

TURNTIDE FOR BUILDINGS

# Automation Install Guide



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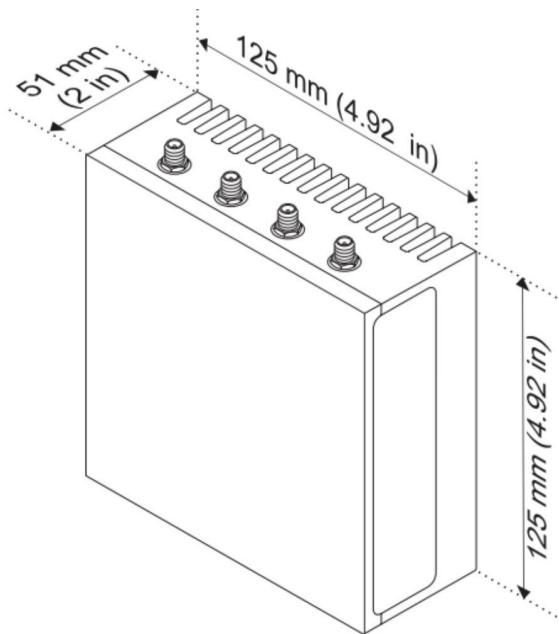
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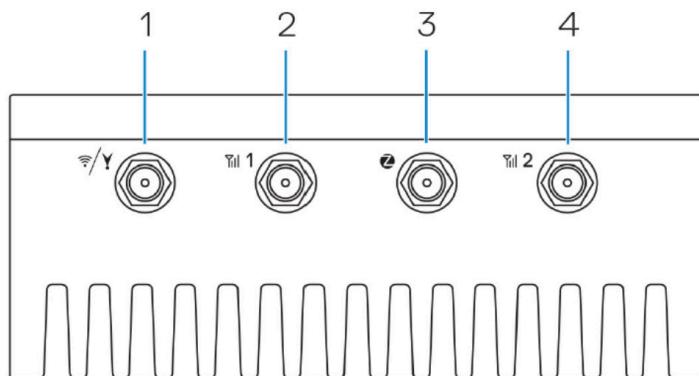
# 1. Product Overview

## 1.1. Turntide Hub 3000

### 1.1.1. Dimensions

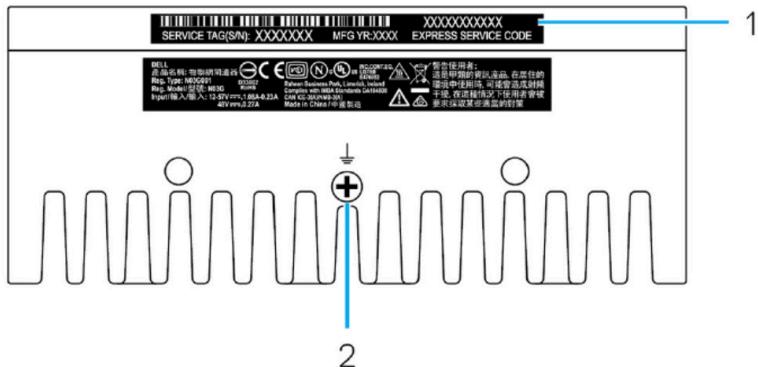


### 1.1.2. Top View



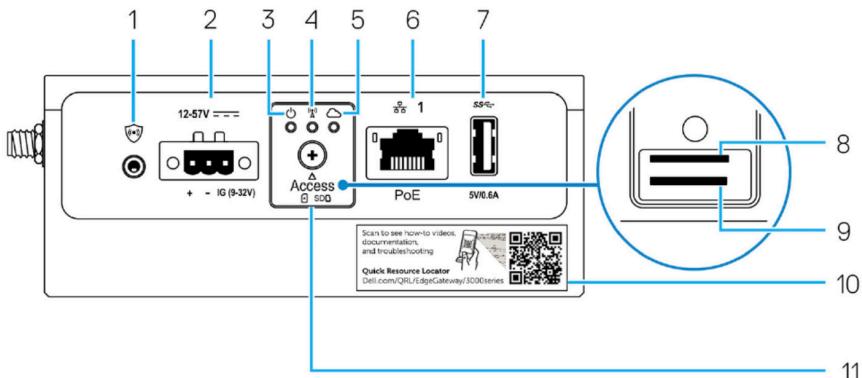
1	WLAN, Bluetooth or GPS connector
2	Not used
3	Zigbee antenna connector
4	Not used

### 1.1.3. Bottom View



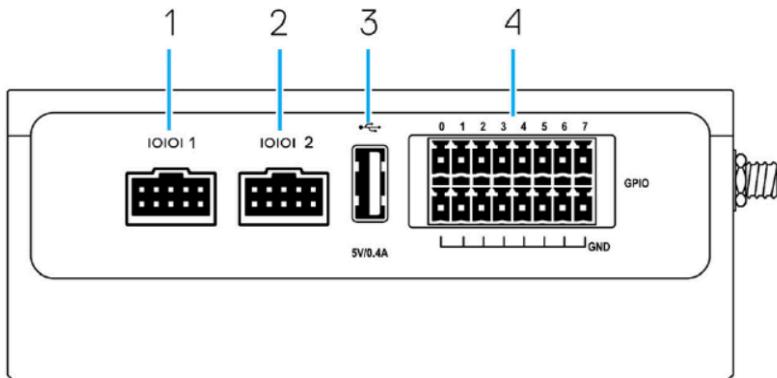
	Service Tag - a unique alphanumeric identifier to help Turntide identify your Turntide Hub
2	Earth ground - a large conductor to serve as a common return

### 1.1.4. Left View



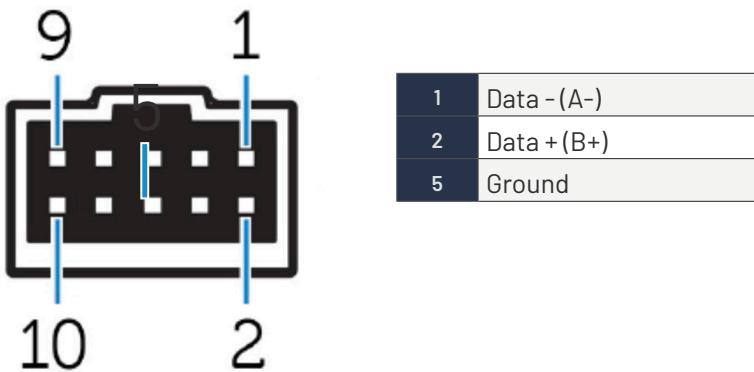
1	Unused
2	Power Port - Connect a 12-57 VDC (1.08-0.23 A) power supply to power the Hub
3	Power and System status light - Indicates the power status and system status
4	WLAN or Bluetooth status light - Indicates if WLAN or Bluetooth is ON or OFF
5	Cloud-connection status light - Indicates the cloud connection status
6	Ethernet port - Connect an Ethernet (RJ45) cable to gain network access. Supports Power over Ethernet
7	USB 3.0 - Connects a USB device to the Hub
8-11	Unused

### 1.1.5. Right View



<b>1</b>	RS485 Port 1 - Connects to an RS-485 network cable
<b>2</b>	RS485 Port 2 - Connects to an RS-485 network cable
<b>3</b>	USB 2.0 Port - Connects a USB device to the Hub
<b>4</b>	GPIO Port - Not used

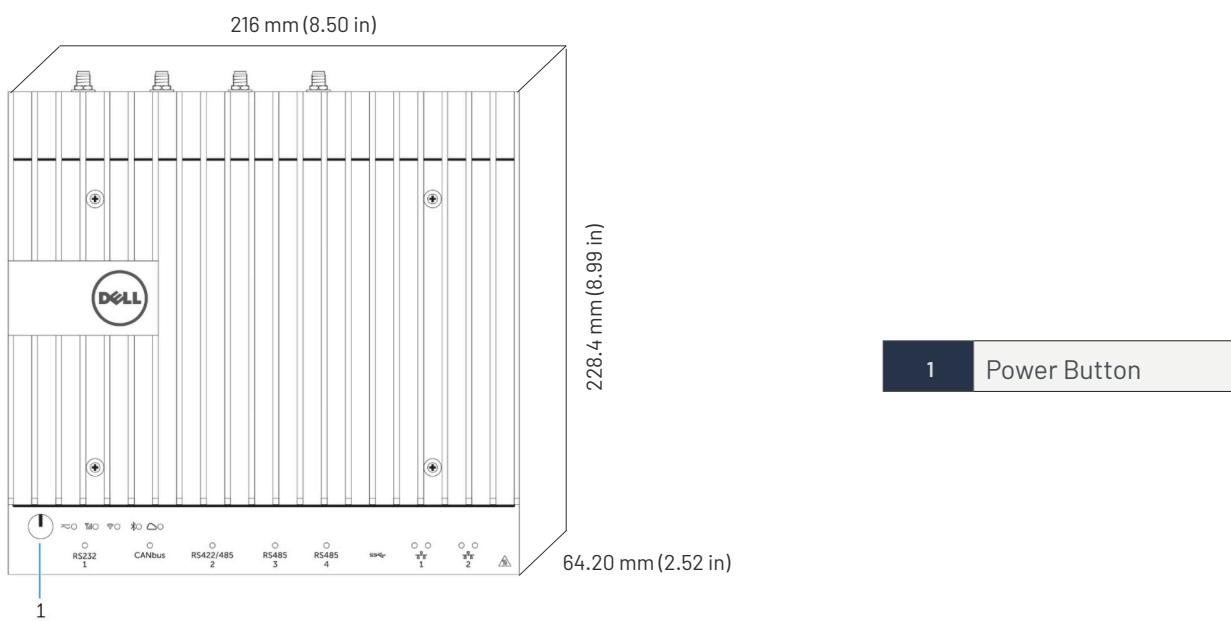
### RS-485 Port PIN details



## 1.2. Turntide 5000 Hub

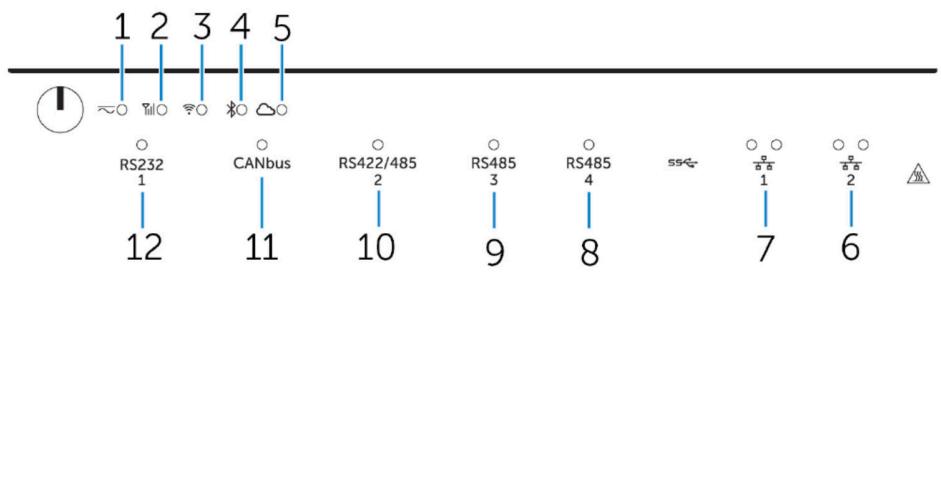
### 1.2.1. Dimensions

### 1.2.2. Front

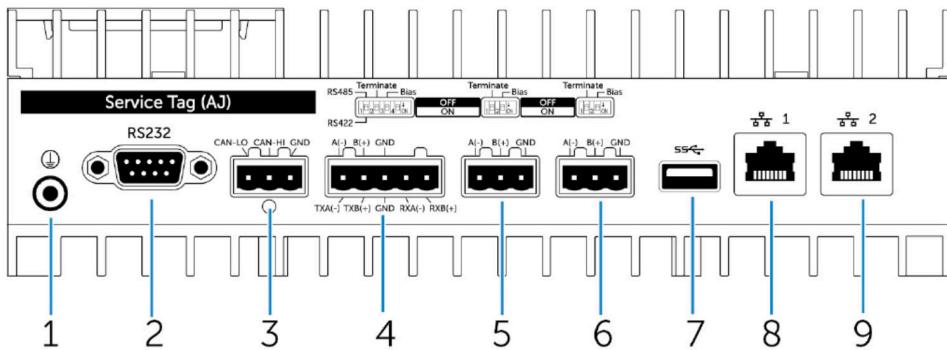


## Front Con't

1	Power status LED
2	NA
3	Wireless status LED
4	Bluetooth status LED
5	Cloud connection status LED
6	IP2 network status
7	IP1 network status
8	RS485 port 4 status
9	RS485 port 3 status
10	RS422/485 port 2 status
11	NA
12	RS232 port 1 status

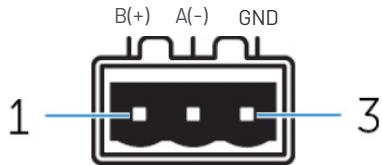


### 1.2.3. Bottom



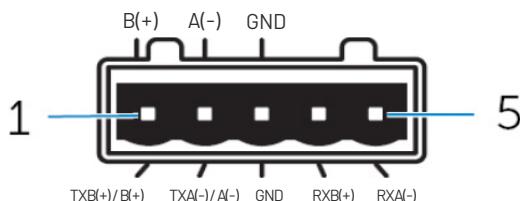
1	Earth Ground - Common system grounding point
2	RS232 Serial Port - Connects to an RS232 network
3	CANbus port
4	RS422/485 port 2 - Connects to an RS422 or RS-485 network cable
5	RS485 port 3 - Connects to an RS-485 network cable
6	RS485 port 4 - Connects to an RS-485 network cable
7	USB 3.0 port - Connects a USB device
8	IP Port 1 - Connect an Ethernet (RJ45) cable to gain network access.
9	IP Port 2 - Connect an Ethernet (RJ45) cable to gain network access.

