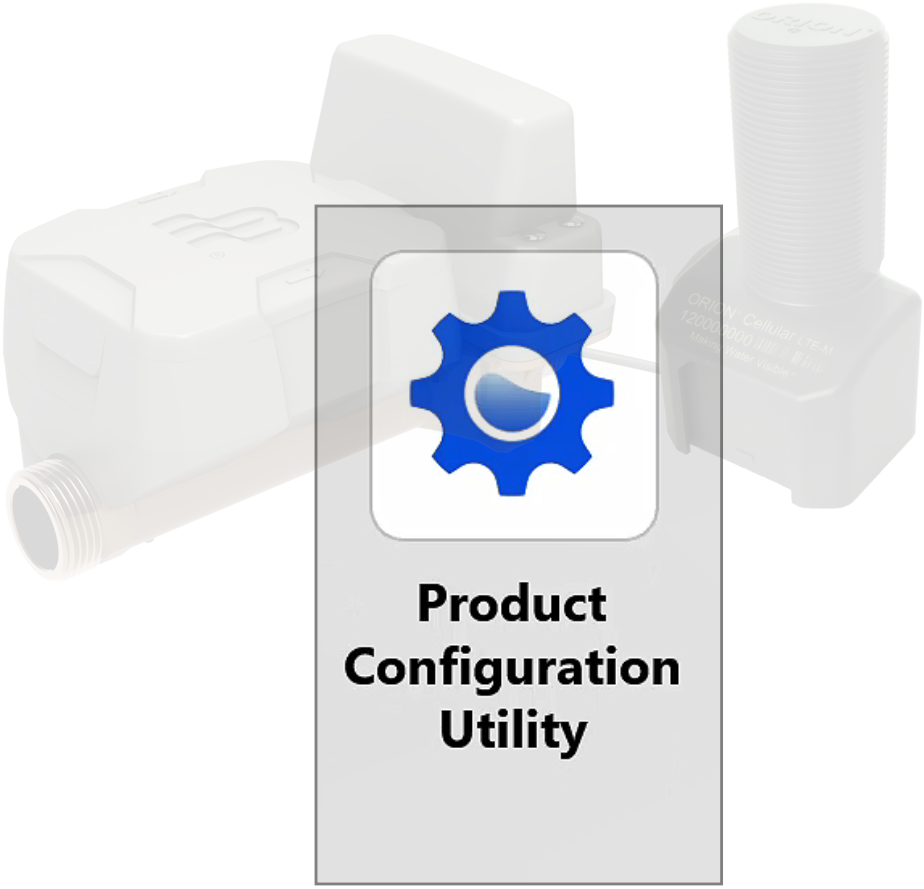
Badger Meter

Product Configuration Utility

for E-Series® Ultrasonic Plus Meter



UTL-PM-03492-EN-05 (April 2025)

Software Manual

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SCOPE OF MANUAL

Badger Meter Product Configuration Utility (PCU) is a field deployment and programming application developed by Badger Meter to install, read, program and extract data from Badger Meter devices.

This manual provides instructions for using the PCU software with the E-Series® Ultrasonic Plus meter. This manual is based on PCU version 1.9.X.

NOTE: To provide the best solution for our customers, Badger Meter continually improves software programs and periodically updates the manual to reflect changes. Therefore, there may be some differences between the installed software and this manual.

IR Programming Device - Required

The software communicates via infrared with the ***E-Series® Ultrasonic Plus meter*** and the ***ORION® Cellular endpoint*** to which the meter is connected. An IR programming device (IR device), either the ACTiSYS® ACT-IR224UN-L+ USB IR programming cable (IR cable) or the Badger Meter IR Communication Device, is required for IR reading and programming using the PCU. See the *"Parts List" on page 4*.

NOTE: When used with a micro USB cable, the IR Communication Device can perform all the functions of an IR programming cable.

Additional Resources

In addition to this document, see these other related documents at *badgermeter.com*.

E-Series Ultrasonic Plus Meter User Manual

IR Programming Cable, Update for Windows® 11

MINIMUM SYSTEM REQUIREMENTS

BEACON® SaaS

Download the PCU software from the BEACON Software as a Service (SaaS) website as described in *"PCU Software" on page 6*. Sign in to the PCU software using your BEACON SaaS sign in and password.

Windows® Device

The software is designed to run on a computing device (PC, laptop, tablet) with a Windows® 10 operating system version 1909 or higher.

Windows Updates

Make sure the device on which the software is installed always has all the most recent Windows updates.

To check for updates, go to **Settings**> **Windows Update**. Then select **Check for Updates**. Install all updates if needed and restart the device before using the PCU.

ORION Endpoints

The software is designed to work with an E-Series Ultrasonic Plus meter connected to an ORION Cellular C, HLD, CS, LTE-M, LTE-MS, HLA, HLB, HLC, LTE-MP, LTE-MSP, LTE endpoint.

Product Firmware

- ORION Cellular endpoint firmware version 2.0.445 and later
- Valve firmware version 4.1 and later

PARTS LIST

Part Number	Description/Photo	Part Name
64436-041		**ACTiSYS IR Programming Cable, USB**
64436-042		**Rugged Serial IR programming and data profile cable**
64436-029		(Optional) **Serial-to-USB adapter** (For use with Rugged Serial IR programming cable 64436-042)
68891-001		**Badger Meter IR Communication Device** used with customer-supplied micro USB cable (not shown) performs as an IR programming device
68779-001		**IR Bracket alignment tool** (Recommended) for ORION Cellular endpoint
68896-001		**IR Bracket alignment tool** (Recommended) for E-Series Ultrasonic Plus meter

IR ALIGNMENT TOOLS

To use the software with a meter or endpoint, connect an IR device—either the ACTiSYS IR programming cable (*Figure 1*) or the IR Communication Device with micro USB cable (*Figure 2*)— to a USB port on your Windows device. See *"Setting the COM Ports" on page 9* for instructions on setting the correct COM port for the IR device.

Figure 1: ACTiSYS IR programming cable

Figure 2: IR Communication Device with micro USB cable

IR Programming Cable Driver

After upgrading to a newer operating system such as Windows 11, an issue may sometimes occur with the driver on the ACTiSYS IR programming cable. If you experience a driver issue, refer to the *IR Programming Cable Update for Windows 11* application data sheet available at *badgermeter.com* for instructions on updating the driver.

Using the IR Alignment Tools

After the IR device is connected, use the IR bracket to make sure the IR device is aligned correctly. The brackets are designed for using an IR device while leaving your hands free. The bracket also keeps the IR device at the correct distance from the endpoint or valve IR port. If you are programming multiple meters, you can move the IR bracket with the IR device from meter to meter.

