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COMARK
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Diligence™ 600

Transmitter Reference Manual

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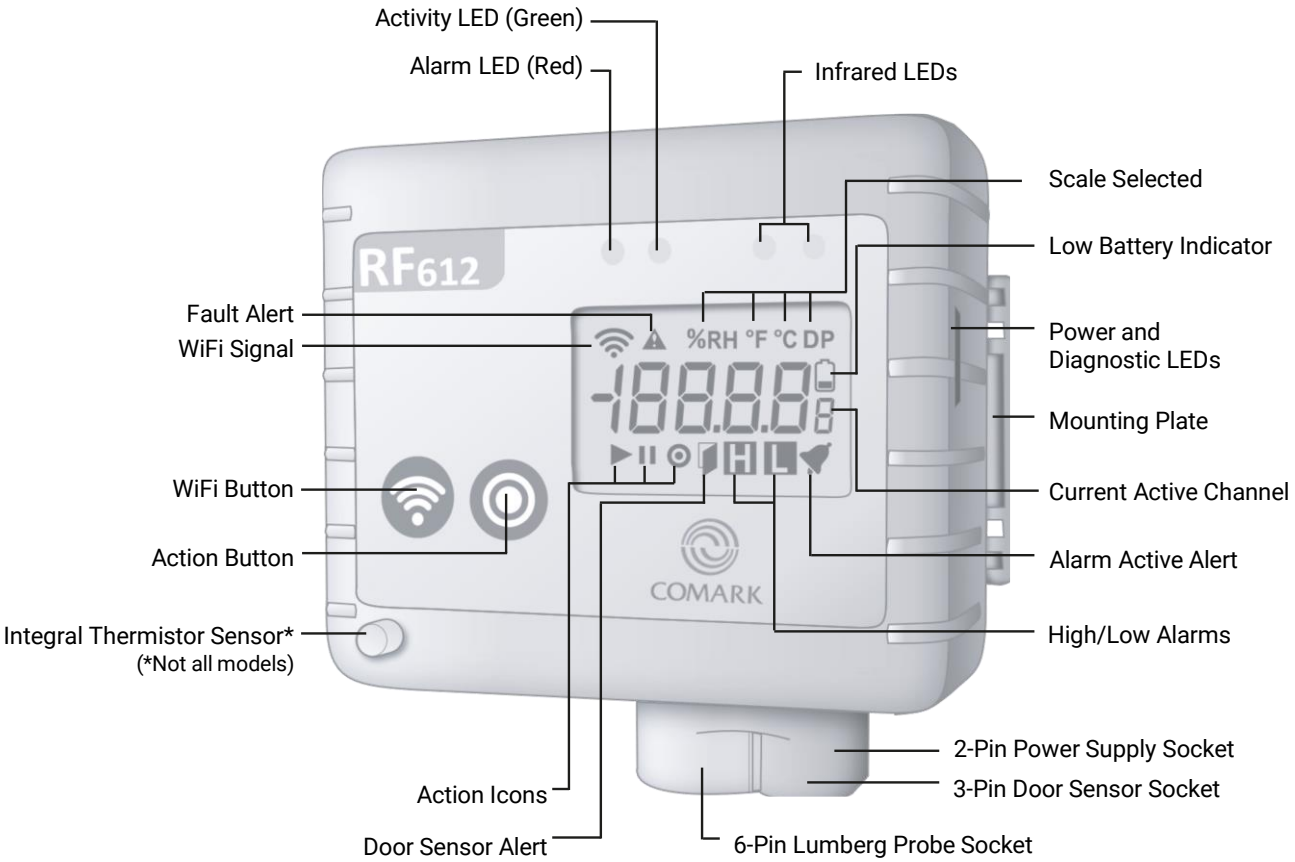
1. Understanding The Transmitter



1.1 WiFi Button

The **WiFi Button** has several functions:

1. Press and hold for one second. The connection to the WiFi could take up to a minute from the button press. The **Activity LED (Green)** will flash as it attempts to connect to the **Diligence Cloud**. The **Activity LED (Green)** will stay solid whilst the connection is active and whilst the transmitter sends any unsent data and/or receives any new **Tasks**. The **Activity LED (Green)** will go off once the connection is complete and WiFi is turned off.

2. Press and hold for five seconds. The transmitter will go into **Survey Mode** and check the WiFi signal strength. To exit, press the **WiFi Button** again.

3. Press and hold the **WiFi Button** and **Action Button** simultaneously for five seconds to place the transmitter into **Setup Mode**. Press the **WiFi Button** again to exit **Setup Mode**.

After a user WiFi connection request, the lower section of the **WiFi Signal** icon ( ) will flash to indicate that a WiFi session is pending. It will remain flashing until a reading is taken, then the transmitter will start the WiFi session.

A reading is taken once a minute regardless of the log rate. The WiFi module is deactivated while a reading is taken. If the transmitter is not logging it will start a WiFi session immediately.

1.2 Action Button

The **Action Button** allows you to navigate between **Active Channels**.

1. Press once to change the **Active Channel** that is displayed.

2. Press and hold the **Action Button** and **WiFi Button** simultaneously for five seconds to place the transmitter into **Setup Mode.**

3. Press to mute an **Audible Alarm.**

1.3 Buzzer (Not Shown)

Above the **WiFi Button** and **Action Button** is a built-in **Buzzer** (not shown) for alarm and other indications during use of the transmitter. The **Buzzer** will activate for 30 seconds when the transmitter detects an alarm.

Pressing either the **WiFi Button** or **Action Button** will mute the alarm. If not required, the **Buzzer** can be turned off in the settings for the transmitter in the **Diligence Cloud**.

1.4 Alarm LED (Red)

The **Alarm LED (Red)** will flash whenever one or more channels is in an active (unacknowledged) alarm state. It will not flash for high and low alert states but will flash for high and low alarm states.

If not required, the **Alarm LED (Red)** can be de-activated in the settings for the transmitter in the **Diligence Cloud**. This will not impact alarms.

1.5 Activity LED (Green)

The **Activity LED (Green)** will briefly flash every second to indicate that the transmitter is operating normally. The **Activity LED (Green)** will also flash once whenever the **WiFi Button** has been operated.

1.6 Infrared LEDs

The **Infrared LEDs** are only used during the manufacturing process and do not display or have any significance in normal operation.

1.7 WiFi Signal Icon

If the **WiFi Signal** icon ( ) is not showing, then the transmitter has no signal or has not been set up. WiFi signal strength is denoted by the number of bands showing - one band is low signal; all four bands is excellent signal.

When the WiFi is connecting, the **WiFi Signal** icon ( ) will flash each segment consecutively, from low to full. If the lower part of the **WiFi Signal** icon ( ) is flashing, then the transmitter is about to wake up and connect to the server. It could take 30 seconds or more before the WiFi connects.

1.8 Fault Alert Icon

When present, the **Fault Alert** icon (⚠) indicates that there is a fault with the transmitter. The **Fault Alert** icon (⚠) will usually appear along with a numerical **Fault Code**. A full list of **Fault Codes** is available in section 7.7.

1.9 Scale Selected

The **Scale** will show against the selected channel and will indicate the scale selected via a **Task** from the **Diligence Cloud**. There are four scale options.

1. %RH – % Relative Humidity
2. °F – Temperature in degrees Fahrenheit
3. °C – Temperature in degrees Celsius or Centigrade
4. DP – Dew Point Temperature in either Celsius or Fahrenheit

1.10 Low Battery Indicator Icon

The **Low Battery Indicator** icon ( ) will show when the batteries are low. The transmitter will continue to operate normally, but we recommend replacing the batteries with new ones as soon as possible.

If the **Low Battery Indicator** icon ( ) is flashing, the batteries are critically low and should be replaced immediately. The transmitter may still log data, but no wireless communication will be possible. Should the display show **Stop** the logging has stopped and the batteries must be replaced in order to start logging again.

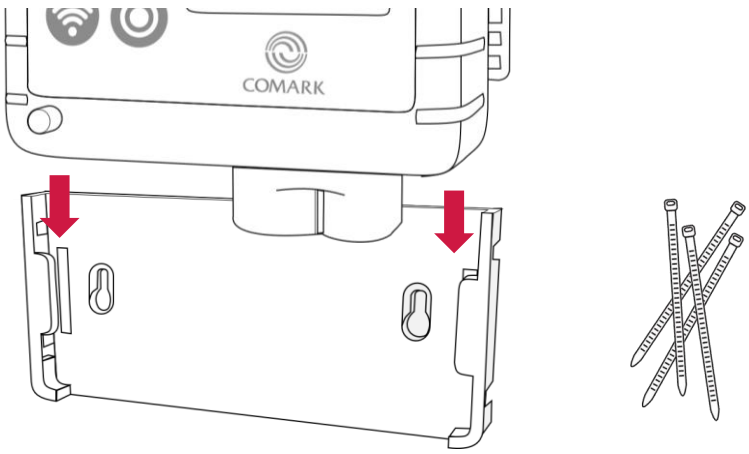
1.11 Power & Diagnostic LEDs

These illuminate at various times depending on the transmitter interactions.

1. Green – A **Mains PSU** (RF520) is connected to the transmitter
2. Solid Red – The WiFi is active
3. Flashing Yellow – The transmitter is attempting to connect to WiFi
4. Solid Yellow – The transmitter is connected to WiFi
5. Solid Red and Yellow – The transmitter is connected to the **Diligence Cloud**

1.12 Mounting Plate & Mounting Bracket

The transmitter has an integral **Mounting Plate** allowing it to slot into the (wall mounted) **Mounting Bracket** and be secured with cable ties if required.



When installing in high humidity environments, such as those found in food factories, near walk-In steam ovens or when installing on external (outside) walls, the transmitter should always be mounted within a **Waterproof Enclosure**.

1.13 Current Active Channel

The number of active channels is dependent on the transmitter type.

Channel Description	Active Channel
Internal (Integral) Channel*	0
External 1	1
External 2	2
External 3	3
External 4	4
Door Event Sensor	5

*The **Internal Channel** (Cold Junction) of the Diligence 600 WiFi Thermocouple Transmitter (RF614) is located inside the Lumberg connector.

Please refer to the features of each Diligence 600 transmitter model for details on the number and type of available channels.

When the transmitter has been tasked, the **Active Channel** will be indicated using the **Active Channel** segment on the display, to indicate which channel is currently active.

NOTE – Displayed values will be updated once per minute during normal logging.

1.13.1 Door Event Sensor

When programmed via a **Task**, Channel 5 on the display will show the time in minutes and seconds that the **Door Event Sensor** has been in an open state, in the current average period. This value is displayed in multiples of five seconds.

Should the **Door Event Sensor** reman in an open state for the entire average door open period, the value will not rise even if the affected door stays open.

1.14 Alarm Active Icon

The **Alarm Active** icon ( ) will flash when the **Active Channel** is currently registering an unacknowledged alarm.

NOTE – If the active channel is not in alarm, then the **Alarm Active** icon ( ) will not flash.

1.15 High/Low Alarm Icons

The **High/Low Alarm** icon (H L) will show to alert you that the value displayed for the **Active Channel** has exceeded the alarm limit. If the **High/Low Alarm** icon (H L is flashing, then the **Active Channel** is registering a **High/Low Alarm**.

1.16 Door Sensor Alert Icon

The **Door Sensor Alert** icon ( ) indicates that a door is either open or closed. If the door is in alarm, the **Door Sensor Alert** icon (will flash.

1.17 Action Icons

The **Play** icon (►) will flash when the transmitter is tasked and logging normally. This is normal status. If the **Play** icon (►) is solid, then the transmitter has received a **Task** but is waiting for a reading.

The **Pause** icon (⏸) can indicate that the transmitter is connected to the **Diligence Cloud** but has not yet received a **Task**.

The **Action** icon (⊙) indicates that the transmitter is waiting for input from the user to perform an action.

If both the **Pause** icon (⏸) and the **Play** icon (►) are displayed, then the display will indicate ‘rDy’ (ready), indicating that the transmitter is waiting for a manual start.

1.18 The Lumberg Probe Socket

The Diligence 600 transmitters are fitted with a single 6-pin **Lumberg Probe Socket** that provides the means for external measurement probes and transducers to be connected, either directly or via a compatible adaptor.

- **Single (Simplex) Probe Connections**

Both the Diligence 600 WiFi Temperature Transmitter (RF612) and the Diligence 600 WiFi Thermocouple Transmitter (RF614) can be used with just a **Single (Simplex) Probe**, directly connected to the **Lumberg Probe Socket** to provide single channel monitoring. Please refer to our website for a full list of **Single (Simplex) Probes** compatible with each transmitter.

