

### **To program the 100G series remote gas module**

- Program the meter drive rate into the 100G series remote gas module using a handheld computer or Belt Clip Radio and laptop computer.
- For all programming and **Check Endpoint** operations using a handheld computer, hold the handheld as close to vertical as possible. For best success, keep the handheld within six feet of the target ERT module.
- Verify you have the correct programming mode (fixed network mode, mobile high power mode, mobile/handheld mode, or hard-to-read mobile/handheld mode) for your application.

Programming parameters are based on the configuration file loaded into the programming device. During programming, the 100G series remote gas module is set to the nearest 100 cubic feet; the last two digits (tens and units) are programmed as zeros (0). After programming is complete, the ERT module assembly will read to the nearest cubic foot.

- **Read** or **Check** the 100G series remote gas module using the handheld computer or Belt Clip Radio.
  - If the read result is higher than the number programmed in step 1, the 100G series remote gas module is counting correctly.
  - If the read result is not higher than the number programmed in step 1, replace the 100G series remote gas module.

## CHAPTER 4

# Electronic Instrument Installation

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This section provides the instructions to install the 100G series remote gas module on:

- Honeywell Mercury Instruments Mini-P, Mini-AT, Mini-Max, and EC-AT
- Honeywell Mercury Instruments Temperature Compensated Indexes (TCI)
- GE Dresser IMC/W2 and MC2 Micro Correctors



**Mini-AT**



**Mini-Max**



**EC-AT**



**TCI**



**IMC/W2**



**MC2**

## Installation Prerequisites

100G series remote gas module installation to a volume corrector or instrument requires:

- 100G series remote gas module ERT module compatible to a volume corrector or instrument (see the [100G Series Remote ERT Module Meter Compatibility List](#) on page 3).
- Volume corrector or instrument compatible with the remote ERT module.
- Proper tools and devices for installation and programming (see [Installation Prerequisites](#) on page 7).



## Installation Overview

Installing the 100G series remote gas module to a volume corrector or instrument involves five tasks:

1. Programming the Honeywell Mercury Instrument (see [Programming the Mercury Instrument Parameters](#) on page 34 or reference the Honeywell Instrument Programming Guide for more information).
2. Installing Honeywell Mercury Instrument retrofit parts (if necessary).
3. Attaching the 100G remote gas ERT module to a pipe or vertical flat surface (wall) (see [Mounting the 100G Remote Gas Module](#) on page 8).
4. Connecting the 100G remote gas ERT module to the Honeywell Instrument Volume Corrector (see [To wire the 100G remote gas module to the Honeywell Mercury Instrument](#) on page 36), Honeywell Instrument Temperature Compensating Index (TCI), or GE Dresser Micro Corrector (IMC/W2 or MC2).
5. Programming the 100G series remote gas module (see [Programming the 100G Remote Gas ERT Module](#)).

## Programming the Honeywell Instrument Parameters

### Code Settings

Volume Instrument Type	Item Code Settings and Corresponding Terminal Board Channel											Terminal Board Connections*
	Pulse Output Options	Channel A		Channel B		Channel C		Number of Blanked digits on CorVol Display	Pulse Output Spacing			
		#056	#93	#057	#094	#058	#095		#96	#115	#1014	
ECAT	Pulse Board Ver-1(3) Form-C	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Module does not support a Form-C pulse output board.
	Pulse Board Ver-2(3) Form-A	2.0000	0	2.0000	0	2.0000	0	1, 2, 3, or 4	1, 2, 3, or 4	n/a	n/a	Ka, Kb, Kc (Red Wire) Ya, Yb, Yc (Blue & White Wire) Connection must be on same terminal board channel (for example, Ka/Ya; Kb/Yb; Kc/Yc).
	Pulse Board Ver-3(2) Form-C1 Form-A	n/a	n/a	n/a	n/a	2.0000	0	1, 2, 3, or 4	1, 2, 3, or 4	n/a	n/a	Kc (Red Wire) Y (Blue & White Wire). For this option, module must be connected to Channel C.
Mini with Form A Mainboard	Main Board Type-2	2.0000	0	n/a	n/a	n/a	n/a	1, 2, 3, or 4	1, 2, 3, or 4	n/a	n/a	K (Red Wire) Y (Blue & White Wire). For optional SPA Bd., jumper must be installed on J1-B as indicated in the Mercury Quick Reference Guide (page 148) for Form A.
Mini-AT	JB29, JB30 & JB31 Jumpered for Form-A	2.0000	0	2.0000	0	n/a	n/a	1, 2, 3, or 4	1, 2, 3, or 4	n/a	n/a	K (Red Wire) Y (Blue & White Wire). For optional SPA Bd., jumper must be installed on J1-B as indicated in the Mercury Quick Reference Guide (page 148) for Form-A.
	JB29, JB30 & JB31 Jumpered for Form-C	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	Module does not support a Form-C pulse output board.
Mini-Max	All Main Boards	2	0	2	0	n/a	n/a	1, 2, 3, or 4	1, 2, or 4	n/a	n/a	K (Red Wire) Ya or Yb (Blue & White Wire)

