



COMFILL SERVICE MANUAL

Comfill Service Manual Version 1.1.4

Model: Comfill

Date: 09th April 2021

Conditions of Use

- Read this manual completely before working on, or making adjustments to, the Compac equipment
- Compac Industries Limited accepts no liability for personal injury or property damage resulting from working on or adjusting the equipment incorrectly or without authorization.
- Along with any warnings, instructions, and procedures in this manual, you should also observe any other common sense procedures that are generally applicable to equipment of this type.
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Product Identification

Specifications	
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Models Covered	This manual applies to the Comfill. NOTE: Do not use this manual for earlier models. Contact Compac for archived manuals if required.
Current Revision Author(s)	Venuka Amarakoon
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Validity

Compac Industries Limited reserves the right to revise or change product specifications at any time. This publication describes the state of the product at the time of publication and may not reflect the product at all times in the past or in the future.

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Safety

You must adhere to the following safety precautions at all times when working on the Compac Comfill. Failure to observe these safety precautions could result in damage to the Comfill, injury, or death. Make sure that you read and understand all safety precautions before installing, servicing or operating the Compac Comfill.

PRECAUTIONS

Always follow safe operating procedures, any national or local regulations and site specific instructions.

Make sure that the service area is thoroughly clean when servicing. Dust and dirt entering the components reduce the life span of the components and can affect operation.

Some components have sharp edges and corners. Wear gloves whenever practicable while working inside the cabinet.

Site Safety

Comply with all safe site regulations for the site you are working on and any additional instructions from the site manager.

Wear and use appropriate safety equipment such as safety boots, high visibility clothing, hard hat, gloves and barrier cream.

Cordon off the area you are working in using cones, barriers, caution tape etc.

CAUTION

When working near any flammable goods area, take all precautions to avoid all potential sources of ignition. This includes but is not limited to: Open flames, hot exhausts, welding flames or sparks, static electricity, non-intrinsically safe electrical equipment, use of mobile phones.

These instructions are to be used as a guide only and may not cover all situations. It is the responsibility of yourself and the site manager to take appropriate health and safety precautions.

Electrical Safety

CAUTION

Always turn off the power to the Comfill before removing the high voltage area Perspex guard. Never touch wiring or components inside the high voltage area with the power on.

Always turn off the power to the Comfill before removing or replacing software.

Always take basic anti-static precautions when working on the electronics, i.e., wearing a wristband with an earth strap.

240 Volt

The Comfill is powered by 240 Volt AC mains power. The mains power enters the cabinet via a gland in the base and is connected to the terminal board. From the terminal board, the power supply goes to the power supply. The power supply steps down the 230 Volts AC to 12 volt DC to power the main electronic components.

Technicians should be able to safely operate and diagnose a Comfill with the cabinet door open as long as they do not touch any of the 230 Volt powered components behind the Perspex cover or the 230 Volt terminals on the power supply.

Introduction

The Comfill enables unattended refuelling at unmanned sites such as truck stops, marinas and aviation sites where the driver, skipper or pilot can pay for fuel by HID, distributor cards or with a PIN. It is compact and suitable for outdoor installation. The Comfill has two card bases that can be customised to allow specific distributor cards access. The unit can be set up from the unit itself or can be set up online from Compac Onsite.

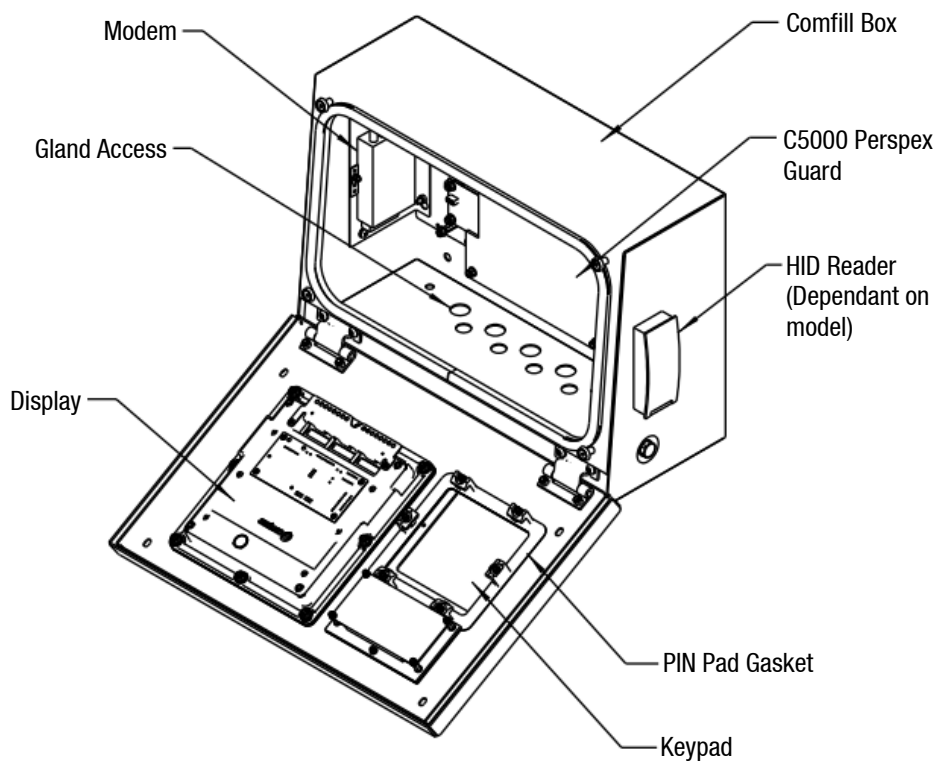
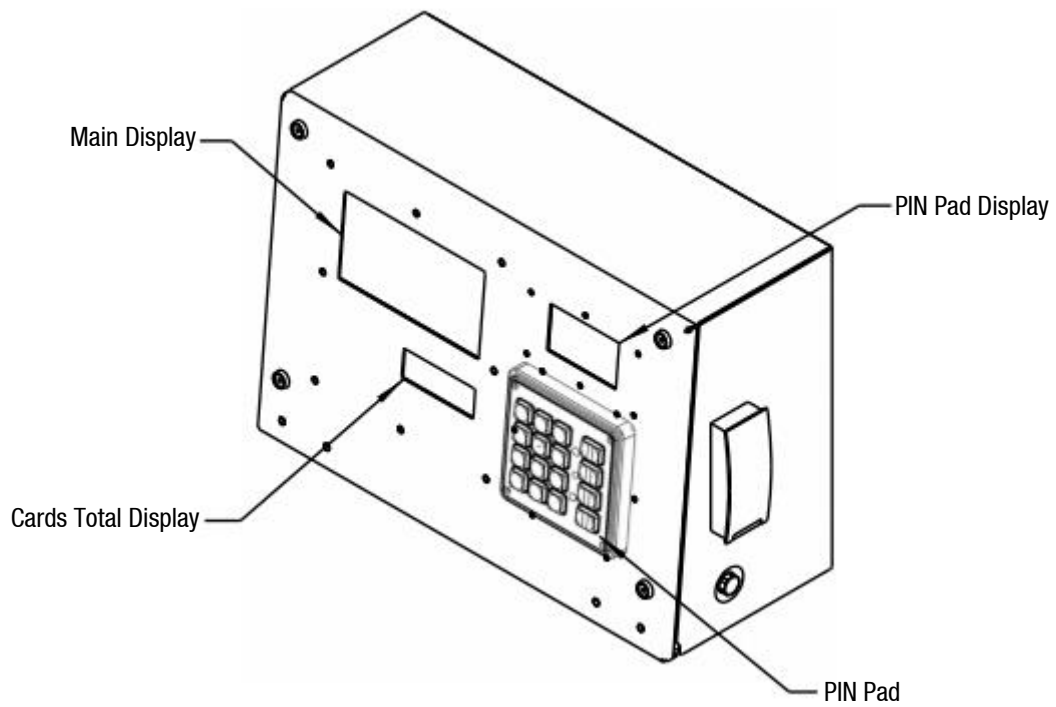
The Comfill is a versatile unit and supports both V50 and encoder meters. Tank levels can be monitored with Fafnir, Vega, Veeder-Root and Virtual tank gauges. The Comfill supports two configurations, both single and dual, and therefore can control either one or two pumps from one unit.

Compac Onsite is an easy to use online interface which allows the site to be controlled remotely. Transactions, pump data and events are all stored and can be viewed from Compac Onsite, as well as being able to update and change the cards, user IDs and other important options. These can all be enabled and disabled from Compac Onsite, as well as being able to enable and disable the pumps.

The Comfill can be used for different applications, as it is both a pump and a Fuel Management System (FMS). This means the Comfill can be used to either authorise and control external pumps, or to dispense fuel using internal controlled pumps.

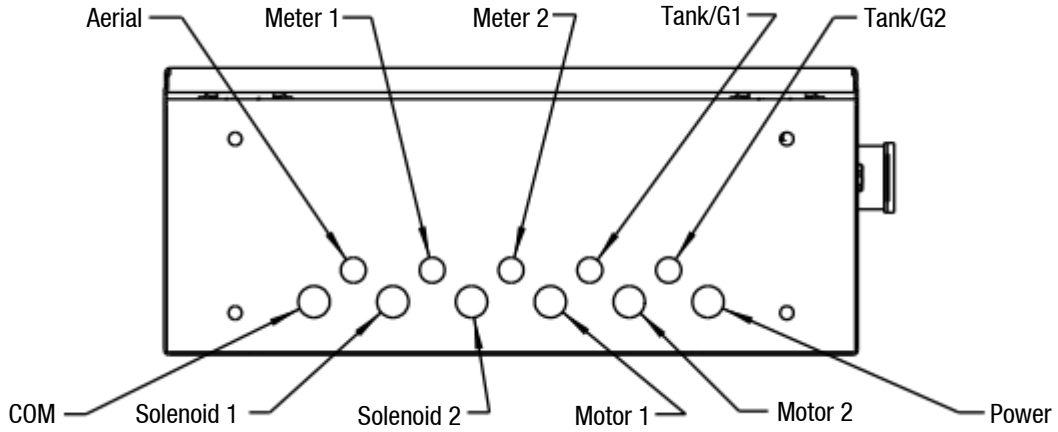
Layout

The Comfill is a very simple unit with no moving parts. The major parts are shown below.



NOTE: Due to continual development of the Comfill the DIN rail is not shown in the layout drawings.

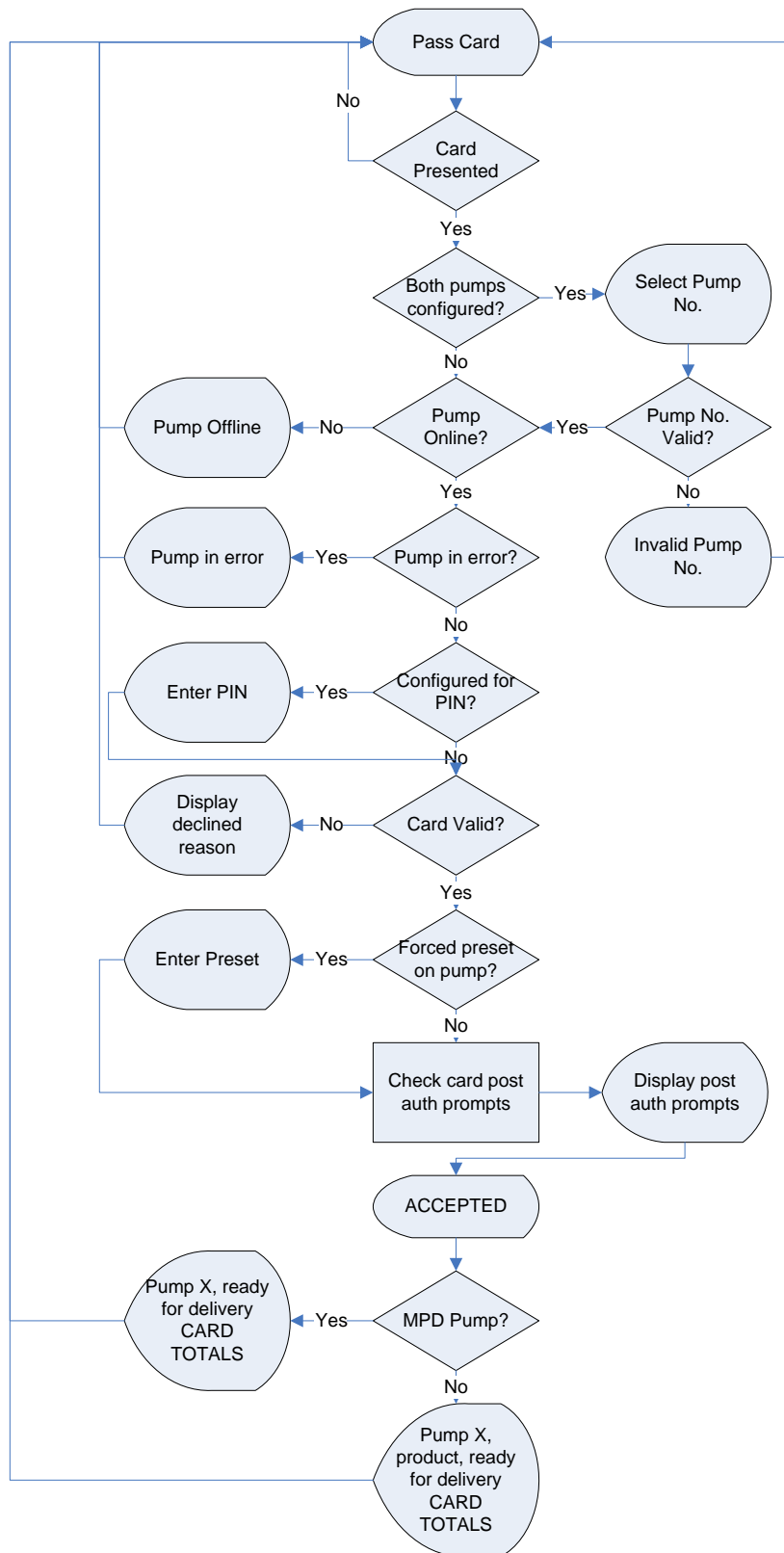
During installation, the unit would have been connected and the empty gland holes will have been blanked. If these need to be altered, the gland access is as shown:



If remounting the unit, refer to the Installation Manual for footprints and installation instructions.

Typical Cycle

The following diagram shows a normal cycle of the Comfill unit, and the displays at each point.



Software

This section details what options are available for the unit and what each setting means. Some settings may not be available for each specific unit.

System

Card Records

Before cards can be added, card records need to be set up from the Comfill unit. When setting up card records, a PAN length, BIN range, and access number can be specified. These are encoded onto the card and can be used to restrict access to the pumps. PAN length is the number of digits that make up the BIN number and card number. The BIN range gives access to a range of cards that have similar BIN numbers. BIN numbers are always 6 digits long. To make this into a BIN range, two numbers must be added. For example, if a card had the following card number:

7824331000132017

The card is 16 digits long, therefore the PAN length is 16.

The BIN number is 782433. To allow all cards with the same BIN number access:

BIN low should be set to 78243300.

BIN high should be set to 78243399.

This would allow all cards with a BIN number of 782433 access. The Access number is used to further restrict cards. This is a 5-digit number and will be encoded onto the cards. 0 should be entered into the Access field if the card does not have an access number. Once the card records are set up, specific cards can be entered into the system using PAN numbers.

If a card is hotlisted, it will be accepted even if the card PAN number has not been entered. Otherwise, the card's individual PAN number will have to be entered as a card. Prompts are an optional setting which may be chosen when setting card records. The prompts that are selected when entering a card will appear when that card is swiped; for example, if odometer is selected, the card holder will have to enter an odometer number to access the fuel pump. Cards can be enabled or disabled.

Passcode

For security, the unit has a passcode. This can be used to access settings from the unit. For extra security, if the settings are accessed with the passcode, some options are not able to be changed, such as the K-Factor setting. These must be accessed by pressing the K-Factor switch.

The unit supports three different authorisation modes: PIN, HID or Cardreader. The system can be set up from either CompacOnsite or from the unit itself.