- **Double (Duplex) Probe Connections**

Only the Diligence 600 WiFi Temperature Transmitter (RF612) is compatible with **Double (Duplex) Probes.** One **Double (Duplex) Probe** can be directly connected to the **Lumberg Probe Socket** to provide dual channel monitoring. There are currently no available **Double (Duplex) Probes** for the Diligence 600 WiFi Thermocouple Transmitter (RF614). Please refer to our website for a full list of compatible probes.

- **Additional Measurement Channels**

The Diligence 600 WiFi Temperature Transmitter (RF612) supports a maximum of four external measurement points so, in order to add additional probes to the 6-pin **Lumberg Probe Socket** of the transmitter, an adaptor is required.

Up to four **Single (Simplex) Probes** can be added via the Diligence 600 4-Way PST Adaptor (RF601A) and two **Double (Duplex) Probes** can be added via the Diligence 600 Y Adaptor (RF602Y). Full details of both adaptors are available via the Comark Website.

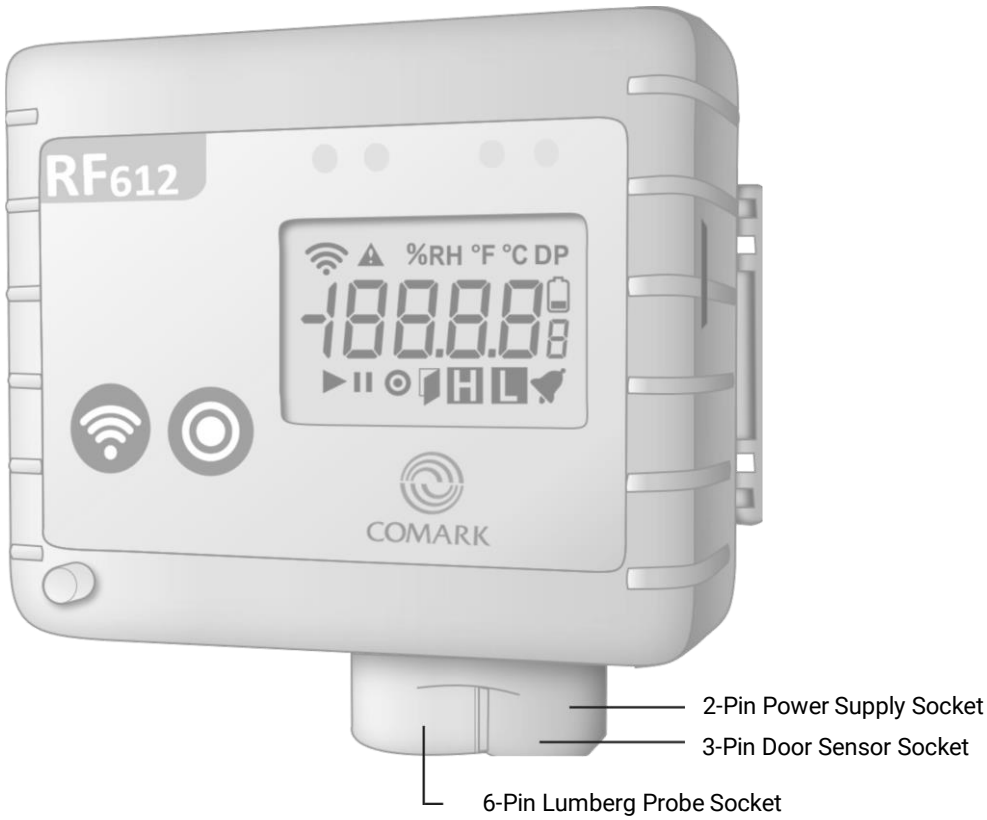
NOTE - the Diligence 600 Y Adaptor (RF602Y) can support both **Single (Simplex)** and **Double (Duplex) Probes** whereas the Diligence 600 4-Way PST Adaptor (RF601A) only supports **Single (Simplex) Probes**.

The Diligence 600 WiFi Thermocouple Transmitter (RF614) supports a maximum of three external measurement points when a **Sub-Min Adaptor (N2000ADP/T or K)** and **Sub-Min Probes** are used.

The **Lumberg Probe Socket** of the Diligence 600 WiFi Multi-Parameter Transmitter (RF615) is not designed for external probes and is solely designed to accommodate two external transducers via a single Multi-Parameter 2-Way Adaptor Box (RF615B) or four transducers by using a second Multi-Parameter 2-Way Adaptor Box (RF615B) and a Diligence 600 Y Adaptor (RF602Y).

1.19 The Power & Door Sensor Sockets

Some Diligence 600 transmitters are each fitted with a 2-pin **Power Supply Socket** and 3-Pin **Door Sensor Socket** which are located at the bottom of the transmitter next to the 6-pin **Lumberg Probe Socket**.



- **The 2-Pin Power Supply Socket**

The 2-Pin **Power Supply Socket** is designed to work solely with the 5V Mains Power Supply Unit (RF520), which supplements the transmitter batteries. When a power supply unit is connected to this socket and in use, the **Power LED (Green)** on the side of the transmitter will be active to indicate the additional power input.

- **The 3-Pin Door Sensor Socket**

The 3-Pin **Door Sensor Socket** allows for the connection of an external **Door Event Sensor**. The Standard Door Event Sensor (RF521) is for regular refrigerator and freezer doors, whilst the Heavy-Duty Door Event Sensor (RF522) is for roller shutter doors.

2. Operating The Transmitter

All functions on the transmitter are completed using the two buttons on the front of the transmitter.

2.1 WiFi Button

The **WiFi Button** has several functions:

1. Press and hold for one second. The connection to the WiFi could take up to a minute from the button press. The **Activity LED (Green)** will flash as it attempts to connect to the **Diligence Cloud**. The **Activity LED (Green)** will stay solid whilst the connection is active and whilst the transmitter sends any unsent data and/or receives any new Tasks. The **Activity LED (Green)** will go off once the connection is complete and WiFi is turned off.

2. Press and hold for five seconds. The transmitter will go into **Survey Mode** and check the WiFi signal strength. To exit press the **WiFi Button** again.

3. Press and hold the **WiFi Button** and **Action Button** simultaneously for five seconds to place the transmitter into **Setup Mode**. Press the **WiFi Button** again to exit **Setup Mode**.

2.2 Action Button

The Action Button allows you to navigate between **Active Channels**.

1. Press once to change the **Active Channel** that is currently displayed.
2. Press and hold the **Action Button** and **WiFi Button** simultaneously for five seconds to place the transmitter into **Setup Mode**.

2.3 Main LCD Display

The **Main LCD Display** is a section of 4.1 Characters. This display will show your measurement value in the range -19999 to +19999. Depending on the value being displayed there could be one or two decimal points.

Over Range and **Under Range** warnings will be displayed when the reading is greater than or less than the max that the display show i.e. >19999 or <-19999.

When the maximum measurement value is exceeded i.e. is >32000 or <-32000 then the display will show four dashes.

Open Circuit readings will also be displayed with four dashes where applicable:

NOTE – A WiFi Multi-Parameter Transmitter (RF615) that is not connected to an 2-Way Adaptor Box (RF615B) will measure small values on its input. Depending on the chosen scale these may result in a random value being displayed. When connected to a 2-Way Adaptor Box (RF615B) the channels will display a reading for 0mA or 0V depending on the configuration of the channel. The WiFi Multi-Parameter Transmitter (RF615) does not display **Open Circuit** readings, only **Under Range** or **Over Range** readings. A zero is displayed when there is no connection.

2.4 Setup With Quick Start Guide (QSG)

The Diligence 600 transmitters rely upon a good WiFi signal for their connectivity. Without a good signal they will struggle to connect, send data, receive new **Tasks** and there will be a severe impact on battery life. It is best practice to confirm that a strong WiFi signal is present at the location the transmitters are to be used.

If concerned that the WiFi signal strength in the selected location could be an issue, please see Checking The WiFi Signal Strength (Survey Mode).

Initial setup of the transmitter is best carried out following the steps outlined in the Quick Start Guide (QSG) included with the transmitter. If required, a copy can also be downloaded from the Comark Website. (www.comarkinstruments.com)

2.4.1 Error Messages During Setup

After exiting **Setup Mode** the transmitter should be provoked by pressing the **WiFi Button** until the **Activity LED (Green)** activates. This will start a WiFi session with the Diligence Cloud. If all is well the WiFi Signal icon ( ) will remain solid. This may take a few seconds in order for a connection to be established.

NOTE – Should an error message or fault code be displayed at this point, then something has gone wrong with the process.

- Fault Code 8 = no WiFi is setup
- Fault Code 16 = no **Diligence Cloud** server details.
- Fault Code 24 = Fault Code 8 and Fault Code 16 combined.

Should any of these messages be displayed, then please contact Comark Technical Support for further assistance.

If the message 'IdEr' (ID Error) appears flashing on the display then the **Diligence Cloud** does not recognise the details that were entered for the transmitter. This could be for several reasons such as an incorrect **Diligence Cloud** account number was entered during this setup process or, the wrong serial number was provided to the **Diligence Cloud**.

Please check these settings prior to repeating the process. Further information is available in the troubleshooting section of this document. Should 'IdEr' (ID Error) continue to be displayed after repeating the process, then please contact Comark Technical Support for further assistance.

3. Locations & Alarm Groups

3.1 Locations & Alarm Groups Overview

Transmitters are nested under two different sub-headings, on the **Diligence Cloud** data management platform, which are **Locations** and **Alarm Groups**. This is to provide a suitable context for each transmitter, in your estate of devices, that relates to its physical location.

Transmitters are nested within **Alarm Groups** and **Alarm Groups** in turn are nested within **Locations**. Each transmitter can only be associated with a single **Alarm Group** and each **Alarm Group** can only be linked to a single **Location**.

To change the **Location** of a transmitter it must either be re-tasked and re-allocated to a different **Alarm Group** and/or **Location** or the existing **Alarm Group**/**Location** must be renamed.

An **Alarm Group** can have an unlimited number of transmitters allocated, subject to the **Diligence Cloud** licence plan type. A **Location** can have an unlimited number of **Alarm Groups**, again subject to **Diligence Cloud** licence plan type. How **Locations** and **Alarms Groups** are defined and named is subject solely to user preference.

- **What is a Location?**

A **Location** is typically a physical location within the business premises where transmitters are installed for monitoring purposes. This could mean a room, a warehouse, a wing of a hospital, or a department. A **Location** could also be a reference to a group of transmitters such as 'All Refrigerators'. Once created, a **Location** must have at least one **Alarm Group** associated with it, before it can be used.

- **What is an Alarm Group?**

An **Alarm Group** refers to a group of transmitters that share a common physical location, usage type or equipment type (i.e. Pharmacy or Pathology Refrigerators).

An **Alarm Group** contains transmitters, where each transmitter is monitoring one or more items of equipment, such as a refrigerator or freezer.

At least one **Location** and **Alarm Group** must be created before a transmitter can be tasked. Each transmitter must be tasked with a **Location** and **Alarm Group** selected.

3.2 Adding New Locations & Alarm Groups

New **Locations** and **Alarm Groups** are added via the **Diligence Cloud** data management platform.

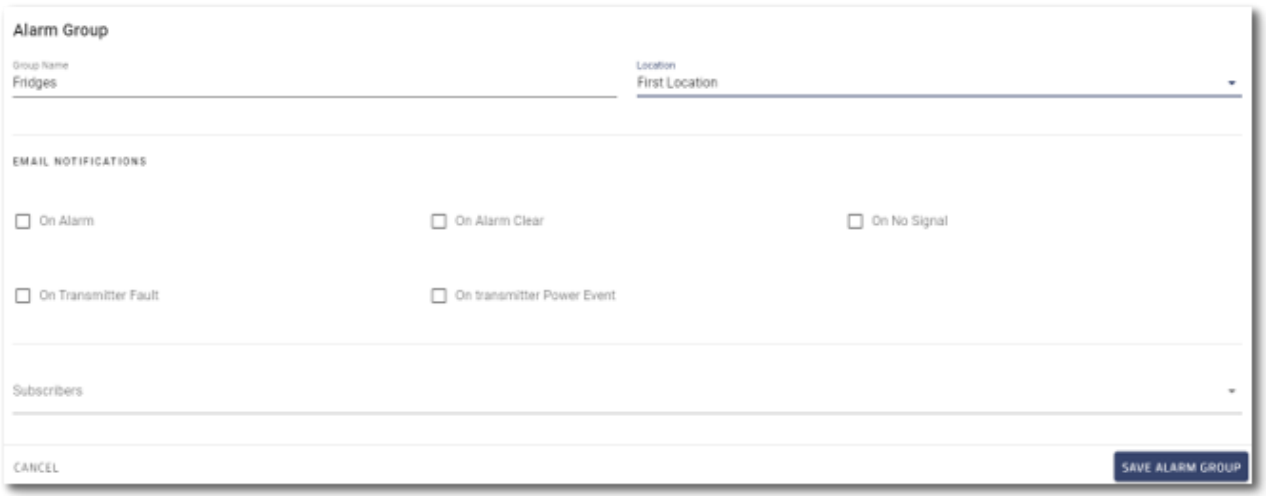
- **Adding a New Location**

From the **Diligence Cloud** homepage click on the menu icon top-left and navigate to **Locations**. Next, click on the **Create Location** icon and enter the name of the **Location** in the field provided. Click **Create Location** to complete.

