Resource
Data Management

# Bluetooth Monitor
# 4 Input Module

Commissioning/ User Guide
Revision 1.1h


PR0631-4I

# Contents



Before installing or using this product, read the contents of this guide thoroughly to familiarise yourself with all the operating parameters and features. Please refer to the safety information detailed in the Technical Specification section. The host equipment **must** provide adequate protection against contact to hazardous live parts.

# Bluetooth Mesh Systems

## From Resource Data Management

The RDM Bluetooth 4I monitor has 4 inputs. Each input can be configured as either a temperature probe or plant fault input. If configured as a temperature probe each input has an over and under temperature alarm set point as well as an associated alarm delay. There is an option to offset each temperature probe input to compensate for long cable runs. Input 2 can also be configured as a defrost input for probe 1 and features a defrost overrun alarm.

When set as plant fault each input has the option to be either normally open or normally closed with an alarm delay.

The Bluetooth 4I monitor uses the latest in Bluetooth mesh technology.

The 4I monitor is logged on to a Data Manager front end system, via a Bluetooth Access Point (PR0632-SF or PR0632-DIN), without the need for a full site wired network infrastructure. This provides greater flexibility for monitoring and control solutions for applications where the installation of a wired network isn't feasible or cost effective.

The 4I monitor obtains its power supply from an external 5Vdc power supply.

The 4I monitor supports; PT1000, NTC2K, 470R, 700R, 3K, NTC2K25, 5K, 6K, NTC10K or NTC10K(2) temperature probes.

**Note**: Probe types cannot be mixed.

**Note**: Bluetooth is only available from DMTouch software version V3.2.1 and above

# Bluetooth Technology

## Typical Non-Bluetooth Mesh Network

Shown below is a typical Wireless network. In Fig 1. Each Wireless device communicates directly to a central point which is the gateway. Any data provided by a device on the Wireless network is relayed via this gateway.

Fig 1

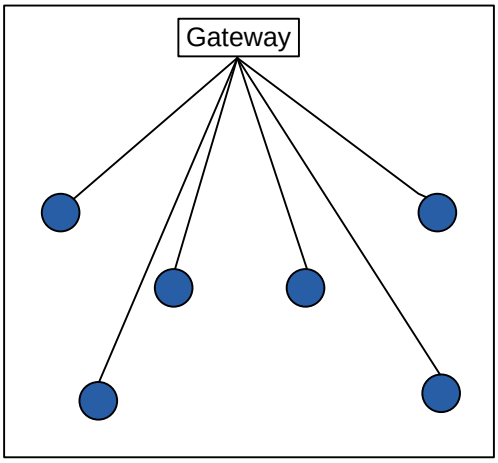
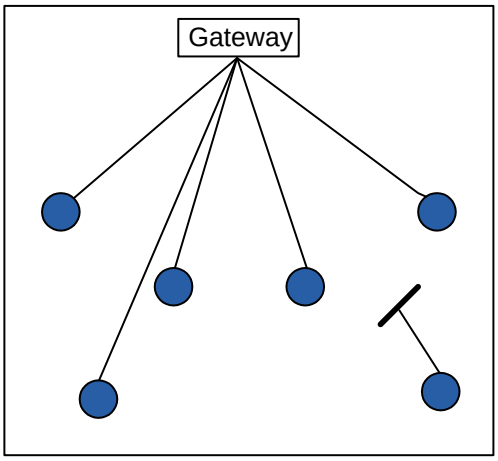



Fig 2




If any single Wireless device loses direct communication with the gateway, e.g. a structure is erected in front of the unit as seen in Fig 2, then the Wireless device would be unable to send/receive any data to/from the gateway. This results in having to either move the Wireless device, the obstruction or the gateway to restore communication.

## Typical Bluetooth Mesh Network

Shown below is the RDM Bluetooth mesh system (Fig 3).

Fig 3

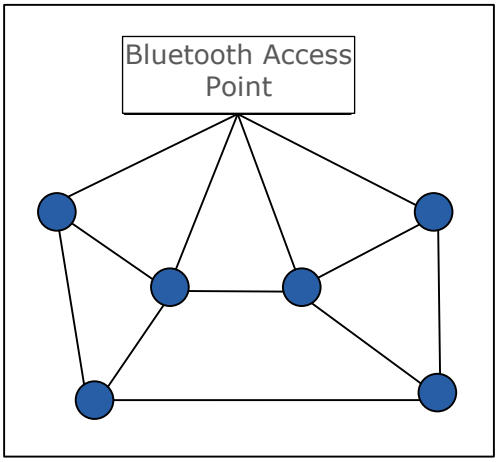
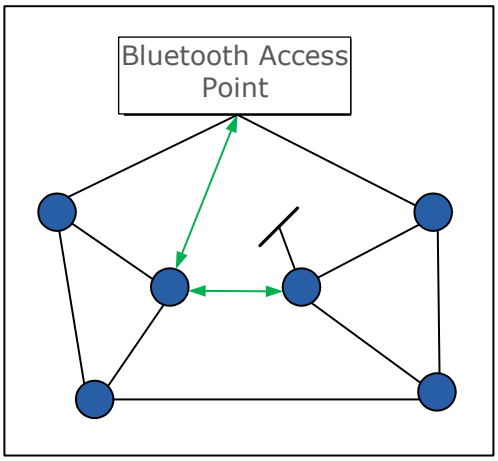



