Installation, Operation and Servicing Manual

Version 1.0.0

Models:
SMART Lite Storage | SMART Lite M-Pulse |
SMART Plus Storage | SMART Plus M-Pulse | SMART Plus Home Base
SMART Plus Fuel Management | SMART Plus Heating | SMART Plus Twin
SMART 5000 Storage | SMART 5000 M-Pulse | SMART 5000 Home Base
SMART 5000 Fuel Management | SMART 5000 Heating | SMART 5000 Twin

GREENCHEM

SMART SYSTEMS

DATED: JUNE 2020

CONTENTS PAGE

1. Introduction

This manual contains specific instructions and information relating to the installation, operation and maintenance of GreenChem SMART systems.

2. Conditions of use

- Read this manual before installing this system.
- Greenchem accepts no liability for personal injury or property damage resulting from working on or adjusting the equipment incorrectly or without authorisation.
- Greenchem accepts no liability for direct, indirect, incidental, special, or consequential damages resulting from failure to follow any warnings, instructions, and procedures set out in this manual.
- Greenchem 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 SMART systems performance. Greenchem makes no representations or warranties concerning the performance of the tank system under the operating conditions prevailing at the installation.
- Only parts supplied by or approved by Greenchem must be used and no unauthorised modifications to the hardware or software should be made. The use of non-approved parts or modifications will void all warranties and approvals and could lead to hazardous safety conditions.
- Unless otherwise noted, references to brand names, product names, or trademarks constitute the intellectual property of the owner thereof.

3. Safety

PLEASE READ THIS MANUAL CAREFULLY BEFORE USE & COMPLY WITH ALL INSTRUCTIONS BELOW.

THIS MANUAL SHOULD BE KEPT WITH THE EQUIPMENT AT ALL TIMES.

1. The major hazard involved with installing and operating the unit is electrical shock.

2. This hazard can be avoided if you adhere to the procedures in this manual and exercise all due care.

3. Installation and use of this product should only be carried out by properly trained and approved personnel.

4. Please refer to storage media MSDS which should be supplied by the proprietor of this system which will detail the PPE required for handling and emergency procedures.

5. The user of this product is responsible for the safe and correct use of this product.

6. This product is only suitable for storage and/or dispensing of the liquid media referenced at the point of sale.

4. Product description

GreenChem SMART systems are designed solely for storage and dispensing of AdBlue®. The tank enables safe AdBlue® storage outdoors, at a safe distance from buildings and Atex hazardous zoned areas. The tanks have high resistance against mechanical impact and protection against frost and heat due the “tank in tank” construction with optional inbuilt heating to suit variable temperature and weather conditions. The high standard of specification ensures optimum safety and functionality. Please bear in mind that this product is not Atex approved nor is weights and measures approved.

4.1 Product identification

The identification plate is located within the cabinet of each system and will detail the capacity and serial number.

4.2 Product specification

	SMART LITE Storage	SMART LITE M-Pulse
Capacity	2300 litres	2300 litres
Length	1520 mm	1520 mm
Width	1300 mm	1300 mm
Height	2420 mm	2420 mm
Weight (approx.)	300 kg	300 kg
Bund material	Thermoplastic construction high density polyethylene	
Inner tank material	Lower Linear Density Polyethylene	
Description	Bunded AdBlue® SMART range	
Fill point	2” stainless steel dry break coupling	
Access	Stainless steel access door	
Delivery line	1” stainless steel	
Voltage	230V	
Ventilation	2x 2” screened vents	
Flow rate (approx.)	40lpm	Truck - 40lpm Passenger - 7lpm
Flowmeter	-	Pulse meter and remote display
Delivery hose	-	4 metres
Heating (optional)	-	-
Hose reel (optional)	-	-
Nozzle	-	Automatic shut off nozzle

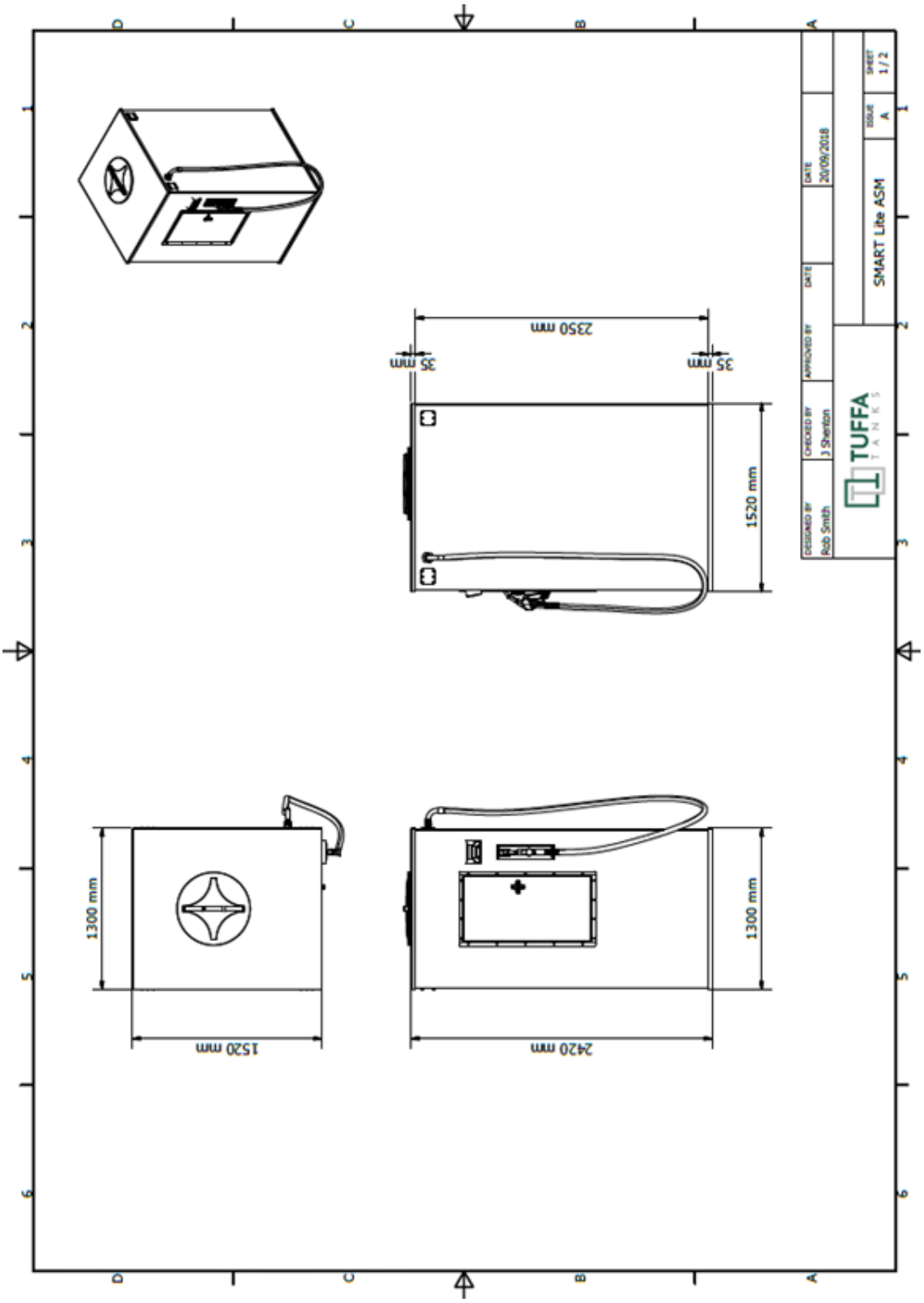
	SMART Plus Storage	SMART Plus M-Pulse	SMART Plus Fuel Management	SMART Plus Home Base / Twin / Heating
Capacity	3300 litres	3300 litres	3300 litres	3300 litres
Length	2440 mm	2440 mm	2440 mm	2590 mm
Width	1120 mm	1120 mm	1120 mm	1120 mm
Height	2310 mm	2310 mm	2310 mm	2310 mm
Weight (approx.)	440 kg	440 kg	440 kg	480 kg
Bund material	Thermoplastic construction high density polyethylene			
Inner tank material	Lower Linear Density Polyethylene			
Description	Bunded AdBlue® SMART range			
Fill point	2” stainless steel dry break coupling			
Access	Stainless steel access door			
Delivery line	1” stainless steel			
Voltage	230V			
Ventilation	2x 2” screened vents			
Flow rate (approx.)	40lpm	Truck - 40lpm Passenger - 7lpm	40lpm	
Delivery hose	-	4 metres	4 metres	8 metres (Twin 2x 4 metres)
Heating (optional)	-	-	-	Space heater in cabinet in bund controlled by thermostat
Hose reel (optional)	-	-	-	Stainless steel
Nozzle	-	Automatic shut off nozzle		

4.2 Product specification

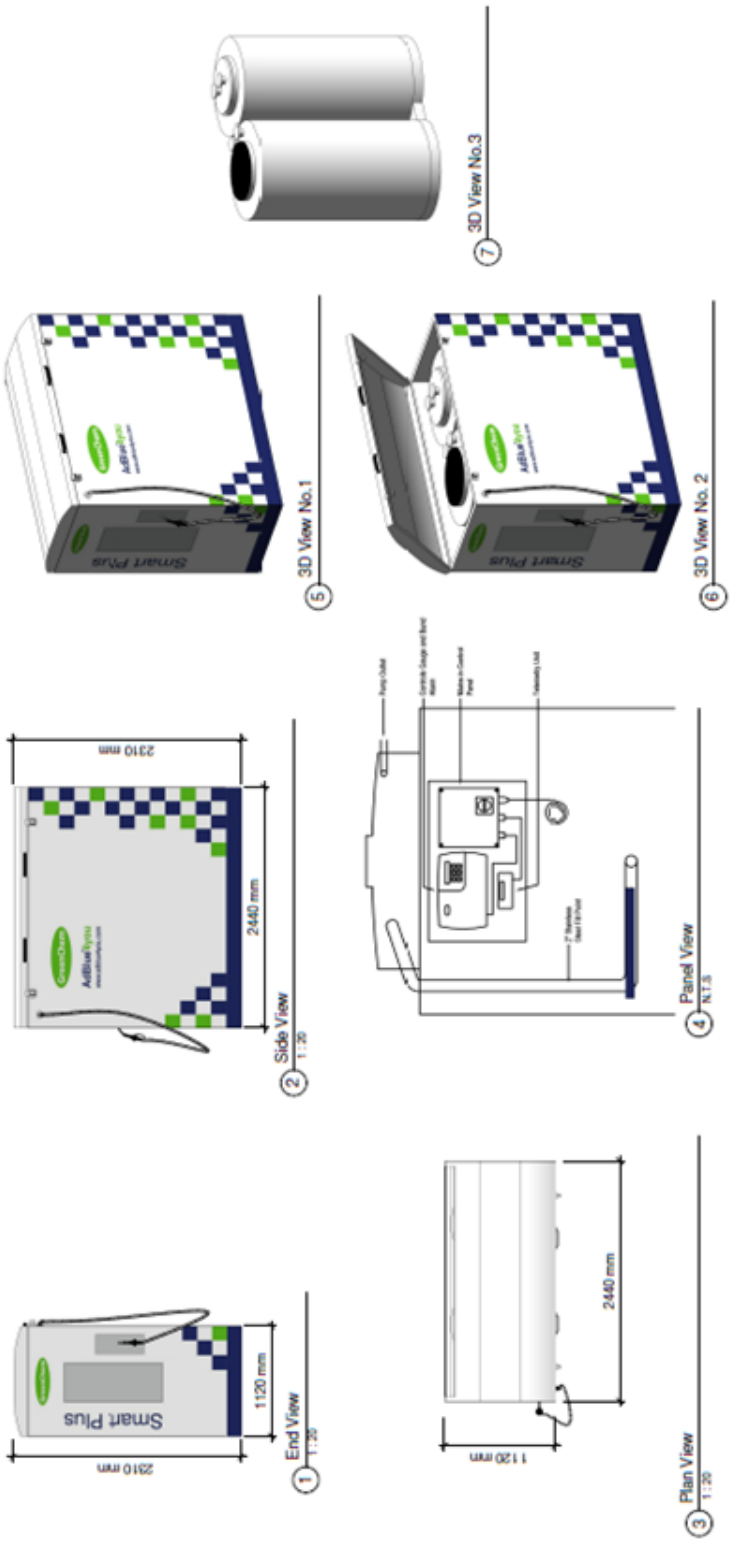
	SMART 5000 Storage	SMART 5000 M-Pulse	SMART 5000 Fuel Management	SMART 5000 Home Base / Twin / Heating
Capacity	3300 litres	3300 litres	3300 litres	3300 litres
Length	3540 mm	3540 mm	3540 mm	3690 mm
Width	1120 mm	1120 mm	1120 mm	1120 mm
Height	2310 mm	2310 mm	2310 mm	2310 mm
Weight (approx.)	590 kg	590 kg	590 kg	630 kg
Bund material	Thermoplastic construction high density polyethylene			
Inner tank material	Lower Linear Density Polyethylene			
Description	Bunded AdBlue® SMART Range			
Fill point	2” stainless steel dry break coupling			
Access	Stainless steel access door			
Delivery line	1” stainless steel			
Voltage	230V			
Ventilation	2x 2” screened vents			
Flow rate (approx.)	40lpm	Truck - 40lpm Passenger - 7lpm	40lpm	
Delivery hose	-	4 metres	4 metres	8 metres (Twin 2x 4 metres)
Heating (optional)	-	-	-	Space heater in cabinet in bund controlled by thermostat
Hose reel (optional)	-	-	-	Stainless steel
Nozzle	-	Automatic shut off nozzle		

