

## 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 mlogonline™ 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-R 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) 100W-R and 100WP-R endpoints. LS devices are mounted on a water service pipe or meter insetter (meter horn) and connect to the appropriate endpoint wires as described in the following section, [Connecting the Leak Sensor to the 100W-R and 100WP-R Endpoints](#). 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).

## Connecting the Leak Sensor to the 100W-R and 100WP-R Endpoints

Connecting a Leak Sensor to the 100W-R and 100WP-R endpoints requires a Leak Sensor enabled endpoint. See [100W-R and 100WP-R Models](#) on page 3. Connect the endpoint flying lead wires to the Leak Sensor (using gel cap connectors, see [Using Gel Cap Connectors](#) on page 32) matching wire colors to complete the three connections.



See the previous section, [Optional Leak Sensor Installation](#), for Leak Sensor mounting information.



**Note** If the endpoint will mount on the exterior of the house but the Leak Sensor is on a pipe on the interior, the Leak Sensor cable must run through a hole in the wall before connecting it to the endpoint. Mount leak sensor gel cap connections securely to the mounting pipe.



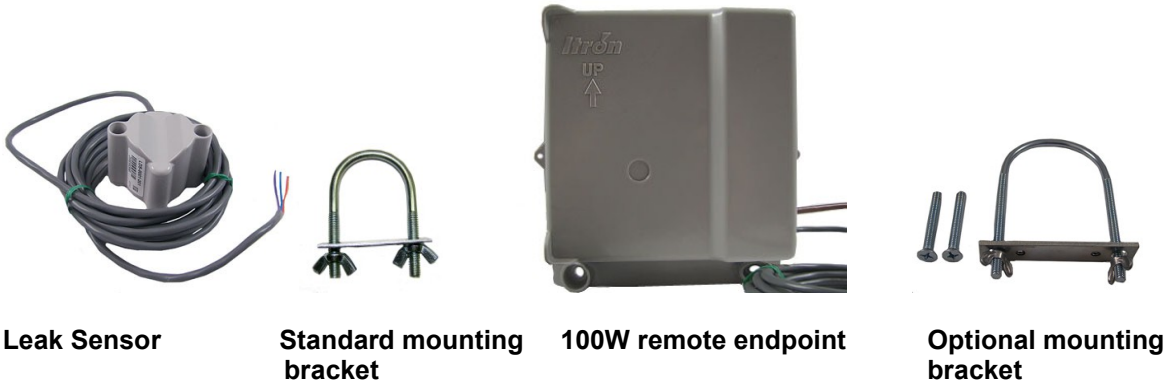
**Caution** Extension cable lengths must not exceed 300 ft. Extension cabling from Itron is stranded, tinned, and pre-bonded for reliability and proper connection to gel cap connectors. Extension cabling manufactured by non-approved Itron manufacturers may result in unreliable and problematic connections. Contact Itron Support for more information.

## Pipe Preparation

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

## Required Equipment

Equipment	Itron Part Number	Description
Leak Detection Sensor	LDS-0001-001	LDS with bracket; 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-R Encoder Remote	ERW-1300-114	100W-R with Leak Sensor, 10" flying lead.
100W-R Pulsar Remote	ERW-1300-116	100WP-R with Leak Sensor, 10" flying lead.



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

1. Select a Leak Sensor mounting location. 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. Contact 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.

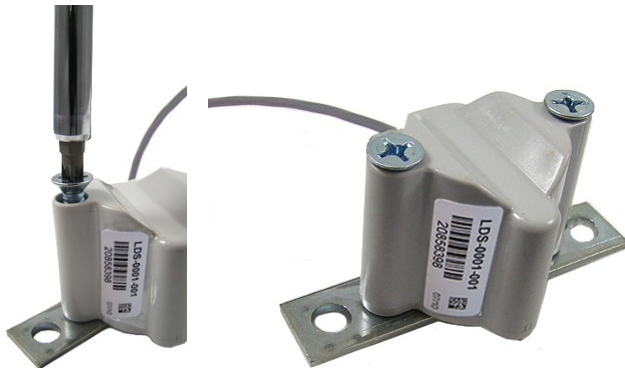
**Caution** The Leak Sensor must be mounted on the water input side of the meter. Failure to follow this mounting requirement could result in errors in the leak detection data. Installation requires Itron mounting hardware. Repair costs and service charges relating to the use on non-compliant mounting 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** To ensure reliable Leak Sensor operation and a secure pipe mount:

- Do not tighten the Leak Sensor to more than 20 inch-pounds. Over-tightening could damage the Leak Sensor housing and/or the pipe.
  - Mount leak sensor gel cap connections securely to the mounting pipe.
  - Extension cable lengths must not exceed 300 ft. Extension cabling from Itron is stranded, tinned, and pre-bonded for reliability and proper connection to gel cap connectors. Extension cabling manufactured by non-approved Itron manufacturers may result in unreliable and problematic connections. Contact Itron Support for more information.
- 

## Remote Mount Installation

Connect the endpoint to the register as described in [Programming and Connecting the 100W-R and 100WP-R](#) on page 6.

Using a back plate, create a template by drilling through a back plate lug slot to mark the position of the screw. Use the drilled back plate as your mounting template.

The arrow on the endpoint must point up when installation is complete.

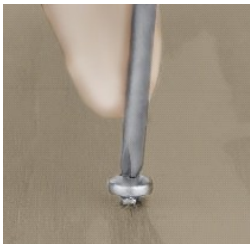
## Required Tools and Hardware

Remote mount installation requires the following tools and hardware:

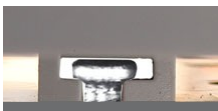
- Remote Mount Kit (CFG-0771-021 or CFG-1300-003) includes the back plate, tamper seals, and mounting screws)
- Nut driver or similar tool
- Phillips screwdriver
- Drill and bits for mounting surface and screw size

### ***To install on a flat surface***

1. Select an installation location.
2. Using a back plate template, drill three pilot holes into the wall or other surface. The two bottom holes should be level.
3. Screw a mounting screw for the lug slot into the surface, leaving approximately 1/8-inch of the screw protruding. The lug slot should slide over the screw with a tight fit.



4. Slide the endpoint lug slot onto the mounting screw, pushing the endpoint upward until the screw head is all the way into the slot.



5. Screw the endpoint to the wall using the remaining two mounting screws.



6. Insert a tamper seal over each mounting screw and drive into place with a nut driver or a similar tool.



---

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

---

7. Secure the cable using the provided cable ties.

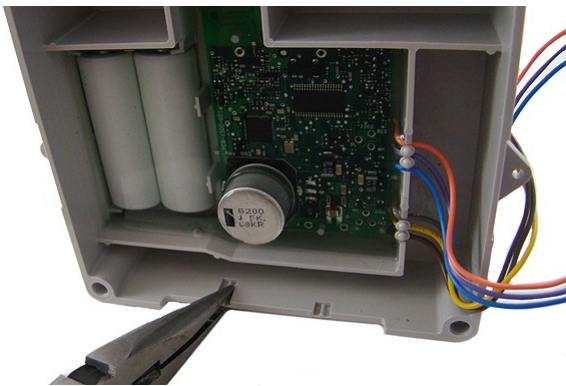
## Direct-Mounting to the Meter Register

Direct mounting endpoints to a meter register requires a register designed for that purpose. This section describes 100W-R and 100WP-R installation for the following direct mount registers:

- Badger ADE and RTR
- Elster/AMCO (ABB) Scancoder, InVISION, and Digital



**Note** If you are installing an endpoint with Leak Sensor capability, use a needle-nose pliers to remove one of the endpoint's housing knock-outs to accommodate the Leak Sensor cable. If your meter register has a raised internal rim, remove the larger case knock-out.



