Disassembling Itron Modules for Recycling or Disposal

Identification
Disassembling Itron Modules for Recycling or Disposal
27 August 2014 PUB-0085-001 Rev F

Applicable Patents
U.S. Patent numbers: 4,614,945; 4,733,169; 7,786,903; 4,799,059; 4,876,700.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.

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
Itron classifies and ships modules as a hazardous material. The proper shipping name is Lithium Batteries contained in Equipment, Class 9, UN3091, Packing Group II.
The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. ERT modules are considered operating transmitters and receivers and cannot be shipped by air.

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

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

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

Warning Only authorized Itron personnel or personnel trained in disassembly should attempt to disassemble Itron equipment. Attempts by others to disassemble Itron equipment may subject them to a shock hazard.

Warning If you cannot comply with local, state, or federal recycling and disposal requirements or you cannot find the recycling and disposal requirements for your area, Itron offers an experienced AMR device recycling and disposal service. Contact Itron Customer Support, your sales representative, or visit www.itron.com for more information.

Suggestions
If you have comments or suggestions on how we may improve this documentation, send them to TechnicalCommunicationsManager@itron.com
Contact

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

Contents

CHAPTER 1

Introduction

This guide provides the information to disassemble a variety of Itron modules for recycling or disposal.

Note Itron is committed to following conscientious recycling guidelines. Contact your Itron representative for information about our AMR device recycling/disposal service.

The information in this guide is a guideline for your company personnel to establish disassembly procedures. You may find it necessary to revise these guidelines to enhance productivity or safety within your organization or comply with local, state, and federal regulations.

Note Itron modules are discussed as endpoints, ERT (encoder/receiver/transmitter), gas, and telemetry modules.

Itron Module Disassembly Tasks

Itron's various module disassembly involves many of the same tasks. Typical disassembly instructions include the following tasks

1. Disassemble the module housing.
2. Disassemble the module circuit board.
3. Disassemble the battery assembly.

After the module is disassembled, recycle or dispose all materials properly (see Determining Disposal Requirements on page 5).

Document Conventions

The following documentation conventions are used:

Caution A Caution warns the user that failure to heed 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 is used to alert you of potential physical harm to the user 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 user with extra suggestions to make a task easier to perform or a concept easier to understand.

Note A Note supplies generic information. You could ignore and continue the task without suffering any adverse consequences.

Itron Module Models Covered in this Guide

ERT Type	Itron module
Electric Meter	40E retrofit kit
Gas Meter	Commercial 40G/40GB Elster American Meter
	Commercial 40G/40GB Sensus/Invensys/Equimeter/Rockwell residential
	Direct Mount 40G/40GB Elster American Meter residential
	Direct Mount 40G/40GB Itron/Actaris/Schlumberger/Sprague residential
	Direct Mount 40G/40GB National/Lancaster residential
	Direct Mount 40G/40GB Sensus/Invensys/Equimeter/Rockwell residential
	Remote Mount 40G/40GB--all models
	Commercial 100G, 100G DL, 100G DLN, 100G DLS, and 100G DLT Elster American Meter
	Commercial 100G, 100G DL, 100G DLN, 100G DLS, and 100G DLT Sensus/Invensys/Equimeter/Rockwell
	Direct Mount 100G, 100G DL, 100G DLN, 100G DLS, and 100G DLT Elster American Meter residential
	Direct Mount 100G, 100G DL, 100G DLN, 100G DLS, and 100G Itron/Actaris/Schlumberger/Sprague residential
	Direct Mount 100G, 100G DL, 100G DLN, 100G DLS, and 100G DLT National/Lancaster residential
	Direct Mount 100G, 100G DL, 100G DLN, 100G DLS, and 100G DLT Sensus/Invensys/Equimeter/Rockwell residential
	Remote Mount 100G, 100G DL, 100G DLN, 100G DLS, and 100G DLT--all models
	Commercial 2.4GZ Elster American Meter
	Commercial 2.4GZ Sensus/Invensys/Equimeter/Rockwell
	Direct Mount 2.4GZ Elster American residential
	Direct Mount 2.4GZ Itron/Actaris/Schlumberger/Sprague residential
	Direct Mount 2.4GZ National/Lancaster residential
	Direct Mount 2.4GZ Sensus/Invensys/Equimeter/Rockwell residential
	Remote Mount 2.4GZ--all models

ERT Type	Itron module
Water Meter	40W Hersey
	40W ABB
	40W Precision PMM
	40W Badger RTR
	40W Schlumberger ProRead
	40W Sensus
	50W, 50W-1, 50W-2 Hersey
	50W, 50W-1, 50W-2 ABB
	50W, 50W-1, 50W-2 Badger RTR
	50W, 50W-1, 50W-2 Precision PMM
	50W, 50W-1, 50W-2 Schlumberger ProRead
	50W, 50W-1, 50W-2 Equimeter/Rockwell/Invensys/Sensus
	60W, 60WP
	60W-R, 60WP-R
	200WM, 200WP
	100W, 100WP, 100W-R, 100WP-R
	100W+, 100WP+, 100W-R+, 100WP-R+
Telemetry	100T-CP Cathodic Protection Telemetry Module
	100T-GasGate Remote Disconnect Valve
	100T-HON Honeywell Telemetry Module

Note The 100T-CP Cathodic Protection and 100T-HON Honeywell Telemetry Modules have the same form factor as the 100G and 2.4GZ Series remote modules. The disassembly procedure for the 100T-CP and 100T-HON telemetry modules is the same as the 100G ERT and 2.4GZ gas remote modules.

Itron Module Recycling or Disposal Materials

40E	40G/ 40GB	100G Series	40W	50W	60W Series	200 Series	100W/ 100W+	100W+ (part number ERW-1300-3XX)	100T Modules	Materials for recycling or disposal
X										Transformer (contains copper internally and externally) lead tin
	X	X	X	X	X	X	X	X	X	Lithium battery
	X	X	X	X	X	X	X	X	X	Circuit board potting material

40E	40G/ 40GB	100G Series	40W	50W	60W Series	200 Series	100W/ 100W+	100W+ (part number ERW-1300-3XX)	100T Modules	Materials for recycling or disposal
X	X	X	X	X	X	X	X	X	X	Printed circuit board containing: Heavy metals not inside components including: Silver Gold Tin Copper Components that may contain: Copper Silver Gold Tin
X*	X*		X	X*						Mercury
X	X	X	X	X	X	X	X			Metallic lead on wires, component leads and printed circuit board solder
X	X	X	X	X	X	X	X			Polycarbonate ERT module housing and circuit board spacer
	X									Battery hold-down wedge (40G Commercial only)
	X		X	X						Lexan ERT module front covers
	X			X						Cork composition gasket

*40G gas ERT modules and 50W water ERT modules only.

Determining Which Itron Modules Contain Mercury

In 2003, Itron phased out the use of mercury in tamper switches to meet environmental compliance with U.S. laws against the use of mercury in any product.

To determine whether an ERT module contains mercury

1. Read the ERT ID number on the ERT module. For ERT modules with mercury switches, the 10-digit part number's four middle digits begin with a *0*:
   - 40G gas ERT module: ERG-**0**00X-XXX
   - 50W water ERT module: ERW-**0**00X-XXX

   Caution Your Itron ERT module contains a mercury switch if the module part number's four middle digits begins with a 0: ERX-**0**00X-XXX.
2. Read the label on the ERT module. The label on non-mercury modules does *not* include the statement, *This device contains mercury*.

Safety and Health Precautions

Itron module disassembly may include direct contact with metallic lead and other heavy metals. Personnel must wash hands thoroughly when moving from the area, even if disassembly is incomplete.

Warning Itron module disassembly includes direct contact with heavy metals. You must have the following safety equipment immediately available:

- Lithium Containment Kit
- Class D fire extinguisher
- Mercury Spill Kit

Verify all personnel know the proper safety procedures for dealing with ruptured lithium batteries and ruptured mercury switches.

Determining Recycling or Disposal Requirements

Contact your state clean air agency for requirements for hazardous materials recycling and disposal. Contact information for regional offices of the National Association of Clean Air Agencies are available online at http://www.4cleanair.org/.

Contact information for regional offices of the **U.S. Environmental Protection Agency** are available online at http://www.epa.gov/epahome/comments.htm.

Recycling information is available online at http://www2.epa.gov/recycle/how-do-i-recycle-common-recyclables.

Warning The instruction to discard in this guide requires you to recycle or dispose of the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

Recycling/Disposal Collection and Shipping

Before disassembly, ask for the following information from your recycling or disposal agency:

- How does the agency want to receive the materials?
- How does the shipper want the materials packaged for shipment?
- Where can you obtain the correct shipping materials and containers?
- Where can you obtain the containers to store the disassembled materials prior to shipment?