NOTE: *If the unit is changed between Cardreader and HID configurations, it is important to change the dipswitch settings on the PIN pad board. See page 51.*

Pumps

The Comfill supports two configurations, single and dual, enabling two pumps to be used simultaneously if one card is used. These pumps are assigned a side so that they may be individually customised. Each side must be numbered between 1-99.

NOTE: *Entering a pump number 0 will disable the pump.*

Individual settings for each pump include the fuel product used, which has a name and product code, and the meter used at each pump. The unit supports encoder meters (max frequency 3.5Khz) or V50 meters. The K-Factor, used to calibrate fuel flow, can also be set for each pump. The state of the pumps can be either operational or locked, which may be desired if the pump is not operating normally. Pumps have two solenoids for product flow. If the solenoids are unavailable, the pump preset should also be unavailable. Solenoid delay, the amount of time it takes the solenoids to turn on after lifting the nozzle, can be customised for each side. Auto authorisation can be enabled for a pump, allowing the pump to be authorised without lifting up the nozzle.

Preset Cutoff and Rounding

Preset cutoff is used to deliver an accurate amount of fuel. When dispensing fuel, two solenoids are used for fuel flow. When the dispensed amount of product reaches the preset cutoff, one solenoid is turned off to slow delivery rate and dispense an accurate volume of product.

A two-digit number can be assigned to determine the preset rounding in litres. The first digit determines how the preset is rounded down, and the second digit determines how the preset is rounded up. For example, if Preset Rounding is set to 89 and the preset is 40;

40.08 is within .08 of 40 and would therefore be rounded down to 40.

39.91 is within .09 of 40 and would therefore be rounded up to 40.

Flow Range

A flow range is needed for each pump to dispense an accurate amount of product. If too much or too little fuel is dispensed, the meter cannot accurately measure the dispensed fuel and therefore should cut off and display an end of sale message. The flow range will vary for different products. Flow low should be the lower value of the flow range, while Flow high is the highest possible flow.

NOTE: *Flow range is optional. The default value is 0.*

A flow timeout can be set, which cuts off the motor after the set amount of time. The default is 000, which is 20 seconds.

Unit Price and End of Sale

For the Comfill, the unit price is always 1. If the setting is changed in the unit to something different, the unit price will remain as 1.

End of sale indicators show why the motor stopped during the last sale. Refer to End of Sale for the full list of these.

Cards and Card Users

Card numbers must be added for a card to be valid. Card or HID numbers can be added. These numbers should correlate to the earlier card setup done in the system section.

Cards can also have User IDs, which are optional prompts for cards. If a User ID is asked for the customer dispensing fuel will have to enter a valid User ID. If a user ID is not required, and instead the retailer wants a different prompt (such as Fleet number) user ID can be configured to ask for different prompts.

Meters

The unit supports encoder or V50 Modbus meters. The encoder meters can be single, dual or triple channel. Single channel encoders measure the fuel dispensed. Dual channel encoders do this as well as determine the rotation of the meter (and therefore the direction of fuel flow). Triple channel meters can determine if the meter is correctly connected and functioning.

K-Factor

The K-Factor is used to calibrate product flow. It is a ratio of litres dispensed per revolution of the meter. The K-Factor may need to be calibrated after periods of time. To calibrate the pump, dispense fuel into a certified measuring container and compare the display value with the one dispensed.

Example:

Display shows 10.00 True volume 20.00

To calculate the correct K-Factor from the information above; firstly record the existing K-Factor.

$$\begin{aligned}
 \text{New K Factor} &= \text{Existing K Factor} * \frac{\text{Dispensed Amount}}{\text{Displayed Amount}} \\
 &= \text{Existing K Factor} * \frac{20}{10} \\
 &= \text{Existing K Factor} * 2
 \end{aligned}$$

Unique ID is for a V50 meter only.

Minimum Measurable Quantity (MMQ)

Minimum measured quantity (MMQ) is the minimum delivery. The MMQ is calculated with the following equation:

$$MMQ = M \times 10^n$$

With the value in litres. For example, if the coefficient was set to 2, and the exponent was set to 1:

$$MMQ = 2 \times 10^1 = 20L$$

So the minimum delivery would be 20 litres. The exponent can only be certain values;

- If the coefficient is 1, the exponent can be 0, 1, 2, 3 (valid values are then 1, 10, 100, 1000)
- If the coefficient is 2, the exponent can be 0, 1, 2 (valid values are then 2, 20, 200)
- If the coefficient is 5, the exponent can be 0, 1, 2 (valid values are then 5, 50, 500)

If either of the values entered are not valid, or the value is left as , the MMQ will be calculated from the maximum flow. The MMQ is the maximum flow x 0.05. For example, if the maximum flow was 40 (the default):

$$MMQ = 40 \times 0.05 = 2L$$

Note that the MMQ still must be one of the valid values listed above. If the MMQ is calculated from the maximum flow, and is NOT one of the valid values listed above, it will be rounded up to the next valid value. For example, if the maximum flow was 600:

$$MMQ = 600 \times 0.05 = 30L$$

30L is not a valid value, and therefore the MMQ would be rounded up to 50L.

Quantity Setting

This setting is what quantity will be shown on the main display when fuel is being dispensed. This is only valid for V50 meters and is ignored for encoder meters which always display Litres uncompensated.

Tanks

Tanks can be set up with their corresponding product, number and capacity.

Tank Gauging

Tank gauging is used to determine how much fuel is left in a tank. The Comfill supports four tank gauges; Veeder-Root, Fafnir, Vega and Virtual. To accurately gauge the volume of fuel, the tank number, safe fill level and capacity are required. These depend on the tanks onsite. If a Vega electronic dipstick is used, please note that more information will be required; the position of the probe in the tank is needed. A Tank Strapping table ID will be required to calculate volume. A Vega electronic dipstick may also be connected differently; the gauge channel may change depending on the connection to the Comms board.

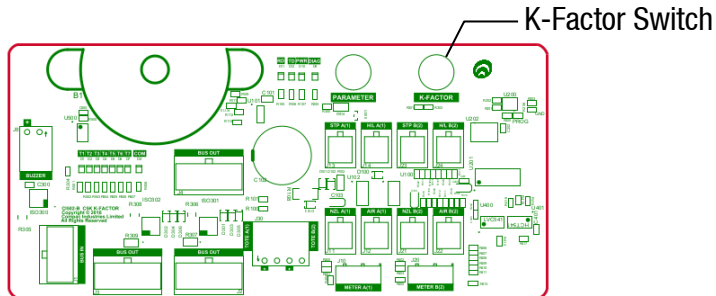
Device

As the C5000 electronics are used for a variety of units, the variant can be changed. For the Comfill, the variant should always be set to COMFILL.

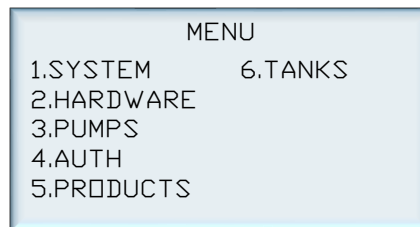
The Comfill does not have a slave display and the slave display setting should be set to none. To update the software, contact Compac.

Local Setup

To change settings from the unit you must either have access to the K-Factor switch, which is located on the inside of the unit on the K-Factor board or have the passcode to the unit.



Pressing the K-Factor switch will bring up a menu displaying set up options on the Keypad display. The available options are shown below. The same menu can be accessed by pressing Cancel on the standard display and entering the passcode.



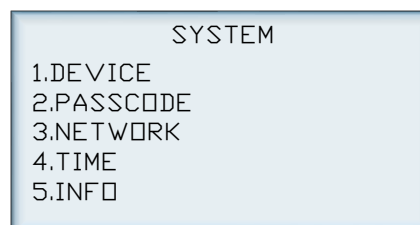
IMPORTANT NOTE: The settings shown on each individual unit will depend on the current software version. Not all the options shown here may be displayed on every unit.

NOTE: If the menu is accessed by entering the passcode, not all the settings will be available. K-Factor and meter setup can only be accessed by pressing the K-Factor switch.

The K-Factor switch must be sealed after servicing.

NOTE: The system has a timeout of 15 seconds.

1. System



Device

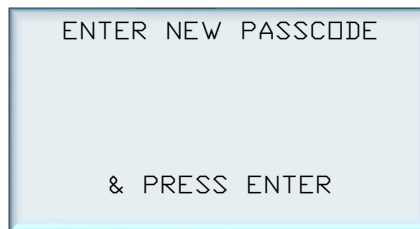


To Access this menu, select `SYSTEM` from the main menu and then select `DEVICE`. Only change the device ID if the processor board is replaced.

To change the device ID,

1. From here the device ID and CompacOnsite login can be viewed
2. To change the Device ID, press #
3. Enter the new device ID and press enter

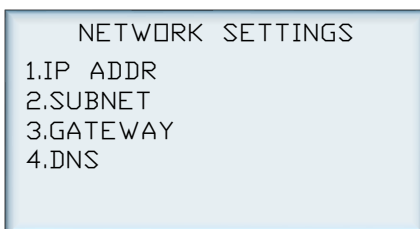
Passcode



To Access this menu, select `SYSTEM` from the main menu and then select `PASSCODE`. To change the Passcode,

1. From System, select Passcode
2. Enter the desired new passcode and press enter

Network



To Access this menu, select `SYSTEM` from the main menu and then select `NETWORK`. The IP address, subnet, gateway and DNS settings of the unit can be viewed or changed. Select the desired setting to be changed .Enter the new values and press enter.

Time

DATE & TIME	
1.DATE	20-02-25
2.TIME	10:09
3.TIMEZONE	NZST
4.TZ OFFST	+12:00
5.DST	YES

Select SYSTEM from the main menu and then select TIME from the system menu.

1. To change the time and date, select the option and enter the new time or date.
2. To change the time zone, press 3 and select the desired time zone.
3. The offset is set by the time zone.
4. Select DST to "yes" or "no" for daylight saving.

Info

SYSTEM INFO	
1.SOFTWARE	
2.SD CARD	NONE
3.STATUS	

To access Info, select SYSTEM from the main menu and then select INFO. The information section is read only.

1. Selecting Software will show the software versions loaded.

SOFTWARE VERSIONS	
1.F/W VER	2.1.5
2.BOOTLOAD	0.0.4
3.KFACT	1.0.0
4.PINPD	0.0.7
5.PRST	1.0.2
NEXT(#)	

SOFTWARE VERSIONS		
1.SLV D	1	1.0.3
2.SLV D	2	1.0.3
3.SLV D	3	1.0.3
4.SLV D	4	1.0.3
(*)PREV		

2. Select status to see the system uptime.

SYSTEM STATUS	
1.UPTIME	0d04:27
2.UPTIME S	16056
3.HEAP TOT	154368
4.HEAP FR1	81472
5.HEAP FR2	77800
NEXT(#)	

2. Hardware

HARDWARE CONFIG	
1.VARIANT	DISPENSER
2.MODE	RETAIL
3.PUMP TYP	DUAL HLB
4.PUMP CFG	
5.DISPLAY	

This menu is available from the main menu. Select **HARDWARE**. Variant, mode, pump type, stop switch and display settings are available in Hardware configurations. The following section will explain how to configure hardware.

Variant

HARDWARE VARIANT	
1.DISPENSER	
2.HYBRID	

Select **HARDWARE** from the main menu and then select **VARIANT**. To change variant,

1. Press 1 to enter the variant from Hardware config menu.
2. Chose the appropriate number to set the variant as a dispenser or a hybrid(controller and a dispenser). This will rarely need to be changed.

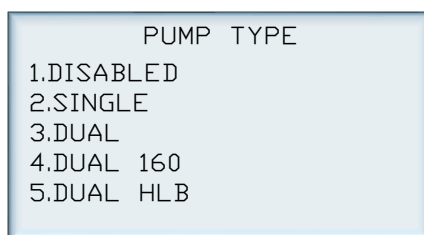
Mode

PUMP MODE	
1.RETAIL	
2.COMMERCL	

Select **HARDWARE** from the main menu and then select **MODE**.

The pump mode is a restricted menu and can only be accessed with the K-Factor switch. The pump mode can be changed by selecting the desired setting.

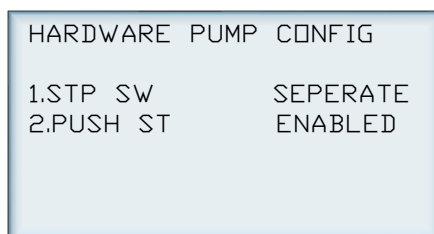
Pump Type



Select **HARDWARE** from the main menu and then select **PUMP TYP**.

Pump type is a restricted menu and can only be accessed with the K-Factor switch. Pump type can be changed by selecting the desired setting.

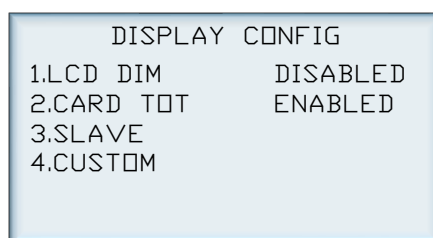
Pump Config



Select **HARDWARE** from the main menu and then select **PUMP CFG**.

1. It's a restricted option and can only be accessed by pressing the K-Factor switch.
2. STP SW is for sump stop switch. Stop switch can be changed between separate and combined
3. PUSH ST is for push start button this option can be toggled between enabled and disabled.

Display



Select **HARDWARE** from the main menu and then select **DISPLAY**.

To change the settings,

1. Select LCD dimming or card totals to enable or disable these functions.
2. Slave display settings or custom display information can be accessed by selecting the desired option.

Slave Display

SLAVE DISPLAY CONFIG	
1.DISP 1	SIDE A
2.DISP 2	SIDE B
3.DISP 3	NONE
4.DISP 4	NONE

SLAVE DISPLAY CONFIG	
1.DISP 1	SIDE A
2.DISP 2	SIDE B
3.DISP 3	NONE
4.DISP 4	NONE

Select **HARDWARE** from the main menu, select **DISPLAY** and then select **SLAVE** from the display config menu.

Each connected slave display can be configured from this menu. Select the slave display to assign it to the appropriate side.

Custom

CUSTOM DISPLAY CONFIG	
1.DENSITY	DISABLED
2.TEMP	DISABLED
3.FLOW RT	DISABLED
4.EXTRA	DISABLED

Select **HARDWARE** from the main menu, select **DISPLAY** and then select **CUSTOM**. To change settings,

1. Select the desired functionality to toggle it between enabled and disabled.
2. Enable extra to display extra information during a transaction.

3. Pumps

Select **PUMPS** from the main menu.

PUMPS	
1.SIDE	A
2.SIDE	B
3.PUMP	01
4.PUMP	02
5.PUMP	03
6.PUMP	04

Only side A and side B are available in dispenser mode. More pumps are available in hybrid mode. Select a pump to configure.

SIDE A CONFIG 1	
1.NUMBER	05
2.PRODUCT	UNLEADED
3.ENABLED	ENABLED
4.INFO	IDLE
5.METER	Next(#)

SIDE A CONFIG 2	
1.FLOW	
2.PRESET	
3.MODE	
4.COMMS	
5.ADVANCED	
(*)PREV	

1. Pump number can be changed by selecting number and entering the new number.
2. Products can be assigned to hoses by pressing 2 and selecting from the list of products.

```

SET HOSE PRODUCT
1.H1  PRD   LPG
2.H2  PRD   UNLEADED
3.H3  PRD   95
4.H4  PRD   AVGAS
5.H5  PRD   DIESEL
      Next(##)
  
```

```

SELECT HOSE PRODUCT
1.PRD  #01 UNLEADED
2.PRD  #02 DIESEL
3.PRD  #03 95
4.PRD  #04 AVGAS
5.PRD  #04 LPG
(<*)PREV
  
```

3. The pump can be toggled between enabled and disabled by selecting enabled.
4. Info is read only and indicates the status of the pump.

```

PUMP 03 INFO
1.IF STATE      INOPER
2.END SALE      FMS TEM
3.TOTALS
4.MMQ USED      00000002
(<*)PREV
  
```

Meter

Select PUMPS from the main menu and select METER will bring up the following menu.

```

SIDE A METER CONFIG
1.TYPE          3CH ENC
2.K FACTOR      005.0000
3.UNIQ ID       N/A
4.CALIB         DISABLED
  
```

1. The meter type can be chosen from given types.

```

METER TYPE
1.DISABLED
2.1CH ENC
3.2CH ENC
4.3CH ENC
5.MODBUS
  
```

2. K-Factor can be set to a desired value.
3. Unique ID is for V50 and other Modbus meters only and can be ignored for other meter types.
4. Calibration mode can be enabled or disabled by pressing 4.

