Banlaw Fuel Management
Banlaw ResTrack™ Advanced Controller

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

Figure 1: Advanced Controller

1. PRODUCT DESCRIPTION

The Banlaw ResTrack™ Advanced Controller provides both the control and the data that will ensure your optimal use of resources and identify asset liquid-cost profiles. While the controller may be used for a range of industrial liquids, this document willin the main, refer to hydrocarbon fuels.

The Advanced Controller is the key device to manage fluid resources. Supervised by the Banlaw ResTrack™ software and with a range of options to control and measure fluid from delivery to storage and then from storage to dispensing to vehicles or other items of plant.

The ResTrack software collects and stores data on all aspects of fluid receival and usage, these liquid movements are called **transactions**. This data can be used for:

- Accounts
- Purchasing
- Management
- Stock Control
- Maintenance

The data will improve productivity by reducing fluid loss, reducing fluid contamination and leading to more efficient and safer resource management outcomes with accurate reconciliation of fluid assets.

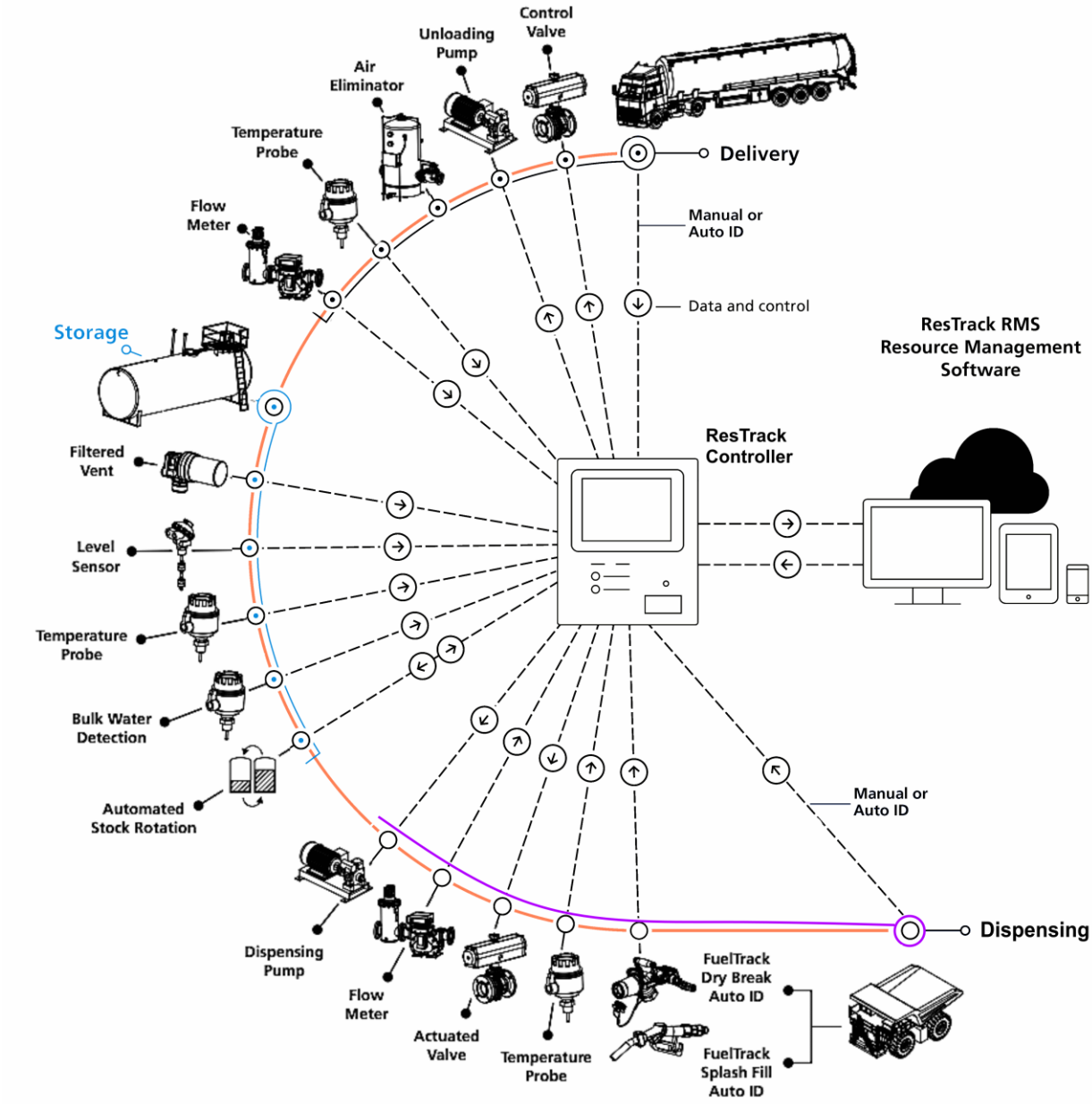

Figure 2: Banlaw ResTrack™ Advanced Controller System Architecture

The ResTrack Advanced Controller is ruggedly constructed for use in mining and other harsh industrial environments. The Controller unit may be mounted on a Banlaw Depot pedestal (BFTE series) or on other infrastructure (see Figure 3). For security, the stainless-steel cabinet door-latch may be locked with an 8 mm shackle padlock. The system is capable of controlling and monitoring fluids from delivery, via control valves and pumps to storage tanks. Accuracy of fluid measurement is assured by temperature compensation and supervised overfill protection may be fitted to storage tanks. The front-panel touch screen allows on-the-spot control of operation and setup, depending on the user's access level, of the ResTrack software.

Banlaw's Auto ID dry-break nozzles (800 and 1000 lpm options) provide high volume spill-free fluid delivery to heavy plant while road vehicle fuel utilisation of fuel can be supervised by Card or nozzle Auto ID verification.

Figure 3: ResTrack Advanced Controller deployed on site

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

The **Advanced Controller** is an intelligent fluid tracking unit. It is typically installed at each refuelling facility and/or storage area. It ensures the following functions to the **Banlaw ResTrack™** system:

- Automatic identification of users, vehicles and plant equipment: dispense only to authorised machines/vehicles/operators
- Automatic recording of fluid deliveries and fluid dispensing
- Accurate fluid metering with temperature correction
- Secure dispensing of fluids only to authorised vehicles and users
- Storage tank level monitoring with temperature compensation: allow logistic and operations team to evaluate levels in real time, order automatically on pre-sets levels, and schedule deliveries
- Storage tank overfill protection
- Pump enable/disable time out
- Stock rotation
- Touch screen interface

The Advanced Controller unit has multiple electrical/electronic sub-systems incorporated inside the enclosure. Advanced Controller configuration may vary from client to client depending on their needs and the installation of optional equipment as required. Figure 3 illustrates the most common type of internal configuration:

