

# Water Solutions

## 100W Datalogging Endpoint Installation Guide

*Putting knowledge to work.*

## Identification

100W Datalogging Endpoint Installation Guide  
04/26/2010 TDC-0909-000

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## 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 has been tested and found to comply with the limits, pursuant to 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 conditions:

- This device may not cause interference.
- This device must accept any interference that may cause undesired operation of the device.

## 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.

Note: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the device.

## Trademark Notice

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All other product names and logos in this documentation are used for identification purposes only and may be trademarks or registered trademarks of their respective companies.



### **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), or incinerate the lithium battery.
- Keep the lithium battery away from children.
- Replace the lithium battery only with batteries meeting Itron specifications. Any other battery may cause a fire or explosion.



**Warning** This unit cannot be modified and is not repairable. Modification of this device could cause non-compliance with FCC rules. Attempts to modify this device will void the warranty.

## Transportation Classification

The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. When powered, endpoints are considered operating transmitters and receivers and cannot be shipped by air. All product returns must be shipped by ground transportation to Itron.

## Suggestions

If you have comments or suggestions on how we may improve this documentation, send them to [TechnicalCommunicationsManager@itron.com](mailto:TechnicalCommunicationsManager@itron.com)

If you have questions or comments about the software or hardware product, contact Itron Technical Support:

## Contact

- Internet: [www.itron.com](http://www.itron.com)
- E-mail: [support@itron.com](mailto:support@itron.com)
- Phone: 1 800 635 8725

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## CHAPTER 1

# Before You Begin

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This document provides the installation instructions for the 100W datalogging endpoint and includes rod mount, wall mount, through-lid (remote antenna), and shelf mount installation. The 100W is available with the following configurations:

- Integral connector
- 5-foot open-end cable
- 20-inch open-end cable

An optional Itron Leak Sensor is available for all three configurations to provide leak monitoring capability. 100W endpoint configurations provide an easy interface to several register types. The 20-inch cable variant allows meter manufacturers to mount the endpoint directly to their respective meter registers before delivery to the installer.



**Caution** Installing an integrated 100W endpoint and meter register in a water pit box reduces the endpoint's RF signal distance significantly. If read reliability is a problem, install a remote antenna or select a new installation method.

## How This Document is Organized

This document is organized into the following chapters:

Chapter	Description
1. Before You Begin	Information about this publication.
2. About the 100W	Overview of 100W installation.
3. Initializing and Connecting the 100W	Instructions to initialize the 100W endpoint and connect the endpoint to the water meter.
4. Installing the 100W	Step-by-step endpoint installation instructions for: <ul style="list-style-type: none"><li>• Rod mount</li><li>• Wall mount</li><li>• Remote antenna (CFG-0900-001)</li><li>• Pit lid shelf mount (kit CFG-1300-001)</li><li>• Base mount</li></ul>
5. Optional Remote Mount Antenna Installation	Step-by-step remote mount antenna installation instructions.
Appendix	Step-by-step instructions to install inline connectors.

## Document Conventions

Convention	Example
Iron product part numbers are noted in parentheses.	To install the endpoint (ERW-0000-000), do the following steps.
Hypertext links are in blue.	See the <a href="#">Copyright Page</a> for identification information.



**Note** A Note indicates neutral or positive information that stresses or supplements important points of the main text. A note supplies information that may apply only in special cases.



**Tip** A Tip helps users apply the techniques and procedures described in the text to their specific needs.



**Caution** A Caution advises users that failure to take or avoid a specified action could result in a loss of data.



**Warning** A Warning advises users that failure to take or avoid a specified action could result in physical harm to the user or the hardware.

# About the 100W Datalogging Endpoint

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The 100W datalogging endpoint is a high-power radio frequency automatic meter reading (AMR) device that attaches to a water meter to collect consumption usage and tamper data that it transmits to a data collection device. The endpoint operates in both bubble-up mode and two-way modes.

The 100W ships in Factory Mode. The endpoint will acquire and transmit meter register data within one hour following register connection. The endpoint will transfer meter data immediately if the unit is initialized with a handheld computer during installation (see [To initialize the 100W](#) on page 5).



**Caution** Failure to initialize the endpoint may delay the initial reading up to 1 hour.

The 100W supports protocols for a variety of meter manufacturer's registers. Refer to the *Water Meter Compatibility List* (PUB-0063-002), for the list of supported meters and registers.

100W s feature the following capabilities:

- **Leak Detection:** The 100W indicates (by meter reading software) that a potential system leak exists if a zero consumption value does not occur over a programmed period of hourly register reads. Upon detecting a zero consumption, the leak test period is reset. The optional Itron Leak Sensor provides advanced leak monitoring through data collections analyzed using a unique mlogonline™ portal.
- **Tamper Indicators:** To minimize the possibility of theft, the 100W features cut cable tamper reporting as well as a security seal to indicate physical tampering. Either a cut cable or a register/endpoint communication error will set a cable tamper flag. This flag will remain set for one day after communication is restored when the endpoint is programmed to Network mode, or 40 days after communication is restored when the endpoint is programmed to Mobile mode.
- **Reverse Flow Detection:** To detect reverse flow, the 100W compares the register's current consumption reading to the reading obtained at the previous hourly update. If the register value is less, the endpoint signals the meter reading software to report a reverse flow condition for the next 40 days. The 40 day time limit is continually reset if another reverse flow event occurs before the period has timed out.

