ecoStat 3

PRE5904 LCD Infrared & NFC Product Setting Handset

Prefect

Cleverly simple
control of energy.

SPECIFICATION

Input controls:
Rotary wheel, Back-ON/OFF button, Function button.

Functions:
Send settings, Read settings,
Favourite settings, Product update.

Indicators:
LCD Display with adjustable back-light.

Memory function:
Yes.

Communication:
Secure Infrared (IR) or Near Field Communication (NFC).

Firmware update:
USB-C port for firmware updates from external USB Drive.

USB Drive compatibility:
128MB min FAT32 Formatted USB-C drive.

Battery size:
4x AA 1.5V.

Battery Life:
Based on 2500mA batteries 25 hours continuous use dependent on usage.

Conformance:
Radio Equipment Directive (RED) 2014/53/EU.

IP rating:
IP50.

Dimensions

PRODUCT COMPATIBILITY

Product	IR	NFC
PRE5004EC2 Ecostat2	●	
PRE5204EC2 Ecostat2	●	
PRE5003EC2 Ecostat2	●	
PRE5203EC2 Ecostat2	●	
PRE5502EC2 Ecostat2	●	
PRE5003EC3 ecoStat3	●	●
PRE5203EC3 ecoStat3	●	●

WARNING:

The handset cannot be exposed to liquids or excessive dust.

NOTE:

Due to firmware upgrades to both handset and target products, variations may appear between this instruction manual and the handset or the product to be set. Please ensure to acquire the latest product manual and handset firmware from:

prefectcontrols.com

See page 13 for firmware update details.

INDEX

HANDSET OVERVIEW

The PRE5904 handset is used to view and alter settings in selected Prefect products. The handset utilises a LCD screen which provides a user friendly interface. Settings can be viewed and changed using the rotary wheel. All settings are either 'Sent' from the handset to the target product or 'Read' from the target product into the handset. Settings can be Read/Sent by either Infrared (IR) or Near Field Communication (NFC).

The handset controls consist of a rotary wheel and two buttons.

Rotary wheel

The rotary wheel is used to navigate through the menus and alter values. Rotate the wheel clockwise or anticlockwise to navigate or alter values. Push the rotary wheel in to select or confirm.

Left grey button

This is the power button, when held for 3 seconds. It also serves as the 'back' button when short pressed. Use this button to return to a previous menu or parameter. The left button corresponds to the left button displayed on the screen.

Right green button

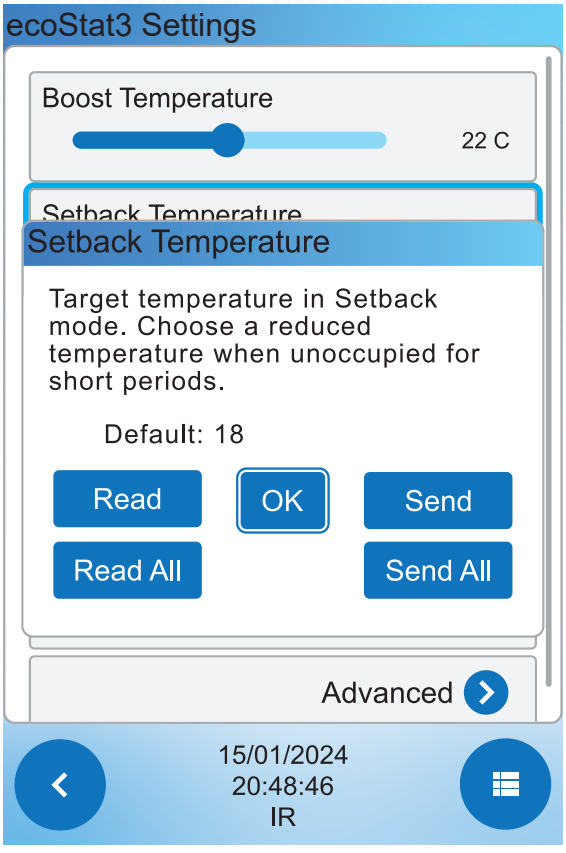
This is the function button.

The use of this button may vary between menus or settings. Press it at any time and a help bubble will appear with details of the currently selected item.

When a setting is selected and this button is pressed, the default value of the selected setting is shown along with the help bubble.

There is an option for sending or reading individual or all menu settings.

The green button corresponds to the right button displayed on the screen dashboard.



MENUS - NAVIGATION

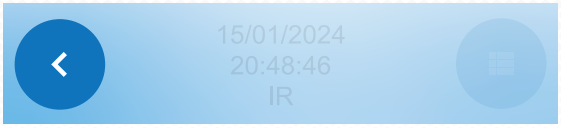
This is an example of a handset menu, in this example the ecoStat3 home menu.

1. The title of each menu is displayed at the top of the screen.

2. The outline around an item indicates what is currently selected. Rotate the rotary wheel clockwise to move down and anticlockwise to move upwards.

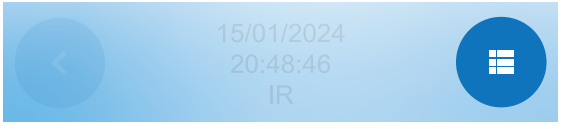
3. The Blue arrows pointing right indicate that selecting this option will move to the next menu. Press the rotary wheel to enter the next menu.

4. The blue arrows pointing left at the bottom of screen is the back button. This is operated by the left hand (grey) button on the handset. This button will not be present on the handset home screen as this is the first screen.

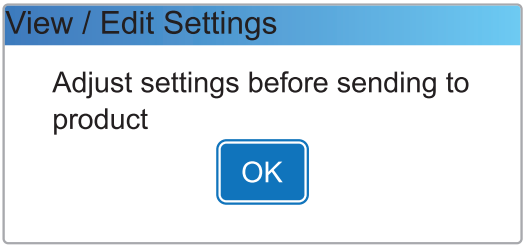


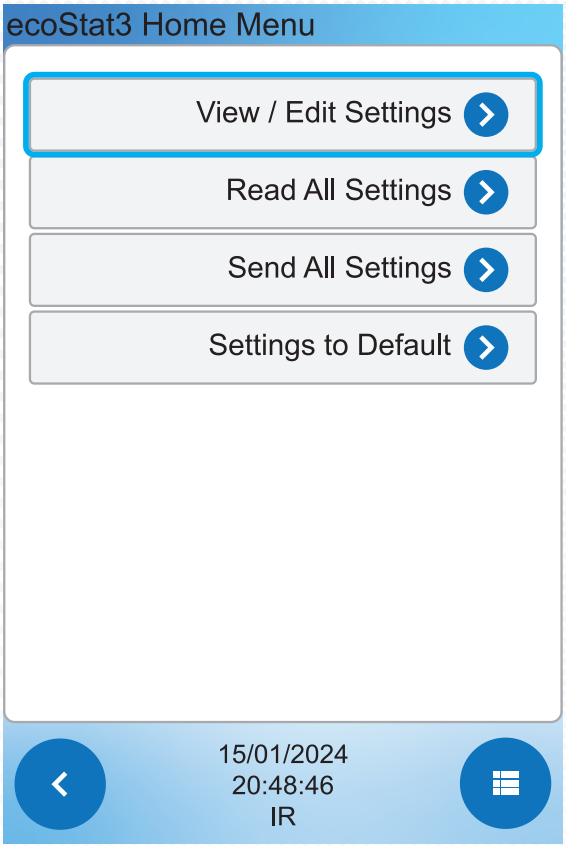
5. The dashboard is displayed at the bottom of the screen. It displays the current date and time. Below the date and time the handset displays which product interface is selected IR or NFC.

