Getting started with Firefly

Congratulations with your purchase! Thank you for choosing Quantified.

Please note: Quantified can only guarantee full end to end functionality when all components in the network are supplied by Quantified. The use of third-party data platforms to view your data are no problem.

Installing the Gateway (Gateway should be installed BEFORE resetting the nodes)

The data generated by the Quantified Firefly sensor nodes is transmitted using the wireless LoRaWAN protocol. The Gateway receives the data and sends the data to the Internet. The gateway can be connected to the internet with an Ethernet cable or via a Wifi connection. The use of an Ethernet cable is highly recommended. In any case, the supplied antenna must be screwed onto the gateway. The gateway must be placed in a dry environment as near as possible to the sensor nodes and preferably in line of sight.

Ethernet connection

Use the Ethernet port for plugging in the Ethernet cable. For correct operation, it is necessary that port 1700 on your router and network provides unhindered (no Fire Wall) access to the internet.

Wifi connection

The gateway can also be connected to a Wi-Fi network. The Gateway can be pre-programmed by Quantified to work directly with the Wifi network name, security protocol and password you specified. WARNING: The gateway will NOT work on other Wifi networks and will need to be reprogrammed. A separate "one pager" is available on our website to help you with this change.

NOTE: If your Wi-Fi network name or your password changes, the connection to the Internet will no longer work and your data will no longer be sent. You can then change the settings in the gateway yourself. A separate instruction is available to help you with this change.

The gateways physical ports and lights

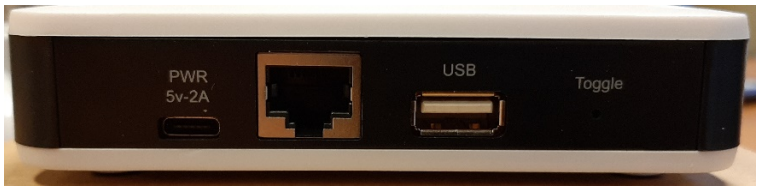


Figure 1: Ports on the gateway

From left to right:

- Power (PWR) USB Type C port 5v-2A
- Ethernet RJ45 host port
- USB 2.0 connector
- Toggle button for resetting gateway (do not use without expert knowledge)

Quantified B.V. · PLNT Building · Langegracht 70 · 2312 NV Leiden · www.quantified.eu

LED lights on the gateway

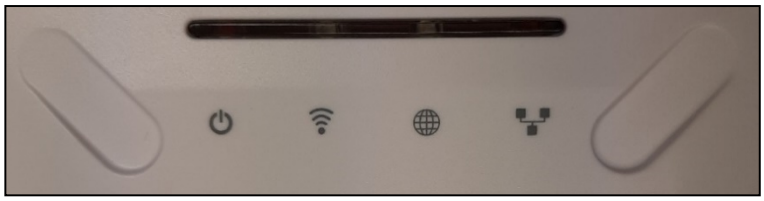
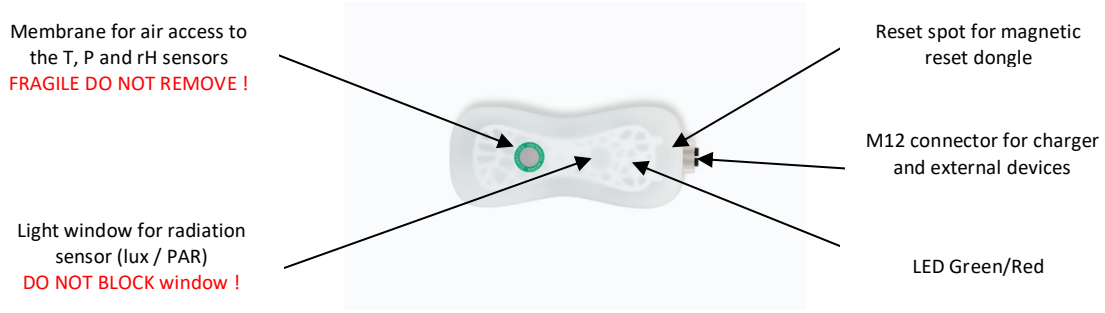


Figure 2: Lights on the top of the gateway

From left to right:

- Power light is red when the gateway has power.
- Wireless connectivity light flashes green when connecting and becomes solid green when connected to the wifi-router. After a while the light turns off.
- Internet connectivity light is solid red when the gateway is not connected to the internet. Once an internet connection has been established the light turns blue. A flickering blue light indicates network activity.
- LoRa connectivity light flashes when connected to ethernet.

Installing the Firefly sensor (first install the Gateway!)



The Firefly sensor nodes are shipped in “safe mode” to preserve battery life. Charging the battery now is a good idea! To get started you need to reset every sensor node by swiping the Quantified magnetic reset dongle over the indicated spot just above the connector. The LED-indicator will flash twice when the reset is successful. The LED-indicator will flash a red – orange – green sequence once it has been successfully reset. When the node transmits a message, it will flash green. As soon as the Firefly has been reset it will start sending data via the internet to the Insight data platform. Depending on the sample rate of your sensor nodes it will take some time before the data will be visible here. On this data platform, you can view the device based on its unique identification number

Ensure that the M12 connector is always shielded with one of the provided caps to prevent corrosion and internal damage. To further eliminate possible damage, always place the sensors horizontally or with the connector facing down.

LoraWAN

The communication protocol that is used by the Quantified sensor nodes is called LoRaWAN. It is comparable with protocols like Bluetooth and Wifi but can transit over long ranges with very low power usage. This makes it possible to transmit wirelessly on a battery. For reference find the table below.

Technology	Wireless Communication	Range	Power Usage
Bluetooth	Short range	10 m	2.5 mW
Wifi	Short range	50 m	80 mW
3G/4G	Cellular	5 km	5000 mW
LoRa	LPWAN	2-5 km (urban / cities) 5-15 km (rural / villages) > 15-80 km (open field)	20 mW