Fig 4

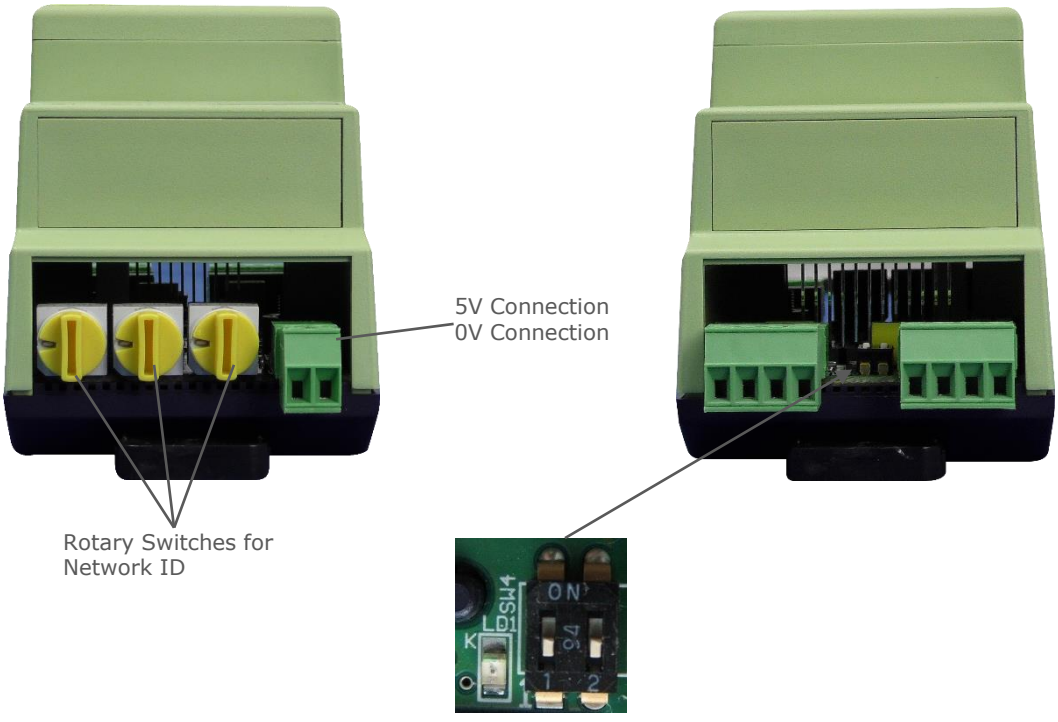



With the RDM Bluetooth mesh system, Bluetooth devices 'talk' to each other as oppose to only the gateway. Where a device doesn't have direct communication with the Bluetooth Access Point, its data can be forwarded via one of the other Bluetooth mesh devices which is in range of the Bluetooth Access Point as shown in Fig 4.

RDM recommends that at least one repeater is used for every 8 devices. This should ensure that there is enough coverage to create the Bluetooth mesh network for the probes to communicate back to the DMTouch. The repeaters should be located in places to help the mesh network spread across the area that the probes are located in.

## Connections

The diagram below shows the connection detail for the 4I monitor. Inputs are assigned according to the chosen configuration. See Input/ Output tables for further details on connections.


Network LED and Channel Selector Switch

**Note: -** The monitor comes supplied with a 5V Din Rail mount PSU.

Do not connect an earth

## Input/ Output Allocation Table

The following table indicates the functions of the inputs and outputs.

| 4I Monitor | Description | Alarm Action |
|---|---|---|
| Probe 1 | Probe 1 or Plant Fault 1 | Yes |
| Probe 2 | Probe 2 or Plant Fault 2 or Defrost Input | Yes |
| Probe 3 | Probe 3 or Plant Fault 3 | Yes |
| Probe 4 | Probe 4 or Plant Fault 4 or Defrost Input | Yes |

## 4I Example System

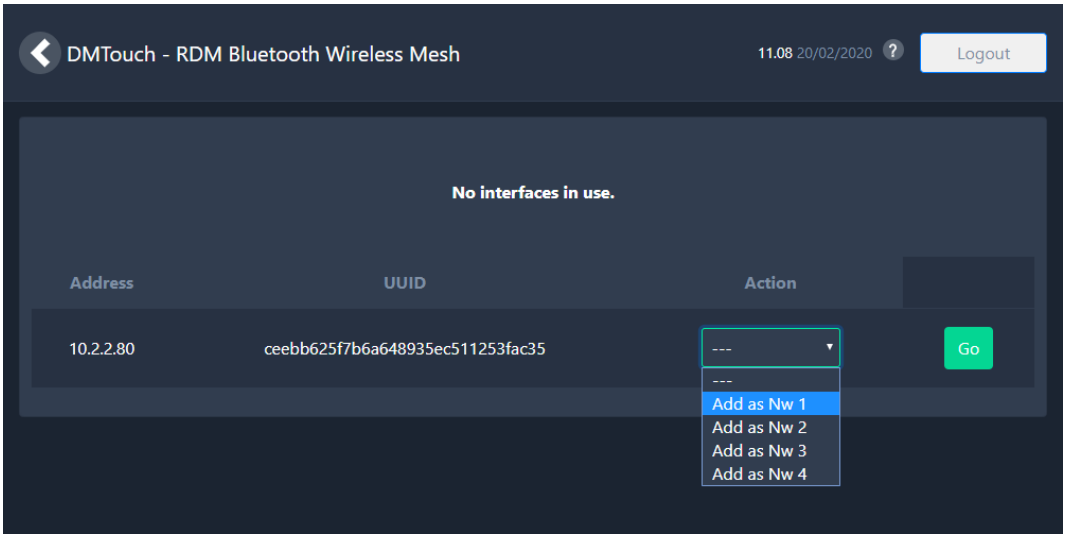
Below is a simplified example of a site setup.


In the above example a number of 4 Input monitors are connected to a Data Manager via the Bluetooth Access Point. The Bluetooth Access Point, is connected to the Data Managers Ethernet 0 IP network via a CAT5 patch cable (see section on Bluetooth Access Point). The Bluetooth mesh 4I monitor transmits data to/ from the Bluetooth Access Point as a radio signal. The Bluetooth Access Point in turn passes the data on to the Data Manager via its Ethernet network connection. This same process allows the Data Manager to send data to the 4I monitors.

