Thank you for purchasing this Banlaw product. Please read through and understand the information in this Product Data Sheet (PDS) BEFORE installation or operation of the product to avoid potential health, safety and environment (HS&E) risks or property damage.

Figure 1: The Xpress Controller

BRTXPC □ □ □

Country Specification	No of FTPs	Tank Gauging
1. Australia	1. 1 off	1. No
2. US	2. 2 off	2. Yes
	3. 3 off	
	4. 4 off	

Table of Contents

1 PRODUCT DESCRIPTION

This PDS covers the ResTrack™ Xpress™ controller fuel management offering from Banlaw. The controller shares a lot of the similarities with the ResTrack Advanced Controller at a lower cost and a smaller, more robust package.

The Banlaw ResTrack Xpress Controller will ensure your optimal use of resources and identify liquid asset costs. While the controller may be used for a range of industrial liquids, this document refers to hydrocarbon fuels.

The Xpress Controller is an integral part of the Banlaw fluid resource management system. When coupled with Banlaw ResTrack software and a range of options for control and measurement of fluid from delivery to consumption, it becomes secure and easy to manage on any scale.

The ResTrack software collects and stores data on all fluid transfer transactions via the Xpress controller. This data can be used for:

- Reconciliation of Accounts
- Purchasing
- Management – Planning operations
- Stock Control – Forecasting demand
- Maintenance

This consumption data delivers concise information which enables improved productivity by reducing fluid loss, double handling, fluid contamination, with a focus on safer resource management usage and at the same time achieving accurate reconciliation of fluid assets.

The ResTrack Xpress controllers are constructed for use in mining, marine and other harsh industrial environments. The Controller unit may be mounted on a Banlaw Depot stand with a sunshade. The Xpress controller can also be mounted on service trucks. It has an IP6 ingress rating which handles low pressure water jets and any type of dusty environment. For security, the stainless-steel cabinet door-latch may be locked with an 8 mm shackle padlock. The system can control and monitor up to 4 nozzles and 4 automatic tank level gauges. The system also provides valve and pump control if required. The accuracy of fluid measurement is enhanced by temperature compensation which is available in the Xpress controllers stock offering. The front panel capacitive touch keyboard allows on-the-spot control of operation and setup (dependent on the user's access level).

Banlaw Auto ID dry-break nozzles (800 and 1000 LPM options) provide high volume spill-free fluid delivery to heavy plant equipment while road vehicle fuel utilisation can be supervised by an HID card and/or nozzle Auto ID verification.

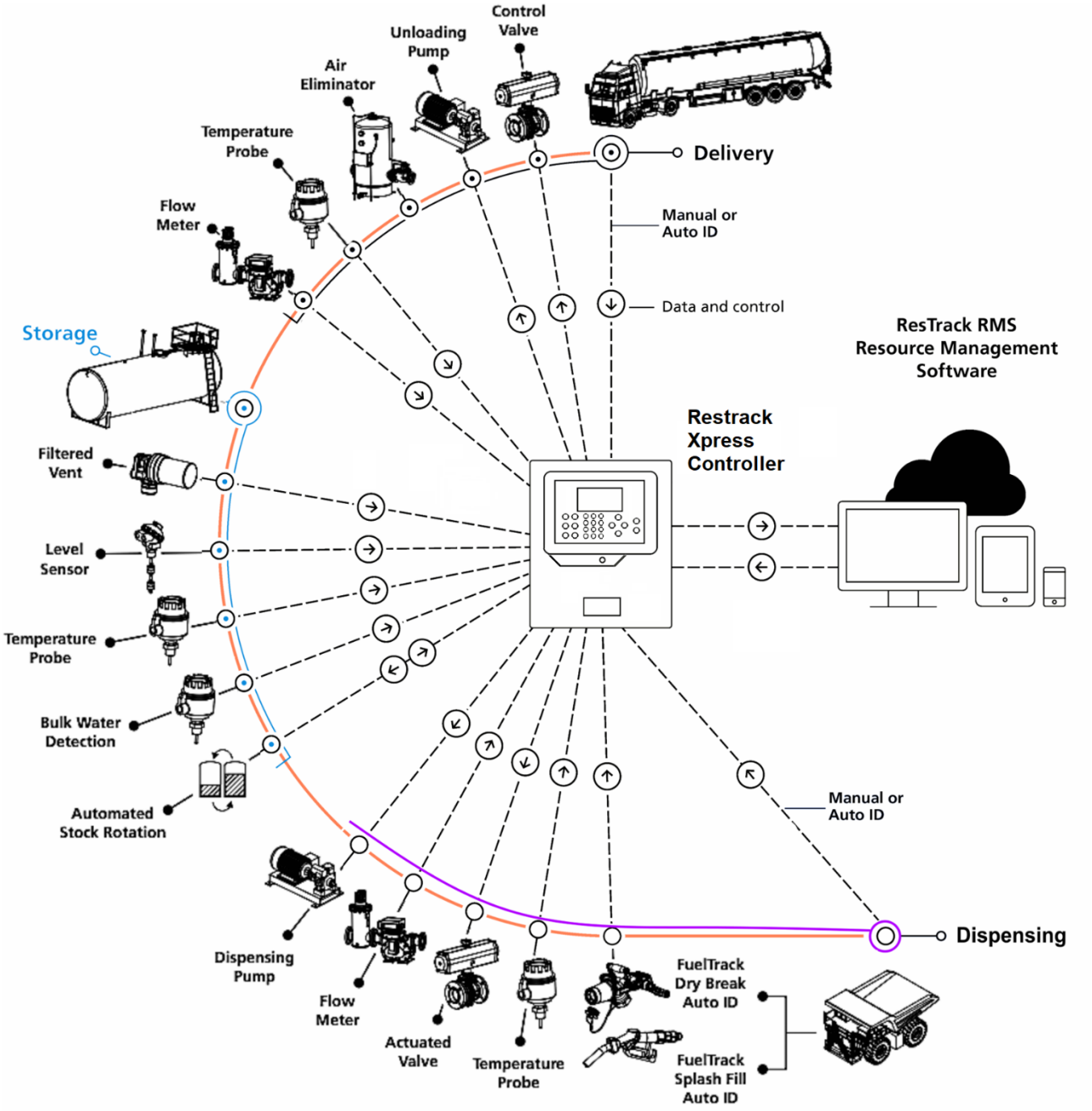


Figure 2: Banlaw ResTrack™ Xpress Controller System Architecture

The **Banlaw ResTrack™** system provides a complete solution to fluid management using electrical, mechanical and computer-based components and subsystems.

The **Xpress™ Controller** is an intelligent fluid tracking unit. It is typically installed at each refuelling facility, storage area or service truck. The Xpress controller enables the following functions in the **Banlaw ResTrack™** system:

- Automatic identification of vehicles and plant equipment: dispense only to authorised machines/vehicles/operators
- Automatic recording of fluid deliveries and fluid dispensing
- Accurate temperature compensated fluid metering
- Secure dispensing of fluids to authorised vehicles by authorised users

- Temperature compensated Storage tank level monitoring for 2 tanks or non-compensated for 4 tanks (4 devices total), that enables logistic and operations teams to evaluate levels in real time, order automatically on pre-set levels, and schedule deliveries
- Pump enable/disable time out for 4 nozzles
- Capacitive touch panel interface that is glove friendly

The Xpress controller unit has multiple electrical/electronic sub-systems inside the enclosure. The Xpress controller can be reconfigured as required. Figure below shows a typical internal configuration:

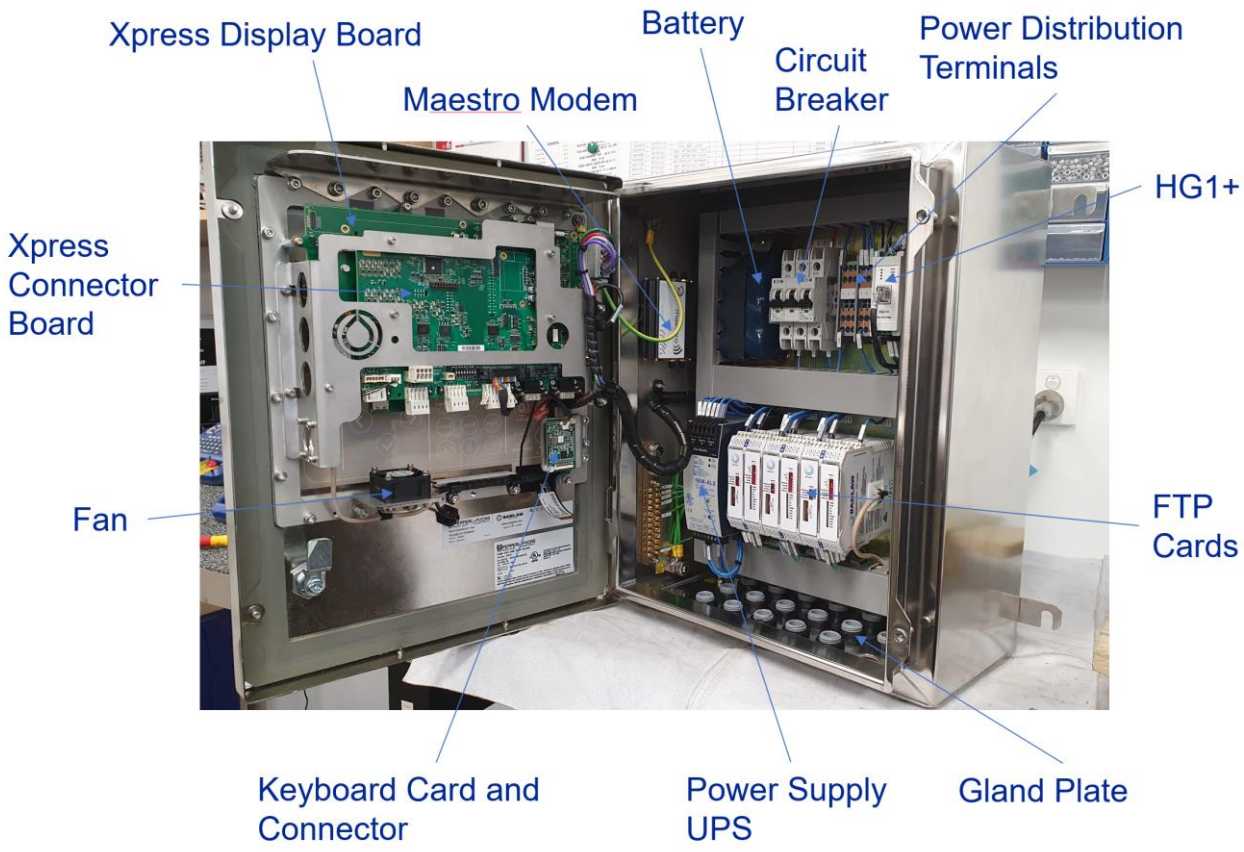
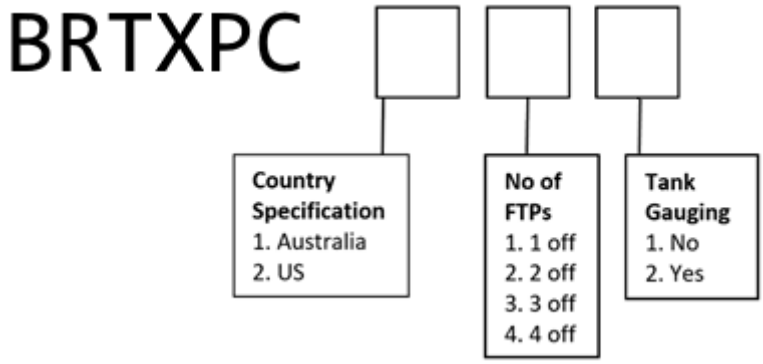


Figure 3: Banlaw ResTrack™ Xpress controller cabinet – typical configuration

1.1 Part Numbering Convention for Xpress



BRTXPC Options:

COUNTRY SPECIFICATION	1. AUSTRALIA	Controller wired to Australian standards and practice AS/NZS 3000:2018	Banlaw Xpress Controllers are configured using components that meet the appropriate standards for the location of installation.
	2. US	Controller wired to US standards (using UL489 Certified Equipment) and practice	
NUMBER OF FTPs	1. 1 FTP	One Fluid Transfer Point interface	Installed FTPs are based upon the number of devices that are supervised by the Xpress Controller. Devices include nozzles, pumps, ball valves, flowmeters, inflow RTDs.
	2. 2 FTPs	Two Fluid Transfer Point interfaces	
	3. 3 FTPs	Three Fluid Transfer Point interfaces	
	4. 4 FTPs	Four Fluid Transfer Point interfaces	
TANK GAUGING	1. NO	Tank Gauging not required	Tank gauging is configured to monitor up to 4 tank levels or 2 tanks with level and temperature compensation. Most Hart 2-wire devices can be used.
	2. YES	Tank Gauging ready	

1.2 Advantages of Banlaw ResTrack Xpress Controller

- Cost effective
- Robust design
- Automatic identification of users, vehicles and plant equipment
- Automatic recording of fluid deliveries and fluid dispensing
- Accurate temperature compensated fluid metering
- Stainless steel cabinet, providing superior durability and corrosion resistance
- Built-in HID security card reader system, external Cardax card reader capable
- The FTP (Fluid Transfer Point) provides actuator control, iButton (Auto ID) read, PT100 RTD (Resistance Temperature Detector) input, single channel pulse count inputs (with a count comparison channel option), override and alarm inputs.
- Ethernet, 3G/4G, Wi-Fi connectivity options for VPN cloud or local communications
- Banlaw on Board BFTBOB capable, through integrated WiFi module (separate from site/ResTrack WiFi comms)
- Tank level gauging for up to 4 tanks

2 PRODUCT SPECIFICATIONS

BANLAW XPRESS CONTROLLER

Operating System	Amazon FreeRTOS
Wi-Fi*	Wi-Fi b/g/n (max. 150Mbps throughput) with WDS support. Security: WEP, WPA/WPA2 or Radius server (TKIP/AES)
Mobile Telecommunications*	Mode: 3G/4G, with 3 Bands available: 850/1900MHz, 900/2100MHz, 800/850/2100MHz
VPN*	PPTP, L2TP/Ipsec, OpenVPN
Power Requirements	22.5-30 VDC
Power Consumption	1.5A at 24VDC (excluding Actuated Ball Valve operation) At least 5A at 24VDC Power Supply is recommended
Screen Size	175 mm (7in)
Operation Temperature Range	-25° to 50° C (-13° to 122 °F)
Certification	RCM
Cabinet Material Composition	Stainless Steel
Dimensions (cabinet only)	461 x 382 x 239.5
Weight	16kg
Nozzle Control Capability	4 (local cabinet)
UPS Battery Backup	Yes, up to 3 mins (to close-off current transaction)
Pulser Input Max Frequency	1.2kHz (10kHz optional)
Temperature Element for temperature Compensation	PT100, 4 Wire
API Table 54b Temperature Compensation	Yes
Automatic Tank Gauging	Up to 4 devices total
IP Rating	IP65

* Wi-Fi and Cellular comms, as well as VPN security, are only available if Maestro router is installed.

As an option, a separate Electrical Distribution Panel (EDP) may be purchased to supply 24 VDC to the Xpress Controller. The EDP will be set-up for the local AC distribution e.g. 240 VDC 50Hz or 120 VAC 60Hz.

3 INSTALLATION AND COMISSIONING GUIDELINES

This Installation and Commissioning Guide is generic and is not meant to replace site specific installation or regulatory requirements. Contact Banlaw for advice if required.

The scope of this section applies to Banlaw ResTrack Xpress Controller assemblies. Whilst other products are mentioned – e.g. level sensors and flow meters – end-users must refer to ***separate*** Banlaw document covering each product *prior* to installation.

General Installation Notes:

1. Complete all necessary hazard mitigation, monitoring and control action.
2. Do not install any parts or modify a previous Controller Installation without assessment and advice from Banlaw.
3. Do not install any damaged or faulty parts.
4. Do not install electrically incompatible parts in the Banlaw ResTrack Xpress Controller.
5. Do not install parts that have not been approved by Banlaw.
6. Do not install or modify any electrical parts if you are not certified to do so.
7. Only engage threads of the same thread type. Ensure all threaded connections are clean and in good condition. Avoid over-tightening.

3.1 Pre-Installation Guidelines

The Pre-Installation guidelines is an aid to complete the installation of a Banlaw Xpress Controller:

- Position the Xpress controller **out of direct sunlight** where possible, this aids in reliability and prolongs hardware life.
- Please choose all fasteners to fit the Xpress controllers mounting lugs and to fit pre-drilled stands. Make certain the correct tools are used to fasten all fasteners.
- The cabinet is IP65 rated from factory. Please ensure all glanding methods are IP65 or greater.
- The Xpress controller has a specially designed sunshade. Banlaw recommends the use of these shades as they are light and easy to assemble and provide extra insurance against harsh environments.

3.2 ResTrack Xpress Controller Installation Procedure

The Banlaw Xpress controller is designed to make refuelling safer and easier. The Xpress controller cannot be installed in a hazardous zone lower than zone 2. Its cabling can run through or into a zone 1 or 0 area with appropriate conduit systems, glanding and electrical barriers.
The Banlaw Xpress Controller cabinet may weigh up to 16kg. The stand for the cabinet weighs approximately 20kg. Perform all lifts in accordance with site manual handling procedures.
All power inputs shall only be connected by a qualified electrician. All grounding should be to site standards or a minimum of AS/NZS 3000:2018. All mechanical work must be carried out by a qualified fitter to site standard as per supplied Banlaw engineering detail. All pipework should comply with standard AS 4041-2006(R2016). Flow meters can be supplied to meet pressure requirements and flow rates for existing or new systems. All air elimination and straining devices shall be installed to suppliers' specification and should reflect the Banlaw Engineering Piping and Instrumentation Diagram (P&ID).

Extra care must be taken while opening the Xpress controller enclosure when it is not mounted or not secured safely by another method. The controllers' door assembly represents significant portion of the total weight and could tip the enclosure over if not secured. Controller then may fall over and cause significant damage or injury.

