



Manual for Arrowes

Handheld Remote Controls unit (HRC X - Blue) eSERIES™ & HAWK from version 1.8 for the eSERIES™ Units

Arrowes Handheld Remote Controls units

HRC (Bluetooth only)



HRC X (white)



HRC X (Blue)

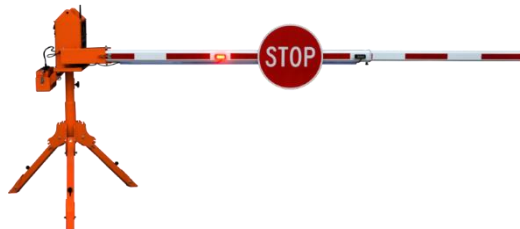


The above HRC units can connect to these eSERIES™ Units below, the eSTOP™, eBOOM™ & eSAS™.

eSERIES™ Units



eSTOP™



eBOOM™



eSAS™ (Speed Awareness Sign)

This manual is focused on the Handheld Remote Control Unit – HRC X eSERIES™ (Blue)

For more details on the HRC, HRC X (White), eSTOP™, eBOOM™ & eSAS™ for setting up and functions, please refer to their respectful manuals for their own instructions.

C4 USB Cable

C4 USB cable, used to recharge the HRC & HRC X units from an eSERIES™ units or any USB port, also to Pair HRC & HRC X units to the eSERIES™ units.



Contents

ARROWES HANDHELD REMOTE CONTROLS UNITS	2
ESERIES™ UNITS	2
C4 USB Cable	2
HRC X (BLUE)	4
LoRa Version 1.8 and Higher	4
Identification items	4
Recharge HRC X Battery	5
Battery Status	6
Turning On	6
Home Screen	6
Menus	7
Setup Menu	7
Mode Menu	8
Pair Menu	9
A. To Pair with eSERIES™ Unit	9
B. To Un-Pair one (1) Unit from the HRC X	9
C. To Un-Pair ALL Units from HRC X	10
Operational Steps	10
1. Antenna	10
2. Power On	10
3. Home Screen	10
5. MUST perform a QUICK TEST	10
6. Modes	10
7. Active Mode	12
8. To Control Traffic Signals	12
9. Auto Mode **	12
10. Using Vehicle Detection in Auto Mode **	13
11. Hawk Mode for the ASIST System **	14
12. Deactivate or Stop operation -change to Test Mode	16
13. Power Off HRC X	16
14. Pack Up	17
Trouble shooting	17
Battery Status	17
Unit Tilted or Knocked Over	17
Software Restart on HRC X	17
No Comms	18
Non-Critical Fault on eSERIES™ Unit	18
Critical Faults	19
Specifications HRC X	20
Repairs and Servicing	20
Warranty	20
Symbols and Icons	21



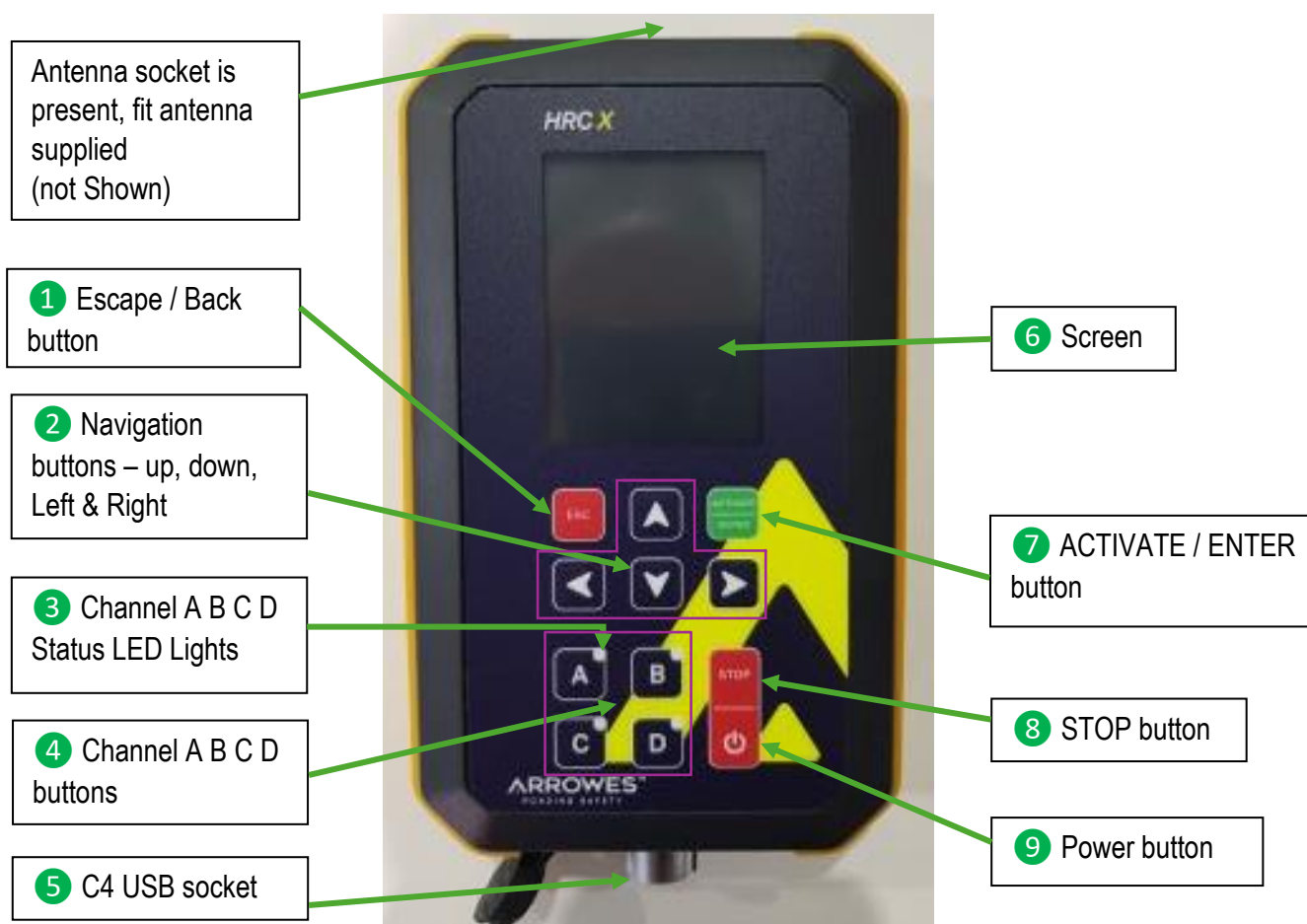
HRC X (Blue)

