



SmartFill Gen 3 OPT Installer Manual



Warranty Information
Wiring Diagrams
Installation Menu Options
Website Configuration
SmartDip
ATG

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Chapter 1

General Information

1.1 Introduction.

This manual provides step-by-step instructions for installing a SmartFill OPT system, in the order that the tasks are typically completed during a normal installation. If you have any suggestions or notice any errors in the manual, please contact the manufacturer.

Throughout the manual, you will see the following icons, which are used to highlight important information:

WARNING



WARNING. This icon indicates a potential hazard or mishap that may occur if you do not read and follow the advice provided. It is extremely important that you pay attention to and fully understand any information following a Warning icon.



TIP. This icon provides helpful tips, suggestions, or shortcuts to improve the installation process.

1.2 Overview

The SmartFill OPT is a sophisticated fuel management system that is built to withstand even the most challenging environments. It is housed in a rugged metal enclosure that has an IP65 rating, and its modular design makes it easy to install, upgrade, and repair. To access fuel, users can start a transaction and select the desired purchase amount using a credit card (note: this will place a preauthorization on the user's credit card, but they will not be charged until the transaction is complete). Unit owners can also add keys to the system. All transactions are logged and include the time and date, the amount of fuel dispensed, the pump from which the fuel was taken, and (if applicable) the key or code used.

The unit stores all data locally and can also send it automatically to a secure website (www.fmtdata.com) if it is connected to the internet via Ethernet or a 3G/4G connection. The unit can be configured either through the keypad and on-screen menus or through the website.

1.3 Terminology

Term	Meaning
Key	Swipe card or NFC card/Fob used to identify a driver or vehicle
Module	A plug in module that is used in the unit e.g pump module
AC	Alternating Current - normally 240VAC/Mains power



Figure 1.1: SmartFill OPT Payment Hardware

1.4 Safety Warnings.

WARNING



- **HIGH VOLTAGE WARNING** - Some SmartFill OPT systems involve / require hazardous electrical voltages to be present. Any electrical installation, testing, maintenance or repairs **MUST** be carried out by a suitably licensed electrician.
- To help prevent electrical shock, connect the SmartFill OPT into properly grounded sources.
- To help avoid possible damage to the SmartFill OPT and or other interfacing equipment, wait 5 seconds after turning off all equipment before disconnecting any interconnecting cables.
- To help protect your SmartFill OPT from sudden, transient electrical increases, your SmartFill OPT is equipped with surge protection. All equipment connected to the SmartFill OPT needs to use a surge suppressor, line conditioner, or un-interruptable power supply (UPS).
- Be sure nothing rests on your SmartFill OPT cables and that the cables are not located anywhere where they can be stepped on or tripped over.
- Do not push any objects into the openings of your SmartFill OPT. Doing so can cause fire or electrical shock by shorting-out internal components.
- In addition, take note of these safety guidelines when appropriate:
 - When you disconnect a cable, pull on its connector or its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. To disconnect this type of cable, press in the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before you connect a cable, make sure both connectors are correctly oriented and aligned.
 - Hold components by their edges or by their metal mounting brackets.
- Any safety concerns about the system should be immediately reported to your SmartFill OPT supplier and the manufacturer.
- The system must be marked as out of order, suitably tagged as dangerous or out of service and must not be used if any safety concerns arise.

- The SmartFill OPT manufacturer's bear no responsibility / liability for any work carried out by unqualified service personnel.
- All wiring MUST be in accordance with the relevant local / state / national regulations as required, and in accordance with AS/NZS 3000:2000.
- Special care must be taken to ensure that the wiring and location of SmartFill OPT systems is in accordance with the relevant regulations and authorities for that particular location.
- Special attention must be paid to locating equipment in possibly hazardous areas.
- The manufacturer can not provide advice or specifications for correct wiring or hazardous area regulations, and in no way implies its suitability for use in any given area, this information MUST be sought by the installer, from the relevant authorities.
- SmartFill OPT enclosures are not rated for use in hazardous areas, and as such the SmartFill OPT must only be operated in a non-hazardous area.

1.4.1 Installing Company / Personnel Requirements.

- The quality of the installation has a lasting effect on the performance of the equipment, and the value the end user receives from the system. We can not stress enough the importance of safe and high standard installation and commissioning practice's. Thorough initial basic training of the client is also crucial to the client getting the best value from the equipment. Obviously, adequate initial training also reduces the number of support calls that the installer receives.
- The installing company is responsible for ensuring that installation staff are competent, they are suitably qualified and that work is performed in a safe manner to a high standard.

1.4.2 Power Conditioners/Voltage Regulators

In locales where power sources fluctuate significantly and over voltages or brownouts occur, power conditioners or voltage regulators may be installed between the SmartFill OPT and its power source for protection against high or low power inputs. These devices condition or regulate power to a constant or maximum output. Power conditioners maintain a constant power input when voltage may otherwise fluctuate between highs and lows which may not be acceptable to SmartFill OPT. Voltage regulators protect SmartFill OPT from high voltage inputs similar to what may occur when an unregulated generator is initially turned on. Power conditioners are more complex and substantially more expensive to purchase.

1.4.3 Backup Generators

Some facilities are equipped with backup generators to supply AC power when the regular power supply goes down. During start-up of the backup generator the initial power surge may be extremely high until all connected equipment is restored to operation. This power surge has the same potential for damage to the SmartFill OPT equipment as a lightning strike. Ensure the installed equipment is protected (regulated) from current surges during start-up of the backup power source. If possible, turn off the SmartFill OPT power until non-regulated generator power stabilizes.

1.5 Ratings

	AC	DC
Operating Voltage	90 - 250 VAC	10 - 36 VDC
Operating Current	0.38A - 0.15A	2A - 0.6A
Pulser	15V @ 2.5mA	15V @ 2.5mA
Nozzle Switch	3.3V @ 0.2mA	3.3V @ 0.2mA
Fuse Rating	1A	2A
Maximum Switching	250VAC @ 10A	24VDC @ 5A
Delay Power Switch	N/A	36V @ 2A

1.6 Certifications/Approvals

Figure 1.2 illustrates the boundaries of a hazardous location which dispenses flammable liquids such as gasoline and E85. These standards are defined in Australian Standard AS/NZS 60079.10.1:2009

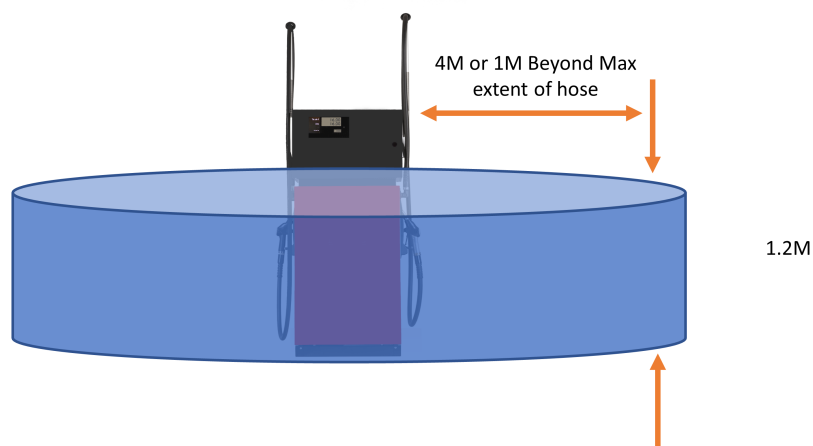


Figure 1.2: Boundaries for Hazardous Locations

The boundary area around a compressed natural gas (CNG) dispenser is different. It extends 5 feet from, and above, the dispenser. Any electrical device installed within these boundaries must be intrinsically safe or must be enclosed within an explosion-proof enclosure. Intrinsically safe devices are generally limited to very low voltage and low current devices, such as that portion of a pulser before the barrier. Examples of explosion-proof enclosures are rigid metal conduit, and junction boxes and conduit fittings approved for use in hazardous locations. If the electrical device is not intrinsically safe, or is not explosion-proof, then it must be installed outside the hazardous area.

1.7 Warranty Information

1.7.1 WARRANTY

- 1.7.1.1** FMT shall provide to the Customer a warranty for all Goods against defects in materials and workmanship for a two-year period (the Warranty Period) commencing on the sale date to the Customer (the Warranty Commencement Date) of the relevant Goods.
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1.7.2 WARRANTY CLAIM PROCEDURE

- 1.7.2.1** In order to make a claim under the Product Warranty, the Customer must notify FMT in writing of any defect in the Goods discovered during the Warranty Period as soon as the Customer becomes aware of the alleged defect specifying in reasonable detail the nature of the defect. Such notice may be made by any one or more of the following methods:
 - i.** By Post addressed to: Fluid Management Technology Pty Ltd, PO Box 1224, Beverley, South Australia, 5009, Australia
 - ii.** By Email to: sales@fluidmt.com.

- 1.7.2.2 Upon FMT verifying the validity and currency of the Product Warranty in respect of the Customer's claim, the Customer must upon request by FMT send the Goods to FMT.
- 1.7.2.3 The Customer must ensure that the Goods are properly packaged so as to ensure that no damage occurs to the Goods during transit. The Customer is responsible for all posting, shipping, freight and insurance charges in respect of the Goods returned to FMT. Whilst in transit, the Goods remains at the Customer's risk.
- 1.7.2.4 FMT may, in its absolute discretion reimburse the Customer for the Customer's cost to undertake such repairs to the Goods, provided that the Customer has first provided to FMT a written quote as to the estimated costs of the Customer undertaking such repair, and FMT has approved (in writing) the Customer to proceed with such repairs up to that agreed estimated cost.
- 1.7.2.5 Upon receiving the Customer's written quote, the Customer acknowledges that FMT shall have sole discretion as to whether FMT engages its own contractors to undertake the required repairs, or if the Customer may undertake such repairs.
- 1.7.2.6 The Customer agrees that FMT shall have no obligation or liability to reimburse the Customer for the costs of any repairs undertaken by the Customer that have not been agreed in writing with FMT beforehand.
- 1.7.2.7 FMT reserves the right at its sole discretion to determine whether to replace or repair, free of charge, any part or parts, or the entire Goods.
- 1.7.2.8 The Customer is responsible for all packaging, posting, shipping, freight and insurance charges in respect of any Goods returned by FMT to the Customer. The Customer agrees to pay such charges upon the same payment terms as apply to FMT's sales of Goods current at the time of the Product Warranty claim. Whilst in transit, the Goods remains at the Customer's risk.

1.7.3 GENERAL EXCLUSIONS AND LIMITATIONS OF THE WARRANTY

- 1.7.3.1 The Product Warranty is limited to replacement or repair of defective parts or defects in workmanship and does not include any labour costs (whether such labour costs are supplied by FMT or the Customer).
- 1.7.3.2 In the event that no identical parts are available to repair the defective Goods, FMT has the right to replace the Goods with similar Goods of equal age and condition as the defective Goods, or offer the Customer the choice to upgrade the defective Goods. These may incur additional costs to the Customer and the Customer in those circumstances agrees to pay those additional costs upon the same payment terms as apply to FMT's sales of Goods current at the time of the Product Warranty claim.
- 1.7.3.3 Replacement Goods or parts may include remanufactured or refurbished parts or components. Repaired or replaced Goods will continue be warranted for the remainder of the Product Warranty from the Warranty Commencement Date.
- 1.7.3.4 The Product Warranty does not cover consumables, including but not limited to batteries and surge protectors.
- 1.7.3.5 The Warranty will not apply, and FMT will be under no obligation or liability whatsoever if, in the opinion of FMT, the Goods have been:
 - i. installed and maintained other than in compliance with FMT's product specifications, instructions and directions;
 - ii. installed or used other than in a manner approved by FMT as suitable for the Goods;
 - iii. handled in a manner which contravenes any direction, instruction or warning issued by FMT from time to time;
 - iv. misused, abused, altered or damaged in any way;
 - v. tampered with, including if any factory applied serial number has been altered or removed from the Goods;
 - vi. damaged through normal wear and tear including exposure to the elements (on both exposed and unexposed surfaces), exposure to abnormally corrosive conditions, rust, or entry by any insect, vermin or foreign object in the Goods; or
 - vii. damaged as a result of connection to irregular voltage sources, voltage supply problems, power surges and dips, thunderstorm activity, result of a natural disaster, or acts of God (including fire, flood, lightning).

1.7.4 LIMITATION OF LIABILITY

1.7.4.1 Subject to Clause 1.7.1.1, FMT's liability to the Customer (and any party claiming through the Customer against FMT) for any claim for loss or damages (including legal expenses) made in connection with the Contract for contract, tort (including negligence), under statute, in equity or otherwise shall be as follows:

i. if the Customer is a consumer (as defined in the Australian Consumer Law) and:

A. FMT is in breach of a guarantee in the Australian Consumer Law (other than a guarantee in section 51, 52 or 53 of Schedule 2 of the Australian Consumer Law) in connection with the supply of goods (other than goods of a kind ordinarily acquired for personal, domestic or household use or consumption), FMT may (in its absolute discretion):

- 1. replace those goods;**
- 2. supply equivalent goods;**
- 3. repair those goods;**
- 4. pay the cost of replacing those goods;**
- 5. pay the cost of acquiring equivalent goods; or**
- 6. pay the cost of having those goods repaired, and FMT's liability is limited to that extent;**

B. FMT is in breach of the guarantee in the Australian Consumer Law in connection with the supply of services (other than services of a kind ordinarily acquired for personal, domestic or household use or consumption) FMT may (in its absolute discretion):

- 1. supply those services again; or**
- 2. pay the cost of having those services supplied again, and FMT's liability is limited to that extent.**

ii. if FMT is in breach of a Contract (other than a breach referred to in Clause 1.7.4.1(i)), FMT's liability is strictly limited to:

A. for goods, products or materials – the cost of replacement of the defective Goods as soon as reasonably practicable, or the supply of equivalent Goods, or the repair of the defective Goods or the repayment (or allowance) of the invoice price of the defective Goods at the option of FMT;

B. for services – to the provision of the services again or payment of the cost of having the relevant services provided again at the option of FMT;

iii. FMT's liability for breach of a Contract does not extend beyond the defective Goods to any other Goods that are part of an Order or otherwise;

iv. where loss or damage is not covered by Clauses 1.7.4.1(i) or 1.7.4.1(ii), FMT is not liable to the Customer under statute, in equity or in tort (including negligence or otherwise) for any loss or damage to person or property arising from or caused in any way by the Goods (except to the extent that FMT's conduct is deliberate, is illegal, is fraudulent or constitutes a criminal offence);

v. subject to Clauses 1.7.4.1(i) and 1.7.4.1(ii), FMT shall not be liable for any indirect, special or consequential loss resulting from or caused in any way by FMT, its officers, employees or agents arising out of or in connection with the supply of the Goods;

vi. indirect, special or consequential loss or damage includes:

- A. any loss of income, profit or business;**
- B. any loss of goodwill or reputation;**
- C. any loss of value of intellectual property.**

- 1.7.4.2 Any claim under Clause 1.7.4.1(ii) by the Customer in respect of defective Goods and/or damaged Goods must be made in writing within 14 days of the delivery of the Goods.
- 1.7.4.3 FMT shall not be responsible for any non delivery of the Goods or failure to supply the Goods on the date agreed between FMT and the Customer, and the Customer shall not be entitled to cancel any Order as a result of that non delivery or failure to supply.
- 1.7.4.4 If any OEM Goods are supplied as part of the Goods, the Customer agrees that the OEM Warranty shall apply and will be limited to FMT's right of redress (if any) against the third party vendor that sold the OEM Goods to FMT.
- 1.7.4.5 The provisions of the United Nations Convention on Contracts for the International Sale of Goods are expressly excluded from all Contracts.

1.8 Recommended Tools for Installers.

The following tools are required for SmartFill OPT service and installation.

- Digital Multimeter, preferably with a DC voltage resolution of 3 digits. **We use and recommend the Fluke Model 117 True RMS Multimeter.**
- **A good quality small electrical flat blade screwdriver.** Poor quality screwdrivers do damage to terminals and prevent adequate tightening of electrical terminals etc.
- A general set of flat and philips screwdrivers.
- Metric and Imperial Hex (Allen) keys. Long ball head types are recommended.
- A cordless drill, with backup batteries.
- Metal Holesaws, sizes 16mm, 20mm, and 32mm.
- Flat and round files (for deburring metal holes).
- Pointed, and Side cutting pliers.
- Multi-Grip type pliers.
- Metric tape measure.



- The following tools are highly recommended, they make working with SmartFill OPT easier...
 - Deep 10mm and 13mm sockets, 1/4" or 3/8" drive with long extensions.
 - 1/4" drive screwdriver handle with 7mm and 7/32" deep sockets fitted. The ends of the sockets should be machined or carefully ground down to reduce the diameter at the end of the sockets.
 - 3/8" x 7/16" Open End Spanner.
 - 13mm Open End / Ring Spanner.

1.9 Pre-Installation Checks.

Check the condition of the SmartFill OPT and its associated parts when opening. Advise your SmartFill OPT supplier immediately if any items are damaged or missing. Its obviously best to carry out this check prior to travelling to the job.

- Check for the following items...
 - The SmartFill OPT Control Box.
 - Mounting kit.

1.10 Safety Related Inspections and Preventative Maintenance

To ensure the user safety features of your SmartFill OPT unit, it is important to perform a safety inspection every time the unit is updated or repaired. This inspection should include checks on wiring integrity (both power and grounds), board retention, and the proper installation of safety covers. No preventative maintenance is required to maintain the user safety features of your SmartFill OPT unit.

1.11 Cleaning Instructions

To clean the SmartFill OPT, dilute a mild detergent in water and use a soft sponge or cloth to wash the chassis, keypad, and LCD glass. Rinse and dry with a soft, dry cloth. Although the unit functions properly and presents no safety issues when dirty, the frequency of cleaning is up to the user's discretion..

1.12 Support

Fluid Management Technology may be contacted at support@fmtweb.com.

Chapter 2

SmartFill OPT Installation and Configuration

2.1 Mounting the SmartFill OPT.


2.1.1 Choosing the Location.

The position for mounting of the SmartFill OPT is to be determined by the installer, who should also consult the owner prior to a final decision.


WARNING

1.  Positioning and Location of the SmartFill OPT MUST be in accordance with electrical regulations.

WARNING

2.  Location must be in accordance with hazardous area regulations, with regard to flammable zones etc.


WARNING

3.  The SmartFill OPT is NOT approved for use in a hazardous / flammable zone.
4. The SmartFill OPT manufacturers can not provide advice with regard to hazardous zones.
5. The installer is responsible for correctly selecting the location of the SmartFill OPT.


Only after the above regulations have been satisfied can you proceed further.

2.1.2 Mount the SmartFill OPT to the pump / flowmeter.

WARNING

-  Take care not to damage internal SmartFill OPT components when drilling into the enclosures. You may need to remove internal components while drilling to avoid damage.

WARNING

-  Always wear a dust mask for breathing protection when drilling enclosures.

Providing that the SmartFill OPT meets the requirements as specified in 2.1.1 above, then the following should also be considered prior to installation.

- The height of the SmartFill OPT enclosure for operators ease of use / access.
- The door can be opened far enough to easily service the unit.
- Where possible, face the door away from prevailing weather.
- The SmartFill OPT does not impede access to the pump for servicing.
- In very hot areas if possible, face the SmartFill OPT display away from morning / evening sunlight. i.e.: face the display North or South.

2.1.3 Mounting Dimensions.

Generally, SmartFill OPT systems have 2 different mounting options. Wall mounted, or pedestal mounted.

2.1.3.1 Wall mounting dimensions

- Enclosure outside dimensions in mm, 400w x 700h x 200d.
- Suggested mounting hole dimensions in mm, 11mm Holes.
- Mounting Bolts, 4 of 8mm x 30mm Zinc Set Screw with Nut and Flat washer.
- Wall Mounting Bracket Kit with 4 x Brackets and Fasteners are included if ordered in the wall mounted configuration.

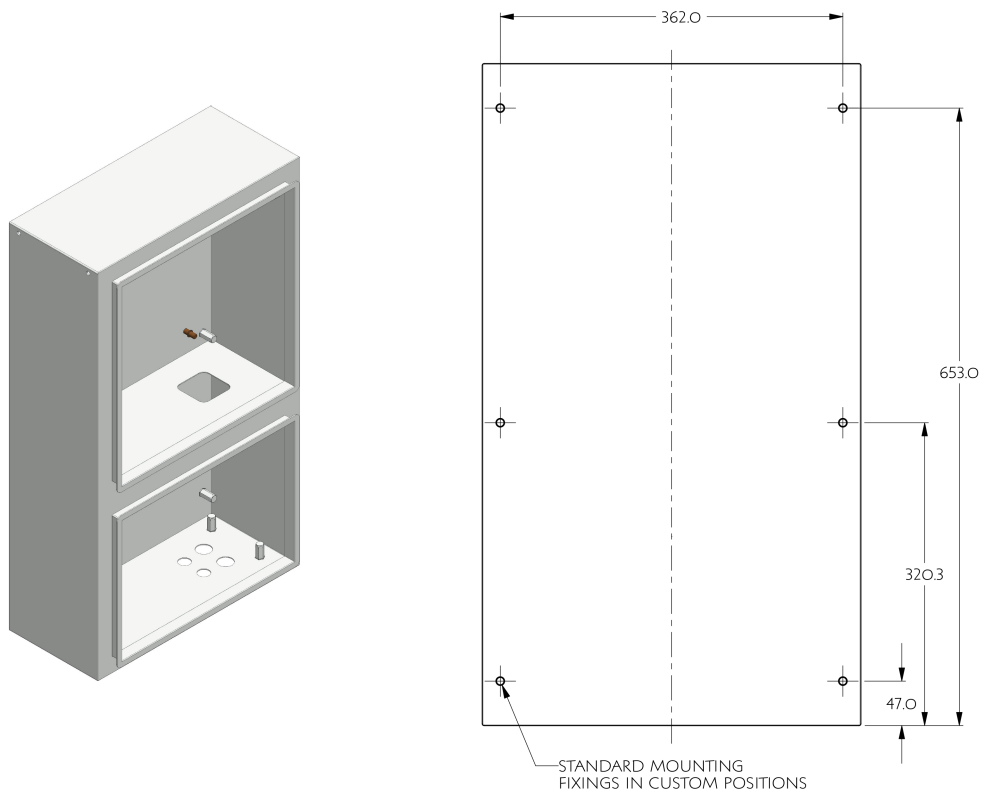


Figure 2.1: Enclosure wall mounting dimensions.

Enclosure can be mounted to the wall directly with the above wall mounting dimensions, or by using the provided wall mounting brackets.



Figure 2.2: Wall mounting brackets

2.1.3.2 Pedestal mounting dimensions

The pedestal mounting option allows you to mount your SmartFill OPT to the ground if wall mounting is not practical.

- Pedestall outside dimensions in mm, 400w x 1000h x 147d.
- Enclosure outside dimensions as specified in 2.1.3.1 above.
- Suggested mounting hole dimensions in mm, 11mm Holes.
- Mounting Bolts, 4 of 8mm x 30mm Zinc Set Screw with Nut and Flat washer.