6. The blue button on the lower right is the function button. The function button is operated by the green button on the handset. The operation of this button can be different depending on the menu or parameter selected.



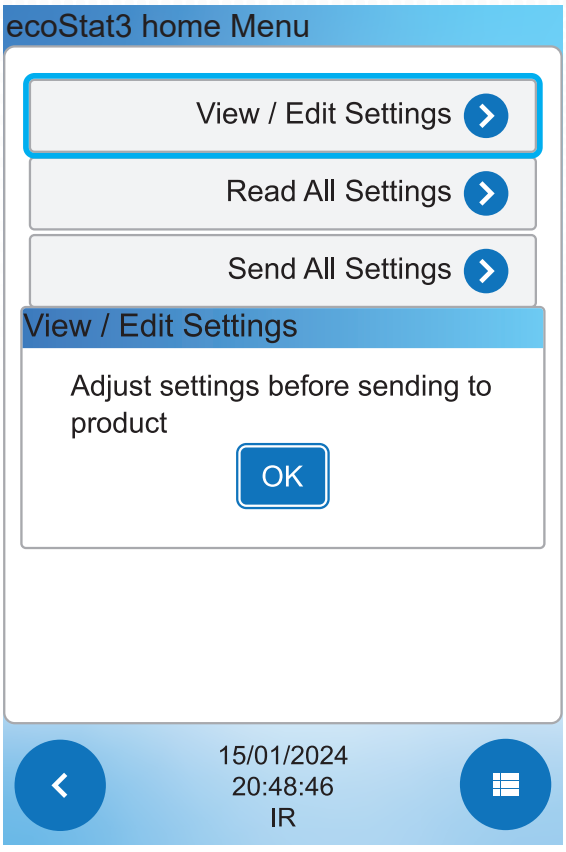
7. At any point pressing this button will open a help bubble.





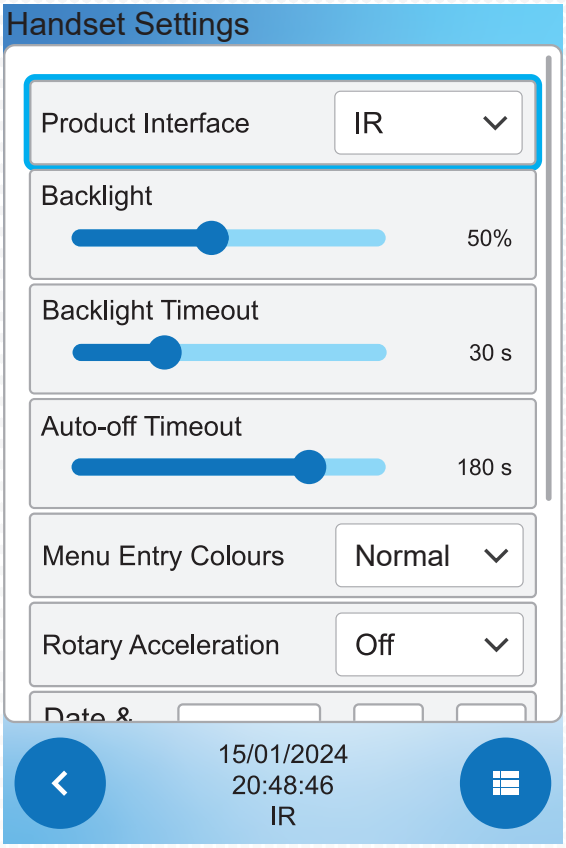
Above: The blue outline indicates current selection.

Below: Press the rotary wheel to enter this menu.



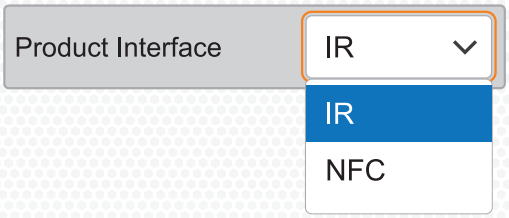
MENUS - ALTERING SETTINGS

This is an example of a settings menu, in this instance the handset settings menu.



Setting parameters are displayed as:

Drop-downs:

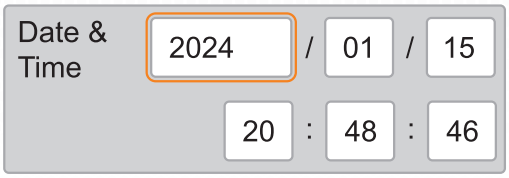


The drop-down provides setting options, When selected press the rotary wheel to enter the drop down. Rotating the wheel moves the blue highlight to the desired option, when highlighted press the rotary wheel to confirm the selection.

Sliders:

Sliders provide selection of numerical values for temperatures and times etc. When selected press the rotary wheel to enter the slider to make an adjustment. When the slider has been entered an orange outline appears. Use the rotary wheel to adjust the slider to the required setting, then press the rotary wheel to confirm the selection. The rotary wheel has acceleration. Turning the wheel faster will result in a bigger change, slower will result in a smaller change.

Digit box:

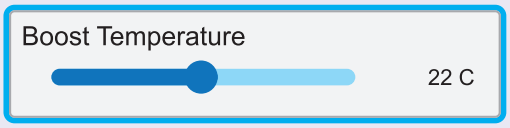


Digit boxes provide input of real time. When selected press the rotary wheel to enter the parameter, the first digit box will be highlighted in orange. Turn the rotary wheel to set the desired value, when the desired value has been selected press the wheel to move to the next digit box. Once the final box has been filled press the wheel again to confirm.

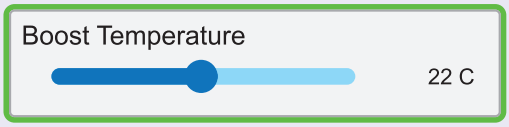
Outline colours:

Menu parameters have specific outline colours when selected.

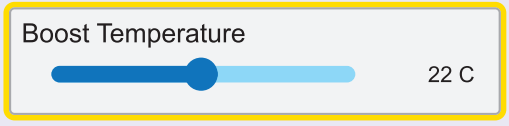
Blue indicates the setting is at the default value.



Green indicates the setting value displayed is the value read from the target product.