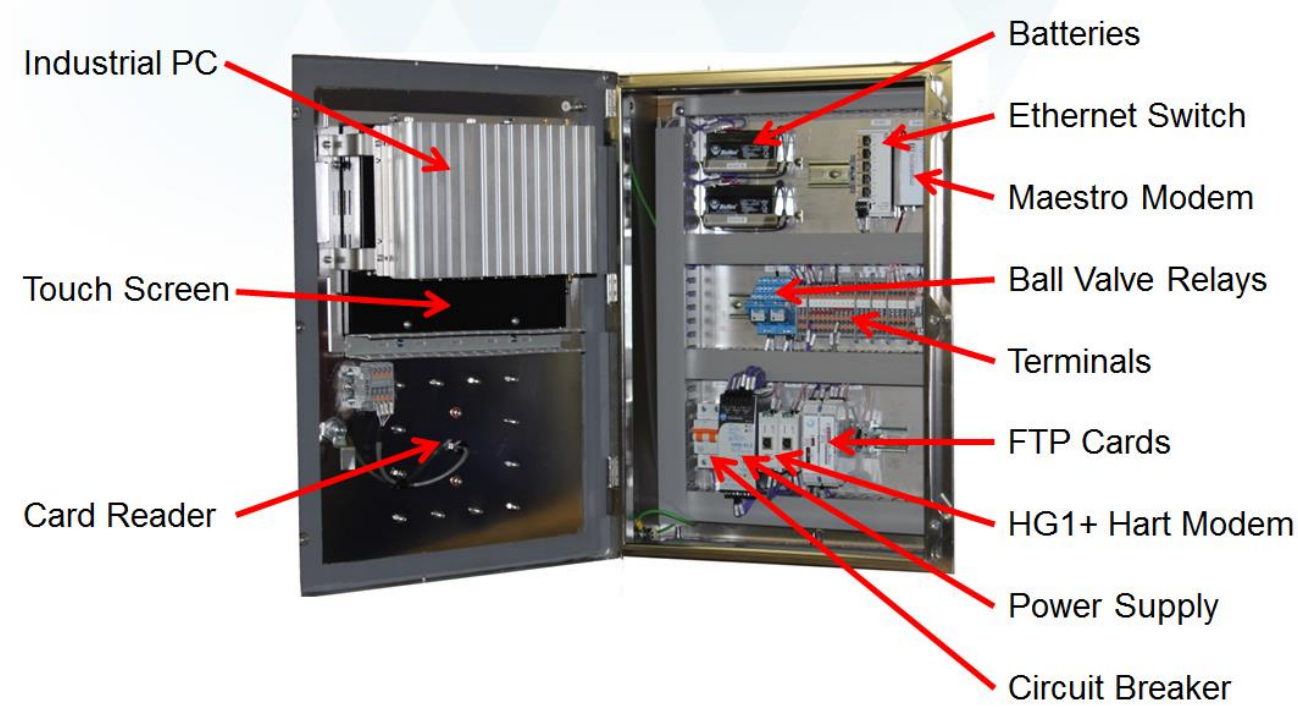

Figure 4: Banlaw ResTrack™ Cabinet – Typical configuration

The ResTrack Controller has an industrial PC at the core. Figure 5 illustrates where important connectors are located on that PC.