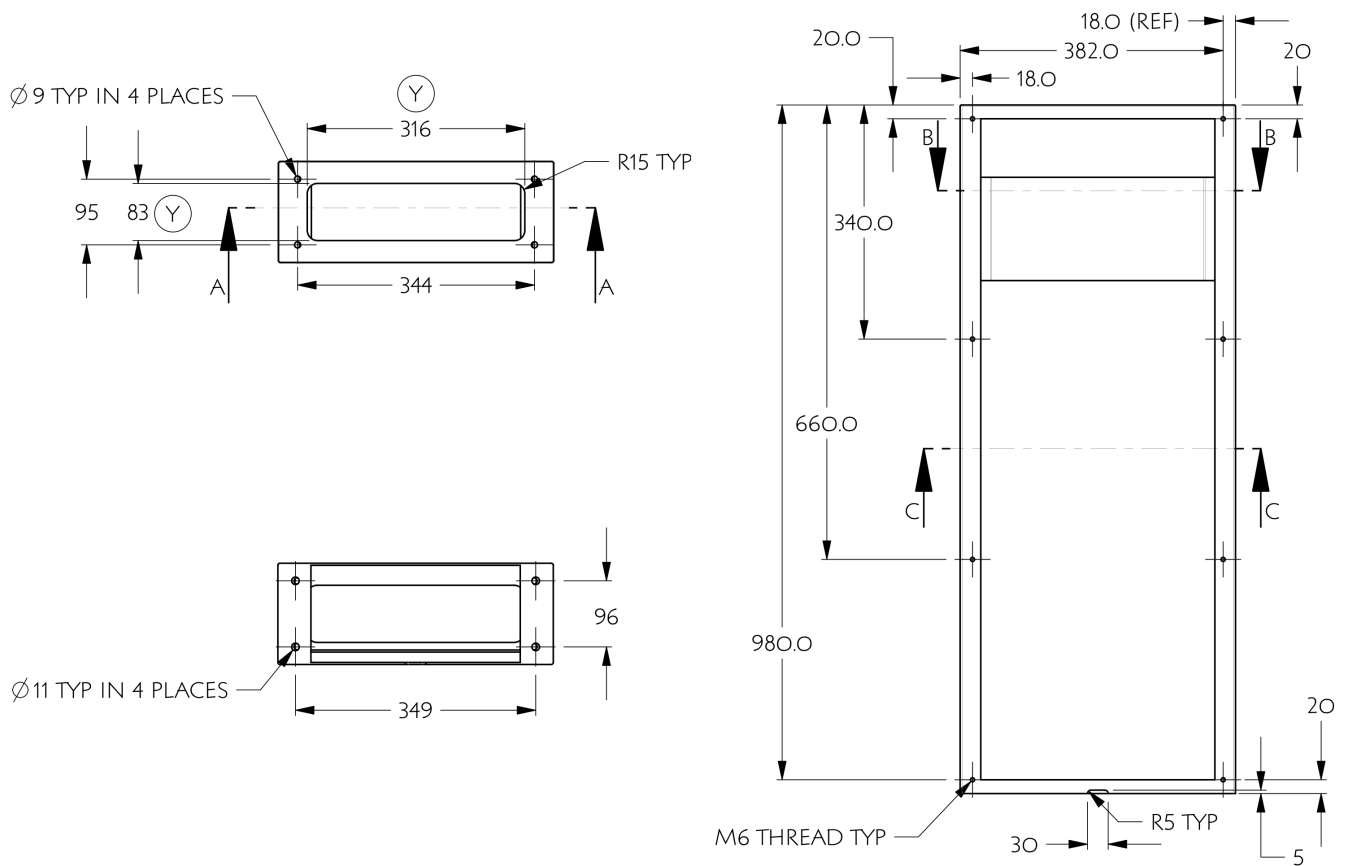


Figure 2.3: Pedestal mounting dimensions

2.2 Power Wiring.

2.2.1 General Warnings.

WARNING



WARNING

- Power wiring must only be installed / connected by suitably qualified personnel.
- Wiring must be safe and in accordance with all relevant National and Local / Site Standards.
- Wiring / conduit etc. must be suitable for the particular zone / area.
- Low voltage pulser wiring MUST NOT be contained in the same conduit as high voltage wiring.

2.2.2 Emergency Stop Switch Recommendations.

- It is recommended, though not compulsory, that any emergency stop switch only disconnects power to the fuel pumping system, but not to disconnect power to the SmartFill OPT. This is to ensure that a fuel delivery is recorded correctly in the event an Estop switch is activated. Some sites will use the Estop to stop the pump in normal operation, and in such cases the risk of data loss / corruption is higher if power is disconnected by the Estop. However should any regulations require the complete powering down of the system as well as the SmartFill OPT, then it should be clearly marked that the Estop is for emergency use only, not to be used to simply stop the pump.
- If an emergency stop switch is to be used also as a pump stop, then it should be wired in series with the input pump module in the SmartFill OPT, where it will then behave also as a Nozzle Switch.

2.2.3 Backup Generators

Some facilities are equipped with backup generators to supply AC power when the regular power supply goes down. During start-up of the backup generator the initial power surge may be extremely high until all connected equipment is restored to operation. This power surge has the same potential for damage to the SmartFill OPT equipment as a lightning strike. Ensure the installed equipment is protected (regulated) from current surges during start-up of the backup power source. If possible, turn off the SmartFill OPT power until non-regulated generator power stabilizes.

2.2.4 Bypass Operation



The Bypass Switches only apply to units using Hose/Pump modules. For pumps/browsers using protocol control the pump must be placed into stand alone mode.

Setting the bypass switch in an on position will remove the SmartFill OPT unit from dispensing operations. NO login/fob/key/PIN will be required to operate the pump. It is as if the SmartFill OPT is not there. This mode also helps in fault-finding. If you cannot get fuel then set the bypass switch and see if you can get fuel. If you still cannot then the SmartFill OPT is not responsible for the issue.

2.3 Termination of a Transaction

In SmartFill OPT there are three ways that a transaction can be terminated:

1. At the expiration of the post walk time duration: if the walk time is set to 30 secs the transaction will be terminated if there is no flow of fuel for 30 seconds
2. Using a nozzle switch. This relies on a switch which is opened and closed when the nozzle is lifted and replaced
3. No Flow Timeout: If the nozzle is not stowed properly and fuel stops flowing, the SmartFill OPT will end the transaction after 5 minutes to secure the fuel and prevent potential fuel theft.

Whichever option is used will determine what wiring, if any is required to initiate the termination of a transaction

2.3.1 Nozzle Switch

It is possible to use an external nozzle switch to terminate a transaction in SmartFill OPT. The switch must be located in a non-hazardous location, and it should be open when the nozzle is in place and closed when the nozzle is lifted. The relay on the pump module will only activate when the nozzle switch is closed and deactivate when the switch is opened (returned to its holster).

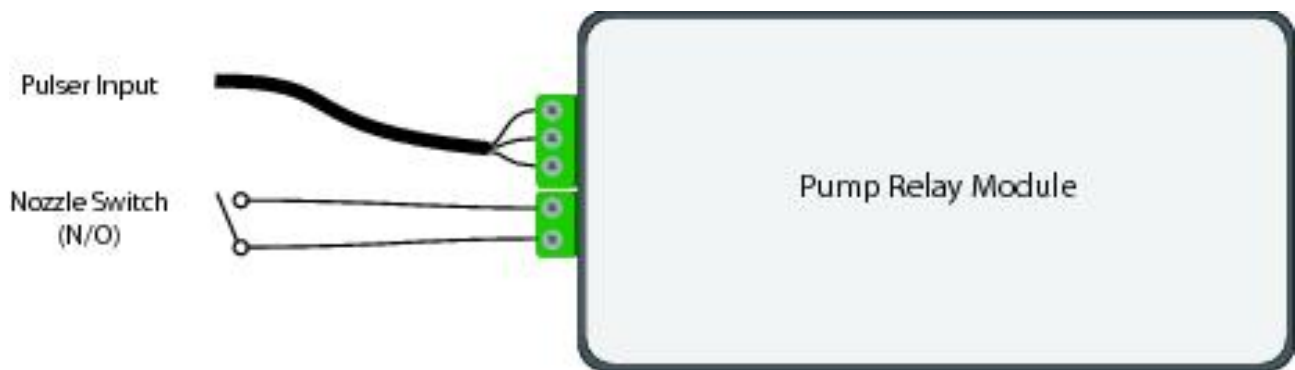


Figure 2.4: Nozzle Switch Wiring for AC and DC Pump Modules

2.4 AC System Wiring.

2.4.1 Single AC Wiring

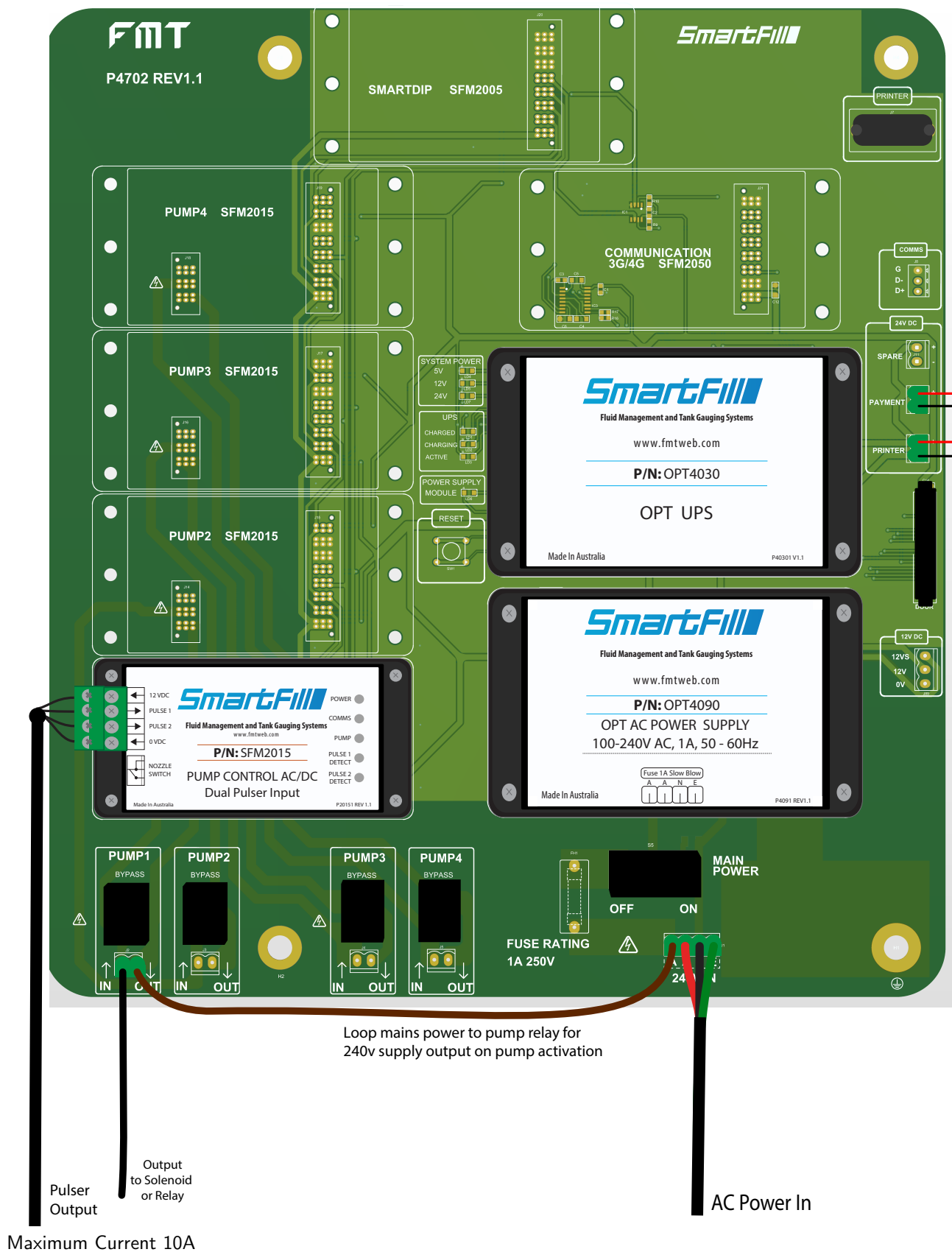


Figure 2.5: Wiring for Single Hose with Mains Switching

2.4.2 Dual AC Wiring Two Flowmeters

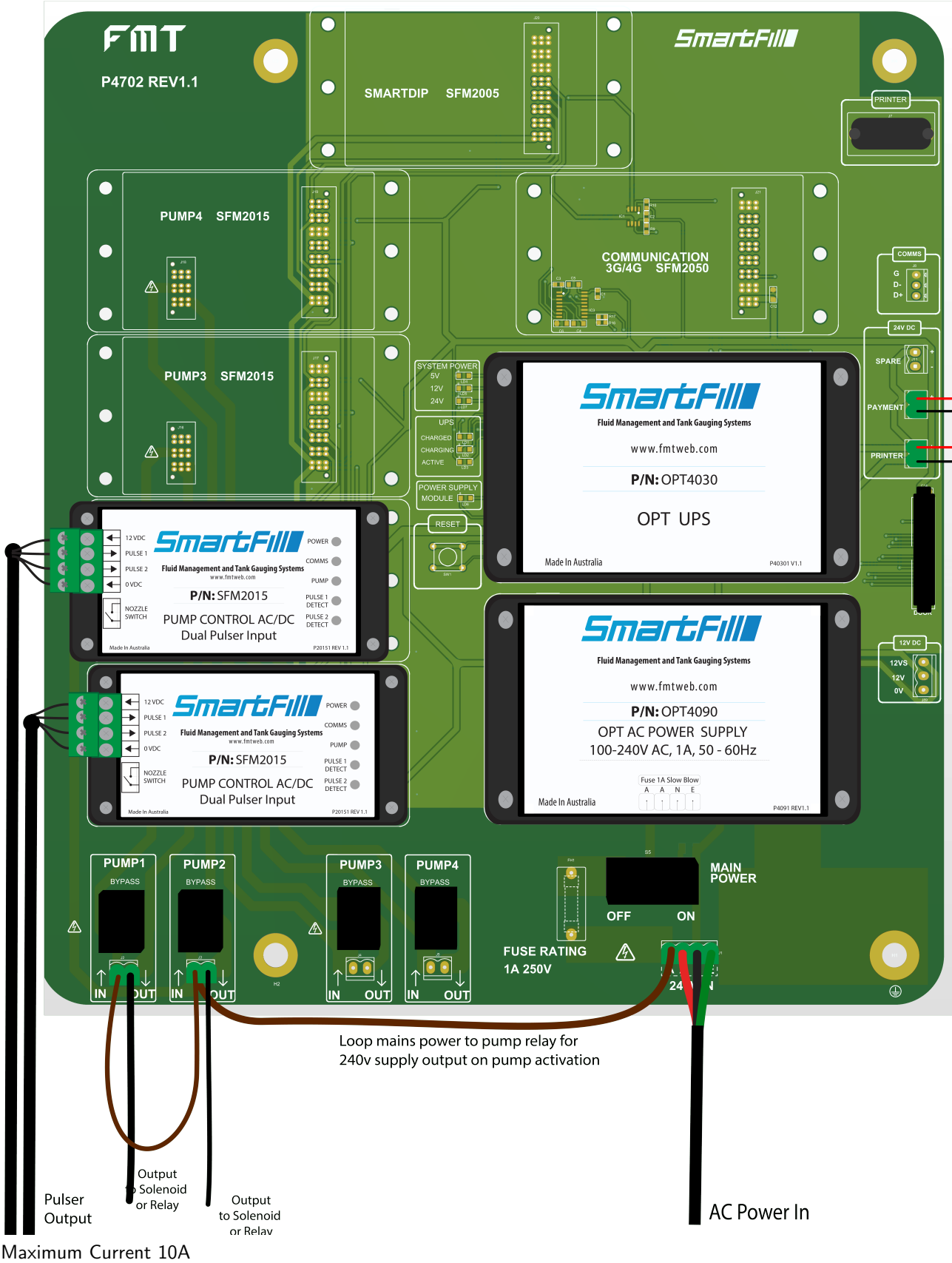


Figure 2.6: Wiring for Dual Hoses with Mains Switching and Two Flowmeters

2.4.3 Dual AC Hoses with One Flowmeter

SmartFill OPT systems that are powered by AC can control two outlet hoses while only being connected to one flowmeter. This configuration allows flow through **one hose at a time** and provides the following benefits:

- Allows the use of high and low flow nozzles on separate outlets, as long as each outlet has a control valve installed.
- Reduces the cost of installation by requiring only one flowmeter.
- Prevents operators from using both nozzles simultaneously.
- Meets NMI requirements for single flowmeter/two hose configuration.

TIP In the pump menu (2.11.8.1) the pulser source should be set to the pump slot that the flowmeter is connected to. Pump 1 is the standard.

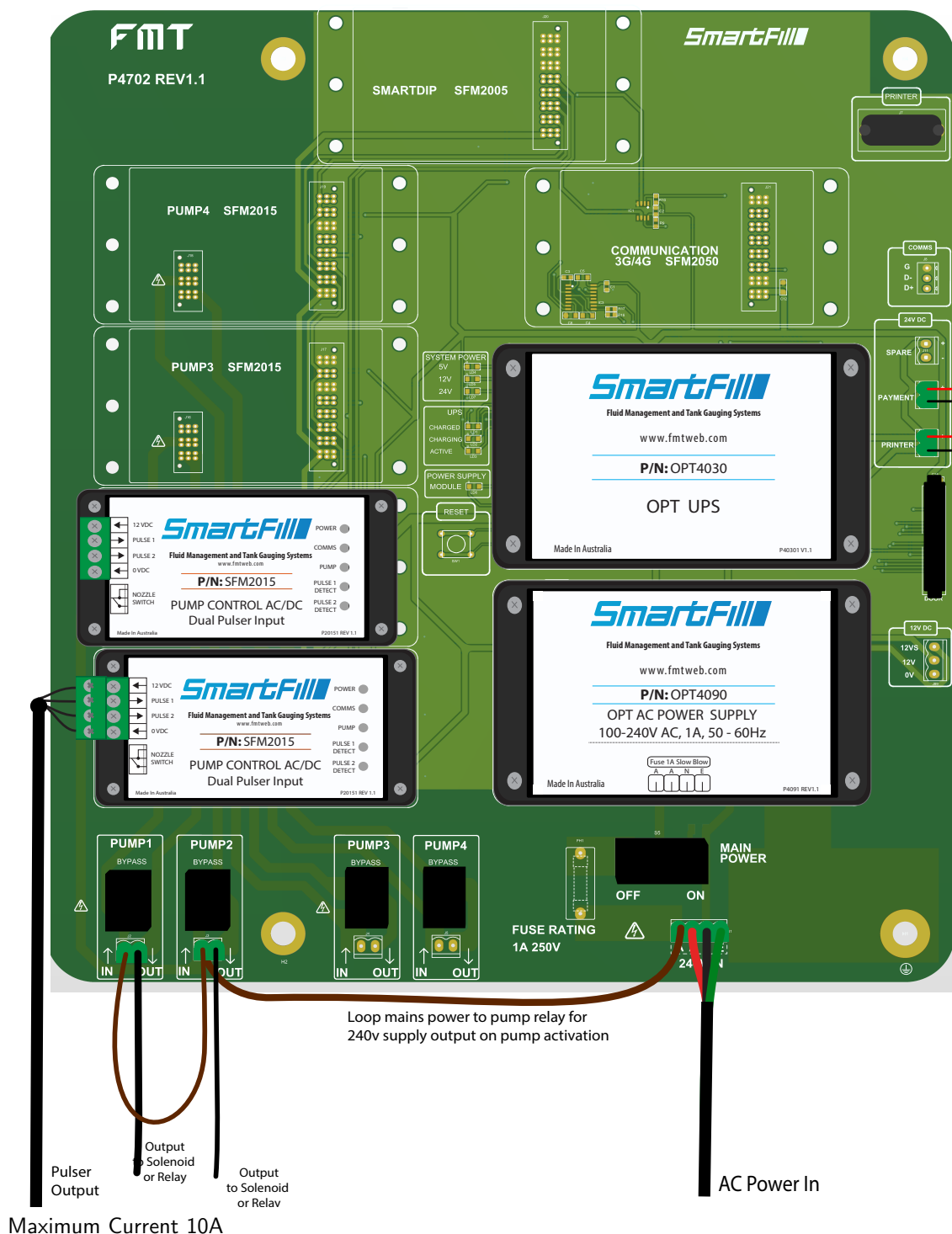


Figure 2.7: Wiring for Dual Hoses with AC Switching and One Flowmeter

2.5 Pulser Installation.

2.5.1 Pulse input theory.

The SmartFill OPT processor board calculates the quantity of fuel by counting pulses from the flowmeter or pulse transmitter and converting these pulses to a quantity in liters. Some flow meters have a built-in pulse output that sends out pulses at a set rate per liter of fuel flow. On other systems, it may be necessary to install a pulse transmitter on a rotating shaft or similar component to convert fuel flow into a pulse output. The SmartFill OPT manufacturers offer pulse transmitters that are compatible with the most common flowmeter registers (mechanical bowser counters). Pulse transmitters generally use one of three types of switching devices to generate pulses, listed below in order of preference:

1. **Hall Effect Switch:** A small, three-pin device that outputs a pulse when a magnet passes. These are the preferred type of pulser because they are solid-state devices with a long lifespan.
2. **Reed Switch:** A small, two-pin device in a glass tube. The two contacts inside the tube come together when a magnet passes, creating a circuit. Reed switches may cause problems if the contacts "bounce" or become dirty, and they have a limited lifespan.
3. **Optical Switch:** A four or five-pin slotted device that uses an LED light source shining on a receiver. When the light path is broken by a slotted wheel or similar component, the receiver outputs a pulse. These pulsers may eventually fail in dirty environments, so they should only be used in dust-free areas.

IMPORTANT: It is best practice to use a Hall Effect type flowmeter/pulser whenever possible.

The supply voltage for the pulser must be at least 12VDC, and the output **MUST** be an open collector.

2.5.2 Acme EPU 200 Pulser.

Acme Pulser Wiring - EPU200

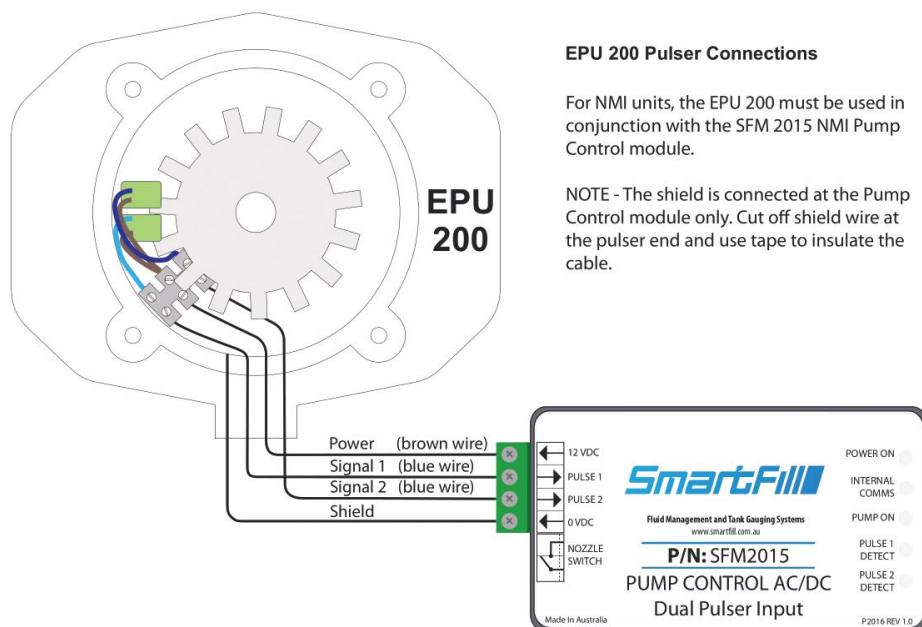


Figure 2.8: Acme EPU200 Wiring.

2.5.3 Dual Pulse Pulser Connection

For Non Acme Pulsers they must be Hall Effect Type as Reed switch type will not function.

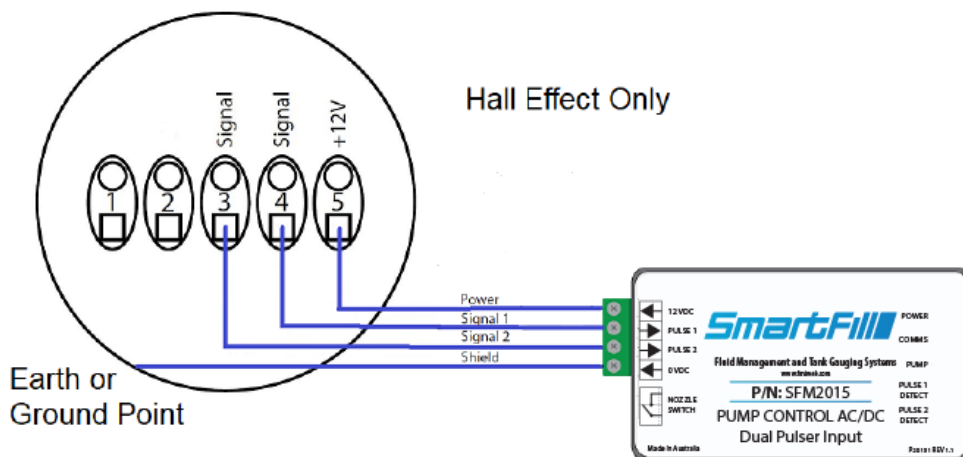


Figure 2.9: Dual Pulse Pulser connection

2.6 Calibrating and Testing the Unit

To calibrate the unit you must first add a test key or code (for vehicles the default is key) to the system. You can then calibrate the unit using one of two methods from the pumps menu:

1. Set K factor - Press <4> from the pumps menu
2. Auto calibrate - Press <5> from the pumps menu



When the SmartFill is controlling a bowser using a two wire protocol, such as Gilbarco or Compac the calibration is done in the bowser and the SmartFill reads the amount of fuel dispensed at the end of the transaction: there are no calibration options in the SmartFill for this configuration

2.6.1 Calibrate by setting the K-Factor

This procedure only applies to units using pump modules. For units using pump protocol modules the calibration is done at the bowser

- The SmartFill counts the number of pulses received while delivering fluid, and converts the number of pulses to a volume in Litres as each pulse is received. The method of adjusting the calibration is known as a 'K-Factor'.
- Adjusting the K-Factor value upwards makes the SmartFill read lower compared to the amount of fluid dispensed.
- You can use a known size measuring container (known simply as a measure, and usually 15, 100 or 200 Litres in size), or you can use the display on the meter or dispenser if fitted.
- The measuring vessel size or amount delivered should be as large as possible.
- It is preferred to use a minimum 200 Litre measuring vessel for High Flow diesel dispensing pumps.