## Battery Life

Powered by two non-replaceable, long-life lithium batteries, the 100W has an expected battery life of 20 years when the endpoint operates in default Mobile or Fixed Network Operating mode.

## Operating Modes

The 100W has three standard operating modes.

### 1. Factory Mode

- 100W endpoints are shipped from the factory in Factory Mode.
- The endpoint's transmitter is turned off.
- The endpoint's receiver is bubbling-up to listen for a programming command.
- 100W encoder models will attempt to read the register every hour.
- Last good read and cut tamper flags may be set when a register is not connected.
- If the 100W reads a connected register, the endpoint automatically moves to Run Mode.

### 2. Run Mode

- 100W endpoint's normal operation mode.
- The 100W transmitted message is dependent on its factory settings for standard consumption messages (SCM), standard consumption messages 30 (SCM30), network interval message (NIM), or network consumption message (NCM).

For SCM and SCM30, the 100W default bubble-up rate is 9 seconds.

For NIM and NCM, the 100W default bubble-up rate is 5 minutes. When the endpoint is set for NCM or NIM, the 100W transmits a contingency SCM message every minute. NCM or NIM mode is configured when the endpoint detects an attached register or by programming NCM or NIM mode with a programming device.

### 3. Audit Mode

- Audit Mode is configured by sending a **Check ERT** command or a **Set Mode command #119** with a programming device.
- The 100W operates as if in Run Mode but also transmits an SCM every 4 seconds and bubbles up the receiver every 4 seconds.
- The 100W exits Audit Mode automatically after 1 hour or by configuring Run Mode with a programming device.



## Initializing and Connecting the 100W Datalogging Endpoint

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This chapter provides the instructions to initialize the 100W datalogging endpoint and connect the endpoint to the water meter register. The 100W initializes immediately when the endpoint is programmed with an approved handheld computer or the endpoint recognizes the meter register and activates itself after connection to a register.



**Caution** To obtain an immediate reading, initialize the 100W with an approved handheld computer. Failure to initialize the endpoint may delay the initial reading up to 1 hour.

### To initialize the 100W

- To initialize the 100W immediately, use one of the following handheld computers running Field Deployment Manager (FDM) version 1.0 or later.
  - FC200SR handheld computer (Itron part number FC2-0005-004 or FC2-0006-004)
  - FC300 with SRead
- For normal activation, connect the 100W to the water meter register. The endpoint polls for a register every hour. After a register is detected, the 100W automatically activates.

### Connecting to a Meter Register Using the Inline Connector

The inline connector system easily allows a separation of the endpoint and meter register and provides for general maintenance or system troubleshooting (see [Using an Inline Connector](#) on page 33).

### Connecting to a Meter Register Using a 5-foot Cable

The 100W may be connected to the water meter register using the 5-foot cable.



**Caution** The wire terminations must be properly sealed with a non-conductive gel material to prevent water intrusion (otherwise, this configuration should not be used in a pit box environment). Itron recommends the 5-foot cable configuration for OEM users only.

**To connect the 100W to the register**

- Connect the 100W wires to the register screw terminals according to the following table.

Register Manufacturer	100W wire color		
	Red (data)	Black (power/clock)	White (ground)
	Register screw terminal		
Elster AMCO Invision	R	G	B
Elster AMCO Scancoder	R	G	B
Elster AMCO evoQ4 (Q4000)	R	W	B
Hersey Translator	G	R	B
Badger ADE	G	R	B
Sensus ECR	G	R	B
Sensus ICE	G	R	B
Metron Farnier	G	R	B
Itron (Actaris) Coder	G	R	B
ProRead	R	B	G
ARB V	R	B	G
Performance ETR	G	R	B
Severn Trent SM700 SmartMeter (Sensus Protocol)	G	R	B

**Caution** Wire should wrap one complete revolution around register screw. Completely tighten register screws and verify wire insulation is not under screw terminal heads or intermittent electrical connection may occur. You must use a moisture-proof sealant if the meter is used outdoors or in any environment where moisture can collect on the screw terminals.

**Using an Extension Cable**

Order the 25-foot inline connector extension cable assembly (CFG-0151-401) to extend the 100W with the inline connector.

## Verifying Operation of the 100W Datalogging Endpoint

Use one of the following handheld computers to verify consumption:

- FC200SR handheld computer (Itron part number FC2-0005-004 or FC2-0006-004)
- FC300 with SRead



### NOTES

- Each handheld radio requires special setup and configuration parameters to successfully read and program 100W products. Refer to the respective meter reading application for specific instructions.
- When comparing the actual register value to that reported by the 100W , please keep in mind the endpoint's consumption value is updated once an hour when it is in a Run Mode.



