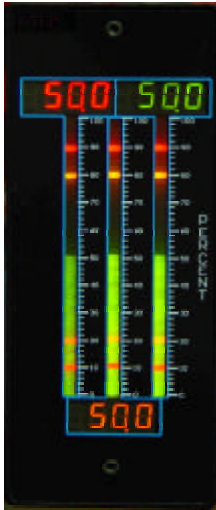


# Single, Dual or Triple automatic tri-color bargraph meter with serial I/O, Analog I/O & relays

HI-Q117



## Green

Bargraph displays denote value is within normal operating parameters. Notice the alarm marks (Yellow & Red). The bargraph can be programmed to change to the color of the alarm marks or only the portion beyond the alarm marks can change. Alternately, the alarm pointers can be disabled and the bargraph will still change to the pre programmed colors. Flashing the bargraph is easily configured and controlled with the alarm settings. Bargraph color and Alarm color is user programmable Red, Yellow or Green.

## FEATURES:

- ⌚ 18 bit Delta-Sigma A/D converter
- ⌚ 10-32VDC or 90-265VAC Power, 15 Watts maximum
- ⌚ Optional Isolated 16 Bit analog output (4-20mA or 0-5VDC) two channels.
- ⌚ Optional six 10A Relays or 8- $\frac{1}{2}$ amp open collector transistor outputs
- ⌚ Optional Isolated RS-232C/422/485 Serial communications
- ⌚ Optional Isolated excitation to power your Sensors/Transducers
- ⌚ 1, 2 or 3 analog input channels. Control each bargraph separately or perform complex math functions.
- ⌚ Math Functions: +, -, x,  $\div$ , ? & More, user definable polynomials and 25 point linearization tables
- ⌚ Custom face plate markings available
- ⌚ Bargraphs are programmable to change color at the limits or as a continuous color display
- ⌚ Replaces T.A. Bailey "775" series
- ⌚ Front panel replaceable scale plate
- ⌚ All metal construction



## Yellow

Bargraph meter indicates value is just outside the normal operating parameters. Notice that the danger alarms (red) are still visible. These give an indication of how far from the danger zone you actually are. If programmed, the bargraph can flash at this alarm and relays can be triggered to turn equipment on or off.

## RED

Bargraph display shows value is outside the normal operating parameters. Notice that the warning alarms are still visible. These give an indication of how far from the intermediate zone you actually are. If programmed, the bargraph can flash at this alarm and outputs can be triggered to turn equipment on or off. The HI-Q also has a feature known as the "PANIC" setting. When enabled, this will cause the relays to switch to a user programmed state (open or close) and the analog output to jump to the pre-determined setting. This is extremely usefull for taking control of a process in the event of a failure.



# Specifications

## A/D CONVERTER

- Bi-polar 18-Bit Delta-Sigma A/D converter
- Accuracy:  $\pm 0.01\%$  of Full Scale
- Linearity:  $\pm 0.01\%$  of Full Scale
- Zero offset: Automatic/Programmable
- SPAN: User Programmable for any reading
- F.S.Input Voltage Range: User selectable with internal jumpers
- Sampling Rate: 16 conversions per second (62.5mS), 100 per second available on request.
- Input Type: DC with internal signal conditioners for RMS, thermocouple, RTD, Strain-Gage or Watts available.
- Input Bias: 50pA
- C.M.V.:  $\pm 2$ VDC max (when powered by 5VDC)
- CMR:  $>90$ dB
- Averaging (Weighted): None to 40. Adjustable band method for quick response
- Input Impedance:  $>100$ K for voltage inputs  
 $<1$ K for current inputs.  
See ordering information for details.

## ANALOG CONTROL OUTPUTS

- 16-BIT Digital to Analog converter, Isolated
- Accuracy & Linearity:  $\pm 0.03\%$
- Outputs: 0-5VDC ( 100K ohm minimum load)  
4-20mADC ( 1K ohm maximum load)  
Sourcing at 24VDC
- Isolation: 500VDC
- Response 70mS standard, 12mS available on request

## ON-OFF CONTROL OUTPUT RELAYS(6)

- Type: 6 each, S.P.D.T. Form "C"
- Max. Switching Current: 10A Res.
- Max. Switching Voltage: 30VDC/ 240VAC @Rated Current
- Contact Protection: Included
- Life Expectancy: 10,000,000 Cycles
- Activation: 30mS on / 50mS off
- Programmable Hysteresis eliminates chatter

