TT8900 Outdoor Payment Terminal

Installation and Service Manual

October 2021

* TT8900 OPT shown as mounted inside optional supporting cabinet.

TT FUEL

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1. Introduction

This document is intended for use by the personnel responsible for the installation and servicing of the TT8900 Outdoor Payment Terminal (OPT).

> Note: Installation and servicing should only be performed by personnel that have received TT8900 OPT maintenance training from TT Fuel or one of TT Fuel accredited distributors.

Credit and EFTPOS Cards

The TT8900 OPT accepts most major debit and credit cards including standard EFTPOS cards, VISA, MasterCard, American Express1 and WEX Motorpass2 cards.

> Note: OPT accepts American Express cards if merchant has applied for and received approval. OPT accepts WEX Motorpass cards if merchant has applied for and received approval.

However, some cards or account types may be declined or limited by restrictions put in place by the card issuer. The customer should contact their card issuer (bank) if their card is declined, or the transaction amount is limited to below what is acceptable for their circumstances.

1.1 Key Information

All TT8900 OPT keys are secured registered keys, unique to TT Fuel. In case the OPT has been purchased with its supporting tower, one additional smaller key (per OPT) is supplied for opening the lower access panel.

Replacement keys cannot be made by the general public and have to be ordered from TT Fuel by contacting our customer support at:

> ✉ sales@ttfuel.com   ☎ +61 88215 5000

> Note: Refer to chapter 4.2 Key Handover for additional key details.

1.2 TT8900 OPT Specifications

EFTPOS / Card Specifications	
Cards Supported	Debit and Credit including Visa / MasterCard / WEX MotorPass / Amex.
PIN Pad Payment Security Standards	PCI PTS 5.x with SRED; GBIC, and CCcompliant; EMV Contact L1 & L2 EMV Contactless L1; Mastercard TQM (PCD/IFM); PayPass, PayWave, DPAS, ExpressPay, Interac Flash.
Card Reader Standards	Magnetic Stripe Reader (ISO 7811 AAMVA Tracks 1/2/3, Bi-directional); Smart Card Reader (asynchronous ISO 7816) – EMV 4.0 Contact L1 compliant ; Contactless.
Acquirer	First Data Interchange (FDI).
Receipt Printer	Thermal receipt printer with approximately 1000 receipts per paper roll.
GST Compliance	Produces GST compliant Tax Invoices.
Loyalty / Account Features	
Discount Schemes	Supports identification of discount cards to provide discounts to loyal customers
Product Restrictions	Support for product (fuel) restrictions on local cards / accounts.

Forecourt Specifications	
Protocols Supports	Supports NZPP / PEC / Gilbarco / Dresser Wayne pump protocols.
No. of Supported Hoses	Supports up to 32 hoses on the forecourt.
ATG Interface	Interfaces with Veeder-Root, OPW, Holykell, Senix, PV4, Weldann and Windbell.
Forecourt Controller	Supplied with internal forecourt controller and also interfaces with POSTEC FCC.
NMI Compliance	Fully NMI compliant for re-sale of fuel.
Attended / Unattended	Supports both modes of operation with arbitration of on-site PCC if required.

Communication Specifications	
EFTPOS Interface	Cellular, NBN (with suitable Modem).
Local Card Authorisation	Internal verification or cellular network real time on-line (includes local pre-paid cards).
Transaction Reporting	Store and Forward (SAF) or cellular network real time on-line.
Remote Management	TCP/IP over Ethernet / Cellular Network / NBN.

Remote Monitoring and Management	
Remote Alarming	Internally generated alarms notified to central back-office server for SMS / Email notification. Alarms, amongst others, include: » Emergency Stop activation, mains power failure, UPS battery state. » Low receipt paper, paper out » PIN Pad status (offline detection), pump offline, missed heartbeat. » Intrusion detection on access door. » Price change (pumps) confirmation, Price Sign change confirmation. » Tank level alarms low, low low, high, high high, leak (if ATG fitted).
Remote Management	Remote management interface to central back-office server provides: » Transaction Management. » Inventory Management. » Event Analysis. » Scheduled Data Import / Export to third party packages. » Software upgrade.
Audit	Internal audit log which can be accessed by central back-office server for post-analysis of events.

General Specifications	
Environment	-10C to +50C with 95% non-condensing humidity. **PIN Pad IP65, Card Reader IP4X.**
Electrical	230V AC 1A maximum - UPS and power filter included. All electrical and communications connections protected by surge arrestors.
Security	» Tower manufactured from powder-coated 304 stainless steel. » Option for 316 grade stainless steel tower for marine environments. » Separate internal cabinet with 19mm aluminium fascia. » Controlled issue high security key system with master and site-specific keys; Optional intrusion detection.
Physical Dimensions	Height: 1804mm, Width: 655mm, Depth: 473mm.

1.3 Internal Architecture

The TT8900 OPT is based on the next gen TT Fuel proprietary modular T20 Dispensing Control System architecture, ensuring maximum reliability and operational uptime.

The T20 DCS comprises of a range of modules that each provide a dedicated set of functions and features that together provide a multitude of solutions for various fuel dispensing control and management applications.

These systems are all supported by a suite of enterprise-level fuel management software applications and web-services developed by TT Fuel to form complete fuel dispensing control and management solutions.

The T20 DCS modules share a common form-factor utilising a DIN rail mountable compact enclosure system interconnected using TT Fuel's proprietary **HBus** communication bus system.

The TT8900 OPT incorporates the following key modules:

 » **T20 System Control Module (SCM)**.
   Conceptually similar to the former T6 Controller, this module is the next-gen forecourt control unit, consequently the brain of the TT8900 OPT.

 » **T20 Terminal Support Module (TSM)**.
   Specific to the OPT, this module combines the functionalities of CAS, PSM and EIM.

 » **T20 Internal Interface Module (IIM)**.
   This module is used for configuring the TT8900 OPT whenever configuration via remote connection cannot be established.

 » **Cellular Router**
   This module provides secure connectivity to the TT Fuel's back-end services through the existent cellular network.

 » Optional **T20 Protocol Converter Modules** (CGM / DGM / CNM) used to interface with forecourt control systems using alternative communication network protocols.

Additionally, the TT8900 OPT accommodates the following internal components:

 » AC/DC power supply.
 » DC UPS.
 » Battery pack.
 » PINpad and display.
 » Card reader.
 » Receipt printer.

1.4 Tandem Configurations

Depending on the particularities and requirements of some installation sites, the TT8900 can be deployed in tandem configuration, having a primary OPT driving one or more secondary OPT units.

The secondary OPTs lack the T20 SCM forecourt control unit found in the primary OPT, therefore any peripherals a refuelling site might have, such as Automatic tank Gauging or a Price Sign can only be connected and controlled through the primary TT8900 OPT.

Secondary OPTs   Primary OPT
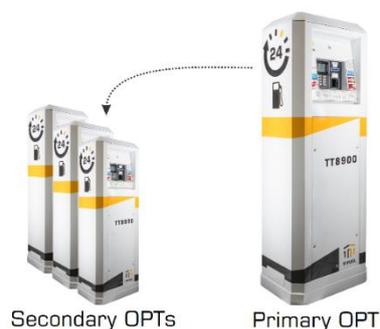
> Note: Secondary OPTs have a slightly different External Connections Label, applied inside the unit, as covered in chapter 2.13 Forecourt Connections.

1.5 Offline Modes

Dealing with authorising electronic payments, the TT8900 OPT default mode of operation is the **Online Mode**, where all transactions are validated in real time, through its permanent Internet connectivity.

However, if Internet connectivity gets disrupted, the TT8900 OPT automatically switches to one of its **Offline Modes**. Each having a distinctive behaviour, there are a total of 7 Offline Modes to choose from prior to deployment, by filling in the Offline Mode Application Form.

Offline Mode	Description
Online Only	The only authorisation method accepted for any transaction is Online Mode. Any Internet connectivity disruption will render the OPT unusable.
Retail 1	Total exposure is limited to the Total Offline Transaction Limit. Exposure per Id is limited to the Transaction Number Limit multiplied by the Floor Limit.
Retail 2	Total exposure is limited to the Total Offline Transaction Limit. All Ids can run up the daily dollar limit each day the system is offline.
Commercial 1	The exposure per Id is limited to the Transaction Number Limit multiplied by the Transaction Volume Limit per Id.
Commercial 2	All Ids can run up the daily volume limit each day the system is offline.
Basic 1	A basic offline authorization mode that disallows active Ids that haven't had recent use. Offline authorizations are not subject to volume, amount or frequency limits.
Basic 2	A very basic offline mode that has no refuelling restrictions. Offline authorizations are not subject to volume, amount or frequency limits.

> Note: Electronic payment authorisation can fall back to an (previously agreed on) offline mode for local account cards only. Consequently, the only authorisation method accepted for bank issued cards is Online Only.

1.6 Referenced Documents

The TT8900 OPT Installation & Servicing Manual should be read in conjunction with the following referenced documents:

Document Title	Document Source
TT8900 OPT User Manual.	TT Fuel
T20 Showcase Brochure	TT Fuel
AS1940 (2017) Storage and Handling of Flammable and Combustible Liquids	SAI Global
AS/NZS2229 (2004) Fuel dispensing equipment for explosive atmospheres	SAI Global
AS/NZS3000 (2016) Electrical installations	SAI Global
NMI R 117Measuring Systems for Liquids Other than Water	National Measurement Institute

2. Installation

This section must be read and understood prior to any installation or servicing work commencing. For further clarifications, please contact Transponder Technologies.

For installation activities, it is assumed the installer possesses previous expertise and training in Transponder Technologies equipment, particularly T6 Controller based DCAs and Forecourt Controllers.

Tools Required: The only non-standard tools required to install the OPT is a Post Torx (also known as Tamper proof Torx) size T30 security screwdriver. This is for the M6 screws that secure the access panel.

2.1 Standards and Safety

It is the responsibility of the installation staff to ensure that all relevant standards and legislation relating to installation of this device are adhered to e.g. OH&S, electrical wiring codes, and hazardous area works etc.

2.2 Applicable Standards

The following is a list of some of the standards that are relevant to the installation of the OPT.

> Note: This list is NOT complete and the installation technician is responsible for determining what other standards may apply.

- » AS 3000 "Wiring Rules".
- » AS 1940 "The storage and handling of flammable and combustible liquids".
- » AS/NZS 2430.3.2 "Classification of hazardous areas" "Part 3.2: Examples of area classification – Vehicle workshops, vehicle parking, fuel dispensing stations and aircraft hangars".

2.3 Safety Issues

This list is provided as a guide to some of the product specific safety issues that need to be addressed when installing this device. It should not be considered complete.