**Caution** Do not use ReadOne Pro, FS2PN, FS3PN, or FC200 readers to read the 100W endpoint. These readers do not keep their receivers on long enough or at the right frequency to reliably capture a 100W transmission.



# Installing the 100W Datalogging Endpoint

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This chapter provides the instructions to install the 100W. Install the 100W using one of the following methods:

- **Rod mount.** The endpoint mounts on a 1/2 inch outside diameter rod.
- **Wall mount.** The endpoint mounts to a wall or other vertical surface.
- **Base mount.** The endpoint mounts on a horizontal, flat surface.
- **Shelf Mount.** The endpoint mounts in pre-fabricated pockets or shelves within the pit lid using a shelf mount accessory kit.

For water pit boxes, the type of installation method is based on two factors: the lid material and the current lid configuration. Metal lids may require a through-lid remote mount antenna for optimal endpoint radio performance. Plastic lids and other composite materials accept any installation methods described above. The 100W is temperature rated from -20° C to +60° C. Do not install the 100W in locations that may exceed the temperature rating.



**Caution** Observe the following guidelines for mounting the 100W:

- Endpoint positioning other than upright could negatively affect radio performance and battery life.
- Do not use gel connectors in pit environments.
- Use only Itron-approved splice kits or inline connectors.

## 100W Datalogging Endpoints with Integral Connectors

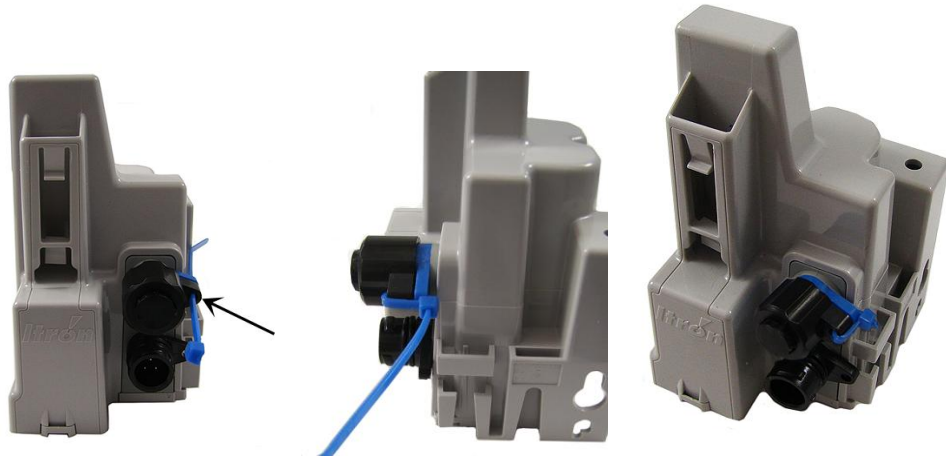
If 100W s with integral connectors (ERW-1300-X0X) and the registers are not installed at the same time, secure the protective connector cover on the endpoint using a cable tie (Itron part number MSE-0005-002). Cable ties are not shipped with the 100W , but can be ordered from Itron. Use the protective cover (on the endpoint side) in the field for up to one year.



**Warning** If a dual-port 100W is installed but the Leak Sensor is not attached, the environmental cap (MSC-0019-005) must remain in place on the blue connector (Leak Sensor connector) to protect the connector from damage.

### **To install a cable tie to the connector**

1. Thread the cable tie through the security holes in the connector and protective cover.
2. Thread the cable tie end through the eye of the cable tie. Pull the cable tie tight to secure it (as shown).



## **Rod Mount Installation**

100W s can mount below the pit lid on a customer-supplied 1/2-inch OD rod. The example installation described in this section uses a fiberglass rod. For more information, see the Compatibility Chart at the following Itron website address:

[http://www.itron.com/pages/products\\_detail.asp?ID=itr\\_000428.xml&pgtype=&subID=ar](http://www.itron.com/pages/products_detail.asp?ID=itr_000428.xml&pgtype=&subID=ar)



**Warning** The rod installation area must be free from other pipes, wires, or facilities that may be damaged by driving a rod into the ground.



**Caution** You must follow local codes when using the rod mount installation method. Failure to use 1/2-inch rod and follow instructions may result in an unreliable installation.