1. If you have a known size measuring container.

- (a) Accurately fill the measuring container.
- (b) Look at the SmartFill display and note the Litres recorded.

2. If you have a display on the dispenser/meter.

Before adjusting the SmartFill K-Factor by using the display on a dispenser or meter, the meter should be calibrated with a measure to ensure that it is delivering the amount actually shown.

- (a) Fill a container or vehicle fuel tank.
- (b) Record the Litres recorded on both the SmartFill and the dispenser.
- (c) To calculate the new K-Factor, use this formula:

$$\text{New K-Factor} = \text{Existing K-Factor} * \text{Liters shown on SmartFill} / \text{Liters delivered}$$

For example:

- Existing K-Factor: 1000
- Liters shown on SmartFill: 15.2 liters
- Liters delivered: 15.0 liters

$$\text{New K-Factor} = 1000 * 15.2 / 15.0 = 1013.33 \text{ (round down to 1013)}$$

3. If your meter has a K-Factor provided

If the meter you are using has a K-Factor provided by the manufacturer, you can use that K-Factor for the calibration.

4. To set the K-Factor manually .

- (a) Press and hold the **CLR** and **ENT** keys together for 3 seconds. The display will show "Enter Admin or Installer PIN". Enter the PIN **6789**.
- (b) Press **8** to enter the pump menu and then select the number corresponding to the pump you want to calibrate e.g 1 for pump one.
- (c) Press **4** to enter the set K-Factor menu.
- (d) Enter the required K-Factor and press <**ENT**>.
- (e) Repeat the process until measurement is consistently accurate.

2.6.2 Setting the K-Factor using Auto Calibrate

The auto calibrate function calculates and sets the K-Factor for you after you have dispensed a set amount of fuel into a measure or determined it by using a display on a register or dispenser.

1. The process to auto calibrate is:
 - (a) Press <5> in the pump menu to select Auto Calibrate
 - (b) Enter the amount of fuel to be dispensed e.g 15 Litres
 - (c) Press <ENT>. This will activate the pump and you can commence dispensing the required amount
 - (d) Once you have dispensed the required amount of fuel, press <ENT> again and the unit will display the K-Factor it has calculated. This automatically overrides the existing K-Factor.

It is important to note that using a large quantity of fluid for calibration provides more accurate results. Calibrating with a small quantity of fluid can result in significant accuracy errors. The recommended minimum calibration quantity is the amount delivered at full flow for at least one minute.

2.6.3 Starting a Test Transaction

Access the Installation Setup Menu using the installer PIN. The default installer PIN is: **6789**. To access the PIN entry screen hold down the **CLR** and keys **ENT** together for 3 seconds until the display reads "Enter Admin or Installer PIN", then enter the required PIN. Once your PIN has been accepted you will be presented with the following menu:

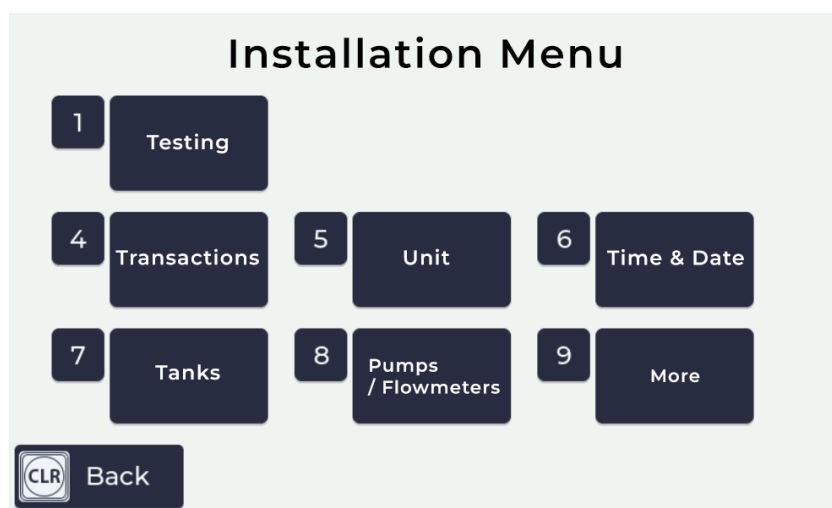


Figure 2.10: Installation Menu

To select a menu item push the corresponding key on the keypad. To start a test transaction, push <1> for "Testing"

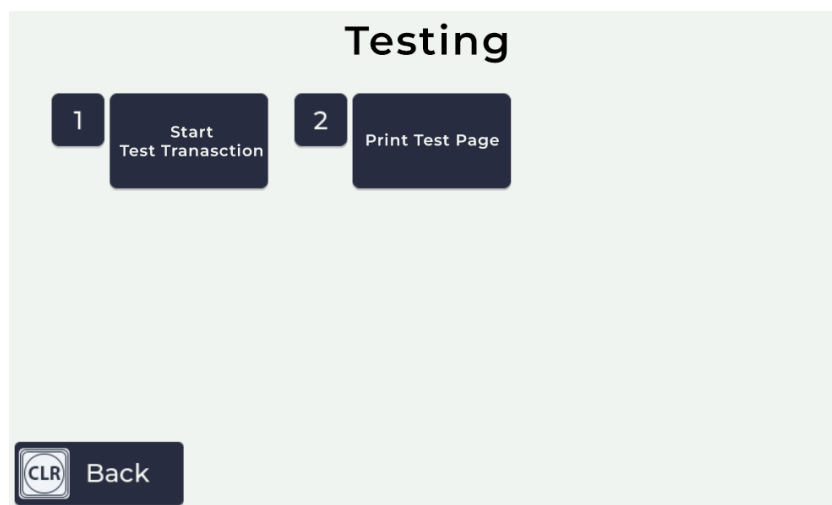


Figure 2.11: Testing Menu

Press <1> for Start Transaction, this will start a new transaction with the screen customers will see, you do not require a credit card for the test transaction.

2.7 Gilbarco Comms SmartFill OPT

2.7.1 Data Cabling.

The ideal data cable for Gilbarco communication is an 18AWG shielded twisted pair. The shielding should be grounded at the SmartFill OPT end and left unconnected at the dispenser end.

- Data cables should be run separately from main cables.
- All cable ends must be insulated where insulation has been removed to prevent shield wiring or similar components from coming into contact with any circuit boards or metal parts.

It is recommended to use bootlace ferrules on all data connections.

2.7.2 Wiring schematic.

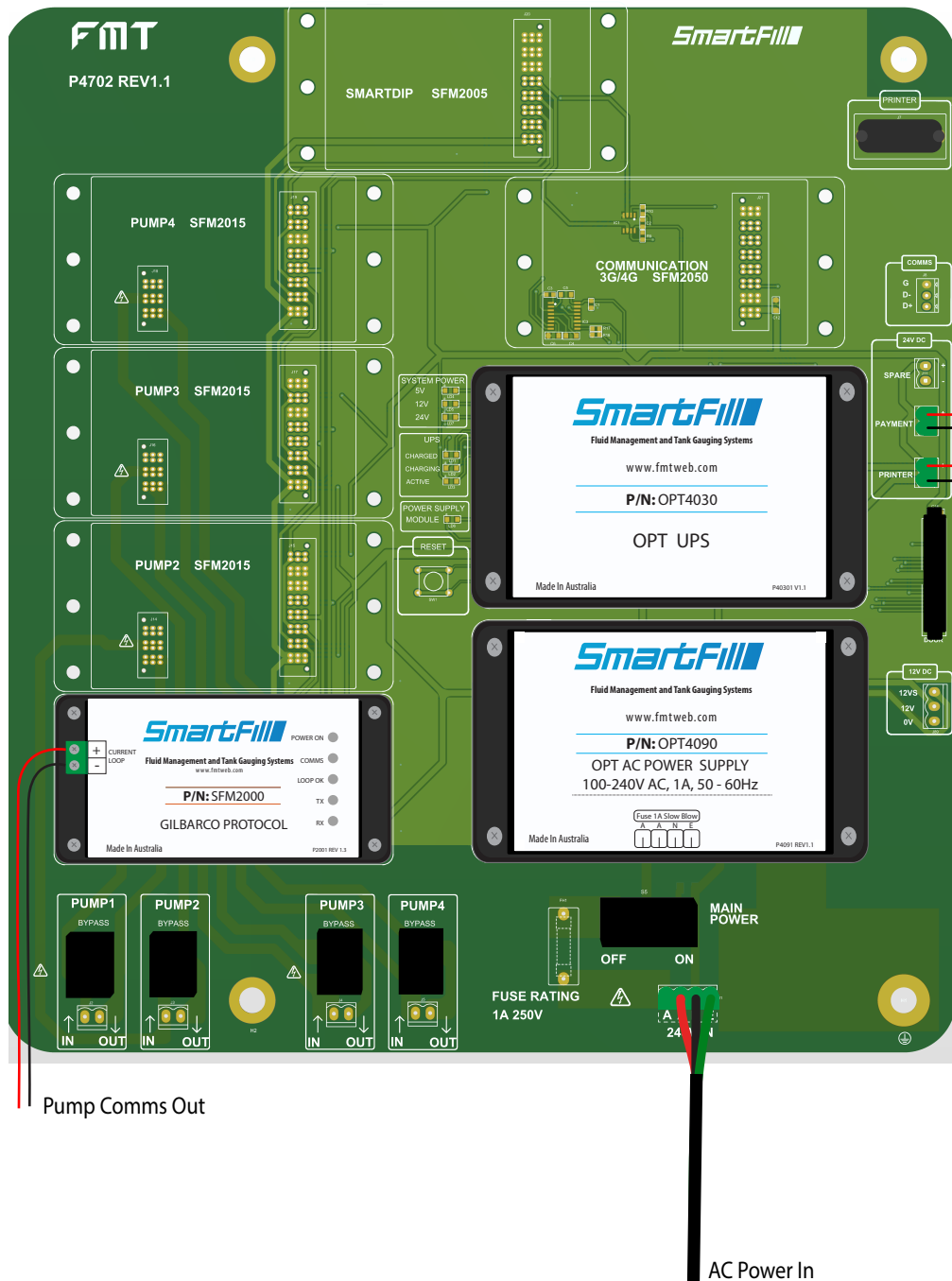


Figure 2.12: SmartFill OPT Gilbarco Wiring diagram.

2.7.3 Gilbarco comms basics.

- The Gilbarco communications standard is a series communication loop which is powered by the controller, i.e.: the SmartFill OPT.
- The SmartFill OPT can control up to 8 pumps with GB comms.
- Pumps can be turned on / off in the SmartFill OPT pumps menu.

2.7.4 5 / 6 Digit purpose and setup.

- The 5 or 6 digit setting is part of the Gilbarco communication system. In earlier models, only 5 digits were available. To allow for larger fuel deliveries, the 6 digit setup was introduced. Some fuel dispensers are fixed at 5 digits, some at 6 digits, and some can be set to either 5 or 6 digits on the pump. To determine the specific arrangement on a particular pump, it is necessary to contact the pump manufacturer (not the SmartFill OPT manufacturer).
- All SmartFill OPT systems can be changed from 5 to 6 digits. This includes multiple hose systems, where each individual hose (pump) can be set to either 5 or 6 digits. This allows for flexibility in setting and allows for the use of both on one site.
- When a pump transmits its fuel data to the SmartFill OPT, the decimal point position in the liters is different between the 5 and 6 digit formats. A dispenser set up as 5 digits can only transmit a maximum of 999.99 liters to the SmartFill OPT, while a 6 digit setup can transmit 9999.99 liters. It is important to set the dispenser to the correct digit format in order to accurately track and manage fuel transactions.
- If the setup on the SmartFill OPT is incorrect, it will result in the system inaccurately reading the fuel data from the pump. This means that the decimal point will be in the wrong place, leading to incorrect transaction records and potentially affecting the accuracy of fuel management. It is important to ensure that the SmartFill OPT is correctly set up in order to accurately track fuel transactions.
- WARNING - Some dispensers will show 6 digits on the display, even when set in 5 digit mode. This results in a fuel delivery of over 1000 Litres losing the 'thousands', which is a serious problem.
- When it is possible, both the SmartFill OPT and the pump MUST both be set to 6 digit mode.
- The SmartFill OPT must only be set to 5 digit mode when a pump is locked on 5 digit.
- Use the 5/6 digit option in the pump menu to switch the SmartFill OPT between 5 and 6 digit operation
- IMPORTANT.
The SmartFill OPT manufacturers can not provide information on the 5 / 6 digit setup procedures for fuel dispensers. This information must be sourced from the pump supplier / manufacturer.

2.7.4.1 5 / 6 digit Litres setup procedure.

5 or 6 digit operation is set up in the pumps menu in Installation Menu. refer to 2.11.8

2.7.5 Gilbarco comms test procedure.

High Voltage Warning: These checks should only be carried out by a licensed and qualified electrician when there are mains voltages present.

This information provides a basic test procedure for Gilbarco communications. It can be used to determine if there is current flow in the communication loop and if there is correct approximate voltage drop across the pumps in the loop. It is important to follow safety precautions when working with high voltage systems to avoid potential hazards.

2.7.5.1 Comms loop current check.

The current flowing through the comms loop can be tested by using a digital multi-meter in DC milliamp mode.

1. Power the system off.
2. Disconnect the + comms wire from the SmartFill OPT module.
3. Put the multimeter in DC Milliamp mode, in series with the loop.

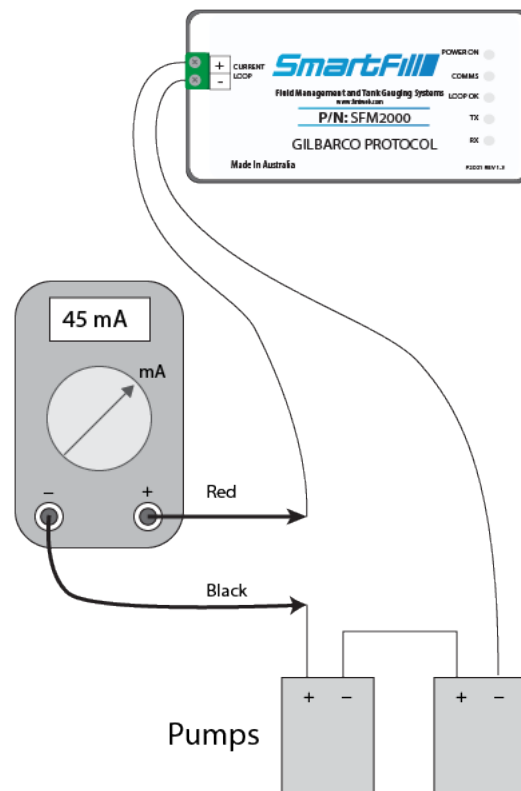


Figure 2.13: Multimeter set up to measure DC milliamp in the comms loop.

4. Power the system on, and measure the current flowing in the circuit.
 - (a) 45 milliamp is an ideal reading, but a range between 40 and 50 milliamp should still be OK.
 - (b) Over 50 milliamp would indicate a fault in the SmartFill OPT board, as this supplies the current for the circuit. You should replace the SmartFill OPT slave board.
 - (c) Below 40 milliamp would indicate a high resistance in the loop, or an open circuit. This could be caused by either a wiring issue, a faulty SmartFill OPT slave board, or a faulty dispenser.
 - i. Disconnect the comms loop from the slave board, and connect the multimeter directly across the + and - terminals. If you now have 45mA, then the cable is faulty. If it is below 40mA, then the slave board is faulty, and should be replaced.
 - ii. Run a temporary comms data cable to each dispenser, to check the cabling. You can also run a cable to each dispenser individually to test each one.

2.7.5.2 Comms loop voltage drop check.

A very simple check is to measure the DC voltage drop over the comms loop.

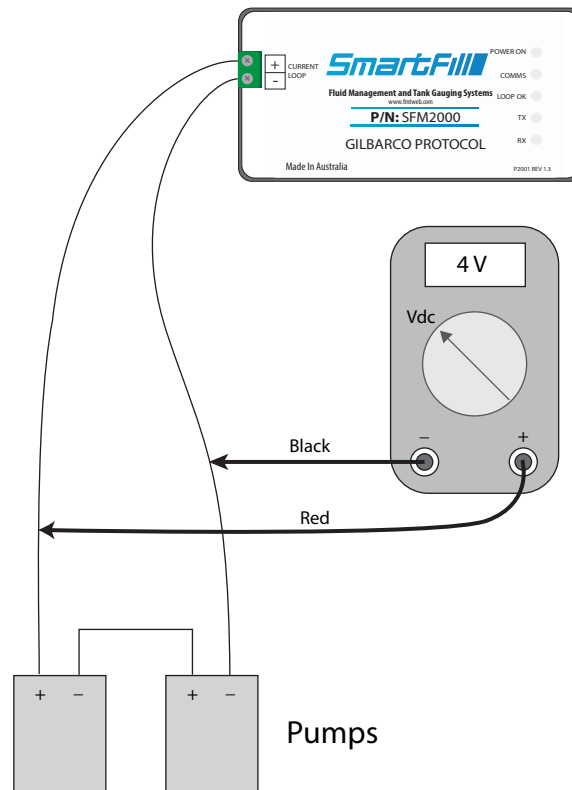


Figure 2.14: Multimeter set up to measure voltage drop over the comms loop.

With the communication loop disconnected from the SmartFill OPT board, you should see a reading of approximately 13 volts across the + and - terminals on the slave board.

When the loop is connected, you should see a reading of approximately 1.5 to 2 volts for each pump on the loop.

For example, if you have 3 pumps on the loop, an acceptable reading would be 4.5 to 7 volts.

2.7.5.3 Troubleshooting.

There are some common faults which can be encountered when installing a SmartFill OPT with Gilbarco comms. Please thoroughly check each of the items below before contacting SmartFill or the Pump manufacturers for assistance.

PLEASE remember, the SmartFill OPT manufacturers can NOT provide technical advice on fuel dispensers, or thier setup processes etc. You must consult the pump manufacturers for specific pump advice.

Check off each item below as you test the system.

- No communication, "Pump comms link failed" showing the SmartFill OPT display.
 - Check that the pump numbers in the dispenser are set correctly.
 - Check that pumps are set to self serve mode, not stand alone.
 - Check wiring, and ensure that the comms loop is connected correctly.
 - Check the loop current, and voltage drop readings, see section 2.7.5.
 - Try a power reset of the pump and the dispenser (Power off for 30 seconds), Do this with the dispenser nozzles hung up. Additionally, trigger a software reset of the SmartFill OPT through the installation menu, this can be done as follows:
 1. Press and hold the **CLR** and **ENT** keys together for 3 seconds.
 2. The display will show "Enter Admin or Installer PIN".
 3. Enter the PIN **6789**.
 4. Press **<5>** for Unit
 5. Press **<3>** for Restart
- Litres reading incorrectly, i.e.: Decimal point is in the wrong place in the Litres shown on the SmartFill OPT.
 - This is simply the 5 / 6 digit setup in the dispenser and the SmartFill OPT. Refer to section 2.7.4.

2.8 NZ Pump Protocol (Compac/TT/ Gallagher) Module Wiring

- The pump/bowser must be set to Self Serve mode to operate with this configuration

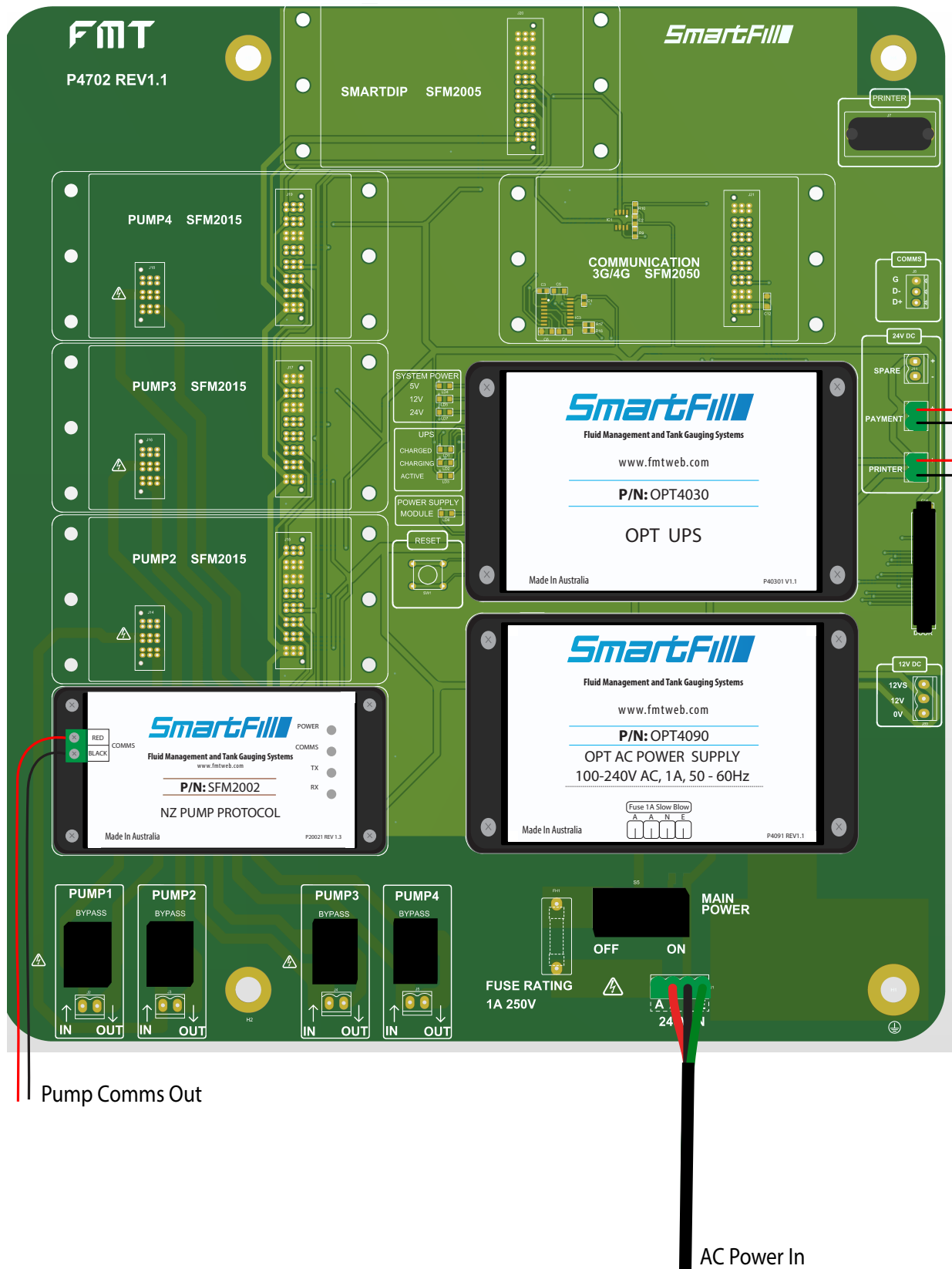


Figure 2.15: NZ Pump Protocol Wiring

Note: multiple pumps are wired in parallel / daisy chained

2.9 Communications Setup

The SmartFill OPT is equipped with both Ethernet and 3G/4G capabilities, which allow it to automatically transmit data to a central website. This feature is included with all units.

2.9.1 3G/4G

To use the 3G/4G feature on the SmartFill OPT, you will need to install a 3G/4G data SIM into the 3G/4G module located in the upper right corner of the unit. Simply insert the SIM card into the spring-loaded slot and it should click into place. Please refer to the picture provided for guidance.



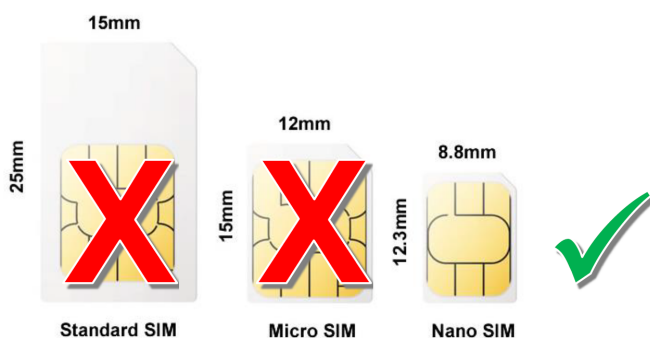
Figure 2.16: Installing SIM

2.9.1.1 Details for the 3G/4G SIM

The SmartFill OPT module uses a 3G/4G SIM enabled for data to allow data to be sent to your account.

Below are the details of what is required for the SIM card:

- **Application Description:** A machine to machine application where data is automatically sent to a website
- Telstra have **IoT** (Internet of Things) the current evolution of **M2M** (machine to machine) data plans, which are specifically designed for this type of application. Details can be found on Telstra's Website.
- **Data Capacity:** Minimum of 500MB per month (0.5GB)
- **SIM PIN:** The SIM card should be unlocked. The SIM PIN / PIN Code / SIM card security, should be disabled. This may be done when the card is supplied, but can also be set by fitting the card into a phone and using the phone settings menu to turn off this functionality
- **Physical Size:** To fit into the module the SIM must be a Nano SIM.