4.3 Product dimensions

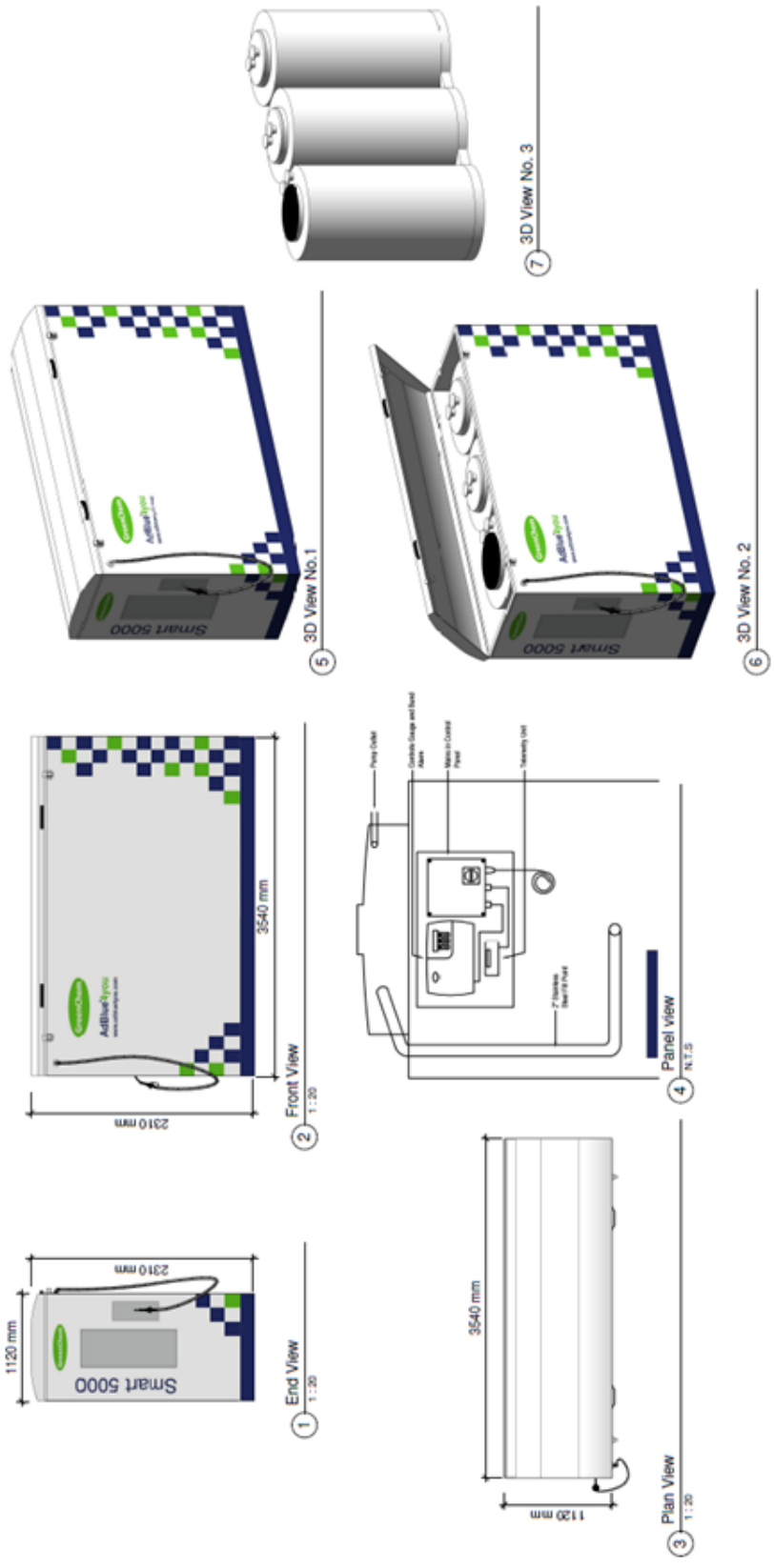
SMART Lite Storage | SMART Lite M-Pulse



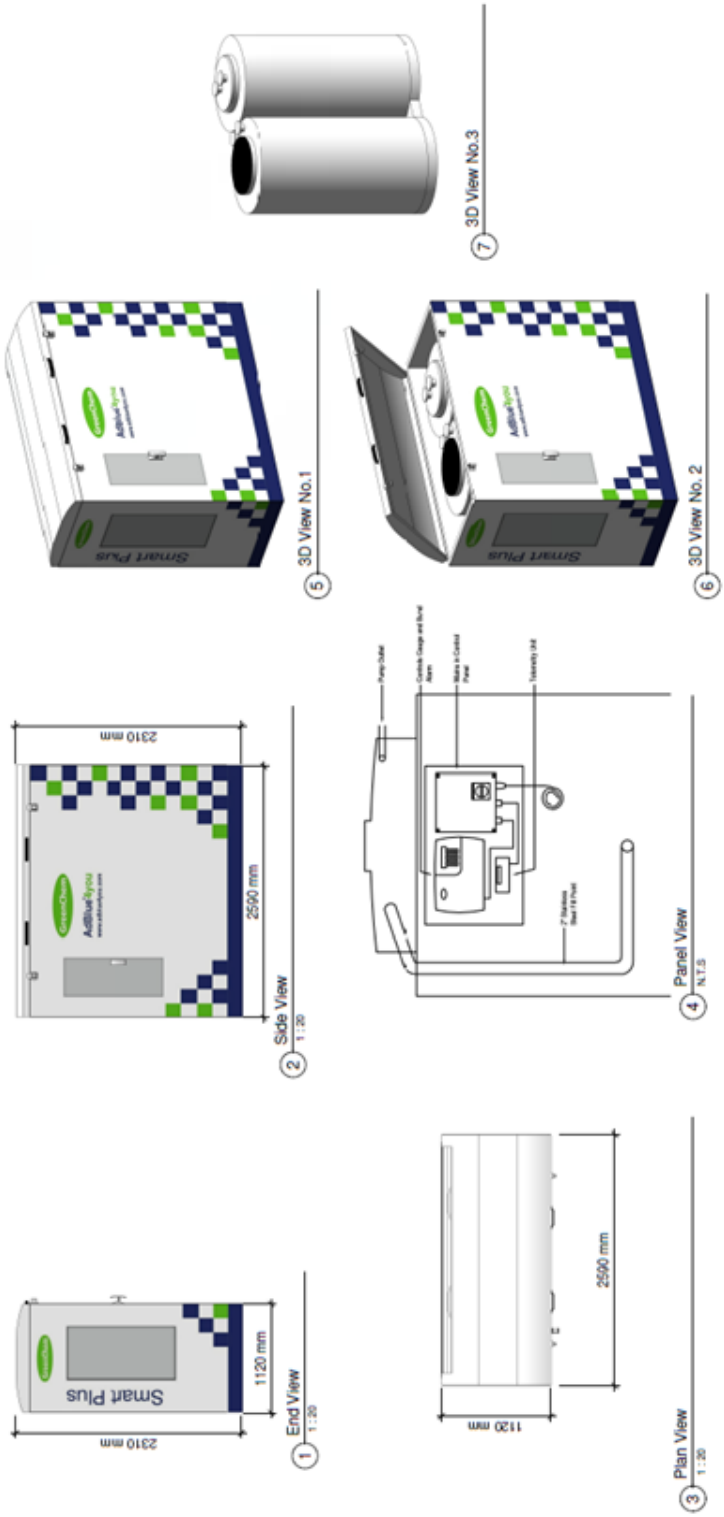
SMART Plus Storage | SMART Plus M-Pulse | SMART Plus Fuel Management



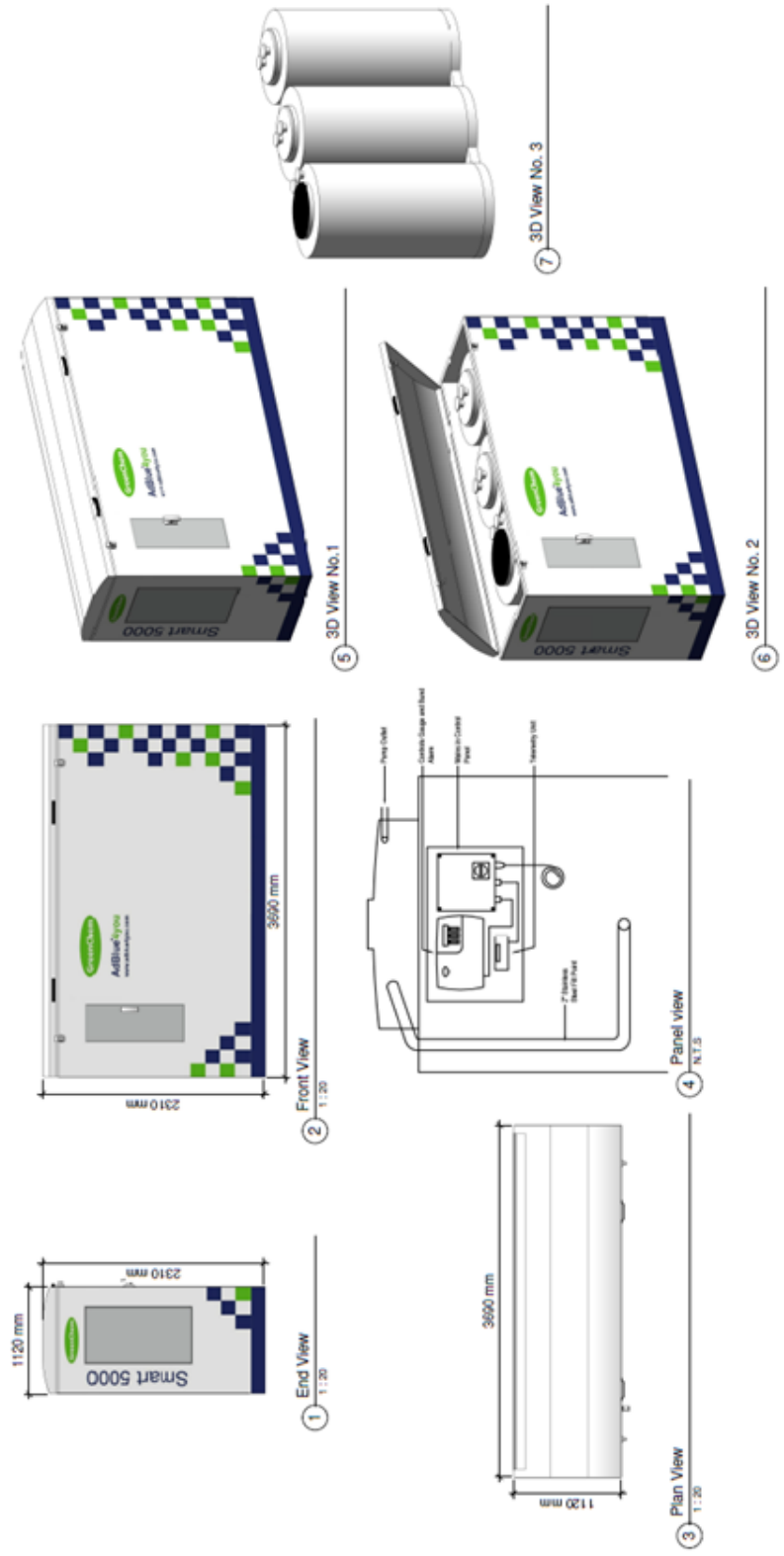
SMART 5000 Storage | SMART 5000 M-Pulse | SMART 5000 Fuel Management



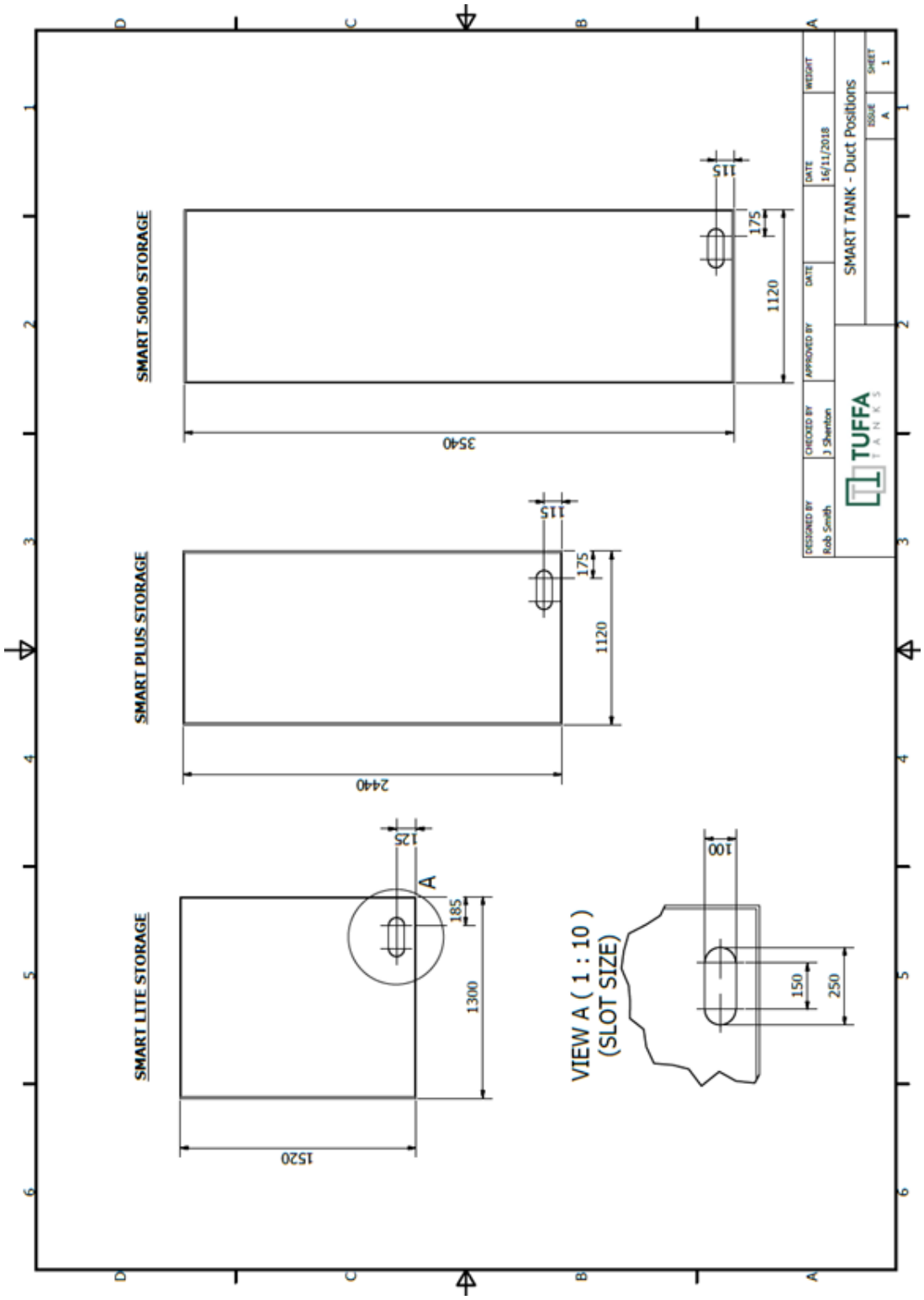
SMART Plus Home Base | SMART Plus Heating | SMART Plus Twin



SMART 5000 Home Base | SMART 5000 Heating | SMART 5000 Twin



SMART Duct Positions



5. Transport & storage

DO NOT TRANSPORT WITH LIQUID INSIDE THE TANK

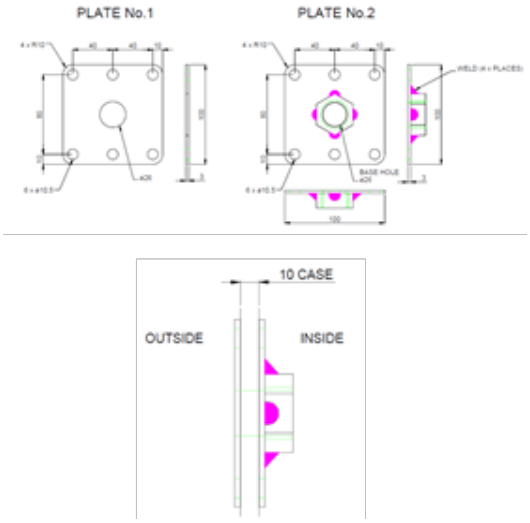
1. SMART systems must be transported with a minimum of 2 ratchet straps over the roof of the tank spaced with a suitable clearance between the tanks and secured to the bed of the vehicle to prevent movement.

2. During transportation the lid is secured by 2 x hasp and staples and 2 x R clips. The 2 x R clips must be installed prior to transportation.

3. The SMART systems must be protected against mechanical damage during transport and storage.

4. Loading and off-loading must be carried out using only professional equipment, either a forklift with extended forks/tines or a crane. If lifting slings are used, they must be attached to the lifting points as shown in the pictures below using a steel lifting eye insert.

5. The covers, sockets or other protruding elements, which are not designed for lifting or moving, must not be used to lift or move the systems.

	
Lifting points	Lifting points

6. The SMART systems must never be pushed or rolled.

7. During transport and storage, the door must be tightly closed and secured. The dispensing nozzle is secured into position using ties.