Tools Required for Disassembly

The following tools are required for ERT module disassembly.

Tool	Purpose
• Medium or large needle-nosed pliers	Used to grip module components.
• Small (4-inch) sidecutter pliers	Used to clip wires and plastic parts.
• Large (5 or 6-inch) sidecutter pliers	Used to clip wires and plastic parts.
• Medium Phillips screwdriver	Used to remove module screws.
• Small Phillips screwdriver	Used to remove screws and batteries.
• Medium flat-head screwdriver	Used to remove module components.
• Small putty knife	Used to remove potting material.
Gloves	A silicone-based sticky potting material encloses most module batteries and circuit boards in gas and water modules. Gloves increase productivity and protect workers hands. Itron recommends lightweight nitrile gloves.
Aprons	Aprons protect worker's clothing from potting material.
Eye Protection	Workers must wear protective safety glasses to minimize possible eye damage from small pieces that may become projectiles or ruptured lithium batteries.
Small sealable plastic bags	Use the small bag for battery disposal. Place each battery in its own sealable bag.

*As you develop your disassembly procedure, you may require other tools and fixtures.

CHAPTER 2

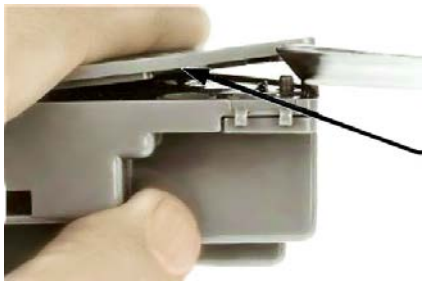
40E Retrofit Kit ERT Module Disassembly

120-volt and 240-volt ERT modules are identical except for their voltage ratings. Disassembly is the same for both products.

Warning The instruction to discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

To disassemble the 40E module housing

1. Using a putty knife or similar tool, pry up one side of the ERT module cover.



2. Pry up the other side of the cover.

3. Remove the cover from the ERT module. Recycle the cover.

4. Use a sidecutter to cut the external connector wires as close as possible to the back of the ERT module housing. Recycle the wires.

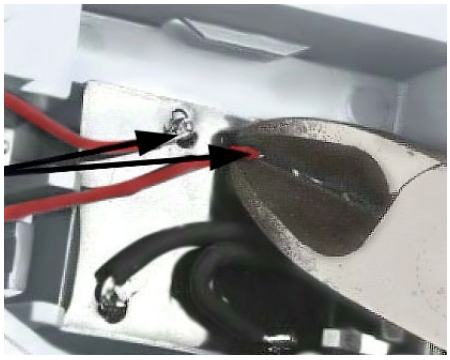
5. Cut the top from the printed circuit board mounting pin. Clip the pin as close to the printed circuit board as possible.

Tip Place a finger over the top of the mounting pin before cutting to stop the pin from becoming a projectile.

6. Use a flat-head screwdriver to push the clipped wire ends inside the ERT module.

7. Push the wires and the circuit board until the circuit board's right side protrudes out of the ERT housing.

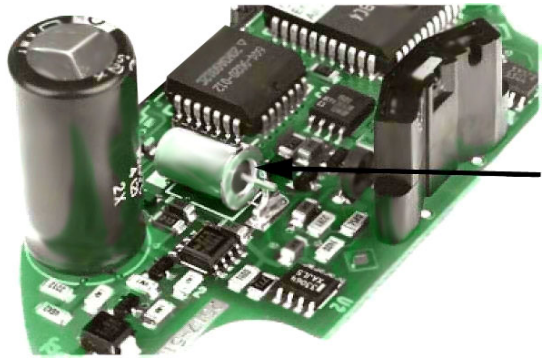
8. Cut the red wire ends as close as possible to the ERT housing. Recycle the red wires.



To disassemble the 40E module circuit board

1. Cut the opposite ends of the red wires as close as possible to the circuit board. Recycle the wires.

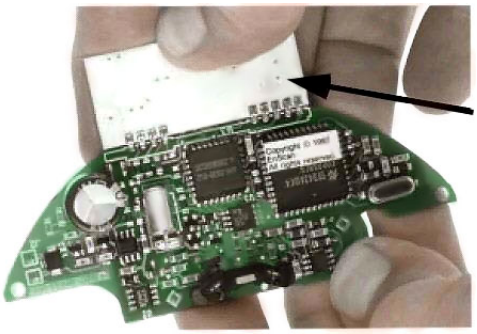
2. Locate the mercury switch on the circuit board. Follow steps 3 through 7 to remove the switch.



Warning 40E electric commercial ERT modules may have a mercury switch containing a small amount (1.16 grams) of mercury in a sealed can. If a mercury switch is present, carefully remove the mercury switch from the commercial ERT module's circuit board. Do not rupture the case of the mercury switch. If the case ruptures, you must immediately follow your organization's procedure for a mercury spill.

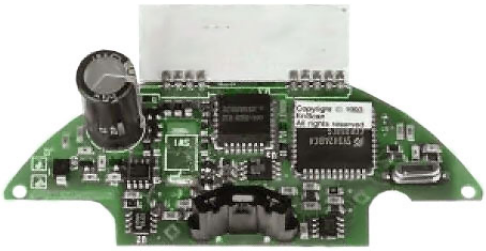
3. Cut the mercury switch mounting wire in the locations shown.

4. If the 40E has the additional small circuit board, bend the board back as shown.



5. Cut the back end of the mercury switch loose from the circuit board. Recycle the mercury switch.

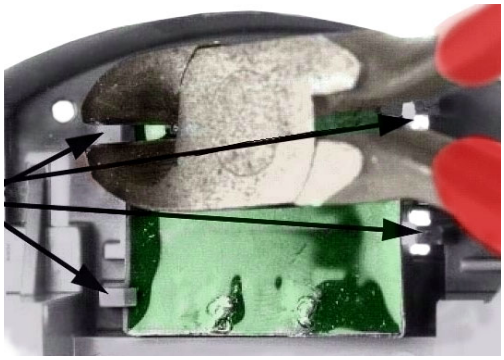
6. Recycle the remaining circuit board.



7. Cut the remaining wires on the ERT housing as close as possible to their terminals on the transformer.

8. Remove the cut wires from the ERT housing and recycle.

9. Cut all four tops from the transformer hold-down clips.



Tip Place a finger over the top of the hold-down clip before cutting to stop the pin from becoming a projectile.

10. Pry the transformer out of the ERT housing. Recycle the transformer and ERT housing.

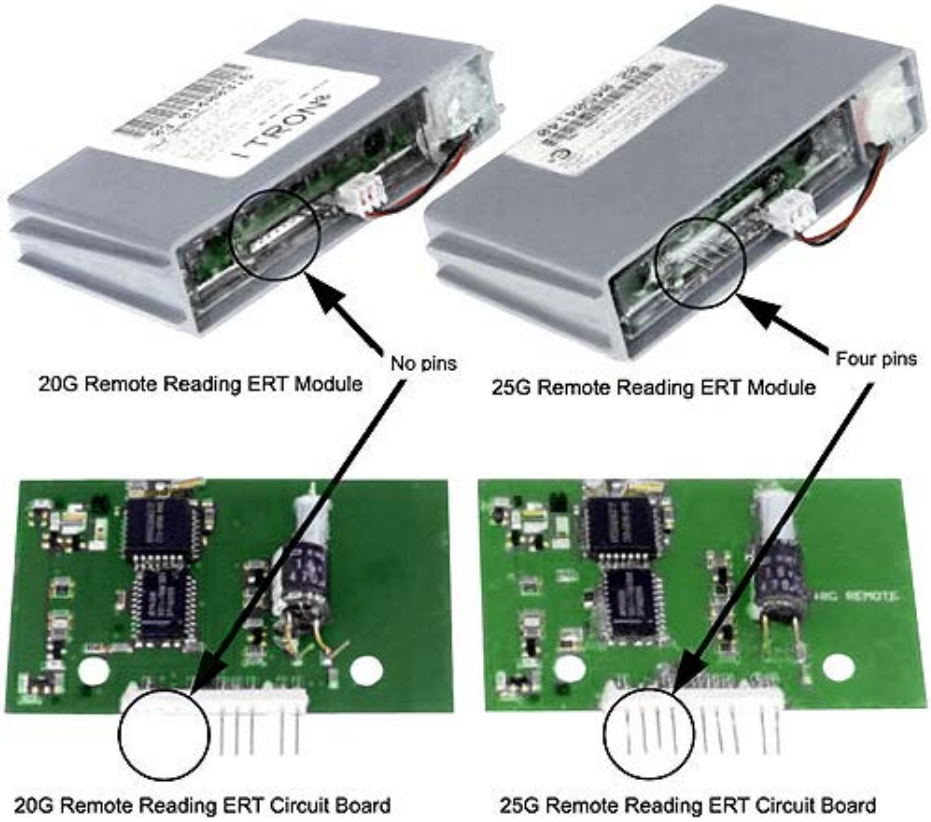
This completes disassembly of the 40E ERT module.