With a **Location** now created, an **Alarm Group** also needs to be created and then it needs to be associated with the **Location**.

- **Adding a New Alarm Group**

From the **Diligence Cloud** homepage click on the menu icon top-left and navigate to **Alarm Groups**. Next, click on the **Create Alarm Group** icon and enter the name of the **Alarm Group** in the field provided. Next, select the **Location** for the **Alarm Group**. Once a **Location** has been selected the modal will expand to reveal additional options.



Select the email notifications that are required for the **Alarm Group.** The **Subscribers** list will be empty at this stage. Click **Save Alarm Group** to complete.

Administrators are automatically set up to view new **Alarm Groups**, but Users are not and have to be manually selected to see new **Alarm Groups**. Visit individual **User Profiles** to add them to an **Alarm Group**.

When Users have been added you can re-visit the **Alarm Group** and click subscribe for Users and Administrators.

3.3 Adding Viewers & Subscribers

A **Viewer** is any **Diligence Cloud** data management platform **User** that is given permission to view a particular **Alarm Group**. Any **Administrators** of the **Diligence Cloud** instance will automatically be allowed to view any new **Alarm Group**.

A **Subscriber** is any **Diligence Cloud** data management platform **User** who has been designated to receive any emails generated by the **Alarm Group**.

Subscribers are set up within each **Alarm Group**.

- **Adding a Viewer**

A **User** can be added as a **Viewer** of a specific **Alarm Group** via the **Diligence Cloud** data management platform. Once logged in, select **Users** from the main navigation. Select any non-administrator by clicking on their email address. The User profile will be displayed.

Under **Alarm Groups** select the **Alarm Group(s)** that the **User** should view using the drop-down selection.

Click **Save** to complete.

Repeat this process for any additional **Users**.

- **Adding a Subscriber**

Once the **Viewers** have been set up, they can be added as **Subscribers**.

To do this, simply click on the menu icon top-left and navigate to **Alarm Groups.** Select the **Manage** icon for the appropriate **Alarm Group** and select the **Subscribers** in the **Subscribers** section using the drop-down selection.

Any **Viewer** added as a **Subscriber** will receive emails and other notifications from the selected **Alarm Group**.

Click **Save** to complete.

Repeat this process for any additional **Subscribers**.

Both processes should also be repeated for any new **Locations** and **Alarm Groups**.

4. Transmitter Tasking

4.1 Tasking Overview

Tasking is a defined set of instructions (**Task**) sent to a Diligence 600 transmitter to ensure that it records temperature and other data at the frequency required and to ensure that alerts and alarms are also sent as required.

The **Task** defines all the criteria required for the transmitter to operate. All mandated elements of the **Task** must be entered correctly to ensure correct operation of the transmitter.

4.2 Data Periods

In addition to **Tasks**, data is segmented into **Periods**. Each **Period** is a set of data that was started when a change occurred to the transmitter and which ended when a subsequent change to the transmitter occurred. Changes to the transmitter may include user requests such as instructions to start or stop logging data or actions such as changing batteries. A change in Period may also occur outside of the user's control, such as when an automatic adjustment to date and time occurs.

Multiple **Periods** can be present within a single **Task**. Once data is recorded under a **Task** and **Period** (with at least one **Period** per **Task**) then the data can be reviewed on either a **Task** by **Task** or **Period** by **Period** basis.

NOTE – For a single transmitter it is possible to view data over multiple **Periods** on the same graph or tabular view, using the **Diligence Cloud** data management platform.

4.3 Task Defaults

All Diligence 600 transmitters have a pre-requisite number of defaults for a **Task**, that are required in order for it to be considered complete and ready for use. These include the following:

- **Task Name**

Each **Task** must be given a name.

- **Log Rate**

Each **Task** must include a **Log Rate** for the transmitter in order to log data regularly. This must be in the range 1-60 minutes. There are pre-set **Log Rate** values of 1, 2, 3, 5, 10, 15, 20, 30 and 60 minutes.

NOTE - A 15 Minute Log Rate is recommended to ensure good granularity of data. All channels are monitored once per minute irrespective of log rate so no alarms or excursions will be missed. In addition, when sending data to the **Diligence Cloud,** smaller data packets result in improved battery life and improved speed of response from the Diligence Cloud when drawing graphs.

- **Location***

Each **Task** must include a given **Location** (i.e., Pathology Department) as defined in the **Diligence Cloud** for the location of the transmitter. This allows for the data to be easily identified at later date.

- **Alarm Group***

Similar to **Location**, an **Alarm Group** allows the user to detail the position of the transmitter within their estate of devices more accurately. Each transmitter will be allocated an individual **Alarm Group** (i.e., Refrigerators or Blood Banks).

NOTE - *For new systems where an initial transmitter is being tasked, a **Location** and **Alarm Group** must first be created. Should a change be required to any **Location** or **Alarm Group** to which a transmitter is allocated, then it must be re-tasked or re-named accordingly.

- **Scale**

The **Scale** presented is appropriate to the transmitter model and may include multiple options. When offered, ensure that the correct scale for the **Task** is selected.

- **Thermocouple Type**

If applicable, the **Thermocouple Type** option is presented. This would normally be Type K or Type T. When offered, ensure that the correct type for the connected probe(s) is selected. The **Thermocouple Type** selection is global for all applicable channels. For humidity select either the %RH or DP scale in either Celsius or Fahrenheit.

- **Manual Start**

All transmitters have the option for a **Manual Start**. If selected, the transmitter will require further manual intervention to commence logging data. This is actioned either by pressing the **Action Button** on the transmitter or sending a start command via the **Diligence Cloud**.

4.4 Transmitter Channel Selection

At least one channel can be activated for data logging per transmitter. Therefore, at least one channel is mandated for selection before a **Task** can be considered valid.

- **Internal (Integral) Channel**

If applicable, the **Internal (Integral) Channel** can be selected. This channel is either integral or, in the case of Thermocouple variants, is available once a Lumberg probe is connected.

- **External Channels (1-4)**

If applicable, **External Channels (1-4)** can be selected. This is transmitter model dependent as some transmitter models channels 1 and 2 may be integral to the transmitter.

- **Door Sensor**

If applicable, the **Door Sensor** channel can be selected.

4.5 Alarm Programming

All available channels are eligible for **Alarm Programming**. Alarm options are as follows:

- **Temperature and Temperature/Humidity Channels**

The available alarms for each channel include **Low Alert** and **Low Alarm**, **High Alert** and **High Alarm**. Alarms are optional and are all independent of each other.

NOTE - If selected, values will be cross-checked with each other as well as with the limits associated with the channel selected. This ensures all programmed values are valid.

- **Alarm Delay (Optional)**

Alarm Delay is simply a time that will delay the action of raising the alarm and helps overcome unnecessary alarm triggers for measured values that hover around the alarm value.

4.6 Scale Mapping

Scale Mapping is unique to the WiFi Multi-Parameter Transmitter (RF615). Each external channel can use a preferred **Scale** (i.e., Pascals or Lumens). The **Scale Mapping** must be correctly entered for the appropriate transducer connected.

5. Alarms

The Diligence 600 WiFi Monitoring System will alarm in several different ways and, depending on the licence applied to the **Diligence Cloud** platform, there are two types of **Temperature Alarm** for Diligence 600 transmitters.

5.1 High & Low Alarms

High and Low Alarms are traditional alarms which will generate the alerts/emails from the **Diligence Cloud**. A maximum and minimum alarm level should be set to ensure that alarm events can be triggered.

5.2 High & Low Alerts (Optional)

High and Low Alerts are levels that sit below and above the absolute **High and Low Alarm** levels. When these **High and Low Alerts** are triggered, a warning is added to indicate that your monitored area is heading towards an alarm excursion. At this stage it is not yet in alarm. **High and Low Alerts** are available with **Diligence Cloud** licence plans above **Lite** level. They remain optional and do not have to be set.

5.3 Alarm Delay (Optional)

An **Alarm Delay** can be set for both **High and Low Alarms** as well as **High and Low Alerts**. This **Alarm Delay** can be a value from 0 to 60 minutes and provides a simple delay to the alarm/alert being triggered. This allows for small deviations, above or below an alarm or alert value, to be ignored until they have been in evidence for the given period at which point the alarm/alert is then required. The **Alarm Delay** is an optional setting and does not have to be programmed to the transmitter.

5.4 Temperature Alarm Limits

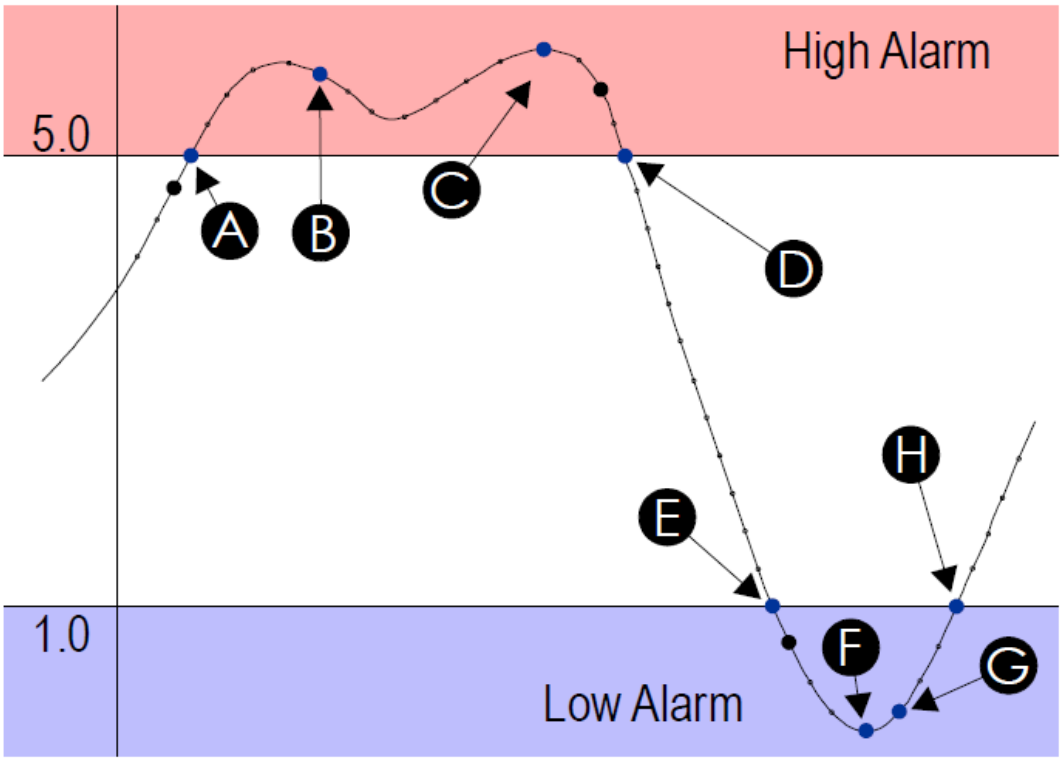
Temperature Alarm Limits are set by the maximum and minimum measurable limits of the transmitter. The **Task** for the transmitter will not allow you to set a limit outside of the measurement range for the channel. Please refer to the specifications for your transmitter.

5.5 Alarm Triggers

An alarm will be triggered when the temperature, or other parameter, exceeds the programmed alarm value, by a value equivalent to the minimum resolution. For example, given a **High Alarm** of 8.0°C on a Diligence 600 WiFi Temperature Transmitter (RF612), an alarm will be triggered for any reading that is recorded at 8.1°C or above. If an **Alarm Delay** is set, then the temperature must remain above the set value for the period of the **Alarm Delay** before the **High Alarm** is triggered by the transmitter.

5.6 Transmitter Alarms

The graph below shows a temperature profile for a transmitter tasked with a fifteen-minute log rate. The **High Alarm** is set at 5.0°C and the **Low Alarm** at 1.0°C. There is also a five-minute **Alarm Delay**. The curve indicates the actual temperature being sampled by Diligence 600 WiFi Monitoring System.



The small dots indicate the sampling at one-minute intervals. The large black dots indicate readings logged at fifteen-minute (log rate) intervals.