## RS485 Connector Mapping



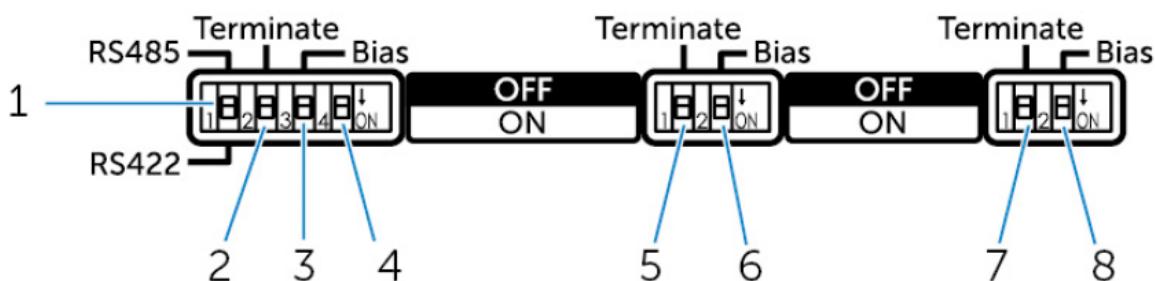
Pin	Signal
1	B(+)
2	A(-)
3	GND

## RS422/485 Connector Mapping



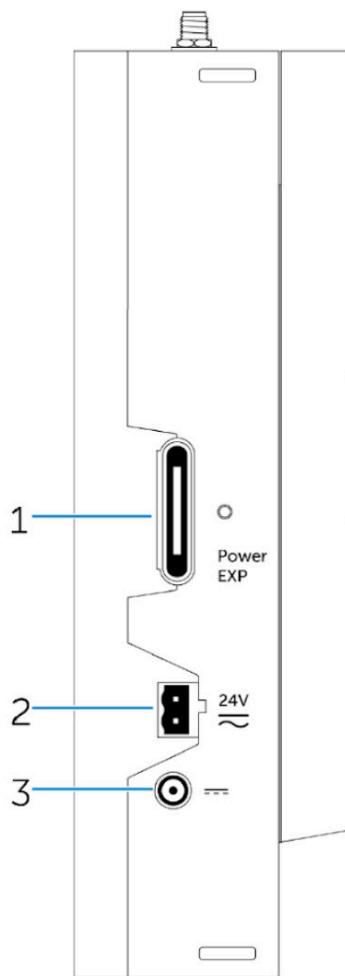
Pin	Signal
1	TXB(+) / B(+)
2	TXA(-) / A(-)
3	GND
4	RXB(+)
5	RXA(-)

## DIP Switches



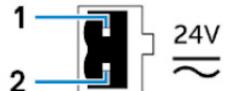
Feature	Description
1	RS422/RS485 port toggle switch
2	RS422/RS485 port resistor switch
3	RS422/RS485 port bias resistor switch
4	ePSA diagnostic switch
	Toggle between RS422 or RS485 standard.
	Enable/disable the differential termination resistor.
	Enable/disable the bias resistor for the RS422/RS485 port.
	When the position of the switch changes, the system starts in ePSA (Enhanced Preboot System Assessment) mode on the next start.

#### 1.2.4. Left View



Features		
1	Power module expansion port	Connect an external power module for increased power options.
2	24 V AC power Phoenix connector	Connect an 24 V AC power connector to provide power to your system.
3	19.5 V DC power adapter port	Connect a 19.5 V DC power adapter connector to provide power to your system.

#### 24 V AC/DC Power Port

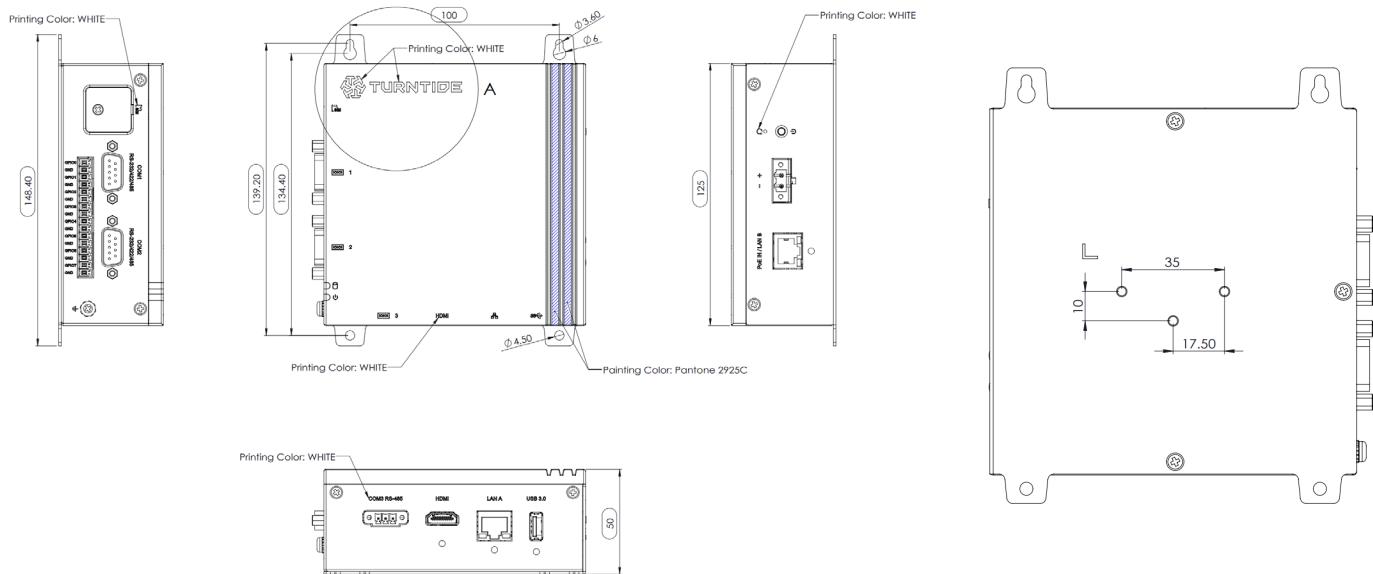


Pin	Polarity
1	24 VAC
2	COM

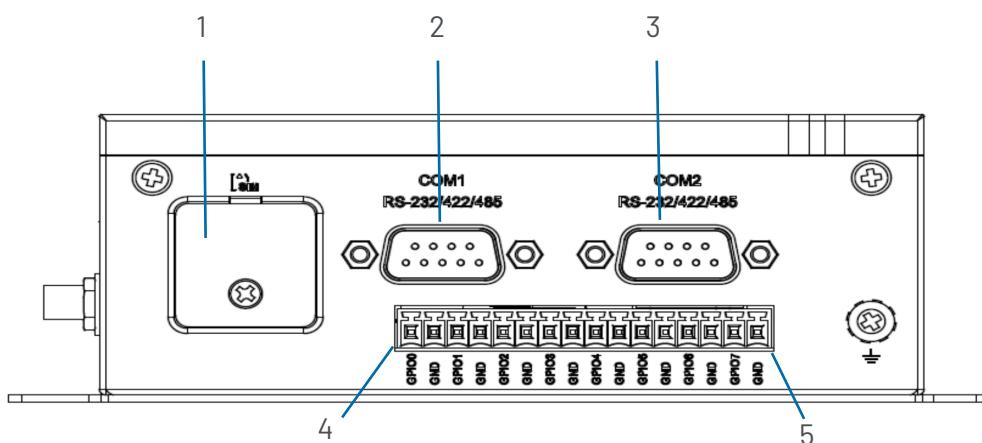
## 1.3. Turntide Hub 6

### 1.3.1. Dimensions

Dimensions in mm

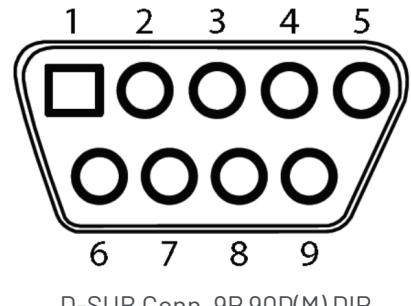


### 1.3.2. Left View



#	Label	Description
1	Sim	Reserved for future use
2	COM 1 RS-232/422/485	Connects to an RS-485 network. Requires an RS232/RS485 converter
3	COM 2 RS-232/422/485	Connects to an RS-485 network. Requires an RS232/RS485 converter
4	GPIO	Reserved for future use
5	Earth Ground	Common system, grounding point

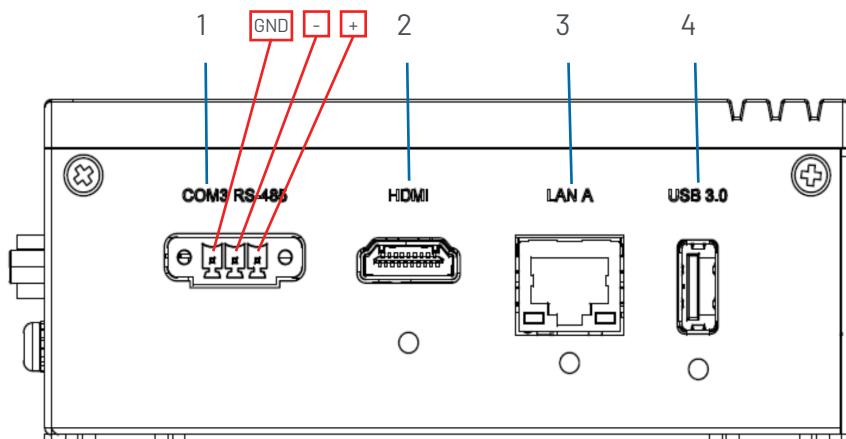
Connecting Pins for  
COM1 and COM 2



D-SUB Conn. 9P 90D(M) DIP

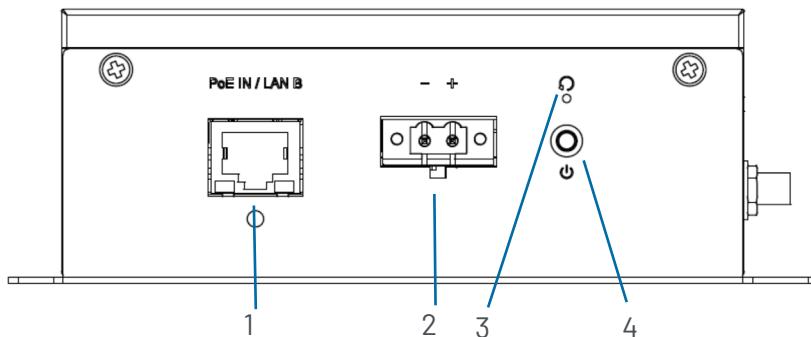
PIN	RS232	RS422	RS485
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX	RX+	
4	DTR	RX-	
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

### 1.3.3. Bottom View



#	Label	Description
1	COM 3 RS485	Connects to an RS-485 network. <b>NOTE: No surge protections provided by this port</b>
2	HDMI	For troubleshooting purposes only
3	LAN A	IP Port 1 - Connect an Ethernet (RJ45) cable to gain network access.
4	USB 3.0	Connects a USB device to the Hub <b>NOTE: Only Turntide-approved USB devices may be connected</b>

### 1.3.3. Right View



#	Label	Description
1	PoE In / LAN B	IP Port 2 - Connect an Ethernet (RJ45) cable to gain network access. Supports Power over Ethernet
2	DC Power Connector	Connect a 10-30 VDC power connector to provide power to your system
3	Reset Button	Used to trigger a hard reset of the Hub <b>NOTE: Only use if directed by Turntide support</b>
4	Power Button	Used to power on/off the hub

## 1.4. Turntide VRF Adapter

The Turntide VRF adapter is used to connect VRF systems directly to the Turntide Hub for monitoring and control.