- Complete all necessary hazard mitigation, monitoring and control action as per site procedures.

- Unpack the Xpress controller and all its associated parts.
- Make a general arrangement of where the controller and all associated components will be fixed
- Determine where the hoses can stretch to and fall naturally. Make sure the Xpress controller screen, e-stop buttons and temperature probes cannot be unintentionally operated or damaged by the swinging movements of fuelling hoses.
- Locate incoming power and outgoing data lines and provision both runs to the cabinet. Check the incoming power circuit breaker and cable meets load requirements and local electrical standards. Power supply has to meet the voltage and power requirements.
- Determine where temperature probes, valves and meters are to be installed. With all meters, ensure that the gauze sieve removal is not obstructed and can be serviced.
- Position all temperature probes where they are out of the way and cannot be easily broken off.
- If a P&ID is supplied, verify the as built installation meets the engineered solution.
- Mark and remanufacture all spools that require modification. Measure all the pressure relief lines and cut and bend for tidy installation.
- Affix all the mechanical and electrical components only after all isolation procedures are complete.

3.3 ResTrack Xpress Controller Service Truck Installation Procedure

The Banlaw Xpress controller cabinet may weigh up to 16kg. All lifts must be in accordance with site manual handling procedures. All power inputs shall only be connected by a qualified electrician. All grounding should be to site standards or a minimum of AS/NZS 3000:2018. Service Truck installation shall comply with AS4871.6 Electrical equipment for mines and quarries Diesel powered machinery and ancillary equipment. All mechanical work must be carried out by a qualified fitter to site standard as per supplied Banlaw engineering detail. All pipework should comply with standard AS 4041-2006(R2016). Flow meters can be supplied to meet pressure requirements and flow rates for existing or new systems. The installation must comply with the Banlaw Engineering Piping and Instrumentation Diagram (P&ID).

Extra care must be taken while opening the Xpress controller enclosure when it is not mounted or not secured safely by another method. The controllers' door assembly represents significant portion of the total weight and could tip the enclosure over if not secured. Controller then may fall over and cause significant damage or injury.

The installation procedure for the BRTXPC is impossible to precisely document due to the wide variety in service truck configurations. The following general advice is provided:

- Complete all necessary hazard mitigation, monitoring and control action.
- Unpack the Xpress controller and all its associated parts.
- Determine where the Xpress controller and all associated components will be installed in the Service Truck.
- Determine where the hoses can stretch to and fall naturally. Ensure the ResTrack Remote Screen, E-stop buttons and temperature probes cannot be damaged by the swinging movements of fuelling hoses.
- Check the incoming power circuit breaker and cable meets load requirements and local electrical standards. If the required power supply is not available to the Xpress controller or does not meet the voltage and power requirements, the truck needs to be modified to provide suitable power.
- Assess where temperature probes, valves and meters are to be installed. Ensure that the gauze sieve removal in filters is not obstructed and can be serviced.
- Locate all temperature probes where they may not be used as a step.
- Where a P&ID is available, verify the completed installation against the P&ID, ensure the as built system meets the design requirements.

- Mark and manufacture all spools that require modification. Measure all the pressure relief lines and cut and bend for tidy installation.
- Affix all the mechanical and electrical components only after all isolation procedures are complete.
- Attach all cabling as per Banlaw Electrical diagrams. Note that the output power for pulsers from the FTP card, inside the Xpress controller cabinet will only output 24V. Check the specification of the selected pulsers you are using to ensure no damage is caused by incorrect voltages.
- Perform all electrical installation inspection and qualification tests prior to energising the Xpress Controller. NB: it's a good idea to remove the plugs to all power consuming devices in the Xpress cabinet when powering the unit, the first time. Check the polarity is correct on all devices.

3.4 ResTrack Xpress Controller Commissioning

The commissioning process comprises of separated in-depth system commissioning procedures that can differ for each site. The following description of commissioning is a guide only.

The commissioning process of the Xpress Controller is as follows. It is meant for systems that have passed all installation checks and are in an energised state.

- Check that the cabinet is not dented and clean on the inside. All glands are installed firmly, and blanks installed.
- Ensure all electrical cables are well connected and the inside of the Xpress controller is neat and tidy.
- Check that terminal numbers correspond to those inserted into the terminals.
- Nameplate installed with all the client, site and controller information.
- Power supply output voltage is correct.
- The Xpress controller should be powered up.
- Verify the keyboard is working properly. Press each key on the screen, traversing menus and entering pin and unit data and check if each key click produces a system response.
- Verify that the FTP cards are powered up and configured correctly with the DIP switches, check LED status. Make sure that the API table is downloaded to the FTP cards if temp compensation is to be used.
- Verify card reader is operational. Swipe a card and validate the correct function of a user identification and the PIN.
- Verify iButton operation. Validate the unit identification.
- Verify Splash-fill and Nozzle Auto-ID operation:
  - Connect Auto-ID Dry Break nozzle to registered Auto-ID receiver.
  - Place Auto-ID Splash-fill nozzle near registered Auto-ID tag.
- Communication verified with the ResTrack Xpress controller:
  - Check if the Controller is visible via the site network and in the ResTrack web server.
  - Correct information showing, Controller, storages and transactions.
- Communication verified between the ResTrack Xpress controller and the Tank Level Devices:
  - Receiving values from temperature and levels sensors.
  - Correct tank and ullages displayed for each tank.
  - Probe level matches the dip level.
- Any third-party equipment configured and tested.
- With the power switched on, use the override switch to determine the ball valves actuate correctly.
- Check the flow meters are reading correctly and schedule calibrations.
- Complete all commissioning documentation.
- Final client sign off.

4 PRINCIPLES OF OPERATION

The ResTrack system itself can be fully automated and requires no manual operator input, except for attaching a nozzle and starting a transaction. Whether using a Banlaw ResTrack Xpress controller system or a Banlaw Advanced controller, the installation of the Xpress controller requires ***no change to the normal operating procedure of the Dry break and Splash-fill refuelling systems*** (i.e. the procedure by which a tank is normally refuelled).

Note:

For more information please refer to the ResTrack Xpress Controller Operator's Manual. For more information to How to use your Banlaw Nozzle please refer to the Nozzle documents. Equipment that is damaged, leaking or otherwise unfit for operation must not be used. Maintenance should be carried out to replace or repair faulty parts prior to use of a diesel refuelling system.

4.1 Xpress Controller interface

4.1.1 Transaction status screen

In standby mode, Xpress Controller default screen is the Transaction status screen. Available nozzles, fluid types and last transaction volumes are displayed here. To navigate between nozzles, press Up/Down buttons on the keypad (see below).

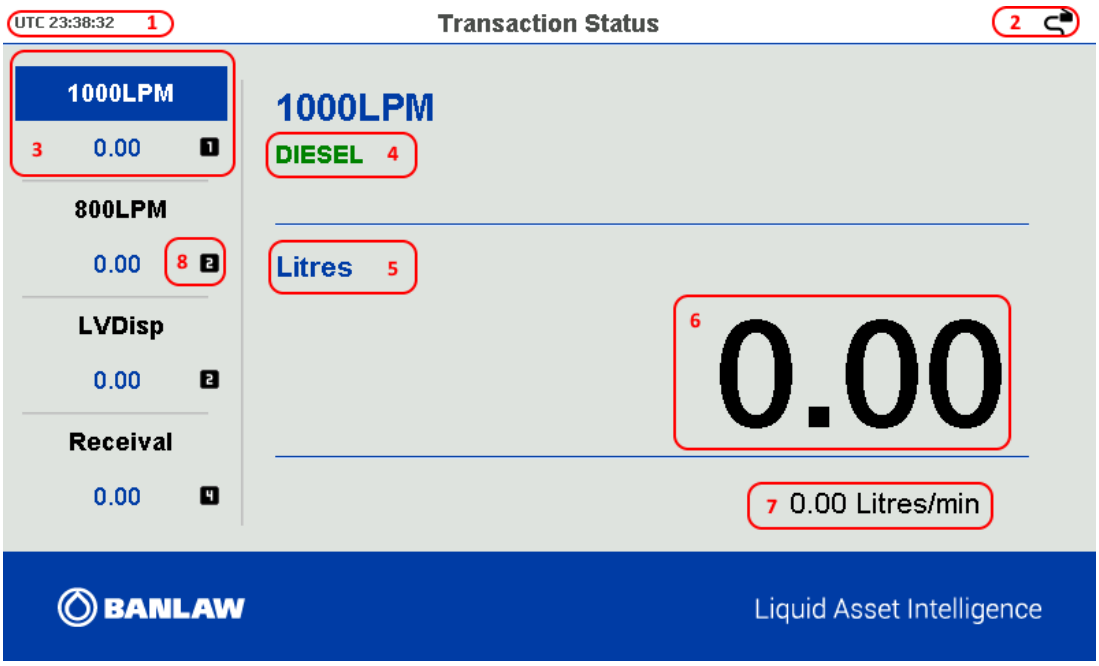


Figure 4: Xpress Standby screen elements

1 - Current controller time in UTC
2 - Current connection used – Ethernet (displayed) or Wi-Fi
3 - Highlighted nozzle, information to the right corresponds to the nozzle that is highlighted
4 - Fluid type dispensed by the nozzle
5 - Volume unit
6 - Current dispensed volume. When system is in standby mode, the last transaction volume will be displayed here. It will be reset once the new transaction starts
7 - Instantaneous transaction flowrate
8 - Indication of a flow pulse signal source. Will be the same for shared flowmeter nozzles.

