



Natural Gas Solutions

100G Series Gas ERT Module Installation Guide, Remote Mount

Identification

100G Series Gas ERT Module Installation Guide, Remote Mount

27 February 2013 TDC-0824-006

100G series remote gas ERT module

ERT module part numbers:

100G remote mount ERT module: ERG-5000-501, ERG-5000-502, ERG-5000-503

100G Datalogging remote mount ERT module: ERG-5002-501, ERG-5002-502, ERG-5002-503, ERG-5002-505

100G Datalogging FN remote mount ERT module: ERG-5003-501, ERG-5003-502, ERG-5003-503, ERG-5003-505

100G DLS remote mount ERT module: ERG-5006-501, ERG-5006-502, ERG-5006-503, ERG-5006-505

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Applicable Patents

U.S. Patent Numbers: 4,614,945; 4,753,169; 4,768,903; 4,799,059; 4,867,700

Canadian Patent Numbers: 1,254,949; 1,267,936; 1,282,118

Compliance Statement

This device complies with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. Operation is subject to the following two conditions:

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

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

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio or TV technician for help.

Compliance Statement

This equipment complies with policies RSS-210 and RSS-GEN of the Industry Canada rules.

Operation is subject to the following two conditions:

- (1) this device may not cause interference, and
- (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Déclaration de conformité

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Transportation Classification

The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. When powered, the 100G series remote ERT module is considered an operating transmitter and receiver and cannot be shipped by air. All product returns must be shipped by ground transportation.

Modifications and Repairs

To ensure system performance, this device and antenna shall not be changed or modified without the expressed approval of Itron. Any unauthorized modification will void the user's authority to operate the equipment.

Meter Installation/Removal

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



Warning To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.



Warning Substitution of components may impair intrinsic safety.



Warning Follow these procedures to avoid injury to yourself or others:

- The lithium battery may cause a fire or chemical burn if it is not disposed of properly.
- Do not recharge, disassemble, heat above 100° Celsius (212° Fahrenheit), crush, expose to water, or incinerate the lithium battery.
- Keep the lithium battery away from children.
- Fire, explosion, and severe burn hazard.



Warning Only authorized Itron personnel should attempt repairs on Itron equipment. Attempts to do so by others might void any maintenance contract with your company. Unauthorized service personnel might also be subject to shock hazard on some Itron equipment if removal of protective covers is attempted.



Warning Use caution when installing the mechanical index to avoid damaging the electronics.



Warning Do not dispose of in fire.



Warning The battery used in the ERT module may present a risk of fire or chemical burn if mistreated.

Suggestions

If you have comments or suggestions on how we may improve this documentation, send them to TechnicalCommunicationsManager@itron.com
If you have questions or comments about the software or hardware product, contact Itron Technical Support:

Contact

- Internet: www.itron.com
- E-mail: support@itron.com
- Phone: 1 877 487 6602

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Before You Begin

Document Conventions

The following documentation conventions are used in this installation guide.



Caution A Caution warns the installer that failure to follow the information in the note could result in loss of data. Be sure to carefully read a Caution note and follow the advice or instructions.



Warning A Warning alerts the installer about potential physical harm to the installer or hardware. It is critical that you pay strict attention to Warning notes, read the information carefully, and follow the advice or instructions.



Tip A Tip provides the installer with extra hints or tips to make a task easier to perform or a concept easier to understand.



Note A Note supplies generic information to the installer. The installer can ignore the information and continue the task without suffering any adverse consequences.

Document Purpose

This installation guide provides step-by-step instructions for installing the 100G series remote gas ERT module on a wide variety of meters and instruments. Mechanical and electrical installation procedures are identical for all module types. For more information about ERT to meter compatibility, see the [100G Series Remote ERT Module Meter Compatibility List](#) on page 3 or the *Itron Gas Module Meter Compatibility List* (PUB-0117-002) for 100G remote module compatible meters and instruments.