Using the IR Bracket with the E-Series Ultrasonic Plus Meter

1. Place the IR bracket (68896-001) over the valve as shown in *Figure 3*. The bracket sits on the valve so the valve IR port is visible through the opening.
2. Place the IR device into the holder of the bracket.
3. To remove, lift the bracket off and remove the IR device.

   NOTE: You can get a reading from the valve IR port or from the attached ORION endpoint. You *cannot* get a reading directly from the optical communication port on the meter.

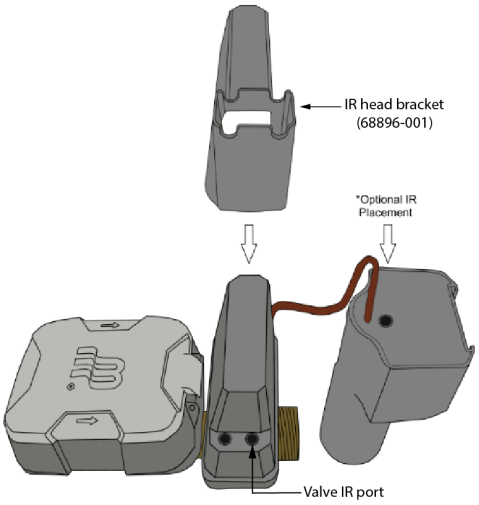

Figure 3: Place IR bracket over the valve

Using the IR Bracket with the ORION® Endpoint

1. Holding the endpoint upside down, place the IR bracket (68779-001) over the bottom of the endpoint as shown in *Figure 4*. The bracket fits into the grooves at the bottom of the endpoint with the opening directly over the endpoint IR port. The IR port should be visible through the opening.

   The IR device fits into the holder on the bracket. See *Figure 5*.
2. To remove the bracket, gently pull the bracket up and off from the endpoint and remove the IR device.

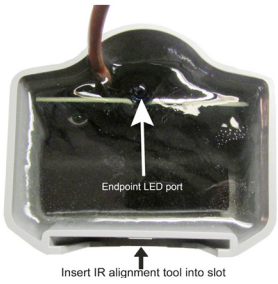

Figure 4: Endpoint IR port

Figure 5: IR bracket with IR device

PCU SOFTWARE

Dowloading the Software

1. On the BEACON SaaS website, go to **Utility Settings**> **Downloads** and select **Download** for the *Badger Meter Product Configuration Utility (PCU)*.

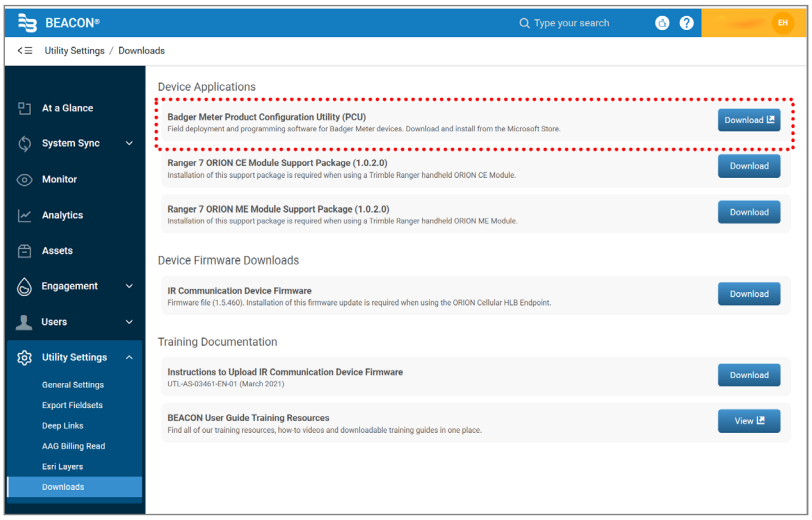

Figure 6: BEACON Downloads

NOTE: The screens shown here are examples of what to look for. Your screens may look slightly different based on your version of Windows and experience with the Microsoft® Store.

2. In the window that opens, select **Get**.

   The installation window opens.

Figure 7: PCU in Microsoft Store

3. Select **Install**.

Figure 8: Install

4. A progress bar displays the download process.

   At the end of the process, select **Launch**.

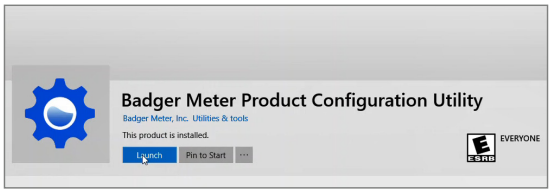

Figure 9: Select Launch

5. The *Sign In* window opens.
   Enter your BEACON email and password and click **Sign In**.

NOTE: If you close the PCU, you can get back to it by opening the Windows **Start** menu, and selecting **Badger Meter Product Configuration Utility**. See *Figure 11*.

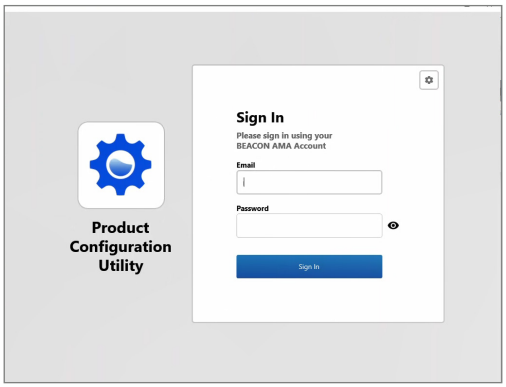

Figure 10: PCU Sign In

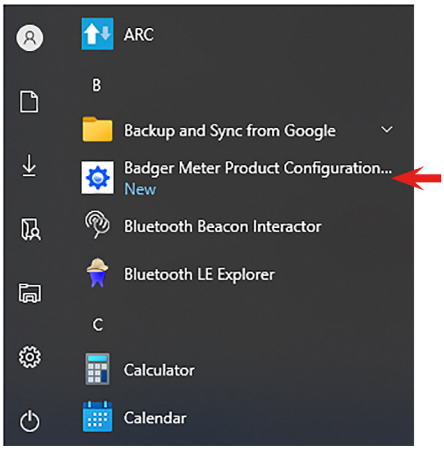

*Figure 11: Windows Start menu showing **Product Configuration Utility***

Software Updates

If you launch the PCU application and there is an update available, a notification icon displays at the top right of the main screen (*Figure 12*).

Click the icon to go to the notifications page to access a new PCU version.

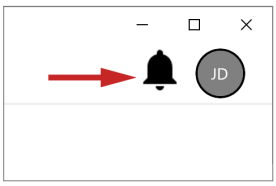

Figure 12: Software update notification icon

USING THE PCU SOFTWARE

1. Connect the IR device to a USB port on your Windows device.

   Connect the IR device *before* you start the software to make sure the software recognizes the connection. If you are using an IR alignment bracket, see *"IR Alignment Tools" on page 5*.