LoRa Version 1.8 and Higher

Key items to identify are:

- Version number is v1.8 and higher
- White background displayed on the screen
 - For HRC X unit with a Black background on the screen, please refer to HRC X (White) for instructions
- An antenna about 5cm or 20cm in length.
- Has a comprehensive list in the Settings Menu
- Can Pair up to **6 LoRa eSERIES™ Units** on four (4) channels **A, B, C & D.**

Identification items

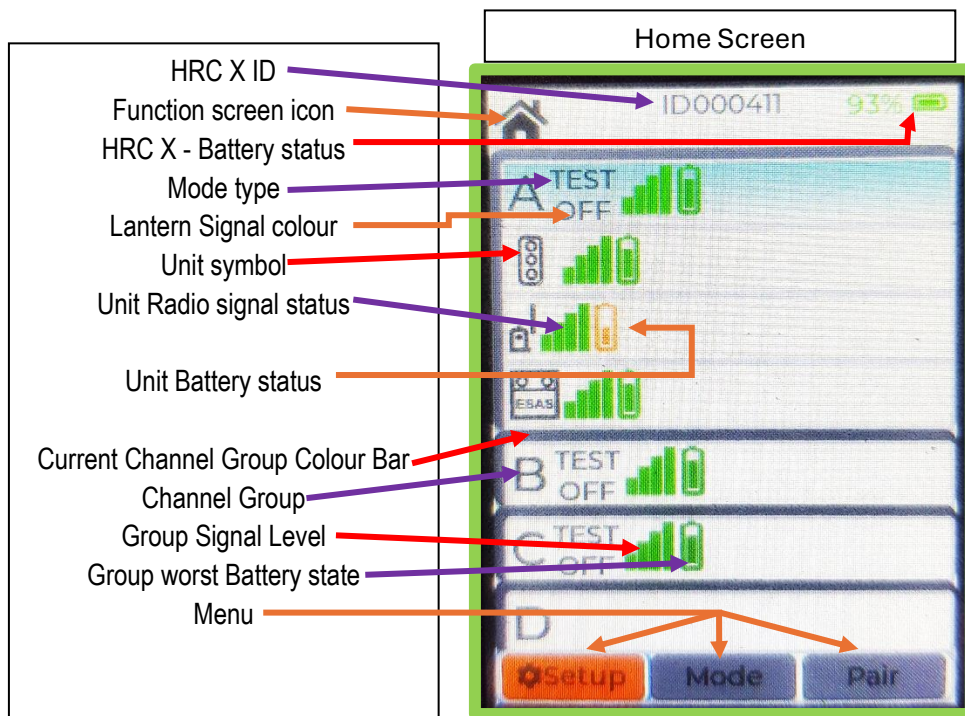


****** Cross matching units WILL NOT WORK! ****** Unable to use a LoRa HRC X with BT eSERIES™ Units and vice versa!

LoRa Units can be identified with a screw in antenna with a length of 20cm long.

BlueTooth BT Units can be identified with fixed antenna with a length of 10cm long.





Description of the icons on the Home screen

Recharge HRC X Battery

Plug in the supplied C4 USB cable into the USB wall charger and connect to ⑤ the bottom of the HRC X unit. Push on plug, may have a locking latch, do not twist the plug.

While the HRC X is turned off and when the HRC X is charging, the screen stays on and will display the following:

- Version number, the colour of the version number also represents the battery charge level, green = good, orange is ok, red is low on charge.
- Battery charge level,
- Battery voltage charging state or Charging or Full,
- The current of charging
- Battery capacity.



Charging & Power up screen
Shows colour of the model and version numbers, the colour Represents battery condition.



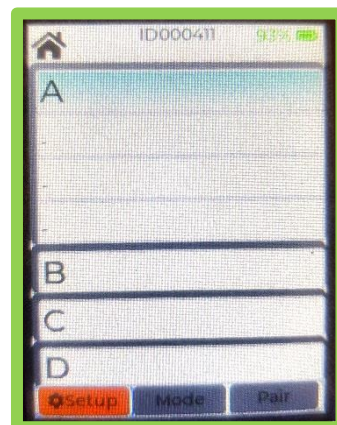
Battery Status

The battery status screen shows the battery status in percentage and the charge status of the HRC X battery.

To view the charge status when the HRC is powered off and not connected to a charger, by quick press of the power button will wake the screen for 10 seconds and show the battery status.

Turning On

Press the Power Button **9** to wake up the screen, the HRC X will show the Charging screen for a few seconds. While the charging screen is on, press and hold the Power Button again for 3 long seconds, the HRC X will beep, and screen will display the Home screen.

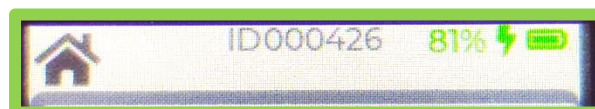


Home Screen

The Home screen will appear after turning on the HRC X.

On the Top Banner across the top is

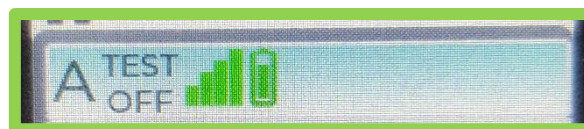
- Home, Menu or Mode symbol,
- HRC X ID number,
- Current message scrolling, if available.
- Battery charge status of the HRC X.
- Charging icon (Lightning bolt next to the battery icon).



In the body of the screen shows the Group Channel letter of A, B C & D.