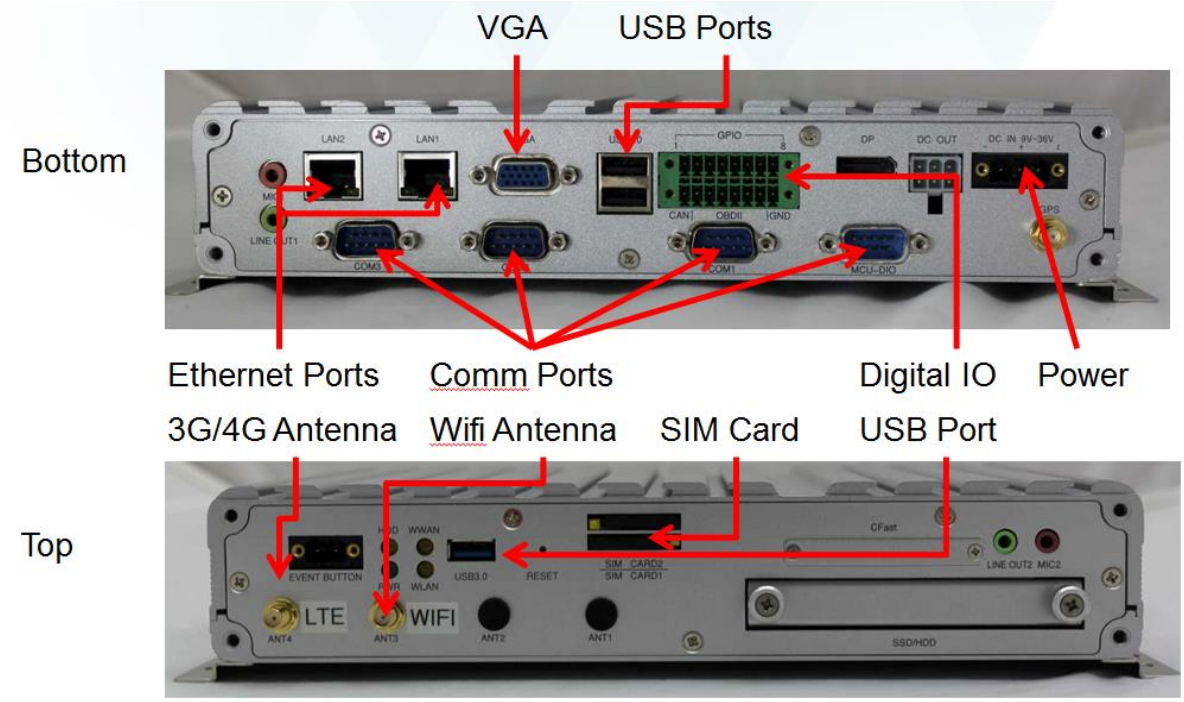

Figure 5: Banlaw ResTrack™ Controller industrial PC top and bottom connector view

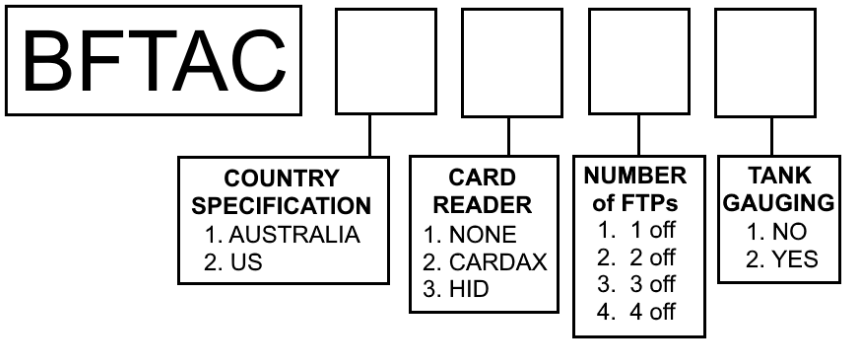

Figure 6: Advanced Controller Naming Convention and Example Plate showing Options "1342"

