

Quatro BarGraph Meters

for Monitoring and Control

- 101 segment bargraph in red, green or tricolor
- 4-digit, 10000 count LED display
- 6" edgewise & 9/64 DIN case sizes
- Vertical or horizontal orientation



Direct Measurement of

DC Current
AC Current
DC Voltage
AC Voltage
Frequency
Process Loops

Thermocouples
RTDs
Load Cells / Strain Gauges
Speed Pickups / RPM
Pressure
Resistance / Potentiometers

A flexible and highly configurable indicator for display of electrical signals and process parameters. Combines the precision of a digital readout with a vivid proportional display. Ideal for new applications and replacement of existing analog gauges or digital panel meters. Simple to install and set up.

Features

- Single & dual bar configurations
- Adjustable bargraph span - the bar can display any part of the digital display range
- Bargraph center zero mode
- Four programmable setpoints
- Front panel setpoint status indicators
- Up to 4 relay outputs for control and alarms
- Analog retransmit option with adjustable span
- Wide power supply range (AC & DC)
- Sensor excitation to power 4-20mA transmitters or bridge type sensors

The Quatro BarGraph line is based on a precision 12000 count A/D converter and microprocessor control. Intelligent filtering smooths noisy signals while quickly responding to large signal changes. A wide selection of input modules easily interface to transducers, sensors and common process signals. Multi-range modules increase field configurability. Range selection is made by moving the on-board jumper.

Setpoints & Relays

Up to four setpoints can be configured for control and alarm functions. Setpoints are indicated on the bar display by a lit segment if the bar is below the setpoint and a dark segment if the display is above the setpoint. Up to 4 setpoints are available in each unit. Relays can be ordered to provide external control and alarms. Each relay may be configured to activate above its setpoint or below its setpoint. High current outputs handle SPST and SPDT switching up to 10A and 250VAC. Solid state relays (DC or AC/DC) are also available in the edgewise case. Setpoints 1 & 2 can be combined to define a hysteresis band for relay one. This is particularly useful in tank level applications. Depending on the relay mode selected, it will perform either a tank fill or tank empty function.

Bar Display

The 101 segment bar provides 1% resolution for the selected bar span, which can be any portion of the input range. Red, green and tricolor bars are available. The tricolor bar can be set to change color based on signal level. This provides an easily seen indication when a measured parameter needs attention. The setpoint values are the transition points for color changes. Any color can be set between two adjacent setpoint values. In a common application, the bar is green when the signal is below SP1. When the signal is between SP1 & SP2, the entire bar changes to orange. Above SP2, the entire bar changes to red.

Analog Retransmit

A 0-10V or 4-20mA isolated analog output is available for remote indication or SCADA interface. The output can be adjusted to track any portion of the input span. Rescaling of the bar will not affect the analog output. An internal jumper quickly changes between V & mA.

Initial setup on the Quatro meters is done through the front panel buttons. Once set, installation of a rear panel jumper disables this feature.



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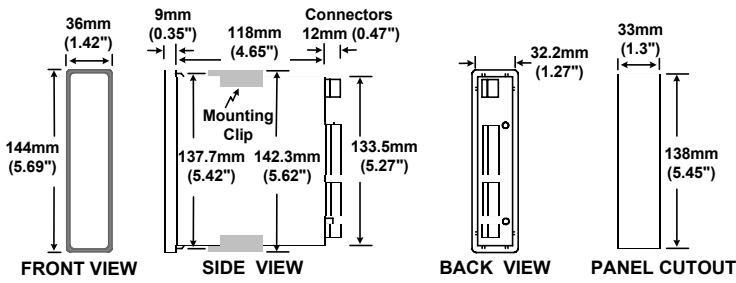
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CLEVELAND, OHIO 44149 USA