On the Group Channel letter line shows:

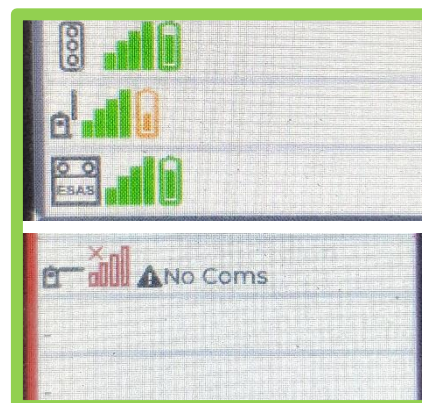
- Mode
- Lantern light colour status
- Highest error alert condition of the eSERIES™ Units
- Radio signal level (weakest signal on that channel)
- Battery condition of units showing the lowest charge state
- Group Bar aspect representation colour of Units state (1/2 box)
- Error message(s) if present.



The paired Units field shows: (scroll up or down to see more)

use **2** ▲ ▼

- The currently paired eSERIES™ Units for channels A, B, C & D.
- eSERIES™ Unit icon type and unit state icon
- Radio signal strength –signal level – green is good, orange is ok, red is poor signal level
- Battery status of unit
- Errors of paired unit



- Unused fields will show ' – ' symbol.

Menu buttons across the bottom the highlighted button is active, use the menu buttons **2** to select menu item, use the green Enter button **7** to Enter menu.

- Setup menu (no access during Active or Auto modes)
- Mode menu
- Pair menu (no access during Active or Auto Modes).



Menus



Setup Menu

You can only enter the Setup menu while the HRC X is in TEST Mode.

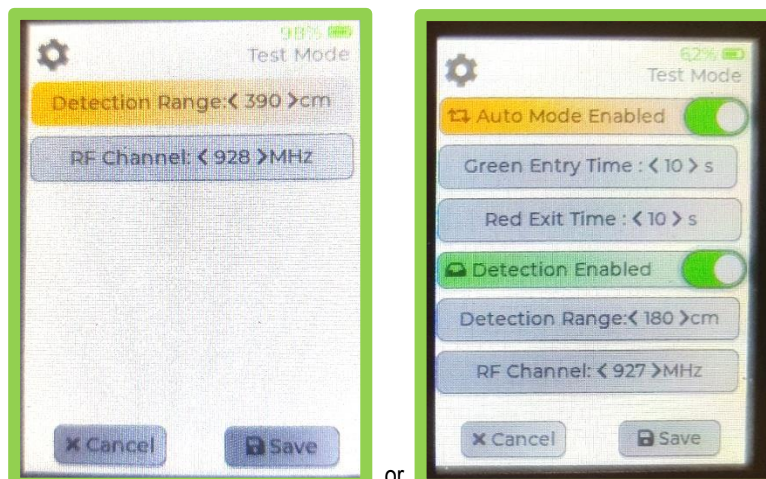
The top left corner will show a gear symbol for Setup. In the Setup menu: use **2** ▲ ▼ ◀ ▶

- ** Auto Mode Enable (On/Off) ***** Not Approved for use for some States or Territories *****
- ** Green Entry Time <xx>s - (xx is time up to 120 seconds)
- ** Red Exit Time <xx>s - (xx is time up to 120 seconds)
- ** Detection Enable (On/Off) - (only if Vehicle Detection option is fitted to eSTOP™ Auto Units)
- Detection Range <200>cm – 50 to 395cm (object detection distance for the 'eSTOP™ Auto' Vehicle Detection & 'eBOOM™')
- RF Channel <915>MHz – 915 to 928 MHz (change channel if another HRC X is in the proximity),
 ** (changing RF channel will UN-PAIR all units paired).
- Cancel button. Exits menu without saving, returns to the Home screen.
- Save button. Saves the settings and exit the menu, returns to the Home screen.

For Green Entry time, allow time for traffic to get past the Unit before the section of work before turn to red.

For Red Exit time, allow time for the traffic to get through the section of work to the other controlling unit.

**** is for only eSTOP™ Auto function if enabled and where permitted.**



or



Mode Menu

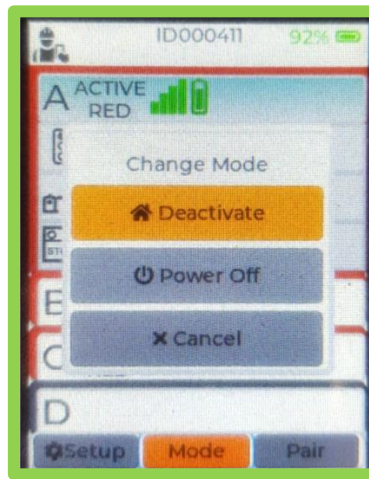
Select Mode button, press ENTER button to open Mode menu.

A pop-up menu will appear and depending on current mode will display certain modes options. The list of options are:

- Power Off
- Activate Mode – to operate the signals on the units manually
- Deactivate or Test Mode – to exit the operation of the signals on the units and return to Test Mode.
- Power Off – De-activates the units and then turns off the HRC X unit.
- Auto Mode – (Auto Mode will only appear if current mode is Active Mode & if enabled in the settings)
- Cancel – to exit the menu, ESC button will do the same.



or



or



Pair Menu



The HRC X can be paired to the LoRa eSERIES™ Units, like the eSTOP™, eBOOM™ or eSAS™ units. The pairing information is stored in the memory.

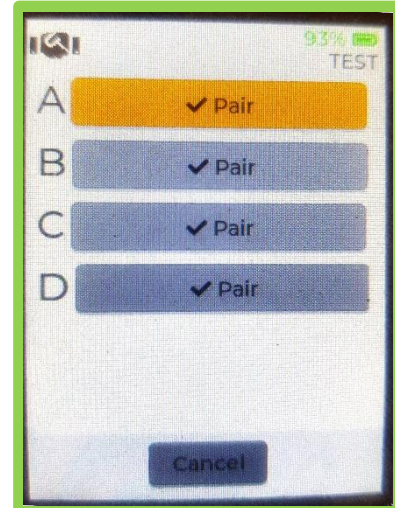
Can only enter Pair Menu when in TEST Mode only.

A pair of hands shaking symbol will appear in the top left corner. On the screen will show channel A, B, C & D. Each Channel has 3 fields to an eSERIES™ Unit to. Use the Up and Down arrows to expand the fields. Use **2** ▼ ▲

The orange highlighted button is active, use Enter button **7** to pair eSERIES™ Unit to current channel and field Pair button.