   NOTE: If you are using an IR device with a serial port connector and your Windows device does not have a serial port, use a serial-to-USB adapter. See the *"Parts List" on page 4.*

Sign In

2. Select **Badger Meter Product Configuration Utility** from the Windows **Start** menu. Alternatively, you can also open PCU by clicking the shortcut that displays in the **Start** menu (*Figure 13*).

   The PCU Sign In window displays (*Figure 14*).

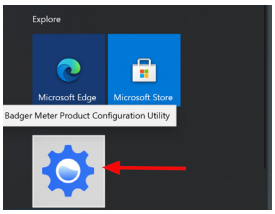

Figure 13: Software shortcut

3. Sign in with your BEACON email and password.

   Then click **Sign In.** The software Product Selector default main screen opens (*Figure 15*).

   NOTE: You must be connected to the internet to sign in. Once signed in, you do not need an internet connection to use the PCU software.

   If you do *not* logout, you can return to the PCU anytime without signing in and without an internet connection.

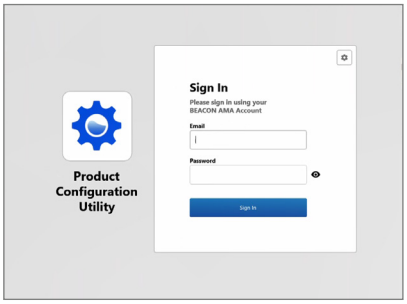

Figure 14: Sign In window

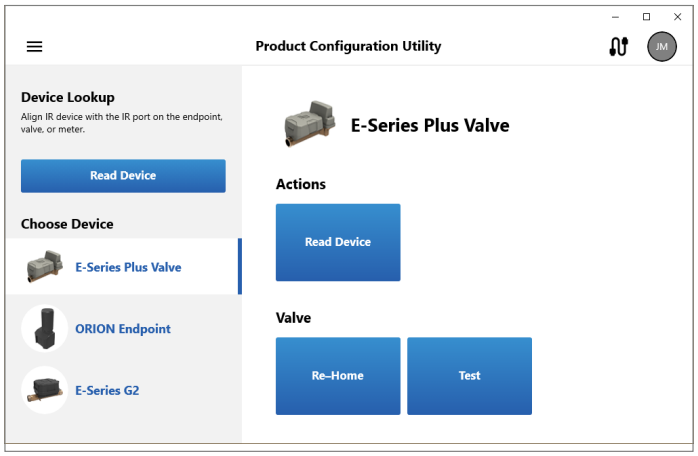

Figure 15: PCU Product Selector default main screen

Exiting the Software

To exit the software, click the **X** in the top right corner of the screen. You can return to the software anytime by selecting the PCU icon from the Windows **Start** menu. See *Figure 11* if you need help.

You can also logout of the PCU by clicking the circled initials in the top right corner of the screen and selecting **Logout** that displays in the popup window. If you logout, you will be required to **Sign In** the next time you access the PCU.

SOFTWARE MENU

Click ≡ in the top left corner of the screen to access the software menu.

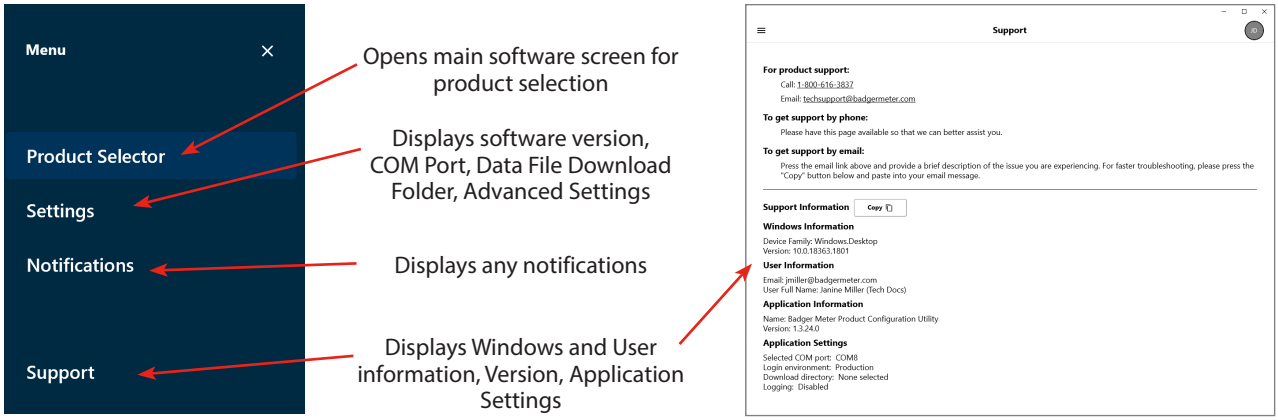

Figure 16: Menu options

Settings

Access Settings from the software menu or by clicking ≡ at the top left corner of the screen.

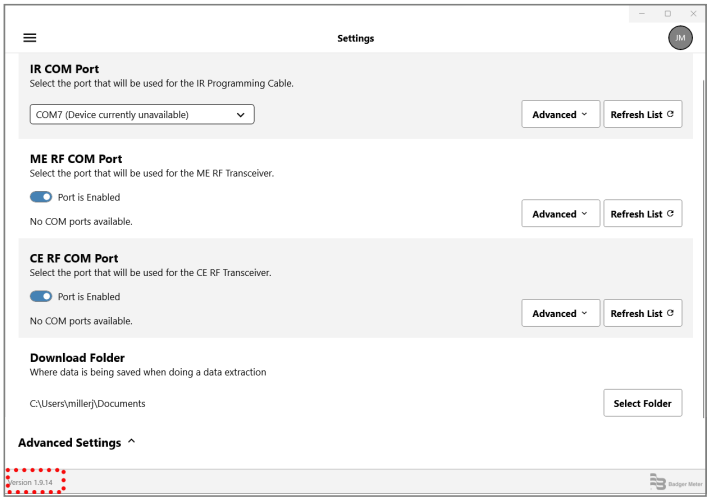

Figure 17: PCU Settings

Setting	Description
COM Port(s)	Displays the COM port(s) for the connected device(s). See *"Setting the COM Ports"* below.
Download Folder	Select a folder where your data files will be saved. See *"Configuring the Download Folder" on page 10.*
Advanced Settings	Displays *Logging* option.
Logging	Enable Logging only when working with Badger Meter Technical Support to diagnose a software problem. If you enable logging, a warning message opens. See *Figure 16* below.
PCU Version	Displays the current software version in lower left corner of the screen.