These settings (SIDE A CONFIG 2) will be available after pressing # from the PUMPS menu

SIDE A CONFIG 2	
1.FLOW	
2.PRESET	
3.MODE	
4.COMMS	
5.ADVANCED	
<*)PREV	

Flow

Select PUMPS from the main menu and press # to go to the next page. Select FLOW

FLOW SETTINGS	
1.FLOW T/□	020
2.S DELAY	020
3.HFC□	3000
4.LFC□	00.0
5.QMAX	1200

Each flow setting can be changed by selecting the setting and entering the new value. These settings are flow timeout, solenoid delay, high- and low-flow cut-off, and maximum flow (Qmax).

Preset

Select PUMPS from the main menu and press # to go to the next page. Select PRESET.

SIDE A PRESET CONFIG		PRESET CONFIG	
1.PRESET	AVAIL	1.P RND HI	0.00
2.PST TYPE	AMOUNT	2.P RND LO	0.00
3.P CUT	0.80		
4.H CUT	00		
	Next(#)	<*)PREV	

1. Preset can be toggled between available and unavailable by pressing 1.
2. Preset type can be toggled between amount and price by pressing 2.
3. Preset high, preset low, and present rounding high and low (on the next screen) can be changed by selecting the functionality and entering the new value.

Pump mode

Select PUMPS from the main menu and press # to go to the next page. Select PUMP MODE.

PUMP MODE	
1.STDALONE	DISABLED
2.AUTO ATH	DISABLED
3.TST/.PURGE	DISABLED

Standalone mode, auto authorisation mode, and purge mode can be toggled between enabled and disabled by selecting the functionality

Comms

Select PUMPS from the main menu and press # to go to the next page. Select COMMS.

PUMP COMMS CONFIG	
1.PROTOCOL	NOT SET
2.ADDRESS	05
3.CHANNEL	NOT SET
4.5D / 6D	6 DIGIT

1. The communications protocol can be set to Compac, PEC, or Gilbarco.
2. Select channel 1 or channel 2 to match with the comms board channel.
3. The address can be set by entering a desired number. Usually pump number and address will be the same.

The display can be toggled between 5 and 6 digits by pressing 4.

Advanced

Select PUMPS from the main menu and press # to go to the next page. Select ADVANCED.

1. Fuel category can be changed between Liquid Fuel , Diesel EF and LPG
2. Quantity unit can be changed between litres compensated and litres uncompensated
3. A valid Minimum measurable quantity can be entered into this field to change the default value
4. Air switch operation can be toggled between normally open and normally closed.

SIDE A ADVANCED CONF	
1.FUEL CAT	LIQ FUEL
2.QTY UNIT	L COMP
3.MMQ CUST	00
4.AIR SW	NORM OP

4. Auth (Only available in hybrid mode)

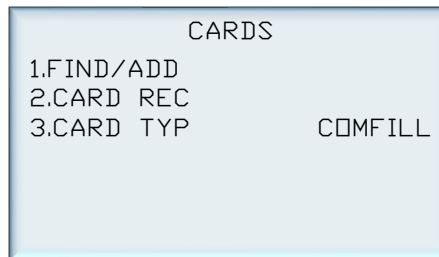
Select AUTH from the main menu.



In Auth settings, cards, card user, authorisation mode and authorisation time out can be changed following section will explain how to configure each setting.

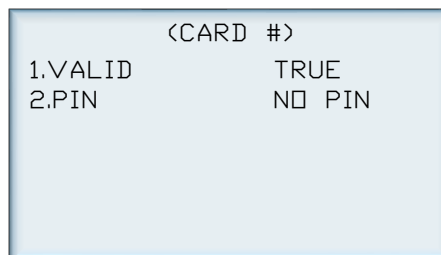
4.1.Cards

Select AUTH from the main menu and select CARDS.

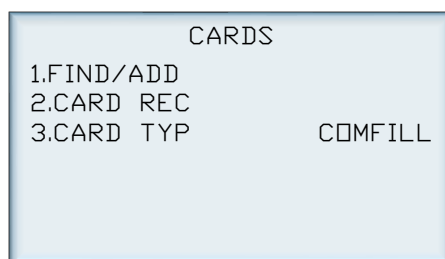


To add or change a card,

1. From Cards, select Find/Add
2. Enter a new card or an existing one
3. Alternatively, swipe the card or HID tag to automatically enter the card number
4. If a card number was entered, press enter to confirm entry
5. To make the card valid select valid and toggle between true and false
6. To set a new PIN, select PIN and enter the desired PIN



Card Type



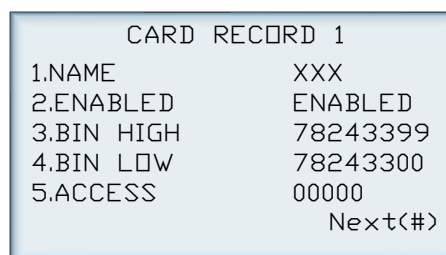
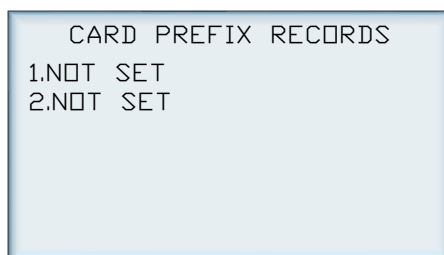
Select AUTH from the main menu and select CARDS and then select CARD TYP.

Card type can be toggled between comfil and comfill s.

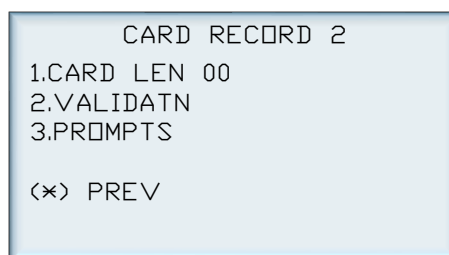
If desired, the card type can be changed to 'Short Comfill'. This setting allows 1200 cards to be recorded, as opposed to 300. If this setting is implemented, only one owner detail can be saved to each card. To change this, press 1 and select the required card type.

Card record

To access card record, select AUTH from the main menu, select CARDS and then select CARD RECORD. Select the desired number to setup a new Card record.



1. Press 1 to name the card record.
2. Pressing 2 will let to enable or disable the card record.
3. Enter appropriate bin high / bin low values and access number.
4. Press # to proceed to next window.



1. Press 1 to Set the length of the PAN (card number).
2. Press 2 to set Validation.

Validation

VALIDATION	
1.HOT LIST	DISABLED
2.EXPIRY	DISABLED

1. Enable hot list to accept all cards within bin low and bin high range.
2. Press 2 to enable or disable card expiry date.

Prompts

PROMPTS	
1.PRESET	DISABLED
2.USER ID	DISABLED
3.ODD METER	DISABLED

Use this menu to enable or disable prompts in authorization mode.

4.2. Card User

USER ID	
1.FIND/ADD	
2.ALPHA	ENABLED
3.PROMPT	NOT SET

To access card user, select auth from the main menu, and then select card user from the auth config menu.

1. User IDs can be found or added by pressing 1 and entering a user ID.
2. Alphanumerical characters can be enabled or disabled by pressing 2.
3. Prompts can be added by pressing 3 and entering the desired prompt

ENTER USED ID PROMPT
& PRESS ENTER

To edit and change user IDs,

1. From Card User, select Find/Add
2. Enter either a new user ID or an existing one
3. If a new user ID was entered, press Enter to confirm entry
4. The user ID can now be changed from valid to invalid and vice versa

```

USER ID
1.000          VALID
  
```

4.3.Auth Mode

To access auth mode, select AUTH from the main menu, select AUTH MODE.

```

AUTH MODE
1.PIN AUTH      ENABLED
2.HID           ENABLED
3.CARD          DISABLED
4.PX EFT       DISABLED
5.PX CC        DISABLED
  
```

The unit can support HID Readers, PIN, and Cardreaders. To set or change the configuration:

1. From System, select Auth Mode
2. Enable or disable the desired configuration. Pressing the number corresponding to a configuration will change it from enabled to disabled and vice versa
3. Eftpos and credit card authorisation should be disabled for this application.

NOTE: If the unit is changed between Cardreader and HID configurations, it is important to change the dipswitch settings on the PIN pad board. See page

4.4. Auth Time Out

To access auth time out, select AUTH from the main menu, select ATH T/□.

```

AUTH CONFIG
1.CARDS
2.CARD USR
3.ATH MODE
4.ATH T/□      0000
  
```

Auth time out can be changed by pressing 4 and entering a new value.

5. Product (Only available in hybrid mode)

Select PRODUCT from the main menu.

PRODUCTS 1		PRODUCTS 2	
1.PRD #01	UNLEADED	1.PRD #06	NOT SET
2.PRD #02	NOT SET	2.PRD #07	NOT SET
3.PRD #03	DIESEL	3.PRD #08	NOT SET
4.PRD #04	DIESEL A	4.PRD #09	NOT SET
5.PRD #05	NOT SET	5.PRD #10	NOT SET
	Next(#)	PREV(*)	Next(#)

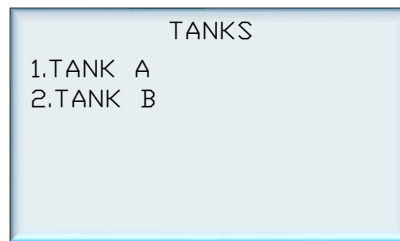
PRODUCTS 3	
1.PRD #11	NOT SET
2.PRD #12	NOT SET
3.PRD #13	NOT SET
4.PRD #14	NOT SET
5.PRD #15	NOT SET
	PREV(*)

Select any product to set a new product or change an existing product.

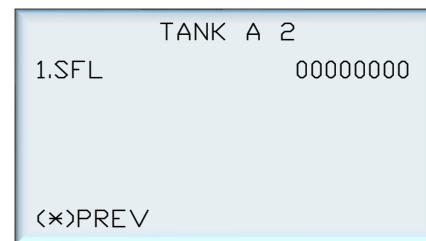
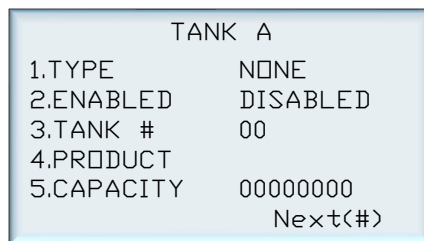
PRODUCT #01	
1.NAME	
UNLEADED	
2.UNIT PRI	01.000

1. Products can be named by selecting a desired product number and entering a name.
2. Once a product is established, a unit price can be set for each product.

6. Tanks (Only available in hybrid mode)



Select TANKS from the main menu and select TANK A or TANK B.



1. The tank gauge type can be changed by selecting 1.
2. The options are VDR, Vega, Virtual, Fafnir.
3. Tank gauging can be enabled or disabled by pressing 2.
4. The tank number and capacity can be set by selecting the desired functionality and entering the new value.
5. The product can be set by pressing 4 and selecting an established product.
6. Safe fill level can be changed by pressing 1 and entering the new value in litres.

CompacOnsite

To access CompacOnsite, the device ID is needed. The following should be entered into an internet browser, replacing device ID with the specific ID of the unit. Refer to Local Setup for instructions on finding the Device ID.

<https://deviceID.compaconsite.com>

The standard passwords are shown below.

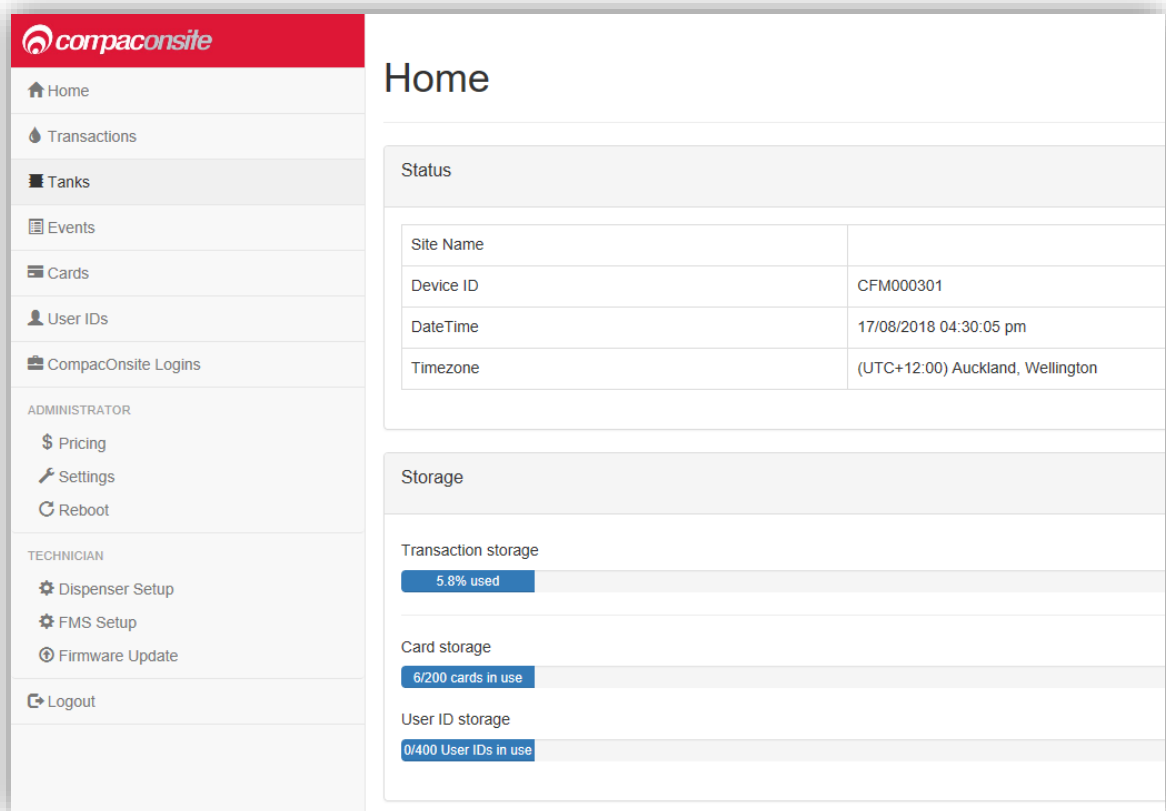
IMPORTANT NOTES:

For the security of the site, ensure the passwords are changed once the unit is installed.

Access to online data is heavily dependent on the unit being powered on and connected to the internet. Ensure the unit is online in order to have full access to all site data.

Username	Password
user	c0mpac5KUser
admin	c0mpac5KAdmin
tech	c0mpac5KTech

After log in, the CompacOnsite home screen will appear.



The screenshot shows the CompacOnsite Home dashboard. On the left is a sidebar menu with the following items: Home, Transactions, Tanks, Events, Cards, User IDs, CompacOnsite Logins, ADMINISTRATOR (Pricing, Settings, Reboot), and TECHNICIAN (Dispenser Setup, FMS Setup, Firmware Update, Logout). The main content area is titled 'Home' and contains a 'Status' table and a 'Storage' section.