When the temperature goes out-of-limit, extra records are logged as indicated by the blue dots as follows:

A. The record logged as the temperature goes out-of-limit (high)
B. The record logged because the temperature has remained out-of-limit throughout the alarm delay
C. The maximum temperature reached for the out-of-limit period
D. The record logged as the temperature again becomes within limits
E. The record logged as the temperature goes out-of-limit (low)
F. The minimum temperature reached for the out-of-limit period
G. The record logged because the temperature has remained out-of-limit throughout the alarm delay
H. The record logged as the temperature again becomes within limits

NOTE – The additional readings will be logged for all active channels to prevent unusual gaps in the data. One extra reading on **Channel 1** would also be recorded for all other active channels including the **Door Switch**.

5.7 Multi-Parameter Alarm Limits

Multi-Parameter Alarm Limits are not strictly validated by the **Diligence Cloud**, so please ensure that they are within the measurement parameters set.

5.8 Displayed Alarms

In the event of **High and Low Alerts**, the H and L (H L) icons will be displayed against the active channel in alert state. In the event of **High and Low Alarms**, the H and L icons (H L) **will flash** to indicate that the active channel is in alarm state.

When the **Alarm Active Alert** icon ( ) is flashing against the active channel and the **Alarm LED (Red)** is flashing (optional), the active channel is in **Unacknowledged Alarm**.

NOTE – This indicates that the active channel is in **Unacknowledged Alarm**. If the alarm is acknowledged and the channel is still in **High or Low Alarm** state, the **Alarm Active Alert** icon ( ) will continue to flash. It will only clear when the channel returns to normal levels.

5.9 Door Sensor Alarm

There are two types of **Door Sensor Alarm:**

- Continuous Door Open
- Average Door Open

5.9.1 Continuous Door Open

Here a duration between 0 and 60 minutes can be set for a **Continuous Door Open** alarm. If the door remains open for the set duration then the alarm is triggered.

5.9.2 Average Door Open

For this alarm type, two parameters need to be set. Firstly the **Average Door Period** must be set. This is the time over which the **Average Door Open** time is calculated. Usually this would be set to 60 minutes, but can be any period from 1 to 60 minutes. Next the **Average Alarm Period** trigger needs to be set. This is the cumulative time that that door was left open, during the **Average Door Period**. Once reached the alarm is triggered.

Example:

For this example **Average Door Open** alarm, the parameters have been configured as follows:

- **Average Door Period** is set to 60 minutes
- **Average Alarm Period** trigger is set to 20 minutes

The **Door Sensor Alarm** will trigger if the door has been open for a cumulative minimum period of 20 minutes, during the past (rolling) 60 minutes. This could be any number of smaller door open periods that total 20 minutes, bearing in mind the resolution of the **Door Sensor** open periods which is five seconds.

5.9.3 Displayed Door Sensor Alarms

A **Door Sensor Alarm** is indicated by a flashing **Door Sensor Alert** icon ( ), as well as a flashing **Alarm LED (Red)**.

Use **the Action Button** to scroll through to Channel 5, where the current **Door Open Average Period** is shown.

NOTE – The number of minutes that the door was open, which triggered the **Continuous Door Open** alarm, is not displayed.

5.9.4 Door Sensor Trigger

When a **Door Sensor Alarm** is triggered, the transmitter will wake up on the next minute, after all channels have been updated, to send the alarm to the **Diligence Cloud**. Once the door is closed and the alarm has cleared, the transmitter will wait a full minute before waking up again to send the all clear message.

5.9.5 Auto-Latching Alarms

When an alarm occurs on a transmitter it will automatically 'latch'. This means that even if the channel returns to normal operation, the **Alarm LED (Red)** and the **Alarm Active Alert** icon ( ) will remain active on the transmitter until such time as the alarm is acknowledged on the **Diligence Cloud** and the resulting alarm acknowledged command has been received by the transmitter. This is to prevent alarms from being missed. The transmitter will display any previous alarm that remains unacknowledged.

6. Logging Modes

Diligence 600 transmitters only have a single **Logging Mode**, although there is the added option of setting logging to a **Manual Start**. During logging the transmitter will complete the following actions:

6.1 Auto-Start

Under normal circumstances a transmitter will automatically start logging as soon as it receives a **Task** from the **Diligence Cloud**.

6.2 Manual Start

During tasking it is possible to set a **Manual Start** which sends an additional command to the transmitter along with the **Task**. This requires further manual intervention, before logging can begin. This manual intervention can take two forms:

- By pressing the **Action Button** on the transmitter
- By sending the **Start** command from the **Diligence Cloud**

6.3 Event Logging

All transmitters have the capacity to measure via one or more sensor inputs, at a number of pre-defined logging intervals. Should an alarm event occur between log intervals then the transmitters will wake up to record this event and transmit the alarm back to the **Diligence Cloud**, via the WiFi network. This process means that long intervals between logging static readings can safely be set, as the transmitter will reliably capture any alarms that occur in between. This results in a robust system, with extra readings being logged, whenever there is an event to record.

7. Troubleshooting

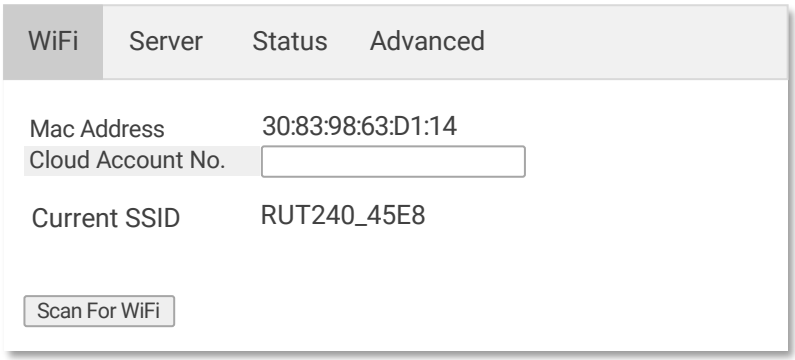
7.1 WiFi Connectivity

If a transmitter is experiencing difficulties connecting to the **Diligence Cloud**, then please check the following:

1. Ensure that a WiFi Protected Access Pre-Shared Key (WPA-PSK) network is available. This type of WiFi network usually requires a password to gain access.

2. Ensure that the right WiFi (WPA-PSK) password is being used.

3. Consult IT to ensure that they are aware of the need to connect the transmitter to the network, as they might have additional protection in place such as a MAC address whitelist. The MAC address of the transmitter can be seen when placed in **Setup Mode** when selecting the **WiFi** tab.



4. Should the connectivity issue persist we recommend contacting Comark Technical Support or the local distributor.

7.1.1 Checking The WiFi Signal Strength (Survey Mode)

Should a transmitter experience difficulties connecting to the WiFi network, or it disconnects from the WiFi network periodically, then a signal strength check is advised. This is best completed from the transmitter itself.

Press and hold the **WiFi Button** for five seconds to enable **Survey Mode**. The display will indicate 'SUr' to indicate that it is about to enter **Survey Mode**.

After another five seconds the display will change and show a negative value.

The value displayed provides an indication of the signal strength in dB. This value will always be a negative value.

- -59dB and above = Excellent signal (four bands of WiFi Signal icon ( ))
- -60dB to -79dB = Good signal (three bands of WiFi Signal icon ( ))
- -80dB and below = Poor signal (two bands of WiFi Signal icon ( ))

If the WiFi signal strength is poor, then consider the following options:

1. Move the transmitter closer to the location of the nearest WiFi router, access point or signal repeater.

2. Install a WiFi signal repeater at the point where there is a good or excellent signal strength, in order to boost the signal to the transmitter.

NOTE – Diligence 600 transmitters cannot act as WiFi repeaters to boost the network signal - even with a power supply unit (PSU) connected. Only a WiFi repeater connected to the WiFi network can achieve this.

Press the **WiFi Button** again to exit **Survey Mode**.

7.1.2 WiFi Network Not Discoverable

If the required WiFi network is not displayed by the transmitter as an available WiFi network, then the following should be checked:

1. Check that the WiFi router, access point or signal repeater is in range.

2. Try moving the transmitter closer to the nearest WiFi router, access point or signal repeater.

3. Check to see if the WiFi router, access point or signal repeater has been set to use the 5GHz band. If so, change to use 2.4GHz and try again.

7.1.3 Transmitter Not Connecting To WiFi Network

Here are some common checks to perform, should the transmitter not connect to the required WiFi network:

1. Check that the correct (WPA-PSK) password is being entered.

2. Check to see if 802.11b is enabled on the router, access point or signal repeater and consider switching if off.

3. Ensure MAC filtering is not enabled for the router, access point or signal repeater. If so, ensure that the MAC address of the Diligence 600 transmitter is also entered. The MAC address can be found under the **WiFi** tab in **AP Mode**.

4. Check that the WiFi network has an active internet connection.

5. Check that the device is in range of the router, access point or signal repeater.

6. Check to see if the router, access point or signal repeater is using the latest firmware.

7. If the router, access point or signal repeater has **Wired Equivalent Privacy (WEP)** encryption enabled, ensure that the hexadecimal key is being entered rather than the password. You can find the hexadecimal key in the internal settings of the device. Alternatively, search the web for resources to help convert your password to a hexadecimal key.

8. Check that **Dynamic Host Configuration Protocol (DHCP)** service is running. This allows the transmitter to be dynamically allocated an IP address. Normally, the DHCP service runs in either your router or on a network server. Make sure that the configured DHCP IP address range allows for the addition of new devices. Extend the IP range if required.

9. Check to ensure that the router, access point or signal repeater has a (WPA-PSK) **Service Set Identifier (SSID)** available. If it requires other levels of security, then your Diligence 600 transmitters may not connect.

10. If the router, access point or signal repeater has a **High Throughput (HT)** or Greenfield mode setting, this should be set to ‘mixed’.

11. Make sure that the **Service Set Identifier (SSID)**, the broadcasted name of the router, access point or signal repeater, does not contain spaces.

Should any connection problem persist, please contact the company IT department for further assistance. Please also refer to the FAQ section, What type of WiFi do I need?

7.1.4 Changing WiFi Access Points

Diligence 600 transmitters can swap between WiFi access points while still tasked and logging data to the **Diligence Cloud**.

NOTE –The transmitter will stop logging data for the duration of the process.

To change the access point to which the transmitter is connected, simply follow the instructions for setting up the transmitter in the **Quick Start Guide (QSG)** supplied with the transmitter.

At the end of the process the transmitter will revert to the last programmed **Task** and will continue logging data.

7.1.5 Provoking The Transmitter

The transmitter can be provoked, to force it to connect to the WiFi network, either to confirm that the WiFi network is healthy or as a means to force the transmitter to send its readings to the **Diligence Cloud**. Simply press and hold the **WiFi Button** until the **Activity LED (Green)** comes on and the **WiFi Signal** icon ( ) starts to flash. Within one minute the transmitter will wake up and attempt to connect to the **Diligence Cloud** server.

7.1.6 Connection To The Diligence Cloud

The transmitter will connect to the **Diligence Cloud** at the pre-determined **Radio Rate** set for that transmitter as per its settings in the **Diligence Cloud**.

Typically, this could be once per hour or greater. Setting a high **Radio Rate** frequency will affect battery life, if the transmitter is powered only by battery cells.

In the event of an alarm the transmitter will not wait for the next radio session, but will wake up immediately to send the alarm. This will have the effect of resetting the radio session timer. So, even if a regular radio session was due, it will now not happen, until the radio rate time has elapsed.

Before the transmitter wakes up and connects to the **Diligence Cloud**, the lower part of the **WiFi Signal** icon ( ) will flash to indicate that the transmitter is about to wake up. This typically happens within 30-40 seconds.

7.1.7 Transmitter Unable To Send Data

If the transmitter wakes up to send its data or to alarm, but is unable to do so, then the transmitter will attempt further connections in the following sequence:

- Once per minute for the following three minutes
- Then once every five minutes for the next fifteen minutes
- Then every hour or the radio rate if more than one hour
- Once a connection is restored the transmitter will return to its normal radio rate, if greater than one hour

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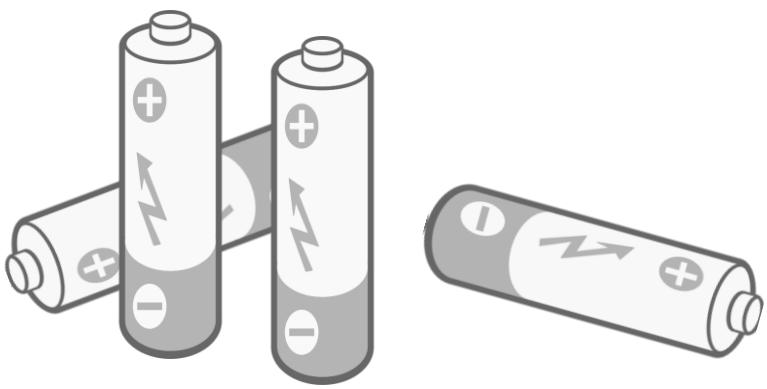
NOTE - If a transmitter is manually provoked in order to connect to the **Diligence Cloud** this sequence will reset.