- » The complete TT8900 OPT tower weighs approx. 140kg, therefore handling precautions are required.
- » The upper cabinet assembly weighs approximately 30kg. Two people should be used when lifting it into position within the tower.
- » The TT8900 OPT has an internal Uninterruptable Power Supply (UPS). This means that even if the device is isolated at the switch board, there will still be voltages present inside. Before operating on the device, the UPS should be switched off using the switch located on UPS battery pack and the UPS battery should be disconnected.
- » The door assembly of the TT8900 OPT weighs approx. 10kg. The oil filled struts that prevent the door from opening too quickly, and restrict its travel, should be inspected regularly to ensure that they are working and are fastened to the door and cabinet securely.

» When the door is open, the corners of the door represent a hazard particularly if someone is working inside in the lower section of the tower enclosure.

2.4 Installation Guidelines

It is recommended that the 240VAC supply to the OPT come from a separate circuit that is protected by an RCD. Local electrical standards must be adhered to when selecting these devices.

Where possible, the 240VAC feed line to the OPT should not be used for power to other high-current or "noisy" electrical devices e.g. pumps or dispensers.

Steps to be completed:

» Pre-installation site survey including signup for a Merchant account with the bank.
» Site preparation, including cabling and installation of required services.
» The actual hardware installation.
» Electrical connections to, and inside, the OPT cabinet.
» Initial power-on check.
» OPT forecourt configuration check.
» **PIN Pad** bank logon check.
» Testing of all connected components on the forecourt.
» Pump calibration / NMI certification and site commissioning.
» Operator Training.

Location Considerations

The following aspects need to be considered when selecting a location for the OPT. This list is not exhaustive and the site surveyor should also consider any other criteria that may come from the customer or from legislative requirements.

» Needs to be installed outside of the applicable hazardous area. Transponder Technologies recommend that the OPT is installed at least 1m outside the reach of any fuel dispensing nozzle even if this is further away from any dispenser than what the applicable standard requires.
» Should be shaded from the sun (particularly the aluminium fascia) by a suitable external structure. This is to help keep the internal temperature of the unit down and to prevent the metal surfaces of the OPT from becoming too hot to touch.
» Users must not be unreasonably exposed to danger from moving vehicles, either while using the OPT or while approaching it.
» Should be sheltered from high winds and saltwater spray.
» Should not be installed where water is likely to pool or flood.
» If the OPT is at risk from being struck by a moving vehicle, then bollards should protect it.
» The mounting plinth should be installed so the top side is clear of the surrounding ground to provide an adequate water barrier, but not so high that the PIN Pad is too high for shorter users.
» If the OPT is to be used at night, then adequate lighting should be provided (as per AS 1940). These suggestions are based on the industry best practices and our technicians' hands-on experience.

2.5 Available Configurations

There are two available TT8900 OPT configurations, depending on the customer's existing infrastructure:

1. The TT8900 OPT as a standalone unit, for tank or in-wall mounting or for retrofitting existing supporting cabinets or mounting. TT Fuel supplies this configuration with the TT8900 OPT unit and all the documentation necessary to correctly mount, wire and configure the unit.

2. The TT8900 OPT with the optional supporting cabinet.

Supporting documentation is also included to aid operators in correctly assemble and wire the unit. For instructions on how to correctly assemble and wire the TT8900 OPT inside the optional supporting cabinet, refer to the following chapters:

» 2.6 Optional Supporting Cabinet.
» 2.7 Mounting Plinth for the Optional Supporting Cabinet.
» 2.8 Supporting Cabinet Installation.
» 2.9 Installing the TT8900 OPT inside the Optional Supporting Cabinet.
» 2.10 TT8900 OPT Cabinet Cable Entry Holes.
» 2.11 AC Mains Power Connection.

2.6 Optional Supporting Cabinet

The TT8900 OPT can be ordered preinstalled inside a supporting cabinet, designed and engineered to withstand the harsh Australian outback conditions.
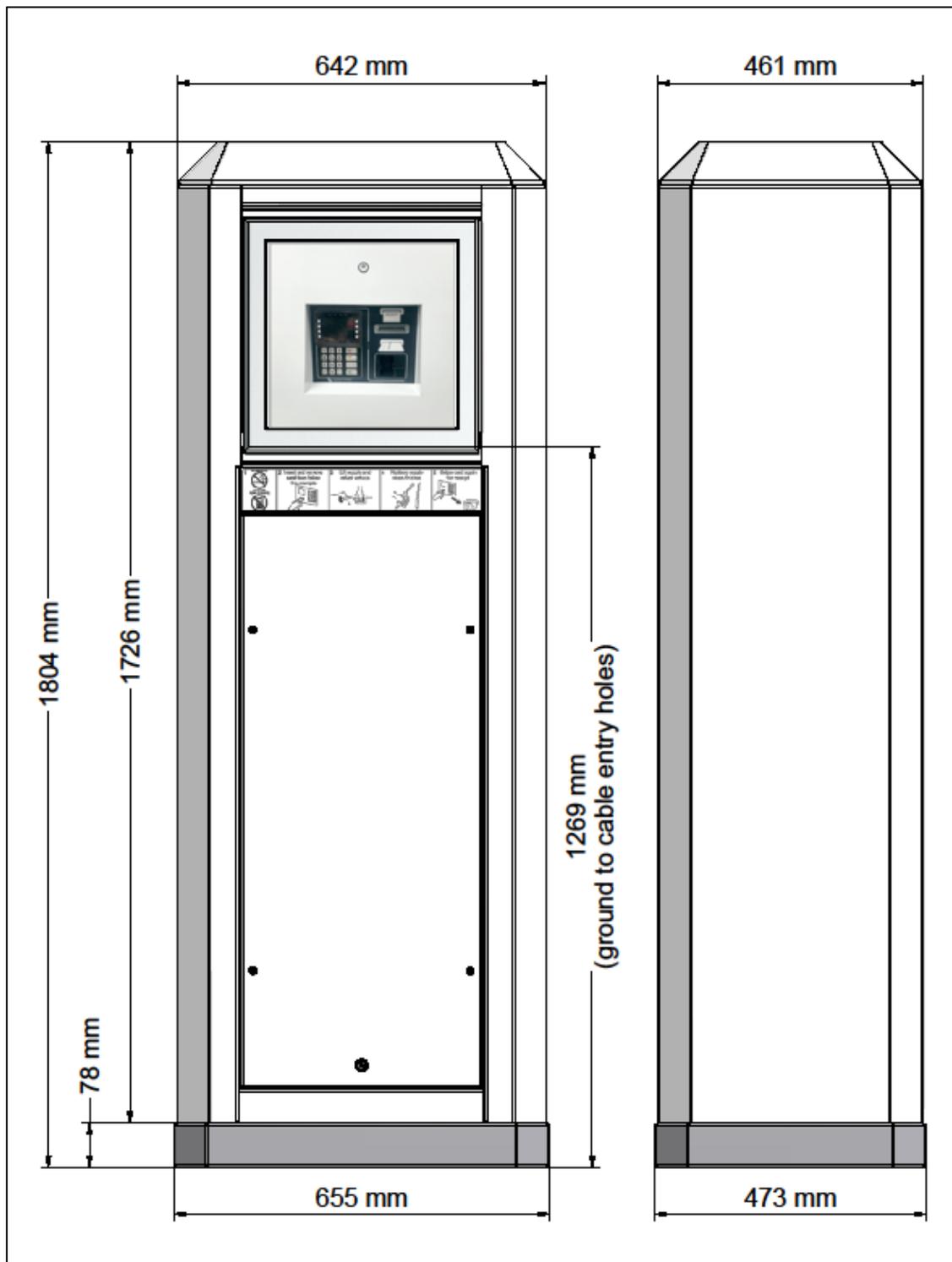
Figure 1: TT8900 OPT Cabinet Dimensions

The supporting cabinet is manufactured from powder-coated 304 grade stainless steel. For maritime environments, there is an option for 316 grade stainless steel to be used.

2.7 Mounting Plinth for the Optional Supporting Cabinet

The optional supporting cabinet must be fastened on top of the mounting plinth, designed to support the full supporting cabinet's weight and provide the required stability. The plinth should be fixed using 4 "dyna-bolts" (or other concrete fasteners) through the four 18mm holes to a flat and level concrete surface that is sufficiently substantial.
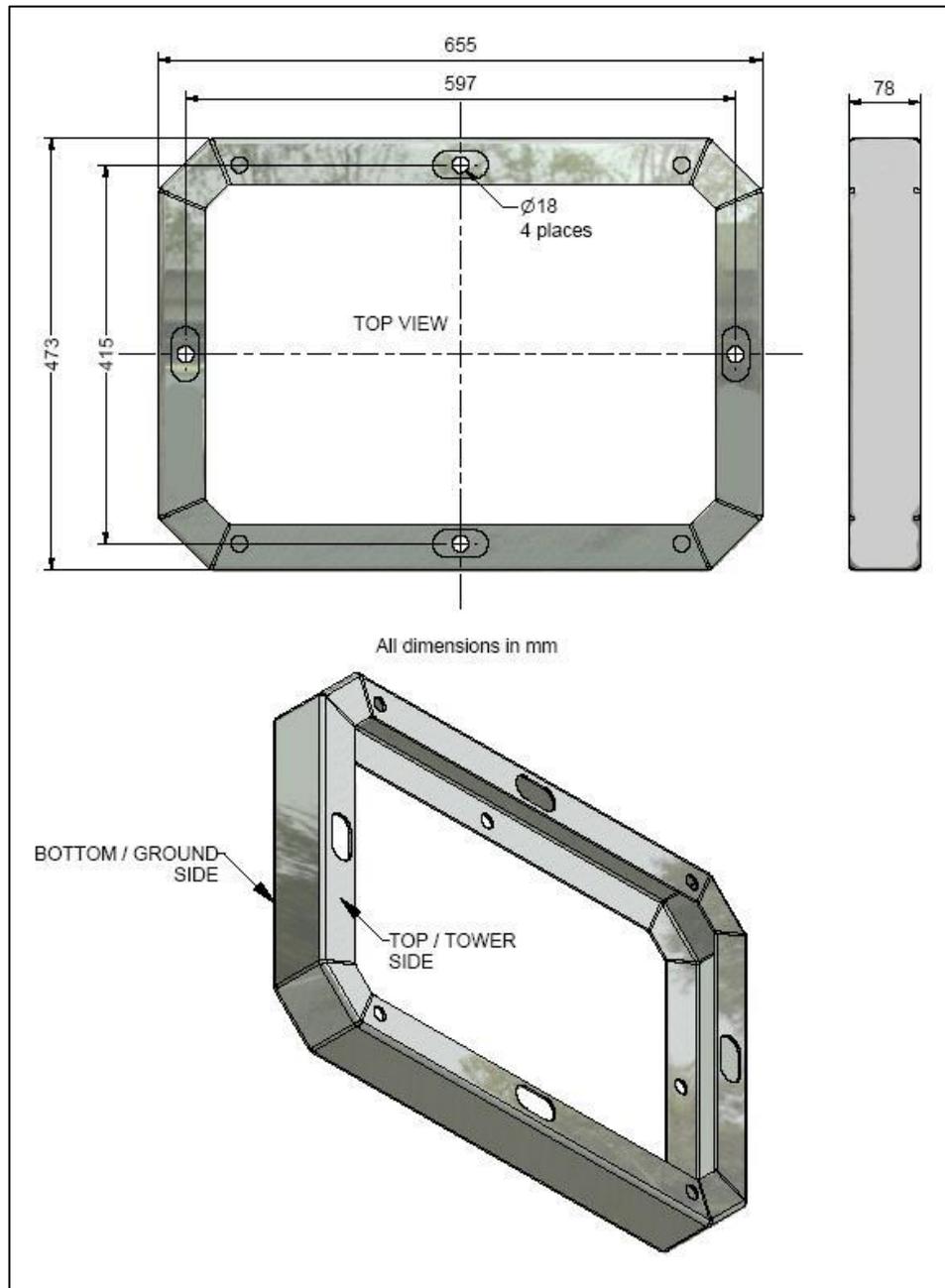
Figure 2: TT8900 OPT Plinth Mounting Points