About the 100G Series Remote Gas Module

Itron 100G series remote ERT modules are radio-frequency (RF) devices designed to transmit meter data to an RF meter reading device within transmission distance of the remote ERT module. The 100G remote gas ERT module was designed with a higher output power than earlier Itron remote gas ERT modules to achieve an increased RF transmission distance. The 100G series remote gas ERT modules have greater output power to meet Itron mobile and fixed network requirements. The first 100G remote gas ERT module offered high transmit power capability which increased operational efficiency and reduced infrastructure costs. The 100G Datalogging remote gas ERT module offered high transmit power with data logging capability (time-stamped hourly interval data) for both mobile and fixed network applications. Itron's 100G Datalogging Fixed Network (DLN) remote gas ERT module added improved network performance through even higher transmit power, accomplished using increased antenna efficiency and more robust optimized messaging structures. The 100G DLS remote gas module adds SCM+ messaging and enhanced network security for increased data networking protection against intrusion.

The 100G remote module features tilt-tamper and cut cable-tamper reporting and security seals to indicate physical tampering and minimize theft. Cut cable is reported when the cable is cut or disconnected from the meter, instrument, or ERT module. The remote 100G module circuitry senses an electrical current *break* to report a cut cable tamper event.

Transmission Modes

The 100G series remote gas module can be set to transmit in fixed network, mobile and handheld, or hard to read mobile and handheld mode.

- **Fixed Network Mode.** The 100G series remote gas module transmits a high-powered network interval message (NIM) RF message every five minutes. Output power in this mode is 500 milliwatts or +27 dBm. Interspersed in the high power NIM, the remote 100G module transmits a medium power RF message at every 60 seconds 10 milliwatts or +10 dBm; expected battery life is 20 years.
- **Mobile High Power Mode.** The 100G series remote gas module transmits a high-powered RF message every 60 seconds. Output power in this mode is 250 milliwatts or +24dbm; expected battery life is 20 years.
- **Mobile and Handheld Mode.** The 100G series remote gas module transmits a medium-powered RF message every 15 seconds. Output power in this mode is 10 milliwatts or +10dBm; expected battery life is 20 years.
- **(Optional) Hard to Read Mobile and Handheld Mode.** The 100G series remote gas module transmits a high-powered RF message every 30 seconds. Output power in this mode is 250 milliwatts or +24dBm; expected battery life decreases to 15 years in this mode. The *hard to read mobile and handheld mode* should only be used for exceptionally hard-to-read applications (such as meters installed on roof tops or in sub-basements).

An FCC license is not required to read 100G series remote gas module.

100G DLS ERT Module and Itron Security Manager

The remote 100G DLS ERT module is a component of Itron's ChoiceConnect system. ChoiceConnect system enhanced security, provided by Itron Security Manager (ISM), applies to the RF communications between the handheld computer, Mobile Collector, or Fixed Network system and the ERT module. ISM is available in the 100G DLS module only.

There are two fundamental security processes used in the ChoiceConnect system to ensure confidentiality and validity of the system communications.

- **Authentication.** Authentication is the process of confirming that an artifact is genuine or valid. Authentication in the remote 100G DLS module is the process of verifying a request is from a valid source and in its original form.
- **Encryption.** Encryption is the process of transforming information to make it unreadable to anyone who does not have a valid security key. There are two types of encryption, symmetric and asymmetric. Symmetric encryption uses a shared key to decrypt or encrypt information. Asymmetric encryption uses a private key to encrypt and a public key to decrypt.

As a component of the Itron ChoiceConnect solution, the remote 100G DLS module supports the security model found in the ChoiceConnect solution for both reading and programming. If the remote 100G DLS module modules are shipped without ChoiceConnect enhanced security enabled (ready to secure), the utility can—at a later date—configure the ERT modules for ISM enhanced security.

Enabling 100G DLS Remote Gas ERT Module Security

When remote 100G DLS modules ship from an Itron factory, each module contains a utility factory key. The presence of this utility factory key does not enable enhanced security; the installer enables enhanced remote 100G DLS module security at the time the ERT module is deployed using an Itron programming device and programming commands. Initial key exchange commands are secured using the utility Factory key. For more information, see the *FDM Endpoint Tools Mobile Application Guide* (TDC-0934).

