



IMPORTANT: This manual contains important warnings and information. READ AND KEEP FOR REFERENCE.



Disclaimer

The user/purchaser is expected to read and understand the information provided in this manual, follow any listed safety precautions and instructions and keep this manual with the equipment for future reference.

Misuse, mishandling and/or inadequate maintenance may impair performance and/or compromise safety.

Questions or Service Assistance

If you have questions regarding the product or this document contact:

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or call your local Badger Meter representative.

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WARNING LABEL INFORMATION

NOTE: communicates installation, operation or maintenance information that is safety related but not hazard related.

SCOPE of MANUAL

This manual contains installation instructions for the **ORION® Repeater** for use with any water or gas ORION transmitter.

Proper performance and reliability of the ORION Repeater depends upon installation in accordance with these instructions.

PRODUCT UNPACKING AND INSPECTION

Upon receipt of the product, perform the following unpacking and inspection procedures:

Note: If damage to the shipping container is evident upon receipt, request the carrier to be present when the product is unpacked.

Carefully open the shipping package, follow any instructions that may be marked on the exterior. Remove all cushioning material surrounding the product and carefully lift the product from the package.

Retain the package and all packing material for possible use in reshipment or storage.

Visually inspect the product and applicable accessories for any physical damage such as scratches, loose or broken parts, or any other sign of damage that may have occurred during shipment.

Note: If damage is found, request an inspection by the carrier's agent within 48 hours of delivery and file a claim with the carrier. A claim for equipment damage in transit is the sole responsibility of the purchaser.

TRANSMITTER DESCRIPTION

An ORION® transmitter is installed by a utility on a consumer's water or gas meter near or in his/her home or business.

ORION REPEATER

The ORION Repeater is a transmitter/receiver that can be used in conjunction with any water or gas ORION transmitter to increase the performance for fixed network applications. Packaged in a remote enclosure, the ORION Repeater can be located in any indoor or non-submersed outdoor application and programmed to repeat up to five ORION transmitter signals within receiving range of the ORION Repeater.

ORION Repeaters are programmed to listen to transmitters that are programmed into their memory and to repeat the ORION standard consumption message each time it is received. Once an ORION Repeater repeats a transmitter standard consumption message, another ORION Repeater cannot repeat the message.

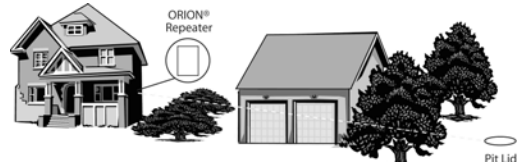
The ORION Repeater is constructed of a plastic remote enclosure with a 'C' sized lithium battery that provides 15 years of power for each ORION Repeater. The ORION Repeater is shipped from the factory in an off mode and is not transmitting. This device can be shipped via aircraft shipment, if necessary.

LOCATING THE UNIT

An ORION Repeater can be programmed with up to five ORION water and/or gas transmitter serial numbers. Once programmed, the Repeater will listen for and repeat the standard consumption messages for those transmitters, which are located within range of the Repeater.

The ideal ORION Repeater location is somewhere that has a clear "line-of-sight" to the ORION gas or water transmitter.

However, this is rarely possible. The line-of-sight may be hindered by obstructions such as trees and vegetation, buildings and other structures, vehicles or uneven terrain.



Note that the change of season, increasing vegetation, building construction and remodeling can all contribute to changing the signal reception over time.

PROGRAMMING THE ORION REPEATER

An ORION Repeater must be programmed in the field in order to activate the device. Once the ORION transmitter is installed, an ORION Repeater can be installed within range of the transmitter to increase the performance.

ORION Repeaters can be easily programmed in the field using either the ORION Mobile Reading Laptop or the Badger®-Radix® Data Collector.

NOTE THAT WHEN THE ORION PROGRAMMING ACCESSORY IS NOT IN USE, IT SHOULD BE TURNED OFF TO PREVENT UNINTENTIONAL PROGRAMMING OF THE ORION REPEATER.

PROGRAMMING WITH A LAPTOP

To program a Water Meter Transmitter Serial Number into a Monitor with a laptop PC:

1. You will need a laptop computer (p/n 65567) with ORION® Programmer Version 1.2.14 or higher listed at the top of the screen.



You will also need the following equipment:
Optical Programmer 64436-013
Programming Accessory 65589-001
ORION Transmitter



2. On the computer desktop, open the ORION Laptop Programmer by double-clicking the icon.



3. Connect the Optical programmer to the 9-pin connector on the laptop PC.
4. Place the Optical Programmer onto the Programming Accessory.

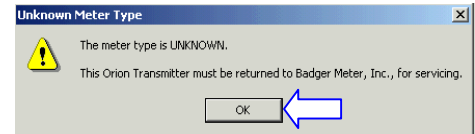
NOTE: The Programming Accessory must be read before any of the other buttons are activated.



5. Select the [Read] button.



6. A message box appears saying, The meter type is UNKNOWN. Select [OK].



7. Select START RADIO.



- On the laptop, move the cursor to the Odometer Value box. Select it.



- Enter the Water Meter Transmitter Serial Number into the Odometer Value box.

NOTE: Do not enter the leading 7 of the Transmitter Serial Number.



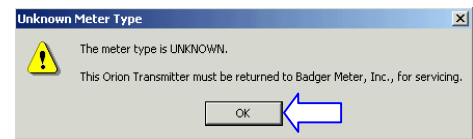
- Place the Optical Programmer onto the Programming Accessory or insure it is still connected.