2.8 Supporting Cabinet Installation

Once the plinth is installed, the supporting cabinet can be lifted onto the plinth and bolted down with the supplied fasteners as shown below.
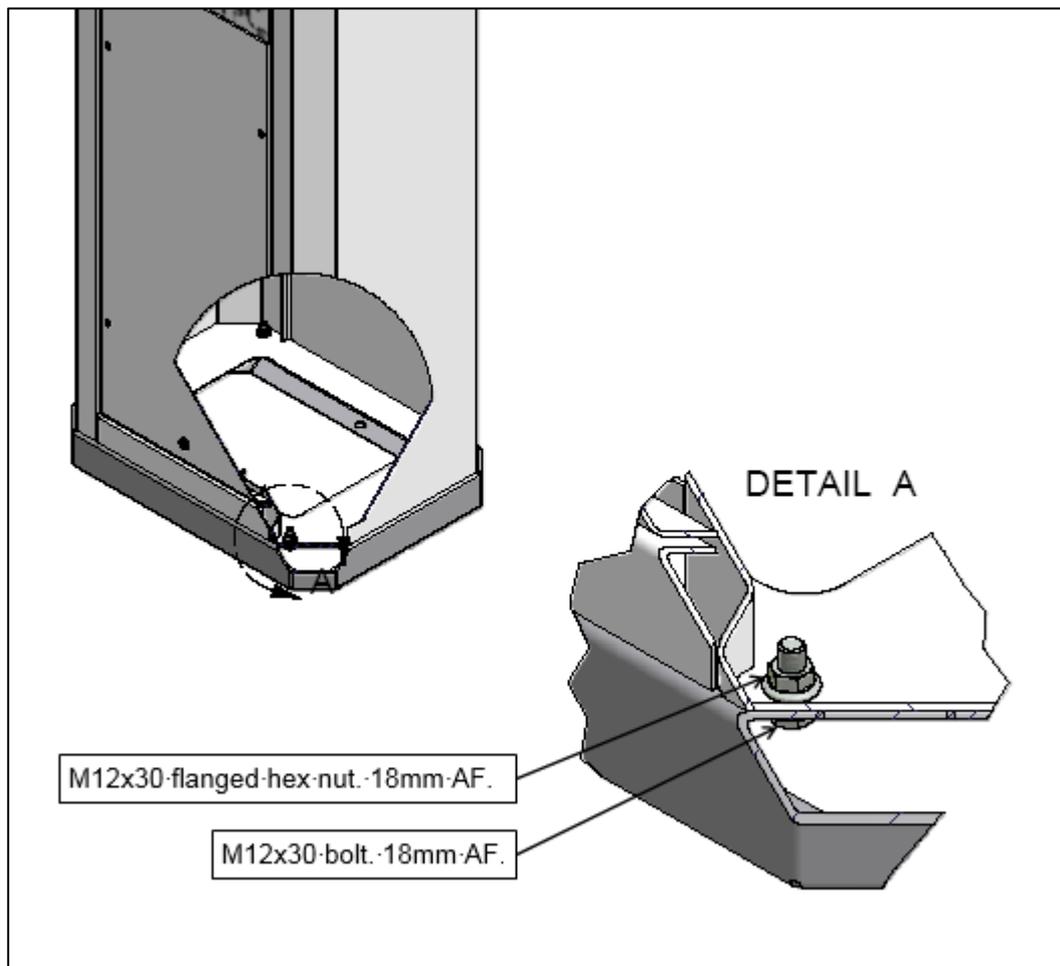
Figure 3: TT8900 OPT Cabinet Tower Installation

Note: Recommended tightening torque is approximately 40 Nm (30 foot-pound or 360 inch-pound).

2.9 Installing the TT8900 OPT inside the Optional Supporting Cabinet

Once the supporting cabinet has been fastened to the plinth, follow these steps to install the TT8900 OPT into the supporting cabinet:

1. Using two people, one positioned each side of the supporting cabinet, lift the TT8900 unit up to the level of supporting cabinet's aperture and rest it on the internal supporting shelves inside the supporting cabinet.
2. Carefully slide the TT8900 OPT unit inside the supporting cabinet until it stops – at this point the hole-plugs in the bottom of the TT8900 OPT unit will have come up against the bottom shelf of the supporting cabinet.
3. Lifting the front of the TT8900 OPT and sliding it in will allow the hole plugs to clear and the unit to be fully inserted.

> Important: Take care that the sides of the aluminium door bezel do not scrape the inside faces of the supporting cabinet when inserting the TT8900 OPT unit.

4. Looking inside the supporting cabinet and up at the bottom of the cabinet, roughly align the mounting holes in the bottom of the cabinet with the round holes in the support shelfs.

5. Insert the bolts and washers into the mounting holes of the support cabinet as shown in the diagram below. Do not tighten the bolts at this stage, tighten by hand only.
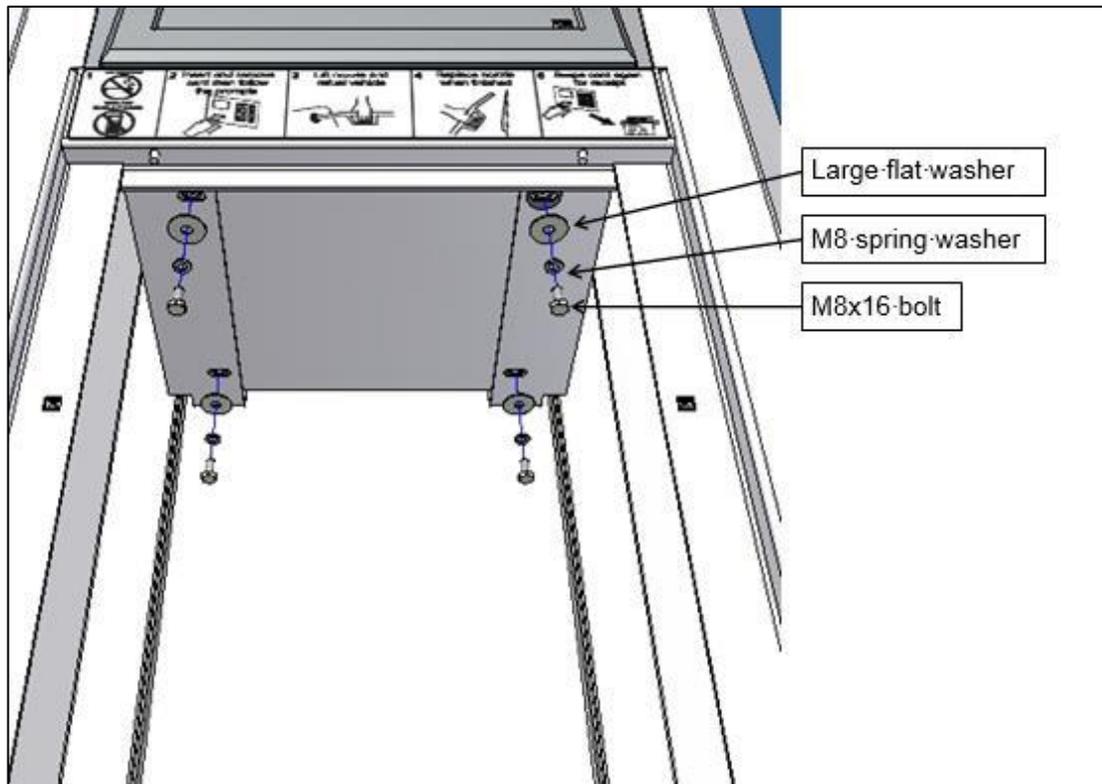
Figure 4: TT8900 OPT Internal Cabinet Installation

6. Pull the TT8900 OPT unit towards the front of the supporting cabinet until the mounting bolts prevent it from coming any further forward.

7. While looking at the front of the TT8900 OPT, ensure that the aluminium bezel is sitting square inside the supporting cabinet aperture and that the gap between the bezel and the side faces of the aperture is the same on both sides.

