



Badger Meter

Permalog+® Acoustic Leak Logger

OVERVIEW

Applications: The ORION® endpoint and Permalog+® acoustic leak logger module are designed for installation in typical water main valve box applications. The Permalog+ module can be used with various water pipe materials such as steel, iron, asbestos cement, PVC and plastic.

Operation: Permalog+ leak loggers are wired to ORION endpoints and are deployed throughout the water system by attaching the magnetic base of the Permalog+ module to the water valve nuts located on water mains. The loggers monitor the water mains during the night when the system is in its quietest state. The system is designed to listen around 2:00 a.m. If the logger senses or hears a nearby water leak in the main, it listens again an hour later. If it hears a leak again at 3:00 a.m., data is sent to the wired ORION endpoint which broadcasts this important leak data along with its unique serial number.

ORION transmissions are picked up during normal mobile meter reading. Once back at the utility, this data is put into a report generated from ReadCenter® reading data management software that displays all leak loggers that reported a leak condition. Typically a leak is picked up between two loggers. With this information, the utility can use leak correlators and/or ground microphones to pinpoint the exact location of the main leak.

ORION endpoints operate using bubble up (broadcast) radio frequency technology, which does not require the utility to obtain an FCC license. ORION endpoints are shipped connected to a Permalog+ leak logger and are factory wired, programmed and ready for installation.

Mounting: For optimal system performance, we recommend that you install the ORION endpoint underneath a non-metal valve box cover using the supplied mounting bracket.

Cut Wire Tamper Indication: ORION endpoints can detect and report a tamper. Tamper information is collected and stored by the reading equipment and can be sorted through reports to help manage the ORION system.

Moisture: The ORION endpoint is fully encapsulated with epoxy to withstand harsh valve box environments and to protect the electronics from flooded or submerged applications.

⚠ WARNING

Transportation: The Federal Aviation Administration prohibits operating transmitters and receivers on all commercial aircraft. The ORION endpoint is considered an operating transmitter and cannot be shipped by air.



SPECIFICATIONS

ORION Endpoint

Operating Temperature	-40...140° F (-40...60° C)
Humidity	0...100% Condensing
Broadcast Technology	Non-licensed, Bubble Up Technology

PERMALOG+ Acoustic Leak Logger

IP Rating	IP68
Battery	Replaceable Lithium Batteries
Battery Life	Typically 5+ Years
Weight	2.2 lbs

FCC Compliance: This device complies with Part 15 of the FCC Rules. Operation of this device is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference that may cause undesired operation. Any changes made by the user not approved by Badger Meter can void the user's authority to operate the equipment. No licence is required by the utility to operate a ORION meter reading system.

Making Water Visible®

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