100G Series Gas ERT Module Specifications

Functional Specifications	Description
Power Source	
100G	Two "A" cell lithium batteries
100G Datalogging	
100G Datalogging FN	One "A" cell lithium battery
100G DLS Datalogging	
Tamper Detection	Tilt tamper and magnetic tamper
FCC Compliance	Part 15 certified
Industry Canada Compliance	RSS-210 certified
Intrinsically Safe per	UL Class I, Division 1, Groups C and D
Product Identification	Numeric and bar coded ERT type and serial number
Construction Materials	Gray polycarbonate housing and back plate with encapsulated electronics

Operational Specifications	Description
Operating Temperatures	-40° to 158° F (-40° to +70° C)
Operating Humidity	5 to 95 percent relative humidity
Program Frequency	908 MHz
Transmit Frequency	Spread spectrum 908 to 924 MHz ISM band
Data Integrity	Verified in every data message

Related Documents

Document Title	Document Part Number
<i>100G Series Gas ERT Module Installation Guide, Direct Mount</i>	TDC-0823-XXX
<i>100 Series Modules and CENTRON Bridge Meter Tamper Reference Guide</i>	TDC-1028-XXX
<i>100 Series Gas and Telemetry Module Technology Guide</i>	TDC-0825-XXX
<i>Gas and Telemetry Module Meter Compatibility List</i>	PUB-0117-002
<i>Gas and Telemetry Module Ordering Guide</i>	PUB-0117-001
<i>100G DLS Gas ERT Module Specification Sheet</i>	Publication 100941SP-XX
<i>100G DLN Gas ERT Module Specification Sheet</i>	Publication 100941SP-XX
<i>Field Deployment Manager Endpoint Tools Mobile Application Guide</i>	TDC-0934-XXX
<i>Field Deployment Manager Field Representative's Guide</i>	TDC-0936-XXX

Note The last three digits of the user and installation guides represent the document's revision level. The revision level is subject to change without notice.

100G Series Remote ERT Module Meter Compatibility List

The following table lists meter types compatible with the 100G remote gas ERT module. Due to continuous research, product improvements and enhancements, Itron reserves the right to change product or system specifications without notice.

Elster American (Canadian)

Meter Model	Meter Notes	100G Module Type	Itron Part Number	Gas Module Notes
10 Metric (10B)	Originally manufactured by Metric Metal Works	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-501 ERG-5002-501 ERG-5003-501 ERG-5006-501	ERT module with 2.5' cable
TC and STD CTR	American RPM series rotary meters including TC and non-TC. Meter must have factory-installed pulser with connector output. Purchase correct cable interface from manufacturer.	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-503 ERG-5002-503 ERG-5003-503 ERG-5006-503	Purchase gas module from Itron. ERT module with 12" lead wires.

About the 100G Series Remote Gas Module

GE Oil & Gas/Dresser Meters (ROOTS)

Meter Model	Meter Notes	100G Module Type	Itron Part Number	Gas Module Notes
B3/LMMA	Rotary meters equipped with WeigandWire solid state pulsers. Meter must have factory-installed pulser with connector output. Purchase correct cable interface from GE. Pulser must be version 17 or higher to be compatible.	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-503 ERG-5002-503 ERG-5003-503 ERG-5006-503	
Integral Micro Corrector IMC/W2	Electronic volume corrector for Series A (LMMA) and Series B rotary	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-505 ERG-5002-505 ERG-5003-505 ERG-5006-505	ERT module with 12" lead wires
Integral Micro Corrector	Electronic volume corrector for Series A (LMMA) and Series B (rotary meters). Must be firmware version 1.93 or earlier. Pulse width must be set for 125 ms. Pulse output must be at 100CF (CM) or higher.	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-505 ERG-5002-505 ERG-5003-505 ERG-5006-505	ERT module with 12" lead wires
ES3		100G Datalogging FN Remote 100G DLS Remote	ERG-5003-503 ERG-5006-503	ERT module with 12" lead wires

Honeywell Mercury Instruments

Meter Model	Meter Notes	100G Module Type	Itron Part Number	Gas Module Notes
EC-AT Mini-P Mini-AT Mini-Max	Pressure and temperature electronic volume instruments. Instruments must have a Form A board, Form C is NOT supported. Item #56 Pulse Scaling Factor must be 2.0. Item #96 Cor Vol Display must be 7, 6, 5, or 4 digits (1, 2, 3, and 4 blanks) ERT module does not support 8 digits (0 blanks). Item #115 Output Pulse Code must be set at 1, 2, 3, or 4 (not "0"). For 100G connection to Mini-Max only, Item #115 must be set at 1, 2, or 4.	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-502 ERG-5002-502 ERG-5003-502 ERG-5006-502	ERT does not support 8 digits (0 blanks). ERT module with 5' cable.
TCI	Temperature Compensating Index. TCI must have a Form A board, Form C is NOT supported. Item #56 Pulse Scaling Factor must be 2.0. Item #96 must be 7, 6, 5, or 4 digits (1, 2, 3, and 4 blanks). ERT module does not support 8 digits (0 blanks). Item # 1014 set to the preset "Itron" selection in the drop-down menu. Compatible firmware versions on TCI are 1.06, 1.07, and 1.10.	100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5002-502 ERG-5003-502 ERG-5006-502	ERT module does not support 8 digits (0 blanks). ERT module with 12" lead wires.