Field	Value
Site Name	
Device ID	CFM000301
DateTime	17/08/2018 04:30:05 pm
Timezone	(UTC+12:00) Auckland, Wellington

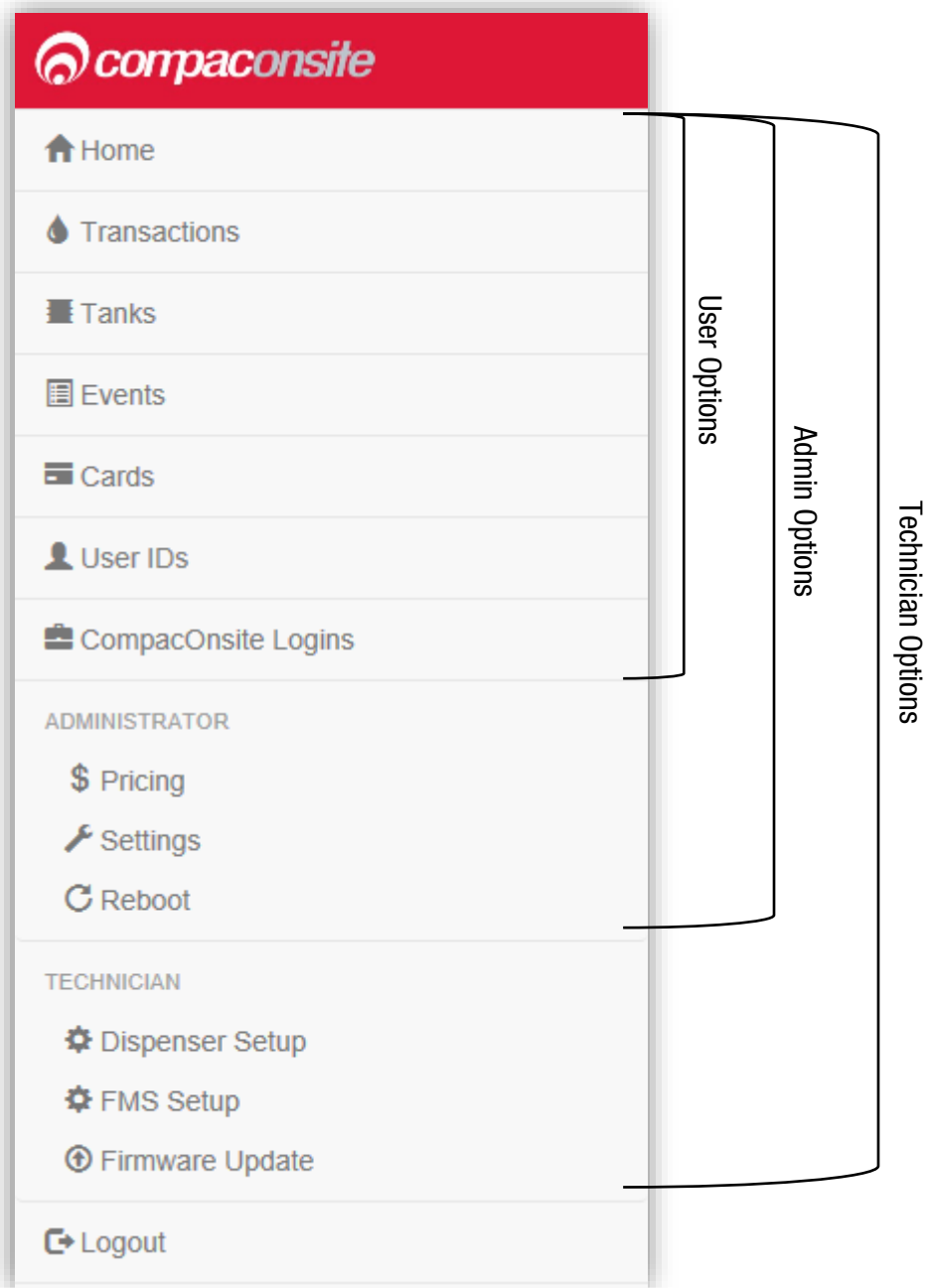
Storage

- Transaction storage: 5.8% used
- Card storage: 6/200 cards in use
- User ID storage: 0/400 User IDs in use

NOTE: The side bar will look different depending on the access level of the user.

Users

There are three different user options when logging into Compac Onsite; standard, technician and administrator. Each user can access different functionalities. Standard users can access all basic functionalities, such as tanks, cards and transactions. Admin users can also access these, as well as being able to access the system settings and reboot. The technician can access all these options, as well as being able to access set up options which are needed when setting up the site.



Standard User Options

Users have access to all the following basic functionalities.

Transactions

Transactions

Transaction storage
0.1% used

Reference	Card Number	Local Date Time	Product	Product Code	Pump	Hose	Amount	Quantity
23	7824331000132...	02/03/2018 11:46:0...	Diesel		3	1	4.38	4.3
22	7824331000132...	02/03/2018 11:45:5...	Diesel		3	2	1.60	1.6
21	7824331000132...	02/03/2018 11:45:2...	Diesel		3	1	3.26	3.2
20	7824331000132...	02/03/2018 11:45:0...	Diesel		3	2	1.71	1.7
19	7824331000132...	02/03/2018 11:44:1...	Diesel		3	1	0.66	0.6
64	7824331000132...	23/02/2018 15:04:4...				2	2.84	2.8
63	7824331000132...	23/02/2018 13:46:3...				1	0.00	0.0
62	7824331000132...	23/02/2018 13:45:2...				1	7.26	7.2
61	7824331000132...	23/02/2018 13:43:4...				1	0.00	0.0
60	7824331000132...	23/02/2018 13:32:5...				2	2.60	2.6
59	7824331000132...	23/02/2018 13:31:5...				2	29.00	29.0
58	7824331000132...	23/02/2018 13:29:4...				1	12.10	12.1
57	7824331000132...	23/02/2018 13:28:4...				1	0.00	0.0

NOTE: Table columns shown on page can be expanded.

The Transactions storage is limited. When Transaction storage is at 100%, the user will have to Export CSV. This will reset the Transaction storage bar and cause the data to be stored in a separate place in the system. This allows more transactions to be recorded.

Ignore checksum

 Only load new transactions

NOTE: Select Refresh before adding more transactions.

Transactions that have not been exported will be viewed in the screen as default. To show exported transactions untick 'Only load new transactions'.

Tanks

The Tanks section indicates product details and volume of fuel in the tank.

Tanks

Tanks

Tank No.	Product	Produc...	Gross Volum...	Net Volume (L)	Safe Fill Level	Ullage	Water Height	Temperature
<								

Deliveries indicate when the last transaction occurred, including tank number and date time.

Deliveries (last 10)

Tank No.	Date Time	Gross			Net	
		Delivery (L)	Start (L)	End (L)	Delivery (L)	Start (L)

The data in this section can be downloaded by pressing Download. Select Refresh to view new data.

NOTE: A reboot is required for any changes to be applied.

Events

Events are notable events that occur with the pumps. The main event that should be examined is the Pump Snapshot event. This is an accumulative amount of fuel that has been pumped from the selected pump. Select Download to download the list of events on screen. Select Refresh to load the most recent events.

Events

Events

Local D...	Event	Event...	Text	Pump	Hose	Unit Price	Amount	Quantity	Tank
2083-01-05...	Controller Pow...		80						
2083-01-05...	Pump Snapshot		46	1	1	1	0	0	
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Pump Snapshot		46	1	1	1	0	0	
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Time update		76						
2018-01-24...	Controller Pow...		80						
2018-01-24...	Time update		76						
2018-01-24...	Generic Event		70						
2018-01-24...	Generic Event		70						

Cards

In this section, a new card can be created with Create New card. Decide on a card number, PIN and owner details, then select Submit.

NOTE: Ensure Enabled box is ticked to validate card.

If a mistake has been made, select Edit and edit card details. Select the trash can icon if a card is not needed. The maximum Card storage is limited at 200 cards.

Cards

Cards

Card storage

9/200 cards in use

User IDs

Card Number	Enabled	PIN	Card Total (l)	Owner detail 1	Owner detail 2	
12345	✗		0.0	123	456	Edit
123213	✗		0.0			Edit
123456	✓		0.0	123	456	Edit
245687f	✗		0.0	123	456	Edit
24568789	✓		0.0	123	456	Edit
1234567890123456...	✗		0.0			Edit
1234567890123456...	✗		0.0			Edit
ABCD1234	✗	1234	0.0	K	John	Edit
ERCD1234	✗	3333	0.0	G	Q	Edit

User IDs consist of any 6 numbers or less. Select Edit to Edit User IDs and owner details. Tick the enable box to make the User ID valid for use. The trash can icon can be selected to permanently delete the user.

NOTE: A card can have multiple users.

Different users will have different User IDs. The purpose of this is to know which user has made a transaction, and ensure they are only fuelling when required.

NOTE: All files created **MUST** be a csv file not an excel file.

Import User IDs is another way of inserting new users. It may be easier for bulk user adding.

User IDs

User IDs

User ID storage

3/200 User IDs in use

User ID	Enabled	Owner detail			
1235	✗	Test	Edit	🗑️	
12356	✗	Test	Edit	🗑️	
54321	✓	test	Edit	🗑️	

CompacOnsite Logins

For the security of the site, the standard passwords should be changed during set up of the unit. In case the passwords were not changed during installation, the process is outlined here. To change the passwords, go to CompacOnsite Logins, shown in the left options tab.

The screenshot shows a web interface titled "User Management". Below the title is a section labeled "Users" containing a table with three rows of user information. Each row has an "Edit" button next to it.

Username ▲		
tech	<input type="button" value="Edit"/>	
admin	<input type="button" value="Edit"/>	
user	<input type="button" value="Edit"/>	

Not all users may be shown depending on the access level of the user. To edit, select Edit.

The screenshot shows the "Edit User" form. It has a header "Edit User" and two main sections: "Username:" and "Password". The "Username:" field contains the text "tech". The "Password" field is empty and has a placeholder "Password" and a note "Minimum of 8 characters" below it. A "Submit" button is at the bottom.

Enter the desired new password, confirm this and press Submit.

Administrator Options

Administrators can access all the above options, as well as being able to access pricing, settings and reboot.

Pricing

From pricing, the pricing for different products can be viewed and changed.

Pricing

Product Prices

Product	Product Code	Active Price	New Price	
ULP	2	2.500	2.500	<input type="button" value="Set New Price"/>
Diesel	3	1.310	1.310	<input type="button" value="Set New Price"/>

Price Change

Apply new product prices. This will change prices on pumps.

Note: For commercial variants, price changes only apply to external pumps.

The Active Price is the price being used currently for the pumps. To change this, select Set New Price.

Set New Price

Product Name:

ULP

New Price:

2.500

Enter the new price for any product and select Change Price. This will change the New Price. However, the unit will continue to use the Active Price until Use New Prices is selected, under Price Change. Clicking this will change the Active Price and update them to the New Price.

Settings

Settings can be used to set site details. Enter the site details and press submit.

Site Details

Site Name:

Site Address 1:

Site Address 2:

Site Address 3:

Site Address 4:

Time

Timezone

Daylight Saving Time

Timezone can also be set. In some cases, timezone will be automatically synced. Enter the timezone and press submit.

Reboot

Reboot is used to restart the application. Some settings require rebooting to update recent actions. The page needs to be refreshed after the Reboot process has been completed.

NOTE: *The unit can only be rebooted when no transactions are taking place.*

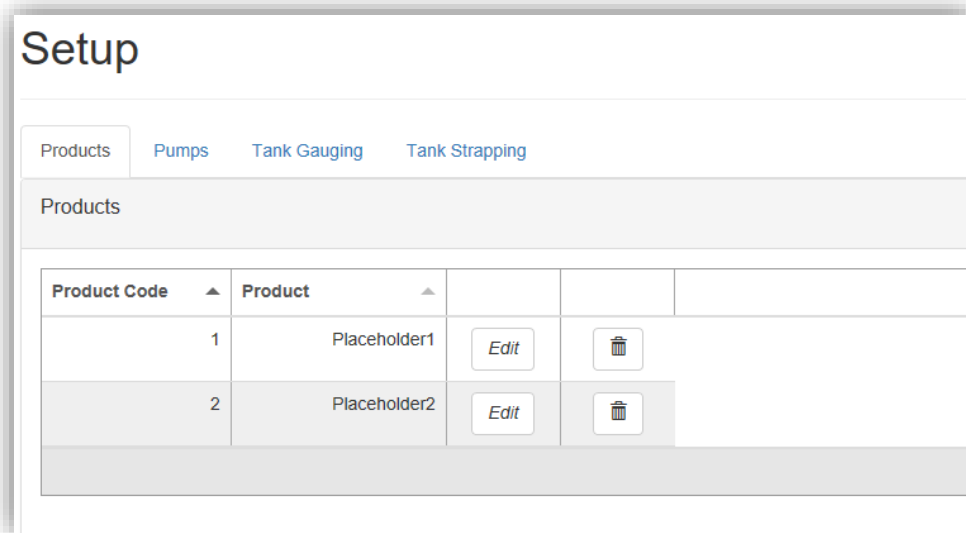
When someone is refuelling the C5000 unit cannot be rebooted. The pumps may stop fuelling as the transaction has been interrupted.

Technician Options

Technician users can access both administrator and standard user options. As well as this, they can access site setup options.

Dispenser Setup

Dispenser Setup will bring up a setup menu with four options; Products, Pumps, Tank Gauging and Tank Strapping.

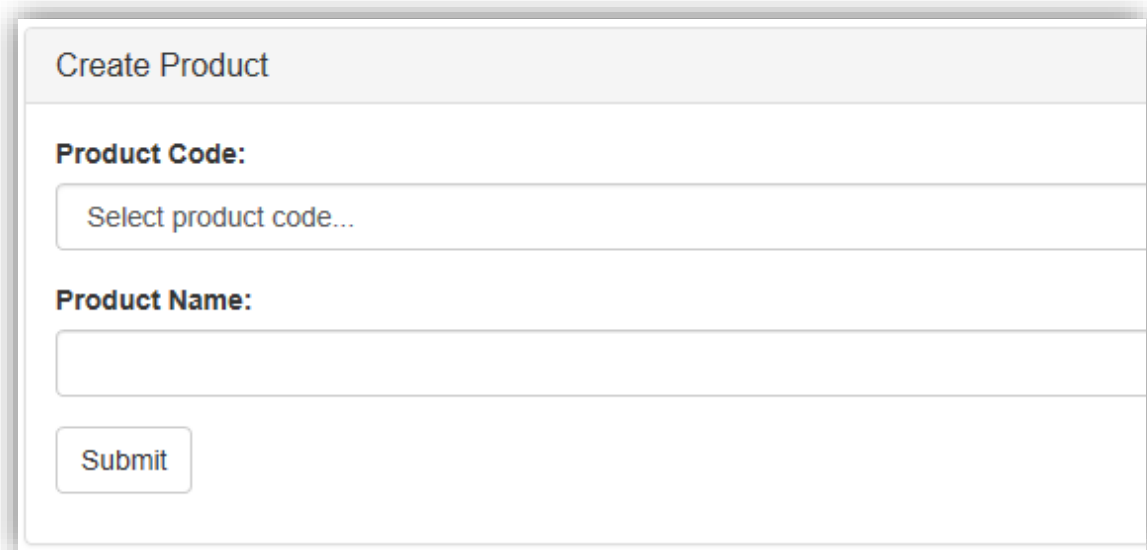


The screenshot shows a web interface titled "Setup". At the top, there are four tabs: "Products", "Pumps", "Tank Gauging", and "Tank Strapping". The "Products" tab is selected. Below the tabs, the word "Products" is displayed. A table with two columns, "Product Code" and "Product", contains two rows of placeholder data. Each row has an "Edit" button and a trash icon to its right.

Product Code	Product		
1	Placeholder1	Edit	
2	Placeholder2	Edit	

In the Products tab, the current products can be viewed.

To create a product, Add Product can be selected. The product must be named and numbered before it can be saved. The following menu will appear.



The screenshot shows a form titled "Create Product". It has two input fields: "Product Code:" with a dropdown menu showing "Select product code..." and "Product Name:" with a text input field. A "Submit" button is located at the bottom left.

Pressing Submit will add the product. When a product is edited the same menu will appear, and the product's name and number can be changed before resubmitting.

To delete a product, select the recycle bin icon in the products table, and click OK on the pop-up.

The next tab is the Pumps tab. From this tab, the configuration of the unit (single or dual) can be chosen, as well as the settings for each pump.

The screenshot shows a web interface titled "Setup". At the top, there are four tabs: "Products", "Pumps", "Tank Gauging", and "Tank Strapping". The "Pumps" tab is currently selected. Below the tabs, there is a section titled "Pumps". Underneath, there is a sub-section for "Side A". This section contains four form fields: "Pump number (1-98)" with the value "0", "Product" (empty), "Meter type" (empty), and "State" with the value "Disabled". At the bottom left of this section is an "Update" button.

Depending on the chosen configuration, only one side may be displayed.

To change the Pump number simply enter the new value and press Update.

To change the product, meter type or state, select the relevant option from the drop down menus and press update.

The Tank Gauging tab shows which tank gauge is selected for each tank.