Up three (3) eSERIES™ Units can be paired to each channel. Maximum of six (6) Units to the HRC X.

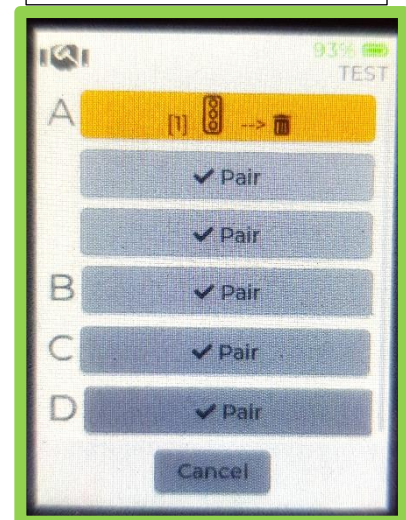
Pair Menu Screen
Nothing Paired



A. To Pair with eSERIES™ Unit

1. Choose Pairing option Wireless or with C4 USB cable
2. Wireless –
 - a. Press Enter (**7**) on the desired Pair button on the HRC X,
 - b. Now press PAIR button on the eSERIES™ Unit, located on the rear of the unit is a silver round button labelled with PAIR, this button will start to flash. Pair only 1 unit at a time.
 - c. Button on screen will show 'Connecting'
 - d. If found will change to 'Success'
 - e. If 'Failed' try again.
3. Using the C4 USB cable - (HRC X charging cable)
 - a. Plug the C4 USB cable into the eSERIES™ Unit and HRC X **5**
 - b. Select the desired channel button & Pair button on the HRC X
 - c. Press Enter (**7**)
4. Once Paired, will show an icon of the eSERIES™ Unit and Trash can 🗑 icon.
5. Press the Channel button **4** to perform a Quick Test.
6. Now ready to Activate.

1 Unit, now paired to HRC X
Ch A – 1 eSTOP™ Unit



B. To Un-Pair one (1) Unit from the HRC X

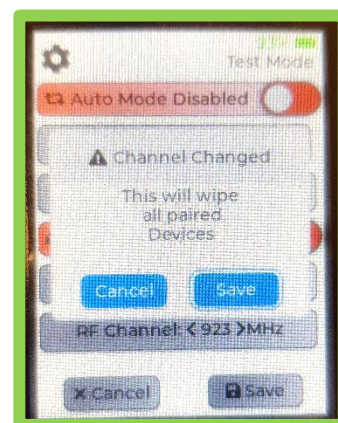
- Go to the Pair menu
- Select the unit button you wish to Un-Pair
- Press Enter and now that unit is removed from the paired unit list.
- The button will now display "Pair"



C. To Un-Pair ALL Units from HRC X

This will remove ALL paired Units from the HRC X.

- Go to the **Setup** Menu
- Select RF Channel
- Change the RF Frequency to another number
- Select Save and then press Enter
- A pop-up menu will appear to confirm, select Save
- Press Enter
- All Paired units are now removed from the HRC X.



Operational Steps

1. **Antenna** - Attach the Antenna to the Antenna socket of HRC X – screws on, finger tight is needed only. If no socket, then the HRC X will have an internal antenna & skip this step.
2. **Power On** – Press the power button ⑨ to wake up the HRC X and the screen will turn on, now press the power button ⑨ for 3 seconds until it beeps to turn on the HRC X. During power on, the battery status screen will appear to show the
 - battery status
 - version number.Refer to the battery section for more detail.



3. **Home Screen** – Once the HRC X is powered on the, the home screen will appear with a Home icon in the top left corner, also showing the current mode of TEST, and the current paired eSERIES™ Units relative to Buttons A/B/C/D ④ and its status, the LED's ③ will also have the same colour as the units.

4. **Wait for Communication link** – any currently paired units will display ▲ and no signal on Channel line and in the unit field will show - ?, no signal icon & ▲ 'No Coms' next to any paired units. Turn on the paired units and they will link up with the HRC X within approx. 30 seconds. Then the unit icon will appear along with signal strength and battery icon.

If there are still No Coms or loses communication in operation, refer to the 'Troubleshooting' section.

5. **MUST perform a QUICK TEST** for each channel with paired units by pressing the channel letters A/B/C/D ④ before Activating the units. This only needs to be done after turning on the HRC X and after pairing or un-pairing any units. On screen message will remind the operator to do this before continuing.

6. **Modes** – the HRC X starts up in the Home Screen in Test Mode. Changing Modes from Test to ACTIVE or Manual can be done by moving the orange button to Mode and press Activate / Enter ⑦ button.



1. Deactivate / Test mode –

- i. Appears only when in Active Mode to return to the Home screen and TEST Mode
- ii. Allows to enter Pair menu to Pair and un-Pair Units.
- iii. Allows to do Quick Test of each Unit by a Press of Channel 4 buttons
- iv. Allows to enter Setup Menu.
- v. Any known faults will be displayed.



2. Activate / Active mode –

- i. Appears only when in the TEST Mode to begin controlling the lanterns
- ii. To Manually change the lantern signals for traffic direction by a Press of Channel buttons 4 & STOP button 8.
- iii. Setup and Pairing menus access are denied.
- iv. If no eSERIES™ Units is paired, access to Active Mode is denied.
- v. If a critical error on eSERIES™ Unit, access to Active Mode is denied.
- vi. Any known faults will be displayed.



3. Auto Mode (depending on state permissions)

- i. Can only enter Auto Mode from Manual Mode, only.
- ii. To change to Auto Mode, all channels MUST be on RED signals
- iii. In the top left corner is R:xx G:xx – for the Auto count down timer.
- iv. For Automatic changing the lanterns from Red to Green, one at a time in a sequence, using the Green & Red Time from the Setup Menu.
- v. Setup and Pairing menus access is denied.



4. Power Off

- i. This will De-Activate the units and turn the HRC X unit off. This can be done while in any mode, also when a channel is on Green or Red signals. The units will go through the normal process of De-Activating of flashing Amber for 5 seconds or boom arm raised then the lights turns off. This does not turn off the power to the units.