## BiMOS OUTPUT (8) OPEN COLLECTOR

- Type: Sink Driver (Open collector Transistor)
- Isolation to 5V Power and analog inputs: None
- Isolation to 10-32VDC or 90-265VAC Power: 500V min
- Isolation to analog output: 500V minimum.
- Max. Current Sink: 250mA each
- $V_{sat}$  @250mA: 1.8V
- Standard Collector voltage: 5VDC
- External Collector voltage: Up to 35VDC
- Switching Speed: 100 $\mu$ S

## POWER INPUTS

- 10-32VDC or 9-36VAC Isolated to 500V minimum
- 90-265VAC or 100-300VDC Isolated to 500V minimum
- Power Consumption 10Watts Maximum

## ENVIRONMENTAL

- Operating Temperature..... -10 to 60 Degrees C
- Storage Temperature..... -40 to 70 Degrees C
- Humidity..... 5% to 95% non-condensing

## DISPLAY

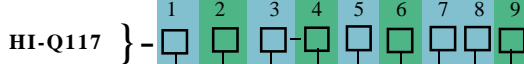
- Bargraphs..... 51 segment tri-color LED
- Numeric.. 4 digit (9999 to -1999) uni-color LED, 0.32" tall high visibility type.
- Face Plate..... Lexan with epoxy ink printed on front

## QUALIFICATIONS

(N, M and S series only. Consult Factory)

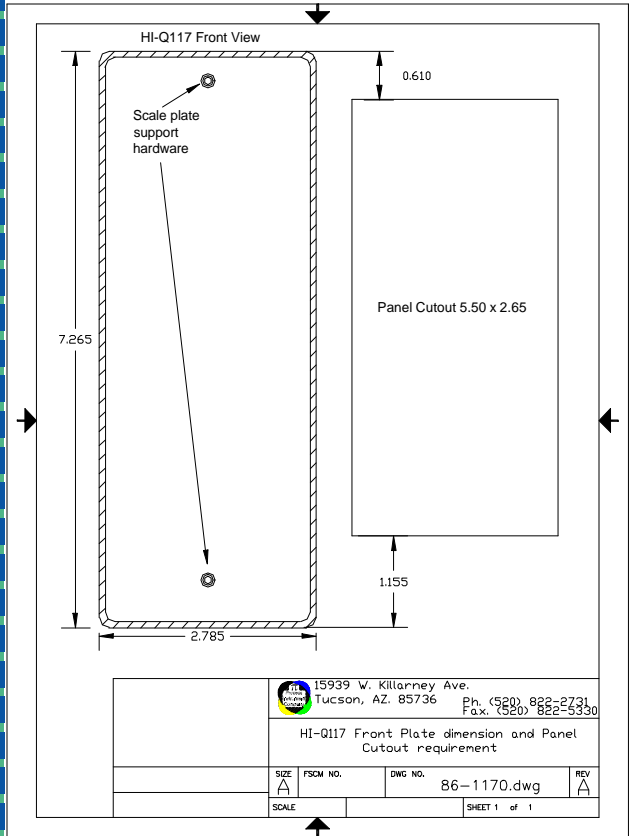
- Meets EPRI TR102323 rev B
- Radiated Emissions MIL-STD-461
- Radiated Susceptibility MIL-STD-462
- Conducted Emissions MIL-STD-461
- Conducted Susceptibility MIL-STD-462
- Fast Transient
- Seismic IEEE 323 / 344
- Software V&V per IEEE
- Shock & Vibration MIL-STD-901 & MIL-STD-167
- MTBF calculated at 100,000 hours per MIL-HDBK
- Optional EMI / RFI mesh.