Itron (Actaris, Schlumberger, Sprague)

Meter Model	Meter Notes	100G Module Type	Itron Part Number	Gas Module Notes
1A		100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-501 ERG-5002-501 ERG-5003-501 ERG-5006-501	ERT module with 2.5' cable
305	#2 flat-face meter	100G Remote 100G Datalogging Remote 100G Datalogging RN Remote 100G DLS Remote	ERG-5000-501 ERG-5002-501 ERG-5003-501 ERG-5006-501	ERG module with 2.5' cable
400	#3 flat-face meter	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-501 ERG-5002-501 ERG-5003-501 ERG-5006-501	ERT module with 2.5' cable
675, 1000	Front-mount index	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-501 ERG-5002-501 ERG-5003-501 ERG-5006-501	ERT module with 2.5' cable. Requires thicker gasket for magnet hub to clear index box. 1-hole gasket: FAB-0014-001 2-hole gasket: FAB-0014-002 3-hole gasket: FAB-0014-003
Dattus fM2, fM3	For all meter types, pulse width must be set to .050 seconds. Meter type 11M or smaller must have pulse weight minimum of 10 cubic feet or 1 cubic meter. Meter type 16M or greater must have pulse weight minimum of 100 cubic feet or 1 cubic meter.	100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-502 ERG-5002-502 ERG-5003-502 ERG-5006-502	ERG module with 5' cable.
DATTUS fM1, fM2, fM3		100G Datalogging FN Remote 100G DLS Remote	ERG-5003-502 ERG-5006-502	ERG module with 5' cable.

National (Lancaster)

Meter Model	Meter Notes	100G Module Type	Itron Part Number	Gas Module Notes
All Meters		100G Remote 100G Datalogging Remote 100G Datalogging FN Remote 100G DLS Remote	ERG-5000-501 ERG-5002-501 ERG-5003-501 ERG-5006-501	ERT module with 2.5' cable

Romet

Meter Model	Meter Notes	100G Module Type	Itron Part Number	Gas Module Notes
RM Series STD CTR 600—56000 TC 2000—23000	Meter must have factory-installed pulser with connector output. Purchase cable interface from manufacturer.	100G 100G Datalogging 100G Datalogging FN 100G DLS Remote	ERG-5000-503 ERG-5002-503 ERG-5003-503 ERG-5006-503	ERT remote module with lead wires
RM Series Electronically compensated meter ECM2 600—56000	Meter must have connector pin with factory-installed pulse output. Purchase correct cable interface from Romet. ECM2 must be configured for 750ms "off-time" between pulses.	100G 100G Datalogging 100G Datalogging FN 100G DLS Remote	ERG-5000-503 ERG-5002-503 ERG-5003-503 ERG-5006-503	Purchase ERT module from Itron. ERT remote module with 2.5' cable.

Sensus (Invensys/Equimeter/Rockwell/EMCO)

Meter Model	Meter Notes	100G Module Type	Iron Part Number	Gas Module Notes
Sonix	Pulser	100G Remote	ERG-5000-503	
12, 16, 25, 57 600,	Metric	100G Datalogging Remote	ERG-5002-503	
880, 2000	Cubic foot	100G Datalogging FN Remote	ERG-5003-503	
		100G DLS Remote	ERG-5006-503	

Installation Prerequisites

The following tools are required to install, program, and check the remote remote 100G module. Some specific tools may be required dependent on meter or instrument type.