7.2 Battery Life & Battery Type

Diligence 600 transmitters require 4 x AA alkaline battery cells (i.e. Energizer Max). In normal conditions these will provide good battery life up to one year.

NOTE - To improve battery life set a **Radio Rate** of two or four hours up to a maximum of 24 hours, remembering that this will not impeded alarm notifications.

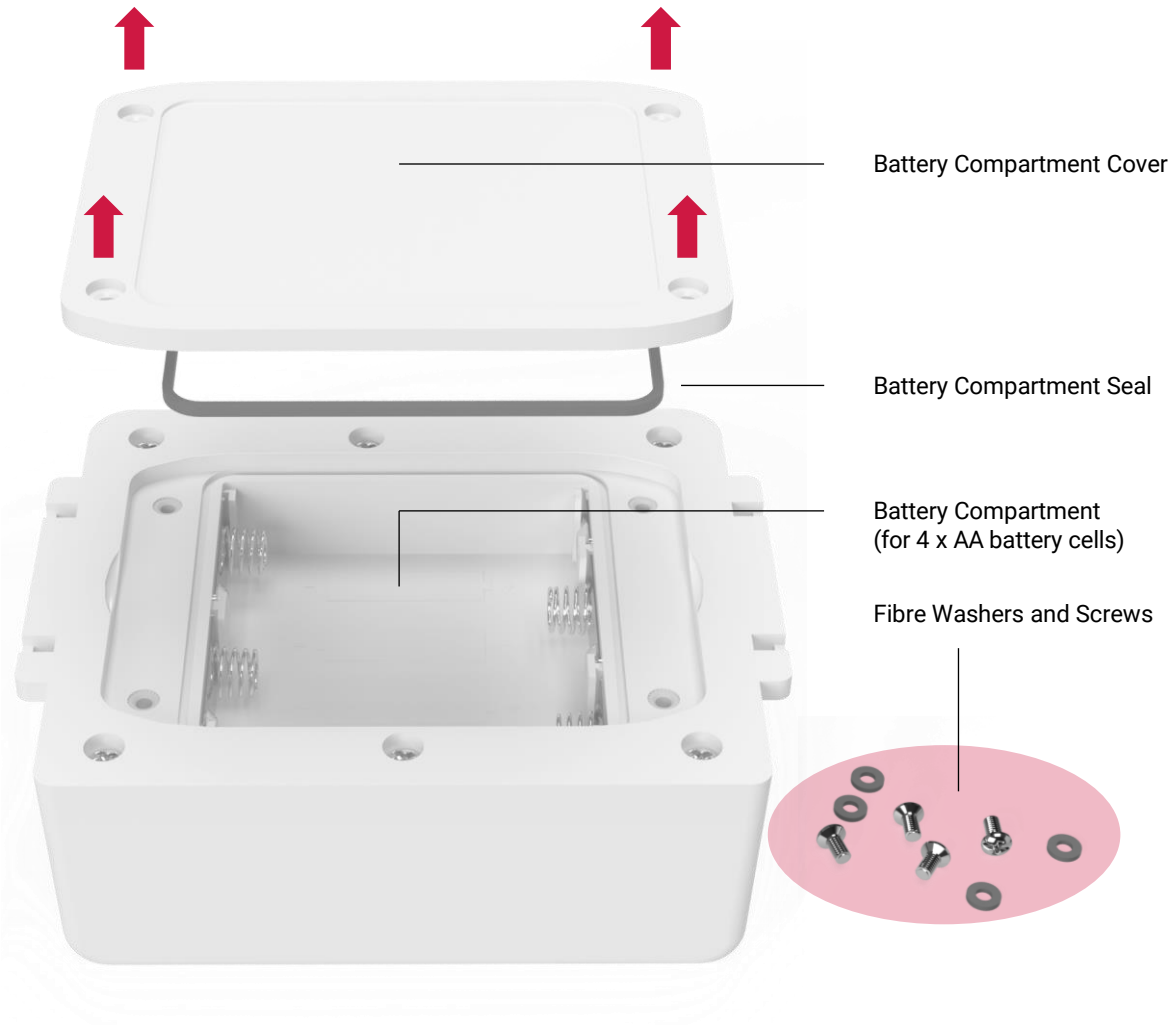
For transmitter operation at or below 0°C (32°F) we recommend upgrading to Energizer Lithium (L91) battery cells, as the battery life of regular alkaline battery cells can be impacted. Always use good quality AA battery cells. Lower quality Alkaline battery cells will work, but will possibly cause issues at the end of their life as the voltage dips will be greater which may cause issues for the transmitter.



7.3 Battery Replacement

Battery Replacement is straightforward. If wall-mounted, remove the transmitter from the mounting bracket then disconnect any external power supply unit (PSU).

Using a screwdriver, fitted with a small flat or Pozidriv head, remove all four screws from the rear battery compartment. The screws should remain captive in the cover. Remove the cover. Remove all four battery cells, then **wait a full thirty seconds**. Replace all four battery cells with new. Do not mix old and new battery cells together as this will result in low battery warnings and affect normal operation.



NOTE - Please be careful to retain the fibre washers on the screws as these aid the water resistance of the case. Please dispose of any depleted, non-recyclable batteries responsibly.

7.4 Restarting A Transmitter

Restarting a Diligence 600 transmitter should not be necessary under normal operation. However, if a transmitter is having trouble connecting or any problems are experienced whilst setting up the transmitter, then the transmitter can be restarted by removing one of the battery cells from the battery compartment **for at least ten seconds** then re-fitting the battery cell and securely replacing the battery cover.

Should the same issue persist with the transmitter, making setup via the **Setup Mode** impossible, then please contact Comark Technical Support or the local distributor for further assistance.

7.5 Resetting A Transmitter To Factory Defaults

Should a full reset to factory defaults ever be advised as part of the technical support process, then the following instructions should be observed:

- Press and hold both the **WiFi Button** and **Action Button** for **five seconds** to place the transmitter into **Setup Mode**.
- Press and hold the **Action Button** continuously for approximately **ten seconds** to initiate the reset. If successful 'CLr' will be displayed along with an animation, indicating that the reset is in process.

- Once complete the transmitter will revert to a standby mode and will display 'OFF'

- The transmitter now needs to be set up again, but this time the server details will also need to be set. Please refer to section 7.8 for full details on accessing the **Advanced Configuration** and configuring the **Server Settings**.

7.6 Error Messages

There are several on-screen messages that are displayed on the transmitter, depending on the current status of the transmitter. These are explained as follows:

The transmitter is in a low power sleep state, as when newly supplied. To activate the transmitter simply press the **Action Button**.

The transmitter has lost date and time or, in the case of a new transmitter, the date and time is not yet set. Tasking the transmitter or connecting to the **Diligence Cloud** will set the clock and this message will clear. If this message displays when not expected or, repeatedly appears, contact Comark Technical Support for further assistance.

If displayed, then the transmitter has stopped logging. This can be rectified by manually starting the transmitter (if a manual start has been programmed) or by simply re-tasking the transmitter. Stop is also displayed when a transmitter receives a new **Task** from the **Diligence Cloud**, as it prepares to load a new set of logging instructions. If this message does not clear it could indicate an error with the transmitter.

This denotes **Setup Mode**. In this mode, the transmitter acts like an **Access Point (AP)** and will start to broadcast itself via WiFi, so that an internet enabled device can detect and connect to it. Once a device has connected with the transmitter a basic webpage is presented allowing for the setup to be completed.

This process is identified as **Setup Mode** and a **Diagnostic LED (Red)** will show on the side of the transmitter whilst in this mode. The transmitter will transition from 'AP–' to 'AP. 0' then 'AP. 1' as progress is made and each time a short audible tone is emitted.

The **WiFi Signal** icon ( ) will animate to show signal is being sent. Search for available wireless networks on your internet enabled device. The **Service Set Identifier (SSID)** or **Network Name** of the transmitter will be shown. This is the same as its **Serial Number**, which is printed on the rear label of each Diligence 600 transmitter.

When prompted for a **Password**, enter the **Serial Number** excluding the first two digits. This is case sensitive.

Once your internet enabled device is connected to the transmitter it can be configured.

The transmitter is successfully connected to your internet enabled device via WiFi and the **Setup Mode** webpage can be viewed by navigating to:

http://192.168.4.1/setup

A **Diagnostic LED (Yellow)** will illuminate on the side of the transmitter and will flash to indicate the active network connection with your internet enabled device. Please refer to the **Quick Start Guide (QSG)** supplied with the transmitter for setup instructions.

The transmitter is receiving a new **Task** and this message is accompanied by an animation indicating a background process is in progress. Should this message display unexpectedly, accompanied by the Fault Alert Icon (⚠) , then this indicates an invalid **Task** has been sent to the transmitter.

This is possibly caused by an interruption in the communication between the **Diligence Cloud** and the transmitter. It may also indicate that there is a memory corruption in the transmitter. Initially attempt to re-task the transmitter to see if the message clears. Contact Comark Technical Support for further assistance should the message remain after re-tasking the transmitter.

The transmitter is clearing the memory ready for the new **Task** and this message is accompanied by an animation indicating a background process is in progress. Should this message be displayed unexpectedly, please contact Comark Technical Support for further assistance.

The transmitter is preparing to load the new **Task** and this (pending) message is accompanied by a countdown as the transmitter waits for the minute to roll-over before taking the first reading. Should this message be displayed unexpectedly, please contact Comark Technical Support for further assistance.

This indicates an **Identity (ID) Error,** and can be due to one of the following reasons:

- The **Diligence Cloud Account Number** was entered incorrectly during the setup process
- The transmitter has not yet been added to the **Diligence Cloud**
- There is an error with the **Serial Number** in the **Diligence Cloud**

To resolve, check the above. The **Serial Number** is printed on the rear label of each Diligence 600 transmitter and is also displayed during setup. If required, the transmitter can be setup again using the correct **Diligence Cloud Account Number**.

This is displayed when a transmitter has been tasked using the **Manual Start** option and a **Task** has been loaded. The **Pause** and **Action** icons ( ) will display to indicate that the transmitter is ready to start logging.

Press and hold the **Action Button** to start logging.

7.7 Fault Codes

There are a number of **Fault Codes** built into Diligence 600 transmitters that may be displayed during the use of the transmitter. **Fault Codes** will appear along with the **Fault Alert** icon ( ).

These are the standard **Fault Codes** associated with the **Fault Alert** icon ( ) :

Bit No	Fault Code	Reason	Action
1	1	File System Initialisation Error	Re-Task Transmitter
2	2	Memory Initialisation Error	Re-Task Transmitter
3	4	Settings Corrupted	Re-Task Transmitter
4	8	No WiFi Settings	Program WiFi Settings
5	16	No Diligence Cloud Server Settings	Program Diligence Cloud Settings
6	32	Reserved	-
7	64	Reserved	-
8	128	Status reply Initialisation or Malformed Error	Re-Task Transmitter
9	256	Memory Ease Error	Re-Task Transmitter
10	512	Memory Write Error	Re-Task Transmitter
11	1024	Memory Read Error	Re-Task Transmitter
12	2048	Memory Status Error	Re-Task Transmitter
13	4096	Memory Save Error	Re-Task Transmitter
14	8192	Memory Clear Error	Re-Task Transmitter
15	16384	Hardware Fault	Re-Task Transmitter
16	32768	Memory Compare Error	Re-Task Transmitter

NOTE – Additional **Fault Codes** can be displayed that are the sum of two or more **Fault Codes** combined.

i.e. **Fault Code** 24 is a combination of **Fault Codes** 8 and 16 and the action required to resolve would be the individual actions for each **Fault Code**.

It is possible to determine the individual **Fault Codes** within the combined value, but we would recommend contacting Comark Technical Support for further assistance.

If an action indicated above is undertaken and the **Fault Code** persists then we would likewise recommend contacting Comark Technical Support for further assistance.

7.8 Setup Mode Advanced Configuration

Occasionally, a Diligence 600 transmitter may require some **Advanced Configuration**. The **Advanced Configuration** options are accessed via the webpage that is available once the transmitter is in **Setup Mode**. To access **Setup Mode**, press and hold the **WiFi Button** and **Action Button** simultaneously until the AP message is displayed.

From any Internet enabled device search for available wireless networks and connect to the **Service Set Identifier (SSID)** or **Network Name** of the transmitter that is shown. This is the same as its **Serial Number**, which is printed on the rear label of each Diligence 600 transmitter.

When prompted for a **Password**, enter the **Serial Number** excluding the first two digits. This is case sensitive.

