C5000 MANUAL

C5000 Manual

Version 1.1.5

Model: C5000 Controlled Pumps and Dispensers

Date: 10th April 2025

compac
INTEGRATED REFUELLING SOLUTIONS

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.
- Failure to comply with any warnings, instructions, procedures, or any other common sense procedures may result in injury, equipment damage, property damage, or poor performance of the Compac equipment.
- The major hazard involved with operating the Compac C5000 processor is electrical shock. This hazard can be avoided if you adhere to the procedures in this manual and exercise all due care.
- Compac Industries Limited accepts no liability for direct, indirect, incidental, special, or consequential damages resulting from failure to follow any warnings, instructions, and procedures in this manual, or any other common sense procedures generally applicable to equipment of this type. The foregoing limitation extends to damages to person or property caused by the Compac C5000 processor, or damages resulting from the inability to use the Compac C5000 processor, including loss of profits, loss of products, loss of power supply, the cost of arranging an alternative power supply, and loss of time, whether incurred by the user or their employees, the installer, the commissioner, a service technician, or any third party.
- Compac Industries Limited reserves the right to change the specifications of its products or the information in this manual without necessarily notifying its users.
- Variations in installation and operating conditions may affect the Compac C4000 processor's performance. Compac Industries Limited has no control over each installation's unique operating environment. Hence, Compac Industries Limited makes no representations or warranties concerning the performance of the Compac C5000 processor under the actual operating conditions prevailing at the installation. A technical expert of your choosing should validate all operating parameters for each application.
- Compac Industries Limited has made every effort to explain all servicing procedures, warnings, and safety precautions as clearly and completely as possible. However, due to the range of operating environments, it is not possible to anticipate every issue that may arise. This manual is intended to provide general guidance. For specific guidance and technical support, contact your authorised Compac supplier, using the contact details in the Product Identification section.
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Product Identification

Specifications	
Manual Title	C5000 Manual v.1.1.5
Original Publication Date	20/11/2018
Models Covered	This manual applies to C5000 controlled pumps and dispensers. ***NOTE:*** *Do not use this manual for earlier models. Contact Compac for archived manuals if required.*

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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1.0.9	16/09/2020	V Amarakoon	Added CC setting
1.1.0	17/05/2022	T Watt	Added software upgrade procedure
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1.1.2	23/01/2023	T Watt	Added GPIO board Added Enabling Amount or Quantity Preset Added HCA and HCB
1.1.3	6/12/2023	T Watt	Added Preset configuration options
1.1.4	23/01/2025	T Watt	Added Comms Board CI501 diagnostic LEDS

1.1.5	10/04/2025	T Watt	Added default K factors for meters

Contents

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Safety

PRECAUTIONS

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

Always turn the power off to the unit and properly isolate so power cannot be turned on by mistake.

Turn off isolating valves to the dispenser and drain the fuel before any mechanical servicing.

Electrical Safety

Observe the following electrical precautions:

Always turn off the power to the Compac C5000 processor before opening the flame proof box. Never touch wiring or components inside the high voltage area with the power on.

Always turn off the power to the Compac C5000 processor at the mains switch before removing or replacing software or memory ICs.

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

Site Safety

Obey all company regulations and site specific instructions relating to the installation. Before working on any hydraulic equipment, drain the dispenser in an approved manner.

Static Electricity Precautions

Electronic components used are sensitive to static. Please take anti-static precautions.

All circuit boards must be carried and transported in static-shielded bags. An anti-static wrist strap should be worn and connected correctly when working on any electronic equipment. If an anti-static wrist strap is unavailable, or in an emergency, hold onto an earthed part of the pump/dispenser frame whilst working on the equipment. This is not a recommended alternative to wearing an anti-static wrist strap.

Compac Industries Limited reserves the right to refuse to accept any returned circuit boards if proper anti-static precautions have not been taken.

C5000 Power Supply

The C5000 may be supplied unmounted for use in applications such as controlling mechanical registers in a bulk dispensing area or mounted on a truck for mobile dispensing.

When installing the C5000 power supply, please observe the following instructions.

Cable Entries

There are fourteen cable entries, five along the top of each of the long sides, three along one short side of the box and one at the bottom. All cable entries have an M20 thread.

The bottom cable entry is used for the power supply output cable while the thirteen top cable entries are for power cable and communication connections.

Use only certified Ex 'd' glands and thread adaptors if required. Blank all unused entries with certified M20 Ex 'd' blanking plugs. Do not use thread adaptors with blanking plugs.

All cables must carry appropriate certification for the required application.

Area of Use

Correctly installed, the power supply is suitable for use in Zone 1 areas as defined in IEC 60079-14, group classification IIA, temperature classification T4, ambient temperature range -25 to 55 degrees Celsius.

With the o-ring fitted in the base and the use of appropriate glands, the enclosure provides protection to IP66.

Location

Mount the power supply in a horizontal position, isolated from vibration and sheltered from excess water spray. Failure to do this may void the warranty.

Installation

Fasten the power supply using the four M6 tapped holes in the base. Hole centres are 185 mm x 105 mm. There should be a minimum of 9 mm and a maximum of 14 mm thread engagement.

Wiring

- Wiring must be carried out in accordance with the relevant code of practice.
- All terminal wiring must have a cross section area of 0.5 mm^2 to 4 mm^2.
- Wiring used should be suitable for 80 degrees Celsius.
- Insulation must extend to within 1mm of the metal face of the terminal.
- Not more than one single or multi-stranded wire should be connected to the terminals. unless they have been pre-joined in an appropriate manner.

Procedure

- Ensure the unit is isolated from the power source.
- Remove the sixteen M10 x 20 stainless steel cap screws and remove the lid.

- Feed all wires into the box via an appropriate gland and connect. The Earth wire from the power lead must be earthed to the casing using a proper terminal.
- Replace the lid making sure the gasket is in place and clean and that no wires have been pinched.

External Earthing

Where required, earth the C5000 Power Supply using an earth wire with a cross sectional area at least equal to the largest conductor. The earth wire is attached to the integrated point.

Cable Requirements

Cable requirements are as follows:

Power

3 Core Steel Wire Armour Cable 2.5mm^2,

220 - 240 Volts. 50 Hz, +/-10%

Core 1: 230 Volt Supply (Active).

Core 2: Neutral.

Core 3: Earth.

Dispenser: 25w Idle, 200W with all solenoids active.

Submersible pump(s): Suitable cable for 230V solenoid switching current. 300mA maximum load.

Do not wire submersible pumps directly to C5000 power supply.

Comms

2 Core Steel Wire Armour Cable 1.5 mm^2. Maximum cable length 100 m. 12 V current loop.

Make sure that there is at least a two metre cable tail on both the incoming underground 230 V and comms cables to reach the C5000 flameproof box.

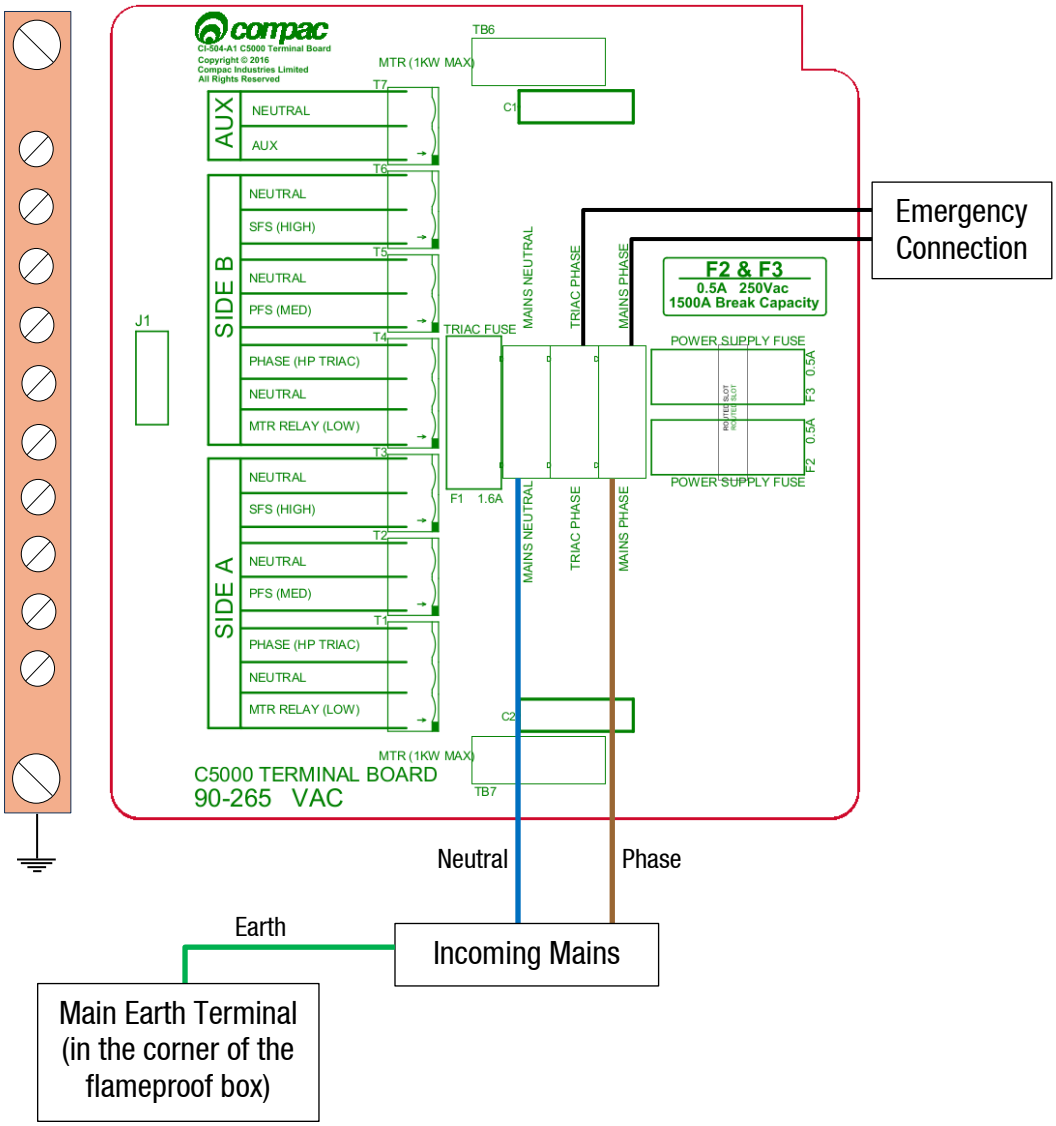
If using generator power refer to: Generator Power (see page 62.)

Incoming Mains

Incoming mains connections should be brought in to the terminal board.

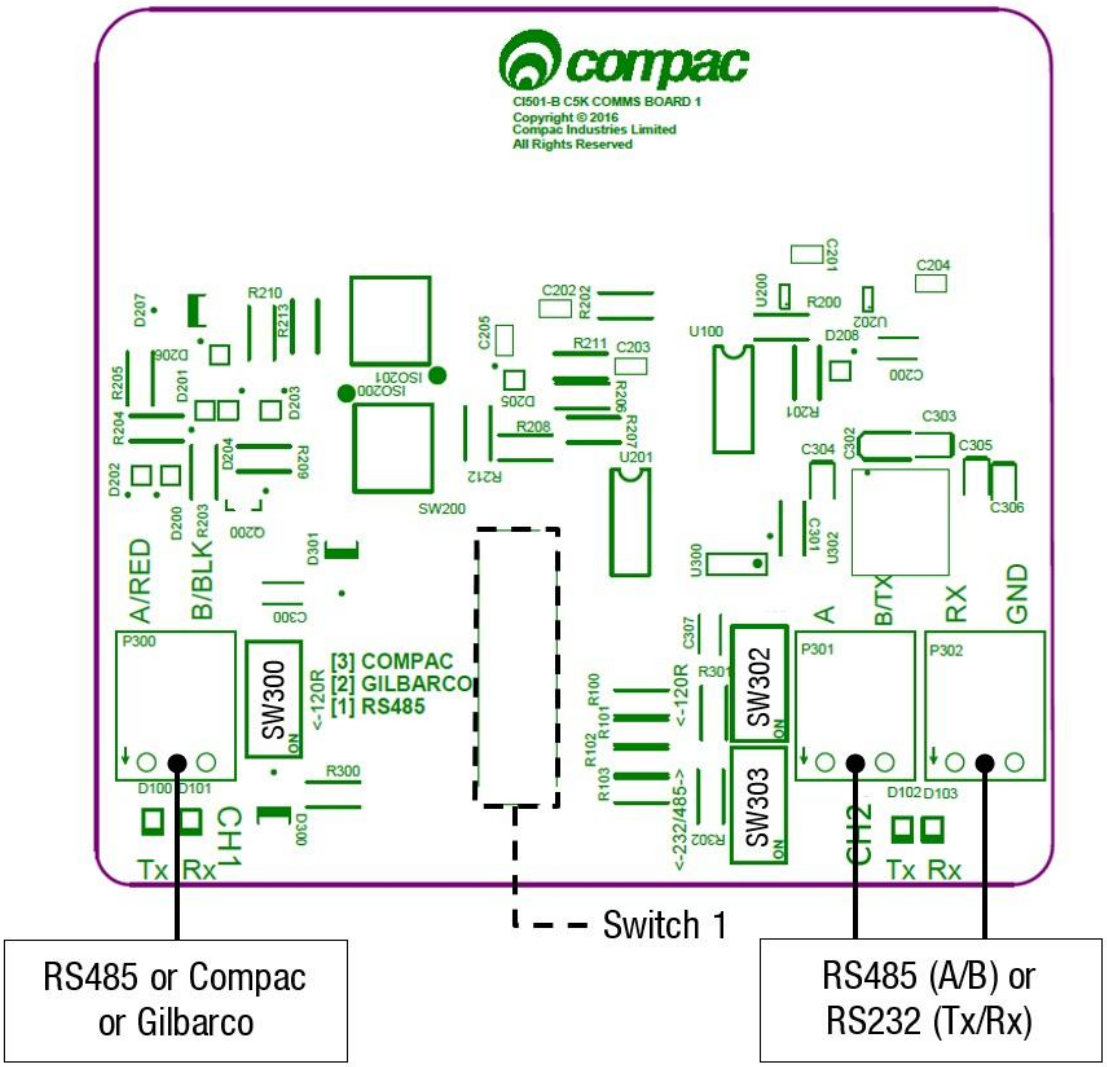
An emergency stop connection, if desired, can also be wired into the terminal board, shown below. This will be in place of the normal loop between the triac and main phases. Wires have standard colours which are shown. In case these are unclear, the colours are as follows:

- Incoming mains phase: Brown
- Incoming mains neutral: Blue
- Incoming mains earth: Green/Yellow



Comms Connections

The comms I/O is controlled by the connections to the Comms board. Refer to the following diagram for connecting RS485, RS232, Compac or Gilbarco pumps. The shown switch should be set to the desired setting.

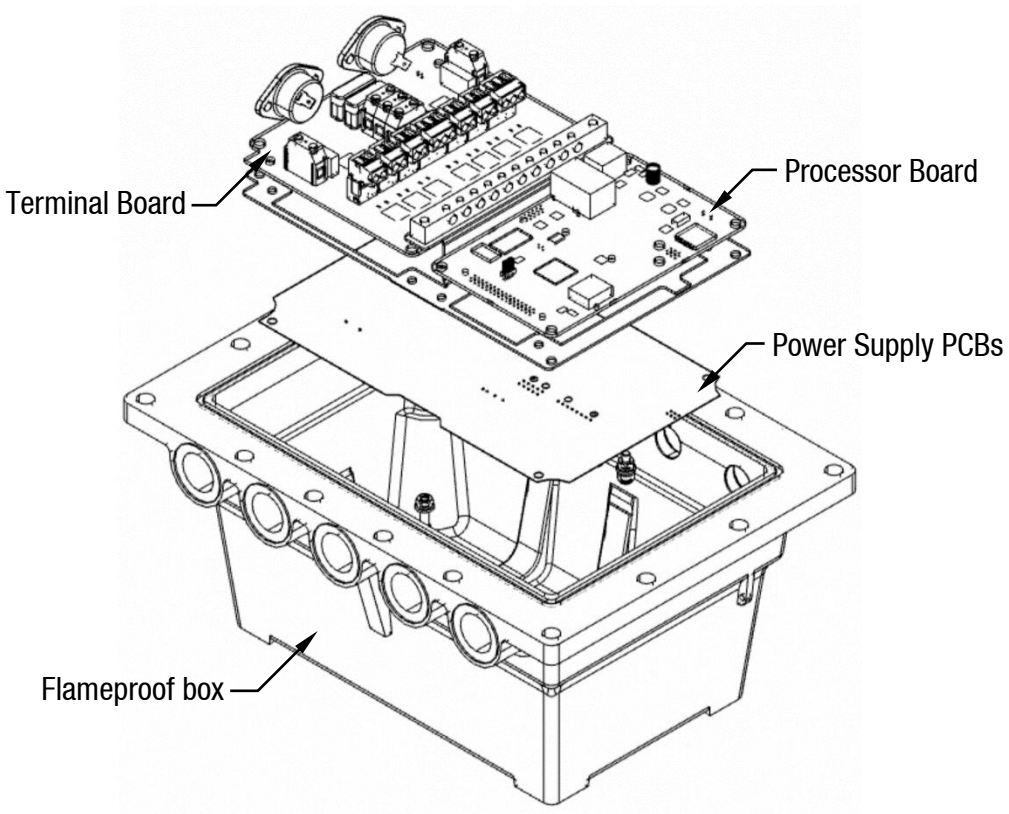


Switches 300, 302, and 303 are for RS485/RS232 Terminator application. Use the following table to configure these switches. Switch 300 is for channel 1, and switches 302 and 303 are for channel 2.

