thermoscientific

Connect Edge

User Guide

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Contents

Introduction

Connect Edge Overview

The Connect Edge gateway enables connectivity between laboratory devices and the Thermo Fisher cloud as well as customer premise-based systems. The Connect Edge gateway is a many to 1 device which means it will allow the user to connect many pieces of equipment to a single gateway. Connect Edge adapters provide an interface between 1 laboratory device and a Connect Edge gateway over Wi-Fi or wired Ethernet.

This user guide presents an overview of the Connect Edge solution and instructions to help get your system up and running quickly.

Intended Use

The Connect Edge gateway is intended for:

- Research or General-Purpose indoor use only.
- Monitoring overall equipment health, detect and alarm on equipment malfunction and degradation.
- Remote system health monitoring and troubleshooting for service providers.
- The system will collect, store and provide analytical data. The data analytics collected from multiple devices (fleet) will provide the operator with supporting data for efficiency recommendations.
- To monitor the parameters of equipment and assess overall health.

Non-Intended Use

The Connect Edge gateway is not considered a medical device and has therefore not been registered with a medical device regulatory body (e.g., FDA).

- These devices are not to be used for any medical purposes.
- It is not stated or implied that the system will uplift the intended use of the device.

Environmental Operating Conditions

The Connect Edge gateway is designed and intended for reliable operation at normal indoor ambient temperature and humidity.

- The Connect Edge gateway and adapters shall not be placed in environmental conditions beyond recommended specifications.
- The Connect Edge gateway and adapters are not submersible.
- Operating temperature range: 0°C to +40°C.
- Operating relative humidity range: 8% RH to 90% RH, non-condensing.

CAUTION: Follow local regulations concerning disposal of packaging, unused wireless devices, and their accessories, and promote their recycling.

Safety Considerations

IMPORTANT: Read carefully and understand the instructions and warnings contained in this document before installing or using the product. Keep this document for future reference.

To lower the risk of personal injury, electric shock, fire, or damage to equipment, observe the instructions and warnings contained in this document. Failure to comply with the instructions and warnings contained in this document, violates the standards of safety, design, manufacture, and intended use of the product. Thermo Fisher assumes no liability for any damage caused by failure to observe the instructions and warnings

contained in this document. Whenever you have any doubt regarding the correct understanding of this document, contact Thermo Scientific technical services.

Device Maintenance

CAUTION: Do not attempt to disassemble the device. There are no user serviceable parts inside.
CAUTION: Do not misuse the device. Follow instructions on proper operation and only use as intended. Misuse could make the device inoperable, damage the device and/or other equipment or harm users.
CAUTION: Never try to dismantle the product yourself, or push the objects of any kind into the product, as this may cause short circuits which could result in a fire or electric shock
CAUTION: Do not apply excessive pressure or place unnecessary weight on the device. This could result in damage to the device or harm to users.
CAUTION: Do not use this device in explosive or hazardous environments.
CAUTION: Do not expose your device to any extreme environment where the temperature or humidity is high. Such exposure could result in damage to the device or fire.
CAUTION: Do not expose the device to water, rain, or spilled beverages. It is not waterproof. Exposure to liquids could result in damage to the device.
CAUTION: Do not place the device alongside computer discs, credit or travel cards or other magnetic media. The information contained on discs or cards may be affected by the device.
CAUTION: Using accessories, such as antennas, that Thermo Fisher has not authorized or that are not compliant with Thermo Fisher accessory specifications may invalidate the warranty.
Caution: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Safety Instructions

- Do not use this product for protection or as part of an automated emergency system or for any other application that involves protecting people and/or property.
- Customers and users of Thermo Fisher Scientific products are responsible for making sure that the product is fit for the intended usage. Do not open the product casing and do not disassemble or modify internal components in any manner.
- Thermo Fisher Scientific products do not contain any internal components that require user intervention or repair. If the device shows signs of improper operation, disconnect it immediately from its power source and contact Thermo Fisher Scientific technical support.

Electrical Warnings

- The Connect Edge gateway must be powered by a 24V DC power supply.
- The Connect Edge adapters must be powered by a 5V DC power supply or via the PoE Ethernet base.
- Do not open the Connect Edge gateway and adapters and do not dismantle internal components or modify them in any manner. The Connect Edge gateway and adapters do not contain any user-repairable parts. If the Connect Edge gateway and adapters show any sign of malfunction, unplug them immediately and contact Thermo Scientific for repair or replacement.
- Do not cause a short circuit with the electrical plug. Do not force either the AC or DC plug.
- Before removing the connector from the gateway or unplugging power cables, unplug the cable from the power outlet.
- Do not subject the gateway and adapters to physical shock, as it may cause serious malfunction or damage. Do not use or place the gateway and adapters in a wet or humid location. The Connect Edge gateway and adapters are not waterproof.

CAUTION: Follow your facility safety guidelines and wear required Personal Protective Equipment (PPE) during installation and/or troubleshooting.

Regulatory Information

Certifications and Compliance

FCC statements
This device complies with part 15 of the FCC rules. Operation 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

FCC RF Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. To avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna should not be less than 20 cm (8 inches) during normal operation. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

FCC Class A Notice
Operation is subject to the following two conditions: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. Operation of this equipment in a residential area may cause interference in which case the user will be required to correct the interference at their own expense.

IC Statements
This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:
1. This device may not cause harmful interference
2. This device must accept any interference, including interference that may cause undesired operation of the device

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotopically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This Class A digital device complies with Canadian ICES-003.

CE - Conformity with European regulations
The product is in compliance with the essential requirements and other relevant provisions of directive 2014/53/EU (Radio Equipment Directive), 2014/30/EU (EMC Directive) and 2014/35/EU (Low Voltage Directive).

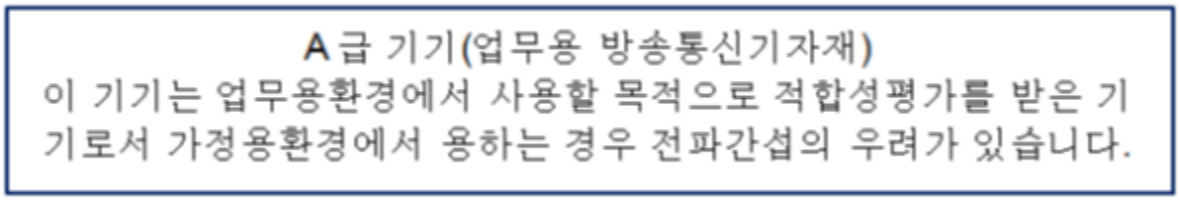
RoHS Statement
The wireless device complies with the EU Directive 2011/65/EU (Restriction of the Use of Certain Hazardous Substances in Electronic and Electrical Equipment) and the amendment of (EU) 2015/863. Do not dispose of this product with household trash. Thermo Scientific recycles this product under certain conditions. Contact us for more information.

CAUTION: Any changes or modifications not expressly approved by Thermo Scientific could void the user's authority to operate the equipment.

South Korea: (Applicable for the gateway)

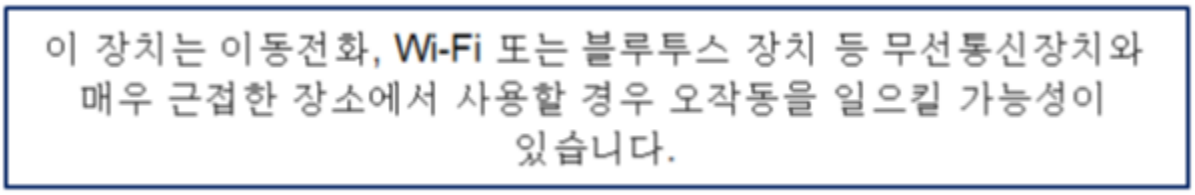
Statement for class A equipment

Class A equipment (Broadcasting equipment for business) This equipment may cause radio interference when used in household environment certified for business use purpose.



Statement for KN 32/35

This product may cause malfunction if it is used nearby wireless communication equipment such as a cell phone, a Wi-Fi or Bluetooth device etc.



Model Numbers, Equipment, and Kits

Connect Edge Gateway

Connect Edge Gateway	Applicable Regions/Countries	Description
EDGEPTGATE01	Global	Edge Gateway Ethernet only
EDGEPTGATE02	US, Europe, Japan, Australia, New Zealand	Edge Gateway Wi-Fi/Ethernet

Connect Edge Gateway Kit

	Connect Edge Gateway	Power Supply	Ethernet Cable	DIN Rail Mount	Wi-Fi Antenna	Cellular Antenna	Quick Start Guide
Connect Edge Kit	**1 x Qty.**	**EDGEPTPWRS01**			**EDGEPTANTD01**	**EDGEPTANTC01**	**EDGEPTINST001**
EDGEKTETHE01	EDGEPTGATE01	1	1	1	0	0	1
EDGEKTWIFI01	EDGEPTGATE02	1	1	1	2	0	1

Connect Edge Accessories

Connect Edge Accessories	Description
EDGEPTPWRS01	Connect Edge Gateway Power Supply EXT 24V
EDGEPTANTD01	Connect Edge Gateway Antenna Dual Band
EDGEPTINST001	Connect Edge QuickStart Guide
EDGEPTBRKT001	Connect Edge Adapter Mounting Bracket (Device adapters)

Connect Edge Device Adapter Kits[1]

Connect Edge Adapter	Description
EDGEKTADPT01xx	Connect Edge Adapter Kit (RS485 configuration)
EDGEKTADPT02xx	Connect Edge Adapter Kit (STTL configuration)
EDGEKTADPT03xx	Connect Edge Adapter Kit (RS232 configuration)
EDGEKTADPT04xx	Connect Edge Adapter Kit (USB configuration)
EDGEKTADPT05xx	Connect Edge Adapter Kit (6-Sensor configuration)
EDGEKTADPT51xx	Connect Edge Adapter Kit PoE (RS485 configuration)
EDGEKTADPT52xx	Connect Edge Adapter Kit PoE (STTL configuration)
EDGEKTADPT53xx	Connect Edge Adapter Kit PoE (RS232 configuration)
EDGEKTADPT54xx	Connect Edge Adapter Kit PoE (USB configuration)
EDGEKTADPT55xx	Connect Edge Adapter Kit Ethernet (6-Sensor configuration)
EDGEKTADPT99	Connect Edge Adapter Kit PoE

[1] <xx> variants available:

None: Base kit. (Not available for all countries)
"B": Includes mounting bracket EDGEPTBRKT001. (Not available for all countries)
"P": Does not include a power supply.
"PB": Includes mounting bracket EDGEPTBRKT001. Does not include a power supply.

Not all variants are available in all countries. For country availability, refer to https://www.thermofisher.com/connectedge

Supported Equipment

Device Type	Model	Device Adapter Kit
Incubator	Heracell Series	EDGEKTADPT03xx (RS232 configuration) EDGEKTADPT53xx (RS232 configuration)
	Heracell VIOS Series	EDGEKTADPT04xx (USB configuration) EDGEKTADPT54xx (USB configuration)
ULT	UxF/HFU-T/TSU/88000	EDGEKTADPT01xx (RS485 configuration) EDGEKTADPT51xx (RS485 configuration)
	TSX ULT Series	
	TDE/RDE/FDE/HDE Series	
Freezer	TSX Freezer Series	EDGEKTADPT02xx (STTL configuration) EDGEKTADPT52xx (STTL configuration)
Refrigerator	TSX Refrigerator Series	
Chamber	Heratherm Series	EDGEKTADPT04xx (USB configuration) EDGEKTADPT54xx (USB configuration)

***For a complete list of supported models, visit:** www.thermofisher.com/edgecompatible

Connect Edge Sensors	Description
EDGEPTSENTx001y	PT100 Sensor, -200 to 200 C, Class B
EDGEPTSENx008y	PT100 Sensor, -100 to 316 C, Class A
EDGEKTSENRx002y	Temp/Humidity Sensor
EDGEPTSENCA003	CO2 Sensor[1]
EDGEPTSENDU004	Door Switch Sensor
EDGEPTSENAU005	Current Transducer 50A[2]
EDGEPTSENTx006y	Digital Temp Sensor -55-125C
EDGEPTSENx007y	Digital Temp/RH -40-125C

[1] Maximum 2 per sensor adapter
[2] Professional installation recommended

Connect Edge Sensor Kits	Description
EDGEKTxRHC	T/RH/CO2 CAL Sensor Kit
EDGEKTxCLD	Cold Kit CAL PT100/Door/CT
EDGEKTxLN2	LN2 Kit CAL PT100/Door

x = Indicates type of calibration (not all options are available for all sensors)

U = uncalibrated
C = ISO9001 calibrated
A = 17025 calibrated

y = If present, indicates the calibration points

Technical Specifications

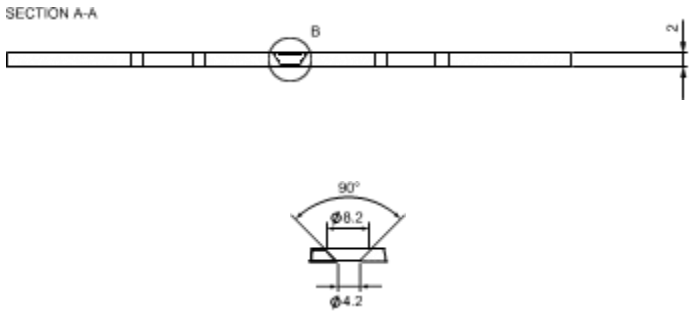
Product Dimensions

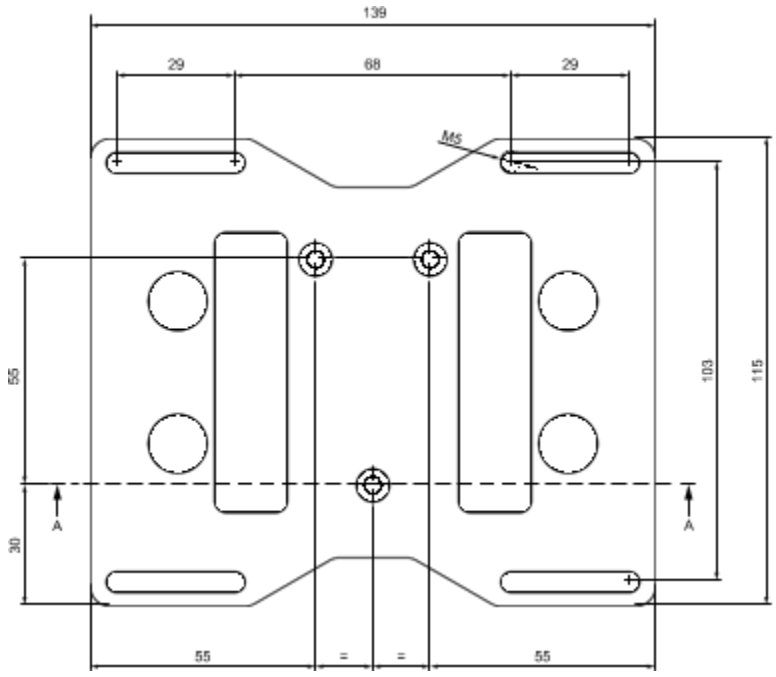
Gateway mechanical dimensions

The product electronics are housed in an ABS enclosure having the following dimensions: 139 (L) x 115 (W) x 46 (H); mm - Antennas Connectors and Mounting Bracket included.

Gateway mounting bracket mechanical dimensions

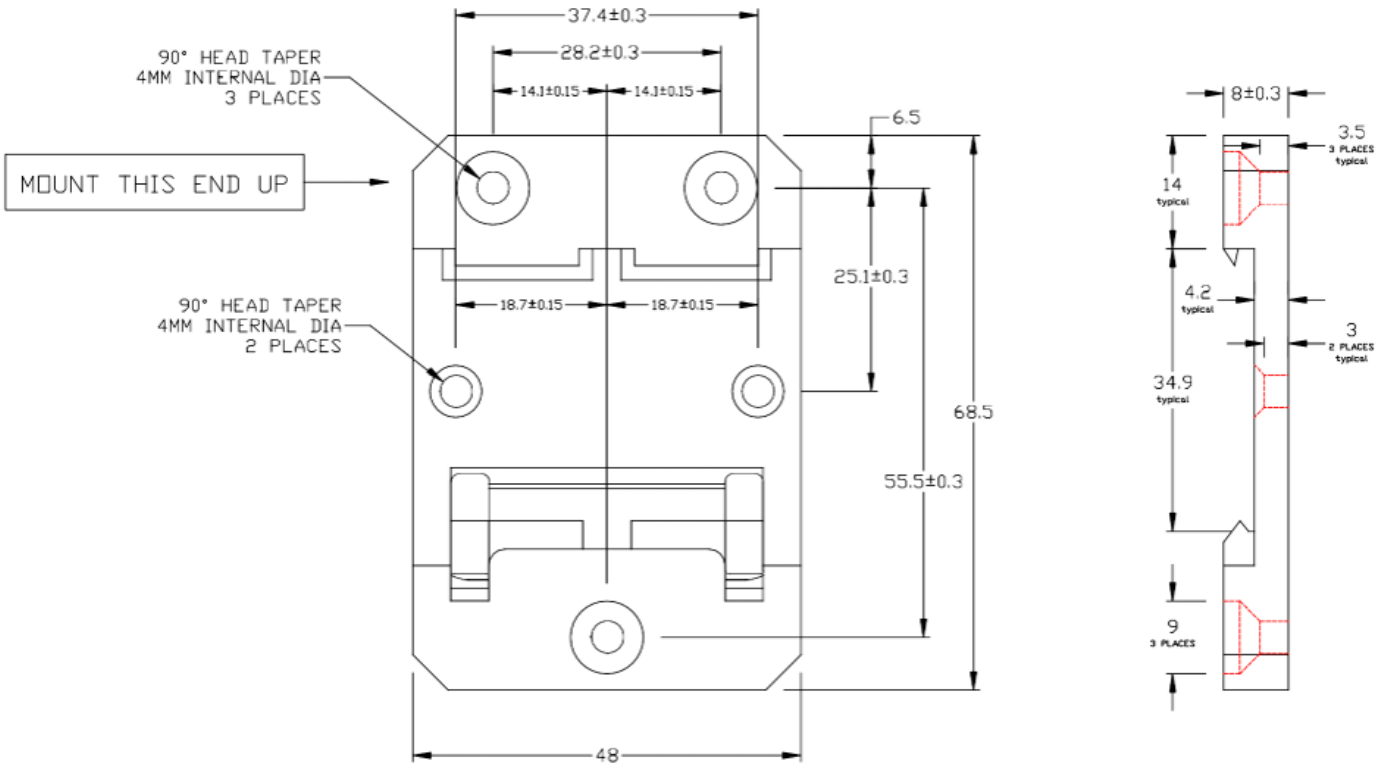
The Mounting Bracket fastened on the bottom side of the gateway has the following dimensions.



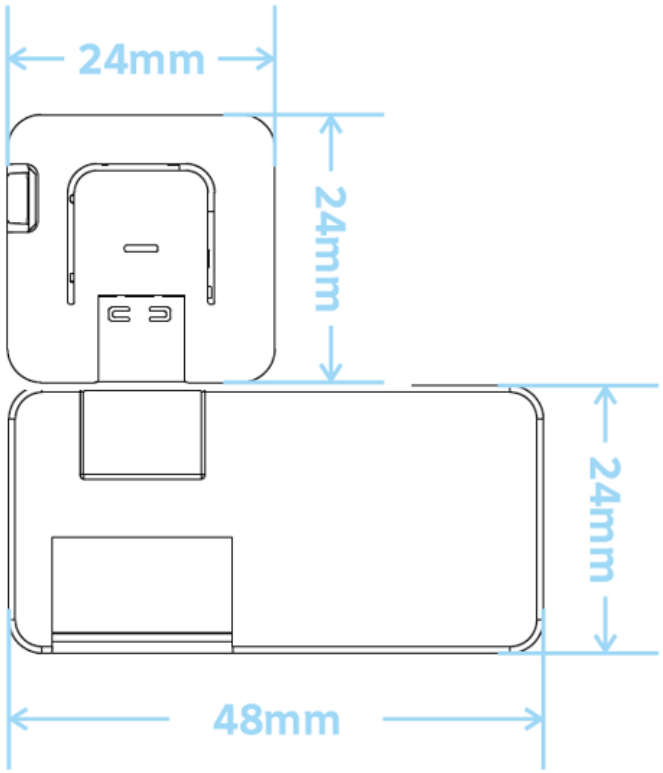


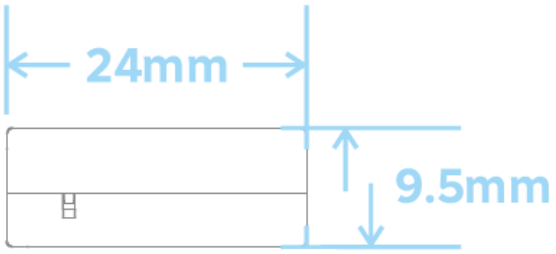
Gateway DIN Rail Mounting Bracket mechanical dimensions

DIN rail mounting clip, 48mm width. Clip material: fiberglass reinforced nylon 66.

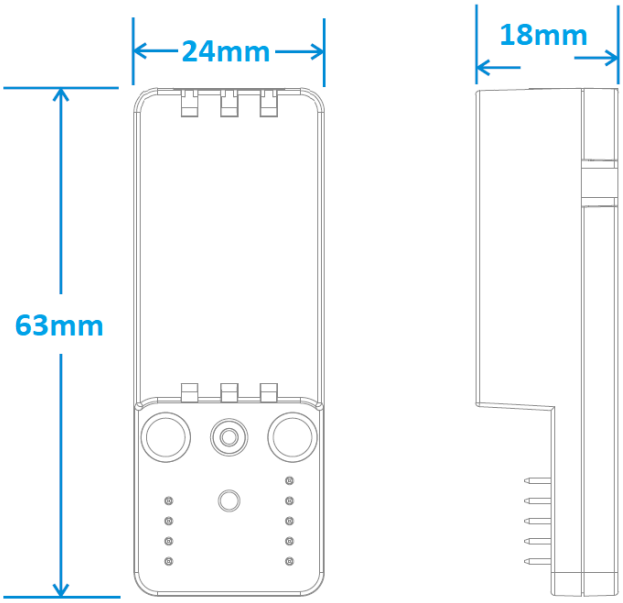


Device Adapter mechanical dimensions

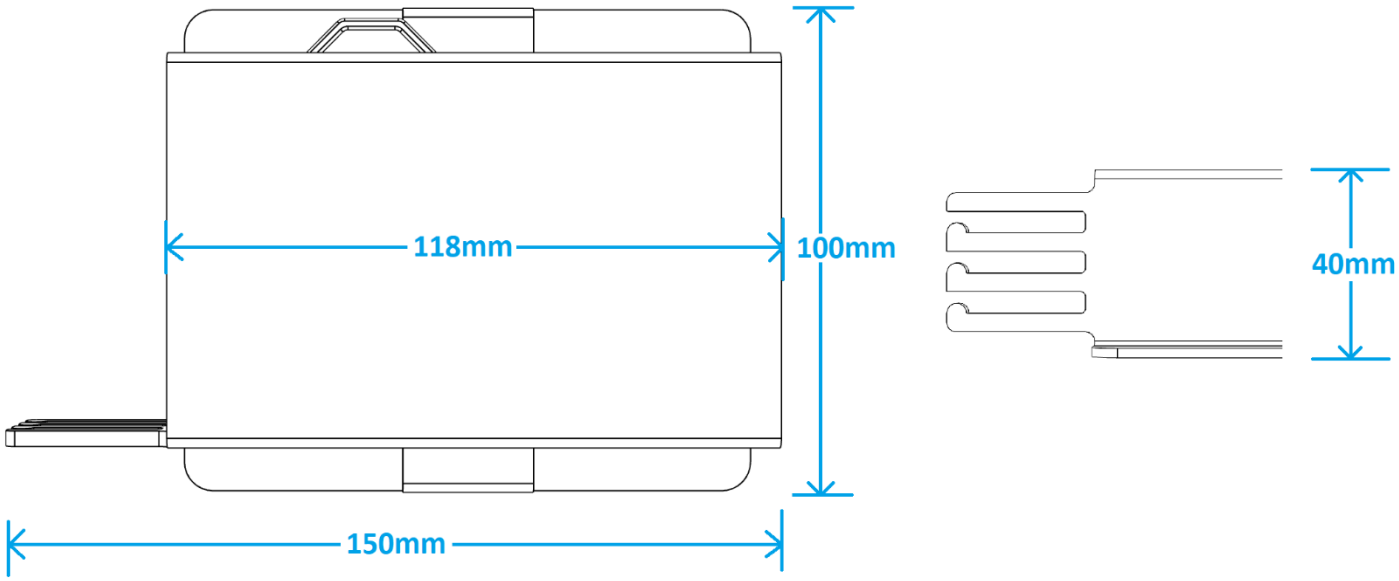




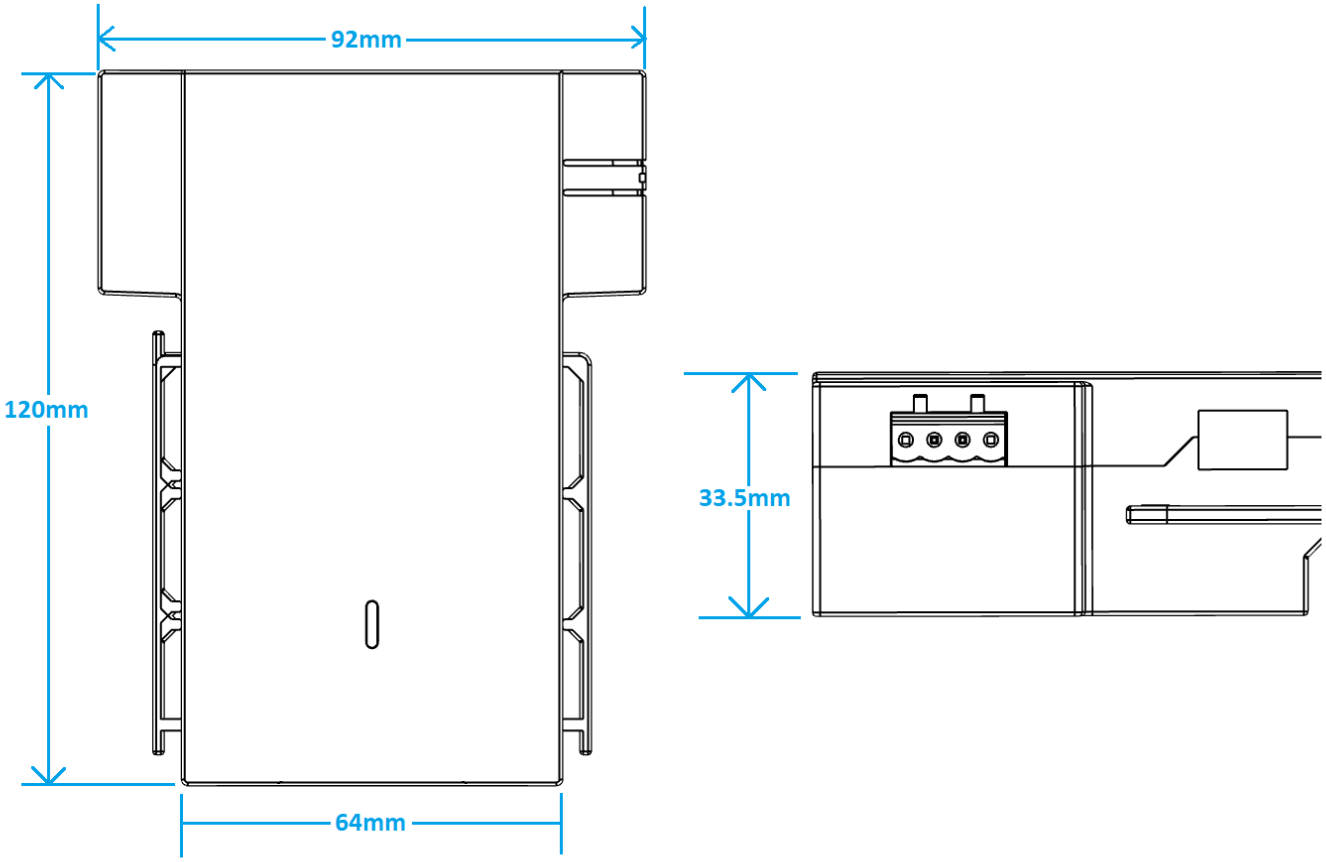
Adapter Ethernet Base mechanical dimensions



Adapter Mounting Bracket mechanical dimensions



Sensor Adapter mechanical dimensions



Power Options

This product is not provided with any ON/OFF switch. The Power IN connector is the disconnecting means from the power supply. Only use provided power supplies.