SIM=Nano SIM

- **Service Provider/ Plan:** All service providers can provide a data SIM and plans vary between suppliers.
- **APN Configuration:** The unit is set to auto by default. If your cell provider requires a specific APN, you can set this in the SmartFill menu as follows:
 1. Press and hold the **CLR** and **ENT** keys together for 3 seconds.
 2. The display will show "Enter Admin or Installer PIN". Enter the PIN **6789**.
 3. Press **<2>** for Network
 4. Press **<1>** for Access Point, and then enter the service providers APN

Once the SIM is installed, you can view the status of the connection by accessing System Information from the installation menu, refer to page 46 chapter 2.11.3.

2.9.2 Ethernet

By default this is set to use DHCP and as long as your system is set for DHCP and has internet access the settings do not need to be changed.

If you require a static IP address you can set this in the Network menu following the steps in 2.9.2.1.

2.9.2.1 Enable Static IP Addressing:

To enable static IP addressing:

1. Press and hold the **CLR** and **ENT** keys together for 3 seconds.
2. The display will show "Enter Admin or Installer PIN". Enter the PIN **6789**.
3. Press **<2>** for Network
4. Press **<5>** for Dynamic Addressing, then press **<5>** to select "No"
5. Press **<ENT>** to exit, you will then have option **<6>** Static Address

Option 6 will give 3 options:

1. **IP Addr**– enter the IP Address needed to connect to your network, ENT moves between fields
2. **Mask**– enter the Subnet Mask used by your network, ENT moves between fields
3. **Gateway**– enter the gateway IP Address of your network usually the router, ENT moves between fields

Once these have been set and you go back to the previous menu Option 7 will allow DNS to be set

1. **Primary DNS**– enter the IP Address of your or your ISPs DNS server to gain access to internet, ENT moves between fields
2. **Secondary DNS**– enter the IP Address of your or your ISPs secondary DNS server to gain access to internet, ENT moves between fields

Once all details have been entered press CLR as many times as needed to return to start screen and save settings.

2.10 Using the System to Get Fuel

SmartFill OPT supports all payment types see 2.10.2 for a complete list of supported payment types. The process to get fuel is as follows:

1. Using the keypad, the customer presses <1> to purchase fuel, the customer may also press <2> to print a receipt from a previous transaction.

13:58 3 DEC 2021

Press 1 to Purchase Fuel 2 to Print Reciept



Version: 3.1.3.8

SN: 7000

Figure 2.17: User Interface - Main Screen

2. The customer will select whether they will pay via Credit Card or Account Card/Fob.

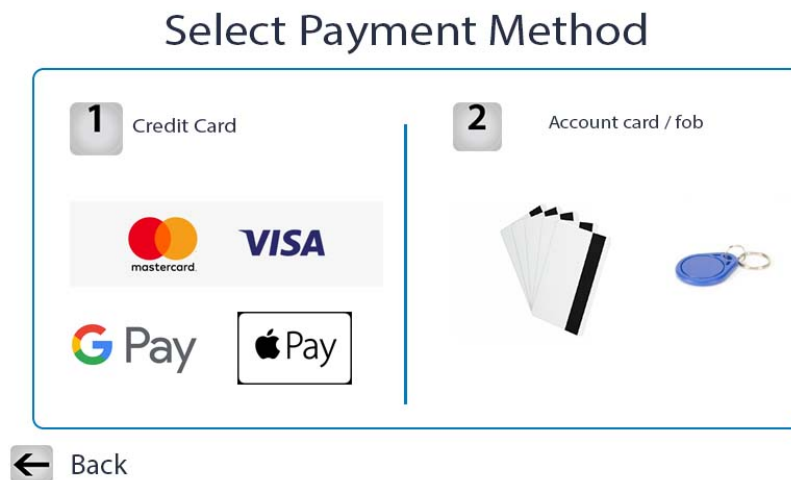


Figure 2.18: User Interface - Payment Selection Screen

3. The customer will then select the pump they wish to use, the screen will display the pump number, fuel type, and price. (Only if more than 1 pump is present).

Select Pump

Press number key to select a pump

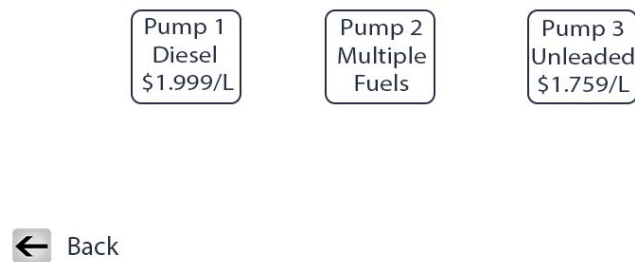


Figure 2.19: User Interface - Pump Selection Screen

4. The customer will select a pre-authorisation amount or enter a custom amount by pressing <8>.



Figure 2.20: User Interface - Choose purchase amount

5. The customer will then proceed to payment, the customer can scan thier credit card using paywave, or insert thier card following instructions on the pinpad, this will apply a pre-authorisation on the customers account, the customer is not charged until they have taken the fuel. The pump won't start until the payment is authorised.

Tap or Insert Card

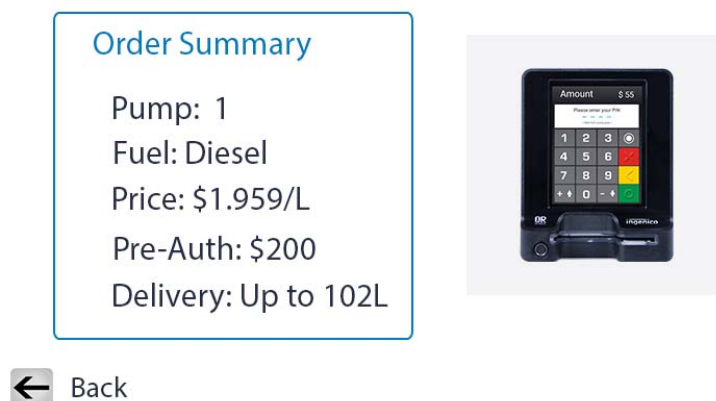


Figure 2.21: User Interface - Refer to pinpad screen

6. Once the payment is authorised, the customer will be able to take fuel, upon completion of the transaction, the customer will recieve a receipt, and the screen will display how much the customer has been charged. NOTE: The customer is only charged for the fuel that they take. The SmartFill OPT stores the details. If the system is online, the transaction information is automatically sent to the appropriate account on the SmartFill website.

2.10.1 Printing a receipt from a previous transaction

In the event of a paper jam or other receipt print error, receipts can be re-printed from the SmartFill OPT unit for transactions that have occurred in the past 24 hours.

1. Using the keypad, the customer presses <2> to print a receipt from a previous transaction.

13:58 3 DEC 2021

Press 1 to Purchase Fuel 2 to Print Reciept



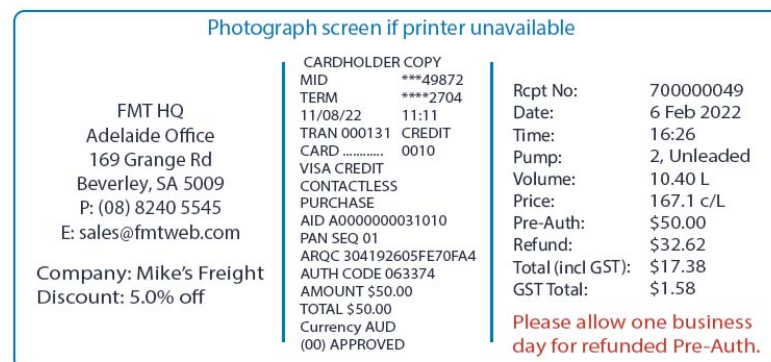
Version: 3.1.3.8

SN: 7000

Figure 2.22: User Interface - Main Screen

2. The customer will then see a screen asking them to insert/tap thier credit card to find the transaction, this will lookup the transactions made by only the customers card.

Reciept



← Clear

Figure 2.23: User Interface - Tap card to find receipt

3. The unit will then be able to re-print the receipt for the customer once the receipt printer issues are resolved.

2.10.2 Supported Payment types

SmartFill OPT supports most payment types including VISA and Mastercard, aswell as any keys or fobs you have added to the system. The SmartFill OPT also works with Google Pay and Apple Pay.

Accepts a range of cards and devices.



Figure 2.24: Supported Payment Types

2.11 The SmartFill OPT Installation Menu

To access the Installation Setup Menu you need to have a valid installer PIN. The default PIN is: **6789**. Press and hold the **CLR** and **ENT** keys together for 3 seconds. The display will show "Enter Admin or Installer PIN". Enter your PIN.

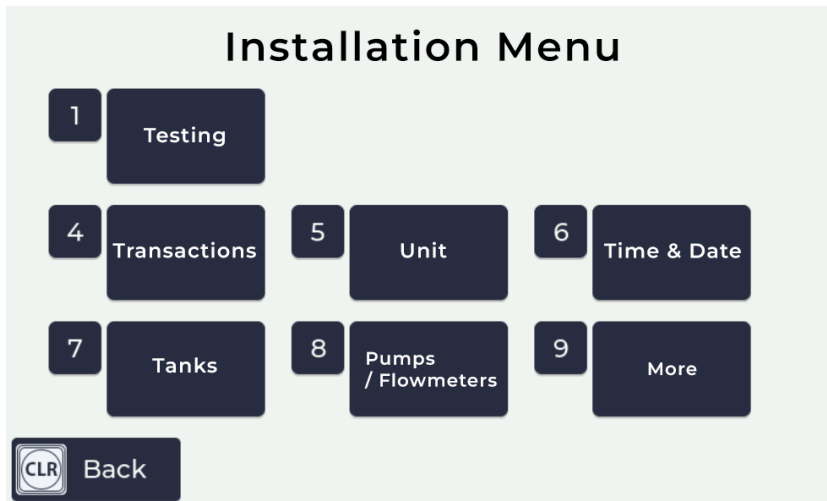


Figure 2.25: Installation Menu

To select a menu item push the corresponding key on the keypad. You will then be presented with the choices available for that menu selection. The menu below appears if you push key number '1'.

2.11.1 Testing

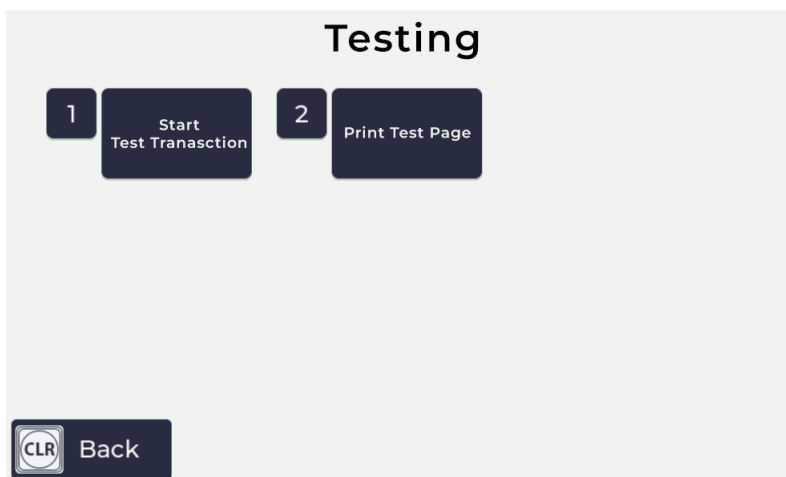


Figure 2.26: Testing Menu

This menu is used for testing as part of the initial setup of the unit, this menu allows you to start a test transaction, and print a test receipt. There are two items in this menu :

1. **Start Transaction**- This option enables you to start a transaction with the same screen that a customer would see, without requiring a credit card, for this option to work, the test transactions feature needs to be enabled from the website.
2. **Print Test Page** - prints a test page to confirm the operation of the receipt printer.

2.11.2 Network

2.11.2.1 Network

The network menu is used to configure the network connection, which can be either wired Ethernet or 3G/4G. The network menu is context sensitive, in that the options displayed will match the configuration of the SmartFill OPT.

Cellular(3G/4G) If there is a 3G/4G communications module installed in the SmartFill OPT then the cellular menu will be shown.

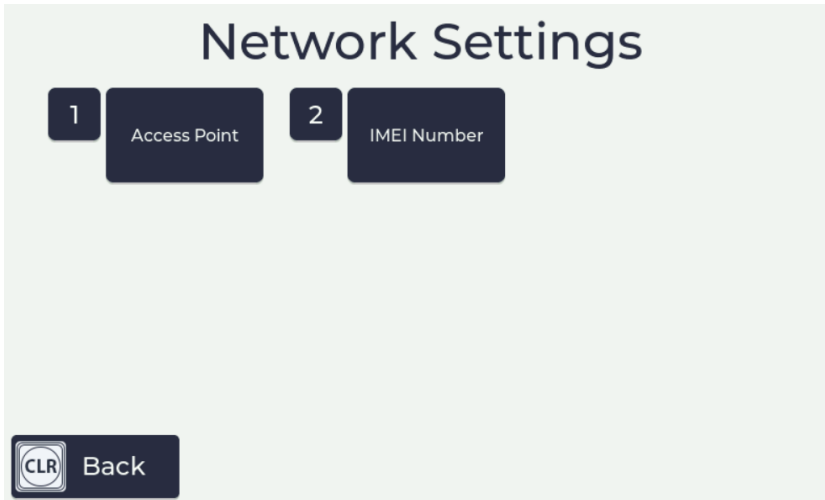


Figure 2.27: Cellular Menu

1. **Access Point** - The cellular menu is used to set the wireless access point or WAP address for the service that is being used for the data service. The unit is set to auto by default. If your cell provider requires a specific APN, you can set this in the SmartFill menu as follows:
 - (a) Press and hold the **CLR** and **ENT** keys together for 3 seconds.
 - (b) The display will show "Enter Admin or Installer PIN". Enter the PIN **6789**.
 - (c) Press **<2>** for Network
 - (d) Press **<1>** for Access Point, and then enter the service providers APN

Once the SIM is installed, you can view the status of the connection by accessing the Installation menu, and pressing **<3>** for System Information, then **<2>** for Network. You can exit this screen by pressing the CAN (Cancel) key.



1. Use the help option to understand how to use the text entry screen.
2. **IMEI Number** - The IMEI number is the unique network identifier for the device.

Addressing If there is no communications module installed in the SmartFill OPT or there is a network cable connected to it, then the addressing menu will be shown.

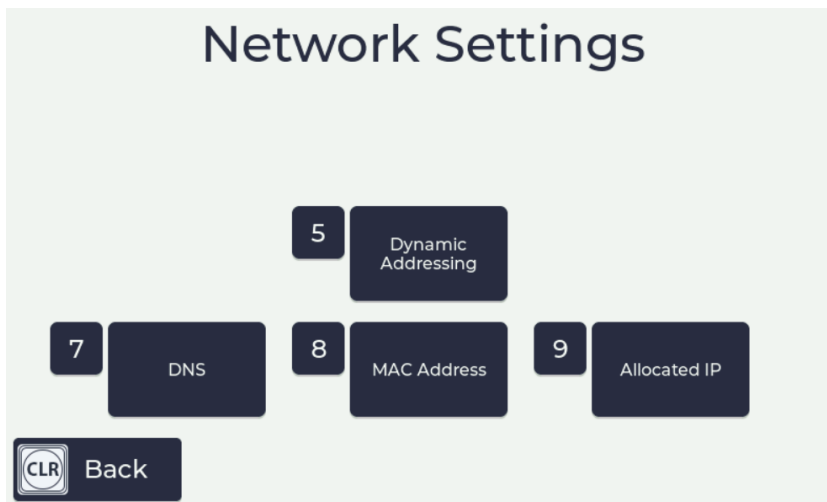


Figure 2.28: Addressing Menu

5. Dynamic Addressing enables the unit to be set to dynamic addressing: DHCP

1. There are two options:

- (a) Yes - DHCP is used to obtain address details.
- (b) No - DHCP is not used and static address details must be entered. These can be entered in the previous menu and the Static Address menu option will appear as option 6.

6. Static Address - select this to set the parameters for using a static IP address. This menu option is only present when Dynamic Addressing is disabled, see 2.11.2.1

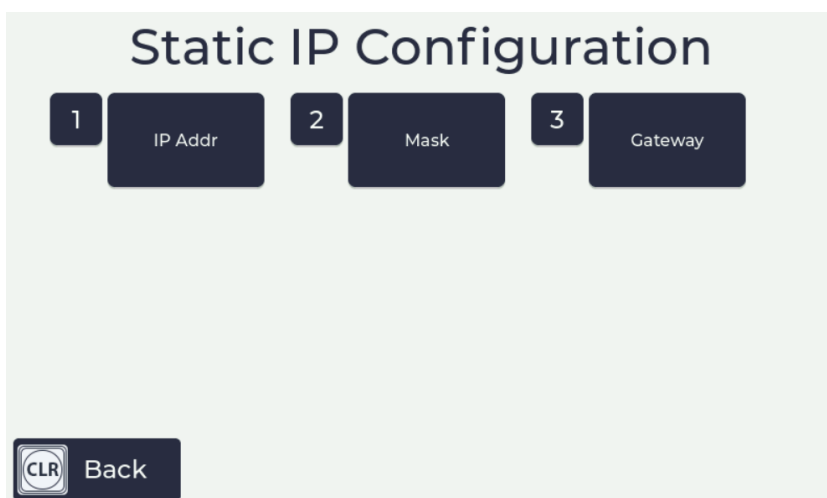


Figure 2.29: Static Addressing Menu

All three of the Static IP configuration menu items must be completed.

- 1. **IP Addr** - used to set static IP address of the unit.
- 2. **Mask** - used to set the subnet mask.
- 3. **Gateway** - used to set the default gateway address.

7. **DNS** - is used to set the domain name server details.

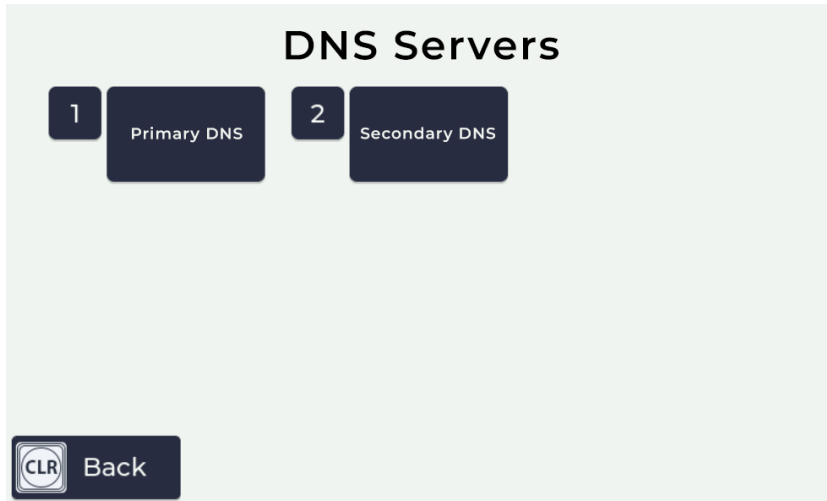


Figure 2.30: DNS Servers

1. **Primary DNS** - Set the primary DNS address.
2. **Secondary DNS** - Set the secondary DNS address.

8. **MAC Address**

Shows the MAC address of the unit if it is needed.

2.11.3 System Information

The system information screen provides system information, including software version, hardware, unit serial number, and network connection status.

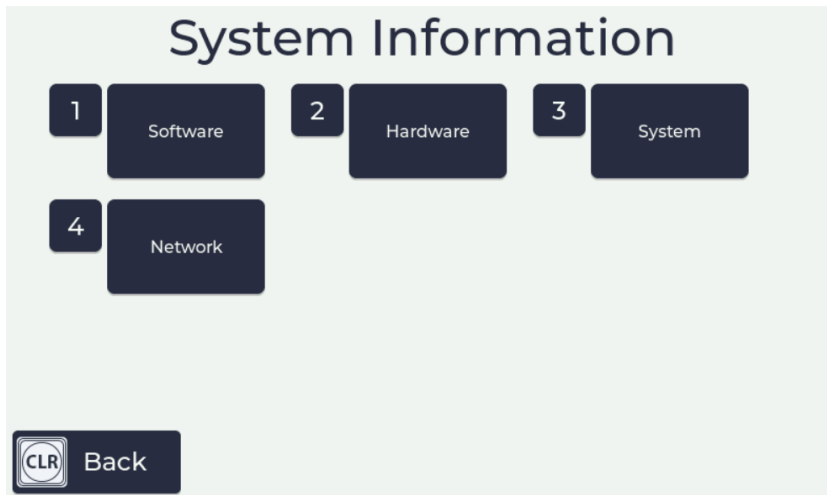


Figure 2.31: System Information

This menu has 4 options:

1. **Software** - Displays the software version installed on the unit
2. **Hardware** - Displays the number of pumps and meters that are installed in the unit
3. **System** - Displays the unit serial number, unit model number, and software version number
4. **Network** - Displays the network connection status and connection settings
5. **Last Sync** - Displays how long ago the unit last synced new data with the website

2.11.4 Transactions

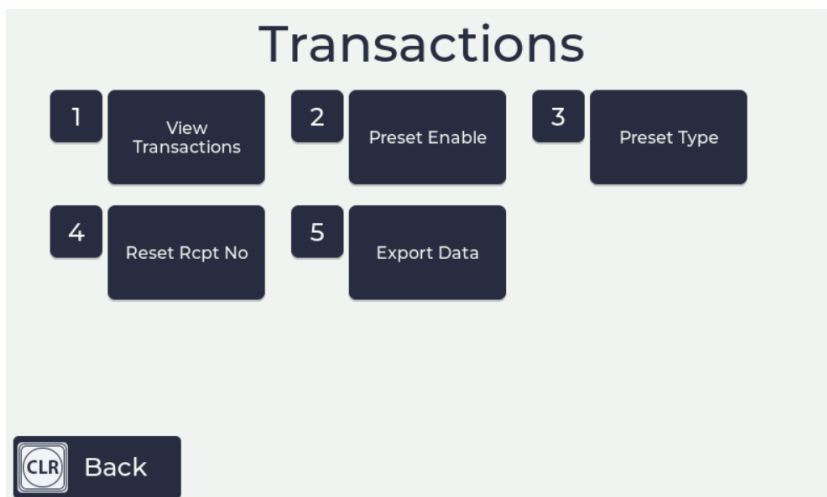


Figure 2.32: Transactions Menu

This menu is used to view transactions that are stored in the unit. There is one option:

1. **View Transactions** - shows all the transactions stored in the unit.

2.11.5 Unit

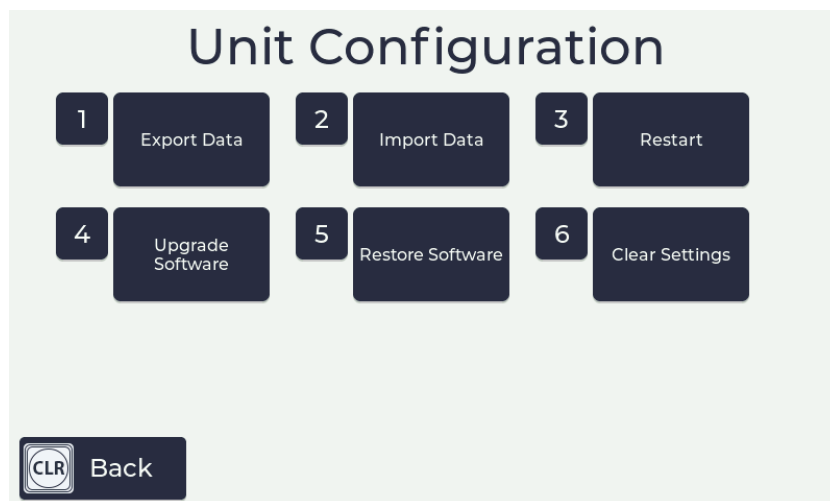


Figure 2.33: Unit Menu

1. **Export Data** - exports a file to USB with all the vehicle keys, driver codes and any un-exported transactions. This can then be imported into the website.
2. **Import Data** - imports a the file that is created from the website export function. This imports all keys, codes and configuration that exist on the website, but are not in the unit.
3. **Restart** - reboots the unit.
4. **Upgrade Software** - is used to upgrade the unit's software via the USB port.
5. **Restore Software** - is used to restore the previous version of the software that was installed prior to the last upgrade.
6. **Clear Settings** - Has two options:
 - (a) Clear Data - clears all keys, codes and transactions.
 - (b) Factory Default - clears all keys, codes, transactions and returns the configuration to the original factory settings
7. **Restart Payment Terminal** - this will cycle power to the Payment Terminal.