### 1.4.1 Dimensions

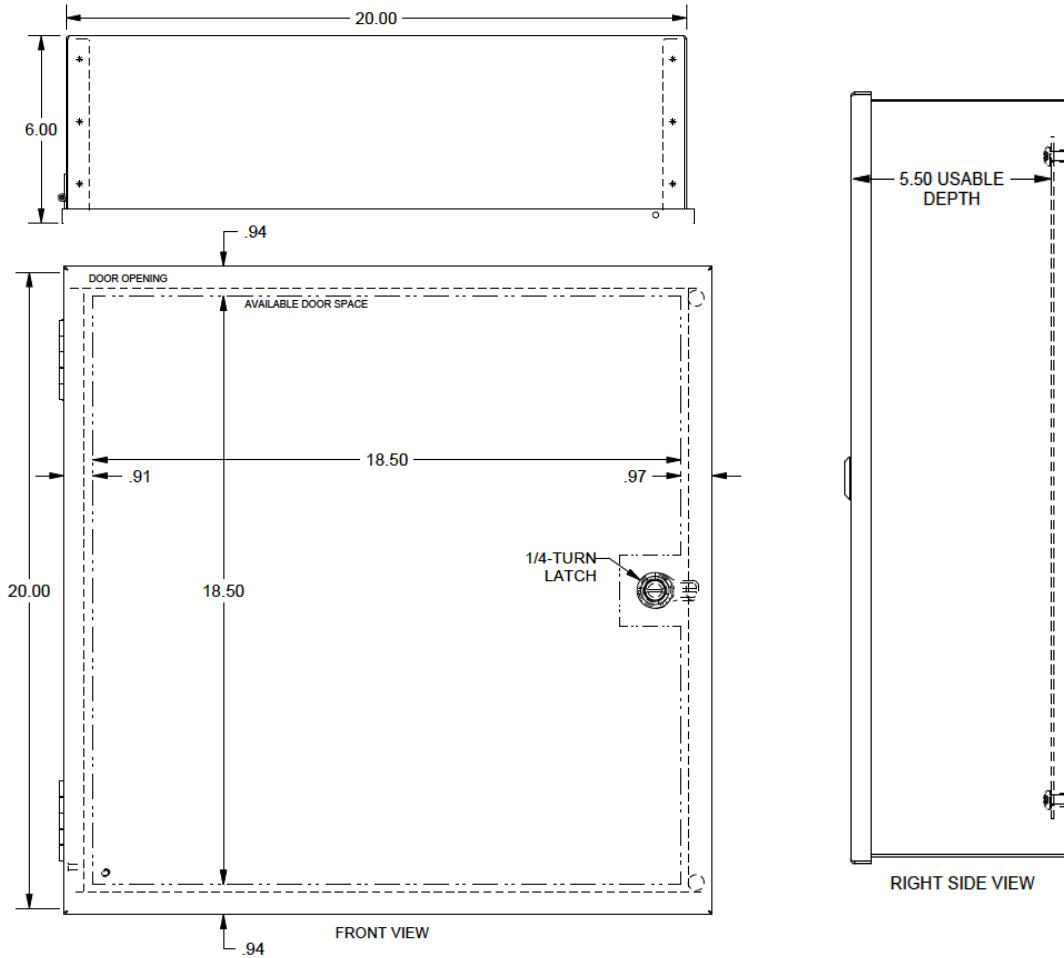
4.13" x 3.54" x 1.00"

## 1.5. Turntide Enclosure

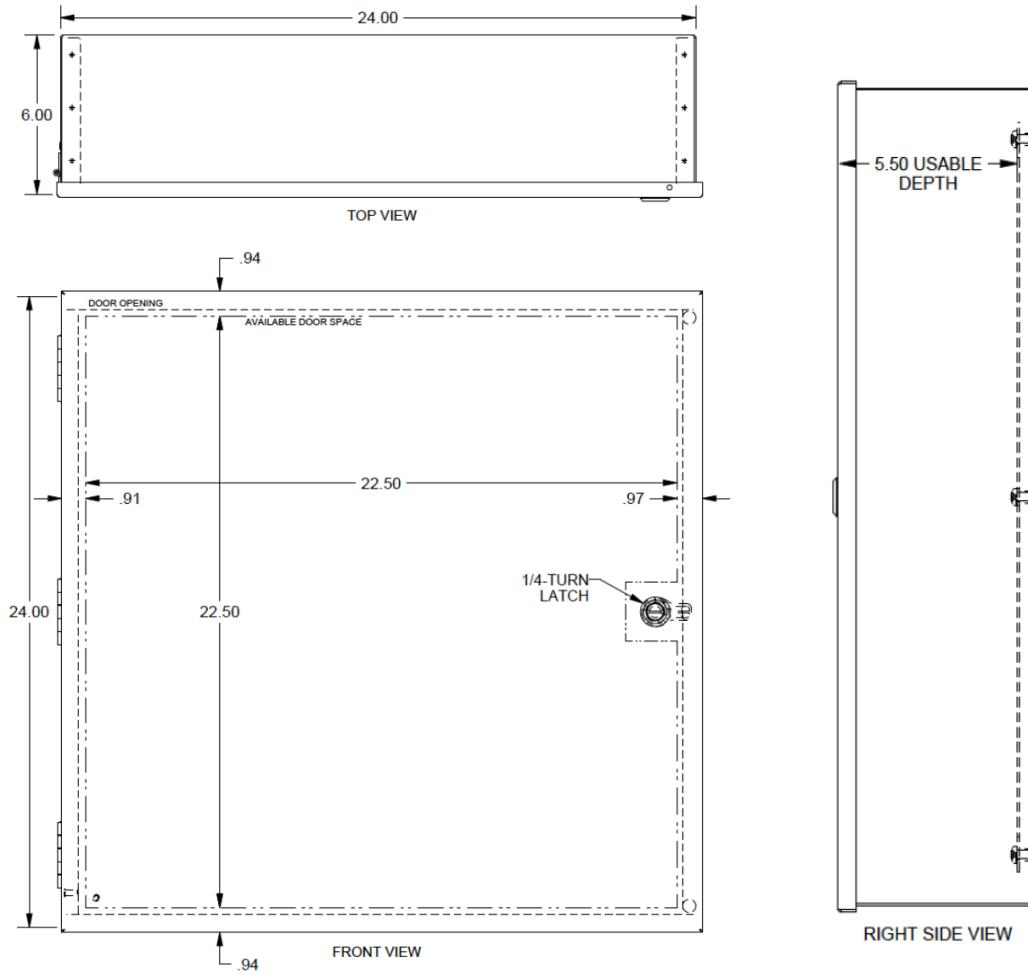
The prefabricated Turntide Enclosure is designed to safely hold Turntide equipment and accessories for easy installation and networking. It is recommended the panels are used for all jobs.

### 1.5.1. Dimensions

#### 1.5.1.1. Turntide 3000 Enclosure / Turntide Hub 6 Enclosure



### 1.5.1.2. Turntide 5000 Enclosure

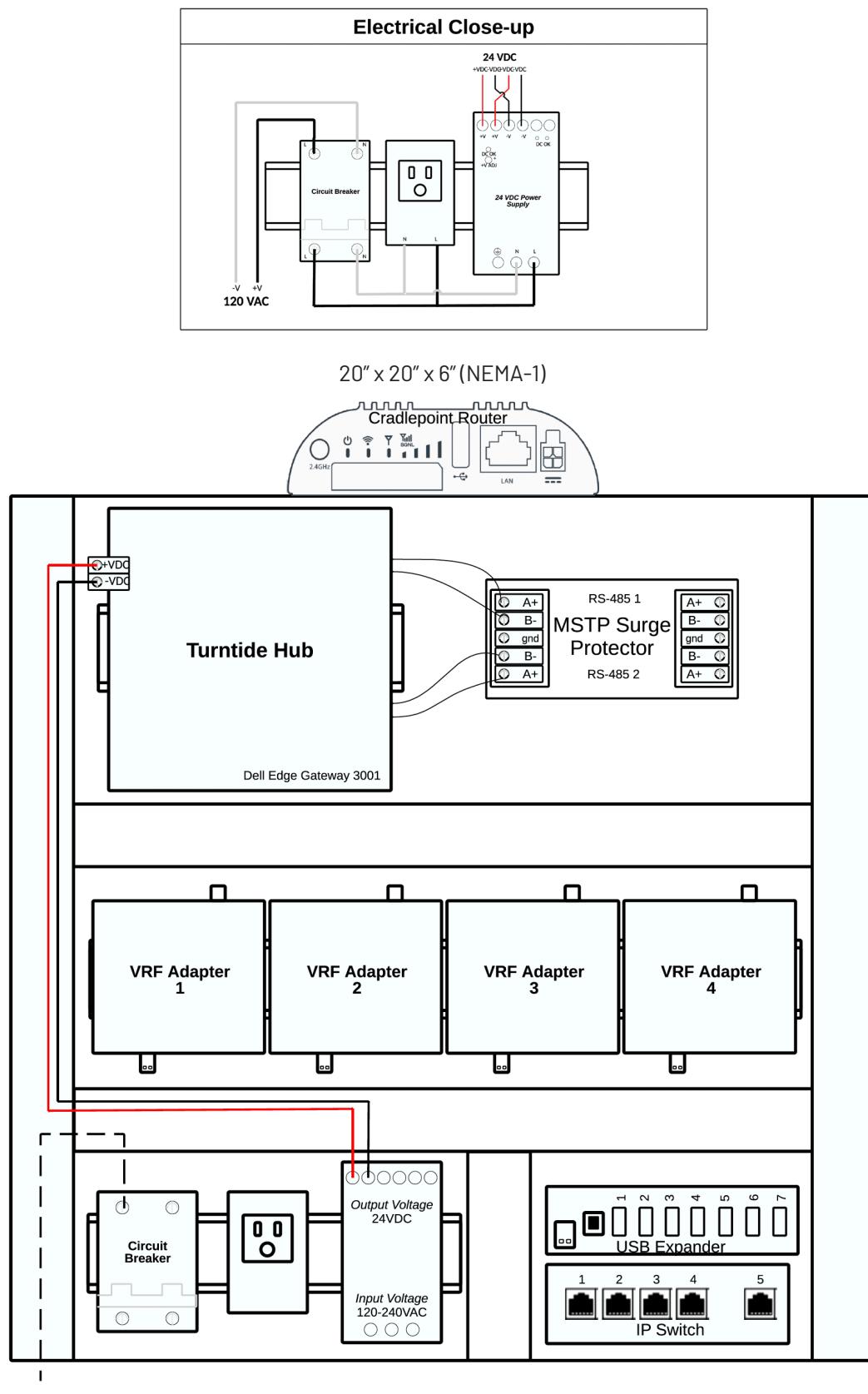


### 1.5.2. Parts List

NEMA Type 1 / IP 30 Enclosure
5-Port 10/100Mbps Switch
7-Port USB Hub
24VDC DIN Rail Power Supply
DIN Rail Mount AC Receptacle
DIN Rail 120VAC circuit breaker

### 1.5.3. Enclosure Drawings

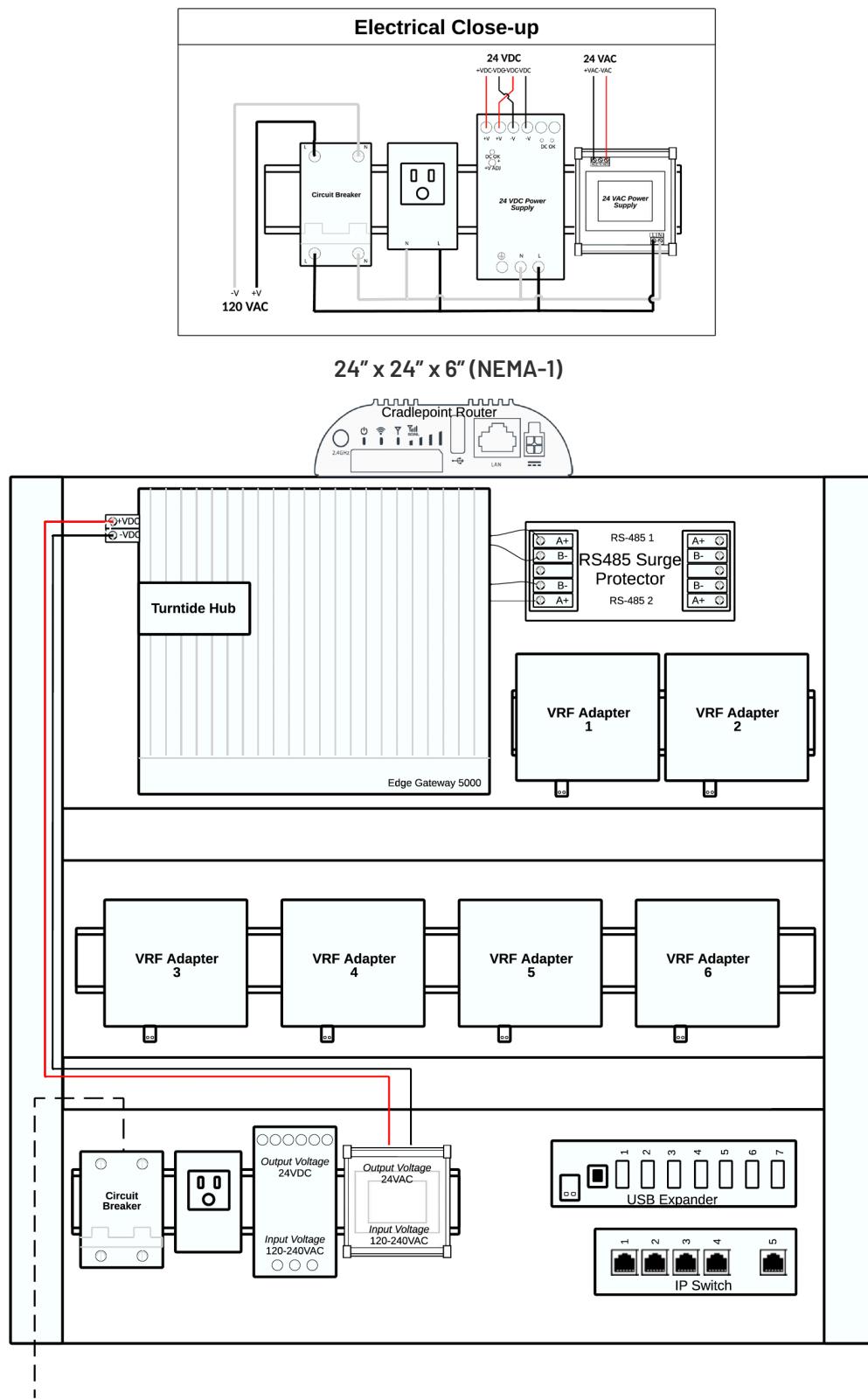
#### 1.5.3.1. Turntide Enclosure Drawing for 3000 Hub



Note: Enclosure can hold up to 4 Turntide VRF Adapters

Note: Cradlepoint Cell router (if being used) should be mounted externally of the panel in a location with good cell service.