8. Loading and transport areas must be smooth and free of sharp edges.

6. Installation & commissioning

6.1 Installation guidelines

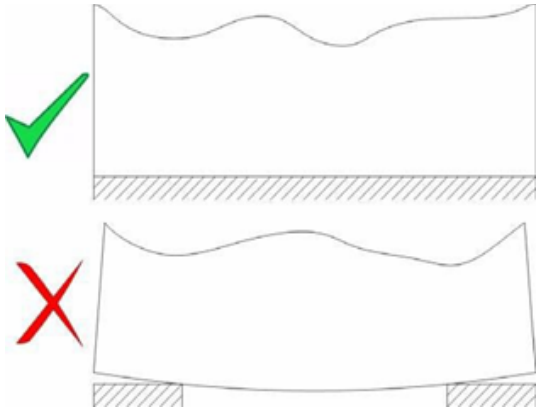
The SMART system user is responsible for complying with all legal requirements relating to the installation and use of this product, as well as the guidelines issued by local firefighting authorities and environmental authorities.

Once the SMART system is received on site, check that no damage has occurred while in transit – in particular, damage to electronics due to vibration or jarring. All terminals and plugs should be checked, including IC clips to ensure they are securely in place.

6.2 System installation

System foundation

The system must be installed and fully supported on a smooth levelled concrete base built in accordance with good building standards and engineering principles. Please refer to diagram below:



6.3 System location

The location of the system should be positioned by a road with sufficient width and loading capacity to accommodate a tanker delivering AdBlue®. Provision for the U-turn of a tanker should be considered. Potential obstacles in the form of tree branches, high voltage lines, or parked vehicles must be minimized. The delivery tanker is a 44 tonne articulated vehicle and suitable clearance must be allowed.

The space around the system should allow free and collision-free movement of served vehicles. There should be free space of minimum width 0.7m around the system and at least 1.2 m above the system to allow the roof to be raised for service and maintenance. Provision should be made to protect tank from impact damage.

6.4 Electrical requirements

Only qualified electrician or trained persons under supervision and surveillance of a qualified electrician according to applicable regulations may work on the electric wiring installation.

The system components under service, maintenance, and repair work must be disconnected from power supply. First check whether they are really disconnected, then earth them, bridge and insulate adjacent components under voltage.

- Power Cable: 5m 3 Core SY Steel Wire Armoured Cable 2.5mm²
- Core 1: 230 Volt Supply Active (Brown)
- Core 2: Neutral (Blue).
- Core 3: Earth (Green/Yellow)

System power requirements:

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

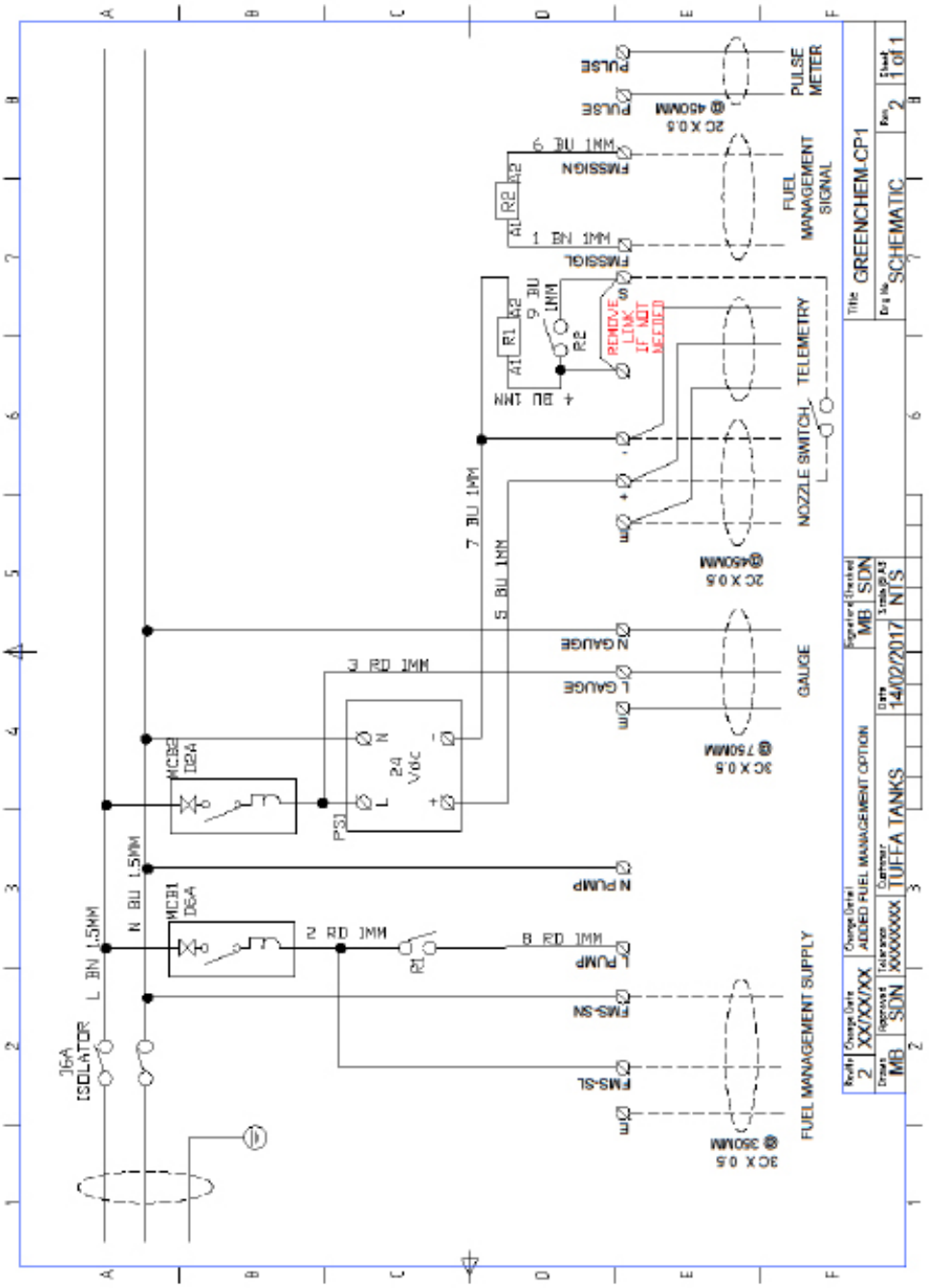
Current draw: All systems

- 5 amps running
- 20amps locked motor

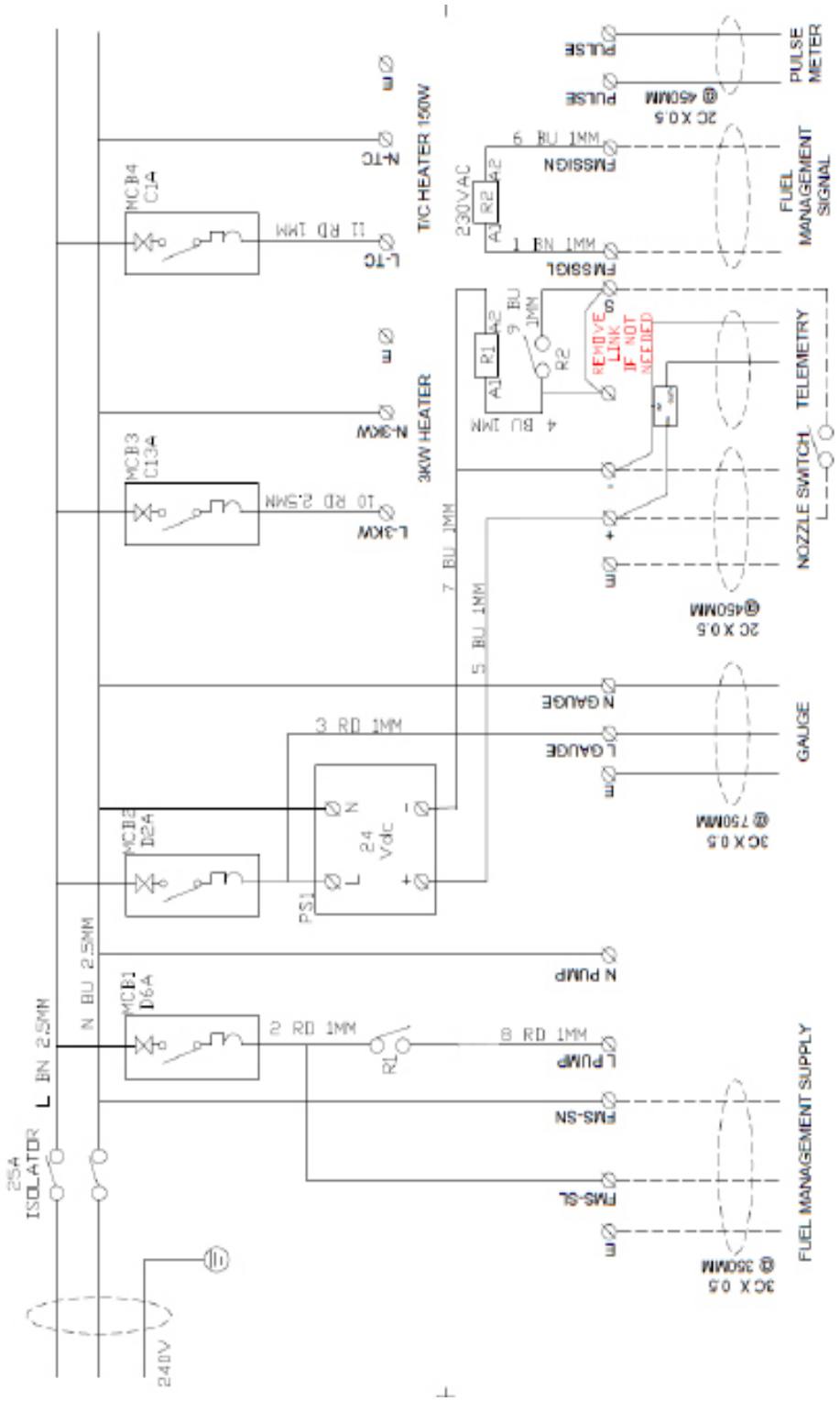
Mains power installation procedure:

6.5 Electrical connections diagram

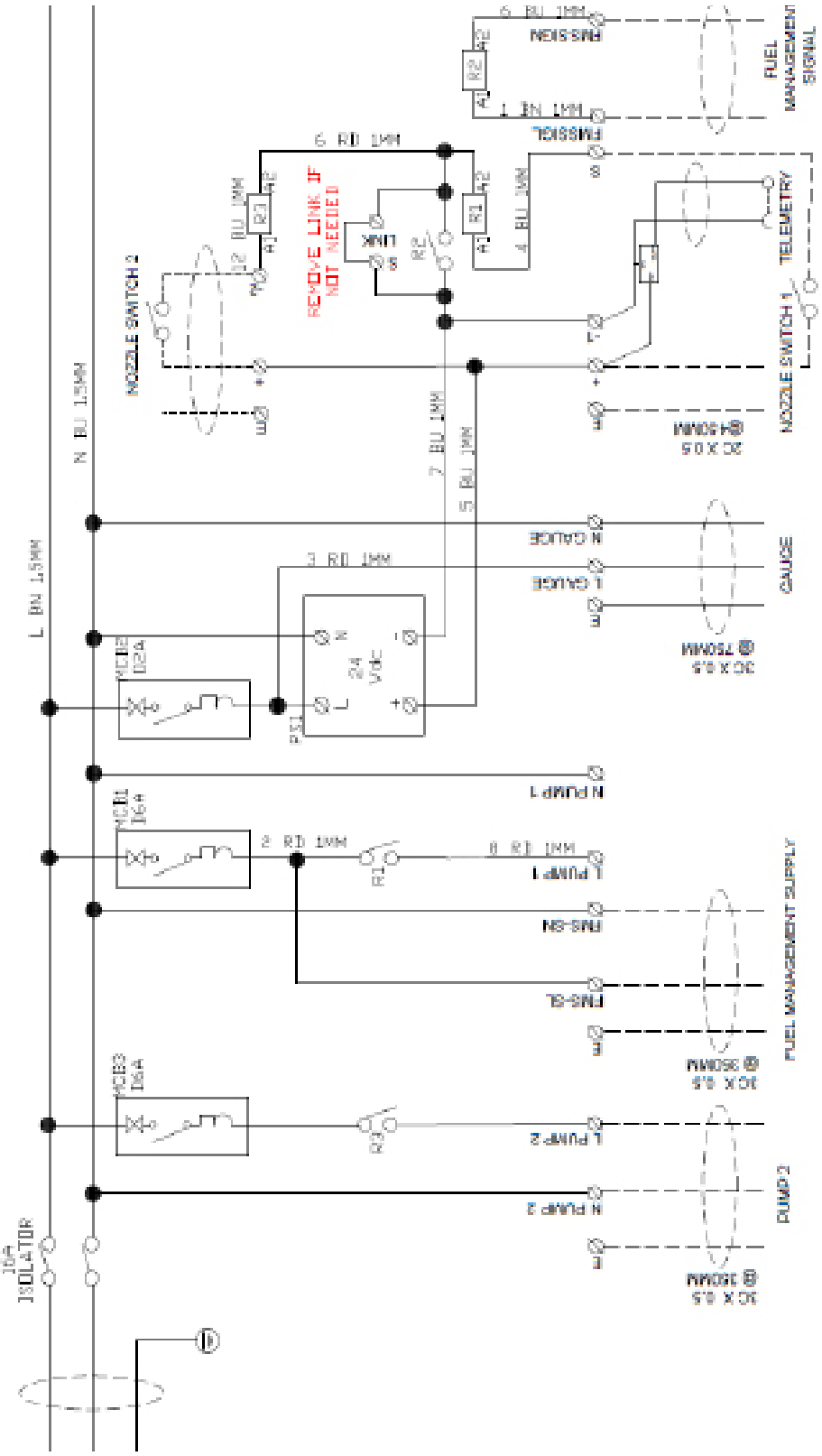
6.5.1 SMART Lite Storage | SMART Lite M-Pulse |
SMART Plus Storage | SMART Plus M-Pulse | SMART Plus Home Base |
SMART Plus Fuel Management |
SMART 5000 Storage | SMART 5000 M-Pulse | SMART 5000 Home Base |
SMART 5000 Fuel Management



