PestConnect

Rentokil

Rentokil

Connect
Radar
Instruction Manual

Relates to :
Connect Radar – 304776

This product has LongReach Technology Inside

This manual is based on the latest information and is provided subject to alteration.

We reserve the right to change the construction and/or configuration of the product at any time without obligation and to modify earlier versions of the product.

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Product disposal instructions
for residential users

The Waste of Electrical and Electronic Equipment (WEEE) Directive (2002/96/EC) has been put in place to recycle products using best available recovery and recycling techniques to minimise the impact on the environment, treat any hazardous substances and avoid increasing landfill. The symbol shown above and on the product means that the product is classed as Electrical or Electronic Equipment and you should not put it into your domestic waste bin. When you’ve no more use for it, please dispose of the product according to your local authority’s recycling scheme. For more information, please contact your local authority or the retailer where you bought the product.

Safety Instructions

- Only use the Battery Pack Part Number 180338 that is supplied by Rentokil. This battery pack is not rechargeable and should never be recharged.
- If the Radar is to be stored for a long period of time then the battery pack should be removed from the device.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Children should be supervised to ensure that they do not play with the appliance.
- Do not use the device if it is damaged.
- Do not expose the device to corrosive liquids.
- Do not use this device near to water sources.
- This device contains Radio Emitting devices and should not be used near to life support systems.
- This device contains a pressurised Carbon Dioxide (CO_2) canister and should not be heated or incinerated. The hazard pictogram below shall be attached to the product.

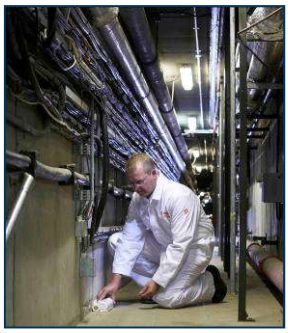
Note: If the equipment is used in a manner not specified by the manufacturer then the protection provided by the equipment may be impaired.

Pest Connect Overview

Pest Connect is a system that enables remote monitoring of devices. Data from sensors are sent to a Connect Control Panel. The Connect Control Panel establishes a secure connection to a central server where the data is entered into a database.
Typical sensors that are used in the Pest Connect system are the Radar Connect mouse trap and the AutoGate Connect, shown below in Figure 1.
A typical installation will have many sensors communicating to the Connect Control Panel. A single Control Panel can manage up to 300 sensors and where necessary multiple Control Panels could be deployed onto a site. In such a system if the sensors fail to connect to the Control Panel they will scan for alternative Control Panels to ensure high levels of connectivity.

Figure 1: Connect System Overview

Product Description



Radar is a stand alone, battery powered unit that has been designed to capture, kill and contain mice efficiently, hygienically and humanely. It is designed primarily for high risk customers, such as food processing plants, pharmaceutical manufacturing and computer suites, where there is zero pest tolerance or conventional baiting is not allowed. However, the many product features of Radar make it suitable for a wide range of customers as it can operate in a variety of environments. Intruding mice are captured as soon as they are detected, immediately reducing the risk to the customer. They are then killed by concentrated release of carbon dioxide (CO_2) into the air tight unit. CO_2 is capable of killing mice extremely rapidly and is widely recognised as a humane method of control. The mouse is unconscious within 15-20 seconds and fatal levels are reached within 45 seconds of the unit's activation. Currently, under existing legislation, CO_2 is approved for use as a rodenticide or exempt from registration in many countries. CO_2 is being fully supported by Rentokil for this use under the European Biocidal Products Directive.

Radar has been designed by Rentokil to exploit the travelling habits of mice as opposed to more traditional methods which target their feeding behaviours, e.g. baiting. Correctly installed units will typically be placed at wall / floor junctions, relying on a mouse's natural curiosity and tendency to run against walls. Radar has two entrances, one at each end of the unit, to allow mice to run along its passageway. Two Infrared emitters are continuously pulsing light, which is reflected off the mouse's fur, bouncing back to the Infrared detectors. This activates a circuit that immediately closes both entrances, trapping the mouse inside a tightly sealed chamber. Simultaneously, a pressurised canister is locked open to fill the unit with carbon dioxide. The customer is provided with 24/7 pest control and can be reassured that the product is both effective and humane, reducing the risk to their stock and premises.

