



# Connect Edge

## User Guide

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# 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 as 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 isotropically 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.

**A 급 기기(업무용 방송통신기자재)**  
 이 기기는 업무용환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용환경에서 용하는 경우 전파간섭의 우려가 있습니다.

## 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.

이 장치는 이동전화, Wi-Fi 또는 블루투스 장치 등 무선통신장치와 매우 근접한 장소에서 사용할 경우 오작동을 일으킬 가능성이 있습니다.

# 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
EDGEPTGATE03	US	Edge Gateway Wi-Fi/ETH/4G
EDGEPTGATE04	Europe	Edge Gateway Wi-Fi/ETH/4G
EDGEPTGATE05	Japan/Australia/New Zealand	Edge Gateway Wi-Fi/ETH/4G
EDGEPTGATE06	China	Edge Gateway Wi-Fi/ETH/4G
EDGEPTGATE07	Mexico	Edge Gateway Wi-Fi/ETH/4G
EDGEPTGATE08	India	Edge Gateway Wi-Fi/ETH/4G

## Connect Edge Gateway Kit

	Connect Edge Gateway	Power Supply	Ethernet Cable	DIN Rail Mount	Wi-Fi Antenna	Cellular Antenna	Quick Start Guide
<b>Connect Edge Kit</b>	<b>1 x Qty.</b>	<b>EDGEPTPWS01</b>			<b>EDGEPTANTD01</b>	<b>EDGEPTANTC01</b>	<b>EDGEPTINST001</b>
EDGEKTETH01	EDGEPTGATE01	1	1	1	0	0	1
EDGEKTWIFI01	EDGEPTGATE02	1	1	1	2	0	1
EDGEKTCELL01	EDGEPTGATE03	1	1	1	2	2	1
EDGEKTCELL02	EDGEPTGATE04	1	1	1	2	2	1
EDGEKTCELL03	EDGEPTGATE05	1	1	1	2	2	1
EDGEKTCELL04	EDGEPTGATE06	1	1	1	2	2	1
EDGEKTCELL05	EDGEPTGATE07	1	1	1	2	2	1
EDGEKTCELL06	EDGEPTGATE08	1	1	1	2	2	1

## Connect Edge Accessories

Connect Edge Accessories	Description
EDGEPTWRS01	Connect Edge Gateway Power Supply EXT 24V
EDGEPTANTD01	Connect Edge Gateway Antenna Dual Band
EDGEPTANTC01	Connect Edge Gateway Antenna 4G Cellular
EDGEPTINST001	Connect Edge QuickStart Guide

## Connect Edge Adapter Kits

Connect Edge Adapter	Description
EDGEKTADPT01	Connect Edge Adapter Kit (RS485 configuration)
EDGEKTADPT02	Connect Edge Adapter Kit (STTL configuration)
EDGEKTADPT03	Connect Edge Adapter Kit (RS232 configuration)
EDGEKTADPT04	Connect Edge Adapter Kit (USB configuration)
EDGEKTADPT51	Connect Edge Adapter Kit PoE (RS485 configuration)
EDGEKTADPT52	Connect Edge Adapter Kit PoE (STTL configuration)
EDGEKTADPT53	Connect Edge Adapter Kit PoE (RS232 configuration)
EDGEKTADPT54	Connect Edge Adapter Kit PoE (USB configuration)
EDGEKTADPT99	Connect Edge Adapter Kit PoE

## Supported Equipment

Device Type	Model	Device Adapter Kit
Incubator	Heracell Series	EDGEKTADPT03 (RS232 configuration) EDGEKTADPT53 (RS232 configuration)
	Heracell VIOS Series	EDGEKTADPT04 (USB configuration) EDGEKTADPT54 (USB configuration)
ULT	UxF/HFU-T/TSU/88000	EDGEKTADPT01 (RS485 configuration) EDGEKTADPT51 (RS485 configuration)
	TSX ULT Series	
	TDE/RDE/FDE/HDE Series	
Freezer	TSX Freezer Series	EDGEKTADPT02 (STTL configuration)
Refrigerator	TSX Refrigerator Series	EDGEKTADPT52 (STTL configuration)

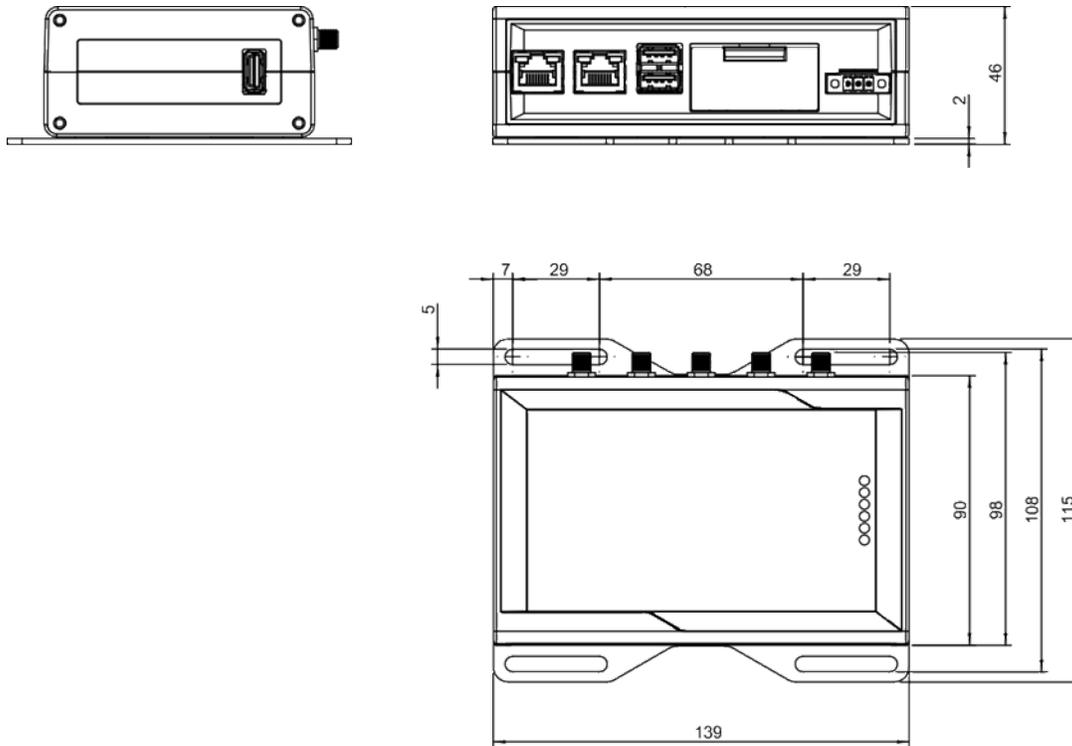
\*For a complete list of supported models, visit: [www.thermofisher.com/edgecompatible](http://www.thermofisher.com/edgecompatible)

# Technical Specifications

## Product Dimensions

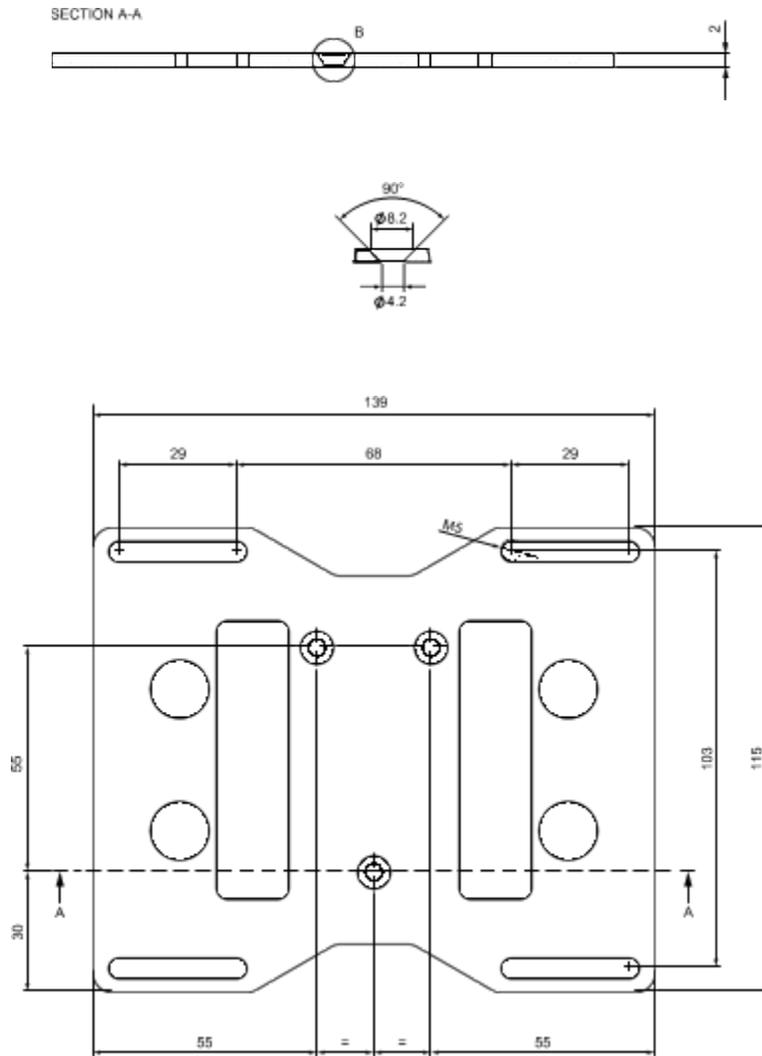
### Gateway mechanical dimensions

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.



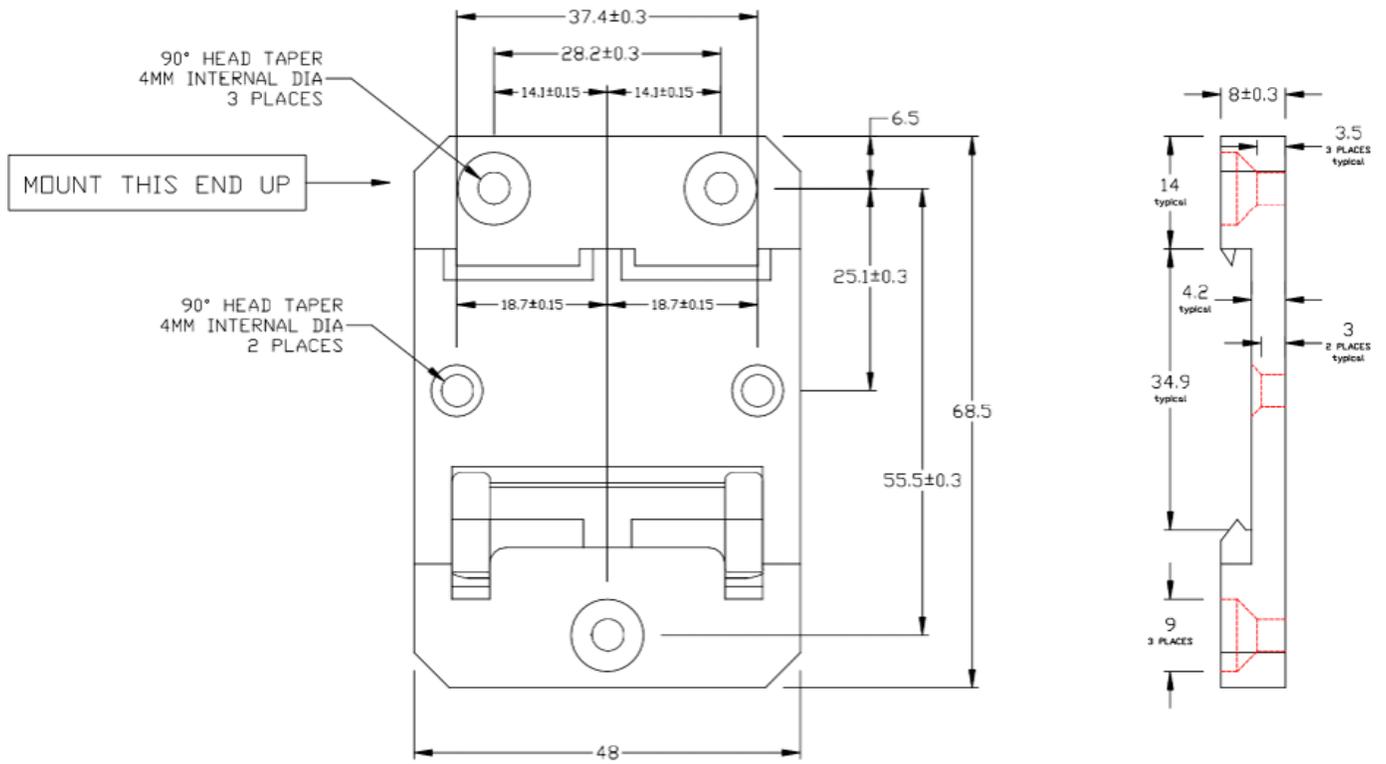
## Gateway mounting bracket mechanical dimensions

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

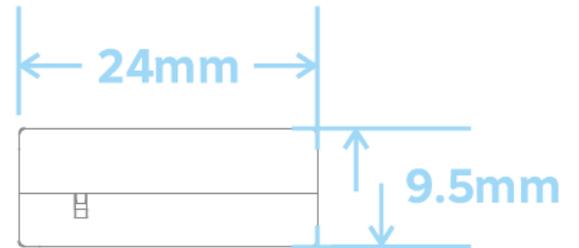
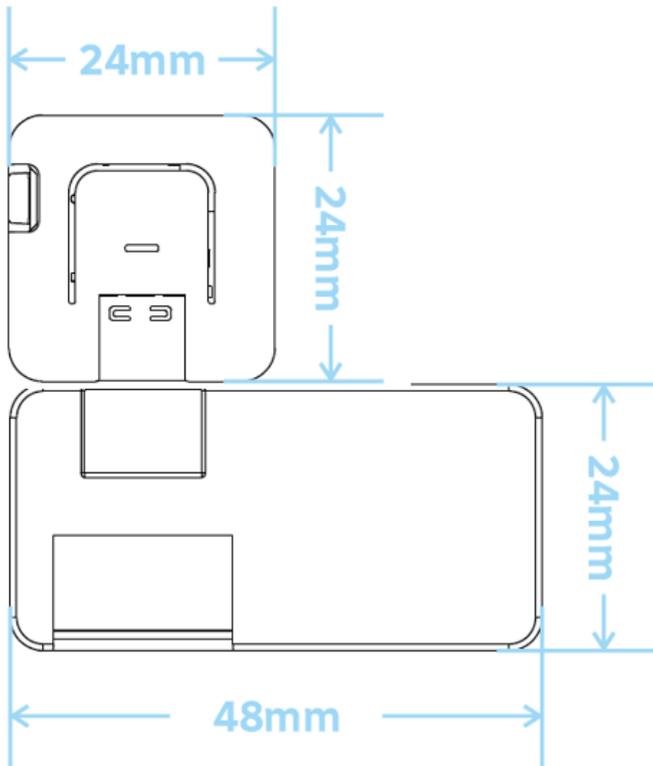


# Gateway DIN Rail Mounting Bracket mechanical dimensions

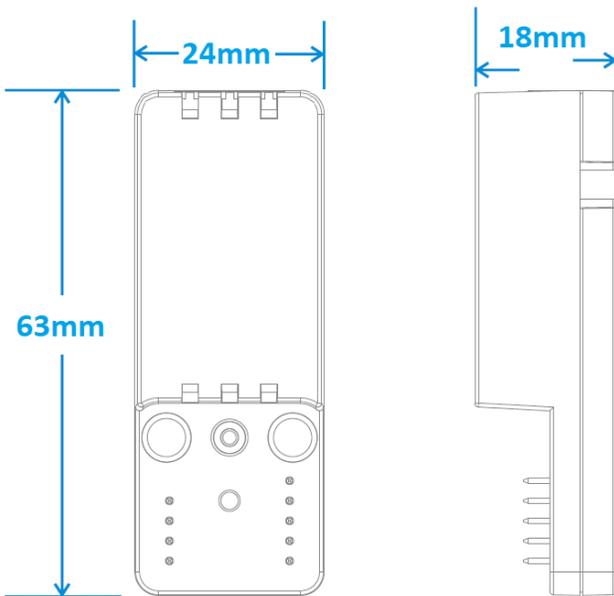
DIN rail mounting clip, 48mm width. Clip material: fiberglass reinforced nylon 66.