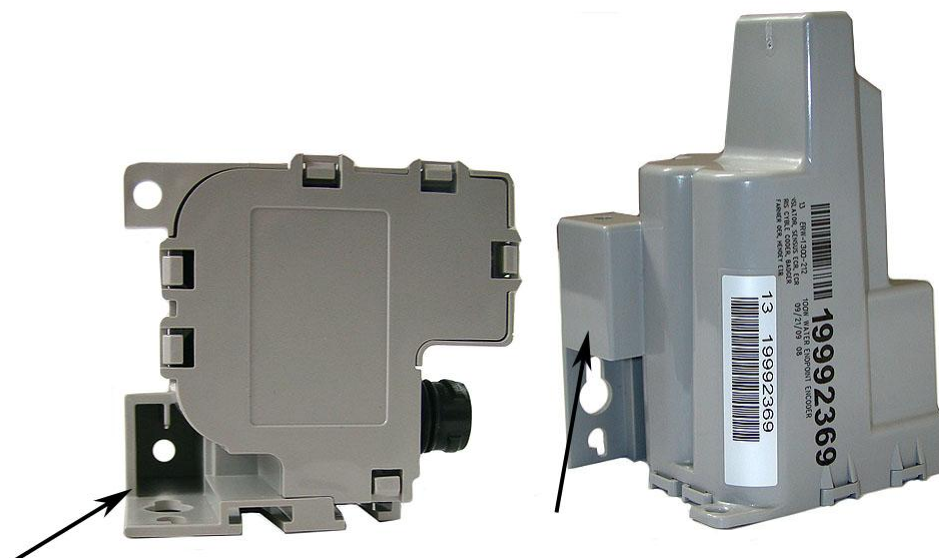
**Caution** Observe the following guidelines for mounting the 100W using the wall mount procedure:

- Endpoint positioning other than upright could negatively affect radio performance and battery life.
- Do not use gel connectors in pit environments.
- Use only Itron-approved splice kits or inline connectors.

## Required Tools and Hardware

- Hammer
- 1/2-inch outside diameter rod (either a square or round rod may be used)
- Tape measure
- Rod-driving tool (optional)
- Cutting tool to adjust rod length

The 1/2-inch diameter rod hole is shown in the following bottom and side view of the 100W.



### ***To install the 100W endpoint on a rod***

1. Remove the pit lid. Inspect the area to make sure there are no buried cables, pipes, or other obstructions.
2. Measure the depth of the pit box from the top of the lip (where the lid will rest) to the bottom of the pit. Be sure to measure the depth at the point where the rod will be driven into the ground.
3. Add 12 inches to the pit box depth measurement taken in step 2. The resulting total represents the minimum length of rod needed. Soil types and moisture conditions may require longer rod lengths to ensure the endpoint is well supported and remains vertical.

- Without touching the meter body or adjacent pipes, position the rod as close to the center of the pit as possible. Drive the rod into the ground. Ensure the rod remains vertical.



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**Note** The rod shown has a protective end cap to protect the rod while driving it into the ground.

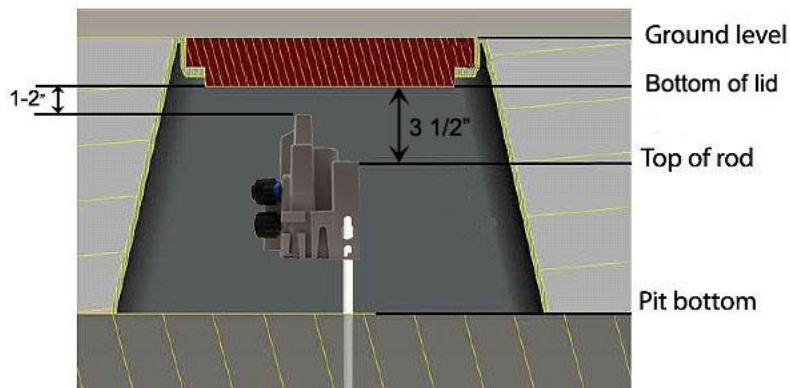
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- Drive the rod into the ground so the top of the rod is approximately three and one-half inches below the bottom of the pit lid.
  - If the rod cannot be driven in enough to equal the necessary spacing, cut the remaining rod length to the proper height using an abrasive cut off tool.
  - If the rod is driven to the correct depth but remains loose in the soil, replace the rod with a longer version.

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**Caution** Cutting fiberglass creates dust particles. Practice proper safety precautions when using cut-off tools to prevent exposure to fiberglass dust particles.

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- The top of the rod should be three and one-half inches below the bottom of the lid. Place the endpoint on the rod. Completely insert the rod into the endpoint's rod mount hole. Do not force the endpoint onto the rod. If the endpoint does not slide freely on the rod, remove the endpoint and examine the endpoint rod hole and rod for burrs or obstructions. You may secure the endpoint to the rod with a self-drilling screw through the hole in the top of the 100W rod mount cavity. The screw mounting hole is shown in the following product image.



- Installation is complete when the endpoint is perpendicular to the underside of the lid. The endpoint must not contact the pit structure or lid.

**Caution** Verify the pit lid does not come in contact with the endpoint when the lid is replaced. There must be a 1 to 2 inch space between the top of the endpoint and the bottom of the pit lid. If the 100W is installed too high, too low, or is touching any of the surrounding surfaces, adjust as necessary.



## Wall Mount Installation

Select a flat vertical mounting surface. Install the endpoint in an upright position; locate the endpoint as high as possible. To mount the endpoint to the wall in a water pit box, select a mounting location on the inside of the pit box and try to maintain a distance of one to two inches from the bottom of the pit box lid.