Radar signals the capture of a mouse sending a message to the Connect Control Panel and then Server. A technician will receive an alert and arrive promptly to empty, clean, service and reset the unit. Rigorous testing and quality controls have been implemented at every stage of the manufacturing process to ensure that Radar is a high quality product that is capable of supporting a high quality service proposition.

Product Functions

The LongReach radio system ensures reliable connectivity over large distances to the control panels. Beacon signals are emitted from the Control Panels and so the Radar will connect to the Control Panel with the best connection but in an system with multiple Control Panels it will select an alternative if the connection to the initial one fails.

It is important to recognise that in a linear chain of repeaters the system is only as good as the weakest link. One badly positioned Repeater can cause the loss of connection of all Sensors and Repeaters beyond it, so it is important to take time to be happy with the locations you have chosen. In general terms, Square sites tend to naturally provide multiple routes, whereas long, thin sites will require more care to ensure that there are no weak points in the system.

The loss of connection to the radio system will cause Sensors to retry the connection and attempt to make a new one if it can. If connection continues to be unsuccessful the software automatically increases the time between attempts to conserve battery life. For normal usage the power consumption of the detector units is comparable to the standard Radar and MMU products – therefore the recommendation is to replace all PestConnect installation detector batteries at 12 monthly intervals (all at the same time) to maximise the installed system performance.

There are some system limitations that should be kept in mind, although typically should only occur in very large systems:

The maximum number of units that can be connected to a Control Panel is 300 and so if more devices are required then an additional control panel will be required.

Installation

Radar units should be sited along wall / floor junctions, behind machinery and equipment, i.e. anywhere that bait boxes and mouse monitor units (MMU's) would normally be placed. Units should be secured with fixing brackets if possible to prevent the unit being accidentally moved, knocked or removed by unauthorised persons. The unit ideally should be sited where the LED is clearly visible to signal an activation.

Environmental Restrictions	Details
Outdoor use	Radar has been specifically designed for indoor applications only. The product is not suitable for outdoor use.
High levels of surface water	The system electronics can be damaged by water. Take care to locate units away from areas where local high pressure washing or hosing down operations are carried out.
High levels of dust / grease	It is important that units are kept clean, especially if installed in areas where high levels of dust or grease are present. Cleaning guidelines must be followed to prevent damage to the units.
Knocking / kicking	Care must be taken to locate units away from pedestrian traffic to avoid false activation. This can be prevented by mounting units on fixing brackets.
Extreme temperature (<0°C)	Extremely low temperatures (i.e. unheated warehouses) could affect Radar's performance and may result in the unit entering low battery status mode.
High humidity (> 80%) or condensation	High humidity and / or condensation could result in damage to the unit's control electronics and result in false activations.
High levels of vibration	High vibration due to localised machinery / fridge compressors etc could affect the performance of the unit and result in false activations.

Setup

Open the Radar unit using the supplied key. *(Figure 1)*
The unit is supplied with the battery fitted.
Slide circuit board switch to 'ON' – the LED will be red. *(Figure 2)*
Pass your finger across the first beam and the LED will flicker repeatedly. *(Figure 3)*
Move your finger to the second beam within four seconds – the solenoid will self test to complete check and the unit doors will close.
If the Control Panel is operating and in range of the Radar then the LED will flash purple to indicate that the beacon signal is being received. After a short period* the LED will flash blue to indicate that it has successfully joined the network. If however there is no beacon signal within range then the LED will flash red at this point you should check that the Control Panel is powered otherwise an additional Control Panel could be required on the site.
Once the Radar has joined the network, set the trigger by pressing the red door level down until it is locked under the blue catch. *(Figure 4 & 5)*
Remove the blue safety pin from the CO_2 canister and ensure the canister is within its expiry date before installing into the unit. *(Figure 6 & 7)*
Locate the canister in position – it should not need forcing. *(Figure 8)*
Close the unit securely. *(Figure 9)*
Note: If the canister resists the fittings, it is likely to be used and in need of disposal

Figure 1

Figure 2

Figure 3

Figure 4

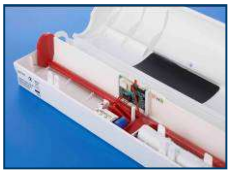


Figure 5

Figure 6

Figure 7

Figure 8

Figure 9

* The time taken to join the network will depend on which radio scheme is being used i.e. which country the units are deployed. In the European regions the join time should be less than 30 seconds but in North American and some Asian regions where frequency hopping protocol is used it could take a few minutes to join the network.