6.5.2 SMART Plus Heating | Smart 5000 Heating

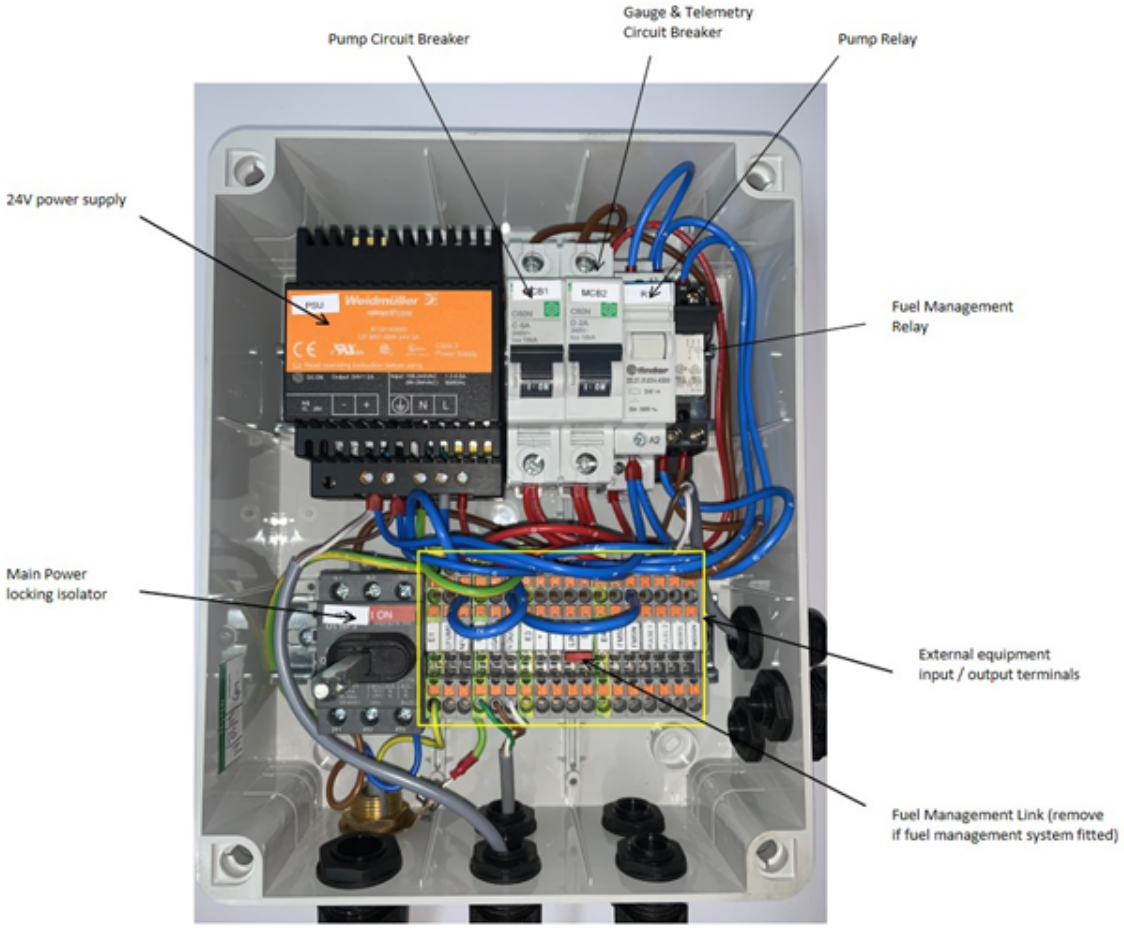


6.5.3 SMART Plus Twin | Smart 5000 Twin

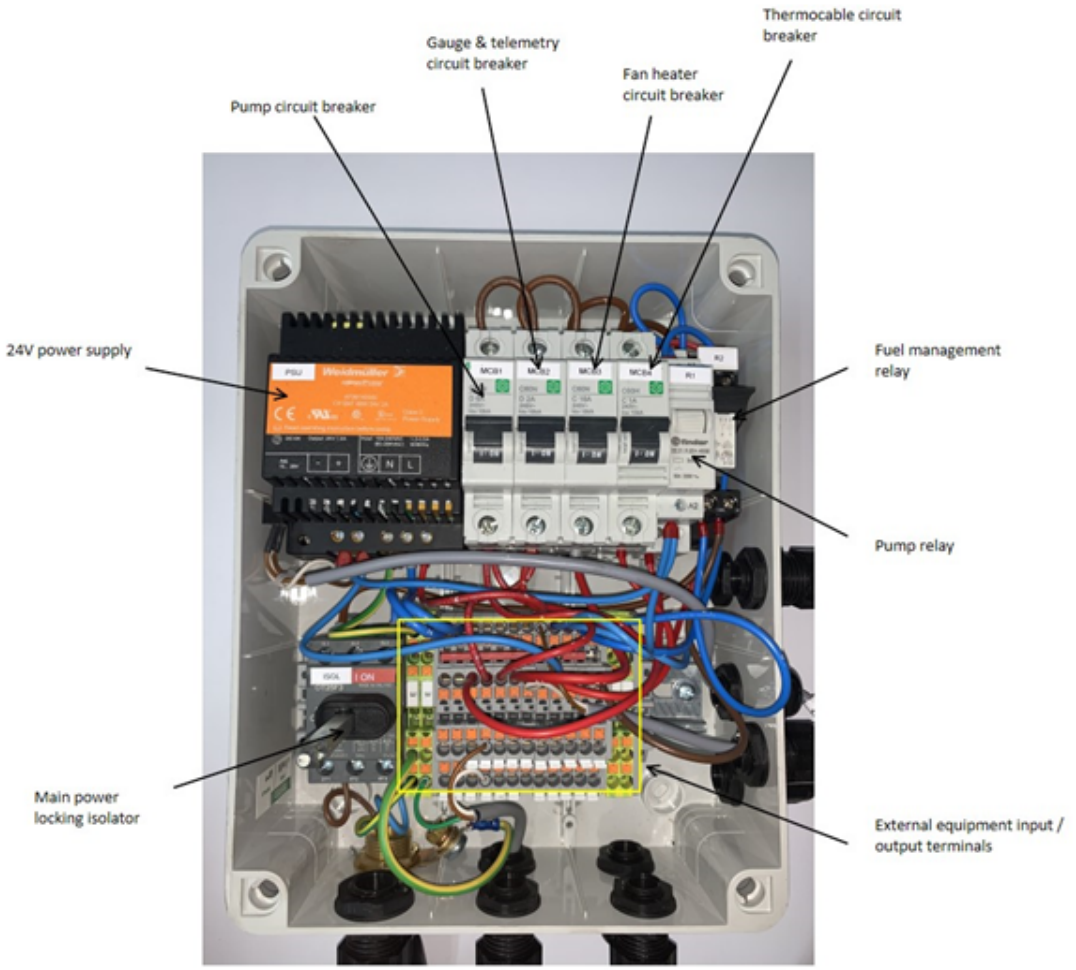


6.5.4 Mains power control panel electrical wiring picture

> Storage I M-Pulse I Fuel Management I Home Base I Twin



> Heating Control Panel



7. Operation of the system

The system and its components are intended for AdBlue® liquid only and for the purposes described below. Use of this system in a means other than described below is regarded as miss-use of the system, the user of the system will be liable for any defects that occur due to its unintended use.

7.1 Staff qualification

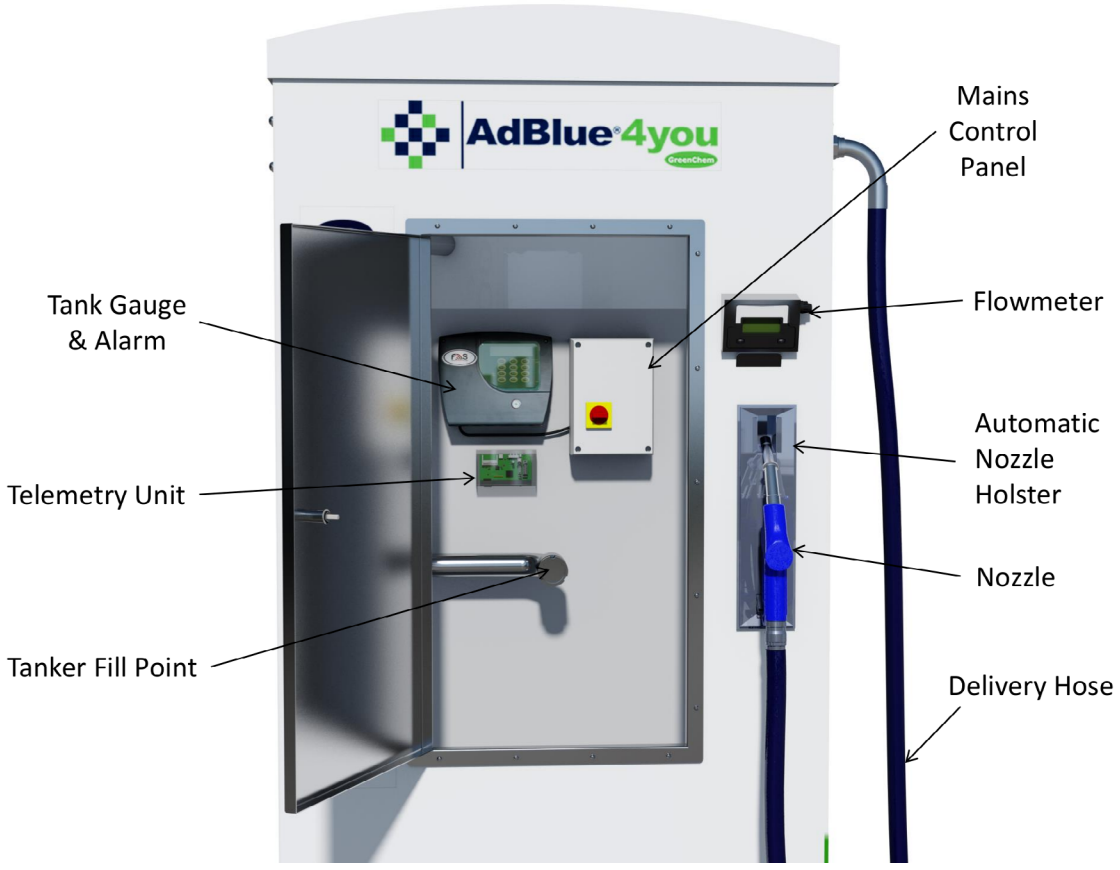
The operation, maintenance, and assembly personnel must be properly qualified for the works. The user must clearly define the range of responsibilities, competences, and supervision over the staff. Training should be given to any user who intends to operate or maintain the system. In addition to this, the user must make sure the staff fully understands the operations and maintenance sections of this manual.

7.2 Summary of main parts

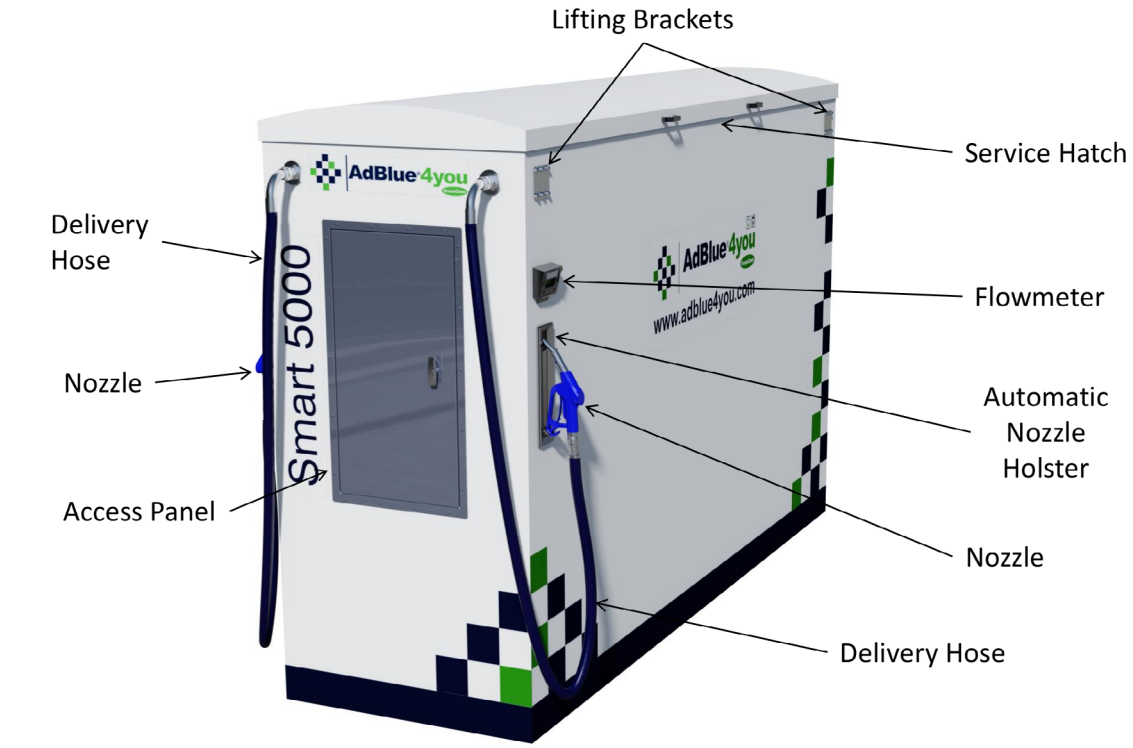
a). Storage

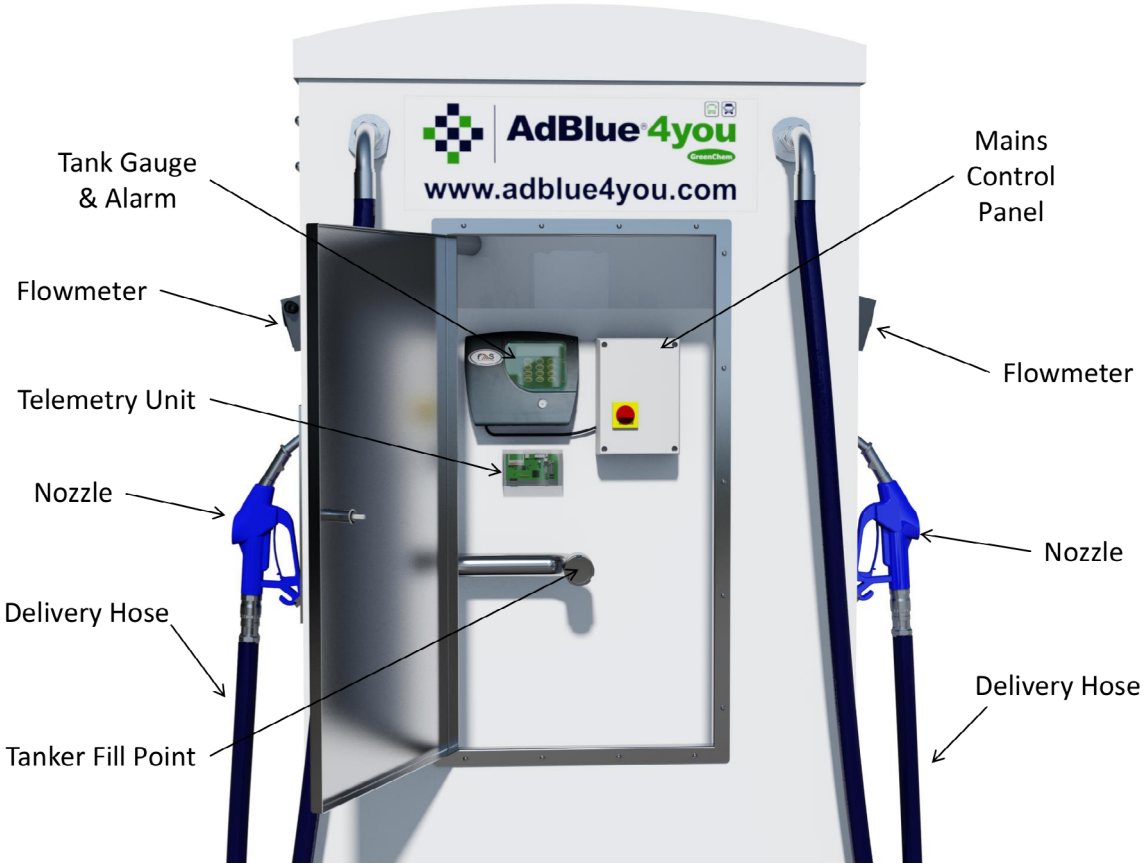
b). M-Pulse


Flowmeter
Lifting Brackets
Service Hatch
Delivery Hose
Access Panel
Automatic
Nozzle
Holster
Nozzle
Smart 5000
AdBlue 4you
www.adblue4you.com