Yellow indicates the setting value has been altered from either the default setting or the setting read from the target product.



SENDING & READING SETTINGS

The settings can be Read/Sent by either Infrared 'IR' or Near Field Communication 'NFC'. The handset product interface setting selects which type of interface is used IR or NFC. By default the handset is set to IR mode as this is the recommended option for most uses.

IR has a theoretical maximum range of up to 5m depending on the target product and does not require direct contact with the target. The target can receive settings at any point when the unit is powered and stable. **IR is the recommended option for most situations**.

NFC requires the handset to be in contact with the front of the target product. Unlike IR, settings can be Read/Sent when the target product is powered down or not yet installed. This can be useful for setting products before or during installation.

NOTE:

Some target products may only be equipped with either NFC or IR, refer to the target product instructions for details.

Selecting product interface

Power on the handset and navigate to the ***Home*** screen. From the home screen select ***Handset Settings***. The window shown in Fig 1 will display. Select the drop down for product interface and select the desired option. The current interface (*) selection is displayed on the bottom of the handset dashboard at all times.

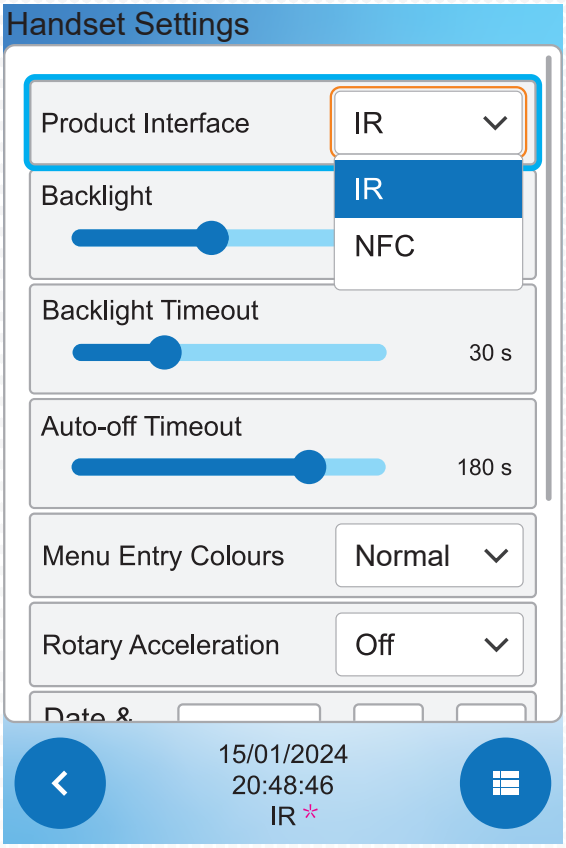
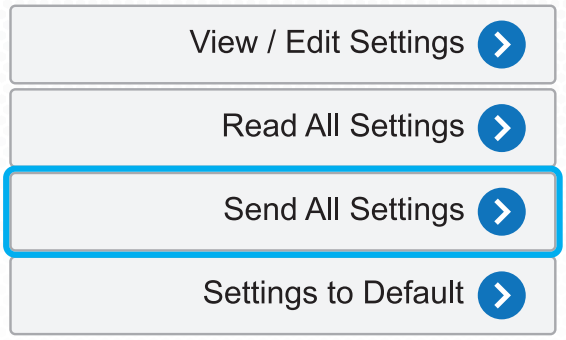


Fig 1

Reading and Sending settings

Settings can be Read/Sent in 3 ways:

1. All settings
2. Current menu settings only
3. Selected setting only



Read/Send all:

'Send All' will send every setting for the selected product. The settings will be sent to the target, overwriting all current settings in the target. Selecting 'Read All' will read every product setting from the target product.

- **This option is best for initial setup.**

Read/Send current menu:

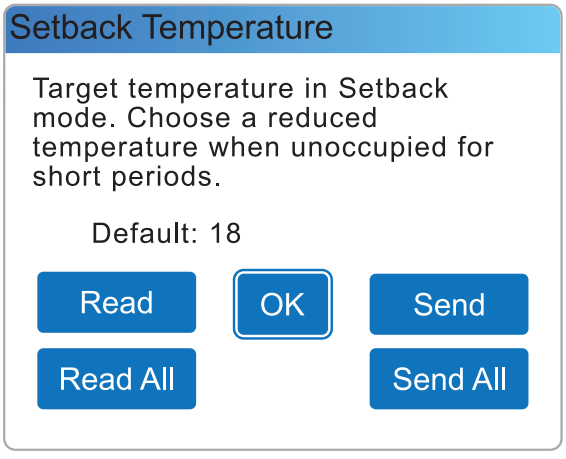
Read/Send current menu will Send or Read settings visible within the current menu only. Sub menus are not Read/Sent.

- **This option is best for adjusting existing settings.**

Read/Send selected setting

Read/Send selected setting will Send or Read the selected setting only.

- **This option is best for adjusting a single setting.**



SENDING & READING SETTINGS

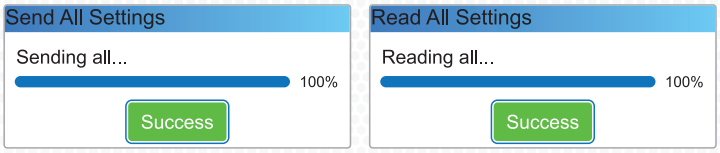
Read/Send All Settings:

Selecting 'Send All' from a target product home menu will send every setting for the selected product, the settings will be sent to the target, overwriting all current settings in the target. Selecting 'Read All' will Read every product setting from the target product. The read settings will be input into the handset, overwriting the settings in the handset product menu. The read settings can then be viewed in the 'View/Edit Settings' menu and altered if required.

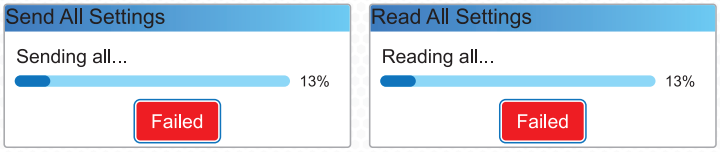
While 'Read/Send All' is active, a status window will open and display the current progress of the Read/Send.

The Read/Send can be cancelled by pressing the rotary wheel.