BFTAC Options:

COUNTRY SPECIFICATION	1. AUSTRALIA	Controller wired to Australian standards and practice AS/NZS 3000:2018	Banlaw's Advanced Controllers are configured using reputable components that meet the appropriate standards for the location of installation.
	2. US	Controller wired to US standards (using UL489 Certified Equipment) and practice	
CARD READER	1. NONE	Not required	Based on site requirements and preferences
	2. CARDAX	Gallagher Cardax reader installed	
	3. HID	HID PROXPRO reader installed	
NUMBER OF FTPs	1. 1. off	One Fluid Transfer Point interface	Installed FTPs are based upon the number of devices that are supervised by the Advanced Controller. Devices include nozzles*, pumps, ball valves, tank level monitoring options. *iButton reader provides a 'touch' input for a registered fluid user.
	2. 2. off	Two Fluid Transfer Point interfaces	
	3. 3. off	Three Fluid Transfer Point interfaces	
	4. 4. off	Four Fluid Transfer Point interfaces	
TANK GAUGING	1. NO	Tank Gauging not required	Tank gauging is configured to monitor up to 6 tank levels or 3 tanks with level and temperature compensation. Most Hart 2-wire devices can be used.
	2. YES	Tank Gauging Enabled	

Key Advantages of the Banlaw ResTrack™ Controller:

- Automatic identification of users, vehicles and plant equipment
- Automatic recording of fluid deliveries and fluid dispensing
- Accurate fluid metering with temperature compensation and bulk air elimination
- Stainless steel cabinet, providing superior durability and corrosion resistance.
- Compatible with HID and Cardax security card systems
- The FTP (Fluid Transfer Points) provide, actuator control, iButton (Auto ID) read, RTD (Resistance Temperature Detector) input (PT100 to PT1000), one 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 and configurable alarms and alerts by email.

The safe installation and subsequent operation of a Banlaw product rely on the completion of all necessary ***"due diligences"*** for the assessment of the Banlaw product(s) being suitable for the intended application(s). Such an assessment is best achieved through the mutual cooperation of the supplier/OEM (Banlaw) and the customer or end-user. Once such an assessment deems the Banlaw product(s) 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 initial assessment was based) be subject to change and may affect the ongoing suitability (i.e. safety and proper function) of the Banlaw product.

The content of this document is not meant to override or substitute any applicable Statutory, Regulatory, Customer/Site, etc. Health Safety and Environment (HS&E) requirements.
All works should only be performed by trained, qualified and competent personnel who are aware of the hazards associated with the constituent components of this installation in addition to the system. Failure to comply with these practices may result in death, serious bodily injury, loss of equipment and environmental damage.
A risk assessment (job hazard analysis - JHA) should be conducted PRIOR to the start of any works or actions within this document. Whilst every effort has been made to ensure the execution of this document represents no HS&E hazard, Banlaw takes neither responsibility nor liability for the consequences and damages that may occur in the execution of works within this document.
Persons conducting or otherwise involved with the execution of the works within this document and project have an obligation to ensure that all HS&E requirements are known and understood, and subsequently followed at all times.

2. PRODUCT SPECIFICATIONS

BANLAW ADVANCED CONTROLLER

Operating System	Windows
Wi-Fi	Wi-Fi b/g/n 1T1R (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
Power Requirements (Note below)	22.5-30 VDC
Touch Screen Size	35.5cm / 14in (22 cm / 8.7in for Service Trucks)
USB	USB 2.0 and 3.0
Operation Temperature Range	-25° to 50° C / -13° to 122 °F
Certification	RCM
Cabinet Material Composition	Stainless Steel
Dimensions (cabinet only)	620 x 535 x 240
Nozzle Control Capability	4 (local cabinet) + 12 (remote mount)
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

Note: A separate Electrical Distribution Panel (EDP) may be configured to supply 24 VDC to the Advanced 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 general, and is not meant to replace or override installation guidelines that arise out of a *due diligence* assessment of a Banlaw product for a specific (intended) application.

For any installations where these limits are likely to be exceeded, contact Banlaw for assessment and advise.

The scope of this section applies to the Banlaw ResTrack™ Advanced Controller assemblies. Whilst other products are mentioned – e.g. Level Sensors and flow meters – end-users must refer to ***separate*** Banlaw documentation covering each product *prior* to installation.