The current settings can be viewed. To edit a row, select Edit.

Setup

Products Pumps **Tank Gauging** Tank Strapping

Tank Gauging

Enabled	Gauge Type ▼	Product ▲	Capacity (L) ▲	Safe Fill Lev... ▲	Gauge C... ▲	Tank Num... ▲	
✘			0	0	0	0	Edit
✘			0	0	0	0	Edit

To change a setting, enter the new setting and Submit the new values.

If a Vega tank gauge is being used, more information is required. The required fields will automatically appear if a Vega meter is selected.

Edit Tank Gauge Settings

Gauge Type
Vega

Tank Strapping Table ID

Distance from probe to product for full tank (mm)
0

Distance from probe to tank bottom (mm)
0

Tank Gauge Channel

Product
AdBlue

Tank Number
1

Tank Capacity (L)
0

Safe Fill Level (L)
0

Enabled

Submit

The final tab in Dispenser Setup is the Tank Strapping section. This section is only relevant if a Vega meter is fitted. Refer to Vega Tank Strapping for information.

Setup

Products Pumps Tank Gauging Tank Strapping

Tank Strapping

Tank Strapping Table ID
1

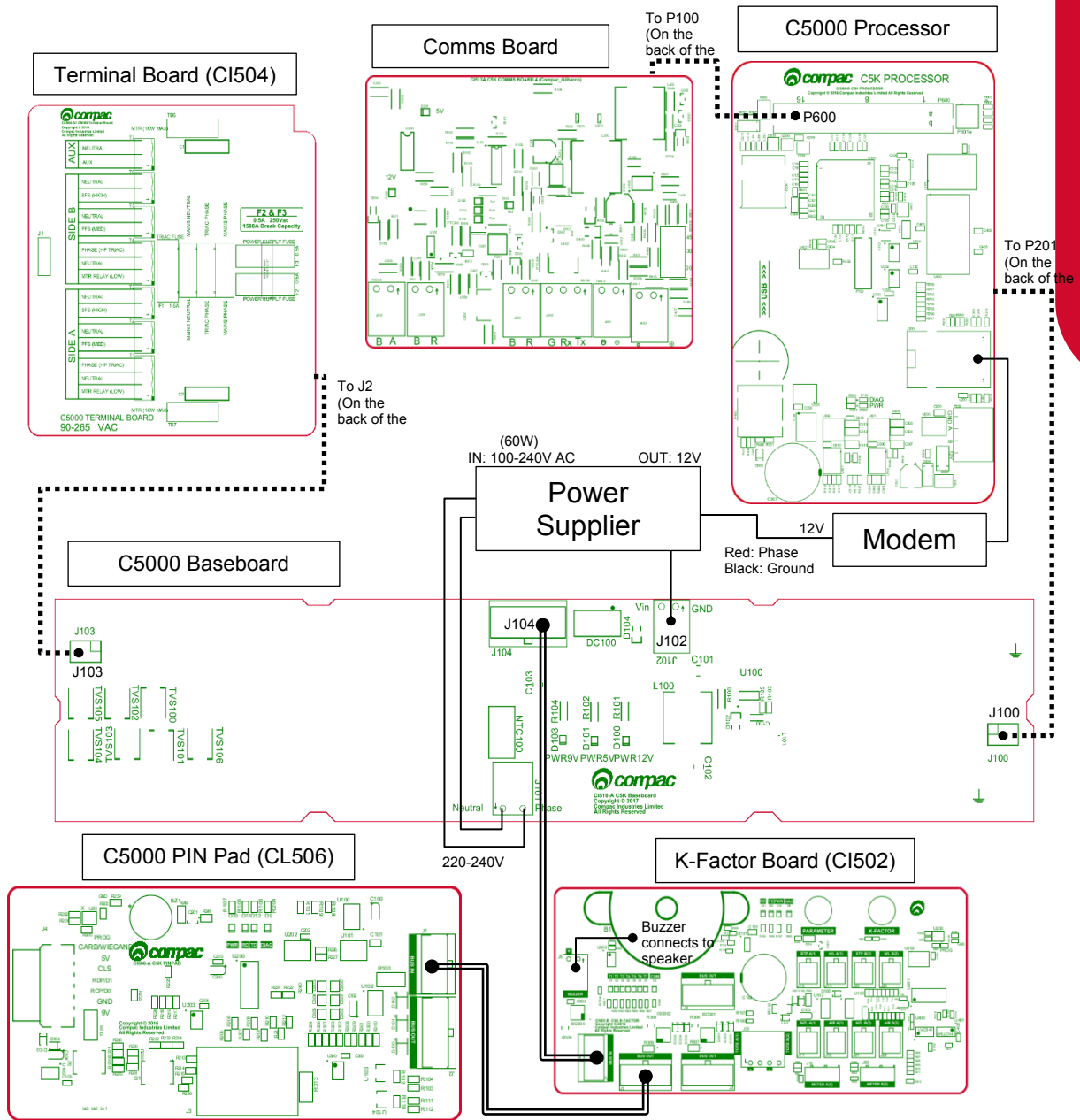
3. Using a measuring tape and the dipstick, record the readings on the dipstick (these will be a volume) and the corresponding length from the bottom of the dipstick (which rests on the bottom of the tank)
4. Fill the table template with a table relating length from the bottom of the tank and volume. This will be the Tank Strapping table
5. Upload this onto CompacOnsite

After making a table, reinsert the dipstick into the tank and then read the volume of fuel in the tank. This is also required on CompacOnsite.

NOTE: *The more readings done on the tank, the more accurate the tank gauging will be.*

Electronics

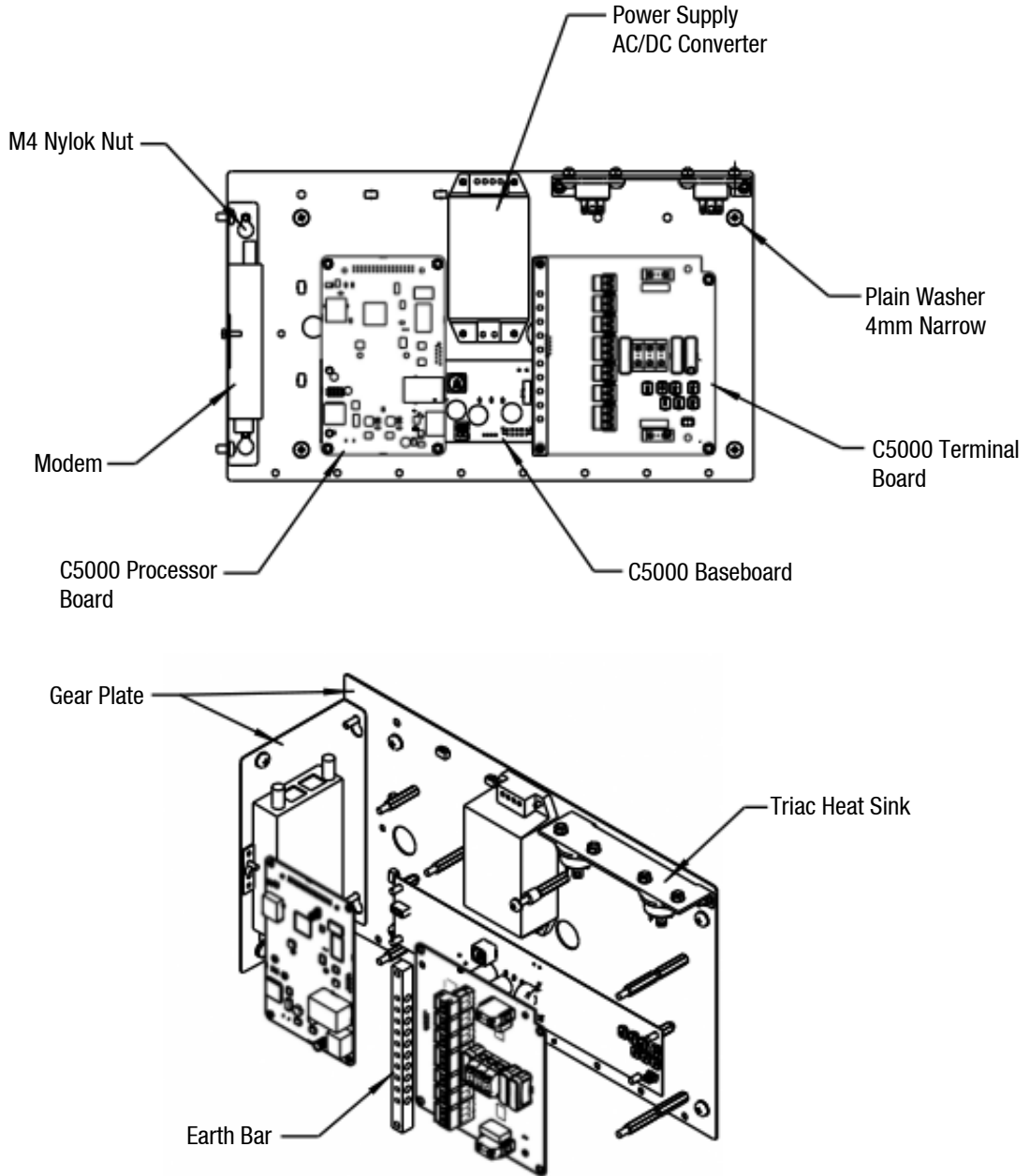
The following diagram shows a standard configuration for the internal wiring of the Comfill unit. Connections may change during ordering, production or customisation. These connections will be pre-installed and most likely will not need to be changed.



—●— C5000 'Bus system' cables (8 core C4x twisted pairs)

.....●..... Internal plug and socket connections between boards

The following diagram shows the location of several of the C5000 circuit boards underneath the Perspex guard. The K-Factor and PIN Pad board can be found on the inside of the Comfill Box cabinet door.

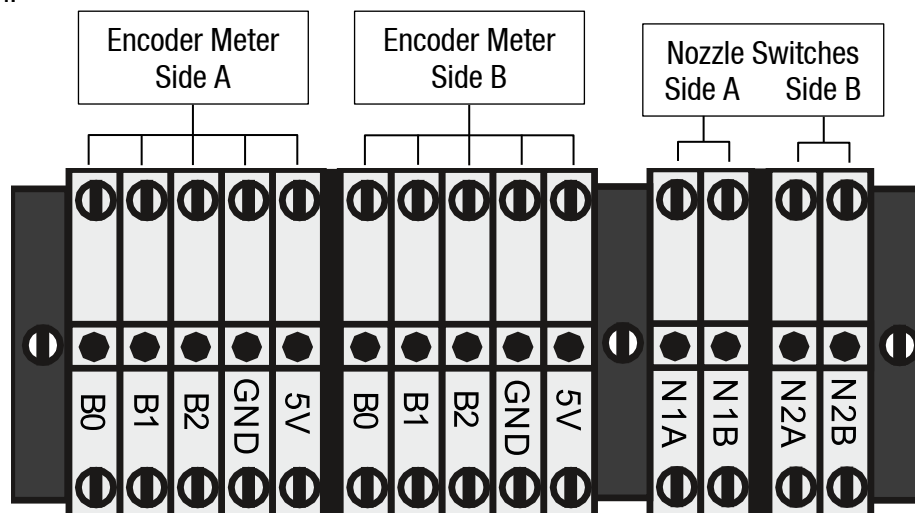


NOTE: If using external pumps, there will be relays in place of triacs.

NOTE: The optional comms board is not shown in these drawings. The comms board is located above the processor board.

DIN Rail Connections

Incoming external cables will have to be inserted through the glands and then connected to the back of the DIN rail. The nozzle switch and encoder meter (if used) will be connected to the DIN rail. If a different type of meter is in use, see instructions below. The connections are as shown:



The Comfill supports encoder, V50 and some third-party meters. Some third-party meters require 10 k Ω resistors to be connected. In case of this, 6 10k Ω resistors will be supplied with the Comfill unit.

If connecting an encoder meter:

The encoder connects to the DIN rail via a six-core (only five cores used) data cable. The five cores used are:

- | | | |
|-----------------|---|---|
| Orange or White | - | 5V terminal |
| Yellow or Black | - | 0V terminal (GND) |
| Brown | - | B0 terminal (used for single, dual and triple channel encoders) |
| Blue | - | B1 terminal (used for dual and triple channel encoders) |
| Red | - | B2 terminal (used for triple channel encoders) |

Where B0, B1 & B2 are the three opto-sensor connections. Not all of these may be used depending on the meter connected. Single channel encoders measure the fuel dispensed. Dual channel encoders do this as well as determine the rotation of the meter (and therefore the direction of fuel flow). Triple channel meters can determine if the meter is correctly connected and functioning.

To reverse the rotation of the encoder sensing, the B0 & B2 wires should be reversed. The error message for reverse rotation is E r r B .

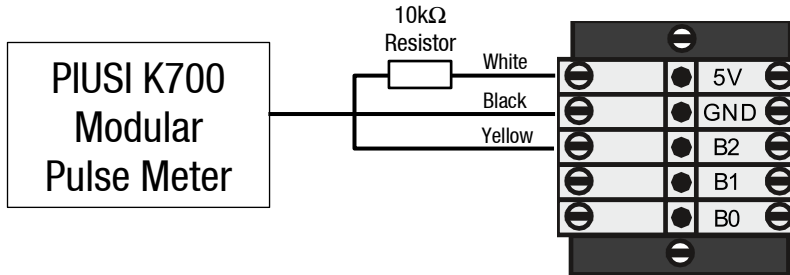
If connecting a V50 meter:

V50 meters can be connected directly to the K-Factor board. See page 47 for the location of the meter plug.

If connecting a Piusi meter:

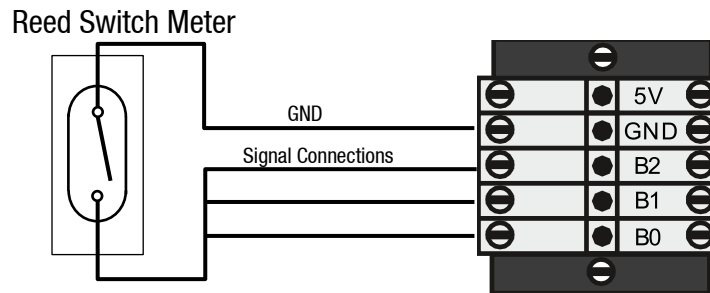
A Piusi K700 Modular Pulse Meter has three data cores. If connecting a Piusi meter, the data cores should be connected as following:

- White - 5V terminal (a resistor should be included)
- Black - 0V terminal (GND)
- Yellow - B2 terminal



If connecting a Reed switch type meter:

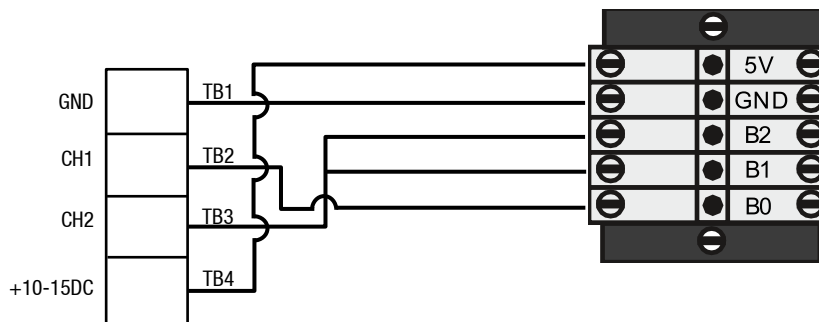
Reed switch type meters require three signal connections and one earth connection as shown:



NOTE: Ensure the wiring is shorted on the meter end, not the Comfill end.

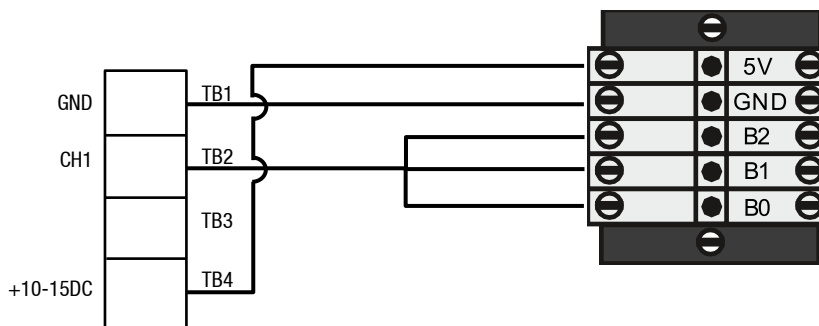
If connecting a Veeder Root Pulser Meter:

Dual Channel:



NOTE: Ensure the wiring is shorted on the meter end, not the Comfill end.