- Medium flat-blade screwdriver
- Small flat-blade screwdriver
- Medium Phillips screwdriver
- Hand pliers
- Side-cutting pliers
- 1/4-inch nut driver or similar blunt tool
- One-inch width putty knife
- Adjustable wrench
- 3M Scotchlock E-9Y crimping tool, 3M Scotchlock E-9C cartridge tool, or similar crimping tool
- All-weather electrical tape
- Mounting screws:
- Size T-10 Torx screwdriver

Program the 100G DLN ERT modules using:

- An FC200SR handheld computer with Field Deployment Manager (FDM) software version 1.1 or higher or
- A FC300 with SRead handheld computer with Field Deployment Manager (FDM) software version 1.1 or higher or
- A 900MHz Belt Clip Radio with Field Deployment Manager (FDM) software version 1.1 or higher and a customer-supplied laptop. The Belt Clip Radio connects to the user-supplied laptop using a USB cable or Bluetooth.

Program the 100G DLS ERT modules using:

- An FC200SR handheld computer with Field Deployment Manager (FDM) software version 3.3 or higher or
- An FC300 with SRead handheld computer with Field Deployment Manager (FDM) software version 3.3 or higher or
- A 900MHz Belt Clip Radio with Field Deployment Manager (FDM) software version 3.3 or higher and a customer-supplied laptop. The Belt Clip Radio connects to the user-supplied laptop using a USB cable or Bluetooth.

See the *Field Deployment Manager Endpoint Tools Mobile Application Guide* (TDC-0934) for more complete programming information.



Note Reference the appropriate programming guide or specification sheet for correct software version (see [Related Documents](#) on page 3).

Mounting the 100G Series Remote Gas Module




This chapter provides the instructions to mount the 100G series remote gas module on a pipe or other flat vertical surface (wall).

Installation Options

Mount the remote ERT module using the Pipe Mount or Wall Mount (Flat Surface) procedure.

- **Pipe Mount.** Pipe mounting is used in conjunction with the Remote Mount Kit (Itron part number CFG-0005-003). The pipe mount option places the module on a pipe near the meter or instrument (not on a wall surface). This option requires a meter manufacturer's cable to connect the module to the meter or instrument.
- **Flat Vertical (Wall) Mount.** Installation using the wall mount option places the module on a wall or other vertical surface. A cable connects the module to the meter or instrument.

Mounting Screw Specifications

Application	Itron Part Number		Description
To mount adapter plates on pipe brackets	575-9930-016		8-16 x 1/2-inch length, type 8 slotted pan-head tapping screw, corrosion-resistant steel
To mount remote modules on adapter plates	575-9930-032		8-16 x 1-inch type 8, slotted pan-head tapping screw, corrosion-resistant steel
To mount remote modules on sheet metal surfaces (to mount modules to wood surfaces, a comparable wood screw is required)	SCR-0009-001		10-16 x 1 1/2-inch type AB thread for sheet metal, Phillips pan-head tapping screw, corrosion-resistant steel

Mounting Installation Considerations

Select a proper mounting location. Itron recommends mounting the 100G series remote gas module in close proximity to the meter or instrument. Some applications may require an extended cable-length. The 100G series remote gas module supports cable lengths up to 300 feet.

Mount the 100G series remote gas module in a vertical position with the ERT label directional arrow pointed upward.



Caution Upright vertical positioning is very important because:



- 100G series remote gas modules 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 ERT module reading.
- 100G series remote gas modules are designed so the tilt tamper is vertical. It is important to maintain vertical positioning in the field to enable tilt tamper stability.



Warning Do not mount the 100G remote module in an orientation other than vertical (remote ERT module label arrow pointed upward). Violating the mounting orientation requirements will void the product warranty.

Mounting the Remote ERT Module on a Pipe

The following items are required to mount the 100G DLS Remote Gas ERT Module on a pipe or vertical flat surface (wall):

Itron Part Number	Description	
ERG-5003-501 ERG-5003-502 ERG-5003-503 ERG-5003-505	100G DLN remote gas module	 (ERG-5006-501 shown)
ERG-5006-501 ERG-5006-502 ERG-5006-503 ERG-5006-505	100G DLS remote gas module	
CFG-0005-003	Remote Mount Installation Kit kit includes: (2) two band clamps (2) two tamper seals pipe bracket cable ties adapter plate Screws: (2) 1/2-inch, to attach the adapter plate to pipe bracket (2) 1-inch, to attach the ERT module to the adapter plate (3) 1 1/2-inch, to attach the ERT module to a vertical surface (wall)	



Warning Install the remote 100G DLS module in an upright position. Any position other than upright can negatively affect radio performance and reduce battery life.

