

Product Datasheet - Technical Specifications



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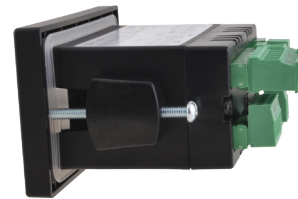
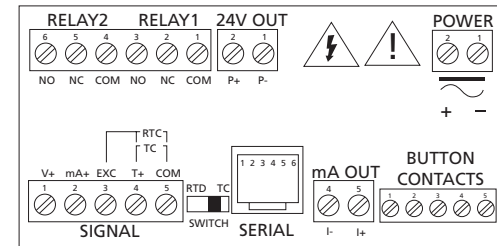
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Panel Meters: Vertu® Series

VPM3000 Series Universal Transmitter/Alarm with Display



Actual Size



Big, bright display ♦ 4-20mA, $\pm 10V$, thermocouple, or RTD input ♦ 4-20mA, Modbus serial, or alarm relay output

Description

Acromag VPM3000 Vertu® digital panel meters are among the most versatile on the market and able to operate as a transmitter and/or alarm to satisfy a wide variety of process and temperature applications. The VPM3000 is field-programmable to accept many inputs including process voltage, process current, Platinum RTDs, and the four most common thermocouples.

One of the VPM3000 meter's most useful features is its ability to provide 24V DC to power a transmitter's 4-20mA signal. Two relays and isolated 4-20mA output options increase the utility of the display. The relays can be used for limit alarms or control applications. The 4-20mA output provides isolated retransmission of the input signal; especially useful for temperature inputs like thermocouples and RTDs without an additional signal conditioner.

A shallow-depth, 1/8 DIN enclosure features a NEMA4X front panel and convenient mounting hardware. There are two power options: 85 to 265V AC or 12 to 36V DC. AC powered versions can provide 24V DC to power a transmitter or other instruments. Programming and setup are very easy with either the four front-panel pushbuttons, the free configuration software or using the Copy function.

Extra-large display numerals are 1.2" (30.5 mm) high for easy reading from distances of up to 30 feet. The display intensity is also adjustable to compensate for various lighting conditions, including direct sunlight.

Key Features & Benefits

- 1/8 DIN digital meter with NEMA 4X, IP65 front
- 4-20mA, $\pm 10V$, TC & RTD field selectable inputs
- 4-digit display, 1.20" (30.5 mm) height
- Shallow depth case extends only 3.6" (91.4 mm) behind panel
- Isolated transmitter power supply option (24V @ 200mA)
- Isolated 4-20mA and dual relay output options
- Input power options: 85-265V AC or 12-36V DC
- Free PC-based programming & monitoring software
- Sunlight readable display
- Duplex pump controller with alternation capability
- High and low alarms with multiple reset actions
- Max/min display
- Modbus RTU communication protocol standard
- Operating temperature range: -40 to 65°C (-40 to 150°F)
- UL & C-UL listed. E244293; UL 508 industrial control equipment
- USB, RS-232, & RS-485 serial communication adapters

Performance Specifications

General

Except where noted all specs apply to operation at +25°C.

Display

1.20" (31 mm), Four digits (-1999 to 9999).

Display Intensity

Eight intensity levels.

Display Update Rate

Process/RTD: 3.7-5/second.

Thermocouple: 1.8-2.5/second.

Overrange and Underrange

Display flashes 9999 (over) or 1999 (under).

Programming Methods

Four front panel buttons, PC software, or Copy function.

Recalibration

All ranges are calibrated at the factory.

Max/Min Display

Max/min readings reached by the process are stored until reset by the user or until power to the meter is turned off.

Power Options

85-265V AC, 50/60 Hz,

90-265V DC, 20 W max.

or 12-36V DC, 12-24V AC, 6 W max.

Isolated Transmitter Power Supply

One or two transmitter power supplies (Optional).

P1: 24V DC $\pm 10\%$ @ 200mA max.

P1 & P2: 24V DC $\pm 10\%$ @ 200mA and 40mA max.

Isolation

4 kV input/output-to-power line.

500 V input-to-output or output-to-P1/P2 supplies.

100 V output-to-24 VDC supply.

Performance Specifications

Normal Rejection Mode

64 dB at 50/60 Hz.

Noise Filter

Programmable from 2 to 199 (0 will disable filter).

Fuse

Required fuse: UL Recognized, 5 A max, slow blow.

Up to 6 meters may share one 5 A fuse.

Environmental

Operating temperature range: -40 to 65°C.

Storage temperature range: -40 to 85°C.

Relative humidity: 0 to 90% non-condensing.

Connections

Removable screw terminal blocks accept 12 to 22 AWG. wire, RJ11 for serial communication adapters.

Enclosure

1/8 DIN, high impact plastic, UL 94V-0, color: black.

Overall Dimensions (H x W x D)

2.45" x 4.68" x 4.19" (62 mm x 119 mm x 106 mm).

9.5 oz. (269 g) (including options).