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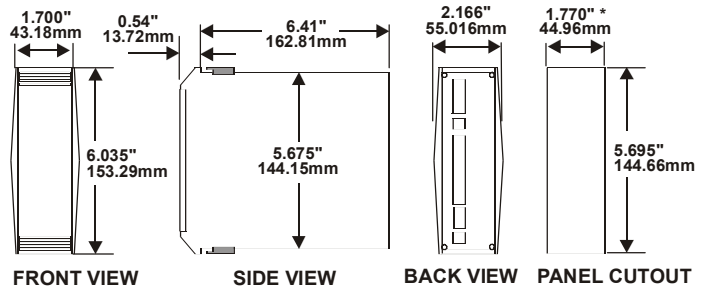
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Quatro BarGraph Meters

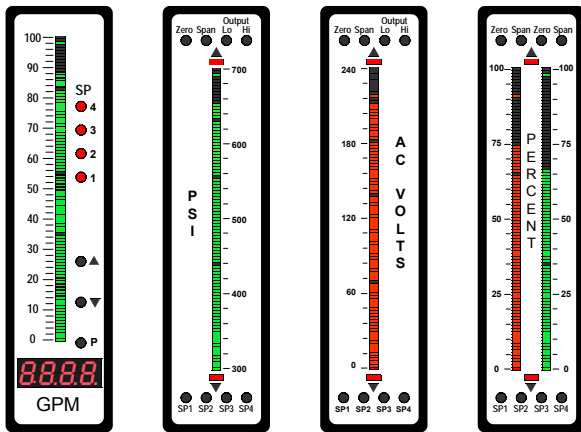
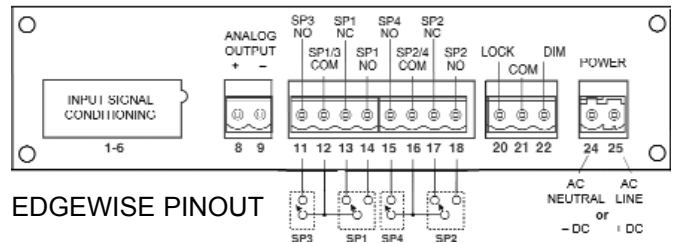
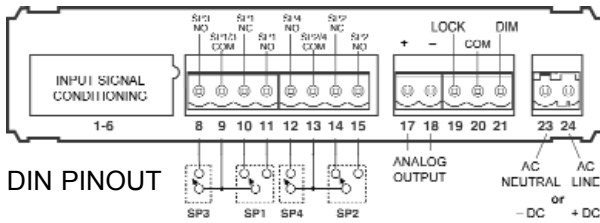
9/64 DIN Case



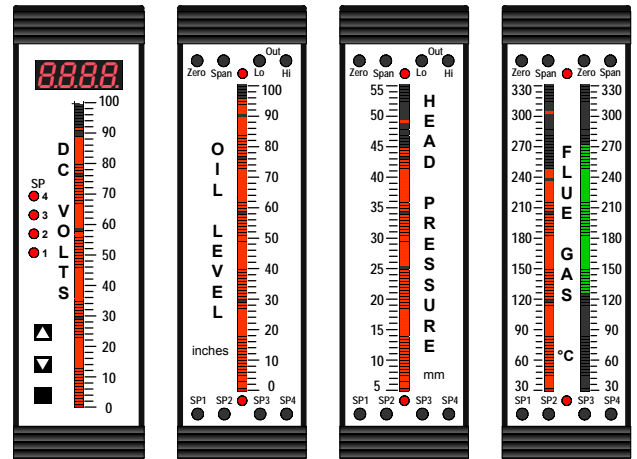
6" Edgewise Case



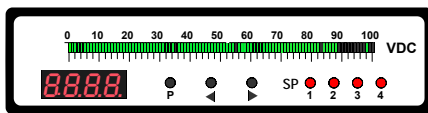
*add 1.74" (44.20mm) for each additional meter



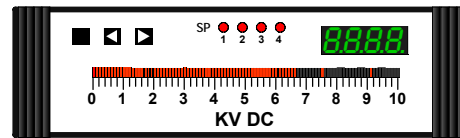
Style A Style C scale right Style C scale left Style D



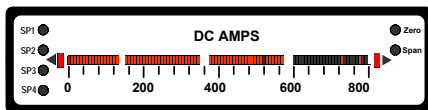
Style A Style C scale right Style C scale left Style D