**Warning** Do not use the direct mounting method in a pit environment. Use a pit endpoint for pit environments. 100W-R and 100WP-R endpoints direct mounted in a pit environment are not covered by the Itron warranty.

**To install the 100W-R and 100WP-R endpoints to a Badger Direct-Mount register**

---

**Caution**

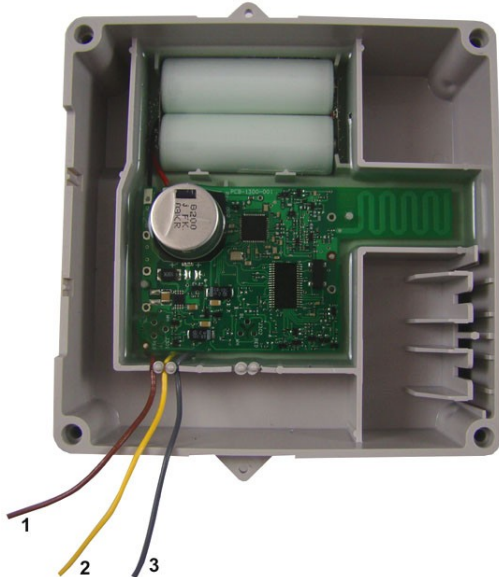
- Verify you have a Badger meter with a register designed for direct mount endpoints.
- Check the part number on the label to make sure the module matches the meter.
- Always install the module with the arrow on the housing pointing upward.



**Note** The register may or may not be mounted on the meter when performing the following steps.

---

1. Direct-meter mounting requires a 100W-R endpoint for the Badger ADE register or a 100WP-R for the RTR register. Both endpoints have three wires:



- (1) brown insulated wire
- (2) yellow insulated wire
- (3) gray insulated wire

**Note** For an RTR register, tuck the unused yellow wire into the housing.

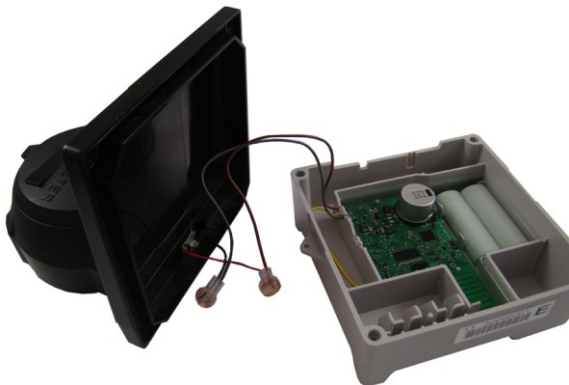
---



2. Connect the endpoint wires to the register using gel-cap connectors (see [Using Gel Cap Connectors](#) on page 32) following the 100W-R encoder to the Badger ADE register wire connections, (see [Connecting 100W-R to a Remote Meter Register](#) on page 6). After connecting the wires, carefully tuck the connectors into the endpoint housing.



3. To wire the 100WP-R to the RTR 2-wire register, connect the endpoint wires to the 2-wire register using gel-cap connectors (see [Using Gel Cap Connectors](#) on page 32). After connecting the wires, carefully tuck the connectors into the endpoint housing.
4. To connect the 100WP-R pulser to the RTR 2-wire register, see [Connecting the 100WP-R to a Remote Meter Register](#) on page 7. The endpoint's yellow wire is not used. Tuck the yellow wire back into the endpoint housing with the gel-cap connectors.



5. Place the endpoint on the register, ensuring the edge of the endpoint housing is seated properly around the perimeter of the register as shown below.



---

**Note** A gasket is not required.

---

6. Install four Torx-head mounting screws (SCR-0010-005) as shown below and hand-tighten the screws.



---

**Warning** Use Itron mounting screws (SCR-0010-005). Using the wrong mounting screws could crack the plastic endpoint housing.

---

7. If you have not already done so, connect the register to the water meter and fully tighten the mounting screw (1) as directed by Badger Meter.