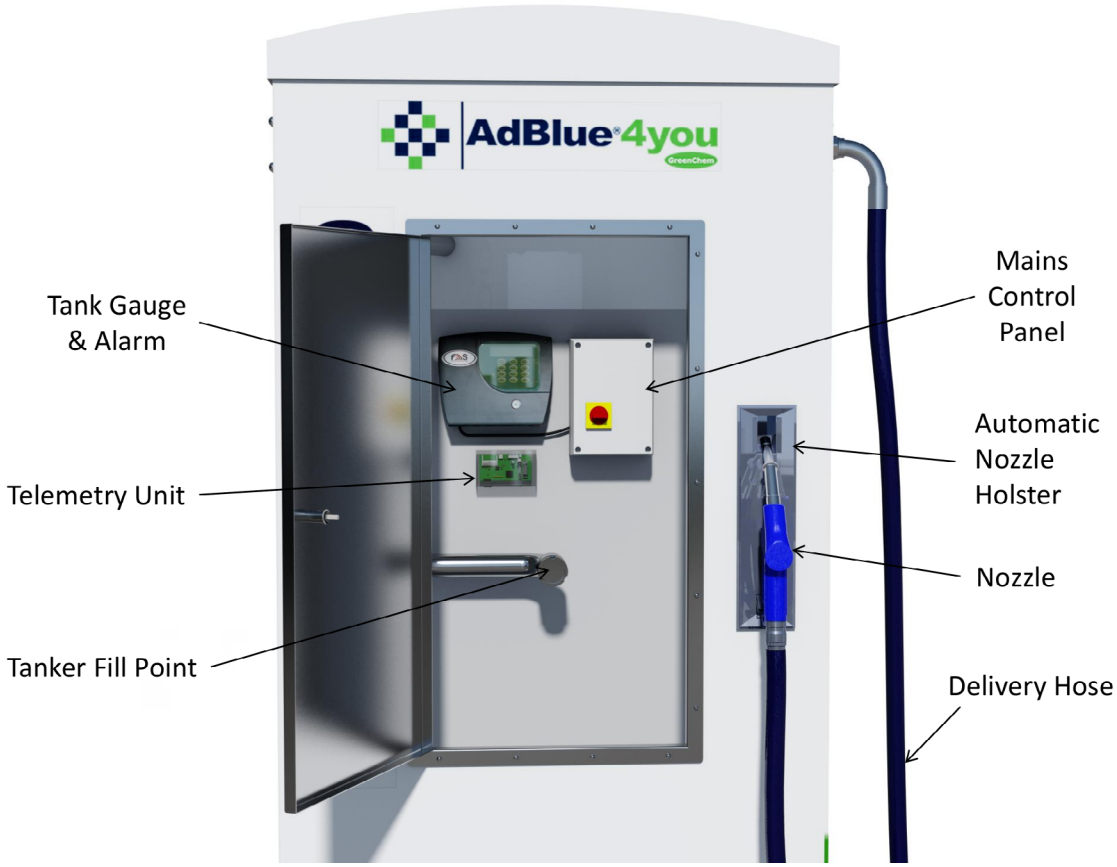

Mains
Control
Panel
Tank Gauge
& Alarm
Flowmeter
Automatic
Nozzle
Holster
Telemetry Unit
Nozzle
Tanker Fill Point
Delivery Hose
AdBlue 4you

c.) Twin

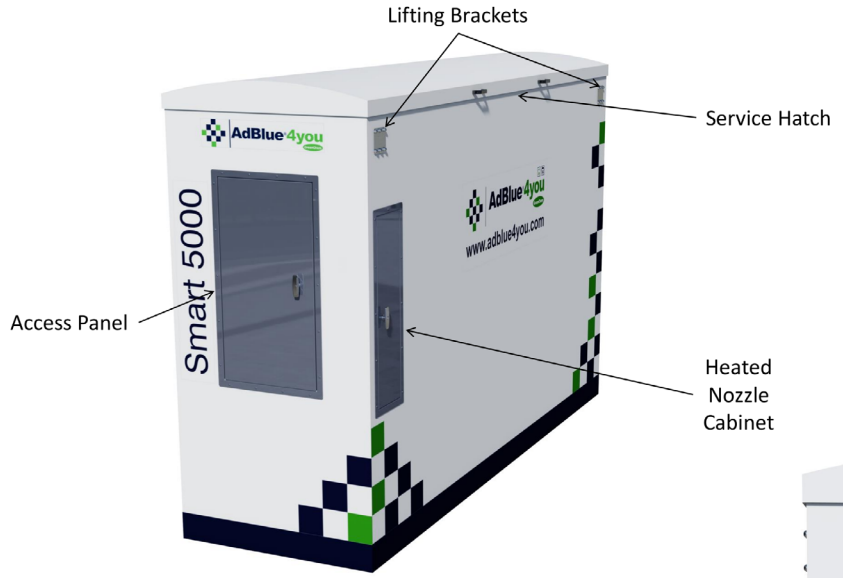

Lifting Brackets
Service Hatch
Delivery Hose
Flowmeter
Nozzle
Automatic Nozzle Holster
Access Panel
Nozzle
Delivery Hose
AdBlue 4you
Smart 5000
www.adblue4you.com

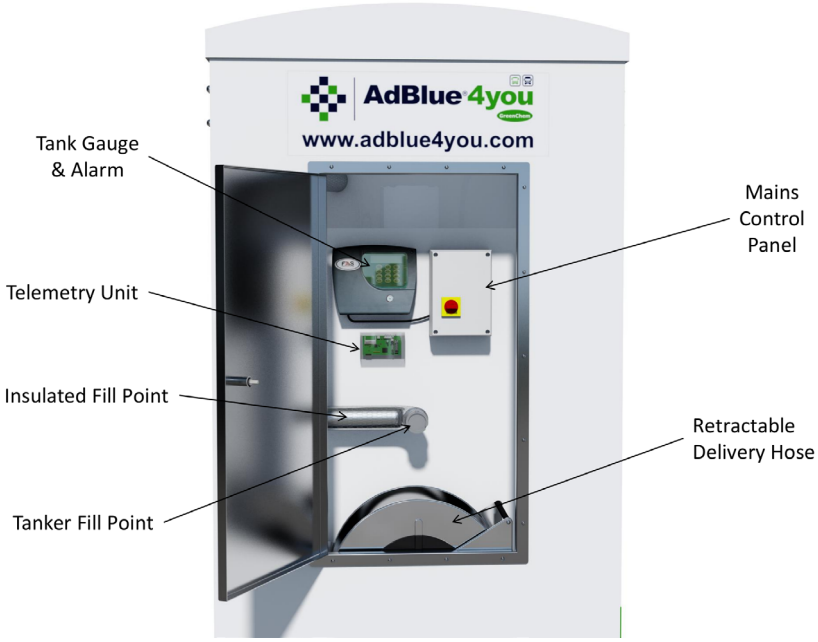

Tank Gauge & Alarm
Mains Control Panel
Flowmeter
Flowmeter
Telemetry Unit
Nozzle
Nozzle
Delivery Hose
Delivery Hose
Tanker Fill Point
AdBlue 4you
www.adblue4you.com

d). Fuel management



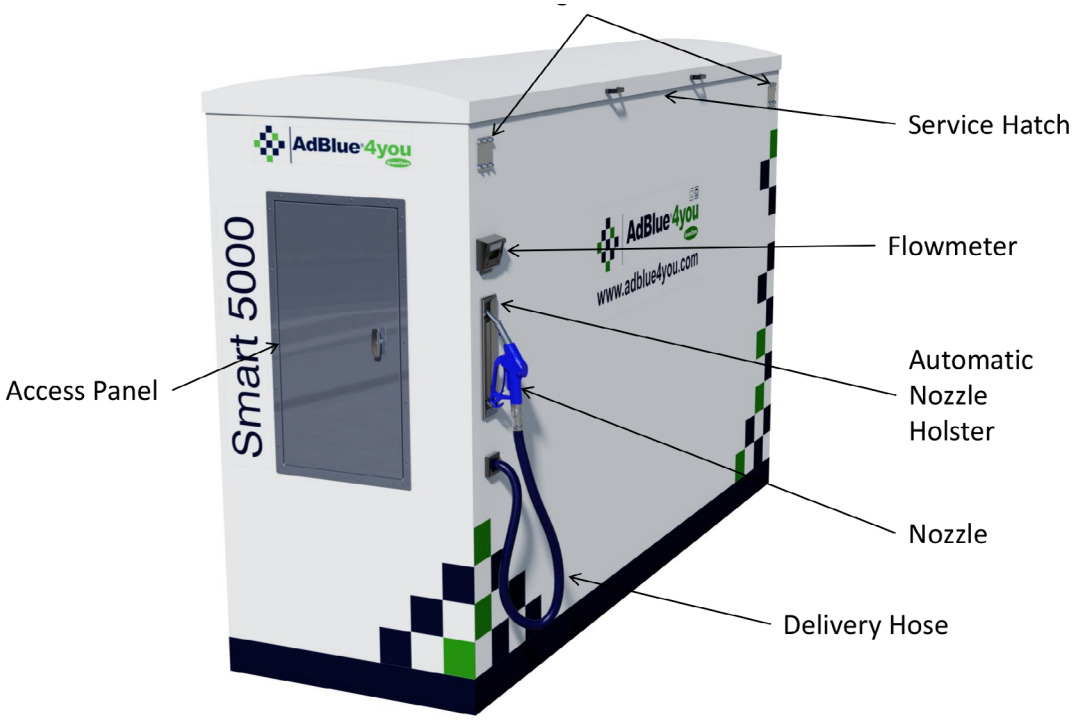
e.) Heating


Lifting Brackets
Service Hatch
Access Panel
Heated Nozzle Cabinet
AdBlue 4you
Smart 5000
www.adblue4you.com


Tank Gauge & Alarm
Mains Control Panel
Telemetry Unit
Insulated Fill Point
Retractable Delivery Hose
Tanker Fill Point
AdBlue 4you
www.adblue4you.com


Heated Nozzle Cabinet
Flowmeter
Access Panel
Nozzle
Automatic Nozzle Holster
Retractable Delivery Hose
Smart 5000

f). Hose reel


Service Hatch
Flowmeter
Automatic
Nozzle
Holster
Access Panel
Nozzle
Delivery Hose
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Smart 5000
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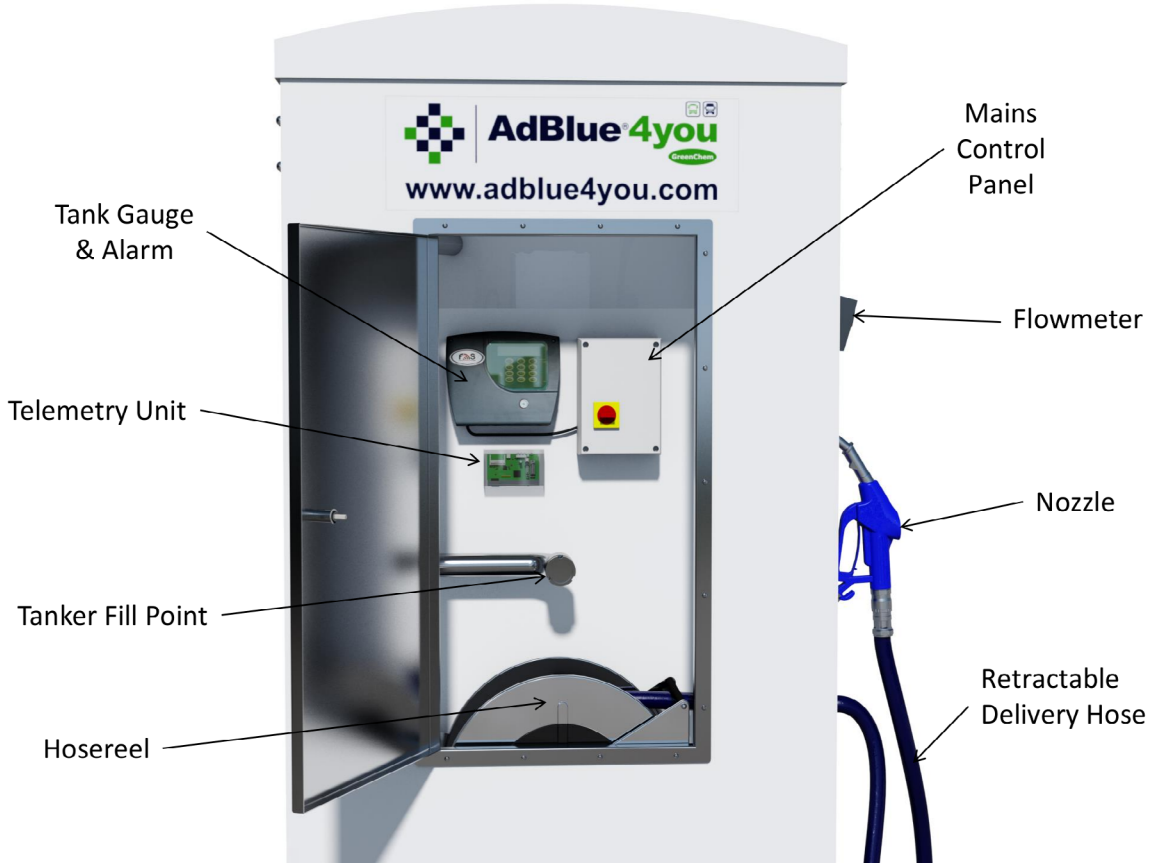

Mains
Control
Panel
Tank Gauge
& Alarm
Flowmeter
Telemetry Unit
Nozzle
Tanker Fill Point
Retractable
Delivery Hose
Hosereel
AdBlue 4you
www.adblue4you.com

7.3 Filling SMART system

1. Filling should be performed only under constant supervision of an authorised person.

2. This tank can only be filled by a tanker equipped with a female dry-break coupling.

3. Before filling the tank with AdBlue, please test the FMS device fitted to the tank and make note of the tank level before filing, ensure the high-level alarm indicator functions correctly.

4. Fit tanker delivery hose to dry-break coupling.

5. Engage tanker pump and begin to fill. Stop filling when desired amount has been dispensed into tank, or when high-level alarm sounds.

6. During tanker fill always observe tank level gauge throughout the duration of the filling process. Tanker driver must observe tank being filled at all times during this process.

7. Once complete disconnect delivery hose from dry-break coupling.

7.4 Dispensing AdBlue® into vehicle

1. Press the RESET button on the flow meter display to set 0 if dispensed volume is required.

2. Remove nozzle from nozzle holster (this action automatically activates micro switch on nozzle holster which engages submersible pump)

3. Insert the nozzle completely into the AdBlue tank filler neck of your vehicle

4. Pull trigger on the nozzle to allow AdBlue to flow into the vehicle AdBlue tank

5. At this time flowmeter counter will start recording the flow, continue refueling until the desired amount is reached or when the vehicle AdBlue tank is full.