	SW300	SW302	SW303
RS485 (Channel 1)	ON	-	-
RS485 (Channel 2)	-	ON	OFF
RS232 (Channel 2)	-	OFF	ON

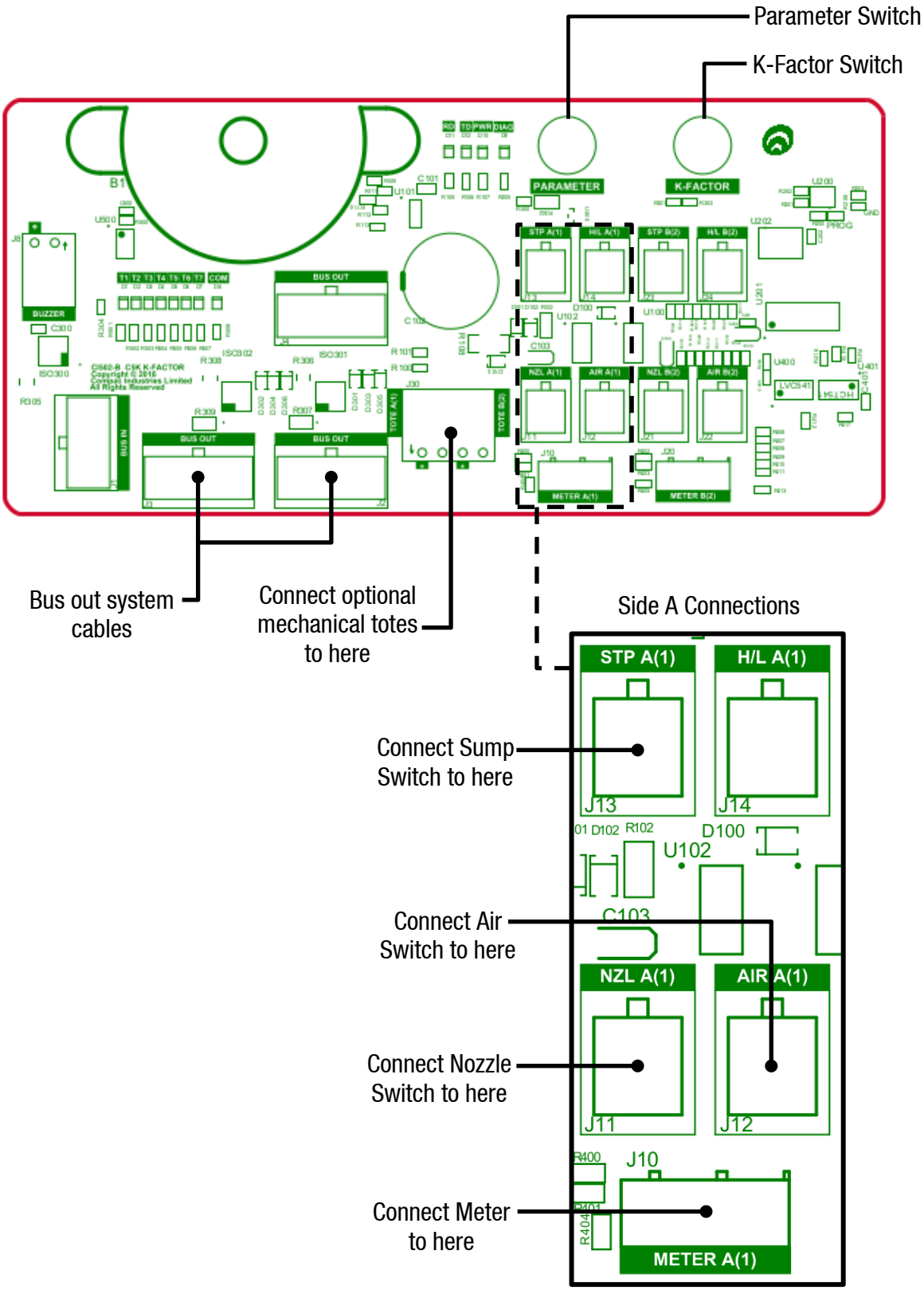
Power Supply

The C5000 power supply is found within the flameproof box, located on the unit. The power supply contains the processor board and the terminal board.



K-Factor Board

Both the Parameter switch and K-Factor switch are found on the K-Factor board. Meters and air switches are also connected to this board. See below for the location of these.



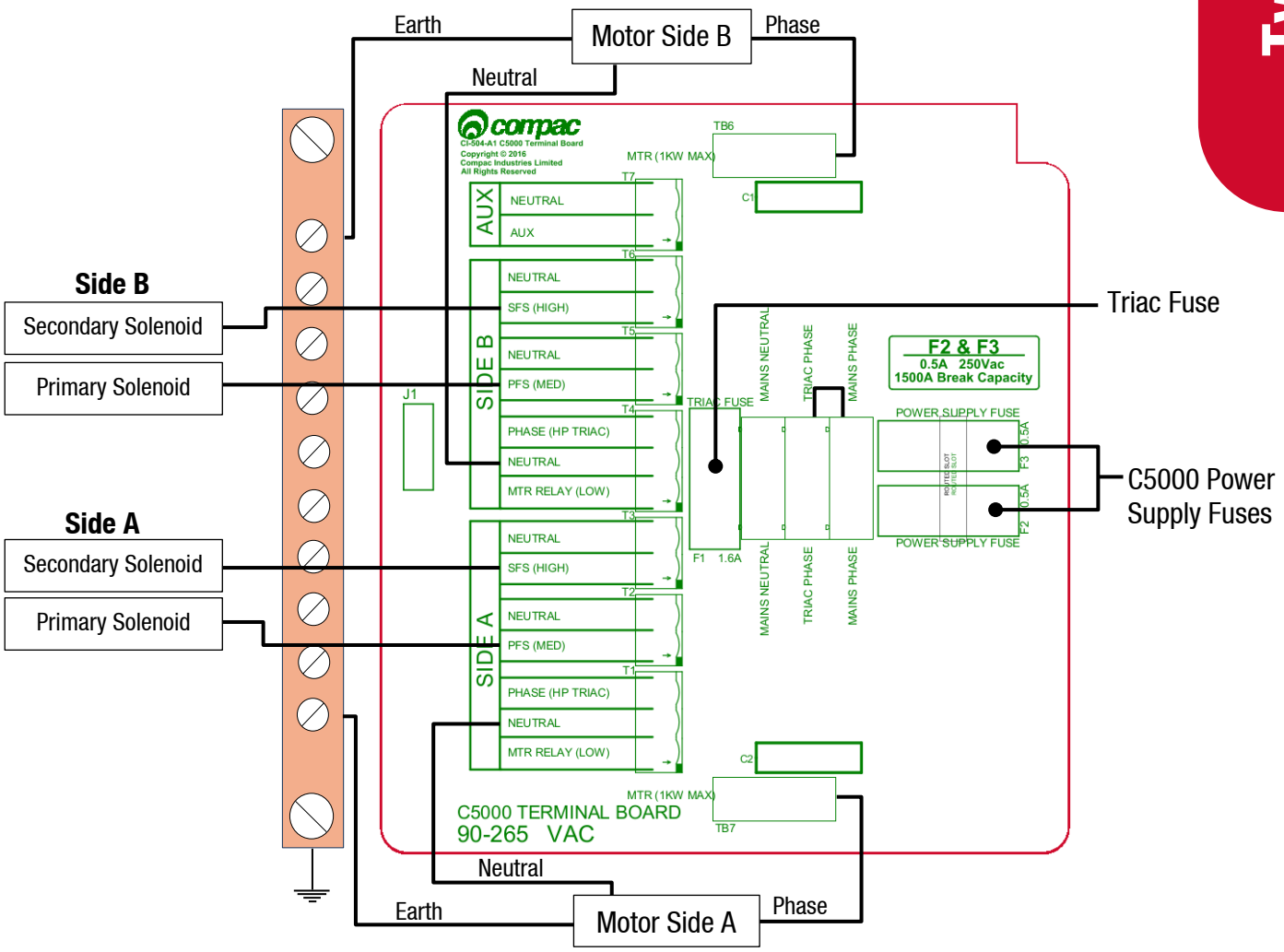
Typical Wiring

Pumps

The following diagrams show the typical wiring required for C5000 pumps.

The motor can be connected to the terminal board for both side A and side B. Only wire in the required side(s). The location of the fuses on the terminal board are also shown. These can be used for diagnosing problems with the unit.

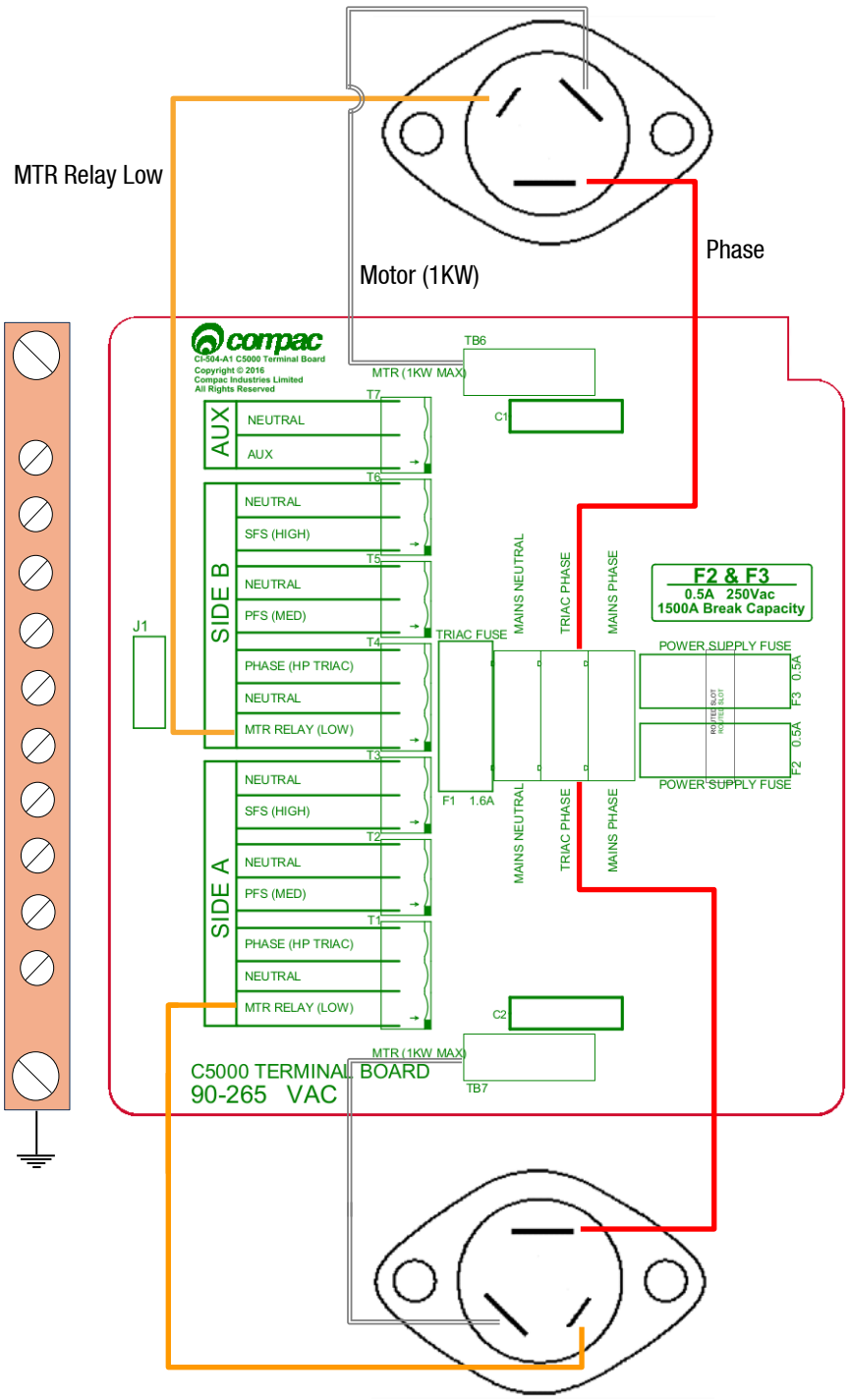
Solenoids for side A and B are optional and can be wired in if preset and prepay options are desired.



Triac Wiring

The triac wiring is pre-installed and, in most cases, will not need to be changed. However, the wiring is shown here to aid triac replacement or other service procedures. These are colour coded with standard colours. In case these are not clear, the colours are as follows:

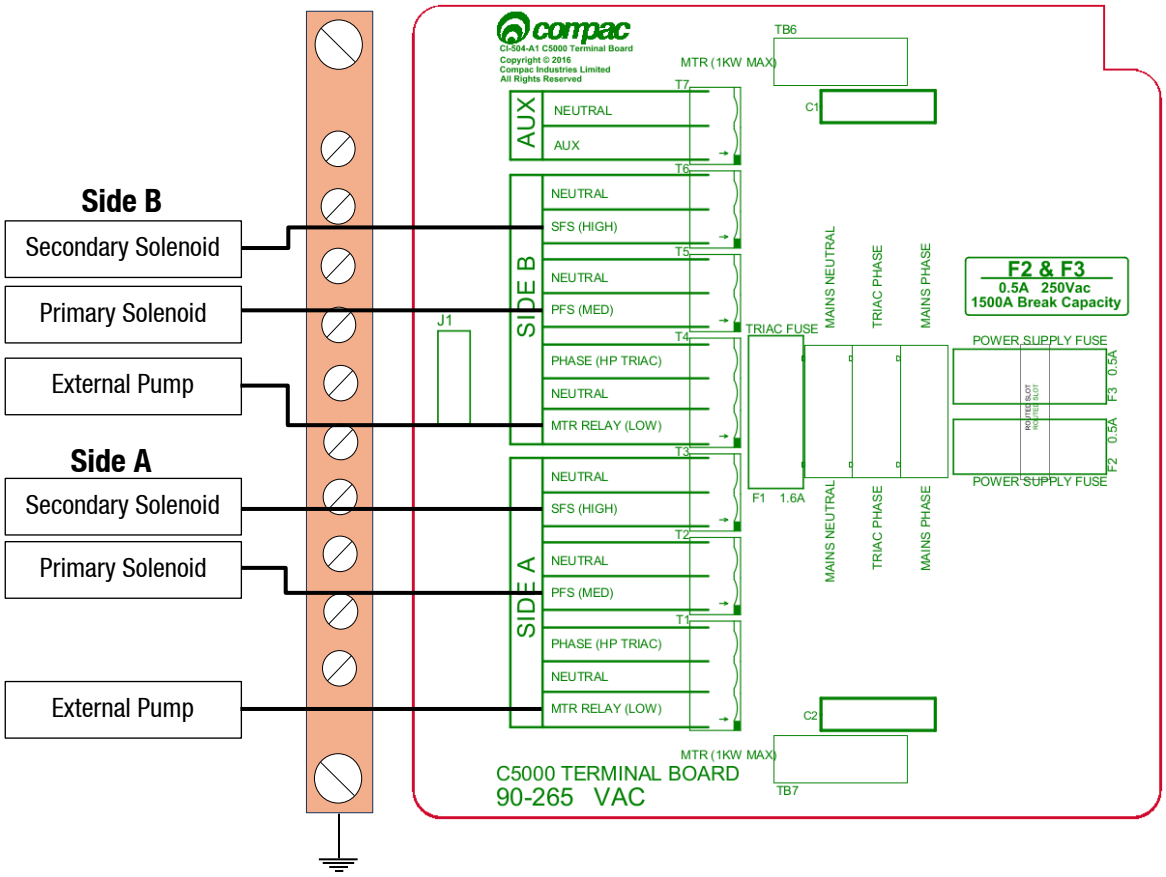
- MTR Relay: Orange
- Phase: Red
- Motor: White



Dispensers

When using the C5000 electronics for dispenser application, as well as connecting the incoming mains, the external pump contactors will have to be connected to the terminal board.