# Bluetooth Mesh Setup on Data Manager

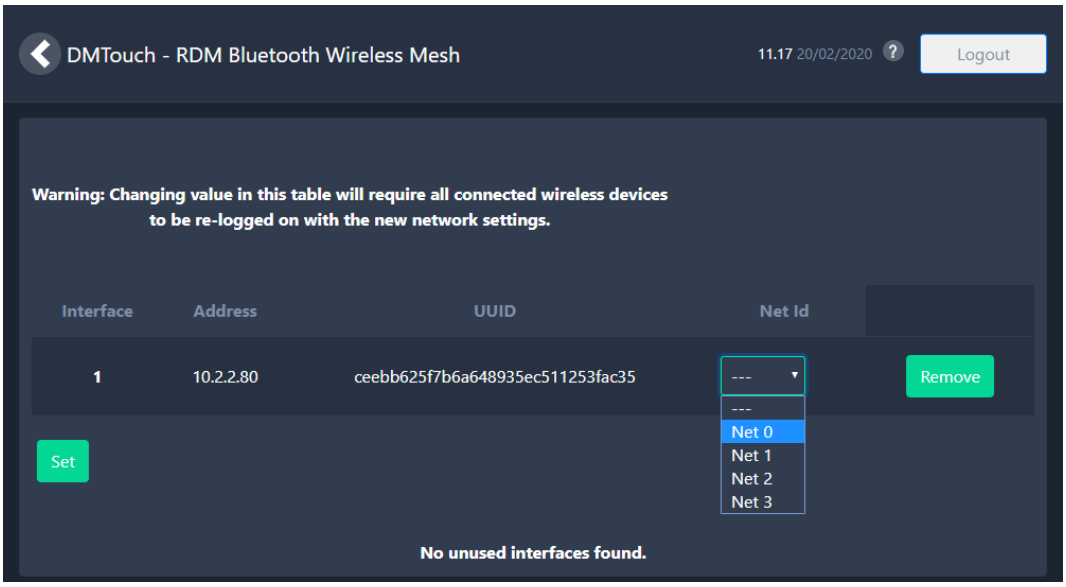
From the Service Menu select: Devices/ Network/ RDM Bluetooth Wireless Mesh

The following guide should be used to configure an RDM Bluetooth Access Point for use with a DMTouch. Up to 4 Bluetooth Access Points can be connected to the DMTouch's Ethernet 0 network. This is advantageous should the wireless network be split across multiple floors in a building.




Shown above is an example screenshot from the DMTouch's 'Bluetooth Setup' page. It shows no current interfaces in use and a single Bluetooth Access Point that has not yet been configured. As mentioned above up to 4 Bluetooth Mesh networks can operate simultaneously. The first step is to set the Access Point's Network number from the 'Action' drop down menu and click 'Go'.

Once the unit has been added as a network it will list it in the below table.




From here, select the desired Net ID (0 – 3) from the drop down menu.

**Note**: Any Bluetooth mesh device to be logged on to the DMTouch via this Access Point must have its network channel switch set to the same Net ID selected for the Access Point.

Press 'Set' to save any changes made.

Now configure the wireless mesh device that is to be logged on to the DMTouch.

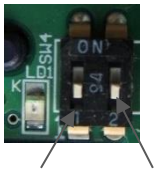
**Note:** The software feature 'DMTouch Bluetooth Mesh Software Enabler' (PR0635) will allow 32 devices to be logged on to the DMTouch. This can be over a single Access point or multiple Access points.

## Network Channel

Communication between the Bluetooth mesh 4I monitor and the Data Manager is dependent on the same network channel being selected in both units. The Data Manager Bluetooth mesh page must be configured before logging on any 4I monitor. The Data Manager can be set to either Net 0, 1, 2 or 3. This allows a number of Bluetooth mesh networks to operate in the same area without interfering with each other.

The network channel switch on the 4I allows the monitor to be configured to operate on the desired Data Manager's network channel. The following switch positions determine the net channel in use.

Both switches down = Net 0
Switch 1 up 2 down = Net 1
Switch 1 down 2 up = Net 2
Switch 1 and 2 up = Net 3




Switch 1 Switch 2

In the above image both switches are in the down position.

**Note**: If the network channel in the Data Manager is altered then each 4I monitor will have to have its network channel changed accordingly and each unit will have to be power cycled so that they acquire the new network settings.

## Network ID

The 4I monitor has three rotary switches for network addressing. The monitors have an auto-initialise function, which will automatically log the device onto the site network when the rotary switches are set to the desired address. If the rotary switches are set to '123' then the device will log on to the Data Manager and appear in the device list as RC12-3.

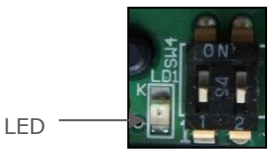
If the wrong address has been entered into the monitor or the ID must be changed then the following procedure must be followed;

- Power down the monitor
- Set the three rotary switches to '000'
- Power up the monitor and leave powered for +5 seconds
- Power down the monitor
- Set the three rotary switches to the new ID and power it back on.
  Note: The incorrect/ old address may have to be deregistered from the Data Manager.

If the rotary switches are set to '999 then the monitor will not log on to the Data Manager but will act as a repeater for the network traffic.

## LED Operation

The LED represents the Bluetooth network traffic. This will flash on/off at 1 second intervals when the monitor is in range of the Bluetooth Access Point and has logged on to the Data Manager.