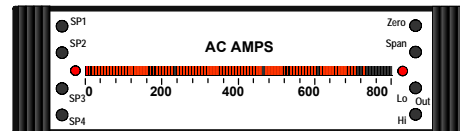
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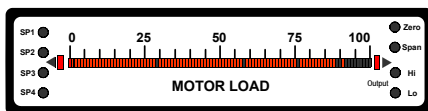
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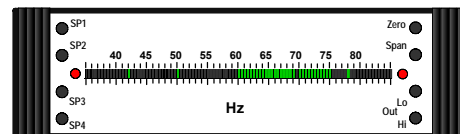
Style C Scale below



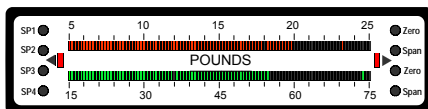
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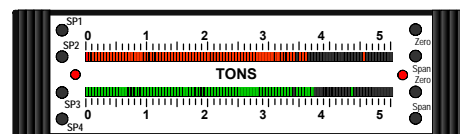
Style C Scale above



Style C Scale above



Style D



Style D

for Monitoring and Control

Style A Bar & Digital

Style A combines a precision 4 digit LED display with a 101 segment bargraph. The bar can be set to display any part of the digital range, from a minimum of 100 counts to the full 12000 A/D counts. Higher bar resolution is useful for applications where the normal operating range is only a portion of the full scale input.

Style A offers 4 levels of display brightness, which can be set from the front panel. A rear panel jumper dims the display by half. A programmable scale factor (PSF) option is available for some input types. With PSF, the input can be rescaled digitally, without applying an external signal. This eliminates the need for calibrated sources. In addition to the general features, setpoint 1 includes delay-on-make and delay-on-break. Each can be independently set from 1 to 9999 seconds.

Style C Single Bar

Style C offers a 101 segment red, green or tricolor bar, without digital display. The bar can be set to grow from the bottom or the center of the scale. The center mode is normally used for center zero but can also show deviation around a half-scale value. For top zero indication where the bar grows downward as the signal increases, order an inverted faceplate and install the meter with the setpoint buttons at the top.

Relay mode, center zero and hysteresis are selected by moveable internal jumpers. Initial setup of the bar range uses the front panel zero and span buttons. Once set, further changes can be inhibited by installing a rear panel jumper.

Style D Dual Bar

The dual bar configuration (Style D) can display two process variables, using the Dual Process input card (PE). Any combination of red and green bars can be specified. Two setpoints are available for each channel. The dual input card may also be used to display one process variable on the left bar and two tracking setpoints on the right bar. In this mode, setpoint 1 is determined by the channel 2 input signal. Setpoint 2 is offset from setpoint 1 by a fixed (user selectable) amount.

The dual bar style can be used with a single channel input module for independent setpoint display. The left bar displays the process signal; the right bar displays up to 4 setpoints. The right bar can also be used for a min/max display. In this mode the left bar displays the process signal; the right bar illuminates between the minimum and maximum signal values encountered since the last operator reset (simultaneous press of SP3 & SP4). Four setpoints are also available in this mode.

The display mode is selected by internal jumpers. Relay mode, center zero and hysteresis are also jumper selected. Operation is similar to Style C. Left and right bars can be independently set for center zero mode. SP1 & SP2 on the left bar can be used for relay hysteresis.

The optional analog output is tied to the channel 1 input signal. Output zero and span are adjusted from the front panel.