Gateway power supply specifications

Power supply	Nominal: 24 VDC; Range: 12 to 24 VDC with Transient Protection
Power consumption	2 W idle; 15 W maximum
Peak power demand	< 15 W

The power input is protected against surge, noise, reverse polarity and over-voltage.

Note: The Power IN connector is NOT protected against short circuit.

Device adapter power supply specifications

Power supply	Nominal: 5 VDC
Power consumption	500 mA (2.5W) maximum
Peak power demand	< 2.5 W

If you have an adapter kit without a supplied power supply, the power supply used must meet the specifications above and have a USB-C plug.

Sensor adapter power supply specifications

Power supply	Nominal: 5 VDC
Power consumption	2A (10W) maximum
Peak power demand	< 15 W

ELECTRIC SHOCK HAZARD

Failure to supply power correctly or to follow all operating instructions correctly may create an electric shock hazard which could result in personal injury or loss of life and/or damage the equipment or other property.

To avoid injuries and safely supply power to the product, complete the following steps:

1. Observe all the instructions for safety, installation and operation.
2. Make sure your hands are dry.
3. Make sure that all the connection cables are:
    a. in good condition
    b. meet the product requirements and comply with the relevant standards and regulations
4. Position cables with care. Do not position cables in places where they may be trampled or compressed.
5. Make sure that the power-points and plugs are in good condition before using them.
6. Do not overload the power-points and plugs.
7. Make sure that the product maintains a proper grounding connection.
8. Use a power supply that meets the product requirements and complies with the relevant standards and regulations.
9. Connect power only after the installation of the system has been completed.
10. Never connect or disconnect the cables with the system or the external power supply switched ON.

Before supplying power to the product, complete the following steps:

1. Make sure that you have thoroughly reviewed all installation, operation and safety instructions.

2. Make sure that the electrical installation is made correctly in compliance with the relevant standards and regulations.

Getting Started

The following section will detail the necessary steps to set up your Connect Edge gateway.

For most activities, you will need:

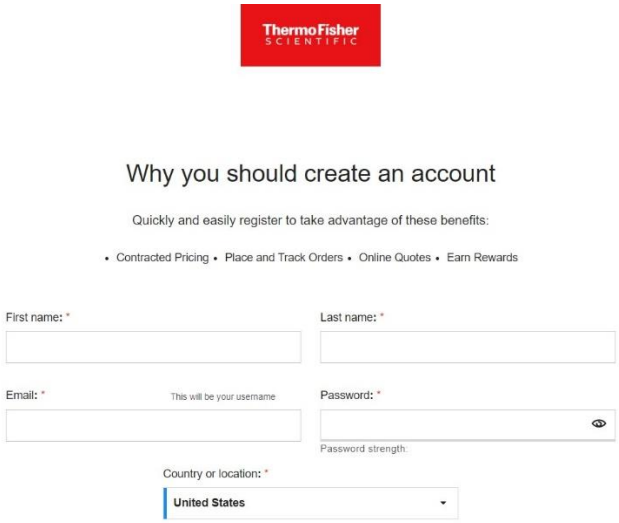
- A computer connected to the internet
- Thermo Fisher Connect login credentials
- Connect Edge gateway and adapters

Pre-requisite: Before getting started, you may need to work with your local IT department to allow the Connect Edge gateway to communicate to external networks*

*For more information, please refer to the Networking Guidance section of this manual.

Step 1: Create Thermo Fisher™ Connect Account

Go to www.thermofisher.com/register and create your free Thermo Fisher Connect account. This is where you will access your device data once the setup is complete.



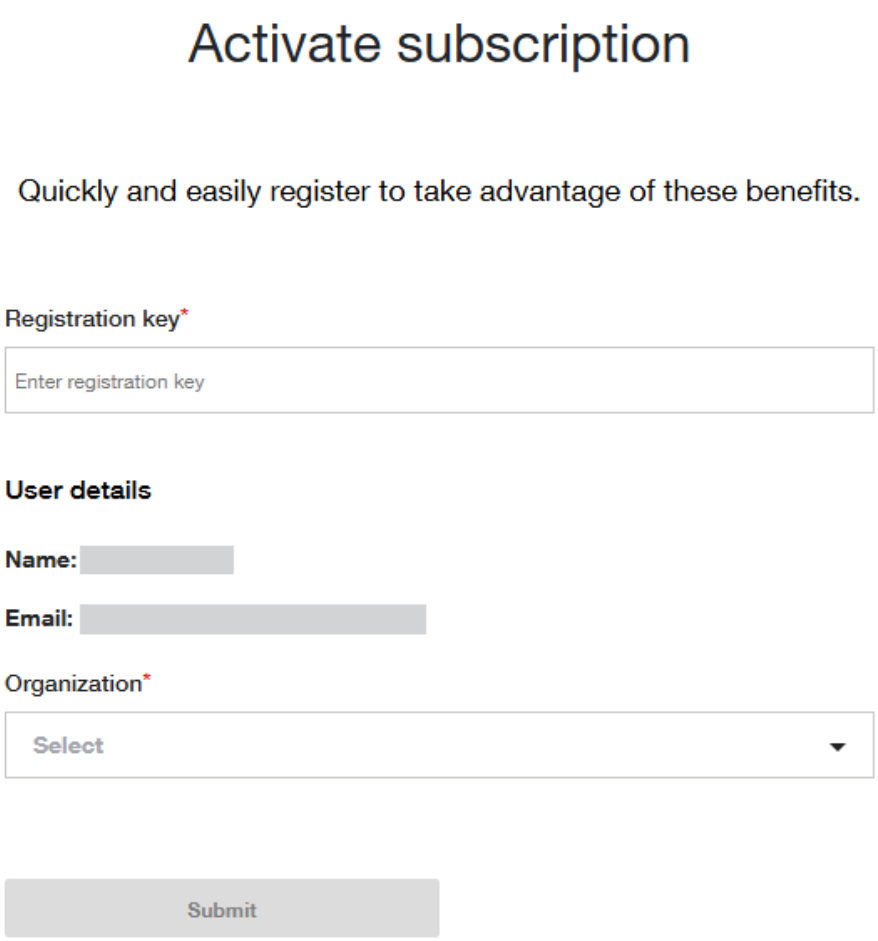
(Optional) Install the InstrumentConnect mobile application on your phone or tablet. Log in using the same email and password you created for your Thermo Connect account above.

Step 2: Activate subscription

To access the Gateway Management portal, the user must first register a valid registration key with a subscription. For this section, it is assumed that this subscription has already been purchased and that the user has received the registration key. Registration key validation can take up to 24 hours, so it is recommended to complete this step in advance.

Follow the following steps:

1. Go to: www.thermofisher.com/productregistration. Select Activate Subscription.
2. Enter the Registration form information and submit the registration request (see form below)
    a. If your Organization is not in the drop-down, select Create New Org
3. Wait for a confirmation that your registration request was successful



Step 3: Set Up Hardware

Decide how the gateway will connect to the Internet. The options are:

- Ethernet 1 (Enabled by default)
- Wi-Fi
- Cellular

If not connecting with Ethernet 1, network configuration will be needed after the gateway is initialized (Status 1 LED becomes solid). If using Ethernet 1, the network must have internet access and default settings assume a DHCP server.

Prepare your gateway by attaching the appropriate antennas or ethernet cable to the ETH 1 port.

Note: If using Wi-Fi, attach the gateway Wi-Fi antennas. If using cellular, attach the cellular antennas.

Wi-Fi Antenna

Cellular Antenna

Powering the gateway:

A. Connect the supplied power supply to the gateway through the PWR IN port.
B. Once power is provided, STATUS 1 LED on the Connect Edge gateway will blink while the gateway prepares itself. Wait for the Status LED 1 to turn solid green.

Note: The gateway initialization process can take up to 10 minutes. After gateway registration, boot times will be longer. Each registered device further increases boot time.

Prepare your adapter(s) by unboxing the adapter and identifying all components. Thermo Scientific equipment will use Device Adapter kits to transmit data to the Connect Edge Gateway. A Sensor Adapter kit can be used for any additional sensors you may want to add to Thermo Scientific equipment. The Sensor Adapter kit can also be used to transmit independent sensor data to the Connect Edge Gateway for other OEM equipment.

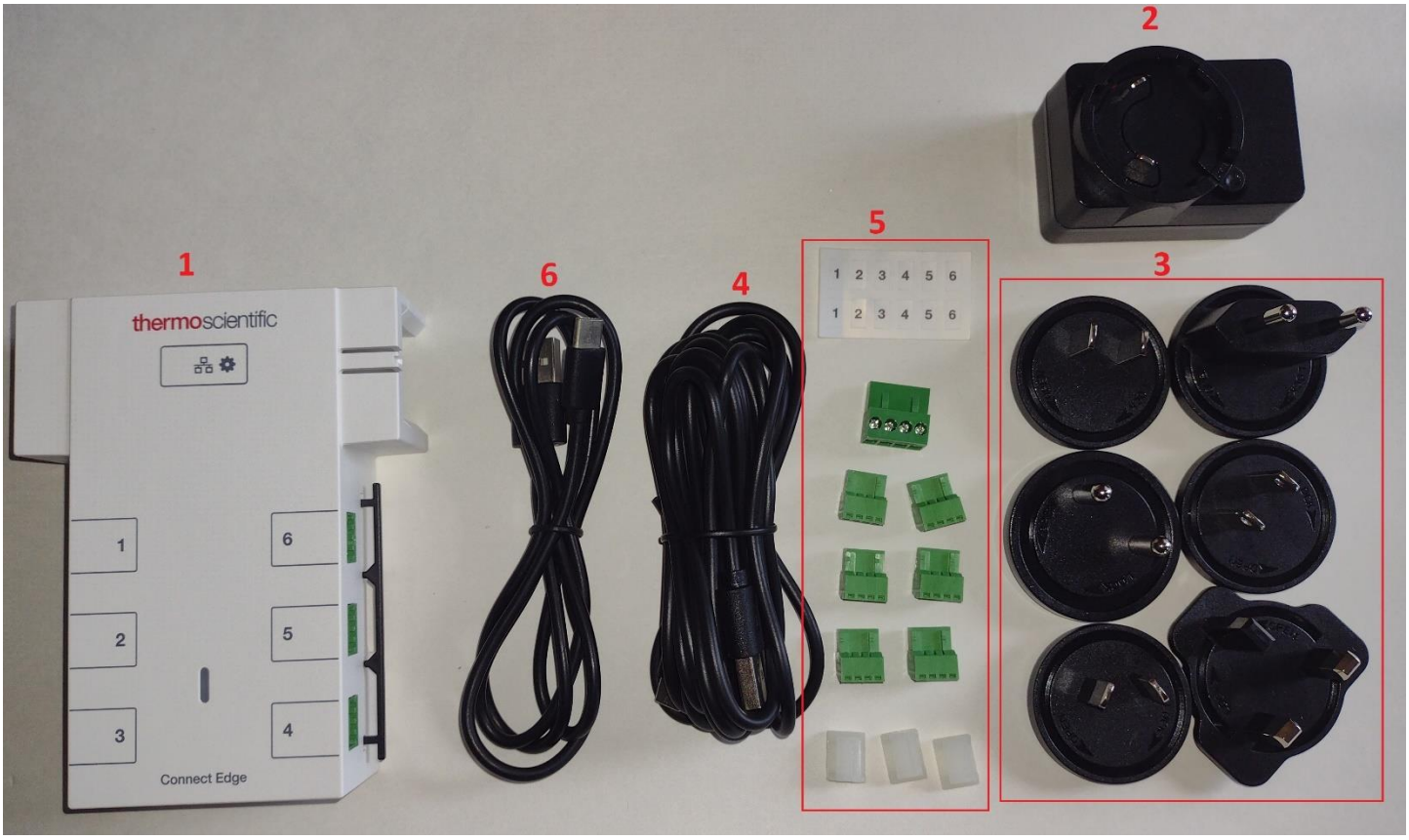
Device Adapter Kit

1. Device Adapter
2. Mounting accessories
3. Equipment Serial Cable
4. USB-C Configuration Cable
5. Power Supply
6. USB-C Power Cable

Device Adapter Mounting Bracket

Connect Edge PoE Adapter: Option varies by location.

Sensor Adapter Kit (Sensors not shown)



1. Sensor Adapter
2. Power Supply (Not included in all kits)
3. Power Supply Plugs (Not included in all kits)
4. USB-C Power Cable
5. Accessories (Plugs, Plug labels, Cable clips)
6. USB-C Configuration Cable

Connect to the Internet:

The Connect Edge Gateway will attempt to access the Internet after booting. An internet connection is required to complete the remaining steps. The default Ethernet method does not require any configuration changes to be made prior to connection. So, if connected via Ethernet, skip to **Step 4: Register Gateway**.

Cellular and/or Wi-Fi options will require network configuration on the gateway's local user interface (UI). To connect to the local user interface:

1. Configure your computer network settings for a static IP address 172.16.0.10 (for info on setting a static IP address, refer to the section **Setting PC Static IP Address**.
2. Connect your computer directly to the gateway's ETH 0 port using an ethernet cable.
3. Navigate to web browser: https://172.16.0.1/
4. Enter the following username and password details.
    a. Username: admin
    b. Password: <latest password> (default is the gateway serial number)

NOTE: For alternate options to access the local UI refer to **Connecting to the Gateway Local UI**.

Wi-Fi Internet Access

- Select Network icon> Internet Connection tab> Edit Configuration.
- Choose Wi-Fi as the network interface
- Complete the form
    a. To enable access to the local UI via Wi-Fi 1 in the future:
        a. Set "Enable local (UI and device access)" to yes
        b. Use the Permitted Network (Restrict local access IP range) setting to restrict access. Use 0.0.0.0/0 to allow any IP address.
- Select "Save Changes"

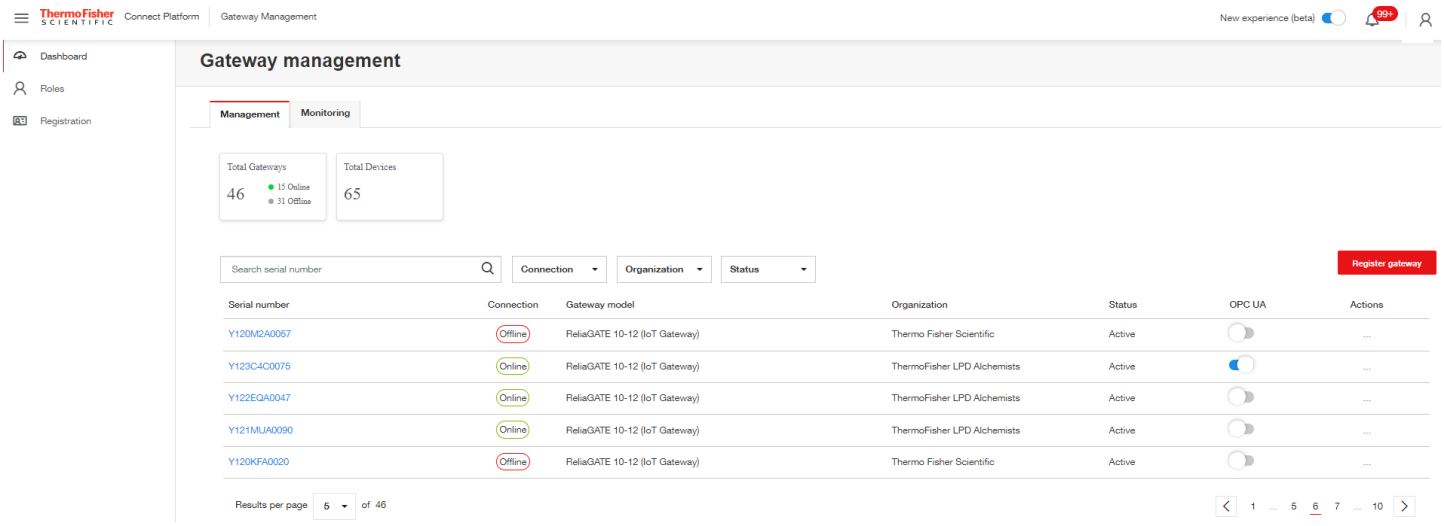
Cellular Access

1. Install the SIM card (not provided)
2. Select Network icon> Internet Connection tab> Edit Configuration.
3. Choose Cellular as the network interface
4. Complete the form
    a. Cellular settings must be supplied by the cellular provider
5. Select "Save Changes"

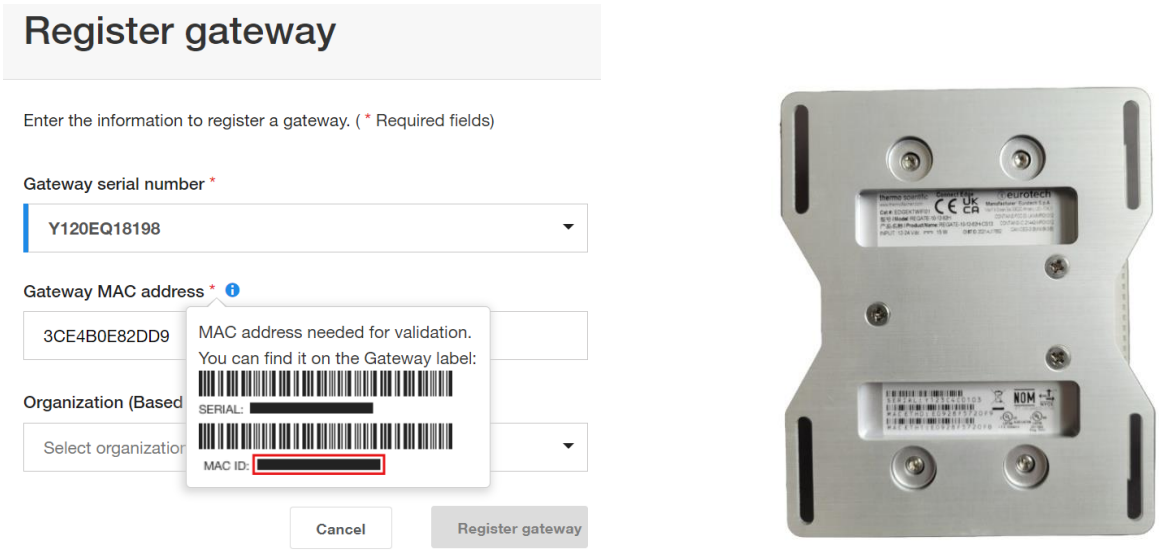
Step 4: Register Gateway

Once your gateway is connected to the Internet, it will need to be registered on Thermo Fisher Connect.

1. From a web enabled device, go to www.thermofisher.com/gatewaymanager and log in using your Thermo Fisher Connect credentials. Upon successful login, you will be redirected to the Gateway Management home screen.



2. Select Register Gateway and enter the serial number and ETH 0 MAC address. These are found on the bottom label of the gateway.



3. Select your organization from the pre-populated drop-down menu. Press **Register Gateway.**

Once the gateway has been registered, you will be redirected to the gateway fleet page. Make sure the new gateway status changes from **Registered** to **Active** before continuing. If the state stays at Registered, this is normally because the gateway does not have Internet access. Check Internet configuration and connections.

Step 5: Register Devices to Gateway

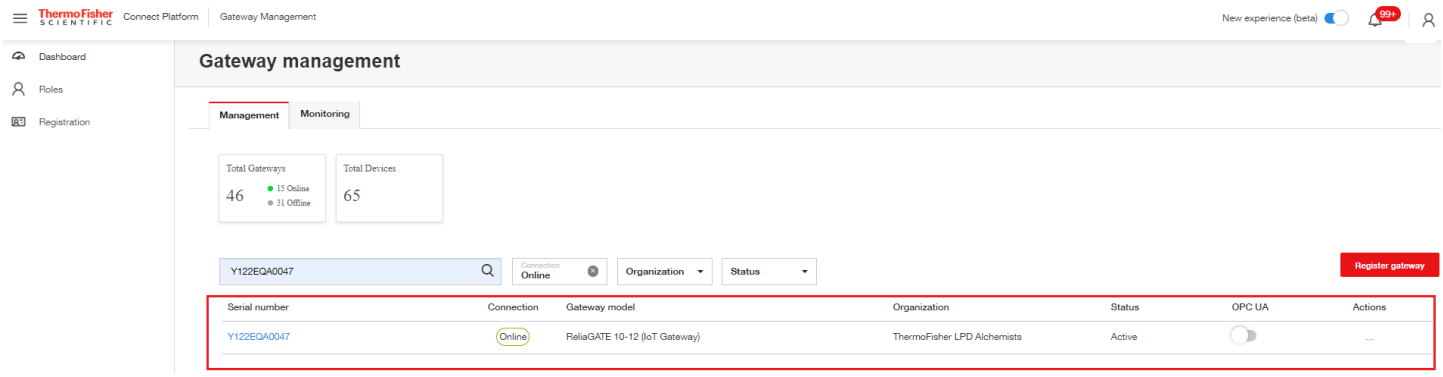
Your Connect Edge gateway can provide connectivity for 10 or more devices. To prevent overloading the gateway, you should always check to ensure CPU utilization is at or below 75%. Utilization beyond 75% could result in unreliable system operation. CPU utilization can be checked by following steps outlined in **Gateway – Details**

1. **Collect the information needed for registration**

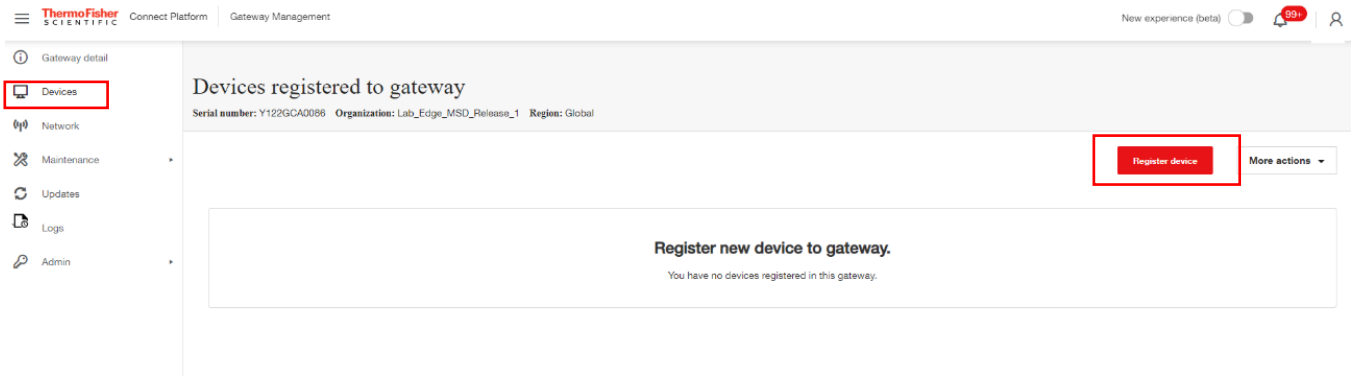
Match up the adapters and devices you intend to register to a gateway. Make sure that the device adapter type (i.e. RS232, RS485, etc..) is correct for the equipment you intend to register. Make a note of the following for all adapters/devices that you plan to register:

1. Edge gateway serial number
2. Device name (choose a friendly name for the device or adapter
3. Device serial number (located on product label)
4. Device connection settings that may be needed (i.e. baud rate)
5. Adapter MAC address (on the side or bottom of the adapter)
6. Adapter serial number (on the top or bottom of the adapter)
7. For a Sensor Adapter (Sensor Group):
    - Name of the registered device to associate (optional)
    - Sensor models and associated sensor adapter channels that will be used (can be configured after registration)

2. From the Gateway Management screen, select the gateway you want to add devices to. The gateway must have a status of "Active" and “Online” Connection before you can register devices to that gateway.



3. Select **Devices** from the left navigation Gateway Management screen. Click **Register device** to register a new device to the gateway.



4. Select the device type and the device model.

Note: For device adapters, match the equipment model series listed in the drop-down box to your device. Refer to the table at www.thermofisher.com/edgecompatible. For a sensor adapter, select Sensor Group.

5. Select the access type (if present)

    Connect Edge Device Adapter: if using an adapter.
    Direct cable connection (Serial/USB): If the device is cabled directly to the gateway USB port.

If using an adapter you will enter the following information:

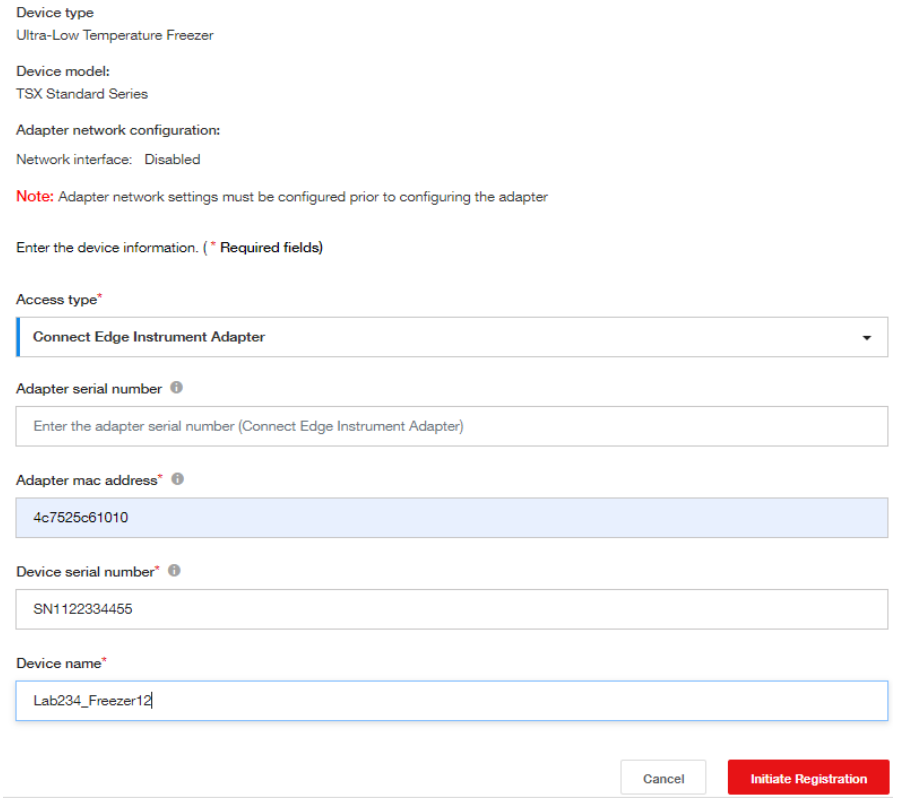
Adapter MAC address: Connect Edge adapter MAC address (found on the edge or bottom of the adapter)

Adapter serial number: Connect Edge adapter serial number (found on the top or bottom of the adapter)

If using the Direct cable connection you will enter the following information:

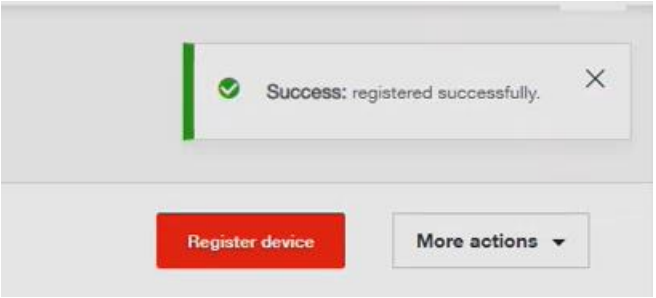
Serial port: USB 0, USB 1 or USB 2 (which is the side USB port)

6. Enter your device serial number: Serial number found on the label of your equipment.
7. Enter your device name: User assigned name (minimum of 3 characters).