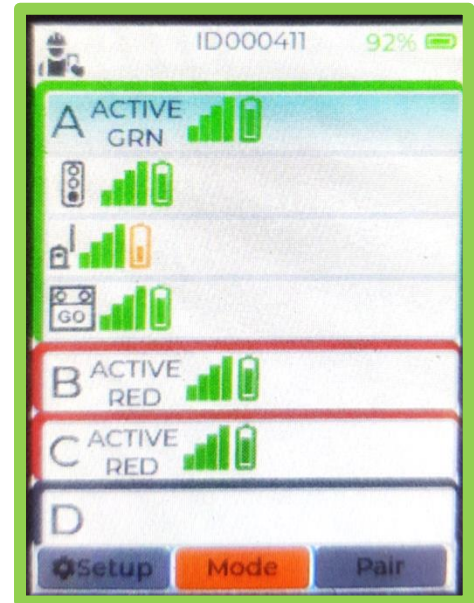


5. Cancel

- i. Exits the sub-menu, 'ESC' button does the same.



7. **Active Mode** –  Once the paired eSERIES™ Units are all communicating and no faults are showing on their status, the system can be activated to Manual Mode by navigating to the modes screen and entering the Manual Mode. Once entered, the screen will return to the home screen and the mode will be changed from TEST to ACTIVE Mode. The eSTOP™ lantern start-up sequence, the eBOOM™ will lower the boom arm, the eSAS™ unit will begin flashing the Wig-Wag lights and manual control will then commence. There is a 5 second lock out after Activating before changing any channel to green signals.



8. **To Control Traffic Signals** - Use the respective paired A/B/C/D  buttons and STOP button to operate the eSERIES™ Units for traffic control. Use the A/B/C/D  buttons to switch the units to a signal to green with a press of the Channel button . (Note: to turn a signal green on, all signals must be on red first).

Only one channel can be on Green at any one time. Lockout systems will control this.

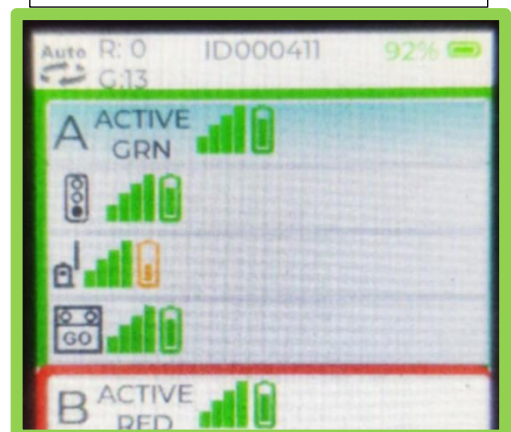
Use the red STOP  button to change all signals to red. Note: the amber lantern will activate for 4 seconds during the transition from green to red. The HRC X will lock for 5 seconds in all red before any channel can change to green is allowed. The HRC X button LED  state indicators reflect the lantern signal colour status.

9. **Auto Mode ****

To switch Auto function on, in Setup Menu ensure 'Auto Mode Enabled' is turned on & in green. Firstly, the HRC X MUST be in Active Manual Mode and all channels MUST be on RED signals, now the system can be activated to Auto Mode. This can be done in the Mode menu. Once Auto Mode is activated, the time **G:xx** (green time) and **R:xx** (all red time) is shown on the home screen.



Auto Mode, Channel A on green.



The red counter will start first and will count down to zero (0) and once at time Zero (0) seconds, the lights will change aspect, and the other timer will start to count down. This will cycle through all channels with only one channel on green signal at a time in a sequential order.

The order will always be Red timer then Green timer for a channel, Red timer then the next channel Green timer and keeps repeating until interrupted.



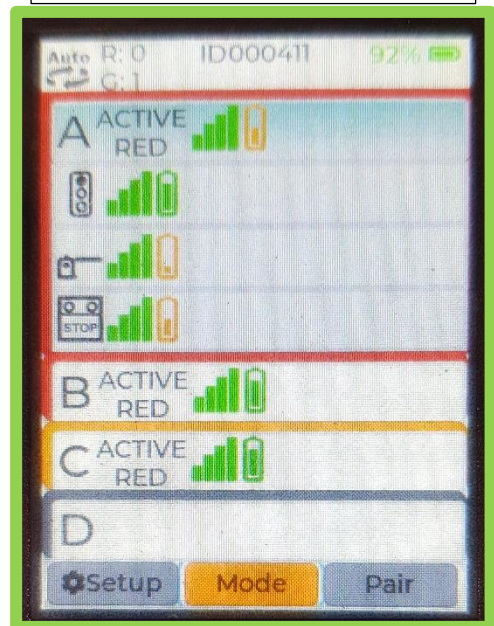
To override the control of the units, the only way is to exit Auto Mode, select Mode then Manual, all channels does not need to be on red signals. All channels will change to red signals and with a 5 second lockout and then can be manually controlled.

Pressing STOP or channels buttons has no function while in Auto Mode.

If a critical error occurs during Auto operation, Auto operation will stop with message "Auto Ended" and all signals will change to Red, both timers are stopped. If the critical error is resolved, Auto Mode will automatically restart.

For example, if lantern is knocked over, all units will go to Red signals, message of "Auto Ended" & with no interactions with the HRC X is and then if lantern is put back upright, Auto Mode will restart with Red count down timer starting & "Auto Started".

Auto Mode, Channel C changing to Red, currently on Amber



Vehicle Detection LiDAR Unit
fitted at bottom of eSTOP™ Unit, facing the traffic.
Will detect objects up to 4 meters in front of unit.