**Caution** Observe the following guidelines for mounting the 100W using the wall mount procedure:

- Endpoint positioning other than upright could negatively affect radio performance and battery life.
- Do not use gel connectors in pit environments.
- Use only Itron-approved splice kits or inline connectors.

The 100W is suitable for use with up to 300 feet of Itron approved cable.

## Required Tools and Hardware

Itron 100W Shelf Mount Kit

### ***To install the 100W endpoint using the wall mount procedure***

1. Select a vertical surface in the pit box or on a wall (for example, endpoints mounted in basements).
2. Position the endpoint vertically so the top of the endpoint is between one and two inches below the bottom of the lid.
3. Mark the location of the top mounting hole.
4. Drill a pilot hole in the pit box wall. Follow the screw manufacturer's recommendation for the size of the pilot hole.

5. For concrete-type pit boxes, it may be necessary to use a screw anchor. Choose an anchor appropriate for a #10 pan head screw.

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**Caution** Do not over-tighten the mounting screws. Over-tightening the mounting screws may break the endpoint mounting tabs.

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6. Start a screw into the pilot hole. Using the top hole of the endpoint, set the endpoint over the screw head and slide it down so the screw is now at the top of the notch (as shown). Carefully tighten the screw until snug. Over-tightening the mounting screw could crack the endpoint housing.



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**Note** If mounting requires a screw anchor, mark the location of the bottom anchor and remove the endpoint. Drill the required mounting hole, insert the anchor, and re-attach the endpoint.

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7. Holding the 100W in the upright position, drill the second pilot hole. Use the bottom mounting hole as a template.

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**Caution** Any endpoint position other than upright may negatively affect radio performance and battery life.

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8. Screw the bottom screw into the pilot hole until snug. Do not over-tighten the mounting screw.



## Base Mount Installation

The 100W may be mounted to a flat surface using the base tab.



**Caution** Observe the following guidelines for mounting the 100W using the wall mount procedure:

- Endpoint positioning other than upright could negatively affect radio performance and battery life.
- Do not use gel connectors in pit environments.
- Use only Itron-approved splice kits or inline connectors.

### Required Base Mounting Tools and Hardware

- Drill and drill bits appropriate for mounting location material.
- Common hand tools for the selected fastening method.
- Mounting screws: #10 size pan head screws appropriate for the wall or pit box material.

### *To install the 100W using the base mount procedure*

1. Select a flat surface.
2. Position the endpoint vertically.
3. Mark the location of the mounting hole.
4. Drill a pilot hole in the mounting location material. Follow the screw manufacturer's recommendation for the size of the pilot hole.
5. Position the 100W and insert a #10 pan head screw in the base mounting tab. Carefully tighten the mounting screw until the 100W is secure.

---

**Caution** Do not over-tighten the mounting screws. Over-tightening the mounting screws may break the endpoint mounting tabs.

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## Shelf Mount Installation

This section describes 100W installation using a Shelf Mount Adapter to mount the endpoint in a pit lid slot.

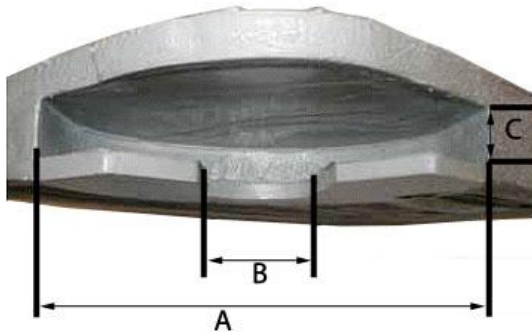


**Caution** Observe the following guidelines for mounting the 100W using the wall mount procedure:

- Endpoint positioning other than upright could negatively affect radio performance and battery life.
- Do not use gel connectors in pit environments.
- Use only Itron-approved splice kits or inline connectors.

The pit lid and slot must have the correct dimensions for the 100W assembly to fit properly.

The following illustration and the accompanying table give pit lid slot dimensions for the shelf mount installation method.



Pit Lid Slot Dimensions		
Dimension	Minimum (inches)	Maximum (inches)
A	6 3/4	N/A
B	2	5 3/4
C	3/4	1

## Required Tools and Hardware

Itron 100W Shelf Mount Kit

**To install using the shelf mount adapter**

1. With the foam spacers facing up, insert the shelf mount adapter into the opening in the disk.



2. Push the adapter into the opening gently until the adapter snaps into place. Insert the shelf mount adapter into the 100W antenna slot pushing firmly with your thumb until the adapter tab locks into place in the opening of the 100W antenna slot.



- Slide the adapter assembly into the pit lid with the foam spacers positioned on each side of the pit lid slot.



**Correct position for foam spacers**



**Caution** Do not install the adapter assembly in a manner that provides little or no support under disk's edge.



**Incorrect mounting position for foam spacers.**

- The installed position of the endpoint should be vertical and upright when the lid is replaced on the pit.

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**Caution** When placing the pit lid on to the pit box after shelf mount adapter installation, use care to avoid pinching or damaging the 100W meter cable. Any endpoint position other than upright may negatively affect radio performance and battery life.