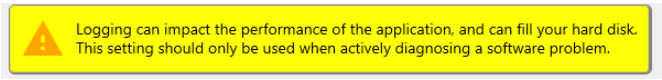

Figure 18: Logging warning message

Setting the COM Ports

You must set the communication (COM) port for the IR programming cable and any other devices attached to your Windows device. When connected, the PCU will automatically detect the connected devices.

1. Click ≡ at the top right of the screen and select **Settings**.

2. Use the drop-down menu to select the correct COM port(s) for the IR programming cable and any other connected device(s). Click **Refresh List** if the device is connected but does not display.

   NOTE: **Advanced** COM port configuration options are available, if needed, but are not required.

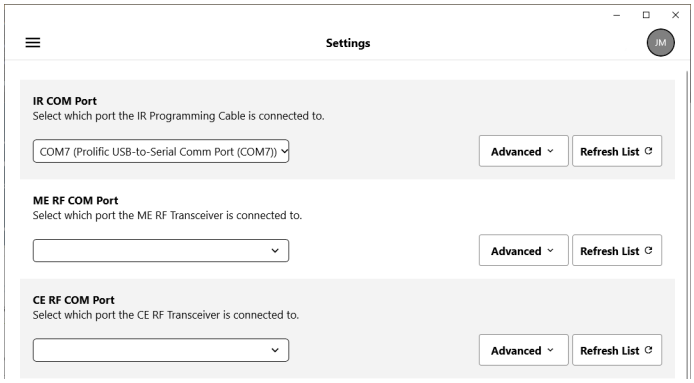

Figure 19: COM port list

Configuring Download Folder

The *Download Folder* is a file you choose for storing data files such as historical data extracted from the endpoint or any log files created by the software. To save time, set up the folder before you start using the software.

1. Click ≡ at the top left corner of the screen to access Settings.
2. Under *Download Folder*, click **Select Folder**.
3. In the window that opens, find and select the folder in which you want to save your downloaded files.

   The folder location you select will display on the Settings screen. Any data or log files created in the PCU will be downloaded to the folder you select.

   The software notifies you whenever a file is downloaded. See the example in *Figure 21*.

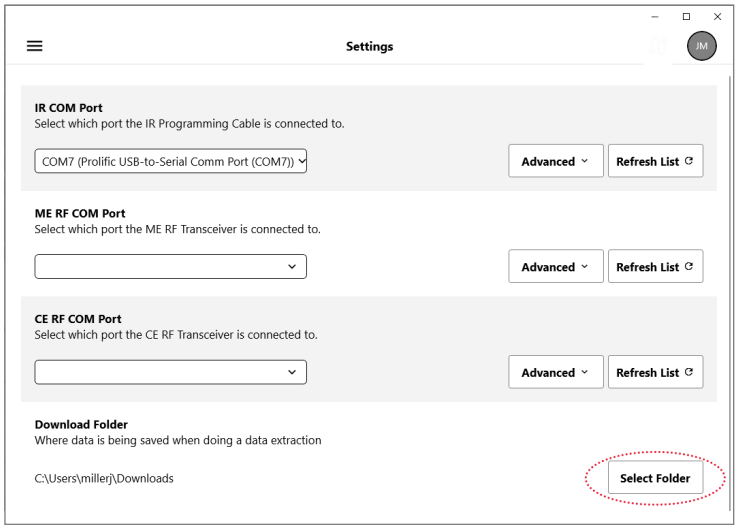

Figure 20: Select download folder

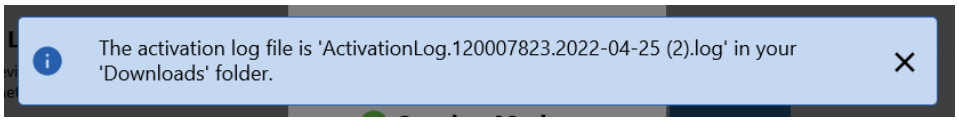

Figure 21: Download notification

4. Click ≡ in the top left corner of the screen and click **Product Selector** to return to the main screen.

   NOTE: Clicking the **X** in the top right corner of the *Settings* window closes the software application.

MAIN SCREEN

When you first open the software, the device at the top of the list displays on the main screen (*Figure 22*).

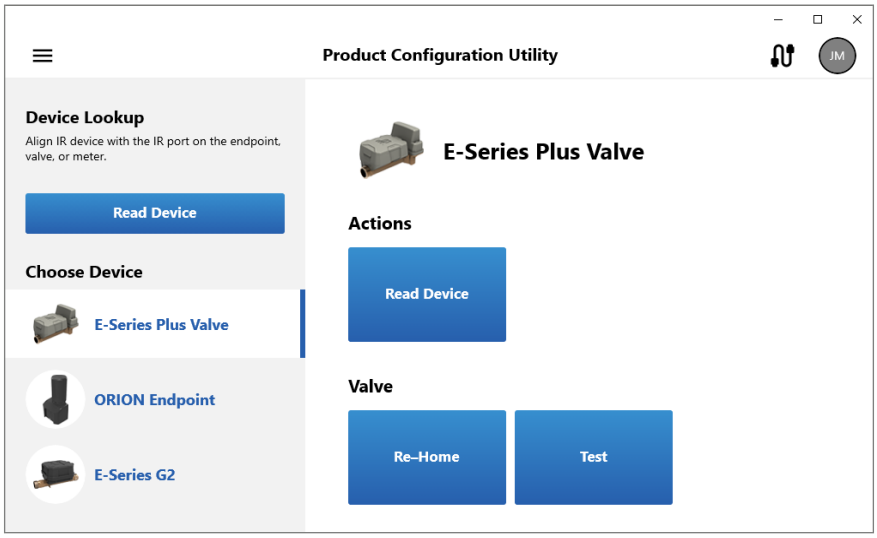

Figure 22: PCU main screen

E-Series Plus Valve Screen Functions

LEFT SIDE OF THE SCREEN (NAVIGATION ()	
Field	**Description**
≡	Access to settings, including COM port; notifications; technical support information; software version. See *"Software Menu" on page 9*.
Read Device*	Software automatically detects and reads the connected device.
Choose Device	Select the device you want to read.

RIGHT SIDE OF SCREEN	
Function*	**Description**
Read Device*	Identifies and displays details of the selected device. You can read the valve from the valve itself or from the endpoint. See *"Read Device" on page 12*.
Re-Home	Repositions, calibrates and stabilizes the valve position by cycling from the RESTRICT to OPEN position. Used for troubleshooting. An empty pipe is required to *Re-Home* the valve.
Test	The valve is typically placed into *Test* operating mode to test valve actuation prior to installation, before it is connected to an ORION endpoint. *Test* mode takes the valve out of *Active* mode and prevents the valve from cycling for routine maintenance. The valve LED does not blink in *Test* mode. You can only place an active valve into *Test* mode using the valve. See *"Placing Active Valve into Test Mode" on page 14*. The valve transitions to *Active* operating mode when it is read with the PCU. See *"Placing Test Mode Valve into Active Mode Using the Endpoint" on page 14*.

