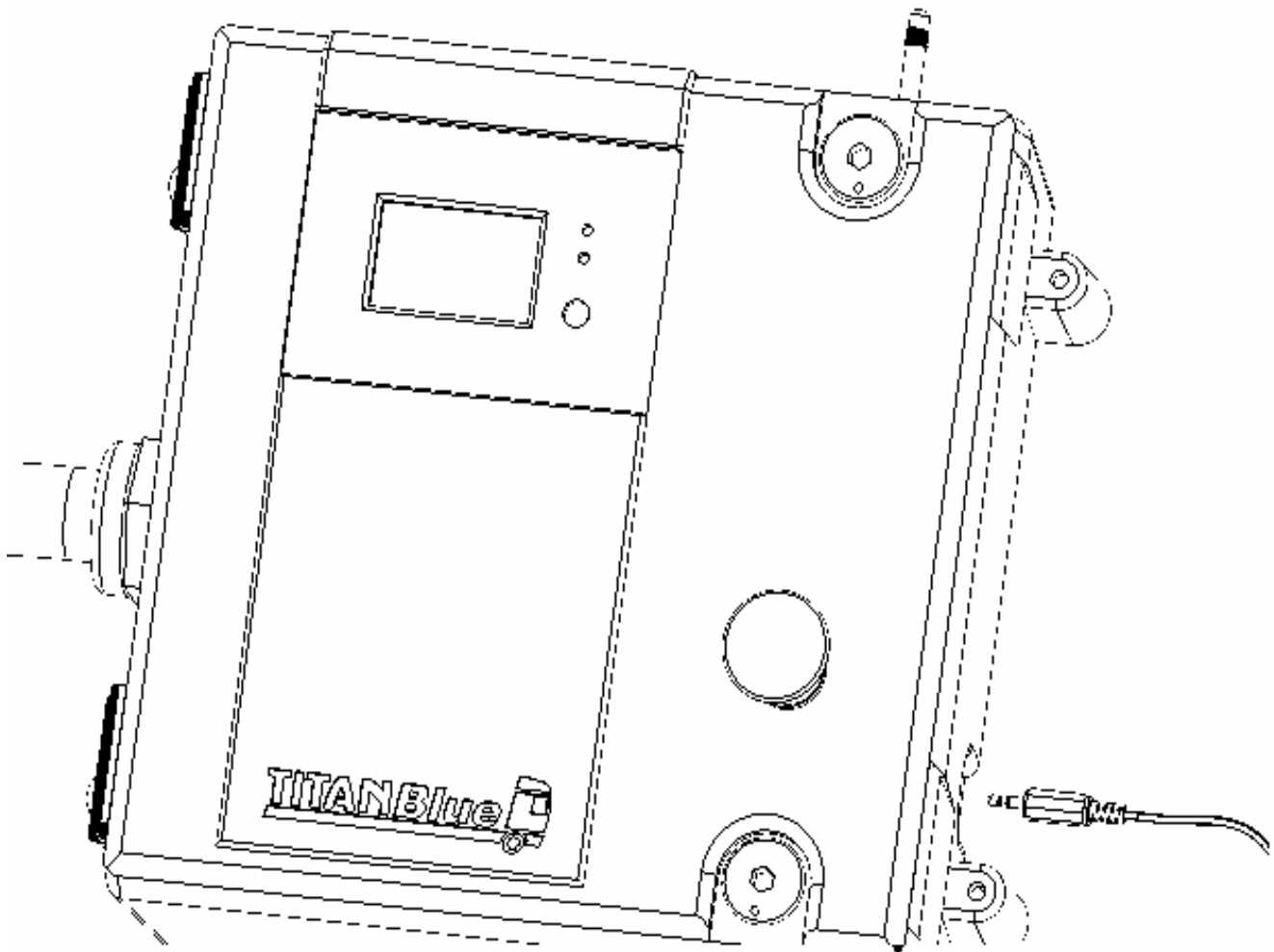


TMS

TANK MANAGEMENT SYSTEM



Operating Instructions

GENERAL

The Tank Management System is a bespoke design to control, monitor and accommodate efficient storage and dispensing of TMS.

