1/4" NPT, #2 Spg, 20Lt
903376	#8-32 x 3/4" SS Fillister-head screws (2 required)
011-14-286-00	Rubber mounting washer Stabilizes bracket/2.4GZ OpenWay Remote Mount Gas Module assembly

\*Order the correct bracket for your installation requirements from Sensus North American Gas Customer Service. Brackets and mounting hardware are ordered separately.

***To direct-mount the 2.4GZ OpenWay Remote Mount Gas Module on the Sonix meter***

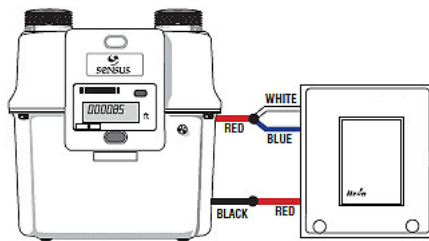
1. Place the module mounting bracket over the inlet or outlet pipe fitting on the Sonix meter. (The default position is over the inlet connection - left side connection looking at the meter front.)
2. Remove the four module backplate screws and turn the backplate so the module mounting screw holes are to the top of the module (the arrow on the module label must point up). Secure with the four module backplate screws previously removed.
3. Slide the mounting lug (now on the bottom of the module) over the bottom anchor. Insert the two top module mounting screws and tighten in an alternating fashion.

## Connecting the 2.4GZ OpenWay Remote Mount Gas Module to a Sensus Sonix 600 or 880 Meter

The 2.4GZ OpenWay Remote Mount Gas Module provides RF-based data collection for the Sonix 600 or 880 meter.

### ***To wire the 2.4GZ OpenWay Remote Mount Gas Module to Sonix 600 and 880 meters***

- Connect the Sonix 600 or 880 meter to the 2.4GZ OpenWay Remote Mount Gas Module following the wiring diagram below.



## Programming the 2.4GZ OpenWay Remote Mount Gas Module Assembly

Program the 2.4GZ OpenWay Remote Mount Gas Module with a Bluetooth-enabled FC200 handheld computer and ZigBee Belt Clip Radio loaded with Endpoint-Link or Endpoint-Link Pro software version 5.3.1.26 or higher. See the Endpoint-Link Endpoint Programming Guide (TDC-0744) for more complete programming information. An Itron magnet is also required for programming.



FC200



Belt Clip Radio



Itron Magnet



**Caution** The 2.4GZ Remote Mount Gas Module must be programmed before use.

### ***To program the 2.4GZ OpenWay Remote Mount Gas Module***

1. Program the meter drive rate into the 2.4GZ Remote Mount Gas Module using the FC200 and Belt Clip Radio. Programming parameters are based on the configuration file loaded into the FC200.

During programming, the 2.4GZ Remote Mount Gas Module is set to the nearest 100 cubic feet with the last two digits (tens and units) programmed as zeros (0). After programming is complete, the 2.4GZ Remote Mount Gas Module reads to the nearest cubic foot.

2. The 2.4GZ Remote Mount Gas Module cover design includes two ridges (1) and a stop (2) to ensure the magnet is placed in the correct location to wake-up the module.
3. Place the magnet under the index cover with magnet face (inked Itron logo and part number) against the bottom of the module. The arrow on the magnet must point to the back of the module. Slide the magnet back toward the 2.4GZ Remote Mount Gas Module back plate until it touches the stop on the bottom of the index cover. Hold the magnet in place for 5 seconds and remove it.
4. The LED will blink red three times. This signifies the 2.4GZ Remote Mount Gas Module is searching for a programming device. Within a few seconds of locating the FC200, the red LED will blink five more times. The FC200 will confirm programming success or failure.
5. **Read** or **Check** the 2.4GZ Remote Mount Gas Module using the FC200 and Belt Clip Radio.
  - If the read result is higher than the number programmed in Step 1, the 2.4GZ Remote Mount Gas Module is counting correctly.
  - If the read result is not higher than the number programmed in Step 1, replace the 2.4GZ Remote Mount Gas Module.