### Device Adapter mechanical dimensions



### Adapter Ethernet Base mechanical dimensions



## 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

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

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

## 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 setup 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](http://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.



Why you should create an account

Quickly and easily register to take advantage of these benefits:

- Contracted Pricing • Place and Track Orders • Online Quotes • Earn Rewards

First name: \*

Last name: \*

Email: \*  This will be your username

Password: \*  

Password strength:

Country or location: \*

(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: Register subscription

To access the Gateway Management portal, the user must first register a valid registration key with 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](http://www.thermofisher.com/productregistration)
2. Enter the Registration form information and submit the registration request (see form below)
3. Wait for a confirmation that your registration request was successful
  - a. NOTE: A user role of Admin or Gateway Manager is required to register a gateway.

### Registration request

Quickly and easily register to take advantage of these benefits.

**Registration key\***

  
**User details**

**Name:** Joe Smith  
**Email:** joe.smith@companyxyz.com

**Organization\***

## 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.



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

Connect Edge PoE Adapter: Option varies by location.



### 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

1. Select Network icon> Internet Connection tab> Edit Configuration.
2. Choose Wi-Fi as the network interface
3. Complete the form
  - a. To enable access to the local UI via Wi-Fi 1 in the future:
    - a. Set “Enable Local” to yes
    - b. Use the Permitted Network setting to restrict access. Use 0.0.0.0/0 to allow any IP address.
4. 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](http://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.

The screenshot displays the 'Gateway management' interface. At the top, there are navigation tabs for 'Management' and 'Monitoring'. Below these, two summary boxes show 'Total Gateways' (46) with 15 Online and 31 Offline, and 'Total Devices' (65). A search bar and filters for 'Connection', 'Organization', and 'Status' are present. A table lists gateway details:

Serial number	Connection	Gateway model	Organization	Status	OPC UA	Actions
Y120M2A0057	Offline	ReliaGATE 10-12 (IoT Gateway)	Thermo Fisher Scientific	Active	<input type="checkbox"/>	...
Y123C4C0075	Online	ReliaGATE 10-12 (IoT Gateway)	ThermoFisher LPD Alchemists	Active	<input checked="" type="checkbox"/>	...
Y122EQA0047	Online	ReliaGATE 10-12 (IoT Gateway)	ThermoFisher LPD Alchemists	Active	<input type="checkbox"/>	...
Y121MJA0090	Online	ReliaGATE 10-12 (IoT Gateway)	ThermoFisher LPD Alchemists	Active	<input type="checkbox"/>	...
Y120KFA0020	Offline	ReliaGATE 10-12 (IoT Gateway)	Thermo Fisher Scientific	Active	<input type="checkbox"/>	...

At the bottom of the table, there is a 'Results per page' dropdown set to 6 of 46, and a pagination control showing page 6 of 10.

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

## Register gateway

Enter the information to register a gateway. (\* Required fields)

Gateway serial number \*

Y120EQ18198

Gateway MAC address \* ?

3CE4B0E82DD9

Organization (Based on)

Select organization

MAC address needed for validation.  
You can find it on the Gateway label:  
SERIAL: [redacted]  
MAC ID: [redacted]

Cancel Register 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.

## Step 5: Register Devices to Gateway

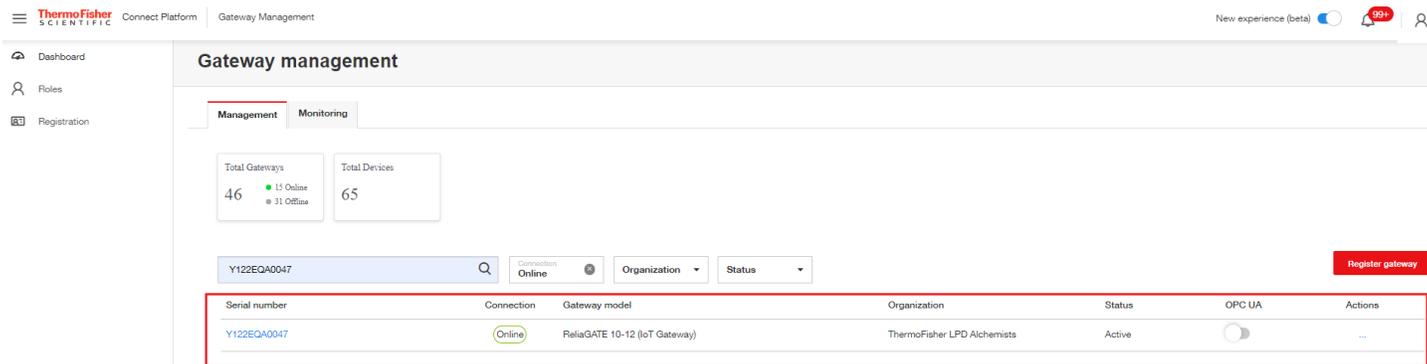
Your Connect Edge gateway can provide connectivity for 10 or more devices. To prevent overloading the gateway, you should always check to ensure CPU utilization is at or below 75%. Utilization beyond 75% could result in unreliable system operation. CPU utilization can be checked by following steps outlined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

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

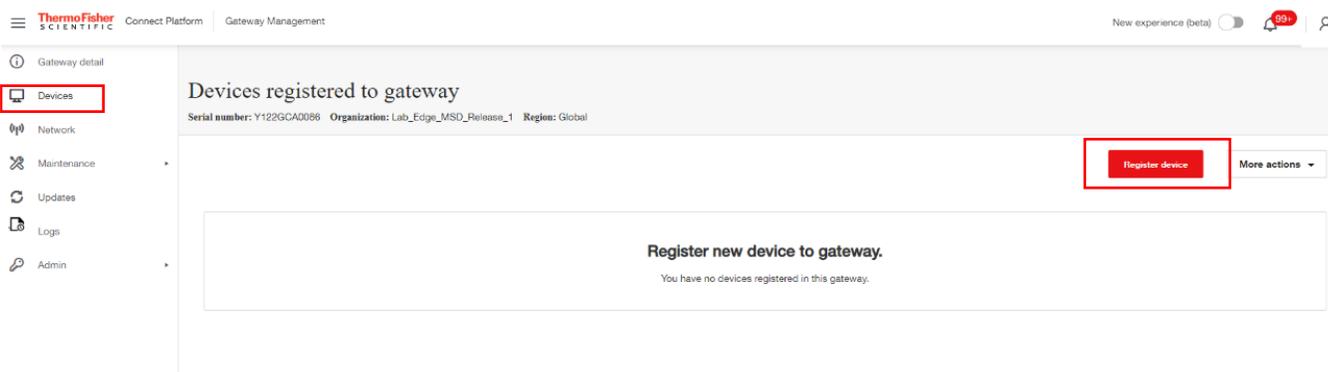
Match up the adapters and devices you intend to register to a gateway. Make sure that the adapter type (i.e. RS232, RS485, etc..) is correct for the equipment you intend to register. Make a note of the following for all adapters/devices that you plan to register:

1. Edge gateway serial number
2. Device name (choose a friendly name for the device)
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 of the adapter)
6. Adapter serial number (on the top of the adapter)

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:** To match the model series listed in the drop-down box to your device refer to the table at [www.thermofisher.com/edgecompatible](http://www.thermofisher.com/edgecompatible).

5. Select the access type:
  - 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 the adapter you will enter the following information:**

  - Adapter MAC address: Connect Edge adapter MAC address (found on the edge of the adapter)
  - Adapter serial number: Connect Edge adapter serial number (found on the top 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).

Device type  
Freezer

Device model:  
TSX Freezer Series

Enter the device information. (\* Required fields)

Access type\*  
Connect Edge Instrument Adapter

Adapter serial number ⓘ  
Enter the adapter serial number (Connect Edge Instrument Adapter)

Adapter mac address\* ⓘ  
4c7525c61010

Device serial number\* ⓘ  
SN1122334455

Device name\*  
Lab234\_Freezer12

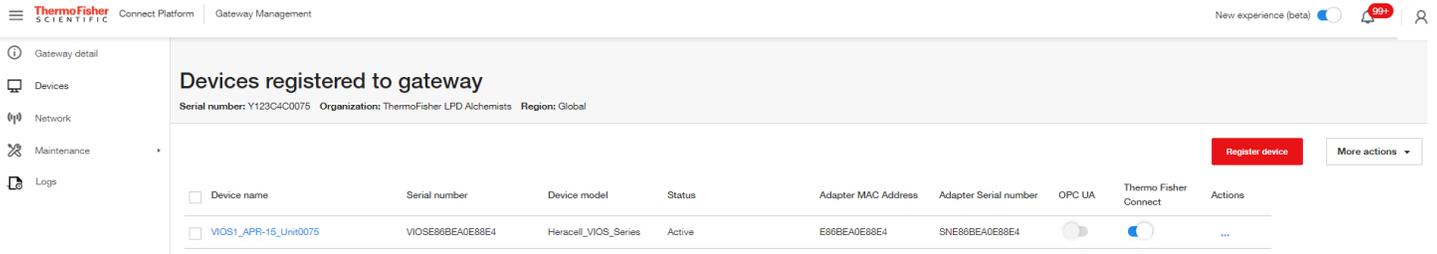
Cancel Initiate Registration

8. Click on **Initiate Registration**.

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



9. Refresh the page periodically to see the device status change. 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

The adapter will connect to the Edge gateway using Wi-Fi or Ethernet. This will vary by country 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 option is available as a potential solution. Use of wired connectivity requires either new or existing Ethernet infrastructure such as cables and switches.

**Note:** If the PoE adapter is attached, 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 a PoE 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
- 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. This is discussed in more detail in [Step 7: Configure Adapter Network Settings](#).

### 2. Use Local UI to Configure Adapter network settings

Now that your adapters have been added to the gateway, they must be configured through the Edge Gateway local UI.

Log into the Edge Gateway local UI from a user device (PC, phone) as follows:

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**. For supported settings and network topologies, refer to Networking Guidance
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
        1. 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 to Yes
      - iv. Set Permitted Network to filter IP address (use 0.0.0.0/0 to enable all IP addresses)
      - v. Select Save changes
  7. Configure Adapter network settings

**Note:** The Adapter tab is only visible when devices are registered to the gateway. If devices are registered and the adapter tab is not visible, please contact Thermo Fisher Support.

- a. Select Adapter configuration tab
- b. Select Edit Configuration
- c. If connecting the adapter via Wi-Fi to the gateway Access Point:
  - i. Set Network interface to “Gateway Wi-Fi”
  - ii. Save settings
- d. 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
- e. If connecting the adapter via Ethernet
  - i. Set Network interface to “Ethernet”
  - ii. Select Using DHCP 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

The screenshot displays the 'Network configuration' page for a Thermo Fisher Scientific Connectivity Gateway. The page header includes the serial number 'Y120GGA0022', organization 'Lab\_Edge\_LPD\_1', and region 'Global'. Three tabs are visible: 'Internet connection', 'Local connection', and 'Adapter configuration', with the latter being the active tab. The 'Adapter default configuration' section contains the following fields:

- Network interface:** A dropdown menu currently set to 'Wi-Fi'.
- Using DHCP:** A checked checkbox.
- Network security:** A dropdown menu currently set to 'WPA2'.
- Network name (SSID):** A text input field containing 'TF\_GW\_803e'.
- Password:** A password input field with masked characters.
- Gateway Interface:** A dropdown menu currently set to 'Wi-Fi 1'.

At the bottom of the form, there are 'Cancel' and 'Save changes' buttons. The footer of the page shows '© 2022'.