6. When the tank is fully filled up the nozzle stops automatically

7. Release the trigger of the nozzle

8. After filling, let the remaining liquid pour from the nozzle to the vehicle tank

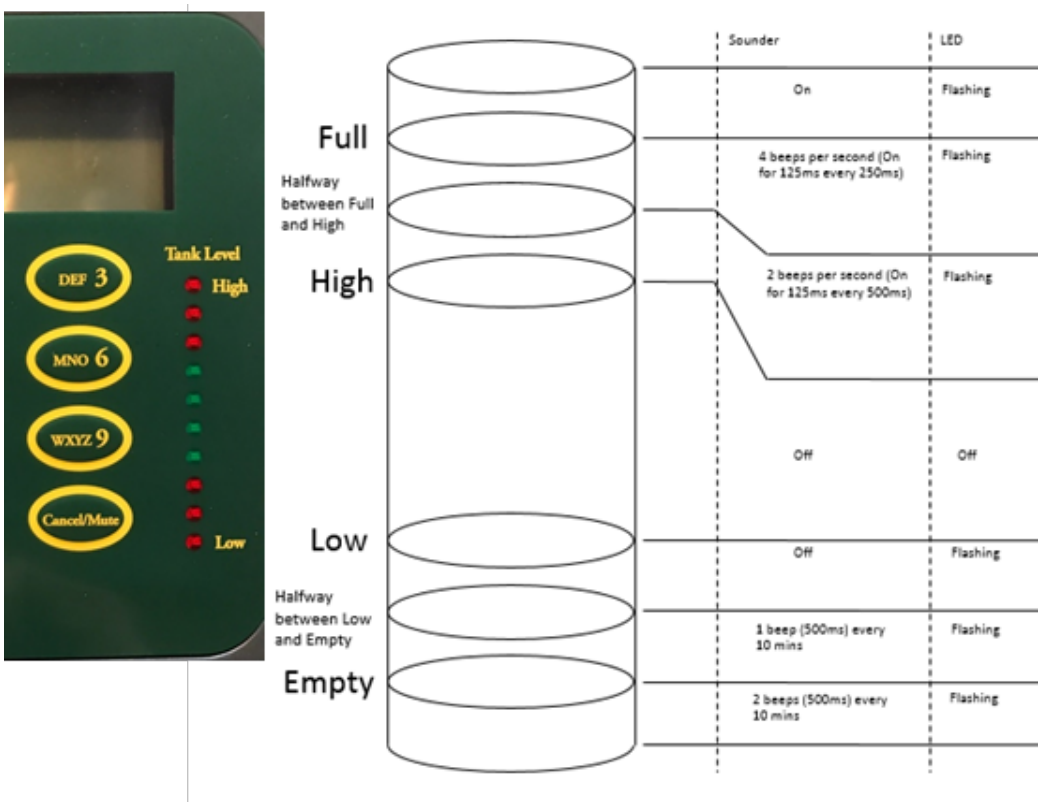
9. Remove the nozzle from the vehicle tank and hold it upwards to avoid dripping of the liquid on surface or the system

10. Place the nozzle back into the nozzle holster and make sure it is docked correctly onto the micro switch ensuring that the pump disengages.

7.5 Equipment components

A. FMS gauge level

The Fuel Level Monitoring System is a 240v combined digital tank level indicator and bund and high-level alarm that is designed to provide both visual and audible alarms whenever a predetermined level in a storage tank is reached. The FMS gives a content readout in both litres and a percentage.



a. Full alarm

Activation of this alarm indicates that the tank is full. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.

b. High level alarm

Activation of this alarm indicates the tank has reached a high capacity and close attention must be paid to the diesel inside the tank. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.

c. Low level alarm

Activation of this alarm indicates the tank has reached a low level. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.

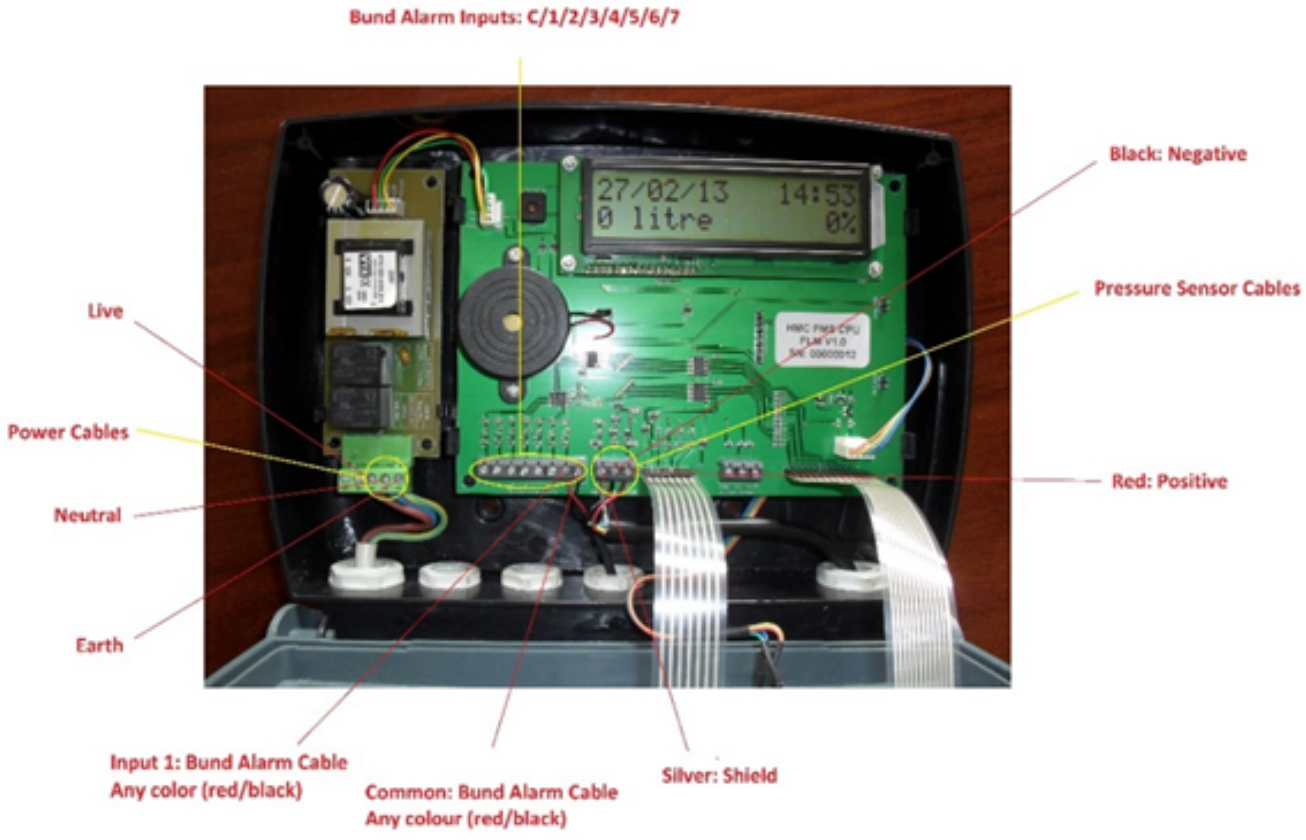
d. Empty alarm

Activation of this alarm indicates the tank is empty and needs filling. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered for a short period of time after it sounds. The audible can be muted using the mute button on the keypad. THE PUMP WILL CONTINUE TO DISPENSE IN THIS ALARM MODE.

e. Bund alarm

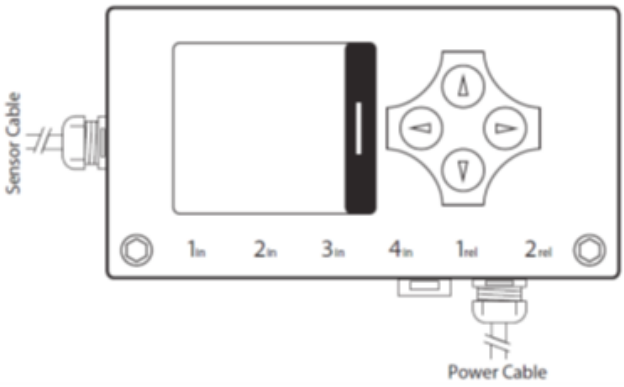
Activation of this alarm indicates that there is product in the bund cavity. This alarm is shown through visual LED's and audible siren. Note: This audible and visual alarm will remain triggered constantly until muted or until the product is removed. The audible can be muted using the mute button on the keypad. In the event of this it is advised the bund cavity is checked and drained as soon as practicable.

f. FMS Wiring diagram



B. Metron (all models)

The Metron is an electronic device which sends the AdBlue® tank level to GreenChem daily by using wireless network like cellphones do. By touching the left button, the Metron displays the actual AdBlue® tank level.



Important note: to best meet your AdBlue® needs it is important that the tank system is 24/7 connected to mains supply.

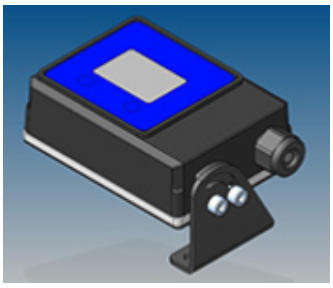
C. High level alarm

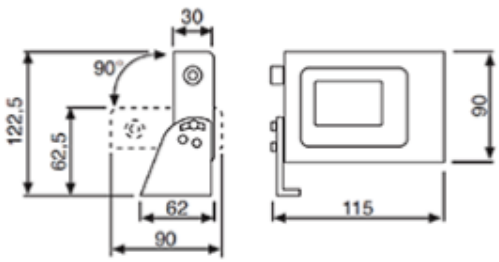
Press and hold the TEST button to display the alarm configuration. The display will flash TEST and either HIGH - LO - BUND and the sounder will initiate.

If the alarm activates then the display will flash with the configured alert on the screen and the sounder will initiate. This will continue until either:
1. The MUTE button is pressed for 3 secs
2. Or the float exits from the alarm condition

If the MUTE button is pressed then the display will continue to flash the configured alert, but the sounder will be silenced.

D. Flowmeter





The meter is delivered ready to use. No commissioning operations are required even after long storage periods. The only operations that need to be done for daily use are resetting the Partial and/or Reset Total register. Below are the two typical normal operation displays. One display page shows the Partial and Reset Total registers. The other shows the Partial and General Total. Switchover from Reset Total to General Total display is automatic and tied to phases and times that are factory set and cannot be changed by the user.

The Partial register positioned in the top part of the display indicates the quantity dispensed since the RESET button was last pressed.

- The Reset Total register, positioned in the lower part of the display, indicates the quantity dispensed since the last Reset Total resetting. The Reset Total cannot be reset until the Partial has been reset, while vice versa, the Partial can always be reset without resetting the Reset Total. The unit of measurement of the two Totals can be the same as the Partial or else different according to the factory or user settings.

- The General Total register (Total) can never be reset by the user. It continues to rise for the entire operating life of the meter. The register of the two totals (Reset Total and Total) share the same area and digits of the display. For this reason, the two totals will never be visible at the same time, but will always be displayed alternately.

The meter is programmed to show one or the other of the two totals at very precise times:

- The General Total (Total) is shown during Meter standby
- The Reset Total is shown:
- At the end of a Partial reset for a certain time (a few seconds)
- During the entire dispensing stage

a. User buttons

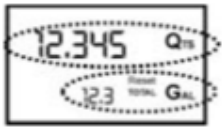
Remote display has two buttons (RESET and CAL) which can be used individually or together. If used individually, the RESET button resets the Partial register and that of the Reset Total. Used together, the two buttons permit entering configuration mode where you can set the desired unit of measurement and the number of pulses by unit of measurement of the partial arriving at the Pulse In inlet.

b. Dispensing in normal mode

This is the default dispensing. During this time the count is made. The Partial and Reset Total are displayed at the same time. Should one of the two buttons RESET or CAL be accidentally pressed during counting, this will have no effect.

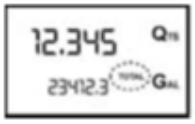
A few seconds after dispensing has ended, on the lower register, the display switches from Reset Total to General Total: the word “Reset” above the word “Total” disappears, and the Reset Total is replaced by the General Total.

This situation is called STANDBY and remains stable until the user operates the meter again.



c. Resetting the Partial Register

The Partial Register can be reset by pressing the RESET button when the meter is in Standby, meaning when the display screen shows the word “Total”.



After pressing the RESET button, during reset, the display screen first shows all the lit-up digits and then all the digits that are not lit up.

At the end of the process, a display page is first shown with the Reset Partial and the Reset Total.

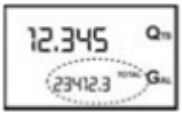
After a few moments, the Reset Total is replaced by the NON resettable.

d. Resetting the Reset Total

The Reset Total resetting operation can only be performed after resetting the Partial register. The Reset Total can in fact be reset by pressing the RESET button at length while the display screen shows “Reset Total” as on the following display page:

Schematically, the steps to be taken are:

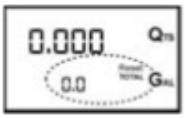
1. Wait for the display to show normal standby display page (with Total only displayed).



2. Press the RESET button quickly.

3. The meter starts to Reset Partial.

4. While the display page showing the Reset Total is displayed, press the RESET button again for at least 1 second.

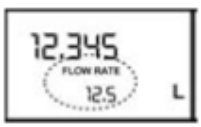


5. The display screen again shows all the segments of the display followed by all the switched-off segments. Finally it shows the display page where the reset total is shown.

e. Dispensing with the Flow Rate Mode display

It is possible to dispense fluids, displaying at the same time:

- The dispensed Partial
- The flow rate in [Partial Unit / minute] as shown on the following display page:



Procedure for entering this mode:

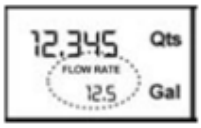
1. Wait for the Remote Display to go to Standby, meaning the display screen shows “Total only”

2. Quickly press the CAL button.

3. Start dispensing

The flow rate is updated every 0.7 seconds. Consequently, the display could be relatively unstable at lower flow rates. The higher the flow rate, the more stable the displayed value.

WARNING
The flow rate is measured with reference to the unit of measurement of the Partial. For this reason, in case of the unit of measurement of the Partial and Total being different, as in the example shown below, remember that the indicated flow rate relates to the unit of measurement of the partial. In the example shown, the flow rate is expressed in Qts/min.



The word "Gal" remaining alongside the flow rate refers to the register of the Totals (Reset or NON Reset) which are again displayed when exiting from the flow rate reading mode.

To return to "Normal" mode, press the CAL button again. If one of the two buttons RESET or CAL is accidentally pressed during the count, this will have no effect.

WARNING
Even though in this mode they are not displayed, both the Reset Total and the General Total (Total) increase. Their value can be checked after dispensing has terminated, by returning to "Normal" mode, and quickly pressing CAL.

f. Partial reset

To reset the Partial Register, finish dispensing and wait for the Remote Display to show a Flow Rate of 0.0 as
indicated in the illustration then quickly press RESET

g. Configuration

Use the menu in the Remote Display to configure the machine in accordance with their requirements.The configuration menu consists of two submenus:

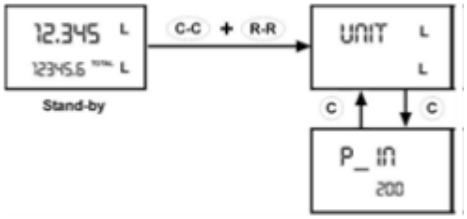
1. Configuration menu for the main unit of measurement

2. Configuration menu for the number of impulses per unit of measurement that the machine can receive on the Pulse-In inlet.

To enter the configuration menu, proceed as follows:

1. Wait for the Remote Display to go on Stand-by;

2. Press the CAL and RESET buttons at the same time and hold them down until the word “Unit” and the previously-set unit of measurement appear on the display (Litre/Litre in this example);



3. To move between submenus press the CAL button once quickly.

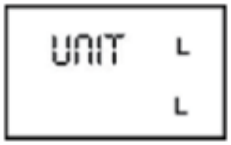
h. Configuration of the units of measurement

The configuration menu for the units of measurement allows the user to select the partial unit of measurement between four available units: Quarts (Qt), Pints (Pt), Litres (L) and Gallons (Gal).