CHAPTER 3

20/25G Remote ERT Reading Module Disassembly

These instructions in this chapter show the disassembly of a 20/25G remote module. 20G and 25G remote reading ERT modules are similar. The visible difference between modules is the four additional connector pins on the 25G module.

Warning The instruction to discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

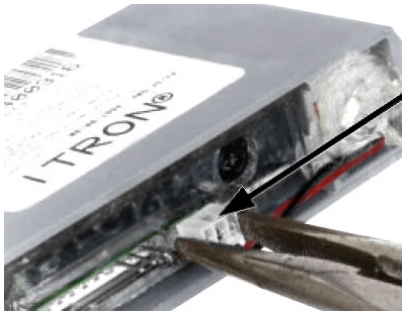


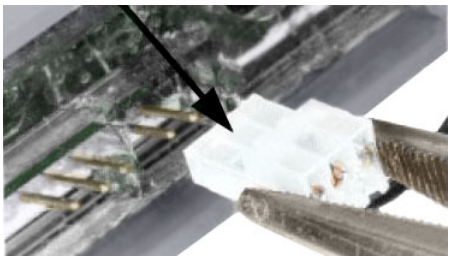
To disassemble the 20G or 25G remote reading ERT module housing

1. If an encoder is connected to the ERT module, disconnect the plug from the ERT module.

2. Recycle the encoder and encoder wire.

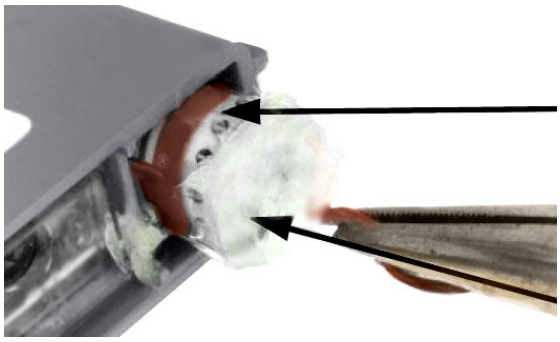
3. Disconnect the battery connector from the circuit board connector plugs.





To disassemble the 20G/25G remote reading battery

1. Remove the battery from the module housing. Scrape off and discard the excess protective material.



Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery case or fluids are leaking from the assembly, immediately follow your organization's procedure for a punctured lithium battery.

Caution Follow these instructions carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying the battery lead wire lengths mitigates the risk of shorting the battery terminals.

2. Cut the black battery wire flush with the battery assembly.

3. Cut the red wire about 1/8-inch above the top of the battery assembly.

Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

4. Place the battery in a sealable plastic bag. Seal the bag. Recycle the battery assembly and wires.

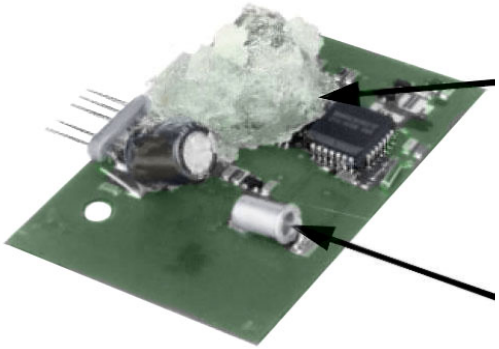
To disassemble the 20G, 25G remote reading ERT module circuit board

1. Remove the circuit board retainer from the ERT module and recycle.

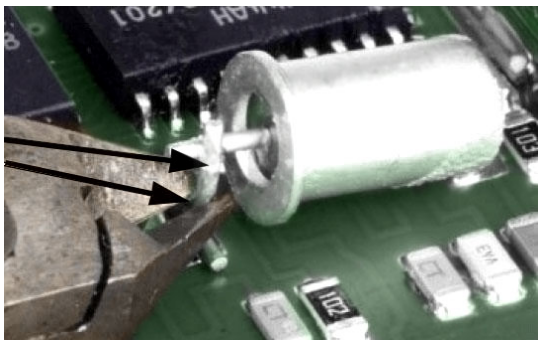
2. Remove and discard as much potting material as possible from around the circuit board. Slide the circuit board from the ERT module housing.

Warning 20G/25G remote reading ERT modules may have a mercury switch containing a small amount (1.16 grams) of mercury in a sealed can. If a mercury switch is present, carefully remove the mercury switch from the ERT module's circuit board. Do not rupture the case of the mercury switch. If the case ruptures, you must immediately follow your organization's procedure for a mercury spill.

3. Remove and discard the excess potting material from the circuit board to better access the mercury switch for removal.

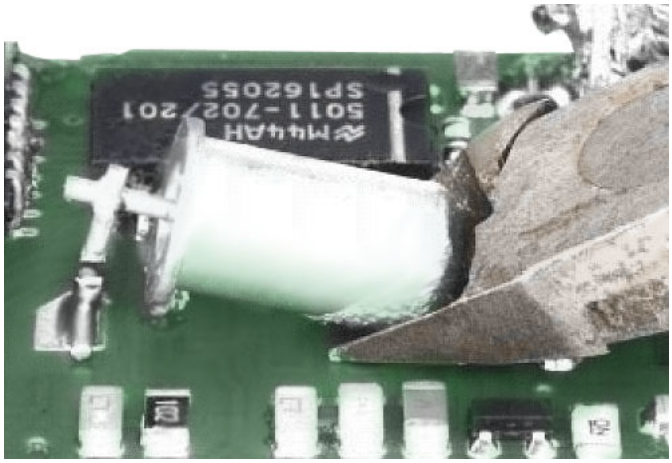


4. Cut the mercury switch mounting wire as shown.



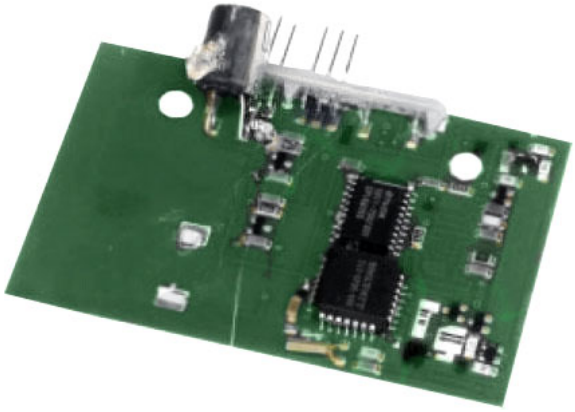
5. Bend the large capacitor upward to access the back end of the mercury switch. Cut the back end of the mercury switch loose from the circuit board. Recycle the mercury switch.

Warning You must recycle components containing mercury in a manner that complies with all local, state, and federal requirements.



Tip Place a finger over the top of the mercury switch before cutting to stop the switch from becoming a projectile.

6. Recycle the circuit board.



This completes disassembly for the 20G/25G remote reading ERT module.

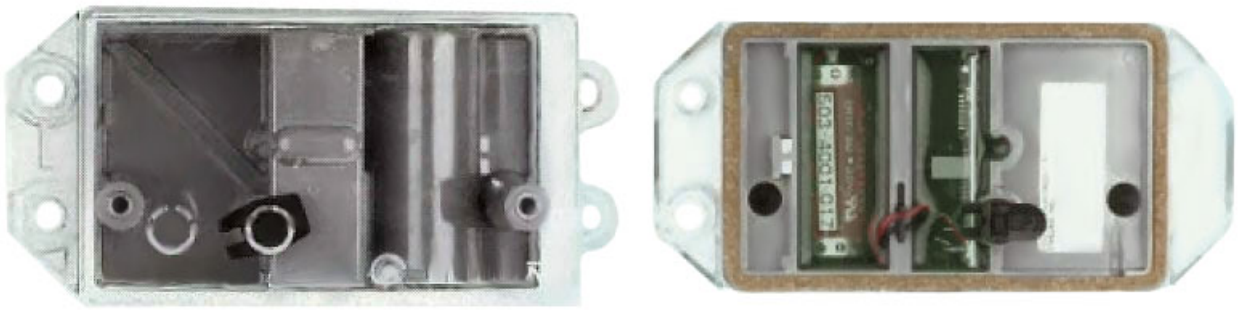
CHAPTER 4

40G/40GB ERT Module Disassembly

This section includes disassembly instructions for 40G/40GB ERT modules designed for Elster/American Meter Co., Sensus/Rockwell/Invensys/Equimeter, National/Lancaster, and Itron/Sprague/Schlumberger/Actaris meters.

Note These disassembly instructions show the Elster/American residential ERT module. The disassembly procedure is similar for all direct-mount residential ERT modules.

Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.



Elster/American 40G/40GB ERT Module

To disassemble the 40G/40GB Direct-mount ERT module housing

1. Remove the index cover from the ERT module housing. Recycle the index cover.

2. Remove the battery's wire hold-down clip on the rear side of the ERT module. Recycle the hold-down clip.

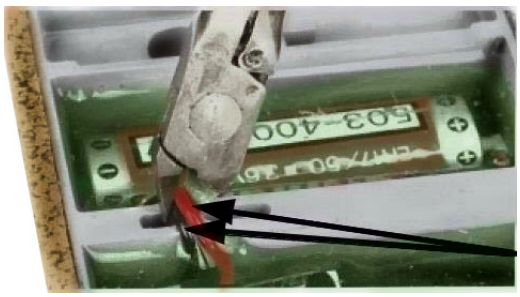
Note Newer ERT modules may have a plastic post securely holding battery wires in place. You must cut the post with a sidecutter.

Tip Place a finger on the top of the post before cutting to stop the plastic piece from becoming a projectile.

Warning Do not cut both battery leads at the same time. Cutting both leads wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury. Do not allow the clipped battery wires to touch.

An AA lithium battery contains 0.9 grams of lithium in the anode of the battery. Some Itron ERT modules contain two batteries.

3. Cut the red battery lead wire.



4. Cut the black battery lead wire.
5. Loosen and remove the battery from the ERT housing cavity.

Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery assembly or fluids are leaking from the assembly, immediately follow your organization's procedure for a punctured lithium battery.

6. Remove the excess potting material from the battery. Discard the potting material.

To disassemble the 40G/GB ERT module battery

Caution Follow these instructions carefully to ensure the cut battery wires do not touch each other. Keep the disassembled battery away from heat and moisture prior to disposal.

1. Cut the black battery wire flush with the battery.

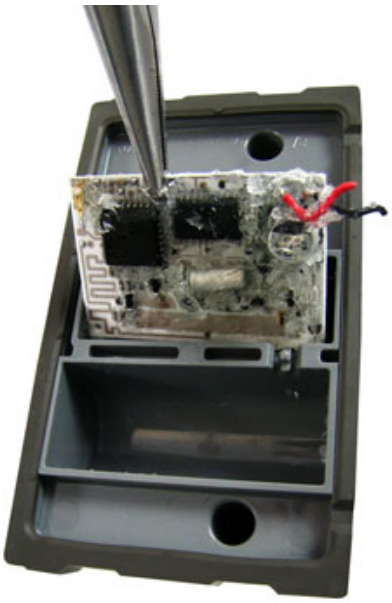
Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

2. Cut the red battery wire about 1/8-inch above the battery.

3. Place the disassembled battery in a sealable plastic bag. Seal the plastic bag. Recycle the battery assembly and wires.

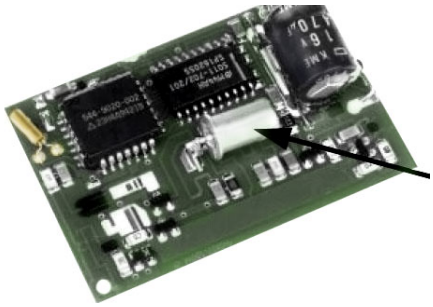
To disassemble the 40G/40GB residential ERT module circuit board

1. Remove the circuit board from the ERT cavity. Scrape off and discard the excess potting material.

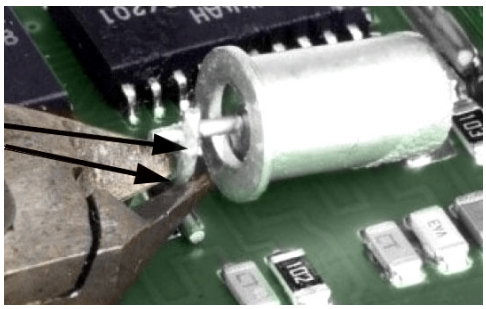


Warning 40G ERT modules may have a mercury switch containing a small amount (1.16 grams) of mercury in a sealed can. 40GB ERT modules do not have a mercury switch. If a mercury switch is present, carefully remove the mercury switch from the ERT module's circuit board. Do not rupture the case of the mercury switch. If the case ruptures, you must immediately follow your organization's procedure for a mercury spill.

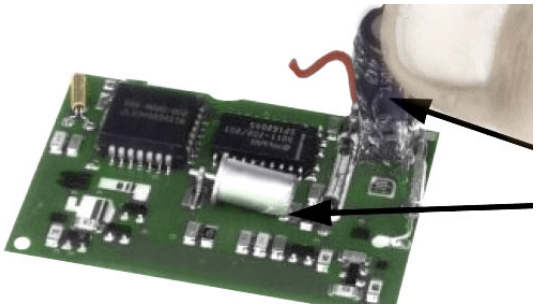
2. Locate the mercury switch on the circuit board. Follow steps 3 through 5 to remove the mercury switch from the circuit board.



3. Cut the mercury switch mounting wire as shown.



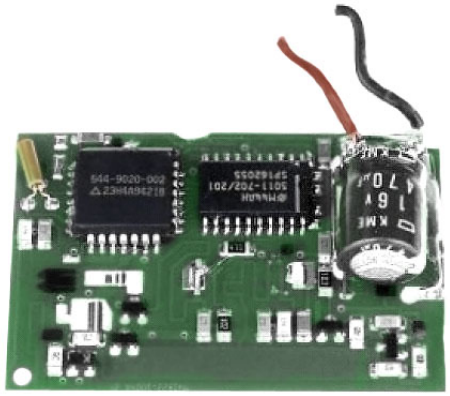
4. Bend the large capacitor upward to allow better access to the back end of the switch.



5. Cut the mercury switch from the board using a sidecutting pliers. Recycle the mercury switch.

Warning You must recycle all components containing mercury in a manner that complies with all local, state, and federal recycling requirements.

6. Recycle the circuit board.



This completes disassembly of the 40G/40GB ERT module.

CHAPTER 5

40G/GB Direct Mount Commercial ERT Module Disassembly

This chapter provides the information to disassemble the 40G/40GB direct mount commercial ERT module.

Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

Note These disassembly illustrations show the Elster/American direct mount commercial/industrial ERT module. The disassembly procedure is similar for Sensus/Invensys/Rockwell direct-mount commercial ERT modules.

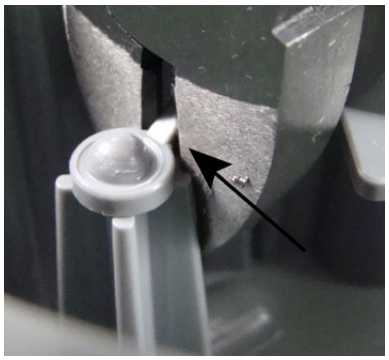
Elster American Direct Mount Commercial ERT Module

To disassemble the 40G/40GB direct mount commercial ERT module housing

1. Position the 40G/40GB commercial module as shown with the battery housing exposed.

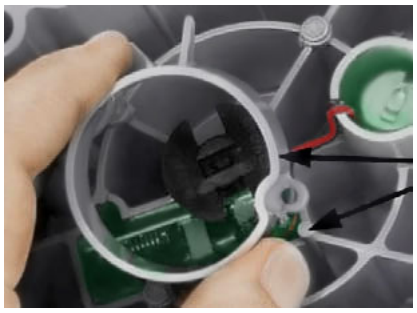
2. Cut the spacer ring mounting fillet as close as possible to the mounting ring.

Note Only early generation 40G/40GB commercial ERT modules contain the spacer ring.

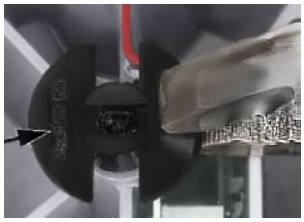


3. Cut the remaining mounting fillets.

4. Bend the spacer ring up and down at the remaining attachment point until it breaks loose.



5. Using a pliers, grasp one side of the wriggler.



6. Pry the wriggler upward until it breaks free from the wriggler center post. Recycle the wriggler and center post (shaft).

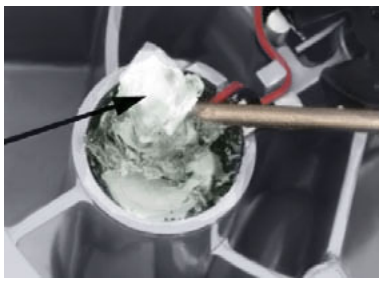
To disassemble the 40G/40GB direct mount commercial ERT module battery

1. Cut the red battery wire.

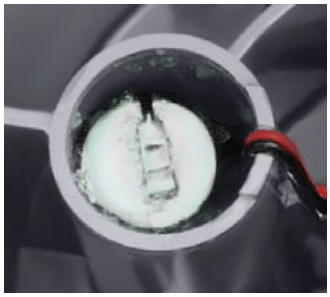
2. Cut the black battery wire. Do not allow the clipped wires to touch.
3. Slowly push the end of a small-head (no more than 1/8-inch in diameter) Phillips screwdriver down through the potting material to the bottom of the battery compartment.

Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery case or fluids are leaking from the assembly, immediately follow you organization's procedure for a punctured lithium battery.

4. Tilt the screwdriver slightly to dislodge some potting material. Pull the screwdriver out of the battery compartment. Removing the screwdriver will also dislodge some potting material and the battery hold-down wedge (one or two, short folded pieces of plastic). Discard the potting material. Recycle the hold-down wedge.



5. Remove as much of the potting material as possible from the battery compartment. Discard the potting material.



6. Remove the battery from the ERT module battery cavity.

7. Remove and discard the excess potting material surrounding the battery.

Caution Follow these instructions carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying the battery lead lengths mitigates the risk of shorting the battery terminals.

Warning Do not cut both battery leads at the same time. Cutting both leads wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

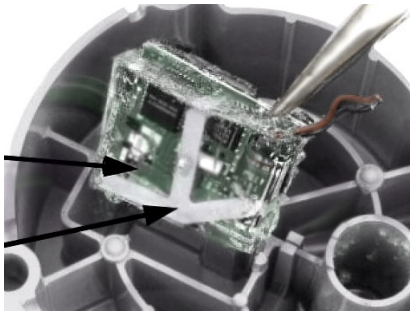
8. Cut the black battery wire flush with the battery.

9. Cut the red battery wire about 1/8-inch above the battery.

10. Place the battery in a sealable plastic bag. Seal the plastic bag. Recycle the bagged battery and the cut wires.

To disassemble the 40G/40GB direct mount commercial ERT module circuit board

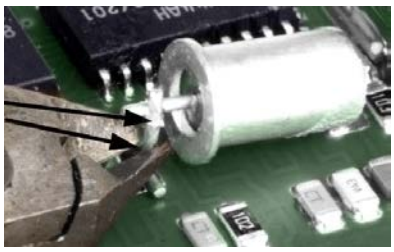
1. Remove the circuit board from the ERT module circuit board cavity.



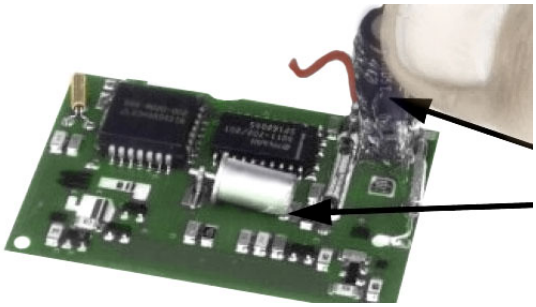
2. Scrape the excess potting material off both sides of the board. The circuit board spacer will dislodge from the board in this step. Discard the potting material. Recycle the circuit board spacer.
3. Locate the mercury switch on the 40G circuit board. Follow steps 3 through 5 to remove the mercury switch from the circuit board.

Warning 40G commercial ERT modules may have a mercury switch containing a small amount (1.16 grams) of mercury in a sealed can. 40GB ERT modules do not have a mercury switch. If a mercury switch is present, carefully remove the mercury switch from the commercial ERT module's circuit board. Do not rupture the case of the mercury switch. If the case ruptures, you must immediately follow your organization's procedure for a mercury spill.

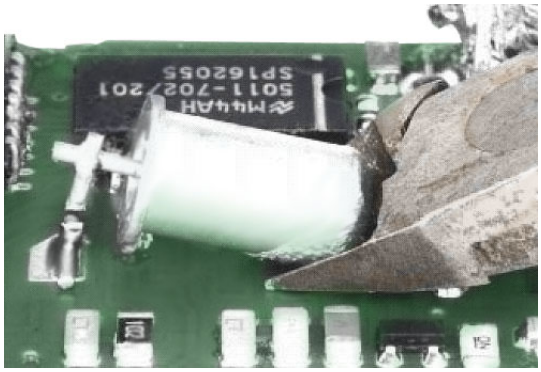
4. Cut the mercury switch mounting wire as shown.



5. Bend the large capacitor upward to allow better access to the back end of the switch.



6. Cut the mercury switch from the board using a sidecutting pliers. Recycle the mercury switch and the circuit board.



This completes the disassembly of the 40G/40GB direct-mount commercial ERT module.

CHAPTER 6

40W, 50W Pit ERT Module Disassembly

40W, 50W Pit ERT Module

Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

To disassemble the 50W and 40W pit ERT module

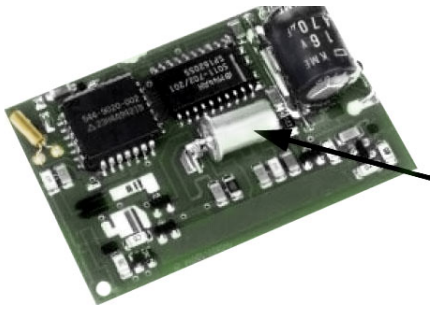
1. Cut the cable from the shaft of the ERT module. Recycle the cable.

2. Remove the four screws from the top plate. Recycle the plate and screws.

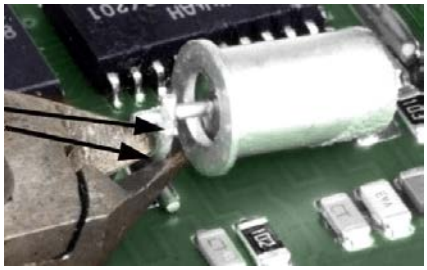
3. Slide the circuit board/battery assembly out of the ERT module's shaft.

Warning 40W and 50W pit ERT modules may have a mercury switch containing a small amount of mercury in a sealed can. If a mercury switch is present, carefully remove the switch from pit module's circuit board. Do not rupture the mercury switch. If you rupture the switch's case, you must immediately follow your organization's procedure for a mercury spill.

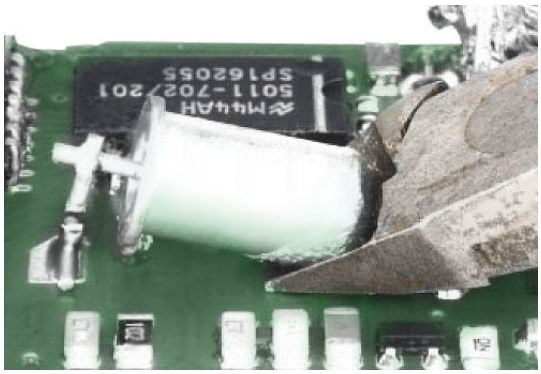
4. Locate the mercury switch on the circuit board. Follow steps 5 and 6 to remove the mercury switch from the circuit board.



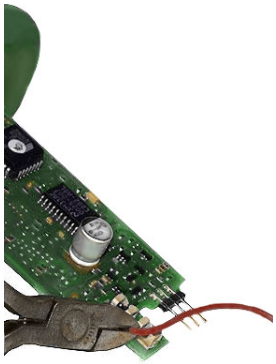
5. Cut the mercury switch mounting wire.



6. Cut the mercury switch from the circuit board using a side cutter pliers. Recycle the mercury switch.



7. Cut the battery wires from the circuit board assembly as shown.



8. Recycle the circuit board and pit module housing.

To disassemble the pit ERT module battery

Note These instructions show a single battery disassembly. Battery disassembly is the same for a battery assembly containing two batteries.

1. Remove the battery mounting plate and foam from the battery assembly. Recycle the mounting plate and foam.

Caution Follow these instructions carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying the battery lead wire lengths mitigates the risk of shorting the battery terminals.

Warning Do not cut both battery leads at the same time. Cutting both lead wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

2. Cut the black battery wire flush with the battery assembly.

3. Cut the red battery wire 1/8-inch above the battery.

Warning Do not puncture the battery's outer case. If you puncture the battery case, immediately follow your organization's procedure for a punctured lithium battery.

4. Place the disassembled battery in a sealable plastic bag. Seal the bag. Recycle the battery assembly and ERT housing.

This completes disassembly of the 40W or 50W pit ERT module.

CHAPTER 7

Remote 40W, 50W, 40G/40GB, and 60W ERT Module Disassembly

This section provides the instructions to disassemble the following Itron modules

- 40W
- 50W
- 40G/40GB
- 60W-R/60WP-R

Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

50W

40G/40GB 40W

60W-R/60WP-R

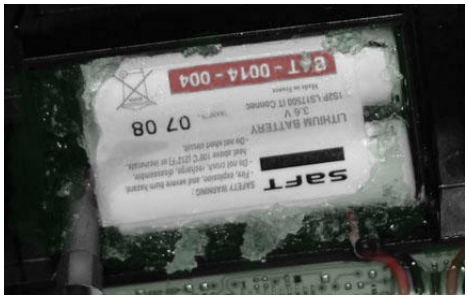
Note These disassembly instruction illustrations show the 50W remote ERT module. The remote modules differ only in the board circuitry and housing color. Disassemble all Itron remote ERT modules following the same steps as the 50W remote.