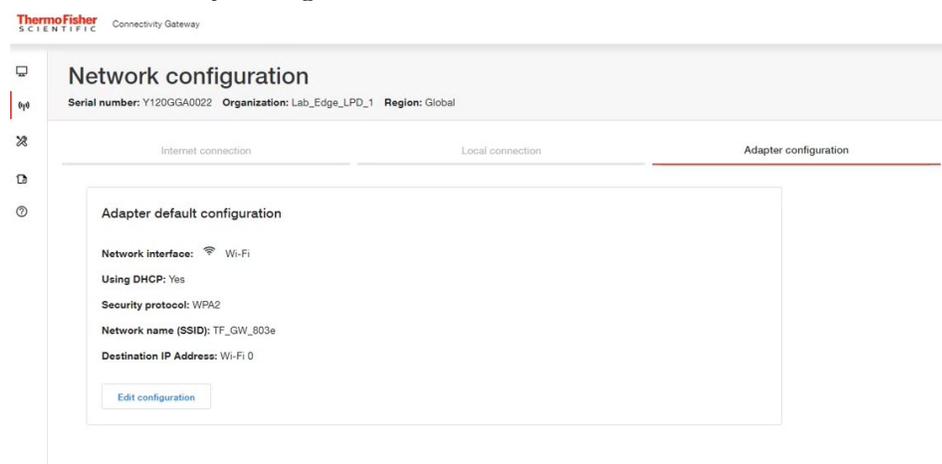
## Descriptions for Network Interface and Gateway Interface settings

- 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: Selects the gateway interface that the adapter connects to:
  - iv. Ethernet 0: Adapter sends data to gateway Ethernet 0 IP address.
  - v. Ethernet 1: Adapter sends data to gateway Ethernet 1 IP address.
  - vi. Wi-Fi 0: Adapter sends data to gateway Wi-Fi 0 IP address.
  - vii. Wi-Fi 1: Adapter sends data to gateway Wi-Fi 1 IP address.
  - viii. 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' setting must be Yes

## 8. 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 to your device to attach the adapter to your device.

**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 Thermo Fisher Connect

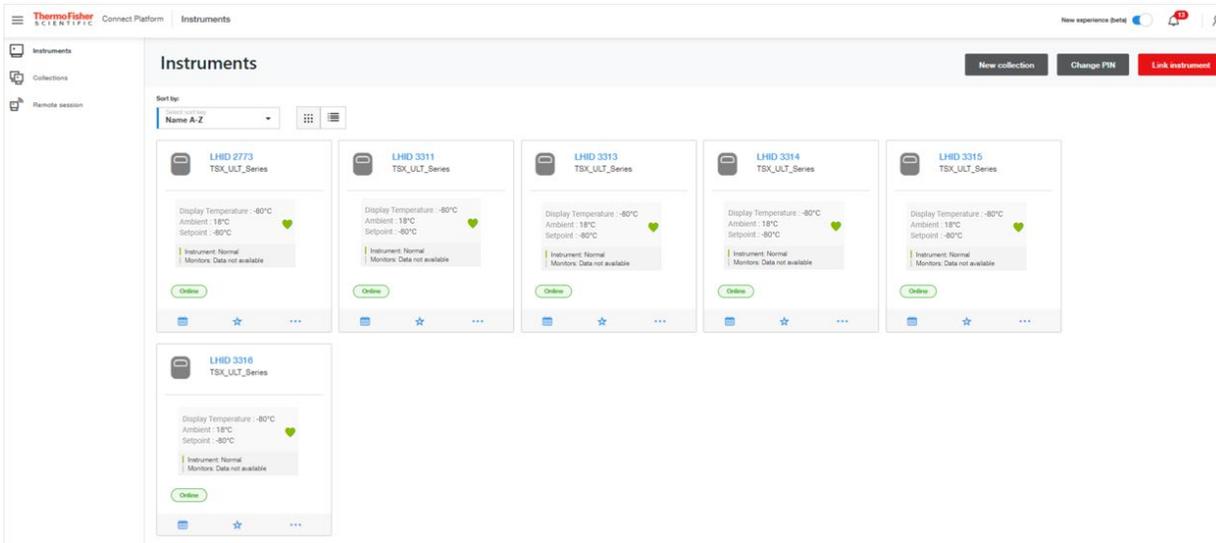
Once your adapters are installed on your equipment and they are communicating to the network, you can monitor your equipment on the Thermo Fisher Connect Platform. You will need to re-establish your normal internet

connection on your computer and navigate to [www.thermofisher.com/edgelogin](http://www.thermofisher.com/edgelogin) (or by using the InstrumentConnect application on your phone/tablet).

## New device connections

After logging in to your Thermo Fisher Connect 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 can also access summary health by selecting Instruments>Edge Management>Monitor. You will receive an e-mail confirmation for each of your monitored devices.

You can customize your Thermo Fisher Connect settings to fit your needs. See Section on [Thermo Fisher Connect](#) describing more features and functions of the Thermo Fisher Connect application.



## 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" set to Yes (set to No by default)

Enabling local UI access over the Internet connection interface opens Port 443 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://\(gateway Wi-Fi 0 IP address\)/](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://\(gateway Wi-Fi 0 IP address\)/](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" 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://\(gateway ETH 1 or Wi-Fi 1 IP address\)/](https://(gateway ETH 1 or Wi-Fi 1 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 is 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” 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” to Yes
    - i. Use the Permitted Network 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”
  - 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](#) .

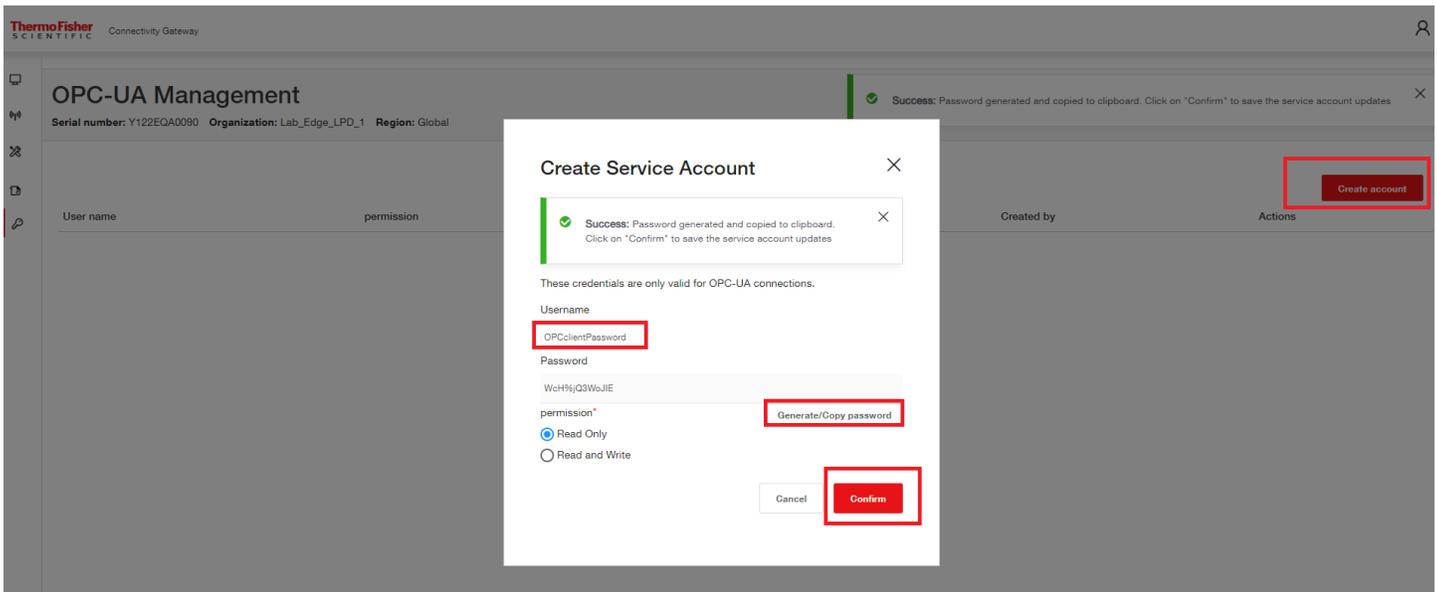
## OPC UA Manage Service Accounts

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

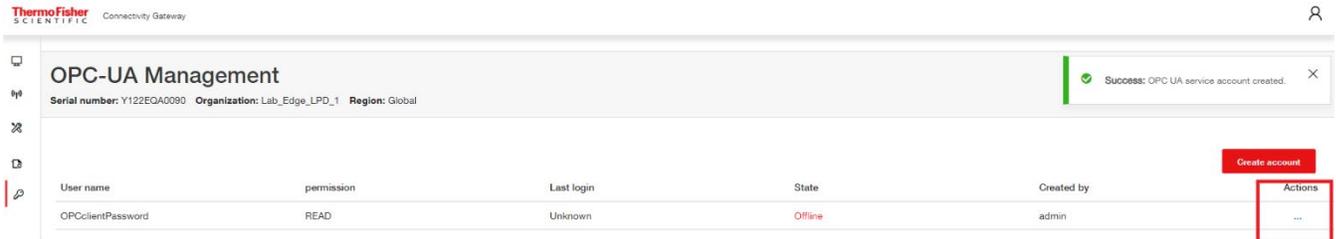
This feature allows the creation and management of OPC-UA server service accounts that can be used by OPC UA clients to connect to the Edge Gateway OPC UA server using username and password.

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](http://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](http://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 are shown.

The screenshot shows the 'Gateway details' page in the Thermo Fisher Connect Gateway Management interface. The page is divided into several sections:

- General info:**
  - Serial Number: Y123C4C0075
  - Organization name: ThermoFisher LPD Alchemists
  - Gateway model: 10-12
  - MAC Address: E0928F5584C7
  - Model: ReliaGATE 10-12 (IoT Gateway)
  - Region: Global
  - Devices: 2 connected
  - Connection: Online
  - Status: Active
  - Last activity: Apr 16, 2024, 3:21 PM
- System status:**
  - Average CPU Utilization: 9.03%

## Gateway – Devices

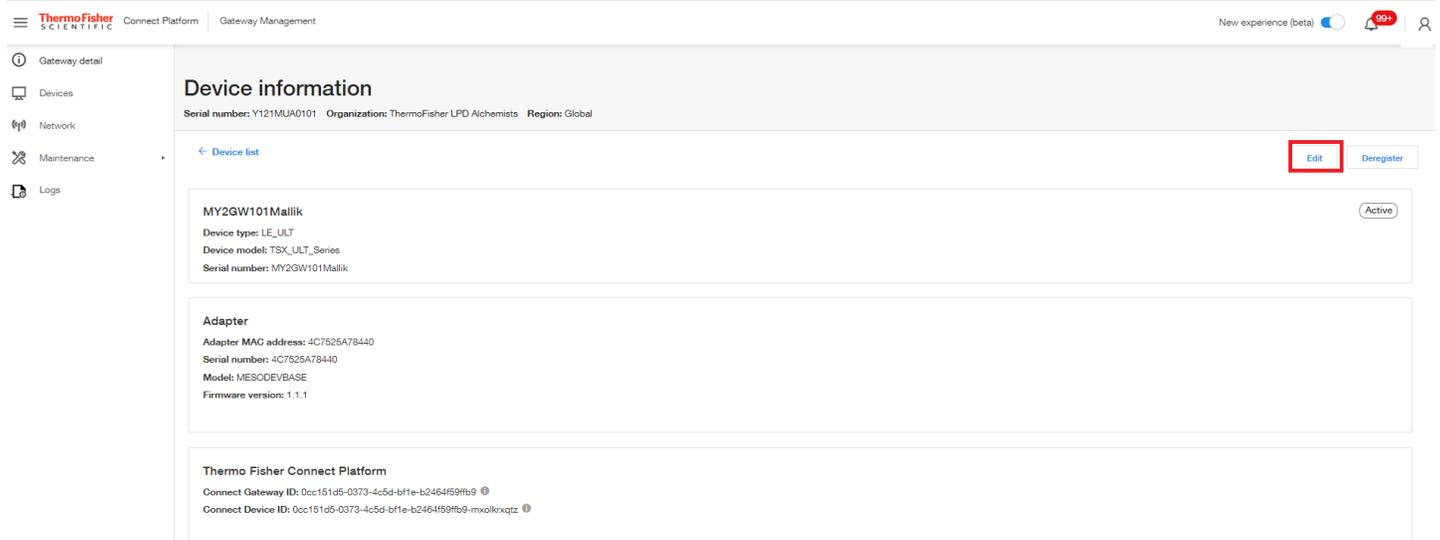
View, register, and de-register devices. View and edit device details.

1. Log in to Thermo Fisher Connect Gateway Management via [www.thermofisher.com/gatewaymanager](http://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

The screenshot shows the 'Devices registered to gateway' page in the Thermo Fisher Connect Gateway Management interface. The page displays a table of registered devices and includes a 'Register device' button and a 'More actions' dropdown.

Device name	Serial number	Device model	Status	Adapter MAC Address	Adapter Serial number	OPC UA	Thermo Fisher Connect	Actions
VIOS1_APPR-15_Unit0075	VIOSE86BEA0E88E4	Heracell_VIOS_Series	Active	E86BEA0E88E4	SNE86BEA0E88E4	<input type="checkbox"/>	<input type="checkbox"/>	...
TSX1_APPR-15_Unit0075	TSX4C7525C61010	TSX_ULT_Series	Active	4C7525C61010	SN4C7525C61010	<input type="checkbox"/>	<input type="checkbox"/>	...

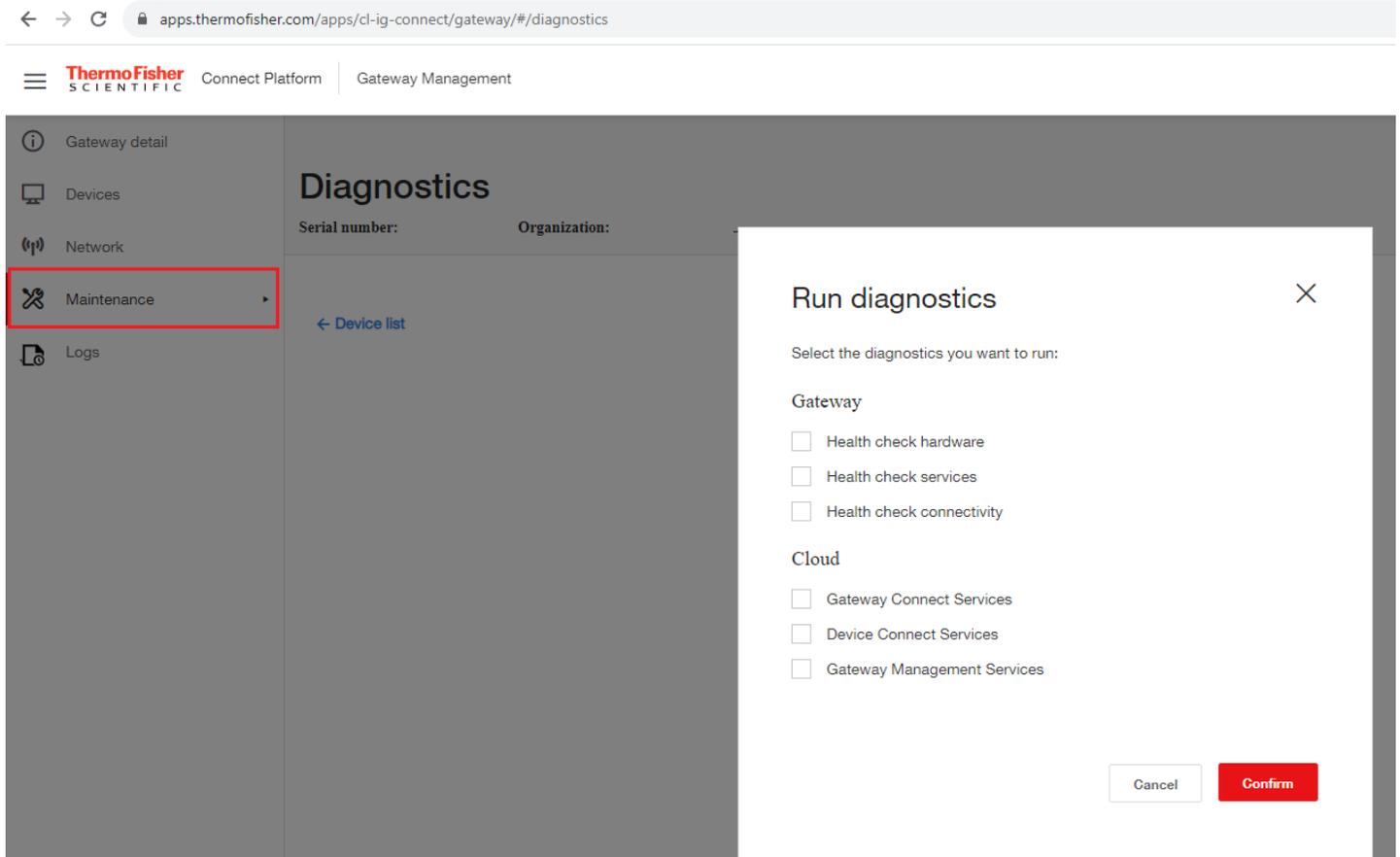
5. Once individual device is selected, select Edit to modify settings.