2.11.6 Time and Date

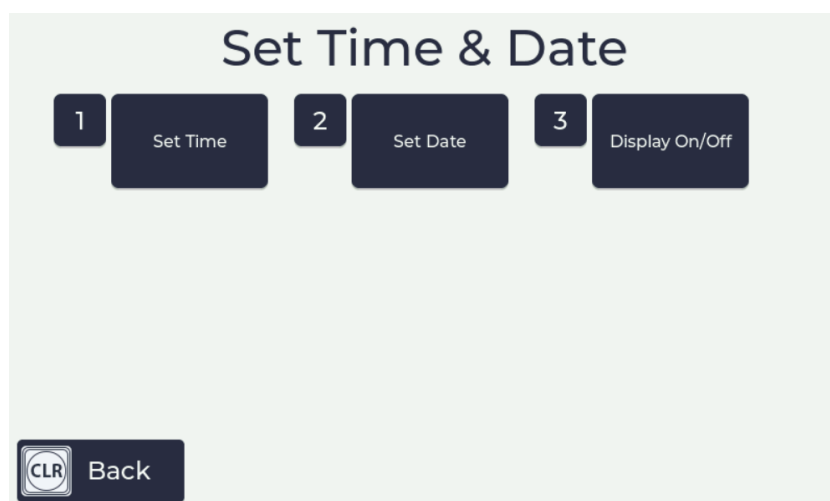


Figure 2.34: Time and Date Menu

This menu is used to set the system time and date and set whether the time and date will appear on the display. There are four menu options:

1. **Time** - allows you to set the system time
2. **Date** - allows you to set the system date

3. **Display On/Off** - has two options

- (a) No - do not display the time and date
- (b) Yes - display the time and date

4. **Auto Update** - setting to yes will let the SmartFill OPT update it's date and time from the connected network date and time.

2.11.7 Tanks (This menu only appears if a SmartDip or TLS module is installed in the unit)

Used to set up tank gauging. See section 5.2

2.11.8 Pumps/Flowmeters

2.11.8.1 Pump Menu When Using Pump Modules

This menu is used to set up each pump when a particular pump is selected a menu option is displayed for each installed pump e.g Pump 2. When a pump is selected the following menu options are shown:

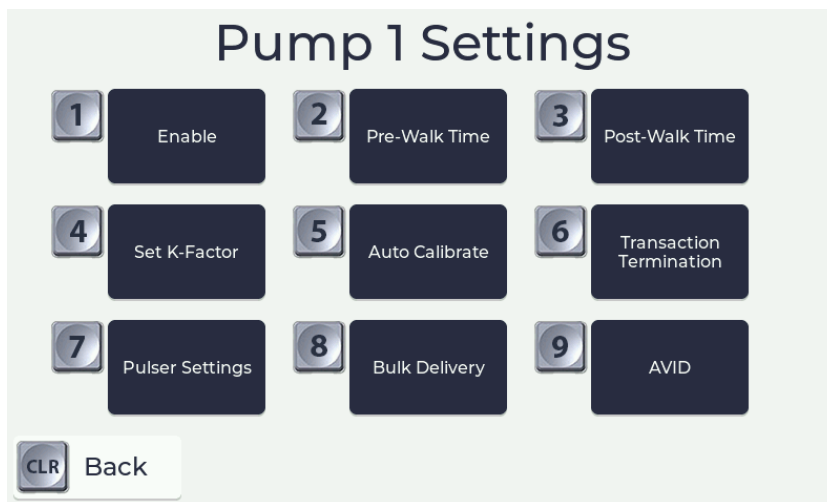


Figure 2.35: Pumps Menu - Pump Module(s)

1. **Enable** - used to turn the pump on or off
2. **Pre-Walk Time** - sets how long in seconds after the transaction has been authorised, before the system terminates the transaction because it has not detected any flow. **Note:** This setting only has an effect if walktime has been selected in the Transaction Termination menu.
3. **Post-Walk Time** - sets the time in seconds before the system terminates the transaction after having detected no further flow through the pump e.g how long after the nozzle is hung up before the transaction is terminated **Note:** This setting only has an effect if walktime has been selected in the Transaction Termination menu
4. **Set K Factor** - allows the setting of the K factor (pulses per litre) if known. Some meters provide this value as part of the calibration report. (Only appears when a standard pump/hose module is being used)
5. **Auto Calibrate** - Used to auto calibrate the unit against a known quantity of fuel dispensed. Specify the amount of fuel to be dispensed, push enter and start dispensing. Push enter when complete and the unit will automatically calculate and display the correct K factor. (Only appears when a standard pump/hose module is being used)
6. **Transaction Termination** - This menu sets how the unit determines when a transaction has been completed. There are two options: (Only appears when a standard pump/hose module is being used)
 - (a) Walk time - uses the value set in the post walk time menu to determine how long after no flow is detected before it terminates the transaction. Default time is 30 seconds.
 - (b) Nozzle - uses the closure of a nozzle switch to terminate the transaction.
7. **Pulser Settings** This menu has two sub-menus:
 - **1. Pulser Source** - When the unit controls more solenoids than there are flowmeters, this menu allows you to select from which pump module this pump will obtain the pulser input. E.g. if this is pump module two and the pulser output is connected to pump 1, you would select pump 1.
 - **2. Cut-Off Frequency** - The cut-off frequency may be increased to compensate for excessive noise on the pulser output.

2.11.8.2 Pump Menu When Using Bulk Fuel Delivery

The system requires that two pump modules are installed before the Bulk delivery option will be displayed.

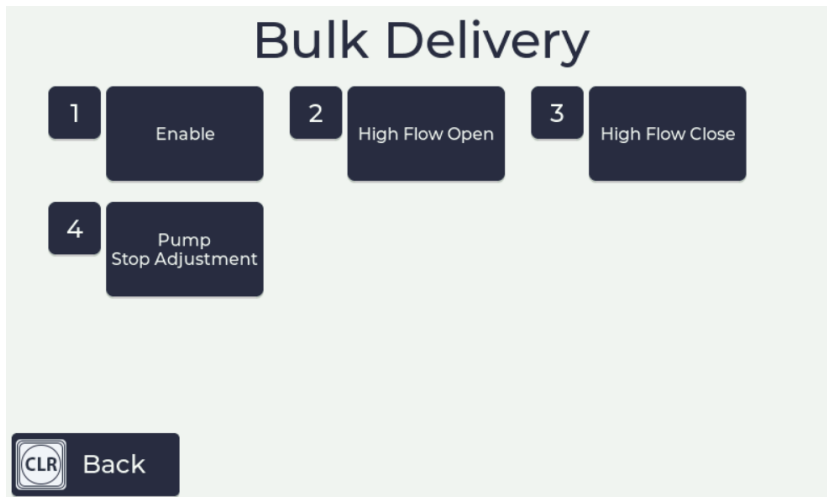


Figure 2.36: Pump Menu - Bulk Delivery

8. **Bulk Delivery** - used to Access Bulk fuel delivery settings

This menu is used to set up the required parameters for a controlled Bulk Fuel Delivery :

1. **Enable** - Used to turn on Bulk delivery - this will remove pump 2 from being visible as it will now be used in conjunction with pump 1 to control bulk fuel delivery
2. **High Flow Open** - Sets the volume at which the high flow valve will open.
3. **High Flow Closed** - Sets the offset below the preset limit where the high flow valve will close.
4. **Pump Stop Adjustment** - Sets the offset below the preset limit that the pump will stop

2.11.8.3 Flowmeter Menu

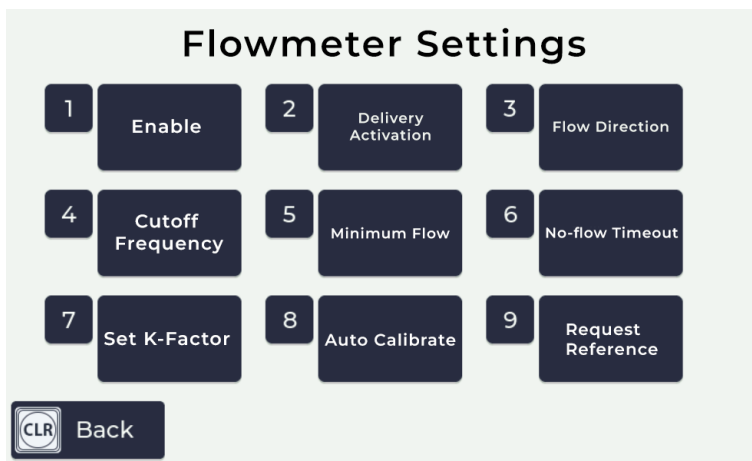


Figure 2.37: Flow Meter Menu

1. **Enable** - used to turn the flowmeter on or off.
2. **Delivery Activation** - sets what activates the recording of fuel to begin. There are two options:
 - (a) Flow - recording will commence when the minimum flow has been achieved. The minimum flow level is set in the minimum flow menu.
 - (b) Switch - recording commences when a switch connected to the flow switch input on the module is closed.
3. **Flow Direction** - sets how the module records the flow on the website. There are two options:
 - (a) Out - the flow is recorded as a transfer out of the tank associated with the SmartFill.
 - (b) In - the flow is recorded as a delivery into the tank.
4. **Cut-off Frequency** - Sets the frequency in hertz at which the module will no longer respond to pulses. This is used to stop the module responding to low frequency vibration in the flowmeter. One is the default and with this setting all frequencies are passed.
5. **Minimum Flow** - Sets the value in litres or gallons (depends on volumetric value chosen) that must flow before recording will commence.
6. **No Flow Time Out** - sets how much time after flow ceases before the module times out and stops recording flow.
7. **Set K Factor** - allows the setting of the K factor (pulses per litre) if known. Some meters provide this value as part of the calibration report.
8. **Auto Calibrate** - Used to auto calibrate the unit against a known quantity of fuel dispensed. Push enter and start dispensing. Push enter when complete and specify the amount of fuel that has been delivered, the unit will automatically calculate and display the correct K factor.
9. **Request Reference** - This menu sets whether a delivery driver is prompted to enter a reference number, such as a purchase order number at the end of the delivery. There are two options:
 - (a) Yes - Driver will be prompted to enter a reference at the end of the delivery. If he fails to make an entry within two minutes, the request will time out.
 - (b) No - No prompt is made at the end of the delivery.

2.11.8.4 Volumetric Units

Selects what unit of measure is used across the unit. There are three options:

1. Litres (Default)
2. US Gallons
3. Imperial Gallons

2.11.8.5 Receipt Printer

The SmartFill OPT comes with a compatible receipt printer (OPT4166) that is suited to the OPT enclosure.

The receipt printer is located in the bottom locked door on the unit, here you can access the receipt printer to change the paper, and troubleshoot printer issues. The labels on the receipt printer will guide you on how to load paper and troubleshoot a paper jam.



Figure 2.38: Receipt Printer

2.11.8.6 Loading paper

The labels on the receipt printer will help guide you through the process of loading the paper.

To load paper onto the receipt printer:

1. Place paper on holder
2. Feed paper into the printer
3. Press the test print button

2.11.8.7 How to fix a paper jam

1. Remove all paper from the printer
2. If paper is crumpled, cut off the crumpled portion
3. Follow procedure for reloading paper

2.11.8.8 Ordering more paper

Paper rolls can be ordered for the SmartFill unit at www.paperrolls.com.au or any other suitable paper roll supplier. Thermal paper rolls compatible for the OPT4166 receipt printer from www.paperrolls.com.au are:

Stock Number: 5945

60mm x 80mm x 25mm x 270m

Thermal rolls

Paper rolls are not supplied by the SmartFill manufacturer and must be ordered through www.paperrolls.com.au or another compatible paper roll supplier.

Chapter 3

SmartFill Gen 3 Website Operation and Configuration

3.1 Configuring and Using Website Page

The SmartFill Gen 3 website is used to store and manage data from the units, including transaction data, unit configuration information, and additional data related to transactions, such as driver names and vehicle departments.

The website is located at www.fmtdata.com.

3.1.1 Creating Your Website and Adding Your First Unit

To set up your SmartFill Gen 3 website for the first time, follow these steps:

1. Open your web browser and navigate to [www.fmtdata.com/new].
2. On the website, select "No" if you don't have an existing account.
3. Enter the serial number and code provided with your SmartFill unit. This information can be found on the USB drive supplied with the unit or on a hard copy that was supplied with the unit.
4. Fill in the required company details and create an Admin username and password. These will be your credentials for logging in to your website from now on.
5. Once you have completed these steps, you will be taken to the first page of your website.

SmartFill

1. Terms and Conditions > 2. Create New Account > 3. Administrator User

Welcome to the SmartFill account creation page.

In order to create a new account, you must enter the serial number and security code for your new unit below.

New customer

Serial Number:

Please enter the SerialNumber of your unit

Security Code:

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Figure 3.1: Initial Account Activation Page

3.1.2 Logging In Once the Website is Created

Once you have created your website you can log in using the credentials you created in 3.1.1 at www.fmtdata.com



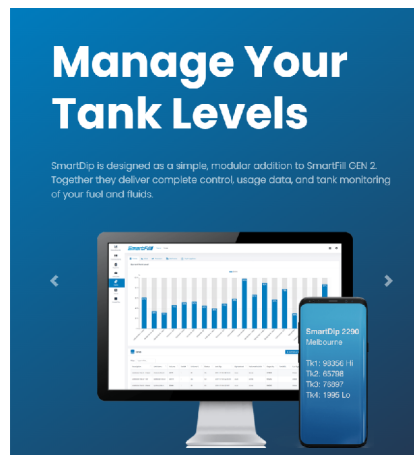
SmartFill Data Login

Username
thomasa

Password

Forgot Password?

Sign In



3.1.3 Dashboards

With the Dashboards feature, you can create custom dashboards to view information about total transactions, fuel consumption, total vehicles, daily fuel usage, and more.



Figure 3.2: Dashboard Page

3.1.3.1 Dashboards - Creating a Dashboard

To create your first dashboard, click the “Create your first Dashboard” button from the Dashboards menu. You will need to enter a name for the dashboard.



Create your first Dashboard

Add a new Dashboard

Click “Add New items to /Dashboard/” to select which information you would like displayed on the page. You may add multiple items.

3.1.4 Transactions Page

The transactions page displays transactions in the selected date range that have been transferred to the website from all associated units. You can select the required date range from the drop-down menu at the top of the screen

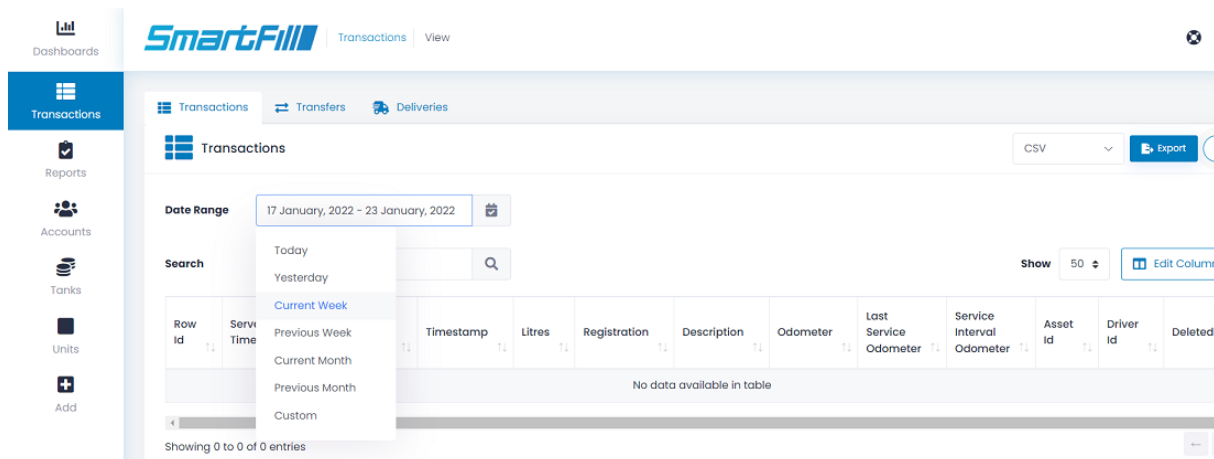



Figure 3.3: Website Transaction Page

3.1.4.1 Transactions

Displays the primary transaction screen. From here you have the following options:

1. **Date Range** - From drop down menu you select what date range you want to display and export. If you want a custom date range then select custom and click on the "From" and "To" dates to set them to the dates required.
2. **Export** - Exports all transactions in the date range to a .csv, .xls, or .xlsx file that can be viewed in a spreadsheet program(e.g. Microsoft Excel)
3. **Show** - defines how many rows will be shown at a time.  Select to show 50 rows per page to enable the webpage to open quicker. The more rows it has to show the longer it will take to load. When you export the transactions it will still export all the transactions in the date range.
4. **Transfers** - Displays fuel transfers between tanks for a set date range.
5. **Deliveries** - Shows fuel deliveries made, both manual and automatic in a chart and list format.

3.1.4.2 Transactions - Edit Columns

If you select Edit Columns on the transactions page you will be presented with the transaction page configuration page. This page enables you to choose which columns are displayed and the order they show in. At the top of the page are the selected columns. You can change the column headings by selecting the heading name and then over typing it with the new name. Headings that are greyed out are set in one of the other configuration screens. You can choose which columns are displayed by dragging and dropping those required into the top section or by clicking the + symbol. The columns are removed by dragging them into the bottom section or clicking the red X.

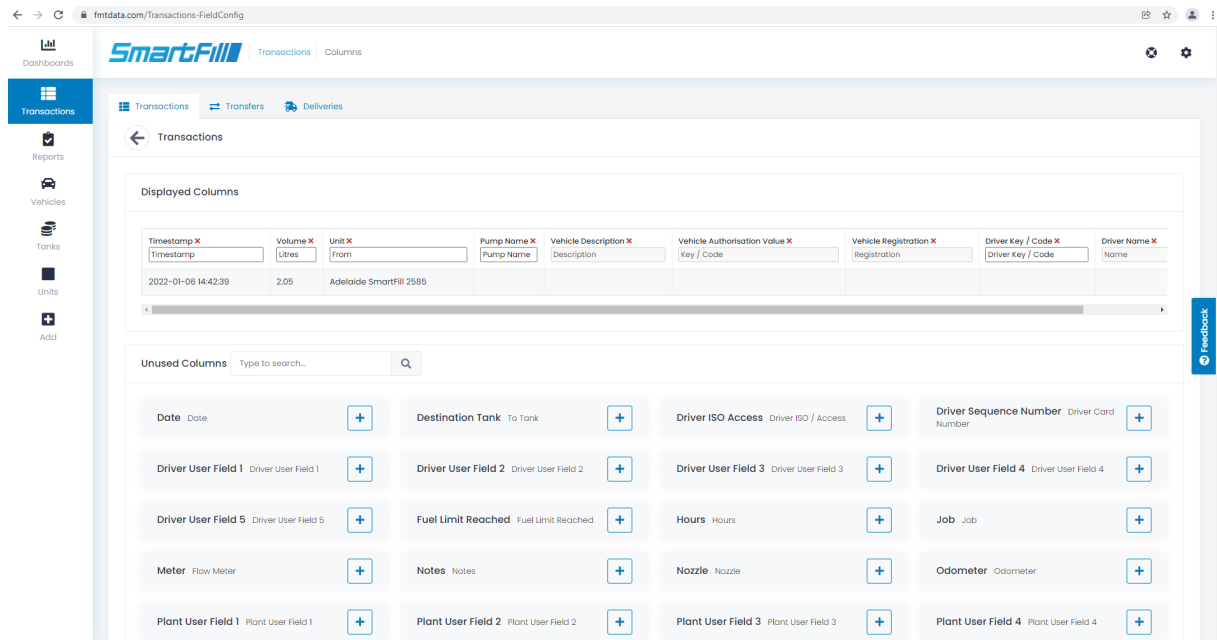


Figure 3.4: Configuring the Transactions Page

3.1.5 Reports - Configure Reports

These settings relate to the pro version of the website. Use these to define desired report settings.

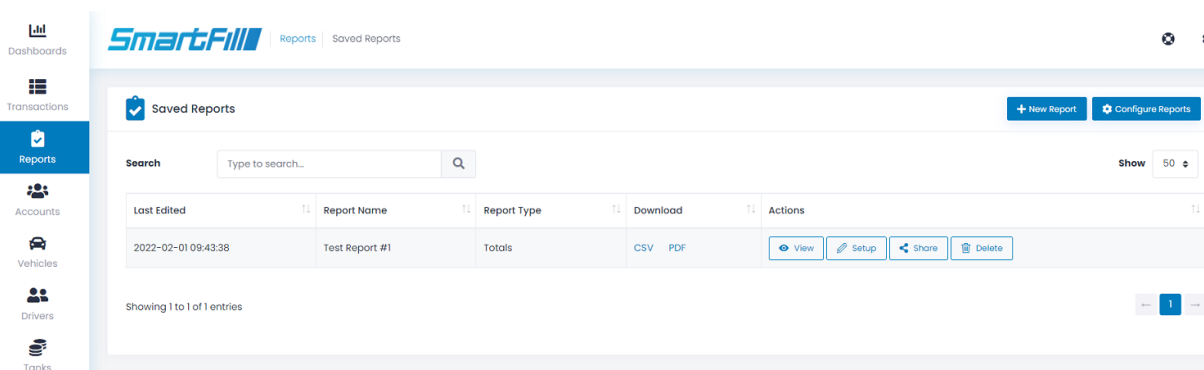


Figure 3.5: Admin Report Settings

3.1.6 Setting up Vehicle and Plant Details

Details for vehicles and plant, such as which key or code (PIN or VIN) is used to identify the equipment and description are set up by clicking on “Add”, then the vehicles and plant page respectively or the buttons on the side toolbar if you have vehicles/plant/drivers set up.

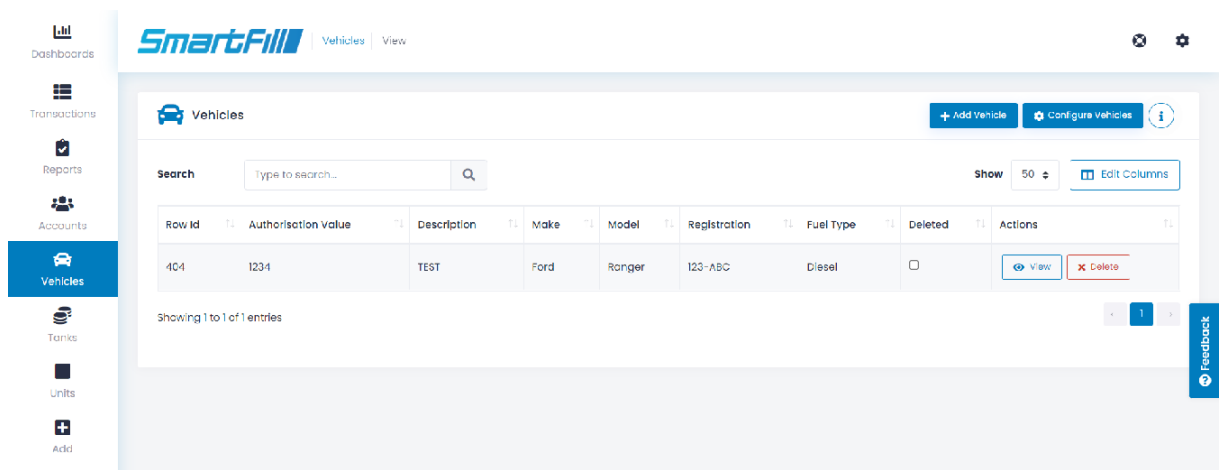


Figure 3.6: Vehicles Page

3.1.6.1 View

The vehicles page provides a overview of existing vehicles and the details that have been associated with them. Details of the key or code are automatically transferred to all selected units. In addition for vehicles the description and registration details are automatically transferred to all selected, connected units.

Details for existing vehicles can be changed by selecting a cell, such as description and over typing the existing text. Vehicles can be disabled by deleting them in the unit or selecting the delete button next to the key or code on the website

Note: If a vehicle is deleted from the website then it can not be re-added directly at the unit.

3.1.6.2 Edit Columns

If you select Edit Columns on the vehicles, drivers or plant pages you will be presented with the columns configuration page. This page enables you to choose which columns are displayed and the order they show in. At the top of the page are the selected columns. You can change the column headings by selecting the heading name and then over typing it with the new name. Headings that are greyed out are set in one of the other configuration screens. You can choose which columns are displayed by dragging and dropping those required into the top section or by clicking the + symbol. The columns are removed by dragging them into the bottom section or clicking the red X.

3.1.6.3 Add Vehicle

Use this to add a new key or code. You will be prompted to enter data for all the columns you currently have selected for display e.g make, model, registration number.

If you are using swipe cards then you will need to add the ISO/Access pair name as well as the card number. The ISO/Access pair should be added first.