Solenoids for side A and B are optional and can be wired in if preset and prepay options are desired.



K-Factor Settings

A summary of the K-Factor settings can be seen below. Information on these settings and how to change them can be found on the following pages.

Setting	Price display	Litres display
Dispenser settings	c-A or c-b	*******
Meter ID	id-A or id-b	******
Temperature calibration	E-A or E-b	***.
Density calibration	d 15-A or d 15-b	****.
Maximum flow		9A **** or 9b ****
K-Factor	FA or Fb	******.
Configuration code	c	*******
Comms	cc	****
Solenoid delay		SdA *** or Sdb ***
Preset cutoff		PcA ***. or Pcb ***.
Preset rounding		PrLA***. or PrLb***. PrHA***. or PrHb***.
Flow time out		n-A *** or n-b ***

Using the Dispenser Menus

When changing settings on the dispenser, pressing the K-Factor switch in quick succession cycles between the options available. The location of this switch can be found on page 7. Each press of the button will cycle between the digits. When going through the menus, each menu will cycle through the digits twice for ease of operation.

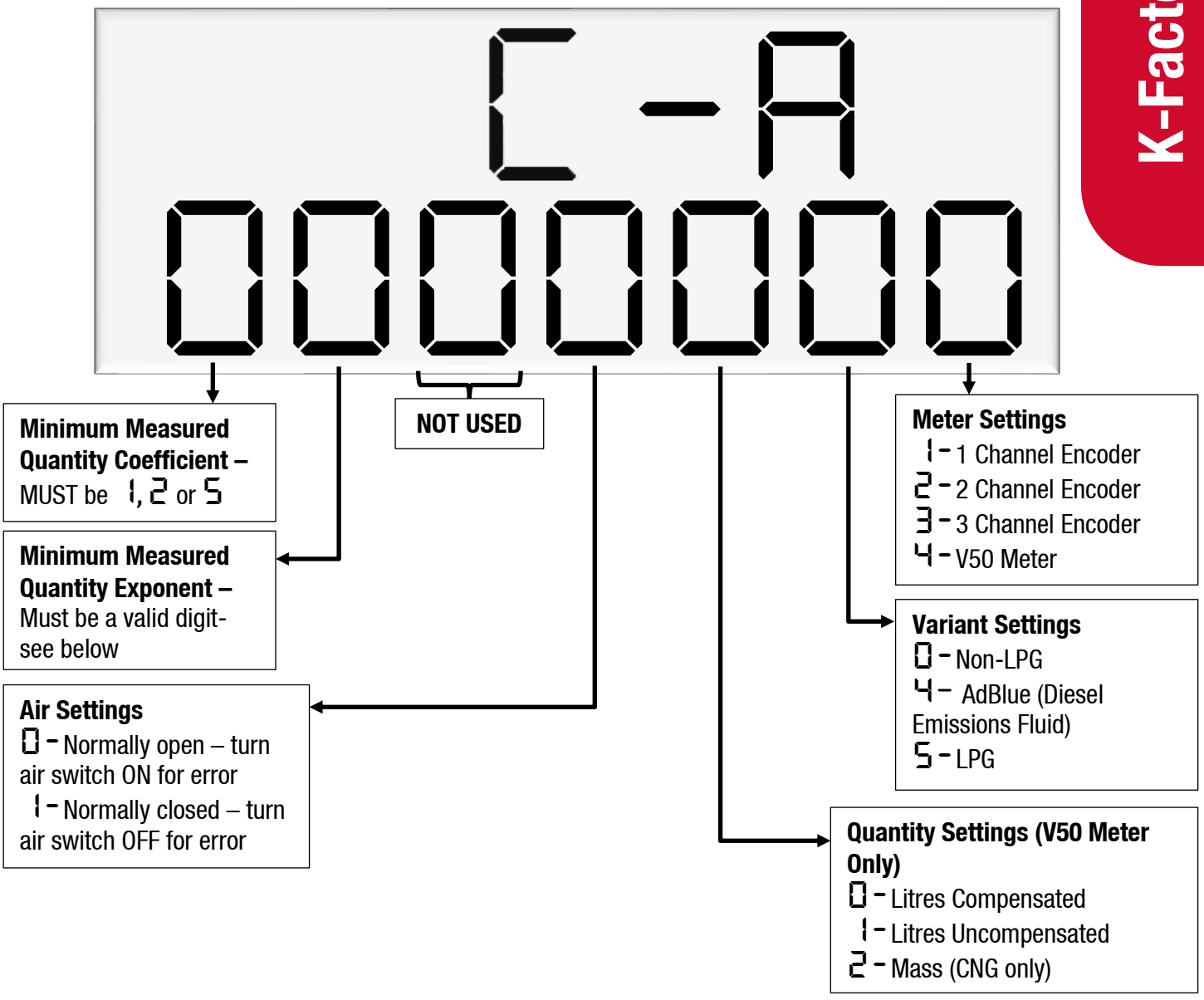
When a digit is flashing, hold down the relevant switch to increment this digit. Release the switch on the desired value.

The system timeout is 10 seconds.

Dispenser Settings

The following diagram displays how to change the dispenser settings, such as the meter type, variant and minimum delivery. To get to the following menu, depress the K-Factor switch once when not in a transaction. The menu shown is for side A – if side B is required, continue depressing the K-Factor switch until the same menu for side B is reached and follow the same set up instructions.

These settings will likely be set in the factory. Only change the following settings if required. See following pages for information on these settings.



Meter Settings

This setting corresponds to the type of meter plugged in to the dispenser. Options 1-3 are for an encoder meter and depend on the channel setting of this meter. Encoder meters are used for petrol and diesel, while V50 meters (option 4) are used for LPG and AdBlue. Some settings (such as temperature and density calibration) are only available for V50 and therefore will not appear if the meter type is not set to V50.

Variant Settings

This setting should be changed depending on the product – set the variant to 0 for liquid fuels such as petrol or diesel. Set the variant to 4 for diesel emissions fluid (AdBlue). Set the variant to 5 for LPG.

Quantity Settings

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.

Air Settings

Air switches can be turned on or off to trigger this error, depending on this setting.

Minimum Measurable Quantity (MMQ)

Minimum measured quantity (MMQ) is the minimum amount of fuel that can be dispensed and measured. The MMQ is calculated with the following equation:

$$MMQ = M\ x\ 10^{n}$$

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

$$MMQ = 2\ x\ 10^{1} = 20L$$

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 00, 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):

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

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:

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

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

The MMQ sets the display suppression. When a transaction starts, the quantity dispensed will not show until a percentage of the MMQ has been dispensed. For LPG, display suppression is 4% of the MMQ. For non-LPG operation, display suppression is 2% of the MMQ. For example, if the dispenser is in LPG mode and the MMQ is 2L:

$$2\ x\ 0.04 = 0.08$$

So the quantity dispensed will not show until more than 0.08L has been dispensed.

Changing the V50 Meter ID

All V50 meters have a specific ID which must match the ID recorded in the dispenser settings. This is a 6-digit number which can be found on the meter.

If the IDs do not match, the dispenser will return an error.

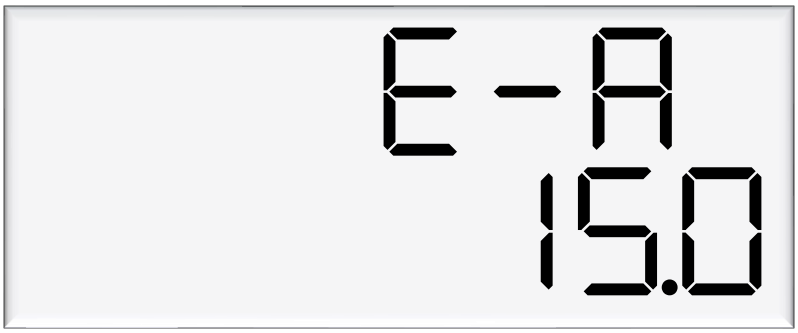
See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.

As meter IDs are only relevant for V50 operation, this option will not show if the meter is not set to V50.

Changing the Temperature Calibration

The temperature calibration can be used to adjust the temperature being retrieved from the meter, if this is not the actual temperature of the product being dispensed. The actual temperature of product being dispensed should be entered in this menu. This will be used to adjust new temperatures returned from the meter.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.

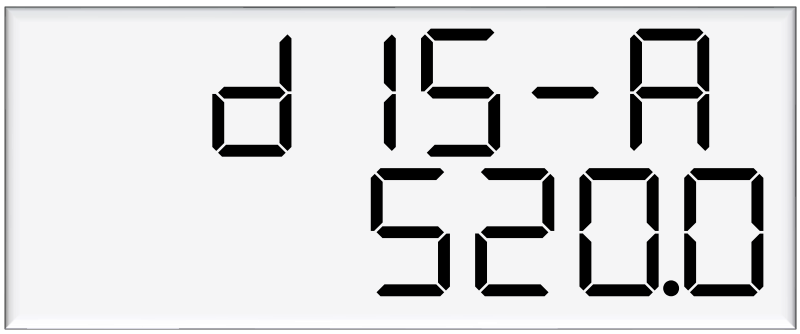


As only V50 meters return temperature readings, this option is only for V50 operation and will not appear if the meter is not set to V50.

Changing the Density Calibration

The density calibration can be used to adjust the density being retrieved from the meter, if this is not the actual density of the product being dispensed. The actual density of product at 15 °C being dispensed should be entered in this menu. This will be used to adjust new densities returned from the meter.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.



As only V50 meters return density readings, this option is only for V50 operation and will not appear if the meter is not set to V50.

Changing the Maximum Flow

If this setting is left at 0000 the maximum flow, or Qmax, is 40 litres/minute by default. When changing the maximum flow, note that the high flow cutoff, low flow cutoff (LPG only), MMQ, and preset rounding are calculated from the maximum flow.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.

Changing the 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.

$$New\ K\ Factor = Existing\ K\ Factor * \frac{Dispensed\ Amount}{Displayed\ Amount}$$

$$= Existing\ K\ Factor * \frac{20}{10}$$

$$= Existing\ K\ Factor * 2$$

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.

Default K Factor setting

All Compac Meters have a default K Factor setting which is set at time of manufacture of the Compac product that it is installed in.

This Default Factor will be very close to the final K factor once the equipment is calibrated on site.

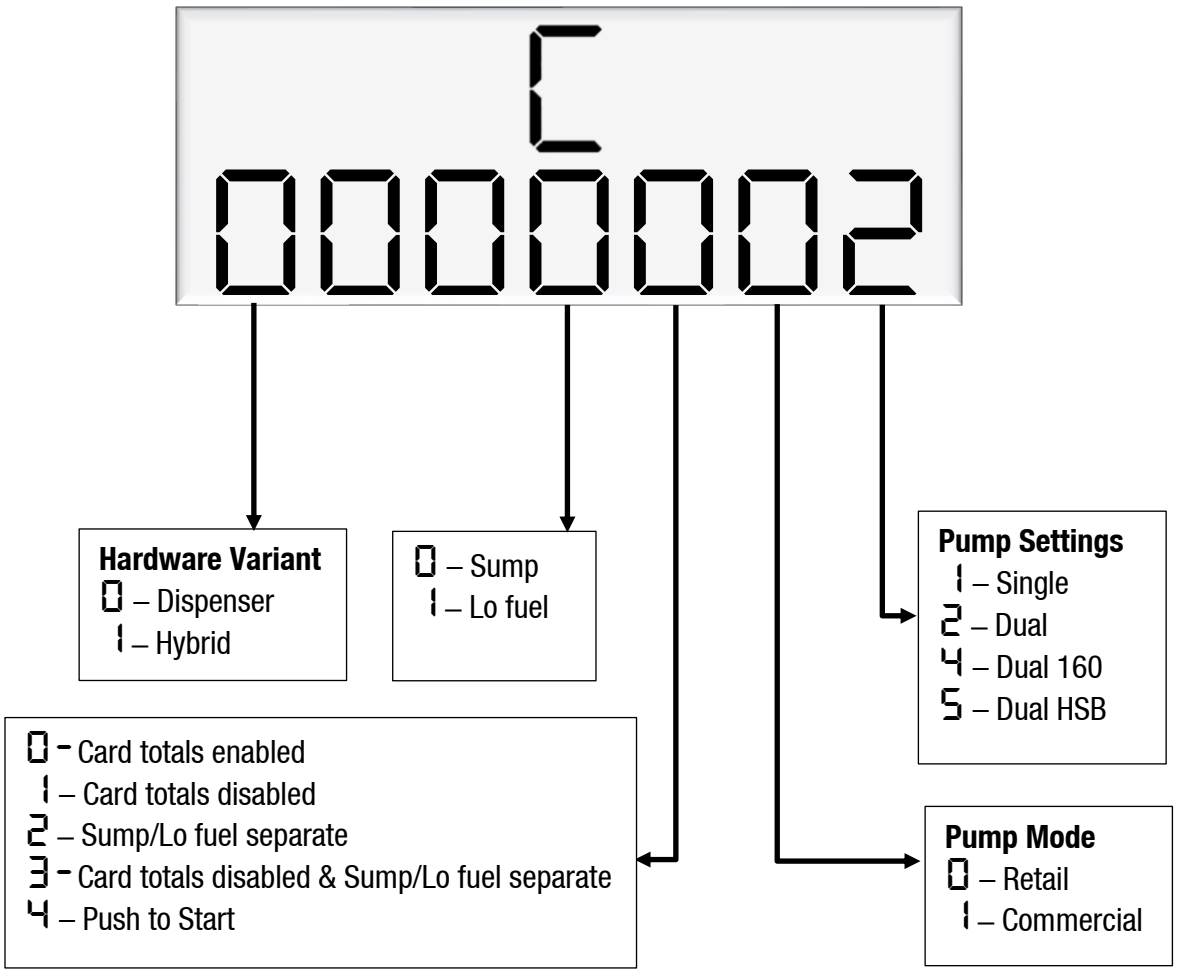
Default K Factors for Compac Meters used in Compac equipment are as follows:

Meter model number	Default K Factor	Product
COM50	0.6450	Petrol / Diesel
COM125	1.1125	Petrol / Diesel
COM250	2.1600	Petrol / Diesel
V40	1.0000	AdBlue DEF
V50	1.0000	AdBlue DEF
V50	1.0000	LPG – if dispensing in litres
KG80 and KG100	0.2500	CNG

Changing Configuration Settings

The dispenser has settings for each side (as previously shown) as well as configuration settings for the entire unit.

Use the following diagram to set the unit up as desired.



Hardware Variant

The hardware variant refers to the type of dispenser and should always be set to 0 – Dispenser for dispenser application.

Card Totals

Card totals record the delivery totals for given cards. This is enabled by default but can be disabled if desired.

Pump Mode

The dispenser can be switched between retail or commercial, depending on the application.

Pump Settings

Each setting is a different configuration with different hardware. See below for descriptions of these configurations.

For all pump settings, the main display shows information on side A. Slave displays will need to be configured to show side B.

Main display (K-Factor display)

Single Pump or Dispenser

In single mode, one outlet is used to dispense one product. The price per litre window for side B is not used.

In this setting, only side A settings will appear in the menus.

Dual Pump or Dispenser

In Dual mode, the dispenser or pump has two outlets which can be used separately, at the same time. Each outlet can be configured separately. Two separate products can be used. Side A supports high flow.

Dual 160 Dispenser

In Dual 160 mode, the dispenser has two outlets, however they must dispense the same product. Either outlet can support high flow and both outlets can be used simultaneously.