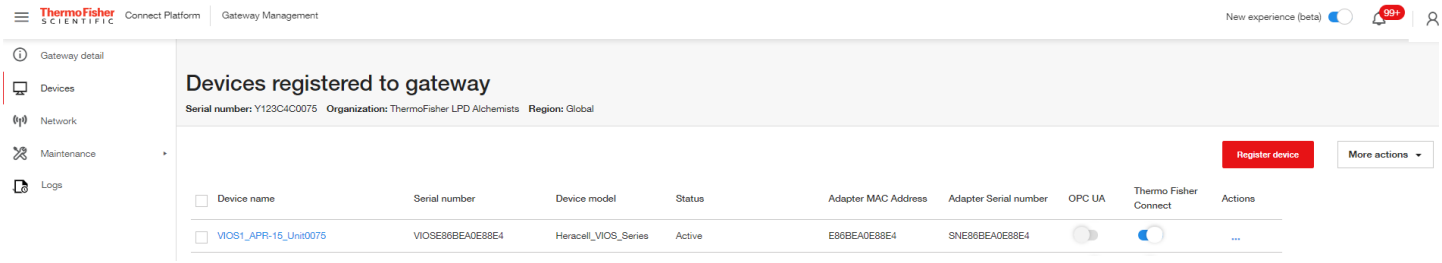


8. Sensor adapter only: Optionally select the device from the “Associate sensors to a device” drop-down to select a currently registered device that should receive the sensor data.
9. Sensor adapter only: Expand the sensor configuration sections to select and configure sensors. This is described in detail in section Sensor Adapter Configuration.
10. Click on **Initiate Registration.**
11. If adapter network settings are not configured, there will be a prompt to allow for setting these. Select Yes to configure the adapter network settings now. Follow the instructions in section **Step 6: Configure Adapter Network Settings**. Select “no” to configure the adapter network settings later. Note that adapter network settings must be configured before connecting the adapter to the gateway USB to apply the configuration.

Note: Once the device has been registered successfully the user will get a confirmation notification in the top right-hand corner of the screen.



12. The status will initially show as ***Registering*** and eventually change to ***Active***. Do not continue to the next step until Status has changed to Active.



Note: If there are multiple devices to register, it is recommended to perform all device registrations at this time.

Step 6: Configure Adapter Network Settings

Note: Once this step has been done, it doesn't need to be done again if additional adapters will use the same network settings.

1. **Decide on the Adapter network settings**
    a. The adapter can connect to the Connect Edge gateway using Wi-Fi or Ethernet. This may vary by country availability and the hardware you have selected. For most situations, the default Wi-Fi connectivity is the easiest option. However, if Wi-Fi is not acceptable for the environment (due to range or other restrictions) the PoE or Ethernet option is available as a potential solution. Use of wired connectivity requires either new or existing Ethernet infrastructure such as cables and switches.

    Note: For adapters with an Ethernet connection, Wi-Fi will be disabled and cannot be used.

    If using adapter Wi-Fi:
    The adapter can connect directly to the Edge gateway, or it can connect to a network that the gateway resides on. If connected directly to the Edge gateway, no further information is needed. If connecting to a network, the following information is needed:
    - Wi-Fi Name (SSID) and Password
    - Authentication Security Type
    - Digital certificate (if necessary, based on authentication type)

    If using the adapter with an Ethernet base:
    - An Ethernet connection and cable will be needed.
    - If PoE powering is desired, the network connection must be connected to a PoE source device (only for adapters that support PoE power)

The adapter is also configured with the specific gateway network interface (IP address) that it will use. The gateway interfaces are Ethernet 0, Wi-Fi 0, Ethernet 1, or Wi-Fi 1 and these will need to be configured appropriately to allow adapter connections.

2. **Access the Adapter network configuration**

The Adapter network configuration can be accessed either by the Edge Management portal or by the Gateway Local UI. A device must be registered before the Adapter configuration is available.

Access via Edge Management portal (recommended)

Option 1: Device Registration provides the user the option to link directly to Adapter network configuration if the adapter was disabled.

Option 2: Manually navigate to the page as follows:

1. Log in to Thermo Fisher Connect Edge Gateway Management via www.thermofisher.com/gatewaymanager.
2. On the Gateway Management screen, locate the gateway the adapter was registered to and click the gateway serial number.
3. On the Gateway details screen, go to the left navigation pane, click Network
4. Select “Adapter configuration” tab

Access via Gateway Local UI

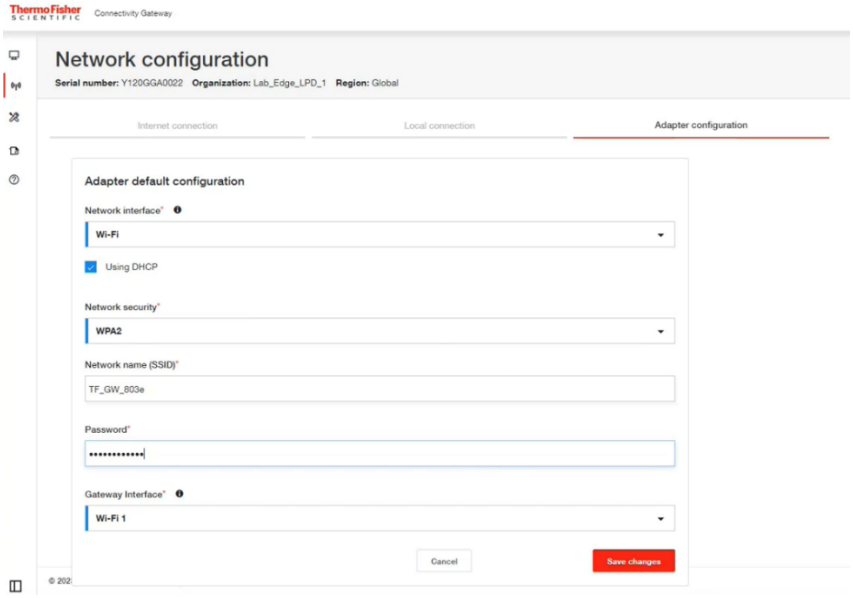
NOTE: For alternate options to access the local UI refer to **Connecting to the Gateway Local UI**. For supported settings and network topologies, refer to Networking Guidance

1. Configure your computer network settings for a static IP address 172.16.0.10 (for info on setting a static IP address, refer to the section **Setting PC Static IP Address.**
2. Connect your computer directly to the gateway’s ETH 0 port using an ethernet cable.
3. Navigate to web browser: https://172.16.0.1/
4. Enter the following username and password details.
    a. Username: admin
    b. Password: <latest password> (default is the gateway serial number)
5. Select the Network icon from the left navigation menu.
6. Configure Internet or Local settings (if needed)
    a. If connecting the adapter via Wi-Fi to the gateway Access Point, enable Wi-Fi 0 Access Point:
        i. Select Local connection tab
        ii. Select Edit Wi-Fi configuration
        iii. Enable Wi-Fi 0 (if not enabled)
        iv. Set Wireless Mode to Access Point (Default settings can be used)
        v. Select Save changes
    b. If connecting the adapter to the gateway Internet interface
        i. Select Internet connection tab
        ii. Select Edit configuration
        iii. Set Enable local (UI and device access) to Yes
        iv. Set Permitted Network (Restrict local access IP range) to filter IP address (use 0.0.0.0/0 to enable all IP addresses)
        v. Select Save changes
7. Select Adapter configuration tab

3. **Adapter configuration tab settings**
    a. Select Edit Configuration
    b. If connecting the adapter via Wi-Fi to the Connect Edge gateway Access Point:
        i. Set Network interface to “Gateway Wi-Fi”
        ii. Save settings
    c. If connecting the adapter via Wi-Fi to a different Access Point:
        i. Set Network interface to “Wi-Fi”

ii. Select appropriate settings for the Access Point
iii. Select Gateway interface (see below for guidance)
iv. Save settings

d. If connecting the adapter via Ethernet
    i. Set Network interface to “Ethernet”
    ii. Select Using DHCP (Obtain IP address automatically) or enter static IP settings
        1. Static IP addresses will be provided to the adapters from lowest to highest
    iii. Select Gateway interface (see below for guidance)
    iv. Save settings



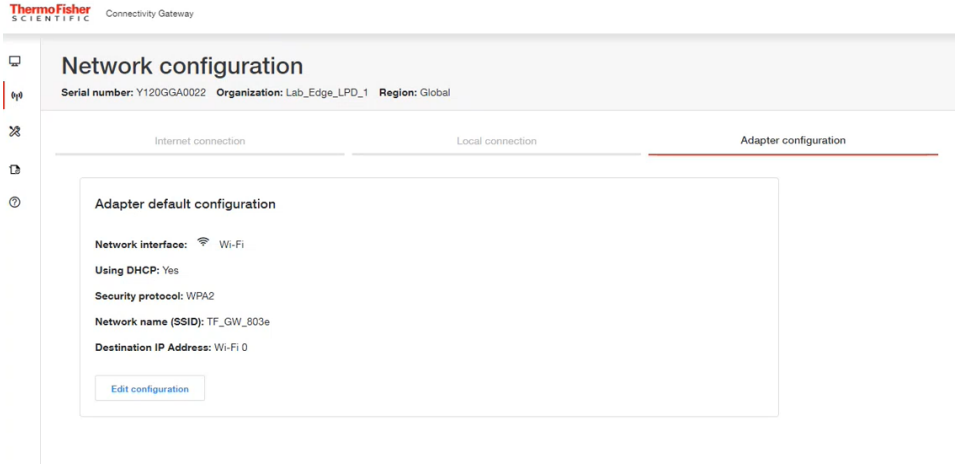
Descriptions for Network Interface and Gateway Interface settings

a. Network Interface: Selects how the adapter connects to the network:
    i. Wi-Fi: Adapter will connect to the local network using Wi-Fi.
    ii. Ethernet: Adapter will connect to the local network using the PoE/Ethernet base accessory.
    iii. Gateway Wi-Fi: Adapter will connect to the gateway using Wi-Fi direct to the gateway’s access point. (all settings are automatically configured if this setting is chosen)
b. Gateway Interface: Select which gateway port the adapter will communicate with.
    i. Ethernet 0: Adapter sends data to gateway Ethernet 0 IP address.
    ii. Ethernet 1: Adapter sends data to gateway Ethernet 1 IP address.
    iii. Wi-Fi 0: Adapter sends data to gateway Wi-Fi 0 IP address.
    iv. Wi-Fi 1: Adapter sends data to gateway Wi-Fi 1 IP address.
    v. Manual: Adapter sends data to the manually entered IP address.

NOTE: Guidance on selecting the gateway interface:

- The interface needs to be enabled and connected to the same network as the adapter.
- The interface needs to be assigned an IP address.
- If Ethernet 1 or Wi-Fi 1 is selected, the ‘Enable local (UI and device access)’ setting must be Yes.

4. **Review summary settings**



Step 7: Apply Adapter Configuration, Mount to instrument

1. Using the supplied configuration cable, connect the adapter to the gateway USB 0 or USB 1 port. The device and network configuration settings will automatically be applied to the adapter.
2. Watch the adapter LED. It flashes white to indicate configuration is in process. It will change to:
    a. Flashing green indicates a successful configuration. When the LED is flashing green, the adapter is configured and ready to be connected to a device (ULT, incubator, etc.).
    b. Flashing red indicates a problem with the configuration settings. Refer to the troubleshooting section if you face any problems.
3. Disconnect the adapter from the gateway and follow the adapter hardware installation section to attach the adapter

Note: If configuring multiple adapters with the same network settings, repeat Step 7 for each adapter. If adapters require different network settings, repeat Step 6 to change the settings before executing Step 7.

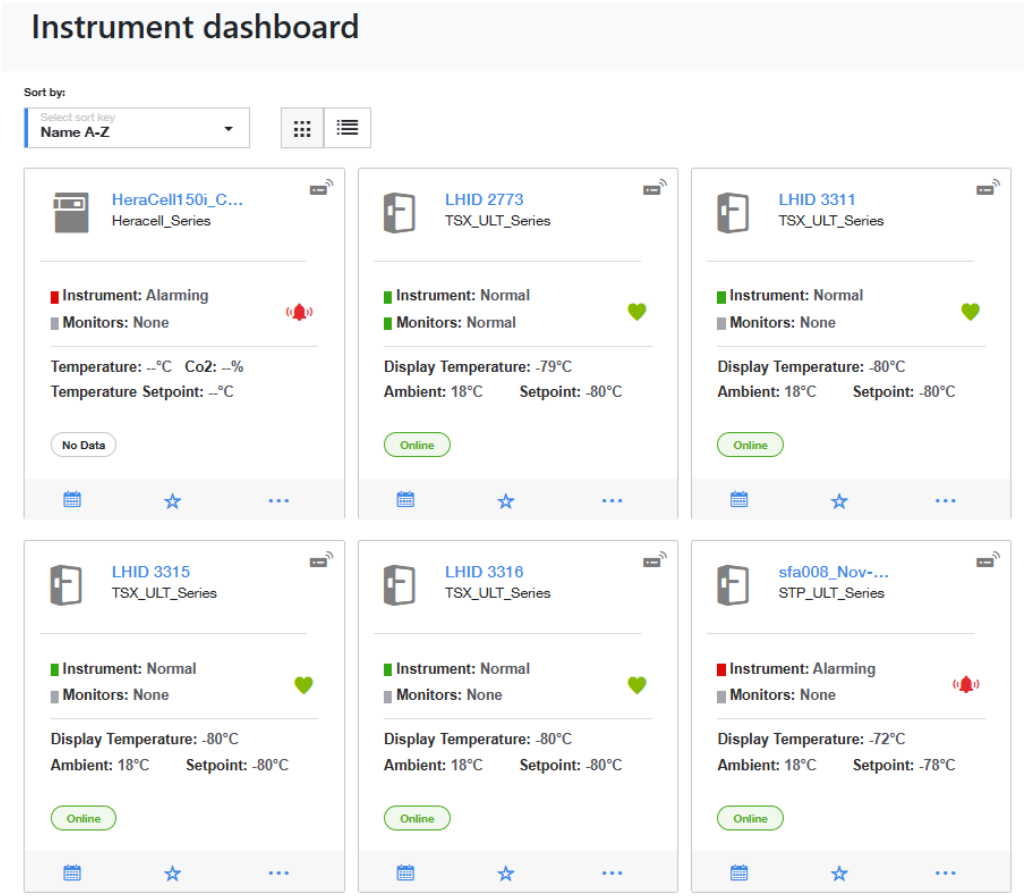
Step 8: Access Devices on InstrumentConnect

Once your adapters are installed on your equipment and they are communicating to the network, you can monitor your equipment on InstrumentConnect, a part of the Thermo Fisher Connect platform. You will need to re-establish your normal internet connection on your computer and navigate to www.thermofisher.com/edgelogin (or by using the InstrumentConnect application on your phone/tablet).

New device connections

After logging in to your account, your new devices will now be visible in your Instrument dashboard which can be accessed by selecting Instruments>Connected Instruments from the hamburger menu at the left. You will receive an e-mail confirmation for each of your monitored devices after registration.

You can customize your InstrumentConnect settings to fit your needs. See Section on InstrumentConnect describing more features and functions of the InstrumentConnect application.



Sensor Adapter Configuration

The Connect Edge Sensor Adapter provides connection for up to 6 analog sensors and 1 digital sensor. These sensors are grouped as a Sensor Group device and can optionally also be associated to another device registered to the same gateway. If associated to another device, the sensor telemetry will be available under that device. Thermo Scientific offers sensors that are purchased as individual sensors or as part of a sensor kit. For sensors not offered by Thermo Scientific, sensors with a 4-20mA output, voltage output (up to 30V), or a dry contact can be supported.

Enter/View/Modify Sensor Configuration

The sensor adapter needs to be configured for the specific port and sensor(s) that are connected. Sensors do not need to be connected during configuration. Configuration can be done during device registration or using the Edit function in Device Details page after registration.

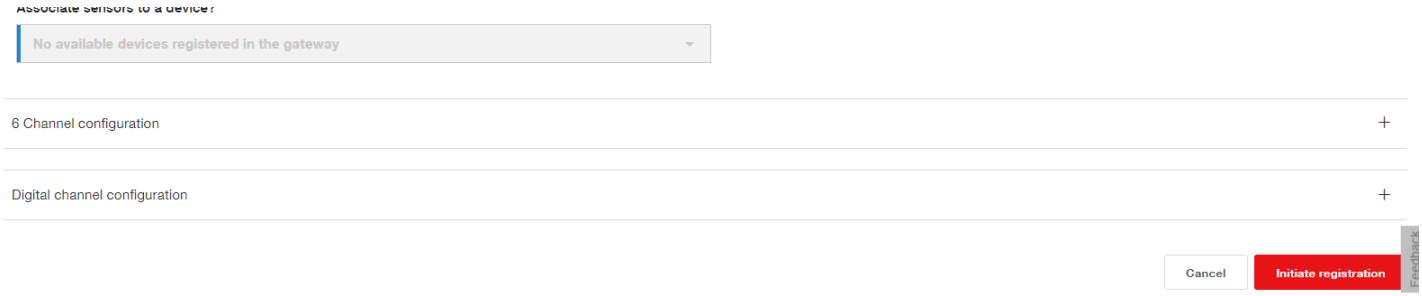
Device registration is described in **Step 5: Register Devices to Gateway**.

For registered sensor adapters, the current sensor adapter configuration can be viewed or modified from the Edge Management Device Details page. Access to the Edge Management Device Details page is described in Gateway – Devices.

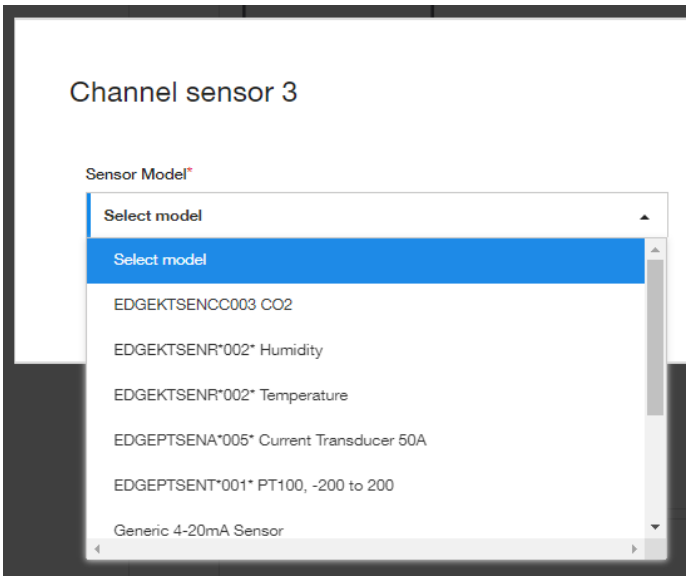
Sensor Configuration Options

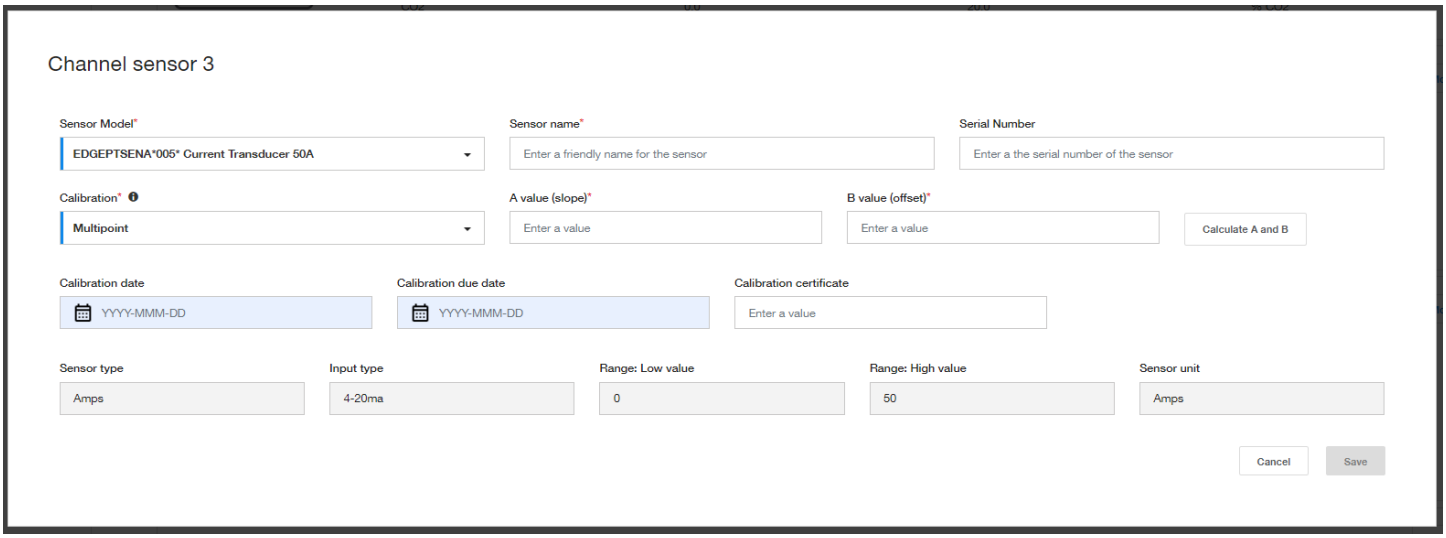
To configure analog sensors, select the “+” expansion in the “6 Channel configuration” row.

To configure digital sensors, select the “+” expansion in the “Digital channel configuration” row.



A summary screen will be displayed that shows the current configuration for each channel. To enter or modify sensor settings, click on the “Modify value” button. This will open a form from which you can use the Select Model dropdown to select the desired sensor for that channel. After selecting the appropriate sensor, the form will populate with the configuration options for that sensor. The example below shows the edit form for the 50A Current Transducer sensor with the Calibration dropdown set to Mult-Point.





Sensor name is a friendly name to identify the sensor. It is recommended to include the channel number in the name for future reference.

Serial Number is intended for sensors that include a serial number. For sensors without a serial number, this field can be used for any other identifier information.

The Calibration options supported are: None, 1-Point, and Multi-point. Calibration configurations include:

- “A value (slope)”: Value for the calibration slope. For 1-Point, the value is 1.
- “B value (offset): Value for the calibration offset.
- “Calculate A and B”: Opens a least squares linear regression calculator for up to 5 calibration points. The result will populate the A and B values.
- “Calibration date”: date on the calibration certificate (optional)
- “Calibration due date”: date when calibration expires (optional)
- “Calibration certificate”: calibration certification number (optional)

The following configurations are read-only for Thermo Fisher supplied sensors and configurable for generic sensors:

- “Sensor type”: Type of sensor measurement.
- “Input type”: Must match sensor output. Supported values are 4-20mA, voltage, and switch (dry contact).
- “Range low value”: lowest sensor measurement
- “Range high value” highest sensor measurement
- “Sensor unit”: type of measurement unit
- “Voltage: Low value”: voltage output that corresponds to the “Range low value”
- “Voltage: High value”: voltage output that corresponds to the “Range high value”

When configuration is complete, select the Save button.

Repeat this process until all sensors are configured as desired.

If performed during device registration:

- Select the “Initiate registration” button to start the sensor adapter registration process.
- After the device status becomes Active and the adapter network configuration is set as desired, plug the sensor adapter into the gateway USB port to apply the configuration
    a. The sensor adapter network/configuration LED will blink green when the configuration is complete
- Mount the sensor adapter where desired and connect the sensors

If performed during a device edit:

- Select the “Save changes” button to update the new values

Sensor data is now configured to send to the cloud. To configure notification settings, please go to Monitors section.

Gateway Local UI (Web Interface)

The Edge Gateway local UI is used for the following purposes:

- Configure the gateway network settings.
- Configure the adapter network settings.
- View the devices registered to the gateway.
- Run diagnostics that can help identify issues with gateway operation.
- Access gateway logs to better understand how the gateway is operating.
- Setup OPC UA service accounts (if OPC UA is installed)

The Edge Gateway local UI is accessed via a browser from a user device (PC, phone) that connects over one of the gateway network interfaces:

1. Ethernet 0: Enabled by default at 172.16.0.1
2. Wi-Fi 0: Requires interface to be enabled (disabled by default)

3. Wi-Fi 1 or Ethernet 1: Requires “Enable local (UI and device access)” set to Yes (set to No by default)

Enabling local UI access over the Internet connection interface opens Port 443 and 4443 on the gateway. This should be approved by your IT organization.

Note that the Adapter will be configured with the Gateway IP address. If the IP address is assigned by a DHCP server, it is highly recommended that the DHCP server be configured to reserve this IP address. If the Gateway IP address is changed by the DHCP server, the Adapter will no longer be able to communicate with the Gateway until it is re-configured.

Connecting to the Gateway Local UI

You may change connection preferences for your adapters and gateways at any time. There are four ways to access your gateway local UI as displayed in prior steps.

Connecting via the ETH 0 port:

1. Configure your computer network settings for a static IP address 172.16.0.10 (for info on setting a static IP address, refer to the section **Setting PC Static IP Address.**
2. Connect your computer directly to the gateway’s ETH 0 port using an ethernet cable.
3. Navigate to web browser: https://172.16.0.1/
4. Enter the following username and password details.
    a. Username: admin
    b. Password: <latest password> (default is the gateway serial number)

Connecting via the built-in Wi-Fi 0 wireless access point

NOTE: Wi-Fi 0 must first be configured as an Access Point, or it must be in Temporary Access Point mode. Temporary Access Point mode is enabled for 10 minutes after the gateway boots if it does not connect to the Internet.

1. Connect your computer to the gateway Wi-Fi 0 SSID (by default: TF_GW_ (last four digits of the ETH 0 MAC address).
    a. Enter password
        i. Temporary Access point mode password is the Gateway serial number (i.e. Y123EQA0043)
        ii. If Wi-Fi 0 was configured as an Access Point, enter that password.
2. Navigate to web browser: https://(gateway Wi-Fi 0 IP address)/
    a. By default, the Wi-Fi 0 access point IP address is 172.16.1.1
3. Enter the following username and password details.
    a. Username: admin
    b. Password: <latest password> (default is the gateway serial number)

Connecting via the Wi-Fi 0 interface in Station mode

NOTE: Wi-Fi 0 must be configured for station mode and connected to a local network access point**.** Your computer must be on the same network subnet as Wi-Fi 0

1. Find the gateway’s Wi-Fi 0 IP address using the network router/access point
2. Navigate to web browser: https://(gateway Wi-Fi 0 IP address)/
3. Enter the following username and password details
    a. Username: admin
    b. Password: <latest password> (default is the gateway serial number)

Connecting via the Internet interface (ETH 1 or Wi-Fi 1)

NOTE: The Internet interface must have “Enable local (UI and device access)” set to Yes. Your computer must be on the same network subnet as the gateway

1. Find the gateway’s IP address using the network router or the Gateway Management Network page
2. Navigate to web browser: https://(gateway ETH 1 or Wi Fi1 IP address)/
3. Enter the following username and password details.
    a. Username: admin
    b. Password: <latest password> (default is the gateway serial number)

View devices

On logging into the local UI, the home screen will list all devices registered to the gateway and their current registration status.