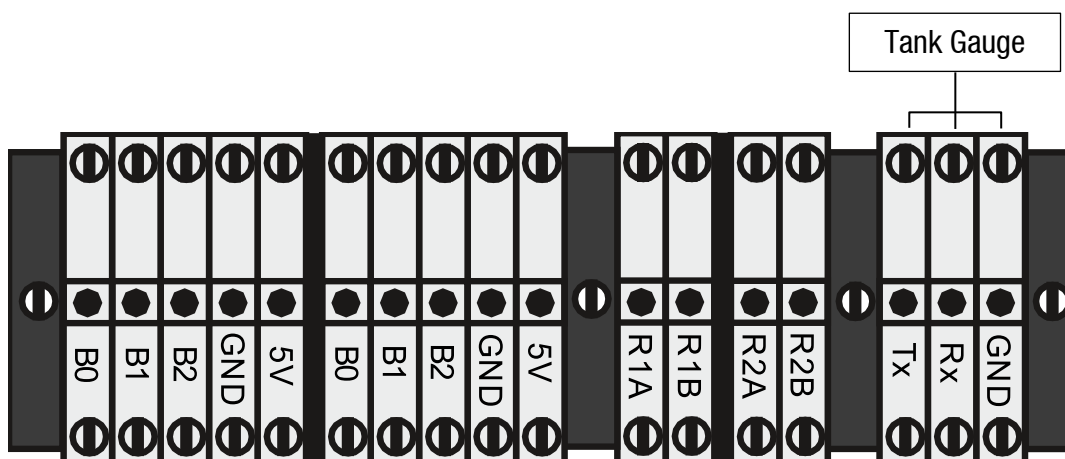
Single Channel:



NOTE: Ensure the wiring is shorted on the meter end, not the Comfill end.

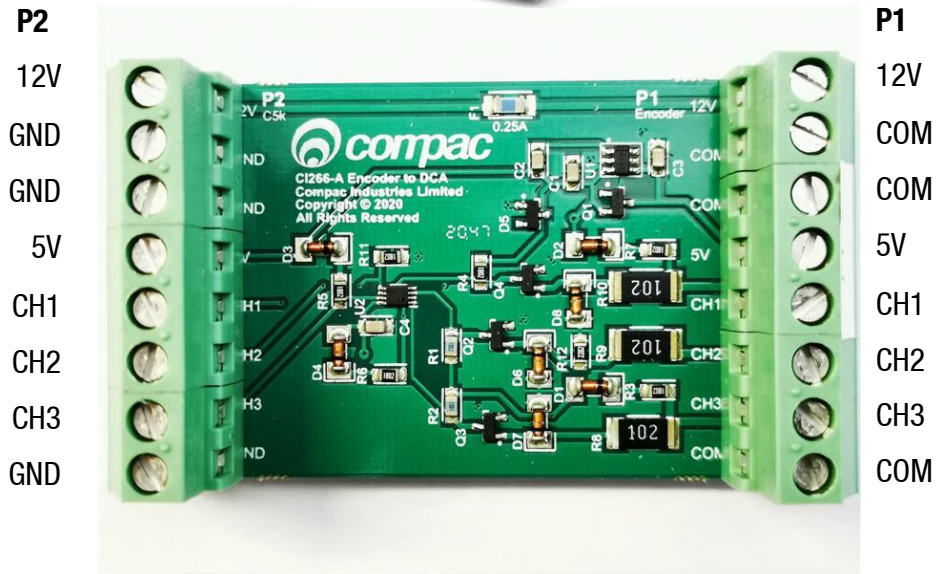
If connecting a Tank gauge:

Tank gauges are optional. If a tank gauge is required, an extra terminal will be on the DIN rail. If connecting a tank gauge, it should be connected to the terminal block as shown:



NOTE: Configuration may change during production. Terminal blocks may not be in the same order in every unit.

Encoder interface for 3rd party encoders



NOTE: The interface board is not intrinsically safe therefore it should not be used in a hazardous area.

Pulser/Encoder I/F is used to interface from third-party pulser/meter. This can be DIN rail mounted. 12V source can be connected to the 12V and GND pin 1 and 2 of P2 terminal to provide a 12V supply on P1-8. The terminal must not exceed 0.25A.

If the 12V supply is not required, the I/F board will work without the 12V. The COM terminals on P1 are connected to the ground terminals of P2. Do not connect the COM to the pulser/meter frame and do not connect the common and frame together.

The 5V power supply must be connected to the P2 terminal pin 4 and 8 to power up the I/F board. 5V supply can also be used to power third-party meter from terminal P1 pins 5 & 1.

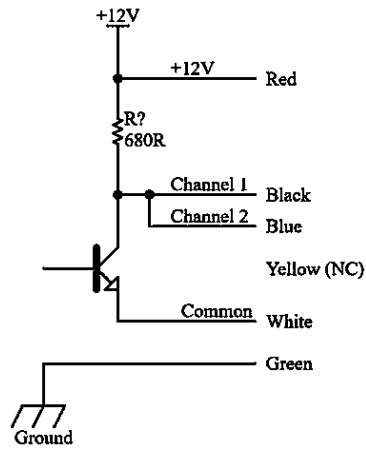
P2 terminal Ch1, Ch2 and Ch3 (pins 5,6 and 7) are the signal outputs from the pulser/encoder which need to be wired into DIN rail Ch1, Ch2, and Ch3. If not wired correctly it will cause error 9.

P1 Terminals

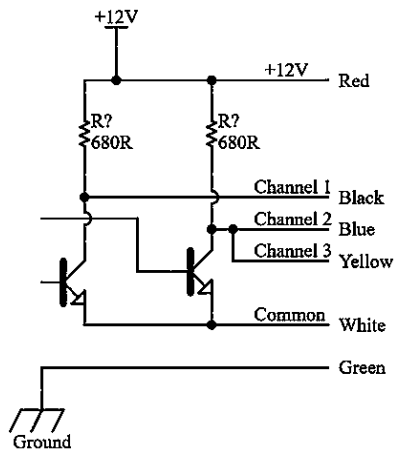
Most third-party pulsers/meters have one or two channels and run on 12V. For error detection, at least two channels need to be wired from the pulser/meter. For single channel pulsers/ meters, two wires need to be connected together at the meter and the outputs need to be connected to Ch1 and Ch2 of the P1 terminal.

Below are some examples of wiring to a third-party pulser/meter from the P1 terminal. The pull-up resistors are internal to the pulser/meter.

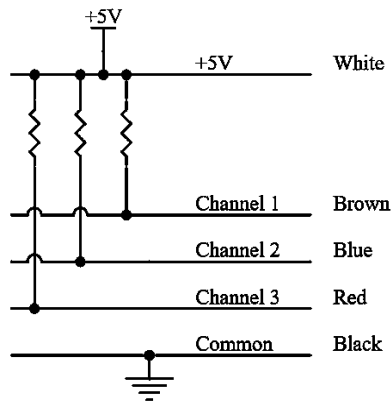
Single channel third-party 12V pulser



Single channel third-party 12V pulser



Three channel Compac 5V pulser



Electrical Parameters

Recommended Operating Conditions

Parameter		Terminal	Min.	Max.	Unit
V_{IN} (12V in)		P2: 1	9	24	V
V_{CC} (5V in)		P2: 4	4.6	5.5	V
V_{OH} (Ch1, Ch2, Ch3) output high voltage		P2: 5, 6, 7	3	V_{CC}	V
V_{OL} (Ch1, Ch2, Ch3) output low voltage		P2: 5, 6, 7	0	0.8	V
V_{OUT} (12V out) output current		P1: 8	0	100	mA
5V output current		P1: 5	0	40	mA
V_{IH} (Ch1, Ch2, Ch3) input high voltage		P1: 4, 3, 2	2	24	V
I_{IH} (Ch1, Ch3) input high current	$V_{IH} = 3V$	P1: 4, 2	-0.14	0	mA
	$V_{IH} > 5V$		0	0.1	mA
I_{IH} (Ch2) input high current	$V_{IH} = 3V$	P1: 3	0.1	0.15	mA
	$V_{IH} = 5V$		0.15	0.22	mA
	$V_{IH} = 12V$		0.45	0.55	mA
	$V_{IH} = 24V$		10	13	mA
V_{IL} (Ch1, Ch2, Ch3) input low voltage		P1: 4, 3, 2	-0.5	0.8	V
I_{IL} (Ch1, Ch3) input low current	$V_{IL} = 0V$	P1: 4, 2	-0.3	0.24	mA
I_{IL} (Ch2) input low current	$V_{IL} = 0V$	P1: 3	0	0	mA
	$V_{IL} = 0.8V$		0	0.05	mA

PIN Pad Board

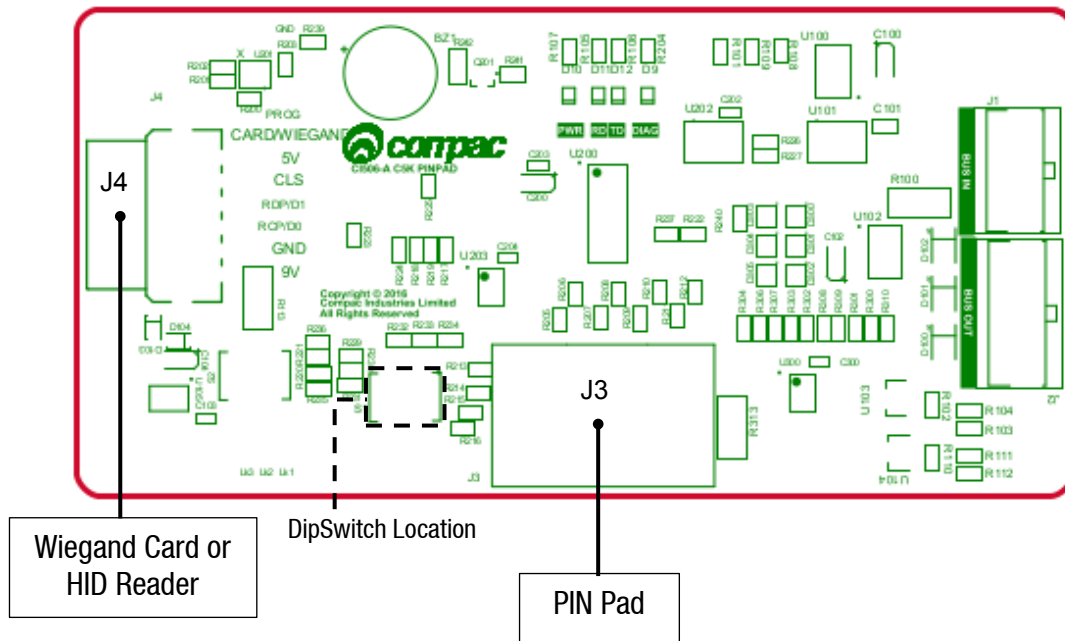
The PIN Pad board is wired to the PIN pad and the Wiegand or HID reader. These connections are internal and pre-installed.

The locations of three dipswitches on the PIN pad board are shown. Switch 1 changes the configuration of the unit between Cardreader mode and HID reader mode.

- If Switch 1 is ON, the unit is in HID mode
- If Switch 1 is OFF, the unit is in Cardreader mode

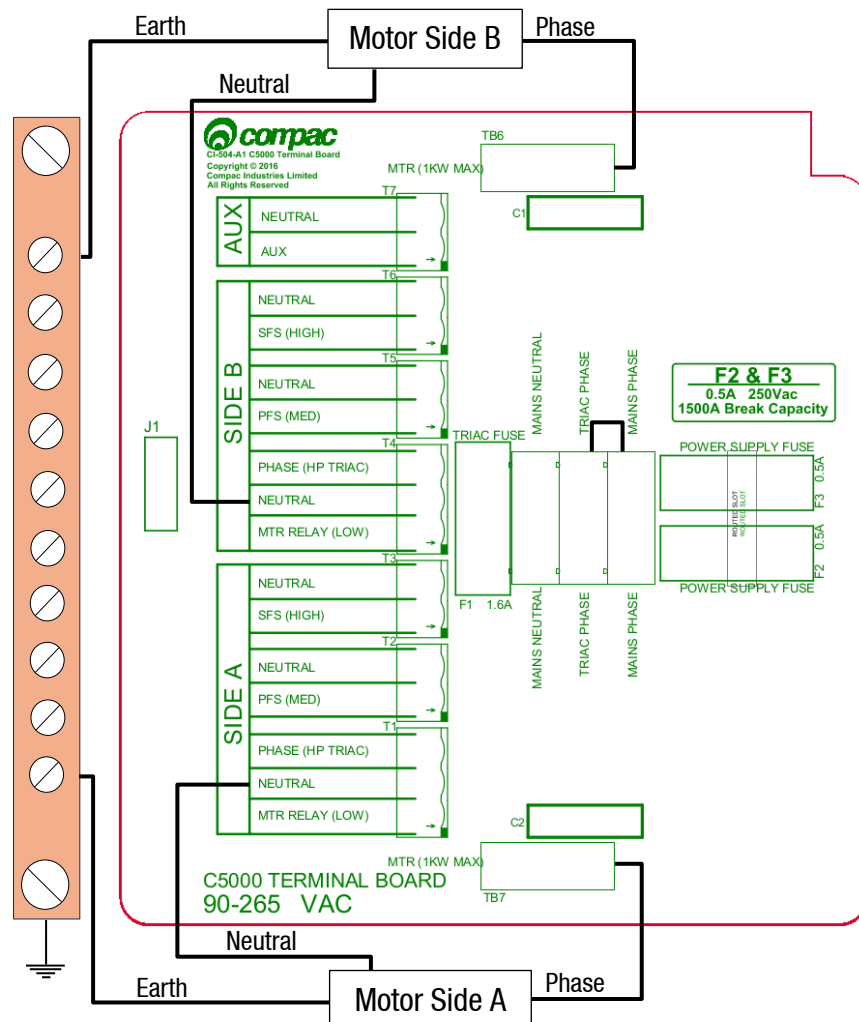
Having this switch in the incorrect position will display XXXXXXXX on the main display when a card or HID is used to take fuel. If the dipswitch position is changed, the unit must be repowered for the changes to take place.

Switches 2 and 3 are not currently used.



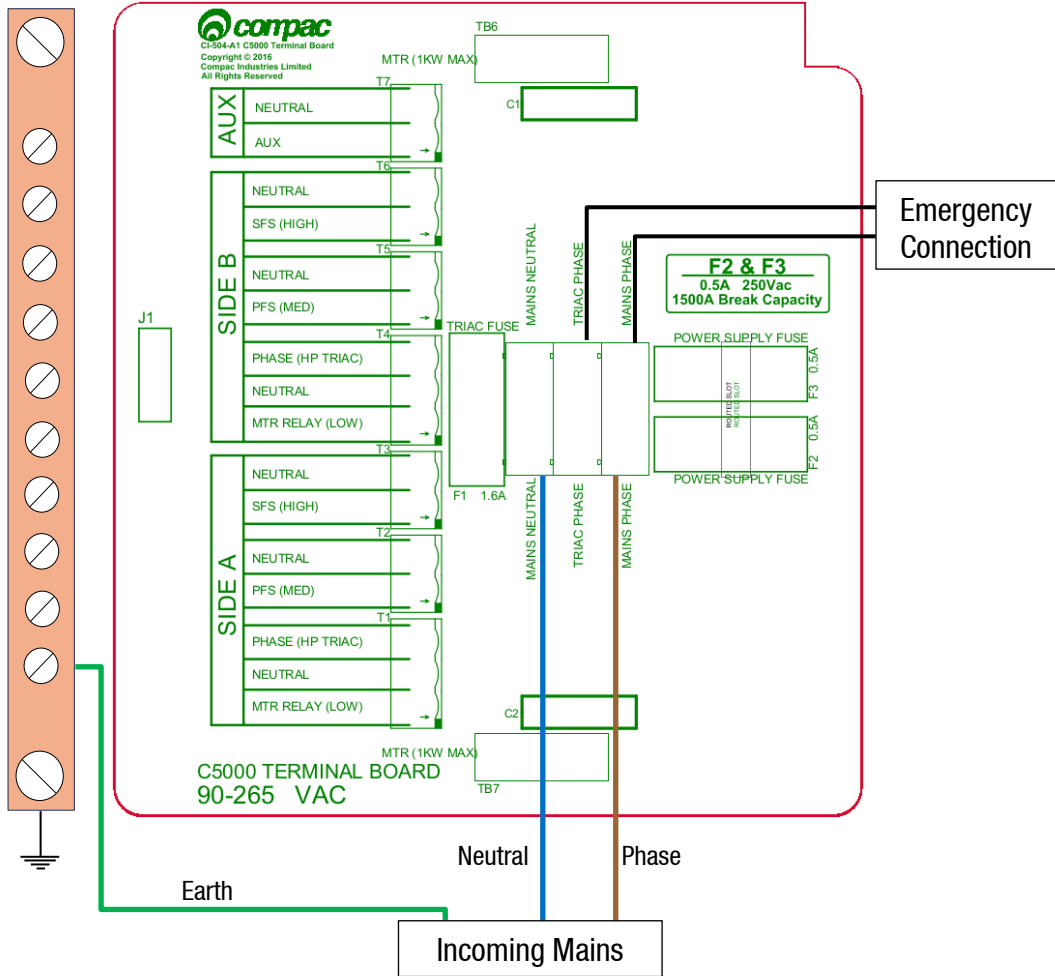
Terminal Board

The external incoming mains and motor connections should have been connected during installation of the unit. In case the wiring needs to be changed, the wiring is shown here. The motor will need to be connected for both side A and side B as shown.



