



minder 2200 series

single & multiple channel tank monitors & data acquisition units

Powerful, versatile, simple to apply & cost effective, attributes common to all members of PSM's new generation of Minders. Developing on the capabilities of its highly successful predecessor, the range offers comprehensive display & control facilities to keep you clearly in the picture.

From a single tank installation, through a small tank farm, to a complete plant or ship wide network, the flexibility and connectivity offered by all units ensures that tailoring the optimum system for your particular application is straightforward & simple.

Particular attention has been paid to engineering the products for installation under the harsh environmental conditions often found in Marine and Industrial applications. They are offered in a choice of formats, both panel and wall mount. The latter are of weatherproof epoxy coated steel construction suitable for outside installation, and with sufficient space for the termination of plant wiring.



Each unit is normally provided with a display for local indication, and has both an RS485 serial port for network communications, and an RS232 port for host communications and local configuration

KEY FEATURES

- **EXPANDABILITY** - from 1 to 100 tanks and beyond
- **EASE OF USE** - simple to use menu structure , accessed either locally or via PC link
- **FLEXIBILITY** - look up table programmable for any shape of pressurised or vented tank. Tank name, product details, and engineering units are all user defined..
- **CONTROL** - up to 4 output relays per tank with digital input monitoring to receive alarms from other systems
- **S.G. CORRECTION** - manually programmable or automatically calculated by the monitor
- **COMMUNICATIONS** - RS485 unit to unit link, and RS232 output to other systems. 4 to 20 mA retransmission signals
- **LOCAL DISPLAY** - both LED and LCD displays are used to provide a complete picture of the current status
- **SECURITY** - dual level password protection of all sensitive data and non volatile memory.

Network communication employs PSM's own highly secure protocol, whilst host communication is based on the MODBUS protocol. This widely supported protocol enables integration with systems from other manufacturers.

To complete the picture PSM offer a comprehensive range of Hydrostatic and Ultrasonic Level transmitters, with particular variants having Marine "Type Approval" and being Intrinsically Safe certified. Also "TANKVIEW FOR WINDOWS" . is a cost effective PC based graphical monitoring package running under MS Windows 3.XX or 95/98 Operating system

Please request separate data sheets covering transmitters & PC software.

MODEL OPTIONS

Single Tank Unit (STU)

Providing full stand alone monitoring and control facilities for one vessel The unit has up to three

4 to 20 mA inputs for level, top pressure, and S.G. or temperature. Up to four control or alarm relay outputs, and a 4 to 20 mA retransmission (volume corrected) are also included.

Triple Tank Unit (TTU)

Employing the same Hardware as the STU this unit will monitor up to 3 vented tanks.

Multi Tank Unit (MTU)

The basic unit has 8 No. 4 to 20 mA inputs and 16 digital (voltage free contact) inputs A further 32

4 to 20 mA inputs may be added, allowing up to 40 vented tanks to be monitored from one stand alone unit. An 8 channel 4 to 20 mA retransmission card, and a 16 relay (mains rated SPCO) may also be added to provide comprehensive local control facilities.

Data Acquisition Module (DAM)

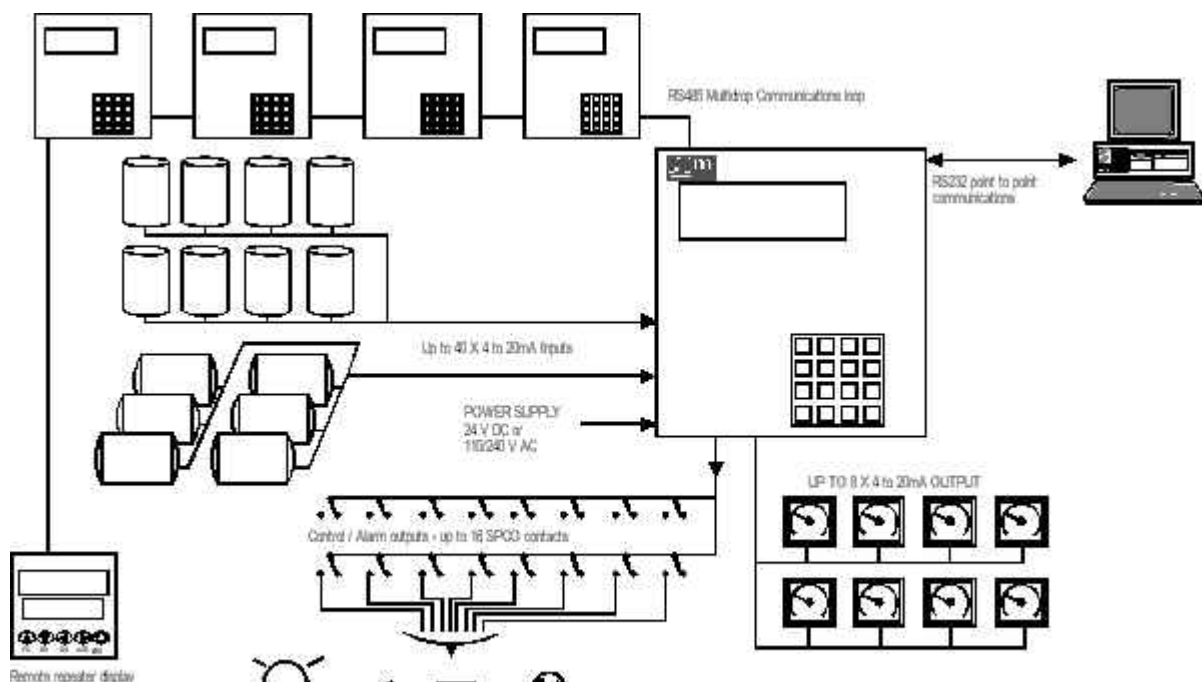
In effect this is a "blind" version of the MTU intended for use where the display is required remote from the data collection point, for example in the control room.