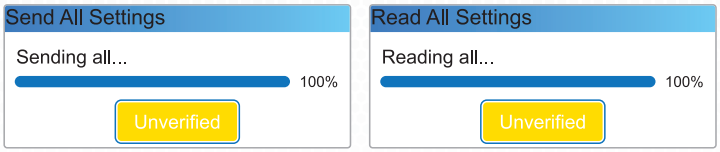
When the Read or Send is successful the window will display:



When a Read or Send is unsuccessful the window will display:



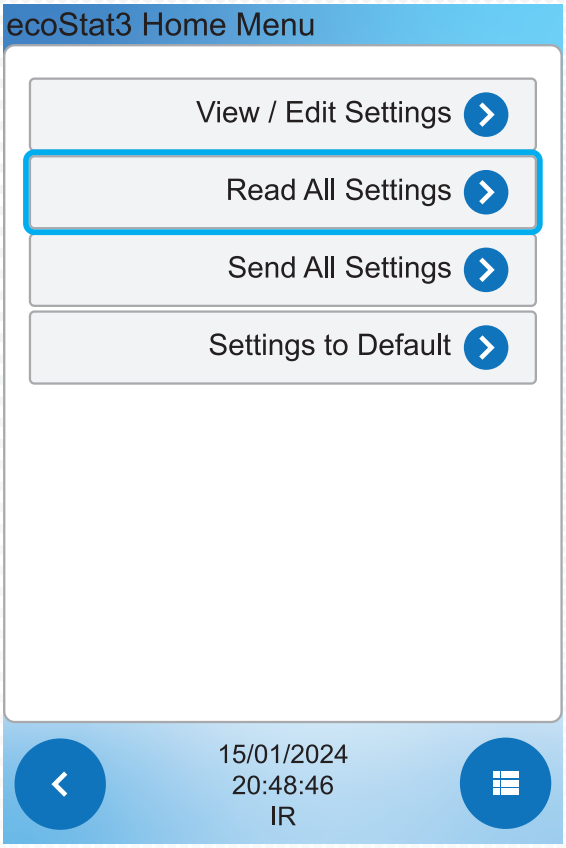
After a successful Read or Send the target product will confirm receipt with the handset. If this confirmation is not received the handset window will display:

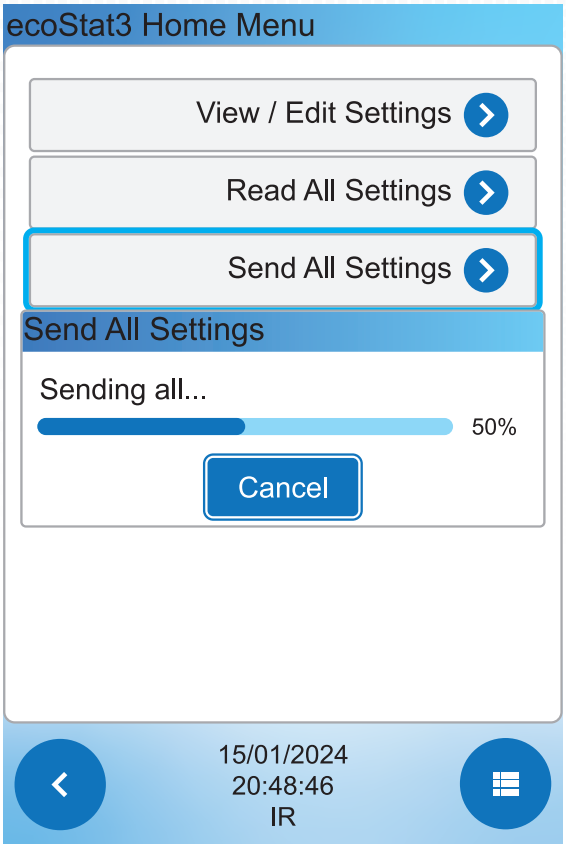


Unverified means the final confirmation was not received, and all settings may not have been successfully received by the target product.

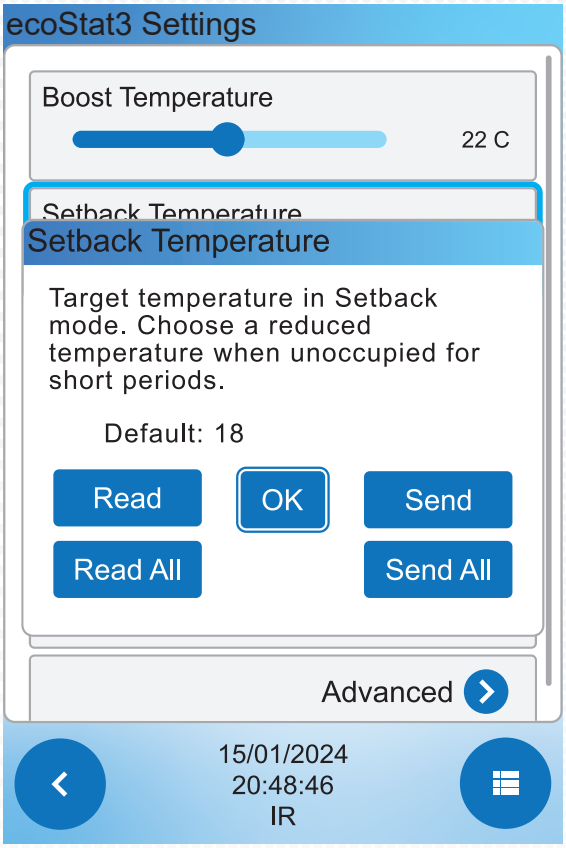
NOTE:

Send All will send every product parameter from every menu and sub menu to the target, overwriting existing settings in the target. To ensure any unmodified settings remain unchanged use the Send menu or Send setting option to send only the altered settings. Alternatively perform a 'Read All' before sending settings - this will load the existing settings from the target product into the handset ensuring only altered settings are sent.





SENDING & READING SETTINGS



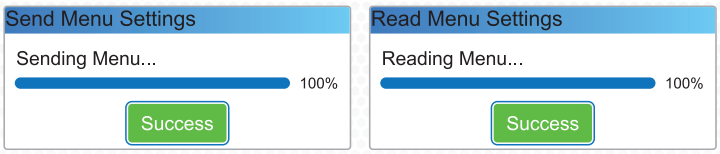
Read/Send Current Menu Settings:

When in a product settings menu, and the green button is pressed, a help bubble will open. This provides the option to Read All or Send All.

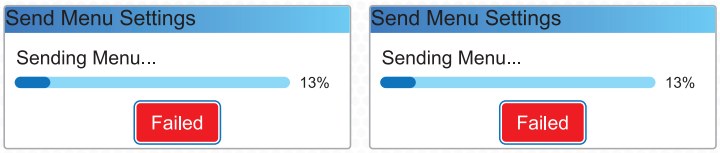
Selecting Send All from here will Send the visible settings in the current menu only. The settings will be sent to the target, overwriting the settings in the target. Selecting Read All will Read the settings in the current menu from the target product. The read settings will be input into the handset menu, overwriting the settings in the handset product menu. The read settings can then be viewed in the menu and altered if required.

While the Read/Send is active, a status window will open and display the current progress of the Read/Send.