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## Optional Leak Sensor Installation

Leak Sensors analyze water flow sound patterns to detect new, evolving, and pre-existing leaks. LS analysis data is uploaded to mlogonline™ Network Leak Monitoring for data analysis accessed through a secure Internet portal unique to your utility.

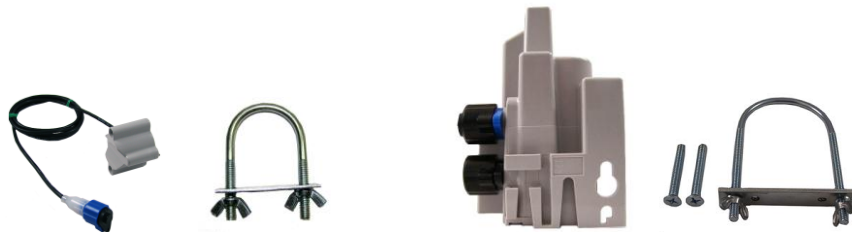
The 100W endpoint stores 20 days of Leak Sensor data. On the 21<sup>st</sup> day, the 100W begins to write over stored data in a first in, first out manner, maintaining current data on the status of the surrounding water pipes.

The 100W automatically detects the presence of connected Leak Sensors. The 100W will automatically detect the Leak Sensor within 22.5 minutes and begin reading leak sensor data. To immediately detect the Leak Sensor and begin reading data, perform a **Check ERT** with a handheld computer running FDM software.

This section describes installation of the Leak Sensor (LS) in a 100W system. The LS is used in both indoor (basement) and outdoor (water meter pit) locations. LS devices are mounted on a water service pipe or meter insetter (meter horn) and connect to the blue, top connector of the 100W endpoint. The mounting bracket shipped with the Leak Sensor accommodates an (up to) 1 1/2-inch OD pipe. An optional mounting bracket is available for pipe sizes (up to) 2 1/2-inch OD.

### Required Equipment

Equipment	Itron Part Number	Description
Leak Sensor	LDS-0001-002	LDS with inline connector, environmental connector cap; 5-foot cable, and mounting bolt
Optional mounting bracket	CFG-0349-002	Mounting bolt fits up to 2 1/2-inch OD pipe.
100W datalogging endpoint	ERW-1300-002	Dual port 100W for LS and environmental connector caps.
25-foot extension cable	CFG-0349-101	25-foot cable with coordinating connectors (LS blue connector, register black connector).
100W LS environmental replacement cap	MSC-0019-005	Protects Leak Sensor connector when the Leak Sensor is not connected to the 100W endpoint.



**Leak Sensor    Mounting bracket    100W endpoint    Optional mounting bracket**



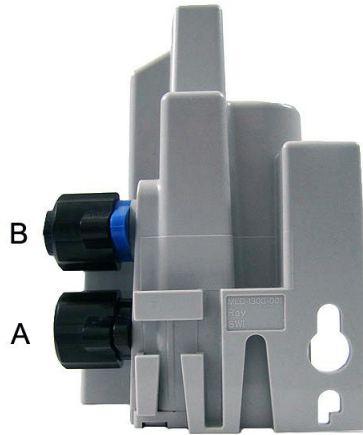
**Warning** When the 100W is installed but the Leak Sensor is not attached, the blue Leak Sensor port must be protected with the environmental cap (MSC-0019-005). If the Leak Sensor is removed from the 100W, the environmental cap must be replaced to protect the connector.



**To connect the Leak Sensor to the 100W**

**Caution** Verify you have the correct 100W endpoint. Leak Sensors must mount to Port B (top port) of the 100W. Connecting the LS to Port A (bottom port) will cause electrical damage to the LS and 100W endpoint.

1. Remove the environmental cap from the 100W endpoint blue connector (B).



B. 100W blue connector: Leak Sensor connection

A. 100W black connector: Register connection

2. Remove the environmental cap from the Leak Sensor connector. Verify the connectors (100W LS connector and the Leak Sensor connector) are clean and dry.



3. Align the Leak Sensor connector with the endpoint's blue connector and insert.



4. Rotate the connector locking ring until the security holes align.



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**Caution** Do not force the connector ends together. While holding the LS connector, engage the 100W connector by rotating the locking ring until both connectors securely connect. Twist only the connector locking ring, not the body of the connector. Twisting the connector body could damage the connector's pins.

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## Attaching an Itron Security Seal

### Required Materials

Itron Security Seal (MSC-0018-001)



**To attach an Itron Security Seal through the connector security hole**

1. Insert the pointed end of the Security Seal through the inline connector and the 100W connector security holes.



2. Insert the pointed end of the security seal into the capped end and push until the seal locks.



This completes 100W and Leak Sensor connections.

## Pipe Preparation

Clean any dust or dirt from the pipe to facilitate direct contact with the LS surface.

**To install the Leak Sensor on a pipe or meter insetter**

1. Select a Leak Sensor mounting location within 5 feet of the 100W endpoint. Mount the sensor on the water input side of the meter.