8. Once the TT8900 OPT unit is correctly aligned, tighten the mounting bolts.

9. Open the TT8900 OPT door and check it doesn't scrape the sides of the supporting cabinet and that it opens fully without obstruction.
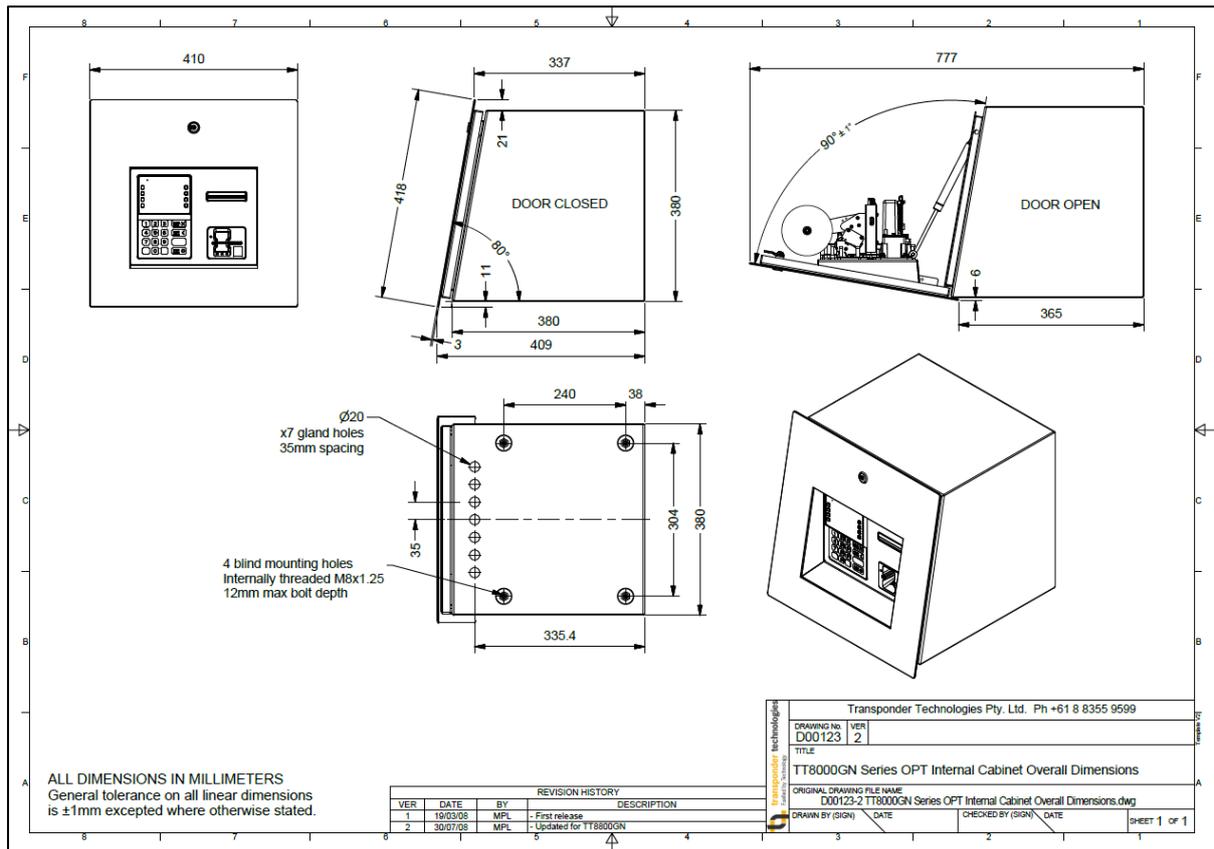
Figure 5: TT8900 OPT Internal Cabinet Overall Dimensions

2.10 TT8900 OPT Cabinet Cable Entry Holes

The TT8900 OPT Internal Cabinet has provision for cable entry via seven holes located in the base of the cabinet. The holes accept a standard plastic or metal 20mm cable gland.

Note: Unused holes must be fitted with blanking covers or sealed with a suitable tape to stop insects entering the cabinet space.

2.11 Connecting the Power Supply Unit to the AC Mains Power

TT8900 OPT has been greatly simplified, now offering a much more robust and quicker way to connect it to the mains power.

Follow these steps to correctly connect your TT8900 OPT to the main power:

1. Route the power cable from the customer's junction box inside the OPT, using one of the far-right cable entry holes (conveniently located next to the PSU, as shown in Figure 6).
2. Connect the **Live** (brown) conductor on the DIN rail mains terminal – connector 1.
3. Connect the **Neutral** (blue) conductor on the DIN rail main terminal – connector 2.
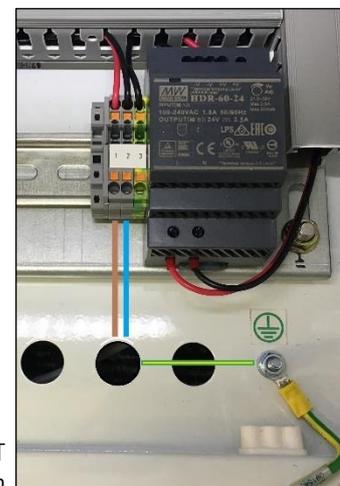
Figure 6: TT8900 OPT Mains Power Connection

4. Connect the **Ground** (green - yellow) conductor to the OPT chassis (by first disconnecting then reconnecting the door grounding cable).
5. Make sure the output voltage is set to +26VDC +/- 0.1, or adjust if necessary, using a flat head screwdriver.

Note:

The **Live** and **Neutral** of the AC mains supply conductors should be fitted with crimp-on boot-lace ferrules and inserted into the DIN rail mains connectors 1 and 2 as shown in Figure 6.

The **Ground / Earth** conductor must be fitted with a crimp-on M6 ring terminal and secured to the earth stud underneath the supplied M6 flat washer and nut on the OPT chassis.

The DIN rail main connector 3 should NOT be used; It is present for test purposes only.

2.12 Connecting the UPS Battery

Follow these steps to mount and connect the UPS battery:

1. Aling the battery's bottom side of the locking mechanism to the DIN rail.
2. While pushing the battery upwards, swing the top side against the DIN rail until it snaps in. (Figure 7)
3. Connect the battery's cable to the OPT's UPS.
4. Switch ON its power button.

Figure 7: UPS Battery Installation

2.13 Connecting the Cellular Network Antenna

Follow these steps to connect the Cellular Network Antenna:

1. After having secured the Cellular Network Antenna, route its cable inside the OPT through one of its entry holes.
2. Screw in the SNA connector ensuring it is finger tight.

Figure 8: Cellular Antenna Connection

2.14 Forecourt Connections

The TT8900 OPT comes standard with support for two PEC/NZ pump communication channels (loops). It can also be optionally fitted with support for one Gilbarco pump communication channel and/or one Email pump communication channel.

Alternatively, the OPT can be optionally fitted with a Postec FCC interface which is an RS232 standard interface. In this case no pump communication channels are required as the forecourt pump network is connected to the Postec FCC not the OPT.

All pump communication or RS232 wiring is terminated into the DIN rail mounted SL protection devices located on the centre of the front DIN rail.

The number and type of SL protection devices fitted to the centre of the front DIN rail in a particular OPT, and therefore the arrangement of them on the DIN rail, will depend on whether the following options are included:

» Gilbarco pump communication channel.
» Email pump communication channel.
» Postec FCC interface.
» Automatic Tank Gauge (ATG) interface.

All standalone or primary TT8900 OPT units are pre-configured from the factory and have the following label (Figure 9) applied on the inside of their enclosure, displaying the connection information (marked in green) for the peripherals attached to the OPT (ATG, Price Sign, FCC, POS).

A separate connection matrix is also present (also depicted in Figure 9), displaying the optional interface modules (Gilbarco, Email, ATG & Postec) and the channel / serial interface they are wired to (marked in blue).

Secondary TT8900 OPTs have a slightly different label (depicted in Figure 10) attached on the inside of their enclosure, displaying the connection information.

Note: For more information regarding a Primary OPT driving Secondary OPTs, read chapter 1.4 Tandem Configurations.

Figure 10: TT8900 Secondary OPT External Connections Label

1	2	3	
Active	Neutral	Earth[1]	SUPPLY

I11	I12	I13	
Signal out (N.C.)	Signal Return	not connected	EM. STOP[2]

O11	O12	O13	
+12VDC[3]	GND	not connected	LED LIGHTS

F11	F12	F13	
Red / +	Black / -	Shield	NZPP[4]
RS485 A / +	RS485 B / -	GND + Shield	NZPP[4]

NOTES
1. Connect earth wire to M6 stud NOT this terminal. This terminal is for test purposes only.
2. Emergency Stop signal from voltage-free contact
3. 12VDC max 1A
4. NZ Pump Protocol / PEC Pump Protocol from TT8900 Primary OPT.

Figure 10: TT8900 Secondary OPT External Connections Label

Figure 9: TT8900 Primary OPT External Connections Label

1	2	3	
Active	Neutral	Earth[1]	SUPPLY

I1	I2	I3	
Signal out (N.C.)	Signal Return	not connected	EM. STOP[2]

O1	O2	O3	
+12VDC[3]	GND	not connected	LED LIGHTS

S11	S12	S13
S21	S22	S23
S31	S32	S33
S41	S42	S43

RS232 TX	RS232 RX	GND + Shield	ATG
RS485 A / +	RS485 B / -	GND + Shield	ATG
RS232 TX	RS232 RX	GND + Shield	Price Sign
RS485 A / +	RS485 B / -	GND + Shield	Price Sign
RS232 TX	RS232 RX	GND + Shield	FCC
RS485 A / +	RS485 B / -	GND + Shield	FCC
RS232 TX	RS232 RX	GND + Shield	POS
RS485 A / +	RS485 B / -	GND + Shield	POS

F11	F12	F13
F21	F22	F23
F31	F32	F33

Red / +	Black / -	Shield	NZPP[4]
Red / +	Black / -	Shield	Gilbarco
RS485 A / +	RS485 B / -	GND + Shield	Wayne[5]

NOTES
1. Connect earth wire to M6 stud NOT this terminal. This terminal is for test purposes only.
2. Emergency Stop signal from voltage-free contact
3. 12VDC max 1A
4. NZ Pump Protocol / PEC Pump Protocol
5. Wayne DART pump protocol

Figure 9: TT8900 Primary OPT External Connections Label

Note: We recommend having all connections fitted with crimp-on boot-lace ferrules before inserted into the connection terminal. Bare wires (especially multi-stranded) should not be used with this type of connection terminal.

Example 1: Having the following external connections will result in a label filled in like the one depicted in Figure 11 - Example 1.

» Forecourt Controller (RS232) on channel **1**, connectors S41-S43.
» ATG (RS485) on channel **2**, connectors S11-S13.
» Price Sign (RS232) on channel **3**, connectors S31-S33.
» Wayne Interface (RS485) on channel **4**, connectors F11-F13.
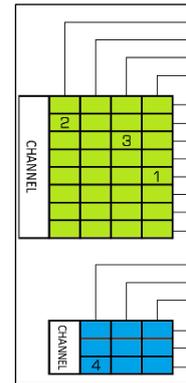
Figure 11: TT8900 OPT External Connections Label **Example 1**

Example 2: Having the following external connections will result in a label filled in like the one depicted in Figure 12 - Example 2.

» Forecourt Controller (RS232) on channel **1**, connectors S21-S23.
» POS (RS232) on channel **2**, connectors S41-S43.
» ATG (RS232) on channel **3**, connectors S31-S33.
» Price Sign (RS485) on channel **4**, connectors S11-S13.
» NZPP Interface on channel **6**, connectors F21-F23.
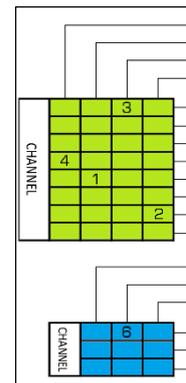
Figure 12: TT8900 OPT External Connections Label **Example 2**

Remember: The Power Supply, Emergency Stop Interface and the LED lights are always connected through 1-3, I1-I3 and O1-O3, respectively.