3.1.6.4 Unit Allocation

Accessed by clicking "Configure Vehicles", allows keys to be allocated to specific units that report to this website. The default settings is keys/codes are allocated to all units

3.1.6.5 Transaction Input

Accessed by clicking "Configure Vehicles", use this to select what inputs are requested on a per vehicle basis. The options are:

1. Enable Odometer - driver must enter odometer when refuelling the vehicle or piece of plant associated with the key or code
2. Enable Hourmeter - driver must enter hourmeter when refuelling the vehicle or piece of plant associated with the key or code
3. Enable Job Input - driver must enter a job number when refuelling the vehicle or piece of plant associated with the key or code
4. Enable User Data Input - driver must enter User Data when refuelling the vehicle or piece of plant associated with the key or code

3.1.6.6 Time of Day Access

Accessed by clicking "Configure Vehicles", used to set during what periods of time a specific key/code associated with a vehicle or piece of plant can access fuel. Use Edit Time of Day List button to edit existing time of day configurations or add new ones.

←

Time-of-day Access

Edit Time-of-day List

Configure Vehicles

?

How to ▶

Allow weekly access to use SmartFill Units.

+

Batch Actions

TOD Access:

Default ▾

Search

Type to search...

Q

Show 50 ▾

NaturalValue	Registration	Description	Time-of-day Access	Enable Time-of-day Access
1234	123-ABC	TEST		<input type="checkbox"/>

Showing 1 to 1 of 1 entries

←

1

→

Figure 3.7: Time of Day Setup

3.1.6.7 Fill Limits

Accessed by clicking “Configure Vehicles”, sets a fill fuel limit for a specific key/code associated with a vehicle or piece of plant. This prohibits more than the specified quantity of fuel being dispensed into a given vehicle or piece of plant on a given transaction. To change the limit click in the “Allocation per Fill” field and either enter the value or over type an existing value.

3.1.6.8 Daily Allocation

Accessed by clicking “Configure Vehicles”, sets a total daily allocation of fuel for a specific key/code associated with a vehicle or piece of plant. If this feature is used the daily limit must be more than the fill limit or the vehicle will be unable to be filled to specified limit. The two settings interact and the lower of the two will determine how much fuel can be taken.

3.1.6.9 ISO/Access Registration

This page lists the ISO/Access pairs that are authorised for use with SmartFill units registered to this website. When adding a swipe card as a vehicle/plant/driver the ISO/Access pair name must be referenced for each card so the SmartFill unit can grant authorisation.

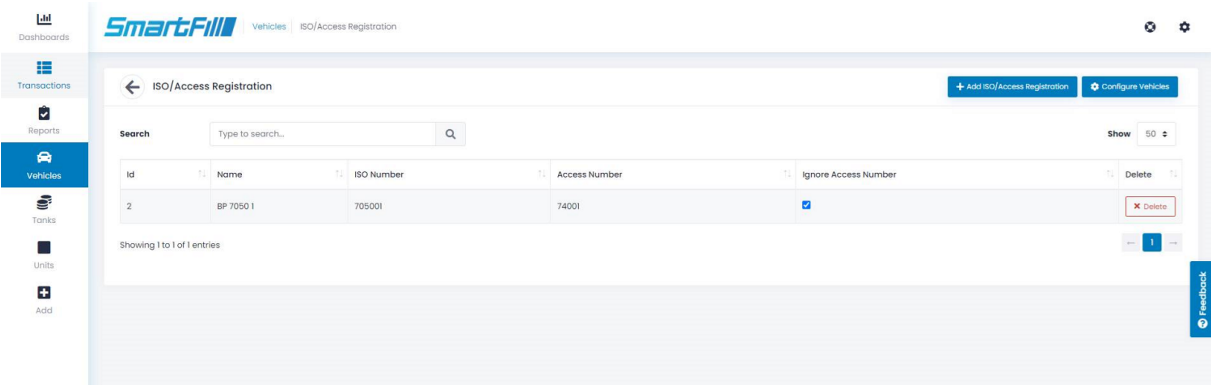


Figure 3.8: Admin ISO/Access Registration

To add an ISO/Access pair, click the **Add** button and fill out the form with the ISO and Access number and give the pair a reference name. Some cards are not encoded with an access number. For these check the "Ignore Access Number" checkbox and only include an ISO number.

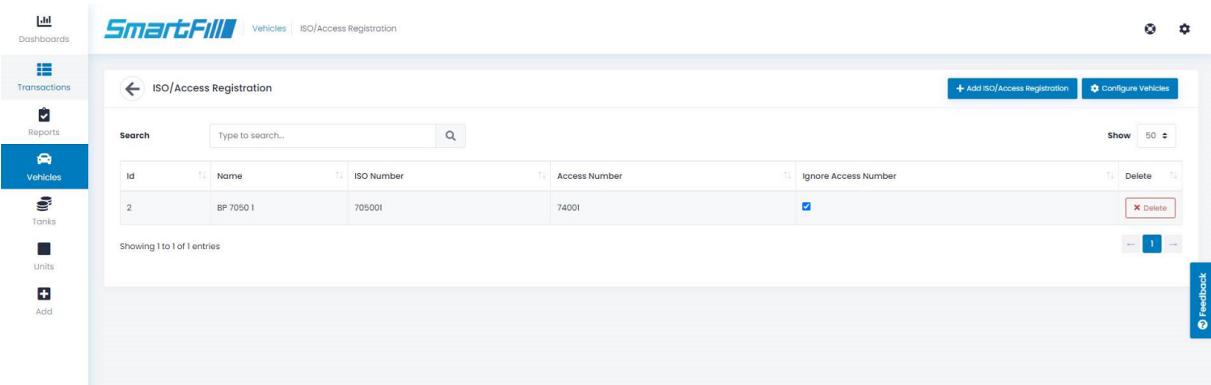


Figure 3.9: Add ISO/Access Pair

3.1.7 Setting up Drivers

Driver details are set up on the Drivers page. The name of the driver can be associated with a key or code and when this is used the driver name will be shown in the transaction while the name has been chosen as one of the displayed fields in the transactions columns page.

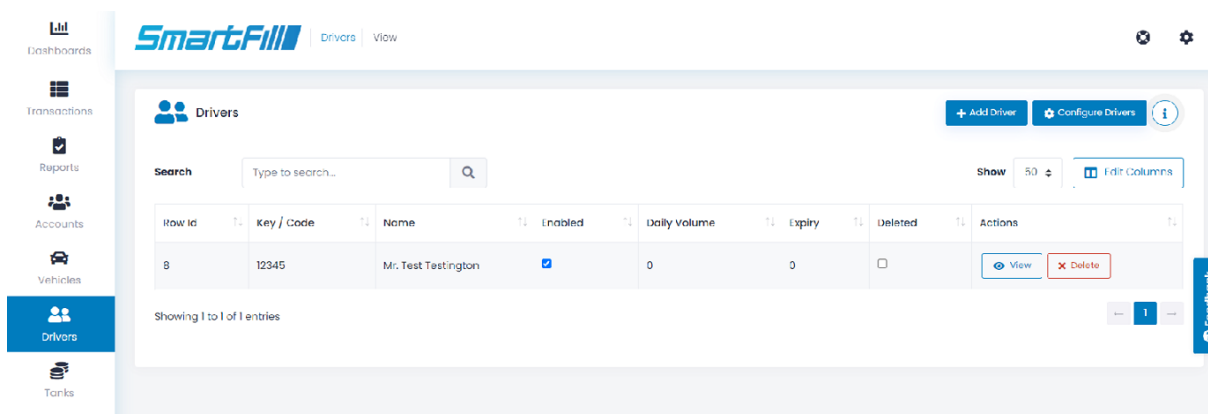


Figure 3.10: Drivers Page

3.1.7.1 Add Driver

The add driver button allows you to add a new driver. You will be prompted to enter data for each of the columns that are displayed on the drivers page. On the input type you must select whether the entry is a key or a code (PIN/VIN). Once a driver is added you can edit it from the drivers page by selecting and over typing the entry.

If you are using swipe cards then you will need to add the ISO/Access pair name as well as the card number. The ISO/Access pair should be added first.

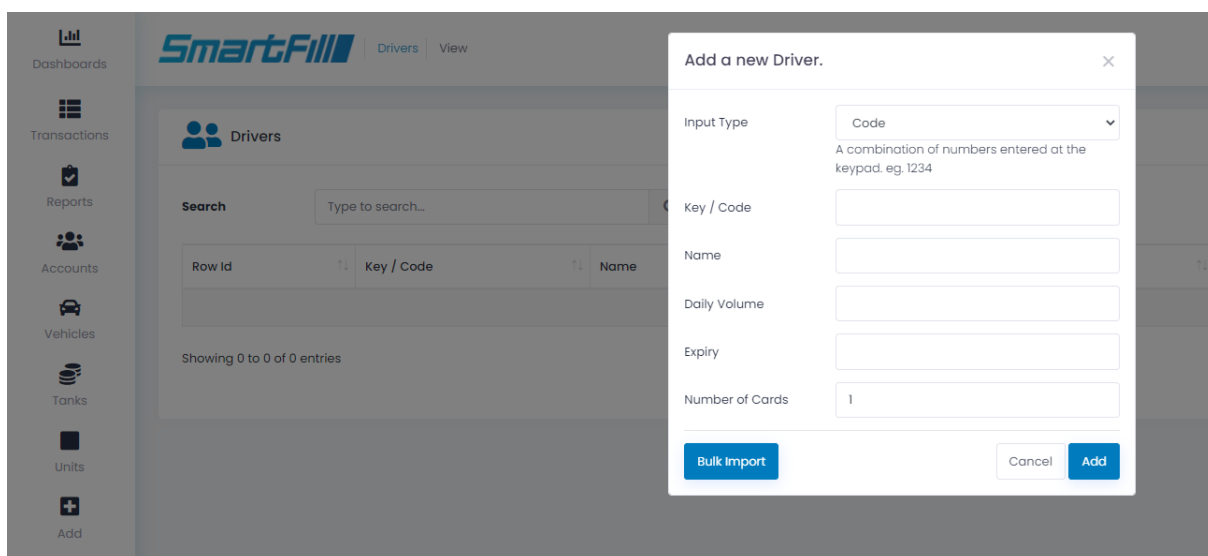


Figure 3.11: Add Driver Page

3.1.7.2 Drivers - View

The Drivers page provides a overview of existing codes or keys and the names that have been associated with them. Details of the key or code are automatically transferred to all selected units. In addition the driver names are automatically transferred to all selected, connected units.

Details for existing drivers can be changed by selecting a cell, such as description and over typing the existing text. Drivers

WARNING



can be disabled by deleting them in the unit or selecting the button next to the key or code on the website Drivers deleted on the website can not be added at the unit.

3.1.7.3 Drivers - Edit Columns

If you select Edit Columns on the Driver pages you will be presented with the columns configuration page. This page enables you to choose which columns are displayed and the order they show in. At the top of the page are the selected columns. You

can change the column headings by selecting the heading name and then over typing it with the new name. Headings that are greyed out are set in one of the other configuration screens. You can choose which columns are displayed by dragging and dropping those required into the top section or by clicking the + symbol. The columns are removed by dragging them into the bottom section or clicking the red X.

3.1.7.4 Unit Allocation

Accessed by clicking "Configure Vehicles", allows drivers to be allocated to specific units that report to this website. The default setting is drivers are allocated to all units. Drivers can be unallocated or allocated to specific units that report to this website.

3.1.7.5 Time of Day Access

Accessed by clicking "Configure Vehicles", used to set during what periods of time a specific key/code associated with a driver can take fuel. Use the Edit Time of Day List button to edit existing time of day configurations or add new ones.

3.1.7.6 Fill Limits

Accessed by clicking "Configure Vehicles", sets a fill fuel limit for a specific key/code associated with a driver. This prohibits more than the specified quantity of fuel being dispensed into a given vehicle or piece of plant by the driver on a given transaction. To change the limit click in the "Allocation per Fill" field and either enter the value or over type an existing value.

3.1.7.7 Daily Allocation

Accessed by clicking "Configure Vehicles", sets a total daily allocation of fuel for a specific key/code associated with a driver. If this feature is used, the daily limit must be more than the fill limit or the vehicle will be unable to be filled to the specified limit. The two settings interact and the lower of the two will determine how much fuel can be taken.

3.1.7.8 Transaction Input

Accessed by clicking "Configure Vehicles", use this to select what inputs are requested on a per driver basis. The options are:

1. Second ID - Can be a key or code that the driver must use in addition to his primary key or code to get fuel.
2. Enable Job Input - driver must enter a job number when refuelling the vehicle or piece of plant associated with the key or code.
3. Enable User Data Input - driver must enter User Data when refuelling the vehicle or piece of plant associated with the key or code.
4. Supervisor - when a selected driver is designated a supervisor, this means he can issue fuel to a vehicle or piece of plant without needing to enter a vehicle/plant key or code. A user can be both a driver and a supervisor. If a vehicle key or code is entered before the driver ID, the user is treated as a driver. If no vehicle identification (key or code) is used to start a transaction and only a driver ID is entered/presented, the user is treated as a supervisor, if the supervisor check box has been selected.

3.1.7.9 Supervisor Inputs

Accessed by clicking "Configure Vehicles", use this page to select what inputs a driver who is designated to be a supervisor must enter when they are operating as a supervisor. The options are:

1. Enable Job Entry - requires the supervisors to enter a valid job number.
2. Enable User Defined Entry - requires the supervisors to enter a valid user defined value, such as location.

3.1.8 Pricing

Use the pricing page to set the prices on each pump of your OPT. The pricing can be scheduled to change, or edited immediately.

You may also use this page to set discounts for your OPT customers.

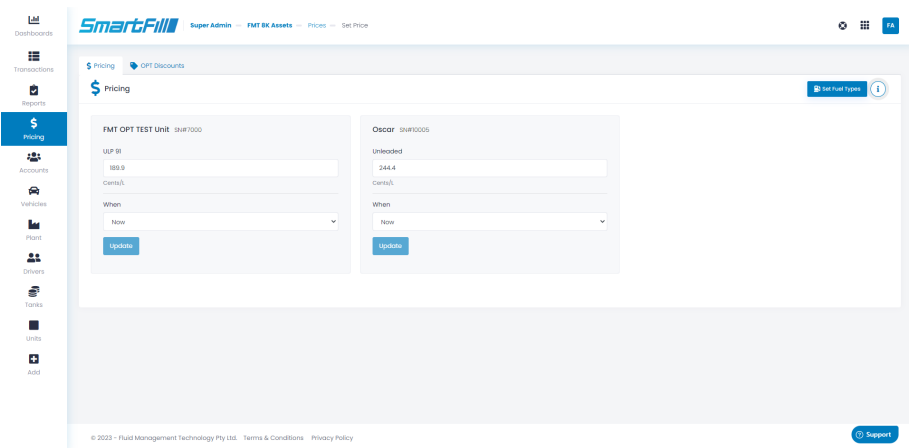


Figure 3.12: Pricing Page

3.1.9 Tanks

Use this page to add tanks, if your SmartFill Gen 3 system has a SmartDip or Automatic Tank Gauging(ATG) interface fitted. If your SmartFill Gen 3 does not have a SmartDip or ATG interface, you can create virtual tanks called Smart Tanks, these allow you to track your tanks with manual dips, transactions that occur will automatically be subtracted from the tank volume so you can monitor your tanks in real-time. The SmartTanks feature requires a subscription to our PRO Reports website add-on.

3.1.9.1 Tanks Page

This is the default page and allows you to view in almost real time the levels in your tanks. This screen shows a combination of tanks with Automatic Tank Gauging, and tanks that are Smart Tanks.

The graphics displayed at the top of the page give you a visual indication of the status of your tanks, these graphics are available with PRO reports.

The table at the bottom of the tanks page lists all your tanks and the current status including the capacity of the tank, safe fill limit, current volume, last dip, and the tank name.

The colours indicate the type of tank and status of the tank. A tank with a SmartDip or ATG will be listed in the table as a white row. A Smart Tank will be listed as a green row if it has had a recent DIP, or as orange if a DIP is required



Figure 3.13: Tanks Page

From the tanks page you may edit the description of the tank by clicking into the description cell and editing the value. If you are using PRO Reports, the tank description will show as the tank name on all charts and graphs. You can see this in figure 3.13, the name of the tanks in the graphics is the tank description.

Add Manual Dip - Allows you to enter the date, time, volume and volumetric unit of a manual tank dip.

Add Delivery - Allows you to enter the date, time, volume and volumetric unit of a fuel delivery. You can also include supplier, reference number, and delivery price.

3.1.9.2 Tank Level - Columns

If you select columns below the Tank Level heading you will be presented with the configuration page for the live view of the tanks. This page enables you to choose which columns are displayed and the order they show in. At the top of the page are the selected columns. You can change the column headings by selecting the heading name and then over typing it with the new name. Headings that are greyed out are set in one of the other configuration screens. You can choose which columns are displayed by dragging and dropping those required into the top section or by clicking the + symbol. The columns are removed by dragging them into the bottom section or clicking the red X.

3.1.9.3 Tanks - Dips

Selecting Dips on the top toolbar shows a record of all the Daily dip transactions for all the tanks. An automatic dip is done for each tank at one minute after midnight or as close as practical to this time, effectively when the unit is next turned on.

NOTE: Selecting specific tanks above the graph will allow you to show or hide all tanks from the graph.. It also shows all extra dips generated every 2 hours or by fluctuations outside the P-Factor setting which can be set between 0-100, the default is 1.

3.1.9.4 Tanks - Transfers

Transfers To and Transfers From show all transfers pertaining to all listed tanks and as all transactions, may be exported for recording elsewhere.

3.1.9.5 Tanks - Deliveries

When there is a large change in volume in a short period of time detected in the tank, a delivery is taken to have occurred and recorded as a tank transaction if the auto deliveries feature is enabled for the tank. This is an automatic delivery. Delivery drivers can also enter a delivery at the unit by holding down the '0' key. This is recorded as a manual delivery.

3.1.9.6 Tanks - Fuel Suppliers

Add fuel suppliers and give them keys to use at the unit on delivery, give supplier numbers and designate fuel prices.

3.1.9.7 Configure Tanks - Add Smart Tanks

The add Smart Tank button allows you to add a new tank if you have PRO Reports enabled on your account. You will be prompted to enter data for each of the columns that are displayed on the tanks page. Once a tank is added you can edit it from the tank page by selecting a field and over-typing the entry.

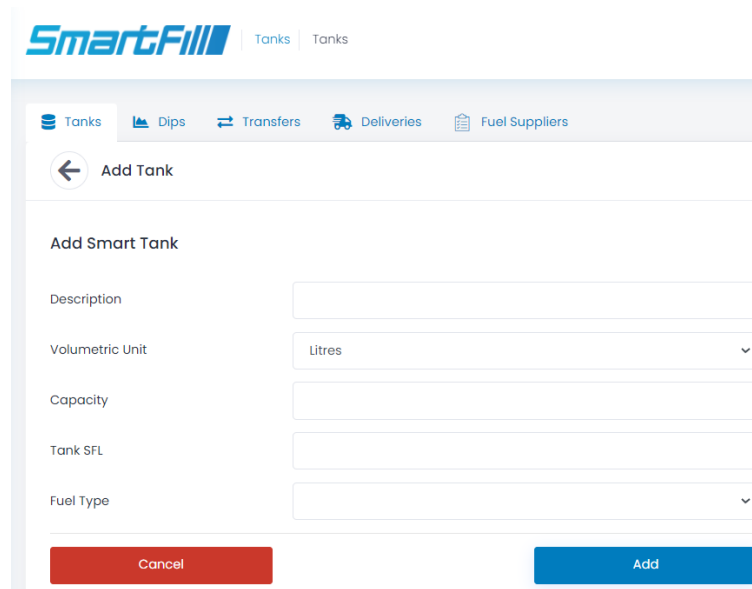


Figure 3.14: Add SmartTank Page

3.1.9.8 Configure Tanks - Combine Tanks

Combine tanks by assigning SmartFill units and creating a name for your combined tank.

3.1.9.9 Configure Tanks - Pumps

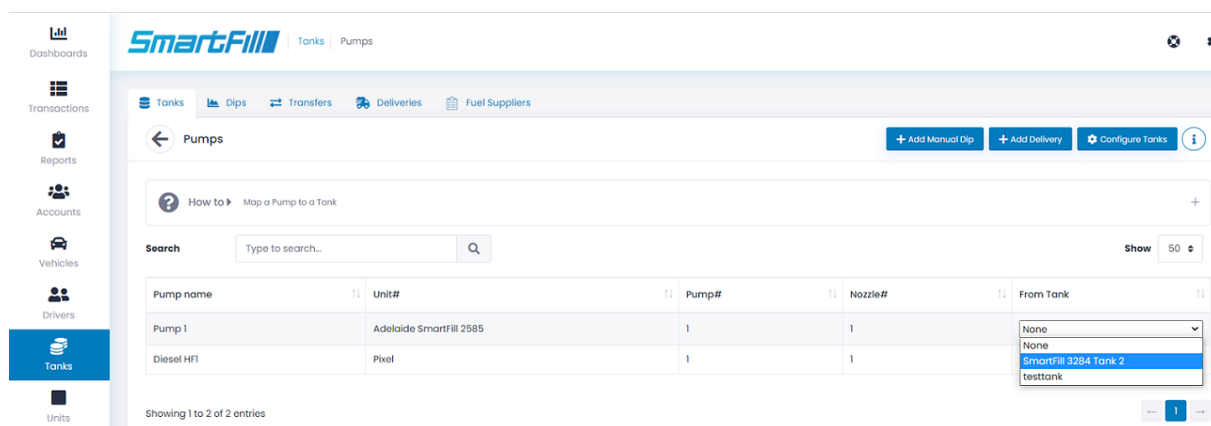


Figure 3.15: Pump to Tank Mapping on the Website

After a SmartTank is created, it is important to map your pumps to the tank to ensure accurate reporting. Connecting each transaction with a tank allows for reconciliation of fuel use. Inflow meters should be configured on the Transfer Meters page.

3.1.9.10 Configure Tanks - Transfer Meters

Configuration on this page requires a SmartFill Inflow module to be installed. Once installed, set up transfer meters with "To Tank" only for deliveries, or "From" and "To" tanks for transfers.

3.1.9.11 Configure Tanks - Mobile Tanks

Configuring a key/code to a tank allows you to authorise the fill of a mobile tank at the SmartFill unit. The movement will be treated as a transfer between tanks instead of a transaction. If you have a SmartFill on the mobile tank, you can then see the fuel leaving the mobile tank as transactions.

3.1.9.12 Configure Tanks - Email Schedule

Tank levels may be scheduled for specific times and sent to multiple email addresses to alert you of your tank levels.

3.1.9.13 Configure Tanks - Email Alerts

You can configure alert notifications to be sent to selected email addresses based on tank levels or when offline, and an optional follow up interval (specified in minutes). Separate email addresses with semicolons (;).

3.1.9.14 Configure Tanks - Delivery Email Alerts

You can configure email alerts to notify you of fuel deliveries. This will send you the date, time, quantity, supplier and price (if set).

3.1.10 Custom User Data

On the custom user data page you can define your own data that you want a driver to enter while refuelling e.g. a department or a location. The driver enters a numeric code that is mapped to a value on the website. Below is a page set up for the entry of test data. To use this function vehicle and/or drivers must have their transaction input set for a user defined field input.

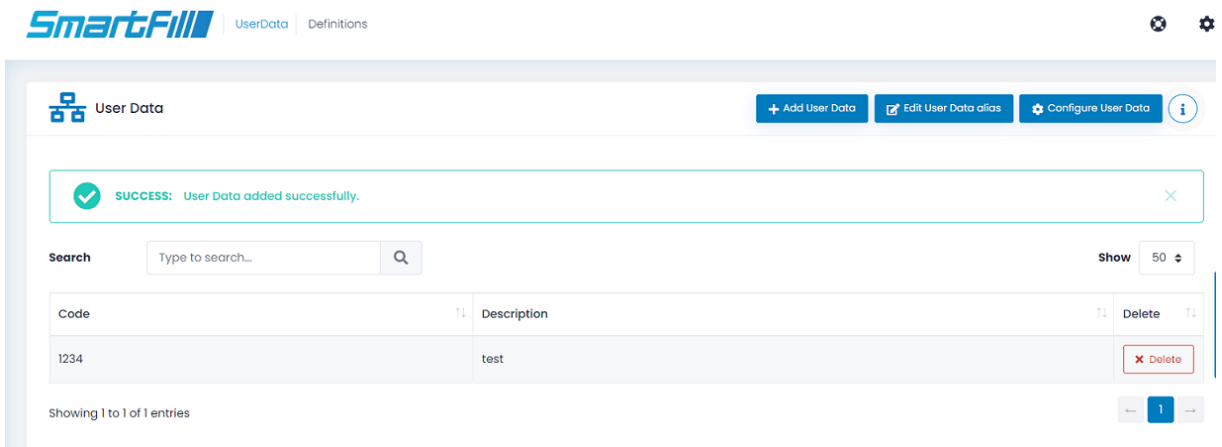


Figure 3.16: User Defined Data Page

3.1.10.1 Configure User Data - Unit Allocation

Allows user defined entries to be allocated to specific units that report to this website. The default setting is they are allocated to all units. User defined data fields can be unallocated or allocated to specific units that report to this website.