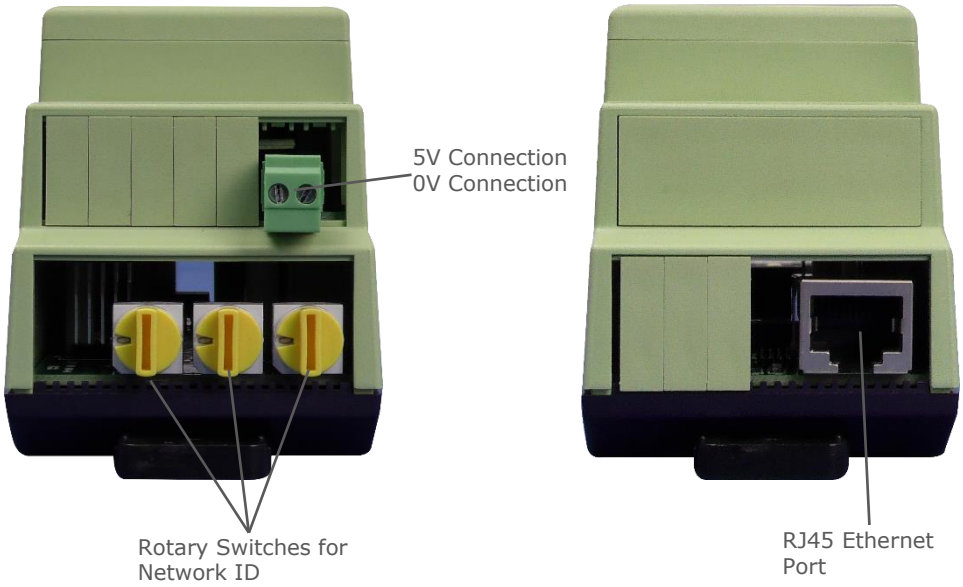
# Bluetooth Access Point

The Bluetooth Access Point comes in two hardware platforms both similar in function; A PR0632-DIN or a PR0632-SF. Both units are setup using the same method.

**Note**: The Bluetooth Access Point unit will only work with DM software V3.2.1 and above.
**Note:** The access point should be connected and powered up before adding Bluetooth devices.

## PR0632-DIN

The DIN rail mountable PR0632-DIN has the below connections.


The gateway itself must be powered by a 5Vdc supply and connected to the Data Manager via a standard Ethernet IP network.

The three rotary switches can be adjusted depending on the network it is connected. See IP Configuration for more details.

From this point the gateway must be configured as outlined in the Bluetooth Mesh Setup on a Data Manger section.

**Note :-** The PR0632-DIN comes supplied with a 5v Din Rail mount PSU

## PR0632-SF

The wall mountable PR0632-SF has the below connections.


The PR0632-SF has the options of being powered by either a 5Vdc supply or by using Power over Ethernet (PoE) and then connected to the Data Manager via a standard Ethernet IP network. RDM's PoE injector kit can be utilised to supply power (PR0619).

The three rotary switches can be adjusted depending on the network it is connected. See IP Configuration for more details.

From this point the gateway must be configured as outlined in the Bluetooth Mesh Setup on a Data Manger section.

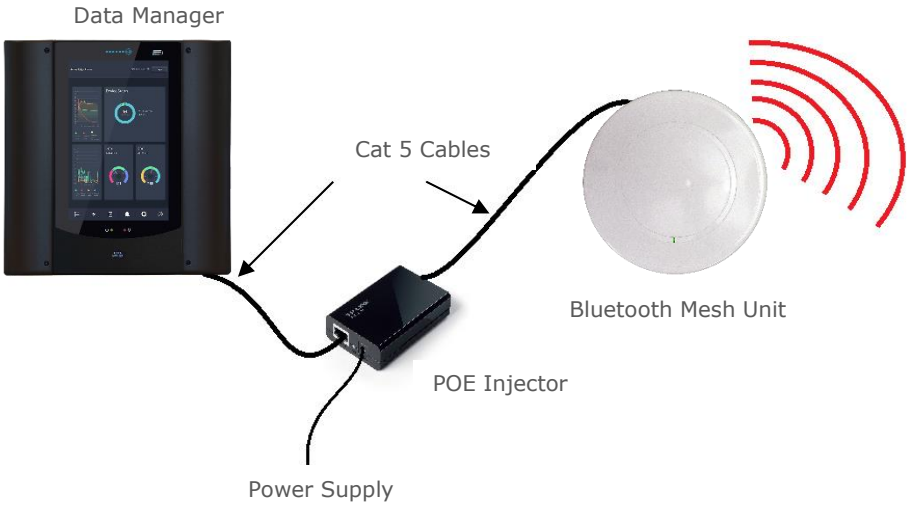
**Note :-** The PR0632-SF comes supplied with a 5v External Desktop PSU

## Option 1 – Direct Power Supply – PR0632-DIN/ PR0632-SF

There are two methods to which the Bluetooth Access Point can be connected to the Data Manager. The first, simply uses its IP interface to directly connect to the Data Manager's Ethernet 0 IP network via a CAT5 cable where the Bluetooth Access Point is powered from a direct power supply (5Vdc).


## Option 2 – Power over Ethernet (PoE) – PR0632-SF

The second utilises the Power over Ethernet standard (PoE) where the POE Injector can be ordered (PR0619) separately. In this instance the Bluetooth Access Point is powered directly via the CAT5 lead and would require no additional power supply. The PoE injector is powered separately and is connected directly to the Ethernet 0 network of the Data Manager (LAN IN). The second IP (LAN OUT) port of the injector will be to communicate and power the Bluetooth Access Point.




Please refer to the CAT5 standard with regards to maximum cable lengths. The POE injector will supply power up to 100m of cable.