Setup (cont.)

The LongReach enabled Control Panel should be powered before starting to install the sensors. Ensure that the LongReach network has started up by checking that the Network Symbol (shown below) is no longer flashing on the display.
As each device joins the network the Number of Connected Devices shown will increment. Note: if the device is switched off it will remain in the device count for 3 hours or until the Control Panel is reset.

It should be noted that messages are only sent every 15 minutes from a Radar device and so it could take up to this time for the messages to appear on the queue on the Control Panel. As the communication is encrypted the negotiation of the session can also take 15 minutes meaning that the initial message will take up to 30 minutes.

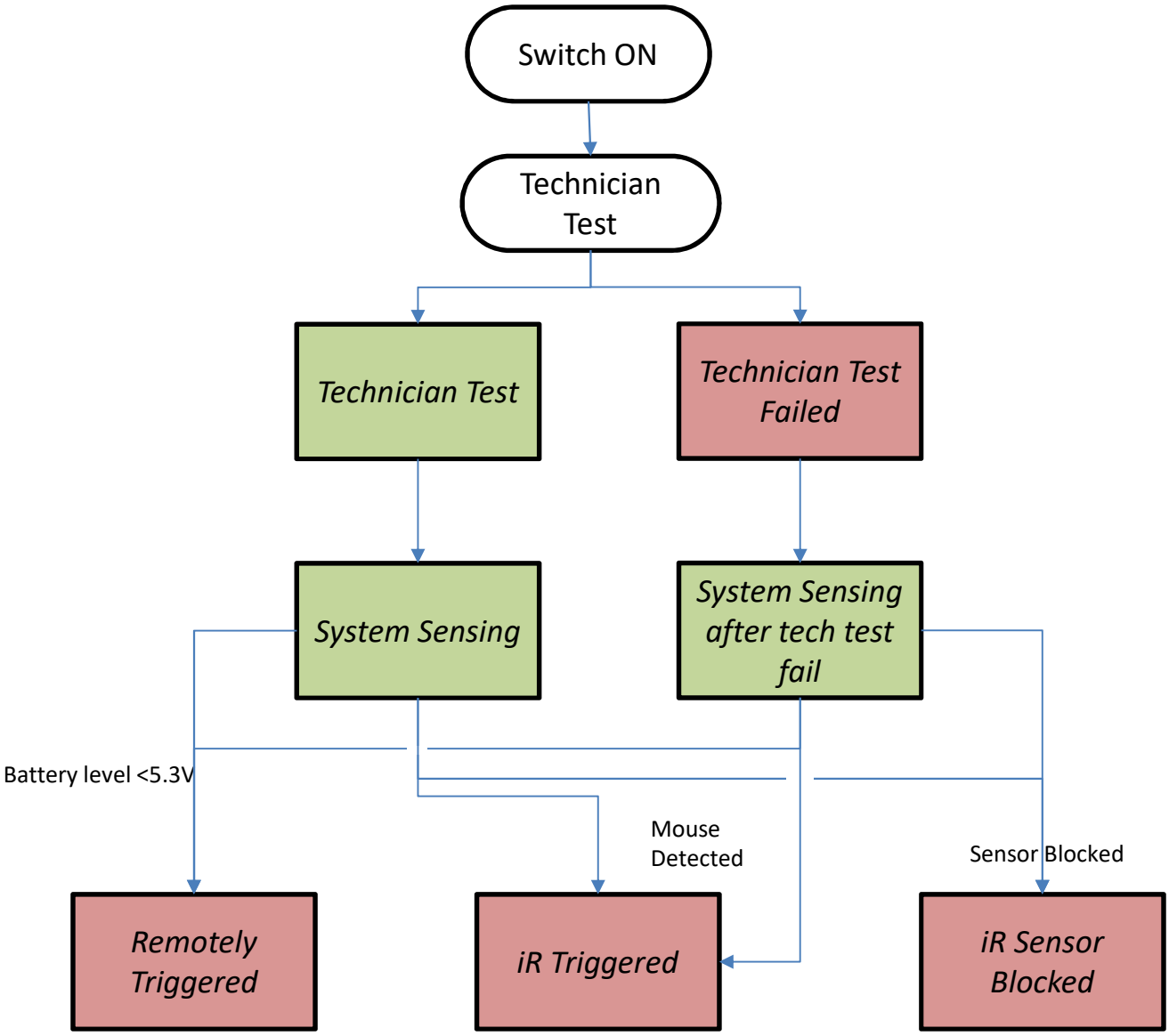
Radio Check Mode

It is possible to put the Radar into Radio Check mode where the signal strength is indicated by the colour of the flashing LED.
To put the Radar into Radio Check Mode, switch on the Radar and wait for 10 seconds. The LED will be solid red for the first 10 seconds and then change to orange when Radio Check can start.
Break the infrared beams (in the same way as the normal setup) to start the Radio Check.
The LED will now flash each 2.7 seconds to indicate the state of the connection to the Control Panel with the following values:

Blue	Good Signal level
Yellow	Functional but should be improved
Red	No Signal

Connect Status

Below are the status messages that can be sent to the Rentokil Data Portals. When the Radar has been set it will report the status of "System Sensing" to the servers. If a mouse is detected then the Radar will trigger and report "iR Triggered" to the servers.



Cleaning / Maintenance

Radar requires no maintenance other than cleaning and management of the batteries and CO_2 canisters.

The recommended cleaning product for Radar is the *Universal Hard Surface Wipes (PSU01)*. These wipes are readily available from Rentokil Initial Supplies.

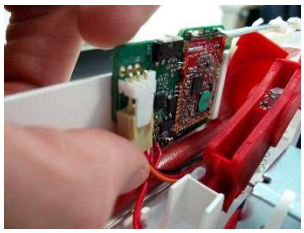