When Xpress is in transaction, the screen will display relevant vehicle information and current dispensed volume.

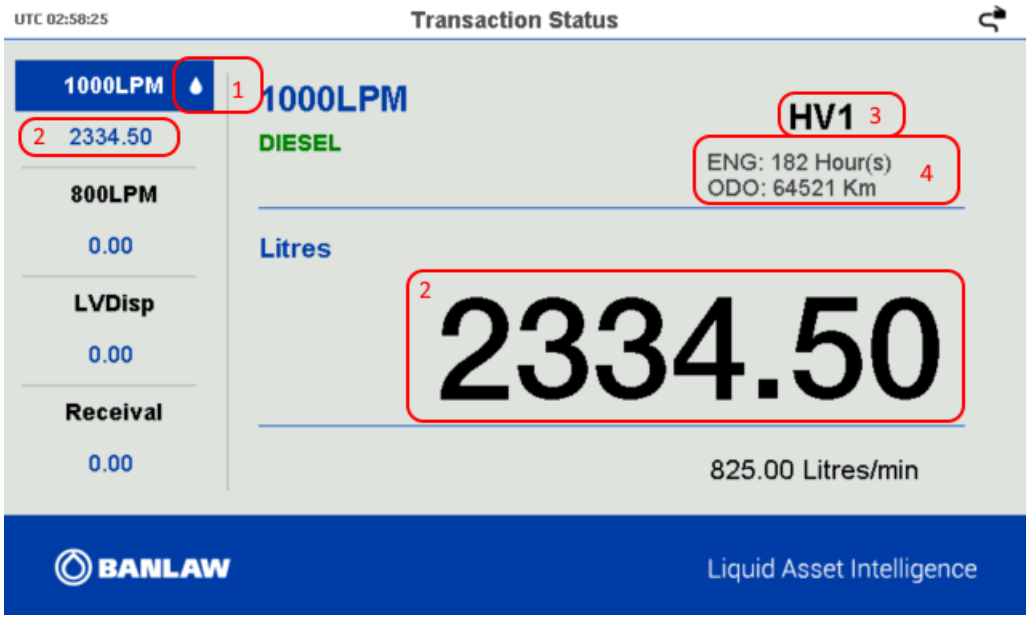


Figure 5: Xpress in Transaction

1 - Droplet icon indicates that the flow has been registered on the nozzle
2 - Current transaction volume
3 - Current vehicle receiving fuel
4 - Vehicle additional details (if enabled on the nozzle)

4.1.2 Xpress Touch panel controls

ResTrack Xpress controller controls are performed with the capacitive touch panel located below the screen.

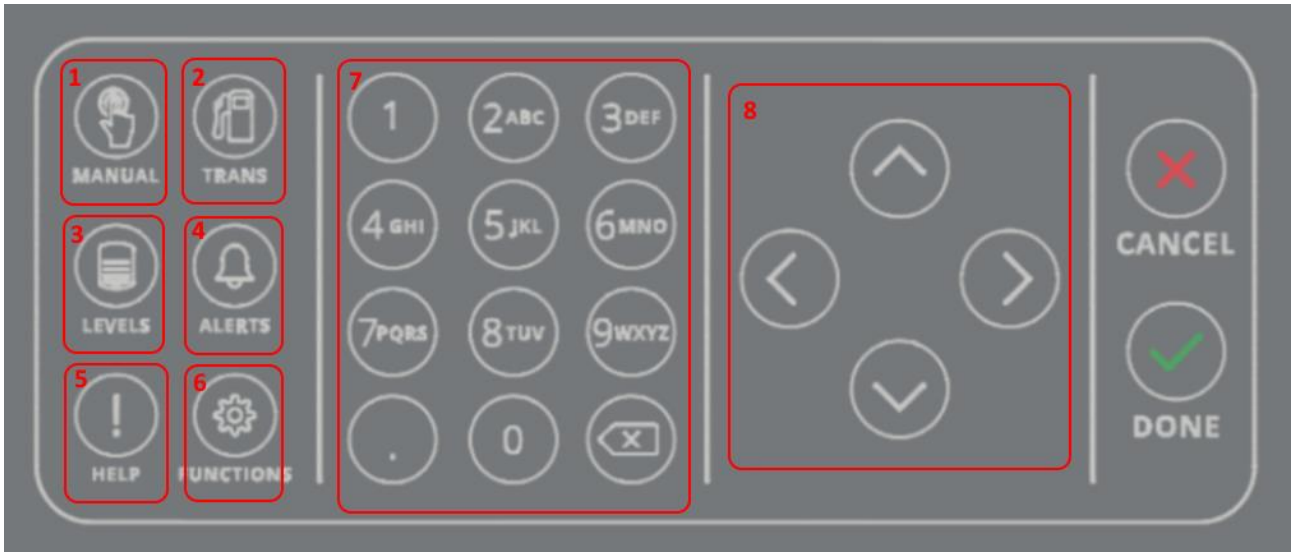


Figure 6: ResTrack Xpress Capacitive Touch panel

1 - Initiate Manual Transaction
2 - Transaction Status screen (system automatically returns to that screen after timeout)
3 - Tank Level Monitoring display
4 - Display recorded system alerts
5 - Display Banlaw Contact details for assistance
6 - Additional functions, information and configuration
7 - Keypad
8 - Navigation pane

4.1.3 Xpress Tank Level Measurement

Levels button displays the summary of Tank level measurements. Xpress supports up to 4 devices simultaneous reading.

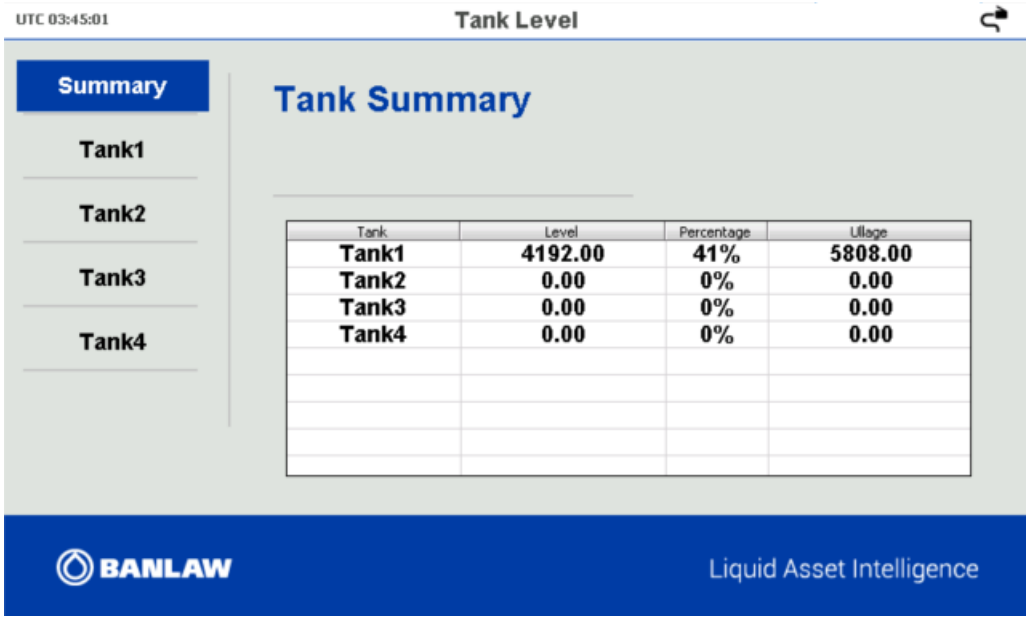


Figure 7: Xpress Tank Level Monitoring Summary

Pressing Up/Down button will scroll through the configured devices and display additional information for each.