* When performing any function, make sure the IR device is connected and aligned with the IR port on the valve or endpoint until the function is completed. See *Figure 3* for correct positioning of the IR device. You can get a reading from the valve itself or from the attached ORION endpoint.

NOTE: You cannot get a reading directly from the optical communication port on the meter.

READ DEVICE

With the PCU software, you can get a reading from the valve or from the endpoint connected to the meter. You cannot get a reading directly from the optical communication port on the meter itself.

Reading the Valve from the Endpoint

When you **Read Device** via the endpoint, results display for both the endpoint and valve. The software also shows an additional information field about the valve—*Last Movement Time* —when you read via the endpoint. Compare the valve information in *Figure 23* and *Figure 24*.

NOTE: Make sure the IR device is connected and aligned with the IR port on the endpoint connected to the meter throughout the process. Using the IR bracket is recommended. See *Figure 3 on page 5* if you need help.

1. Holding the IR device steady, select **ORION Endpoint** and then select **Read Device** on the main screen.
2. Scroll down to see all the results. Sample results are shown for the *Endpoint* and *Valve*.

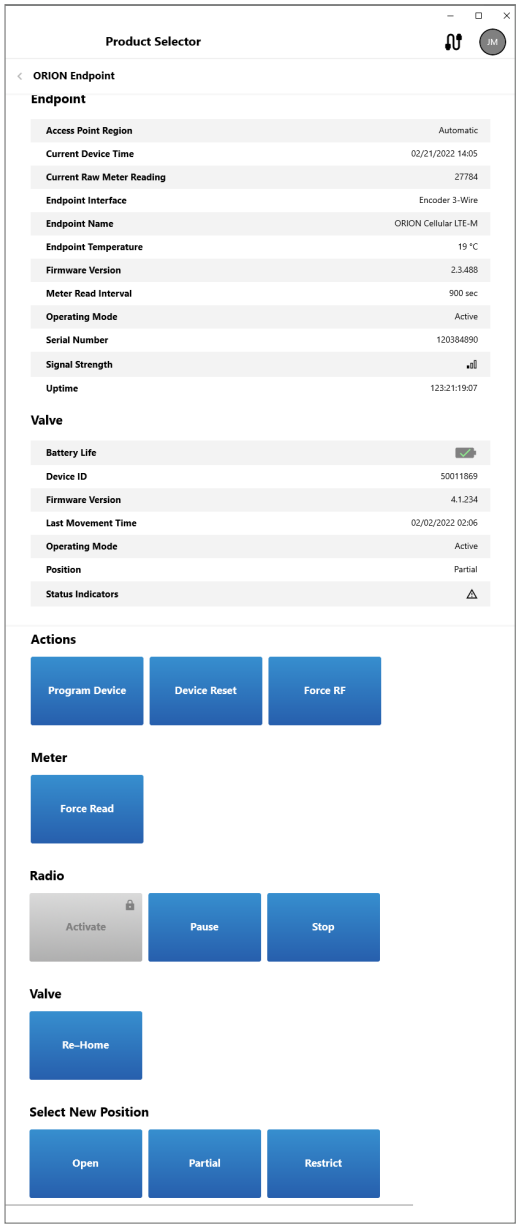

Figure 23: Reading from endpoint

Select **< ORION Endpoint** to go back to the ORION endpoint main screen

Endpoint Fields	Description
Access Point Region	Designated region (geographic area) for cellular coverage
Operating Mode	Active, Paused, Stopped
Current Device Time	Date and time from the endpoint
Serial Number	Serial number of the endpoint
Current Raw Meter Reading	Current meter read without reading resolution applied
Endpoint Interface	Connection protocol between endpoint and encoder
Endpoint Name	Endpoint type
Endpoint Temperature	Ambient temperature measured by the endpoint
Firmware Version	Firmware version of the endpoint
Meter Read Interval	Time between reads
Signal Strength	Indicator of received cellular signal strength
Uptime	Time elapsed since endpoint was last reset. A reset can be triggered by actions such as a firmware update, *"Device Reset"*, or a command from BEACON. A reset does not occur with a tamper or if an endpoint is stopped. Uptime is shown in Days:Hours:Minutes:Seconds

Valve Fields	Description
Battery Life	GOOD
	LOW, one (1) year remaining
	REPLACE, six (6) months remaining
Device ID	ID number of the valve
Firmware Version	Firmware version of the valve
Last Movement Time	Shows date and time of last valve movement
Operating Mode	Active or Test
Position	Current valve position: OPEN, PARTIAL, RESTRICT
Status Indicators	Displays icons for any meter status indicators

Functions	Description
Actions:	
Program Device	Gives access to meter programming fields
Device Reset	Electronically resets endpoint to attempt recovery from an unexpected condition, mainly for troubleshooting
Force RF	Forces RF communication from the endpoint
Meter:	
Force Read	Updates the reading with the real-time value
Radio:	
Activate, Stop, Pause	Select to start, pause or stop endpoint. ACTIVATE selection is grayed out when endpoint is already active.
Valve:	
Re-Home	Recalibrates valve by cycling from current position to OPEN—empty pipe is required
Select New Position:	
Open, Partial, Restrict	Select new valve position

Reading from the Valve

When you **Read Device** from the IR port on the valve, you see the results for the valve only.

NOTE: Make sure the IR device is connected and aligned with the IR port on the valve throughout the process. Using the IR bracket is recommended. See *Figure 3 on page 5* if you need help.

1. Holding the IR device steady, select **E-Series Plus Valve** and then select **Read Device** on the main PCU screen.
2. Review the results that display. An example of the results screen is shown below. Options to **Re-Home** or **Test** the valve are shown at the bottom of the screen.