## Gateway – Diagnostics

Run hardware and software diagnostics on the gateway and cloud.

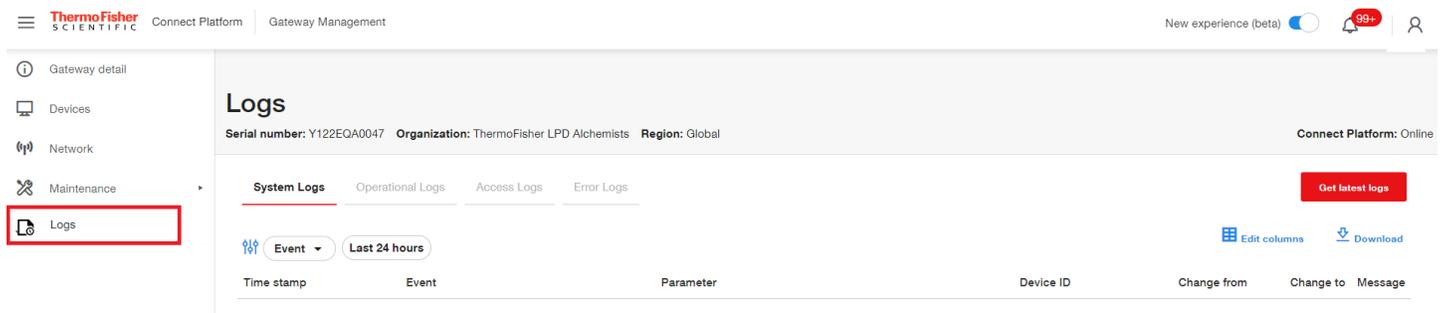
1. Log in to Thermo Fisher Connect Gateway Management via [www.thermofisher.com/gatewaymanager](http://www.thermofisher.com/gatewaymanager).
2. On the Gateway Management screen, locate the appropriate gateway and click the gateway serial number.



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

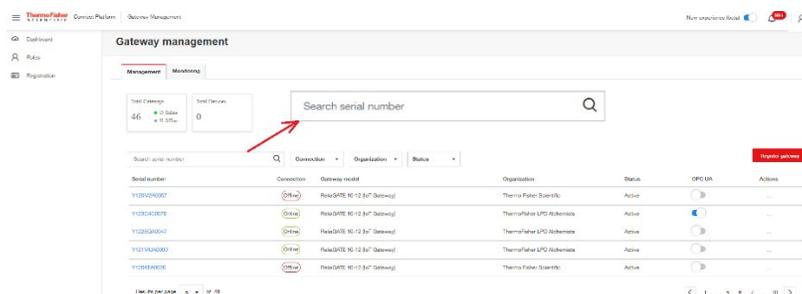
1. Log in to Thermo Fisher Connect Gateway Management via [www.thermofisher.com/gatewaymanager](http://www.thermofisher.com/gatewaymanager).
2. On the Gateway Management screen, locate the appropriate gateway and click the gateway serial number.
3. On the Gateway details screen, go to the left navigation 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  .



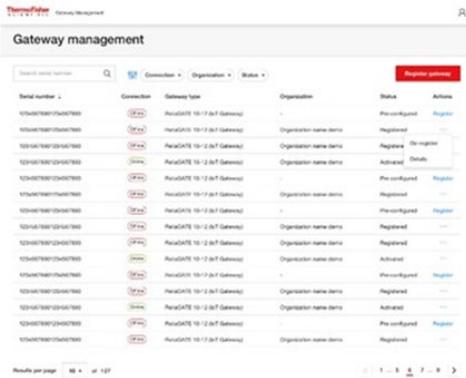
## Deactivating a Gateway

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 is 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](http://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.



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



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



- Confirm the decision to Deactivate the Gateway.
- 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 recommended to restore the gateway to the original factory/as shipped configuration.

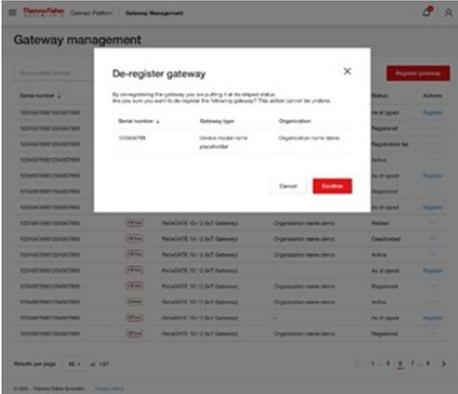
**Note:** Before de-registering a gateway, you **MUST** deregister all devices currently registered to the gateway and de-activate the gateway. If you encounter issues deregistering devices, please contact support before proceeding.

### To de-register a gateway:

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

Status	Actions
Registered	
Active	Details
Active	De-register
Active	Activate
Registered	...
Active	...

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.

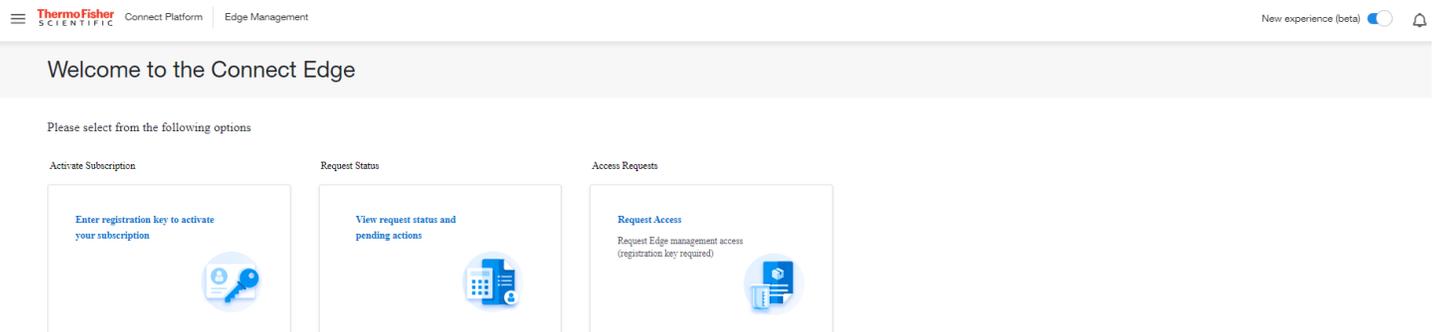


## Subscription / User Portal

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

This portal is used to:

- Submit requests to register 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)



## Registering a subscription

When an Edge subscription is purchased, a registration key will be provided. After submitting a registration your Edge subscription will be setup, including creation of your organization if needed. After complete, your request status will be changed to Approved.

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 that request access to your organization's Edge Gateway Management portal and you will be expected to deny or approve those requests.

To register the subscription:

1. Go to the <https://www.thermofisher.com/productregistration>
2. Select Register Subscription
3. On the Register Form
  - 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. Enter a Phone number
  - e. 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 Enroll User
3. On the Enrollment Form
  - a. Enter a registered 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 View Request
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

# Hardware Installation

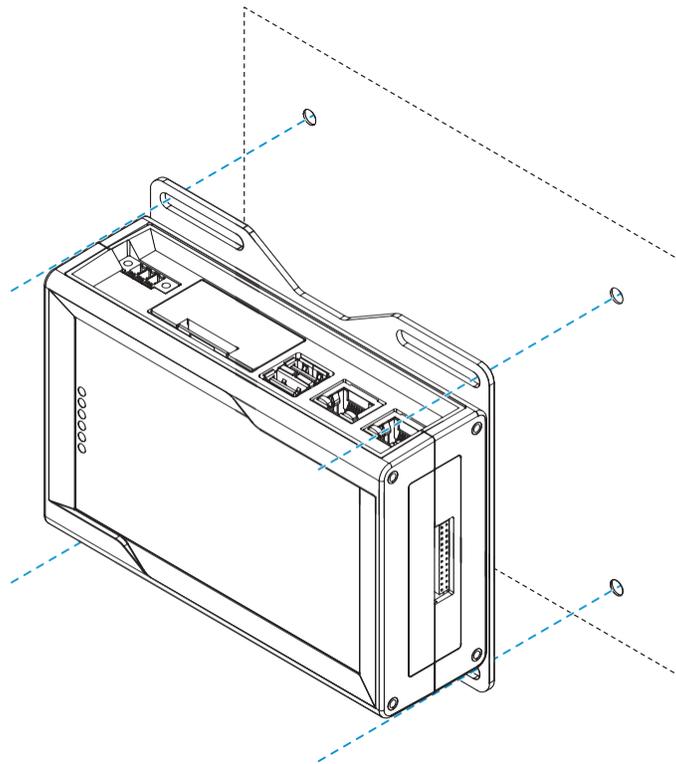
## Installing/Mounting Connect Edge gateway

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:

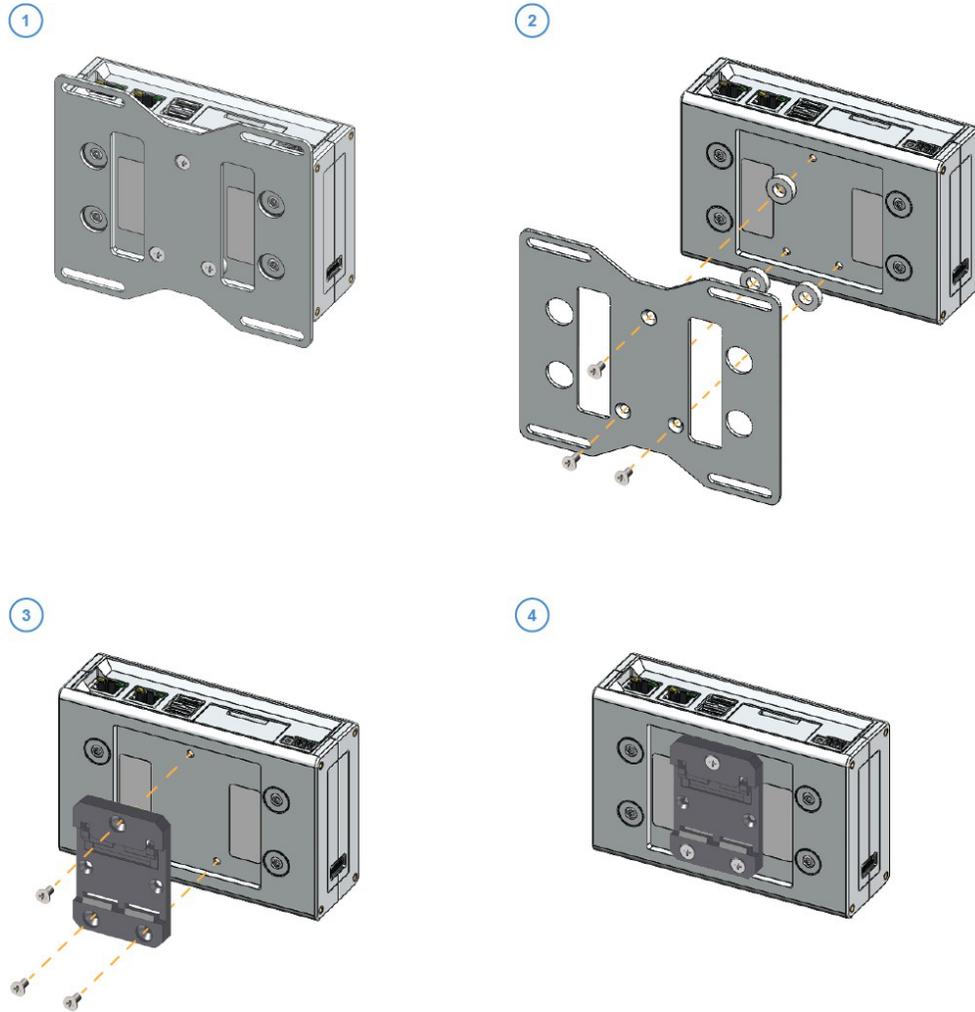
1. See "Technical Specifications" on page 10.
2. Use the 4 slots available on the Mounting Bracket.
3. Add all the necessary mounting hardware to safely fasten the gateway in place according to your installation requirements (use 4x M5 screws, with a minimum length of 15 mm). Material, type and length 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:

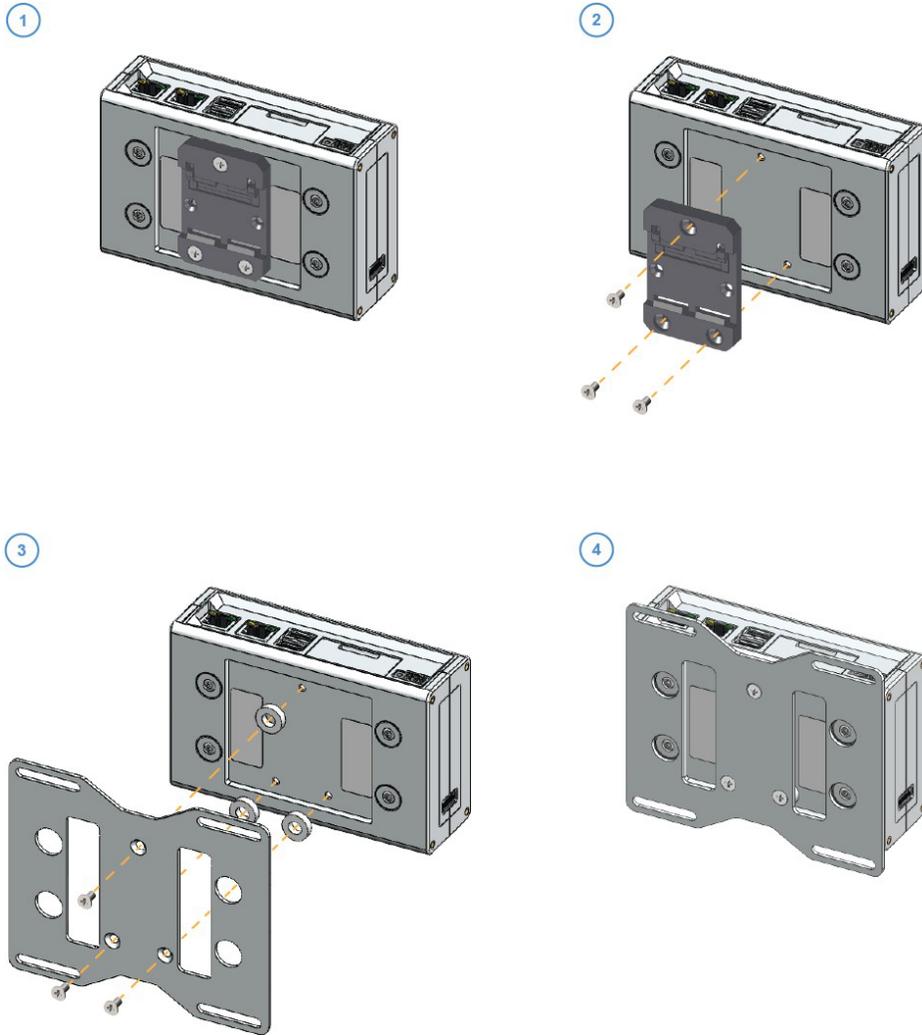
1. Remove the 3 screws that hold the mounting bracket in place.
2. Remove the mounting bracket and the 3 spacers (H = 4mm; Ext. diam. = 14mm; Int. diam. = 7mm).
3. Place the DIN rail mounting clip.
4. Tighten the 3 screws removed at step 1 by applying a torque of 0.7 Nm.