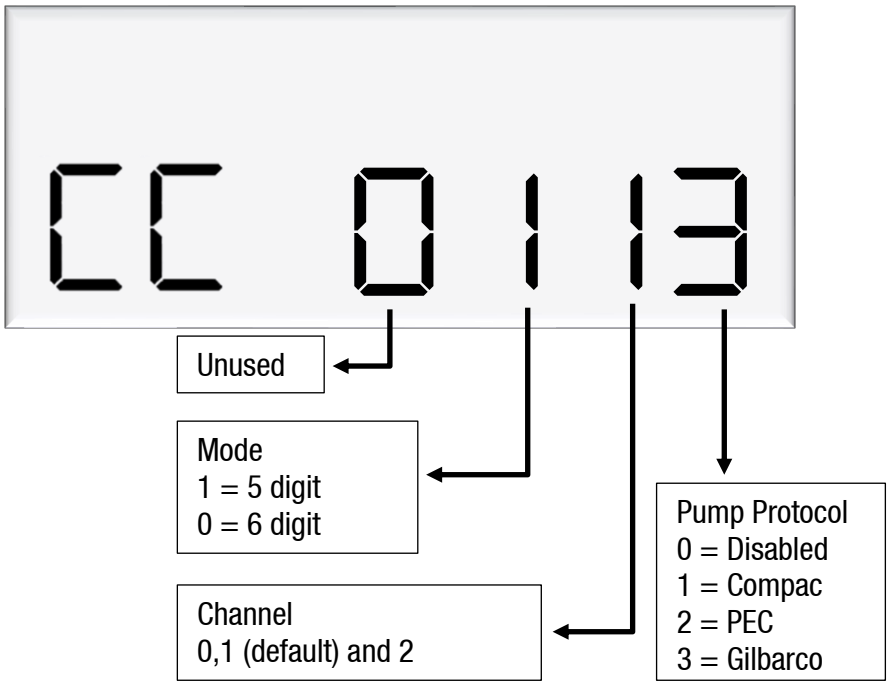
Dual 160 mode can only be used in dispenser application, and not for pump application.

Dual HLB Pump or Dispenser

In Dual HLB mode, the dispenser or pump has two outlets which can be used separately, at the same time. Each outlet can be configured separately. Two separate products can be used. Side B supports high flow.

Changing COMMS

Use the following diagram to setup COMMS as required.



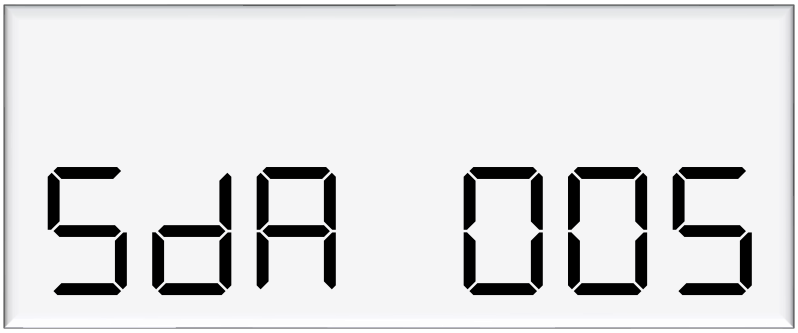
Change the Protocol and the mode to match the controller's settings. Channel 1 is the default channel for dispensers (channel number should always match the with the comms board terminal block used).

E.g. CC = 0113 Gilbarco on Channel 1, 5 Digit mode

Changing the Solenoid Delay

Pumps have two solenoids for product flow. If the solenoids are unavailable, the pump preset should also be unavailable. The solenoid delay is the time between when the motor starts, and when the solenoids start at the beginning of a transaction. The value entered is in seconds.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.



Changing the Preset Cutoff

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.

The entered value should be in litres – for example, if 1.50 is entered, and the preset is 10, the primary solenoid will cut off once 8.5 litres have been dispensed.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.

Changing the Preset Rounding

The dispensed amount of fuel can be rounded to the preset if within the preset rounding parameters. If the preset rounding is left as zero, the preset rounding will be calculated from the MMQ. In LPG mode, 2% of the MMQ will be used for preset rounding. In non-LPG mode, 1% of the MMQ will be used for preset rounding. For example, if the dispenser is in LPG mode and the MMQ is 2L:

$$2\ x\ 0.02 = 0.04$$

Therefore, if the dispensed value is within 0.04L of the preset, it will be rounded to the preset.

A high and low amount can be entered, which will be used to round the preset. The measurement is in litres. For example, if .80 was entered for the low amount, and the preset was 40L:

39.20 is within .80 of 40 and would therefore be rounded up to 40.

If 2.00 was entered for the high amount, and the preset was 40L:

42.00 is within 2 of 40 and would therefore be rounded down to 40.

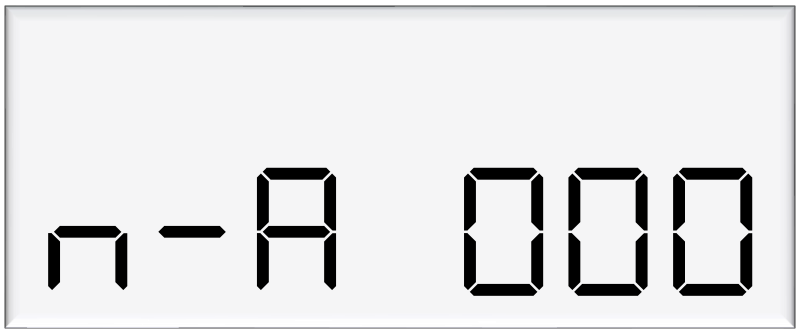
See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.

Changing the Flow Time Out

The flow time out is the amount of time it takes for the transaction to time out after flow stops, if the nozzle is not hung up. The default depends on the dispenser mode. If the dispenser is in LPG mode, the default time out will be 10 seconds. In non-LPG mode, the default time out will be 20 seconds.

If a different value is desired, enter this value in the menu below, in seconds. The maximum flow time out is 120 seconds. If a value above 120 seconds is entered, the flow time out will stay as 120 seconds.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.



Parameter Settings

The following table summarises the parameter switch settings. Information on these settings and how to change them can be found on the following pages.

NOTE: *The configuration settings must be set before parameter settings can be accessed.*

Setting	Price Display	Litres Display
Software Version	P******	P******
Pump Number		PnA *** or Pnb ***
Price		PA***** or Pb*****
Pump Settings		bA **** or bb ****
High Preset cut off		HcA** or Hcb**
High-flow cut off		HFA ***
Low-flow cut off		LFA ***
b Setting		b ****
Slave display		dS ****
Custom display		dc ****
Last Sale	****	A **** or b ****
Electronic Totes	LA **** or dA **** Lb **** or dA ****	L****** d******

Using the Dispenser Menus

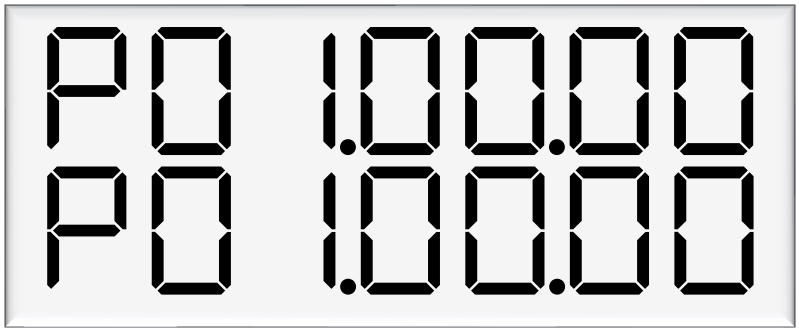
When changing settings on the dispenser, pressing the Parameter switch in quick succession cycles between the options available. The location of this switch can be found on page 7. Each press of the button will cycle between the digits. When going through the menus, each menu will cycle through the digits twice for ease of operation.

When a digit is flashing, hold down the relevant switch to increment this digit. Release the switch on the desired value.

The system timeout is 10 seconds.

How to View the Software Version

Pressing the parameter switch once will show the software version.



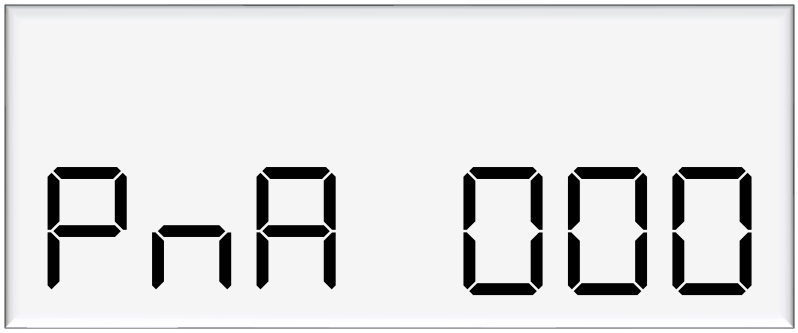
The dispenser will then run through a segment test.

Changing the Pump Number

If the parameter switch is continually depressed, the following menu to change the pump number will appear. Each side must be numbered between 1-99.

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

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.



Changing the Price

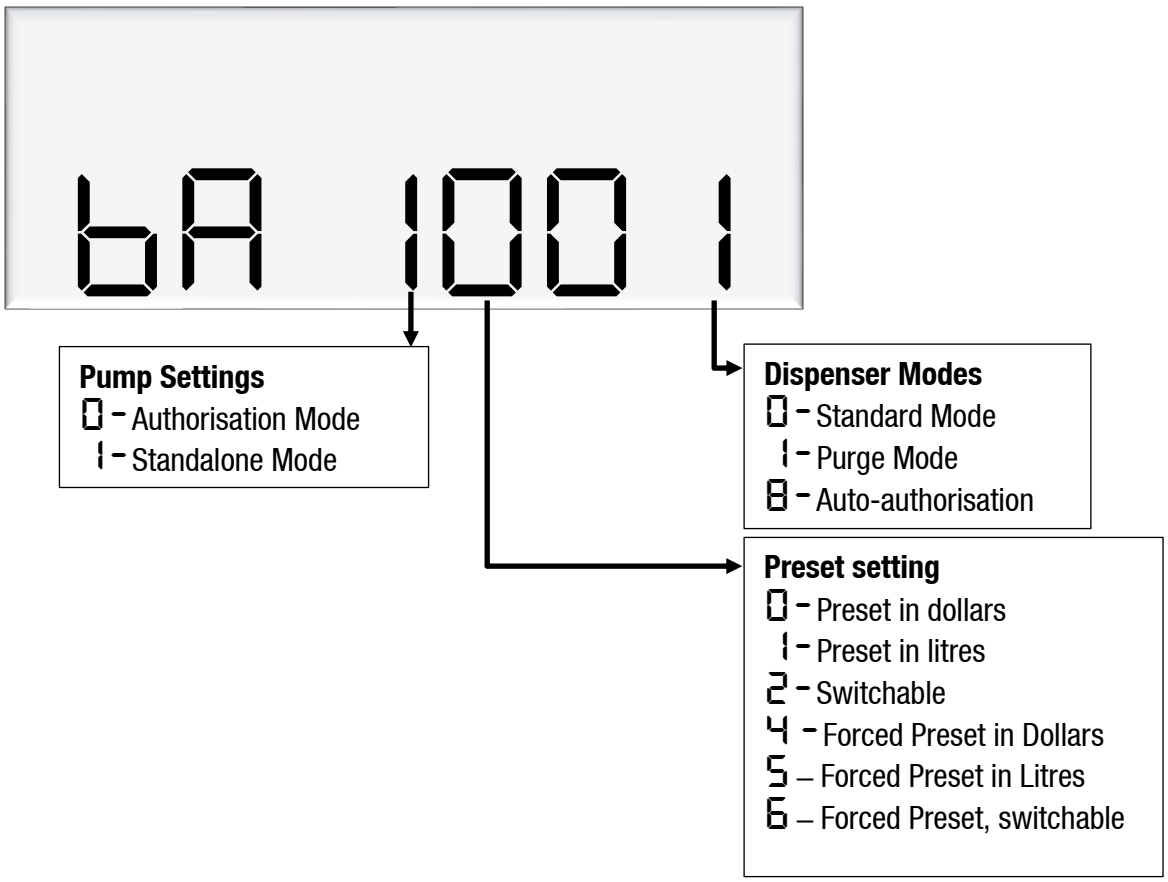
The price must be set before the dispenser can be used, otherwise an error will be returned. Set the price in dollars per litre.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.

Changing the Pump Settings

The pump can have different modes, which can be set using the diagram below. See below for information on these modes.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B. If the dispenser is in multi product mode (see page 17) there are only settings for side A, which will apply to the whole unit.



Changing the High Preset Cut

The settings HCA and HCB are used in high flow applications as an extra flow control.

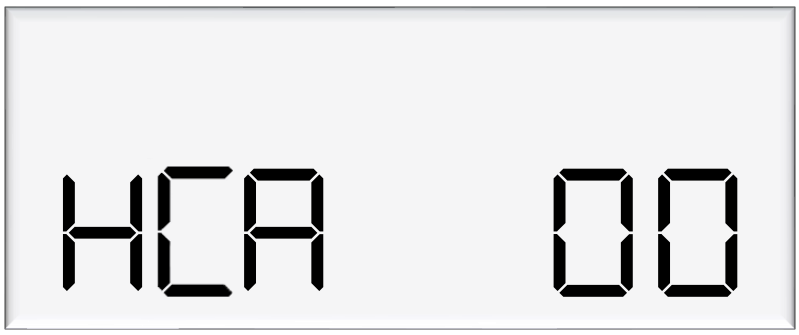
This setting is the number of litres before the preset that the output will switch off.

It is used when extra high flow control is needed. The PCA and the PCB settings have a maximum setting, up to 9.99 litres, where-as the HCA and HCB can be set to a maximum of 99 litres.

In the MR400S, it is used to control the 2” extra High flow valve but this setting could also be used to control an extra high flow valve in a Volume Register application.

In an MR400S dispenser, HCA is normally set to 20.

Note: To use the HCA (high cut), it is also necessary to short the pins together on plug H/L A (or H/L B) on the k-factor board



Standard Mode

In standard mode, the main display will show:

- Top row: Transaction total in dollars
- Second row: Compensated litres for LPG, or uncompensated litres for non-LPG, dispensed by default, but can be changed in Dispenser Settings

And the unit price window will display the price per litre.

Purge Mode

Test mode can be used for all calibrated runs with the exception of vapour tests. When in purge mode, the following is displayed on the main display:

- Top row: PurGE
- Second row: Uncompensated litres dispensed

If the meter setting is set to V50 meter, the unit price window will alternate between showing temperature and density at 15 °C. If the density is outside of the compensation range, then the observed density will be displayed. This information is obtained from the V50 meter.

If the meter settings are set to encoder meter, the unit price display will show flowrate.

In purge mode, all display suppression is turned off.

Preset Options

A preset in dollars or litres can be set. Before a transaction, type in a desired preset value. There are three options for setting a preset:

- Dollars – the preset will be shown in the top row of the main display
- Litres – the preset will be shown in the bottom row of the main display
- Switchable – The preset can be switched between dollars and litres by holding '#' for three seconds when not in a transaction.

The above three options can be set up to be either Optional Preset or Forced Preset

Presets can still be entered during a transaction, as long as flow has not started. Enter a preset by using the keypad. Pressing # will clear a preset. As soon as flow starts, the preset can not be changed, however, pressing the # key during the transaction will display the preset amount.

Pressing # after a transaction will recall the last preset. This will then be used for the next transaction, if it is displayed when the nozzle is picked up. This is useful for multiple transactions in a row requiring the same preset.

Presets entered must be larger than the MMQ. If the MMQ is large, when entering a preset after lifting the nozzle, the MMQ will automatically show up. Continue entering the desired preset to override this. If entering a preset before lifting the nozzle, and a value below the MMQ is entered, an error code will be returned.

Changing the Low-flow Cutoff

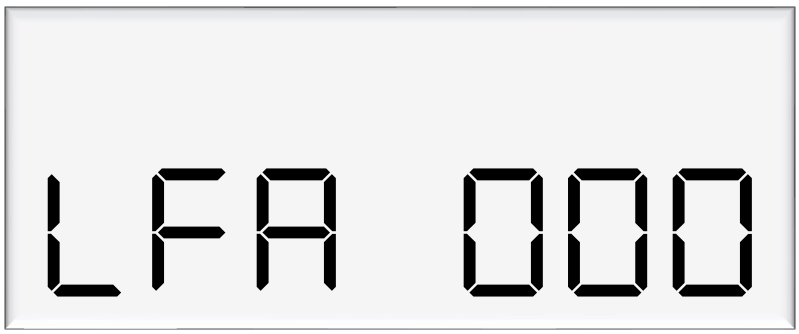
A flow range is needed for each pump to dispense an accurate amount of product. If too much or too little fuel is dispensed, the meter can not accurately measure the dispensed fuel and therefore should cut off and display an end of sale message.