Specifications

Input Accuracy:	
DCV, DCA	±(0.06% of reading + 2 counts)
ACV, ACA	±(0.07% of reading + 5 counts)
Temperature	±(0.1% of reading + 3 counts)
Direct Pressure	±(1.0% of range + 3 counts)
Frequency/RPM	±(0.06% of reading + 2 counts)
Strain/Load	±(0.08% of reading + 3 counts)
Process	±(0.06% of reading + 2 counts)
Resistance/Pots	±(0.06% of reading + 2 counts)
Input Characteristics:	
DCmV, DCV	>500kΩ input resistance
ACmV, ACV	≥1MΩ input resistance
DCmA, ACmA	2V burden at full scale
DCA, ACA	<130mV burden at full scale
Line frequency	4MΩ input resistance
A/D Converter:	14 bit single slope, 2V full scale
Warm-up time:	2 minutes
Conversion Rate:	10/second (typical)
Bargraph Display:	4", 101 segment
Bar Viewing Angle:	±40° red or green, ±35° orange
Digital Display:	4 digit LED, 0.31" (7.9mm) height Range -1999 to 9999 counts
Decimal Position:	Front panel selectable n.nnn, nn.nn, nnn.n, nnnn.
Positive Overrange:	Bargraph & top segments of digital display flash
Negative Overrange:	First segment of bargraph & bottom segments of digital display flash.
Relay Output:	
Form A (SPST)	5A@250VAC, 5A@30VDC (resistive)
Form C (SPDT)	10A@240VAC, 8A@24VDC (resistive)

Analog Output:	Isolated 16 bit, user scalable
mA out	4-20mA, 500Ω maximum loop resistance
Volts out	0-10VDC, 500Ω minimum load resistance
Power Supply:	85-265 VAC / 95-370 VDC @ 5W (11VA) max., orange polarized connector; 18-48 VAC / 10-72 VDC @ 5W (11VA) max., black polarized connector
Sensor Excitation:	24VDC @50mA (2-wire loop power) 10VDC @120mA (bridge excitation)
Operating Temperature:	0 to 60°C, 95% RH (non-condensing)
Storage Temperature:	-20°C to 70°C
EMI:	EN61326: 1998
Isolation (50/60Hz):	2500VAC 500VAC
	between input, power & relays; between analog out, power & relays; between relays & function lines between input & analog out; between analog out & function lines
Mounting Dimensions:	DIN cutout: 33 x 138mm, depth 148mm 6" cutout: 1.77" x 5.695", depth 6.41"
Weight:	DIN case: 10 ounces (0.3kg) 6" case: 16 ounces (0.5kg)
Connectors:	Plug-in, screw terminal mating connectors included, accept #14-24 AWG wire; fixed screw terminals on 1A & 5A inputs; 2.5mm tubing to direct pressure modules
Warranty:	Two years, material and workmanship

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Quatro Bargraph Configuration Guide

Select desired code for each category to build the 15 digit part number

Also specify input range, faceplate scale and faceplate legend when ordering.

Certain option combinations not available on all models.

PART NUMBER

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TYPE L 4 digit, 9/64 DIN Case M 4 digit, 6" Edgewise Case
STYLE A Digital & bar C Single bar (no digital) D Dual bar (no digital)
ORIENTATION V Vertical H Horizontal
BAR COLOR R Red G Green T Tricolor (Style A or C only)
DIGITAL DISPLAY COLOR R Red G Green X None (Style C or D)
BAR & SCALE POSITION C Center bar (Style A) A Center bar, scale Left or Above (Style C) E Center bar, scale Right or Below (Style C) X Dual bar (Style D)
SECOND BAR COLOR (right or bottom bar) R Red (Style D only) G Green (Style D only) X None

OPTIONS P Programmable scale factor (Style A, w/o freq or temp) C NEMA4 cover (Type L only) M Metal shell (Type L only) S Special X None
RELAYS <i>for Type L:</i> 1 One 10A Form C 2 Two 10A Form C 4 Two 10A Form C & Two 5A Form A ** S Special X None <i>for Type M:</i> A One 10 Amp Form C B Two 10 Amp Form C H Two 5 Amp Form A K Four 5 Amp Form A E Two 10 Amp Form C & Two 5 Amp Form A ** M Two 400V DC Solid State Relays (SSR) 210mA P Four 400V DC Solid State Relays (SSR) 210mA R Two 400V AC/DC Solid State Relays (SSR) 140mA T Four 400V AC/DC Solid State Relays (SSR) 140mA S Special X None
RETRANSMIT A Isolated 16 Bit Current Output, 4-20mA V Isolated 16 Bit Voltage Output, 0-10VDC S Special X None
POWER 1 85-265VAC/95-370VDC 2 15-48VAC/10-72VDC S Special