Notes:

- Code 0 for items 093, 094 & 095 = Corrected Volume Pulse Data
- Code 1 for item 115 = 1.000 Sec.
- Code 2 for item 115 = 2.000 Sec.
- Code 1 for item 096 = blank 1 digit and display 7 digits
- Code 2 for item 096 = blank 2 digits and display 6 digits
- Code 3 for item 096 = blank 3 digits and display 5 digits
- Code 4 for item 096 = blank 4 digits and display 4 digits

\*For more information, see pages 11-20 of the "Basic Pulse Information for Honeywell Instruments, Inc., Electronic Volume Correctors" manual, or contact Honeywell Mercury Instruments at 513-272-1111.

### Honeywell Mercury Instrument programming parameters:

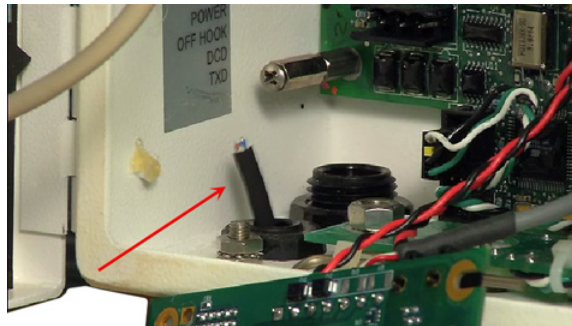
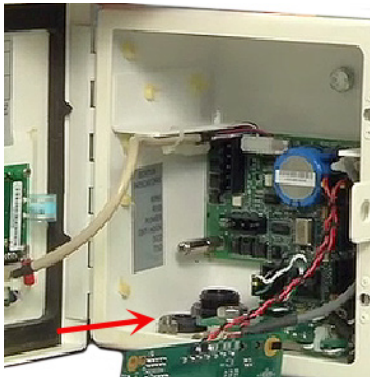


**Caution** A Honeywell Mercury Instrument must have a Form A board. A Form C board is not compatible with the remote 100G DLS module.

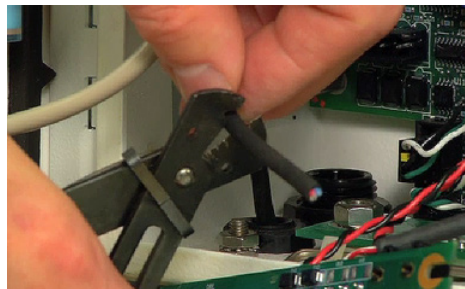
- Item #056: Pulse A Scaling. Set at 2.0000 for a form A switch.
- Item #057: Pulse A Scaling. Set at 2.0000 for a form A switch.
- Item #058: Pulse A Scaling. Set at 2.0000 for a form A switch.
- Item #090: Corrected Volume Units: Code (0-20) selects the unit of measure for Corrected Volume (Item000) and other "CorrVol" related items.
- Item #092: Uncorrected Volume Units: Code (0-20) selects the unit of measure for Uncorrected Volume (Item002) and other "UncVol" related items.
- Item # 093, 094, 095: Type of gas volume information to be sent. For "CorrVol" selected, must be set at 0.
- Item # 096: Corrected Volume Display: Must be set at 1, 2, 3 or 4 blanks. Module does not support a setting of 0 blanks.
- Item # 097: Uncorrected Volume Display: Must be set at 1, 2, 3, or 4 blanks. Module does not support a setting of blanks.
- Item # 098: Check drive rate of the corrector. Should be the same as the plate above the uncorrected dials and the same as the plate on the index drive of the meter.
- Item # 115: Output Pulse Code: Must be set at 1 or 2.

### **To wire the 100G series remote gas module to the Honeywell Mercury Instrument**

1. Insert the ERT module cable into the instrument's compression connector.



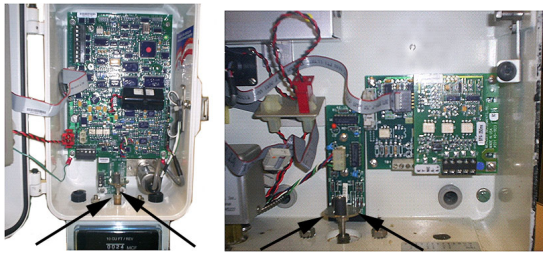
2. Strip one inch of the outer insulation from the 100G series remote gas module.