### 1.5.3.2. Turntide Enclosure Drawing for 5000 Hub

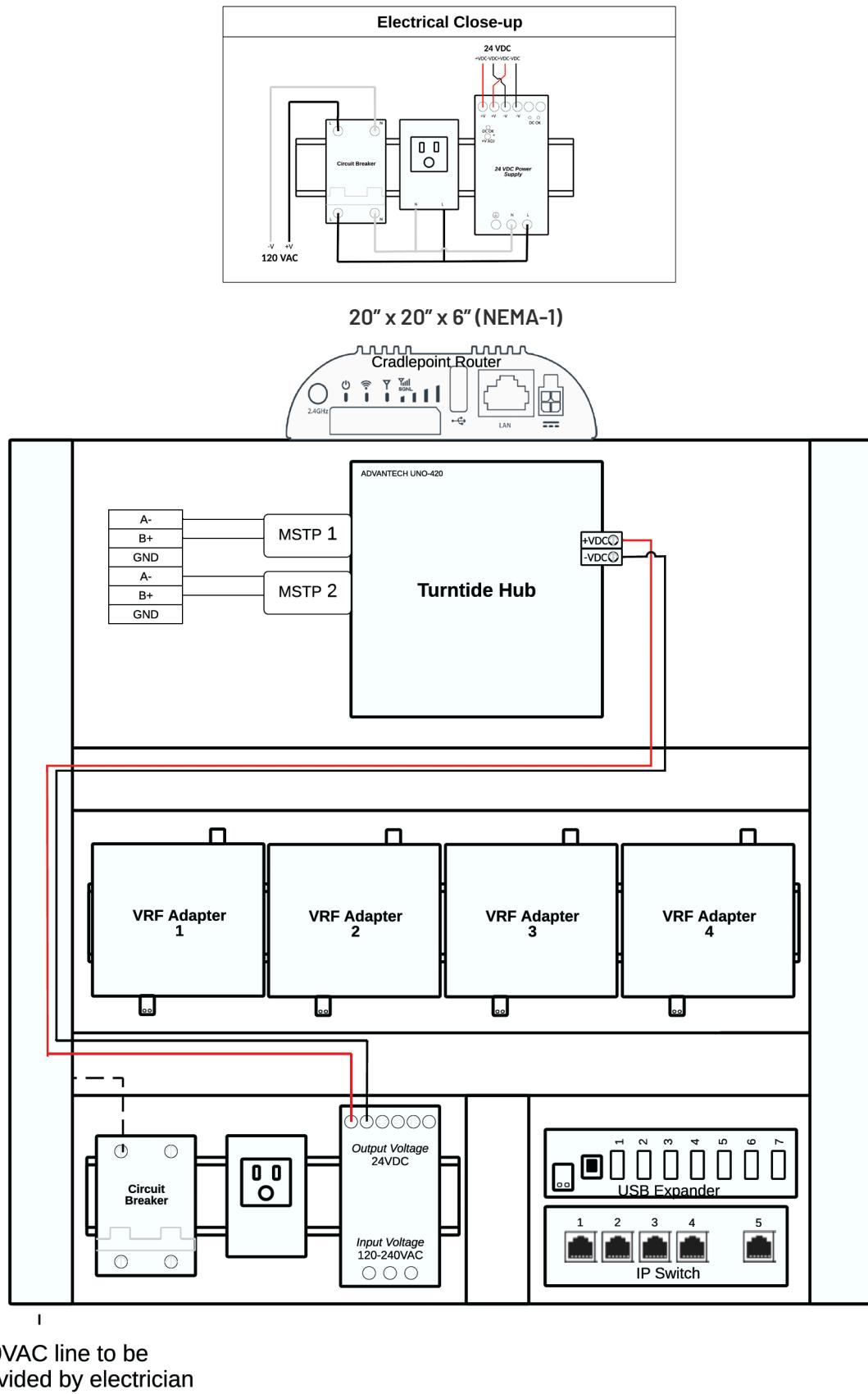


120VAC line to be  
provided by electrician

Note: Enclosure can hold up to 6 Turntide VRF Adapters

Note: Cradlepoint Cell router (if being used) should be mounted externally of the panel in a location with good cell service.

### 1.5.3.3. Turntide Enclosure Drawing for Hub 6



Note: Enclosure can hold up to 4 Turntide VRF Adapters

Note: Cradlepoint Cell router (if being used) should be mounted externally of the panel in a location with good cell service.

## 2. Installation Requirements

It is recommended that the Turntide Hub is always installed inside of a Turntide Enclosure or similar. Be sure to install the Turntide Hub in a location that meets the requirements in 2.1 and 2.2 below.

### 2.1. Location Requirements

The Turntide Hub must be mounted in a clean, indoor area that is free from dust, water and direct sunlight. If not mounted in a panel, the Hub should be in an environmentally maintained communications room.

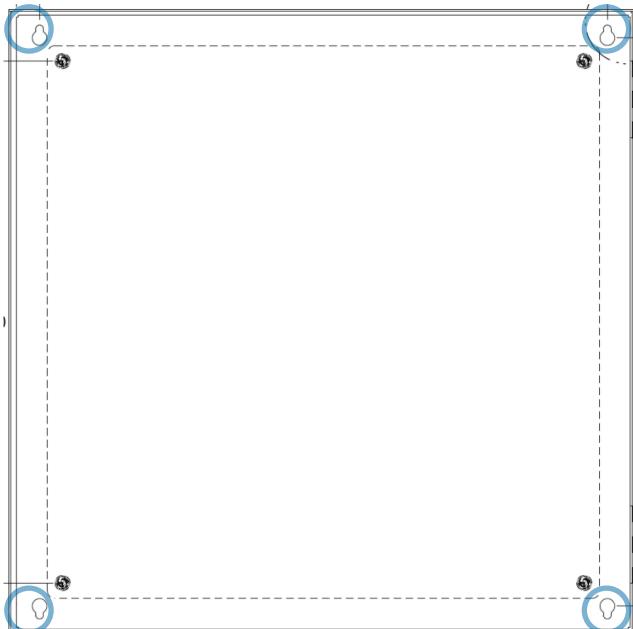
### 2.2. Environmental Conditions

Maximum Vibration	5 Hz with 0.0002 G2/HZ
Altitude	-15.20 m to 5,000 m (-50 ft to 16,404 ft)
Temperature	-30 °C to 70 °C (-22 F to 158 F)
Humidity	10% to 90% (non-condensing) @ 40C

## 3. Installation Instructions

### 3.1. Mounting the Turntide Enclosure

The Turntide Enclosure is easily mounted on the wall using the four pre-drilled mounting holes located on the back of the enclosure.



Note: For proper installation all four mounting points must be used

Note: Make sure all four mounting points are properly attached to the wall using correctly rated wall anchors or expansion anchors.

**Warning:** Please insure the wall mounting locations are rated to hold the entire enclosure.

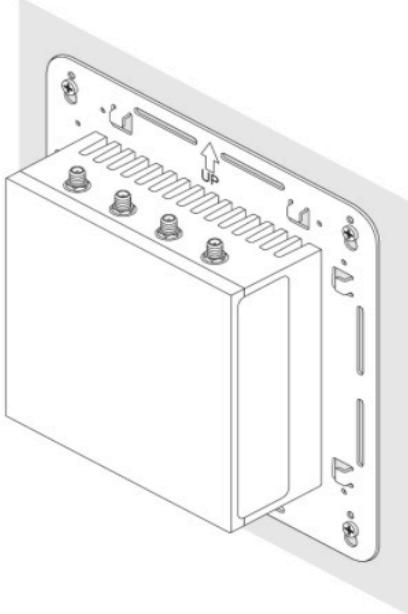
### 3.2. Installation - Hub Only

Turntide Hubs purchased without an enclosure can be mounted using a wall or DIN rail mount. All mounts are sold separately and must be specifically ordered.

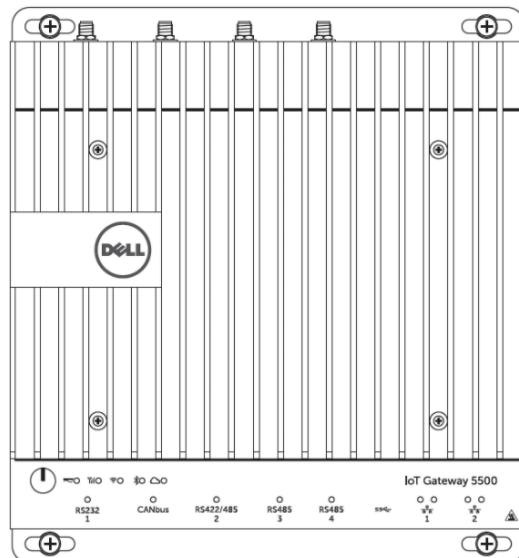
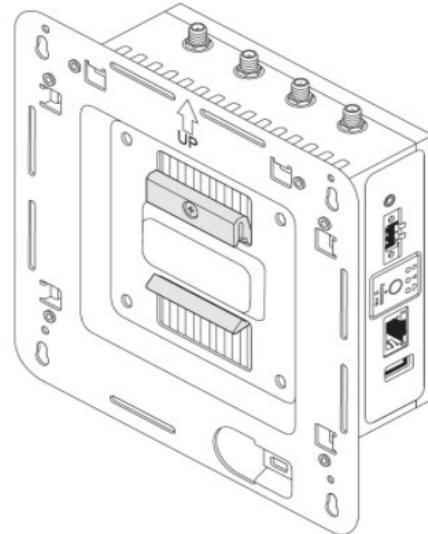
#### Hub 3000 and Hub 5000

The Turntide 3000 and Turntide 5000 can be mounted directly to a wall vertically, using a supplied wall mount. A standard wall mount is available for the 3000 and 5000 as well as a quick mount available for the Turntide 3000.

**Standard Mount**

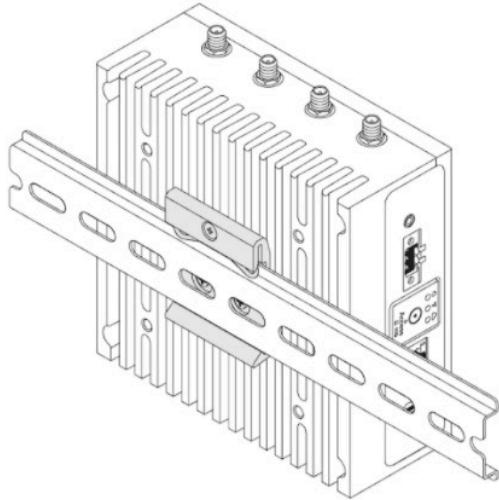


**Quick Mount**

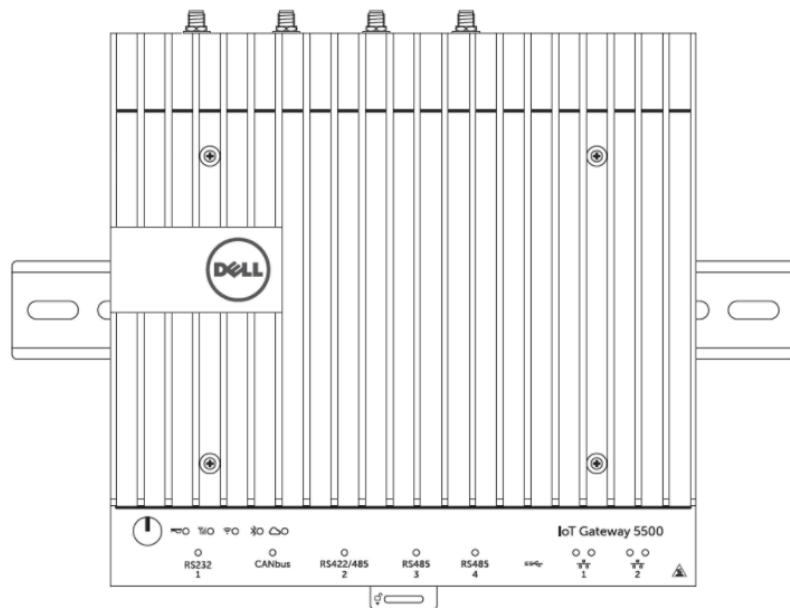
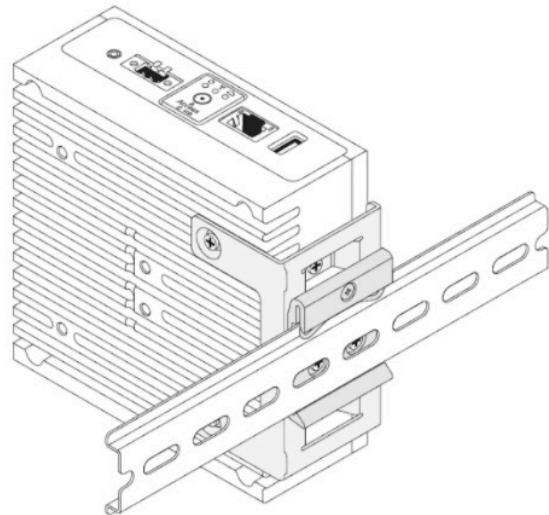


The Turntide 3000 and Turntide 5000 can also be mounted on DIN rail using the DIN rail bracket.