To disassemble the remote ERT module battery

Note These instructions show a single battery disassembly. Battery disassembly is the same for a battery assembly containing two batteries.

1. Remove the four screws holding the backplate on the remote ERT. Recycle the screws and the backplate.

2. Remove as much potting material from around the battery as possible. Be careful not to damage the battery. Discard the potting material.



3. Carefully insert a screwdriver into the potting material surrounding the battery. Remove and discard as much potting material as possible.

Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery case or fluids are leaking from the assembly, immediately follow your organization's procedure for a punctured lithium battery.

4. Gently pry the battery case out of the remote ERT battery cavity.

Warning Do not cut both battery leads at the same time. Cutting both leads wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

Caution Follow these instructions carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying the battery lead wire lengths mitigates the risk of shorting the battery terminals.

5. Cut the black battery wire flush with the battery.

6. Cut the red battery wire about 1/8-inch above the battery.

7. Place the disassembled battery in a sealable plastic bag. Seal the plastic bag. Recycle the battery assembly and battery wires.

To disassemble the remote module circuit board

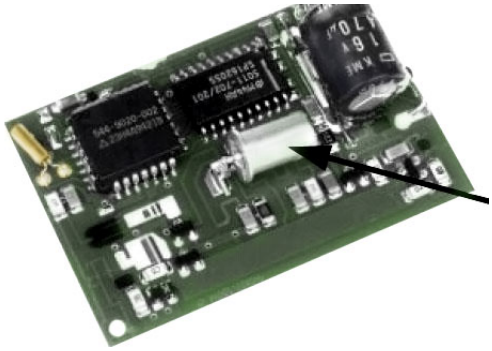
1. Remove and discard the excess potting material surrounding the remote ERT module's circuit board.

2. Cut or pry the wires loose and remove the circuit board from the remote module's housing.

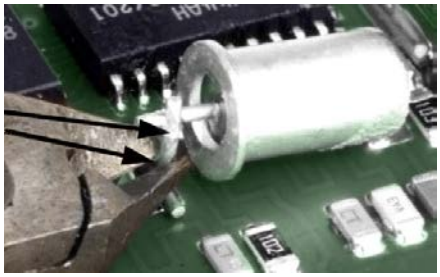
3. 40GB and 60W-R series modules only. This completes disassembly of the 40GB and 60W-R series remote modules. Recycle the circuit board and housing.

Warning 50W and 40G ERT modules may have a mercury switch containing a small amount of mercury in a sealed can. 40GB and 60W-R remote modules do not have a mercury switch. If a mercury switch is present, carefully remove the switch from the remote module's circuit board. Do not rupture the mercury switch. If you rupture the case, you must immediately follow your organization's procedure for a mercury spill.

4. Locate the mercury switch on the circuit board.



5. Follow steps 5 and 6 to remove the mercury switch from the remote ERT circuit board.
6. Cut the mercury switch mounting wire.



7. Bend the large capacitor upward to allow better access to the back end of the switch.

8. Cut the mercury switch from the board using a side-cutter pliers. Recycle the mercury switch.

Warning You must recycle components containing mercury in a manner that complies with all local, state, and federal requirements.

9. Recycle the circuit board and remote module housing.

This completes disassembly of the 40W and 50W remote ERT module.

CHAPTER 8

60W Series ERT Module Disassembly

This chapter provides the information to disassemble the 60W and 60WP ERT module.

Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

60W/60WP ERT Module

To disassemble the 60W series ERT module

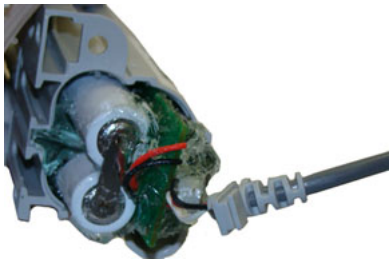
1. Remove the bottom plate and connector cable clip from the bottom of the ERT. Recycle the bottom plate.

2. Remove the excess potting material from the ERT housing with a standard screwdriver. Discard the potting material.
3. Carefully insert a small screwdriver into the remaining potting material surrounding the battery and circuit board assembly.

Warning Do not puncture the battery's outer case. If you puncture the battery case, immediately follow your organization's procedure for a punctured lithium battery.

4. Gently pry the assembly loose from the interior housing.

5. Slide the battery and circuit board assembly out of the 60W housing.



6. Cut the connector wire from the battery and circuit board assembly. Recycle the connector wire.

To disassemble the 60W series ERT module battery

Warning Do not cut both battery leads at the same time. Cutting both leads wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

Caution Follow this battery removal procedure carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying battery lead wire lengths mitigates the risk of shorting the battery terminals.

1. Cut the black battery wire. Gently pull the black wire back to its source on the battery assembly. Cut the black wire flush with the battery.

2. Cut the red battery wire about 1/8-inch above the battery.

3. Place disassembled battery in a plastic sealable bag. Seal the bag.
4. Recycle the battery assembly, circuit board, and ERT housing.

This completes disassembly of the 60W ERT module.

CHAPTER 9

200W Series Endpoint Disassembly

This chapter provides the information to disassemble 200W series ERT modules.

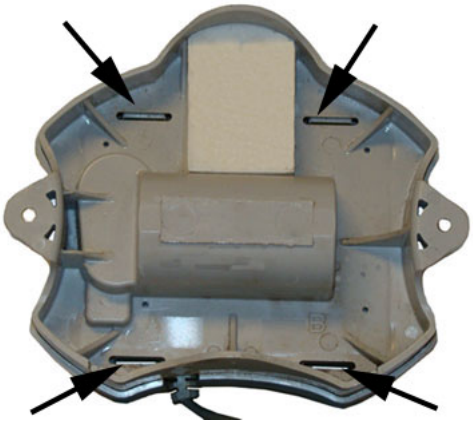
Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

200W Series Endpoint

To disassemble the 200W series module housing

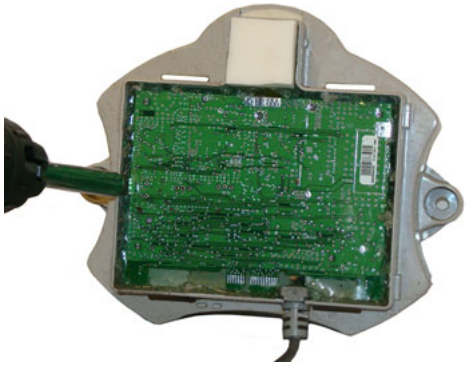
1. Remove the remote antenna tab and recycle the tab.

2. Remove the backplate by prying the four housing tabs loose with a straight-edge screwdriver. Recycle the backplate.

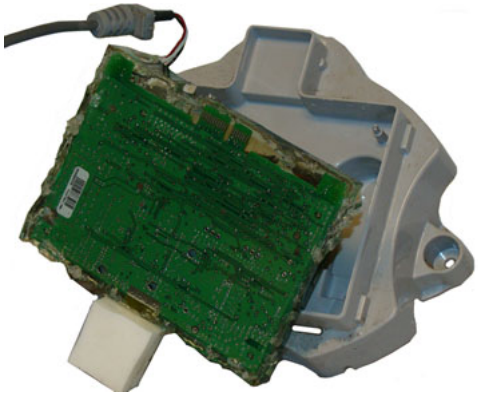


3. Remove the excess potting material from the circuit board cavity and discard the potting material.

4. Insert a straight edge screwdriver between the endpoint housing and the circuit board.

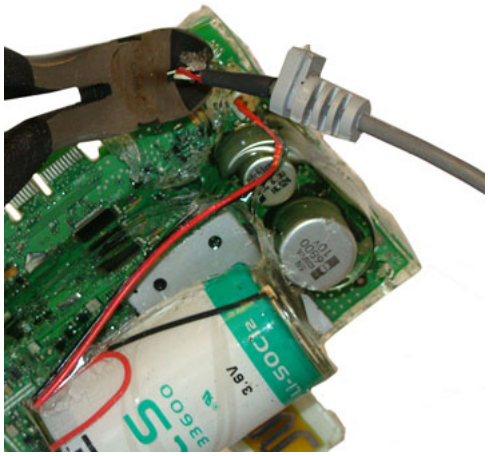


5. Pry the circuit board out of the housing.



6. Cut the cable wire(s) from the circuit board using a sidecutter pliers. Recycle the cable(s).

Note Some 200W series modules have two cables. These instructions show a module with one cable.