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**Caution** The Leak Sensor must be mounted on the water input side of the meter. Failure to follow this mounting requirement could result in errors in the leak detection data. Installation requires Itron mounting hardware. Repair costs and service charges relating to the use on non-compliant mounting hardware will be charged to the customer. Contact Itron Support for more information.

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2. Verify the pipe's mounting surface is free from dirt and debris. Place the curved surface of the LS against the pipe.



3. Insert the mounting U-bolt over the pipe and into the LS mounting holes.

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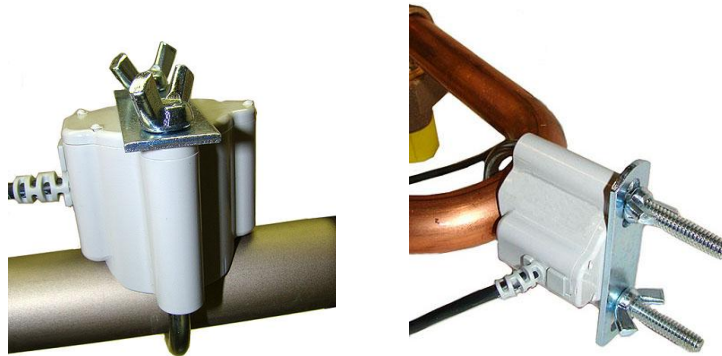
**Caution** Do not mount the Leak Sensor on a pipe coupler, joint, or nut.

---



4. Insert the mounting plate over the U-bolt's threaded screw ends. Attach the two wing nuts over the clamp screw ends and tighten the wing nuts until snug (to a minimum of 5-inch pounds) to prevent device rotation on the pipe. After the second wing nut is tightened, check the Leak Sensor to verify the device is snug. If the sensor moves, tighten the wing nuts until there is no movement.

**Caution** Do not tighten the Leak Sensor to more than 20 inch-pounds. Over-tightening could damage the Leak Sensor housing and/or the pipe.



**Note** Leak Sensor mounting orientation is not critical. Orient the Sensor to best accommodate your installation. The most important installation practice is to mount the Sensor securely to the pipe.



**To install the Leak Sensor on a pipe (up to 2 1/2-inch OD)**

1. Select a Leak Sensor mounting location within 5 feet of the 100W endpoint.

---

**Note** Leak Sensor mounting orientation is not critical. Orient the Sensor to best accommodate your installation. The most important installation practice is to fasten the Sensor securely to the pipe.

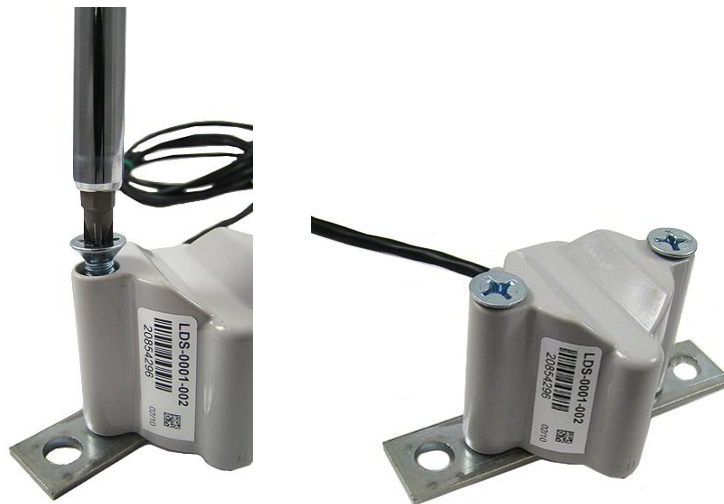
**Caution** The Leak Sensor must be mounted on the water input side of the meter. Failure to follow this mounting requirement could result in errors in the leak detection data. Installation requires Itron mounting hardware. Repair costs and service charges relating to the use on non-compliant mounting hardware will be charged to the customer. Contract Itron Support for more information.

---

2. Insert the mounting plate screws into the holes on the Leak Sensor's curved surface.



3. Secure the mounting plate to the Leak Sensor.



4. Verify the pipe's mounting surface is free from dirt and debris. Place the curved surface of the LS against the pipe.



---

**Caution** Do not mount the Leak Sensor on a pipe coupler, joint, or nut.

---

5. Insert the U-bolt around the pipe and into the holes in the plate/Leak Sensor assembly. Secure the U-bolt with the wing nuts. Tighten the wing nuts until snug (to a minimum of 5-inch pounds) to prevent device rotation on the pipe. After the second wing nut is tightened, check the Leak Sensor to verify the device is snug. If the sensor moves, tighten the wing nuts until there is no movement.



---

**Caution** Do not tighten the Leak Sensor to more than 20 inch-pounds. Over-tightening could damage the Leak Sensor housing and/or the pipe.

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## Optional Remote Antenna Installation

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The optional 900 MHz remote mount antenna provides increased RF range coverage for:

- Meters located deep in a pit boxes.
- Meters submerged in water for extended periods of time.
- Meters in Fixed Network systems.