Note:

General Installation Notes:

1. Conduct a **Job Hazard Analysis** (JHA) ***prior*** to install to mitigate health, environmental and equipment hazards.
2. Do ***NOT*** install any parts or modify a previous Controller Installation without assessment and advise from Banlaw.
3. Do ***NOT*** install any parts that are damaged or are otherwise faulty.
4. Do ***NOT*** install parts which are not compatible electrically with the Banlaw ResTrack Advanced Controller.
5. Do ***NOT*** install parts which are not 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-Install guide is available as an organisational tool to aid a complete installation of a Banlaw Advanced Controller. The Advanced Controller is in essence a computer that is connected to your fuel delivery and dispensing hardware. It provide security in who is able to use fuel and will deny an unauthorised user. It catches and stores information automatically which can be reported on in the future, while showing flow totals and tank levels locally to users.

The appropriate care should be taken to position the Advanced Controller out of direct sunlight. This can only help reliability and prolong hardware life.

The Advanced Controller screens can be susceptible to scratching and damage by sharp objects. Like most all equipment if the screen is used in its intended manor this will prolong hardware life.

Please choose all fasteners to fit the Advanced 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.

3.2 Installation Procedure

The Banlaw Advanced Controller is designed to make refuelling safer and easier. The Advanced Controller cannot be installed in a hazardous zone lower than zone 2. It's cabling, can run through or into a zone 1 or 0 area with appropriate conduit systems, glanding and electrical barriers.

The Banlaw Advanced Controller cabinet may weigh up to 20kg. The stand for the cabinet weighs approximately 25kg. All lifts should be aided with a mechanical lift apparatus or carefully achieved by 2 people.

All 240VAC inputs will only be connected by a qualified electrician. All grounding should be to site standards or a minimum of AS/NZS 3000:2007. NB Supersed by: AS/NZS 3000:2018

All mechanical work will 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 are to be installed to suppliers specification and should reflect the Banlaw Engineering Piping and Instrumentation Diagram (P&ID).

- Complete all necessary hazard mitigation, monitoring and control action as per the JHA.
- Unpack the Advanced controller and all its associated parts.
- Make a general arrangement of where the Controller will be fixed and all associated components.
- Make an assessment of where the hoses can stretch to and fall naturally. Make sure the Advanced controller screen, e-stop buttons and temperature probes cannot be broken 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. If the required power supply is not available to the Advanced Controller or does not meet the voltage and power requirements the site will need to provided such as service.
- Make a general assessment of where temperature probes, valves and meters are to be installed. With all meters be wary that the gauze sieve removal is not obstructed and can be serviced. Place all RTD where there out of the way and can't be used as a stepping zone.
- Using the P&ID, determine the previous assessment meets the engineered solution. Mark and remanufacture all spools that require modification. Measure all the pressure relief lines and cut and bend those.
- 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 outputs power for pulsers from the FTP card inside the Advanced 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 Advanced Controller.

3.3 Commissioning

The commissioning process comprises of in depth system documentation and procedures that are mentioned in this document but are just in guide form.

The commissioning process of the Advanced 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 Advanced Controller is neat and tidy.
- Check 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 Advanced Controller screen should be powered up.
- Verify the touch-screen 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 the FTP cards are powered up and the configuration is corrected using the DIP switches and the led states. Make sure that the API table is downloaded to the FTP cards if temp compensation is to be used.
- Verify card readers are operation. 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 DryBreak nozzle to registered Auto-ID receiver.
    - Place Auto-ID Splash-fill nozzle near registered Auto-ID tag.
- Communication verified with ResTrack Advanced 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 Advanced Controller and the Tank Level Devices:
    - Receiving values from temperatures 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.
- Complete client sign off.

4. PRINCIPLES OF OPERATION

The ResTrack system itself can be fully “automated” and requires no manual operation or manipulation. Whether using a Banlaw ResTrack Advanced Controller system or a Banlaw classic depot, the installation of the Advanced Controller requires ***no change to the normal operating procedure of the dry-break and splash-fill refuelling system*** (i.e. the procedure by which a tank is normally refuelled).

Note:

For more information please refer to the ResTrack Controller Operator’s Manual and User’s Manual.
For more information to How to use your Banlaw Nozzle please refer to the Nozzle documents.

The following process illustrates a typical operating sequence for a **MANUAL** fuel transaction, refuelling a unit with the Banlaw ResTrack Advanced 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.