DIN Rail



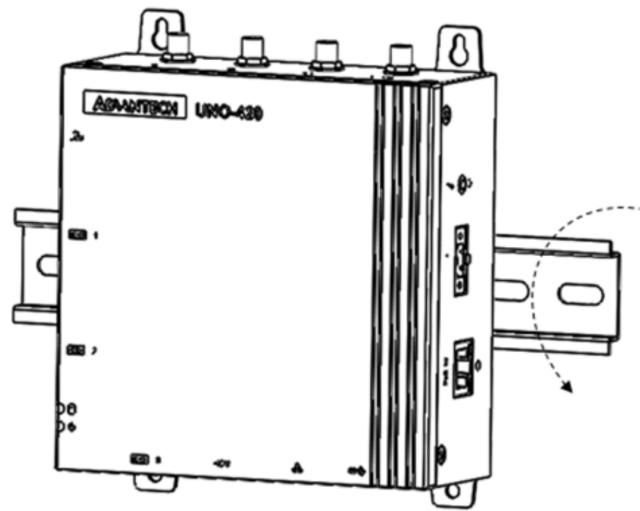
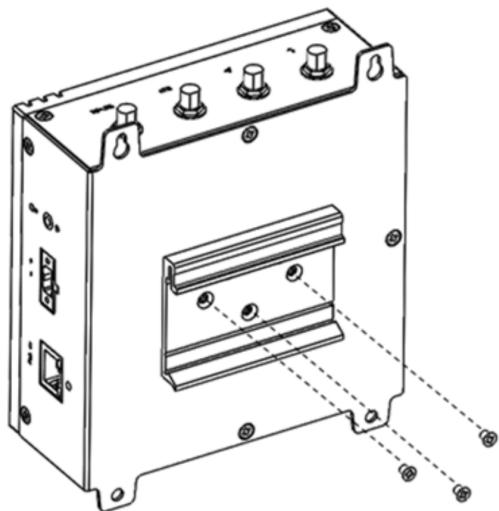
Perpendicular Mount



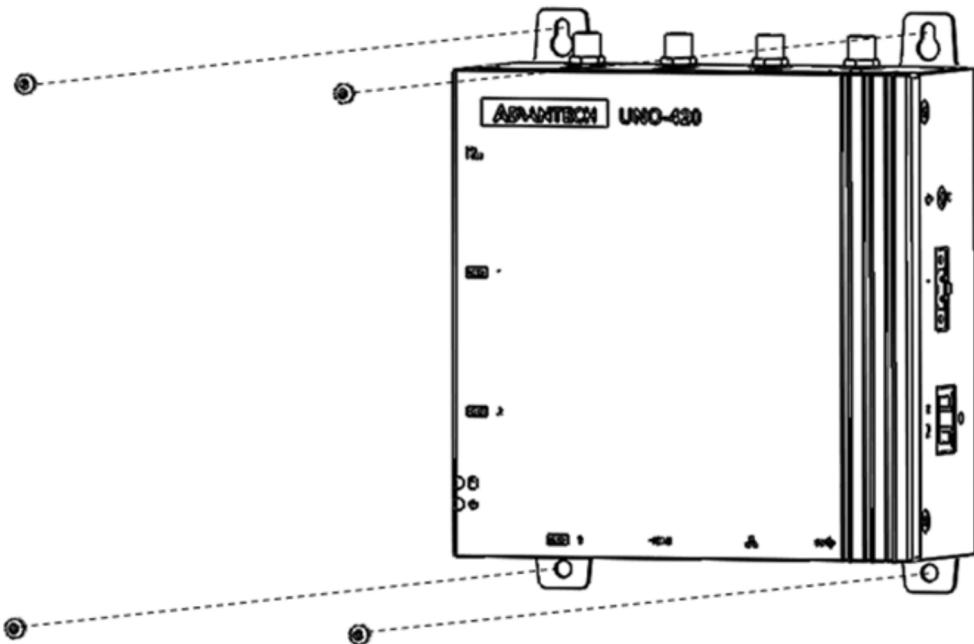
## Hub 6

The Hub 6 can be mounted either through DIN rail or a wall mount as shown below.

DIN Rail



Wall Mount



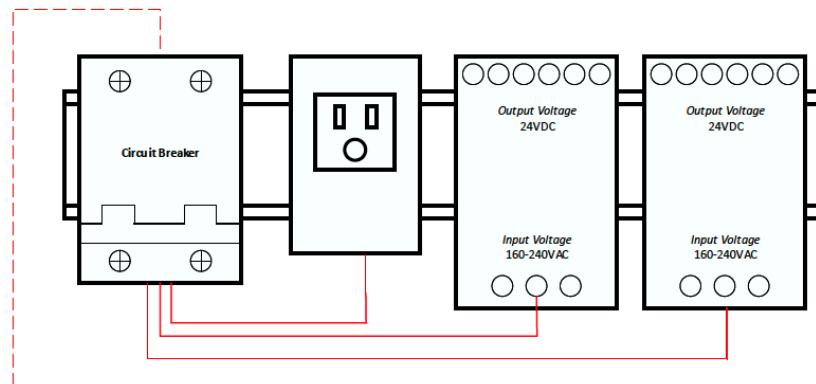
## 3.3. Connecting Power

### 3.3.1. Power Requirements

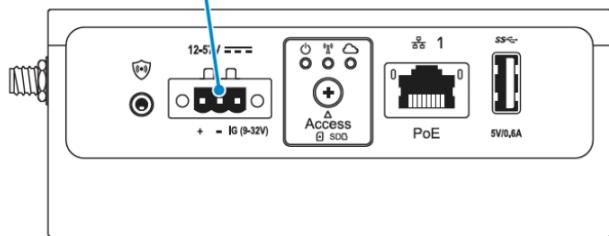
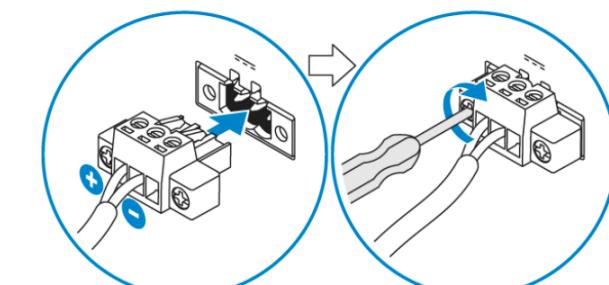
**Warning:** Electrical work is dangerous and should only be completed by a skilled and qualified person. All electrical procedures must be carried out with the power supply shut off. Do not turn the power supply on until all connections are made. Not doing so may result in electric shock.

### 3.3.2. Powering with Turntide Enclosure

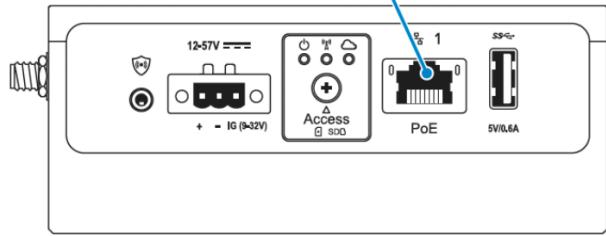
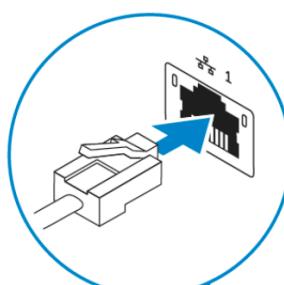
The Turntide Enclosure is shipped with all required equipment power supplies and wiring completed. A 120VAC power feed is required to be wired into the supplied breaker.



12 VDC - 57 VDC



Power over Ethernet (PoE)

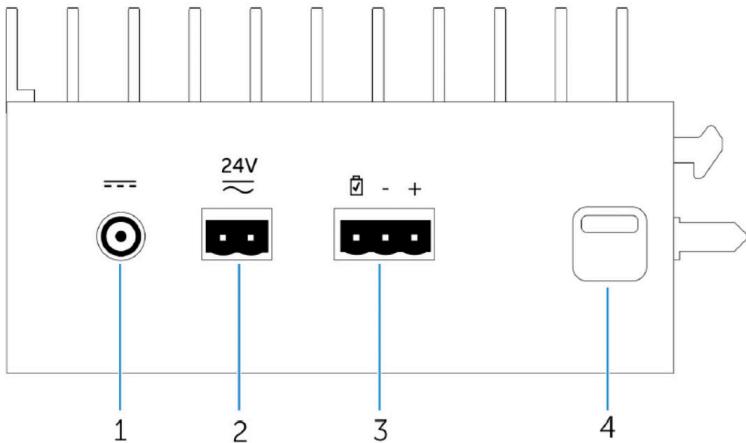


### 3.3.3. Powering Hub Only

The Turntide 3000 supports a 12-47 VDC (1.08 A at 12V/0.23A at 57V) power source or Power over Ethernet (PoE).

Note: only one power source can be utilized at a time. Connection of VDC and PoE simultaneously can result in hardware failure.

Turntide 5000 supports a 19.5 VDC power adapter or a 24 V AC power source



Turntide Hub 6 supports a 10-30 VDC, 2A power source or power over Ethernet (PoE).

19.5 V DC power adapter



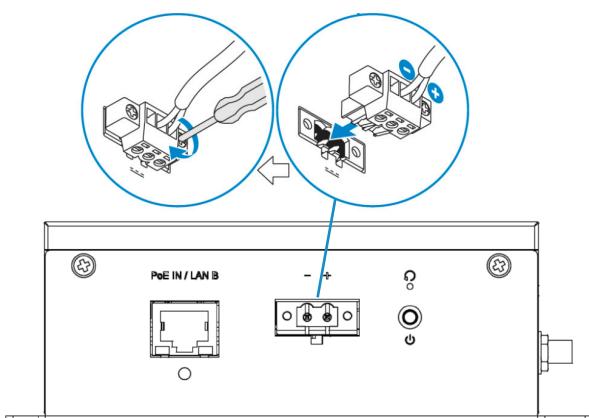
Pin	Polarity
1	DC Negative
2	DC Positive

24 V AC/DC power supply

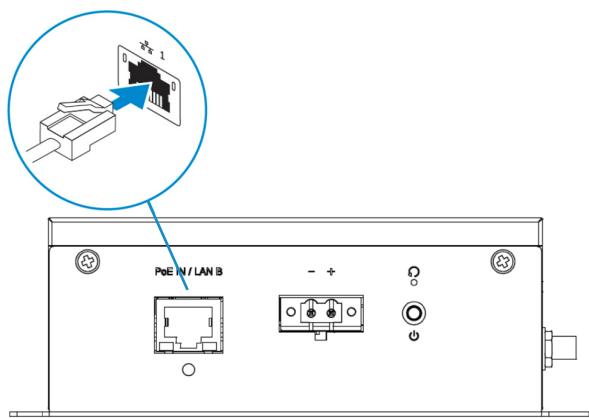


Pin	Polarity
1	24VAC
2	COM

10 VDC - 30 VDC



Power over Ethernet (PoE)



## 3.4. Connecting Internet

The Turntide Hub requires an active internet connection to connect to the Turntide Cloud. An ethernet connection to an active internet line is required at the installation location to be connected to the Turntide Hub. When using a local LAN connection the below port configurations are required to be completed by the Network Administrator.

### List of Ports to be Opened by IT

	Destination	Protocol	Port
Required Egress	Turntide Cloud	MQTT	TCP/8883
Required Egress	Turntide Cloud	SST	TCP/3199
Required Egress	Turntide Cloud	HTTPS	TCP/443
Required Egress	Configurable	DNS	UDP/53
Required Egress	Configurable	NTP	UDP/123
Important Egress	Protocol Specific	HTTP	TCP/80

### 3.4.1. Internet Connectivity

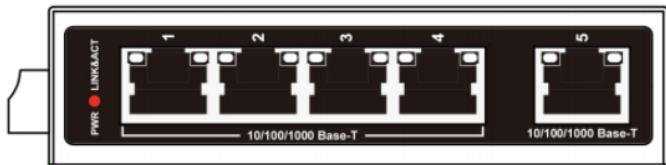
The Turntide Hub requires a stable internet connection to connect to the Turntide Cloud. Depending on the planned internet connection the below is required at the installation location.