**Note: -** The PR0632 does not come supplied with PoE (Power over Ethernet) injector.

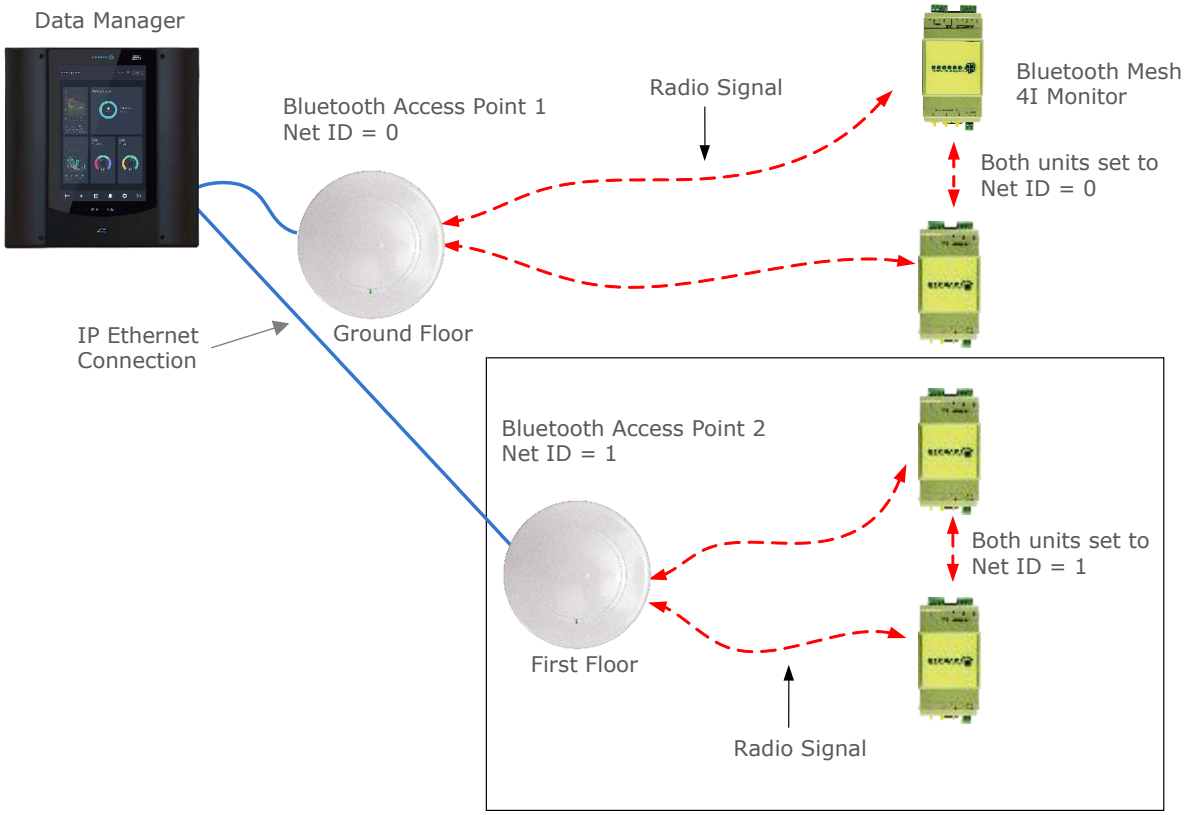
## IP Configuration

For the Bluetooth Access Point to connect to a DMTouch its IP address must be configured and connected to the Eth0 interface. The IP address of the module is dependent on the rotary switch positions. The table below shows the configuration.

| Rotary Address | IP Address Range |
|---|---|
| 001 to 254 | The module is set to operate in the 10.1.2.XXX range with the last part of the IP address being a number between 1 and 254. The last part of the IP address determined by the rotary switch address entered.<br><br>For example if the rotary switch address is set to '150' then the module will be assigned the address 10.1.2.150. |
| 301 to 555 | The module is set to operate in the 192.168.0.XXX range with the last part of the IP address being a number between 1 and 254. The last part of the IP address is determined by the rotary switch address entered.<br><br>Rotary address 301 equates to 1, 302 is 2 etc up to address 555 which is 254. If you add 300 to the last part of the desired IP address it will provide the required rotary switch setting.<br><br>For example if the desired IP address is '192.168.0.150' then the module rotary switch address will be '450'. |
| 000 or 999 | The module is set to DHCP mode and will request an IP address from network. Set '999' and power on the module. |
| Remaining Addresses | The remaining rotary switch addresses are reserved for future use and should not be used. |

## Multiple Bluetooth Access Points

The Data Manager can support up to four Bluetooth Access Points (any combination of PR0632-DIN and PR0632-SF). This is advantageous should the Bluetooth network be split across multiple floors in a building. Shown below is a simplified network configuration with two Bluetooth Access Points.




In the example above, two Bluetooth Access Points are connected to a Data Manager via Eth 0. One is configured as Net ID 0 and the other as Net ID 1. One is installed on the ground floor of a building and the other on the first floor. By setting the Net ID on the 4I monitors to the appropriate Net ID (set within the Data Manager) the associated monitors can be logged on to the desired Bluetooth Access Point.

**Note**: 4I monitors can only communicate with other Bluetooth mesh monitors or an Access Point unit which are set to the same Net ID.

**Note:** The access point should be connected and powered up before adding Bluetooth devices.

# Logging on a 4I Monitor to the Data Manager

The following steps should be followed when logging on a 4I monitor to the Data Manager. See also Mounting and Installation Instructions

- Ensure the Data Manager has software version V3.2.1 or above.
- Ensure the Bluetooth Mesh interface (PR0635) is enabled in the Data Manager 'System Configuration'.
- Configure the Bluetooth Access Point as detailed in the IP Configuration section.
- Now connect the Bluetooth Access Point to the Data Manager via an Ethernet cable.
- Configure the Bluetooth Network Setup page in the Data Manager. Add the desired Access Point and set the desired 'Network ID'.
- Set the Network Channel on a given 4I monitor to match that of the Data Manager you wish to log the monitor on to.
- Now set the three network ID rotary switches on the 4I monitor to the desired address and power up the monitor.
- After a short duration the 4I monitor will appear in the Data Manager's device list. At this point check and edit the parameters if necessary.
- If the monitor does not appear follow the instructions within the Network ID section.

When commissioning a site for the first time start by logging on the 4I monitors closet to the Bluetooth Access Point before working out towards the 4I units which are furthest away.