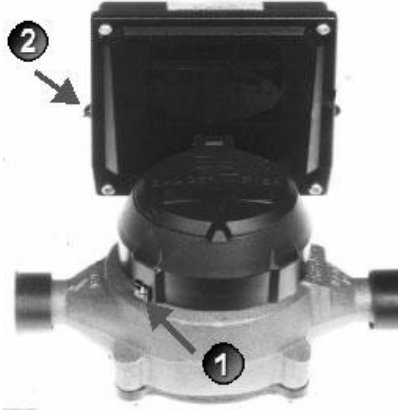
---

**Note** Mount the register on the meter in one of four different positions with respect to the direction of water flow (refer to the manufacturer's installation directions).

---

8. If the standard Torx screw is used (1), a wire seal is not necessary.

If the optional slotted and drilled RTR screw is used, install a wire seal through the drilled screw from (1) to (2), or as specified by utility policy.



**To install the Elster/AMCO (ABB) Scancoder, InVISION, or Digital Direct-Mount**

---

**Caution**

- Verify you have an Elster/AMCO meter with a register designed for direct mount endpoints.
- Always install the endpoint right side up with the arrow on the housing pointed upward.

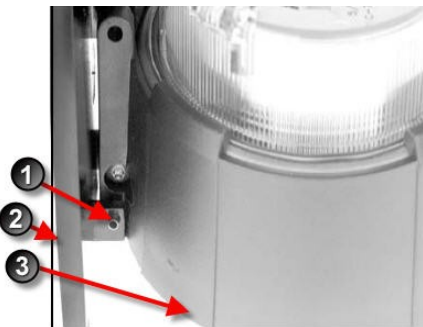


---

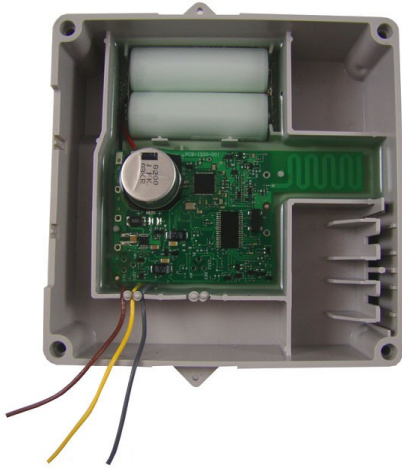
**Note** The register may or may not be mounted on the meter when performing the following steps.

---

1. Push the hollow pin (1) completely out of its location and separate the endpoint mounting bracket (2) from the meter register collar (3).



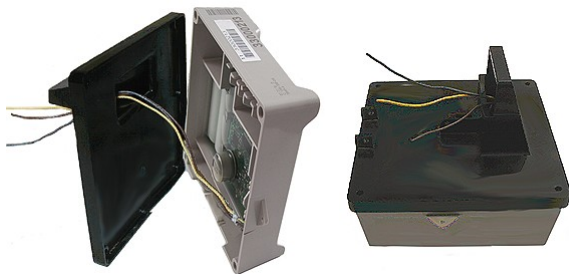
2. Installation requires a 100W-R endpoint for an InVISION or Scancode register. Installation for a Digital register requires a 100WP-R.



3. Strip 1/2-inch of insulation from the end of the brown, gray, and yellow wires.



4. Place the endpoint on the mounting bracket and route the yellow, gray, and brown wires through the opening.



---

**Note** A gasket is not required.

---

5. Install four Torx-head mounting screws (Itron Part Number SCR-0010-005) as shown below. Hand tighten each screw.



6. Connect the endpoint wires to the register screw terminals following the 100WP-R pulser to the Elster/AMCO meter register wire connections, (see [Connecting 100WP-R to a Remote Meter Register](#) on page 7). After connecting the wires, carefully tuck the connectors into the endpoint housing. Tighten all screws securely.

---

**Caution** Install the wires around the screws in a clockwise direction (as shown) or the wires may come out from under the screw heads as you tighten them. Also, verify insulation is *NOT* compressed under the screw head, or the wire may not make good contact.