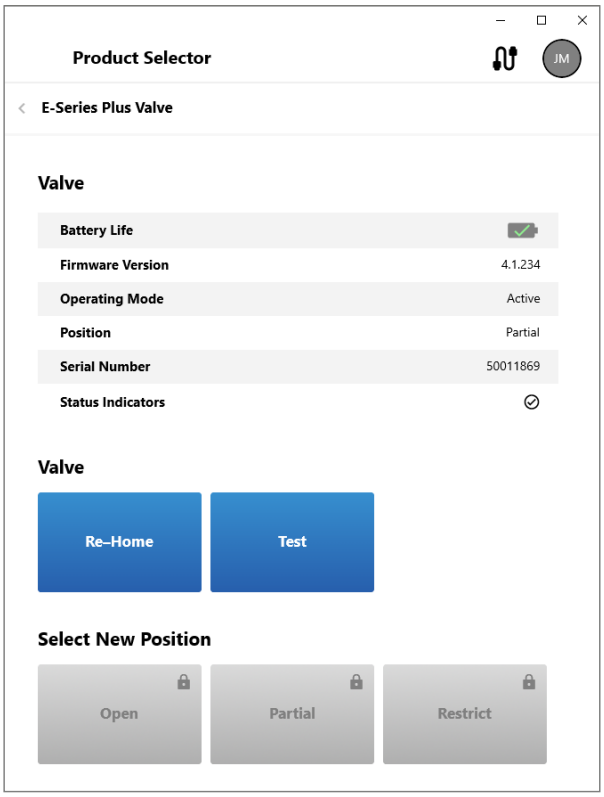

Figure 24: Reading from valve IR port

Select < **E-Series Plus Valve** to go back to the E-Series Plus Valve main screen	
Valve Field	**Description**
Battery Life	GOOD
	LOW, one (1) year remaining
	REPLACE, six (6) months remaining
Firmware Version	Firmware version of the valve
Operating Mode	ACTIVE or TEST mode
Position	Position of valve: OPEN, PARTIAL, RESTRICT
Serial Number	Serial number of the valve
Status Indicators	Displays icons for any active meter status indicators
Functions	**Description**
Valve:	
Re-Home	Repositions valve by cycling from restricted to open. An empty pipe is needed for this command.
Test	Updates device to TEST mode. In TEST mode, the valve is not active. Button does not display if valve is already in TEST mode. See the TEST mode description at *"E-Series Plus Valve Screen Functions" on page 11* for more information.
Select New Position:	
Open, Partial, Restrict	Valve positions. Selections are grayed out and locked when the valve is ACTIVE. New valve position must be selected from the endpoint.

TEST MODE

Placing Active Valve into Test Mode

NOTE: Placing an active valve into *Test* mode *must* be done using the valve. It cannot be done with the endpoint. Make sure the IR device is connected and aligned with the IR port on the valve throughout the process. Using the IR bracket is recommended.

1. To place the valve into Test operating mode, align the IR device with the valve IR port and select **Read Device**. *Figure 25* shows the valve is currently in Active operating mode.
2. Select **Test** mode. The valve is placed in *Test* operating mode.
3. Select **< E-Series Plus Valve** to go back to the E-Series Plus Valve main screen. Then select **Read Device** again to see the updated operating mode on the screen (*Figure 26*).

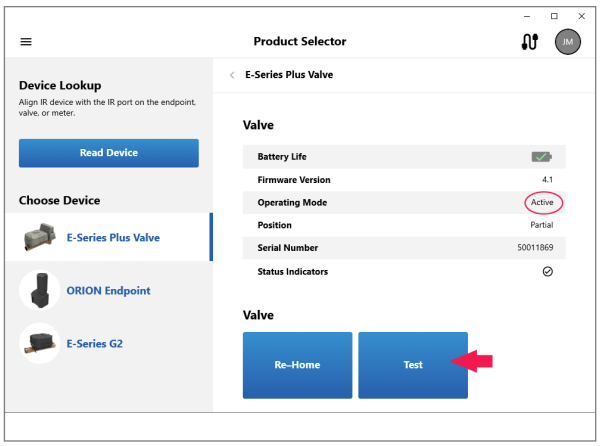

Figure 25: Select Test mode

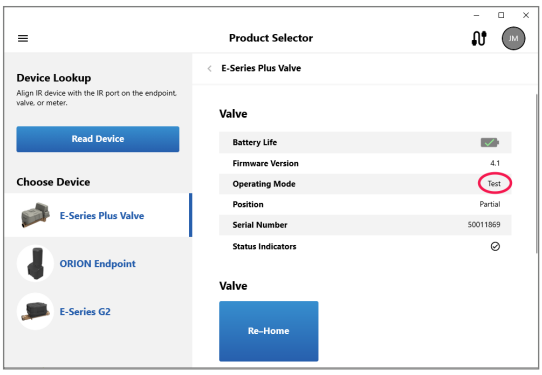

Figure 26: Test Operating Mode

Placing Test Mode Valve into Active Mode Using the Endpoint

NOTE: Placing a Test mode valve into *Active* mode *must* be completed using the endpoint. Make sure the endpoint is in Active operating mode.

Make sure the IR device is connected and aligned with the IR port on the endpoint connected to the meter throughout the process. Using the IR bracket is recommended.

To place a Test mode valve into *Active* operating mode, align the IR device with the endpoint, select **ORION Endpoint** and then select **Read Device**.

The Read screen displays with the updated endpoint and valve properties.

This action takes the valve out of *Test* mode and changes it to *Active* operating mode.
The updated valve operating mode—**Active**— displays on the screen.

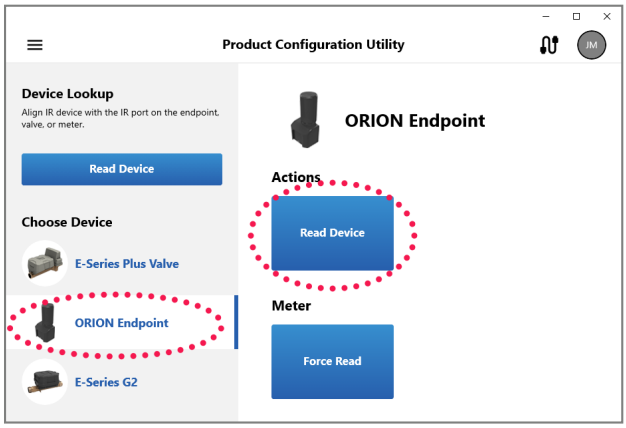

Figure 27: Read active endpoint to change valve to Active mode

CHANGING THE VALVE POSITION

> **! *BEST PRACTICE recommends actuating the valve from the endpoint since the endpoint has more information and can perform system checks prior to actuation.***

Actuating the Valve from the Endpoint

NOTE: Make sure the IR device is connected and aligned with the IR port on the endpoint connected to the meter throughout the process. Using the IR bracket is recommended.