## Parameter Table

Once the 4I monitor has been addressed and has logged onto the Data Manager the following parameters can be reviewed and changed if necessary.

| Parameter | Range °C (°F) | Step | Units | Default °C (°F) | Comments |
|---|---|---|---|---|---|
| Probe Type | PT1000<br>NTC2K<br>470R<br>700R<br>3K<br>NTC2K25<br>5K<br>6K<br>NTC10K<br>NTC10K (2) | N/A | N/A | PT1000 | Select the desired probe type.<br><br>NTC10K (2) = USA |
| Channel 1 Select | Off<br>Probe<br>Plant N/C<br>Plant N/O | | | Probe | - Channel not used<br>- Temperature probe<br>- No 0 volt return signal = 'Plant 1 Fault'<br>- 0 volt return signal = 'Plant 1 Fault' |
| Chan 1 Prb Slug | No<br>Yes | | | No | Electronic slugging. Applies a damping factor which is used to make a standard probe have the same temperature response as a mechanical product probe. |
| Channel 1 Offset | -10 to +10<br>(-20 to +20) | 0.1 | Deg | 0.0<br>(0.0) | Allows the user to offset the measured temperature reading to account for long cable runs. |
| Chan 1 UT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | -2.0<br>(28.4) | Channel 1 Under temperature alarm |
| Chan 1 OT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | 5.0<br>(41) | Channel 1 Over temperature alarm |
| Chan 1 Alm Dly | 00:00 to 99:00 | 01:00 | mm:ss | 20:00 | Alarm delay for OT, UT and Plant fault alarms on Channel 1. |
| Channel 2 Select | Off<br>Probe<br>Plant N/C<br>Plant N/O<br>Defrost | | | Probe | - Channel not used<br>- Temperature probe<br>- No 0 volt return signal = Plant 2 Fault<br>- 0 volt return signal = Plant 2 Fault<br>- 0 volt return signal = Probe 1 Defrost active |
| Chan 2 Prb Slug | No<br>Yes | | | No | Electronic slugging. |
| Channel 2 Offset | -10 to +10°C<br>(-20 to +20) | 0.1 | Deg | 0.0<br>(0.0) | Allows the user to offset the measured temperature reading to account for long cable runs. |
| Chan 2 UT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | -2.0<br>(28.4) | Channel 2 Under temperature alarm |
| Chan 2 OT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | 5.0<br>(41) | Channel 2 Over temperature alarm |
| Chan 2 Alm Dly | 00:00 to 99:00 | 01:00 | mm:ss | 20:00 | Alarm delay for OT, UT and Plant fault alarms on Channel 2. |
| Channel 3 Select | Off<br>Probe<br>Plant N/C<br>Plant N/O | | | Probe | - Channel not used<br>- Temperature probe<br>- No 0 volt return signal = 'Plant 1 Fault'<br>- 0 volt return signal = 'Plant 1 Fault' |
| Chan 3 Prb Slug | No<br>Yes | | | No | Electronic slugging. Applies a damping factor which is used to make a standard probe have the same temperature response as a mechanical product probe. |
| Channel 3 Offset | -10 to +10<br>(-20 to +20) | 0.1 | Deg | 0.0<br>(0.0) | Allows the user to offset the measured temperature reading to account for long cable runs. |
| Chan 3 UT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | -2.0<br>(28.4) | Channel 1 Under temperature alarm |
| Chan 3 OT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | 5.0<br>(41) | Channel 1 Over temperature alarm |
| Chan 3 Alm Dly | 00:00 to 99:00 | 01:00 | mm:ss | 20:00 | Alarm delay for OT, UT and Plant fault alarms on Channel 1. |
| Channel 4 Select | Off<br>Probe<br>Plant N/C | | | Probe | - Channel not used<br>- Temperature probe<br>- No 0 volt return signal = Plant 2 Fault |

| | | | | | |
|---|---|---|---|---|---|
| | Plant N/O<br>Defrost | | | | - 0 volt return signal = Plant 2 Fault<br>- 0 volt return signal = Probe 1 Defrost active |
| Chan 4 Prb Slug | No<br>Yes | | | No | Electronic slugging. |
| Channel 4 Offset | -10 to +10°C<br>(-20 to +20) | 0.1 | Deg | 0.0<br>(0.0) | Allows the user to offset the measured temperature reading to account for long cable runs. |
| Chan 4 UT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | -2.0<br>(28.4) | Channel 2 Under temperature alarm |
| Chan 4 OT | -90 to +128<br>(-130 to +260) | 0.1 | Deg | 5.0<br>(41) | Channel 2 Over temperature alarm |
| Chan 4 Alm Dly | 00:00 to 99:00 | 01:00 | mm:ss | 20:00 | Alarm delay for OT, UT and Plant fault alarms on Channel 2. |
| Df Recovery | 00:00 to 99:00 | 01:00 | mm:ss | 20:00 | Defrost Recovery Period |
| Df Overrun | 00:00 to 99:00 | 01:00 | mm:ss | 60:00 | Defrost Overrun |
| Temp Units | Deg C<br>Deg F | N/A | N/A | N/A | Select the desired Temperature Unit |

## Defrost

If Channel 2 is set as 'Defrost' and a defrost signal is received then the controller input 'Defrost 2' will change from off to on. Channel 1's control state will now show 'Defrost'. Any OT/UT alarms on Channel 1 will be inhibited during the time the defrost signal is present.

## Defrost Overrun

A defrost overrun period can be set into the controller. If the defrost signal is present and exceeds this period the controller will generate a 'Channel 1 defrost overrun' alarm. OT/UT alarms will still be inhibited until the defrost signal is removed even after the Defrost Overrun alarm has been generated. Setting the Defrost Overrun parameter to 00:00 inhibits the feature.

## Defrost Recovery Period

After the defrost signal is removed Channel 1 enters the Recovery period. All OT/UT alarms will continue to be inhibited for the duration of the Recovery period. Once the recovery period expires OT/UT alarms will be enabled.

## Network Alarms

The table below shows the text and associated type number that is sent to the system 'front end'. The type number is normally used to provide different alarm actions.