- Select [Program Odometer] button.



- A screen appears saying, The meter type is UNKNOWN. Select OK.



- Swipe the programming magnet over the bottom right corner of the ORION® Repeater to put the unit into programming mode. Once the ORION Repeater has been put into programming mode, it will listen for a signal from the Programming Accessory for up to 16 seconds. Once it successfully hears the Programming Accessory signal, the ORION Repeater will verify it has been successfully programmed by continuously broadcasting the ORION transmitter reading for one minute.

- As soon as you are done programming an ORION Repeater, it is important to turn off your Programming Accessory. Turn off the Programming Accessory by properly positioning the Optical Programmer on to the Programming Accessory and selecting the **[Stop Radio]** button.

NOTE: To erase all ORION serial numbers in the repeater, program the Program Accessory to a transmitter number of '0' and place the ORION Repeater in programming mode using the steps above.

To verify all ORION® transmitter serial numbers in the repeater, swipe the magnet across the programming location on the ORION Repeater. BE CERTAIN THAT THE PROGRAMMING ACCESSORY IS EITHER TURNED OFF OR NOT IN RANGE OF THE ORION REPEATER PRIOR TO SWIPING THE MAGNET ACROSS THE PROGRAM LOCATION.

PROGRAMMING WITH BADGER® - RADIX®

To program a Water Meter Transmitter Serial Number into a Monitor with a Badger-Radix unit, you will need the following items:

- Programming Accessory 65589-001
- Water Meter Monitor 65567-001
- ORION Transmitter
- Badger-Radix Data Collector



1. Press and hold any key to turn on the Badger-Radix Data Collector Unit.



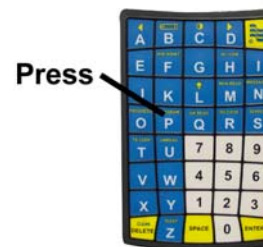
2. At the "Main Menu", select [Program & Quick Read] <Q>.



3. Select [ORION] <O>



4. Select [Program] <P>



5. Place the Badger®-Radix® Data Collector over the Programming Accessory.



7. Select [Start Radio] <S>



NOTE: Verify the IR port (the oval shaped hole on the bottom of the Badger-Radix unit) is over the opening of the Programming Accessory.

8. Select <Enter>.



6. Select [Read] <R>



9. Remove the Badger-Radix unit from the Programming Accessory.

10. Clear the Odometer Entry box.

Click the <Delete> key until the Odometer Entry box is empty.



A message will appear on the screen “The ORION® Transmitter has an invalid meter type and needs to be returned to Badger Meter for servicing.” Select OK <Enter>.


Program Orion	
Serial #:	<input type="text"/>
Odometer	<input type="text"/>
MT: <input type="checkbox"/>	Tamper: <input type="checkbox"/> Leak: <input type="checkbox"/>
Radio:	<input type="text"/>
Status:	READY
Read <R>	Set Odometer <O>
Start Radio <S>	Pause Radio <P>
Stop Radio <T>	Exit <Esc>

11. Use the keypad to enter Transmitter Serial Number into the Odometer Entry box.

NOTE: Do not enter the leading 7 of the Transmitter Serial Number.

Program Orion

Serial #:

Odometer: 

MT: Tamper: Leak:

Radio:

Status:

Read <R>	Set Odometer <O>
Start Radio <S>	Pause Radio <P>
Stop Radio <T>	Exit <Esc>

12. Again, place the Badger®-Radix® unit over the Programming Accessory.



13. Select [Set Odometer] <O>.



14. Remove the Badger-Radix from the Programming Accessory.

15. Swipe the programming magnet over the bottom right corner of the ORION® Repeater to put the unit into programming mode. Once the ORION Repeater has been put into programming mode, it will listen for a signal from the Programming Accessory for up to 16 seconds. Once it successfully hears the Programming Accessory signal, the ORION Repeater will verify it has been successfully programmed by continuously broadcasting the ORION transmitter reading for one minute.

16. As soon as you are done programming an ORION[®] Repeater, it is important to turn off your Programming Accessory. Turn off the Programming Accessory by properly positioning the Badger[®]-Radix[®] Data Collector on to the Programming Accessory and selecting the **[Stop Radio] <T>** button.



NOTE: To erase all ORION serial numbers in the repeater, program the

Program Accessory to a transmitter number of '0' and place the ORION Repeater in programming mode using the steps above.

To verify all ORION transmitter serial numbers in the repeater, swipe the magnet across the programming location on the ORION Repeater. BE CERTAIN THAT THE PROGRAMMING ACCESSORY IS EITHER TURNED OFF OR NOT IN RANGE OF THE ORION REPEATER PRIOR TO SWIPING THE MAGNET ACROSS THE PROGRAM LOCATION.

SPECIFICATIONS

Power Source	"C" size lithium battery
Construction	Monitor housed in a NEMA 4 plastic enclosure
Dimensions	
Weight	5.5 oz
Environmental	Indoor or non-submersed outdoor
Temperature	-40°F to 140°F (-40°C to 60°C)
Humidity	0% to 95%, non-condensating

REGULATORY

This device complies with Part 15 of FCC rules. Operation is subject to:

- (1) this device may not cause harmful interference
- (2) this device must accept any interference, including interference that may cause undesired operation

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www.badgermeter.com
for specific contacts.

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Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.



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