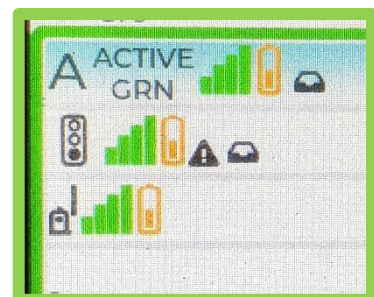
10. Using Vehicle Detection in Auto Mode **

**** Optional Extra hardware required****

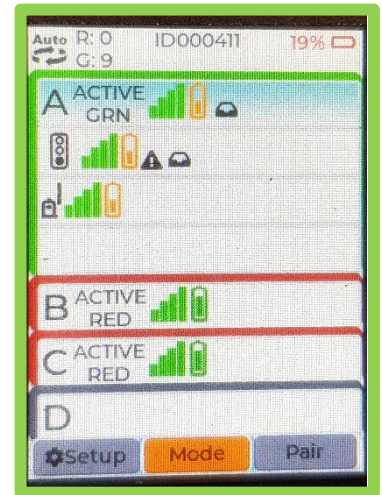
Only operates in Auto Mode.

In the Setup Menu, ensure 'Detection Enabled' is turned on & in green & 'Detection Range' is best to be set to the maximum distance (395cm) to detect any waiting and approaching vehicles.

If eSTOP™ Units paired have a Vehicle Detection LiDAR device fitted and turned on in the settings, if a vehicle is present in front of the lantern with the vehicle detector fitted will show this symbol. Then the lantern sequence will change depending on traffic. If no vehicle is present at a eSTOP™ Unit, this may skip a turn of changing to green signals.



For example: Using 2 eSTOP™ Units controlling a single lane in Shuttle Serino, if direction A has a queue of cars, direction B has no cars in sight, the direction of A lantern will stay on green signals until a vehicle arrives at direction B. Then direction A lantern will change to red signal once the countdown timer reaches zero, then direction B will get the green signal for ** (xx) time set in the Settings page. Then direction B will change to red signals and then direction A will return to green signals and stay on green signals until a vehicle arrives at direction B.



A car symbol will appear on the screen of the HRC X for the eSTOP™ unit to represent that a vehicle is waiting at the red signals. If this symbol appears and stays on and no vehicle is present, there may be an object detected by the sensor, try changing the sensor distance in the Setup Menu.

The HRC X unit is designed to operate up to four eSTOP™ units, this can control a 4-way intersection and give priority of when a vehicle is present at a eSTOP™ Unit and not have to wait for the complete cycle finish of the other units when there is no vehicle at them. Only one (1) unit will be on green signals at one time.

If no vehicles present at any units with the vehicle detect sensors, then the lanterns will change and alternate using the timers.

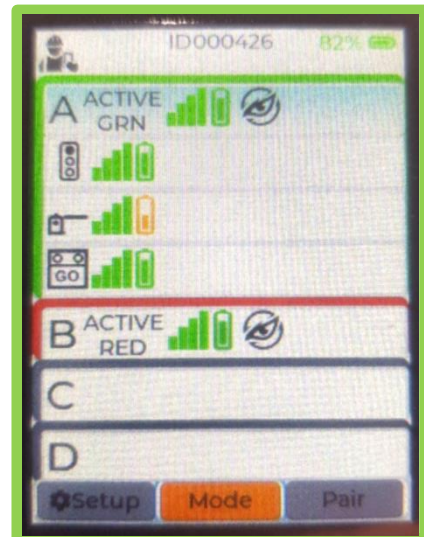
11. Hawk Mode for the ASIST System **

Optional Extra hardware required

HRC X version 1.8.2+

eSERIES™ Units with Hawk enabled system will have a serial number ending in H.

The ASIST system can only force the units to change to Red signals quickly for any speeding approaching vehicles for safety of the workers. This is triggered by the eSAS™ Unit which communicates to the ASIST System and if one of the rules is activated, the ASIST System will send a signal to the eSTOP™, eBOOM™ & or eALERT™ Units to change to Red light status and alert the workers onsite. (eALERT™ are a new wristwatch type unit worn by the workers onsite, which will flash red light, vibrate and with a buzzer to alert the workers of an approaching fast vehicle hazard).



The ASIST system will take control of the eSERIES™ Units for a set time. The HRC X will display on the Group Channel with the HAWK eye icon and during this activation of the ASIST system, the buttons on the HRC X will be disabled, can show a message at top of 'HRCx is in ASIST Mode' and depending on the rules and settings set in the ASIST system will control all eSERIES™ units connected with the Hawk control boards as per the units set in the ASIST System rules.

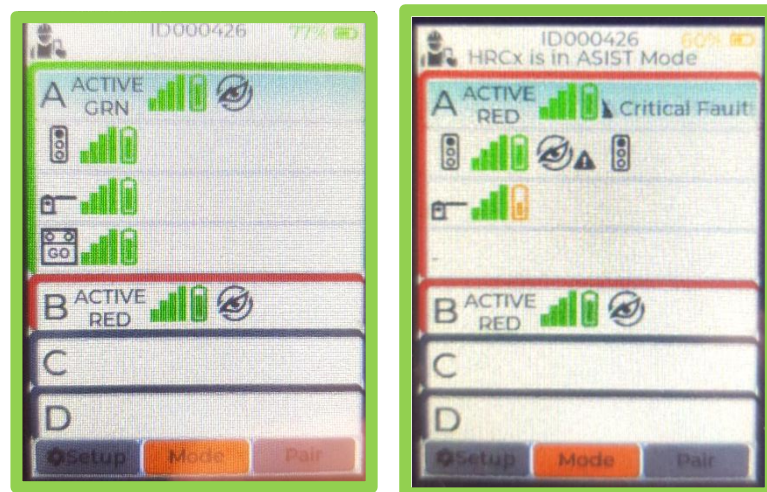


An example of the HAWK system in operation:

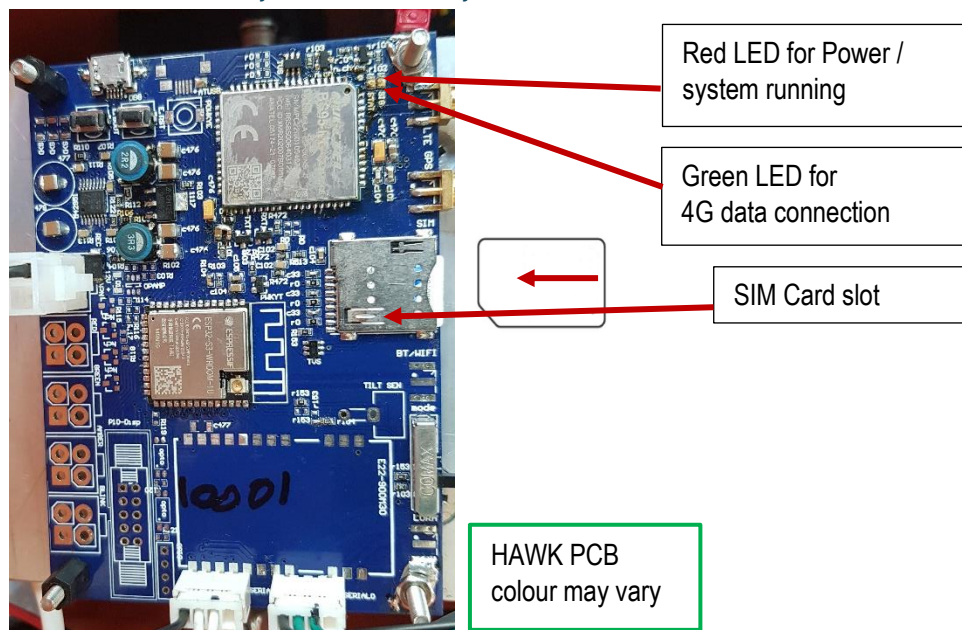
Site setup has an eSTOP™, eBOOM™ & eSAS™ units on a road with road works in progress in 40km zone. A car approaching the units with green aspect on at a speed of 55 km/hr. If ASIST rule is set at 50km/hr. The eSAS™ unit shows the speed of 55 and sends a signal to the ASIST System, the ASIST System has a rule to engage and the eSTOP™ & eBOOM™ units will change to red aspect, hopefully to stop the speeding vehicle. Also alerting the workers wearing the eALERT™ wristbands of a potential hazard approaching. After a time set in ASIST System, the units change back to the original colour aspect, but also depending on the HRC X operation.

Hawk Mode can be engaged when HRC X is in Test & Activated Modes, as long as the eSERIES™ Units are turned on. When Hawk disengages the units will return to the original aspect colour or mode state.

For the ASIST System setup, please refer to the ASIST System program.



- *Getting eSERIES™ Unit ready for the ASIST System*



For the Units to enable Hawk mode will require to have an activated Data SIM card and inserted into the HAWK PCB inside of the eSERIES™ Units. Turn off the power to the Units off.

- eSTOP™ - open the Amber light by gently squeeze the clips on either left or right hand side to reveal the HAWK PCB mounted inside. Insert SIM Card.
- eBOOM™ - remove the 12 screws from the back panel (panel with or closest to the power switch) to reveal the HAWK PCB. Insert SIM Card. Refit the screws.
- eSAS™ - open the rear panel.to reveal the HAWK PCB. Insert SIM Card.

Once the SIM card is insterted and turn power back on

- LED colours on the HAWK PCB should be: (may take up to 60 seconds)
 - Red = power on /system running –
 - Flashing – booting in progress
 - Solid light – Hawk PCB ready
 - Green = 4G data network
 - Off but flashes on – not connected to 4G network or no SIM card.
 - On but flashes off – connected to 4G network.
- The unit is registered onto the ASIST System by the unit's serial number.

12. **Deactivate or Stop operation -change to Test Mode** - The system can be deactivated from Active or Auto Modes to Test Mode at any time. When changing to Test Mode, the eSTOP™ lanterns will flash amber for 5 seconds, and all lanterns' lights will then turn off and the eBOOM™ arm will rise and the eSAS™ units will stop displaying the Wig-Wag lights. The eSAS™ Unit will continue to show the speed or smiley face or message to the approaching vehicles as per the stand-alone mode on the eSAS™ Unit.

13. **Power Off HRC X** – There are 2 ways to turn the HRC X off.

- i. Select Mode and select Enter, select Power Off from the popup menu. Regardless of which Mode the HRC X is in, this will De-Activate the units and the HRC X will shut down. On power up the HRC X will start in Test Mode. (Preferred method).
- ii. The Power  button, press and hold for 5 seconds. All paired units will change to Red signals with no coms to the HRC X.

When powered back on, the system will start on the last mode that it was in before being powered off. As all units will go to red signals and then a 5 second lockout will occur before any unit can be changed to greens signals. The Quick Test is bypassed in this situation, but once the mode changes back to Test Mode, Quick Test will be required on all channels before returning to Activate Mode.

To avoid unwanted activation when powering on, it is best practice to change the mode to De-Activate and return to **Test Mode** before powering off or Power Off through the Mode Menu.



14. **Pack Up** – Switch off the power to all units and including the HRC X and disassemble the eSERIES™ units and pack up. The paired devices settings will remain stored in the HRC X memory, even when turned off.

Note: - No need to Unpair the eSERIES™ Units, particularly if the same units will be reused the next day.

Trouble shooting

Battery Status

5 levels of battery status

- Full charge status, in green. 
- ¾ charge status, in green. 
- ½ full charge status, in orange. 
- ¼ charge status, in orange. 
- Very low Battery, in red & Critical Fault message on the channel line. 

In Very Low Battery error the units will change to red light condition also if in Test Mode does won't allow to go to Active Mode.

Unit Tilted or Knocked Over



The eSTOP™ has a built-in sensor to detect a tilt incline of approx. > 20° angle. If the eSTOP™ units gets hit by a vehicle or falls over, this will trigger an alarm to the HRC X and will trigger a Critical Fault process and show an icon on the screen of the HRC X. Error will clear once unit is put back into the vertical position.

Software Restart on HRC X

If a strange problem is experienced with the HRC X, try a Software restart on the HRC X.

Press the Power button  and the Enter button  at the same time and release.

The screen will blank out and then display “HRCx Starting...” the HRC X will shut down and restart and return to the previous mode type. This will not Unpair any eSERIES™ Units.

When powered back on, the system will start on the last mode that it was in, before it was powered off. As all units will go to red signals and once all units have reconnected then a 5 second lockout will occur before any unit can be changed to greens signals. The Quick Test is bypassed in this situation, but once the mode changes back to Test Mode, Quick Test will be required on all channels before returning to Activate Mode.