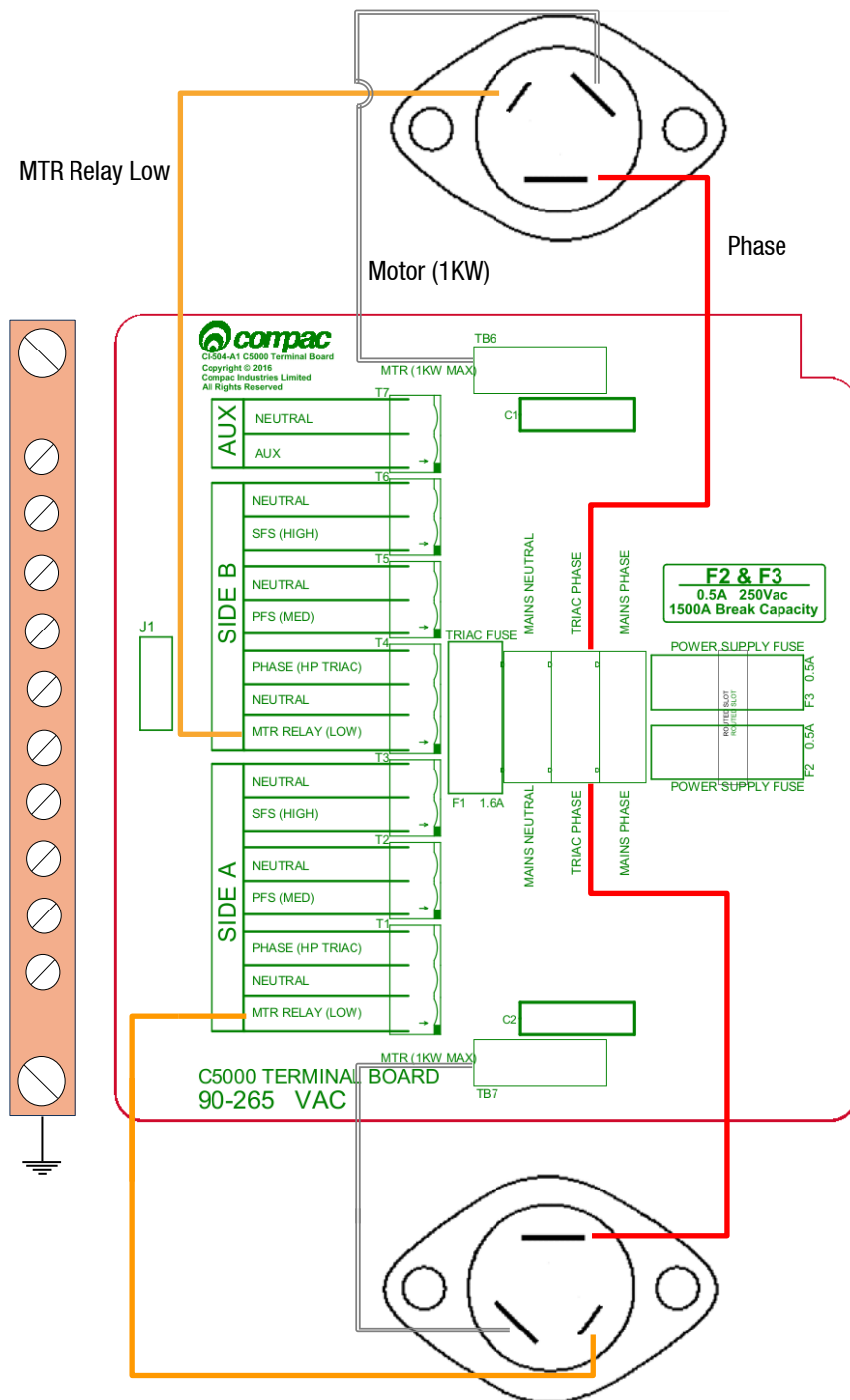
If wiring in an emergency connection, it should be connected to the triac-phase loop. Cutting this loop will cut power to all outputs on the terminal board. An emergency stop switch should be installed.

The incoming mains also needs to be wired to the terminal board. The incoming mains will need to be connected to phase, neutral, and earth as shown.

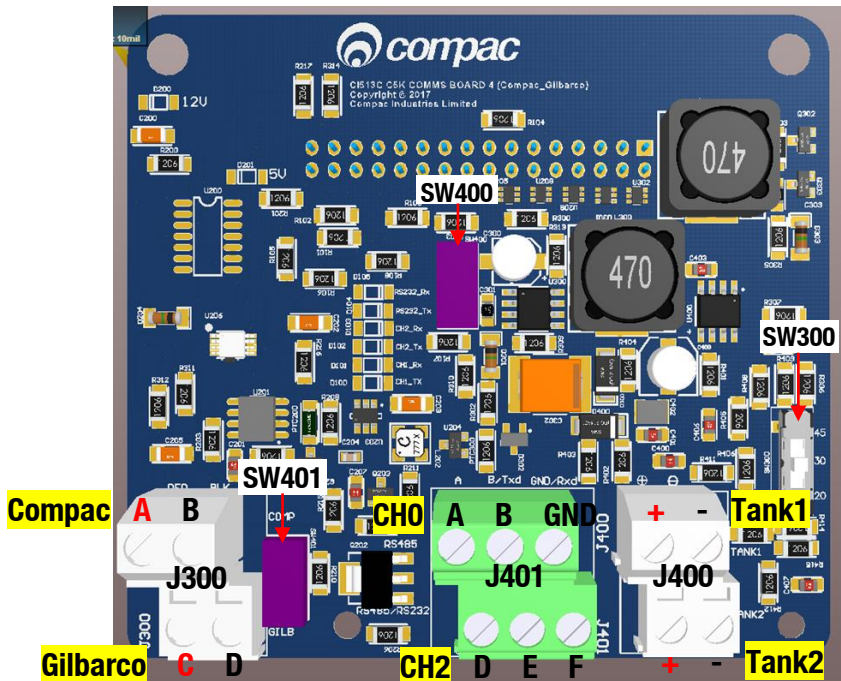


The triac wiring will be pre-installed and, in most cases, will not need to be changed. However, if replacing a faulty triac, or performing other service procedures that may disrupt this wiring, the wiring is shown below for easy duplication. The wires are colour coded with standard colours. In case these are not clear, the colours are as follows:

- MTR Relay: Orange
- Phase: Red
- Motor: White



Comms Wiring



If Compac or Gilbarco comms are being connected, connect to the J300 port on the comms board as shown below.

Protocol	Channel	J300 terminal	
Compac	1	A - RED	B - BLACK
Gilbarco	2	C - RED	D - BLACK

Switch SW300

This switch is used for current loop systems on channel 1 (e.g. Gilbarco, Wayne). Adjust the switch according to the current (mA) of the site protocol as required. There are three current options.

Site Protocol	SW300 switch position
Wayne	45
Gilbarco AUS	30
Gilbarco USA	20

RS232 and RS485 comms

If RS232 or RS485 comms are being used, use the table below to configure the switches and connect the comms.

J401 channel 0 is wired to the upper terminals whereas channel 2 RS485/RS232 is wired to the lower terminals.

COMMS/terminal block	SW400	SW401	Channel	Terminal	Terminal
RS485 on J300 *Note	N/A	N/A	0	GND	RS485-A RS485-B
RS485 on J401	OFF	OFF	2	GND	RS485-D RS485-E
RS485 on J401 with a terminator	OFF	ON	2	GND	RS485-D RS485-E
RS232 on J401	ON	OFF	2	GND	RS232-E (Txd) RS232-F (Rxd)

***NOTE:** J300 is shared with Compac Comms. Therefore, a site with Compac comms cannot use this RS485 channel.

Tank Gauge comms

Use J400 for 4-20mA tank gauge connections. Up to two tank gauges can be connected to J400.

Service

Having all the correct tools will make installation, upgrade and repair procedures easy and minimise the risk of damage to components.

Before you arrive on site, make sure you have a minimum of all the tools listed here.

- 5.5mm nut driver
- 7mm nut driver
- 8mm nut driver
- T30 Torx drive bit or driver
- T10 Torx drive bit or driver
- Metric spanner set
- Metric 3/8" or 1/4" drive socket set
- 1/4" screwdriver bit holder
- 1/4" A/F spanner
- 6" adjustable spanner
- Flat blade screwdriver set (1.5 - 5mm blades)
- #0, #1, #2 Phillips screwdrivers
- #1, #2 Pozidriv screwdrivers
- Set of metric Allen (hex) keys
- Fine long nose pliers, side cutters & pliers
- Hacksaw
- Stanley knife or similar sharp blade
- Ruler
- Multimeter
- Laptop or smartphone with internet

Maintenance

The Comfill is a relatively simple unit with no moving parts and therefore needs minimal maintenance.

Cleaning the Cabinet

The cabinet should be cleaned with a soft cloth and non-abrasive cleaner to remove dirt, grease, graffiti and unauthorised stickers. All instruction and branding decals should be replaced if damaged or faded.

NOTE: Do not use buckets of water, hoses or water blasters to clean the cabinet as water may enter and damage delicate components.

Card Reader

The card reader should be swiped through with a cleaner card wet with cleaner fluid. The card reader may need to be cleaned daily on dirty, dusty or wet sites.

PIN Pad

The PIN pad should be cleaned to keep the printing legible. A soft dry rag should be used. Do not use a rag wet with solvent or petrol as the PIN pad printing may be damaged.

Testing

Regular zero dollar tests with valid PINs, cards or HID readers (whichever applicable) should be undertaken to ensure the unit is operating correctly.

Perspex Guard

The Perspex guard houses the 230V components and will need to be removed to repair or replace components such as the power supply and several of the circuit boards.

DANGER

Ensure the unit is isolated before attempting to remove the Perspex guard. The unit should remain isolated while removing or repairing any components underneath the Perspex guard. Do not repower the unit until the guard is back in place.

To remove the Perspex guard, simply unscrew the M4x10 pozi screws holding the guard in place. Replacement is the opposite of removal.

Power Supply

The Perspex guard will need to be removed before the power supply can be accessed. Refer to Perspex Guard.

The power supply can be removed simply by removing the screws securing it. Cables obstructing the power supply may need to be disconnected.

Modem

The ADSL modem is not repairable on site and will need to be replaced with a new part.

The Modem can be removed simply by removing the screws securing it to the gear plate, and by removing any cables connecting it to other components.

Circuit Boards

Display and K-Factor board

The display can be found on the inside of the Comfill box door. The display is connected to the K-Factor board.

CAUTION

Always take anti-static precautions when working with electronic components for example, wearing a wristband with an earth strap.

Removal:

1. Unplug connections to the K-Factor board. Refer to Electronics for the K-Factor board connections
2. Remove the screws holding the display in place
3. Gently remove the display

Replacement is the reverse of removal.

In cases where the K-Factor board is removed from the display:

1. Unplug connections to the K-Factor board. Refer to Electronics for the K-Factor board connections
2. Remove the screws holding the K-Factor board in place
3. The K-Factor board is held on to the display with a pin connection. Gently remove the board, taking care not to damage the pin

Replacement is the reverse of removal.

If the K-Factor board is replaced, press and hold the parameter button and press the K-Factor button once to transfer the old settings to the new K-Factor board.

PIN Pad Board

The PIN Pad board can be found on the inside of the Comfill box door.

CAUTION

Always take anti-static precautions when working with electronic components for example, wearing a wristband with an earth strap.

Removal:

1. Unplug connections to the PIN Pad board. Refer to Electronics for the PIN Pad board connections
2. Remove the screws holding the board in place

Replacement is the reverse of removal.

Terminal Board

Before removing the Terminal board, the Perspex guard must be removed. Refer to Perspex guard removal instructions.

CAUTION

Always take anti-static precautions when working with electronic components for example, wearing a wristband with an earth strap.

Removal:

1. Unplug all connections to the Terminal board
2. Unscrew and remove the earth bar
3. Remove screws holding the Terminal board in place
4. The Terminal board is connected to the baseboard with a plug and socket connection. Remove the board with care

Replacement is the reverse of removal. Refer to Electronics for Terminal connections.

Comms Board

Before removing the Comms board, the Perspex guard must be removed. Refer to Perspex guard removal instructions.

CAUTION

Always take anti-static precautions when working with electronic components for example, wearing a wristband with an earth strap.

Removal:

1. Disconnect any cables connected to the Comms board
2. Remove screws holding the Comms board in place
3. The Comms board is connected to the processor with a plug and socket connection. Remove the board with care

Replacement is the reverse of removal. Refer to Electronics for Comms connections.

Processor Board

Before removing the processor board, the Perspex guard and Comms board (if included) will need to be removed. Refer to removal instructions in Service.

CAUTION

Always take anti-static precautions when working with electronic components for example, wearing a wristband with an earth strap.

CAUTION

The Processor board stores all transactions and data. Before replacing the processor board, it is recommended to download the memory dump to recover information. Please contact Compac to access this.

Removal:

1. Disconnect any cables connected to the Processor
2. Remove screws securing the Processor
3. The Processor is connected to the Baseboard with a plug and socket connection. Remove the board with care

Replacement is the opposite of removal.

If the processor board is replaced, press the K-Factor button once to transfer settings to the processor board.

Baseboard

The Baseboard is located underneath the Perspex guard, below the Processor and Terminal boards. Remove these components before removing the baseboard.

The Baseboard can be removed simply by removing the screws securing it.

PIN Pad

The PIN Pad may need to be replaced if it gets worn or becomes faulty. The PIN Pad can be removed from the back to the Comfill door.

1. Remove any cables obstructing the PIN Pad. Refer to Electronics for the replacement of these cables
2. Remove the white plastic brackets by removing the screws securing them
3. Remove the PIN Pad unit

Replacement is the opposite of removal.

Card Reader

To remove the card reader:

1. Disconnect cables going to the PIN pad board. Refer to Electronics for PIN pad board connections
2. Remove the screws securing the card reader gear plate to the Comfill box
3. Slide the card reader out into the inside of the box

Replacement is the opposite of removal.

Test the card reader by using a valid card to perform a zero-dollar transaction.