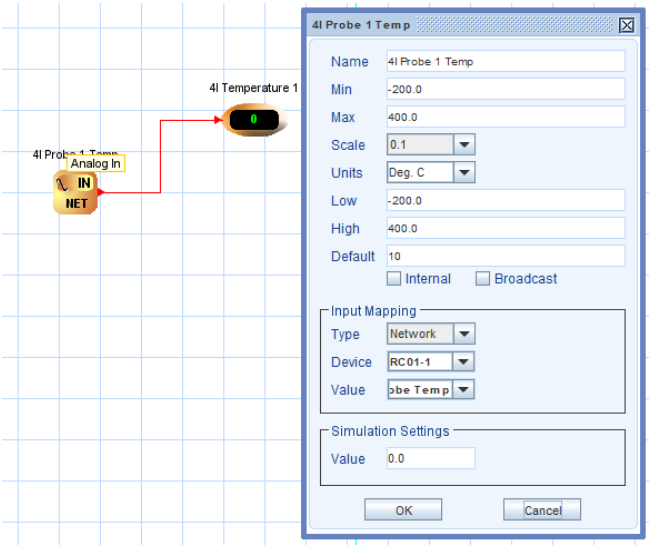
| Alarm text | Type # (Index #) |
|---|---|
| Probe 1 Over Temperature | 4 |
| Probe 2 Over Temperature | 4 |
| Probe 3 Over Temperature | 4 |
| Probe 4 Over Temperature | 4 |
| | |
| Probe 1 Under Temperature | 5 |
| Probe 2 Under Temperature | 5 |
| Probe 3 Under Temperature | 5 |
| Probe 4 Under Temperature | 5 |
| | |
| Probe 1 Faulty | 6 |
| Probe 2 Faulty | 6 |
| Probe 3 Faulty | 6 |
| Probe 4 Faulty | 6 |
| | |
| Plant 1 Fault | 6 |
| Plant 2 Fault | 6 |
| Plant 3 Fault | 6 |
| Plant 4 Fault | 6 |
| | |
| Probe 1 Df Overrun | 20 |
| Probe 3 Df Overrun | 20 |

## Data Builder

Using a TDB program running on a DMTouch, miniDM or Intuitive TDB Controller, the user can pull in values from the Inputs of the 4I Monitor.

To read information into a TDB program, the user would use an Analog Input block with the following setup: -

**Type** This must be set to 'Network'.
**Device** Enter the controller name as it appears in the device/network list e.g. 'RC26-1'.
**Value** Enter the input you would like to pick up, making sure the name matches exactly the same as on the item is displayed (including upper and lower case characters)



# Technical Specification

**Note** the product must be used as detailed by the manufacturer, failure to comply may result in the level of protection being affected.

| | |
|---|---|
| **Power Requirements** | |
| Supply Voltage Range | 5VDC ±10% |
| Supply Frequency | DC |
| Maximum Supply Current | 0.6A |
| Typical Supply Current | < 0.3A |
| **General** | |
| Operating Temperature Range | 0°C to +50°C (32°F to +122°F) |
| Operating Humidity | 80% maximum |
| Storage Temperature Range | -20°C to +65°C (-4°F to +149°F) |
| Environmental | Indoor use at altitudes up to 2000m, pollution degree 2, installation category III. |
| Dimensions – L x W x H | 110mm (4.3in) x 52.5mm (2in) x 68mm (2.7in) |
| Approx. Mass | 133g (0.293lbs) |
| IP Rating | IP20 |
| EMC | EN 61326-1: 2013<br>EN 55032: 2015<br>ETSI 301 489-1 V2.2.3<br>ETSI 301 489-17 V3.1.1<br>FCC – X8WBT832<br>ICES-003 Issue 6 |
| Ventilation | There is no requirement for forced cooling ventilation |
| Insulation | Class III |
| Origins | Product designed in the UK manufactured in Taiwan |
| **Probe Inputs** | |
| Input Resistance | 3.01K Ohms (NTC type probes) |
| Rated Voltage | 3.3V |
| Measurement Category | CAT I |
| **Bluetooth** | |
| Bluetooth version | 5.0 |
| Operating Mode | Mesh Network |
| Frequency | 40 Channels selectable from 2.4 – 2.485 GHz |
| Output Power | +4dBm to -20dBm |
| Receiver Sensitivity | -96dBm |
| Transmit power | 4dBm |
| Antenna Gain | 2.34 dBi |
| Range | Range is directly dependant on site conditions. Obstacles such as metal structures and the presence of other 3rd party wireless devices operating in the same frequency range affect the maximum range achievable. |
| Data rate | 125Kbps to 2Mbit/s |
| Max Number Hops | 5 |
| Max Number Devices | 64 per Bluetooth Access Point |
| **Bluetooth**® is a registered trademark of Bluetooth SIG. | |
| **NFC** | |
| Frequency | 13.56 MHz |
| Signal Type | NFC-A Type 2 Tag conforming to ISO 14443-3A |
| Range | 10mm (0.4in) – 30mm (1.2in)<br>Range dependant on 3rd party wireless device used to communicate to the NFC on the 4I monitor. |
| Data Rate | 106 kbps |