To mount the pipe bracket on a vertical pipe

Caution A vertical mounting position is important to maximize RF performance. Mount the 100G remote module with the module's label arrow pointing up. *The module's arrow must never point to either side or upside down.* The module's tilt tamper functionality is designed to operate with the module installed vertically.

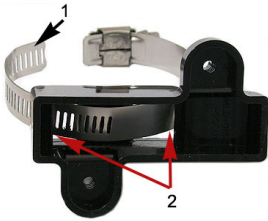
1. Remove the pipe bracket and band clamp from the Remote Mount Installation Kit (Itron part number CFG-0005-003).



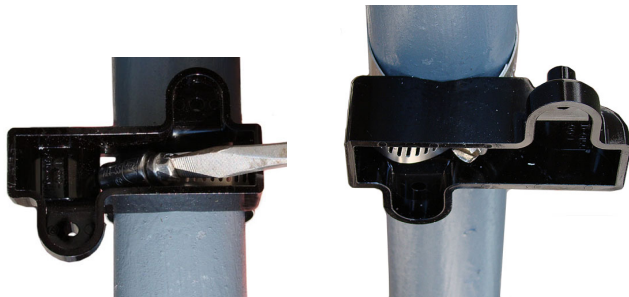
2. Loosen the band clamp screw until the end of the band releases.



3. Push the end of the clamp's band (1) through the holes (2) in the pipe bracket. The pipe bracket must be oriented as shown below.



4. Place the band clamp around the pipe. The band will loosely wrap around the pipe. Push the end of the band through the band clamp screw assembly. Turn the band clamp's screw assembly to fit into the pipe bracket opening. Tighten the clamp screw until the band clamp is secure on the pipe.

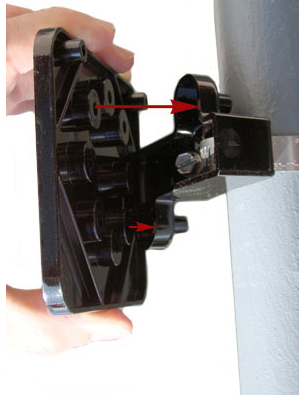


Caution The pipe bracket must fit firmly against the pipe to prevent slippage.

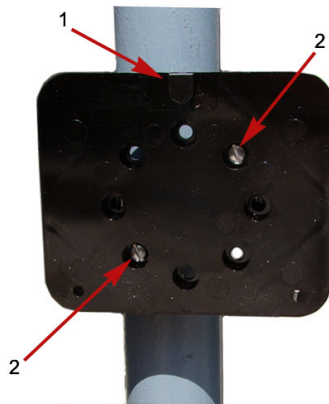
To mount the adapter plate on the pipe bracket

Caution Vertical mounting position is important to maximize RF performance. Mount the 100G remote gas module with the module label arrow pointing up. The module's arrow must never point to either side or upside down. The module tilt tamper functionality is designed to operate with the module installed vertically.

1. Place the adapter plate on the pipe bracket with the mounting lug at the top or bottom. The adapter plate screw bosses fit into the pipe bracket recess.



2. Ensure the adapter plate is positioned as shown below with the mounting lug (1) at the top or bottom. To install the adapter plate on a vertical pipe, use the two shortest (1/2-inch) adapter plate mounting screws from the installation kit. Place the mounting screws (2) in the holes shown below.

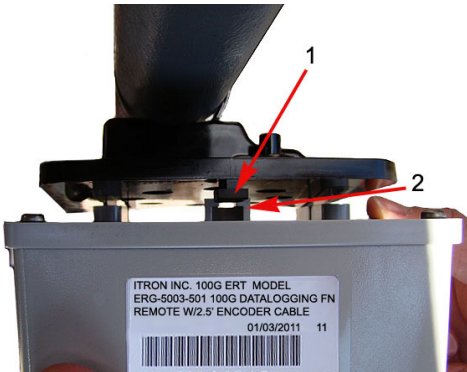


3. Tighten both screws securely in an alternating pattern. Tighten to 9 - 12 inch-pounds torque.

To mount the 100G series remote gas module on the adapter plate

1. Take the 100G series remote gas module and the two one-inch mounting screws from the Remote Mount Installation kit.

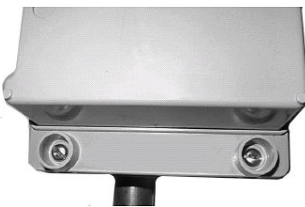
- Place the back of the remote ERT module against the face of the adapter plate. The adapter plate mounting lug (1) must be positioned just above the ERT module mounting lug recess (2).