Ensure that you wear protective gloves during the cleaning of the unit.

Remove the dead mouse and dispose of it in accordance to standard protocol. Remove any external dirt, paying particular attention to any accumulated dirt on the underside of the unit.
Clean the inside of the unit, cleaning any fur, urine, droppings, etc.

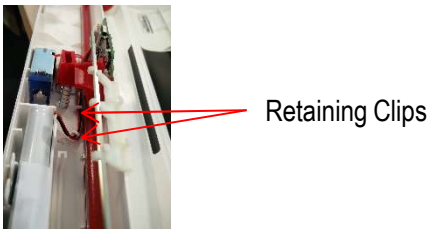
Battery Change

Alkaline batteries should be disposed of in accordance with local, national or state regulations, or recycled where such facilities exist. It is recommended that battery packs are replaced every 12 months, irrespective of use, to ensure that they are fit for purpose. Exhausted batteries are to be removed from the Radar and disposed of as above.

To replace the battery remove the label which holds it in place, remove the connector from the electronics board and remove the battery.



Remove the battery connector



Hook the cable under the clips

Changing CO2 Canister

A new canister will need to be inserted every time the Radar unit is activated (please ensure a new canister is within the expiry date). After firing, the red wedge at the neck of the CO_2 canister it is held inside by a ratchet that empties it completely. This ensures that empty canisters cannot be reused by mistake. Empty canisters are not classified as hazardous waste and can therefore be disposed of in accordance with local, national or state regulations, or recycled where such facilities exist. However, full canisters are classified as "Hazardous Pesticide Waste" and therefore MUST be discharged prior to disposal. The canisters should be discharged by holding the canister horizontally away from the body and pushing the trigger, thus dispensing the contents. It is recommended that CO_2 canisters are replaced every 12 months, irrespective of use, to ensure that they are fit for purpose.
Canisters that have been emptied should be marked as used by pressing a dent into the can as shown below.

Note: This product contains a pressurised Carbon Dioxide (CO2) canister. I shall not be heated or incinerated.