Configure Network Settings

Network settings are used to configure gateway network interface settings and to configure the network settings that will be applied to the adapter (if used).

To access the network settings:

Internet Connection:

The internet connection is required and is the interface that is used for managing the gateway from Thermo Fisher Gateway Management. By default, Ethernet 1 is enabled and configured to use DHCP. Computers (for accessing the Local UI) and Devices can also connect to the gateway using this interface if the “Enable local (UI and device access)” is set to Yes.

1. Select the Network icon > Internet connection tab > Edit configuration
2. Choose the desired Network interface
    a. Ethernet, Wi-Fi, or Cellular
3. Complete the form
    a. To allow access to the local UI on this interface, set the “Enable local (UI and device access)” to Yes
        i. Use the Permitted Network (Restrict local access IP range) setting to restrict access. Use 0.0.0.0/0 to allow any IP address.
    b. For Ethernet and Wi-Fi, static IP settings can be entered by unchecking “Using DHCP (Obtain IP address automatically)”
    c. For Wi-Fi, enter the settings for the network access point
    d. For Cellular, the settings are dependent on the cellular provider
4. Select “Save changes”

Local Connection:

The local connections can be used to access the gateway local UI and for connecting to devices. By default, Ethernet 0 is enabled and configured with a static IP address of 172.16.0.1 and Wi-Fi 0 is disabled. Both can be enabled at the same time.

1. Select the Network icon > Local connection tab
2. Choose the desired Network interface
    a. Edit Ethernet configuration or Edit Wi-Fi configuration
3. Complete the form
    a. For supported network configurations and topologies, refer to Networking Guidance
4. Select “Save changes”

Run diagnostics

There are diagnostics that can be run to help diagnose any issues with the gateway or to check the health status of the gateway and device connections.

To run the diagnostics

- Select the Diagnostics icon and select Diagnostics.
- Select the Run Diagnostics button in the upper right corner.
- Check the diagnostics to be performed.
- Select Confirm.

The diagnostics will run and generate a report.

The report can be downloaded using Download .

Access logs

There are several types of logs that can be accessed using the local UI:

- System Logs
- Operational Logs
- Access Logs
- Error Logs
- Debug Logs

For all log types except for Debug logs, filters and column selections can be applied to customize the logs displayed on the screen. All logs can be downloaded.

To access logs

- Select the Logs icon .
- Select the tab for the type of logs to be displayed and/or downloaded
- For logs other than Debug Logs
  - Choose the filters if desired to limit the types of log entries displayed/downloaded
  - Choose the Edit columns to select the specific columns to be displayed/downloaded
- If desired, download the logs by selecting Download .

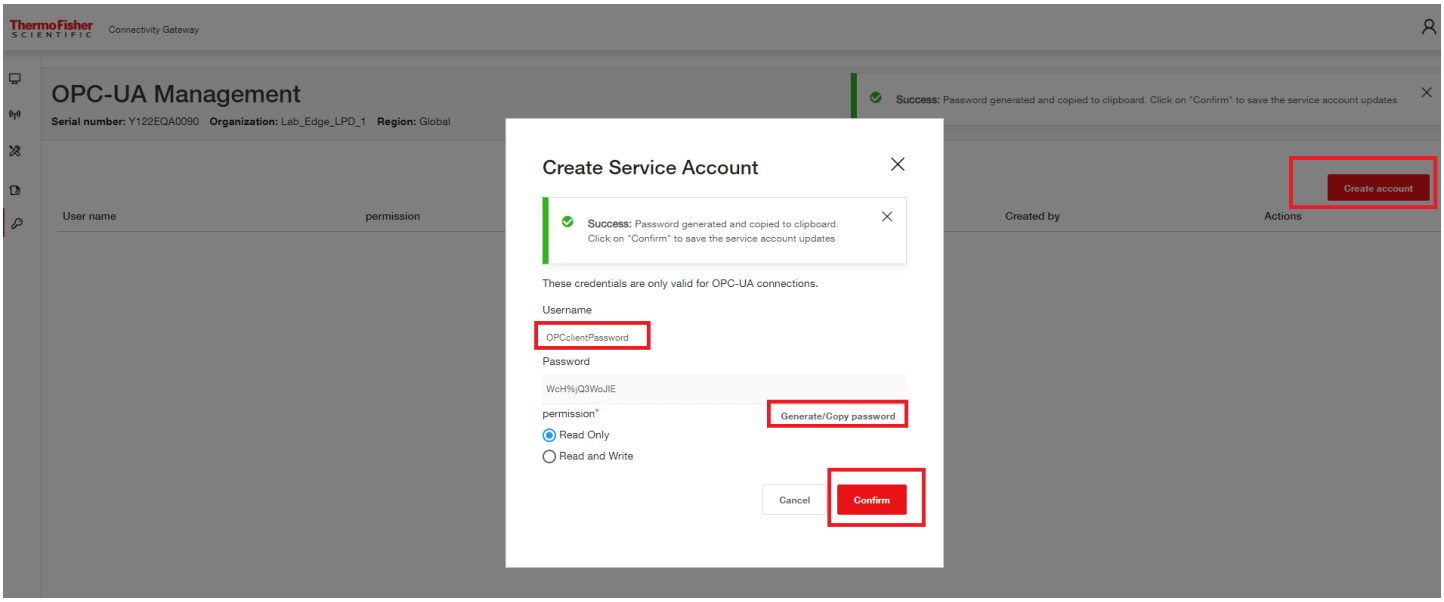
OPC UA Manage Service Accounts

This feature is only available if OPC UA Server functionality has been installed.

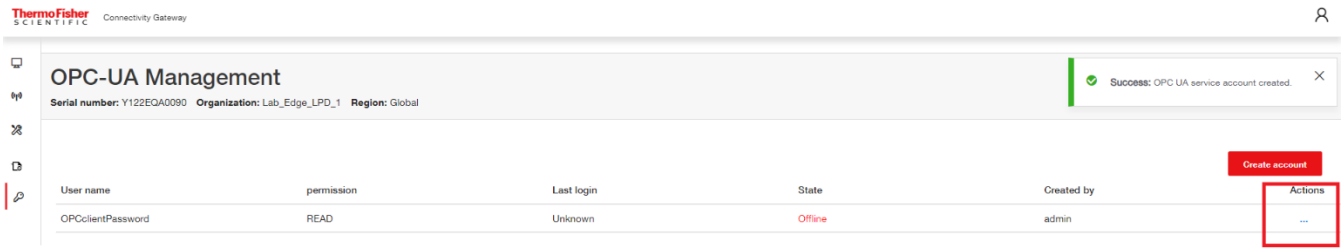
This feature allows the creation and management of OPC-UA server service accounts that can be used by OPC UA clients to connect to the Edge Gateway OPC UA server using username and password.

To access OPC UA management:

- Select the OPC UA management icon .
- To create a new service account, select the Create account button, enter a Username, select the permission type, and select the Generate/Copy password button. Save the password someplace safe before selecting Confirm as it cannot be re-displayed.



- The new account will be listed, and the Action options provide a way to remove the account or to reset the password. Multiple accounts can be created.



Gateway Management

Gateways – Monitor a Fleet or Individual Gateways

View the health of all gateways and detailed health about individual gateways.

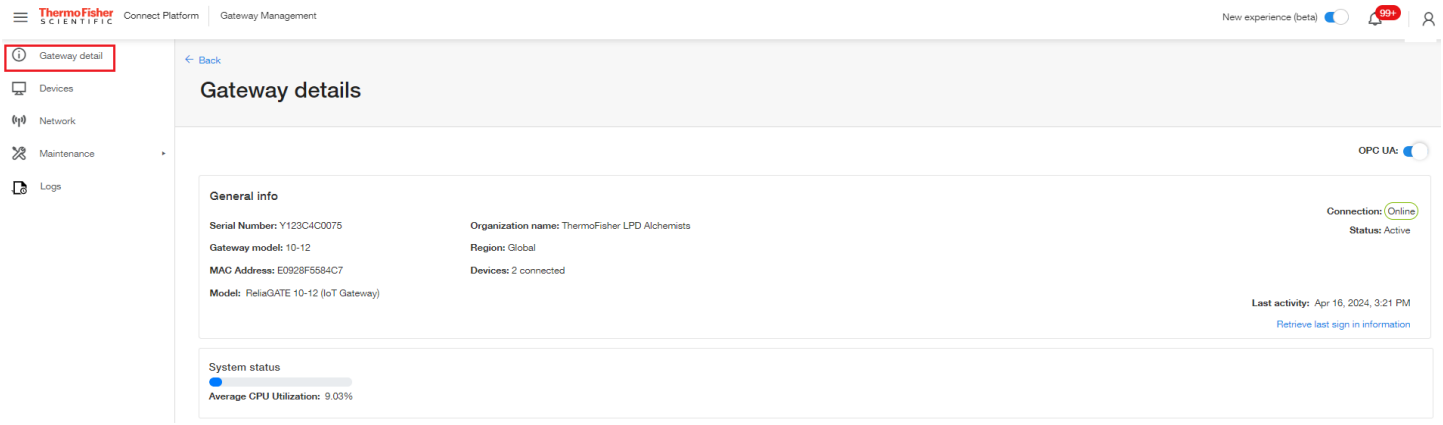
1. Log in to Thermo Fisher Connect Gateway Management via www.thermofisher.com/gatewaymanager
2. On the Gateway management screen, click the **Monitoring** tab.
   This screen displays a summary view at the top for all available gateways. The color coding indicates:
   - Red – Fault/Alarm detected.
   - Orange – Warning.
   - Green – Healthy.
3. Customize the view as needed. You can:
   - Filter the gateway data by Organization, Status, Software version, Software, Hardware, Cloud connectivity, and Device connectivity.
   - Sort the data by column header.
4. To view an individual gateway, click the gateway serial number or use the search feature.
5. The single gateway monitoring screen displays summary information at the top of the screen:
   - Hardware status
   - Software status
   - Device Connectivity information
6. Customize the view as needed. You can:
   - Filter the gateway data by Time, Event Type, and User.
   - Sort the data by column header.

7. Click Download to download the gateway event details as a .csv or .pdf file.

Gateway – Details

View the current status and health of a gateway.

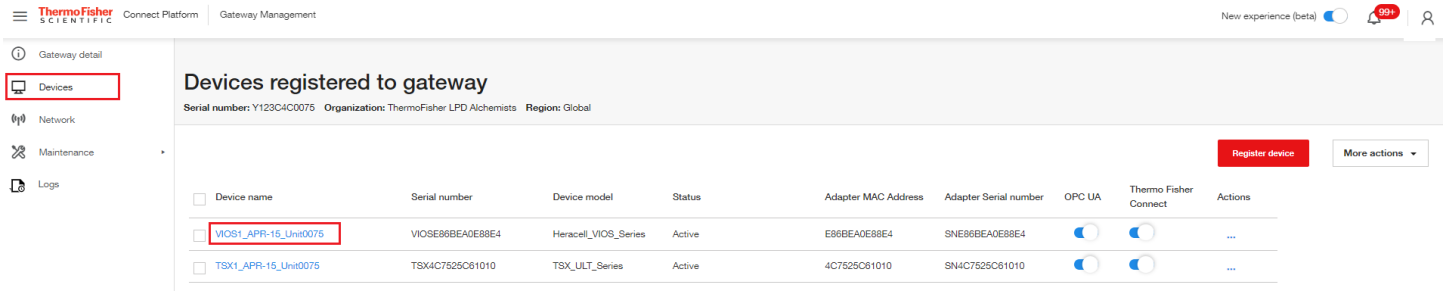
1. Log in to Thermo Fisher Connect Gateway Management via www.thermofisher.com/gatewaymanager.
2. On the Gateway Management screen, locate the appropriate gateway and click the gateway serial number.
3. Basic information about the gateway health and status is shown.



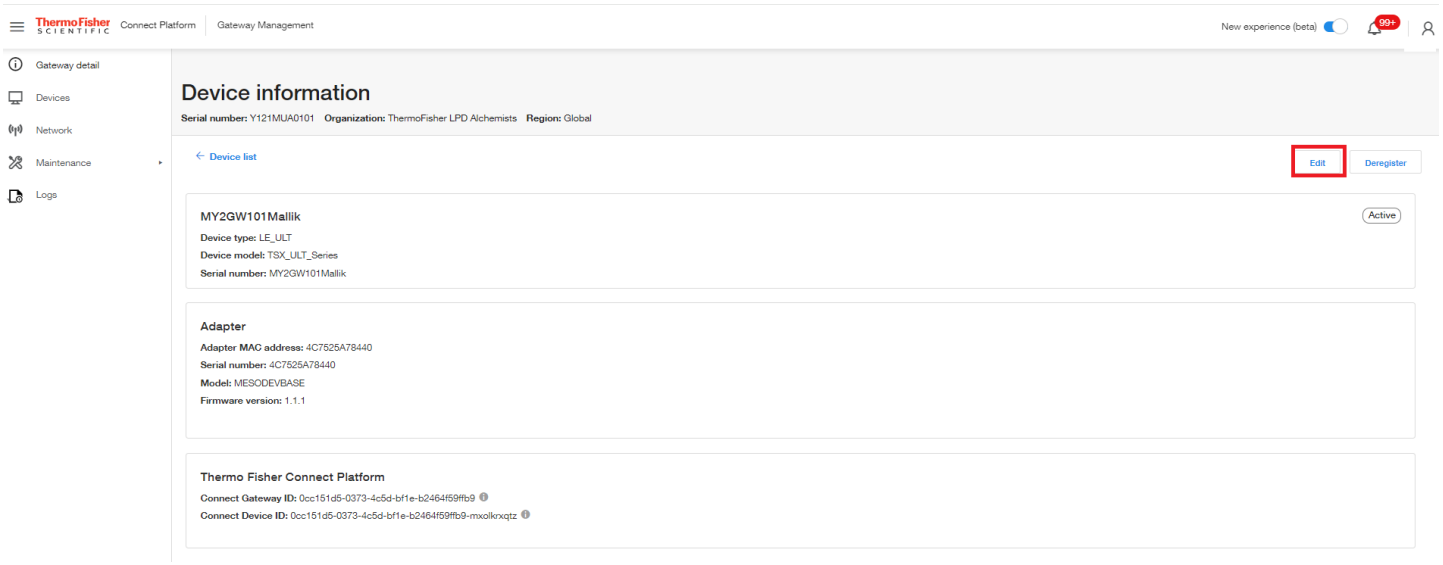
Gateway – Devices

View, register, and de-register devices. View and edit device details.

1. Log in to Thermo Fisher Connect Gateway Management via www.thermofisher.com/gatewaymanager.
2. On the Gateway Management screen, locate the appropriate gateway and click the gateway serial number.
3. On the Gateway details screen, go to the left navigation pane, click Devices.
4. On the Device list page:
   a. Select Register device to register new devices.
   b. Select Individual devices to view and edit device details



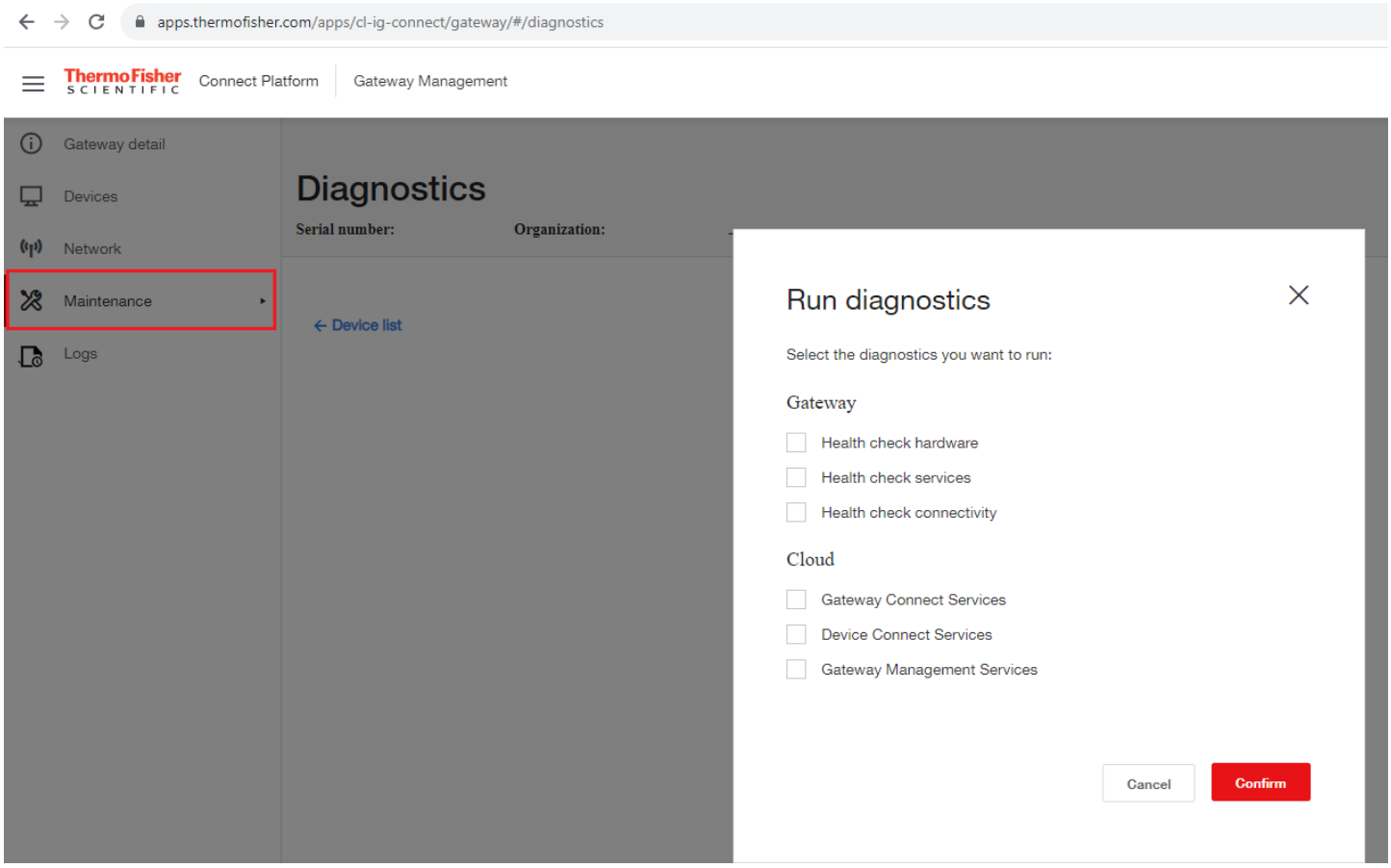
5. Once individual device is selected, select Edit to modify settings.



Gateway – Diagnostics

Run hardware and software diagnostics on the gateway and cloud.

1. Log in to Thermo Fisher Connect Gateway Management via www.thermofisher.com/gatewaymanager.
2. On the Gateway Management screen, locate the appropriate gateway and click the gateway serial number.

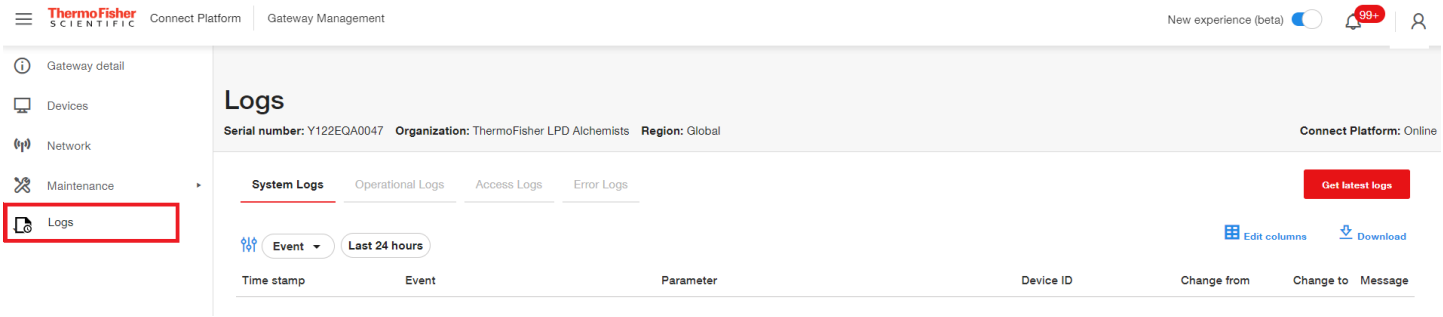


3. On the Gateway details screen, go to the left navigation pane, click Maintenance, then choose Diagnostics.

4. In the Run diagnostics window, select the diagnostics you want to run.
5. Click Confirm. The system begins generating a diagnostic report.
6. The Diagnostics screen displays the selected report information. From this screen, you can initiate repairs (via the Repair icon if available) or download the report.
7. From the Diagnostics screen, you can choose to run the diagnostic report again or choose another menu option from the left navigation.

Gateway - Logs

1. Log in to Thermo Fisher Connect Gateway Management via www.thermofisher.com/gatewaymanager.
2. On the Gateway Management screen, locate the appropriate gateway and click the gateway serial number.
3. On the Gateway details screen, go to the left navigation pane, click Logs.
4. Choose the filters if desired to limit the types of log entries displayed/downloaded.
5. Choose the Edit columns to select the specific columns to be displayed/downloaded.
6. If desired, download the logs by selecting Download .

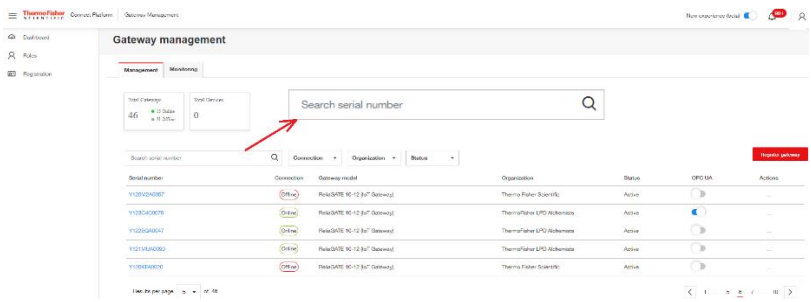


Deactivating a Gateway

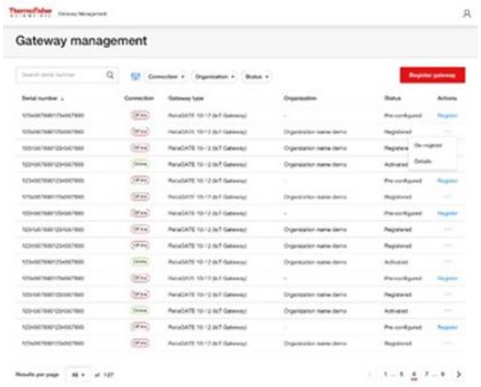
Deactivating a gateway is intended to be a temporary action, stopping data flow until a condition is resolved or until the gateway is deregistered. By deactivating a gateway, all device credentials and network configuration are retained, whereas deregistering a gateway is a permanent action and requires deregistering all devices connected to the gateway.

1. Log in to Thermo Fisher Connect Gateway Management via www.thermofisher.com/gatewaymanager or navigate to Instruments>Edge Management from the hamburger menu at the left if you're already logged into the Connect Platform.

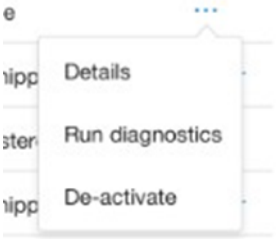
2. Search for the gateway by partial or full serial number.



3. Once the gateway appears in the list, view the Status column. Only gateways with a status of ***Active*** can be Deactivated.



4. In the Actions column, click the three dots and choose Deactivate.



5. Confirm the decision to Deactivate the Gateway.
6. A Success message indicates the gateway is deactivated. On the Gateway Management screen, the Status changes to ***Deactivated***.

De-register a Gateway

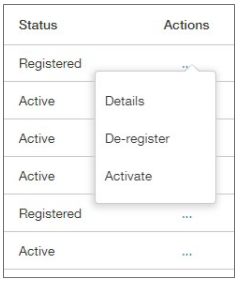
It may be desired to de-register a gateway due to:

- Retired due to failure or end of life.
- Returned to the inventory pool to be redeployed in a different location.
- Returning the gateway to Thermo Fisher

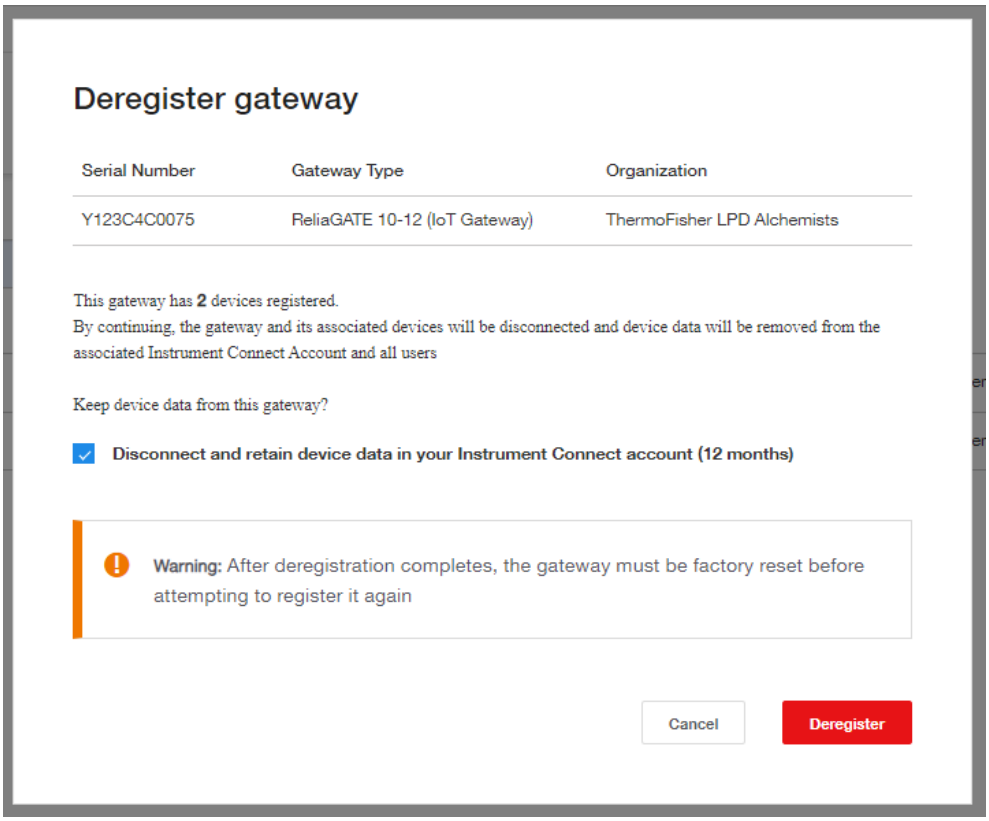
In all scenarios, a long restore button push is required to restore the gateway to the original factory/as shipped configuration so that it can be re-registered.