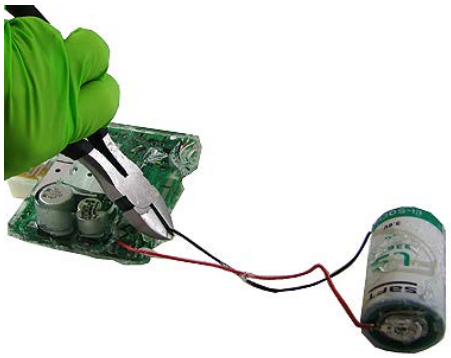
To disassemble the 200W series module battery

Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery case or fluids are leaking from the assembly, immediately follow your organization's procedure for a punctured lithium battery.

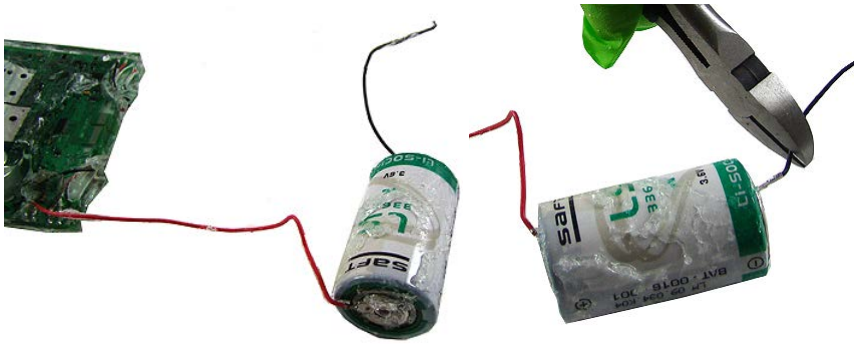
Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

Caution Do not cut both battery leads at the same time. Cutting both lead wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

1. Cut the black battery wire from the circuit board.



2. Bend the black wire end away from the red wire and side-cutter pliers. Trim the black wire to 1/8-inch.



3. Cut the red battery wire flush with the battery assembly.

4. Place the battery assembly in a sealable plastic bag. Seal the bag. Recycle the battery assembly, circuit board and cut wires.

200W series endpoint disassembly is complete.

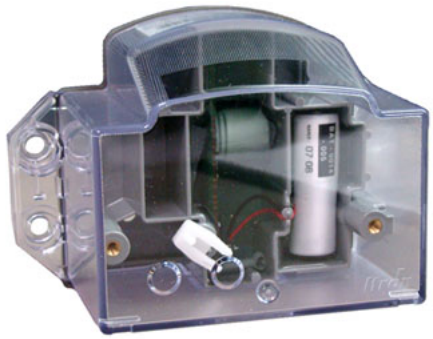
CHAPTER 10

100G Series ERT Modules and 2.4GZ OpenWay Residential Module Disassembly

This section includes disassembly instructions for the residential 100G Series ERT modules and the 2.4GZ OpenWay gas module designed for Elster/American Meter Co. Follow these disassembly instructions for the Sensus/Rockwell/Invensys/Equimeter, National/Lancaster, and Itron/Sprague/Schlumberger/Actaris ERT modules.

Warning The instruction to recycle or discard in this guide requires you to recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

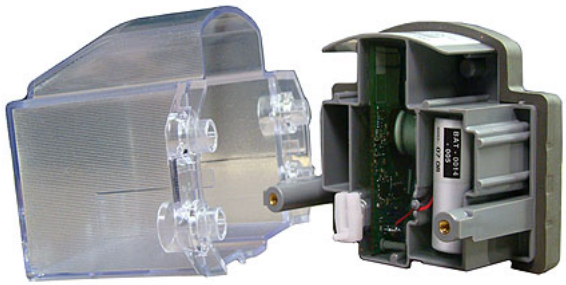
Note These disassembly instructions show the 100G Elster/American residential ERT module. The disassembly procedure is similar for all direct mount residential ERT and gas modules.



Elster American Module

To disassemble the 100G Series ERT module and 2.4GZ gas module housing

- Remove the index cover from the module housing. Recycle the index cover.



To disassemble the 100G Series ERT module and 2.4GZ gas module battery

1. Remove as much potting material as possible from the battery cavity of the module. Be careful not to damage the battery.
2. Discard the potting material.

3. Carefully insert a small head screwdriver tool into the battery cavity.

4. Gently pry the battery out of the cavity. Scrape off the excess potting material from the battery assembly. Discard the potting material.

Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery case or if fluids are leaking from the assembly, immediately follow your organization's procedure for a punctured lithium battery.

Do not cut both battery leads at the same time. Cutting both lead wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

Caution Follow these battery disassembly instructions carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying battery lead wire lengths mitigates the risk of shorting the battery terminals.

5. Cut the black battery wire as shown. Bend the black wire away from the red wire and cutting tool.

6. Clip the red wire close to the battery assembly.
7. Pull the black battery wire to its source. Clip the black battery wire.

8. Place disassembled battery in sealable plastic bag. Seal the bag. Recycle the bagged battery and wires.

To disassemble the module's circuit board

1. Remove the circuit board from the housing cavity.

2. Discard the potting material. Recycle the circuit board, and module housing.

This completes disassembly of the 100G Series ERT module and 2.4GZ gas module.

CHAPTER 11

100G and 2.4GZ Direct Mount Commercial Module Disassembly

This chapter provides information for the disassembly of the 100G and 2.4 GZ commercial direct mount module.

Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

Note These disassembly illustrations show the 100G Elster/American direct-mount commercial ERT module. The disassembly procedure is similar for all 100G and 2.4GZ Sensus/Invensys/Rockwell direct-mount commercial modules.

Elster American Direct Mount Commercial ERT Module

Sensus/Invensys/Rockwell Direct Mount Commercial ERT Module

To disassemble the 100G Series module and 2.4GZ direct mount commercial module battery

1. Pull the passive antenna out of the commercial module housing. Recycle the antenna.

Note This step applies only to the 100G Series module. 2.4GZ modules do not have a passive antenna.

2. Grasp the wriggler wheel using a pliers and break the wriggler from its mounting post (shaft). The wriggler and shaft are secured together with a snap-fit feature.

3. Remove the wriggler post (shaft).

4. Recycle the wriggler and shaft.
5. Carefully remove the excess potting material from around the battery assembly. Be careful not to damage the battery. Discard the potting material.
6. Slowly push the end of a small-head (no more than 1/8-inch in diameter) screwdriver down through the remaining potting material to the bottom of the battery compartment.

7. Tilt the screwdriver slightly and pull the battery out of the battery compartment. Some of the potting material will dislodge along with the battery assembly.

8. Carefully remove and discard as much potting material as possible from the battery assembly.

Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery case or fluids are leaking from the assembly, immediately follow you organization's procedure for a punctured lithium battery.

Do not cut both battery leads at the same time. Cutting both leads wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

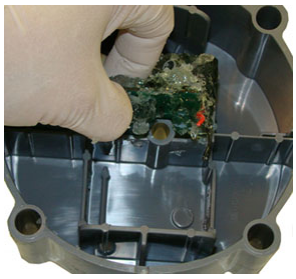
Caution Follow the battery disassembly directions carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying the battery lead wire lengths mitigates the risk of shorting the battery terminals.

9. Cut the black battery wire as shown.

10. Bend wire end away from red wire and cutting tool.
11. Cut the red battery wire flush with the battery assembly.
12. Pull the black wire free from the battery assembly and trim to 1/8-inch.
13. Place the battery assembly in a sealable plastic bag. Seal the bag. Recycle the bagged battery and the cut wires.

To disassemble the 100G Series and 2.4GZ direct mount commercial module circuit board

1. Remove the circuit board from the housing cavity.



2. Scrape off and discard the excess potting material.
3. Recycle the circuit board and housing.

This completes disassembly of the 100G and 2.4GZ direct mount commercial module.

CHAPTER 12

100T-GasGate Remote Disconnect Disassembly

This section provides the instructions to disassemble the 100T-GasGate Remote Disconnect module.

Warning The instructions to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

100T-GasGate Remote Disconnect

To open the GasGate RD housing

1. Push a small straight-edge screwdriver into the GasGate RD tamper seal and remove the seal from the top of the GasGate RD housing.

2. Recycle or discard the broken seal.
3. Remove the three top housing screws from the assembly.

4. Lift the cover from the assembly.

To disassemble the module's top electronic assembly

1. Remove the circuit board assembly from the top housing cavity.

2. Disconnect the plug from the bottom valve connection.

3. Remove the three screws from the valve motor assembly.

4. Recycle or discard the lower valve assembly and valve motor.

To disassemble the 100T-GasGate RD circuit board assembly

1. Run a straight-edge screwdriver or knife around the edge of the board/battery assembly to loosen the potting material from the clear plastic case.