The low-flow cutoff will end the transaction (without an error code) if flow drops below this value. In LPG operation, the default value for the low flow cutoff is 0.1x the maximum flow. For example, if the maximum flow was 40L/min (the default):

$$LF = 0.1\ x\ 40 = 4L/min$$

If a custom value is desired, enter the value in this menu in litres. In non-LPG mode, the low-flow cutoff only applies if a custom value is entered.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.



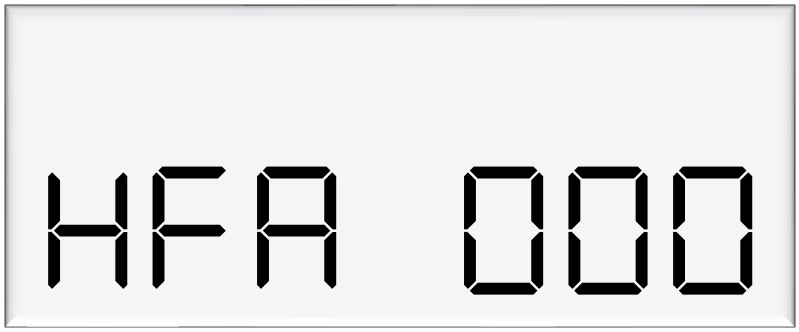
Changing the High-flow Cutoff

The high-flow cutoff will stop transactions if the flowrate exceeds this value, and will return an error. For LPG operation the default value for the high flow cutoff is 1.5x the maximum flow. For example, if the maximum flow was 40L/min (the default):

$$HF = 1.5\ x\ 40 = 60L/min$$

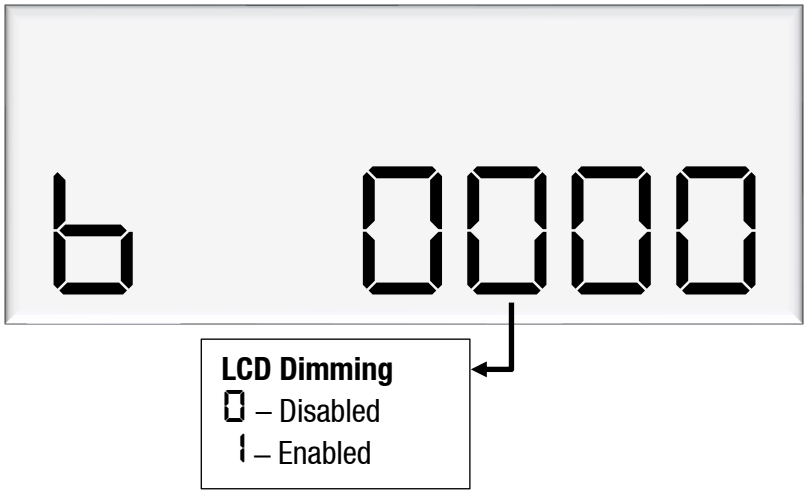
If a custom value is desired, enter the value in this menu in litres. In non-LPG mode, the high-flow cutoff only applies if a custom value is entered.

See Using the Dispenser Menus to edit these settings. Use the procedure for both side A and B.



Changing the b Setting

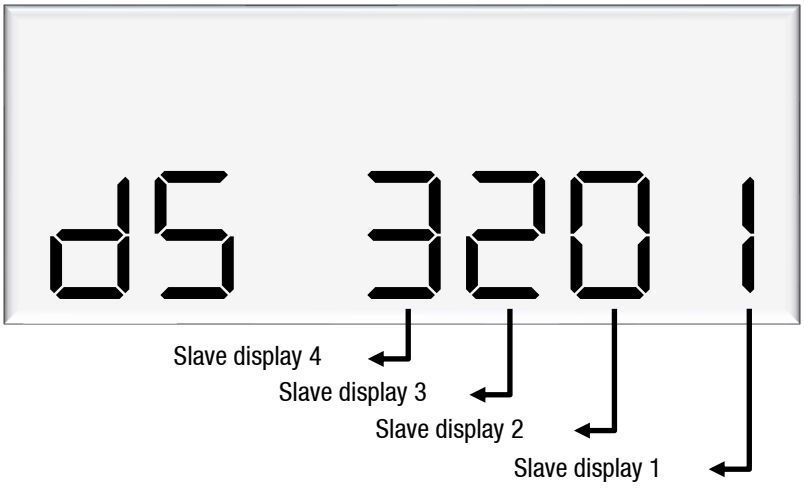
The b setting is currently only used for LCD dimming. Set the b configuration code as desired.



Changing the Slave Display Configuration

Slave displays can be configured as, a clone of the main display, to show side A, or to show side B. Otherwise, it can be disabled. Slave display configuration is a two-step process.

1. Change dS setting to assign a side to the slave display
2. Assign the correct number to the slave display by changing the slave display board dip switches.



The first digit from the right correlates to slave display 1, and so on. In this example, slave display 1 – clone, slave display 2 – disabled, slave display 3 - side A, slave display 4 - side B.

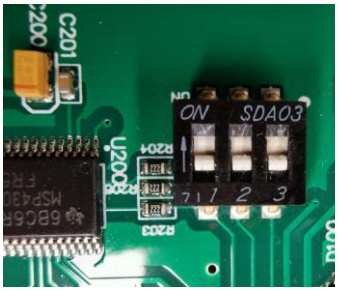
Note: *Each digit can have 4 different values, each value has a different meaning.*

0 – Disabled
1 – Clone
2 – Side A
3 – Side B

Assigning a number to slave display

Slave display numbers can be set with dip switch 2 and 3 on the slave display board. Use the following table as a guide to configure the slave displays

Slave Display	Switch 1	Switch 2	Switch 3
1	OFF	OFF	OFF
2	OFF	OFF	ON
3	OFF	ON	OFF
4	OFF	ON	ON



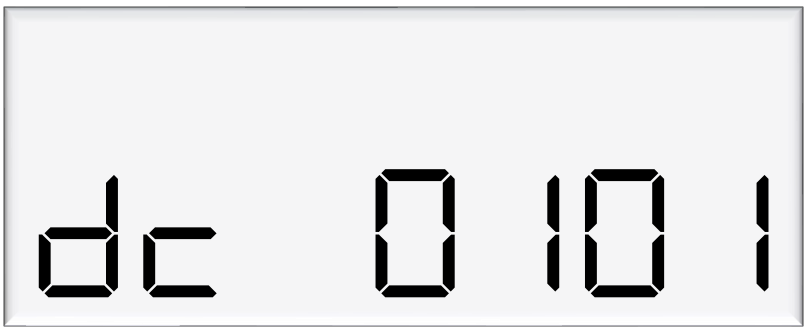
CAUTION : *Make sure the device is powered off before attempting to change the dip switches*

Changing the Custom Display Configuration

The custom display configuration can be used to show additional information on the unit price display. The additional information that can be shown includes the density, temperature, flowrate, and reset batch. This can be configured with the dc setting. Each digit corresponds to a custom display option. Setting a digit to 1, as opposed to 0, enables the custom display. The digits represent the following options:

Digit 1: Reset batch
Digit 2: Temperature display
Digit 3: Density display
Digit 4: Flowrate display

For example, the following code would enable temperature and flowrate to be shown on the custom display.



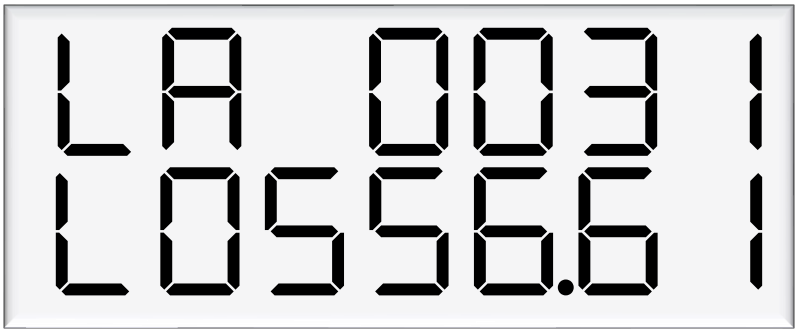
How to View Last Sale

To view the last sale details, continue pressing the parameter switch until the following display is shown. This will only show up if the dispenser is in V50 mode.

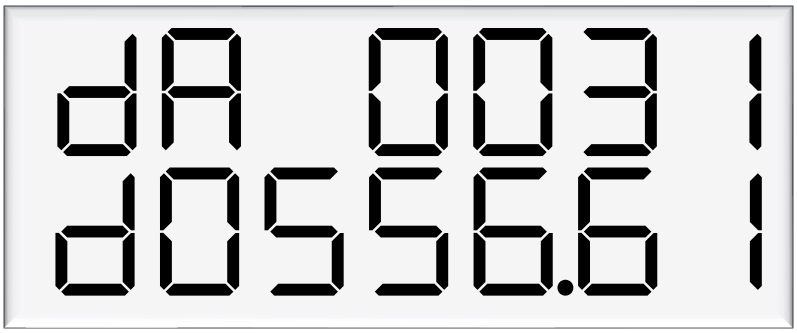
The top row will show uncompensated, unsuppressed quantity dispensed in litres, while the bottom row will show the density reading at 15°C. The unit price display will show the temperature reading at the end of the sale. The left most character of the density reading indicates the nozzle side. There is a reading for side A and B. Last sale is useful for the calibration of LPG where the dispenser is set to compensated mode, but the uncompensated quantity is required.

How to View Electronic Totes

The dispenser records electronic totes for price and dollars. To view the electronic totes, continue pressing the parameter switch until the following display is shown:



The bottom row is a continuation of the top row – for example, the above display should be read as 003 105566 1. The side (A or B) will be shown in the unit price display. Dollars totals are also recorded, which can be viewed by continually pressing the parameter switch.



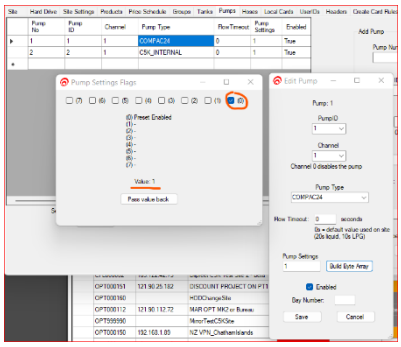
The electronic totes can also be viewed by pressing the # key five times on the main display, as long as the unit is not in a transaction. Each tote will be shown for ten seconds before the next tote is displayed.

NOTE: *Electronic totes and mechanical totes are disabled in purge mode.*

Enabling Amount or Quantity Preset

Enable from CompacOnline Admin tool

1. In Pump settings, Edit pump and click on Build Byte Array
2. Ensure 0 is selected to enable Preset
3. Click on Pass value back and close the Edit page
4. Flag the site to update the pump settings



Changing presets between Amount and Quantity

This can be achieved in two ways:

1. Using Pinpad on Com5
2. Or through Parameter settings on K-Factor board

Using Pinpad

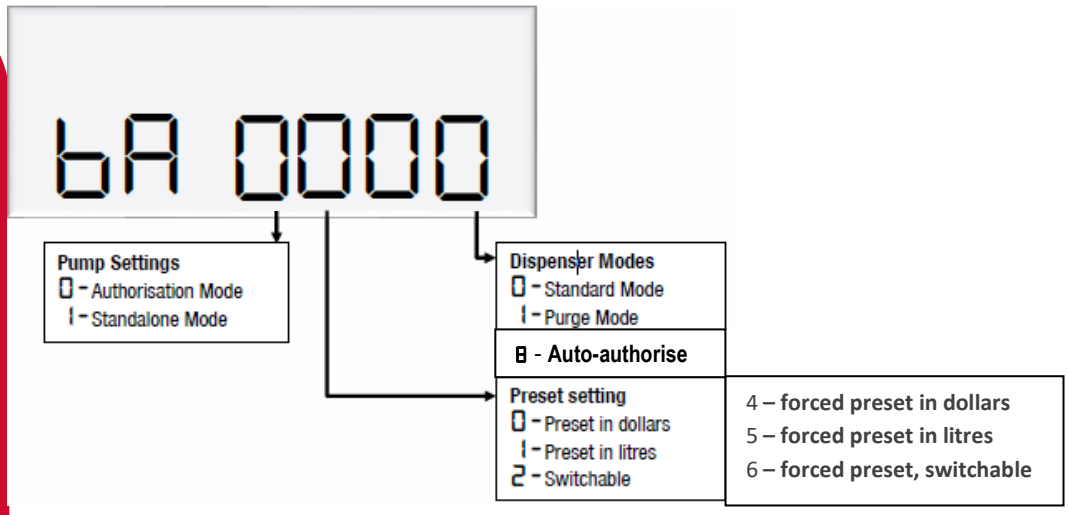
1. Press *Cancel* and enter Passcode
2. Main Menu – Select *3. Pumps*
3. Pumps – Select *1. Side A* (or select corresponding pump)
4. Side A Config 1 – *Press #* key for next screen
5. Side A Config 2 – *Select 3*. Preset
6. Preset Config – Select 2. To cycle between *Amount; Quantity or Switch*

Parameter Settings on K-Factor board – navigate to *Pump Settings*

- Change preset setting **0** or **1**

Changes to Prompts displayed

Changing between Amount or Quantity, the prompt display will be updated accordingly.



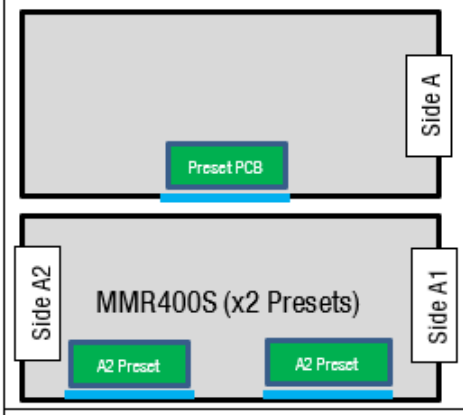
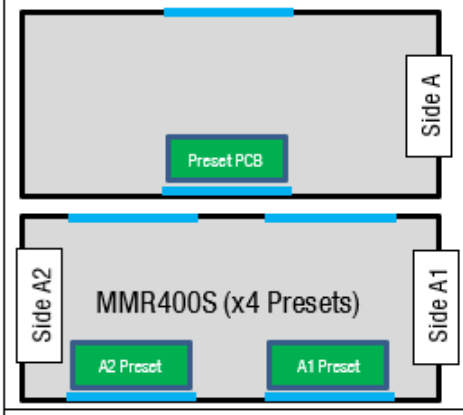
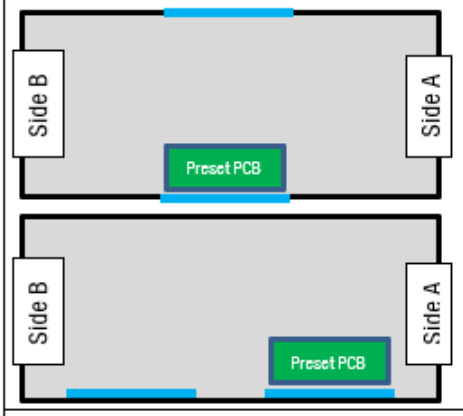
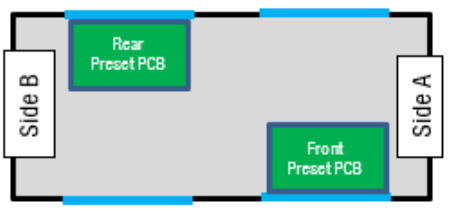
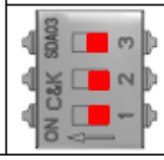
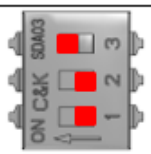
Setting to Amount:

Setting to Quantity:

Preset Board

Preset Board DIP Switches

Use the table below to determine which layout applies and set the dipswitch on the Pre-set board.

Top view of Master Dispenser	Description and dip switch position
	One keypad with one pre-set PCB Plug Side A keypad to J201 port on the pre-set PCB  For MMR400S; Side A1 keypad to J201 on A1 Pre-set PCB; Side A2 keypad to J201 on A2 Pre-set PCB
	Two Side A keypads with one pre-set PCB Plug keypads into J200 and J201 port on the pre-set PCB  Note: MMR400S with four keypads and two Pre-set PCB is a duplicate of the above setup.
	Side A and B keypads with one pre-set PCB Side A keypad to J201; Side B keypad to J200 
	Two Side A and Two Side B keypads with two pre-set PCB. Front Pre-set PCB:  Rear Pre-set PCB: 

GPIO Board

GPIO Pulse Input

Overview

The Pulse input is designed to interface the Compac dispenser to a third party meter. The Pulse input can be up to 35 VDC.