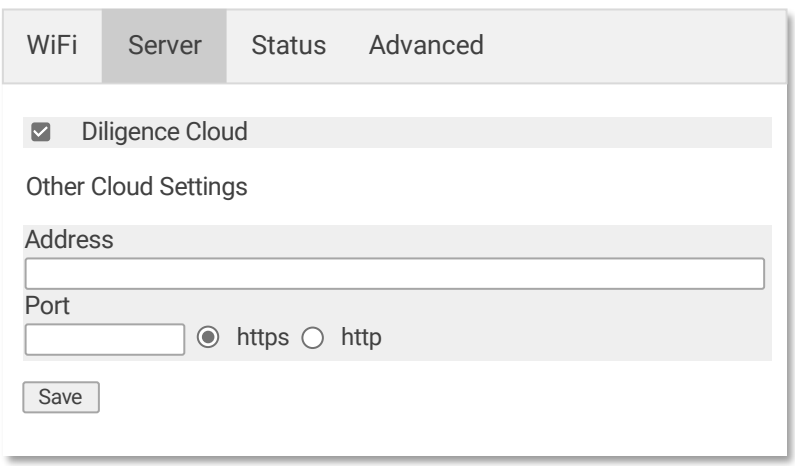
Once the transmitter is successfully connected to your internet enabled device via WiFi, the **Setup Mode** webpage can be viewed by navigating to:

http://192.168.4.1/setup

7.8.1 Server Settings

Customers with Diligence 600 transmitters that are not using the standard **Diligence Cloud** instance, will need to change the **Server Settings** accordingly.

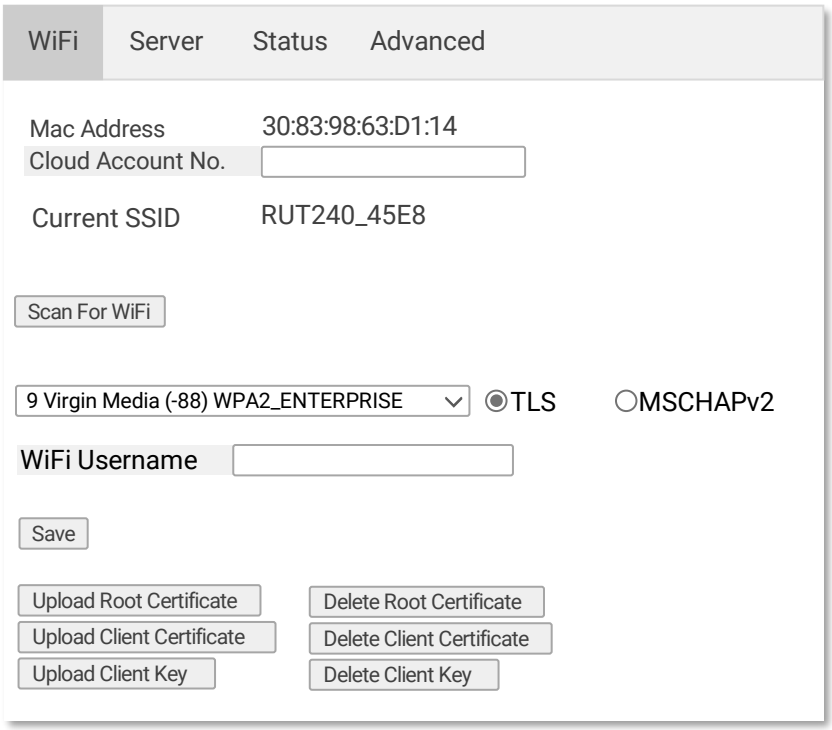
Click on the **Server** tab to view the fields for **Other Cloud Settings**.



Once the appropriate details have been entered click **Save** to continue.

7.8.2 Enterprise WiFi Settings

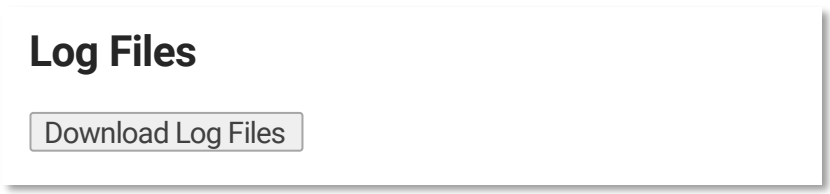
When connecting to an **Enterprise WiFi** network, there may be an additional requirement to install or upload a **Root** or **Client Certificate** or a specific **Client Key**. We recommend consulting the company IT Department to ensure all details are correct, but in general The WiFi tab provides the necessary fields and upload links. Enterprise security is not supported at launch and will be enabled with a firmware update in the future. Please contact Comark for further details.



7.8.3 Log Files

A Diligence 600 transmitter may experience an issue that requires support from Comark Technical Support. As part of the problem diagnosis Technical Support may request that the **Log Files**, stored in the transmitter, be sent to them.

These **Log Files** are accessed via the **Setup Mode** of the transmitter. Click on the **Advanced** tab to view the available **Log Files**.



Simply click on the **Download Log File** button to download. The **Log Files** can be saved locally and then sent to Technical Support.

8. Firmware Updates

Performing a **Firmware Update** should only be completed when Technical Support has indicated that it will be beneficial or if Comark has advised of an important update for **Bug Fixes** or **Feature Updates**. The **Firmware Updates** should not be necessary for normal operation of the transmitter. Should problems with a transmitter arise or it is believed that there is a fault with a transmitter, then we would suggest contacting Comark Technical Support for further advice in the first instance.

NOTE – This **Firmware Update** procedure is separate from the procedure for update that can be conducted via the **Diligence Cloud** data management platform and is performed directly with a computer and the transmitter.

8.1 File Preparation

To prepare for the **Firmware Update** the update file will need to be download to a location on your PC/Computer, from any email or webpage containing the link. Please note the location of the file once downloaded.

8.2 Firmware Update Process

Before proceeding with the **Firmware Update**, the transmitter batteries should be checked to ensure that they are healthy and have sufficient capacity. If in doubt, please change the batteries for a fresh set, following the battery change procedure outlined in section 7.3.

The transmitter now needs to be placed into **Setup Mode** (AP Mode).

To access **Setup Mode**, press and hold the **WiFi Button** and **Action Button** simultaneously until the AP message is displayed.

From any Internet enabled device search for available wireless networks and connect to the **Service Set Identifier (SSID)** or **Network Name** of the transmitter that is shown. This is the same as its **Serial Number**, which is printed on the rear label of each Diligence 600 transmitter.

When prompted for a **Password**, enter the **Serial Number** excluding the first two digits. This is case sensitive.

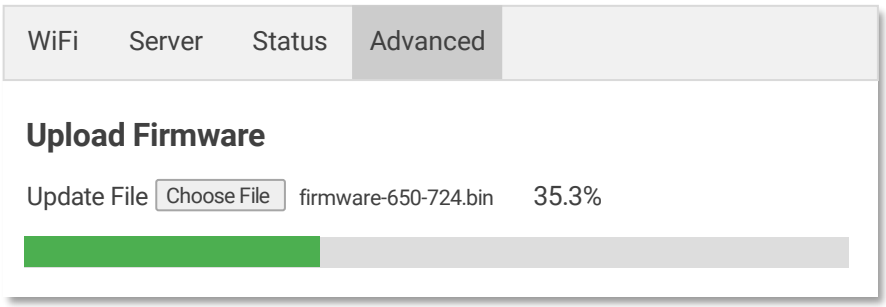
Once the transmitter is successfully connected to your internet enabled device via WiFi, the Setup Mode webpage can be viewed by navigating to:

http://192.168.4.1/setup

Click on the **Advanced** tab to view the option to **Upload Firmware**.

Click on the **Choose File** button and navigate to the location of the update file on the computer/PC. Click **OK** when ready.

The **Firmware Update** file will be uploaded to the transmitter and progress is displayed.



NOTE – It is important that this process be allowed to complete successfully. Do not power off the transmitter during this process or attempt to cancel it once started. The display will go blank for several minutes during the update. This is quite normal. If the process or download gets interrupted or is incomplete, simply go back into **Setup Mode** and try again. If the problem persists contact Comark Technical Support.

Once the **Firmware Update** file has been successfully uploaded the transmitter will re-start and complete a WiFi session indicated by a flashing **WiFi Signal** icon ( ) and the following message will be displayed.

The display will clear shortly after and the **Diagnostic LEDs** (Red and Yellow) on the side of the transmitter will flash alternately. The transmitter will re-start once more and again display the above message (CLoc).

A normal WiFi session will complete and the transmitter will connect to the **Diligence Cloud**. If the transmitter was previously logging, then a new **Task** will be sent to the transmitter and it will start logging as expected. If at any time during the process, the transmitter is interrupted, then the transmitter should be re-started (following the process in section 7.4) before re-attempting.

9. Accessories

The Diligence 600 WiFi Monitoring System provides a number of **Accessories** designed to complement the Diligence 600 transmitters. For the an up-to-date and complete list, please visit our website (www.comarkinstruments.com).

9.1 Mains Power Supply Unit (PSU)

To supplement the battery power of the transmitter, a 5V **Mains PSU** (RF520) is available. When used, the **Power LED (Green)** on the side of the transmitter will be active to indicate the additional power input. It is recommended to use a **Mains PSU** when a radio rate of less than one hour is planned, in order to maximise battery life.

NOTE - The **Mains PSU** (RF520) only applies to the WiFi Temperature Transmitter (RF612).

9.2 External Probes

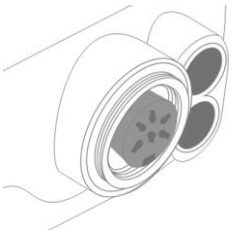
A wide range of external air, penetration and product simulant probes is available for the Diligence 600 transmitters. Additional duplex probes are also available for dual-channel measurement.

9.3 Door Event Sensors

Each transmitter allows for the connection of an external **Door Event Sensor**. The **Standard Door Event Sensor** (RF521) is for regular refrigerator and freezer doors, whilst the **Heavy-Duty Door Event Sensor** (RF522) is for roller shutter doors.

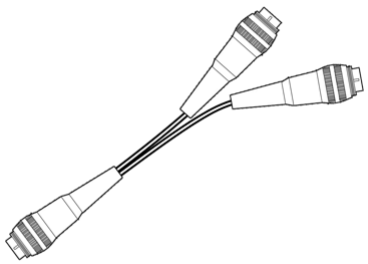
9.4 Probe Adaptors

There are several adaptors which allow for the connection of multiple probes or other devices to the single 6-pin **Lumberg Probe Socket** of a Diligence 600 transmitter.



- **Diligence 600 Y Adaptor (RF602Y)**

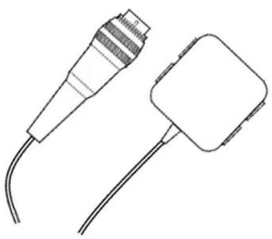
Designed for use with Diligence 600 WiFi Transmitters (RF612 and RF615) to extend their measuring capabilities. It allows for the connection of two simplex or duplex probes (i.e. maximum of four channels) to a Diligence 600 WiFi Temperature Transmitter (RF612).



It also allows for the connection of two Multi-Parameter 2-Way Adaptor Boxes to a Diligence 600 WiFi Multi-Parameter Transmitter (RF615) and therefore up to **four** external transducers.

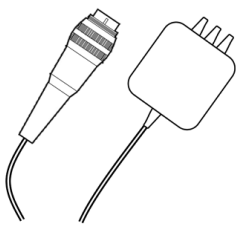
- **Diligence 600 4-Way PST Adaptor (RF601A)**

A four-way adaptor box that allows for the connection of up to four single-channel probes to a single Diligence 600 WiFi Temperature Transmitter (RF612).



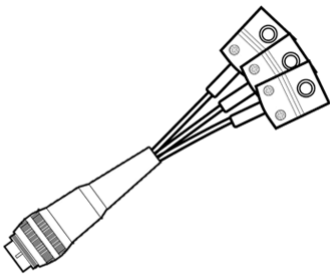
- **Multi-Parameter 2-Way Adaptor Box (RF615B)**

Only designed for use with Diligence 600 WiFi Multi-Parameter Transmitters (RF615) and allows for up to **two** external transducers to be connected to a single transmitter. It is compatible with both voltage and current transducers.



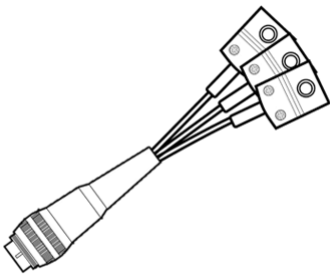
- **N2000 Adapter Type K (N2000ADP/K)**

A three-way adaptor that allows for the connection of up to three sub-miniature (Type K) probes to a single Diligence 600 WiFi Thermocouple Transmitter (RF614).