**Local Area Network:** Ethernet cable connected to the building network

**Cellular Network:** Strong 4g cellular network signal

When connecting via local area network, the below port requirements must be configured for proper communication with the Turntide Cloud Application. Refer to the table in 3.4 above, "List of Ports to be Opened by IT."

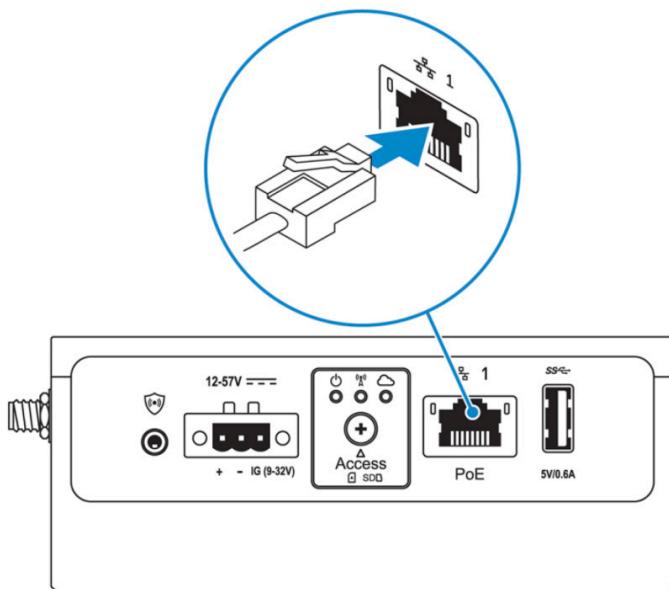
### 3.4.2. Connecting Ethernet with Enclosure



The Turntide Enclosure ships with a pre configured 5-port data switch. Connect an ethernet cable (RJ45 plug) into any available port on the supplied switch.

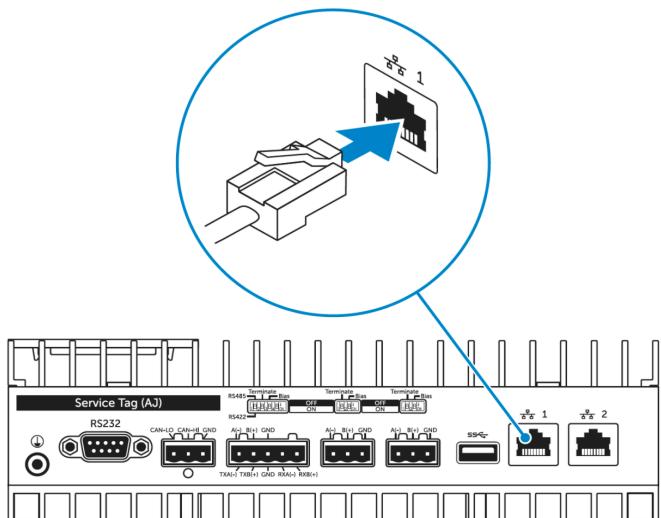
### 3.4.3. Connecting Ethernet Hub only

When not using a Turntide Enclosure or switch an ethernet cable must be connected directly to the hub.



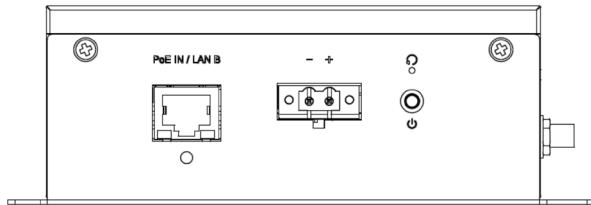
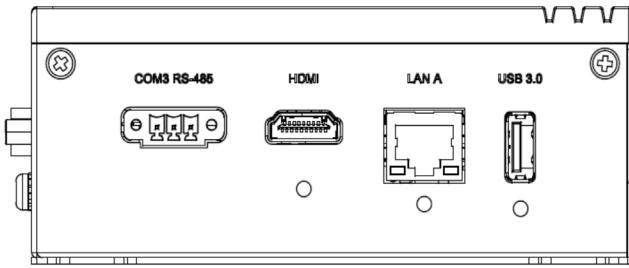
#### Turntide 3000

Connect the ethernet cable (RJ45) for internet access into the PoE port. It is recommended a network switch be installed to allow for additional IP connections to the Turntide 3000.



#### Turntide 5000

The Turntide 5000 hub has two ethernet ports. Connect the ethernet cable (RJ45) for internet access into Ethernet Port 1.



### [Turntide Hub 6](#)

The Turntide Hub 6 has two ethernet ports, LAN A and Lan B. LAN A is the primary connector: connect the ethernet cable (RJ45) to LAN A.

#### **3.4.4. Using a Cell Modem**

When using a supplied cellular modem an ethernet cable must connect the cell modem to the Turntide hub using one of the methods outlined in 3.3.1 and 3.3.2.

## **4. Connecting Equipment**

This section outlines how to connect compatible building equipment to the Turntide Hub. There are several methods of connection available.

### **4.1. IP Network**

#### **4.1.1. What Can Be Connected**

Turntide supports multiple protocols over ethernet. Any devices supporting these protocols can be connected over IP to the Turntide hub.

#### [Supported IP Protocol](#)

BACnet IP	Modbus TCP	NOAA Weather
Open ADR	Generic REST	

#### **4.1.2. How to Connect**

##### **4.1.2.1. 3000**

The Turntide 3000 hub has a single ethernet port. A network switch connected to the 3000's ethernet port will allow for termination of multiple IP network devices and an internet connection.

The Turntide enclosure ships with a preconfigured 5 port switch for IP connections.

##### **4.1.2.2. 5000**

Turntide Hub 5000 has two ethernet ports. Networked IP devices should be connected to the appropriate ethernet port

to match the hub's configuration. By default Ethernet 1 Port is used. If multiple IP devices are to be connected a network switch is required. Use of the Ethernet 2 Port is also allowed.

The Turntide enclosure ships with a preconfigured 5 port switch for IP connections.

#### 4.1.2.2. Hub 6

Turntide Hub 6 has two ethernet ports. Networked IP devices should be connected to the appropriate ethernet port to match the hub's configuration. By default LAN A port is used. If multiple IP devices are to be connected a network switch is required. Use of the LAN B Port is also allowed.

The Turntide enclosure ships with a preconfigured 5 port switch for IP connections. By default, LAN A is configured for a static IP address of 192.168.1.100 and LAN B is configured for DHCP. Either can be used to connect to the Hub 6.

#### 4.1.3. Limitations / Cable Specifications

Allowed cable types	Ethernet Cat 5e, Cat 6, Cat 6a, Cat 7 or Cat 7a
Termination type	RJ45
Maximum cable length	100 m (328 ft)

## 4.2. RS-485 Network

#### 4.2.1. What Can Be Connected

The Turntide hubs have multiple RS-485 network ports that can be used to connect building devices. Each RS-485 network can only be used for a single protocol at a time.

##### Supported Protocols

BACnet MSTP	Modbus RTU	Modbus ASCII
Trane Comm4	Johnson N2	Lennox Sysbus

#### 4.2.2. Wiring

RS-485 networks must be run as a daisy chain between equipment. Star and Spoke connections are not allowed and can cause network communication issues.

The Turntide hub can be positioned at any point along the network though it is highly recommended the hub be placed at the physical end of line for best network performance.

Note: The shield wire must be connected along the daisy chain for proper functionality

Note: A single common cable type must be used along the entire network. Splicing of different cable types can lead to network faults.

#### 4.2.3. How to Terminate

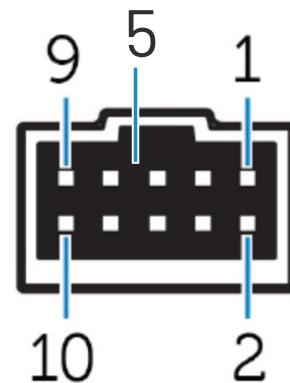
When using RS-485 ensure all terminations are secure with no crossed wires.

**Note:** The RS-485 cable's shield should be connected to earth ground at one end only

##### 4.2.3.1. Turntide 3000 - Without Enclosure

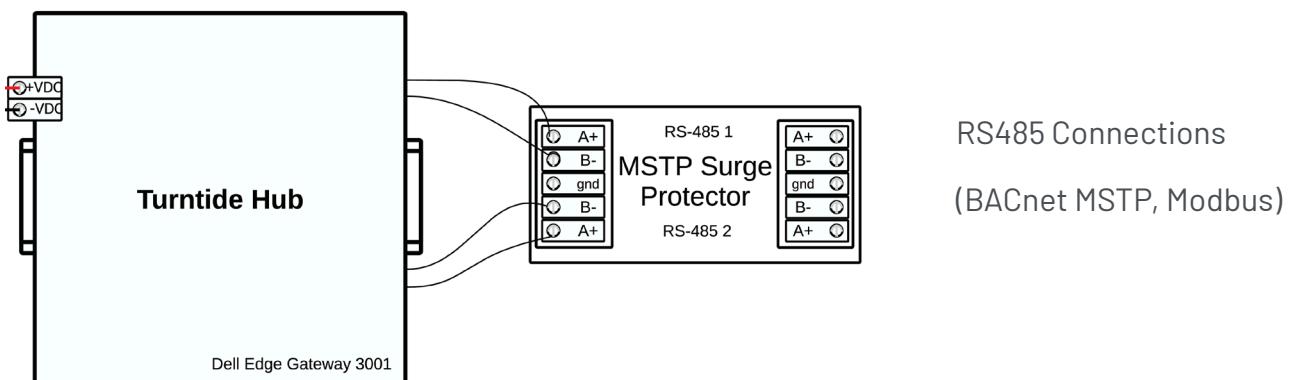
Terminate the RS-485 cables directly to the Hub using the supplied plugs.

1	Data -(A-)
2	Data +(B+)
5	Ground



##### 4.2.3.2. Turntide 3000 - With Enclosure

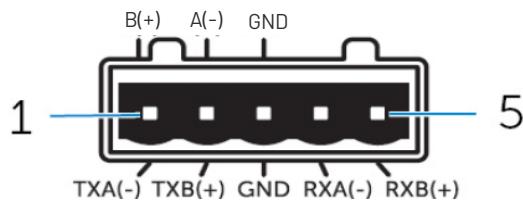
The Turntide Enclosure comes with pre-wired terminal strips for each RS-485 network.



#### 4.2.3.3. Turntide 5000

Terminate the RS-458 cable directly to the hub using the supplied phoenix plugs. When using the RS-422/485 port, the dip switches must be set to RS-485.

Pin	Signal
1	TXB(+) / B(+)
2	TXA(-) / A(-)
3	GND
4	RXB(+)
5	RXA(-)

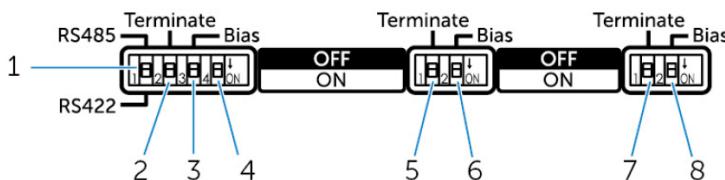


#### 4.2.3.4. Turntide Hub 6

There are no bias or termination switches on Turntide Hub 6.

#### 4.2.4. End of Line

The Turntide 5000 comes with dip switches to enable an End of Line resistor for each network. If the Turntide Hub is located at the physical end of the network this switch must be set to on. If it is not at the physical end of the network it must be set to off.



Feature		
1	RS422/RS485 port toggle switch	Toggle between RS422 or RS485 standard.
2	RS422/RS485 port resistor switch	Enable/disable the differential termination resistor.
3	RS422/RS485 port bias resistor switch	Enable/disable the bias resistor for the RS422/RS485 port.
4	ePSA diagnostic switch	When the position of the switch changes, the system starts in ePSA (Enhanced Preboot System Assessment) mode on the next start.

Note: Correct end of line termination must be completed at both physical ends of the network utilizing an in-built EOL resistor or with a properly sized (normally 120 Ohm) resistor.

#### 4.2.5. Limitations / Cable Specifications

Allowed cable types	Twisted pair(1 or 2) shielded cable with braid and foil
Cable size	24 - 22 AWG
Termination type	Daisy Chain
Maximum cable length	1200 m (4000 ft)
Maximum devices	Electrical load and protocol dependent

## 4.3. USB Network

### 4.3.1. What Can Be Connected

The USB ports on the Turntide Hubs can be used to connect Turntide VRF Adapters and other supported USB adapters.

### 4.3.2. How to Connect

USB devices can be plugged directly into the available USB ports on either Turntide Hub.

When using the Turntide Enclosure, USB devices should be plugged into the supplied 7 port USB expander.