2.15 Description of Emergency Stop Interface

Australian Standard AS 1940 requires that any unsupervised self-service refuelling facility has an emergency shut-down system that must disconnect power to the fuel dispensers and transmit an alarm to a person or organisation capable of responding to this event (refer to AS 1940-2004 Clause 7.3.5). To facilitate compliance with this requirement, the OPT has an interface (SL7V5) which must be connected to a normally closed voltage free contact that opens when the emergency shut-down system activates. This will cause the OPT to generate an alert event which will in turn relay the alarm to the appropriate person or organisation via the T-ALERT service. If power is disconnected to the OPT as well, as a result of the emergency stop system activating, then the event notification will still occur as the OPT will continue to run from its UPS. Due to the significant variations in power supply wiring networks used in refuelling facilities, it is difficult to give complete information on how the OPT should be interfaced with the on-site emergency stop control system.

One possible solution is that the OPT interface be connected to a separate normally closed pole/switch module that is integrated into the main emergency stop push button switch as shown below.

Note: The OPT comes from the factory with a red shorting link on the SL7V5 connection between the L1 and L2 contacts which must be removed prior to making this connection. The AS 1920-2004 Clause 7.3.5 also has some requirements for the type and location of the switch.

3. Configuration and Testing

3.1 T20 TSM Configuration

Unlike the legacy TT8800 OPT, the new TT8900 OPT benefits from a modular approach. As such, all the functionality previously handled by the CAS Card is now managed by the T20 TSM module.

Everything from product grades to tank and pump configurations is now performed through the Internal Interface Module (T20 IIM), procedures covered in chapters 3.2 – 3.4.

The T20 TSM comes pre-set from the factory, having the SW1 DIP switch already configured as required. However, in case the Pump ID needs to be changed, consult the table in Figure 14.


Figure 13: T20 TSM Module

| ON | EFTPOS CAS Mode - Default |
| OFF | Normal CAS Mode |

| Reserved. Should remain OFF |

| ON | GENERIC OPT Mode - Default |
| OFF | CALTEX OPT Mode |

| Reserved. Should remain OFF |

5	6	7	8	Pump ID
OFF	OFF	OFF	ON	1
OFF	OFF	ON	OFF	2
OFF	OFF	ON	ON	3
OFF	ON	OFF	OFF	4
OFF	ON	OFF	ON	5
OFF	ON	ON	OFF	6
OFF	ON	ON	ON	7
ON	OFF	OFF	OFF	8
ON	OFF	OFF	ON	9
ON	OFF	ON	OFF	10
ON	OFF	ON	ON	11
ON	ON	OFF	OFF	12
ON	ON	OFF	ON	13
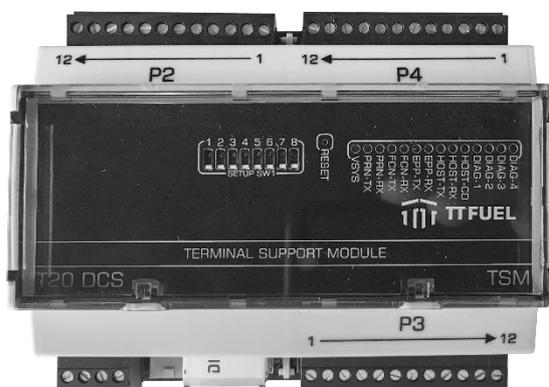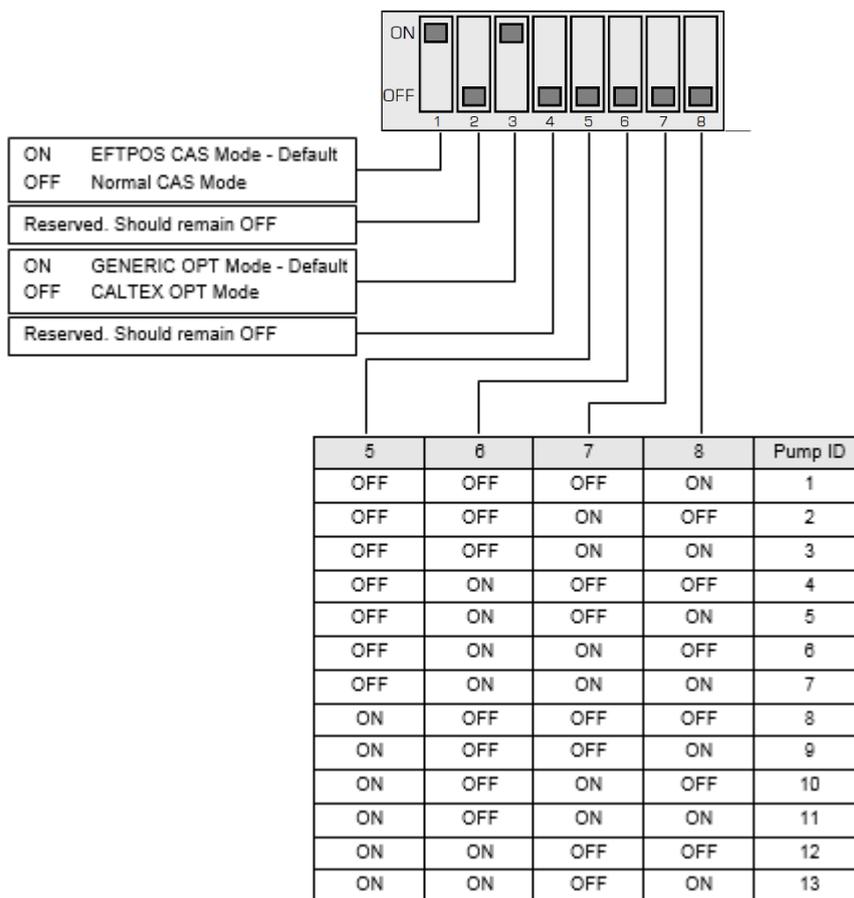
Figure 14: T20 TSM Module

3.2 T20 IIM Configuration

The T20 Internal Interface Module (IIM) is used to view the forecourt status and to manage the internal configuration of the TT8900 OPT.
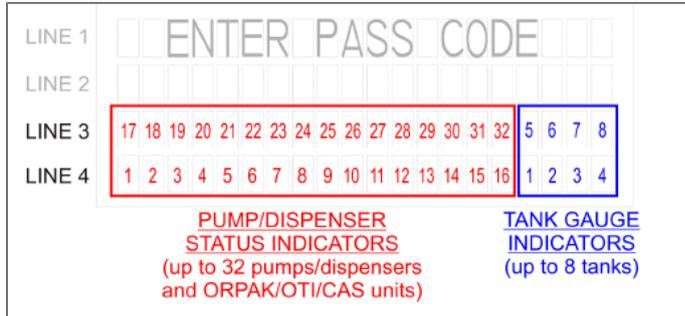

Figure 16: TT8900 OPT Internal Display Closeup
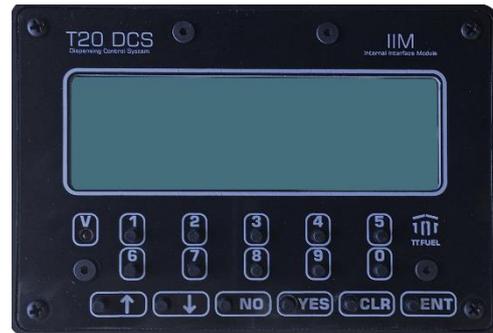
Figure 15: TT8900 IIM Module

The actual position on the display conveys information about equipment connected to the OPT.

Status Symbol Meaning

Pump Dispenser	
i	Idle
s	Dispensing - predelivery
d	Dispensing
h	Dispensing – on hold
o	Dispensing – post delivery
u	In use (Postec only)
n	Nozzle out – on hold
c	Reserved for card sale
x	Pump offline
Tank Gauge	
i	Idle
p	Probe error
e	Format error (parity etc)
r	Out of range
x	Tank probe offline
WAYNE / OTI / CAS	
i	No nozzles present
a	One or more nozzles detected
l	Lost vehicle contact (both nozzle and vehicle absent during delivery – OTI only)

3.3 Step by Step Configuration

Follow the steps below to configure the TT8900 OPT.

Note: A step number highlighted in blue means that this configuration step is usually done locally at the OPT, using the built-in keypad and display. Step numbers highlighted in green (6, 14) can be taken either locally or remotely, via a modem/network connection.
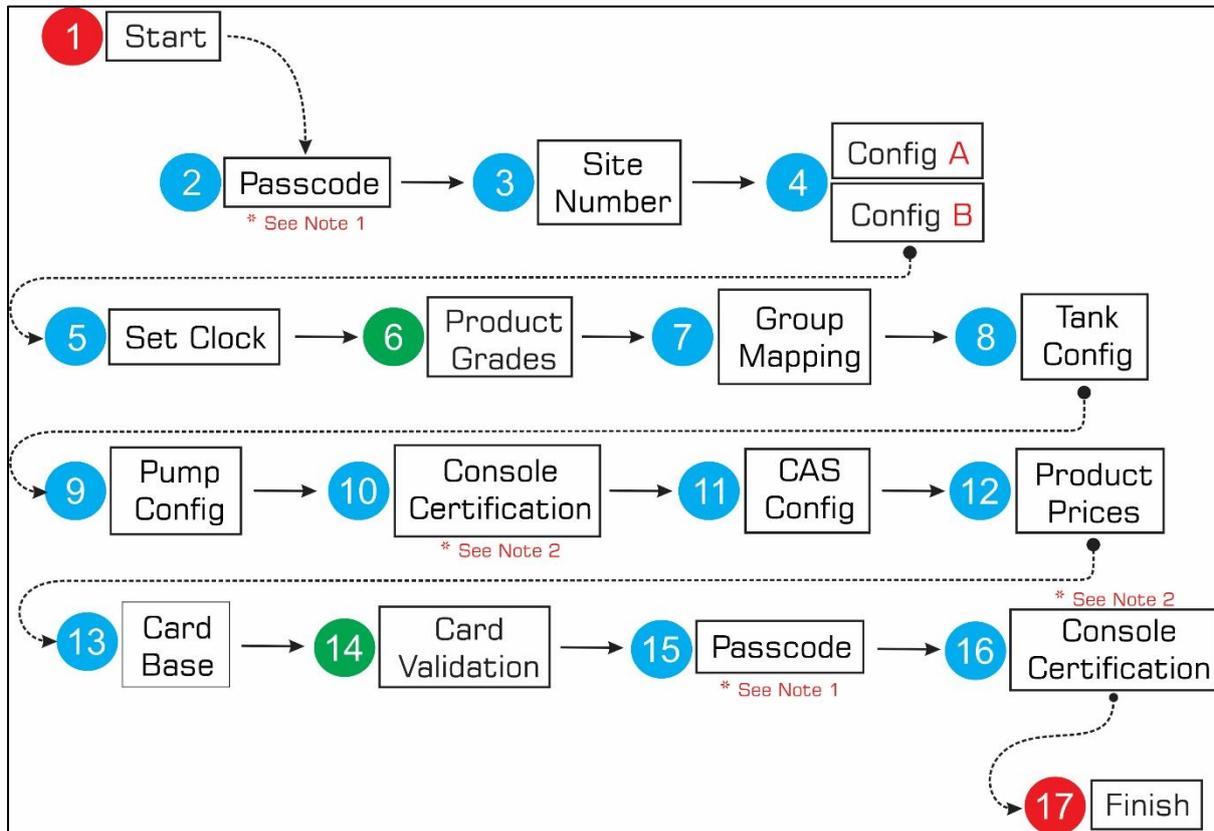

Figure 17: TT8900 OPT Configuration Steps

Note 1: This is a six-digit number that allows both local and remote access to the TT8900 OPT.
Note 2: Refer to Part 6 of NMI V 2-1 and NMI V 2-2.