1. Select **ORION Endpoint**. See *Figure 28*.

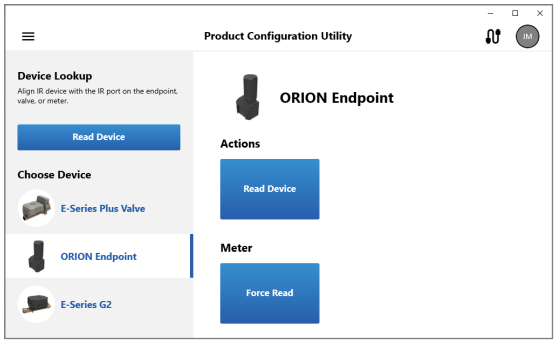

Figure 28: ORION endpoint selected

2. With the IR device aligned to the endpoint IR port, select **Read Device**. Readings for the endpoint and valve display (*Figure 29*).
3. The screen shows the current valve position is **Open**.
   Under the heading ***Select New Position***, select the new valve position. In this example, we selected **RESTRICT**. The valve starts moving almost immediately. When actuation is completed, the new position is shown (*Figure 30*).

IMPORTANT

Keep the IR device aligned until the valve movement stops.

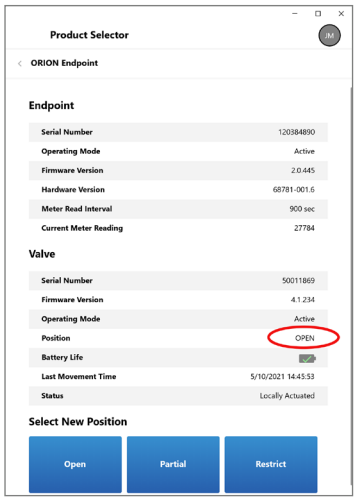

Figure 29: Endpoint and Valve readings prior to actuation

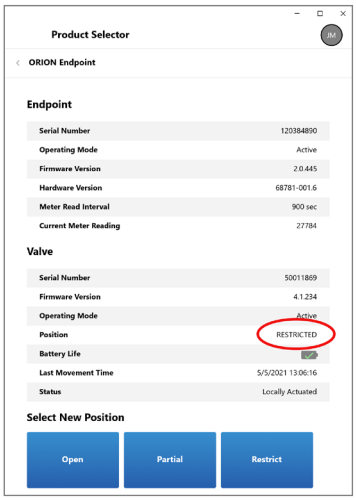

Figure 30: After actuation, Valve is restricted

After the valve moves to the new position, the software performs another READ automatically and updates the valve properties on the screen with the new valve position, RESTRICTED (*Figure 30*).

Actuating the Valve from the E-Series Plus Valve

IMPORTANT

To actuate the valve from the valve itself, the valve must be in TEST mode. If the valve is in ACTIVE mode, actuate the valve from the endpoint.

NOTE: Make sure the IR device is connected and aligned with the IR port on the valve throughout the process. Using the IR bracket is recommended.

1. Select **E-Series Plus Valve**. See *Figure 31*.

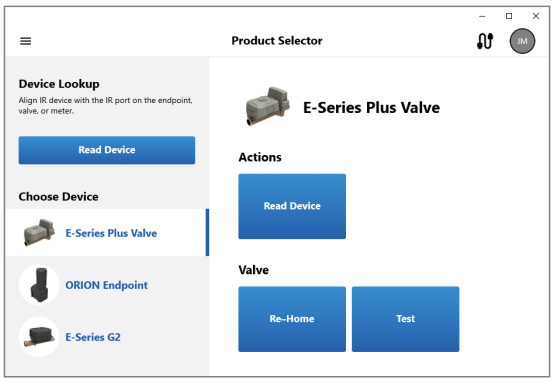

Figure 31: Valve selected

2. With the IR device aligned to the valve IR port, select **Read Device**. Readings for the valve are displayed.

   The screen shows the current valve position is **Partial** and the Operating Mode is *Test*. The **Test** button is grayed out since the valve is in *Test* mode (*Figure 32*).

3. Select the new valve position. In this example, we selected **Restricted** (*Figure 33*). The valve starts moving almost immediately.

IMPORTANT

Make sure to keep the IR device aligned until the valve movement stops.

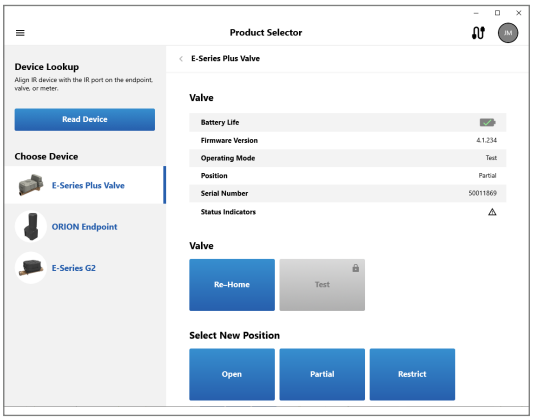

Figure 32: Valve readings prior to actuation

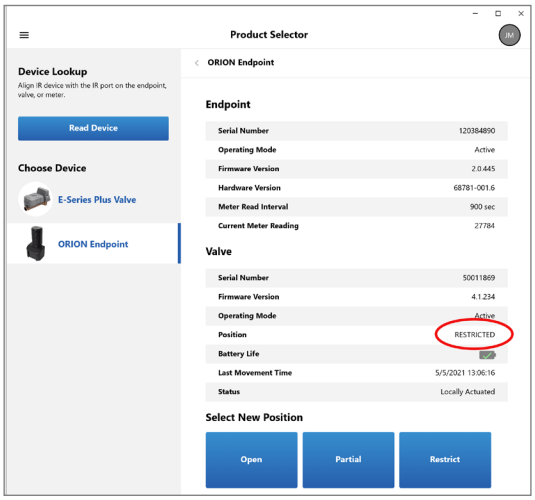

Figure 33: After actuation, valve is restricted

As the valve is closing, the valve LED indicator blinks red. The indicator is next to the valve IR port (see *Figure 3*). Once the valve movement stops, the LED indicator blinks red once per minute to indicate the valve position is Restricted. The chart on the next page shows the valve position colors/indicators.

Valve Position

Status	Valve Position	LED Color	LED Indicator
Active	Open	Green	Blinks once per minute
Active	Partial	Amber	Blinks once per minute
Active	Restricted	Red	Blinks once per minute
Valve opening	Moving	Green	Blinks continuously until the valve movement stops
Valve closing	Moving	Red	Blinks continuously until the valve movement stops
Obstacle/Error on Restriction	Restricting	Amber	Steady (up to a minute), then blinks once per minute
Test	Open	--	LED does not operate when valve is in Test mode

FORCE READ

A **Force Read** is performed to get the latest real-time data from the meter.

NOTE: Make sure the IR device is connected and aligned with the IR port on the endpoint connected to the meter throughout the process. Using the IR bracket is recommended.