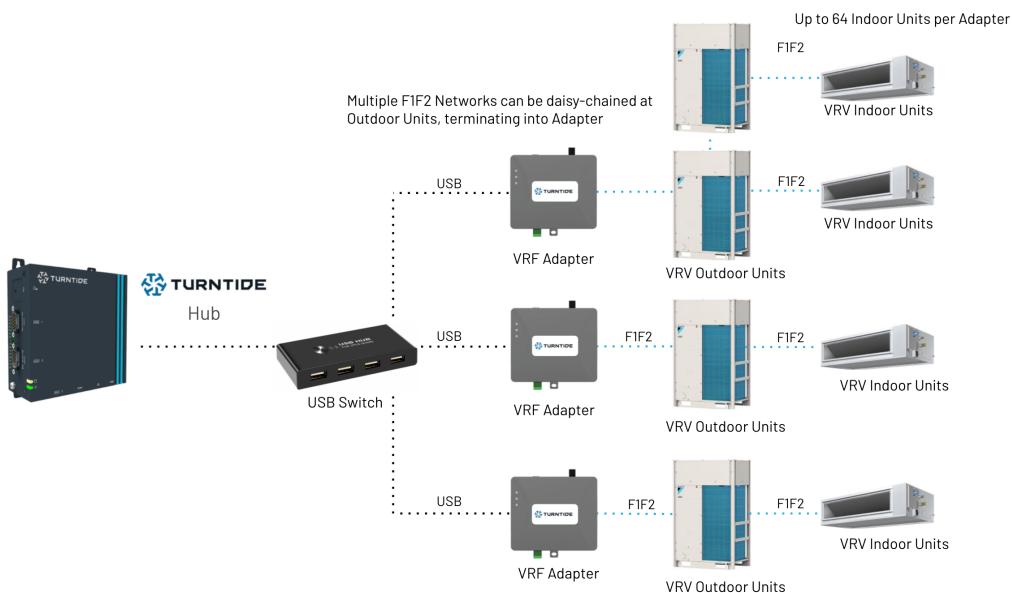
### 4.3.3. Limitations / Cable Specifications

Allowed cable types	USB
Maximum cable length	5 m (16 ft)
Maximum devices	1 per a USB port

## 5. Installing Turntide VRF Adapter

### 5.1. Connecting Power

The Turntide VRF Adapter is powered over USB. It does not require external power. Do not connect 24 VDC power to the Turntide VRF Adapter unless instructed to by Turntide support.



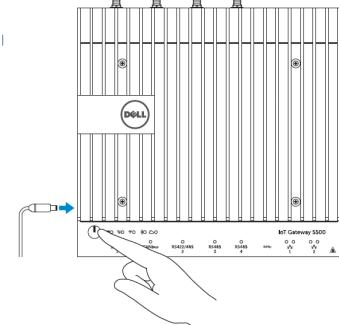
## 5.2. Network Configuration & Connecting to the Hub

Connect the F1F2 bus directly to the D-Net terminal connection on the VRF Adapter. The VRF adapter connects to the Turntide Hub using a USB A-B cable. Natively the Turntide 3000 can connect 2 Turntide VRF Adapters and the Turntide 5000, 3 Turntide VRF Adapters. Up to 7 Turntide VRF Adapters can be connected to a single hub using the USB expander supplied with the Turntide Enclosure.

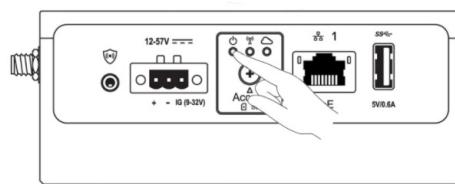
Note: a single F1F2 network can be connected to the VRF adapter.

## 5.3. Network & Cable Limitations

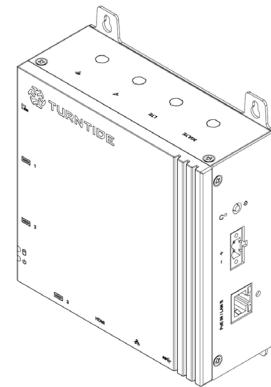
Allowed cable types	2-core, shielded or vinyl-insulated/vinyl-sheathed cable
Cable size	18 - 16 AWG
Termination type	Daisy Chain
Maximum cable length	1,000 m (3,280 ft)
Maximum FCUs (per network)	64



Turntide Hub 5000



Turntide Hub 3000



Turntide Hub 6

## 6. Initial Configuration (Quick Start Guide)

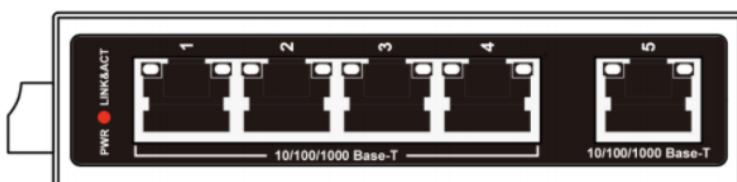
### 6.1. Connecting to the Hub Locally

With the hub mounted, power the panel/hub.

Verify LED power lights are illuminated on the Turntide Hub

Connect an ethernet cable from a PC or laptop to a free port on the ethernet switch.

Configure the computer's IP address as follows:



- IP address: 192.168.1.101
- Subnet Mask: 255.255.255.0
- Router/Default Gateway: 192.168.1.1

## 6.2. Logging In

Using a web browser on the computer, log into the Turntide Hub (<https://192.168.1.100:5000>) with the default admin credentials.

If prompted to accept the security certificate select [Advanced > Go to Website](#)



**Your connection is not private**

Attackers might be trying to steal your information from **192.168.254.105** (for example, passwords, messages, or credit cards). [Learn more](#)

NET::ERR\_CERT\_AUTHORITY\_INVALID

Help improve Chrome security by sending [URLs of some pages you visit, limited system information, and some page content](#) to Google. [Privacy policy](#)

[Hide advanced](#) [Back to safety](#)

This server could not prove that it is **192.168.254.105**; its security certificate is not trusted by your computer's operating system. This may be caused by a misconfiguration or an attacker intercepting your connection.

[Proceed to 192.168.254.105 \(unsafe\)](#) (Not recommended)

**This site is not secure**

This might mean that someone's trying to fool you or steal any info you send to the server. You should close this site immediately.

[Go to your Start page](#)

**Details** (Not recommended)

Your PC doesn't trust this website's security certificate.

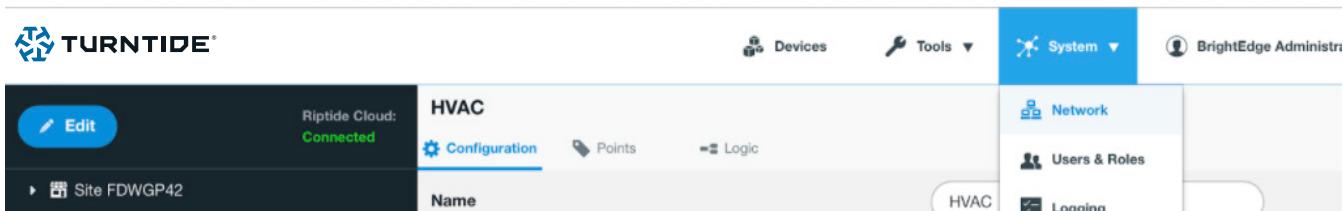
The hostname in the website's security certificate differs from the website you are trying to visit.

Error Code: DLG\_FLAGS\_INVALID\_CA  
DLG\_FLAGS\_SEC\_CERT\_CN\_INVALID

[Go on to the webpage](#) (Not recommended)

## 6.3. Initial Configuration / IP Setup

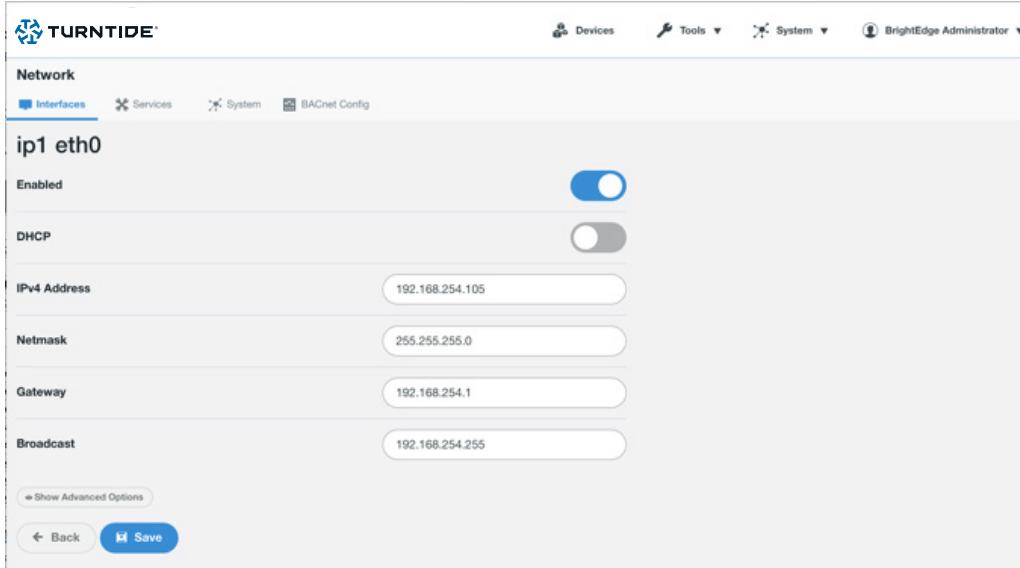
1. Select [System > Network](#) from the navigation bar



The screenshot shows the Turntide Hub interface with the following details:

- Top Bar:** TURNTIDE logo, Riptide Cloud: Connected, Site FDWGP42, Edit button.
- Left Sidebar:** HVAC section with Configuration tab selected, Points, Logic, HVAC.
- Right Sidebar:** Network, Users & Roles, Logging.
- Navigation Bar:** Devices, Tools, System (selected), BrightEdge Adminstr.

2. Select IP interface (IP1 primary interface)

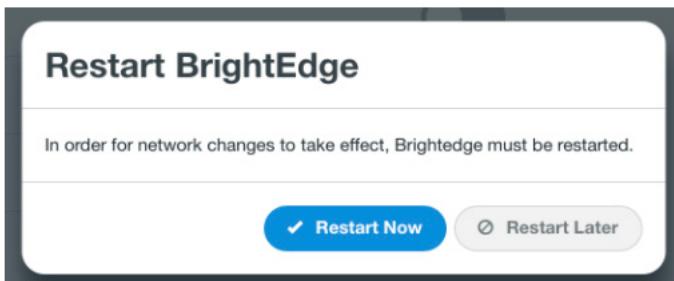


The screenshot shows the 'Interfaces' tab selected in the Network section. A single interface, 'ip1 eth0', is listed. The configuration includes:

- Enabled:** On (blue toggle switch)
- DHCP:** Off (grey toggle switch)
- IPv4 Address:** 192.168.254.105
- Netmask:** 255.255.255.0
- Gateway:** 192.168.254.1
- Broadcast:** 192.168.254.255

At the bottom, there are buttons for 'Show Advanced Options', 'Back', and 'Save'.

3. Disable DHCP and configure the fields with the assigned IP address



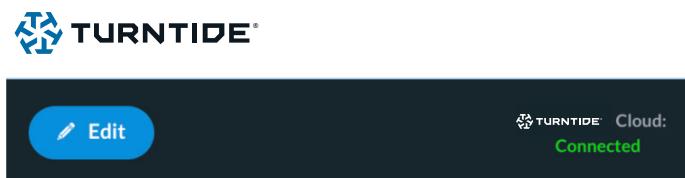
The dialog box has a dark background with white text. It says:

**Restart BrightEdge**

In order for network changes to take effect, Brightedge must be restarted.

**Restart Now**    **Restart Later**

4. Select Save and Restart Now to complete the setup



The screenshot shows the main interface with a dark header. The 'Edit' button is visible on the left. In the top right, it says 'Cloud: Connected'.

## 6.4. Confirming Cloud Connection

While still directly connected to the Turntide Hub, use a web browser to access the hub at the newly assigned IP address (<https://<IP address entered in section 6.3>:5000>)

Once logged in connection to the Turntide Cloud can be verified from the main page.

**Note:** Your computer must be on the same subnetwork as the hub for connection. If any of the first three segments of the hub's IP address were changed, you must adjust your computer's IP address to match.

## 7. Turntide Stratus Troubleshooting Guide

This guide contains first steps to check to help you through issues starting up and connecting devices to the Turntide Hub. If after checking this guide your issue persists please contact support@turntide.com.

### 7.1 IP Network Issues

#### Can't Direct Connect to the Hub

##### Incorrect Username & Password

If you are able to access the Hub UI login page but unable to login, you may be using the wrong username & password.

The Hub UI does not use the same user login as issues for the Turntide web and mobile application. If you do not know the Hub UI login, talk to your Turntide account manager.

##### Incorrect IP Address

To directly connect to the hub, the IP address on your computer must be on the same IP subnet as the Turntide Hub. At default this is 192.168.1.xxx /24. Check to make sure that you have set a static IP address of 192.168.1.xxx (suggested: 192.168.1.105). These guides will show you how:

- Windows: <https://www.hellotech.com/guide/for/how-to-set-static-ip-windows-10>
- MAC: <https://www.macinstruct.com/node/550>

##### Wrong Web URL

When first shipped Turntide Hub is accessed at its default address from any major web browser by entering the url <https://192.168.1.100:5000>. You must be directly connected to the hub and have https at the beginning and :5000 at the end. (*Note: If there are two hubs in the Turntide panel the second hub can be reached at https://192.168.1.101:5000*)

If the Hub's IP address has been configured already for the site, the hub can be reached at [https://<Hub\\_IP\\_Address>:5000](https://<Hub_IP_Address>:5000) where <Hub\_IP\_Address> is the IP address configured.