3.1.11 Jobs

The details for job numbers are set up on the jobs page. On this page you can add new job numbers and map a numeric entry made at the unit to an internal job number that can be used on the transaction report.

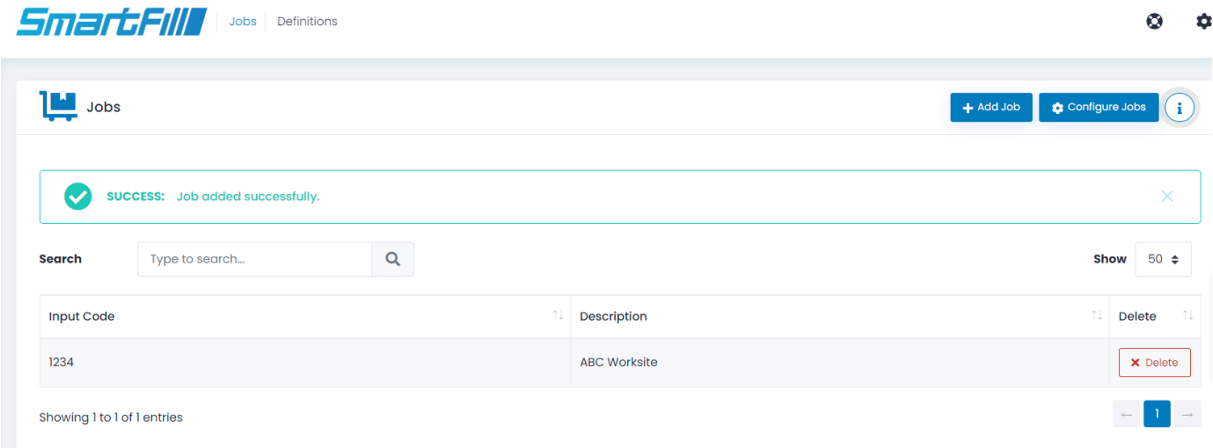


Figure 3.17: Jobs Page

3.1.11.1 Add Job

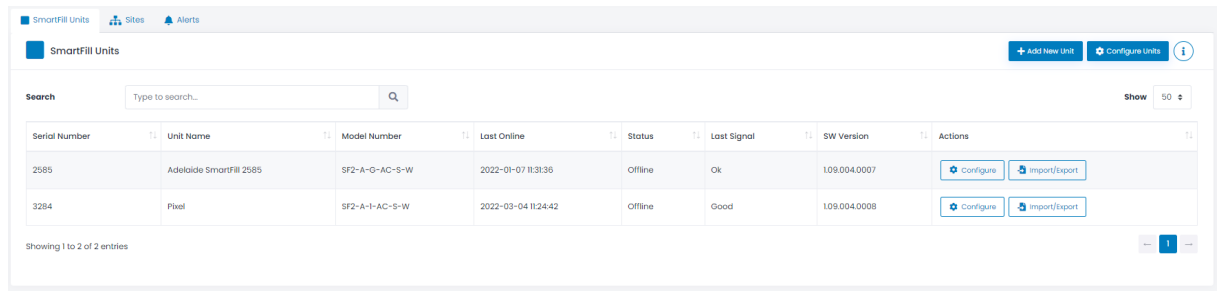
Selecting the Add button on the jobs page allows you to enter a new job number and a description for it.

3.1.11.2 Configure Jobs - Unit Allocation

Allows job numbers to be allocated to specific units that report to this website. The default setting is all job numbers are allocated to all units. Job numbers can be unallocated or allocated to specific units that report to this website.

3.1.12 Units

This page enables you to see the status and the configuration of units allocated to this website and add new units.



Serial Number	Unit Name	Model Number	Last Online	Status	Last Signal	SW Version	Actions
2585	Adelaide SmartFill 2585	SF2-A-G-AC-S-W	2022-01-07 11:31:36	Offline	Ok	1.09.004.0007	Configure Import/Export
3284	Pixel	SF2-A-I-AC-S-W	2022-03-04 11:24:42	Offline	Good	1.09.004.0008	Configure Import/Export

Showing 1 to 2 of 2 entries

Figure 3.18: SmartFill Units Page

3.1.12.1 Units

Is the primary screen and shows the status of the connected units. The time represents the last time the unit reported its status to the website.

3.1.12.2 Sites

Sites allow you to allocate multiple SmartFill units to a **site**. This gives you the ability to sort by site, allow users access to only specific sites and report on sites.

3.1.12.3 Alerts

Provides alerts when the SmartFill unit goes offline.

3.1.12.4 Software Update

This is where you can check and download software updates if required

3.1.12.5 Import (From Unit to Website)

If your unit(s) is not connected to the website via a network connection then transaction and configuration data will need to be transferred via a USB drive. Export data and transactions from the SmartFill Gen 3 onto a USB drive and then use the import function to import into the website. The SmartFill Gen 3 Operations manual has details on how to export data and transactions from the SmartFill Gen 3.

3.1.12.6 Export (From Website to Unit)

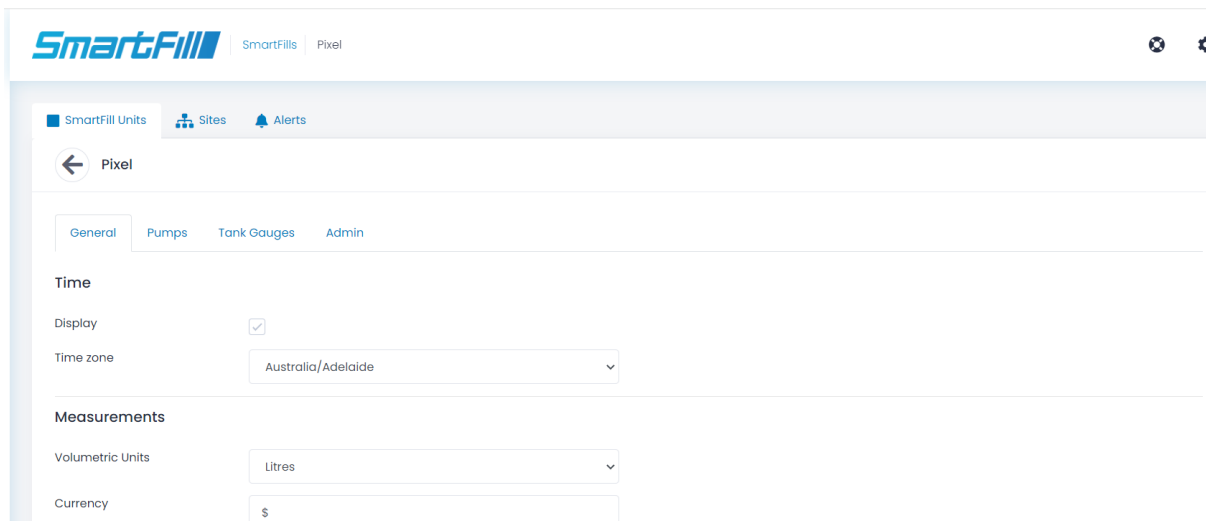
As above, if you have no network connection then use this function to export all the website configuration onto a USB drive so it can be imported into the SmartFill Gen 3. The SmartFill Gen 3 Operations manual has details on how to import data from a USB drive.

3.1.12.7 Add New Unit

Is used to add a new unit to this website. To do this requires the security code that is shipped with the unit.

3.1.12.8 Unit - Configure

This option is shown in the action column for each unit and is used to remotely configure options in the unit. There are four pages, if tank gauging is installed and three if there is no tank gauging.



The screenshot shows the SmartFill web interface. At the top, there's a header with the SmartFill logo and navigation links for SmartFills and Pixel. Below the header, there's a sub-header with 'SmartFill Units', 'Sites', and 'Alerts'. The main content area is titled 'Pixel' and contains a 'General' tab, which is currently selected. Under the 'General' tab, there are two sections: 'Time' and 'Measurements'. In the 'Time' section, the 'Display' checkbox is checked, and the 'Time zone' is set to 'Australia/Adelaide'. In the 'Measurements' section, the 'Volumetric Units' are set to 'Litres' and the 'Currency' is set to '\$'.

Figure 3.19: Configuration - General

1. Time

- (a) **Display** sets whether the time is shown on the display (default is on)
- (b) **Time Zone** - Select which time zone you are in

- 2. **Measurements** - Sets what units are used for measurement in the unit. The options are litres and US or imperial gallons
- 3. **Menu Access** - Allows you to enable the Installer Menu and change the Admin and Installer PINs,
- 4. **Security** - If the hide PIN numbers is selected, PIN entries are shown as an asterisk ' * ' on the display when the driver enters his PIN.
- 5. **Receipt Header** - Sets your Company Name as the header for receipts.
- 6. **Other** - Sets transaction hold time and input screen timeout.

3.1.12.9 Configure - Pumps

This page is used to remotely configure the pumps (hoses) in the unit.

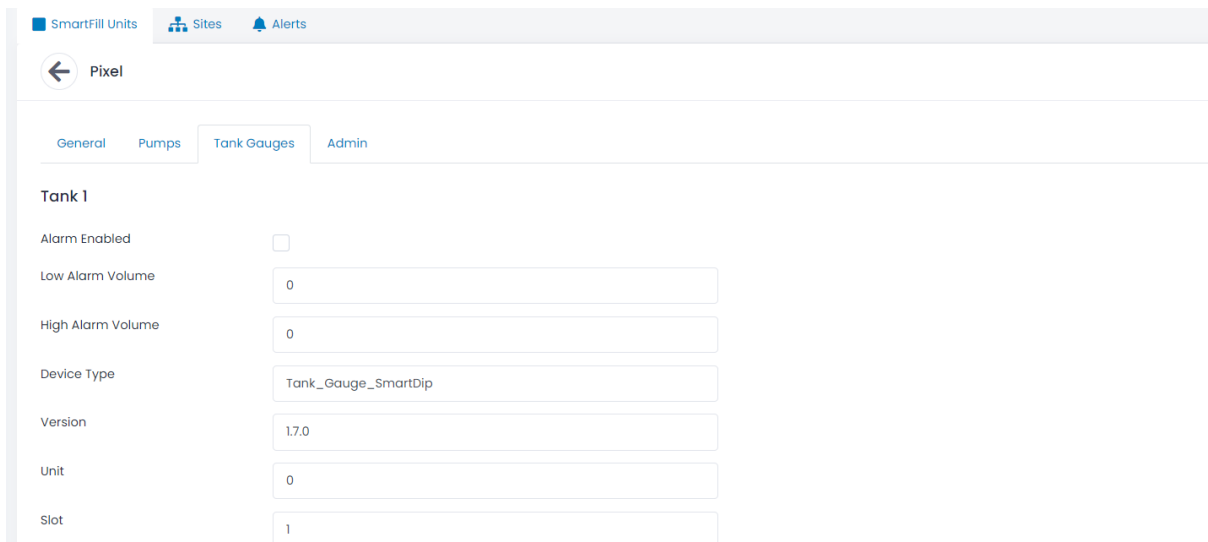
The screenshot shows the 'SmartFill' web interface. At the top, there's a header with the 'SmartFill' logo and links for 'SmartFills' and 'Pixel'. Below the header is a navigation bar with 'SmartFill Units', 'Sites', and 'Alerts'. A sidebar on the left shows a back arrow and 'Pixel'. The main content area has tabs for 'General', 'Pumps', 'Tank Gauges', and 'Admin'. The 'Pumps' tab is active, showing 'Pump 1' configuration. The form includes fields for Name (Diesel HFI), Enabled (checked), Show Price (checked), Bypass Detection (checked), Fuel Type (Diesel High Flow), Fuel Price (\$ 1.750), Cutoff Freq (1), Pulser Source (1), and Activation (Nozzle).

Figure 3.20: Configuration - Pumps

1. **Name** - Used to name the pump. This name is shown on the display when the pump is in use and when the pump selection screen is show (when there is more than one hose being controlled)
2. **Enabled** - Sets whether this pump/hose is enabled on the unit. If it is not selected, the driver will not be given the option to select this pump.
3. **Show Price** - When set, will make the total price of the transaction visible on the SmartFill display.
4. **Bypass Detection** - If using a pump control module with compatible software, this feature allows you to record transactions that occur including if an asset has not been used and the system has been bypassed.
5. **Fuel Type** - Selects the fuel type being dispensed by this pump/hose. This should ONLY be set if you are going to use fuel type checking on the vehicles or plant page.
6. **Fuel Price** - Sets the price that is displayed when the transaction is in progress. NOTE: this is a display only function and it DOES NOT enable the system to calculate the total price of delivery.
7. **Cutoff Freq** - Enables you to ignore flow rate/pulses that are very slow. Usually used when Walktime is set and there is a inflow/outflow meter used.
8. **Pulser Source** - Enables one pulser to be used for 2 pumps. Ex. High Flow and Low Flow Diesel using the same flow meter at a pump.
9. **Activation** - Sets the pump activation to Nozzle Switch or Walktime depending on your requirements.

10. **K-Factor** - Sets the k-factor for the pump.
11. **Volume Multiplier** - Sets volume multipliers needed for accurate display of volume.
12. **Gilbarco Digits** - Sets the displayed quantity of digits for Gilbarco pumps. See 2.7.4
13. **Device Type** - Read-only information about the type of SmartFill Gen 3.
14. **Version** - Read-only information about the version number of the SmartFill Gen 3.
15. **Unit** - Read-only information about the unit of the SmartFill Gen 3.
16. **Slot** - Read-only information about the slot of the SmartFill Gen 3.

3.1.12.10 Tank Gauges



The screenshot displays the 'SmartFill Units' configuration page. At the top, there are navigation links for 'SmartFill Units', 'Sites', and 'Alerts'. Below this is a breadcrumb trail showing 'Pixel'. The main content area has four tabs: 'General', 'Pumps', 'Tank Gauges', and 'Admin'. The 'Tank Gauges' tab is selected. Under the heading 'Tank 1', there are several configuration fields:

- Alarm Enabled**: A checkbox that is currently unchecked.
- Low Alarm Volume**: A text input field containing the value '0'.
- High Alarm Volume**: A text input field containing the value '0'.
- Device Type**: A text input field containing the value 'Tank_Gauge_SmartDip'.
- Version**: A text input field containing the value '1.7.0'.
- Unit**: A text input field containing the value '0'.
- Slot**: A text input field containing the value '1'.

Figure 3.21: Configuration - Tank Gauges

1. **Alarm Enabled** - sets whether the tank level alarms are on. If enabled and notifications are set on the tanks page, an SMS will be sent to the numbers on the notification list when either a low or high alarm condition occurs.
2. **Low Alarm Volume** - sets the level at which the system will send a low level alert via SMS, if configured.
3. **High Alarm Volume** - sets the level at which the system will send a high level alert via SMS, if configured.
4. **Device Type** - Shows the type of tank gauge used for each tank.
5. **Version** - Read-Only information about the version of the tank.
6. **Unit** - Read-Only information about the unit the tank is assigned.
7. **Slot** - Read-Only information about the slot that tank is assigned.

3.1.12.11 Configure - Admin

The Admin screen in the configure section is used for more advanced settings, these options are as follows:

- Protocol - Used to specify the pump protocol when using a Gilbarco pump
- Logging - This section has two options, these should only be changed if directed by support and may use more data if enabled
 - Persistent Logs
 - Comms Debug
- Printer - Used to configure a receipt printer for use with a SmartFill unit
 - Enabled - Choose whether receipt printer is enabled on the unit.
 - Baud Rate - Default is 9600.
 - Data Bits - Default is 8 bits.
 - Parity - Default is none. Can be none, odd or even.
 - Stop Bits - Default is 1 bit.
- Swipe Cards
 - Enable Expiry - If using swipe cards this enables card expiry
- Offline Reboot - If the unit goes offline, this setting specifies how long before the unit should reboot to reset the connection. The unit will not reboot if a transaction is in progress.
 - Enabled - Choose whether to enable offline reboot.
 - Threshold - How long until the unit should reboot after going offline.
 - Interval - At which interval the unit should keep rebooting if the connection is not restored.

3.1.13 Admin

The Admin page lists out all the users who have access to your website, from here you can manage accounts and permissions, create new accounts for your website, and change your password.

SmartFill | Admin | User Management

Users Roles Settings

User Management User Log Invite User

Search Type to search... Show 50

Id	First Name	Last Name	Username	Account Admin	Permissions	Logged In	Last Login	Last Activity	Actions
8505	Test	McTester	@fmtweb.com	<input checked="" type="checkbox"/>	Account administrators have full access to all sites and features.	<input type="checkbox"/>	2022-01-10 09:55:19	2022-01-10 10:26:50	View Delete Re-Send Invite

Showing 1 to 1 of 1 entries

Figure 3.22: Admin

3.1.13.1 View/Edit Users

It is possible on this screen to view all users, define them as administrators or not and to delete users from the system.

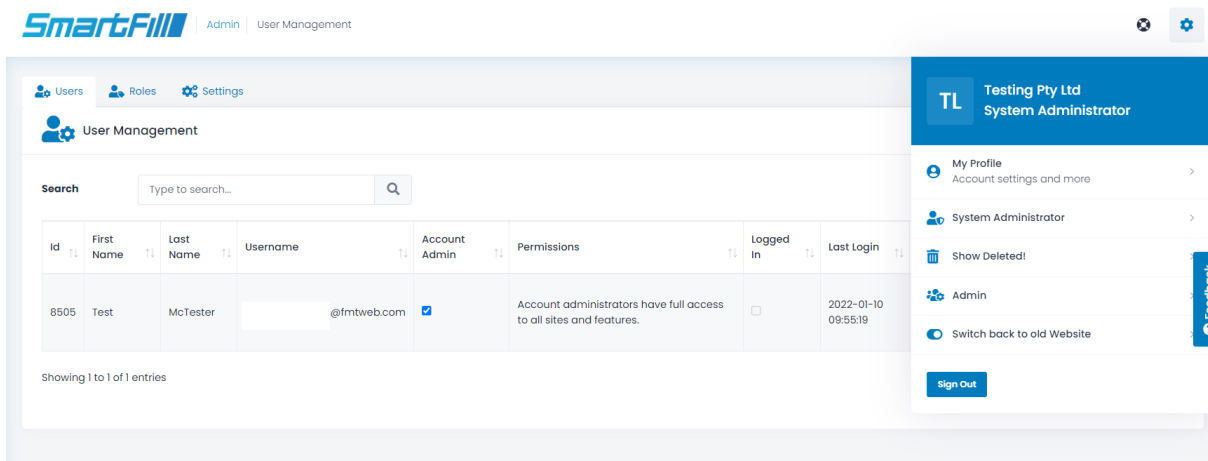


Figure 3.23: Admin View/Edit Users

3.1.13.2 Invite New User

Use this page to add new users to the system. Fill in the details and click "Invite".

The screenshot shows the 'Invite User' form. It has a title 'Invite User' and a close button. The main text says 'Complete this form to invite a new user into the system.' and 'An email will be sent to this email address asking to register into the system.' The form fields are: 'Email Address' (text input), 'Account admin' (checkbox), 'Site' (dropdown menu with 'All Sites' selected), and 'Role' (dropdown menu with 'Site Admin' selected). Below the 'Site' dropdown, there's a link 'To manage sites Click here'. Below the 'Role' dropdown, there's a link 'To manage roles Click here'. At the bottom right, there are 'Cancel' and 'Invite' buttons.

Figure 3.24: Admin Add User

3.1.13.3 My Profile - Change Password

Use this page to change the password of the currently logged in user.

SmartFill | Admin | Change Password

Users Roles Settings

Change Password

Test McTester
SmartFill Expert

Email: @fmtweb.com
Phone: 1800AMAZING

Personal Information
Profile Permissions
Change Password

Change Password Update your password periodically

Current Password
New Password
Retype New Password

Submit

Figure 3.25: Admin Change Password

3.1.13.4 Roles

Roles allow you to configure permissions for each user easily. By assigning a user a specific role, you get to decide what they can see and edit.

Users

Roles

Settings

PEO

Add

Units

Vehicles

Tools

Roles

Search

Type to search...

#	Role Name	Privileges	Actions																		
8759	Site Admin	<table><tr><th>Feature</th><th>View</th><th>Edit</th></tr><tr><td>Transactions</td><td></td><td></td></tr><tr><td>Assets</td><td></td><td></td></tr><tr><td>Drivers</td><td></td><td></td></tr><tr><td>Units</td><td></td><td></td></tr><tr><td>Tanks</td><td></td><td></td></tr></table> <div>List of privileges.</div>	Feature	View	Edit	Transactions			Assets			Drivers			Units			Tanks			<div><div></div>Configure</div>
Feature	View	Edit																			
Transactions																					
Assets																					
Drivers																					
Units																					
Tanks																					
8760	View and Edit	<table><tr><th>Feature</th><th>View</th><th>Edit</th></tr><tr><td>Transactions</td><td></td><td></td></tr><tr><td>Assets</td><td></td><td></td></tr><tr><td>Drivers</td><td></td><td></td></tr><tr><td>Units</td><td></td><td></td></tr><tr><td>Tanks</td><td></td><td></td></tr></table> <div>List of privileges.</div>	Feature	View	Edit	Transactions			Assets			Drivers			Units			Tanks			<div><div></div>Configure</div>
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Transactions																					
Assets																					
Drivers																					
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Tanks																					
8761	View Only	<table><tr><th>Feature</th><th>View</th><th>Edit</th></tr><tr><td>Transactions</td><td></td><td></td></tr><tr><td>Assets</td><td></td><td></td></tr><tr><td>Drivers</td><td></td><td></td></tr><tr><td>Units</td><td></td><td></td></tr><tr><td>Tanks</td><td></td><td></td></tr></table> <div>List of privileges.</div>	Feature	View	Edit	Transactions			Assets			Drivers			Units			Tanks			<div><div></div>Configure</div>
Feature	View	Edit																			
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Assets																					
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Tanks																					
8762	Tanks Only	<table><tr><th>Feature</th><th>View</th><th>Edit</th></tr><tr><td>Tanks</td><td></td><td></td></tr></table> <div>List of privileges.</div>	Feature	View	Edit	Tanks			<div><div></div>Configure</div>												
Feature	View	Edit																			
Tanks																					

Figure 3.26: Admin - Roles Tab

3.1.13.5 Admin - Settings

The Settings page contains the API Reference and API Secret. For more details, please view the API documentation at www.fmtweb.com or email support@fmtweb.com

There is also an Installer Access section which will allow your SmartFill installer to view and change values and settings for your website.

Chapter 4

Automatic Tank Gauging Interface

4.1 Introduction

The Smart Fill fuel management system can interface with any automatic tank gauging (ATG) system which supports either Veeder Root TLS 350 or 450 protocols. The interface is accomplished via a serial port. This interface supports up to four tanks. The Smart Fill fuel management system collects the following data from ATG equipment:

- 12:01 AM dip
- Continuous tank inventory level
- Fuel delivery information

Utilizing the automatic tank gauging system allows the Smart Fill fuel management system to seamlessly monitor your fuel system from end to end and provide reconciliation reports on demand, at the touch of a button, or at predetermined intervals via email or SMS.

4.2 Operation

The ATG module functions by querying the tank gauging system for current inventory data. The acquired data is imported into the Smart Fill system and is accessed locally at the Smart Fill console or online at the users Smart Fill website.

4.3 ATG Setup

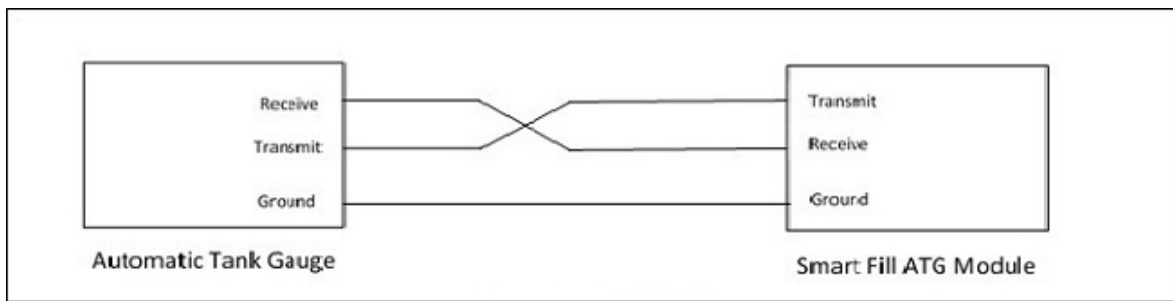
The ATG system dictates which communications protocols (RS 485 or RS 232) are to be utilized. Following the ATG manufacturer's instruction:

- Enable a communication port
- Select Veeder Root language
- Select communication standard (RS232 or RS485)

4.3.1 RS232 Serial Communication – RS232 requires a three (3) wire interface. The three (3) wires are Receive, Transmit, Common/Ground. Interconnect the two systems in accordance with Table 4.1 and Figure 4.1.