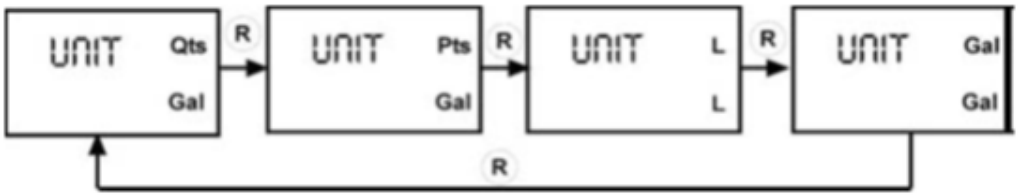
The combination between the Partial register and the Total register units is preset according to the following table:

Combination Number	Unit of Measurement Partial Register	Unit of Measurement Totals Register
1	Litres (Lit)	Litres (Lit)
2	Gallons (Gal)	Gallons (Gal)
3	Quarts (Qts)	Gallons (Gal)
4	Pints (Pts)	Gallons (Gal)

WARNING
The partial unit of measurement of the Universal Remote Display Pulse In must be the same as that of the Universal Remote Display Pulse Out to which it is connected.



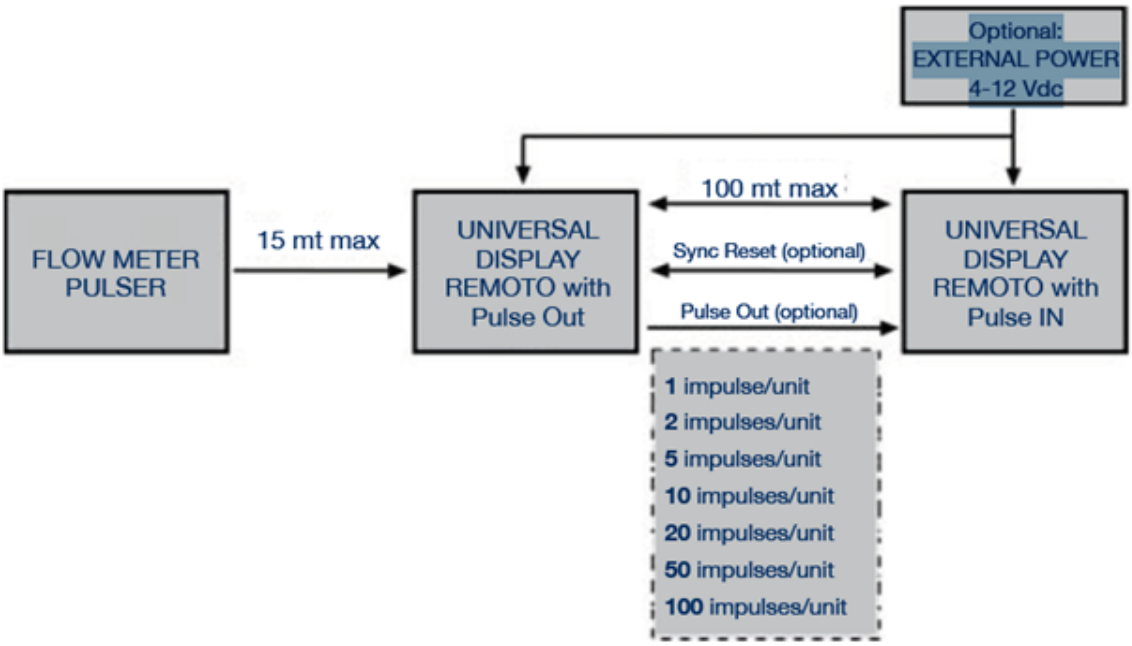
Enter the configuration submenu as shown previously.
Each time the RESET button is pressed quickly, the various units of measurement will appear as shown:



If you want to exit the configuration menu, press and hold down the CAL button. The new settings will be saved, the Remote Display will start up and be ready for measurement. However, if you want to move to the next submenu, press the CAL button quickly. The new settings will still be saved. If no operation is carried out for a certain period of time, the Remote Display will start up and be ready for measurement, but any configuration modifications that had been made will not be saved.

i. Pulser Input (Pulse IN)

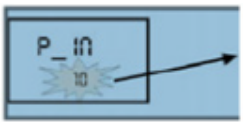
The REMOTE DISPLAY may be used with most of the Pulser flowmeters and, as an optional, it can have the Pulse OUT outlet to transmit impulses to a display repeater known as the “Pulse IN Remote Display”.



For the “Remote Display Pulse In” to show the correct quantity of fluid, it must be configured with an “impulse weight” that is consistent with what is being received from the Universal Remote Display Pulse in. To do this, the Remote Display must be configured in accordance with impulse numbers by partial unit of measurement issued by the Universal Remote Display with Pulse Out.

Enter the configuration menu as shown previously. Press the CAL button to go to the Pulser inlet configuration submenu: the script “P_in” and the previously set number of impulses by unit of measurement will appear on the display.

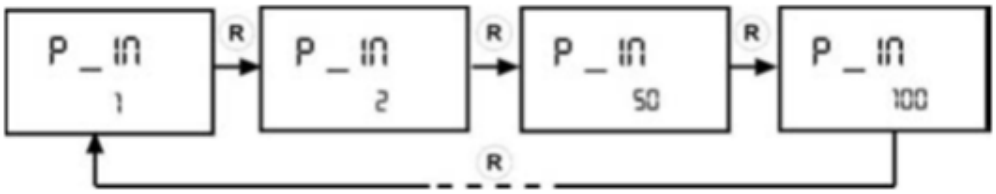
“10” on the display indicates that 10 impulses by partial unit of measurement must enter on the inlet.



Press the RESET button quickly to scroll through all the available flowmeter models:
The number that appears on the display immediately matches the model as shown in the table below:

Value on Display	Impulse number
1	1 impulse/partial unit of measurement
2	2 impulses/partial unit of measurement
5	5 impulses/partial unit of measurement
10	10 impulses/partial unit of measurement
20	20 impulses/partial unit of measurement
50	50 impulses/partial unit of measurement
100	100 impulses/partial unit of measurement

Press RESET quickly to scroll through all the possible Pulse-Ins:



Select the appropriate flowmeter model. If you want to exit the configuration menu, press and hold down the CAL button. The new settings will be saved, the Remote Display will start up and be ready for measurement. However, if you want to move to the next submenu, press the CAL button quickly. The new settings will still be saved.

If no operation is carried out for a certain period of time, the Remote Display will start up and be ready for measurement, but any configuration modifications that had been made will not be saved.

E. HDA Fuel Management

A software user guide for the system can be found online:
https://www.tecalemituk.com/wp-content/uploads/2016/02/UK-HDM-software-guide.pdf

OVERVIEW

Description

The HDA consists of the HDA eco automatic dispenser, which is mounted in sheet metal housing. The built-in HDA eco automatic dispenser is optimised for the administration of small and medium sized vehicle fleets and enables the administration of up to 10,000 transactions / 2000 users / 2000 vehicles.
Optional, additional components to create an entire tank system are the feed pump, the flowmeter and the dispensing hose with an automatic nozzle and, if applicable, a level probe or fill level switch for monitoring the level in the tank.

Intended use

The HDA is designed as a Fluid Inventory Control System for use in industry, service centers, filling stations and similar facilities.
It is intended for the control of dispensing during the refueling of vehicles wth liquid and pumpable operating media.
The installation and operation of the HDM / HDA in explosion hazardous areas is not permitted. This would constitute a risk of explosion.

Permitted media

All liquid and pumpable operating media including diesel, fuels, chemicals, oils, water, heating oil, coolant, DEF, windshield washer.
Please check the safety data sheet for your medium.
In the case that the medium generates explosion hazards, the user has to make sure that the used additional equipment (e.g.pump and meter) and the electrical and mechanical installation follows the national regulations of explosion protection.

Technical data

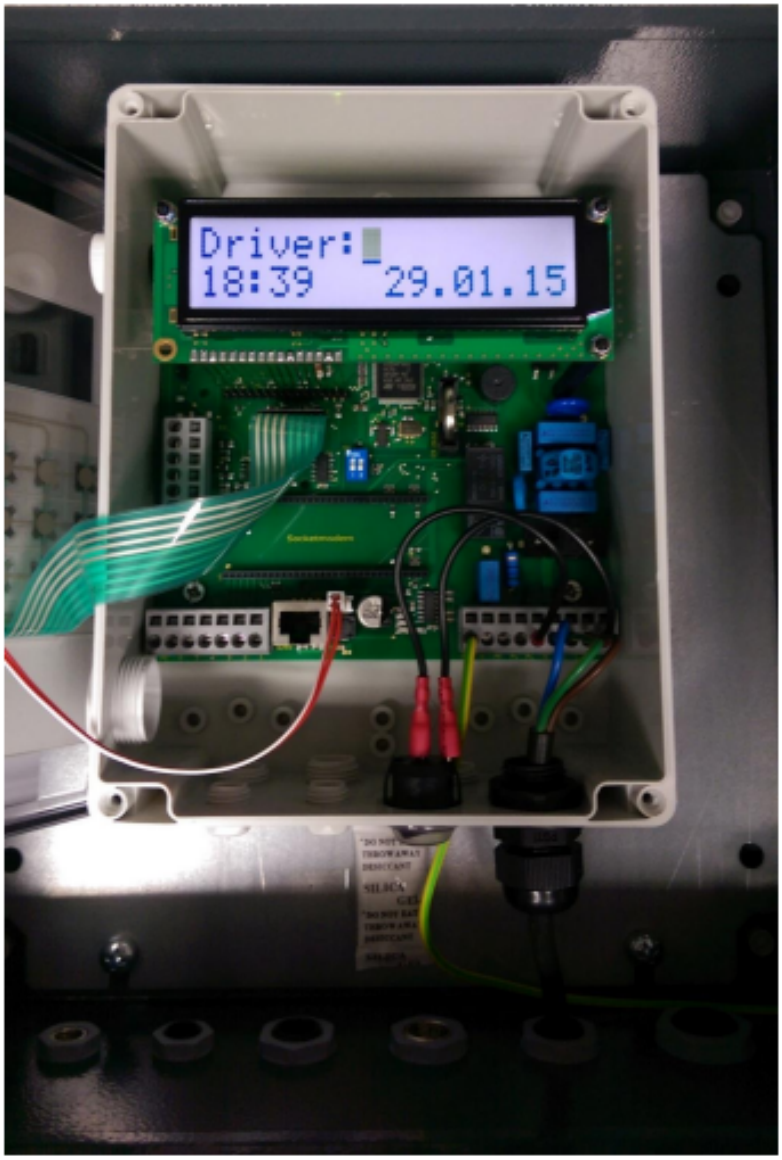
Dimensions (WxHxD):	300mm x 300mm x 127mm approx.
Voltage:	120v 60 Hz
Ambient temperature:	- 4° F to 131° F
Protection class:	IP54
Max switched current:	6.2 A
Weight:	8 kg
Maximum pulse frequency for the external used flowmeter:	240 Hz
Maximum failure elevation of the used measuring equipment	
• for a flowmeter:	0.1%
• for a level sensor:	1%

HORN TECALEMIT

EXTERIOR I/O

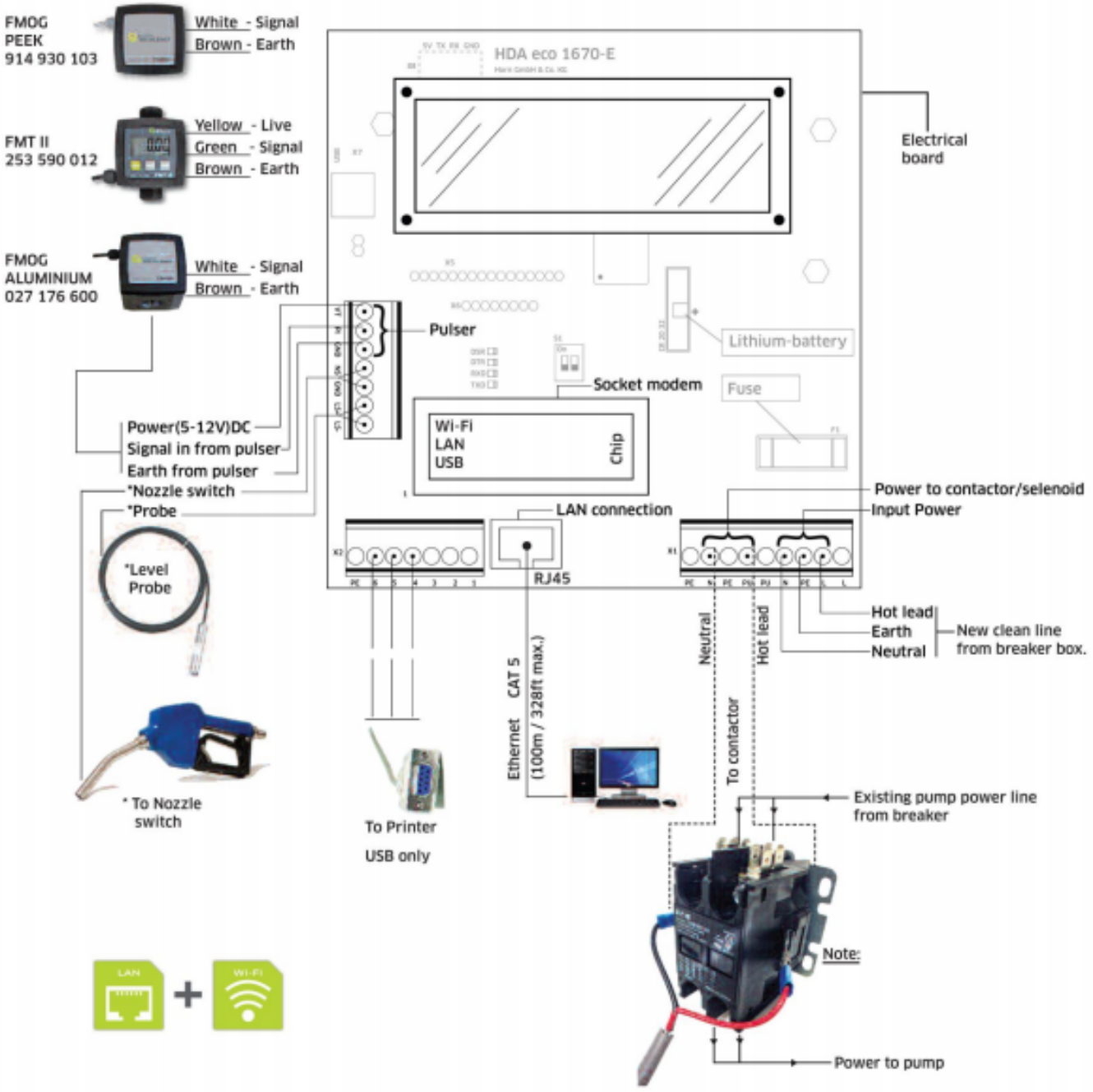
HORN TECALEMIT

ELECTRICAL BOARD



The HDA internals kept simple and straight forward. LAN and Wi-Fi capable.

ELECTRICAL CONNECTIONS



8. Maintenance of the GREENCHEM SMART SYSTEMS

Keep this manual stored in a place of use so it can be obtained for future reference. All persons who install, commission, maintain, and operate the system must be deemed competent by their employers and have the adequate knowledge and training required to carry out any required tasks which are recommended by this manual, it is recommended that any persons carrying out work on the system have fully read and understood the instructions set out by this manual.

It is advised that no changes nor conversions with potential impact on safety may be performed on this system, any spare parts which are used must comply with the technical requirements which are defined in this manual or directly by the manufacturer.

ATTENTION
Please make sure prior to any maintenance work that power supply is turned OFF and that there is not an inadvertent chance to reconnect the system to power supply.