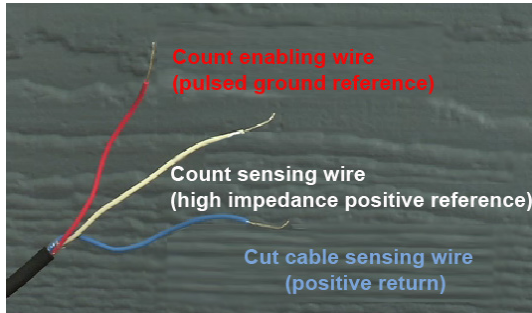
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**Caution** Keep wires away from the rotating magnetic spindle in the Honeywell Mercury Instrument.

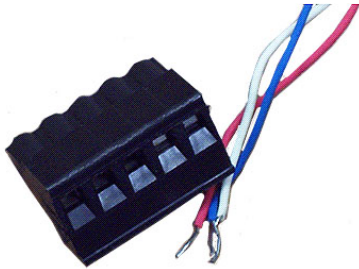
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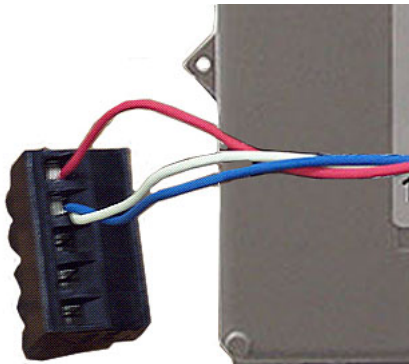
- Strip 1/4-inch individual wire insulation from the red, white, and blue lead wires.



- Twist the blue and white wires together and connect them to the Honeywell Mercury Instrument terminal strip connector (Phoenix connector) following the Honeywell Mercury Instrument [Code Settings](#) on page 35 Table.



- Connect the red wire following the [Code Setting](#) on page 35 Table.



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**Note** In Honeywell Instrument EC-AT correctors, the connector may be soldered to the pulse board.

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- See [Mounting the 100G Remote Gas ERT Module](#) on page 8 for module mounting instructions.

## Wiring Dual ERT Modules to a Honeywell Mercury Instrument

This section includes the information to wire dual ERT modules to a single Honeywell Instrument. Installation requires the correct programming parameters (see [Code Settings](#) on page 35).

With Itron 100G series remote gas modules, utilities can receive *corrected* and *uncorrected* consumption values by installing two ERT modules. The ERT module for *corrected* reads is attached to the corrector's pulse output. The ERT module for *uncorrected* reads is attached to the input switch board. The *corrected* pulse output is programmable; the *uncorrected* pulse output is dependent on the connected meter's drive rate.



**Important** Some Honeywell Instruments have two pulse outputs so the *uncorrected* pulse output could be connected to the additional output, but the connection should be to the input switch board in case the corrector battery fails. Counts will be collected if the *uncorrected* pulse is connected to the switch board since the board is not dependent on battery power.



### Dual remote ERT modules mounted on a Honeywell Mercury Instrument

#### **To install dual 100G Series Gas ERT Modules to a Honeywell Mercury Instrument Mini-Max Case Volume Corrector using Honeywell Mercury Instrument Kit 22-1077**

1. Place the Honeywell Mercury Instrument volume corrector in *shutdown* condition and disconnect all power from the Mini-Max main board.
2. Remove the battery pack from the volume corrector and set it aside.
3. Remove the four screws from the main board and the board from the enclosure. Set the board aside.
4. Remove the two hex screws from the input switchboard and the switchboard from the enclosure and set it aside. You will re-install the switchboard later.

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**Warning** The battery pack, main board and switchboard may be damaged if left in the Honeywell Mercury Instrument volume corrector while completing this installation.

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5. Drill two 3/16-inch holes in the back of the Mini-Max enclosure as specified by the information included in the kit. Remove any metal shavings from the enclosure.
6. Clean the remote 100G DLS modules with the alcohol wipe where you will place the Corrected and Uncorrected labels (included in the kit).

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**Note** Clean the 100G series remote gas modules with the alcohol wipe to ensure good label adhesion.