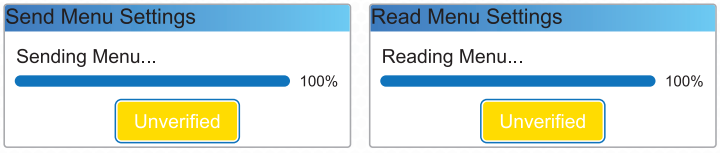
The Read/Send can be cancelled by pressing the rotary wheel.
When the Read or Send is successful the window will display:



When a Read or Send is unsuccessful the window will display:



After a successful Read or Send the target product will confirm receipt with the handset. If this confirmation is not received the handset window will display:



Unverified means the final confirmation was not received, and all settings may not have been successfully received by the target product.

SENDING & READING SETTINGS

Read/Send Current Setting:

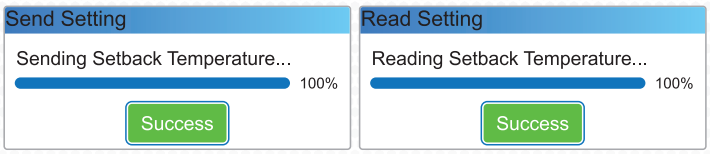
When in a product settings menu and the green button is pressed, a help bubble will open. This provides the option to Read or Send.

Selecting Send from here will send the selected setting only. The settings will be sent to the target, overwriting the sent setting in the target. Selecting Read will Read the selected setting from the target product. The read setting will be input into the handset, overwriting the selected setting in the handset product menu. The read setting can then be viewed in the menu and altered if required.

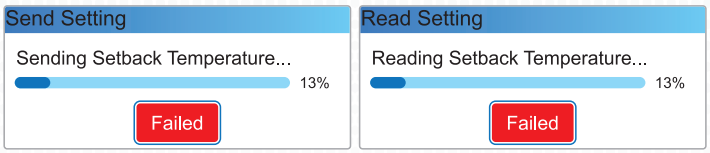
While the Read/Send is active, a status window will open and display the current progress.

The Read/Send can be cancelled by pressing the rotary wheel.

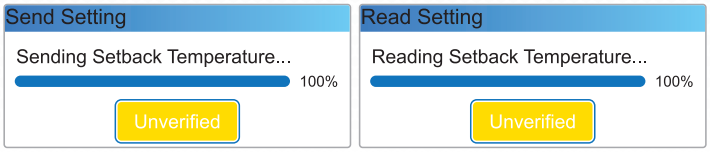
When successful the window will display:



When a Read/Send is unsuccessful the window will display:



After a successful Read/Send the target product will confirm receipt with the handset. If this confirmation is not received the handset window will display:

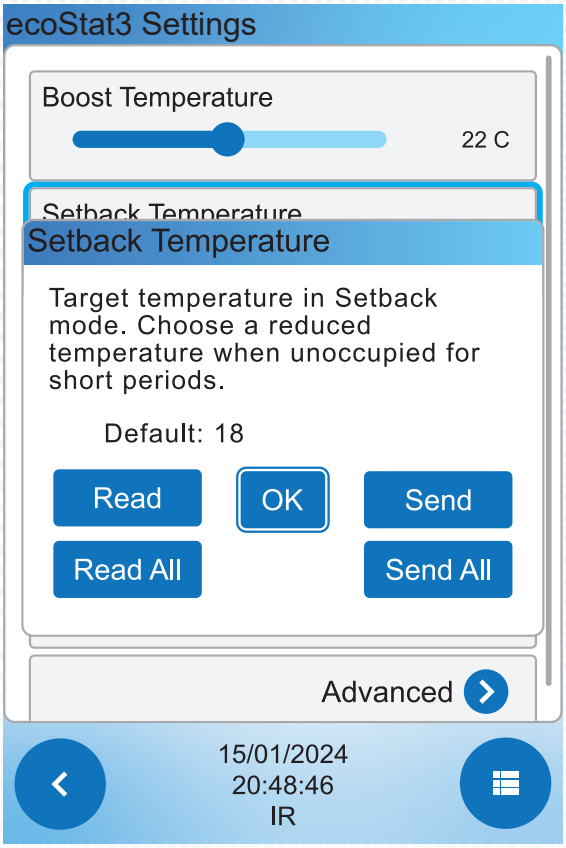


Unverified means the final confirmation was not received, and the setting may not have been successfully received by the target product.

Individual settings can also be Read or Sent from the menu directly using the rotary wheel or green button.

Press the rotary wheel for 2 seconds to Read the selected setting.

Press the green button for 2 seconds to Send the selected setting.



READING & SENDING SETTINGS

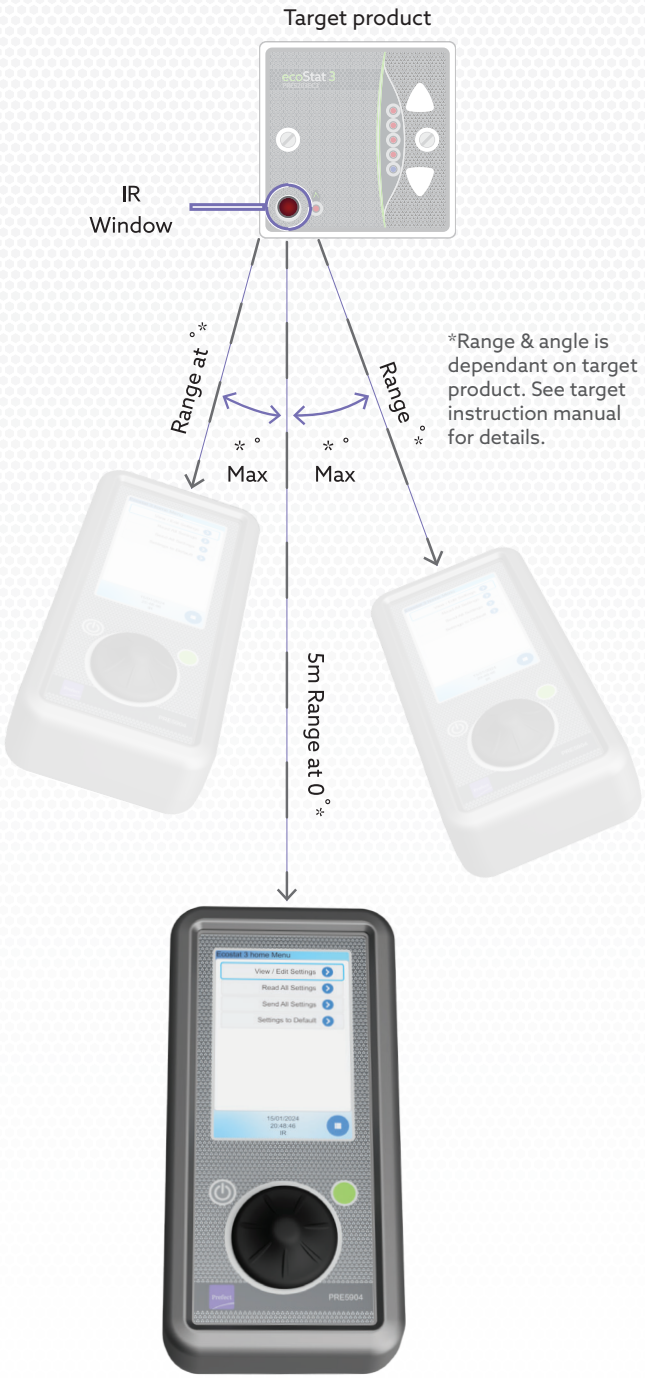
Reading/Sending with IR mode

Infrared communicates via direct line of sight. It has a range of up to 5m (depending on the target product). This operates like a TV remote and is recommended for most situations.