There are 2 settings that need to be set to enable the C5000 for third party meter input. The first is in the CA/CB. The CA/CB needs to be set to CA XXXXXX5.

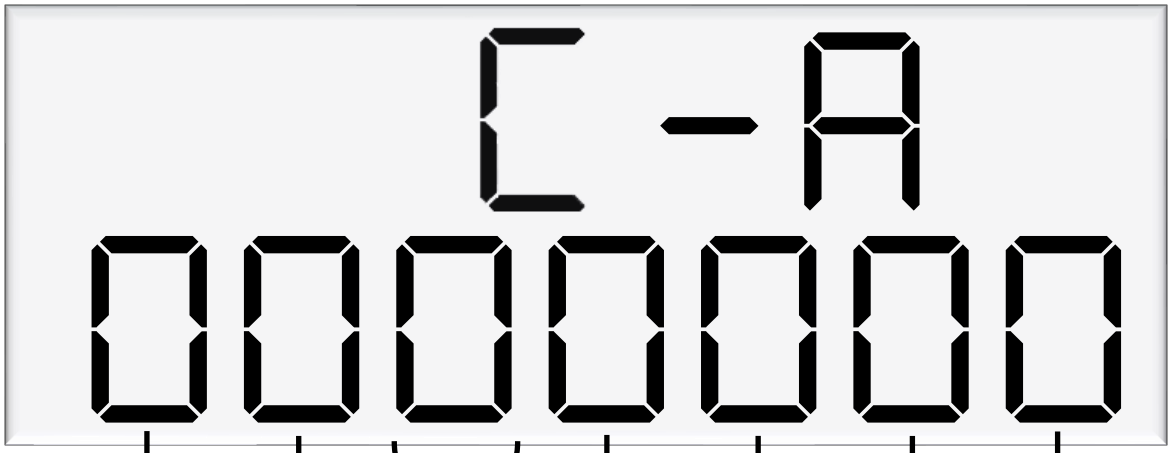
The Pulse input can be configure for the following meter types

- Single channel
- Two channel quadrature
- Three channel

.

CA/CB Setting for third party input

To tell the C5000 to read meter pulses from the GPIO board you need to set the CA/CB to XXXXXX5. This 5 disables the meter input on the K Factor board and tells the C5000 to read pulses from the GPIO board



Minimum Measured Quantity Coefficient – MUST be 1, 2 or 5

Minimum Measured Quantity Exponent – Must be a valid digit- see below

Air Settings
0 - Normally open – turn air switch ON for error
1 - Normally closed – turn air switch OFF for error

NOT USED

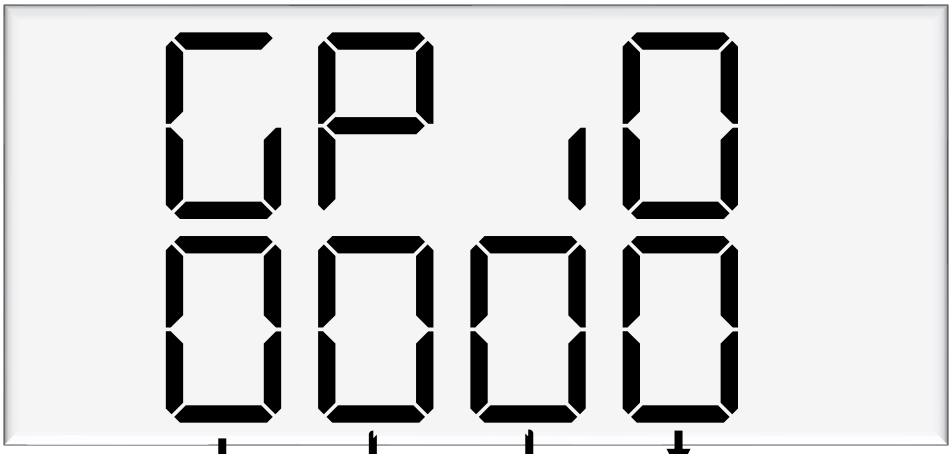
Meter Settings
1 - 1 Channel Encoder
2 - 2 Channel Encoder
3 - 3 Channel Encoder
4 - V50 Meter or KG Meter
5 - GPIO meter input

Variant Settings
0 - Non-LPG
4 - AdBlue (Diesel Emissions Fluid)
5 - LPG
6 - CNG

Quantity Settings (V50 Meter and KG meter Only)
0 - Litres Compensated
1 - Litres Uncompensated
2 - Mass (CNG only)

GPIO K Factor settings

The GPIO settings in the K factor board is where you set the GPIO specific settings. The below figure shows details of all the options available for each setting.



Duty Cycle Setting
0 - 50%
1 - 10%
2 - 20%
3 - 30%
4 - 40%
5 - 50%
6 - 60%
7 - 70%
8 - 80%
9 - 90%

Inputs Setting
0 - 1KHz
1 - 100Hz
2 - 200Hz
3 - 300Hz
4 - 400Hz
5 - 500Hz
6 - 600Hz
7 - 700Hz
8 - 800Hz
9 - 900Hz
A - 1KHz
b - 1.1KHz
c - 1.2KHz
d - 1.3KHz
c - 1.4KHz
d - 1.4KHz

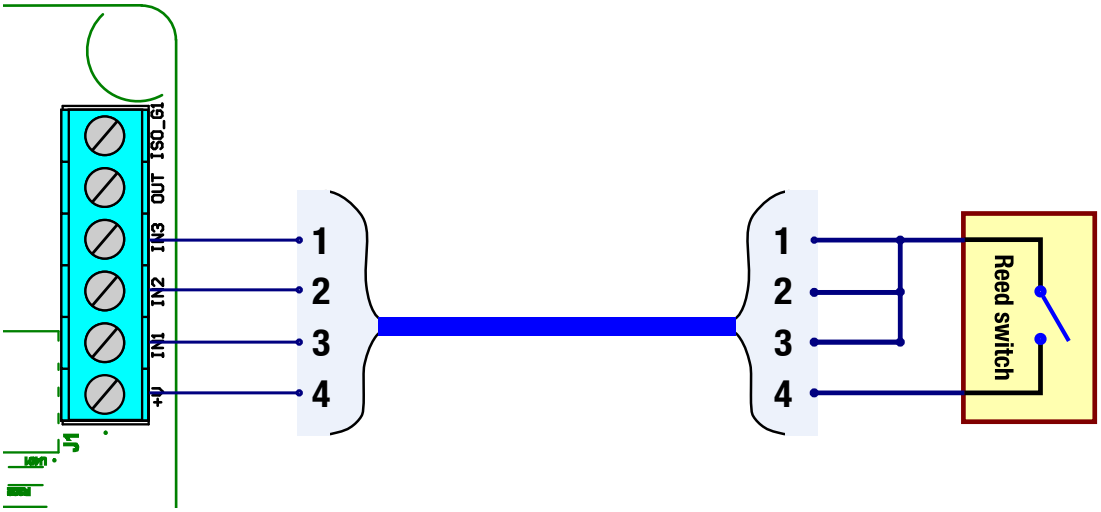
Inputs Setting
0 - 0 Off
1 - 1 Channel Encoder
2 - 2 Channel Encoder
3 - 3 Channel Encoder
4 - Switch Input

Output Settings
0 - 0 off
1 - Volume (Litres/Kg's)
2 - Amount (Dollars)

Third party meter wiring

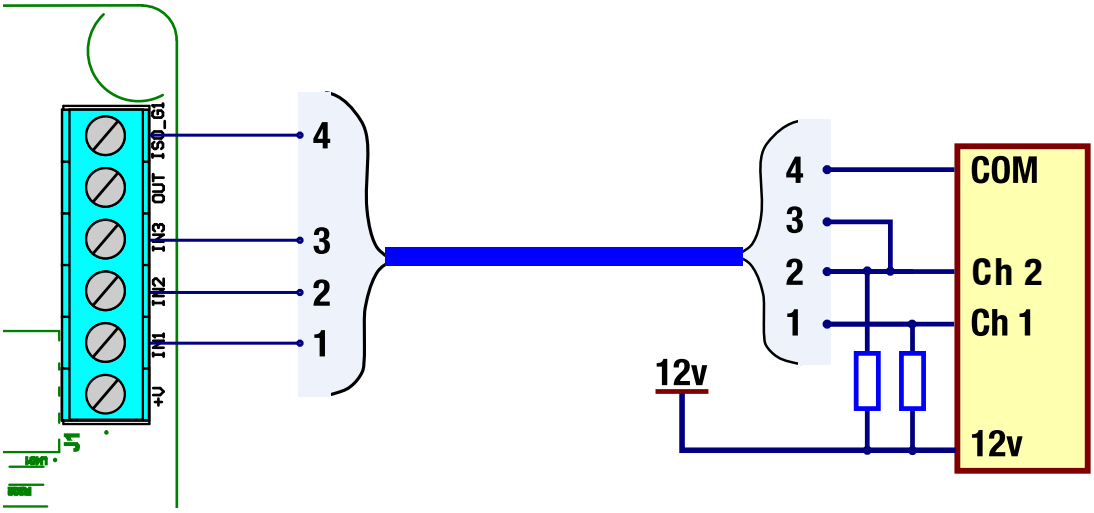
There are different types of meters with different numbers of channels. The below is the meter type and how to wire them to the GPIO Board.

When connecting to a reed switch type meter you connect the GPIO 5-volt to the reed switch and then all 3 inputs to the other terminal on the meter.



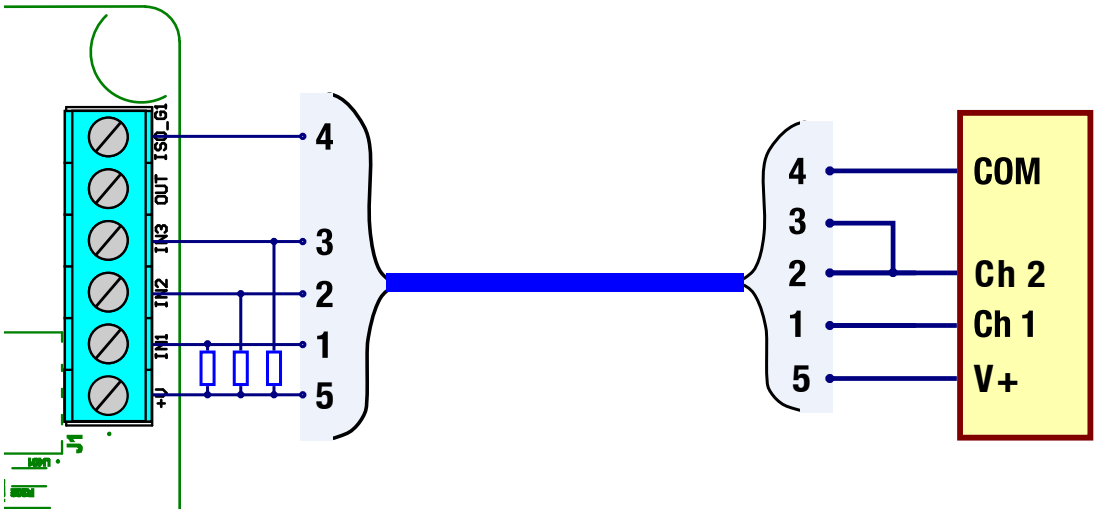
Single channel Reed Switch meter

The two Channel 12 volt meter is not powered from the GPIO Board, instead it is powered by its own power supply. Depending on the meter, pullup resistors may need to be added.



12-volt two channel meter

The 2 channel 5 volt meter is powered from the GPIO board. This means that the meter doesn't need power from an external source. Depending on the meter pullup resistors may need to be added. For 5 volts the pull up resister should be 820Ω



5 volt two Channel meter

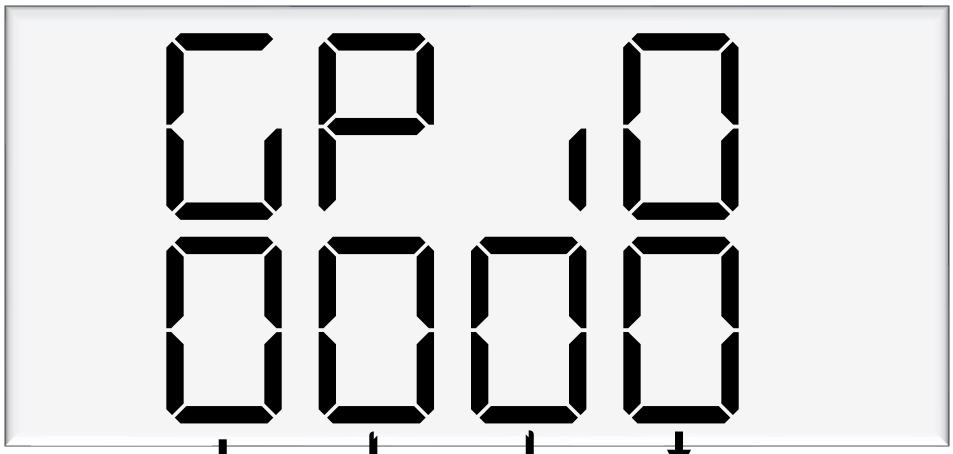
GPIO Input switch mode

Overview

The “Nozzle“ input is to act as a control allow or not allow the dispenser to be started. It is as if there is a switch in series with the real nozzle switch. with means that both nozzles need to be made for the dispenser to start

GPIO K Factor settings

The GPIO settings in the K factor board is where you set the GPIO specific settings. The below figure shows details of all the options available for each setting.



Duty Cycle Setting
0 - 50%
1 - 10%
2 - 20%
3 - 30%
4 - 40%
5 - 50%
6 - 60%
7 - 70%
8 - 80%
9 - 90%

Inputs Setting
0 - 1KHz
1 - 100Hz
2 - 200Hz
3 - 300Hz
4 - 400Hz
5 - 500Hz
6 - 600Hz
7 - 700Hz
8 - 800Hz
9 - 900Hz
A - 1KHz
b - 1.1KHz
c - 1.2KHz
d - 1.3KHz
c - 1.4KHz
d - 1.4KHz

Inputs Setting
0 - 0 Off
1 - 1 Channel Encoder
2 - 2 Channel Encoder
3 - 3 Channel Encoder
4 - Switch Input

Output Settings
0 - 0 off
1 - Volume (Litres/Kg's)
2 - Amount (Dollars)

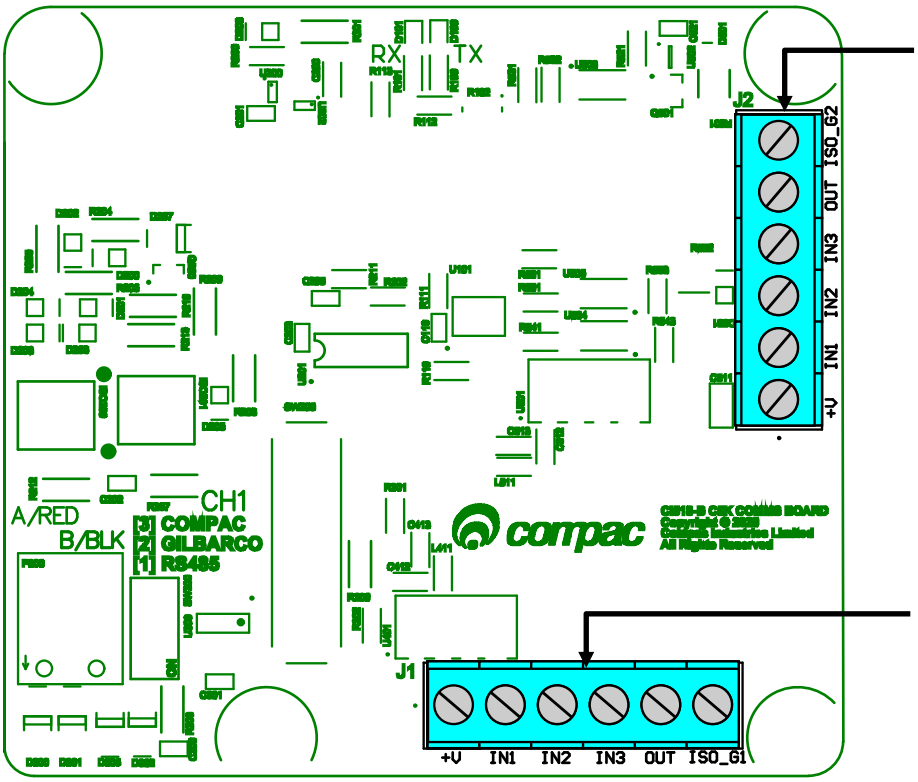
Input Switch Setting

The setting on the K Factor board to enable the “nozzle Switch“ is GPIO XXX4. When the switch input is enabled the dispenser will not start a transaction until the GPIO nozzle input is high and the nozzle input on the k factor board is high (lifted) as well.

