

VPM Marine Tank Gauging Systems

Scalable solutions for any Vessel



Key features

- A family of stand-alone tank and draught monitoring solutions with data output to other systems
- Modular functionality allows for tank gauging, draught monitoring, trim and heel measurement, and flood detection either as a discrete function or combined in a single system
- Scalable for all vessel sizes and types
- Purpose developed central processing unit with embedded firmware and no reliance on commercial operating systems
- No limit to type or number of input points
- Serial multi-drop instrument loops and Ethernet display interconnection saves significant cable costs and installation time
- Multiple display options

Scalable Tank Monitoring Systems

At the centre of each system is PSM's VPM processing module. With both hardware and the "Connect" embedded firmware having been developed In-house this Type Approved system, does not rely upon a Windows Operating System and is engineered for maximum performance and reliability.

All firmware and configuration data are stored on solid-state non-volatile memory with 100% redundancy.

The central module handles all signal acquisition and data processing and generates the display of real-time data, alarm status and serial outputs to other systems. All variants employ the "Connect" firmware and the hardware option is selected depending on the requirements of a particular application.

VPM4300 (DTGS)

For smaller vessels with fewer tanks the hardware option is selected depending on the requirements of a particular application with the displayed data formatted to suit the screen size. The VPM4300 communicates directly with PSM APT1000 intelligent tank level transmitters via a multi-drop RS485 network which is constructed using PSM's RFM4 Termination Modules.

Each RFM4 accepts connections for up to 4 APT1000 level transmitters and then interconnect using a single cable carrying both power and communications. This arrangement significantly reduces both cabling required and installation time for both newbuild and retrofit applications. A PSM RFM-ISR is included between the VPM and RFM4 network. This module functions as both Safety Barrier for I.S. compliance on Hazardous Area networks and a power supply regulator for safe area networks.

Where information is needed at more than one location, multiple VPM4300 units can be interconnected via a dedicated Ethernet link.

Each VM4300 may have its own network of directly connected APT1000 transmitters or may just be used as a repeater display. All tank data is shared, meaning it may be shown on all or selected VPM 4300 units depending on user requirements.

Each VPM4300 can be used can also provide an RS485 output of all tank status data. Output protocol is Modbus RTU which can be read by other onboard systems such as a loading computer or alarm monitoring system. The format and content of this message can be configured per indicator.