The settings are sent from an IR transmitter on the top of the handset and are received by an IR receiver on the target product.

The IR is direct line of sight, meaning there must be a clear path between the handset and the target. For settings to be Read/Sent the unit must be powered.

For most target products settings can be Read/Sent at any time when powered. Target setting changes are immediate.



Using the handset in IR mode

Ensure the target product is powered. This is indicated by one or more lit LEDs. Point the top of handset at the IR window of the target. Hold the handset from 30cm to 5m away from the target (distance may vary between products).

The handset only needs to be pointed at the unit while the settings are being transmitted. A status window on the handset screen displays progress. Keep pointing towards the target until the Read/Send function is complete. A bleep will confirm all parameters have been Read or Sent successfully.

The target's LEDs will blink to confirm infrared contact (product dependent). If the LEDs do not flash during a Read/Send the infrared signal is not being received. Move closer and try again until the LEDs start to flash. If the LEDs still fail to flash check product interface setting on the handset dashboard is displaying "IR".

Infrared Lock

Target products IR can be disabled if necessary. This may be required if there are multiple targets in close proximity, or in rare circumstances if the unit is being affected by another IR device in the installation area.

When locked, targets will not accept Sent settings and settings cannot be Read. When locked, all LEDs will flash when a Read/Send is attempted from the handset (product dependent).

Locking IR

To lock IR please refer to the target product instruction manual.

READING & SENDING SETTINGS

Reading/Sending with NFC mode

NFC communicates via short range magnetic field, and requires the rear of handset to be touching the target product. This operates much like a contact-less credit card.

NFC can be beneficial if there are multiple targets mounted in close proximity to where IR could inadvertently communicate with other units.

The main benefit of NFC is it does not require the target to be powered*, settings can be Read/Sent with the target powered down. Target products can also be set before they are installed*.

NOTE:

***Feature may not be available on all target products. Refer to target product instruction manual for details.**

Using the handset in NFC mode

NFC requires the handset to be placed in contact with the front of the target as shown in Fig 1. The target does not need to be powered to Read or Send settings*.

Roughly align the NFC antennas that are shown in Fig 2. When in place, settings can be Read/Sent.

The handset only needs to be held against the unit while the settings are being transmitted. A status window on the handset screen displays progress. Keep the handset in place until the Read/Send function is complete.

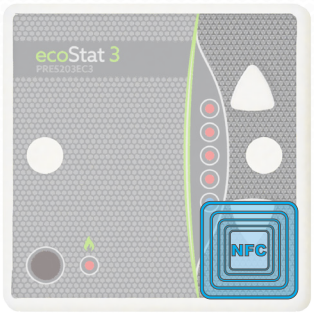
A bleep will confirm all parameters have been Read or Sent successfully. The target's LEDs will blink to confirm NFC communication. If the LEDs do not flash during a Read/Send the NFC signal is not being received. Reposition the handset and try again until the LEDs start to flash.

If the LEDs still fail to flash check the product interface setting on the handset dashboard is displaying "NFC".

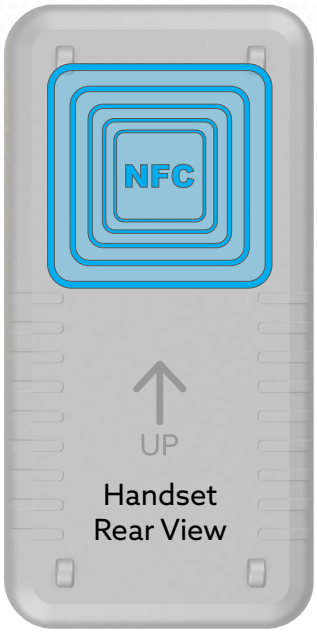
Setting changes are immediate.

Fig 1
Placement for transmission

Fig 2
Antenna Locations

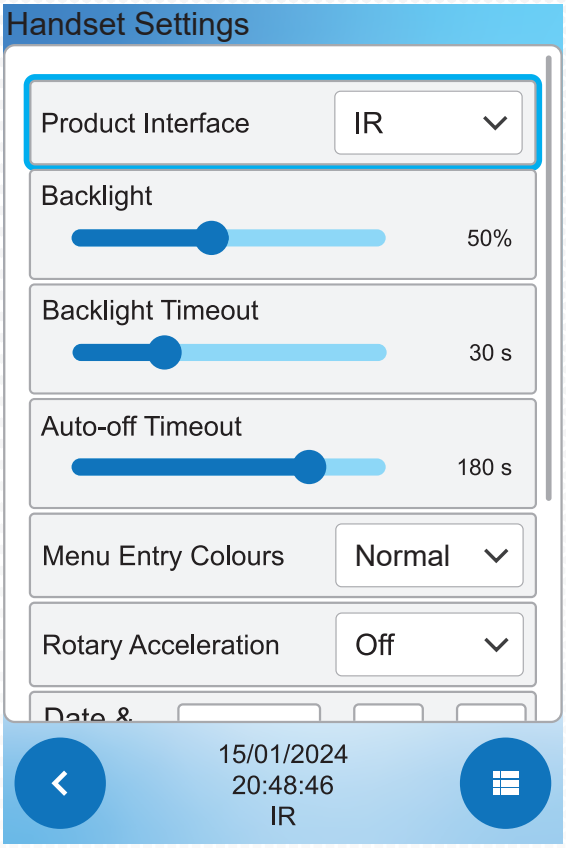


Example Target
PRE5203EC3



Please see target product instruction manual for antenna location.

HANDSET SETTINGS



Product Interface:
This is the setting for how the handset communicates with the target product. See page 6 for details.