FUNCTIONS OF TMS CONTROL PANEL

- Level Measurement
Ultrasonic or 4 – 20mA type identical transducer
- Overfill Alarm
Visual and audible
- Variable Low Level Cut Off
Visual and audible
- Bund Alarm
Active Conductive type sensor, 10mm from tank base
- Equipment Alarms
Notification if level measurement, bund or capacitive sensors are damaged
- House Light
- Integrated Flow Meter
Flow in litres and cumulative amount
Auto display when pistol is lifted
Reverts back to level after 1 minute or via button toggle facility
- Flow Meter Conversion
91 – 100 pulses converter for flow equipment
- Automatic Pump Control
Cuts off after 5 minutes, if not used

OPTIONAL FEATURES

- Remote Monitoring Facility
GSM/GPRS real time accessibility
Provision of Alarms
Web hosting and integration of level / status information to SAP, Sage etc

- RFID
Dispensing Measurement Solution

PHYSICAL FEATURES

- Fire Resistant Cabling
- Safety Cut Off Emergency Stop Button
- Fire Retardant Box
- Tested for Humidity, (see Technical Specification)
- Fits full range of tanks

INSTALLATION

Mounting Instructions: Mount the unit in a waterproof housing using suitable nuts and bolts.

Positioning: Install the Control Panel allowing clear access to the Isolation switch. Leave adequate clearance to the 'RS232 Communication Port' to allow for calibration.

Electrical Connection: The electrical power should be connected to the Junction Box terminal block. Use minimum 13AWG (2.5mm²) wire.

Be sure to make all connections that comply with all appropriate electrical and safety codes.

FILLING TANK

Do not exceed a maximum fill rate of 350 litres per minute.

- Ensure pistol is in holder.
- Fit delivery hose to valve.
- Fill tank in normal manner.
- Stop filling when Overfill Alarm sounds.
- Disconnect delivery hose from valve.

DISPENSING FROM TANK

- Lift pistol from holder.
- The LCD will automatically switch to the Pistol Screen.
- Dispense Contents.
- Replace pistol in holder.
- Pistol Screen will revert back to the Main Screen in 1 minute.

Note: If the pistol is not replaced into the pistol holder correctly, the pump will run for 5 minutes before automatically switching off.

OPERATION

When the control panel is switched on, the LCD 'Main Screen' will appear, as shown in Figure 1 below. The numeric indicator shows the volume of liquid remaining in the tank, in litres. The bar chart below the number is a visual indication of the tank's volume, each bar represents 1/10th of the volume (ullage).



Figure 1 LCD – Main Screen

Flow Mode

When the dispensing nozzle is removed from its holder, the LCD will automatically switch to the 'Pistol Screen', as shown in Figure 2 below. The large size numbers in the centre of the screen indicate how many litres have been dispensed at present. The small size numbers beside "TOTAL" indicates the total volume of liquid dispensed in litres.



Figure 2 LCD – Pistol Screen

When the dispensing operation is complete and the dispensing nozzle is returned to its holder, the 'Pistol Screen' will revert back to the 'Main Screen' in approximately one minute.

There is still the ability to move between the 2 screens, by using the reset button.

If the pistol is lifted off it's holder or not positioned back correctly, the pump turns off after 5 minutes if nothing is dispensed.

It is possible to turn off the buzzer by pushing the reset button.

There is a light inside the cabinet which can be turned on and off by holding down the reset button for 5 seconds. This light will turn off automatically after 5 minutes if nothing is dispensed.

ALARMS



: This symbol will appear in the top left corner of display to indicate that there is at least 1 alarm mode present.

Low Level Alarm:

This indicates the level in the tank is low, and therefore it is not possible to dispense any liquid. The pump is switched off automatically, and cannot be switched on until the volume in the tank exceeds the low level setting, eg Tank has to be filled to enable pump to operate.

Note: The first section of the bar chart will be flashing. There will be no buzzer sound and no Alarm LED light.