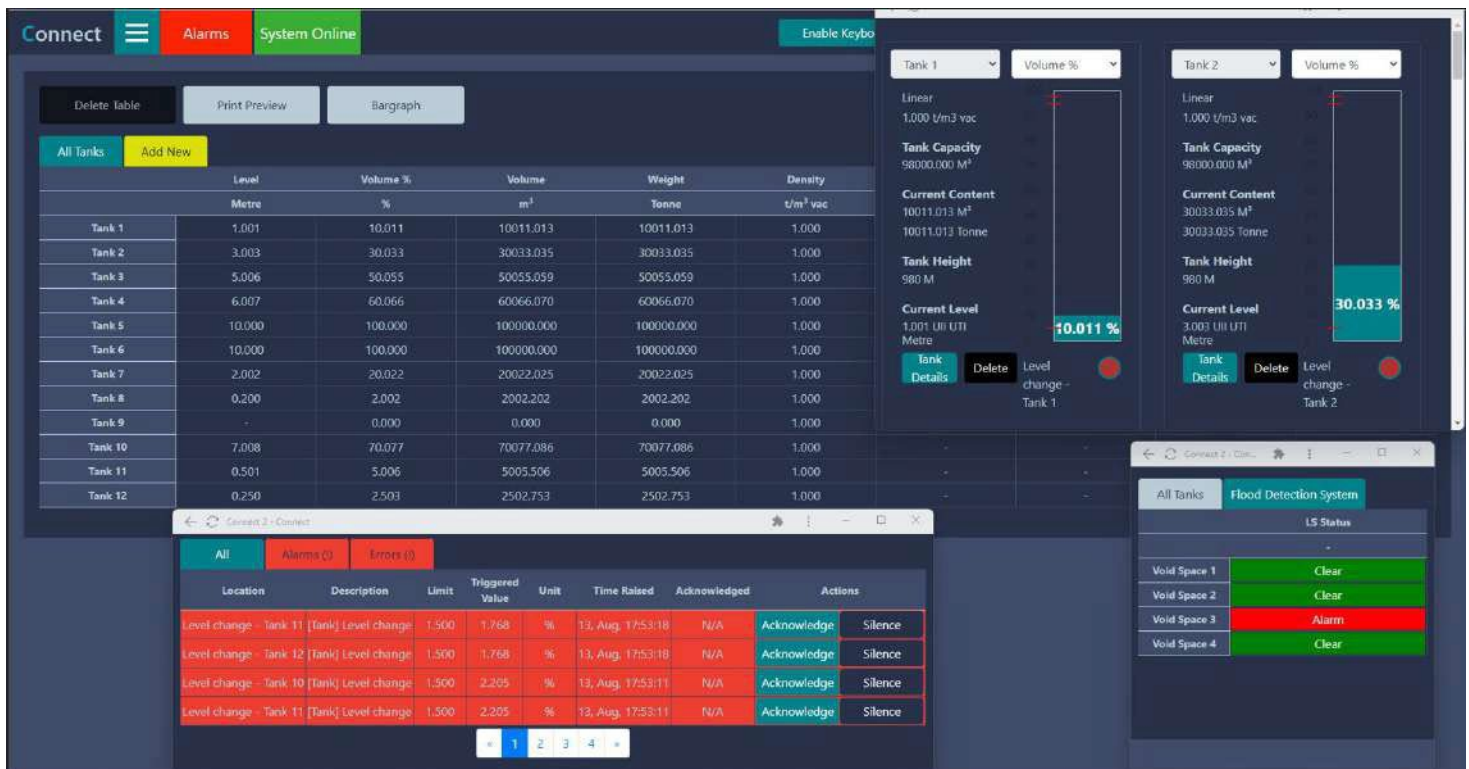
VPM+

For larger vessels where a more comprehensive/larger display is required, the same basic architecture is used to directly connect to the APT 1000 transmitters and the VPM 4300 is equipped with additional firmware functionality to support the addition of one or more larger remote displays.

These displays connect to the VPM 4300 via a dedicated ethernet network, each having a small communications hub which interfaces to the Ethernet network and provides an HDMI output to the display. The display may either be touchscreen or mouse / trackpad controlled, and each remote screen can be formatted to display all data or only that which is needed at its location.

Tank content and alarm data is presented in both tabular and graphical formats with grouping and layout as required.

In this configuration the VPM acts as a web server mean it is also possible to add any other hardware such as a PC which has an Ethernet port and the ability to open a web browser.



VPM System (VPMS)

Both DTGS and VPM+ systems are based upon PSM’s APT1000 transmitters for tank and draught measurement.

The VPMS expands on this and allows multiple input types to be monitored.

The VPMS features a repackaged central processing unit with additional input and output capability. Five RS485 input ports allow serial connection of a range of input modules.

- A 12 Channel input Module supporting HART protocol – for connection of the PSM SC R8 80Ghz Radar level transmitter.
- A 12 Channel 4-20mA input Module with integral Intrinsic Safety Barriers
- A module with 8 RS485 ports. To each of which a signal converter with up to 14 PT1000 temperature sensors can be connected

Up to 16 input modules can be connected to each of the 5 RS485 input ports on the VPMS meaning that the number of inputs is unlimited for practical purposes.

All input modules integrate Safety Barriers into their design permitting direct connection to Hazardous Area equipment.

The VPMS also includes 9 changeover relays which can be configured to provide contact outputs for high or low tank states (either common to all tanks or for discrete tanks) or other system errors such as power failure, communications loss, etc.

System primary supply is 24V DC and a secondary supply, also 24V DC, may be connected providing seamless operation in case of primary supply failure.

Two onboard USB ports allow for simple backup / uploading system configuration.

Packaging of a VPMS system is flexible and arranged to suit each application. The input modules may be packaged within the same enclosure as the central processing unit, or they may be remotely mounted and connected via RS 485.

The VPMS can use VPM Displays, Remote Hubs, or any remote hardware capable of connecting via Ethernet and running a web browser. Each remote display can be configured to show all information, or only what is relevant to its location.

VPMS Typical Schematic