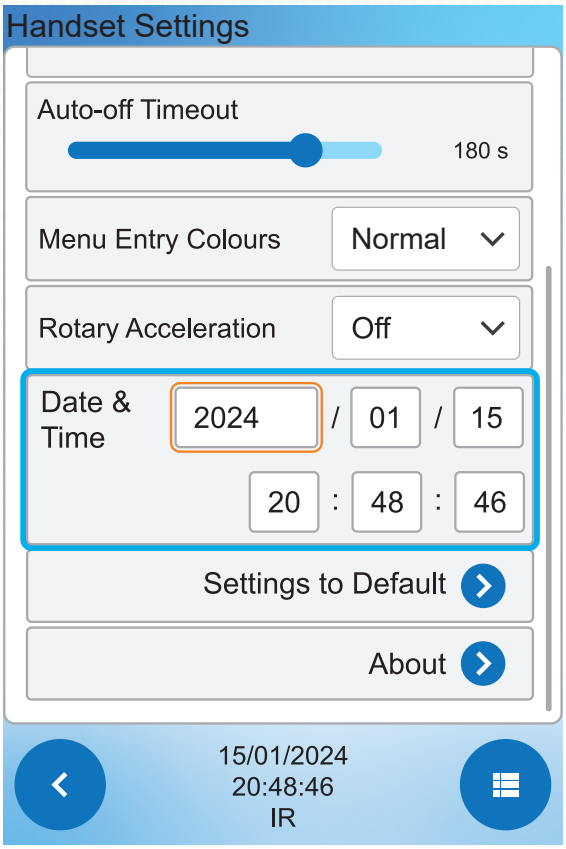
Backlight:
This is the handset LCD screen backlight level. This can be set from 5 to 100%. A lower backlight level will increase battery life.

Backlight Timeout:
This is the time the LCD backlight will stay at full brightness before dimming, to conserve power. This can be set from Disabled to 100s. A shorter time will increase battery life.

Auto-off Timeout:
This is the length of time the handset will remain powered when not in use. When this time has elapsed the handset will turn off automatically. This setting can be set from disabled to 240 seconds. A shorter time will increase battery life.

Menu Entry Colours:
This setting controls the outline colour of settings. This can be set to either normal or contrast. The contrast setting may be beneficial to colour-blind users.

Rotary Acceleration:
This setting controls the acceleration characteristics of the rotary wheel. This setting can be set to Off, Accel1 or Accel2. When set to Off there is no acceleration meaning each click of the wheel results in one step regardless of how fast the wheel is turned. When set to Accel 1 or Accel 2 turning the wheel faster results in bigger changes. Accel 1 and Accel 2 are two different variants of acceleration, choose which ever is more suited to the operator.



Date & Time:
The handsets real time clock (RTC) should be set on first use. The RTC is displayed on the dashboard at the bottom of the screen. The time and date is sent to the target product every time the handset communicates with the target. It is therefore important the RTC is correctly set. The handset has an internal backup battery that will retain the RTC when the 4xAA batteries are replaced.

The RTC format is: **YYYY / MM / DD - HH / MM / SS**

Settings to Default:
This option will reset the handset settings to default. This operation only applies to the settings in the ***Handset Settings*** menu, none of the other menus will be affected.

Resetting to default does not alter the RTC.

About:
The About menu contains information on the handset software and firmware version. This menu also contains the firmware update menu. See page 13 for firmware update details.

UPDATING HANDSET FIRMWARE

The handset firmware 'FW' is the operating software of the handset. The FW can be updated. Updates can include: added features, bug fixes and compatibility with new products.

A FW update may be required for the handset to be compatible with existing and future products.

The handset is updated by a USB-C memory stick. This can be acquired from Prefect Controls with the latest FW preloaded

Alternatively the FW can be downloaded from **prefectcontrols.com.**

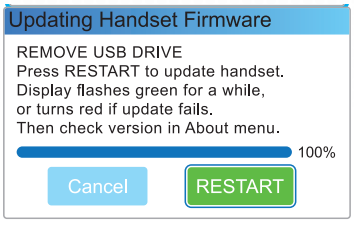
Once downloaded, extract the software from the zip file and copy the '.bin file' to the root of a USB memory stick. The memory stick must be a USB-C type and FAT32 formatted.

Update installation

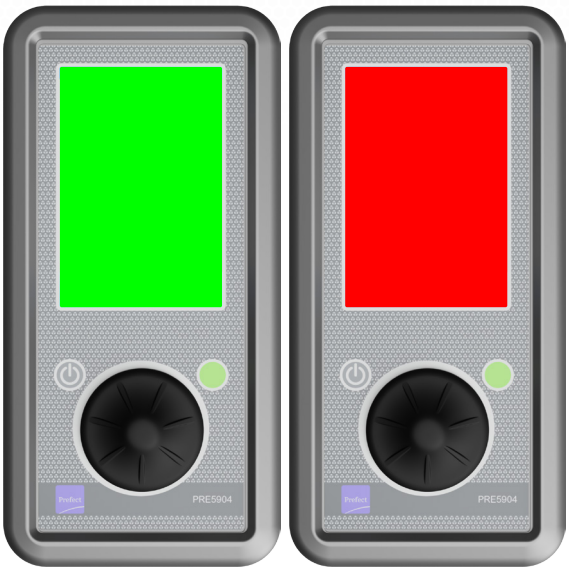
If the low battery indicator is present on the dashboard replace all batteries before proceeding.

1. Power on the handset. Navigate to: ***Home>Handset Settings>About***.
2. Insert the memory stick into the USB-C port located on the top of the handset.
3. Select ***Update by USB Drive*** and press the rotary wheel.
4. Select ***Start***, the FW file will be copied from the memory stick and stored in the handset.

5. When the file has been copied successfully remove the USB drive.



6. When the USB drive is removed select ***RESTART***. During the update the screen will flash green. If the update fails the screen will flash red.



TROUBLESHOOTING

The handset won't turn on	1. Check the batteries are fitted in the correct orientation. 2. Replace the batteries. 3. Ensure the left (grey)button is being held for 3 seconds to switch the handset on.
The screen is very dim	Check the screen brightness setting. See page 12 for details.
The target product is not listed in the menu	1. Check if the target product is compatible with the PRE5904 handset. See compatibility chart on page 1. 2. The handset firmware may be out of date and requires an update. See page 13 for details. 3. Some products are listed as groups. For example, the PRE5003EC3 and PRE5203EC3 ecoStat3 products are set via the ecoStat3 menu.
The handset keeps turning off	The handset has an auto-off timeout. This can be adjusted in the handset settings menu. See page 12 for details.
The handset time is wrong	The real time clock (RTC) in the handset must be set for first use. See page 12 for details.