## 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 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.

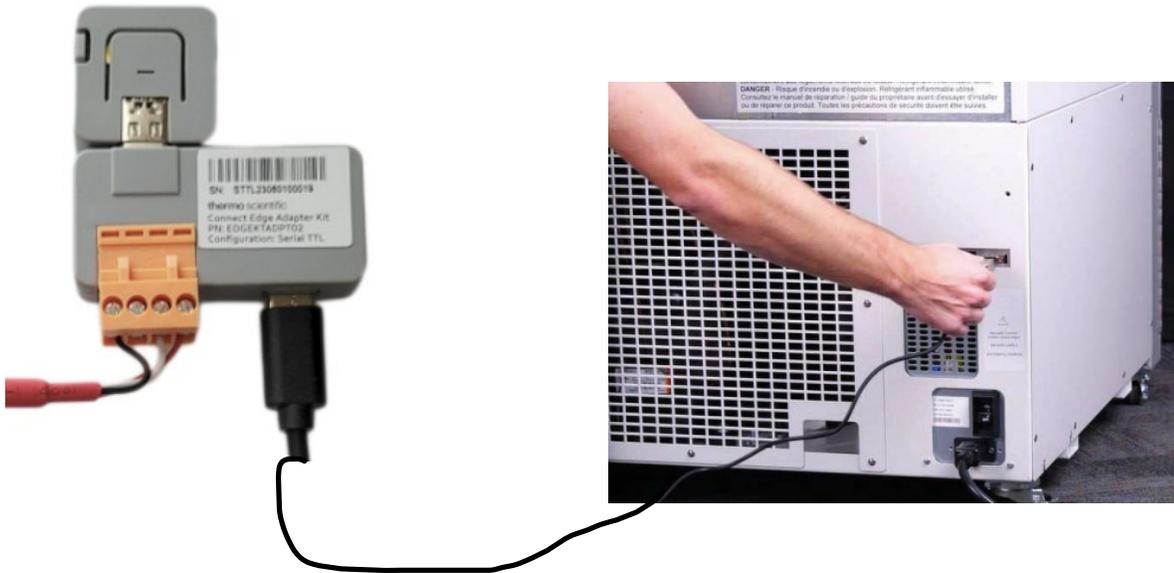
NOTE: If you are using an Ethernet base accessory, the strips would be applied to the Ethernet base.

To attach the strips:

1. Remove the adhesive from one side of a strip.
2. Attach the strip to the back side of the rectangular portion of the adapter.
3. Repeat for the second strip.
4. Remove the adhesive from the other side of the adhesive strips.
5. 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.

## Connecting the Device Adapter Cable

Connect your device adapter to the item being monitored via serial port connection. Using the equipment serial cable, plug into the RS232/485/USB port on your device. Plug the cable into the four-pin terminal connector of your device adapter.



## 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 device adapter.





**Optional:**

If using the PoE adapter, power may be supplied by an external source such as an injector or switch through the Ethernet connection. When the PoE adapter is used, Wi-Fi is disabled.

## Hardware Features

### Gateway Interfaces

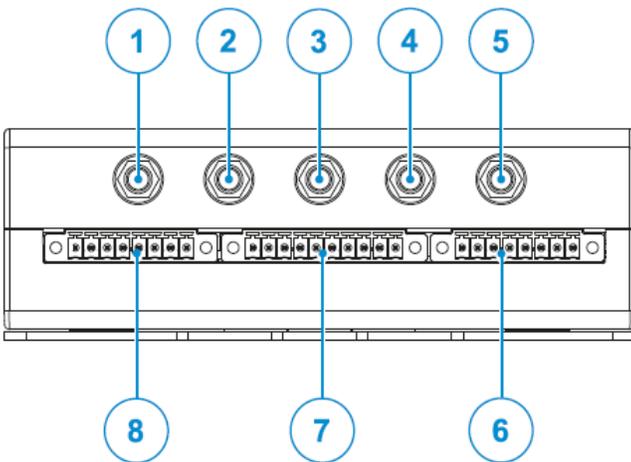
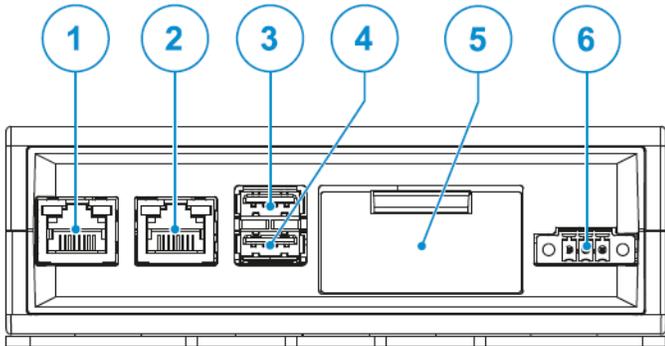


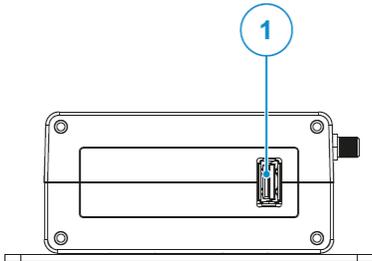
Figure 1 Gateway Front Side Interfaces

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



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

Figure 2 - Gateway Rear Side Interfaces



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)

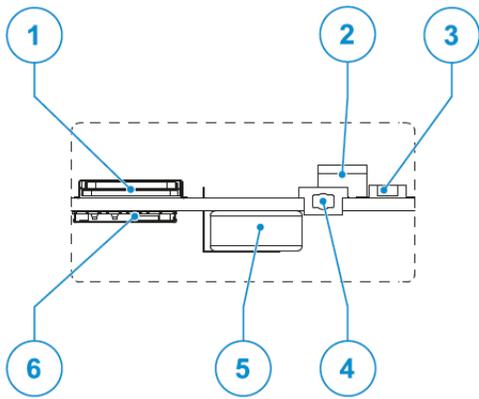


Figure 4 - Gateway Service Features (located behind Service Panel depicted in Figure 2)

## Gateway Features

### Gateway Hardware reset button

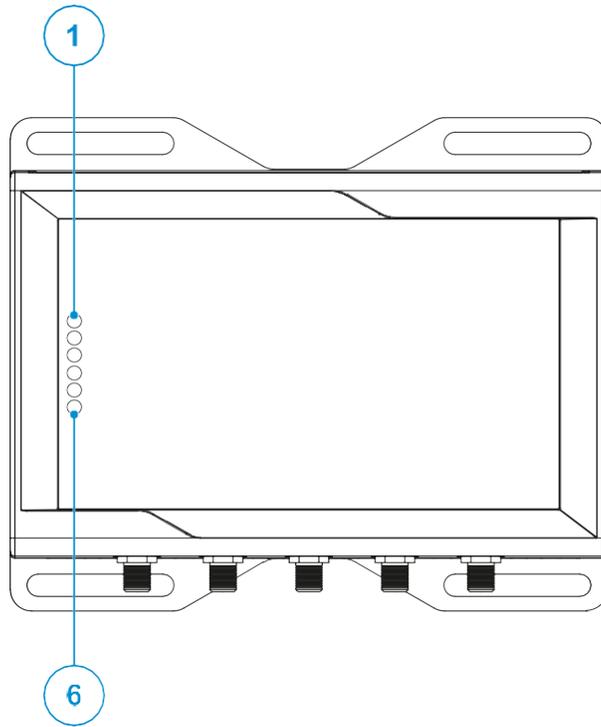
The hardware reset button is located behind the service panel (refer to Figure 4). Pressing this button will immediately trigger a hardware reset and the gateway will reboot.

### 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. <b>WARNING:</b> 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

## Adapter Features

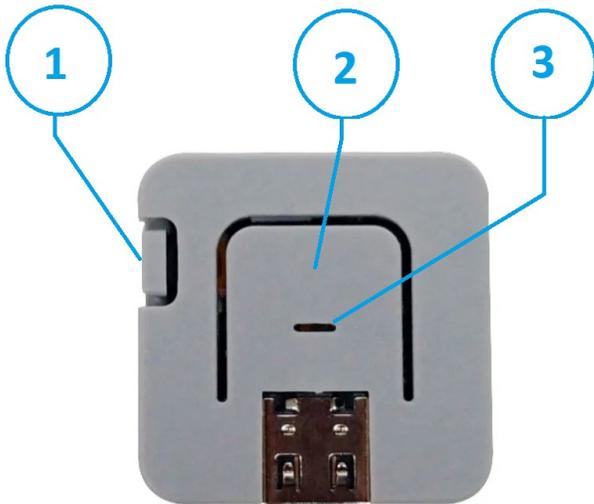


Figure 5 - Adapter Features

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

## Adapter LED Indicators

RGB LED: Operating Mode (After a successful configuration)

RGB	Frequency	Status
White	Solid	Configuration is blank. (Shipping state)
Red	2 Hz	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.

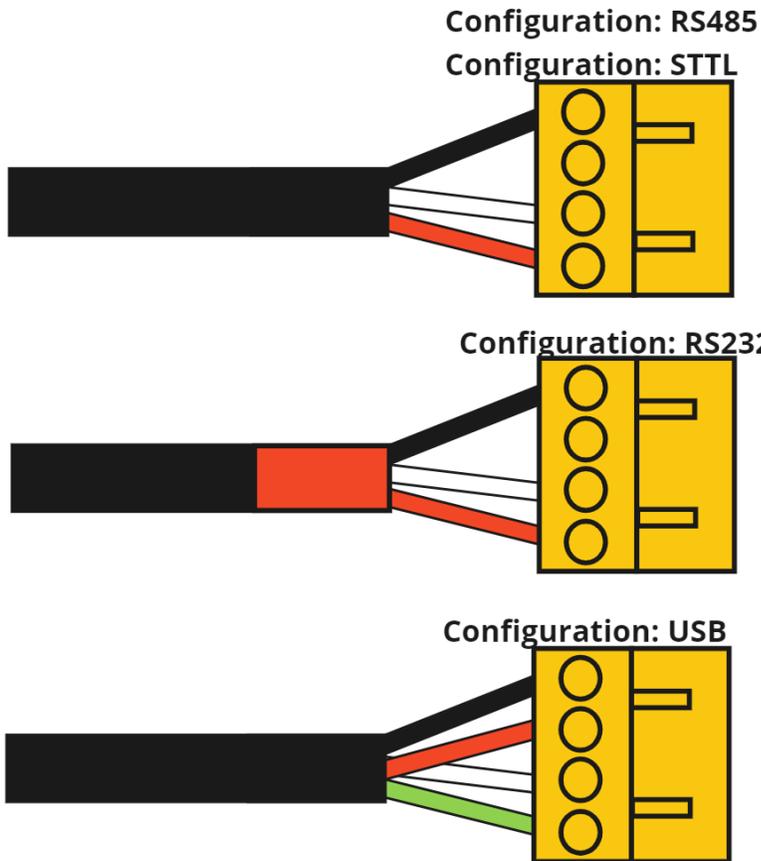
RGB LED: Configuration Mode (i.e. attached to Edge Gateway via USB)

RGB	Frequency	Status
White	2 Hz	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.

<b>Red</b>	2 Hz	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.
<b>Green</b>	2 Hz	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:



# Thermo Fisher Connect Overview

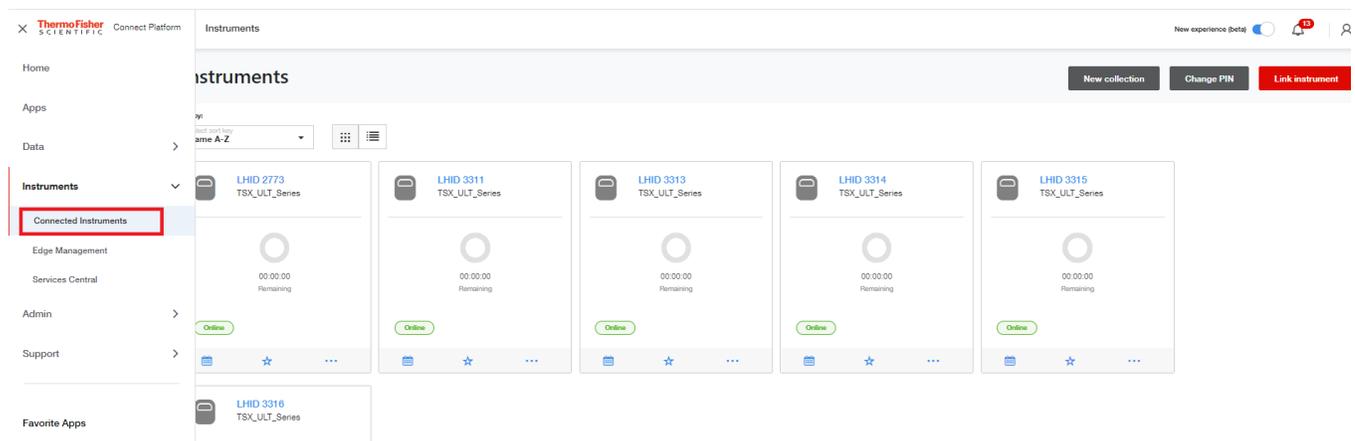
Thermo Fisher Connect is the universal platform for connected lab equipment. You can access your device data either on the web or through the InstrumentConnect mobile application, available for both iOS and Android devices.

## Access Device Data

Log into your Thermo Fisher Connect account at [www.thermofisher.com/edgelogin](http://www.thermofisher.com/edgelogin). Select the Instrument section via the left-side navigation menu.