# Technical Specifications – PR0632-SF/DIN

| | |
|---|---|
| **Power Requirements** | |
| Supply Voltage Range | 5VDC ±10% |
| Supply Frequency | DC |
| Maximum Supply Current | 1A |
| Typical Supply Current | < 0.5A |
| **General** | |
| Operating Temperature Range | 0°C to +50°C (32°F to +122°F) |
| Operating Humidity | 80% maximum |
| Storage Temperature Range | -20°C to +65°C (-4°F to +149°F) |
| Environmental | Indoor use at altitudes up to 2000m, pollution degree 2, installation category III. |
| Dimensions – L x W x H (SF) | 193mm (7.6in) x 193mm (7.6in) x 23mm (0.9in) |
| Dimensions – L x W x H (DIN) | 110mm (4.3in) x 52.5mm (2in) x 68mm (2.7in) |
| Approx. Mass (SF) | 305g (0.672lbs) |
| Approx. Mass (DIN) | 121g (0.267lbs) |
| IP Rating | IP20 |
| EMC | EN 61326-1: 2013<br>EN 55032: 2015<br>ETSI 301 489-1 V2.2.3<br>ETSI 301 489-17 V3.1.1<br>FCC – X8WBT832<br>ICES-003 Issue 6 |
| Ventilation | There is no requirement for forced cooling ventilation |
| Insulation | Class III |
| Origins | Product designed in the UK manufactured in Taiwan |
| **Ethernet** | |
| PoE Supply Voltage Range (SF only) | 48VDC ±10%<br><br>It's recommended that the product is powered by an IEEE 802.3af compliant power sourcing equipment (PSE). |
| PoE Supply Protection (SF only) | Short circuit protected |
| PoE standard (SF only) | Conforms to IEEE 802.3af Power-over-Ethernet (PoE) standard. |
| PoE Supply Frequency (SF only) | DC |
| PoE Maximum Supply Current (SF only) | 1A |
| PoE Maximum Typical Current (SF only) | < 0.5A |
| Ethernet Interface | Conforms to 10Base-T & 100Base-T with Auto MDI/MDIX |
| Max Cable Length | 100m |
| **Bluetooth** | |
| Bluetooth version | 5.0 |
| Operating Mode | BLE Mesh Network |
| Frequency | 40 Channels pseudo-randomly selected from 2.4 – 2.485 GHz using AFH |
| Output Power | +4dBm to -20dBm |
| Range | Outdoors (Line of sight): 220m (722ft) – 330m (1082ft)<br>Indoors: 10m (33ft) – 50m (164ft)<br><br>Range dependant on site conditions. Obstacles such as metal structures and the presence of other 3rd party wireless devices operating in the same frequency range affect the maximum range achievable. |
| Data rate | 125Kbps to 2Mbit/s |
| Max Number Hops | 5 Hops |
| Max Number Devices | 64 per Bluetooth mesh unit |
| **NFC** | |
| Frequency | 13.56 MHz |
| Signal Type | NFC-A Type 2 Tag conforming to ISO 14443-3A |
| Range | 10mm (0.4in) – 30mm (1.2in)<br><br>Range dependant on 3rd party wireless device used to communicate to the NFC on the gateway. |
| Data Rate | 106 kbps |

## Maximum Number of Devices per Network

Up to 4 access points can be supported by a single DMTouch. For example, wireless coverage across multiple floors/levels in a building. A DMTouch supports up to a total of 64 Bluetooth Mesh enabled devices*.

A software enabler is required per 32 devices (PR0635).

*Devices include the 2I2O, 4I, wireless probes and comms monitors.

# Related Part Numbers

| Description | Part Number |
|---|---|
| Bluetooth 232 Module | PR0630 |
| Bluetooth Monitor (2I/ 2O) | PR0631-2I2O |
| Bluetooth Monitor (4 Input) | PR0631-4I |
| Bluetooth Ethernet Access Point with POE | PR0632-SF |
| Bluetooth Ethernet Access Point | PR0632-DIN |
| Bluetooth Probe | PR0633 |
| Data Manager RDM Bluetooth Enabler (Block 32 devices) | PR0635 |

## Power Supply

Please see power supply user document for further details before installation.

# Cleaning

Do not wet the controller when cleaning. Clean the front by wiping with slightly damped lint free cloth.

# Mounting and Installation Instructions

The installation instructions apply to both the 4I monitor and the Bluetooth Access Point.

- When installing the 4I monitor try to avoid physical obstacles which block direct line of sight with the Bluetooth Access Point such as brick walls, metal structures etc as this may reduce the effectiveness of the radio signal.
- The Bluetooth Access Point should be mounted centrally within the installation in relation to the majority of the 4I monitors. Care must be taken to position the Access Point away from physical obstacles so that the Bluetooth Access Point can be detected by most Bluetooth 4I monitors.
- As with all radio equipment avoid mounting the monitor nearby other Electronic equipment as to minimise the possibility of interference.
- When mounting the monitor avoid metal surfaces, where possible, to maximise the radio signal range.
- Avoid mounting the 4I monitor in between two metal surfaces and do not install the product inside metal enclosures.

# Network Repeater

If communication issues are encountered setting the rotary switches on a 2I2O or 4I monitor to '999' will enable the monitor to act as a repeater module for the network traffic. The repeater module will not appear on the Data Manager as a device. This module can then be placed in between the Bluetooth Access Point and the problem monitor(s).

**Note**: Each repeater allows a maximum of 10 devices.

RDM recommends that at least one repeater is used for every 8 devices. This should ensure that there is enough coverage to create the Bluetooth mesh network for each module to communicate back to the DMTouch. The repeaters should be located in places to help the mesh network spread across the area that the probes are located in.

## Disclaimer

The specifications of the product detailed in this document may change without notice. RDM Ltd shall not be liable for errors or omissions, for incidental or consequential damages, directly or indirectly, in connection with the furnishing, performance or misuse of this product or document.

## Warranty Information

www.resourcedm.com/terms-and-conditions/

# Revision History

| Revision | Date | Changes |
|---|---|---|
| 1.0 | 03/11/2020 | First Release |
| 1.1a | 18/12/2020 | DM compatibility version added |
| 1.1b | 21/12/2020 | I/O Table updated |
| 1.1c | 15/03/2021 | Note added to advise product comes with power supply. |
| 1.1d | 02/04/2021 | Note added regarding devices logging on over multiple access points |
| 1.1e | 28/09/2021 | Data Builder section added. |
| 1.1f | 02/11/2021 | Part numbers updated. |
| 1.1g | 03/02/2023 | Note added for the amount of repeaters recommended. |
| 1.1h | 07/03/2023 | Note added to network repeater. |

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