CHAPTER 4

Installing the 100W and 100WP Endpoint

Install the endpoint using one of the following methods:

100W and 100WP Mounting Options

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.	
Through lid	The endpoint mounts in lids with hole sizes from 1 3/4 inches to 2 inches. Through lid installation requires the Pit Lid Mounting Kit (CFG-1300-004).	

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 Endpoint is temperature rated from -20° C to +60° C. Do not install the 100W Endpoint 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.
- Use only Itron-approved splice kits or inline connectors.

100W and 100WP Endpoint Accessories

100W/100WP Mounting Accessories

Accessory	Part Number	
Remote Antenna Kit (Mobile Applications Only)	CFG-0900-001	
Shelf Mount Kit	CFG-1300-001	
Pit Lid Mounting Kit	CFG-1300-004	

100W and 100WP Endpoints with Integral Connectors

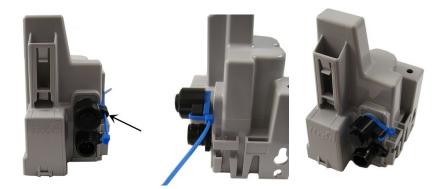
If 100W Endpoints with integral connectors (ERW-1300-X0X) and the registers are not installed at the same time, secure the protective connector cover on the endpoint using a cable tie (Itron part number MSE-0005-002). Cable ties are not shipped with the 100W Endpoint, but can be ordered from Itron. Use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



Warning If a dual-port 100W Endpoint 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.
- 3. Pull the cable tie tight to secure it (as shown).
- 4. Remove excess cable tie.



Rod Mount Installation

100W Endpoints 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, visit www.itron.com/ Products and Services and reference the *Water Products Compatibility List*.



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 or 100WP using the wall mount procedure:

- Endpoint positioning other than upright could negatively affect radio performance and battery life.
- 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 Endpoint.



To install the 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 you will drive the rod 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.

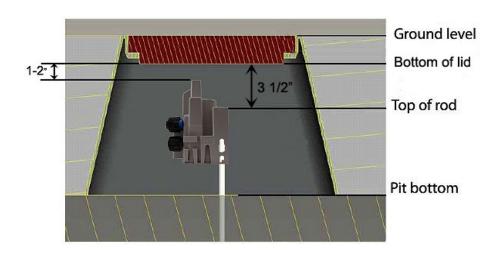
4. Without touching the meter body or adjacent pipes, position the rod as close to the center of the pit as possible. Drive the rod into the ground. Ensure the rod remains vertical.



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

- 5. Drive the rod into the ground so the top of the rod is approximately 3-1/2-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.

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



6. The top of the rod should be 3-1/2-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.



7. 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 endpoint 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.



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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.
- Use only Itron-approved splice kits or inline connectors.

The 100W and 100WP endpoints are suitable for use with up to 300 feet of Itron approved cable.

Required Tools and Hardware

Itron 100W Shelf Mount Kit

To install the 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.

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

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.



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 reattach the endpoint.

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

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

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



Base Mount Installation

The endpoint 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.
- 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 endpoint using the base mount procedure

1. Select a flat surface.

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- 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.



Shelf Mount Installation

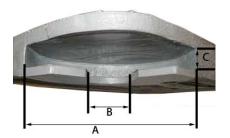
This section describes endpoint installation using a shelf mount adapter to mount the endpoint in a pit lid slot.

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.
- Use only Itron-approved splice kits or inline connectors.

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

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



Pit Lid Slot Dimensions					
Dimension	Minimum (inches)	Maximum (inches)			
А	6 3/4	N/A			
В	2	5 3/4			
С	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 Endpoint antenna slot pushing firmly with your thumb until the adapter tab locks into place in the opening of the 100W antenna slot.



3. 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

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

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

Through Lid Mount

This section provides instructions to mount the 100W Endpoint in a pit lid with a drilled, round 1-3/4-inch, 1 7/8-inch, or 2-inch hole.



Caution Some pit lids have a molded, recessed cavity that allows Itron 40W-1, 50W-1, and 50W-2 ERT modules to sit flush with the top surface of the lid. However, the dome of the endpoint retainer for the 100W and 100WP endpoints has a smaller diameter and does not fill the pit lid cavity. This can cause the cavity to become a trip hazard. Itron does not recommend using this type of pit lid with 100W endpoints.

Required Tools and Hardware

This mounting method requires the Pit Lid Mounting Kit. Refer to the 100W Installation Methods Overview (PUB-1300-004) for guidance on which kit to install for different pit lid material and traffic conditions.

Pit Lid Mounting Kit (CFG-1300-004)

• Note The Pit Lid Mounting Kit is not intended for applications involving vehicular traffic. Use the Remote Antenna Kit in incidental traffic areas (such as residential environments).

To install in lids with holes using the Pit Lid Mounting Kit (CFG-1300-004)

This section provides the instructions to install the 100W Endpoint in a pit lid with a hole using the Pit Lid Mounting Kit (CFG-1300-004).

1. Verify you have the following items to complete the installation.



- (simulated pit lid material shown)
- C Retainer clip collar
- D 100W/100WP endpoint

2. Insert the retainer clip into the hole in the pit lid with the convex surface on the top of the pit lid.



3. From the bottom side of the lid, screw on the threaded retainer clip collar until the beveled top rests against the pit lid.



Note Ensure the beveled edge is toward the top of the lid.