3.4 Configuration Menu

To access the configuration menu: Main Menu → 👆 [NO] → 👆[passcode] → Configuration Menu.

Note: The factory default passcode is 000000.

1) REPORTS	5) PUMPS
2) CARDS	6) TANKS
3) FUELS	7) GROUPS
4) SYSTEM	8) MORE

Menu items are shown next to a number. By selecting the corresponding number on the keypad, that particular menu flow is entered.

Key Action - Description	
0 - 9	Selects a menu number or a configuration option.
↓	Used to move down through a list. When used in the default screen, it cycles through the configured Tanks information.
↑	Used to move up through a list. When used in the default screen, it cycles through the configured Tanks information.
YES	Used to enter a menu.
NO	Used to exit a menu or enter the Configuration Menu from the default screen.
CLR	Removes current data entry.
ENT	Confirms current data entry.

3.4.1 Reports

```
1) TOTALS          3) SETUP
2) TANKS           4) IDs
TRANSACTIONS:
5) TODAY           6) DATE RANGE
```
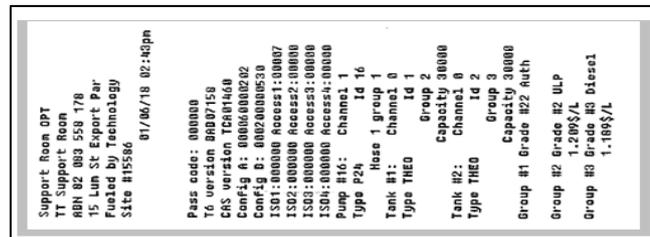

Figure 18: TT8900 OPT Configuration Printout Example

Menu Selection	Description		
1) TOTALS	1) SHIFT (selecting this option prints a Shift Report)		
	2) TOTALS	1) SHIFT. Selecting this option prints the shift report.	
		2) NON-RESETABLE. Selecting this option prints the report.	
		3) PRODUCT (by date range) requires START and END dates.	
		4) CARD (by date range) requires START and END dates.	
2) TANKS	Selecting this option prints the Tank(s) report.		
3) SETUP	Selecting this option prints the Configuration Report.		
4) IDS	Selecting this option prints a Cards Report.		
TRANSACTIONS:			
5) BUFFER	1) WHOLE BUFFER. (selecting this option prints report)		
	2) BUFFER BY DATE. (requires START and END dates)		
6) CURRENT	1) CURRENT. (selecting this option prints report)		
	2) CURRENT BY CARD. (requires INDENTIFIER #) up to 13 digits		
	3) DELETE. (requires RE-ENTER PASSCODE) to delete transaction		

3.4.2 Cards

```
1) ID VALIDATION
2) USER VALIDATION
3) NETWORK SETUP
```

MENU SELECTION	DESCRIPTION
1) ID VALIDATION	1) #? (requires 13-digit card identifier)
	2) IS VALID/INVALID (saves the above ID as valid or invalid in the system).

	3) PIN (requires 4-digit number)
2) USER VALIDATION	1) #? (Username)
	2) IS VALID/INVALID (saves the above username as valid or invalid in the system).
3) NETWORK SETUP	1) #? (requires 13-digit card identifier)
	2) IS ? IS VALID/INVALID.
	3) PIN (requires 4-digit number).
	1) #? (requires 13-digit card identifier).

3.4.3 Fuels

```
1) GRADE
2) PRICE
3) DENSITY
4) PRICE SIGN MAP
```

MENU SELECTION	DESCRIPTION	
1) GRADE	Grade numbers between 01 to 48 may be used (default grades shown below)	
	01 = Lead Replacement Petrol (LRP) 02 = Unleaded Petrol (ULP) 03 = Diesel (DIESEL) 04 = Premium ULP (PULP) 05 = Liquefied Petroleum Gas (LPG) 06 = Oil (OIL)	07 = Kerosene (KERO) 08 = Aviation Fuel (AVGAS) 09 = Aviation Jet Fuel (JET A1) 10 = ADBLUE 11 = Ethanol Blend (E10) 12 = Ethanol (E85)
2) PRICE	The price per litre for selected grade (up to 3 decimal places $x.xxx)	
3) DENSITY	Density of selected grade in Kilograms per Litre (1 decimal place xxx.x)	
4) PRICE SIGN MAP	Displays the Price Sign – Pump assignation.	

3.4.4 System

```
1) PASSCODE      5) CFG B
2) SITE NUM      6) FMWARE
3) CLOCK         7) TIMEOUT
4) CFG A         8) USB PASSCODE
```

MENU SELECTION	DESCRIPTION
1) PASSCODE	This is a **6-digit** number that allows both local and remote access to the TT8900 OPT. Factory default is 000000. The passcode may be changed if restriction of operator access (to parts of the video monitor menu) is required.
2) SITE NUM	This is a **6-digit** number that is used to uniquely identify this particular OPT. Factory default is 000001. It may be changed to distinguish different sites on a network for reporting purposes.
3) CLOCK	Sets the system date/time in the format of dd/mm/yy hh:mm

4) CFG A	Configuration A string. This is a **12-digit** numeric string that controls the behaviour of certain aspects of the TT8900 OPT. Any change to this string must be done in consultation with Transponder Technologies.
5) CFG B	Configuration B string. This is a **12-digit** numeric string that controls the behaviour of additional aspects of the TT8900 OPT. Any change to this string must be done in consultation with Transponder Technologies.
6) FMWARE	Represents the version number of the installed firmware on the T20 SCM control module.
7) TIMEOUT	1) DCA/CAS TIMEOUT (enter number of seconds). Default = 120
	2) NO-FLOW TIMEOUT (enter number of seconds). Default = 240
7) USB PASSCODE	Used to configure a passcode that would protect against unauthorised transfers of transactions and valid IDs using a USB thumb drive.

3.4.5 Pumps

```
1) NUM          5) H1 - Gxx
2) CHANL        6) H2 - Gxx
3) TYPE         7) H3 - Gxx
4) ID           8) More
```

MENU SELECTION	DESCRIPTION	
1) NUM	Enter number between 01 and 32 that is assigned to a physical fuelling position. (A position could supply up to three fuel products. This number will appear on the icon on the video monitor screen (1 to 32)	
2) CHANL	Enter 0, 1 or 2. This number reflects the channel number that the pump is using. The TT8900 OPT supports two channels (1 and 2). If the status of a pump is set to 0, the pump is not configured for use and will not appear on the video monitor.	
3) TYPE	The type of pump being used.	
	1) PEC 2) PDS 3) WAYNE 4) GILBARCO	5) EMAIL 6) SANKI 7) WAYNE CL 8) OTI 9) BS (Blue Sky)
4) ID	Enter number between 00 and 99. This number is the actual (pump) number used by the communication protocol. The ID may be different to the pump number, as displayed on its icon (defined by NUM)	
5) H1-Gxx	The Group number to which Hose 1 is assigned.	
6) H2-Gxx	The Group number to which Hose 2 is assigned.	
7) H3-Gxx	The Group number to which Hose 3 is assigned.	
8) MORE		
1) H4-Gxx	The Group number to which Hose 4 is assigned.	
2) ISLAND xx	Generally, an island number is assigned to a pump only when an Authorisation Station (AS) is used on the island where the pump is located. The island number restricts authorisation (of the pump) to that particular AS. A value of 0 is used to indicate that the pump can be authorised by any AS.	

3) H1-xxx	The OTI nozzle tag number that has been assigned to Hose 1.
4) H2-xxx	The OTI nozzle tag number that has been assigned to Hose 2.
5) Position xx	Used to change the display position on the main screen for the selected pump.
6) Test	Not relevant to TT8900 OPT installations.
7) Version	Not relevant to TT8900 OPT installations.

3.4.6 Tanks (Theoretical Gauging)

```
1) NUM xx        5) DIP (L)
2) STATUS        6) METER
                 7) SETUP
4) DELIVERY      8) COMMS
```

MENU SELECTION	DESCRIPTION
1) NUM xx	The number assigned to a particular tank (Range = 00 to 10). NO duplicate numbers.
2) STATUS	Displays the selected tank's Volume + Capacity. Same functionality can be accessed from the default screen, by 👆 ↓ or ↑.
4) DELIVERY	Used to manually enter the quantity of fuel added to that tank (0 to 99999).
5) DIP (L)	Used to manually enter the most recent dip stick (volume) reading for that tank.
6) METER	Used to manually enter the meter value for EVERY pump that uses the tank. First enter Pump Number then enter pump's meter reading (up to 9999999).
7) SETUP	1) HI ALRM – volume (litres) at which HIGH (overflow) alarm is triggered.
	2) LO ALRM -volume (litres) at which a LOW volume alarm is triggered.
	3) LOLO AL - volume (litres) at which a critical LOW volume alarm is triggered.
	4) CAPACTY – enter the total tank capacity (litres).
	5) GROUP – defines the GROUP NUMBER to which the tank is assigned.
8) COMMS	1) TYPE – THEO (for tanks with no automatic gauging system).

3.4.7 Tanks (Automatic Gauging)

```
1) NUM xx
2) STATUS        6) METER
                 7) SETUP
                 8) COMMS
```

MENU SELECTION	DESCRIPTION
1) NUM xx	The number assigned to a particular tank (Range = 00 to 10). NO duplicate numbers.
2) STATUS	When selected shows tank's Status + Current Volume + Capacity

6) METER	Used to manually enter the meter value for EVERY pump that uses the tank. First enter Pump Number then enter pump's meter reading (up to 9999999).

7) SETUP	1) HI ALRM - volume (litres) at which HIGH (overflow) alarm is triggered.	
	2) LO ALRM - volume (litres) at which a LOW volume alarm is triggered.	
	3) LOLO AL - volume (litres) at which a critical LOW volume alarm is triggered.	
	4) CAPACTY – enter the total tank capacity (litres).	
	5) GROUP – defines the GROUP NUMBER to which the tank is assigned.	
	6) BELOW / ABOVE GN.	
	7) STRAP TBL	1) STRAP RECORD (00 to 99) (selects a new table).
		2) HEIGHT (0 to 99999) mm.
		3) VOLUME (litres).
		4) CLEAR TABLE (used to delete record values).
	8) INT TBL – defines a strap table stored in the ATG system	
8) COMMS	1) TYPE – select the type of ATG system; VEGA, VDR, OPW or VEGH (rare)	
	2) CHANNEL – Select comms channel 1 or 2.	
	3) ID – Assigns the ID number to be used on the selected channel.	