This section provides antenna mounting instructions through a pit lid and the instructions to connect the antenna to the 100W.

### Mounting the Remote Antenna

Metal lids on water pit boxes require a through-lid solution for optimal endpoint radio performance. The remote antenna is designed to fit in a pit lid hole with a diameter between 1 3/4-inch to 2-inches and a lid thicknesses from 1/4-inch to 1 3/4-inch.



#### *To mount the optional remote antenna through a pit lid*

1. Insert the remote antenna into the hole in the pit lid with the convex surface on the top of the pit lid. (These instructions show a simulated pit lid material.)



2. From the bottom side of the lid, screw on the threaded collar two or three turns. Turn the threaded collar until it is tight against bottom of the pit lid. Verify the antenna dome does not move up and down or shift laterally .



---

**Note** Ensure the beveled edge (1) of the threaded collar is toward the top of the lid (2). The Itron-recommended placement centers the remote antenna and takes up the extra space in mounting holes up to 2 1/2-inches.

---

***To connect the remote antenna coupler to the 100W***

1. Insert the remote antenna cable coupler into the 100W s antenna slot with the flat side of the coupler against the 100W housing.



2. Push the antenna coupler into the antenna slot until the coupler locks into the tabs of the antenna slot.



---

**Important** Verify the antenna coupler locks with the antenna slot's tabs.

---

Remote antenna installation is complete.



## APPENDIX A

### Using an Inline Connector

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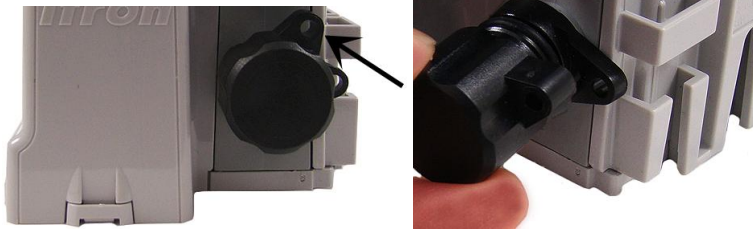
This section describes the connections of the 100W to the water meter register using the inline connector assembly. Follow the manufacturer's recommended procedure for installing the water meter register on the meter.

#### **To connect the inline connector**



**Note** If an inline connector is not used and the 100W is already connected to the water meter register, skip this step.

1. Remove the protective cover from the connector by twisting the two halves in opposite directions. Pull the halves apart.



---

**Caution** Verify the connector halves are clean and dry before assembly.

If any of the following conditions occur, do not install the endpoint:

- Any of the three pins are damaged or missing.
- The O-ring is missing.
- The cable is cut or nicked

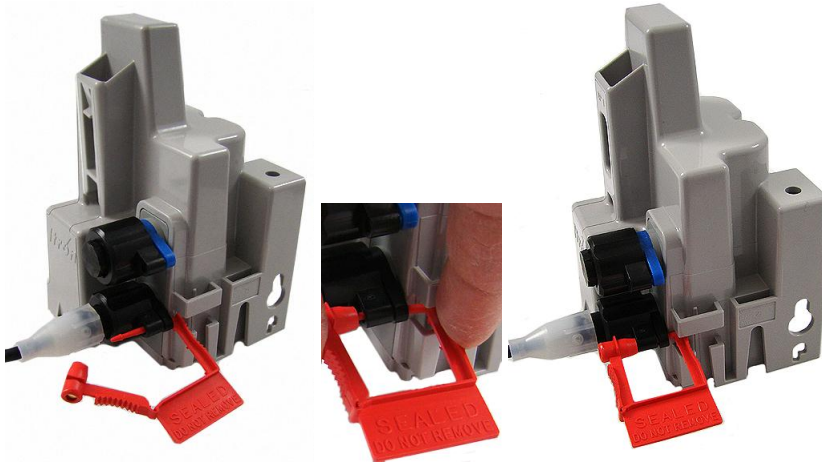
2. Connect the register cable to the endpoint connector. Holding the connectors by the back shells, rotate one end to align the keyed slots. Push until snug. Slide the black coupling nut over the O-ring. Make sure the O-ring stays seated. If the O-ring does not stay seated, disconnect and try again.



3. Twist the register cable's black coupling nut to align the two tabs.



4. Install the security seal as shown. Push it until it snaps into place.



---

**Note** For future meter or endpoint servicing, break the security seal by pulling apart. The original protective connector covers can be reused if kept clean and dry. Install a new security seal after servicing either device. To order more parts, see the *Water Endpoint Ordering Guide* (PUB-0063-001).

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**Caution** Shield connectors with protective environmental covers. Do not leave an exposed connector in the field.

Leak Sensor connector environmental cover: MSC-0019-005

Register connector environmental cover: MSC-0019-001, 1-year life.

The Leak Sensor environmental Cap employs multiple seals to increase cap life. The Leak Sensor's cap design allows utilities to install the endpoint and install the Leak Sensor at a later date.

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