##### Faulty Physical Connection

To access the Turntide Hub directly the computer you are using must be connected to the Turntide Hub with an ethernet cable. One end must be plugged into your computer and the other end either directly into the IP1 ethernet port on the Turntide Hub or into a network switch that is also connected to IP1 on the Turntide Hub. Check that all ethernet cables are properly plugged in and the cables are not faulty.

## Testing the Connection

If you can still not reach the Turntide Hub UI, test the connection with a ping. In windows, open the Command Prompt program or on Mac open Terminal. Enter the line:

```
ping 192.168.1.100
```

Note: if the IP address of the hub has been changed enter the Hub's IP as opposed to 192.168.1.100.

If the response line reads host unreachable or Request timeout the connection is not active. If it says 64 bytes from 192.168.1.100 and lists a time=xx.xxx ms then the connection is active. Reopen your web browser, double check the web address and try again

## Turntide Hub is Not Connecting to the Turntide Cloud

### Internet via Building LAN

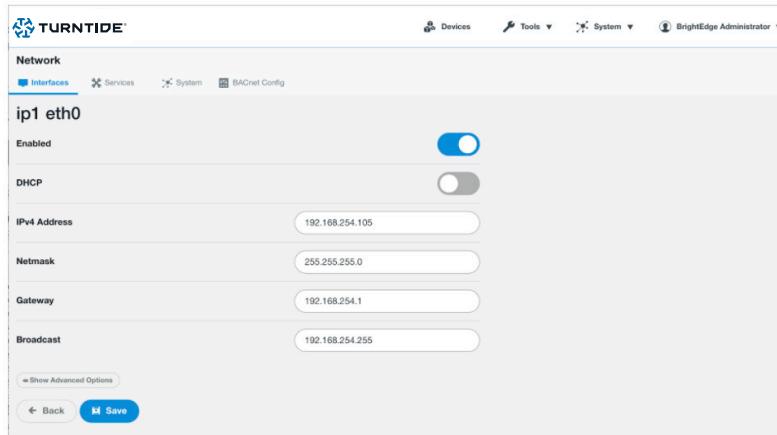
#### IT Firewall

The Turntide Hub requires an outbound connection on several ports to communicate with the Turntide Cloud. If there is no active connection with the Turntide Cloud, confirm with the IT administrator that the below port settings have been configured.

Item	Description	Protocol	Port
Required Egress	Turntide Cloud	MQTT	TCP/8883
Required Egress	Turntide Cloud	SST	TCP/3199
Required Egress	Turntide Cloud	HTTPS	TCP/443
Required Egress	Configurable	DNS	UDP/53
Required Egress	Configurable	NTP	UDP/123
Important Egress	Protocol Specific	HTTP	TCP/80

### Incorrect Network Configuration

To communicate on the local LAN network the Turntide Hub must be configured with a correct IP address. This address must be supplied by the IT administrator. Directly connect to the Hub UI and confirm the IP address entered matches what has been specified by the IT administrator. If it does not, update the IP address, Gateway and Subnet information, set DHCP to disabled. Save and restart the hub.



## Faulty Physical Connection

Check to make sure all physical connections are secure and correct

- Ethernet cable connected to IP1 on the Turntide hub or to a switch that is also connected to IP1 on the Hub
- Ethernet is connected to the correct building network switch and port. This can be confirmed with the IT administrator
- All cables are connected and undamaged

## Cell Modem

### Modem Not Operating

Check the indicator lights on the front of the modem to insure it is powered on and connected. If it is not connected, power the modem on and off.

INDICATOR	BEHAVIOR
	<b>POWER:</b> The IBR200 must be powered by a 4-pin AC adapter. <ul style="list-style-type: none"> <li>• No Light = Not receiving power. Check the power switch and the power source connection.</li> <li>• Blue = Powered on.</li> </ul>
	<b>WiFi BROADCAST:</b> Indicates WiFi activity. <ul style="list-style-type: none"> <li>• Green = WiFi is on and operating normally.</li> <li>• Amber = Attention. Log into NCM and check the router status.</li> </ul>
	<b>EMBEDDED MODEM:</b> Indicates information about the embedded modem <ul style="list-style-type: none"> <li>• Green = Modem has established an active connection.</li> <li>• Blinking Green = Modem is connecting.</li> <li>• Amber = Modem is not active.</li> <li>• Blinking Amber = Data connection error. No modem connection possible.</li> <li>• Blinking Red = Modem is in the process of resetting.</li> </ul>
	<b>SIGNAL STRENGTH:</b> Blue LED bars indicate the active modem's signal strength. <ul style="list-style-type: none"> <li>• 4 Solid Bars = Strongest Signal.</li> <li>• 1 Blinking Bar = Weakest Signal.</li> </ul>

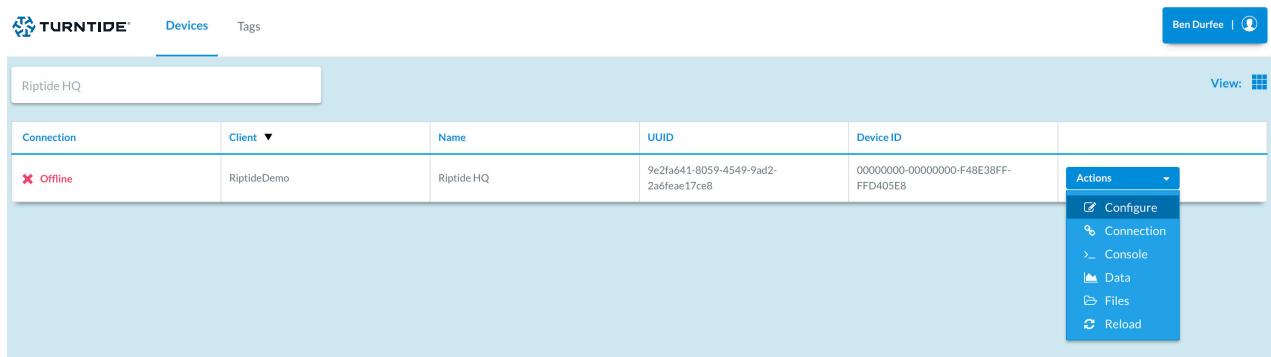
## Poor Cell Service

The cell modem must be mounted in a location with good cellular service. If the cell modem displays a weak single strength (1 or 2 bars), try relocating the modem to an area with better cell service. Try using your phone to identify an area with better service.

## Changes in the Hub UI not reflected in the Application

### Sync the Hub to the Cloud

For changes in the Hub to reflect in the Application the hub must be synced to the Cloud. From the Ops page <app. turntide.com/ops> selected Action → Reload. Wait a few minutes and then refresh the browser you are viewing the web Application from.



Connection	Client ▾	Name	UUID	Device ID	
<span style="color: red;">✗ Offline</span>	RiptideDemo	Riptide HQ	9e2fa641-8059-4549-9ad2-2a6feae17ce8	00000000-00000000-F48E38FF-FFD405E8	<span style="border: 1px solid #ccc; padding: 2px;">Actions</span> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Configure</li> <li><input type="checkbox"/> Connection</li> <li><input type="checkbox"/> Console</li> <li><input type="checkbox"/> Data</li> <li><input type="checkbox"/> Files</li> <li><input type="checkbox"/> Reload</li> </ul>

## 7.2 VRV Discovery Issues

### No VRV Devices Discovered

#### VRV Addressing

Every VRV indoor unit must be assigned a group address and an airnet address at the local controller. Every outdoor unit must be given an airnet address at the unit. Make sure that all devices have been addressed correctly.

#### VRF Adapter Issue

Check the LED lights on the front of the VRF Adapter.

- **Power:** No light = No power to the adapter. Check power source to USB expander

Green = Powered on

- **RxTx:** No light = No data on DIII-Net bus. Check units are on and active

Blinking Blue = Data present on DIII-Net bus

- **ERR:** No light = Normal

Solid Amber = Power issue or data inconsistency. Check power supply at USB expander

Blinking Amber = Data collision. Check VRV system wiring

### Correct and Active Port

Make sure the port you are using for DNET discovery is active. In the Hub UI check in Network → Interface. Active ports are denoted with a green circle. Turntide VRF Adapters will be connected to USB ports, generally usb1.1 - usb1.7, corresponding to ports 1-7 on the USB expander. If the port is not green and the VRF Adapter is powered, make sure the USB connection between the Hub, USB Expander and VRF Adapter are secure.

---

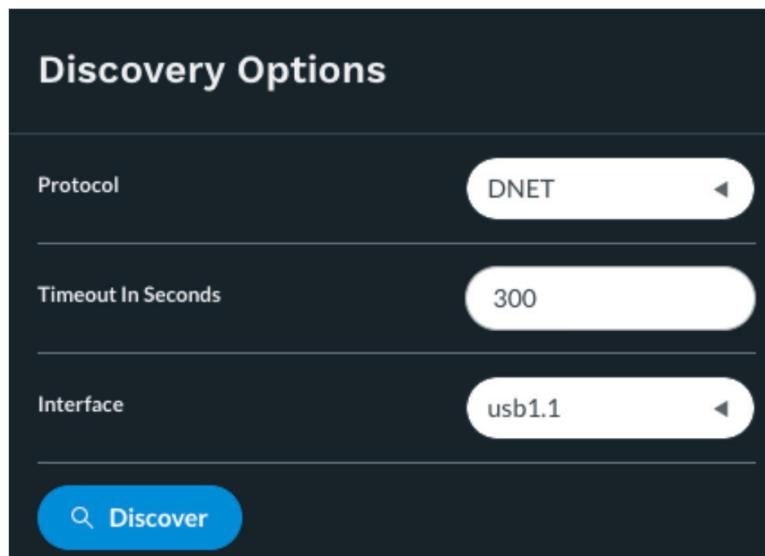
<b>usb1</b>	<input type="radio"/>	/dev/riptide/serial/usb1
<b>usb1.1</b>	<input checked="" type="radio"/>	/dev/riptide/serial/usb1.1
<b>usb1.2</b>	<input type="radio"/>	/dev/riptide/serial/usb1.2

---

### Only Some VRV Devices Discovered

#### Discovery Timeout Too Short

If not all the VRV devices on a network are found while running discovery, the Timeout in Seconds may have been too low, especially on larger VRV networks. Adjust the timeout length up and rerun discovery.



## VRV Device not Connected

If the same devices are not appearing on repeated attempts to discover them, check the physical VRV unit. Ensure the VRV device is powered and the F1F2 network cables are well terminated.

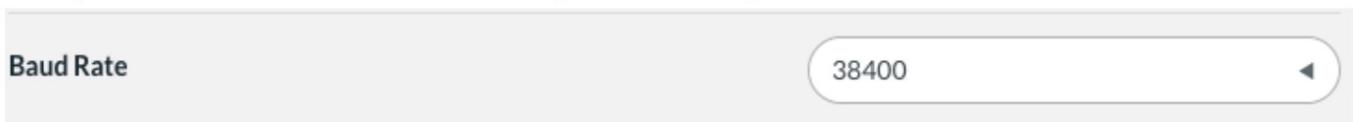
## 7.3 BACnet Discovery Issues

### BACnet MSTP Devices Discovered

#### Inconsistent Baud Rate Settings

Every BACnet device on the same MSTP network must be communicating at the same baud rate (speed). A common default baud is 38.4k but this is usually configurable at the device. The Baud rate for the Turntide Hub can be configured individually for each serial bus port under its configurations in Network → Interfaces (com1 - com4).

Check all devices and make sure they have the same configured baud rate.



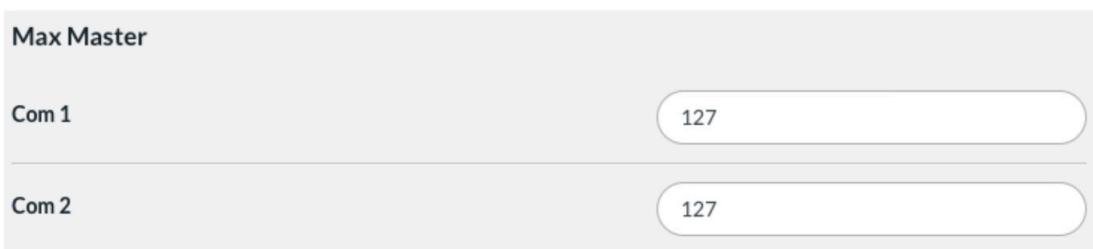
#### Duplicate MAC Addresses

Each BACnet MSTP device must be configured with a unique MAC address at the device. If several devices are missing from discovery, it's possible multiple devices have been programmed with the same MAC address. Check the user guide for the BACnet device and assign it a unique MAC between 1 and 126.

The Turntide Hub is generally configured with a MAC of 0 or 127.

#### Max Master Setting

The Max Master setting can be found in the Hub UI under Network → BACnet Config. This is set to 127 by default to allow communication to all devices.



## TURNTIDE TECHNOLOGY FOR SUSTAINABLE OPERATIONS

Our breakthrough technologies accelerate electrification and sustainable operations for energy-intensive industries.