## Dashboard View

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



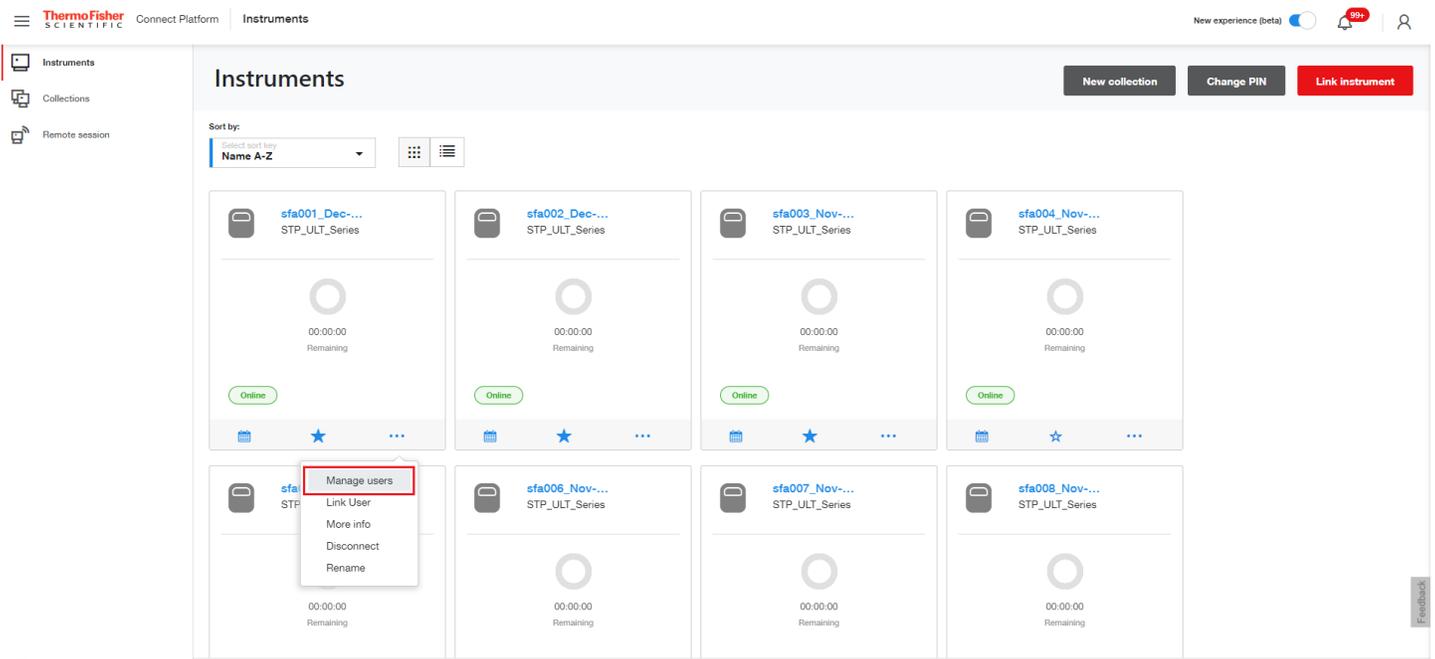
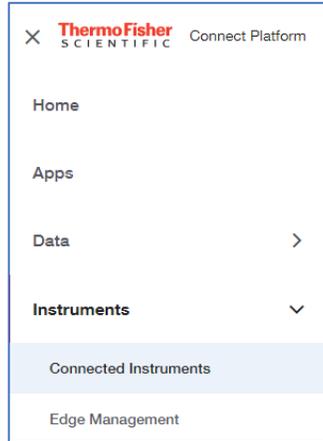
You can designate up to 3 favorite devices to keep at the top of your dashboard. Single click the device tile in your dashboard. Then select Make Favorite from the top-right menu.

## 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. Click on the Connected Instruments icon, which is located on the far-left side of the screen.

- This will bring you to your dashboard. From this dashboard you are able to see all devices connected to your Thermo Connect account. Right click the menu drop-down on the device you wish to manage the users on and select Manage Users.



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

ThermoFisher Scientific Connect Platform Instrument

New Experience (Beta)

Instrument list

## Manage Users

sfa011\_Nov-15\_UnitR2 Link User

sfa011

Contact information



No contact information to be displayed.

Instrument users

Search Contact

Contact Name	Role	Position	Email	Actions
Rick Hennessy	ADMIN		rick.hennessy@thermofisher.com	...

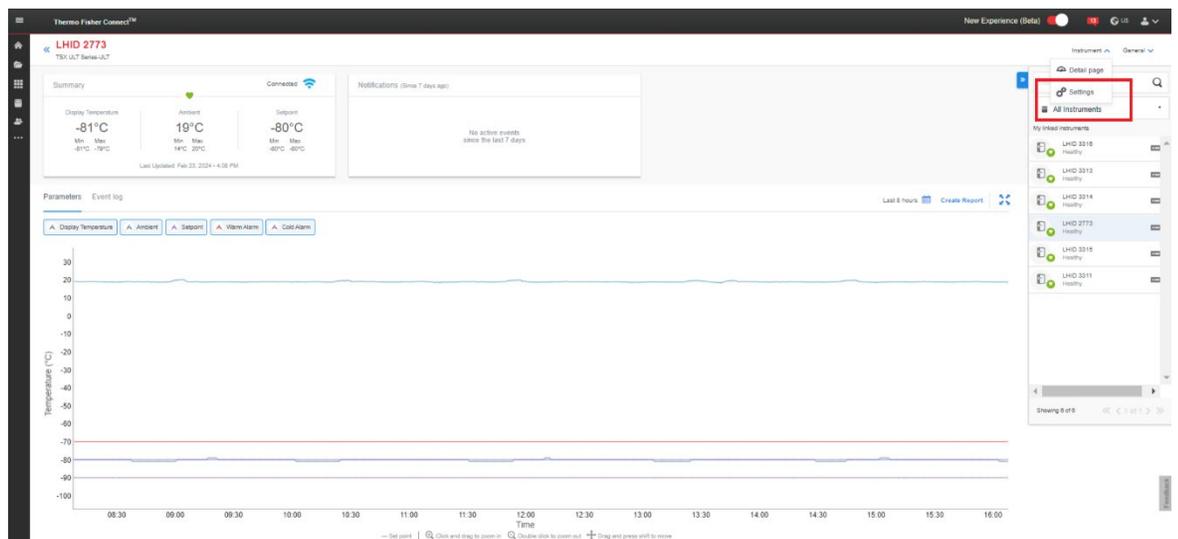
## Monitors

Monitors allows 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-Sensors allows you to create these alert/alarm rules for active monitoring on the following device types:

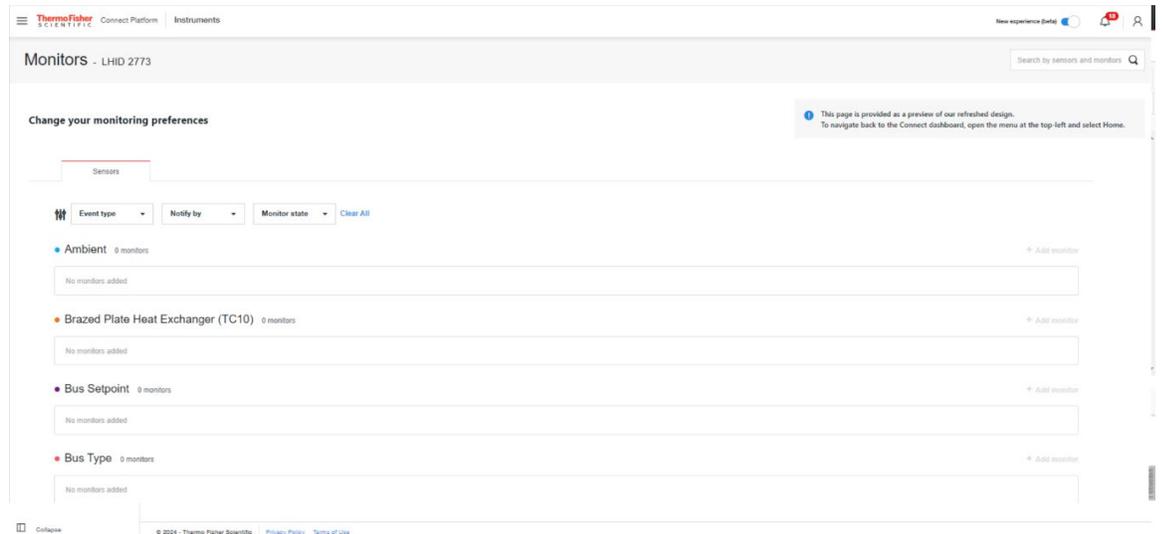
- Thermo Scientific™ TSX Ultra-Low Temperature Freezer
- Incubators, High Performance Refrigerators and Freezers, and Ultra-Low Temperature Freezers

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 Monitors.



4. Select Monitor Instrument to access settings you can customize.



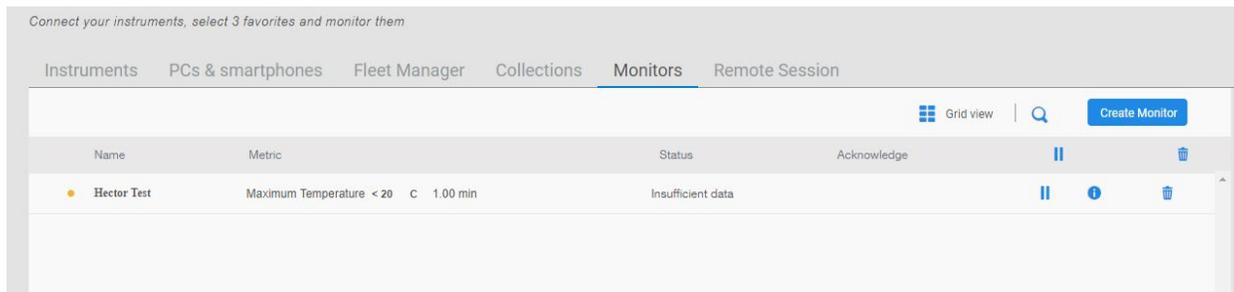
For the creation of a Monitors rule, the user will be able to configure the following:

- 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.

Once the Monitors rule has been created, click on the Create button.

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



**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

Selecting More Info on a device tile 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.

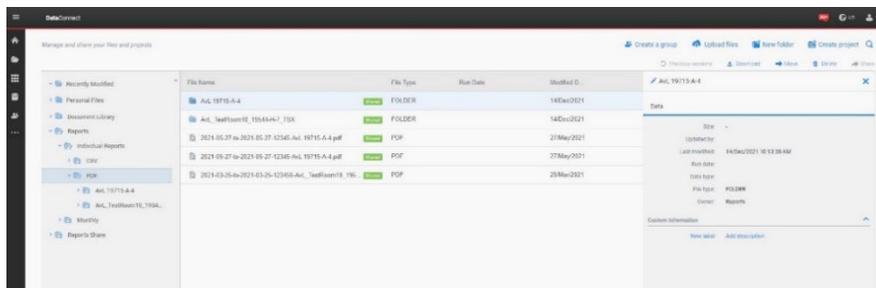


## Creating Reports

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 users desired folder



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 and click on the Download Icon; this will generate a PDF report for the device.



# OPC UA™ Server Overview

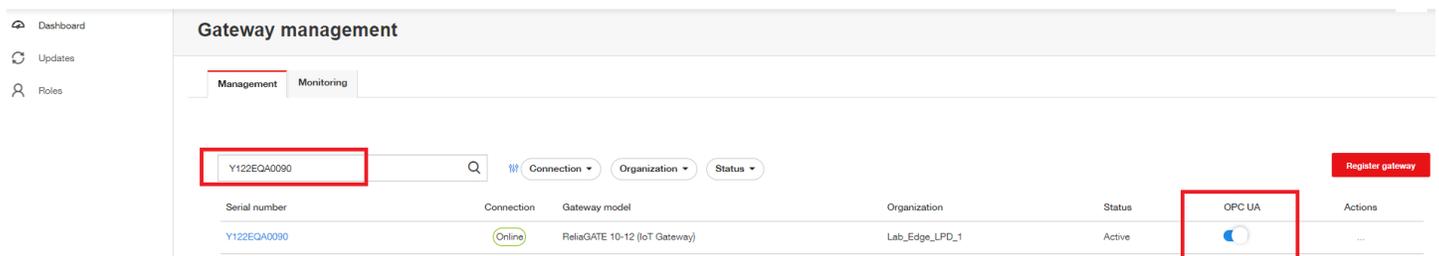
The Connect Edge platform supports an OPC UA™ server that can be used to connect to OPC UA client software over the local network. This is a subscription-based service that will make device data available in a node tree that can be accessed by OPC UA client.

## 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.

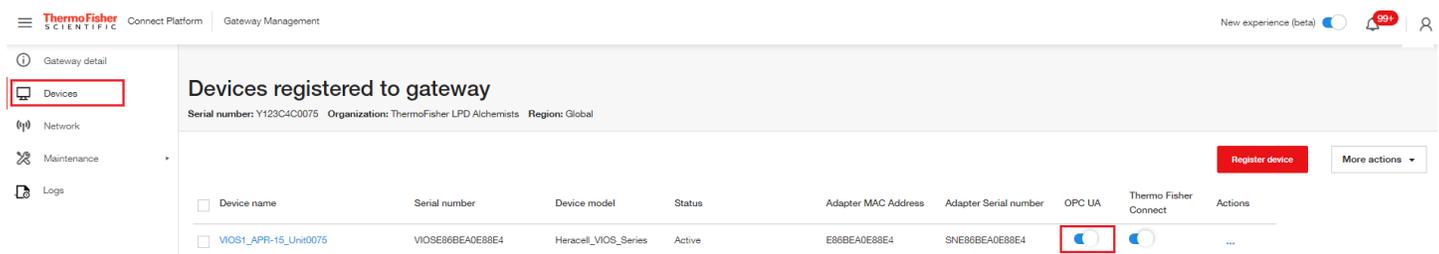
## Install OPC UA Server software

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 a 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](opc.tcp://<gateway_ip_address>:12686/connectedge)

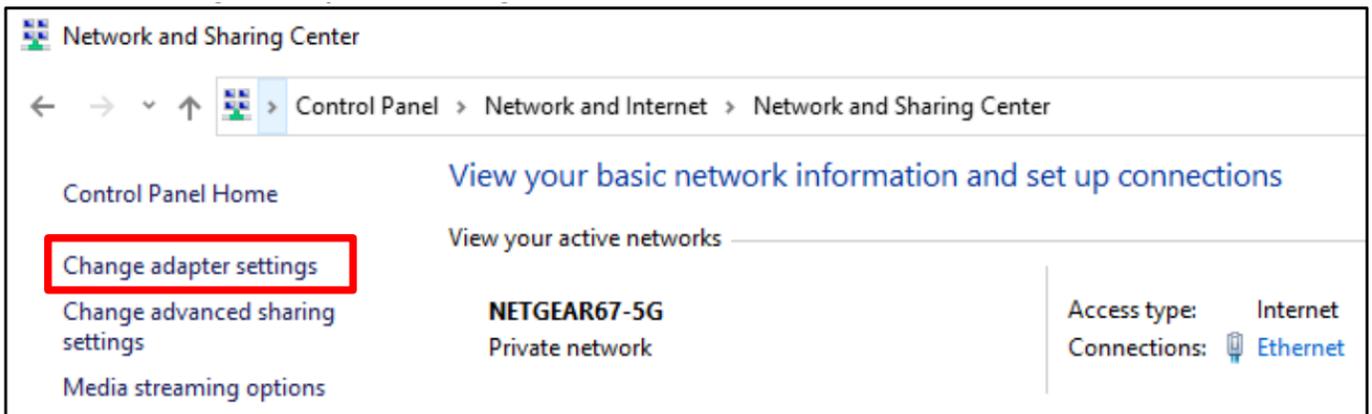
Credentials: Only username/password credentials are supported. By default the Gateway admin account can be used. Service accounts can be created as described in the previous section.