---



7. Install the module and mounting bracket on the meter register adapter collar.
8. Replace the hollow pin (1) you removed in step 1.



## APPENDIX A

# Using Gel-cap Connectors

---

This section describes connecting the 100W-R and 100WP-R endpoints to the water meter register using gel cap connectors.

### Required Materials

- E-9R 3M® gel cap crimping tool
- Gel cap connectors



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

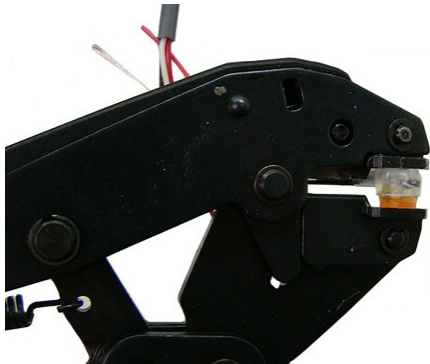


---

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

---

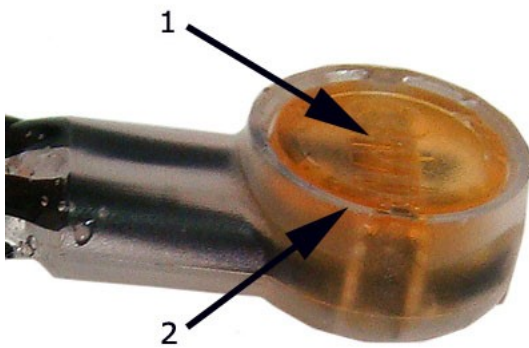
2. Carefully place the connector and wires into the jaws of the crimping tool. Make sure the wires remain fully inserted in the gel-cap connector.



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).

---





## APPENDIX B

# Troubleshooting

---

# Index

---

## Symbols & Numbers

- 100WP-R Operating Modes • 5
- 100W-R and 100WP-R endpoints Accessories • 13, 9
- 100W-R and 100WP-R Models • 3, 18
- 100W-R and 100WP-R Transmission Modes • 4
- 100W-R Operating Modes • 4

## A

- About the 100W-R and 100WP-R • 3
- Attaching the Backplate • 9

## B

- Battery Life • 4
- Before You Begin • 1

## C

- Connecting the 100WP-R to a Remote Meter Register • 31, 26, 7
- Connecting the 100W-R to a Remote Meter Register • 26, 6
- Connecting the Leak Sensor to the 100W-R and 100WP-R endpoints • 18

## D

- Direct-Mounting to the Meter Register • 9, 24

## H

- How This Document is Organized • 2

## I

- Initializing the 100W-R • 6
- Installing the 100W-R and 100WP-R Endpoint • 9

## O

- Optional Leak Sensor Installation • 18

## P

- Pipe Mount Installation • 9, 13
- Pipe Preparation • 19
- Programming • 7
- Programming and Connecting the 100W-R and 100WP-R • 22, 6, 3

## R

- Related Documents • 2, 8
- Remote Mount Installation • 9, 22
- Required Equipment • 19
- Required Tools and Hardware • 23

## T

- To attach an encoder/pulsar and leak sensor backplate • 11
- To attach an encoder/pulsar only backplate • 10
- To install on a flat surface • 23
- To install tamper seals and cable ties • 16
- To install the Elster/AMCO (ABB) Scancoder, InVISION, or Digital Direct-Mount • 29
- To install the Leak Sensor on a pipe (up to 2 1/2-inch OD) • 21
- To install the Leak Sensor on a pipe or meter insetter • 19
- To mount the 100W-R and 100WP-R endpoints on the adapter plate • 16
- To mount the adapter plate in other positions • 14
- To mount the adapter plate on a vertical pipe • 13
- Troubleshooting • 34

## U

- Using Gel Cap Connectors • 7, 18, 26, 26, 32

## V

- Verifying 100W-R and 100WP-R Endpoint Operation • 8