To de-register a gateway:

1. Log in to Thermo Fisher Connect Gateway Management
2. On the Gateway Management screen, locate the appropriate gateway and click the gateway serial number
3. When you locate the gateway, go to the Actions column, click the ellipsis, and choose De-register



4. Confirm the decision to De-register the Gateway



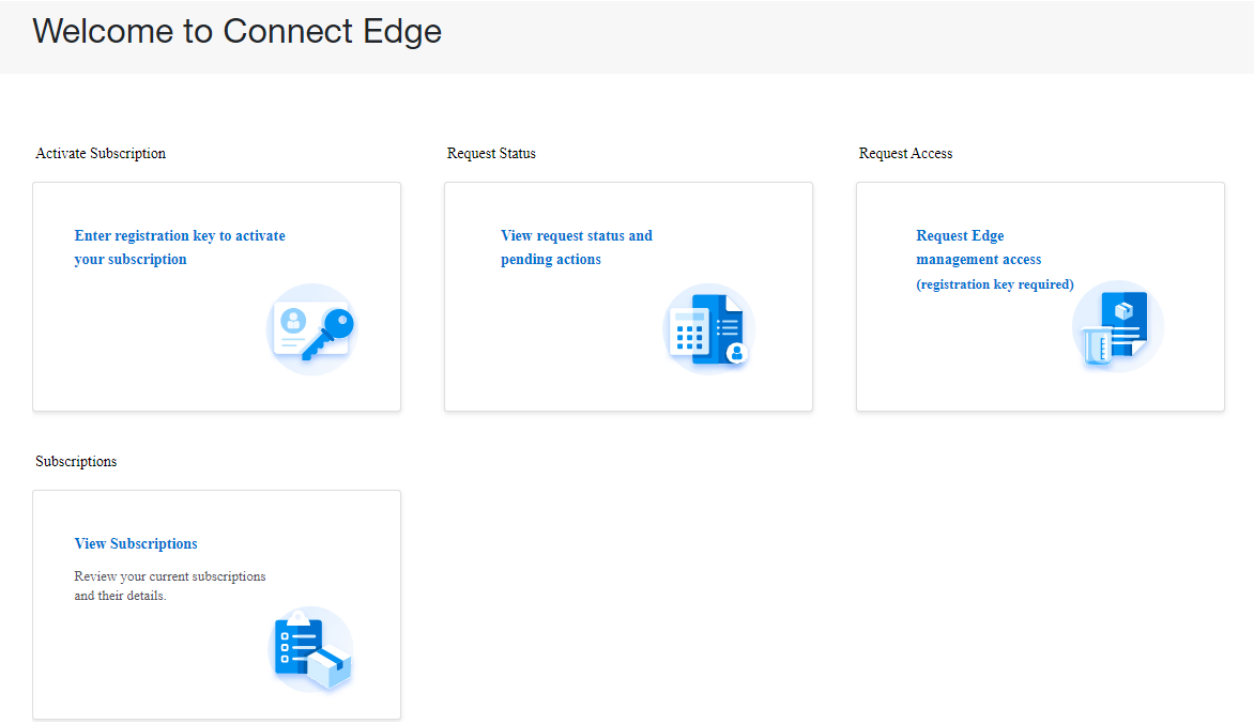
5. A Success message indicates the gateway is de-registered. On the Gateway Management screen, the Status changes to de-registered. The gateway will no longer be shown in the gateway management portal. It can be re-registered if desired.

Subscription / User Portal

The Connect Edge registration portal is accessed at: https://www.thermofisher.com/productregistration.

This portal is used to:

- Submit requests to activate product subscriptions
- Submit requests to be enrolled for Edge Gateway Management
- View submitted requests
- Approve requests for user enrollment (if you are the Edge administrator)
- Review registered subscriptions



Activating a subscription

When an Edge subscription is purchased, a registration key will be provided. If you are the first person in your organization, you will be assigned as the Edge administrator for your organization. You may receive requests from users requesting access to your organization's Edge Gateway Management portal. You will be expected to deny or approve those requests.

To activate the subscription:

1. Go to the https://www.thermofisher.com/productregistration
2. Select Activate Subscription
    a. Enter the Registration key
    b. Select your Organization from the Organizations dropdown or select Create New Org
    c. If creating a new Organization
        i. Enter the Organization name as you would like it to be created
        ii. Provide a description of your organization
    d. Select Submit registration

Enroll for Edge Gateway Management

If your organization has already registered an Edge subscription and you wish to be provided access to Edge Gateway Management:

1. Go to the https://www.thermofisher.com/productregistration
2. Select Request Access
3. On the User Enrollment Form
    a. Enter an activated subscription registration key
    b. Select Submit

View /Approve Requests

To view request that you have submitted

1. Go to the https://www.thermofisher.com/productregistration
2. Select Request Status
3. This page provides the type and status of requests
4. If you are an Edge administrator, you will be able to view all Edge requests for your organization and be able to approve or deny requests of users that request access to your organization's Edge Gateway Management portal

View registered subscriptions

To view subscriptions that have been registered

1. Go to the https://www.thermofisher.com/productregistration
2. Select View Subscriptions
3. This page provides details about subscriptions that have been registered

Hardware Installation

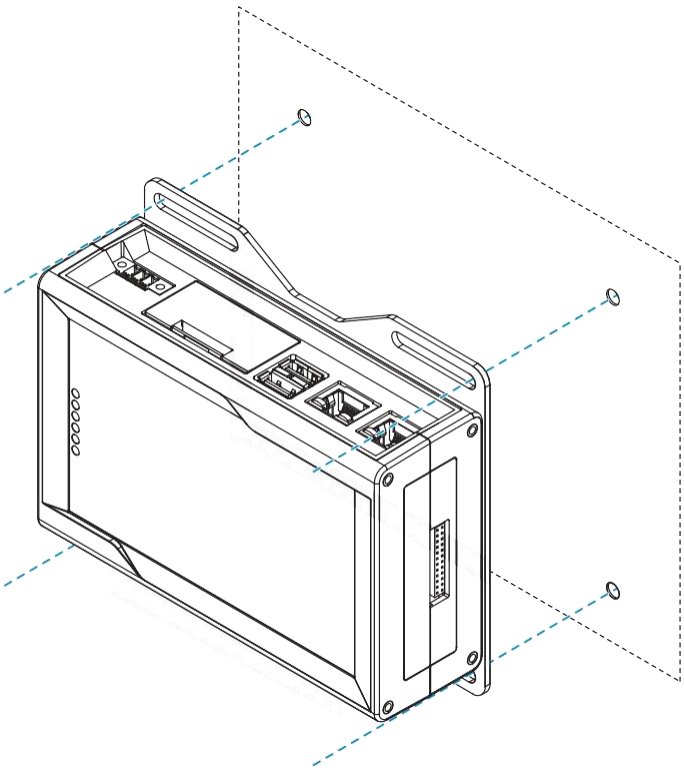
Installing/Mounting Connect Edge gateway

The product must be installed in a secured location accessible to authorized personnel only (for example in a cabinet / technical compartment).

By default, the Connect Edge gateway comes with a Mounting Bracket fastened on the bottom side. You can use this mounting bracket to install the gateway.

To install the gateway in place, complete the following steps:

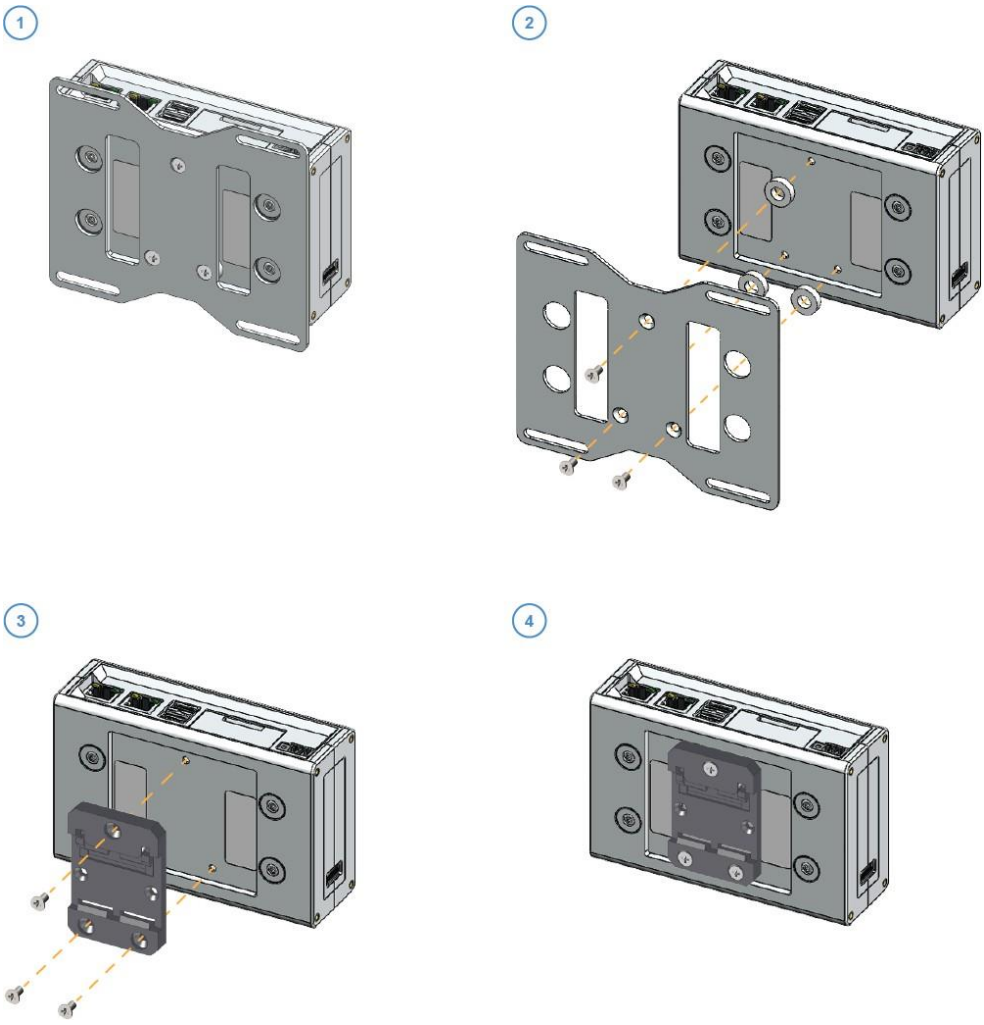
1. See "Technical Specifications" on page 10.
2. Use the 4 slots available on the Mounting Bracket.
3. Add all the necessary mounting hardware to safely fasten the gateway in place according to your installation requirements (use 4x M5 screws, with a minimum length of 15 mm). Material, type and length of the screws, and the maximum torque applicable, depend on your installation requirements. The mounting bracket is made of 2mm aluminum alloy 6061 T6.



Replacing Mounting Bracket with the DIN Rail Mounting Clip

To replace the mounting bracket with the DIN rail mounting clip on the product, complete the following steps:

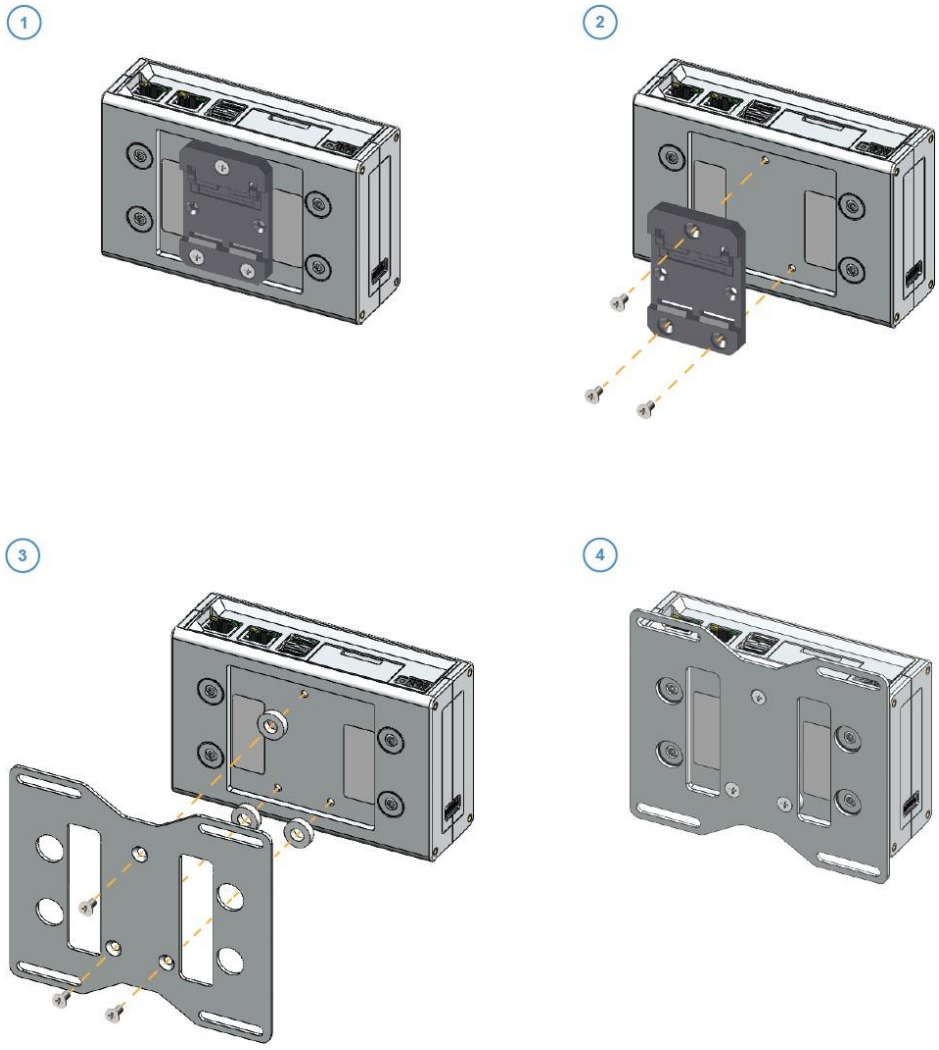
1. Remove the 3 screws that hold the mounting bracket in place.
2. Remove the mounting bracket and the 3 spacers (H = 4mm; Ext. diam. = 14mm; Int. diam. = 7mm).
3. Place the DIN rail mounting clip.
4. Tighten the 3 screws removed at step 1 by applying a torque of 0.7 Nm.



Replacing DIN Rail Mounting Clip with Mounting Bracket

To replace the DIN rail mounting clip with the mounting bracket on the product, complete the following steps:

1. Remove the 3 screws that hold the DIN rail mounting clip in place.
2. Remove the DIN rail mounting clip.
3. Place the 3 spacers (H = 4mm; Ext. diam. = 14mm; Int. diam. = 7mm) and the mounting bracket.
4. Tighten the 3 screws removed at step 1 by applying a torque of 0.7 Nm.



Attaching Device Adapter

The device adapter can be mounted directly to a surface, or it can be installed using the adapter mounting bracket.

Step 1: Direct attachment to instrument (without the mounting bracket)

The device adapter kit includes a set of 2 adhesive strips and a set of 2 Velcro strips with adhesive backing. Either of these can be used to mount the adapter. Use the Velcro strips if you wish to be able to easily remove the adapter.

NOTE: If you are using an Ethernet base accessory, the strips would be applied to the Ethernet base.

Attach the strips to the adapter:

1. Remove the adhesive from one side of the strip.
2. Attach the strip to the back side of the rectangular portion of the adapter.

3. Repeat for the second strip.

Connect cables to the adapter

4. Plug the provided USB-C power cable into the adapter.
5. Plug the orange connector of the instrument cable into the adapter.

Attach the adapter to the instrument

6. Remove the adhesive from the other side of the adhesive strips.
7. Press the rectangular section of the adapter against the device or mounting location, ideally leaving the square section above the top of the device. The antenna is located in the square portion of the adapter.
8. Use the adapter kit cable hooks if desired to secure the cables

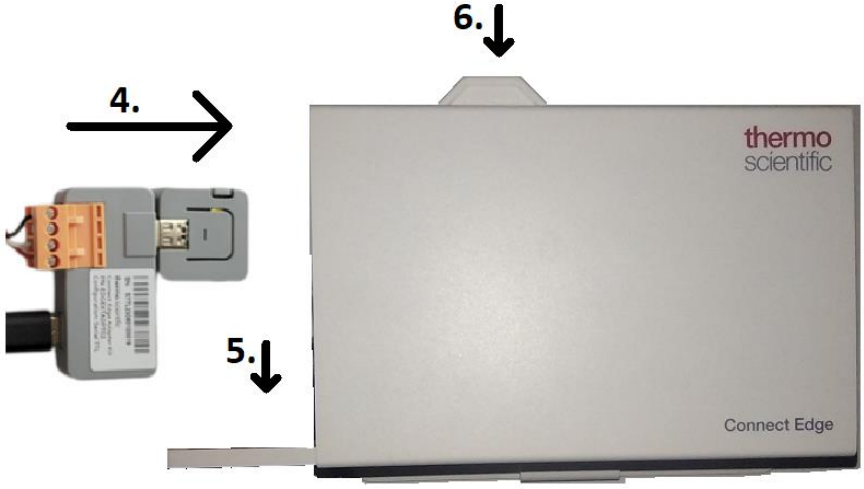
Step 1: Mounting Bracket Attachment to Instrument

Connect cables to the adapter

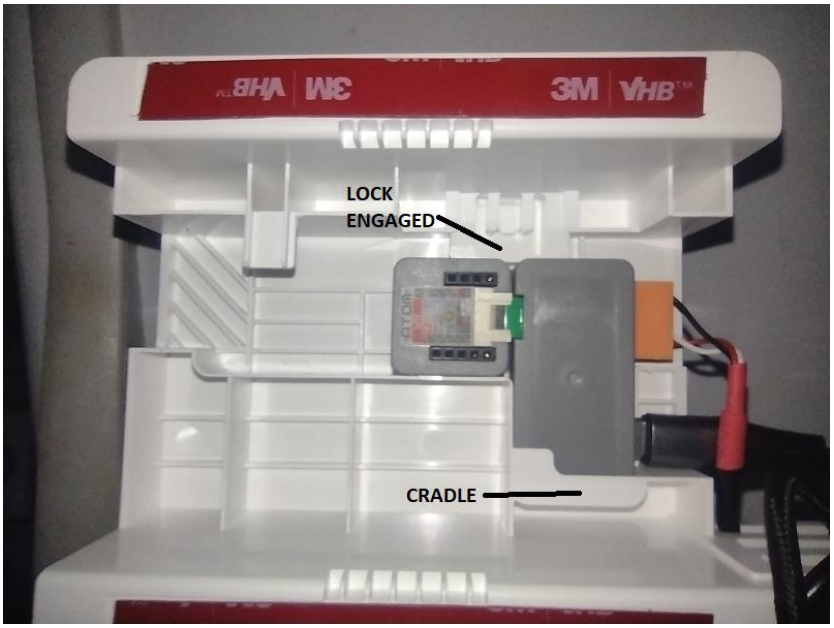
1. Plug the provided USB-C power cable into the adapter.
2. Plug the orange connector of the instrument cable into the adapter.

Install the adapter with cables into the mounting bracket

3. Make sure the mounting bracket Lock tab is in the unlocked (pulled out) position.
4. Slide the adapter into position from the left side of the bracket.
5. Make sure the adapter shifts down into the cradle.
6. Push down on the Lock tab to secure the adapter in place.



The following image shows the adapter seated in the cradle and the lock mechanism engaged.



Attach the mounting bracket to the instrument

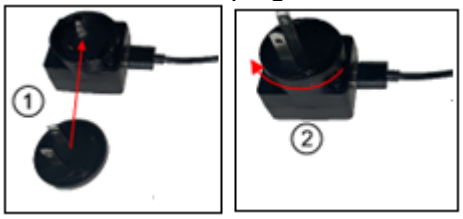
7. Determine the location of the bracket keeping in mind the following:
    a. Attachment can be done via integrated magnets or attached adhesive strips.
    b. Make sure the cables can reach their destination.
    c. Wi-Fi performance is better the higher the adapter is located.
8. Place the bracket on the instrument
    a. If using adhesive strips, remove the red adhesive liner from the adhesive strips before attaching and press for 10 seconds to create a good bond.
9. Run the cables through the mounting bracket comb feature to secure the cables
10. Use the adapter kit cable hooks if desired to further secure the cables

Step 2: Connecting the Device Adapter Cable

Connect your device adapter to the item being monitored via serial port connection. Using the equipment serial cable (with orange plug), plug into the RS232/485/USB port on your device.

Step 3: **Supply power using a USB-C power source**

1. Plug the USB-A plug into the power adapter
    a. NOTE: If equipment provides a USB power source, this can be used if it meets the specifications in the Power Options section.
2. If using the adapter that is supplied with the adapter kits:
    a. Insert the appropriate outlet plug onto power supply.
    b. Twist clockwise to lock into place.
        i. The outlet plug should twist easily and there should be a click when the plug is locked.



3. Insert the plug into an appropriate outlet

Step 3: Supply power using a PoE (if using the PoE base)

1. Connect one end of an Ethernet cable to the adapter PoE base RJ45 port

2. Connect the other end of the Ethernet cable to network equipment that is PoE enabled and provides the data network connection. (Note: Adapter Wi-Fi is disabled when the PoE/Ethernet base is attached).

Attaching Sensor Adapter and Sensors

The sensor adapter includes integrated magnets and pre-attached adhesive strips. Note that the adapter configuration should be completed before placing the adapter in its final location. If generic sensors are used, refer to section Using generic sensors with the sensor adapter.

To attach via magnets:

1. Choose a location with a flat metal surface. If using Wi Fi, choose a high location as close as possible to an access point.
2. Place the adapter at the location with the thermo scientific logo at the top
3. For Ethernet versions, connect an Ethernet cable between the adapter and a network with internet access

To attach via adhesive strips:

1. Choose a location with a flat, clean surface. If using Wi Fi, choose a high location as close as possible to an access point.
2. Remove the film from the adhesive strips attached to the bottom of the adapter
3. Press the adapter against the surface with the thermo scientific logo at the top
4. For Ethernet versions, connect an Ethernet cable between the adapter and a network with internet access

Attaching sensors

1. Remove the 2 cable guide rails from the sensor adapter
2. For analog sensors, attach the appropriate numbered sticker (included with the sensor adapter) to the green sensor plug to identify sensor channel for that sensor
3. Plug the sensor into the appropriate channel
4. Route the sensor wire as desired
5. Optional: After all analog sensors are attached, re-install the sensor wire clips to hold the wires in place
6. For a digital sensor, attach the sensor to the digital sensor channel

Supplying power*

1. Insert the appropriate outlet plug onto power supply.
2. Twist clockwise to lock into place.
    a. The outlet plug should twist easily and there should be a click when the plug is locked.
3. Attach one end of the USB-C power cable to the power supply and the other end to the sensor adapter.

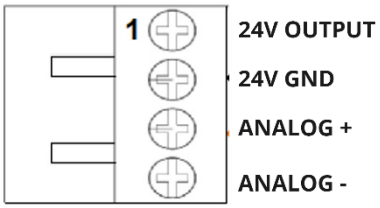
* If using an alternate power supply, verify it meets the specifications in section Power Options

Using generic sensors with the sensor adapter

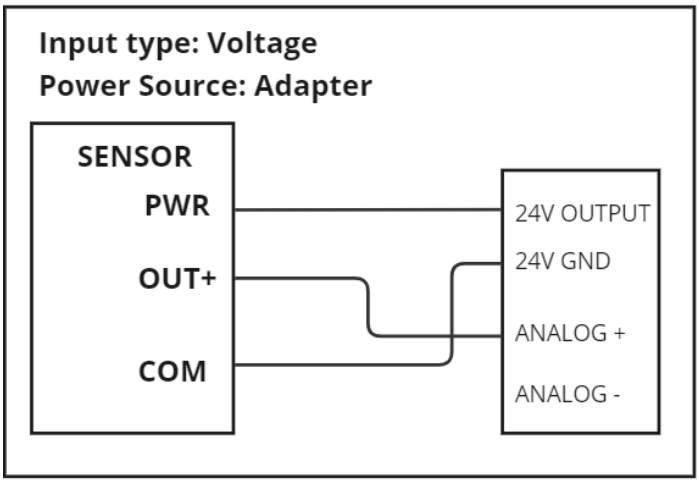
The Connect Edge Sensor Adapter supports sensors that meet the requirements described in the table below.

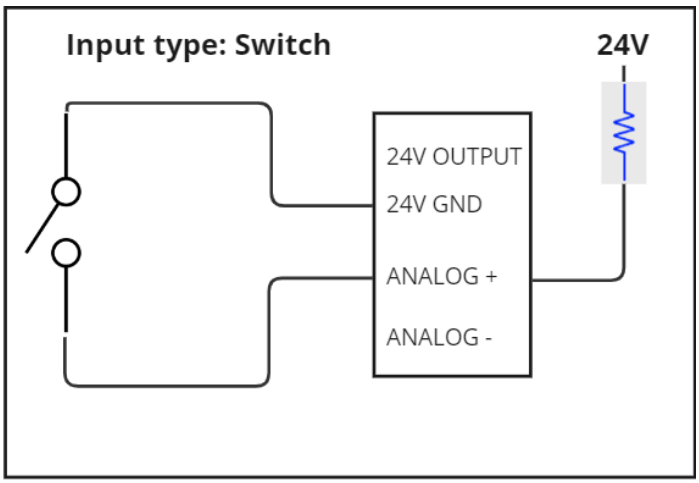
Sensor specification	**Requirement**
Output Types	4-20mA, OR Voltage (0-up to 30V), OR Dry contact
Voltage output	Maximum:30V
Voltage Input (if supplied by sensor adapter)	22 - 24V
Power Input (if supplied by sensor adapter)	Maximum: 500mW
Dry contact, maximum voltage	24V
Wire gauge	20 – 28AWG

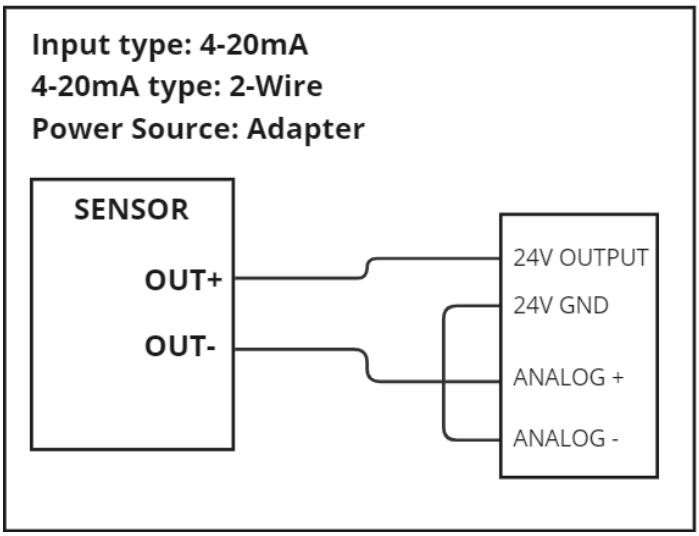
The sensor adapter analog plug pinout is shown here.

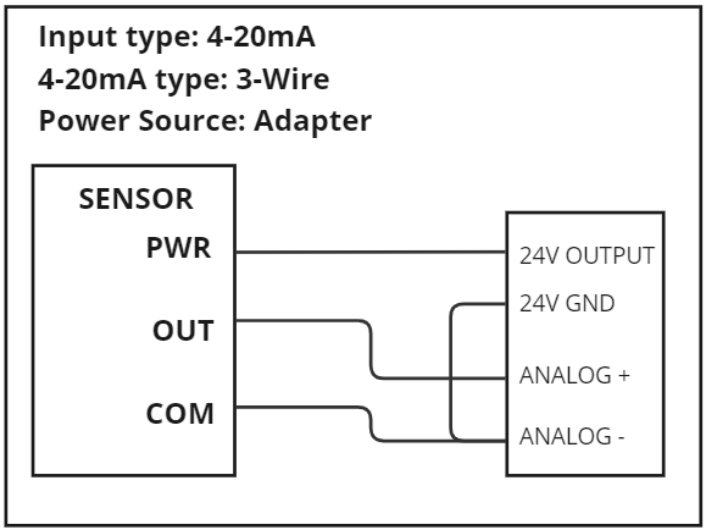


Wiring and input type selection, when using the sensor adapter internal 24V power source is shown here.