- Push up on the remote ERT module until the adapter plate mounting lug (1) is as far as possible inside the module mounting lug recess (2).



- Align the remote module backplate mounting holes with the pipe mount adapter plate holes. Install the two one-inch ERT module mounting screws from the installation kit.



- Tighten the module mounting screws evenly in an alternating fashion. Tighten to 9 - 12 inch-pounds of pressure.

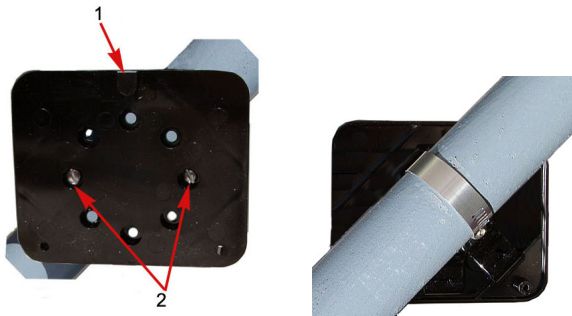
Adapter Plate Mounting Positions

The following pictures show adapter plates mounted on horizontal or 45-degree angle pipes.



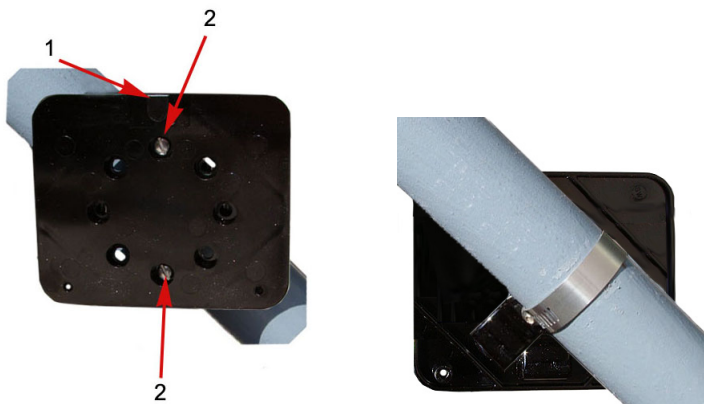
Caution Regardless of the pipe's direction, the adapter plate mounting lug must always be at the top.

If the pipe is a 45 degree angle up to the right, install the adapter plate as shown below.



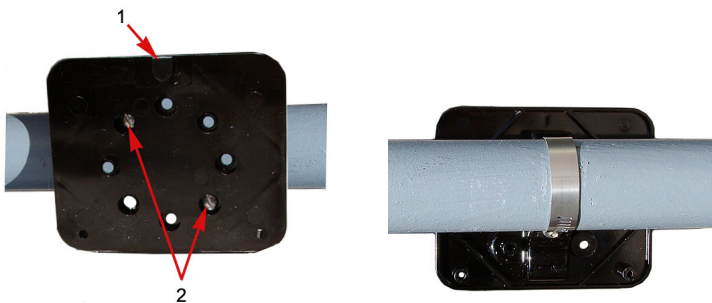
Typical module mounting **Mounted adapter plate**

If the pipe is a 45 degree angle up to the left, install the adapter plate as shown below.



Typical module mounting **Mounted adapter plate**

If the pipe is horizontal, install the adapter plate as shown below.



Typical module mounting **Mounted adapter plate**

To install tamper seals and cable ties

1. Place the new tamper seals from the Remote Mount Installation Kit over the remote module mounting screws.



2. Firmly push both tamper seals all the way into place with a 1/4-inch nut driver or similar blunt tool.

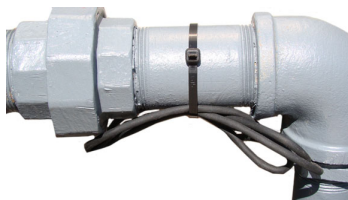


Note A tamper seal is fully seated when the top of the tamper seal is approximately 1/16-inch below the top of the screw recess.

3. Gather any excess remote module cable. Loop a cable tie around the pipe and excess module cable.



4. Insert the chiseled end of the cable tie into the locking end and pull the cable tie tight. Cut off and properly dispose the excess cable tie.



100G series remote gas module pipe mount installation is complete.