1. Select **ORION Endpoint** on the left side of the screen.

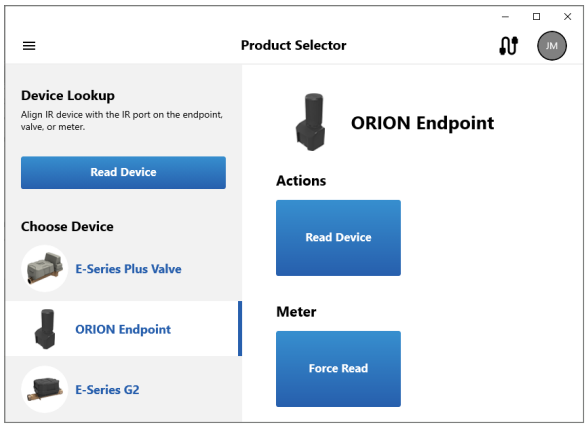

Figure 34: Force Read

2. With the IR device aligned to the endpoint IR port, select **Force Read** (*Figure 34*).

   The Force Read displays the most current meter data such as the Current Raw Meter Reading and Status Indicators.

   An example of the results are shown in *Figure 35*.

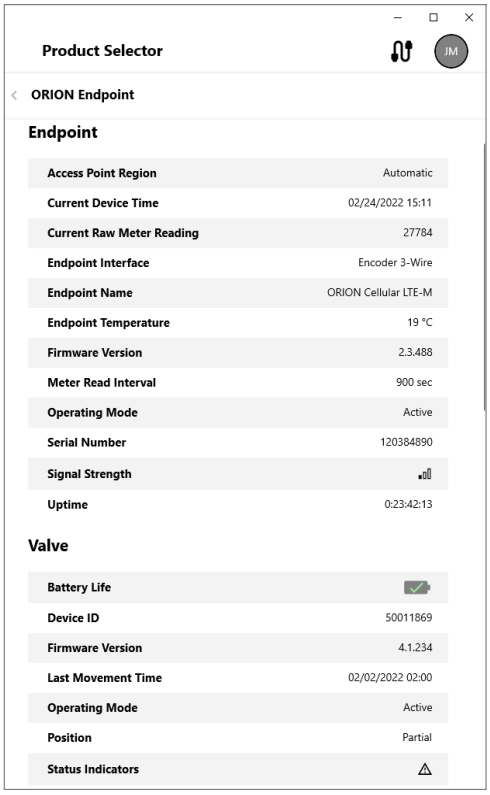

Figure 35: Force Read results

STARTING AN ORION ENDPOINT

Part of the meter and valve installation process is starting an endpoint radio. Follow these steps to Activate an ORION Cellular endpoint.

NOTE: Make sure the IR device is connected and aligned with the IR port on the endpoint connected to the meter throughout the process. Using the IR bracket is recommended.

1. Select **ORION Endpoint** on the left side of the software screen.
2. Click **Read Device**. Information for the ORION endpoint and the Valve display.
3. Check the Operating Mode of the ORION endpoint. The mode will be **Storage** or **Paused**.
4. Scroll down to see the **Action** buttons and under **Radio**, select **Activate**.

   The endpoint LED flashes during the activation process as the software goes through a series of checks that are displayed on the screen (*Figure 36*). When the process is complete, an Activation Log file is created (*Figure 37*).

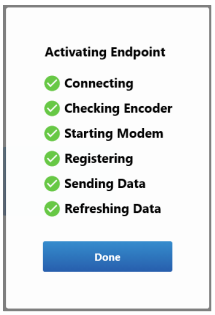

Figure 36: Activation check list

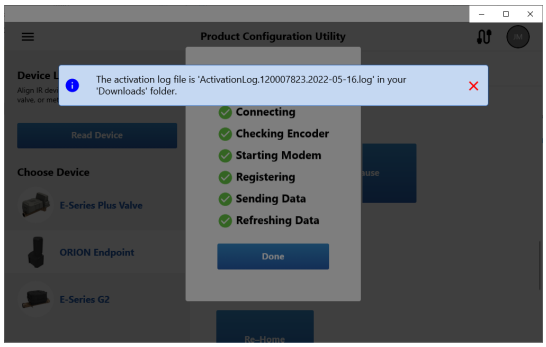

Figure 37: Endpoint activation completed

5. Click the **X** to close the Activation Log file message.
6. Click **DONE** to close the checklist window. When the window closes, the software performs another READ automatically and updates the properties on the screen to show the endpoint Operating Mode is **Active.**

NOTE: For complete information about ORION water endpoint installation, see the *ORION Water Endpoints Installation Manual* at *badgermeter.com*.

TROUBLESHOOTING

Issue	Possible Cause	Solution
Error when setting the COM port	Bluetooth enabled	Disable Bluetooth while selecting the COM port.
PCU software will not install	OS; VPN	Check the operating system on your Windows 10 device. It must be version 1909 or newer. Disable VPN if you have a VPN enabled. You can reconnect after installation.
Unable to sign in to software	No internet connection	You must be connected to the internet to sign in. Once you are signed in, you do not need to be connected to use the PCU software.
Valve position does not change when actuated	Reading error IR device not aligned with the valve IR port	• Retry your command, making sure the IR device is properly aligned, 1/2…1-1/2 inches from the IR port. Hold the device steady while reading. • Use the IR bracket for best results. • If you are using the IR bracket, reverse the position (front to back) of the IR device in the bracket and retry your command.
Valve does not change to Active mode from Test mode after reading it with ORION endpoint	Endpoint is not Active	Activate the endpoint radio. The valve should Activate automatically. See *"Starting an ORION Endpoint" on page 18*.
Error Message: ***Unsupported device detected. Please ensure that device is compatible with software.***	Possible firmware issue	Occurs when trying to read a device that is not yet supported.
Error Message: ***Unable to open communications.***	COM port not set or wrong COM port set	• Close the error message. • Go to **Settings** to set the COM port. See *"Software Menu" on page 9* if you need help.
	IR device not aligned with IR port on valve/endpoint IR device too close or too far from IR port on valve/endpoint	• Close the error message. • Retry your command, making sure the IR device is 1/2…1-1/2 inches from the valve IR port. Hold the device steady while reading. • Use the IR bracket for best results.
Error Message: ***The valve is already at the position state of:*** _____	Valve is already in the position selected	• Close the error message. • If possible, visually verify the valve position. • If valve is *not* already in the position selected, retry the command to actuate. Contact Technical Support if you continue to receive the error.
Error Message: ***Valve movement not allowed directly. Use attached endpoint.***	Valve is NOT in Test mode	• Close the error message. • Actuate the valve using the endpoint or place the valve in TEST mode to actuate directly from the valve.

Contact Badger Meter Technical Support (800-616-3837) for any additional issues.

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