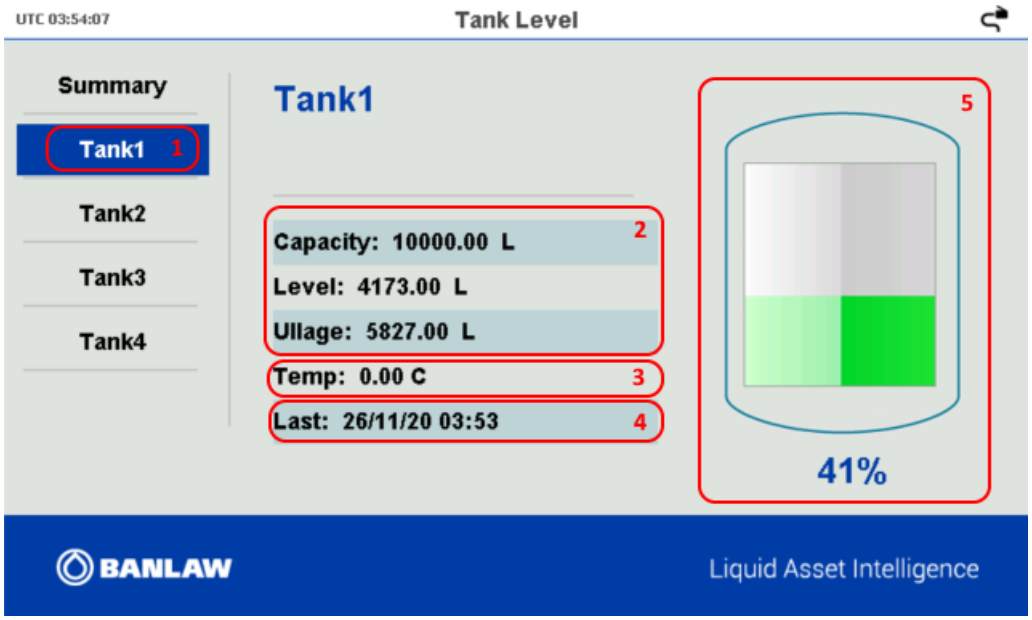


Figure 8: Individual Tank Information

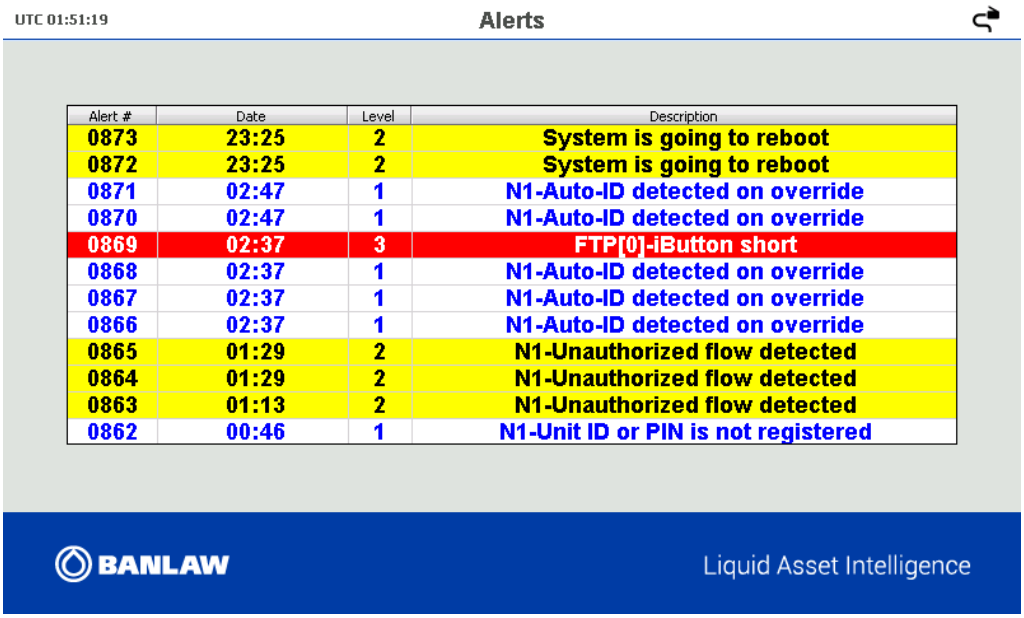
1 - Selected tank
2 - Tank capacity and current level measurement
3 - Temperature sensor data, if connected
4 - Date/time last polled
5 - Graphical level representation

4.1.4 Xpress Alerts Screen

Xpress Alerts screen displays the list of system alert messages of several different levels. The alert levels are:

- Information (level 0): Xpress provides additional information.

- **Notification (level 1)**: Xpress provides noteworthy information.
- **Warning (level 2)**: Xpress detects problems and manages the problems.
- **Error (level 3)**: Xpress detects problem, but it can't be managed automatically.
- **Critical (level 4)**: Xpress encountered a problem that impedes some functionality but can be recovered.
- **Alert (level 5)**: Xpress encountered a problem that impedes all functionality but can be recovered.
- **Emergency (level 6)**: Xpress encountered a fatal problem that impedes all functionality and cannot be recovered.



Alert #	Date	Level	Description
0873	23:25	2	System is going to reboot
0872	23:25	2	System is going to reboot
0871	02:47	1	N1-Auto-ID detected on override
0870	02:47	1	N1-Auto-ID detected on override
0869	02:37	3	FTP[0]-iButton short
0868	02:37	1	N1-Auto-ID detected on override
0867	02:37	1	N1-Auto-ID detected on override
0866	02:37	1	N1-Auto-ID detected on override
0865	01:29	2	N1-Unauthorized flow detected
0864	01:29	2	N1-Unauthorized flow detected
0863	01:13	2	N1-Unauthorized flow detected
0862	00:46	1	N1-Unit ID or PIN is not registered

Figure 9: Xpress Alerts screen

4.1.5 Xpress Help Screen

Xpress Help Screen presents contact details of Banlaw support, as well as links to Banlaw social network profiles.

Figure 10: Xpress Help screen

4.1.6 Xpress Functions Screen and Menu

Xpress Functions screen provides access to the controller advanced functions menu:

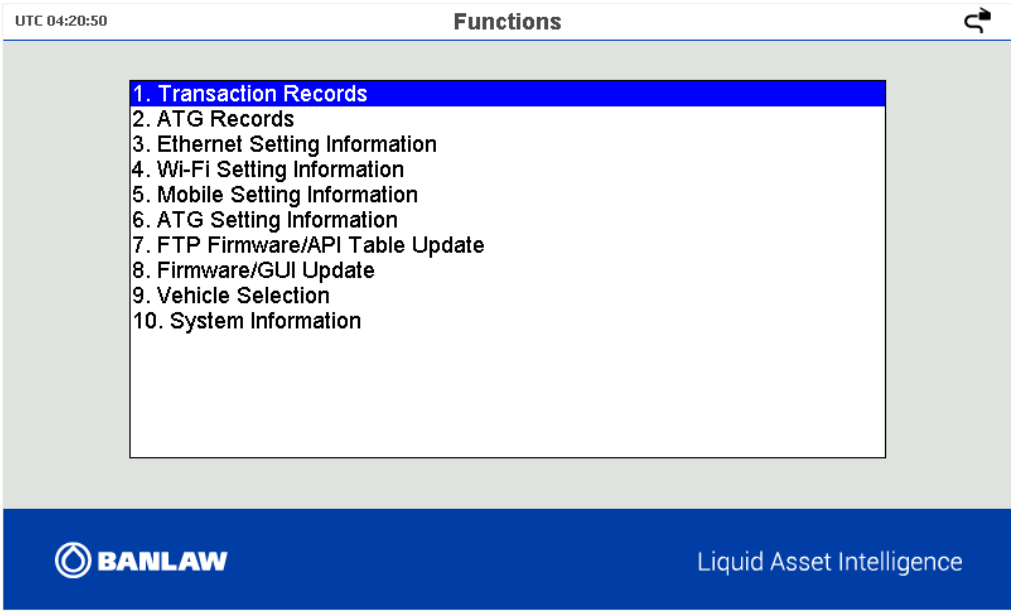


Figure 11: Xpress Functions menu

1. Access to the full list of transactions recorded by the controller, listed in chronological order
2. Access to the full list of tank level records polled by the controller from the connected level and temperature devices
3. Current controller Ethernet adapter settings
4. Current controller Wi-Fi access point settings (for Banlaw on Board Device communications)
5. Xpress cellular settings – currently not implemented. 3G/4G is available through the Maestro router only
6. Current HART modem ethernet settings
7. FTP card firmware update menu. Protected by supervisor-level PIN prompt
8. Xpress firmware update menu. Protected by supervisor-level PIN prompt
9. Manual vehicle auto ID selection menu
10. Current Xpress firmware and serial number information

4.2 Manual Transaction - Dispensing

The following process illustrates a typical operating sequence for a **MANUAL** fuel transaction, refuelling a unit with the Banlaw Xpress controller.
To initiate a manual transaction, press the "Manual" button on the keypad. The screen will change to the Manual Dispense or Delivery screen. Choose 1 for a dispense:

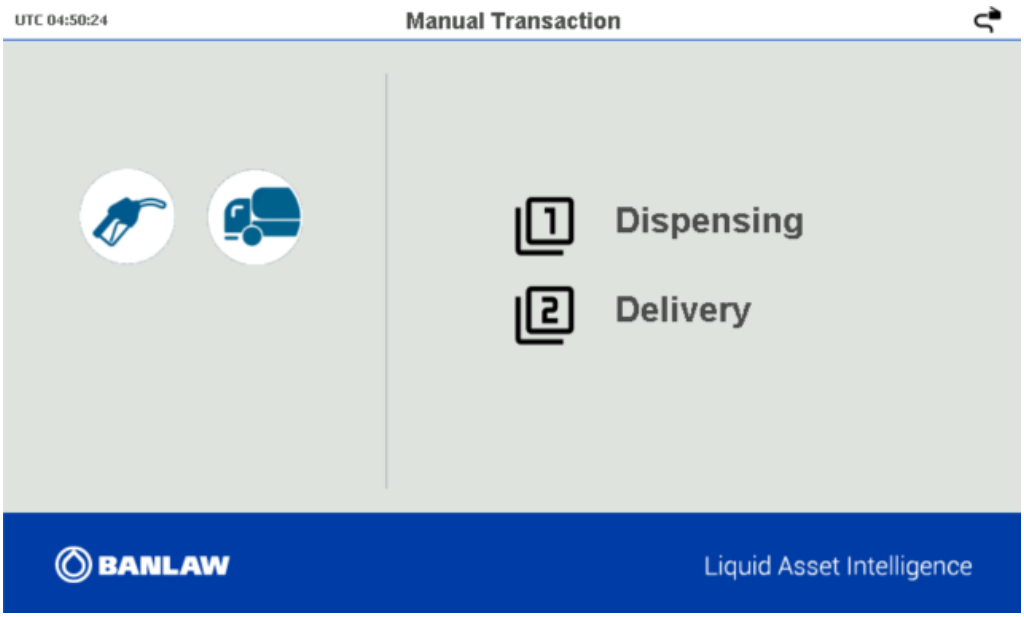


Figure 12: Manual mode selection screen 1

The available nozzle numbers appear on the screen. Using the keypad select a nozzle. NB: In some cases, multiple nozzles can be chosen.

The example below shows nozzle 1 is selected. The available nozzles are highlighted with red.

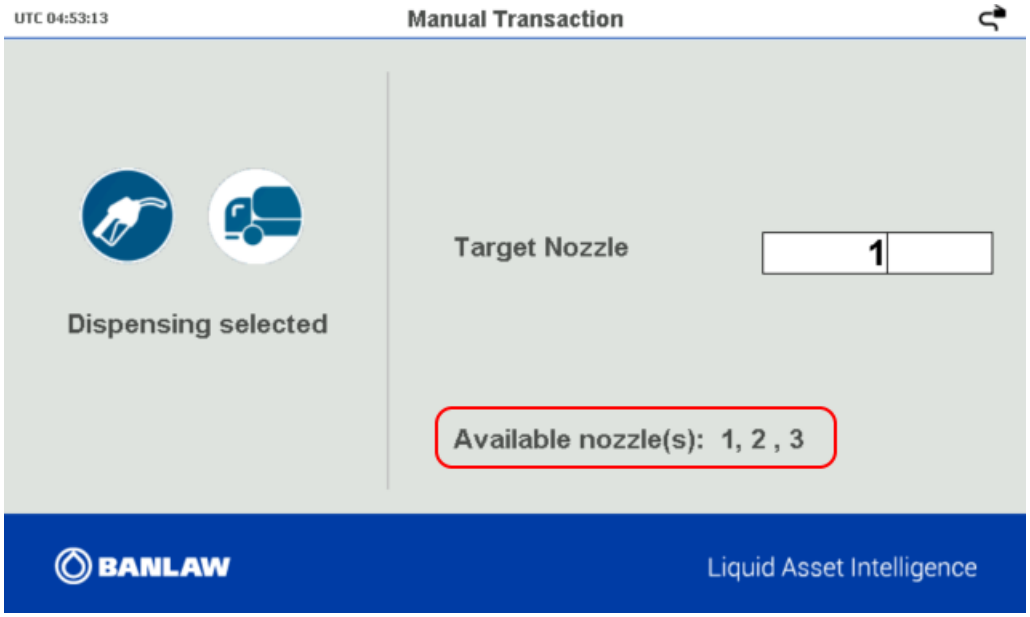


Figure 13: Nozzle selection

Press the “Done” button to move to the next screen.

Enter the Unit ID and pin number to proceed. Pin can be read from the card reader. If the “Engine Hours” or “Odometer” settings are enabled on the nozzle, they will become available and can be entered also.

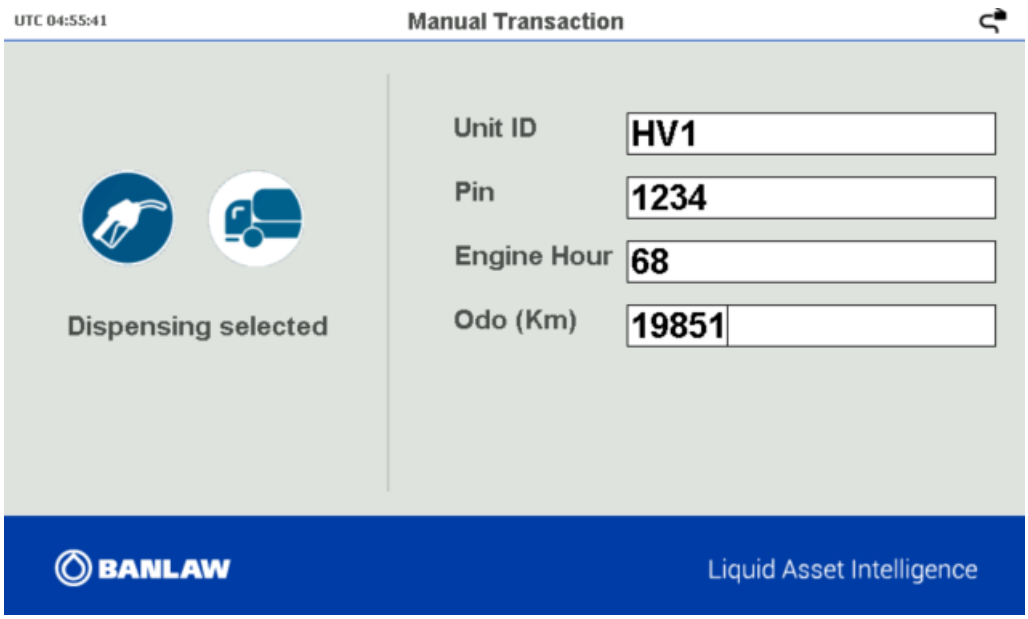


Figure 14: Manual transaction information screen

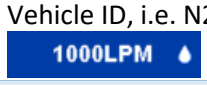
Press “Done” button to start the transaction.

4.3 Automatic Transactions - Dispensing

The following process illustrates a typical operating sequence for an **AUTOMATIC** fuel dispensing transaction refuelling a unit with Auto ID Dry break (heavy vehicles) and/or the Splash-Fill (light vehicles) the Banlaw ResTrack Xpress Controller.

4.3.1 Heavy Vehicles

NOTE: This procedure is general and site procedures will have precedence.

Heavy Vehicle Auto ID Refuelling	
Step	**Instruction**
1	Move the unit into the fuelling area
2	Isolate the vehicle as required by site procedures
3	Remove the receiver dust cap
4	Using a clean rag, thoroughly clean the receiver
5	Remove the nozzle from the holster, ensure the handle is locked in the OFF position, retract the actuator and push the nozzle onto the receiver. Release the actuator to lock it on
6	Turn on the nozzle by pulling the trigger up into the ON position
7	The Auto ID will have identified the unit and the Xpress controller screen will display the Vehicle ID, i.e. N2 = HT468 and a liquid drop beside the nozzle number on the left 
8	The Xpress controller should allow fuelling to commence, or press the START button to start the pump if it is not automated
9	After automatic shut-off, remove the nozzle by retracting the actuator. If necessary, press the STOP button to turn off the pump The LCD will display the amount of fuel dispensed i.e. N2 = 2347L

10	Ensure that the nozzle holster is clean prior to placing the nozzle back into the holster NOTE: If genuine Banlaw nozzle holster is used and configured, Xpress will display exclamation mark on the nozzle that is out of holster and not currently in transaction.  Once holster is successfully connected and recognized, exclamation mark will disappear.
11	Put the receiver cap back on to prevent contamination

4.3.2 Light Vehicles

NOTE: This procedure is general and site procedures will have precedence.

Light Vehicle Secure Fill Auto ID Refuelling	
Step	**Instruction**
1	Insert Banlaw Splash Fill Nozzle into the Vehicle Fuel filler pipe.
2	The ResTrack Xpress controller will detect an Auto ID tag. The Vehicle ID will be displayed on the screen e.g. LV1, then it will display a liquid drop next to the nozzle number on the left. 
3	The ResTrack Xpress controller will open the fuel valve actuator ready for the Pump to Start
4	START the Pump
5	Dispensed Fuel is displayed on the LCD screen for the respective Nozzle e.g. N1= 43.20
6	When refuelling has completed remove the splash fill nozzle, turn OFF the pump and place the nozzle in the holster or bowser. The Xpress controller will detect zero fuel flow and after a pre-set timeout period, will close the fuel line actuator. The volume dispensed is displayed until a new transaction is initiated.

4.4 Manual Transaction - Delivery

The following process illustrates a typical operating sequence for a **FUEL DELIVERY,** fuel transaction using the Banlaw ResTrack™ Xpress controller. Equipment that is damaged, leaking or otherwise unfit for operation **must not be used**. Maintenance should be carried out to replace or repair faulty parts prior to use of a diesel refuelling system.