4. Align and insert the retainer clip tab into the retainer clip receptacle on the 100W housing.



5. Verify the clip locks into place in the housing.



Caution Carefully align the 100W through lid assembly. If the assembly is improperly aligned, the pit lid may not close.



Pit Lid Mounting Kit installation is complete.

Installing in a New Lid

This section describes installation of the endpoint in a pit lid without a drilled hole.

To install the 100W in new lids

- 1. Select a hole location with enough clearance on the bottom side of the lid to attach the threaded clip collar.
- 2. Drill a 1-3/4-inch hole in the lid.
- 3. See To install in lids with holes using the Pit Lid Mounting Kit to complete installation in a new lid.

Optional Leak Sensor Installation

Leak Sensors (LS) analyze water flow sound patterns to detect new, evolving, and pre-existing leaks. LS analysis data is uploaded to mlogonlineTM Network Leak Monitoring for data analysis accessed through a secure Internet portal unique to your utility. This section describes installation of the Leak Sensor (LS) in a 100W or 100WP system.

The 100W endpoint stores 20 days of Leak Sensor data. On the 21st day, the 100W begins to write over stored data in a first in, first out manner.

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.

The LS is used in conjunction with both indoor (basement) and outdoor (mounting on the exterior of the house) endpoint. LS devices mount on a water service pipe or meter insetter (meter horn) and connect to the appropriate endpoint wires as described in Connecting the Leak Sensor to the 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 Detection Sensor	LDS-0001-002	LDS with inline connector, environmental connector cap; 5-foot cable, and mounting bolt (fits up to 1 1/2-inch OD pipe).
Optional mounting bracket	CFG-0349-002	Mounting bolt fits up to 2 1/2-inch OD pipe.
100W Endpoint	ERW-1300-002	Dual port 100W or 100WP 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 endpoint.







Leak Sensor

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Standard mounting 1 bracket

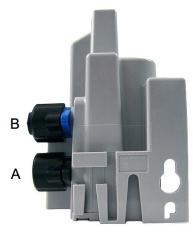
100W/100WP endpoint Optional mounting bracket

Warning When the 100W or 100WP endpoint 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 endpoint, the environmental cap must be replaced to protect the connector.

To connect the Leak Sensor to the endpoint

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



Caution Do not force the connector ends together. While holding the LS connector, engage the endpoint 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.

To attach an Itron Security Seal through the connector security hole

Required Materials

Itron Security Seal (MSC-0018-001)



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 or 100WP endpoint 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 endpoint. Mount the sensor on the water input side of the meter.

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. 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.

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 you tighten the second wing nut, 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 the pipe.

Optional Remote Antenna Installation

The optional 900 MHz remote mount antenna provides increased RF range coverage for the listed mobile applications:

- Meters located deep in a pit boxes.
- Meters submerged in water for extended time periods.
- 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.



Caution Optional remote antenna installation applies only to mobile applications.

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 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 Itronrecommended placement centers the remote antenna and takes up the extra space in mounting holes up to $2 \frac{1}{2}$ -inches.

To connect the remote antenna coupler to the endpoint

1. Insert the remote antenna cable coupler into the endpoint's antenna slot with the flat side of the coupler against the endpoint 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

This section describes the 100W and 100WP connections 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 endpoint 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:

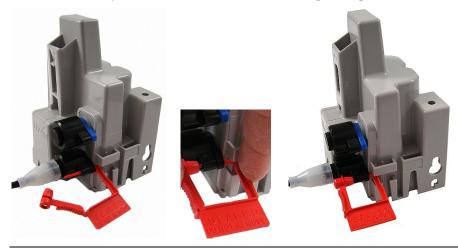
- Any of the three pins are damaged or missing.
- The O-ring is missing.
- The cable is cut or nicked
- 2. Connect the register cable to the endpoint connector. Holding the connectors by the back shells, rotate one end to align the keyed slots. Push until snug. Slide the black coupling nut over the O-ring. 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 are reusable if they are 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).

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.

APPENDIX B

Using Gel Cap Connectors

This section describes connecting the 100W or 100WP endpoint to the water meter register using gel cap connectors.

Required Materials

- E-9R 3M[®] gel cap crimping tool
- Itron Splice Kit (OEM-0034-002)



1. Push two wires as far as possible into the connector.



Caution Do not strip insulation from the ends of the wires before inserting them into the connector.

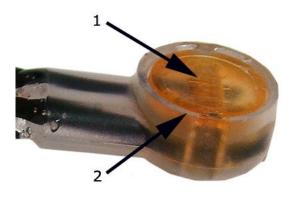
2. Carefully place the connector and wires into the jaws of the crimping tool. Make sure the wires remain fully inserted in the gel-cap connector.



3. Crimp the connector by squeezing the handles until the connector cap is fully seated. Continue to apply pressure for three seconds.



4. A connector is crimped properly when the top of the movable yellow center (1) is flush with the top of the connector body (2).



Warning Crimping the connector forces some sealant out of connector. The sealant protects the inside of the connector against insects, moisture, and other contaminants.

The sealant may cause minor eye and skin irritation. Avoid eye contact. Avoid prolonged or repeated skin contact. Contact Itron Support for Material Safety Data Sheets (MSDS).



5. After you complete all endpoint to register wire connections, arrange the connectors in a single file.



6. Insert the connectors and wires into the splice tube until the connectors and wires completely immerse in the splice tube's gel material.



7. Separate the cables to the sides and close the splice tube cover.



8. Discard any leftover materials from the customer premises.

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