LED patterns

LED	Meaning	Notes
Static Red	Awaiting Technician Test (will start in normal mode if activated)	· Occurs after first turning on the device · Waiting for the sensors to be tested · Once technician test is complete sensor will start in normal mode. · Times out after 10seconds
Static Yellow	Awaiting Technician Test, (will start in radio test mode if activated)	· Occurs after 10seconds in Static Red · Waiting for sensors to be tested, pass hand in front of the sensors · Once technician test is complete sensor will start in radio test mode. · Times out after 20seconds (will power down at this point)
Rapid flashing Red	Sensing first sensor in technician test mode	· Occurs when one sensor is obstructed in Technician test mode (obscuring second sensor triggers trap)
Flashing Purple	Beacon signal found, waiting for a join request	· Unit is scanning to find PestConnect Control Panels and comparing signal strengths to select the best route
Flashing Red	No beacon signals found	· Check that the control panel is plugged in and sending beacons
Flashing Blue (2 second interval)	Test Mode: within radio range	· Good radio signal
Flashing Yellow (2 second interval)	Test Mode: low radio signal <120dB	· Weak signal being received - consider moving the control panel or installing an additional one.
Flashing Red (2 second interval)	Test Mode: not in radio range	· No beacon signal being received
3 even Blue flashes	Making final connection to Control Panel	· Occurs either after scanning or after test mode · Indicates it is about to arm, and has connection through to a Control Panel
3 even Red flashes	Unable to make final connection to Control Panel	· Occurs either after scanning or after test mode. · Indicates it has been unable to make a connection. It will retry automatically

Troubleshooting

Issue	Cause	Solution
No Red LED when Radar is switched on	Insufficient Power	Change the battery
		Check that the connector is in tact and that the cable is routed under the red door beam.
	Radar switched off and on too quickly.	Switch the Radar off and wait for 5 seconds before switching back on.
Doors do not close	Faulty components	Enter a quality complaint before returning the unit
	Insufficient tension in the springs or plastics causing too much friction (especially at low temperatures)	Check that the spring is still located in the red door beam
Mouse alive in the unit or found in the electronics / battery section	Empty or faulty CO2 canister.	Ensure that the Radar is not damaged by the mouse. If there is no sign of damage then replace the CO2 can.
Radar immediately activating when switched on OR rapidly flashes red without breaking the beams	Infrared detectors are detecting dust or other debris.	Clean the iR sensors and black stickers
Solenoid does not trigger	Not enough power in the battery	Change the battery
LED flashes red when triggering the solenoid in the technician test	Not communicating with the radio module	Switch the Radar off and wait for 5 seconds before switching back on.
Can not activate the Radar in technicain test mode	Unit is in high light conditions and the iR sensors could be saturated	Move out of the direct sunlight and try again.

Technical Details

Connect Radar

Power Supply	
Battery supply	Use only Rentokil-Initial battery pack FR18 6v output - 4 x AA cell Alkaline battery pack -20°C to 50°C Operating Temperature range
Interfaces:	
Local Area Network (LAN)	868-928MHz depending on local Approvals Rentokil Initial Propriatary Application Layer Protocol
Connect Device connectivity	
Maximum Number of Radar units per Control Panel	300
Physical:	
Dimensions	308mm x 196mm x 60mm
Material	Perrite Polypropylene PCS18E - HB rated polymer to UL94
Weight	415g (including full gas canister)
Operating Temperature	0°C to +40°C
Environmental rating	IP21
Mounting	Possible to mount with bracket (optional FR55)