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](http://www.thermofisher.com/connectedge/resources)

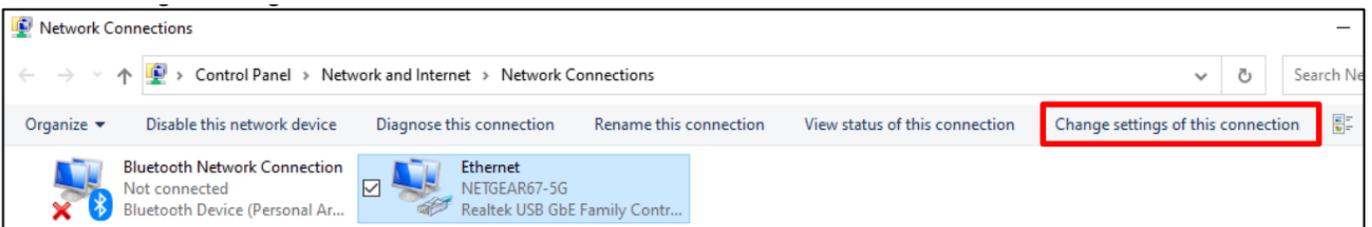
## Setting PC Static IP Address

### Windows 10 PC

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

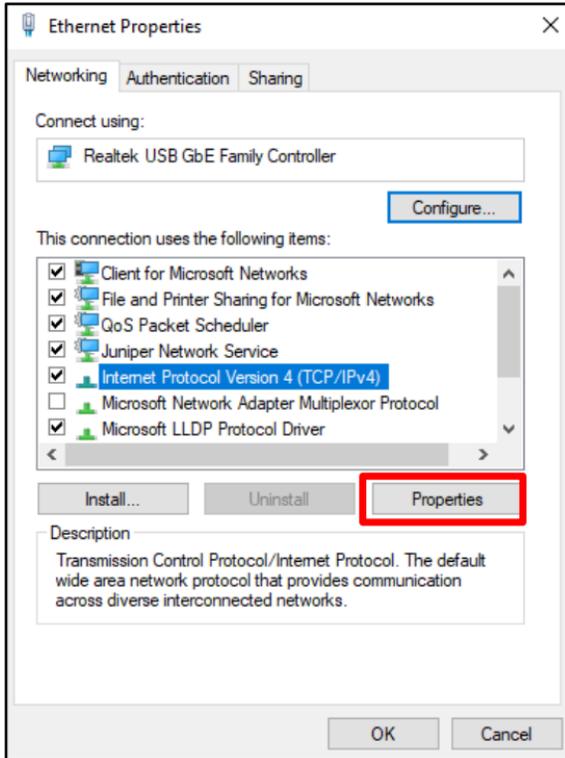


4. Select your ethernet adapter from the list
5. Select **Change settings of this connection**

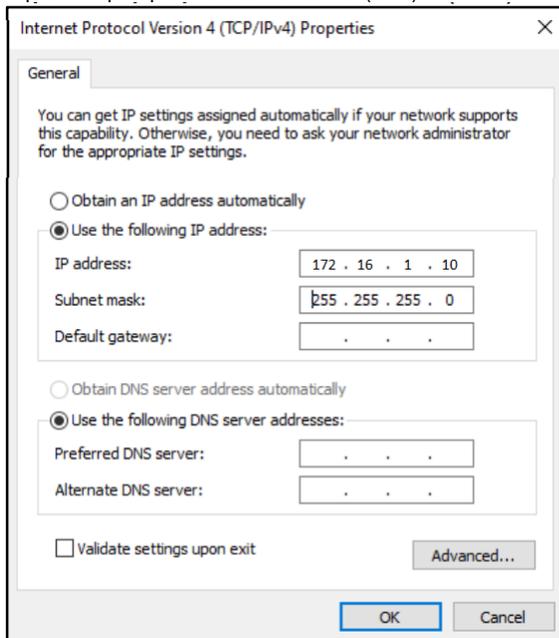


6. Select the TCP/IPv4 from the connection list

7. Select **Properties**

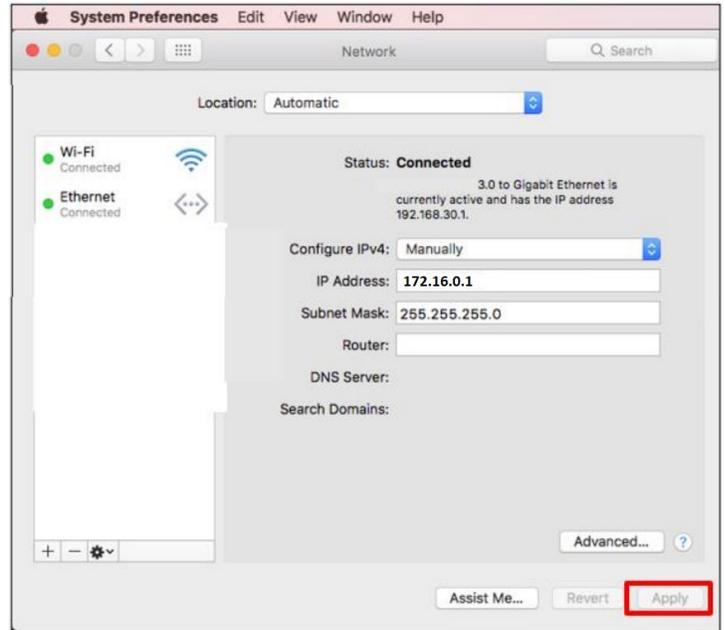


8. Input IP properties and save (**OK**).



## 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.



## Alarm Management

### Alarm List by Device Type

#### HPLRF

Device Type	Applicable Model	Event	Event Type	Description
HPLRF	All	Alarm	EQUIPMENT_DISCONNECTED	Equipment disconnected: Connection between Connect Edge and equipment interrupted: check equipment power and equipment data connections.
HPLRF	All	Alarm	WARM_ALARM	Warm Alarm Error Generated: The freezer temperature has exceeded the warm alarm set point of Warm Alarm Prolonged door openings and warm product loading may cause warm alarms.
HPLRF	All	Alarm	COLD_ALARM	Cold Alarm Error Generated: The freezer temperature has exceeded the cold alarm set point of Cold Alarm.
HPLRF	All	Alarm	CTRLPROBE_ALARM	Control Probe Failure Alarm: Control Probe out of range. Service required.
HPLRF	All	Alarm	DOOR_OPEN	Door Open Alarm: Door open for greater than 30 seconds will cause door open alarm.
HPLRF	All	Alarm	POWER_OUTAGE	Power Failure Alarm: Unit in power failure mode. Display operating on battery power. Check unit plug /unit circuit breaker in the ON position / and supply voltage.
HPLRF	All	Warning	SYSBATT_LOW	System Battery Low: System Battery is below the voltage threshold. Recommend replacing battery. Contact customer service for battery replacement.

## Incubators

Device Type	Applicable Model	Event	Event Type	Description
Incubator	All	Alarm	EQUIPMENT_DISCONNECTED	Equipment disconnected: Connection between Connect Edge and equipment interrupted: check equipment power and equipment data connections.
Incubator	All	Alarm	DOOR_AJAR	Device door open too long Alarm: Device door has been open for longer than 30 seconds.
Incubator	All	Alarm	DISPLAY_ERROR	System Error: Display: Display not communicating with the main board.
Incubator	All	Alarm	MAIN_BOARD_ERROR	System Error: EEPROM main board: EEPROM on main board is defective
Incubator	VIOS	Alarm	STERIRUN_ERROR	System Error: steri-run: Error in Steri-Run routine.
Incubator	150i/240i	Alarm	CONTRARUN_ERROR	System Error: contra-run: Error in Contra-Run routine.
Incubator	VIOS	Alarm	POWERDOWN_STERIRUN	Power down during steri-run: Power failure during Steri-Run routine.
Incubator	150i/240i	Alarm	POWERDOWN_CONTRARUN	Power down during contra-run: Power failure during Contra-Run routine.
Incubator	All	Alarm	AUTOSTART_ERROR	System Error: auto-start: Error in auto-start routine
Incubator	VIOS, 3WJ	Alarm	ADC_ERROR	System Error: ADC: Measurement of reference resistance out of tolerance.
Incubator	150i/240i	Alarm	SAFETY_CIRCUIT_ERROR	System Error: Safety circuit active: Temperature signal plausibility doubtful
Incubator	150i/240i	Alarm	COMM_ERROR	System Error: Bottle turning device: Communication between bottle turning device and main board faulty.
Incubator	VIOS	Alarm	FAN_ERROR	System Error: Fan: Actual value of the fan is out of tolerance.
Incubator	All	Alarm	SENSOR_BREAKAGE_TEMP	Temperature Error: Sensor Breakage: Measured value exceeds accepted limit.
Incubator	All	Alarm	HIGH_TEMP	Temperature Actual value high Alarm: Temperature Actual Value > Set value + 1°C.
Incubator	All	Alarm	LOW_TEMP	Temperature Actual value low Alarm: Temperature Actual Value < Set value - 1°C.
Incubator	150i/240i	Alarm	COMM_ERROR_TEMP	Temperature Error: Communication: Measuring cell cannot communicate with mainboard.
Incubator	150i/240i	Alarm	LM75_ERROR	Temperature Error: LM75: LM75 sensor cannot communicate with mainboard.
Incubator	150i/240i	Alarm	EEPROM_ERROR_TEMP	Temperature Error: EEPROM sensor: NV-Ram sensor error.
Incubator	All	Alarm	SENSOR_BREAKAGE_CO2	CO2 Error: Sensor Breakage: Measured value exceeds accepted limit.
Incubator	All	Alarm	HIGH_CO2	CO2 Actual value above Alarm: CO2 Actual Value > Set value + 1%.
Incubator	All	Alarm	LOW_CO2	CO2 Actual value low Alarm: CO2 Actual Value < Set value - 1%.
Incubator	VIOS	Alarm	COMM_ERROR_RH	RH Error: Communication: RH Sensor not communicating with the main board.
Incubator	All	Alarm	COMM_ERROR_CO2	CO2 Error: Communication: CO2 Sensor not communicating with the main board.
Incubator	150i/240i	Alarm	EEPROM_COMM_ERROR_CO2	CO2 Error: EEPROM: NV-RAM sensor error.
Incubator	VIOS	Alarm	SENSOR_BREAKAGE_RH	RH Error: Sensor Breakage: Measured value exceeds accepted limit.
Incubator	All	Alarm	SENSOR_BREAKAGE_O2	O2 Error: Sensor Breakage: Measured value exceeds accepted limit.

Incubator	All	Alarm	HIGH_O2	O2 Actual value above Alarm: O2 Actual Value > Set value + 1%.
Incubator	All	Alarm	LOW_O2	O2 Actual value low Alarm: O2 Actual Value < Set value - 1%.
Incubator	All	Alarm	COMM_ERROR_O2	O2 Error: Communication: O2 Sensor not communicating with the main board.
Incubator	VIOS, 150i/240i	Alarm	LOW_WATER	RH Low water Alarm: Low Water Event 2-3 days remaining.
Incubator	All	Warning	DATALOGGER_ERROR	System Error: data logger: Error while writing to the memory of the data logger. Incubator is still operative.

## ULT

Device Type	Applicable Model	Event	Event Type	Description
ULT	All	Alarm	EQUIPMENT_DISCONNECTED	Equipment disconnected: Connection between Connect Edge and equipment interrupted: check equipment power and equipment data connections.
ULT	All	Alarm	HEATEXCH_PROBE_FAIL	Heat Exchanger Probe Failure Alarm: The freezer will continue to operate with current freezer setpoint, but cabinet temperature variation will increase. Contact customer service
ULT	TSX Series	Alarm	REFRIDGE_FAILURE	System Refrigeration Failure Alarm: An error has occurred within the refrigeration system. Contact customer service.
ULT	All	Alarm	POWER_OUTAGE	Power Failure Alarm: Unit in power failure mode. Display operating on battery power. Check unit plug /unit circuit breaker in the ON position / and supply voltage.
ULT	All	Alarm	WARM_ALARM	Warm Alarm Error Generated: The freezer temperature has exceeded the Warm Alarm Setpoint of <CURRENT_SETTING>°C. Prolonged door openings and warm product loading may cause warm alarms.
ULT	All	Alarm	COLD_ALARM	Cold Alarm Error Generated: The freezer temperature has exceeded the Cold Alarm Setpoint of <CURRENT_SETTING>°C.
ULT	All	Alarm	DOOR_OPEN	Door Open Alarm: Door open for greater than <CURRENT_SETTING> minutes will cause door open alarm.
ULT	All	Alarm	CTRLPROBE_ALARM	Control Probe Failure Alarm: Cannot display cabinet temperature. The freezer will continue to operate in full run mode. Contact customer service.
ULT	STP2 Water Cooled, UxF/HFU-T/TSU/88000 Series Water Cooled	Alarm	PRESS_SWITCH_ALARM	Water flow outside allowable water flow conditions.: Water flow rate must be within 1.9 - 6.06 LPM (0.5 - 1.6 GPM) to provide the required system cooling environment.
ULT	All	Alarm	WRONG_POWER_ALARM	Wrong Power Alarm: The unit has detected the wrong power connected. Please verify the proper voltage.
ULT	STP2 Water Cooled, UxF/HFU-T/TSU/88000 Series Water Cooled	Alarm	WATER_TEMP_ALARM	Water Inlet Temperature: Water Inlet Temperature out of range.
ULT	All	Alarm	SYSTEM_BATT_DISC_ALARM	System Battery Disconnected: System Battery Disconnected and will not be able to enunciate status under AC interruptions.