Wire	From ATG Function	Wire Color	To Smartfill Function
1	Transmit		Receive
2	Receive		Transmit
3	Common/Ground		Common/Ground

Table 4.1: RS232 Wiring



Note: the Receive and transmit wires are crossed over.

Figure 4.1: RS232 Wiring

Record the ATG RS232 communications characteristics in Table 4.2.

Name	Setting.
Baud Rate	
Data Bits	
Stop Bits	
Parity	

Table 4.2: RS232

4.3.2 RS485 Serial Communication – RS485 requires a two (2) wire interface. The two (2) wires are Plus and Minus. Interconnect the two systems in accordance with Table 4.3 and Figure 4.2

Wire	From ATG	Wire Color	To Smartfill
1	Plus		Plus
2	Minus		Minus

Table 4.3: RS485 Wiring

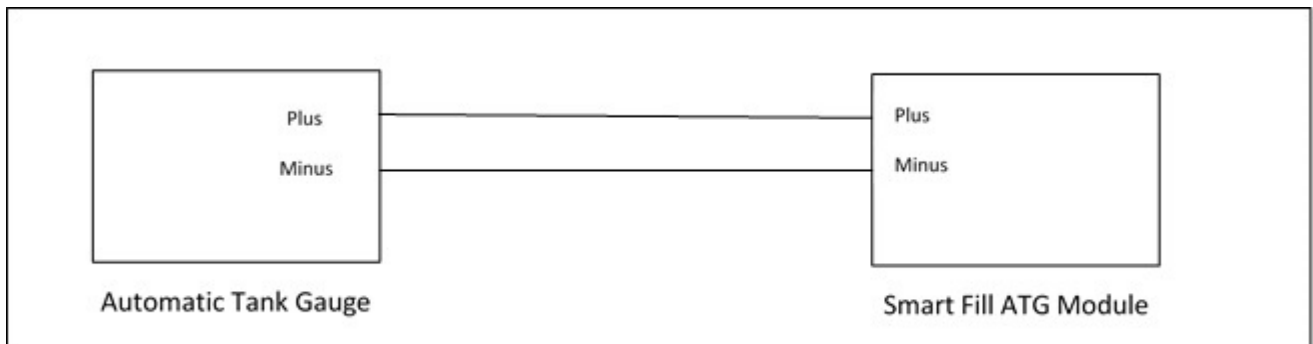


Figure 4.2: RS485 Wiring

Record the ATG RS485 communications characteristics in Table 4.4.

Name	Setting.
Baud Rate	
Data Bits	
Stop Bits	
Parity	

Table 4.4: RS485

4.4 Smart Fill Set Up

Module - To access an Automatic Tank Gauge, a Smart Fill ATG module must be installed. To install the module, snap it into any open slots and secure it with a minimum of two (2) screws. The head of the terminal block is removable for easier wiring termination.

Serial Communication Characteristics –

1. Press and hold the CLR and ENT keys together for 3 seconds. The display will show "Enter Admin or Installer PIN".
2. Enter the PIN 6789.
3. Press <7> for Tanks
4. Press <4> for Comms
5. Press <1> for Baud Rate and enter the baud rate recorded in either Table 4.2 or 4.4
6. Press ENT
7. Press <2> Data Bits and enter the data bits recorded in either Table 4.2 or 4.4
8. Press ENT
9. Press <3> for Parity and enter the Parity recorded in either Table 4.2 or 4.4
10. Press ENT
11. Press <4> for Stop Bits and enter the stop bits recorded in either Table 4.2 or 4.4
12. Press ENT
13. Press <5> for Interface and select either RS232 or RS485 to match the TLS settings
14. Press ENT
15. Press CLR 3 times to return to the main screen. Note that the system annunciates Saving Settings

Interconnect Wiring –

Connect the TLS to the ATG module using the information recorded in the table that corresponds with the communications protocol you are using.

Enable Tanks –

Press and hold the CLR and ENT keys together for 3 seconds. The display will show "Enter Admin or Installer PIN". Enter the PIN 6789.

1. Press <7> Tanks
2. Press <1> Tanks
3. Press <1> Tank 1
4. Press <1> Enable Tank
5. Select Yes
6. Press ENT
7. Press CLR
8. Enable up to seven (7) additional tanks by following steps 4 through 8 except select the next tank number to be enabled.
9. Press CLR until you are returned to the Main Screen to save your settings

FUNCTIONAL CHECK

Press and hold CLR until the Tank Level Screen pops up. The enabled tanks and the levels will appear on the screen. It may take a minute or two for the tank levels to update and appear on the screen.

Chapter 5

SmartDip Installation and Configuration

Overview

The SmartDip is a tank gauging product that is either fitted as an option to the SmartFill OPT unit or supplied as a stand alone unit. One SmartDip module can monitor up to four tanks. The levels from tanks can be displayed locally by holding down the CLR key if incorporated with a SmartFill OPT, sent via an SMS message, if a 3G module is fitted and viewed on the website.

The SmartDip has the ability to generate high and low level alarms. On activation of the alarm a SMS will be sent to all numbers recorded in the unit and alarm status will be displayed on the website

5.1 Installation

WARNING



The SmartDip has a built in Intrinsically Safe Barrier making it suitable for use with combustible liquids, such as diesel or oil and for use with flammable liquids such as motor spirit/gasoline. In the USA if the conduit for the SmartDip passes from a tank through a Class I area around a gasoline dispenser, then the installation must comply with the sealing and wiring method requirements of (NEC) Art. 501

5.1.1 Tank sensor installation to tank.

The sensor for each tank should be installed as per the diagram in figure 5.1. It is important that the probe is connected into a vented Electrical junction box, extra wiring needs to be a minimum of 22AWG Shielded Cable

Smart-Dip Sensor Installation Into Tank.

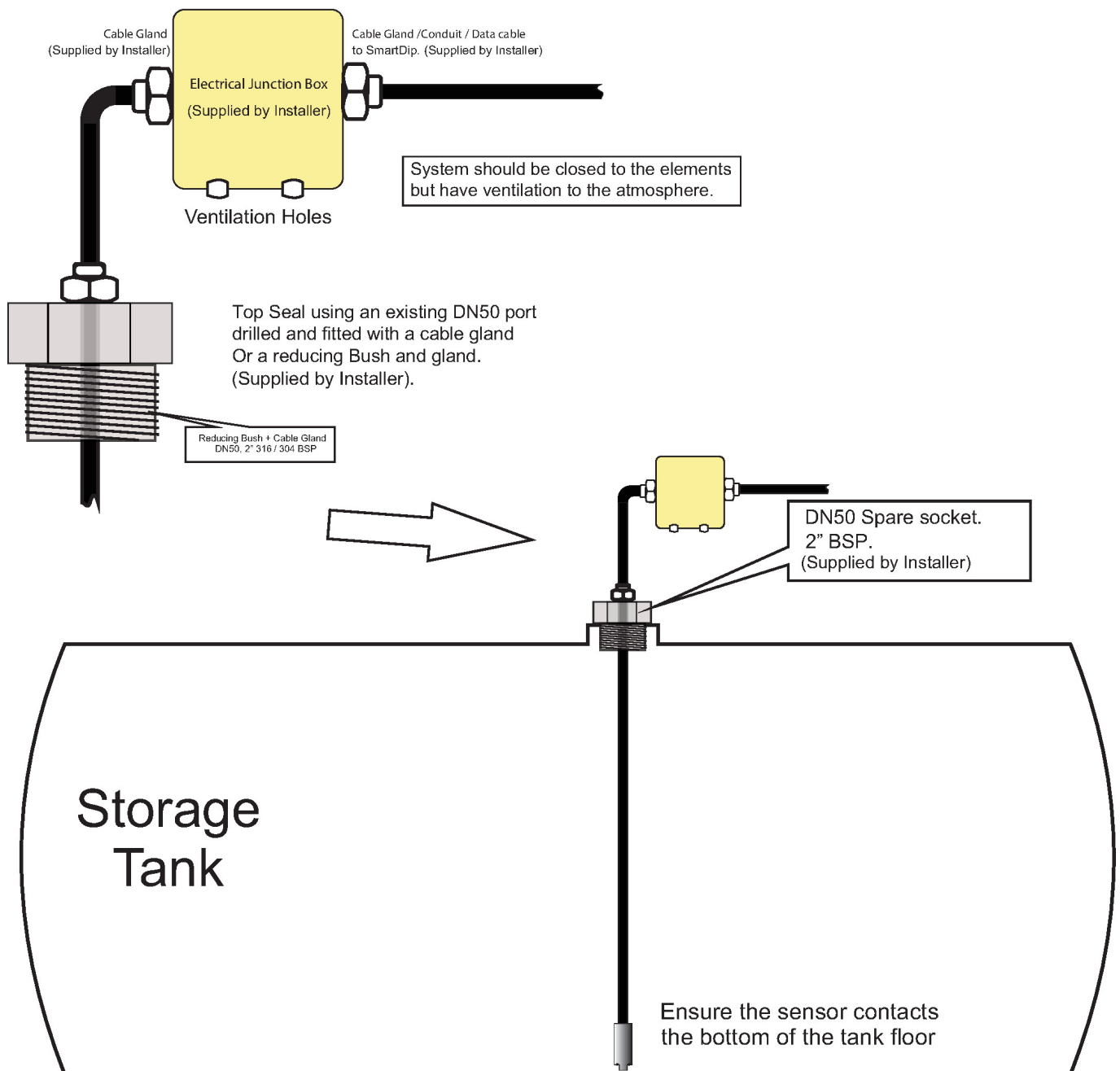


Figure 5.1: Tank Pressure Sensor Installation

5.1.2 Tank sensor electrical connections.

This diagram shows pressure sensor connections.

Pressure Sensor Connections

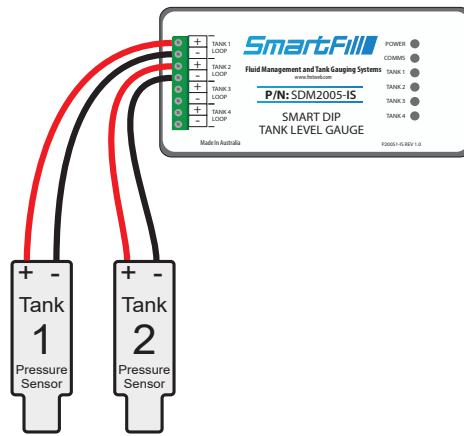


Figure 5.2: Tank Pressure Sensor Connections

NOTE: On newer SmartDip sensors Red is positive and Yellow is negative.

5.2 Set Up of SmartDip

Press and hold the CLR and ENT keys together for 3 seconds. The display will show "Enter Admin or Installer PIN". Enter the PIN 6789.. Once the installation menu is shown press the <7> key for Tanks to display the tank configuration menu options.

5.2.1 Tanks

If the SmartDip module is fitted the menu shown below will be shown: Select **7** to access the menus for tank gauging.

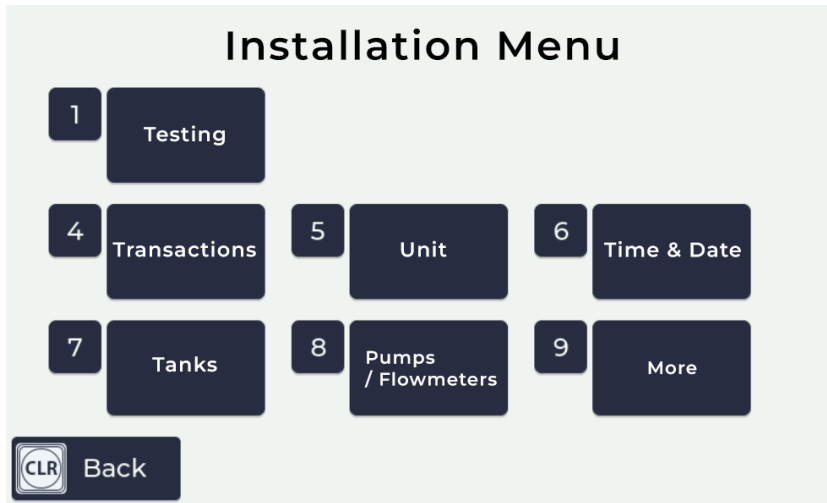


Figure 5.3: Installer Menu with SmartDip fitted

5.2.2 Tank Gauging Settings

When Tank Setup is selected there are three menu options.

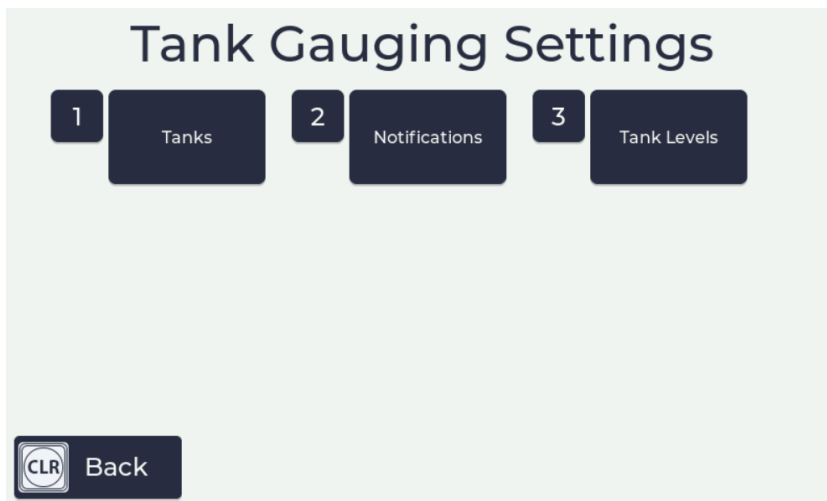


Figure 5.4: Tank Gauging Settings Menu

5.2.2.1 Tank Configuration

When the tanks menu is selected the menu in figure 5.5 will be displayed. Each SmartDip module can do tank gauging for up to four tanks and there is the possibility to have two SmartDip modules attached to each SmartFill depending upon the other configuration.

This menu is used to select what tank is to be configured. Selecting a number displays the tank configuration options for that tank.

5.2.2.2 Tank 1...8 Configuration



Figure 5.5: Tank x Configuration Menu

1. Enable Tank

- **No** - tank gauging is not enabled for this tank
- **Yes** - tank gauging is enabled for this tank

2. Type Used to select the tank type or how the tank data will be entered:

- **Rect** - tank is rectangular in shape
- **H Cyl** - tank is a horizontal cylinder
- **V Cyl** - tank is a vertical cylinder
- **20 -pt** - tank parameters will be entered using 20 data points obtained from the dipstick
- **Gauge** - You are using a third party probe or sensor that outputs a 4 - 20mA signal proportional to the tank's volume . If this option is selected you will need to enter the volumes at 4 and 20mA. Menus such as dimensions, density and sensor range will be disabled if this option is selected.

3. Dimensions This menu is used for entering the internal tank dimensions in mm for the chosen tank. The requested inputs vary depending on the tank type selected. If the 20 point option has been chosen, you will be requested for the tank height, the capacity of the tank and the volume at 20 calculated heights.

4. Density Used to enter the density of the fluid being measured. Diesel density is typically 840.

5. Sensor Range Enter the sensor range in mbar. Default value is 250 which is the correct size for all tanks up to 3 metres in height. Other values are:

- 350 for tanks up to 4 metres in height
- 450 for tanks up to 5 metres in height

The mbar value for the sensor is printed on the side of the sensor.

6. Sensor Offset Once the tank dimensions or 20 point dip data have been entered use this menu to set the sensor offset for the selected tank. Measure the volume in the tank using a dipstick and then enter in this volume into this menu using the keypad. This will calculate the sensor offset for the given volume at the dimensions previously entered.

7. Enable Alarms Enables the operation of high and low level alarms

- **No** - Alarms are not enabled
- **Yes** - Alarms are enabled

8. Low Alarm Sets the point in litres at which the low level alarm will activate. On the activation of the alarm, a SMS is sent to all numbers stored in the system and an alarm status is shown on the website.

9. High Alarm Sets the point in litres at which the high level alarm will activate. On the activation of the alarm, a SMS is sent to all numbers stored in the system and an alarm status is shown on the website.

5.2.2.3 Notifications

There are two options in this menu :

1. **Time** - up to six different times a day may be set for the system to send through the tank levels to the numbers entered in the next menu.
2. **SMS** - up to six numbers may be entered that will be sent the tank levels at the times specified previously or the alarms as they occur.

5.2.2.4 Tank Levels

Displays the levels for the currently enabled tanks.

5.3 Troubleshooting

5.3.1 Tank level not changing on the website

This means an interruption in the communications. Check that the SmartFill OPT unit itself is connected to the website by checking the network status from the installation menu and pressing <3> for system information, then <4> for network, or by checking the SmartFill Units page of the website.

Also, check the wiring from the sensor to the SmartDip module. If this has been disconnected then the website will show the last value received.

5.3.2 Tank level incorrect

Check the configuration settings for the tank at the SmartFill OPT unit. See the installation manual for how to do this. If the problem persists contact your SmartDip installer for them to check the sensor installation. The sensor must be fully sealed as any fluid in contact with the sensor will degrade the reading.

5.3.3 No tank level showing

Ensure the configuration settings for the tank at the SmartFill OPT unit have it set to "Enable" for that tank. If this is correct then check the wiring from the sensor to the SmartDip module as 0% means that the SmartDip module is not receiving a signal from the sensor.

5.3.4 Tank level at 100%

There is either water/fluid in the pipe that houses the sensor or there is a short in the wiring from the sensor to the SmartDip module. If the pipe has been flooded then a new sensor will be required.

5.3.5 The SmartDip module

For each tank connected to the SmartDip module there should be a LED on next to that tank designation on the module. If it is not on or flashing then that would indicate an issue with the gauging. Please call Fluid Management technology support to identify the issue.

The following fault conditions can occur on the Module:

5.3.5.1 Open Circuit

The level bar goes red and below it the word "offline" appears. The corresponding tank led on the module will also not be lit

5.3.5.2 Short Circuit (current > 27.6mA)

The bar remains white with no level showing. All the tank leds on the module flash on and off at a 1Hz rate. Once the short is removed, the unit must be rebooted to clear the fault condition.

5.3.5.3 For testing the module there should be a 1K resistor fitted to input 4.

if you follow the steps in section 5.3 to enable Tank 4

then select H.Cyl for the Tank Type

Under Dimensions enter a Diameter of 3000 and a Length of 3000 press enter then press CLR until settings are saved.

then when you hold CLR you should see Tank 4 with about a 50% level showing, that will confirm that the Module is working.

Chapter 6


Troubleshooting at the SmartFill OPT unit.

6.0.1 Key Problems ?.


6.0.1.1 Require vehicle keys ?

- You can order new SmartFill OPT keys from your SmartFill OPT supplier for internal use for staff.

WARNING

-  Always use genuine SmartFill OPT keys, as there are several types of keys, and some types do not operate correctly with the SmartFill OPT system due to differences inside the key.

WARNING

-  Check that your supplier can guarantee that the keys will be SmartFill OPT compatible before purchasing.

6.0.1.2 SmartFill OPT does nothing when a key is presented.

1. Ensure the SmartFill OPT is powered on.
2. Check the area around the sensors for dirt or moisture, and clean with a soft cloth if necessary.
3. Perform a power reset by turning pressing and holding the RESET button located at the centre of the backboard for 10 seconds then releasing.
4. Try another key, if it works, then the key may be faulty.
5. If another key also does not work, have an electrician check the SmartFill OPT is properly powered.
6. If the key has not been supplied by the SmartFill OPT manufacturers, it may not be compatible.
7. If all above are OK, arrange a SmartFill OPT supplier to inspect / service your SmartFill OPT.

6.0.1.3 Keys shows as 'INVALID'.

- The key may not have been loaded into the SmartFill OPT, or may be an incompatible type key (not a genuine manufacturer supplied SmartFill OPT key). You can add via the installation menu at the unit or by adding them at the website.
- If the front of the SmartFill OPT is wet, you may need to dry the area around the key sensors with a tissue or clean rag. Moisture around the sensors will cause the keys to misread.
- If the key has been loaded onto the website, the unit may not have synced with the website or you have not entered the key number correctly on the website.
- If the key was added at the website, ensure the Input Type is set to 'Key'

6.0.1.4 Lost vehicle keys.

If you lose a vehicle key...

1. Delete the key at the website or disable it at the website by deselecting enable, if you think the key is likely to be returned.

If you find old keys, you can use them again. Test them on the SmartFill OPT when finding them to ensure they work, but will not operate the system. If they do operate, delete that number in the system.

6.0.1.5 Lost door lock key.

If you lose your SmartFill OPT door lock key, you should replace the lock immediately. Some SmartFill OPT systems have a bypass switch fitted internally, and having the door key may give the person the opportunity to bypass the SmartFill OPT, and take fuel unauthorized, and unrecorded.

6.0.2 Not asking for additional data (userdata, job, hourmeter, odometer .etc)?

- Check that the vehicle/driver has the correct boxes checked for additional data on the website.

6.0.3 Pump / dispenser problems.

6.0.3.1 Pump stops after a short period.

The cause of this problem is easier to identify, if you check that the Litres taken were recorded or not.

1. If Litres are NOT recorded by the SmartFill OPT...
 - (a) The SmartFill OPT is most likely not receiving pulses from the flow meter.
2. If Litres ARE recorded by the SmartFill OPT.
 - (a) The SmartFill OPT thinks that the nozzle has been hung up. Check wiring / micros switches etc.
 - (b) The wiring to the pump / valve may be faulty / poor connections. Check all wiring.

6.0.3.2 SmartFill OPT is not recording Litres accurately.

1. Systems with relay pump modules (pulse input and relay / valve control).
 - (a) SmartFill OPT is not calibrated correctly to flow meter / dispenser. The SmartFill OPT should be calibrated with a proving measure or master flow meter.
2. Systems with a Gilbarco comms module
 - (a) Gilbarco communications systems...
 - i. The SmartFill OPT and the dispenser MUST both be in the same 5 or 6 digit mode. If they are set differently, the Decimal point in the Litres reading may be in the wrong place. See the relevant installers documentation for 5/6 digit setup procedures.
 - ii. The Dispenser may be set in 5 digit mode, but still allowing a fuel delivery over 999.99 Litres. This has occurred previously on PEC dispensers, and it causes the dispenser to lose the 1000's in the Litres, i.e. a delivery of 1354.77 Litres is recorded as 354.77. This is a dispenser issue, not a SmartFill OPT issue. Ensure that both the SmartFill OPT and the dispenser are both set in 6 digit mode wherever possible.

Appendix A

SmartFill OPT Terminology.

ATG. Automatic Tank Gauging.

Bowser. A very old brand of fuel dispenser, which has now become a loose term to describe any fuel pump / dispenser.

Comms. Communication between 2 devices, such as SmartFill OPT and dispenser, or SmartFill OPT and PC.

Download. The process of transferring fuel transaction data from the SmartFill OPT to a USB so it can be uploaded to the website

OPT Outdoor Payment Terminal

LCD. The liquid crystal display panel which you view on the SmartFill OPT front door.

PIN number. The unique identification number (any number from 0000 to 65000)

PRO Reports. An add-on for the SmartFill website that provides a range of reports, charts, and other features such as SmartTanks. PRO Reports is included with all SmartFill OPT units.

Pulser. A device fitted to your fuel flowmeter or bowser, which provides electrical pulses to the SmartFill OPT electronics, which it then converts to a volume of Litres.

SmartDip. A Tank Gauging system designed to incorporate directly with a SmartFill OPT system, or as a stand alone system.

SmartTank. A virtual tank that can be added to your SmartFill website to track tank levels if you don't have a SmartDip or Automatic Tank Gauging system installed. This feature requires PRO Reports.

Walktime. Sometimes also known as a no-flow timer. This is a feature which stops the fuel pump from running for long periods of time without any fuel flow. It turns the pump off after its preset Walktime (number of seconds). This time period is adjustable by the manager.

Appendix B

Operating Principles.

B.0.1 Relay control.

In order to control access to the fuel, the SmartFill OPT needs to only allow access following authorisation via the vehicle ID key, and optionally, that the driver pin number is valid.

Once access is approved, the SmartFill OPT operates a relay which is used to start a pump or open a valve etc.

B.0.1.1 Relay.

This type of relay has a mechanical contact, which is operated by the SmartFill OPT electronics.

This is normally used to switch low current, 5, 12 or 24 volt DC loads.

WARNING



Care must be taken to ensure that the load does not exceed the contact rating of the SmartFill OPT relay.

This relay can be used to control...

- A higher capacity relay, to switch a 12 or 24v pump etc.
- A solenoid or motorised ball valve.
- The low voltage nozzle switch circuit on a fuel bowser.

B.0.2 Communication access control.

SmartFill OPT systems are able to control bowsters which use 'Gilbarco comms or NZ Pump protocol'. In these applications, when the SmartFill OPT has been authorised, it sends a command to the dispenser to start the pump.

Litres amounts are sent from the dispenser to the SmartFill OPT via comms with pulse measurement and scaling (kfactor) done by the dispenser .