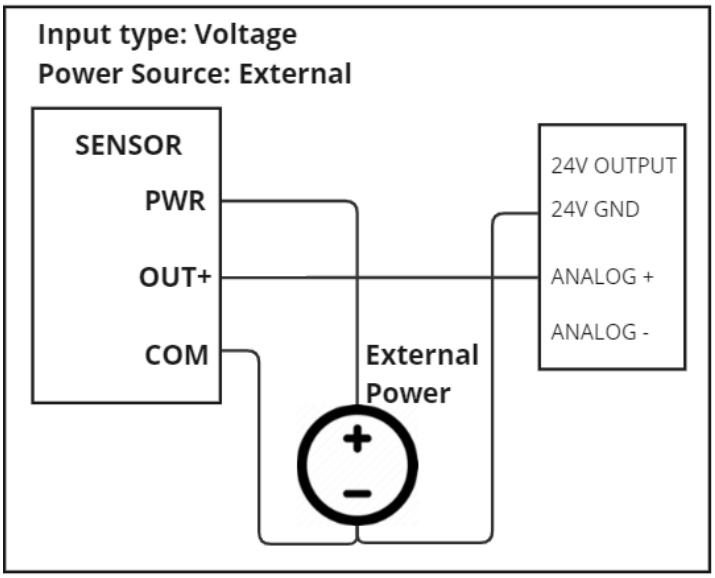


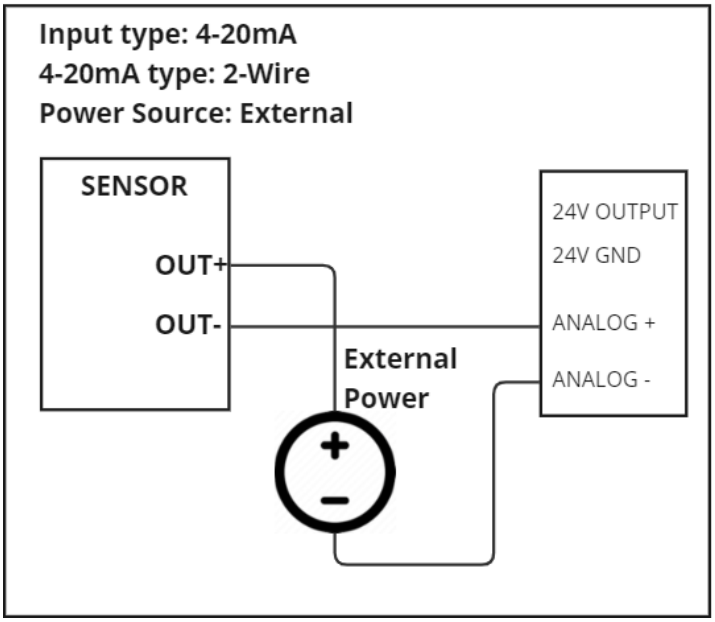


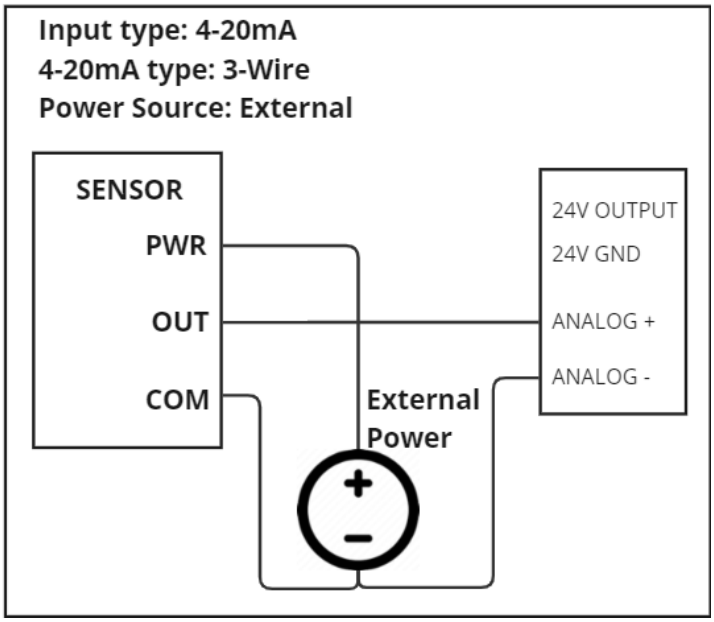




Wiring and input type selection, when using an external power source is shown here.







Hardware Features

Gateway

Gateway Interfaces

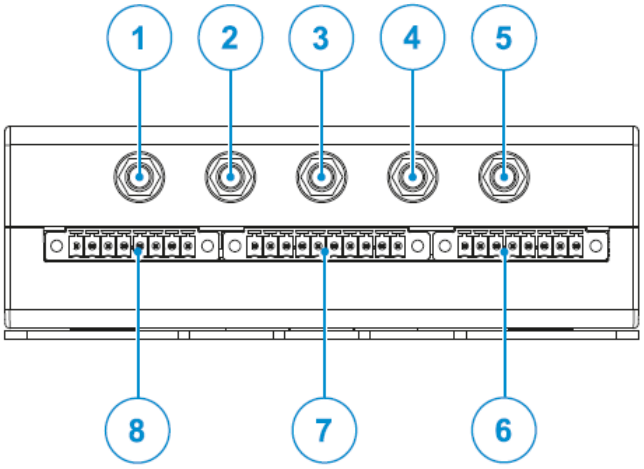


Figure 1 Gateway Front Side Interfaces

Ref #	Description	Supported Models
1	Antenna connector for 2.4 GHz Wi-Fi	All except EDGEPTGATE01
2	Main antenna connector for Internal Cellular Modem	All except EDGEPTGATE01, EDGEPTGATE02
3	Antenna Connector for Internal GPS	None
4	Diversity antenna connector for Internal Cellular Modem	All except EDGEPTGATE01, EDGEPTGATE02
5	Antenna connector for 5 GHz Wi-Fi	All except EDGEPTGATE01
6	Connector A (currently unused)	All
7	Connector B (currently unused)	All
8	Connector C (currently unused)	All

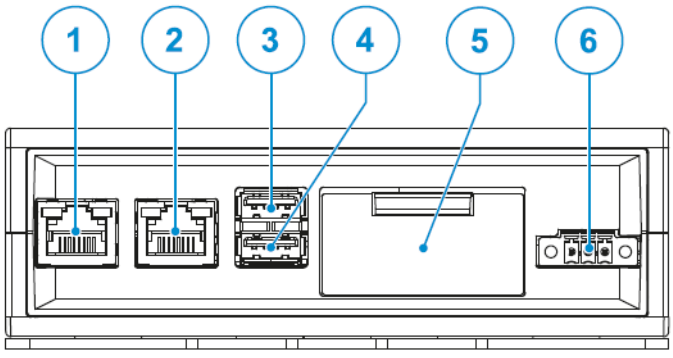
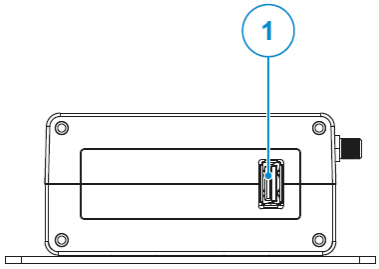


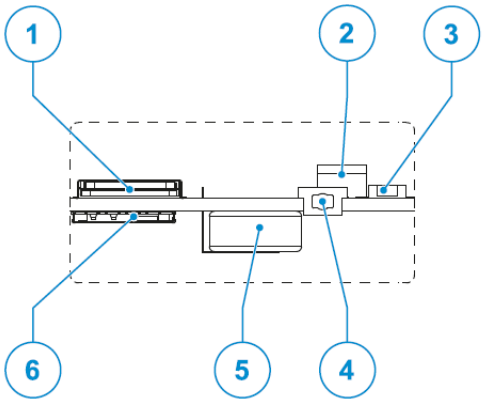
Figure 2 - Gateway Rear Side Interfaces

Ref #	Description
1	Ethernet ETH 1 connector
2	Ethernet ETH 0 connector
3	USB 0 connector
4	USB 1 connector
5	Service Panel
6	Power IN Connector



Ref #	Description
1	USB 2 Connector

Figure 3 - Gateway Left Side Interface



Ref #	Description
1	Micro SIM Top card receptacle (pull-lever)
2	DIP-switch (Not used)
3	Restore button
4	Hardware reset button
5	RTC backup supercap (not removable)
6	Micro SIM Bottom card receptacle (push-pull)

Figure 4 - Gateway Service Features (located behind Service Panel depicted in Figure 2)

Gateway Features

Gateway Hardware reset button

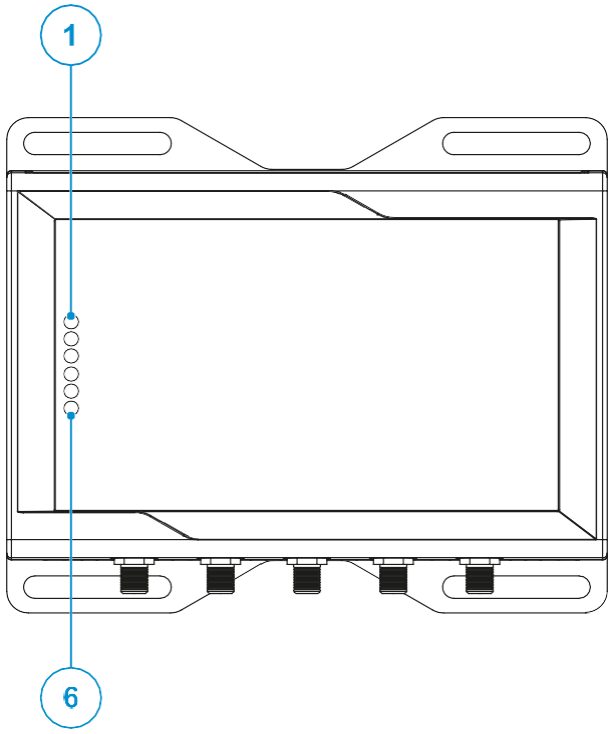
The hardware reset button is located behind the service panel (refer to Figure 4). Pressing this button will immediately trigger a hardware reset and the gateway will reboot.

Gateway Factory restore button

The factory restore button is used for 2 purposes, a network restore and a system restore. It can be located using Figure 4).

Desired Function	Trigger operation	Result
Restore network settings	Press and hold the restore button for 5 to 10 seconds, then release.	Network settings will be restored to factory state. All other gateway configuration and registered devices will remain unchanged.
Restore system settings	Press and hold the restore button for 25 seconds or more, then release.	Gateway will be restored to factory state. WARNING: All configuration changes, registrations, and data will be erased.

Gateway LED Indicators



Ref#	Use	Color	Status
1	Status 1	Green	LED Blinking: Gateway bootup and preparing the gateway software LED Solid: Gateway is ready
2	Status 2	Green	Not used
3	Status 3	Amber	LED Blinking: Attempting to connect to cloud LED Solid: Connected to the cloud
4	Status 4	Amber	LED Blinking after a bootup indicates a failure during the bootup or software starting process
5	CELLULAR (Internal Cellular Modem activity)	Green	LED Solid: Modem ON LED Blinking: Modem connected to cellular network
6	POWER:	Blue	LED ON: Product powered by the external source LED OFF: Product not powered by the external source

Device Adapter

Device Adapter Features

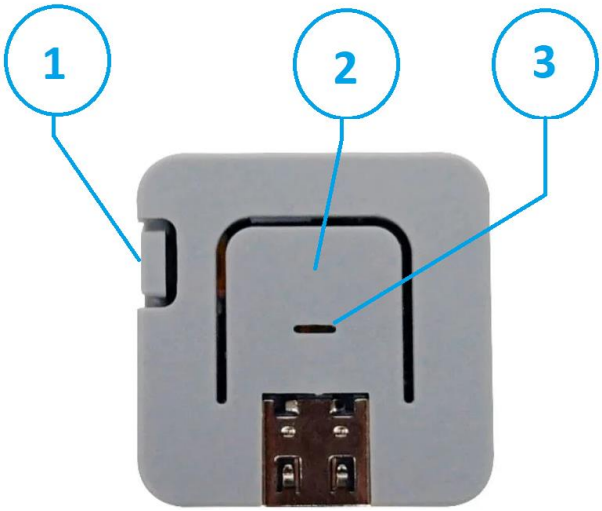


Figure 5 - Adapter Features

Ref #	Description	Function
1	Hardware reset button	Press triggers an adapter reboot
2	Center button	Currently not used
3	RGB LED	Indicates status

Device Adapter LED Indicators

RGB LED: Operating Mode (After a successful configuration)

RGB	Frequency	Status
White	Solid	Configuration is blank. (Shipping state)
Red	Blinking	Fault detected. (e.g., flash corruption detected)
Red	Solid	Link error. (Unable to connect to AP or PHY did not negotiate)
Yellow	Solid	Link OK. (Attempting to connect to WS endpoint)
Green	Solid / Strobe	Connection OK. Strobing indicates received data from WS endpoint or serial received data from device.

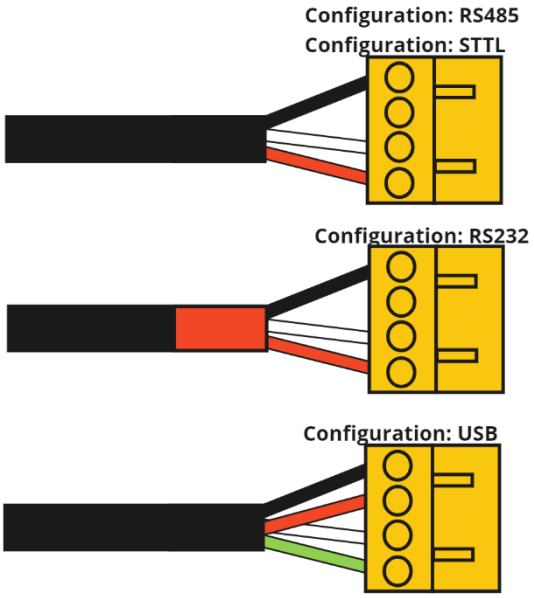
RGB LED: Configuration Mode (i.e. attached to Edge Gateway via USB)

RGB	Frequency	Status
White	Blinking	Configuration mode. This state is entered whenever the adapter is being configured via USB.

		The adapter will remain in this state until it is either successfully configured or failed.
Red	Blinking	Configuration failed. This state is entered whenever the adapter is unable to save a new configuration via USB. The adapter will remain in this state until the adapter is reset or power cycled.
Green	Blinking	Configuration accepted. This state is entered whenever the adapter successfully saves a new configuration via USB. The adapter will remain in this state until the adapter is reset or power cycled.

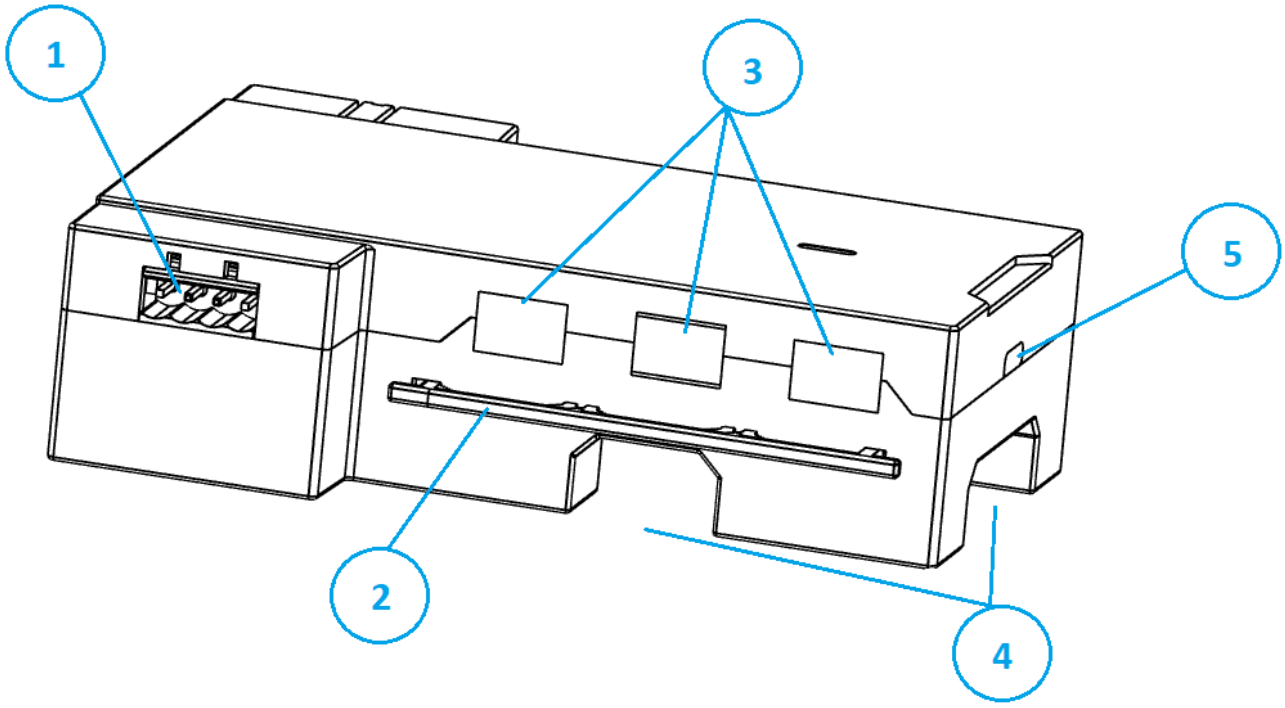
Device Adapter Wiring

The correct wiring for device adapter cables is shown below:

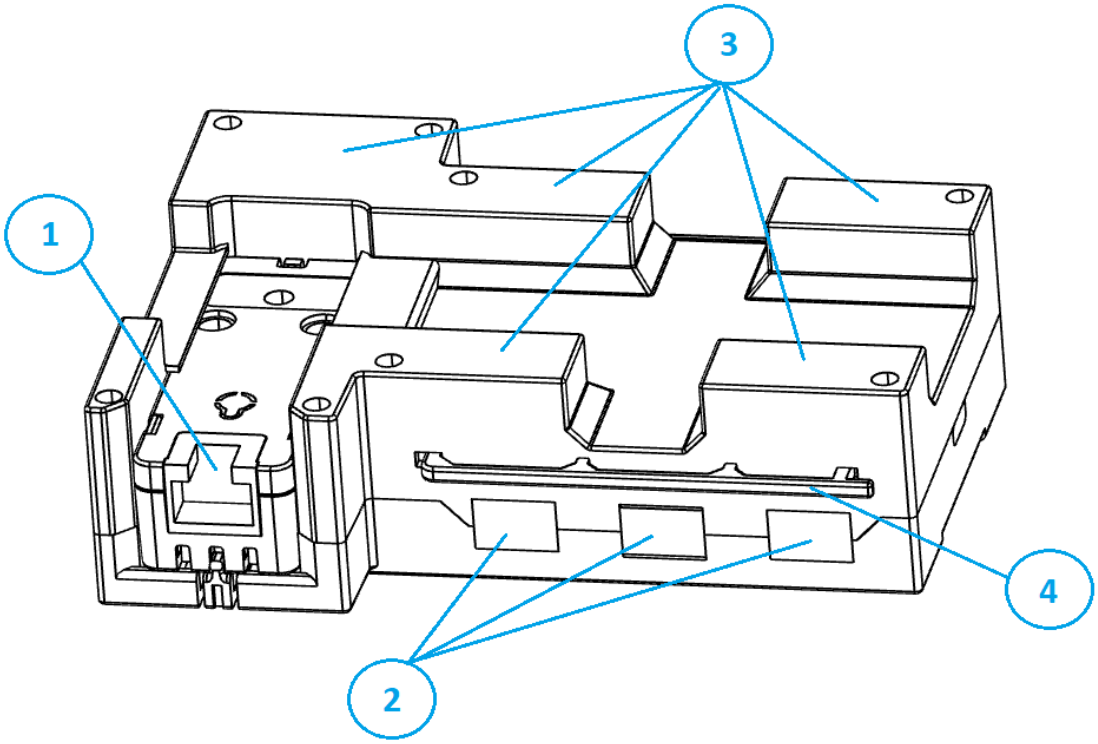


Sensor Adapter

Sensor Adapter Features

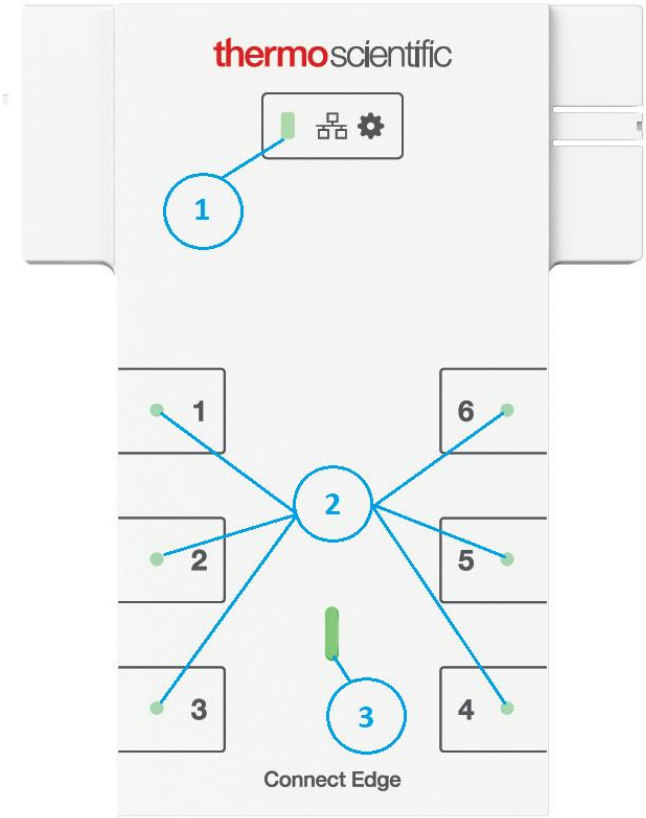


Ref #	Description	Function
1	Digital port	Connection for digital sensor
2	Cable guide rail	Cable management
3	Analog ports 1 - 3	Connections for analog sensors
4	Cable routing channels	Cable management
5	USB-C port	Power supply connection Configuration by gateway



Ref #	Description	Function
1	RJ45 Ethernet port	Ethernet connection (Ethernet model only)
2	Analog ports 4 - 6	Connections for analog sensors
3	Magnets, Adhesive strips	Integrated magnets and attached adhesive strips for mounting
4	Cable guide rail	Cable management

Sensor Adapter LED Indicators



Ref #	Description
1	Configuration and network LED - Refer to RGB LED in **Device Adapter LED Indicators**
2	Analog port power LED - Green = 24V output enabled (unconfigured ports will have the 24V output disabled after communication with the gateway)
3	Power failure LED - Red: Power failure condition

InstrumentConnect Overview

InstrumentConnect is the universal platform for connected lab equipment located within the Thermo Fisher Connect platform. You can access your device data either on the web or through the InstrumentConnect mobile application, available for both iOS and Android devices.

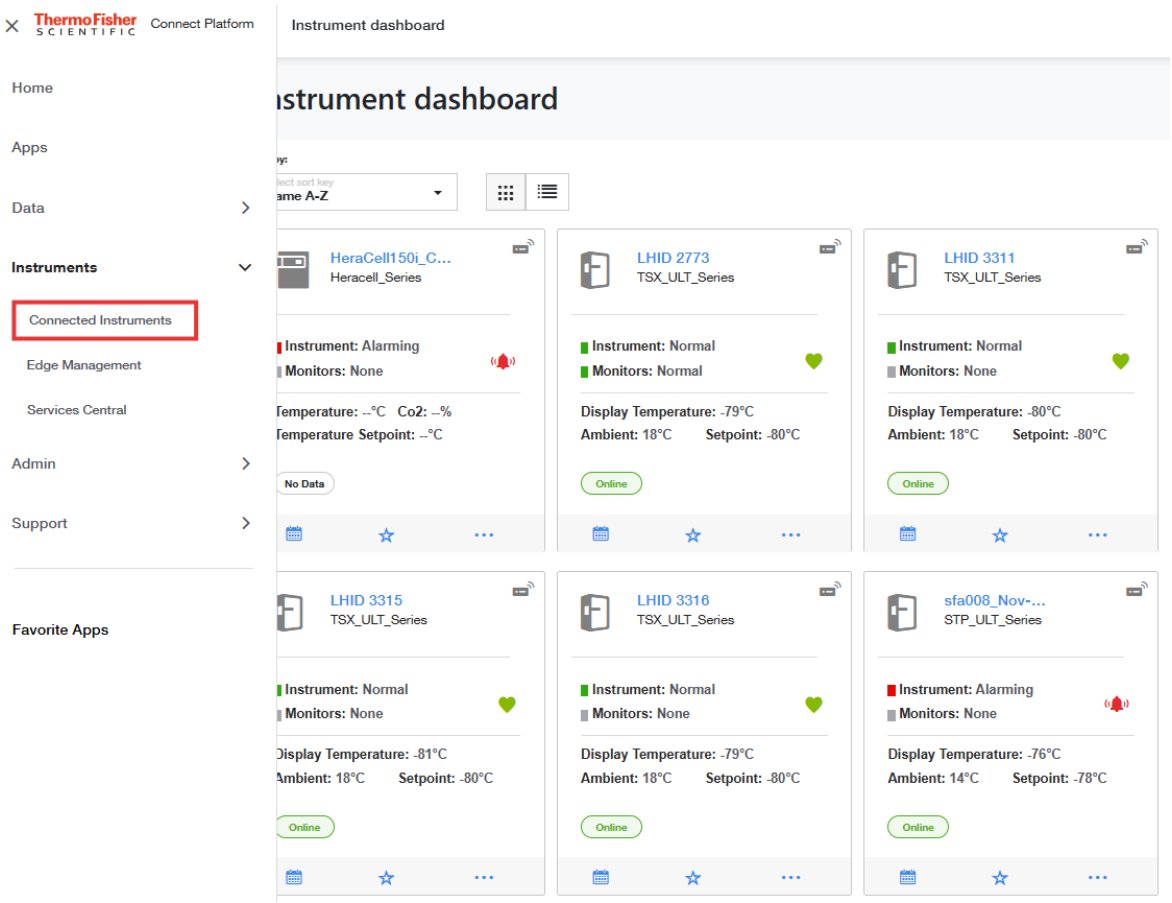
Access Device Data

Log into your InstrumentConnect account at www.thermofisher.com/edgelogin.

Dashboard View

This will bring you to your equipment dashboard. From this dashboard you can see all devices connected to your account.

To return to this view from anywhere within Thermo Fisher Connect, use the left navigation to select Instruments > Connected Instruments.