To initiate a manual transaction receival, press the "Manual" button on the keypad. The screen will change to the Manual Dispense or Delivery screen. Choose 2 for a delivery:

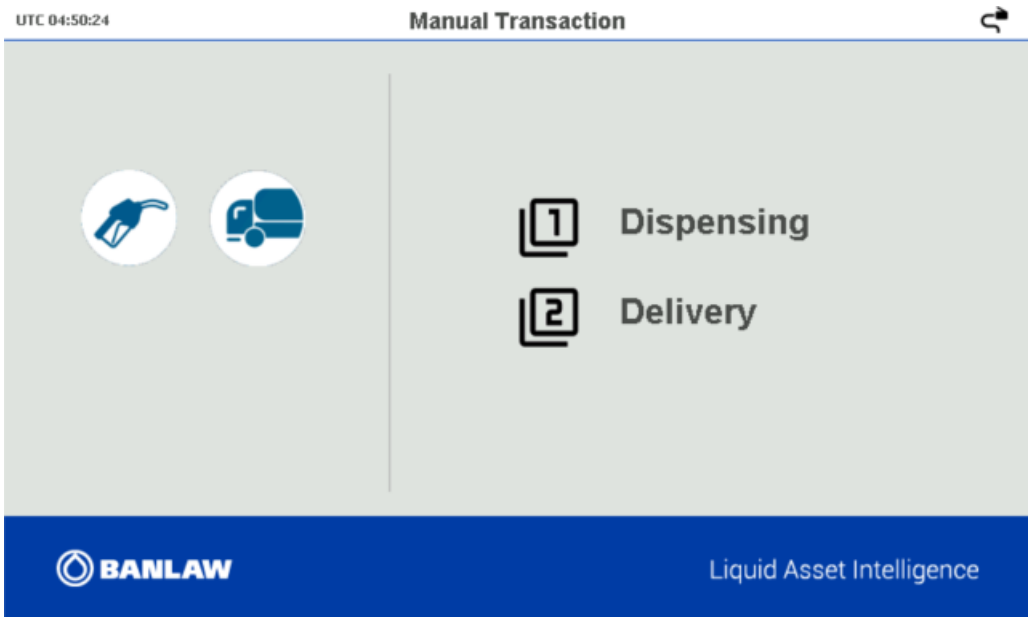


Figure 15: Manual mode button

The available nozzle numbers appear on the screen, using the keypad select a nozzle. The example below shows nozzle 4 is selected. The available nozzles are highlighted with red.

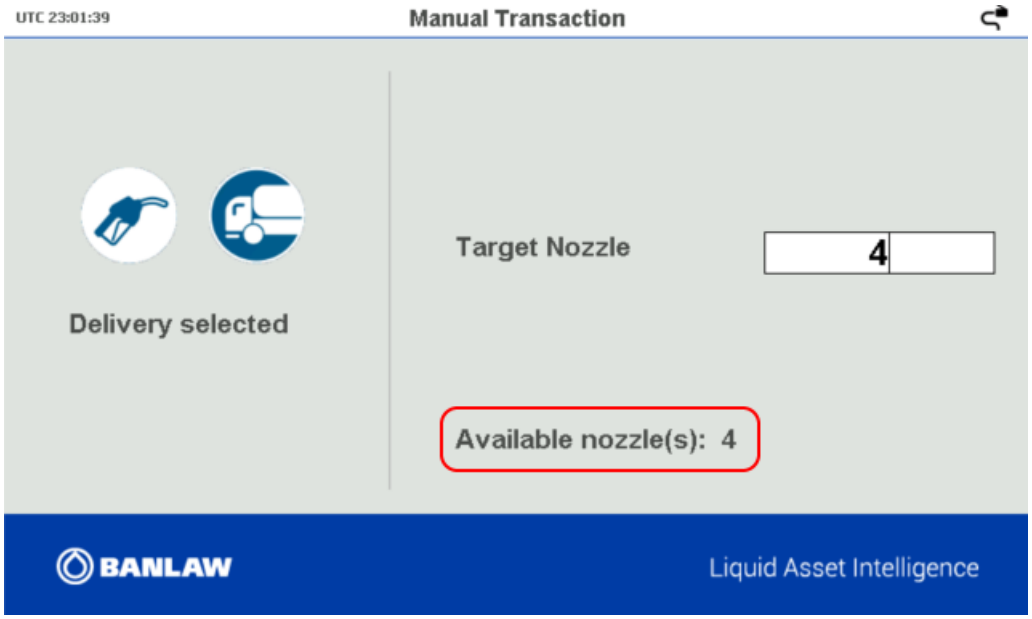


Figure 16: Nozzle selection

Press “Done” button to move to the next screen.

The Manual Delivery screen will prompt for a Unit ID, pin number, expected delivery volume, and the docket/manifest number which is to be delivered.

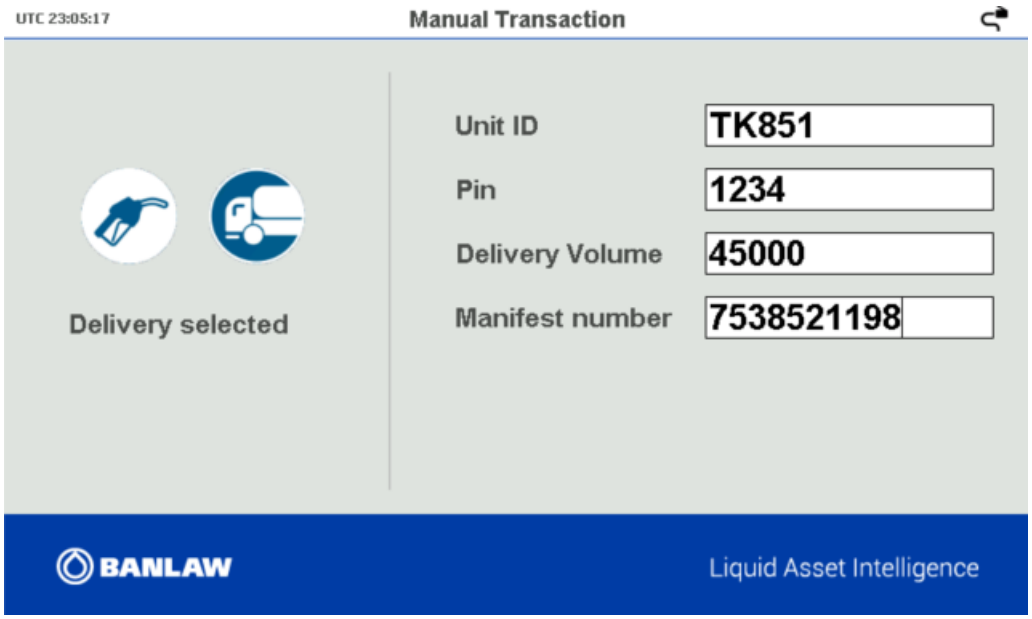


Figure 17: Manifest Delivery screen

Press "Done" button to start the delivery.

4.5 Fluid Delivery – Direct to Storage

Fluid deliveries may be transferred from the tanker into a specified storage area by:

A. inwards flow-meter situations recording the liquid quantity, OR
B. non-metered situations where the quantity will be recorded on the delivery manifest for later manual entry into the Banlaw ResTrack system.

In the situation A, ResTrack Xpress controller will record the fluid being delivered into the storage area by the delivery operator as part of the fluid transfer process. These delivery transactions will not show any User ID or Fleet information, but the date, time and quantity will be recorded by the flow meter for the targeted storage area.

5 MAINTENANCE AND SPARE PARTS

Banlaw product warranty is void in the event:

- Non-genuine spare parts are used for product repair/servicing.
- Repairs are carried out by unauthorised personnel.
- Any attempt is made to repair/service a product deemed as non-serviceable by Banlaw.
- Products are subjected to abuse, tampering, neglect, or improper operation and maintenance.
- As per the terms and conditions of Banlaw product warranty – refer Section 8.

CAUTION	To maintain the safety, performance and reliability of Banlaw products: Only genuine Banlaw spare parts are to be used. Products should not be tampered with or modified in any manner not endorsed by Banlaw.

WARNING DANGER	It is typically a *legal* responsibility of the person(s) who have identified the potential hazard to isolate the part of the system whose use is likely to result in an unacceptable risk to health, safety and environment. Complete the applicable procedure for the proper and positive isolation of the system and inform worksite management immediately.

Note:

The scope of this section – and Banlaw document in general – is restricted to recommended service and maintenance requirements for the ResTrack Xpress Controller. It is the responsibility of the end-user to identify and adequately conduct any necessary service and maintenance requirements for other equipment and items within the fluid transfer system.

Note:

Batteries used in this system contain Lithium-ion. Please follow appropriate battery disposal or recycling practices for used batteries of this type.

Note:

Banlaw makes no guarantees and assumes no liability for circumstances arising out of the accuracy and completeness of third-party product specifications included within this document. The verification, validation and publishing of specifications for any product remain the responsibility of the product OEM.