2. Pull the connector wires loose from the heat stakes.

3. Grasp the connector wires and the upright antenna and pull the board/battery assembly out from the clear case.
4. Remove as much potting as possible from the battery and battery connections. Discard the potting material.
5. Using a small side cutter, clip the battery pins (4) next to the PC board to remove the batteries from the board assembly. Clip the pins one at a time.

Warning The batteries used in Itron 100T-GasGate Remote Disconnect modules contain lithium. Do not twist or deform the battery tab. Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally puncture the battery case or if fluids are leaking from the assembly, immediately follow your organization's procedure for a punctured lithium battery.

6. Place disassembled batteries in sealable plastic bags. Seal the bag. Recycle the bagged battery.
7. Recycle or discard the board assembly and clear assembly case.

This completes the 100T-GasGate RD disassembly.

CHAPTER 13

100W/100W+ Series ERT Module Disassembly

This chapter provides the information to disassemble the 100W/100W+ and 100WP/100WP+ ERT module.

Warning The instruction to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

100W/100WP/100W+/100WP+ ERT Module

Note These disassembly instructions show a 100W with a single connector. The disassembly procedure is the same for all 100W/100W+ modules.

Important 100W+/100WP+ ERT modules numbered -4XX must be returned to Itron for product disposal and recycling.

To disassemble the 100W or 100W+ series ERT module

1. Remove the bottom plate from the bottom of the module. Recycle the bottom plate.

2. Remove the excess potting material surrounding the circuit board in the housing with a standard screwdriver. Discard the potting material.

3. Carefully insert a small screwdriver into potting material surrounding the battery/circuit board assembly to loosen assembly.

Warning Do not puncture the battery's outer case. If you puncture the battery case, immediately follow your organization's procedure for a punctured lithium battery.

4. Slide the connector, battery, and circuit board assembly out of the 100W housing.

Note 100W and 100W+ series ERT modules are available in many module types. Modules may have any combination of black (register), red (optional remote antenna), and blue (telemetry) inline connectors or a flying lead cable and a red and or blue inline connector.

5. Remove the connector from circuit board assembly. Recycle the connector.

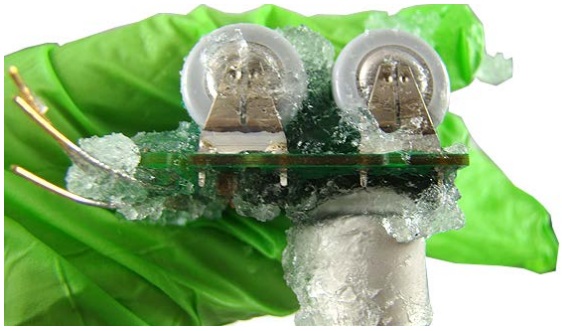
To disassemble the 100W/100W+ series ERT module battery

Warning Do not cut both battery leads at the same time. Cutting both leads wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

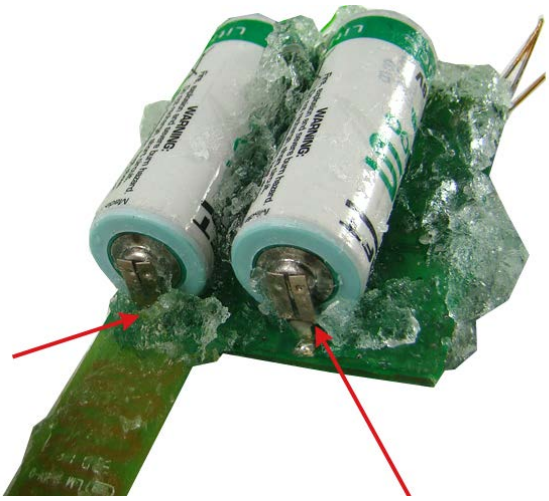
Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

Caution Follow this battery removal procedure carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying battery lead wire lengths mitigates the risk of shorting the battery terminals.

1. Remove as much potting as possible from around the battery and circuit board assembly.



2. Clip the battery standoffs from the circuit board.



3. Place disassembled batteries in separate plastic sealable bags. Seal the bags. Recycle the batteries, circuit board, and module housing.

This completes disassembly of the 100W/100W+ ERT module.

CHAPTER 14

Remote 100G Series, 100W/100W+ Series, 2.4GZ and 2.4ZR Modules, and 100T Telemetry Module Disassembly

This section provides the instructions to disassemble the following itron modules (see the Itron *Gas Endpoint Meter Compatibility List* (PUB-0117-002) for a complete listing).

- 100G, 100G DL, 100G DLN, and 100G DLS
- 100W-R/100WP-R
- 100W-R+/100WP-R+
- 2.4GZ
- 2.4GZ Range Extender
- 100T-CP
- 100T-HON

Warning The instructions to recycle or discard in this guide requires that you recycle or dispose the materials in a manner that complies with all local, state, and federal recycling or disposal requirements.

Note Disassembly instructions are the same for all remote form-factor models of the 100G Series, 100W/100W+ Series, 2.4GZ Series, 2.4ZR, 100T-HON, and 100T-CP modules.

100G/100G DL/100G DLN 100G DLS/100G DLT

100W-R/100WP-R/100W-R+ 100WP-R+

2.4GZ Gas Module

2.4ZR Range Extender

100T-CP Telemetry Module

100T-HON Honeywell Module

To disassemble the remote module battery

1. Remove as much potting material as possible from the battery cavity of the remote module. Be careful not to damage the battery. Discard the potting material.
2. Carefully insert a small head screwdriver tool into the battery cavity. Gently pry the battery out of the cavity.

Warning Do not puncture the battery's outer case. Carefully inspect the battery assembly for leakage. If you accidentally punctured the battery case or fluids are leaking from the assembly, immediately follow you organization's procedure for a punctured lithium battery.

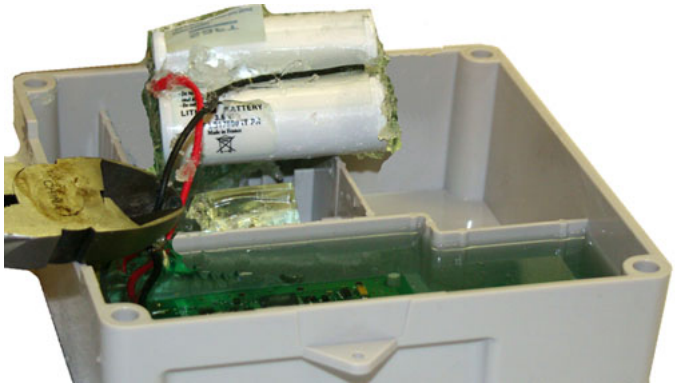
3. Scrape off excess the potting material surrounding the battery assembly.
4. Discard the potting material.

Warning Do not cut both battery leads at the same time. Cutting both leads wires at the same time could short-circuit the battery and cause the battery to generate heat or explode resulting in bodily injury.

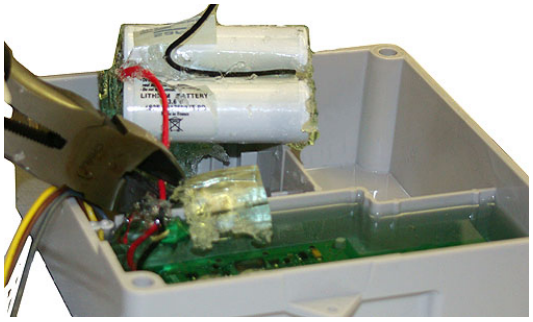
Note The batteries used in Itron modules contain lithium. Some Itron modules have multiple batteries.

Caution Follow these instructions carefully to ensure the cut battery wires do not touch. Keep the disassembled battery away from heat and moisture. Varying the battery lead wire lengths mitigates the risk of shorting the battery terminals.

5. Cut the black battery wire as shown. Bend the black wire away from the red wire and cutting tool.



6. Clip the red wire to remove the battery assembly from the remote housing.



7. Cut the red wire close to the battery assembly.
8. Pull the black battery wire to its source. Clip the black battery wire.

9. Place disassembled battery in sealable plastic bag. Seal the plastic bag.
10. Recycle the bagged battery.

To disassemble the module's circuit board

1. Remove the excess potting material from circuit board cavity.
2. Discard potting material.

3. Pry circuit board from housing cavity and clip the wires.

4. Recycle the circuit board and the module housing.

This completes disassembly of the module's circuit board.

CHAPTER 15

Safety Data and Information Sheets (SDS)

For complete information regarding the materials discussed in this guide, visit the component's manufacturer's respective website.

American Electronic Components http://www.aecsensors.com/html/

Saft http://www.saftbatteries.com/

Maxell http://www.maxell.com/

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