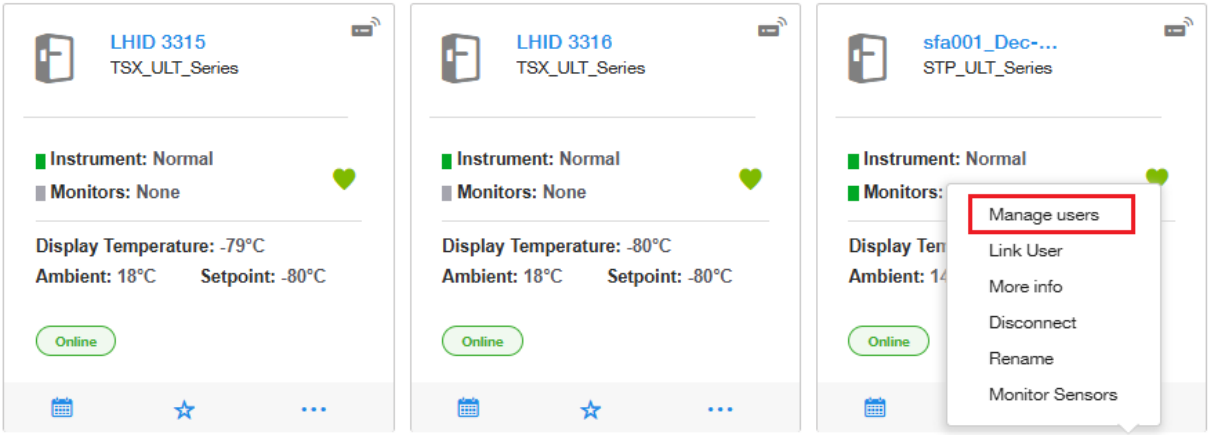


You can designate favorite devices to keep at the top of your dashboard. Click the star in the device tile in your dashboard to identify the device as a favorite.

Managing Users

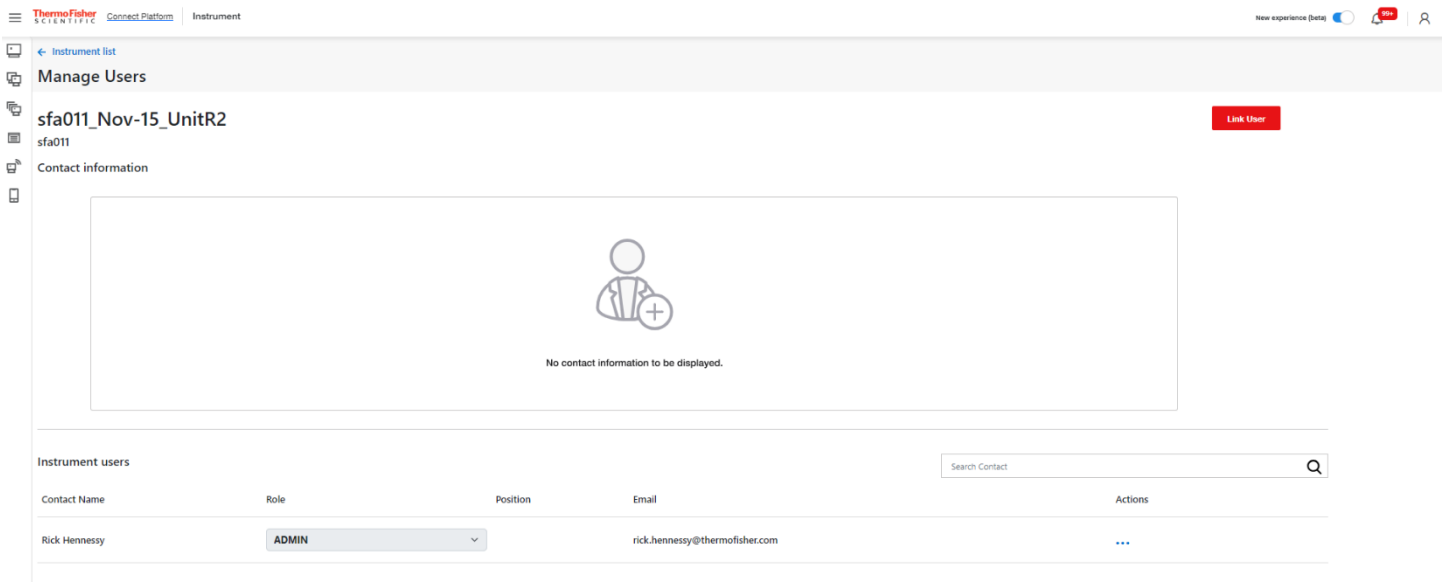
The first user to connect to a device is made the admin (default). An admin then can share the device with other individuals who have a Thermo Fisher Connect account and designate them as basic users or Admin. From the Manage User menu, an Admin can designate and remove users for the device.

1. From the Connected Instruments dashboard you are able to see all devices connected to your InstrumentConnect account. Right click the menu drop-down on the device you wish to manage and select Manage Users.



2. Once you click on the Manage Users, a new window will open; here you can select the link new users

and remove existing users.



Monitors

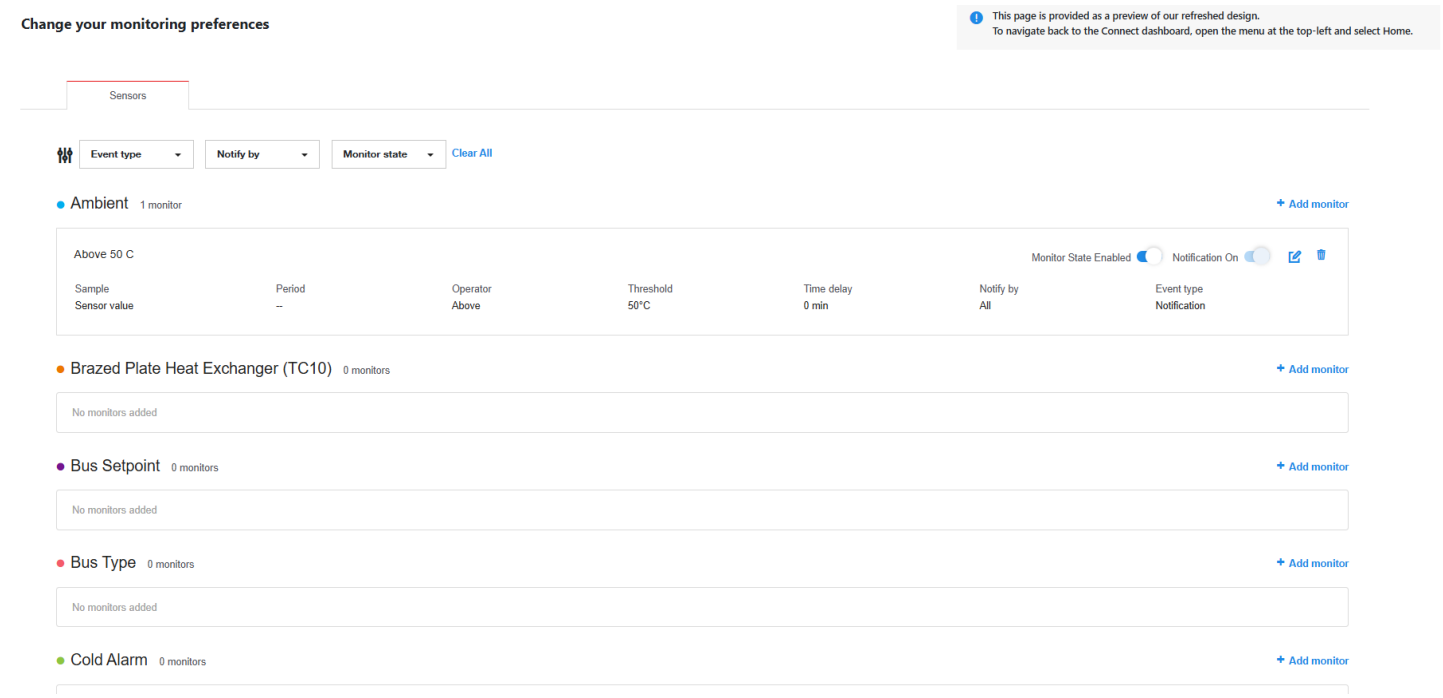
Monitors allow you to set warnings and alarms on data streams like sensor inputs. These can be set based on thresholds or statistical measurement depending on your needs. Monitors allows you to create these alert/alarm rules for active monitoring of any devices supported by Connect Edge.

Monitors configuration can be accessed by selecting “Monitor Sensors” from a device tile menu or as follows:

1. Select a unit from your Instruments and select More Info listed under the Instrument ellipsis.

2. From the individual instrument dashboard, select the Instrument dropdown to access Settings.

3. Go to Unit Settings and then Go to Monitors

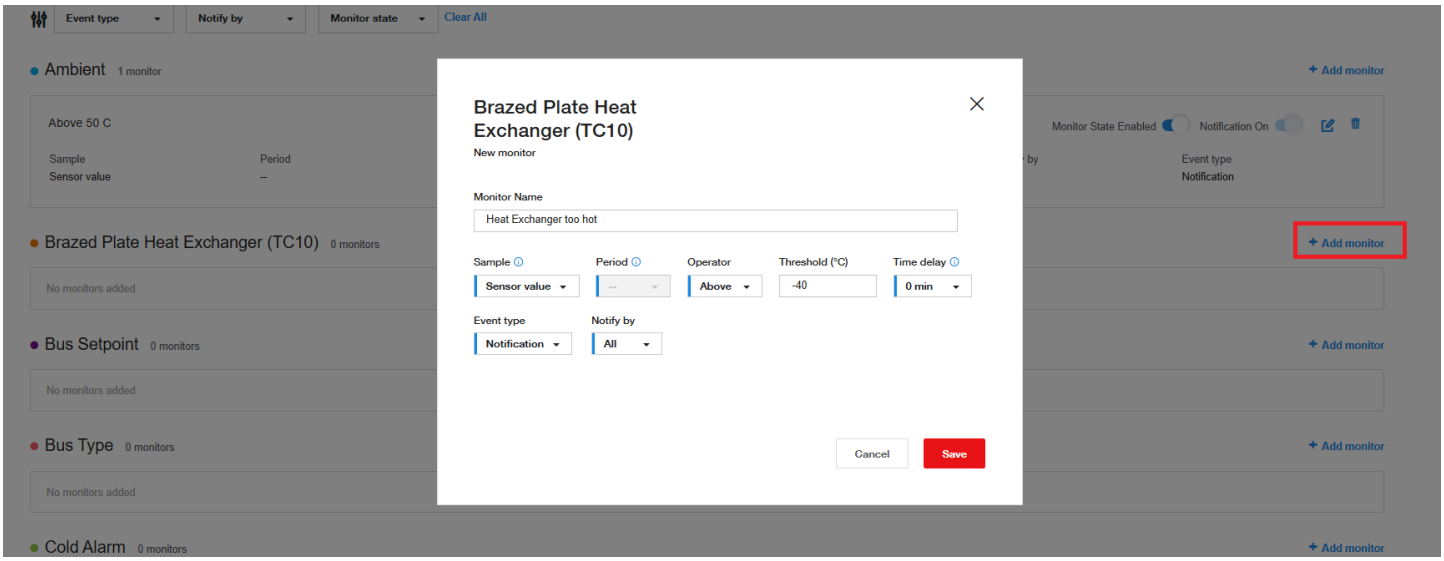


For the creation of a Monitors rule, the user will be able to configure the following:

- data sample type you wish to use for the rule
- raw sensor value or a statistical calculation of the data values (max, min, average or sum)
- An operator to compare against the threshold of your interest: above, below or equals.

To create a monitor, select the Add monitor next to the data sample type, configure the settings, and click on the Save button.

As an Admin of a device, you will be able to also Delete/Modify rules via the Monitors Application. To delete an already created rule, click on the trash can icon for that rule and select Delete.



Note: Users linked to a given device will receive notifications, based on individual user notification settings,

when a Monitors alert/alarm rule condition has been met. You can create multiple Monitors alert/alarm rules for a given data stream/sensor. Notifications for Monitors alert/alarm rule will be delivered.

Viewing Device Data

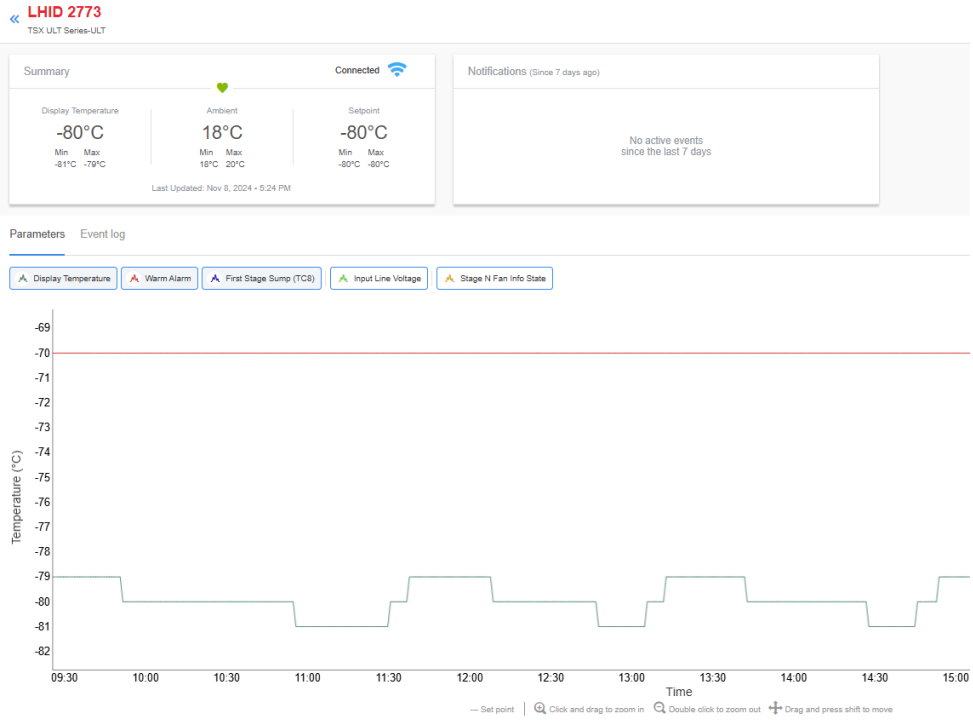
Double clicking on a device tile or selecting More Info on the device tile menu in the dashboard will bring you to the details page. From this page you have:

Summary Card: Indicates top parameters and current sensor readings for the device. Health status (normal, alarm, warning) as well as connection states are also indicated.

Notifications: This window will show the most recent active events for the devices.

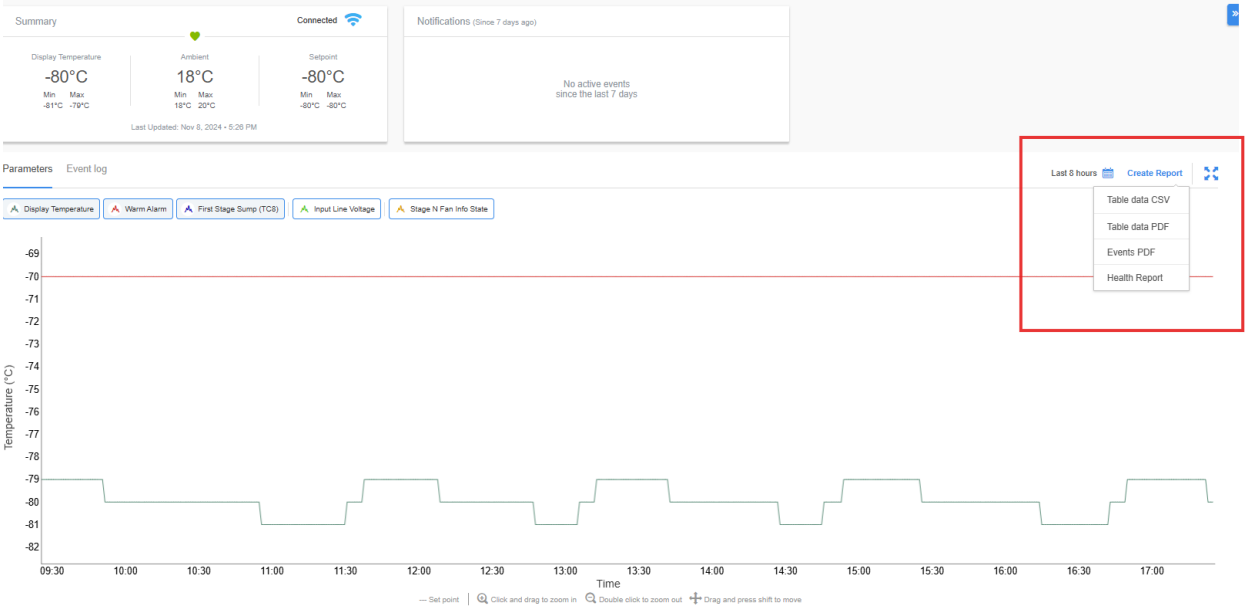
Parameters Graph: Scalable and customizable graph of your monitored sensors/telemetry data.

Event Log: Filterable history of the events, alarms, etc. provided by the unit.



Creating Reports

Click on the ***Create Report*** button located on the screen and then select either Table data CSV or Table data PDF from the drop down. This will generate the report and save it to the appropriate Individual Reports folder within Data Storage.



Select the DataConnect icon located on the left-hand panel of the window. Select the folder and the device name within that folder that the report was generated for. Select the desired report file and Action > Download; this will download the report file.

OPC UA™ Server Overview

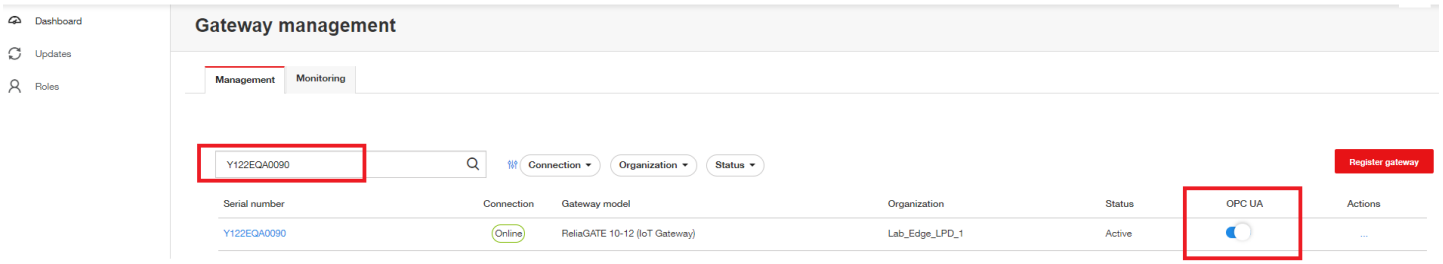
The Connect Edge platform supports an OPC UA™ server that can be used to connect to OPC UA client software. This is a subscription-based service that will make device data available in a node tree that can be accessed by the OPC UA client.

Purchase and register an OPC UA Subscription

Before being able to utilize OPC-UA, contact your Thermo Fisher sales contact to purchase an OPC UA subscription and register that subscription using the Connect Edge Registration portal at https://www.thermofisher.com/productregistration. Subscriptions are needed for the number of devices to be enabled for OPC UA access, but these devices can be on any gateway.

Install OPC UA Server software

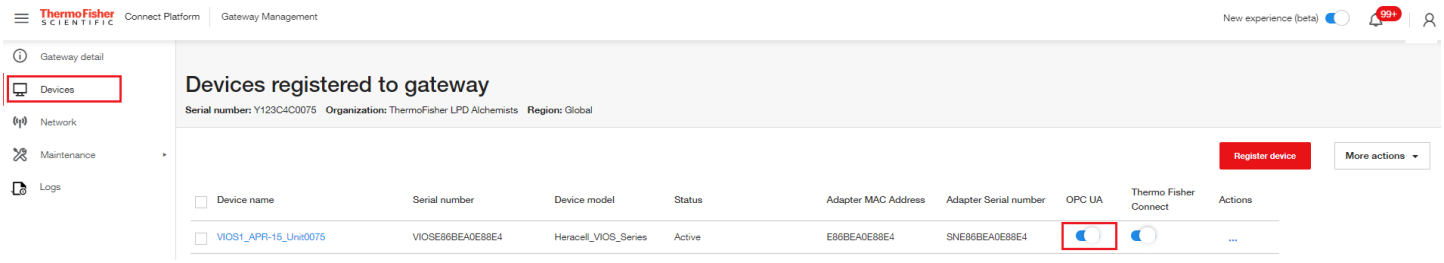
Navigate to Edge Gateway Management as described in **Gateway Management**. From the Dashboard search for the specific gateway where the OPC UA software should be installed and select the OPC UA toggle button to the right. A spinner will be shown during the installation. The image below shows a gateway after OPC UA software is installed.



Enable device(s) on the OPC UA Server

To add device data to the OPC UA Server, navigate to the Gateway Management Device list for a gateway to which the device is registered. Select the OPC UA toggle button to the right. A spinner will be shown while the

gateway is configured to add the device data to the OPC UA Server. The image below shows a device list with one device enabled for OPC UA.



OPC UA Server Service Accounts

The gateway admin account has administration OPC UA permissions, allowing OPC UA clients to connect to the OPC UA server using those credentials. OPC UA service accounts can be created using the gateway local web interface that provide other username/password-based accounts for connection to the server.

Access and setup of these accounts is described in OPC UA Manage Service Accounts.

OPC UA Server Connection and Data access

Use one of the following to connect an OPC UA client to the server:

Server URL: https://<gateway ip address>:4843/connectedge

Server URL: opc.tcp://<gateway ip address>:12686/connectedge

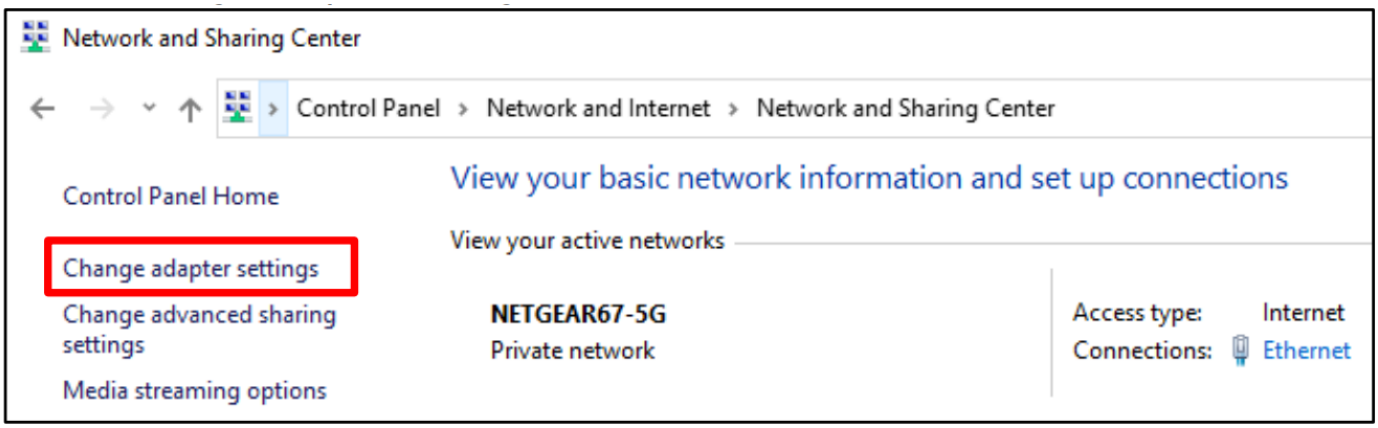
Credentials: Only username/password credentials are supported. By default, the Gateway admin account can be used. Service accounts can be created as described in the previous section.

For information on the specific node tree parameters refer to the latest OPC UA documentation available in our Resources section at www.thermofisher.com/connectedge/resources

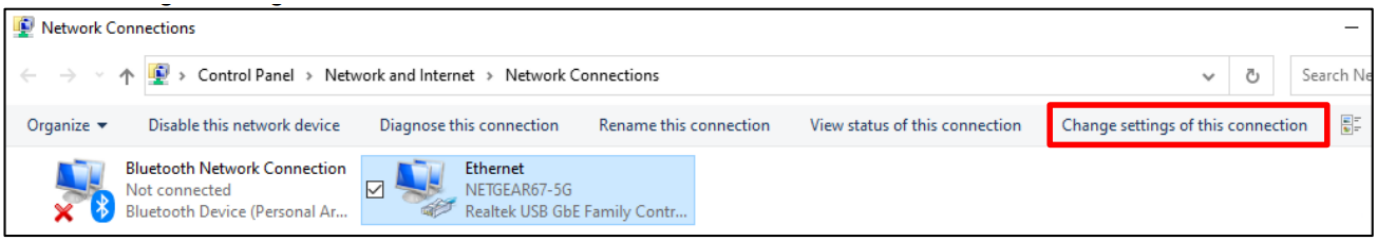
Setting PC Static IP Address

Windows 10 PC

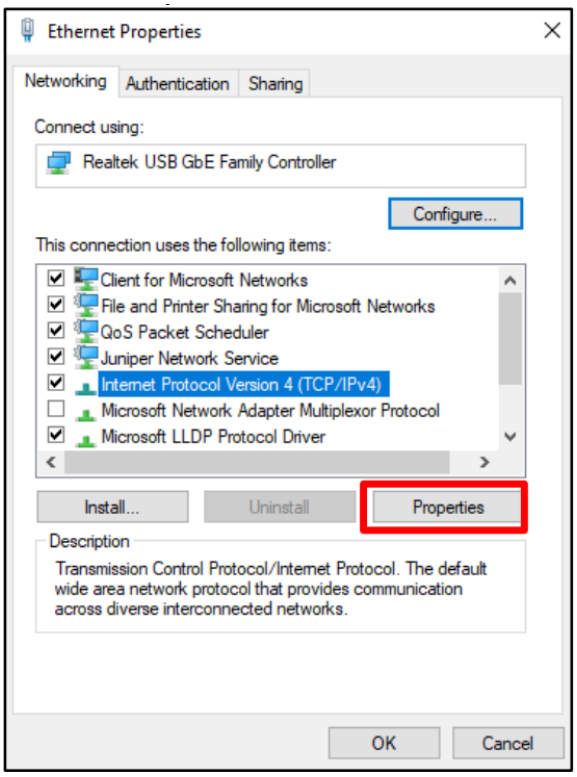
1. Navigate to the Control Panel
2. Select **Network and Sharing Center**
3. Select **Change adapter settings**



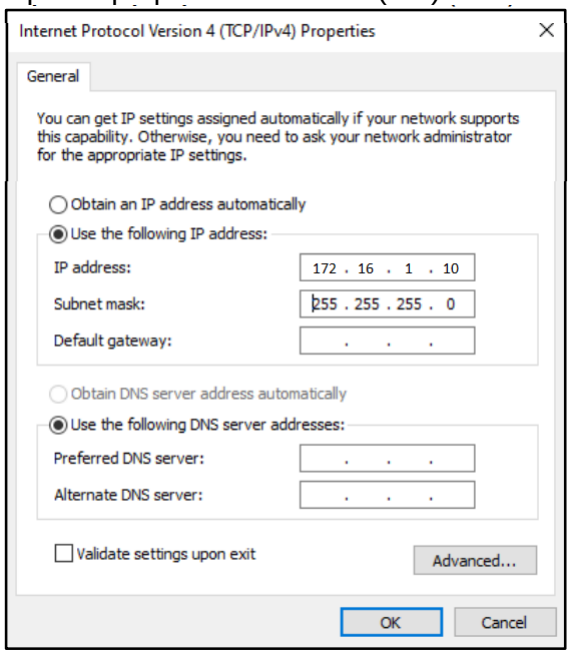
4. Select your ethernet adapter from the list
5. Select **Change settings of this connection**



6. Select the TCP/IPv4 from the connection list
7. Select **Properties**

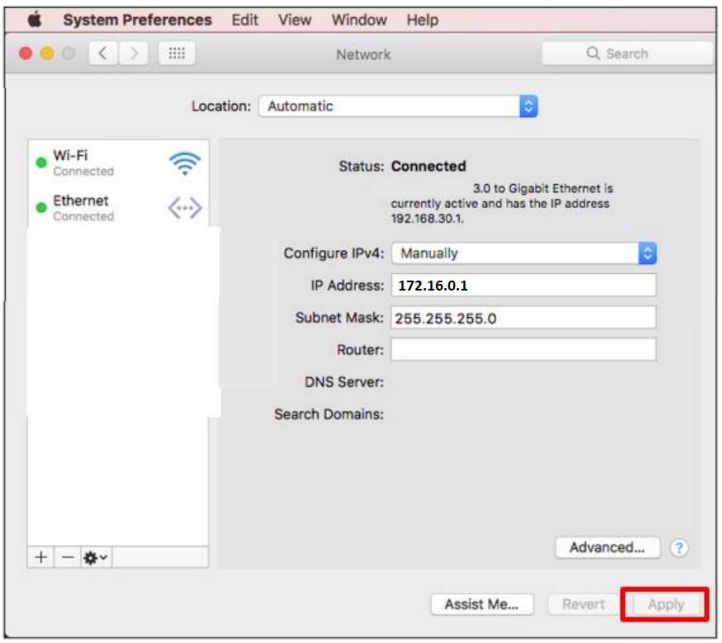


8. Input IP properties and save (**OK**).



MAC OS

1. Navigate to **System Preferences** (either from your dock or by clicking the Apple menu at the top of your screen.
2. Select Network
3. Select your Ethernet connection from the left list menu
4. Change the Configure IPv4 to “Manually”
5. Input IP properties and Apply.