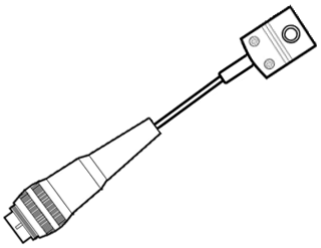
- **N2000 Adapter Type T (N2000ADP/T)**

A three-way adaptor that allows for the connection of up to three sub-miniature (Type T) probes to a single Diligence 600 WiFi Thermocouple Transmitter (RF614).



- **Single Channel Type T Adaptor (KX9601)**

A simple adaptor that allows for the connection of up one sub-miniature (Type T) probe to a single Diligence 600 WiFi Thermocouple Transmitter (RF614).



10. Diligence Cloud Licence Plans

The **Diligence Cloud** data storage and management platform has been designed to be a one-stop-shop covering the widest variety of monitoring needs. It is recognised however, that not all customers will require all features. Licence levels were therefore introduced, to provide tiered access, depending on business or organisational needs.

There are currently four **Diligence Cloud** licence levels covered by each of the following plans:

- **Lite Plan**

Designed to provide the minimum level of features in order to get started. Perfect for either a small numbers of users (up to three), or a small number of transmitters (up to ten). It includes all the features you need to receive alarms.

- **Plus Plan**

Allows for unlimited users and up to one hundred transmitters as well as additional alarm features (include repeat and snooze alarm functions) and Multi-Graph.

- **Premium Plan**

Includes all of the features of the previous plans for unlimited transmitters and users, as well as 21CFR Part 11 compliant features such as alarm acknowledge with forced comments, digital signature, and an electronic data signing.

- **Enterprise Plan**

This is our custom offering that has all features enabled, but which allows for additional specific requirements not covered by any other licence plan, such as an instance of the **Diligence Cloud** on your own network.

NOTE - The full breakdown of features per licence plan is subject to change so it is advised to contact us or your local distributor for the latest information.

11. Models & Features

11.1 WiFi Temperature Transmitter Part No: RF612 (5306302)

Integral Temperature Sensor Specifications	
Sensor Type	Thermistor
Scales	°C and °F
Temperature Measurement Range	-18°C to +55°C (-0.4°F to +131°F) [1]
Accuracy 0°C to +55°C (-32°F to +131°F)	<±0.3°C (±0.6°F)
Accuracy (full range)	±0.5°C (±0.9°F)
Temperature Resolution	0.1°

External Probes Specifications	
Number of External Channels	4
Sensor Type	Thermistor
Connector	6-Pin Lumberg
Scales	°C and °F
Temperature Measurement Range	-40°C to +125°C (-40°F to +257°F)
System Accuracy 0°C to +70°C (-32°F to +158°F) - including Probe	<±0.3°C (±0.6°F)
System Accuracy -25°C to 100°C (13°F to +212°F) - including Probe	±0.5°C (±0.9°F)
System Accuracy (Full Range) - including Probe	±1°C (±1.8°F)
Temperature Resolution	0.1°

Door Sensor Specifications	
Door Sensor Resolution	5 seconds
Door Sensor (Optional for RF612 only)	Available as standard (RF521) or Heavy-Duty (RF522)
Door Sensor Alarms	Door Switch Alarms Continuous and Average (up to 60 minutes programmable)

[1] Temperature and storage range with Energizer Lithium L91 cells is expanded to -30 to +60°C (-22°F to +140°F)

11.2 WiFi Temperature & Humidity Transmitter P/N: RF613 (5306325)

Integral Temperature Sensor Specifications	
Sensor Type	Digital Temperature
Scales	°C / °F and Dew Point
Temperature Measurement Range	-18°C to +55°C (-0.4°F to +131°F) [1]
Accuracy (full range)	<±0.5°C (±0.9°F)
Temperature Resolution	0.1°

Integral Humidity Sensor Specifications	
Sensor Type	Digital Humidity
Scales	%RH
Measurement Range	0 to 100% RH
Accuracy	±3% RH (10 to 90% RH)
Humidity Resolution	0.1%
Calibration	5-Point RH Calibration (Optional)

[1] Temperature and Storage range with Energizer Lithium L91 Cells is expanded to -30 to +60°C (-22°F to +140°F)

11.3 WiFi Thermocouple Transmitter Part No: RF614 (5306333)

Integral Temperature Sensor Specifications [1]	
Sensor Type	Thermistor Sensor is built into Comark Lumberg thermocouple probes. A probe must be connected to measure temperature. There is no built-in sensor in RF614.
Scales	°C and °F
Temperature Measurement Range	-18°C to +55°C (-0.4°F to +131°F) [2]
Accuracy 0°C to +55°C (-32°F to +131°F)	<±0.3°C (±0.6°F) [3]
Accuracy (full range)	±0.5°C (±0.9°F) [3]
Temperature Resolution	0.1°

External Probes Specifications	
Number of External Channels	3
Sensor Type	Type T and Type K Thermocouple
Connector	6-Pin Lumberg and Sub-Min Connector Options [4]
Scales	°C and °F
Temperature Measurement Range (Thermocouple Type T)	-200 to +400°C (-328 to +752°F)
Temperature Measurement Range (Thermocouple Type K)	-200 to +1372°C (-328 to 2501.6°F)
Instrument Accuracy	+/-0.1% ±0.2°C (±0.4°F) full range @ +23°C Ambient
System Accuracy Type T - Over the range 0°C to +70°C (32°F to +158°F)	±0.5°C @ +23°C (+73°F) Ambient [3]
System Accuracy Type T and K - Full Range	Please refer to specification for the chosen thermocouple probe
Temperature Resolution	0.1°

[1] Only applies when thermocouple probe or adaptor used

[2] Temperature and storage range with Energizer Lithium L91 cells is expanded to -30 to +60°C (-22°F to +140°F)

[3] When used with a Comark Lumberg thermocouple probe or Lumberg adaptor

[4] Comark Type T Lumberg probes will connect directly to the RF614. For up to 3 channels an N2000ADP/T or N2000ADP/K adaptor is required. These adaptors are compatible with thermocouple sub-min probes.

11.4 WiFi Multi-Parameter Transmitter Part No: RF615 (5306340)

External Probes Specifications	
Number of External Channels	4
Sensor Type	Voltage or Current Measurement
Connector	6-Pin Lumberg [2]
Scales	Free Form on Cloud
Measurement Range	+/-0.32000 to +/-32000
Decimal Points	1DP to 5DP
Displayed Range (LCD Only) Not Applicable to logged readings	+/-0.32 to +/-19999
Instrument Accuracy	+/-0.3% of reading @ +23°C Ambient
Resolution	Resolution @ 0-10V +/-1mV Resolution @ 0-1V +/-0.1mV Resolution @ 4-20mA 1µA

[1] Temperature and storage range with Energizer Lithium L91 cells is expanded to -30 to +60°C (-22°F to +140°F)

[2] To connect to two external transducers, a Multi-Parameter 2-Way Adaptor Box (RF615B) is required. Up to 4 external channels can be achieved by connecting a Y-Adaptor (RF602Y) with two Multi-Parameter 2-Way Adaptor Boxes (RF615B).

11.5 WiFi PT100 Temperature Transmitter Part No: RF616 (5306357)

Integral Temperature Sensor Specifications	
Sensor Type	Thermistor
Scales	°C and °F
Temperature Measurement Range	-18°C to +55°C (-0.4°F to +131°F) [1]
Accuracy 0°C to +55°C (-32°F to +131°F)	<±0.3°C (±0.6°F)
Accuracy (full range)	±0.5°C (±0.9°F)
Temperature Resolution	0.1°

External Probes Specifications	
Number of External Channels	1
Sensor Type	PT100 (4-Wire)
Connector	6-Pin Lumberg
Scales	°C and °F
Temperature Measurement Range	-200°C to +150°C (-328°F to +302°F)
Instrument Accuracy (full range)	<±0.1°C (±0.2°F) [2]
Temperature Resolution	0.05°C (0.1°F)

[1] Temperature and Storage range with Energizer Lithium L91 Cells is expanded to -30 to +60°C (-22°F to +140°F)
[2] When used with a Comark Probe

11.4 WiFi Transmitters All Models

Common Specifications (All Models)	
Low and High Alarms / Low and High Alerts - All Channels excluding Door Switch	Low and High Alarms / Low and High Alerts both with Alarm Delay and fully selectable Alarms
Alarm Delay 0-60 minutes - All Channels excluding Door Switch	Delay is programmable for Alerts or Alarms agnostic of whether you program High and Low or High or Low
Ambient Operating Temperature Range	-18 to +55°C (-0.4°F to 131°F) - 10-90% RH - Non-Condensing
Storage Temperature	-18 to +55°C (-0.4°F to 131°F)
Wireless Frequency	2.4GHz WiFi (IEEE 802.11b/g/n)
Wireless Security	WPA2 Pre-Shared Key
Radio Range	Typically, 20 metres indoors
Clock Accuracy	20ppm (1 minute/month) at +25°C (+77°F)
Logging Memory	140000 Max records - Depends on number of active channels
Log Rate	Programmable between 1 minute and 60 minutes
Channel Monitoring Rate	1 Minute
Wireless Radio Rate	Programmable between 5 Minutes to 24 Hours
Alarm/Active LEDs (Front)	The GREEN LED flashes to indicate that the Transmitter Active is logging
Status LEDs (Side)	RED - WiFi Active / YELLOW - Communications Active / GREEN - Mains Power Connected
Case Material	Over-moulded food safe clear polycarbonate with BioCote® Antimicrobial Protection
Environmental Protection	Case enclosure designed to meet IP65 BS EN 60529
Battery Type	4 x AA Alkaline or Energizer Lithium L91 Cells
Battery Life	Up to 1 year
Dimensions	Length 110mm, Height 100mm, Depth 45mm
Weight	300g
Mains PSU (Optional)	Optional Mains PSU Part No RF520 (100-240VAC 0.3A 50/60Hz)
Maximum Probe Lead Length	Not to exceed 30m
Warranty	2 Years

12. Glossary Of Terms

The following terms are used in this Reference Manual.

21 CFR - The regulations issued by the FDA (Food and Drug Administration) in the USA, under Title 21 of the CFR (Code of Federal Regulations) Part 11 that provides the criteria for acceptance by the FDA, or an approved regulatory body, of electronic records, electronic signatures, and handwritten signatures executed to electronic records as equivalent to paper records and handwritten signatures executed on paper. These regulations, which apply to all FDA program areas, are intended to permit the widest possible use of electronic technology, compatible with the FDA's responsibility to promote and protect public health. Part 11 expressly applies to any record governed by an existing FDA predicate rule that is created, modified, maintained, archived, retrieved, or transmitted using computers and/or saved on durable storage media. In other words, any record from a Diligence 600 transmitter, that is at some stage stored on a PC or where a PC is used to retrieve the data, 21 CFR Part 11 can be applied. The Diligence 600 WiFi Monitoring System is designed to aid compliance with 21 CFR Part 11.

AP - Describes the Access Point or Setup Mode used for setting up Diligence 600 transmitters via WiFi

Buzzer - Describes the internal sounder for warning of alarm conditions on Diligence 600 transmitters.

Diligence Cloud - Refers to the Comark application that sits on cloud-based servers on the internet. The Diligence Cloud is a data storage and management platform for the estate of WiFi transmitters, which can be connected to via any internet enabled device with a web browser.

LCD - Describes the liquid crystal display of the Diligence 600 transmitters that displays channel and alarm information including readings and warnings.

LED - Describes the various visual (light emitting diode) indicators on the Diligence 600 transmitters that indicate current status.

Lumberg - Refers to the Lumberg 6-Pin connection type as used by the Diligence 600 transmitters, probes and accessories. It is designed to provide a robust and rugged means of connection preventing accidental removal and ingress.

Task - Describes a set of instructions from the Diligence Cloud that is sent to a transmitter in order to program it with the instructions to carry out logging and reporting on alarms.

WiFi - The wireless network to which Diligence 600 transmitters connect in order to send their measurement data to the Diligence Cloud.

13. Frequently Asked Questions (FAQs)

There are many questions when deciding on or implementing a WiFi Monitoring System. Here are a few that have been collated from customer interactions:

Can the Diligence Cloud send emails?
Yes, the Diligence Cloud will send emails to any designated user who enters a valid email address. Emails can be stopped at any time.

Can the Diligence Cloud send SMS text messages?
Yes, the Diligence Cloud has the means to send emails to an online provider who will convert them to SMS to forward to a mobile phone. Comark recommends the use of www.Textmagic.com for this purpose.

What type of WiFi do I need?
Comark Diligence 600 WiFi transmitters require WPA2-PSK WiFi access, which is similar to that of a domestic WiFi network which generally only requires a password for access. Should the WiFi network not have this type of security, then please refer to the relevant IT department about getting a new SSID setup with WPA2-PSK access for the Diligence 600 WiFi transmitters and possibly a MAC address whitelist, in order to ensure that only the Comark Diligence 600 transmitters can gain access. The MAC address of a Diligence 600 transmitter can be found under the WiFi tab of the transmitter webpage in AP Mode.
Should further help be required, please contact Comark Technical Support or local Distributor.
Additional WiFi security types are planned for the Diligence 600 Transmitters.