INPUT AK AC millivolt, scaled RMS, 100mV AB AC Volts, scaled RMS, 200mV/2V/20V AA AC Volts, scaled RMS, 200/600V AM AC millivolt, True RMS, 100mV AG AC Volts, True RMS, 200mV/2V/20V AF AC Volts, True RMS, 200/600V AC AC mA, scaled RMS, 2/20/200mA AD AC Amps, scaled RMS, 1A AE AC Amps, scaled RMS, 5A AH AC mA, True RMS, 2/20/200mA AJ AC Amps, True RMS, 1A AL AC Amps, True RMS, 5A DB DC millivolt, 20/50/100/200mV w/ 24V Excitation DA DC Volts, 2/20/200V/Custom w/ 24V Excitation DE DC Volts, 2/20/200V/Custom w/ Offset and 24V Excitation DC DC milliamp, 2/20/200mA w/ 24V Excitation DF DC milliamp, 2/20/200mA w/ Offset and 24V Excitation DG DC Amps, 1A DD DC Amps, 5A E1 Line Frequency, 60-500VAC, 199.9Hz (Style C or D) F2 Frequency, 99.99/999.9/9999Hz, 50mV-30V, w/ 24V Exc. (Style A) F3 Frequency, 99.99/999.9/9999Hz, 60-500VAC (Style A only) GB Direct Pressure, 1 psi differential/gage (clean, dry gas) GD Direct Pressure, 5 psi differential/gage (clean, dry gas) GE Direct Pressure, 15 psi absolute (clean, dry gas) GF Direct Pressure, 15 psi differential/gage (clean, dry gas) GG Direct Pressure, 30 psi absolute (clean, dry gas) GH Direct Pressure, 30 psi differential/gage (clean, dry gas)

GJ Direct Pressure, 100 psi absolute (clean, dry gas) GK Direct Pressure, 100 psi differential/gage (clean, dry gas) M1 RPM, 99.99/999.9/9999Hz, 50mV-30V, w/ 24V Excitation (Style A) PC Process Input, 1-5V DC w/ Offset, 24V Excitation PD Universal Process, 2/5/10/20/200V/2mA/20mA/Custom PE Dual Process, 2/5/10/20/200V/2mA/20mA/Custom (Style D) RD Resistance, 2kΩ, 2/3/4-wire RB 3-Wire Potentiometer, 1kΩ min RC Linear Potentiometer, 3-wire, 1kΩ min SA Strain Gage, 5/10VDC Excitation, 2/20 mV/V, 4/6-wire SB Pressure, 5/10VDC Excitation, 2/20 mV/V, 4/6-wire SD Pressure/Load Cell, 5/10V Excitation, 2/20 mV/V, 4-wire SC Pressure, External 5/10V Excitation, 2/20 mV/V, 4/6-wire SF Pressure, Ext. 5/10V Exc., 2/20 mV/V, 4/6-wire, High Impedance SE Pressure/Load Cell, Ext. 5/10V Excitation, 2/20 mV/V, 4-wire TA RTD, 100Ω Pt. 2/3/4-wire (-200 to 800°C) TB RTD, 100Ω Pt. 2/3/4-wire (-200 to 1470°F) TC RTD, 100Ω Pt. 2/3/4-wire (-190.0 to 199.0°F) TH RTD, 100Ω Pt. 2/3/4-wire (-199.0 to 199.0°C) TD Thermocouple, J Type (0-1400°F) TF Thermocouple, J Type (0-760°C) TE Thermocouple, K Type (0-1999°F) TG Thermocouple, K Type (0-1260°C) W1 Thermocouple, J,K,R,T; Selectable °C/°F, 1°/0.1° W2 RTD, 100Ω Pt Selectable 3/4-wire, °C/°F, 1°/0.1°, 385/392 W3 RTD, 1000Ω Pt Selectable 3/4-wire, °C/°F, 1°/0.1°, 385/392 PT Prototype Board for Custom Design XS Special	<p>** shared common between A & C</p> <p>} Style C or D</p> <p>} Style A</p>
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