The following genuine Banlaw spare parts are available to suit the ResTrack Xpress Controller:

BANLAW PART NO.	DESCRIPTION
000747	Battery, 12V, 2x3 Shrink Wrap, 2.5aH
000640	Power Supply, UPS, 12 VDC & 22.5VDC Output, 24V DC Input
BFTFTP	Fluid Transfer Point
001061	Router, Maestro, Cellular, WAN LAN & Wi-Fi, Australia
BFTE244	Circuit Breaker, 15A
BFTE247	Circuit Breaker, 10A
000379	Ethernet HART Modem, Intelligent HART Gateway Plus (As required, project specific)
BRTXPDA	Xpress Door assembly

5.1 Preventative Maintenance

The integrity of refuelling couplings and tank overfill protection systems is critical to ensure all equipment can be operated safely.

The working life of equipment depends on many factors, including the environment in which it operates. Dusty and dirty environments are more prone to contamination. Due to the many varied operating environments in which Banlaw equipment is used, any preventative maintenance information provided within this document shall be used as a guide – unless noted otherwise.

The ResTrack Xpress controller contains electrical and electronic components, which are reliant on door seals to be maintained regularly. In the event of failure of a door seal, liquid and dust ingress will accelerate damaging effects to the Xpress controller electronics. This will eventually cause a system malfunction and require complex repairs or replacement of the whole Xpress Controller.

The following preventative maintenance guidelines apply to the ResTrack Xpress Controller:

- Keep the Xpress Controller cabinet clean and closed all the time
- Keep the door seal in working condition, inspect for cracks and other damage regularly
- Avoid operating high voltage and electromagnetic equipment near the controller
- Avoid powering the controller with unstable power supplies
- Maintain the use of the receiver dust cap and nozzle anchors and holsters
- Remove any contamination from the Dry break Auto ID receiver prior to connecting a nozzle
- Visually inspect the receiver for excessive wear and tear or damage prior to connecting a nozzle
- Ensure adequate controls and conditions monitoring are in place to ensure the contamination levels (and other specifications) of your fuel supply are maintained – PREVENT inadequate quality fuel entering your site fuel infrastructure and plant equipment.

5.2 Banlaw Site Service and Preventive maintenance

Clients can benefit from a **Banlaw Service Level Agreement (SLA)** to assist with the preventative and corrective maintenance of the Xpress controller. Other fuel and lubricant storage assets onsite can also be managed via a Banlaw SLA. Clients with an SLA can *focus on their core business activities* and allow experienced Banlaw technicians and engineers to help keep such infrastructure operating with optimum ***safety, performance and reliability.***

6 TROUBLESHOOTING

This section provides troubleshooting recommendations for the Xpress controller system and its components when installed, operated and maintained in accordance with Banlaw guidelines.

XPRESS CONTROLLER TROUBLESHOOTING GUIDE			
ISSUE	**POSSIBLE CAUSE**	**CHECKS**	**SOLUTION**
No fuel dispensed. Controller display black.	Power outage	Check main power circuit breaker. Check power to pump. Check ball valve actuation.	Maintenance to restore power Restore Power to pump Restore ball valve operation.
	No power outage	Check Controller power supply. Check that Controller boards have the power LEDs on. Check that Controller screen is on.	If your site allows manual transactions, first attempt a manual transaction using a level one PIN. Failing this, the system should be placed into override by switching off the “OVR POL” dip switch on the FTP card for each nozzle. This enables the relays that allows refuelling. Note: security is compromised when the Controller is in override. Automatic fuel transactions might still be recorded whilst the ResTrack controller is in override. However, vehicles not registered can fuel as well and will create transactions with unit as OTHER.

XPRESS CONTROLLER TROUBLESHOOTING GUIDE			
ISSUE	**POSSIBLE CAUSE**	**CHECKS**	**SOLUTION**
Transaction started but no fuel is being delivered.	Actuated valve is not opening.	Check that the control valve is in the "Open" position. Check actuated valve power and wiring. Check FTP BV LED is on.	Repair and replace faulty parts. Fix wiring issues.
	Pump is not running.	Check pump circuitry. If controlled by FTP, check that FTP PUMP LED is on.	Reset pump circuit breakers. Fix pump wiring issues.
	BV open and pump is running, but still no fuel is delivered.	Check for blockage in the pipeline or hoses. Check if filtration system is clogged. Check if pump is running in bypass.	Clear the obstruction.
Nozzle will not lock into holster or receiver.	Nozzle/holster dirty. Ball locks can be seized through contamination. Receiver can be badly worn not allowing ball locks to engage.	Check the nozzle/holster is clean. Check nozzle body. Check receiver for wear.	Clean/repair/replace holster/nozzle. Nozzle may need to be repaired. Send Nozzle to an authorised repairer.
Insufficient fuel dispensed.	Rings or tag type Auto ID tag detected then ID connection has been lost. This means the ID detection is lost for more than a few seconds and the transaction ends. Class or set dispensing limit was reached on the vehicle.	Check if Persistent Auto ID option is ON. Check class limit for the unit. Check if there are any additional limits set on the vehicle. Pump may be cutting out due to restriction in flow or problem with pump circuit. Check filters, hoses, pipework for obstruction.	Remove unnecessary limit, change vehicle class limit. Check controller settings. Clean filters/remove obstructions.
Auto ID Fail. No Fuel dispensed. Controller does not respond.	Auto ID has failed to read or the controller may have stalled.	Check Auto-ID circuit. Verify ID tag is OK.	Repair Auto ID. Cycle Controller Power. Upload/Reload Controller Firmware (Banlaw).

XPRESS CONTROLLER TROUBLESHOOTING GUIDE			
ISSUE	**POSSIBLE CAUSE**	**CHECKS**	**SOLUTION**
Fuel dispensed but volume not counted on the controller screen.	Flowmeter pulses not getting to the Controller FTP	Check FTP (Fluid Transfer Point) unit Dip Switch settings Check flowmeter wiring and signals.	Cycle power to Controller to reset the FTP unit and recheck LED sate. Update/Reload FTP Firmware (Banlaw). Correct wiring and replace flowmeter pulse generator if necessary.
Controller has Locked up and is not responsive	Software fatally crashed		Restart the Banlaw Xpress Controller. Reupload controller firmware.

7 PRODUCT WARRANTY AND SERVICE

Banlaw is committed to providing quality products and services. To provide further assurance, our products and services are backed by generous warranties.

The Banlaw ResTrack Controller is a fully serviceable product with a serial number and traceable build history. Please contact Banlaw or your nearest Banlaw Accredited Technical Partner for servicing. In order to initiate a warranty repair/replacement process, please submit a warranty claim at https://www.banlaw.com/warranty-form/

Additionally, Banlaw strongly recommends the Service Level Agreement (SLA) option for **extended support, timely software upgrades, monthly System Health Check reporting and 24/7 Helpdesk Support.**

A copy of the Banlaw product warranty terms and conditions is available from Banlaw, the Banlaw website, or your nearest authorised Banlaw agent.

8 IMPORTANT RESTRICTIONS ON THE USE OF THIS PRODUCT

The safe installation and subsequent operation of Banlaw ResTrack Xpress controller rely on the completion of all necessary ***"due diligence"*** for the assessment of the system is suitable for the intended application(s). This assessment is best achieved through the mutual cooperation of the end-user (client) and the supplier/OEM (Banlaw). Once such an assessment is completed and deems this system to be suitable, the customer or end-user shall ensure effective ***"change management"*** applies should any prominent or influential aspect of the application (upon which the assessment was based) be subject to change.

This Banlaw document does not contain an exhaustive (complete) list of Regulatory and Statutory requirements related to the use of the system in all international countries and regions. It remains the responsibility of the end user (Banlaw client) to assess the information within this Banlaw document and its references, and to then ascertain the relevant Regulatory and Statutory requirements that apply to the use of this Banlaw system within the country or region in which the system is to be used.

This document is not meant to substitute or override any such Regulatory and Statutory requirements, nor is this document meant to inform the end user of all such requirements that *may* apply to the use of this Banlaw system within a certain region or application.

The information within this Banlaw document was correct and current at the time of writing. **End-users are however responsible for obtaining and assessing any labels, documents or other media for a third-party product supplied by Banlaw to confirm the required approvals, certifications and specifications of the product are *appropriate* for the intended application.**

Regional Regulations/Codes/Standards/Guidelines etc. may cover the use of certain features of hardware on mining plants.

- Banlaw Pty Ltd proprietary product is approved under FCC and CE governances. Additional and/or different product certification/approval requirements may apply under alternative governances.
- Certification and/or Approval governances will apply to the use of wireless communication device within a hazardous area (i.e. explosive atmosphere). End-users are responsible for only the use of suitably certified products within such areas.

Due to the numerous requirements – as per above – that may apply to a Banlaw product, the client shall liaise with Banlaw *prior* to the use of the product within an application that is potentially deemed to be "uncommon". The majority of Banlaw clients shall already be familiar with Banlaw products, and the applications for which each product/system are suited.

Failing to properly and thoroughly identify, investigate, assess and subsequently conform with all necessary requirements for a Banlaw product application *may* pose potentially serious risks, hazards and consequences.

"IF IN DOUBT, ASK!"

END OF DOCUMENT

Website – www.banlaw.com