3.4.8 Groups

```
1) GROUP NUMBER x
2) IS xx ZZZ
```
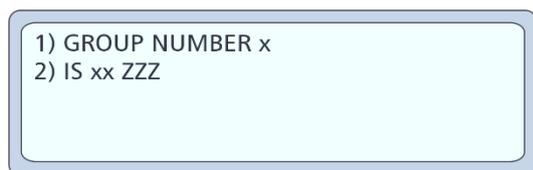
MENU SELECTION	DESCRIPTION
1) GROUP NUMBER x	Up to 16 (00 to 15) groups can be nominated for use by forecourt devices.
2) IS xx TYPE	For each group nominated, a FUEL GRADE is assigned to that group, or a pre-allocated device function, such a "price sign" or "card acceptor".

3.4.9 More

```
1) PRICE SIGN
2) PRINTER
3) POS
SSN: xZxZxZxZxZxZxZxZxZxZxZ
```
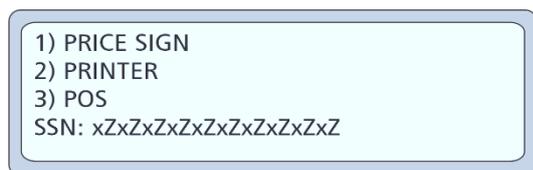
MENU SELECTION	DESCRIPTION
1) PRICE SIGN	Options used to configure the type (AusPort / Wayne), channel number, mode (7/8 bit odd/even parity) and baud speed (2400, 4800, 9600, 19200, 38400) of an attached price sign.
2) PRINTER	Not relevant to TT8900 OPT installations.
3) POS	This option is only relevant when a POS is present in the installation and it would allow configuring the channel used to communicate with it.
4) SSN	Represents the unique hexadecimal Silicon Serial Number of the T20 SCM module.

4. Commissioning

Before the system can be signed-off or after servicing (replacing one or more modules) the following tests/checks should be performed (other additional tasks, specific to a particular service company's requirement, should also be performed at this stage):

- » Check that all pumps are displaying the correct price and have been configured in the T20 SCM module for the correct fuel grade.
- » Check that the OPT can authorise all pumps and that the pump number selected releases the correct pump.
- » Check that a selection of white/account cards are authorised correctly.
- » Check that at least one EFTPOS (Savings or VISA account) card correctly authorises to prove bank connection is operative.
- » Start an EFTPOS transaction, take some fuel and then collect a receipt. Check that the merchant details on the receipt are correct for the site.
- » Check that the emergency stop system operates and causes the OPT to display "EMERGENCY STOP" on the LCD screen.
- » Check that the T-WEB can connect with the OPT.

4.1 Fitting the Compliance Plate

The OPT's compliance plate is pop-riveted (using the rivets supplied in the parts bag) to the left side of the tower using the holes already drilled in the tower.

> Note: The holes may require re-drilling as the powder coating can make the holes too small for the pop rivets. If this is the case, carefully re-drill the holes using a 3.5mm drill bit and reapply a coat of cold galvanized paint (or other zinc rich corrosion protection paint) on the holes before fitting the compliance plate.

4.2 Key Handover

Every TT8900 OPT comes with two secured registered keys, unique to TT Fuel. In case the OPT has been purchased with its supporting tower, one additional smaller key (per OPT) is supplied for opening the lower access panel.

> Note: The installer must liaise with the customer to determine who will hold the keys and the nominated person should give signed notification to the installer that they have received them.

5. Servicing

Having the TT8900 OPT been engineered from the ground up with modularity in mind, its next-gen internal T20 architecture allows most components to be quickly replaced in the field.

This chapter covers the printer maintenance and the procedures for replacing the following modules, NOT directly connected, or linked to mains power:

> » Card Reader.
> » PIN Pad.
> » T20 SCM.
> » T20 TSM.
> » T20 IIM.
> » T20 CMM (Cellular Modem).
> » T20 CGM / DGM / CNM Protocol Converter Modules.

Important: For servicing any other component not covered in this chapter, we recommend the engagement of a suitable electrical contractor that is familiar with TT equipment and the methodology required to safely access and navigate the internal configuration system embedded within the OPT.

Safety Considerations

The following safety considerations must be read and understood before any servicing is done on the OPT:

> » Dangerous voltages exist under the yellow safety cover. **DO NOT REMOVE THE COVER.**
> » The OPT has an internal uninterruptible power supply (UPS).
>
> ---
> Note: Please follow the instructions detailed in chapter 2.3 General Maintenance from the complementary TT 8900 OPT – User Manual, in case the OPT needs to be switched off: first power off ❶ the battery, then ❷ the mains power.
> ---
>
> » The door assembly of the OPT weighs approximately 10kg. The oil filled struts that prevent the door from opening too quickly, and restrict its travel, should be inspected regularly to ensure that they are working, that there are no leaks and that they are fastened to the door and cabinet securely. If the door is difficult to open, do NOT force it, contact your service company. Always support the door when opening.
> » When the door is open, corners can represent a hazard that people could walk into.
> » The door should not be opened when it is raining. If it is no longer raining but the OPT is still wet, then wipe around the door with an absorbent cloth before opening to ensure no water drips into the cabinet.

5.1 Receipt Printer Maintenance

Loading a new paper roll into the printer requires the following steps:

1. The new paper roll is loaded as per the Paper Path diagram. To do this, prepare the new roll by first removing approximately 100mm of paper (as this may be dirty or marked) and then cutting the leading edge of the paper cleanly at right angles.
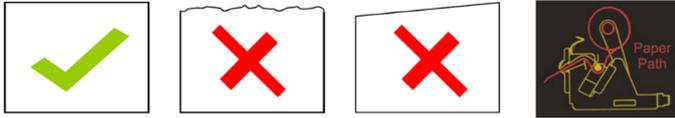
2. Slide the new paper roll onto the support shaft with the paper directed towards the printer body.

    > Note: Make sure the centre cardboard tube is not pushed out of the roll.

3. Insert the prepared leading edge of the paper into the rear of the pinch roller. The printer should automatically capture the paper and feed a short length out of the exit slide.
4. To obtain a "test print", press the Form Feed (FF) button on the side of the printer. The test print can be removed by pulling the paper straight out with a little downward pressure.

    The printer's internal cutting edge should leave a clean, slightly serrated edge across the width of the paper.

    > Note: should the paper advance without any test print, check the orientation of the paper, as it may be upside-down.

Figure 19:Printout Example

For clearing a paper jam either internally or in the exit slide, follow these steps:

1. Open the TT8900 OPT door using the commissioned key.
2. Gently open the spring-loaded paper guide to check and remove any paper jam in this area.
3. Jammed paper is removed from the feed roller by gently pulling backwards.
4. When the area is clear, reload the paper roll as described in the previous paragraph.
5. Use the Form Feed (FF) button to print a test receipt.
5. Close the cabinet door and discard the test receipt.
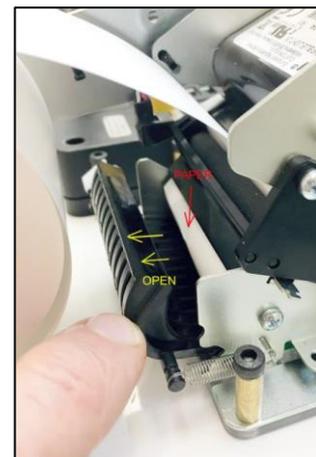
Figure 20: Clearing a Paper Jam

5.2 Replacing the Card Reader

Tools Required: Philips #2 screwdriver, 10mm socket and a 10mm open-end spanner.

In the unfortunate event the **Card Reader** needs to be replaced, follow these steps to complete the swap and resume normal operations:

1. Open the TT8900 OPT door using the commissioned key.
2. First power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. There is a 10-way cable connected to the reader and one earth lead. Unplug the cable from the connector and release the earth lead.
4. Using the 10mm socket and spanner, release the four (anti-vibration) nuts that are holding the reader to the front panel. Note that one of these also holds the cable clamp for the cable.
5. Carefully remove the reader from the door.
6. After replacing the reader, carefully undo steps 4-1.
7. To complete the installation, please finish the pairing process.
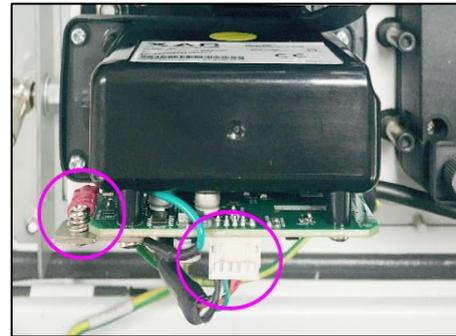
Figure 21: TT8900 OPT Card Reader Connections

Note: Pairing is the process of exchanging security keys between the PIN Pad and the reader to ensure only a "trusted" reader can pass card details to the PIN Pad for processing.

The pairing process is done remotely by Transponder Technologies. To arrange for this to be done, please contact TT Fuel Customer Support at:

✉ support@ttfuel.com   ☎ +61 88215 5000

Figure 22: TT8900 OPT Anti-Vibration Nuts

5.3 Replacing the PIN Pad

Tools Required: 3mm Allen key (hex key).

In the unfortunate event the **Pin Pad** module needs to be replaced, follow these steps to complete the swap and resume normal operations:

1. Open the TT8900 OPT door using the commissioned key.
2. First power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. Disconnect the five cables [ETHN, COM1, COM3, POWER, USB] from the PIN Pad and tie clear of unit.
4. Unscrew by hand the two bolts and remove the bracket holding the PIN Pad to the front fascia plate.
5. Withdraw the PIN Pad (lift each side to break gasket seal).

Figure 23: TT8900 OPT PIN Pad

6. Ensure the sealing gasket is positioned correctly over the mounting studs.
7. Install the new PIN Pad into position.
8. Secure the PIN Pad with original retaining nuts. Give each mounting spacer an extra half-turn so the gasket seals correctly, tightening evenly across the unit (ie: left bottom, then right top, then left bottom etc.)
9. Undo STEP 3, 4.
10. Power up the unit: ❶ the battery, then ❷ the mains power.
11. Close the OPT door.
12. Wait for the "INSERT and REMOVE CARD" prompt on the screen.
13. To complete the installation, please finish the pairing process.

Note: Pairing is the process of exchanging security keys between the PIN Pad and the reader to ensure only a "trusted" reader can pass card details to the PIN Pad for processing.