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7. Mount the module for *corrected* pulse outputs on the left bracket mounting space. Insert three #8-32 x 1/2-inch screws in a triangular pattern. Install the top screw so the head of the screw is approximately 1/8-inch from the ERT mounting bracket surface. Slide the module onto the screw so the mounting lug fits securely onto the screw. If necessary, remove the module and make any necessary adjustment to the screw depth to ensure a secure fit. Install the two bottom screws in an alternating fashion.
8. Mount the module for *uncorrected* pulse outputs on the right bracket mounting space. Insert three #8-32 x 1/2-inch screws in a triangular pattern. Install the top screw so the head of the screw is approximately 1/8-inch from the ERT mounting bracket surface. Slide the ERT module onto the screw so the mounting lug fits securely onto the screw. If necessary, remove the module and make any necessary adjustment to the screw depth to ensure a secure fit. Install the two bottom screws in an alternating fashion.
9. Route the module cables under the bracket edge and toward the rear of the Honeywell Instrument.
10. Mount the ERT mounting bracket (Honeywell Mercury Instrument part number 22-1077, included in the kit) onto the Mini-Max enclosure. Place a #8 metal flat washer followed by a rubber sealing washer onto both #8-32 x 3/8-inch screws. Align the lower threaded holes in the mounting bracket with the drilled enclosure holes and insert a screw/washer through the enclosure housing. Screws heads must be inside the enclosure. Tighten both screws using a screwdriver.

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**Note** Aligning the second bracket threaded hole and drilled hole may require some manipulation of the mounting bracket.

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11. Insert the module cables (both units) through the large cable strain relief on the left rear of the instrument's enclosure. Leave a one-half to one inch drip loop under the cable strain relief.
12. Secure three cable ties on the module cables in three places on the cables as specified by information included in the kit.
13. Re-install the input switchboard, main board, and battery pack removed in step 2.
14. Connect the *corrected* module wires to TB1 on the Mini-Max board following the table below. Use Honeywell Mercury Instrument upgrade kit 40-2678-1 to provide the second pulse output channel for the uncorrected endpoint.

**Corrected ERT Module Connections**

<b>ERT Module</b>	<b>Mini-Max TB1</b>
Red wire	K terminal
Blue wire*	Ya terminal
White wire*	Ya terminal

\*Twist the blue and white module wires together before connecting to the Mini-Max board.

Tighten terminal connections securely.



15. Connect the *uncorrected* module wires to the Input Switch Board UNC. VOL following the table below.

**Uncorrected ERT Module Connections**

ERT Module	Mini-Max Input Switch Board UNC. Vol.
Red wire	COM terminal
Blue wire*	NO terminal
White wire*	NO terminal

\*Twist the blue and white ERT module wires together before connecting to the Mini-Max board.

Tighten terminal connections securely.

16. Tighten the large strain relief securely.

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**Warning** Do not crush the module through-cables when tightening the strain relief.

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17. Re-install or reconnect the power or battery sources.

18. Close the instrument case and tighten the case screw securely. Replace any locks that were removed for installation.

## Wiring the Remote ERT Module to the Honeywell Mercury TCI

The Honeywell Mercury Instruments Temperature Compensating Index (TCI) provides two Form-A volume pulse outputs and one Form-B alarm output. These outputs are electronic switches. The Form-A pulse outputs are configurable for compensated or uncompensated volume. The Form-B output is for alarm output use only.



Connections to the three output pulse channels are completed using the lead wires (the individual wires from a cable) and gel-connectors. The TCI unit has six lead wires and six gel-connectors (Itron part number CON-0023-001) to enable pulse connections to ancillary devices. Lead wires are located inside the gray adapter plate behind the black strain relief fitting.



**Adapter plate with black fitting**



**Lead cable wires**



**Honeywell Mercury TCI adapter backplate (Honeywell Mercury part number 22-1929)**

### **To make TCI pulse connections**

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**Note** Connect one ERT module/channel to the alarm output if the modules are used on channels A and B.

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1. Remove strain relief fitting by unscrewing from the gray adapter plate.



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**Note** Do not remove the fitting's hex nut. Unscrew the entire fitting from the gray adapter plate. A tether line is secured to the strain relief fitting. When the strain relief fitting is removed, the tether line pulls the lead wires out of the adapter plate for access to the lead wires.

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2. Loosen the strain relief fitting hex nut and remove the white plug from the center.
3. Place the strain relief fitting onto the field pulse cable.



4. If the field pulse cable is smaller than a 0.2-inch diameter, install the rubber tube supplied with the TCI onto the cable so the strain relief will clamp onto the tube after it is reinstalled.



5. Connect the individual external pulse cable conductors to the lead wires following *Configuration for two ERT modules connected to one TCI*. Insert one lead wire into an opening of a gel-connector (six gel-connectors were included with the TCI). Insert the appropriate field cable wire into the other gel-connector opening.