4.1 Manual Transaction - Dispensing

To initiate a manual transaction please press the "Manual" icon on the screen:

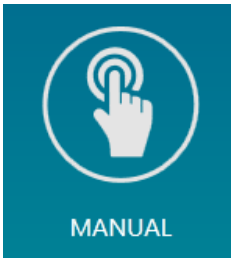

Figure 7: Manual mode button

The screen will change to the following:

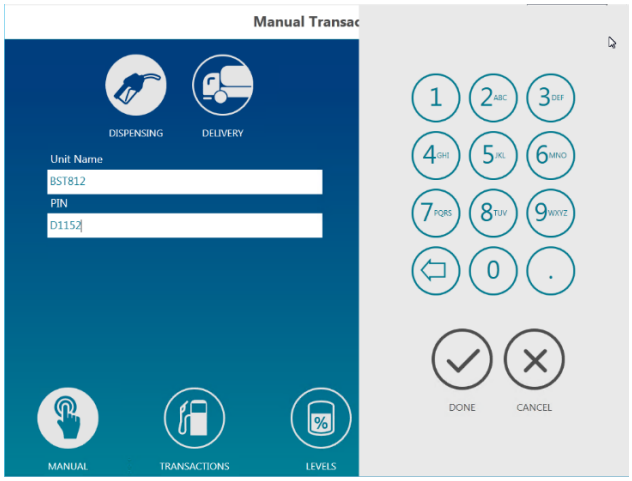

Figure 8: Manual Transaction Screen

Using the keypad, enter the unit ID and PIN number and press the "done" key then the "Next" key. If all the details are entered correctly the next step is to choose a nozzle. Select the 1 or 2 Nozzle.

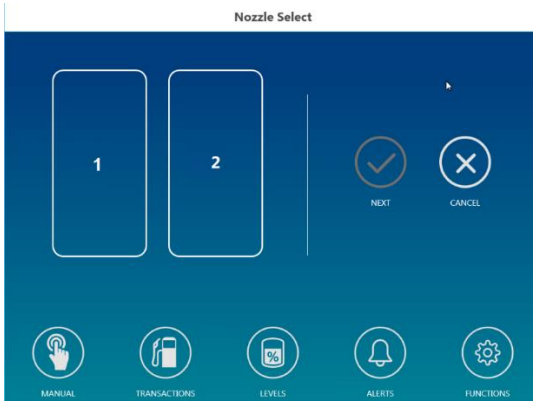

Figure 9: Nozzle Select Screen

Select the "Next" key and the transaction begins. The Manual transaction process is completed.

4.2 Automatic Transactions - Dispensing

The following process illustrates a typical operating sequence for an **AUTOMATIC** fuel dispensing transaction refuelling a unit with Auto-ID Drybreak (heavy-vehicles) and/or the Splash-Fill (light-vehicles) the Banlaw ResTrack Advanced Controller. Equipment that is damaged, leaking or otherwise unfit for operation must not be used, but must instead be replaced or repaired prior to use of a diesel refuelling system.

4.2.1 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	Halt 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 Advanced Controller screen will display the Vehicle ID, i.e. N2 = HT468
8	The Advanced Controller should allow fuelling to commence, or press the START button to start the pump if it's 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
11	Put the receiver cap back on to prevent contamination

4.2.2 Light Vehicles

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

Light Vehicle SecureFill Auto ID Refuelling	
Step	**Instruction**
1	Insert Banlaw Splash Fill Nozzle into the Vehicle Fuel filler pipe.
2	If the ResTrack Advanced Controller detects an Auto ID TAG it will display “Nozzle Enabled, display fuel digits to check LCD is working, and Please Proceed” when this has finished the Vehicle ID will be displayed on the LCD screen e.g. N1= 224
3	ResTrack Advanced Controller will open the fuel line 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. L1= 43.20
6	When refuelling has completed remove the splash fill nozzle and turn OFF pump and place nozzle on holster or bowser. ResTrack will now detect zero fuel flow and after 30 seconds will close the fuel line actuator. The volume dispensed is displayed until a new transaction is initiated.

4.3 Manual Transaction - Delivery

The following process illustrates a typical operating sequence for an **FUEL DELIVERY** fuel transaction using the Banlaw ResTrack™ Advanced 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.

Manual deliveries can be started by selecting the “DELIVERY” button.

Figure 10: Delivery button

The Manual Delivery button will prompt for a Unit ID, and Pin Number that would be allocated by the site fuel champion. The delivery operator is required to punch in the docket/manifest number and the expected delivery volume, which is to be delivered.

With all this information inserted press the “Done” button to start the delivery.