HID Reader

To remove the HID Reader:

1. Disconnect cables going to the PIN pad board. Refer to Electronics for PIN pad board connections
2. Remove cables connecting to the HID Reader
3. Remove screws securing the HID Reader to the Comfill box

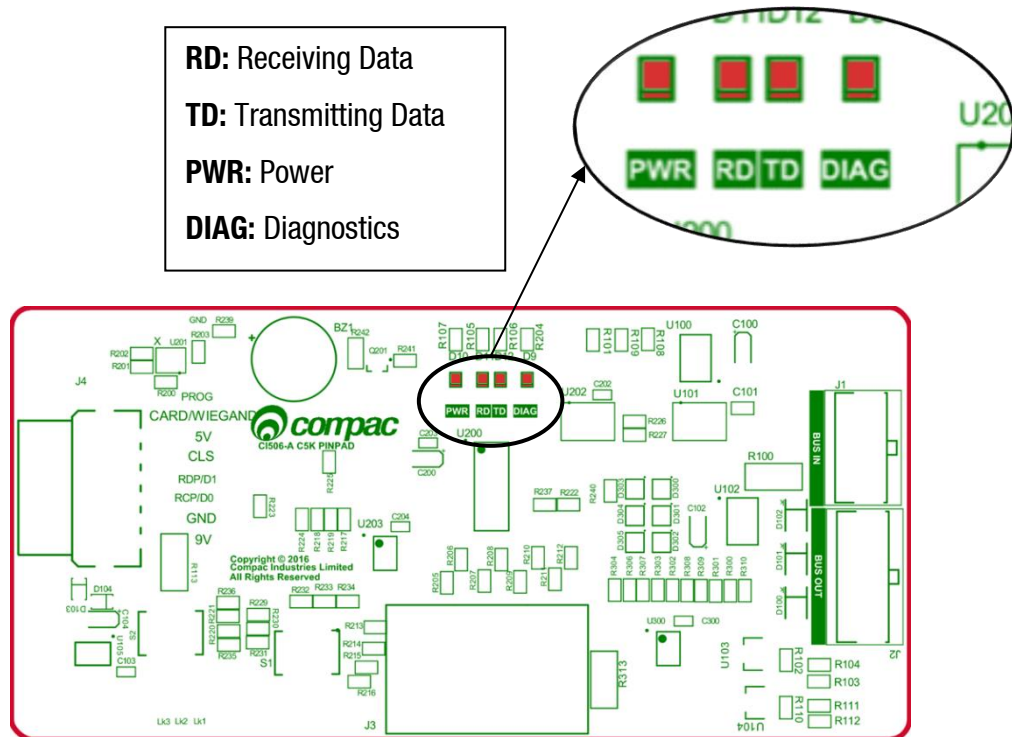
Replacement is the reverse of removal.

Test the HID reader by using a valid key to perform a zero dollar transaction.

LED Diagnostics

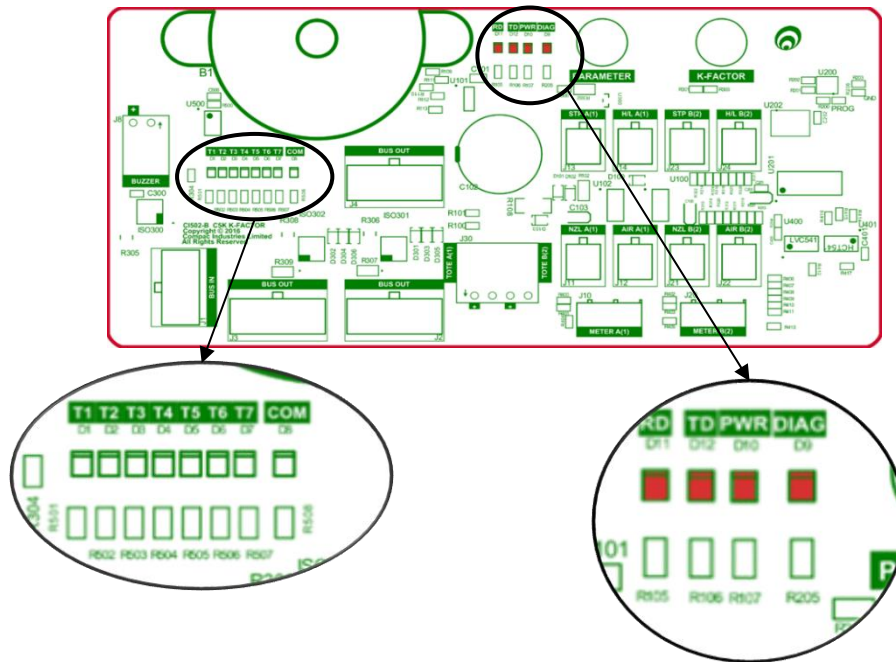
LEDs on the circuit boards can be used to diagnose faults in the unit. View the LEDs and their corresponding tables to see the state of the board.

PIN Pad Board



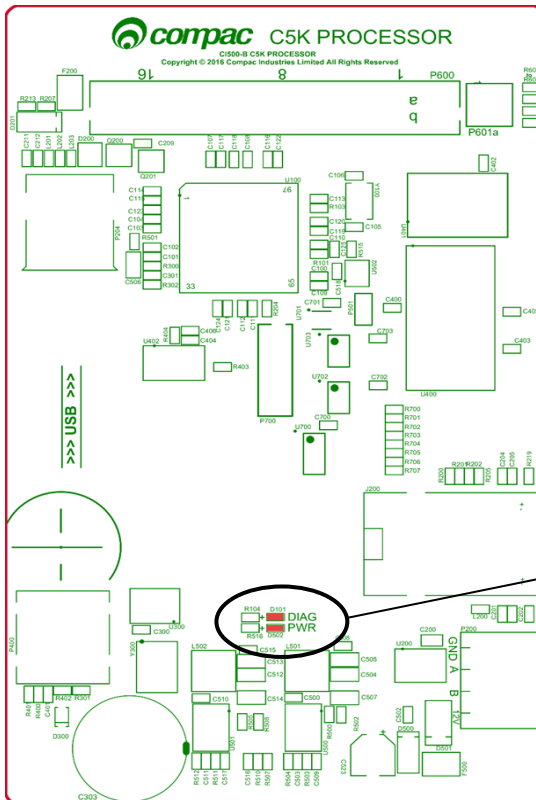
Processor Board LEDs	Operation/Possible Cause
Power	This should be on when there is power to the unit.
Diagnostics	This should be on whenever the power LED is on.
Transmitting data/ Receiving data	In normal operation, these should be on when the Diagnostics light is on, and off when the diagnostics light is off. If the diagnostics light is on, and the TD/RD LEDs are off, this means there is an error. This could be due to cabling – check the bus system cables.

K-Factor Board

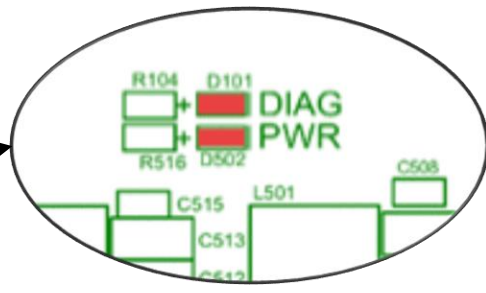


K-Factor Board LEDs	Operation/Possible Cause																		
Power (PWR)	This should be on when there is power to the unit.																		
Diagnostics (DIAG)	In normal operation, this should flash slowly, and then flash quickly when the nozzle switch is lifted.																		
Output LEDs (T1-7)	<p>These LEDs correspond to side A and B motors and solenoids. They will light up according to the hardware they represent. These outputs change depending on the configuration of the unit.</p> <table border="1"> <thead> <tr> <th>Single:</th> <th>Dual:</th> <th>Dual 160:</th> </tr> </thead> <tbody> <tr> <td>T1: Side A motor</td> <td>T1: Side A motor</td> <td>T1: Sides A & B motor</td> </tr> <tr> <td>T2, T3: Side A solenoids</td> <td>T2, T3: Side A solenoids</td> <td>T2, T3: Side A solenoids</td> </tr> <tr> <td>T4, T7: Side A high flow solenoids</td> <td>T4: Side B motor</td> <td>T4: Side B high flow solenoid</td> </tr> <tr> <td>T5, T6: Not used</td> <td>T5, T6: Side B solenoids</td> <td>T5, T6: Side B solenoids</td> </tr> <tr> <td></td> <td>T7: Side A high flow solenoid</td> <td>T7: Side A high flow solenoids</td> </tr> </tbody> </table>	Single:	Dual:	Dual 160:	T1: Side A motor	T1: Side A motor	T1: Sides A & B motor	T2, T3: Side A solenoids	T2, T3: Side A solenoids	T2, T3: Side A solenoids	T4, T7: Side A high flow solenoids	T4: Side B motor	T4: Side B high flow solenoid	T5, T6: Not used	T5, T6: Side B solenoids	T5, T6: Side B solenoids		T7: Side A high flow solenoid	T7: Side A high flow solenoids
Single:	Dual:	Dual 160:																	
T1: Side A motor	T1: Side A motor	T1: Sides A & B motor																	
T2, T3: Side A solenoids	T2, T3: Side A solenoids	T2, T3: Side A solenoids																	
T4, T7: Side A high flow solenoids	T4: Side B motor	T4: Side B high flow solenoid																	
T5, T6: Not used	T5, T6: Side B solenoids	T5, T6: Side B solenoids																	
	T7: Side A high flow solenoid	T7: Side A high flow solenoids																	
Receiving data/Transmitting data (RD/TD)	<p>In normal operation, these should be on when the Diagnostics light is on, and off when the diagnostics light is off.</p> <p>If the diagnostics light is on, and the TD/RD LEDs are off, this means these is an error. This could be due to cabling – check the bus system cables.</p>																		

Processor Board

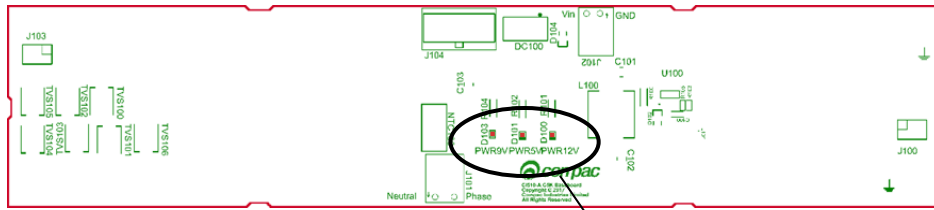


DIAG: Diagnostics
PWR: Power



Processor Board LEDs	Operation/Possible Cause
Power	This should be on when there is power to the unit.
Diagnostics	<p>This LED shows whether the firmware is running for the board. If it is off, the firmware is not running, and if it is on, it is running.</p> <p>Upon start up this LED will flash, indicating the firmware is loading. The flashing may last up to a minute before it stabilises to being constantly on.</p> <p>If the flashing lasts longer, the board is in bootloader mode – this means that the firmware has crashed, or not loaded correctly.</p>

Base Board



D100: Power 12V

D101: Power 5V

D103: Power 9V



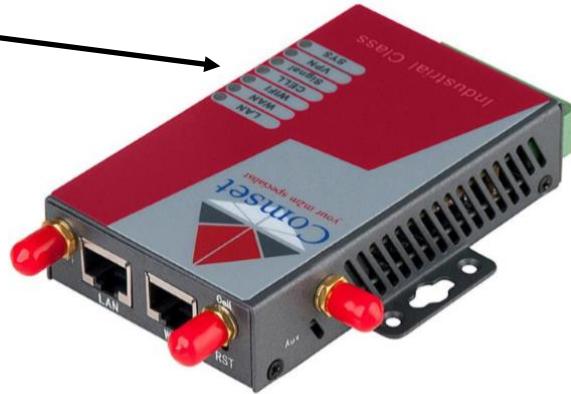
The baseboard LEDs will turn on when the respective power supplies are on.

Modem LEDs

The Fillmaster comes with a Comset modem, which has indicating LEDs to display the status of the modem. Refer to the accompanying table to understand the modem LEDs.

LEDs shown here.
Order is as follows:

- LAN
- WAN
- WIFI
- CELL
- Signal
- VPN
- SYS



LED	Indication Light	Description
SYS	On for 25 seconds	On for 25 seconds after power up
	Blinking	System set-up normally
	Off or still on after 25 seconds	System set-up failure
LAN	Blinking	Ethernet data transmission
	Off	No Ethernet connection
	On	Ethernet is connected
VPN	On	VPN tunnel set-up
	Off	VPN tunnel not set-up or VPN failure
CELL	On	Cell connection is 'UP' and now you have access to the Internet
WIFI	On	Wi-Fi enabled
	Off	Wi-Fi disabled
WAN	Blinking	Ethernet data transmission
	Off	No Ethernet connection
	On	Ethernet is connected
Signal	Off	No signal, or signal checking is not ready
	Blinks once every 4s	Signal bar is 1
	Blinks once every 3s	Signal bar is 2
	Blinks once every 2s	Signal bar is 3
	Blinks once every 1s	Signal bar is 4
	Blinks twice every 1s	Signal bar is 5

End of Sale Indicators

The reason for the end of sale for each transaction is recorded by the unit. These can be viewed by entering the passcode into the unit and selecting Pumps > (Relevant side) > End Sale.

These are helpful for troubleshooting the unit.

End of sale indication	Meaning
NOZ	Nozzle hung up
PRESET	Reached preset
TO FLO	No flow timeout
TO ATH	Auth timeout
AIR	Air switch cut out
ERROR	Encoder error
SUMP	Sump switch cut out
DIS OFF	K-factor offline or unpaired
DIS PIR	K-factor offline or unpaired
MAX	Maximum litres and/or dollars reached
MTR ERR	Meter error
REV FLO	Meter reverse flow
EXC FLO	Meter excess flow
UNKNOWN	

Troubleshooting

Problem	Possible Cause	Recommended Action
No Power/No Lights	No power entering unit	Ensure that power is entering unit, check external fuses and switches
	Faulty power supply	Replace the power supply
Will not read cards	Debris on card or magnetic head	Clean card or card reader's magnetic head using head cleaning kit.
	Wrong system (with distributor / In-house cards)	Wrong card base (ISO, Access number) Check card base is loaded onto the Comfill
"Pump Error" on display	One of the linked pumps or dispensers has encountered an error.	Read the error message on the pump display to find out what is wrong.
Pumps will not dispense fuel	Wrong pump number selected	Ensure pump number set in pumps matches pump number set in controller and also pump number written on the pump.
	No fuel in tanks	Verify tanks have sufficient product
	Pump fault	Try another pump to verify. Contact pump service agent Have service agent check pumps
Unable to access Compac Onsite	Wrong username / passcode	Enter correct username / passcode into Compac Online software
	Internet connection down	Check with internet service provider for information on internet service quality
	Wrong device ID entered into browser	Enter correct Device ID
"Wrong system" on display	No power entering unit	See No Power/No lights
	Card ISO number is not between card record BIN range	Refer to Compac Online > Technician Options > FMS Setup to set allowed BIN range

Problem	Possible Cause	Recommended Action
“Card Declined” on display	Card not in Card records	Refer to Compac Online > Technician Options > FMS Setup to set card records
“Pump Buffer Full” on display	Memory Full	Export transactions. Refer to Compac Online > User Options > Transactions
		Reboot Comfill; the unit will save transactions to SD card
“Expired Card” on display	Card is expired	Use a valid card
No transactions recorded	Wrong date and time	Check date and time on CompacOnsite
	Pump in bypass mode	Take the pump out of bypass mode
	Meter error	Check if error code is on display. Refer to Error Codes
		Replace meter
	Check error codes	
Pump Error	Use another pump and check if transactions are recorded; if so, contact pump service agent	

Troubleshooting

Error Codes

Error codes will show on the litres display when common faults occur. Use the following table to diagnose these faults.

Error Code	Fault	Action
Er FL0	Excess flow	Maximum flow rate exceeded
Er r 8	Excess reverse flow	Check product is not flowing back into the tank once the delivery has finished
Er r 9	Pulse Meter Error	If the problem persists, repower the unit. Replace the meter if necessary.
Er 50	Meter Modbus error	Check that the meter is plugged in correctly. Check correct configuration and correct software installed
Er 52	Meter error	If the problem persists, repower the unit. Replace the meter if necessary
Er 53	Meter stopped vibrating	Replace meter
Er 54	Temperature sensor failure	Replace meter
Er 55	Meter not ready	Wait for meter to calibrate. If the problem persists, repower the unit
cAL 1b F	No K-Factor set	Set the K-Factor

Spare Parts

The following diagram displays the location and part number of spare parts available for the Comfill unit.

NOTE: The comms board is not shown due to ongoing development of the Comfill unit.
Comms board spare part number: **F-CP-C5K-CMPGIL**