If in Auto Mode, the timer will restart once all units have re-connected to the HRC X unit.

Some of the problems that this method will reset is:



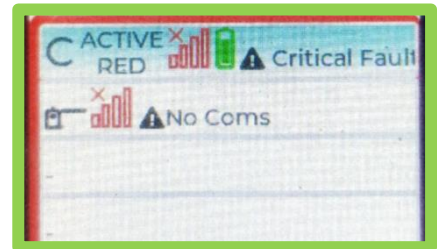
- Appears to be dead, even on charge
- Buttons not responding
- Constant alarm with no error
- buttons not responding.

No Comms



The HRC X unit is always the Master controller at all times.

If any paired unit loses communication with the HRC X, then all units will go to red light condition, this is classed as a Critical Fault until rectified. Some of the things can cause this is:



- Unit battery has gone flat or disconnected from the unit
 - Reconnect battery or connect a fully charge battery.
- No Comms on the screen for 1 unit
 - Power reset the unit
 - Try un-Pair that unit and re-Pair again
 - Software restart of the HRC X unit.
- Missing or damaged antenna
- The eSERIES™ unit may have been paired to another HRC X and therefore will not connect to the previously connected HRC X,
- The signal between the Unit and HRC X is out of range
 - Move the unit and HRC X closer to each other.
- Radio Frequency Interference (RFI) a radio transmitter of another device is causing interference and blocking the signal of the HRC X.
 - Move the transmitter (or Two-way Radio) away or move the HRC X and unit to another location
 - Test the units in another location to confirm operation.
- 2 or more HRC X units are operating within the same area on the same frequency
 - Change the frequency on 1 of the HRC X units in the Setup page, you may require by performing a power reset & re-Pair the units to the HRC X again.

Non-Critical Fault on eSERIES™ Unit

If a fault arises on a unit, the HRC X will show the fault icon on the paired unit also on the Channel letter. No audible alarm for when a non-critical fault occurs.

With a non-critical fault, will allow to change the Mode to Active & Test Mode and back again without interfering with operating.

Non-critical faults will still allow the units to operate and change signal colours, but will require some attention, when possible, some of these faults are:

- Strobe, Green or Amber light fault on lanterns



- Object in front of eBOOM™ unit when on green or red signal (not during the transition from green to red signals, as this will make the arm to go up or stay up and with alarm sounding until object in front moves away)
- Lights on eBOOM™ arm fault

Critical Faults



Several faults is deemed as critical and will force all units to change to red signals and remain red until error is cleared, rectified or the mode is changed to TEST Mode where the faulty unit can be unpaired.

When a Critical fault occurs, the message appears against the channel letter along with an audible alarm sounding.

With a Critical Fault is present, the HRC X can be changed to Test Mode, but will not allow to change back to Manual or Auto Modes.

Once the Critical Fault is cleared, all units will stay on the red signals, but a green signal can be selected. Some the errors are

- Unit is tilted or lying down, except for eBOOM™ & eSAS™ units
- Red light failure on eSTOP™ lanterns
 - If this fault occurs and fault is rectified in Test Mode, only way to clear error message is doing a lantern Quick Test by pushing the channel button, while in Test Mode.
- Communication fault (No Comms) with any unit.
- Critical low battery power on unit.

Red light Fault



Multiple Faults



If HRC X is in Auto Mode and a Critical Fault occurs, the Auto Mode will stop the countdown timers with message "Auto Ended" and all units will go red signals until fault is cleared. Once critical fault is cleared, then the HRC X will restart the countdown timers, starting on red, automatically.



Specifications HRC X

RF Operating Frequency	915 – 928 MHz
IP Rating	IP65
Case	Takachi with TPE rubber side grips & O-ring
Case Flame Resistant	ABS, meets UL94V flame resistant Class
Battery (rechargeable)	7.5 A/Hr Lithium Polymer
Operating Hours (50% DoD)	~24 hours
Recharge power source	USB type A with C4 USB cable, up to 1 Amp
Hours Charging time	up to 6 hours
8-hour Operating Current (Average)	150 mA
Sleeping Current	1 mA
Operating Temperature Range	-20 to 85° Celsius
Communication Range	up to 2 km
Number of Units to Connect	6 eSERIES™ Units MAX. Up to 3 Units on up to 4 Channels

Repairs and Servicing

All repairs and servicing of the HRC X shall be performed by ARROWES™ Roading Safety or its authorised representative.

Any modification or alteration may or will void any warranty and may affect the safe performance of HRC X unit and any unit connected.

Warranty

The HRC X is supplied with a limited ex-factory warranty for 12 months.



Symbols and Icons

Other symbols used.

eSTOP™

	eSTOP™ Symbol
	eSTOP™ Red Signal or fault
	eSTOP™ Amber Signal or fault
	eSTOP™ Green Signal or fault
	eSTOP™ Tilted error
	Tilted Error
	Vehicle Detected

eSAS™

	eSAS™ Symbol
	eSAS™ on Red on Stop
	eSAS™ on Green on Go

Signal Strength Level

	Signal Strength Strong
	Signal Strength Good
	Signal Strength OK
	Signal Strength Low
	No Signal Lost communication

eBOOM™

	eBOOM™ Arm is up
	eBOOM™ Arm is moving
	eBOOM™ Arm is down
	eBOOM™ object in front of sensor
	eBOOM™ Tilted error
	eBOOM™ Sensor Error

Errors

	Attention! Error for Attention
	Attention! Error for Attention
	Error Strobe light
	eBOOM™ Light fault
	eBOOM™ Light fault
	Unit Has been Rotated
	eBOOM™ Arm Sensor fault
	eBOOM™ Arm Jammed fault

Mode & Menu

	Home Menu Deactivate
	Setup Menu
	Pairing Menu
	In Manual Mode
	Auto Mode in Menu
	In Auto Mode
	Power
	Hawk Mode Active

Battery Charge Status

	Battery Full
	Battery Good
	Battery OK
	Battery Low
	Battery Very Low



ARROWESTM

ROADING SAFETY

17 Bailey Court Brendale,
Queensland 4500
PH: (07) 3881 3302
FAX: (07) 3881 3324

Author: Jason - 19/2/2025

