

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

HI-Q119

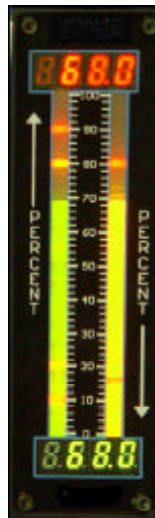


## Green

Bargraph display denotes value is within normal operating parameters. Notice the alarm marks (Yellow & Red). The bargraph display 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
- ⌘ Horizontal or Vertical gang Mounting with trim plates.
- ⌘ Optional Isolated 16 Bit analog output (4-20mA or 0-5VDC) two channels.
- ⌘ Optional six 10A Relays or 8-¼amp 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.
- ⌘ Math Functions: +, -, x, ÷, ? & 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 GE180 type, Dixon BB101 and BB202, Westing House VX251/252 and other standard 6" edgewise instruments.
- ⌘ Front panel replaceable scale plate
- ⌘ All metal construction



## Yellow

Bargraph display 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 meter 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 display 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 predetermined setting. This is extremely useful 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 dip switches
- 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
- Vsat @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

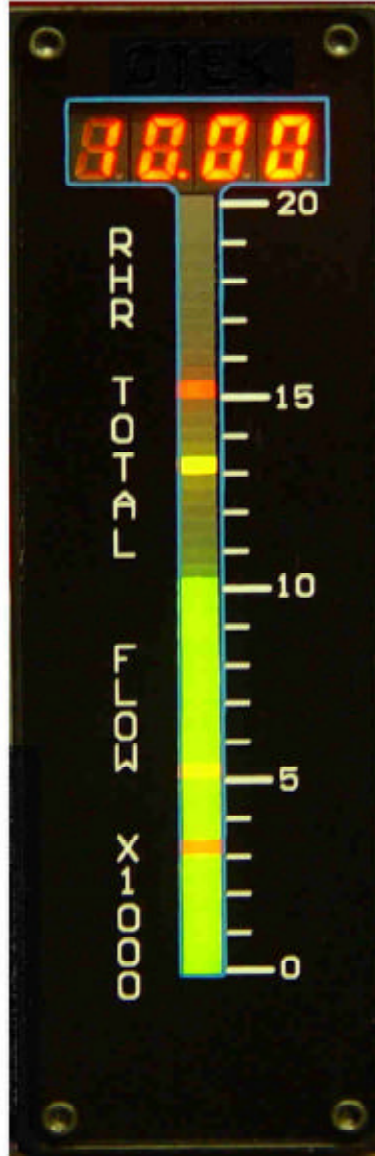
- Operating Temp  
-10 to 60 Degrees C
- Storage Temp  
-40 to 70 Degrees C
- Humidity 5% to 95%  
non-condensing

## DISPLAY

- Bargraph.....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)**

HI-Q119 }  1  2  3  4  5  6  7  8  9

**BARGRAPH/DIGITAL**

0 ..... 1 Each Vertical Mount

1 ..... 2 Each Vertical Mount

2 ..... 1 Each Horizontal Mount

**BAR-DIGITAL COLOR**

0 ..... STD. GRN-RED

1 ..... BLUE-RED

9 ..... Custom

**SERIAL I/O**

0 ..... Non-Isolated RS232C Only

1 ..... Isolated. RS232C/485

2 ..... Isolated RS232C/422

9 ..... Custom

**POWER INPUT**

1 ..... 10-32VDC

2 ..... 90-265VAC

9 ..... Custom

**CONTROL OUTPUTS**

0 ..... None

1 ..... Relays (6)

2 ..... O.C.T. (8)

**ANALOG & POWER OUTPUTS (2)**

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

**SIGNAL INPUTS**

00 ..... None

**ANALOG INPUTS (1 Channel)**

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#)

**ANALOG INPUTS (2 Channels)**

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 #)

**ANALOG INPUTS (3 Channels)**

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**

**Twist Lock Mounting Hardware Included**

REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	A	Initial Release	Dec. 7, 2002	OHF

# UNITS	DIMENSION "A"	
	INCHES	MM
1	1.77	44.95
2	3.52	89.41
3	5.26	133.60
4	6.99	177.55
5	8.73	221.74

19939 W. Killarney Ave.  
Tucson, AZ. 85736 Ph. (520) 882-2731  
Fax: (520) 882-5330

HI-Q119 Front Plate dimension and Panel Cutout requirement

SIZE	FSCM NO.	DWG NO	REV
A		86-1190.dwg	A

SCALE: SHEET 1 of 1

**MOUNTING**

0 ..... Without TRIM Plates

1 ..... With TRIM Plates

9 ..... Custom

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