

# PANEL METERS

A brief overview of the various panel meter types and their capabilities.

## Analog Panel Meter - Signal Indication

Typical size: 2½-5½" rectangular, 1½-4½" round, 3/16 & ¼ DIN, 6" edgewise, 4½ & 8¾" square switchboard.  
 Typical accuracy: 1-2% of reading DC, 2-3% AC.  
 Simple installation: No setup, no external power required.  
 No RF emissions and low EMI susceptibility.  
 Many special types & options: center zero, offset, RF, VU, high shock, illuminated, custom scaling, color dials.

Electrical Signal (V, A, Hz) or Sensor (TC, RTD, RPM)

2<sup>nd</sup> Input on W, VA, PF & Synchro Meters



Custom scales & legends can be ordered

## Analog Meter Relay - Indication with Relay Contact Outputs

Typical size: 3½-4½" rectangular.  
 Typical accuracy: 2% of reading DC, 3% AC.  
 External power: 120/240VAC, 5-28VDC.  
 Setpoint relays: one high, one low, or dual (high and low).  
 Optical relay activates when signal passes setpoint.  
 Setpoint adjustment: knob or screw.

Electrical Signal (V, A, Hz) or Sensor (TC, RTD)



Custom scales & legends can be ordered

Relay Output  
 HI = active above setpoint  
 LO = active below setpoint

## Digital Panel Meter (DPM) - Signal Indication

Typical size: 1x2" to 4x5", 1/32 to 1/8 DIN.  
 Typical accuracy: 0.1% of reading DC.  
 External power: 5-28VDC.  
 Display: LED (red, green or amber), LCD or backlit LCD.  
 Fixed function & range.  
 Typical resolution: 3-4½ digits for V/A, 6 digits for counter/timer.  
 Special types & options: loop powered, sealed front, custom range.

Electrical Signal (V, A, Hz) or Sensor (TC, RTD, RPM)



## Smart Digital Panel Meter - Advanced Indication, Control & Communication

Typical size: 1.5x3" to 8x16", 1/32 to 1/4 DIN.  
 Typical accuracy: 0.1% of reading DC, 0.5% of reading AC.  
 External power: 120/240VAC, 5/24/125/250VDC.  
 Display: LED (red, green or amber), LCD or backlit LCD.  
 Typical resolution: 3½-5 digits for V/A, 6-9 digits for counter/timer.  
 Some models have field selectable input type, sample rate, filtering, scaling, setpoints, curve fitting, etc.  
 Analog retransmit: DCV/mA output for remote indication or recording.  
 Relay outputs: Up to 6 setpoint relays for control & alarms.  
 Digital communication: RS232, RS485 or Ethernet for software setup & networking.  
 Special types & options: dual input, loop powered, triple display, power meters, sealed front

Electrical Signal (V, A, Hz, pulse, Ω) or Sensor (TC, RTD, Load cell, RPM, etc)



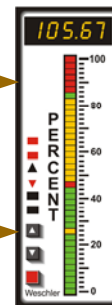
Scaling & Advanced Computations (curve fitting, A-B, A/B, etc)

Options  
 Analog Output  
 Relay Output  
 Digital Comm.

## Digital Bargraph Meter - Digital Display & Analog Bar Indication with Control & Communication

Typical size: 6" edgewise, 4½ & 8¾" square switchboard; 9/64 DIN.  
 Typical accuracy: 0.1% of reading DC, 0.5% of reading AC.  
 External power: 120/240VAC, 12/24/48/125/250VDC.  
 Display: LED digits (red, green or amber) plus single or tri-color bar.  
 Typical resolution: 3½-5 digits and 50-100 segment bar.  
 Some models have field selectable sample rate, filtering, scaling, setpoints, curve fitting, bar color changes at setpoints, etc.  
 Bar & digital display can be scaled separately.  
 Analog retransmit: DCV/mA output for remote indication or recorder.  
 Relay outputs: Up to 6 setpoint relays for control & alarms.  
 Digital communication: RS232, RS485 or Ethernet for software setup & networking.  
 Special types & options: dual input, dual bar, high shock, sealed front

Electrical Signal (V, A, Hz, pulse, Ω) or Sensor (TC, RTD, Pressure, Load, RPM, etc)  
 2<sup>nd</sup> Input for W, VA, PF, computations or dual displays



Scaling & Advanced Computations (curve fitting, A-B, A/B, etc)

Options  
 Analog Output  
 Relay Output  
 Digital Comm.

## Controller - Digital Display & Setpoint Control

Typical size: 1/32 to 1/4 DIN.

Typical accuracy: 0.2% of reading DC, 0.5°C

External power: 120/240VAC, 24VDC.

Display: LED (red, green +/- or amber), backlit LCD.

Typical resolution: 4 digits for process & setpoint displays.

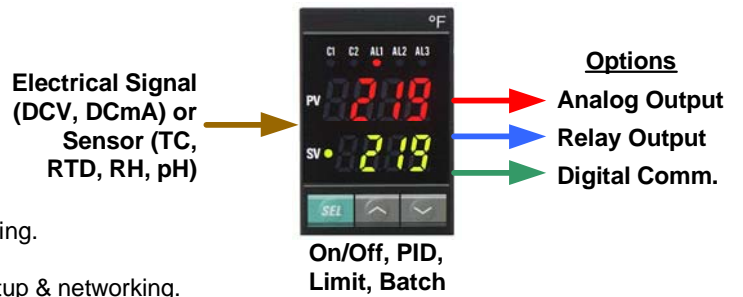
Control modes: On/off, P/I, PID, batch, heating/cooling, etc.

Analog retransmit: DCV/mA output for remote indication or recording.

Relay outputs: One or two setpoint relays for control & alarms.

Digital communication: RS232, RS485 or Ethernet for software setup & networking.

Special types & options: reverse acting, pulse output, autotune,



## Transducer/ Sensor & Meter

Use a transducer or sensor to convert a signal so it can be read by an analog or digital meter.



### Examples:

- Current Transformer (CT)
- Potential Transformer (PT)
- DC Shunt
- Current Transducer
- Frequency Transducer
- Watt Transducer
- Pressure Sensor

- hi current AC → 1A or 5A AC
- hi voltage AC → 120V AC
- hi current DC → 50 or 100mV DC
- AC or DC A → DCV or mA
- Hz → DCV or mA
- AC V&A → DCV or mA
- psi → DCV or mA

Liquid Level Sensor with 4-20mA output



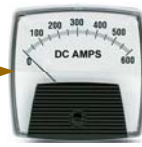
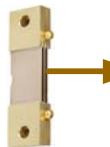
Bargraph Meter: 4-20mA input.

Digital readout in Gallons.

Bar equivalent to a sight glass.

Setpoint relays drive pumps and alarms.

600A:50mV DC Shunt



50mV Meter scaled for 0-600A

100A:5A CT



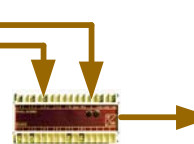
600V:120V PT



Triple Display Power Meter

Display 3 parameters e.g. V, A, W  
W, VA, Freq  
W, PF, THD

V from PT  
A from CT



Watt Transducer 0-1mA DC output



Meter with 0-1mA DC input, scaled for 0-150MW

60 pulse/revolution speed sensor



Digital Counter scaled for RPM

WI-03 7/11

Offering an extensive line of Analog Panel Meters, Digital Panel Meters, Bargraph Meters, Controllers, Sensors, Transducers, Data Loggers, Calibrators & Test Equipment.



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