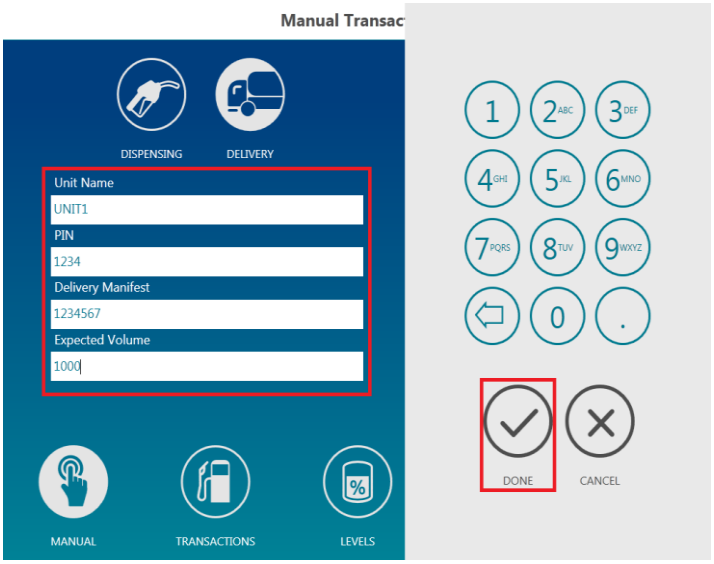

Figure 11: Manual Delivery Screen – Step 2

Select the correct nozzle number then the "NEXT" button.

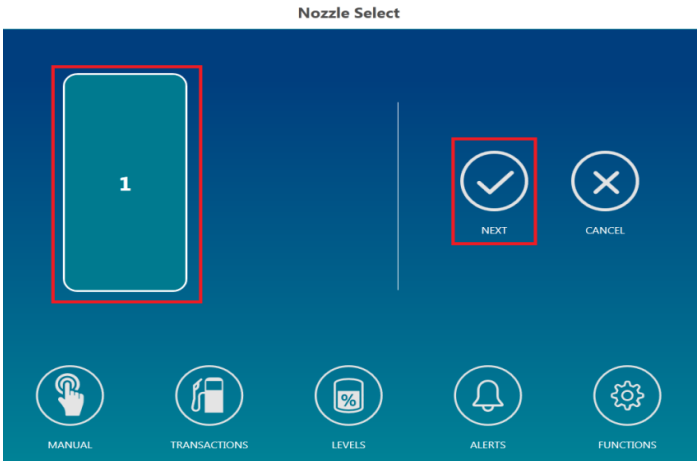

Figure 12: Manual Delivery Screen – Step 3

The transaction has now started. Open the fuel valves and turn the pumps on to complete the delivery. The flow can be monitored on the Transaction Status screen

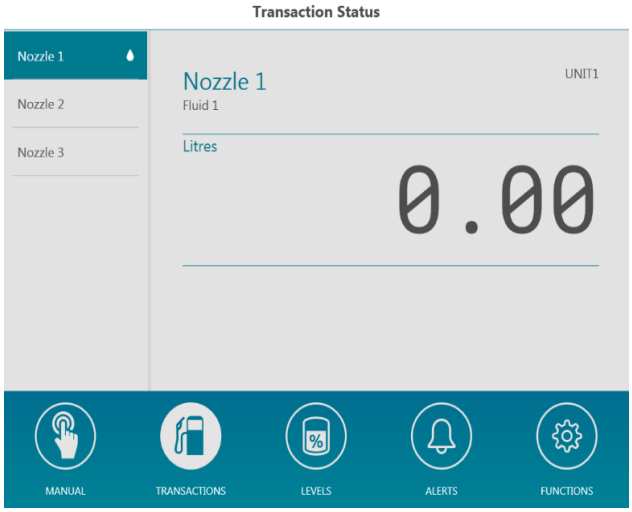

Figure 13: Manual Delivery Screen – Step 5

4.3.1 Fluid Delivery – Direct To Storage

Liquid deliveries may be transferred from the tanker into the 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 situation A. above the ResTrack Advanced 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.

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.

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

BANLAW PART NO.	DESCRIPTION
000640	Power Supply UPS, input 24V, output 12,24
000747	12V Battery, 2x3 Shrink Wrap
000635	Industrial Computer
000638	Touch Screen
BFTFTP	FTP (Fluid Transfer Point)card
001061 (non US model) **000606 (US Model)**	Communications Interface – Maestro module
000379	HART Gateway – HG1+
000744	Ethernet Industrial Switch
BFT158(Card reader) + **BFTE162(Cover) +** **BFTE211A(Cover assembly) +** **BFTEG2(Gasket)**	HID Card reader system
000666	iButton identifier system
000586	Enclosure 620 x 450 x 215 SS 304

5.1 Preventative Maintenance

The integrity (sound working condition) of refuelling couplings and tank overfill protection systems is critical to ensure all equipment can be operated in a safe and proper manner.