WARNING
System warranty will become void if any repairs are made by technicians not authorised by the manufacturer, the same applies to works with hazardous or potentially hazardous equipment.

ATTENTION
Do not use jet cleaners to clean the system. You can clean the system with water and household cleaners. Do not use an excessive amount of water when cleaning near any electrical items as this can cause a short circuit to occur potentially permanently damaging the equipment.

8.1 System maintenance Tasks

Activity	Frequency of Task
Keep Equipment in good working order by returning to its original position	After every use
Visually inspect operation of gauge equipment	Weekly
Visually inspect exterior condition of tank	Monthly
Visually inspect condition of delivery hose	Monthly
Physically check bund alarm by activating the float switch in bund cavity (audible alarm)	3 Months
Check electrical cables and cable connection points	3 Months
Visually inspect and if required maintain the tank id plate and warning labels	3 Months
Physically check fixings and bracket stability	6 Months
Visually inspect inner tank and bund cavity	6 Months

8.2 Inspection by competent person

Inspections should be undertaken by a competent person that is receiving a delivery of product on every fill prior to and whilst filling.

This inspection should include:

- The fill point arrangement for soundness and leaks
- Any outlet valves should be checked for leaks and operation (open and close successfully)
- The testing of contents gauge, any high level / overfill alarm and bund alarm.
- If vents can be seen that they are clear and unblocked and free of debris.
- A visual inspection around the tank with emphasis on the base of the tank. The inspection for plastic tanks should include any deformation of the surface of the tank i.e. excessive bulging, change in colour due to chemical attack, crazing or stress fractures. The inspection of steel tanks should include looking for evidence of rust and heavy corrosion, damp patches on seams & seam fractures.
- Bund to be visually inspected for soundness and integrity, water, spilt product, or other debris.

8.3 Internal examination and cleaning

Internal examinations should be undertaken by a competent person at appropriate intervals, as determined by the product used, and its cleanliness i.e. solids or water falling out of suspension. Entry into confined spaces should be carefully planned and supervised and should be subject to a strict procedures dependent on the substance stored, and in accordance with HSE requirements.

8.4 Troubleshooting		
Symptom	Possible Causes	Solutions
No power	1. Local distribution board fuse	1. Check local distribution board RCD
	2. Power cable damaged	2. Check condition of power cables
	3. Power cable connection broken	3. Check power cable connections
	4. System control panel circuit breakers	4. Open system control panel and check circuit breakers
	5. System control panel connections loose	5. Check cable connections inside of system control panel
Pump not operating	1. Potential air lock in pipeline caused by tank fill after running dry	1. Remove nozzle allowing air to pass through pipeline
	2. No AdBlue in the system	2. Request AdBlue delivery
	3. Pump circuit breaker in control panel tripped	3. Engage pump circuit breaker or replace if necessary
	4. Pump relay fuse in system control panel blown	4. Replace relay / fuse
	5. Pump failure	5. Replace pump
	6. No power to system	6. Check power supply
Auto nozzle not operating	1. Spring mechanism inside nozzle valve failed	1. Replace nozzle
	2. Trigger plunger failed	2. Replace nozzle
Nozzle holster not switching pump correctly (auto operation nozzle holster versions only)	1. Micro switch failure	1. Replace micro switch
	2. Micro switch lever not contacting correctly	2. Adjust position of micro switch or switch lever
Telemetry does not transmit data	1. System not connected to power at all times	1. Alter so power is constant
	2. Power failure to telemetry unit	2. Check power supply and cable connections
	3. Telemetry unit failure	3. Refer to manufacturer
	4. Sim card issue	4. Refer to point 3
Level gauge does not show reading	1. Power failure to gauge	1. Check power supply and cable connections
	2. Sensor cable connection loose	2. Check sensor cable connections inside gauge unit
	3. Sensor failure	3. Refer to manufacturer
	4. Gauge unit failure	4. Refer to manufacturer
Level gauge shows incorrect reading	1. Pressure sensor not positioned at base of tank	1. Lower pressure sensor down until it touches base of tank
	2. Incorrect gauge parameters	2. Refer to manufacturer to alter gauge parameters
	3. Sensor failure	3. Refer to manufacturer
	4. Gauge unit failure	4. Refer to manufacturer

8.4 Troubleshooting		
Symptom	Possible causes	Solutions
Bund alarm not working	1. Bund float switch not postioned correctly	1. Alter position of float switch to hang approximately 1" off bund floor
	2. Bund float not able to move freely	2. Check float switch for blockage or replace if necessary
	3. Damage to bund cable	3. Refer to manufacturer
	4. Float switch cable	4. Refer to manufacturer
AdBlue® in bund cavity	1. Inner tank overfill	1. AdBlue must be removed from the cavity as soon as possible
	2. Pipework leaking in bund cavity	2. See point 1
	3. Inner tank leaking	3. See point 1
Pipework leaking	1. Threaded connection loose	1. Connection must be tightened
	2. Thread sealant degraded	2. Thread sealant must be replaced
	3. O-ring or seal joint perished	3. O-ring or seal must be replaced
	4. Swaged hose ends leaking	4. Hose assembly needs replacing: refer to manufacturer
	5. Rubber hose perished	5. See point 4
Hose reel not operating correctly	1. Internal reel spring has come loose	1. Refer to manufacturer
	2. Spring failure	2. Refer to point 1
Flowmeter display not working	1. Battery in display has no power	1. Replace battery
Flowmeter displays incorrect readings	1. Blockage to meter turbine	1. Undo meter joints and remove blockage
	2. Flowmeter calibration is incorrect	2. Refer to flowmeter instructions in operation section
	3. Display failure	3. Replace pulse meter display or flowmeter
Inner tank has lifted up and ruptured bund lid	1. AdBlue inside bund is causing inner tank to float	1. Refer to manufacturer
Tank exterior damaged	1. Impact from external force	1. If the damage is significant refer to manufacturer for further information
Flip lid does not open easily	1. Gas strut(s) have de-gased and are not operating	1. Gas strut(s) need replacing
The LC display is too pale or dark?	1. The contrast setting is incorrect.	1. It should be adjusted (chapter 5.3.4.3.2) If the display is no longer legible, the contrast setting can be reset to the factory setting (44) by pressing the 'EXIT' button when switching the HDA eco on. The button must stay pressed until the date and time are displayed.
The language has been accidentally changed?	1. The language can be set 'blindly'.	1. For this, change to the management mode and using the ,▼ button, change downwards three menu points following this, confirm with the 'ENTER' button, change downwards two menu points, then change downwards two menu points once again and confirm. The correct language can now be selected using the◄ and ,► buttons and then confirmed with 'ENTER'

8.4 Troubleshooting

Symptom	Possible Causes	Solutions
After drawing the nozzle and/ or starting the delivery of fuel, the pump is not switched on via the keyboard?	1. The pump motor is not correctly connected to the switch output of the HDA eco.	1. Check the connection. If an additional relay or safety device is used, check the connection of this component.
	2. The setting of the menu point 'nozzle switch y/n' is not correct.	2. Adjust the setting.
	3. HDA eco is blocked.	3. Unblocking should take place in the corresponding menu
	4. HDA eco is blocked due to too many zero fillings.	4. It should be unblocked and the reason for the zero fillings should be dealt with, e.g. a defective pump, or a defective flow meter. As the case may be, the number of successive zero fillings should be increased.
The pump runs and the medium is pumped, but the quantity display does not change?	1. The flow meter is not correctly connected to the pulse input of the HDA eco.	1. The connection should be checked.
	2. The flow meter is blocked.	2. It should be checked and, as the case may be, cleaned.
The pump runs and the medium is pumped, but the quantity display does not correspond with the quantity which is dispensed?	1. The pulse value in the HDA eco does not correspond with that of the flow meter.	1. It should be checked and adjusted. As the case may be, a calibration should be carried out.
The fuse blows each time a delivery is started?	1. The current consumption of the pump is too high for the HDA eco (max. 10 A).	1. An additional relay or safety device should be used.
	2. The pump has a defect (e.g.: a blocked rotor).	2. It should be checked.
Wthout intervention on the part of the user, the delivery is suddenly terminated?	1. The value of the delivery limit is too low.	1. It should be adjusted.
	2. The value of the maximum delivery time is too low.	2. It should be adjusted.
	3. The delivery timeout value is too low.	3. It should be adjusted.
The serial RS232 connection does not work?	1. The wrong COM port was selected on the computer.	1. It is necessary to ensure that the COM port that is used and selected in the HD manager program correspond with each other
	2. The interface connection is not correct.	2. The connection should be checked.
The serial RS422 connection does not work?	1. The RS422 converter set does not have any supply voltage.	1. The mains power pack (supplied) should be used.
	2. The wrong COM port was selected on the computer.	2. It is necessary to ensure that the COM port that is used and selected in the HD manager program correspond with each other.
	3. The interface connection is not correct.	3. The connection should be checked.
	4. The setting of the DIP switch on the RS422 converter set is not correct.	4. The connection should be checked.

8.4 Troubleshooting		
The LAN / WLAN connection does not work?	1. Different ports for the communication have been set at the HDA eco and in the HD manager program.	1. It has to be made sure that the ports do match (factory setting: 54937).
	2. The existing network does not use a DHCP server.	2. The network settings in the HDA eco (IP Address, Subnet Mask, IP Gateway) have to be set manually. If necessary, the network administrator should be consulted for the correct settings.
	3. The network settings in the HDA eco (IP Address, Subnet Mask, IP Gateway) in a network without DHCP server have been input incorrectly.	3. If necessary, the network administrator should be consulted for the correct settings.
	4. On the used PC there is a firewall installed that blocks communication of the HD Manager program with the HDA eco.	4. The firewall has to be adjusted. If necessary, the network administrator should be consulted for the correct settings.
The LAN communication does not work?	1. The LAN cable connection to the existing network is not correct.	1. The connection should be checked.
The WLAN communication does not work?	1. The login details for the existing WLAN network have been input incorrectly.	1. The login details (SSID, Password, Encryption) have to be input correctly. If necessary, the network administrator should be consulted for the correct settings.
	2. The field strength of the WLAN signal is too weak or is floating.	2. Measures to improve the signal quality have to be taken (e.g. external antenna, repeater etc.). As the case may be a cable connection (e.g. LAN) may be the better solution.
The GPRS communication does not work?	1.The used SIM card has not been activated or is not applicable for M2M (Machine to Machine) operation.	1. If necessary, Internet Service-Provider (ISP) support has to be contacted.
	2. The login details for the Access Point Name (APN) of the chosen Internet Service Provider (ISP) have been input incorrectly.	2.The login details (APN, User,Password, DNS1, DNS2, Port) have to be input correctly. If necessary, Internet Service-Provider (ISP) support has to be contacted.
	3. The GPRS field strength is too weak or is floating.	3. Measures to improve the signal quality have to be taken (e.g. external antenna, change of ISP).
	4.The customer ID has not been input on the HDA eco or it has been input incorrectly.	4. It has to be input correctly. The unique customer ID is allocated by HORN TECALEMIT at the address http:// hdmanager.net/register.php“ after registration.
	5. The customer login details in the HD Manager PC program have not been input or have been input incorrectly.	5. See manual HD Manager program.
	6. On the used PC there is a firewall installed that blocks communication of the HD -Manager program with the web server via internet.	6. The firewall has to be adjusted. If necessary, the network administrator should be consulted for the correct settings.
	If the display shows “Server Error Code 2110” the customer ID has been input incorrectly.	It has to be input correctly. The unique customer ID is allocated by HORN TECALEMIT at the address http:// hdmanager.net/register.php“ after registration.

8.5 Tank maintenance record			
Date	Description of works	Comments	Site representative / contractor details

8.5 Tank maintenance record			
Date	Description of works	Comments	Site representative / contractor details

8.6 AdBlue® delivery log

Date	Time	Amount delivered (litres)	Tank driver signature	Drivers comments

8.6 AdBlue® delivery log

Date	Time	Amount delivered (litres)	Tank driver signature	Drivers comments

9. Warranty

The text below briefly summarises the supplier's warranty for the system:

GreenChem SMART systems have the below guarantee period commencing from the delivery date. Within the warranty period, GreenChem will repair or replace, at its discretion, any tanks found faulty due to defective material or manufacturing defects.

PRODUCT	WARRANTY PERIOD IF REGISTERED
Parts failure (part only warranty)	1-year
Manufacturing defect	2-years
Delivery hoses (from failure, not misuse)	3-months
Inner tank	10 years
Bund	2 years

Immediately upon discovery of any defect you must contact the local office (refer to contact information section) and allow a representative to inspect the tank and its surroundings and where necessary carry out any repairs.

This guarantee is not valid for the following defects:
- Incorrect tank installation.
- Incorrect commissioning of tank equipment or additional equipment.
- Mechanical damage caused by the user, dealer or improper maintenance.
- Faults, damage or premature wear caused by improper use.
- Damage caused by third parties.
- Repairs carried out by unauthorised service personnel.

The guarantee is offered as an extra benefit and does not affect your statutory rights. The guarantee shall expire at the end of the specified 1-year period from the date of delivery.

9.1. Failures and Claims

In case of failure, please contact the office in the country of the system installation.
Defects found during the warranty period will be remedied within two weeks at the latest after formal notification (e-mail). Guaranteed response time to the notifications on defects is 48 hours of e-mail confirmation; only business days are included. When the notification is made from 4 p.m. to 8 a.m. and on weekends and holidays, 8 a.m. of the closest next business day (of the country of the system installation - see purchase contract) is regarded as the notification time.

Customer who requires the repair service shall pay the repair service invoice not covered by warranty directly through authorised service of the manufacturer. GreenChem verifies the notifications received and provides assistance to the customer and the authorised service to perform the order as most effectively as possible.

10. Contact

Netherlands (HQ) and Benelux	GreenChem B.V Gravinnen van Nassauboulevard 95 4811 BN Breda PO Box 1101 (4801 BC) www.greenchem-adblue.com | info@greenchem-adblue.com
	Contact: Guy Flochlay
	Tel: +31 (0) 76 - 581- 27 27 Fax: +31 (0) 76 - 581 - 25 - 71
United Kingdom	GreenChem Solutions Ltd Midshires House, Smeaton Close Aylesbury, Buckinghamshire HP19 8HL uk@greenchem-adblue.com
	Contact: Chris Haynes
	Tel: +44 (0) 1296 678 548 Fax: +44 (0) 1296 769 692
France	GreenChem France S.A.S 11 bis Rue de Cotte 75012 Paris france@greenchem-adblue.com
	Contact: Virginie Janiaud
	Tel: +33 (0) 155 - 78 - 22 - 06 Fax: +33 (0) 155 - 78 - 20 - 92
Spain & Portugal	GreenChem Solutions S.L c/Lepant 264, 3r F 08013 Barcelona
	Contact: Oriol Canut
	Tel: +34 (0) 93-417-82-17
Czech Republic	GreenChem CZ s.r.o Pyšelská 2327/2, 149 00 Praha 4 josefriha@greenchem-adblue.com
	Contact: Josef Říha
	Tel: +420 724 639 957
Slovakia and Hungary	Greenchem SK s.r.o. Nobelova 34, 836 05 Bratislava, Slovakia
	Contact: Roman Markovič
	Mobile: +421 918 477 995, Tel. +421 2 4951 2780

11. Activation Form

Your Smart system is equipped with a sophisticated telemetry unit.

To get the telemetry as fast as possible active on our servers, we kindly ask you to send this sheet by fax to us with the following information.

Please return this form when the power supply is connected and switched on:

Customer details	
Company:	
Contact:	

Tank location	
Address:	
Post code:	

Identification number	
System ID:	

NOTES

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