TROUBLESHOOTING

Reading & Sending settings in IR mode

Fault	Checks
Read or Send failed in IR mode	1. Check the handset is within the operating range and angle. See target instructions for details. 2. Check the target is powered and one or more LEDs are lit. 3. Ensure the target product being set, matches the handset menu. 4. If all target LEDs flash simultaneously when attempting to Read/Send, the IR lock is enabled. IR must be enabled to allow reading/sending. See target instruction manual for details. 5. Check the handset product interface setting is set to IR. The current interface setting is displayed at the bottom of the handset screen. See page 6 for details. 6. Check the target product is compatible. 7. Check the IR window on the handset and target are both clear and unobstructed. 8. The handset may have outdated firmware and requires an update. Handset firmware can be downloaded from **prefectcontrols.com** Alternatively contact Prefect Controls for assistance. See page 13 for details. 9. Check the correct target menu has been selected. 10. Check the handset silicone sleeve is not installed backwards covering the top black IR window and USB-C port.
The handset displays "unverified"	When settings have completed sending, the target will send confirmation to the handset that all settings have been received. The handset will display 'Success'. If the handset displays 'Unverified', this indicates the final confirmation was not received, this means settings may not have been completely received. In this instance move closer to the target and try again.
Only one setting is being Sent/Read	When using the 'Send' or 'Read' button this only Reads/Sends the highlighted setting. Using the 'Read All/Send All' button from the home menu Reads or Sends All settings simultaneously. A Read All or Send All from within a menu Reads/Sends all settings within that menu. See page 5 for details.
The Target LEDs all flash when I try to Read or Send	If all target LEDs flash simultaneously when attempting to Read/Send the IR lock may be enabled. IR must be enabled to allow Reading/Sending. See page 10 for details.
When Send All is finished all the LEDs turn off	Check the LED fallback setting. When set to 0% the LEDs will turn off after the LED fallback time has elapsed. See target product instruction manual for details.
After settings are sent the target changes behaviour	One of the settings that has been altered has changed how the unit operates. For example, if the unit was in boost mode with the heating off, before the settings were sent and the boost temperature was increased, as part of the settings changes, the heating may switch on when the new settings are implemented. This is because the higher setting requires the heater to be on.
The time in the target is wrong	Check the handset time is set correctly. Whenever a setting is sent from the handset, the time and date are also sent. If the handset time is incorrect the target will also be wrongly set. See page 12 for details.

TROUBLESHOOTING

Reading & Sending settings NFC mode

Fault	Checks
Read or Send failed	1. Check the handset NFC antennas are aligned as shown on page 11. 2. Ensure the target product being set, matches the handset menu. 3. Check the handset product interface setting is set to NFC. The current interface setting is displayed at the bottom of the handset screen. See page 6 for details. 4. Check the target product is compatible, and has NFC capability. 5. Check the IR window on the handset, and target, are both clear and unobstructed. 6. The handset may have outdated firmware and requires an update. Handset firmware can be downloaded from **prefectcontrols.com**. Alternatively contact Prefect Controls for assistance. See page 13 for details. 7. Check the correct target menu has been selected. 8. Ensure the handset is held against the target product for the duration of the Read/Send.
The handset displays 'Unverified'	When settings have completed sending, the target will send confirmation to the handset that all settings have been received. The handset will display 'Success'. If the handset displays 'Unverified' this indicates the final confirmation was not received. This means settings may not have been completely received. In this instance reposition and try again.
Only one setting is being Sent/Read	When using the 'Send' or 'Read' button this only Reads/Sends the highlighted setting. Using the Send All/Read All button from the home menu Reads/Sends all settings simultaneously. A Read All/Send All from within a menu Reads/Sends all settings within that menu. See page 6 for details.
When Send All is finished all the LEDs turn off	Check the LED fallback setting of the target. When this setting is 0% the LEDs will turn off after the LED fallback time has elapsed. See target product instruction manual for details.
After settings are sent the target changes behaviour	One of the settings that has been altered has changed how the unit operates. For example, if the unit was in boost mode with the heating off, before the settings were sent and the boost temperature was increased, as part of the settings changes, the heating may switch on when the new settings are implemented. This is because the higher setting requires the heater to be on.
The time in the target is wrong	Check the handset time is set correctly. Whenever a setting is sent from the handset, the time and date are also sent. If the handset time is incorrect the target will also be wrongly set. See page 12 for details.

FREQUENTLY ASKED QUESTIONS

Do I have to keep the handset pointing at the target?

When sending in IR mode, the handset only needs to be pointing towards the target during the Read/Send operation.

When in NFC mode, the handset only needs to be touching the target during the Read/Send operation.

What is the difference between IR and NFC?

IR operates like a TV remote. Settings can be Read/Sent from up to 5m away. IR requires the target to be powered.

NFC operates like a contact-less credit card. The handset must be in contact with the front of the target. With NFC the target does not need to be powered.

What is the range of the IR?

Range is dependent on the target product. The range can be up to 5m. See target instruction manual for details.

What is the default product interface IR or NFC?

By default the handset is set to IR mode as this is best suited to most situations.

Do all target products have IR and NFC?

No, some products may have both, or, one or the other. Please check the compatibility table on page 1.

Does the target have to be powered?

IR mode - YES. NFC mode - NO.

What if I have two or more targets in close proximity?

Multiple targets within range of the IR can receive settings simultaneously, which can cause setting errors. There are several options:

1. Switch to NFC mode.
2. Power only one device at a time.
3. Disable IR on target devices.
4. Adjust your position to point the handset towards one unit and way from another.

Are the settings in the handset saved when I power off the handset?

YES.

Are the settings in the handset saved when I replace the batteries?

The product settings will revert to default. The Handset configuration settings will be unaffected.

Does the real time clock (RTC) retain the time when I replace the batteries?

YES.

How long do the handset batteries last?

25 hours continuous use. Battery life can be preserved by reducing the screen backlight level and dimming timeout.
See page 12 for details.

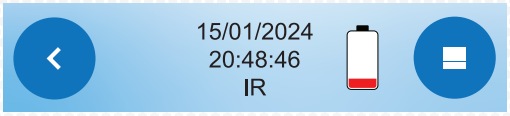
How do I change the batteries?

See page 18 for details.

HANDSET BATTERIES

The handset is powered by 4x AA size batteries. The handset is supplied with alkaline batteries however rechargeable 1.5V AA batteries may also be used. Use only good quality 1.5V batteries with 2500mA or more capacity for best results.

When the batteries are low a battery symbol will appear on the handset dashboard.



The handset can also be powered via the USB-C port using a standard 5V USB port or power pack.

NOTE:

Current product settings in the handset will be returned to default when the batteries are removed, the handset configuration settings are retained. The real time clock will not be affected and will retain time.

Replacing the batteries

1. To replace the batteries remove the silicone sleeve starting from the top above the screen. When the sleeve is removed the battery door is visible on the rear of the handset.
2. Remove the cover by sliding downwards.
3. Inspect the batteries for signs of leaks or damage. If one or more of the cells have leaked carefully remove the batteries using appropriate PPE to avoid injury. Remove any acid residue from the handset battery compartment using a suitable contact cleaner applied to a disposable soft cloth. Ensure appropriate PPE is worn. Remove the existing batteries and dispose of them in suitable refuse or battery recycling.
4. Fit 4x AA batteries into the compartment in the correct orientation.
5. Re-fit the battery cover.
6. Power on the handset to ensure the battery orientation is correct.
7. Re-fit the silicone sleeve by placing the lower edge of the handset into the sleeve first, followed by the top edge.

CARE AND MAINTENANCE

To clean the handset remove the silicone sleeve starting at the top edge above the screen. The silicone sleeve can be cleaned in warm soapy water using a mild detergent. To clean the handset case, dampen a soft cloth with a mild cleaning agent and gently wipe the housing and screen. Do not spray or apply liquid directly to the handset.