#### **Configuration for two ERT modules connected to one TCI**

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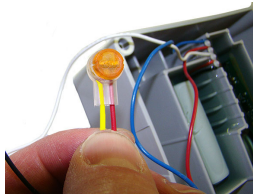
##### **Channel A**

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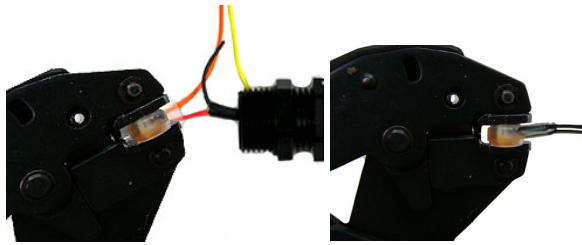
ERG-500x-503	TCI
White	Orange and brown
Red	Yellow
Blue	Blue (alarm)

Channel B	
ERG-500x-503	TCI
White	White
Red	Green
Blue	White



- Verify both wires are fully inserted into the gel-connector prior to crimping.




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**Important** Use a crimping tool compatible with gel-connectors. *Do not* use a standard pliers for crimping gel-connects. The crimping tool provides an even pressured crimp to make a secure connection. Apply pressure for three seconds until the gel cap is fully crimped (collapsed) to allow time for the low viscosity silicone-based gel to flow. If the silicone gel flows out of the crimped connector, avoid touching the gel. Gel flowing from the connector provides environmental protection for the connection.

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- Insert the gel-connected wires into the threaded gray adapter plate hole.



- Replace the strain relief and tighten until secure.

## Connecting the Remote Module to the IMC/W2 or MC2 Cable

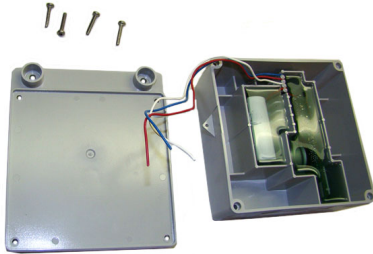
You can ship the Itron 100G series remote gas module directly to GE Dresser for a factory-installed cable. If you connect the module to the meter using an existing cable purchased from GE Dresser, complete the following cable installation procedure.



**Caution** The purchased cable must have a mating connector compatible with the IMC/W2 or MC2 receptacle. GE Dresser cables may be wired in different configurations for specific applications. If necessary, contact GE Dresser for wiring diagrams for your specific application.

**To connect the remote module to the IMC/W2 or MC2 cable**

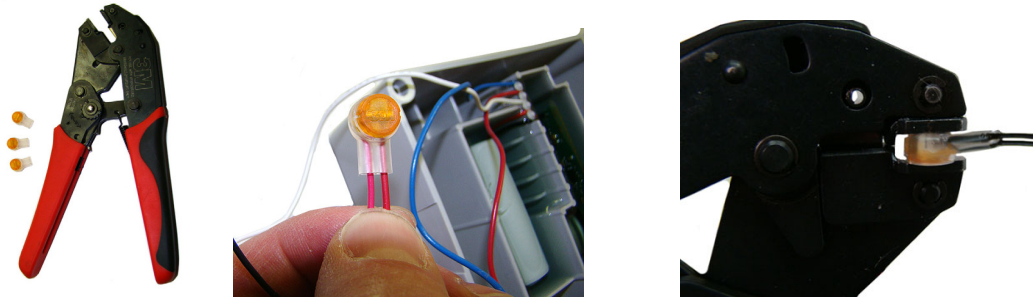
1. Remove the backplate (4 screws) from the remote module and expose the module lead wires. The backplate and screws will be re-installed on the module later in this procedure so store them (temporarily) in a safe, secure place.



2. Insert the lead wires from the remote module into new 3M gel connectors (Itron part number CON-0023-001) together with the same colored lead wire from the meter cable (see the wiring table below) and crimp using a 3M hand-held crimping tool.

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**Important** Use a crimping tool compatible with gel-connectors. *Do not* use a standard pliers for crimping gel-connects. The crimping tool provides an even pressured crimp to make a secure connection. Apply pressure for three seconds until the gel cap is fully crimped (collapsed) to allow time for the low viscosity silicone-based gel to flow. If the silicone gel flows out of the crimped connector, avoid touching the gel. Gel flowing from the connector provides environmental protection for the connection.



**Note** Do not strip lead wire prior to inserting the wire in the gel connector.

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IMC/W2 Wire	Remote Module wire
Red	Red
White	White
Blue	Blue