0 Lts

Figure 3 LCD – Low Level Alarm

Level Alarm:

This indicates a fault has occurred with the tank's level detection device and therefore cannot measure the volume of liquid remaining in the tank. The volume displayed is the last good level received and will remain until new level is received. An Alarm LED will light and a buzzer will also sound. It will not be possible to dispense liquid while in this alarm mode, as the pump will be automatically switched off.



Figure 4 LCD – Level Alarm

Overfill Alarm:

Activation of this alarm indicates the tank has reached full capacity and filling must be stopped immediately. An Alarm LED will light and a buzzer will also sound also for 5 minutes.

Note: The tank volume will flash for 5 minutes. After 5 minutes the word 'Stop' will be replaced with a bargraph, as per the normal screen.



Figure 5 LCD – Overfill Alarm

Leak Alarm:

If a leak from the tank has been detected the buzzer will sound and Alarm LED will light. The buzzer will stop after 5 minutes, but the LED will remain lit.

Check to see if bund area is wet.

Once bund area is emptied, the LED will turn off and the LCD will revert back to the main screen.



Figure 6 LCD – Leak Alarm

Leak Error Alarm:

If a fault has been detected with the leak detector, the buzzer will sound and Alarm LED will light.



Figure 7 LCD – Leak Error Alarm

TMS Control Panel Technical Specification

Dimensions	Height: 310mm, Width: 358.5mm, Depth: 114.7mm
Material	ABS
Ambient temperature	-20°C to +40°C
Humidity Range	15% - 95%
Altitude Range	<2000m above sea level
Supply voltage	230 V AC, 50-60Hz, 1.6KVa
Electrical connections	High voltage: 2 and 3 way connectors 5.08 pitch Low voltage: 2 way and 20 way connector 3.5 pitch, Jack connector – 3 pole, 3.5mm, 1A jack socket
Inputs	High voltage: <ul style="list-style-type: none"> - power supply 230 V - thermostat 35 C - thermostat -8 C Low voltage: <ul style="list-style-type: none"> - ultrasonic input (3 V) - 4 - 20 mA - flowmeter input (91 impulses/ litre) - thermistor 10k - leak sensor - pistol
Outputs	High voltage (230 V) : <ul style="list-style-type: none"> - fan 1 - fan 2 - pump - house heater - tank heater - MC Box - light Low voltage: <ul style="list-style-type: none"> - impulses out (100 impulses/litre), open collector 12 V dc
Interface	Jack connector – 3 pole, 3.5mm, 1A jack socket (RS232)
Display	128x64 graphic LCD, blue
LEDs	Green – power Red – alarm
Operation	<ul style="list-style-type: none"> - switch - emergency button
Buzzer	12 V dc
Circuit breakers	<ul style="list-style-type: none"> - fans - 6A - pump and MC Box - 6A - house heater - 10A - tank heater and lamp - 16A
Approvals	Unit meets the requirements of; <ul style="list-style-type: none"> • Low Voltage Directive: EN 61010:2001 • EMC Directive: EN55011:1999+A2:2001, EN 61326:1998+A3:2003

Note:



High Voltage Outputs (Fan 1, Fan 2, Light, Pump House Heater, Tank Heater), are hazardous voltage (mains voltage).

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired

Maintenance

F1 (Fuse) - 315mA Quick Blow Fuse

The equipment contains no other user serviceable parts and all maintenance and repair must be carried out by the manufacturer

External Circuit Technical Specifications

Circuit	Max Rated Input/Output	Connector
House Heater	230V 50/60Hz 600W	Connector – Tyco 1-480701 Pin Contact – Tyco 926896-1 Wire Seal – Tyco 794272-1 Heatshrink – Tyco CGFC-24/8-0
Tank Heater	230V 50Hz 450W (Max length – 12m)	
Fan 1	230V 50Hz 180mA 15W	
Fan 2	230V 50Hz 400mA 60W	
Pump	230V 50Hz 520W 2.4A	

TOUBLE SHOOTING GUIDE

Alarm	Action/Solution
Low Level Alarm	Fill Tank
OverFill Alarm	Stop Filling the Tank
Level Alarm	Check connection to Level Device
Leak Alarm	Pump out bund area as soon as possible. Dispose of fluid safely and according to the requisite legislation
Leak Error Alarm	Check connection to the Bund Sensor