ULT		Alarm		Bus Battery Disconnected: BUS Battery Disconnected and will not be able to inject refrigerant under AC interruptions Recovery: BUS Battery Connection has been re-established.
	w/ Backup System (BUS)		BUS BATT DISC ALARM	
ULT	All	Alarm		Main Memory Write Error Generated: Main memory tried to recover but was not successfully.
			MAIN_MEMORY_ALARM	
ULT	All	Alarm		Backup Memory Write Error Generated: Backup memory tried to recover but was not successfully.
			BACKUP_MEMORY_ALARM	
ULT	w/ Backup System (BUS)	Alarm		Backup System Communication Alarm: A communication error has occurred within the backup system. Contact customer service.
			BUSFAIL_ALARM	
ULT	All	Alarm		Lost Communication Alarm: A communication error has occurred within the system. Contact customer service.
			COMMFAIL_ALARM	
ULT	All	Alarm		Invalid Control Model Alarm: Invalid Control Model Alarm. Contact service to ensure the correct model is selected for the system to avoid cargo loss.
			WRONG_CTRLMODEL	
ULT	All	Warning		System Battery Low: System Battery is below the voltage threshold. Recommend replacing battery. Contact customer service for battery replacement.
		Warning		
			SYSBATT_LOW	
ULT	All	Warning		Extreme Ambient Notification: Ambient temperature has exceeded the Extreme Ambient Setpoint of <CURRENT_SETTING>°C. Ensure room temperature is properly controlled.
			EXTAMB_TEMP	
ULT	TSX Series, UxF/HFU-T/TSU/88000 Series	Warning		Compressor Temperature Notification: A refrigeration system temperature has exceeded the Compressor Temperature Setpoint of <CURRENT_SETTING>°C. Contact customer service.
			COMP_TEMP	
ULT	All	Warning		Unable to Reach Set Point Notification: Door openings or product loading may cause this notification. Allow unit to stabilize. If condition persists, contact customer service.
			SP_ATTAIN	
ULT	w/ Backup System (BUS)	Warning		BUS Battery Low: BUS Battery Low. Recommend replacing battery. Contact customer service for battery replacement.
			BUSBATT_LOW	
ULT	All	Warning		Inefficient buck / boost notification: Freezer input voltage is out of range. Ensure proper supply voltage is applied. Please contact service if you are unable to clear this notification.
			BB_INEFFECTIVE	
ULT	TSX Series, UxF/HFU-T/TSU/88000 Series	Warning		Clean Filter Notification: Recommend cleaning the filter and condenser. Please contact service if you are unable to clear notification.
			CLNFILTER_ALARM	

**Note:** When the Applicable Model is "All" that is the list of models of that type supported by Connect Edge.

# 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
- 123 (NTP)\*
  - ntp.pool.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 setting is Yes:

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

If OPC UA is installed:

- 4483 (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 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” 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 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” 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” 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
- 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 is automatically determined by the access point
- If “Using DHCP” 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.

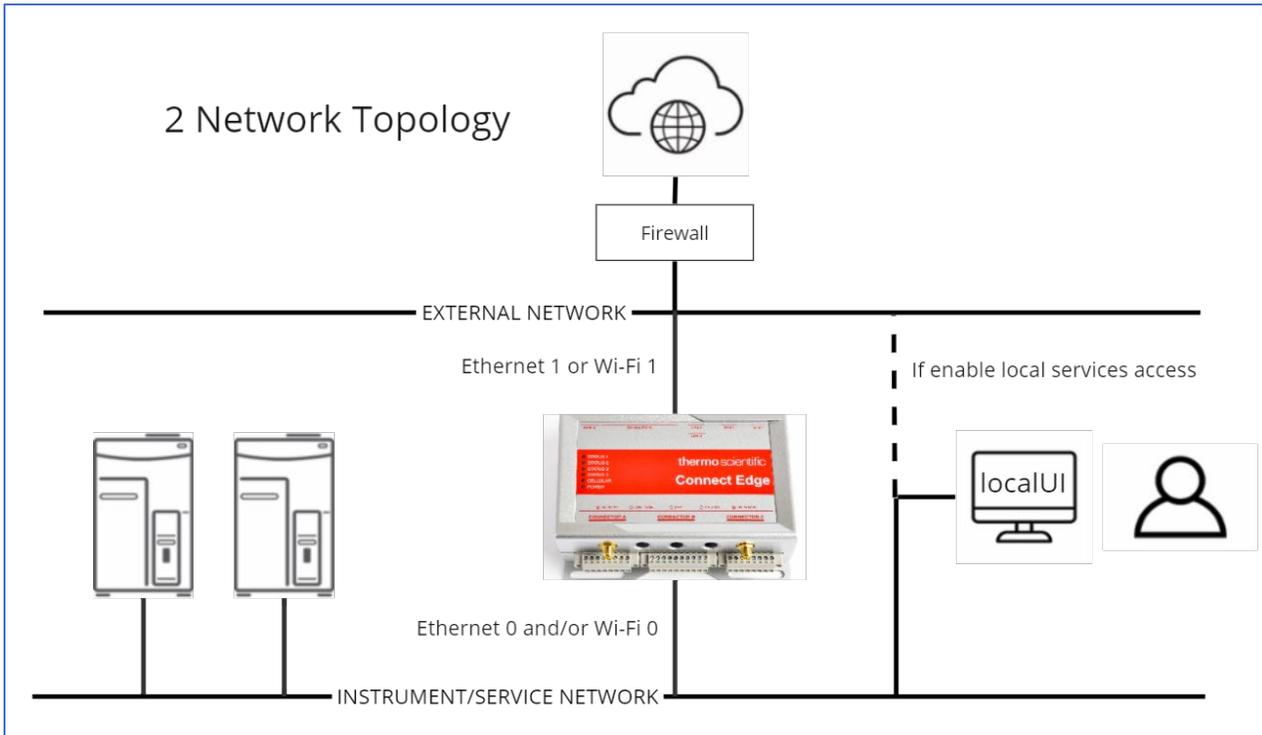
- Cellular recommended signal strength is < -95 dBm.
- Ensure all antennas are properly connected.

### Recommended Network Topologies

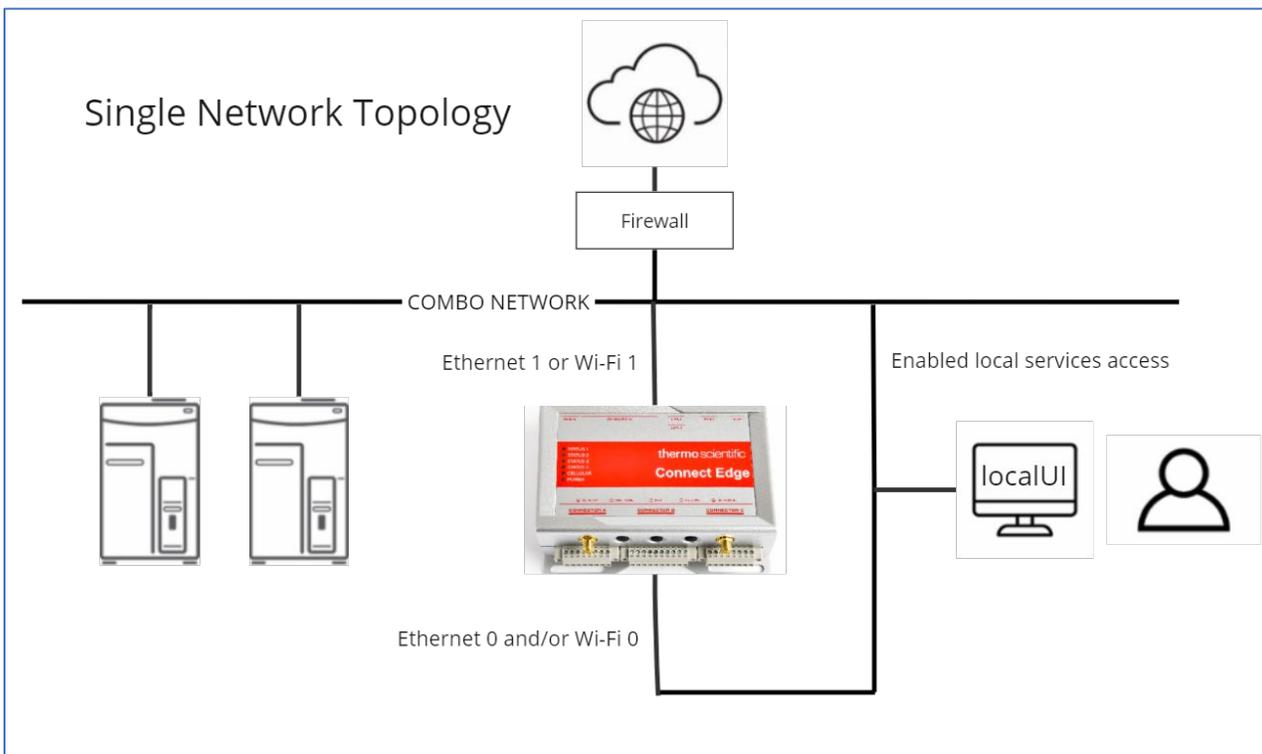
- If instrument connection segmentation is not required, use a single network with all components connected to ETH 1.
- If an isolated lab network is desired, utilize ETH 1 or Wi-Fi 1 for internet access and ETH 0 and/or Wi-Fi 0 for lab network connectivity.
- For best network performance, utilize a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

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

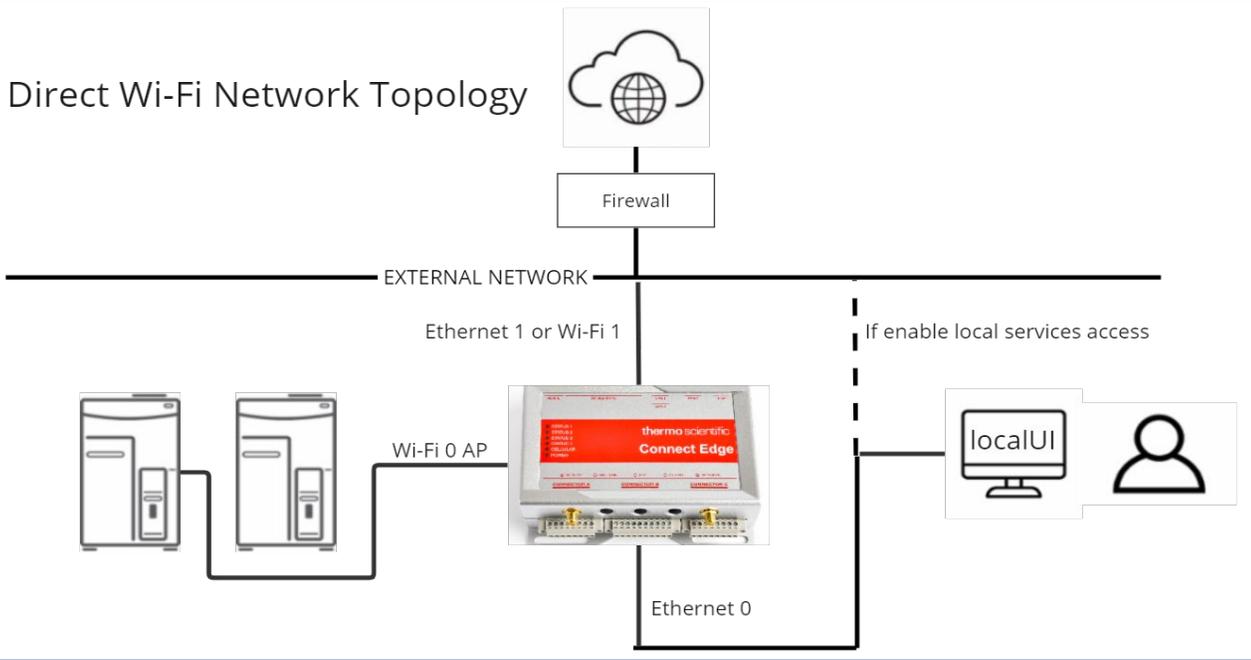
## 2 Network Topology



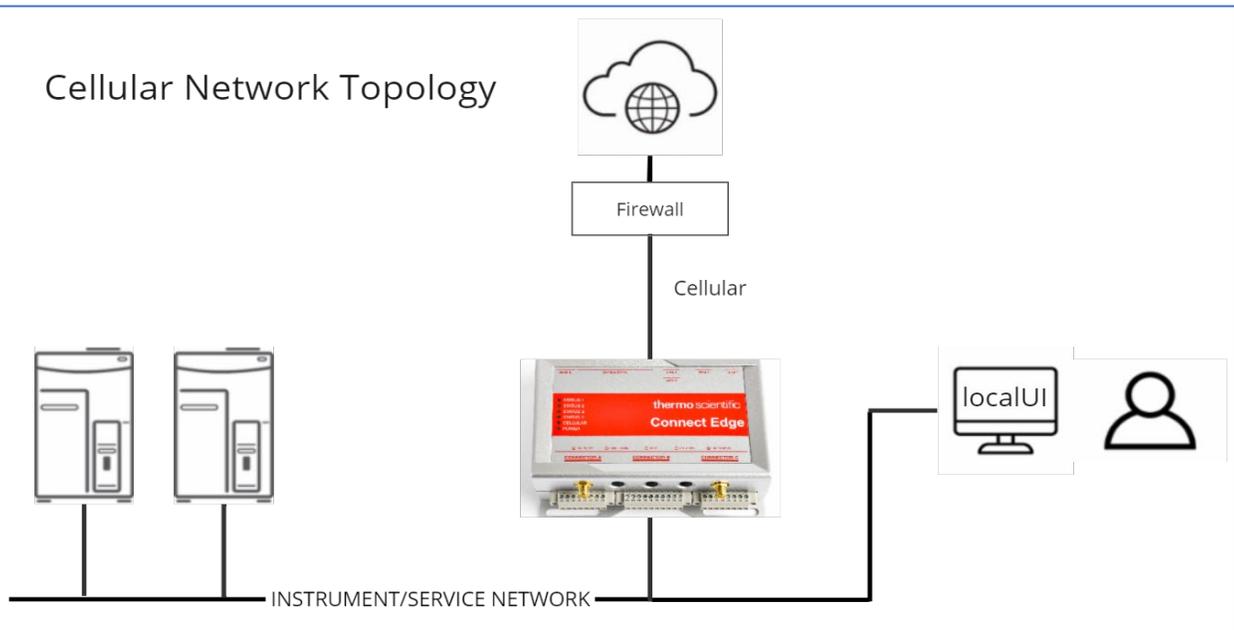
## Single Network Topology



## Direct Wi-Fi Network Topology



## Cellular Network Topology



# 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 <a href="https://172.16.0.1/">https://172.16.0.1/</a> 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 services access”	Use the Gateway Web UI to enable the setting “Enable local services access”.
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 services access	If using Ethernet 1 or Wi-Fi 1, verify with the Gateway Web UI that the Enable local services 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 device 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 communication needs to be reset	Disconnect cable from the device and then power 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)

# 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 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:

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