Note that if the nozzle is lifted on the K-factor board and the GPIO Nozzle input is low (not shorted) the Diag LED on the K factor board won’t flash. In saying that if you want to troubleshoot the nozzle without the GPIO nozzle input you can disable the switch input by setting the GPIO setting to GPIO XXX0

Input switch Wiring

The GPIO nozzle input is wired in to the GPIO board in the flameproof box. The below figure shows the GPIO board and the location of the connectors.



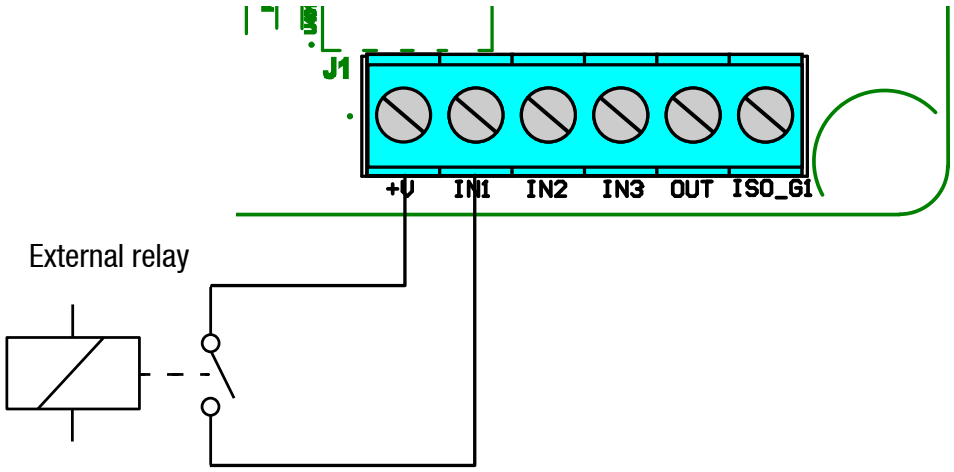
Side B GPIO connections

Side A GPIO connections

There are different ways to connect the GPIO Nozzle input to an external device and the specific way will depend on the application

Relay switch wiring

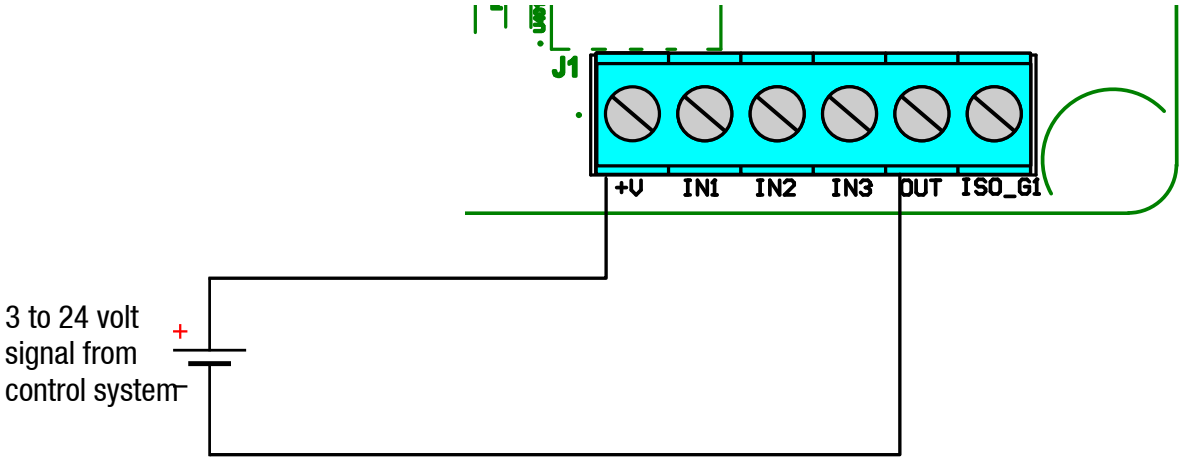
In this application an external relay is used to enable the GPIO nozzle input. 5 volts from the +V is fed into the relay and the output of the relay feeds back into the GPIO board via the IN1 terminal as shown below. This means that when the relay is energized the GPIO is pulled high enabling the nozzle. Use a relay means you can use any voltage AC or DC you just have to source the correct relay for your application



External DC Voltage

In this application an external DC voltage is applied to enable the GPIO nozzle input. This DC voltage can be between 3 to 50 volts DC. The ISO_G1 is connected to the Ground connection of the DC voltage source and the Positive side is connected to IN1.

Note that in the figure below the DC voltage sauce can be from a control system i.e. PLC



GPIO Pulse Output

Overview

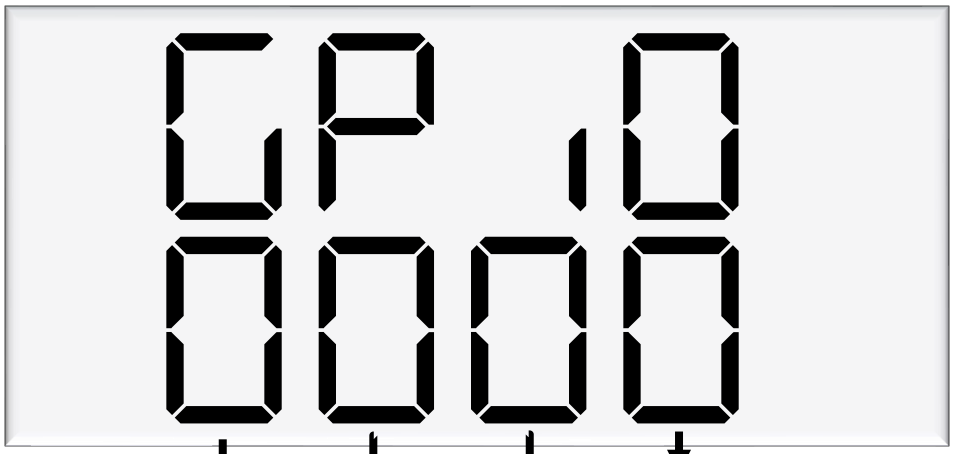
The Pulse output is designed to interface the Compac dispenser to a 3 party Controller/POS without the need to talk a communication protocol.

The Pulse output has the following parameters that can be changed

- Frequency
- Duty Cycle
- Output pulses for volume or amount
- The Value of a pulse

GPIO K Factor settings

The GPIO settings in the K factor board is where you set the GPIO specific settings. The below figure shows details of all the options available for each setting.



Duty Cycle Setting
0 - 50%
1 - 10%
2 - 20%
3 - 30%
4 - 40%
5 - 50%
6 - 60%
7 - 70%
8 - 80%
9 - 90%

Inputs Setting
0 - 1KHz
1 - 100Hz
2 - 200Hz
3 - 300Hz
4 - 400Hz
5 - 500Hz
6 - 600Hz
7 - 700Hz
8 - 800Hz
9 - 900Hz
A - 1KHz
b - 1.1KHz
c - 1.2KHz
d - 1.3KHz
c - 1.4KHz
d - 1.4KHz

Inputs Setting
0 - 0 Off
1 - 1 Channel Encoder
2 - 2 Channel Encoder
3 - 3 Channel Encoder
4 - Switch Input

Output Settings
0 - 0 off
1 - Volume (Litres/Kg's)
2 - Amount (Dollars)

Output

The output setting enables the GPIO board to output pulses. It also sets whether the output pulses are representing volume(litre/Kg's) or amount(dollars). Majority of applications will set the pulses to represent volume

Note you cannot have meter input enabled at the same time.

Frequency

The Frequency output setting sets the maximum speed of the output pulses. The Default setting of 0 sets the frequency to 1KHz. This setting combined with the Value per pulse setting sets the maximum flow rate of the dispenser.

Example

Frequency set to 1KHz (1000 pulses/sec)
Pulses per value are set to 00001 (10ml/pulse)

That means the maximum flow rate the dispenser can do before the output pulses lag behind is

$$maximum\ flow = maxium\ frequency\ \times\ pulses\ per\ value$$
$$maximum\ flow = 1000Hz\ \times\ 10ml$$
$$maximum\ flow = 10000\ ml\ per\ second$$
$$maximum\ flow = 600\ l\ per\ minute$$

The default setting of 1KHz should be sufficient for most applications. In applications where the maximum flow rate is lower and the 3rd party controller is only able to read pulses at a lower frequency then a lower frequency output can be selected.

Note that if the flow rate exceeds the maximum pulse output the next transaction will not be allowed until the pulses have completed being outputted.

Duty Cycle

The duty cycle setting gives the ability to set the percentage of the pulse high and low. The default setting is 50%. The pulse length is determined by the following formula.

Example

Duty cycle set to 50%
Frequency set to 1KHz (1000 pulses/sec)

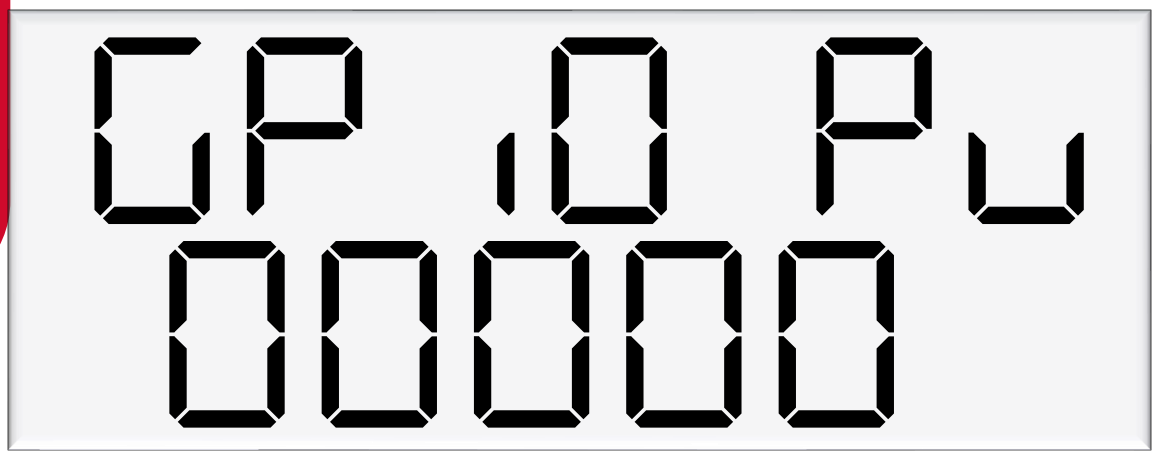
$$Duty\ Cycle = Pulse\ Width\ (sec) \times Frequency\ (Hz) \times 100$$
$$50 = Pulse\ Width\ (sec)\ \times 1000 \times 100$$
$$\frac{50}{100} = Pulse\ Width\ (sec)\ \times 1000$$
$$\frac{0.5}{1000} = Pulse\ Width\ (sec)$$
$$500\ microseconds = Pulse\ Width\ (sec)$$

The Default setting of 50% should be sufficient for most applications.

Pulse value

The pulse value setting sets what a pulse is worth. When the output is set to volume the lowest volume a pulse can be set to is 00001 which is 0.1 ml. If the output is set to amount the lowest amount a pulse can be set to is 00001 which is 0.0001 dollars.

The most common setting for most applications would be 00100 or a factor of 10. Any other setting would cause an error with rounding.



Commissioning

Electrical

This procedure outlines how to perform an electrical operational test, making sure that the dispenser is functioning correctly. Check for any damage that may have occurred in transit. Check all terminals, plugs, and chips to make sure that they are securely in place.

NOTE: *Damage to electronics occurs most commonly from vibration and jarring.*

Before beginning this test, check that fuel has **not** been applied to the dispenser. The factory set-up information should be programmed into the dispenser, but all K-factor and Parameter switch settings should be checked and confirmed before commissioning tests are carried out.

Check that pump number is set (see page 26.)

Check the pump price is set (see page 27.)

For the location of LEDs, required for this operations test, see page 54.

To perform an electrical operational test:

1. Make sure that the inlet shut-off valves are closed (these are the valves in the inlet lines at the base of the dispenser, but they are not part of the dispenser).
2. Turn on the power supply to the dispenser.
3. With the dispenser in a **ready state**, check that the C5000 processor board Power LED is turned on.

NOTE: *If the dispenser is receiving information, RD LED on the K-Factor board will be on. If the dispenser responds to polls for its respective pump number/s, TD LED will also be on.*

4. Lift the nozzle. The display will show 888888 and the solenoids will energise, starting the pump motor. Check that T1-3 (side A) or T4-6 (side B) turn on, indicating a signal is being sent to the triacs to open the solenoid valves.
5. The diagnostic LED (K-factor board) flashes quickly when the start button is pushed, or the nozzle removed from the holster to initiate a fill. When the button is released or nozzle returned to the holster it will return to the normal state and flash slowly.
6. Verify solenoid operation by listening for a click, or by using a screwdriver tip or some other metallic tool to check for a magnetic field present on the solenoid coils.

Mechanical

The following mechanical commissioning instructions are for liquid fuel pumps and dispensers. If LPG, CNG, or AdBlue is being dispensed, refer to the specific manuals for these.

Make sure that the electrical commissioning tests have been carried out and the solenoid operation has been verified before carrying out the following tests.

Ensure the power supply to the dispenser is turned on, and lift the nozzle. Check all the dispenser fittings, solenoids and pipework for leaks.

Check all bungs have been removed.

Perform test transactions to ensure flow rate is within acceptable ranges and the dispenser is correctly measuring fuel.

If a preset is required, perform test transactions with presets and ensure they are working correctly.

Calibrate the unit with the K-Factor (see page 16.)

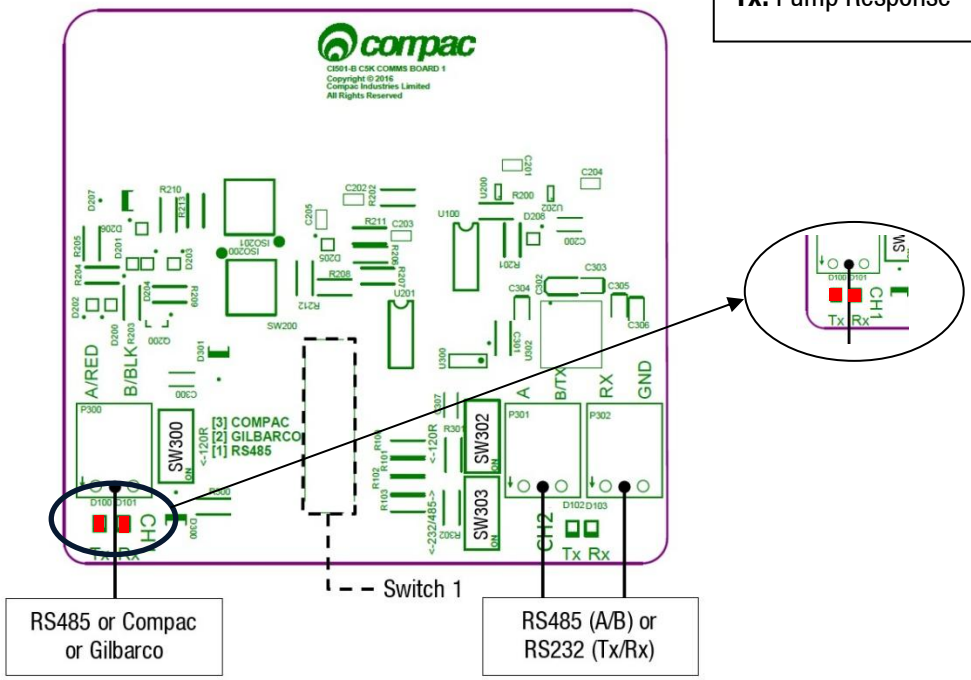
LED Diagnostics

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.