Networking Guidance

Network Requirements

Port Openings Required

Open Network A (Internet) External Ports

- 443 (HTTPS, MQTTS)
  - broker.cg.tfcprod.thermofisher.com
  - *.iot.us-east-1.amazonaws.com
  - edt-data-manager-s3-bucket.apps.thermofisher.com
- 123 (NTP)*
  - *.ntp.org
- 53 (Domain Name Service)
  - URL depends on configured DNS servers
- 1194 (Rapid OpenVPN – Device dependent)
  - URL is location-dependent

*Network Time Protocol (NTP) allows the system clock to be set accurately and is required. Accesses pool.ntp.org Please allow the gateway to reach the local or internet NTP server to synchronize the system time.

Open Network A (Internet) Local Ports

If Enable local (UI and device access) setting is Yes:

- 443 (HTTPS, if Enable local (UI and device access) is Yes)
  - For local UI and Device connections
- 4443 (TLS, if Enable local (UI and device access) is Yes)
  - For local UI and Device connections

If OPC UA is installed:

- 4843 (HTTPS)
- 12686 (OPC.TCP)

Open Network B (Instrument/Service Network) Ports

- 22 (Provides ssh access for local debug)
- 67 (DHCP Server access)
- 443 (HTTPS)
- 4443 (TLS Authentication)
- 4843 (HTTPS, If OPC UA installed)
- 12686 (OPC.TCP, if OPC UA installed)

Network A (External Network)

ETH 1, Wi-Fi 1, and Cellular are utilized for cloud connectivity. Only one interface may be selected.

Used Protocols:

- HTTPS
- MQTTS
- NTP
- DNS
- DHCP
- OCP.TCP (optional if OPC UA installed)

ETH 1

Can be configured to get IP address from a DHCP server or set an IP manually.

Can provide appropriate ports for Instrument services and local UI access.

- If Using DHCP (Obtain IP address automatically) is selected, the network must have a DHCP server to provide the required IP settings
  - It is recommended to reserve the IP address on the DHCP server
- If Static IP is used, the following must be configured:
  - IP Address
  - Subnet Mask
  - Default Gateway IP
  - DNS Servers
- If Instruments and/or local UI access is required by ETH 1, you can enable it:
  - Using “Enable local (UI and device access)” setting
  - Opens Port 443 and 4443

Wi-Fi 1

Can be configured to get IP address from a DHCP server or set an IP manually.

Can provide appropriate ports for Instrument services and local UI access.

Station Mode Only

- If Using DHCP (Obtain IP address automatically) is selected, the network must have a DHCP server to provide the required IP settings
    - It is recommended to reserve the IP address on the DHCP server
- If Static IP is used, the following must be configured:
    - IP Address
    - Subnet Mask
    - Default Gateway IP
    - DNS Servers
- If Instruments and/or local UI access is required by ETH 1, that can be enabled
    - Using “Enable local (UI and device access)” setting
    - Opens Port 443 and 4443

Implementation Guidelines

- Wi-Fi Standard Implemented
    - 802.11a/b/g/n
- Security Standards Available
    - WPA (not recommended)
    - WPA2
    - WPA/WPA2 (not recommended)
    - WPA2 Enterprise
        - Supports quick settings for PEAP-MsCHAPv2 and EAP-TLS, including options for uploading certificates
        - Fully customizable settings are supported via a wpa_supplicant editor
- Desired Signal Level
    - A signal strength < -70 DBM is not recommended and results in a warning on the Gateway Management monitoring page.
- SSID Name Limitations
    - None

Cellular

Supported services are carrier-specific.

- Provided Settings
    - APN
    - Dial String
    - Auth Type: <carrier specific>
    - Username: <carrier specific>
    - Password: <carrier specific>
- Signal Level
    - A signal strength < -95 dBm is not recommended and results in a warning on the Gateway Management monitoring page.
- Supported Sim Card Type
    - Micro SIM
- Cellular Modem Guidance
    - Refer to the gateway model documentation to determine the supported cellular options

Network B (Instrument/Service Network)

Both interfaces (if supported by the gateway model) can be enabled at the same time

Used Protocols:

- HTTPS

- MQTTS
- WSS
- DHCP
- OCP.TCP (optional if OPC UA installed)

A DHCP server is needed or configure Static IPs. Network address translation (NAT) is not supported (no internet connectivity).

ETH 0

- If “Using DHCP (Obtain IP address automatically)” is No, the following must be configured:
    - IP Address
    - Subnet Mask
    - NOTE: Default gateway and DNS is not supported because there is no internet access on this interface

- If DHCP Server is enabled, the following must be manually configured:
    - Starting IP Address
    - Ending IP Address
    - Subnet Mask

Wi-Fi 0

Two modes are available in this option: Access Point mode or Station mode.

Access Point Mode

- The following must be configured:
    - SSID (default is TF_GW_<last 4 digits of ETH 0 MAC address>)
    - Wi-Fi Password (default is randomly assigned)
    - Static IP
    - Subnet Mask
    - Security Standard (WPA2 Highly Recommended)
    - Radio Mode (Wireless compatibility)
- If DHCP Server is enabled, the following must be manually configured:
    - Starting IP Address
    - Ending IP Address
    - Subnet Mask
    - NOTE: Default gateway and DNS is not supported because there is no internet access on this interface

Station Mode

- The following must be configured:
    - SSID
    - Wi-Fi Password
    - Required Security Standard
- Radio Mode (Wireless compatibility) is automatically determined by the access point
- If “Using DHCP (Obtain IP address automatically)” is No, the following must be configured:
    - IP Address
    - Subnet Mask
- A DHCP Server can be enabled and configured for starting and ending IP addresses

Implementation Guidelines

- Wi-Fi Standard Implemented
  - 802.11a/b/g/n
- Security Standards Available
  - WPA
  - WPA2
  - WPA2 Enterprise
    - Supports quick settings for PEAP-MsCHAPv2 and EAP-TLS, including options for uploading certificates
    - Fully customizable settings are supported via a wpa supplicant editor
- Desired Signal Level
  - A signal strength < -70 DBM triggers a warning.
- SSID Name Limitations
  - None

Network Security Features and Recommendations

- WPA2 or better Wi-Fi security
- Change all default passwords

Supported Network Interfaces and Configuration Options

Default Settings

The gateway default has the following network configuration options enabled:

- ETH 1: 10/100 Mbps
- ETH 0: 10/100 Mbps

The gateway default has the following network configuration options disabled:

- Wi-Fi 0: 2.4 or 5GHz 802.11a
- Wi-Fi 1: 2.4 or 5GHz 802.11a
- Cellular
  - CAT-1 or CAT-4, depending on gateway model
  - Refer to Model details for support for specific carriers

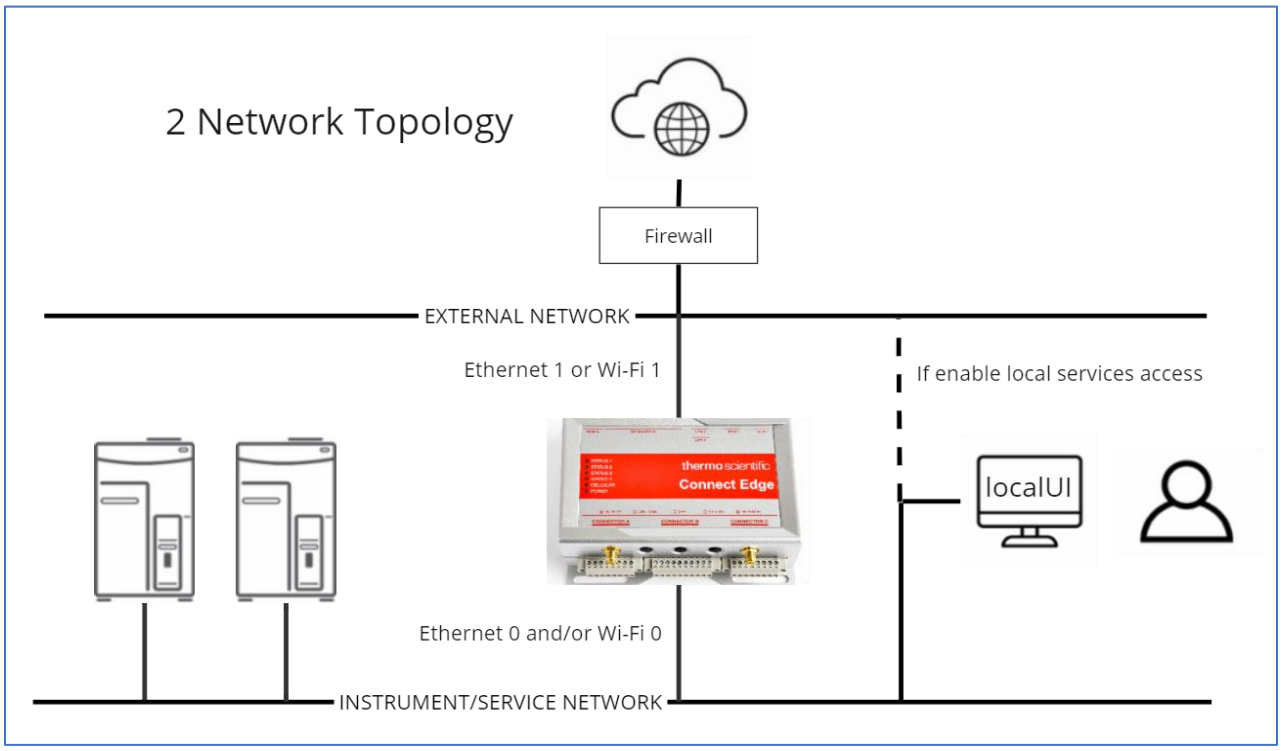
Guidance on Achieving Best Wi-Fi and Cellular Performance: The Wi-Fi signal strength is recommended to be < -70 dBm and should not vary by more than 4 dBm (+/-2 dBm) per minute.

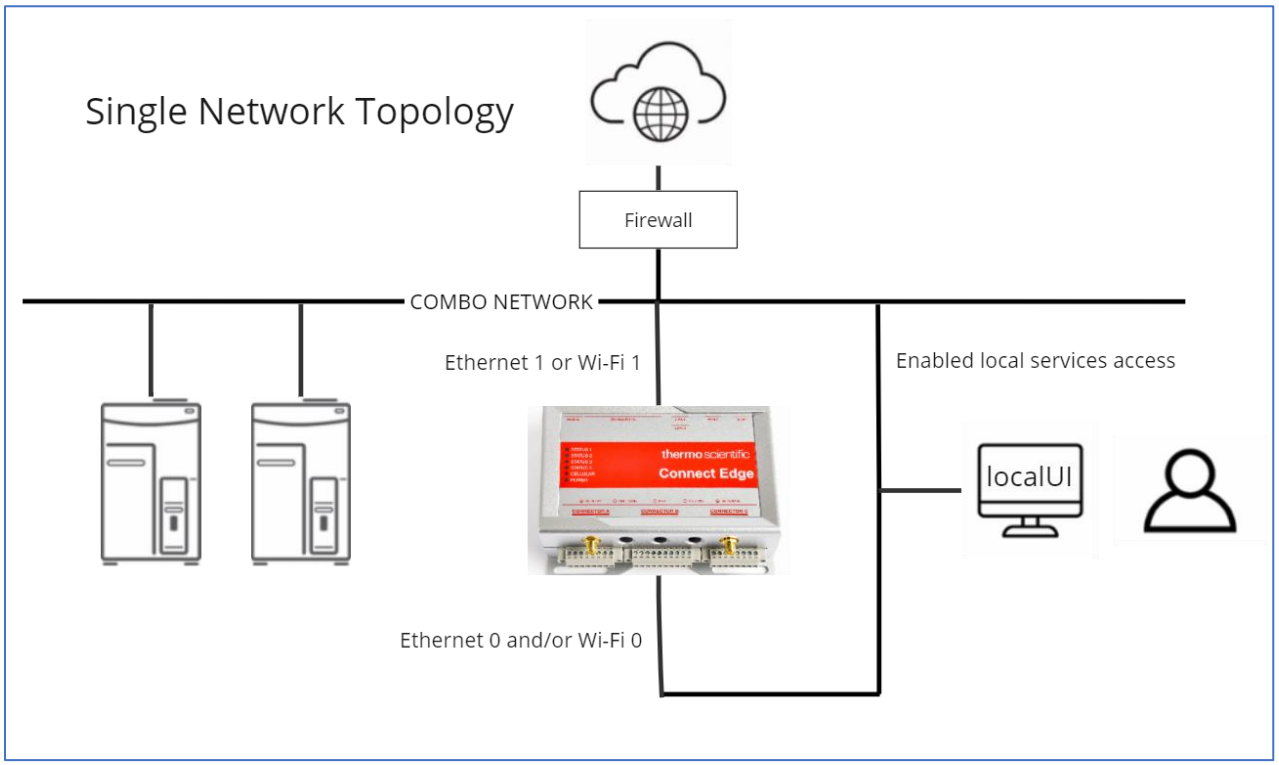
- Cellular recommended signal strength is < -95 dBm.
- Ensure all antennas are properly connected.

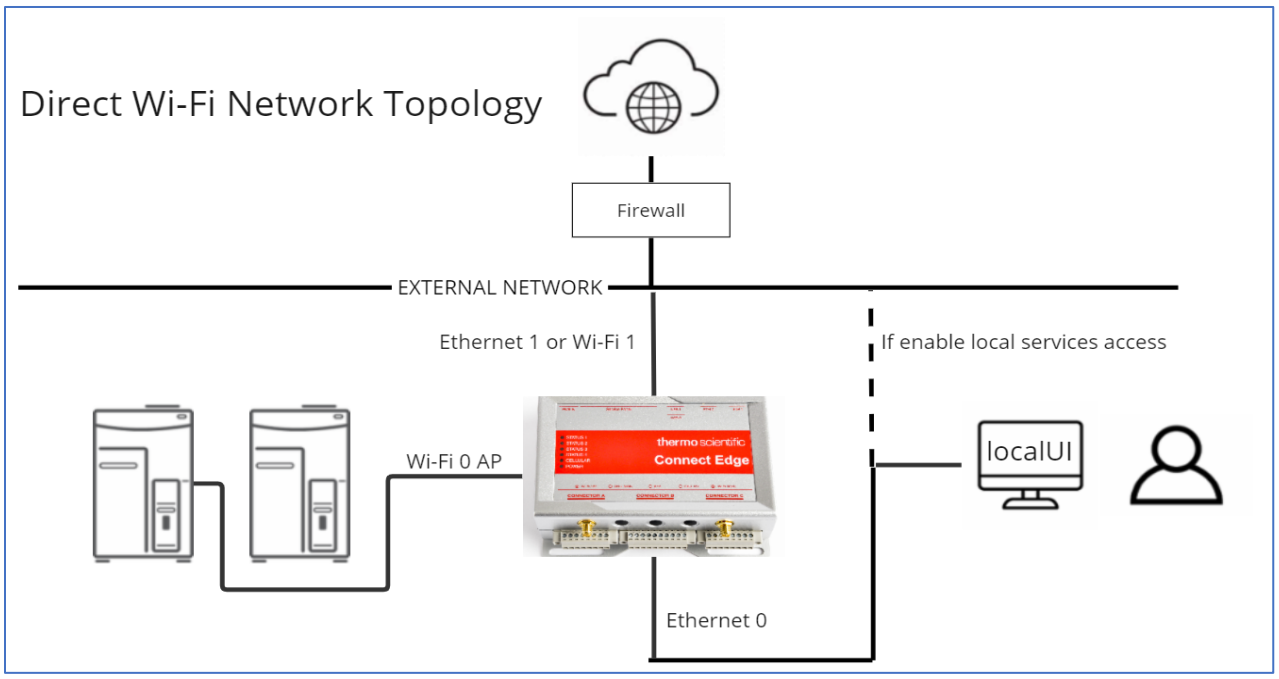
Recommended Network Topologies

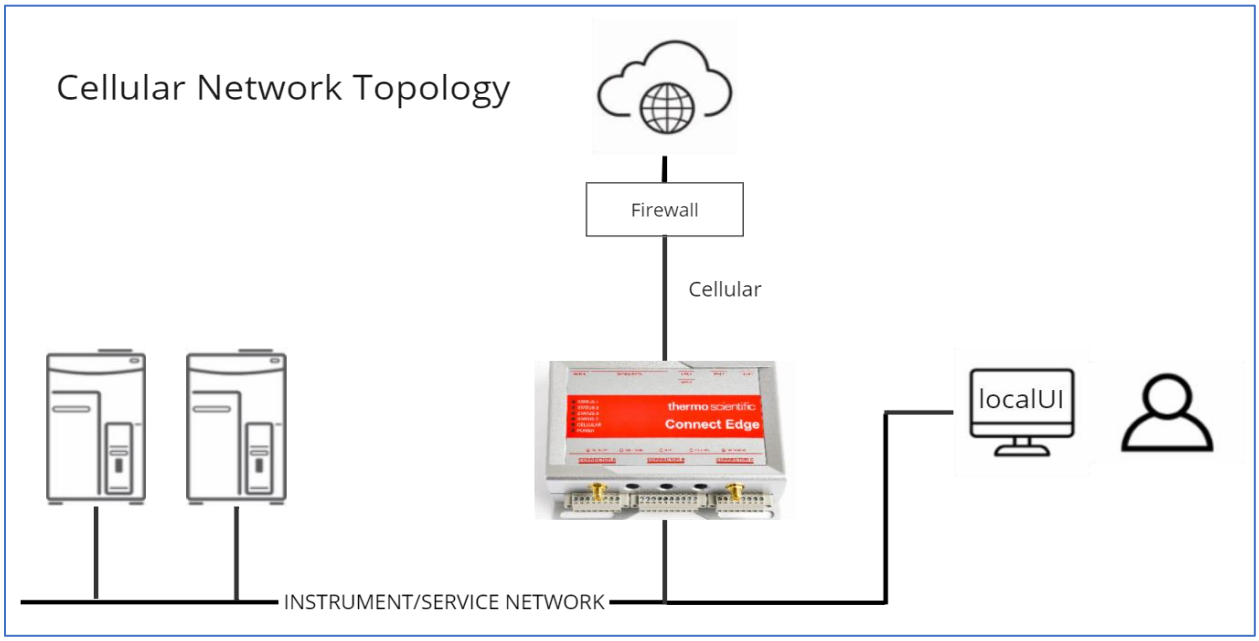
- If instrument connection segmentation is not required, use a single network with all components connected to ETH 1.
- If an isolated lab network is desired, utilize ETH 1 or Wi-Fi 1 for internet access and ETH 0 and/or Wi-Fi 0 for lab network connectivity.
- For best network performance, utilize a wired connection.

The following diagrams are examples of the different network topologies that are supported.






Direct Wi-Fi Network Topology
Firewall
EXTERNAL NETWORK
Ethernet 1 or Wi-Fi 1
If enable local services access
Wi-Fi 0 AP
thermo scientific
Connect Edge
localUI
Ethernet 0


Cellular Network Topology
Firewall
Cellular
thermo scientific
Connect Edge
localUI
INSTRUMENT/SERVICE NETWORK

Troubleshooting

Problem	Possible Cause	Fix
Gateway does not boot	No power	If the blue power LED is not lit, verify that the power supply is properly connected to a live outlet.
	Reboot failed	If the blue power LED is lit, unplug power from gateway, wait 10 seconds, and then plug power back into gateway
Gateway Status 1 LED does not go solid green	Gateway is still getting ready	Wait for up to 20-25 minutes for the gateway to become ready.
Status 3 Orange LED is blinking (not connected to Gateway Management service)	Gateway is not registered	Register gateway.
	Gateway is not connected to your network	Verify network settings for the Internet connection. Verify Ethernet cable (if using eth1) is properly connected.
	Network firewall	Check if network firewall rules are blocking outgoing ports required for connection.
Cannot login to Gateway Web UI using Ethernet 0 (eth0)	Ethernet cable not connected	Verify cable is good and has a good connection to the eth0 connector and your PC connector.
	PC is not configured with a static IP address	Configure the connected PC for a static IP address of 172.16.0.10.
Cannot login to Gateway Web UI (general)	Invalid URL	Enter https://172.16.0.1/ in the browser address bar if using eth0. Replace 172.16.0.1 with the correct IP address if using a different interface.
Cannot login to Gateway Web UI (Ethernet 1, Wi-Fi 1)	Need to “Enable Local (UI and device access”	Use the Gateway Web UI to enable the setting “Enable local (UI and deviceaccess”.
Cannot access Gateway Management portal	Not registered to an Organization	Follow the user instructions to register to an Organization.
Gateway not found in the Gateway Management portal	Gateway is not registered	Register gateway.
Gateway registration fails	Service is temporarily unavailable	Retry after some time. If it still fails, contact customer support.
Gateway registration stuck at Registered	Gateway does not have an Internet connection	The Gateway will remain “Registered” until it can establish an Internet connection. It will then transition to “Active”. Refer to troubleshooting section regarding Status 3 Orange LED is blinking.
Device registration or deregistration fails or does not complete	Disruption occurred during process	Retry after some time. If it still fails, contact customer support.
Gateway operation not working as expected	Gateway hardware or software issue	Run the Gateway diagnostics.
Adapter LED solid white	Adapter has not been configured	Follow the steps to configure your adapter and then apply the settings by connecting the adapter to a gateway USB port.

Problem	Possible Cause	Fix
Adapter USB configuration fails (LED flashing red)	Adapter serial number not found	Verify that the adapter plugged into the USB socket matches the adapter serial number entered during device registration.
	Incorrect network settings	Verify the adapter network settings using the Gateway Web UI.
Adapter LED solid yellow (network access, but not able to connect to gateway)	The gateway is not connected to the same network	Verify that the gateway is connected to the same network (sub-net) as the adapter.
	Interface needs to enable local UI and device access	If using Ethernet 1 or Wi-Fi 1, verify with the Gateway Web UI that the Enable local (UI and device access) is enabled.
	Adapter needs to be rebooted	Press the reset button on the side of the adapter OR Un-plug power to the adapter and re-plug.
	Gateway network failed to startup properly	Un-plug power to the gateway and re-plug
Adapter LED solid red (no network access)	Incorrect network settings	Verify the adapter network settings using the Gateway Web UI. If updated, plug adapter into a gateway USB port to apply the settings.
	Out of wireless range	Make sure the adapter is within range of the access point.
	Adapter needs to be rebooted	Press the reset button on the side of the adapter OR Un-plug power to the adapter and re-plug.
Adapter shows solid green but data is not showing in Thermo Fisher Connect	Device is not configured properly	Make sure the device serial / USB interface is configured correctly.
	Incorrect adapter type	Make sure the device adapter type (i.e. RS232, RS485, etc..) is the correct one.
	Device/sensor communication needs to be reset	Disconnect cable from the device/sensor and then cycle power to adapter before re-connecting.
Adapter LED blinking red	Invalid configuration	Disconnect from PoE Ethernet base if attached (Wi-Fi is disabled if attached).
Adapter Ethernet base is not working	Invalid configuration	Configure the adapter for Ethernet and verify correct network settings.
	Adapter mis-configured	Re-connect adapter to a gateway USB port to apply configuration settings
OPC-UA Software does not install	Subscription needed	Purchase a Connect Edge OPC-UA server subscription
Password is not recognized	Extra characters	If copying the password from other software, make sure there are no extra characters included (copy text only)
Sensor adapter power failure LED is blinking red	Insufficient power source	Verify that the power adapter meets the requirements for the sensor adapter
Sensor adapter channel LED is off	Channel not configured	Channel LEDs are off if the channel is not configured. Verify channel configuration.
	Over power condition	Sensor channels are protected be a resettable fuse. Unplug the sensor to see if it is causing an over-power condition.

Maintaining your Connect Edge Hardware

Maintaining your gateway

Periodically inspect the product to verify its integrity and to ensure proper operation. To maintain the product, complete the following steps:

- Carefully read and understand the instructions contained in **Safety Considerations.**
- Safely remove the power supply.
- Verify the installation of the product.
- Clean the product.

How to safely remove the power supply

ELECTRIC SHOCK HAZARD

Failure to remove power correctly may create an electric shock hazard, which could result in personal injury or loss of life, and / or damage to the equipment or other property.

To avoid injuries and safely remove power supply from the product, complete the following steps:

- Make sure your hands are dry.
- Turn OFF all the power supply sources.
- Disconnect all the cables.
- Make sure that all the circuits are discharged.

How to verify the installation of the product

To verify the installation of the product, complete the following steps:

- Verify that the product is clean and not damaged.
- Verify that the LED indicators are visible and not damaged.
- Verify that all the locking parts (for example: screws, bolts, nuts) are correctly fastened.
- Verify that the product is installed correctly.

How to clean the product

To clean the product, complete the following steps:

- Never use detergents, aerosol sprays, solvents, or abrasive sponges.
- To remove dust from the case of the product, use a dry, lint-free, cloth.
- To remove the dirt, use water-based, non-flammable, cleaner products.

CAUTION: Follow your facility safety guidelines and wear the required Personal Protective Equipment (PPE) during installation and/or troubleshooting.

Contact Information

Thermo Fisher Scientific products are backed by a global technical support team ready to support your applications. Visit https://www.thermofisher.com/contact or call:

Countries	Sales	Services
Austria	+43 1 801 40 0	+43 1 801 40 0
Australia	+61 39757 4300	1 300 735 292
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France	+33 2 2803 2180	+33 2 2803 2180
Germany (international)	+49 6184 90 6000	0800 1 536 376
Germany (national toll free)	0800 1 536 376	0800 1 536 376
India tolls free	1800 22 8374	+91 22 6716 2200
India	+91 22 6716 2200	+91 22 6716 2200
Italy	+32 02 95059 552	+39 02 95059 552, 432 254 375
Japan	+81 3 5826 1616	+81 3 3816 3355
Netherlands	+31 76 579 55 55	+31 76 571 4440
Nordic/Baltic/CIS Countries	+358 9 329 10200	+358 9 329 100
North America	+1 866 984 3766	(800) 438-4851
New Zealand	+64 9 980 6700	+64 9 980 6700
Russia	+7 812 703 4215	+7 812 703 4215
Spain/Portugal	+34 93 223 09 18	+34 93 223 09 18
Switzerland	+41 44 454 12 22	+41 44 454 12 12
UK/Ireland	+44 870 609 9203	+44 870 609 9203
Other Asian Countries	+852 2885 4613	+852 2885 4613
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