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 a guide – unless noted otherwise.

The ResTrack Advanced 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 to the electronic parts will definitely accelerate damaging effects to the Advanced Controllers electronics. This will eventually cause a system malfunction of the ResTrack Advanced Controller.

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

- Keep the Touch-screen clean.
- Avoid operating the Touch-Screen with dirty fingers, PPE and/or clothing contaminated with fuel.
- Keep the Advanced Controller cabinet clean and closed all the time.
- Keep the door seal in working condition
- 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 Holster.
- 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 in the preventative and corrective maintenance of the Advanced Controller. Other fuel and lubricant storage assets onsite can also be managed via a Banlaw SLA for peace of mind. Clients with an SLA can *focus on their core business activities* and allow experienced Banlaw technicians and engineers to help keep such infrastructure operating at optimum ***safety, performance and reliability.***

6. TROUBLESHOOTING

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

ADVANCED CONTROLLER TROUBLESHOOTING GUIDE			
ISSUE	**MEANING**	**CHECKS**	**SOLUTION**
No fuel dispensed Controller display black or display does not change	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. Controller PC has the power led on. 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 on the override Circuit Breaker in the ResTrack Controller Control Box. This power up the nozzle enable relays and allows refuelling. Note: security is compromised when the Controller is in override. Automatic fuel transactions will 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.
No Fuel Dispensed Nozzle is connected and machine is identified, authorisation to proceed is displayed on the Controller Display and Nozzle is enabled, but no fuel is being delivered	Control valve actuator is not opening	Check that the control valve is in the “Open” position. If the electrical actuator fails to open, check wiring is secure. Check the relay in the control box that energises the control valve is functioning. This is denoted by a yellow illuminated LED.	Repair replace faulty parts.
	Pump circuitry has tripped out.	Check pump circuitry.	If necessary, reset pump circuit breakers.
	No flow is being detected.	Check FTP Led state. Cycle power to Controller.	Reload/Update FTP firmware (*BANLAW). Cycle Controller power.

ADVANCED CONTROLLER TROUBLESHOOTING GUIDE			
ISSUE	**MEANING**	**CHECKS**	**SOLUTION**
Nozzle won't lock into holster or receiver	Nozzle /holster not clean. Nozzle body can be loose. 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 overhauled. Send Nozzle to an authorised repairer.
Insufficient fuel dispensed	Ring Tags and Pucks RF Auto-ID only Tag Detected has been lost. Only with No tag detects on at Controller: this means tag detection is lost for more than a few seconds.	Nozzle may have foreign object behind retainer. Remove nozzle and inspect for obstruction. Check FTP (Fluid Transfer Point) unit led. Check wiring from pulse to Controller board. Check Pulse drive mechanism and flow meter. Pump may be cutting out due to restriction in flow or problem with pump circuit. Check filters for obstruction/Pump circuit.	Repair wiring. Repair Flowmeter/pulse drive mechanism. Reset power to Controller to reset the FTP unit. Clean filters/remove obstructions.
Auto-ID Fail. No Fuel dispensed. Controller does not respond. Controller Display blank or unreadable.	Auto-ID has failed to read anything. OR The Controller has stalled.	Check Auto-ID circuit. Verify ID tag is OK.	Repair Auto-ID. Cycle Controller Power. Upload/Reload Controller Firmware (*Banlaw).
Fuel dispensed but no litres ticking over on Controller LCD display	Flowmeter pulses not getting to the Controller FTP	Check FTP (Fluid Transfer Point) unit Dip Switch's	Cycle power to Controller to reset the FTP unit and recheck led sate. Update/Reload FTP Firmware (*Banlaw).
Controller has Locked up and is not responsive	Software process has stopped. Internal corruption or Service.	Check the windows task manager and/or services manager.	Restart Banlaw Advanced Controller application and services. Reboot Banlaw Advanced Controller.

7. PRODUCT RECYCLING AND DISPOSAL

Banlaw values and supports the sustainable use of resources, and the safe, responsible and proper disposal or recycling of all materials within its products. For a description of the principal materials within the Banlaw Advanced Controller system, please refer to Section 1.

8. 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. Please see www.banlaw.com for warranty details and a full list of Banlaw Accredited Technical Partners.

Alternatively, Banlaw strongly recommends the client to purchase a Service Level Agreement (SLA) to fully support our valued clients with software upgrades, monthly health check reporting and 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.

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