Comms board CI501

Rx: Poll from Controller

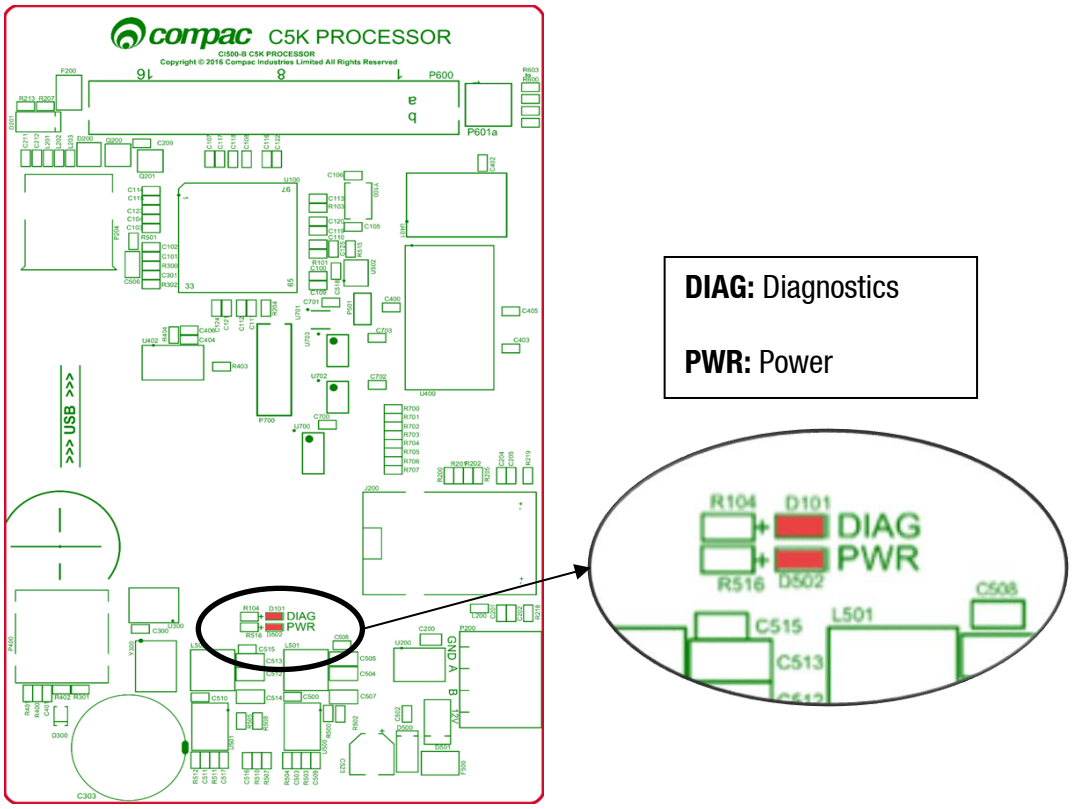
Tx: Pump Response



Comms board CI501 LEDs	Operation/Possible Cause
Tx and Rx	**Er41, Er 41 or Error 41** means that there is a communication problem between the Pump and the Controller. You can get more detail on what is causing the problem by looking at the two diagnostic LEDs on Comms channel 1 (CH1). These are labelled Tx and Rx and are located next to Comms Terminals P300. These are used for both Compac and Gilbarco communications but work differently when there is a fault.

Compac Comms	Rx = Poll from the Controller Tx = Pump Response When working normally, both Rx and Tx LEDs flash If more than one pump is connected, Rx will flash for the number of pumps connected between each Tx flash For example, if there are three pumps connected, Rx should flash 3 times for each Tx flash (on the pump that you are working on.)
Compac comms **Faults:**	1. Neither Tx nor Rx are flashing: *The Controller is either not working or there is no comms connection between and the Controller and the Pumps* 2. Rx flashes but Tx is not flashing: *Controller is polling the pump but the pump is not responding due to a fault or configuration issue eg. No pump number set.* 3. Rx stuck hard on faintly blinking: *Comms cable Tx and Rx wires are reversed - Reverse the comms wire connections.*
Gilbarco comms	Rx = Poll from the Controller Tx = Pump Response When working normally, both Rx and Tx LEDs flash Note: for Gilbarco comms, Tx and Rx flash very fast
Gilbarco comms **Faults:**	1. Rx stuck hard on - Tx off and not flashing: *The Controller is either not working or there is no comms connection between and the Controller and the Pumps* *Controller is polling the pump but the pump is not responding due to a fault or configuration issue* *Comms cable Tx and Rx wires are reversed - Reverse the comms wire connections.*

Processor Board



Processor Board LEDs	Operation/Possible Cause
Power	This should be on when there is power to the unit.
Diagnostics	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. 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. If the flashing lasts longer, the board is in bootloader mode – this means that the firmware has crashed, or not loaded correctly.

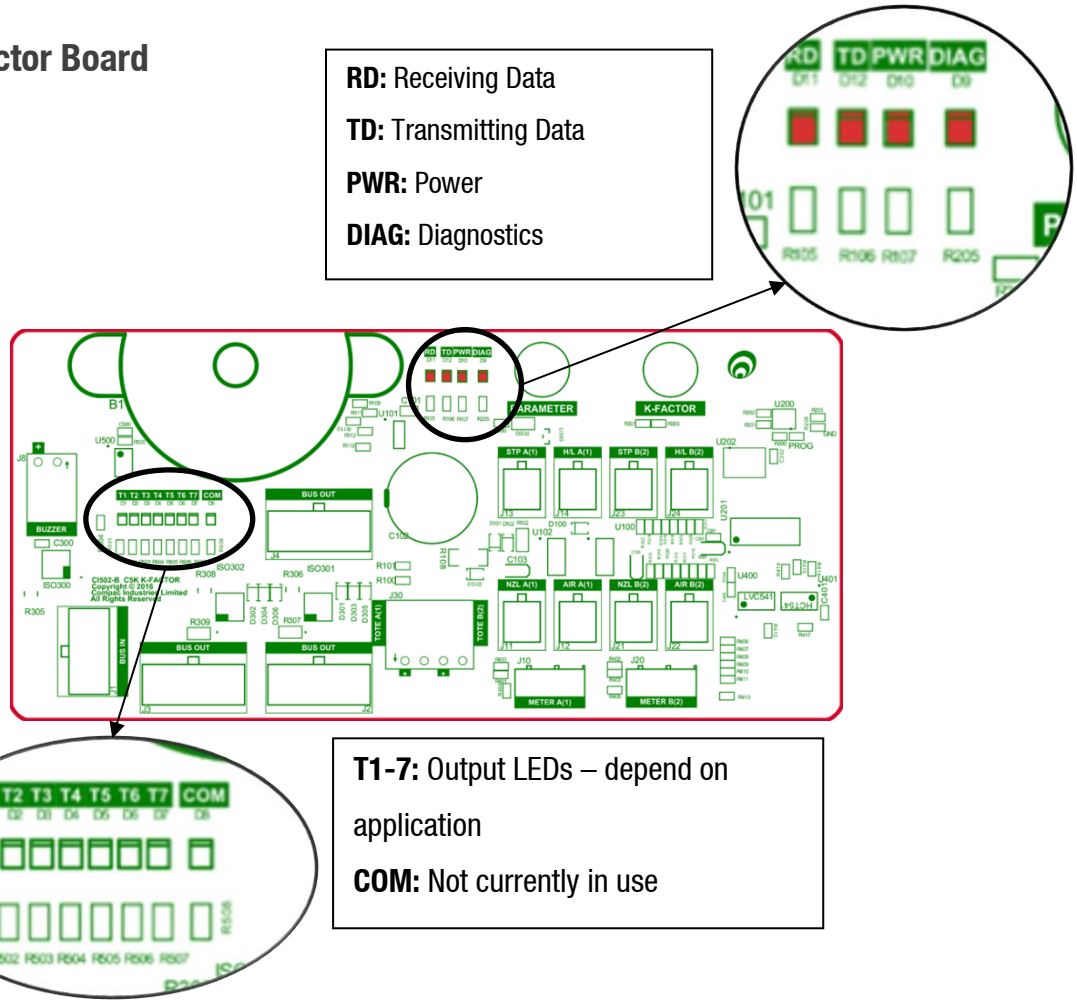
K-Factor Board

RD: Receiving Data

TD: Transmitting Data

PWR: Power

DIAG: Diagnostics



T1-7: Output LEDs – depend on application

COM: Not currently in use

K-Factor Board LEDs	Operation/Possible Cause
Power	This should be on when there is power to the unit.
Diagnostics	In normal operation, this should flash slowly, and then flash quickly when the nozzle switch is lifted.
Triac Output LEDs (T1-7)	These LEDs correspond to side A and B motors and solenoids. They will light up according to the hardware they represent. See the following table for the output LEDs for each application.
Receiving data/ Transmitting 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 these is an error. This could be due to cabling – check the bus system cables.

K-Factor Board Output LEDs

The following table describes what each output LED represents for each mode. The output LED will light up when the corresponding outlet is engaged. Outputs for both side A and B are shown.

Mode	T1	T2	T3	T4	T5	T6	T7
Single	Motor A	Primary Solenoid A	Secondary Solenoid A	High Flow A			High Flow A
Dual	Motor A	Primary Solenoid A	Secondary Solenoid A	Motor B	Primary Solenoid B	Secondary Solenoid B	High Flow A
Dual 160	Motor A	Primary Solenoid A	Secondary Solenoid A	High Flow B	Primary Solenoid B	Secondary Solenoid B	High Flow A
Dual HLB	Motor A	Primary Solenoid A	Secondary Solenoid A	Motor B	Primary Solenoid B	Secondary Solenoid B	High Flow B

Troubleshooting

Electrical

No Power

- Check power to dispenser/pump unit.
- Check Power LED on processor board.
- Check connections.
- If Power LED is off, check for a short on intrinsic devices by unplugging each device until the Power LED lights up.
- Check Power Supply fuses.
- Replace C5000 if fault not found.

No comms

- Check comms cable connections
- Check operation of LEDs as detailed in Comms board CI501 LED Diagnostics section

Pump Cuts Out

- Check end of sale indicator in the pump number setting on the parameter switch to determine what ended the fill.
- Check Diagnostics LED on the processor board to see if there is a software issue.
- If Diagnostic LED is off, check that memory chips are firmly in their sockets.
- Replace C5000 if LED is on after repowering unit.

Pump Not Starting

- Check Triac fuse.
- Check all pump motor connections.
- Check pump motor.
- Check wiring.
- Select a spare High Current Solid State Relay if the above checks are okay.
- On the K-Factor board, if the output LEDs are off, check nozzle switch, the nozzle switch is working if the Diagnostic LED flashes faster when switch is on.
- Check Display connection.
- Replace C5000 if fault not found.

Pump Not Stopping

- Check nozzle switches are releasing, the nozzle switches are working if the Diagnostic LED on the K-Factor board flashes faster when switch is on.
- If Output LEDs are off, select a spare High Current Solid State Relay.
- Replace C5000 PCB if fault not found.

Solenoid Not Energising

- Check Triac fuse.
- Check all Solenoid connections.
- Check Solenoid.
- If output LEDs on the K-Factor board are off, check nozzle switch operation, the nozzle switches are working if the Diagnostic LED flashes faster when switch is on.
- Select a spare Low Current Solid State Relay if the above checks are okay.
- Replace C5000 if fault not found.

Solenoid Not De-energising

- If output LEDs on the K-Factor board are on, check nozzle switch is releasing, the nozzle switch is working if the Diagnostic LED flashes faster when switch is on.
- Select spare Low Current Solid State Relay.
- Replace C5000 if fault not found.

Preset Display Digit Flashing

- Check if any preset buttons are stuck in.
- Check wiring & condition of display plugs.
- Replace if fault not found.

PIN Pad Not Working

- Check that the unit is communicating with the controller using the RD/TD LEDs.
- Check connectors are fitted correctly and free of dust.
- Replace if fault not found.

Mechanical

Pre-Set Overrun

- Solenoid blocked and cannot close or has a damaged piston.
- Solenoid coil wired incorrectly. Check solenoid orientation.
- P-cut setting too low. Adjust P-Cut setting.

Calibration Problems

- Check that configuration is correct for calibration method - i.e., temperature compensation on or off.
- Check that filter is not dirty.

Solenoid Valve Not Opening

- Check the output LEDs on the K-Factor board.
- Check the electrical supply to the coil. Check the C5000 output triac is switched on. There should be 220 – 240 volts across the solenoid coil.
- Put power on the solenoid and hold a screwdriver above the coil to feel the magnetic field pull. Because of the construction of the coil a resistance reading cannot be obtained.

Software Upgrade

Dispenser Software Upgrade/Replacement

You can upgrade the dispenser software via USB Stick. Make sure the USB stick is formatted as FAT32 and has the new dispenser software loaded on it.

CAUTION: Before working on the dispenser electronics, take basic anti-static precautions by wearing a wristband with an earth strap.

To record set-up data and tote information:

- Access the K-Factor board by opening the cover behind the main display.
- Record all the set-up data by accessing the **Parameter** switch and the **K-Factor** switch. Refer to Parameter Switch Settings and K-Factor Switch Settings to obtain this information.

  The following data is required from the **Parameter** switch :
  - Dispenser pump price.
  - Dispenser pump number.
  - Dispenser Setting
  - Software Program number, if you are upgrading to a new version.

  The following data is required from the **K-Factor** switch:
  - The K-Factor. There is a value for side A and side B in dual hose dispensers.
  - Configuration Code C.
  - The Density Factor.

- Record the tote information by pressing the nozzle switch or start button quickly five times

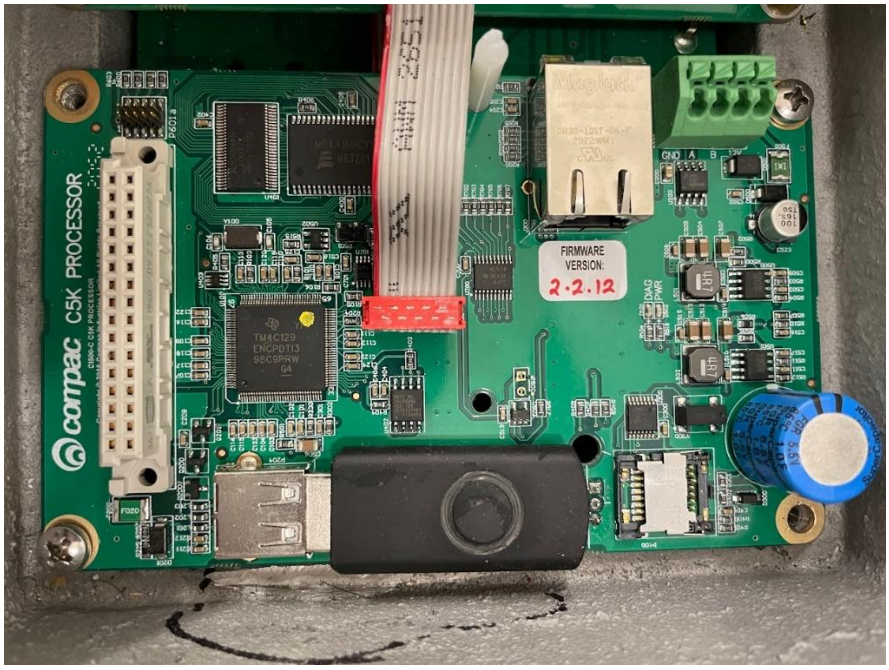
To install the new C5000 software

1. Switch off the power supply to the dispenser.

DANGER: Never remove any electrical components without first switching off the power to the dispenser. Failure to turn off the power could result in an electric shock.

2. Remove the flameproof box lid to gain access to the C5000 Processor board.

3. Install the USB stick for the software that you want to install. If there is a coms or GPIO card installed on the C5000 processor board, you might have to remove it.



4. Re-install the lid on the flameproof box

DANGER: Before replacing the lid on the flameproof box, make sure that the O-ring is not damaged, and is seated properly in its groove. If the O-ring is damaged and needs replacing, replace it with an O-ring of the same size and specification (**176 N70**).

5. Switch on the power supply to the dispenser.
6. The Display will display hold. The display will change from hold to calib, this mean that the software has been upgraded.

7. Press the K-Factor board button on the K-Factor board to clear the caib from the display and sync the K-Factor board settings will the C5000 processor board.

8. Check the Dispenser operation.

Generator Power

The power output from onsite generators can cause power spikes that may damage electrical components within the cabinet.

Although generators are fitted with power regulators, most are not filtered sufficiently for powering sensitive electrical components. We recommend installing a commercial power conditioner and/or UPS between the generator and the unit.

Start Up:

- Before starting a generator, make sure the power to the unit is turned off.
- Start the generator, let the generator reach stable operating speed and wait 30 seconds before reconnecting the power to the unit.

For units where the generator starts and stops on demand, install a delay timer or PLC to automatically isolate the unit until the operating speed and consistent power output is achieved.

Isolate the unit before shutting down the generator.