### ORDERING INFORMATION (01/03)



|                                       |                                       |
|---------------------------------------|---------------------------------------|
| <b>BARGRAPH/DIGITAL</b>               |                                       |
| 0                                     | ..... 1 Each Center                   |
| 1                                     | ..... 2 Each (Sides)                  |
| 2                                     | ..... 3 Each                          |
| <b>BAR-DIGITAL COLOR</b>              |                                       |
| 0                                     | ..... STD. GRN-RED                    |
| 1                                     | ..... BLUE-RED                        |
| 9                                     | ..... Custom                          |
| <b>SERIAL I/O</b>                     |                                       |
| 0                                     | ..... Non-Isolated RS232C Only        |
| 1                                     | ..... Isolated. RS232C/485            |
| 2                                     | ..... Isolated RS232C/422             |
| 9                                     | ..... Custom                          |
| <b>POWER INPUT</b>                    |                                       |
| 1                                     | ..... 10-32VDC                        |
| 2                                     | ..... 90-265VAC                       |
| 9                                     | ..... Custom                          |
| <b>CONTROL OUTPUTS</b>                |                                       |
| 0                                     | ..... None                            |
| 1                                     | ..... Relays (6)                      |
| 2                                     | ..... O.C.T. (8)                      |
| <b>ANALOG &amp; POWER OUTPUTS (2)</b> |                                       |
| 0                                     | ..... None                            |
| 1                                     | ..... 4-20mA, 1 Each                  |
| 2                                     | ..... 0-5VDC, 1 Each                  |
| 3                                     | ..... 4-20mA, 2 Each                  |
| 4                                     | ..... 0-5VDC, 2 Each                  |
| 5                                     | ..... 4-20mA & 0-5VDC, 1 Each         |
| 6                                     | ..... 4-20mA & 30V Compliance, 1 Each |
| 7                                     | ..... 0-5VDC & 30V Compliance, 1 Each |
| 8                                     | ..... 30V Compliance, 1 Each          |
| 9                                     | ..... Custom                          |
| <b>SIGNAL INPUTS</b>                  |                                       |
| 00                                    | ..... None                            |
| <b>ANALOG INPUTS (1 Channel)</b>      |                                       |
| 10                                    | ..... VDC (1M?)                       |
| 11                                    | ..... mADC                            |
| 12                                    | ..... 4-20mA Current Loop (25?)       |
| 14                                    | ..... VRMS (1M?)                      |
| 15                                    | ..... mARMS (0.1?)                    |
| 17                                    | ..... Strain-Gage(>200<400?)          |
| 18                                    | ..... Strain-Gage (>1K<5K?)           |
| 20                                    | ..... Resistance (50K?)               |
| 21                                    | ..... Temperature RTD                 |
| 22                                    | ..... Temperature Thermocouple        |
| 25                                    | ..... mVDC (1M?)                      |
| 29                                    | ..... Custom (Factory#)               |
| <b>ANALOG INPUTS (2 Channels)</b>     |                                       |
| 30                                    | ..... VDC (1M?)                       |
| 31                                    | ..... mADC                            |
| 32                                    | ..... 4-20mA Current Loop (25?)       |
| 33                                    | ..... Watts DC (1M-0.1?)              |
| 34                                    | ..... VRMS (1M?)                      |
| 35                                    | ..... mARMS                           |
| 36                                    | ..... Watts RMS (1M-0.1?)             |
| 41                                    | ..... Temperature RTD                 |
| 42                                    | ..... Temperature TC                  |
| 47                                    | ..... mVDC (1M?)                      |
| 49                                    | ..... Custom (Factory #)              |
| <b>ANALOG INPUTS (3 Channels)</b>     |                                       |
| 50                                    | ..... VDC (1M?)                       |
| 51                                    | ..... mADC (0.1?)                     |
| 52                                    | ..... 4-20mA Current Loop (25?)       |
| 53                                    | ..... VRMS (1M?)                      |
| 54                                    | ..... mARMS (0.1?)                    |
| 55                                    | ..... Temperature RTD                 |
| 69                                    | ..... Custom (Factory #)              |

### MECHANICAL



|  |              |   |
|--|--------------|---|
| 15939 W. Killarney Ave.<br>Tucson, AZ. 85736               |              | Ph. (520) 822-2731<br>Fax: (520) 822-5330 |
| HI-Q117 Front Plate dimension and Panel Cutout requirement |              |   |
| SIZE: A  | FSOM NO.     | DWG NO. 86-1170.dwg                       |
| SCALE  | SHEET 1 of 1 |   |

- NOTES**
1. Contact sales for Custom Scales/Overlays
  2. .... 30V Compliance is for External Transmitters/Transducers
  3. Volt & Amp Ranges are Internal Jumper Range Selectable .5, 5, 10 & 50VDC, 1, 5, 20mADC, Shipped with .5V or 1mA Unless specified.
  4. Mixed Inputs (V&A, Temp & 4-20, Etc.) Available
  5. 16" Deep Housing with Specific Connector Termination on Request
  6. Blue-Red Bargraph (1 Ea.) On Center. Any Other Use Option 9 & Specify. It is NOT Available with 5VDC Power Input.

**HOUSING DEPTH (5)**

|   |                  |
|---|------------------|
| 0 | ..... 8" Deep    |
| 1 | ..... 14.5" Deep |
| 9 | ..... Custom     |

E-MAIL:sales@PrecisionInstrument.com  
http://www.PrecisionInstrument.com



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MADE IN USA