The pairing process is done remotely by Transponder Technologies. To arrange for this to be done, please contact TT Fuel Customer Support at:

✉ support@ttfuel.com   ☎ +61 88215 5000

5.4 Replacing the T20 SCM Module

Tools Required: Flat head screwdriver.

In the unfortunate event the **T20 SCM** module needs to be replaced, follow these steps to complete the swap and resume normal operations:

1. Open the TT8900 OPT door using the commissioned key.
2. Power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. Remove the **T20 SCM P1**, **P2** and **P3** connector banks, using a flat head screwdriver.
4. Using the same flat head screwdriver, pull out both orange tabs keeping the **T20 SCM** module attached to the **DIN rail**.
5. Pull out the **T20 SCM** module.
6. Install the new **T20 SCM** module, undoing steps 4-1.

   Important: Make sure to match the Setup SW1 dip switches to the old module.
7. Once the front door is closed, turn on the power and proceed to contact TT Fuel customer support in order to re-configure the T20 SCM module.

☎ +61 8 8215 5000   ✉ support@ttfuel.com
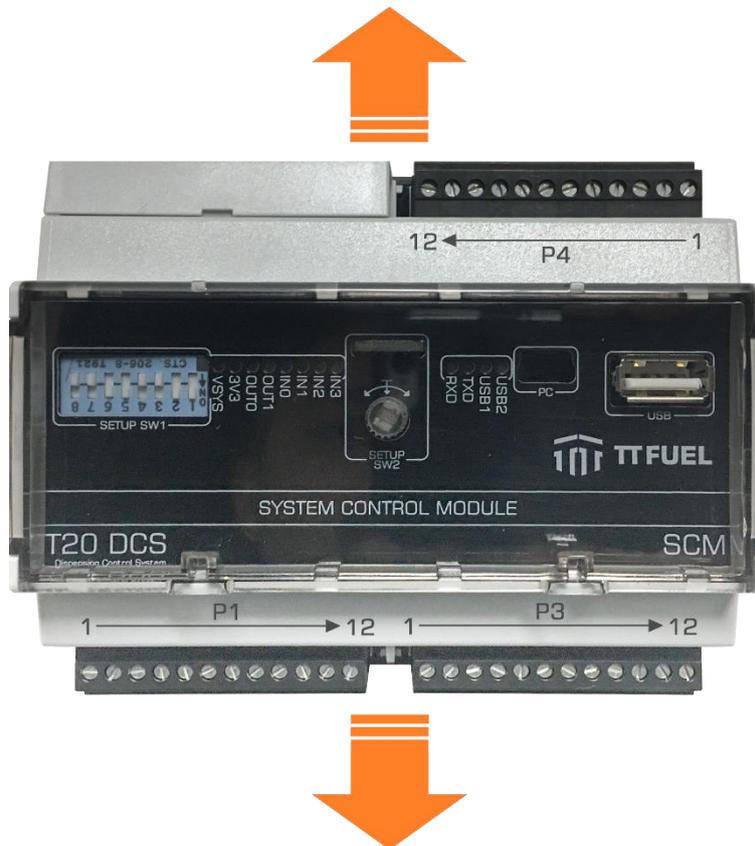
Figure 24: T20 SCM Module Replacement

5.5 Replacing the T20 TSM Module

Tools Required: Flat head screwdriver.

In the unfortunate event the **T20 TSM** module needs to be replaced, follow these steps to complete the swap and resume normal operations:

1. Open the TT8900 OPT door using the commissioned key.
2. Power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. Remove the **T20 TSM P1**, **P2**, **P3** and **P4** connector banks, using a flat head screwdriver.
4. Disconnect the Ethernet cable.
5. Using the same flat head screwdriver, pull out both orange tabs keeping the **T20 TSM** module attached to the **DIN rail**.
6. Pull out the **T20 TSM** module.
7. Install the new **T20 SCM** module, undoing steps 4-1.
   Important: Make sure to match the Setup SW1 dip switches to the old module.
8. Once the front door is closed, turn on the power and resume your TT8900 OPT activity.
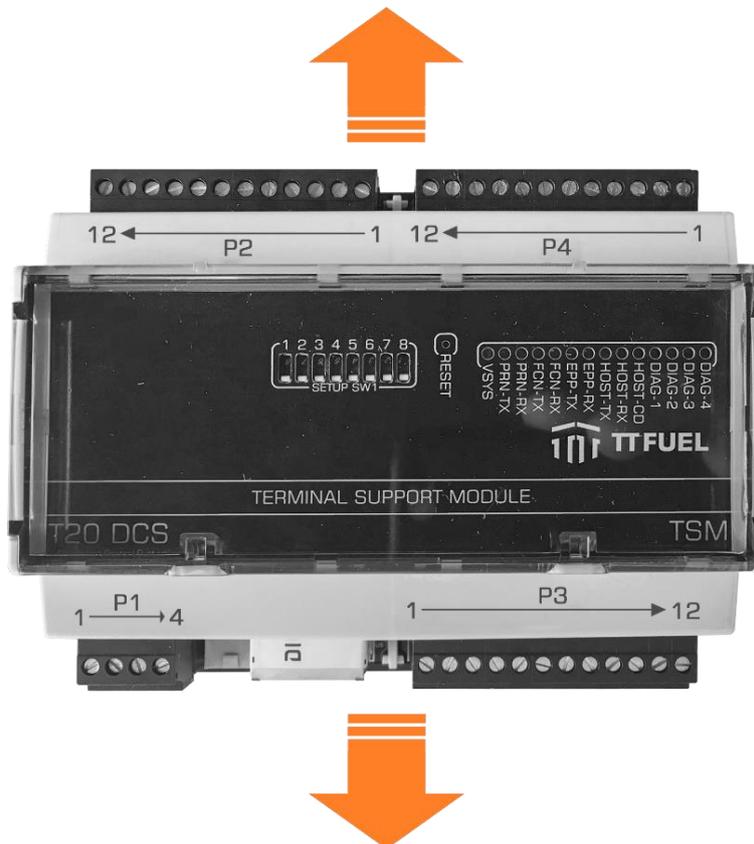

Figure 25: T20 TSM Module Replacement

Note: Make sure to properly align the P1 -P4 connector banks when replacing a T20 TSM module. Misaligning will result in faulty behaviour.

5.6 Replacing the T20 IIM Module

Tools Required: Flat head screwdriver.

In the unfortunate event the **T20 IIM** module needs to be replaced, follow these steps to complete the swap and resume normal operations:

1. Open the TT8900 OPT door using the commissioned key.
2. Power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. Remove the data cable from the **T20 SCM** module, using a flat head screwdriver.
4. While pushing the module down against the rail, swing the bottom end towards you to release it.
5. Install the new **T20 IIM** module, undoing steps 3-1.
6. Once the front door is closed, turn on the power and resume your TT8900 OPT activity.
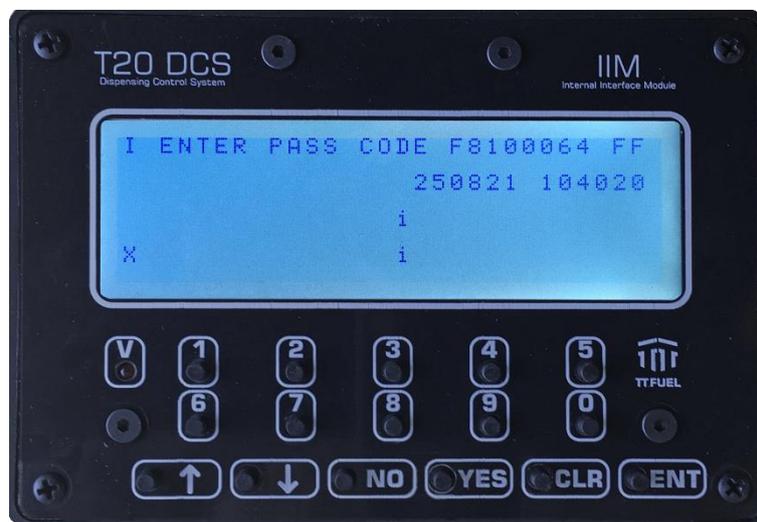
Figure 26: T20 IIM Module Replacement

5.7 Replacing the Cellular Router

Tools Required: Flat head screwdriver.

In the unfortunate event the **Cellular Router** module needs to be replaced, follow these steps to complete the swap and resume normal operations:

Note: The replacement Cellular Router has already been configured, prior shipping.

1. Open the TT8900 OPT door using the commissioned key.
2. Power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. Locate the Cellular Router module and:
   » Disconnect the cellular network antenna from the Cellular Router's end.
   » Disconnect the Ethernet cable.
   » Disconnect the power cable.
4. While pushing the module down against the rail, swing the bottom end towards you to release it.
5. Install the new Cellular Router by pushing the module down against the rail, then swinging the bottom end towards the DIN rail until it locks.
6. Undo STEPS 3,2,1.
7. Once the front door is closed, turn on the power and resume your TT8900 OPT activity.

Figure 27: T20 CMM Module Replacement

5.8 Replacing the Power Supply Unit (PSU)

Tools Required: Flat head screwdriver.

Important: For replacing the PSU, we recommend the engagement of a suitable electrical contractor that is familiar with TT equipment and the methodology required to safely access and navigate the internal configuration system embedded within the OPT.

In the unfortunate event the **PSU** needs to be replaced, follow these steps to complete the swap and resume normal operations:

1. Open the TT8900 OPT door using the commissioned key.
2. Power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. Locate the PSU and:
   » Disconnect all the connected cables.
   » Using a Phillips head screwdriver, open the latch located on the bottom side of the unit and remove the PSU.
4. Install the new PSU on the DIN rail by undoing steps 3-1.
5. **Important**: Adjust the output voltage to +26VDC +/- 0.1, as shown in Figure 28.
6. Once the front door is closed, turn on the power and resume your TT8900 OPT activity.

Figure 28: PSU Replacement

5.9 Replacing the UPS Battery

In the unfortunate event the **USP battery** needs to be replaced, follow these steps to complete the swap and resume normal operations:

1. Open the TT8900 OPT door using the commissioned key.
2. Power off the UPS battery then, disconnect the TT8900 OPT unit from the mains power.
3. Disconnect the UPS battery from the OPT.
4. While pushing the battery downwards, swing the top side away from the rail to release it.
5. Install the new UPS battery on the DIN rail:
   » Aling the battery's bottom side of the locking mechanism to the DIN rail.
   » While pushing the battery upwards, swing the top side against the DIN rail until it snaps in. (Figure 29)
   » Connect the battery's cable to the OPT's UPS.
   » Switch ON its power button.
6. Once the front door is closed, turn on the power and resume your TT8900 OPT activity.

Figure 29: UPS Battery Replacement

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We have global experience supporting companies with fuel management systems, outdoor payment terminals, forecourt controllers, point of sale terminals, bulk fuel loading systems, management software services and specialised fuel storage & dispensing solutions.

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