■ Process Input

Inputs (field-selectable reanges)

±20 mADC (0-20, 4-20 mA) and ±10 VDC(0-5, 1-5, 0-10 V).

Accuracy

±0.05% of span ±1 count, square root: 10-100% FS.

Function

Linear or square root.

Low-Flow Cutoff

0-9999 (0 disables cutoff function).

Temperature Drift

0 to 65°C ambient.

Current: ±0.20% FS (50 PPM/°C).

Voltage: ±0.02% FS (1.7 PPM/°C).

Decimal Point

Up to three decimal places for process inputs:

d.ddd, dd.dd, ddd.d, or dddd

Input Impedance

Voltage ranges: greater than 1 MΩ.

Current ranges: 50 to 100 Ω (depending on resettable fuse).

Input Overload

Current input protected by resettable fuse.

Fuse resets automatically after fault is removed.

■ Temperature Inputs

Inputs

Field selectable: type J, K, T, or E thermocouples;

100 Ω platinum RTD (0.00385 or 0.00392 curve).

Resolution

1° or 0.1° for all RTD inputs. 1° for all thermocouples.

1° or 0.1° for Type T thermocouple.

Offset Adjustment

Programmable to ±19.9°. This parameter allows the user to apply an offset value to the temperature being displayed.

Cold Junction Reference

Automatic, fixed, no user calibration needed.

Input Impedance

Greater than 100 kΩ.

Sensor Break Detection

Open TC or RTD sensor indicated by display flashing "oPEn".

All relays and alarm status LEDs go to alarm or non-alarm

state, programmable for each relay individually.

Analog output goes to the programmed sensor break value.

Accuracy

0 to 65°C. (see manual for -40 to 0°C ranges).

Type	Range	Accuracy
J	-58° to 1382°F (-50° to 750°C)	±2°F (±1°C)
K	-58° to 2300°F (-50° to 1260°C)	±2°F (±1°C)
T	-292° to 700°F (-180° to 371°C)	±2°F (±1°C)
T 0.1° Res	-199.9° to 700°F (-180° to 371°C)	±1.8°F (±1°C)
E	-58° to 1578°F (-50° to 870°C)	±2°F (±1°C)
100Ω RTD	-328° to 1382°F (-200° to 750°C)	±1°F (±1°C)

■ Relays Option

Rating

Two SPDT (Form C); rated 3A @ 30V DC or 3A @ 250V AC resistive load; 1/14 HP @ 125/250V AC for inductive loads.

Electrical Noise Suppression

A suppressor (snubber) should be connected to each relay contact switching inductive loads to prevent disruption to the microprocessor's operation.

Recommended suppressor value: 0.01 μF/470 Ω, 250V AC.

Deadband

0 to 100% of full scale, user selectable.

High or Low Alarm

User may program any alarm for high or low trip point.

Relay Operation

Automatic (non-latching), latching, pump alternation control.

Relay Reset

User selectable via front panel buttons or PC.

Automatic reset: Resets when the input passes the reset point.

Manual reset: Front panel ACK button.

Fail-Safe Operation

Programmable, independent for each relay. Relay coils are energized in normal condition. In case of alarm or power failure, relays will go to de-energized state.

Time Delay

0 to 199 seconds, on and off delays.

Auto Initialization

When power is applied to the meter, relays will reflect the state of the input to the meter.

■ Isolated 4 to 20mA Transmitter Output

Output Range

1.00 to 23.00 mA typical. Factory calibrated for 4 to 20mA.

Scaling Range

0.00 to 23.99mA for any display range, see output range.

Accuracy

± 0.1% FS ± 0.004mA.

Drift: 0.4 uA/°C from -40 to 65°C ambient.

Note: Analog output drift is separate from input drift.

External Loop Power Supply

35V DC maximum.

Output Loop Resistance

Power Supply	Minimum	Maximum
24V DC	10 Ω	700 Ω
35V DC (external)	100 Ω	1200 Ω

■ Serial Communications

Meter Address

Modbus protocol: 1 to 247.

Baud Rate

300 to 19,200 bps.

Transmit Time Delay

Programmable between 0 and 199 ms.

Data

8 bit (1 start bit, 1 stop bit).

Parity

None (1 or 2 stop bits), even, or odd.

Byte-To-Byte Timeout

0.01 – 2.54 sec (Modbus only).

Turn Around Delay

Less than 2 ms (fixed).

Ordering Information (click here to view online)

Model No.	Pwr: 85-265V AC or 90-265V DC	Pwr: 12-36V DC or 12-24V AC	4-20mA Output	Dual Relays	24V DC Supply	Dual 24V DC Supply	* Modbus Interface
VPM3100	x						x
VPM3101	x				x		x
VPM3110	x		x				x
VPM3111	x		x		x		x
VPM3112	x		x			x	x
VPM3121	x		x	x	x		x
VPM3130	x			x			x
VPM3131	x			x	x		x
VPM3200		x					x
VPM3210		x	x				x
VPM3220		x	x	x			x
VPM3230		x		x			x

* Requires APMA-7422 RS-485 interface adapter