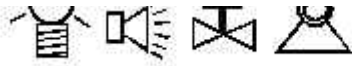
Input Display Module (IDM)

This unit has no direct plant inputs or outputs, it communicates serially with other units to act as a remote or repeater display.

All units have both RS 232 and RS485 serial communication ports. RS232 is used for local communication, for example to a Host Computer or for a Service Engineer to interrogate the unit.

RS485 is used for the unit to unit communications network and may have a total cable run of up to 1.2 Km. Even this may be extended by the addition of low cost line drivers.





SOFTWARE CONFIGURATION FACILITIES

INPUT SCALING

Span : Corrects for differences between the actual tank depth and the level transmitter's set range

Zero offset : Corrects for transmitter mounting position where this is below or above the tank base.

Linearisation : Up to 20 point look up table relating liquid level to tank volume.

Specific Gravity : This may either be a manually entered value, a direct signal input, or derived in the unit by comparison of input signals. It corrects the signal from hydrostatic level transmitters.

DISPLAY

Tank Title : May be any combination of letters & numbers up to 10 characters

Engineering Units : any combination of letters & numbers up to 10 characters

Dimmer : On models with LED display this may be toggled between day & night settings.

Backlight : On models with LCD display the backlight may be toggled on / off

ANALOGUE RETRANSMISSION (4 - 20 mA)

Scaling : Zero offset and span function allows output to be scaled over all or part of the input range.

Assignment : Allows signal output to represent level, volume, top ;pressure or S.G.

Invert : Output may be proportional or inversely proportional to represented parameter

RELAY OUTPUTS

Function : Alarm (may be acknowledged) or control (background function)

Type : **Make On Rise**, **Make On Fall**, **DEVIation**.

Failsafe : Relays normally energised or normally de-energised.

Assignment : Output may be "tied" to level, volume, top pressure, or S.G. value.

Setpoint : The point where the output is triggered as a percentage of monitored parameter

Debounce : Delay before output triggers

Hysteresis : The differential, in percent of monitored parameter, between set and reset of the output.

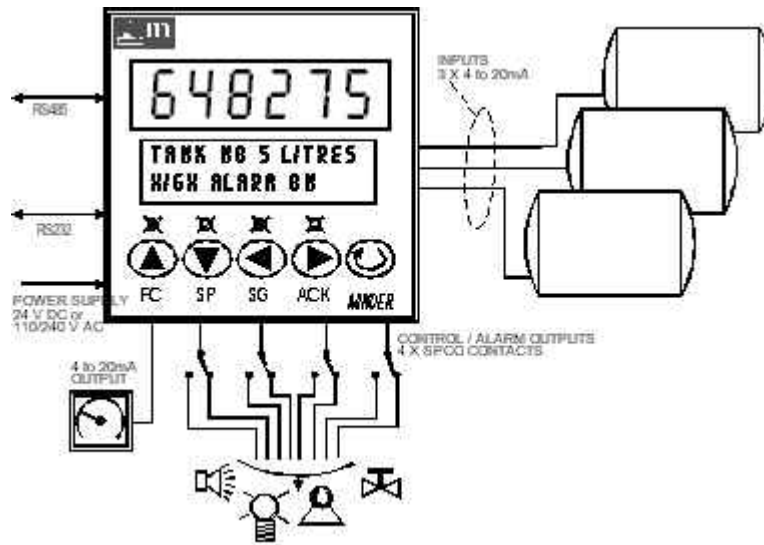
SECURITY

Ident No : A unique identifier for each unit which defines its position within a networked system

Passwords : Access to system facilities is protected by a 2 level password system. **Supervisor** gains access to all facilities and **Operator** only to those that the Supervisor has allowed.

Note :The comprehensive facilities of these instruments means that the foregoing only provides a brief overview of

the main configuration parameters. Also, certain facilities are mutually exclusive



HARDWARE SPECIFICATIONS

STU & TTU

Packaging : Enclosure options of DIN 96 mm Panel mount, and IP65 wall mount weatherproof .

Display : 2 line X 16 character alphanumeric LCD, & 6 decade "superbright" 14.2 mm LED.

Operation : Fully menu driven accessed via 5 multifunction buttons on front panel.

Power requirement : 24 V DC , or 110 / 240 V AC.

Inputs : 3 No. 4 to 20 mA . Transmitter power supply may be selected /de-selected as required.

Retransmission : 1 No. Isolated 4 to 20 mA

Relay outputs : 4 No. SPCO relays rated 5A 250 V AC

A to D conversion : 12 Bit

Serial Communications : 1 No RS 232 local port, 1 No RS 485 network port

Note : The **IDM** variant has a similar mechanical packaging to the STU and TTU variants with the exception that no local input or outputs are fitted.

MTU

Packaging : IP65 Wall mounting steel enclosure

Display : 8 line X 40 Character alphanumeric LCD.

Operation : Menu driven accessed via integral 16 button keypad.

Power requirement :

Inputs : 8 No 4 to 20 mA. Transmitter power supply may be selected if required

16 No digital Volt free contact closure inputs

Retransmission : 8 No Isolated 4 to 20 mA.

Relay outputs : 16 No SPCO relays rated 5A 250 V AC

Optional Input expander : a further 32 No 4 to 20 mA inputs. Transmitter supply selected if required

A to D conversion :12 Bit

Serial Communications : 1 No RS232 local port, 1 No RS485 network port

Note : The **DAM** has a similar mechanical packaging to the MTU but is not equipped with a display or keypad and has software facilities to support data acquisition only.

PSM manufacture a complete range of Hydrostatic and Ultrasonic level transmitters, and will be pleased to discuss your particular requirements

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