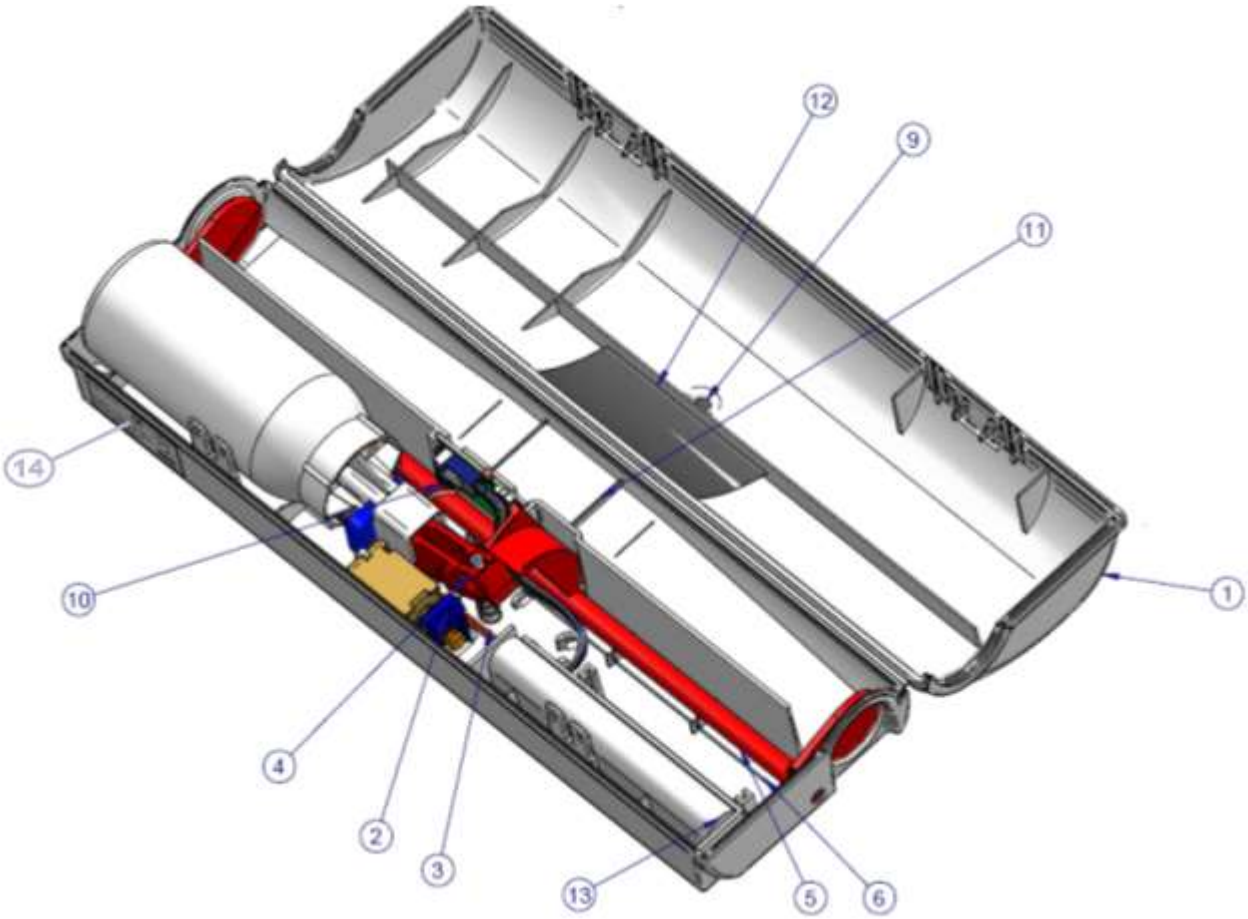
This product contains the LongReach radio module :

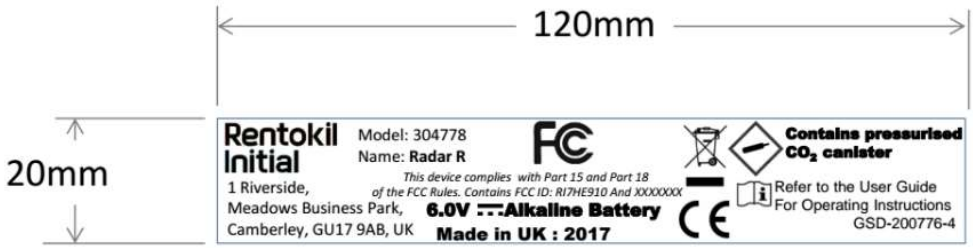
FCC ID: 2AK3PGSD-500349

IC ID: 22407-GSD500349

These will be shown on the approval label attached to the product.

Item	Description	Part Number
1	Main casing	306128
2	Lever - [Red]	360102
3	Lever spring	360106
4	Trigger - [Blue]	360103
5	Door beam	360101
6	Door beam spring	360105
9	Lens	216207
10	Circuit board assy	GSD-800731
11	Radar LR Connect Approval Label	GSD-200776
12	Sensor label - Black	85670
13	Battery pack	180338
14	LR Radar Antenna Support	GSD-300814
15	Sensor label - Black	85670





SAMPLE LABEL