What happens if I ignore an Alarm?
If an alarm is ignored then it will simply remain unacknowledged on the Diligence Cloud, but beware, ignoring an alarm can cause issues such as stock loss due to over or under temperature conditions.

What is the optimum radio rate for my transmitters?
Comark recommends that for best battery life, the radio rate of each transmitters is set to one hour or greater. Should data be required to be updated in the Diligence Cloud more frequently, then Comark recommends that these transmitters be mains powered.

If my radio rate is set to one hour, will I have to wait an hour for an alarm?
No. The transmitters check the inputs for readings that are in alarm every minute. Once an alarm value is detected (and any delay time passed) then the transmitter will wake up immediately to send that data to the Diligence Cloud.

Does the Diligence Cloud send hardware alerts?
Yes. Alerts can be sent to users to inform them of hardware related issues with transmitters.

What is self-heating?
Radio rates of less than five minutes can cause internal self-heating of the transmitter, which will result in a slight heating effect on the integral sensor. This can result in the internal temperature sensor recording ambient temperatures approximately 1°C greater than actual. We therefore recommend that the integral sensor be switched off if the transmitter is required to operate with a radio rate of less than five minutes. An external air probe should be used to measure the local ambient temperature instead. The internal warming of the transmitter does not impact the other external temperature channels and accuracy of the transmitter is equally not affected.

NOTE – Extensive use of Setup (or AP) Mode, which puts the WiFi module into an 'always on' state, can also result in temporary heating of the inside of the transmitter, which can also increase the temperature of the integral sensor. This effect is temporary, and the temperature will reduce very quickly after Setup (AP) Mode is deactivated.

What happens when the battery goes flat?
As the batteries go flat on a Diligence 600 transmitter, warnings are provided via normal communications in the Diligence Cloud. If setup, an email notification about the low battery can also be sent. There are three stages of low battery event:

1. Low Battery - The transmitter will indicate low battery by showing the Low Battery Indicator icon on the display. During this phase the transmitter will operate normally.

2. Dead Battery - The transmitter will indicate a dead battery warning by flashing the Low Battery Indicator icon and, if programmed, emails will be sent. During this phase the transmitter will continue to log data, but WiFi will be deactivated. Please replace the batteries as soon as possible.

3. Battery Exhausted - The transmitter will shut down and stop logging. The display will show StOP. Batteries must be replaced to continue normal operation.

When fresh batteries are installed data logging will resume and any unsent data and alarms will be sent to the Diligence Cloud. Batteries should always be replaced as a set and discarded batteries should be recycled in accordance with local regulations.

If the transmitter is mains powered please remove this first and allow the transmitter to completely power down before re-fitting fresh batteries. Do not leave dead batteries in transmitters for extended periods as they can leak and damage your transmitter.

Will I still get my data if the Internet goes down?
Yes. The transmitters will continue to store data and alarms locally for many weeks and months before the memory starts to wrap around.

Can a transmitter be UKAS calibrated at time of purchase?
Yes. Comark its own UKAS laboratory and new transmitters can be supplied with UKAS certification. Please contact Comark Technical Support or local distributor for more details.

Can you provide service level agreements (SLAs) for Diligence 600?
Yes. For customers in the United Kingdom, Comark offers SLAs as part of our on-site services. Please contact Comark Technical Support or local distributor for more details. For regions other than the United Kingdom, please contact the local distributor for details of their own on-site services.

What happens if a transmitter stops working?
In the unlikely event that a transmitter stops working completely, firstly check that the batteries have not simply died. Replace the batteries as per the prescribed process to see if the transmitter recovers. If not, then please contact Comark Technical Support or the local distributor for more details on how to return the transmitter for service.

Can I turn a transmitter off if it is not being used?
To turn a transmitter off you will need to ensure that the latest firmware is being used. The transmitter will need to be placed in Setup Mode. Under the Advanced tab there is the option to Power Down the transmitter i.e. for transportation or long-term storage.

I bought extra transmitters, can I leave them in the 'off' state?
Yes. When transmitters arrive, they are in a deep sleep state and can be safely left in this state for an extended period of time. Should this time exceed six months, then we would recommend removing the battery cells completely to switch off the transmitter.

Can a Diligence 600 WiFi Monitoring System be self-installed?
Yes. We encourage self-installation. Follow the Quick Start Guide (QSG) provided with the Diligence 600 transmitters to get setup. Should additional help be required, then please contact Comark Technical Support or the local distributor who will be happy to provide assistance.

Can a Diligence 600 WiFi Monitoring System be installed for me?
Yes. For customers in the United Kingdom, Comark offers an on-site installation service. Please contact Comark Technical Support or the local distributor for more details. For regions other than the United Kingdom, please contact the local distributor for details of their own on-site services including installation.

Can my transmitters be calibrated on-site?
Yes. For customers in the United Kingdom, Comark offers a UKAS certified on-site calibration service for Diligence 600 transmitters. Please contact Comark Technical Support or local Distributor for more details. For regions other than the United Kingdom, please contact the local distributor for details of their own on-site services including calibration.

What is the warranty for Diligence 600 products?
All Diligence 600 transmitters come with a two year warranty from the date of purchase. All probes and accessories have a six month warranty.

Can I upgrade/downgrade my Diligence Cloud licence plan?
Yes. You can upgrade/downgrade your licence plan at any time, during your ownership. Please contact Comark Technical Support or the local distributor for more details.

What are the Diligence Cloud user levels?
The Diligence Cloud offers several user levels. Administrator Level has full access to the features (dependent on licence plan level). Other users can choose from a selection of operations, such as access to accounts, alarms, devices, logging, signing data, and tasking.

How many locations can I have on my Diligence Cloud account?
There are a maximum of three permitted locations for users on the Diligence Cloud Lite Plan, but this is unlimited for all other licence plan levels.

How many transmitters can I have on my Diligence Cloud account?
The number of permitted transmitters is dependent on the licence plan level. The Lite Plan is limited to a maximum of ten transmitters and the Plus Plan to a maximum of one hundred transmitters. All other plan levels can have an unlimited number of associated transmitters.

Is there a limit to the number of users I can add to my account?
There are a maximum of three permitted users with the Diligence Cloud Lite Plan, but this is unlimited for all other licence plan levels.

Can I remove a user from the Diligence Cloud?
In order to ensure that user actions are not deleted from the Diligence Cloud database, users cannot be simply deleted. This is a requirement for some industries. A user can however be disabled, so that they cannot continue to log in.

Can I delete a transmitter from the Diligence Cloud?
Transmitters can be deactivated, but they cannot be deleted as this would remove their data from the Diligence Cloud. This is a requirement for some industries. Only a transmitter that was incorrectly added to the Diligence Cloud, but not yet connected, can be deleted.

What happens if I no longer want my Diligence Cloud account?
If required, simply contact Comark Technical Support or the local distributor to arrange for an account to be deleted and closed.

Does the Diligence Cloud send a heartbeat notification?
Yes. The Diligence Cloud can be setup to send a heartbeat notification to advise that it is working as expected. This is available to all licence plan levels except Lite Plan.

Is there an App for the Diligence Cloud?
There is no Diligence Cloud App at present. Access to the Diligence Cloud can still be achieved via mobile devices such as tablets and smartphones, though not all features are optimised for, or may work on such mobile devices.

What devices can I use to access the Diligence Cloud?
You can use any Internet connected device that offers a web-browser, such as a PC, laptop, tablet or smartphone. However, we recommend the use of a PC or Laptop with a full HD display for an optimum Diligence Cloud experience.

Note – Devices should be running a currently maintained version of Windows, Mac OS, iOS or Android in order to ensure optimum compatibility.

What browser can I use?
The Diligence Cloud has been designed to work with all modern browsers and has been tested to work with Google Chrome, Microsoft Edge, Safari and Firefox. The Diligence Cloud will not work with Internet Explorer as this is no longer a supported and maintained browser.

Are there any other hidden charges?
No. Once a Diligence Cloud licence has been acquired there are no other charges applicable. A licence fee is due annually, for as long as access to the Diligence Cloud is required.

Will my data still be accessible if I stop using Diligence Cloud?
No. You will need to have at least a Lite Plan licence in place in order to access any stored data.

Will you provide firmware updates?
Yes. From time-to-time, when new features or performance improvements are made available, firmware updates will be made available. These will always be provided free of charge and will be available so that transmitters can be upgraded via the Diligence Cloud.

Do the transmitters support fixed IP addresses?
No. Diligence 600 transmitters do not support fixed IP addresses and should only be set up with a DHCP Server. For further related questions, please contact Comark Technical Support.

How does Diligence 600 help with 21CFR Part 11 compliance?
The Diligence 600 WiFi Monitoring System and the Diligence Cloud data storage and management platform have been designed with the requirements of 21 CFR in mind. We offer full password protection, audit trails and electronic signing of data for example. However, Comark does not undertake to tell you that a deployed Diligence 600 system will meet the requirements of 21 CFR Part 11. You may need to undertake to validate the Diligence 600 system and its components, by way of IQ/OQ/PQ, in order to confirm its suitability for your application. We are confident however, that the installation will meet your requirements.

Can the transmitters work over a Virtual Private Network (VPN)?
Diligence 600 transmitters may work via a VPN connection, provided that the relevant ports are open.

Which processes trigger a connection to the Diligence Cloud?
The transmitter will only connect to the Diligence Cloud under the following circumstances:

- Regular radio rate – The pre-determined radio rate as programmed, typically once per hour
- If manually provoked – If the WiFi Button on the front of the transmitter is pressed to initiate a radio session
- In the event of a High or Low Alert – If a High or Low Alerts is programmed, the transmitter will wake up and send the data to the Diligence Cloud, when the configured limits are exceeded.
- In the event of a High or Low Alarm – If a High or Low Alarms is programmed, the transmitter will wake up and send the data to the Diligence Cloud, when the configured limits are exceeded.
- When an alarm ceases – If an alarm event comes to an end, and the measurements return to within set limits, the transmitter will wake up and send the data to the Diligence Cloud.

NOTE - A broken sensor, mains status change and low or dead battery will also cause the transmitter to wake up and connect to the Diligence Cloud to inform the user.

All of the following state changes will also result in an automatic radio session:

- Normal to Alert Status
- Alert Status to Alarm Status
- Alarm Status to Alert or Normal Status

The change of state from Alert to Normal Status will not cause a radio session.

Will I still get my alarms if the Internet goes down?
No. Only local alarms on the transmitter will be possible while the Internet is down.

What if there is a local power cut, what happens to my data?
In the event of a local power cut leading to a loss of mains power and or the local WiFi network and Internet, then the transmitters will continue to log normally and will send their data to the Diligence Cloud once power is restored.

14. User Notes

15. Warranty

Each Comark product is warranted to be free from defects in material and workmanship under normal use and service. The warranty period is one (1) year, unless otherwise stated, and the warranty period begins on the date of shipment. Temperature probes are warranted for six (6) months.

The warranty extends only to the original buyer or end-user of a Comark authorized reseller. This warranty does not cover damage resulting from normal wear and tear, abuse, misuse, accidental breakage, negligence, defects caused by modifications, repair and servicing not made or authorised by Comark Instruments, damage caused by handling, operating, storing, or using the product outside the intended uses described by our product literature. Disposable batteries are also exempt from warranty.

Comark's warranty obligation is limited, at Comark's option, to refund of the purchase price, free of charge repair, or replacement of a defective product returned within the warranty period. Products must be returned to Comark or one of Comark's authorized service agents.

This warranty is the buyer's sole and exclusive remedy and is in lieu of all other warranties, express or implied, including but not limited to any implied warranty of fitness for a particular purpose. Comark shall not be liable for any special, indirect, incidental or consequential damages or losses, including loss of data, whether arising from breach of warranty or based on contract, tort, reliance or any other theory. Since some countries or states do not allow limitation of the term of an implied warranty, or exclusion or limitation of incidental or consequential damages, the limitations and exclusions of this warrant may not apply to every buyer.

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UKAS CALIBRATION 0451
UKAS CALIBRATION 0775
bsi. ISO 9001 Quality Management FM29700

BioCote® Antimicrobial Protection

Comark Diligence 600 WiFi Transmitters have BioCote's silver technology incorporated into instrument cases at the time of manufacture. The antimicrobial finish inhibits the growth of bacteria, reducing the risk of cross-contamination and infection in the environment.

BioCote® has been officially recognised for its benefits within the food industry with HACCP International Certification. HACCP International Certification supports organisations that demonstrate food safety excellence in non-food products that are designed for, or are commonly used in, the food industry.

BioCote® is the only antimicrobial solution to be awarded HACCP International Certification.