

## 4 1/2 DIGIT VOLTMETER CONTROLLER



### SERIES 240/250C

#### FEATURES

- ASCII RS232 Interface (optional)
- Analog output, 4-20mA or 0 to  $\pm 10$  VDC (optional)
- Optional TRMS AC Input
- High/Low limit set points
- 4 1/2 digits of display and control
- Input and power via screw terminals
- Easily scaled for reading out directly in engineering units
- Heavy duty form C relay closure for each limit
- Optional dead zero (LSD) for 5 1/2 digit display
- Optional three state parallel BCD outputs with single line enable
- High input impedance ( $10^9$  ohms, DC input only)

A dual or single set point comparator and voltmeter in the same package, and easily scaled input are just a few of the features that make this voltmeter/controller unique in the field of panel instrumentation. No wiring between two units is required, just apply power, input a voltage, dial in the set points, and the unit will indicate if the voltage is above, between, or below the set points. Scaling is accomplished by simply picking the desired voltage off a thick film resistor network by making a few solderless jumpers internally. For a nominal charge DCI will scale the Series 240C/250C to read almost anything desired. Just specify input voltage and full scale reading desired when placing order. It will be set up prior to shipment. For instance if a transducer has an output of 0-5VDC, which represents 0-1750.0 pounds, DCI will program the reference and calibrate the meter to your needs.

Systems outputs include latched three state TTL compatible parallel BCD outputs and RS232 serial interface. The three state outputs allow the output lines to be wired in parallel with other outputs and then called up using the single line enable thereby reducing required wiring. The hold/convert line allows single conversion capability greatly enhancing systems uses.

#### SERIES 240C & 250C SPECIFICATIONS

**Accuracy:**  $\pm .01\%$  reading  $\pm 2$  counts @ 25°C plus temperature coefficient of 25PPM/°C.

**Input protection:**  $10^9$  ohms up to  $\pm 5$  VDC input voltage. Above 5VDC, 5megohms minimum.

**Input bias current:** 50pA typically.

#### Input voltage range:

0 to  $\pm 20$  volts, 0 to  $\pm 200$  millivolts on standard models, or up to 750 volts using factory installed scaling resistors. (See option -06)

**NMRR:** 70db; **CMRR:** 70db.

**Rollover error:** 30 microvolts typically; 100 microvolts maximum.

**Front panel controls:** Thumbwheel switches 4 1/2 digits, 0-9 and optional polarity selector for each limit.

**Visual indicators:** 4 1/2 digits. .56" red LEDs  $\pm 1.9.9.9.9$

Decimal points programmable on rear I/O connector.

Red LED dots for "LO" and "HI", both dots out during "IN" condition.

**Inputs:** External convert/hold: Requires logic zero to hold. For single conversion, hold must be allowed to go high for a minimum of 10 milliseconds and a maximum of 100 milliseconds. For continuous run operation hold line must be left open or high. Input loading 1 LPTTL load.

Three state input: (01 option only) Requires logic level zero. Forces BCD outputs to a high impedance state for bussing applications. Input loading 1 LPTTL load. Pulled up internally with 20Kohm resistor.

Latch input: (01 option only) Requires logic zero. Latches BCD data without affecting display. Data will be held as long as latch is held low. Input loading 1 LPTTL load. Pulled up internally with 20Kohm resistor.

#### Outputs:

ASCII RS232 compatible (optional); format: 1 start bit, 8 data bits, 1 stop bit, and no parity bits.

BCD outputs (optional); latched 3 state + 8421 TTL logic level for each digit plus overrange and polarity. Will drive 4 TTL loads.

4-20mA output (optional); maximum load 500 ohms. Offset and span programmable via solderless jumpers and potentiometers.

Analog output (optional): 1mV per digit into 10K ohm (maximum 10 volts).

5 Volt logic level output for "LO", "IN", and "HI", will drive three TTL loads.

Form C relay closure for each limit. Contact ratings 6 amps @ 28VDC or 2.5 amps @ 115VAC resistive or 1 amp @ 230VAC resistive.

**Conversion rate:** Three per second standard, optional seven and one-half per second.

#### Power:

115VAC 50-400 hz,	8 watts maximum
230VAC 50-400 hz,	8 watts maximum (optional)
10-30VDC 500 mA max.	(optional)
5VDC 600 mA max.	(optional)

**Case size:** "B" See page 39.

**Input Current:** 100nA typically, 300nA maximum

**Operating temperature:**  $-20^{\circ}$  to  $+60^{\circ}$  Celsius.

#### OPTIONS

- 01 Latched, three state, parallel BCD outputs, TTL compatible.
- 02 Polarity control and indication
- 04 Differential input. Requires three wire hookup; one for analog common and two for the differential input.
- 05 5VDC input power. 600mA maximum required.
- 06 Special scaling. Specify full scale input and desired reading, up to 750V peak. Zero offset no more than 5% of specified full scale. For higher zero offset consult factory.

- 07 7.5 conversions per second
- 08 4-20mA output, max load 500ohms
- 09 Analog output, tracks input. (Max. 10VDC into 10Kohm).
- 10 ASCII RS232 computer interface
- 11 Unregulated excitation output voltage 25VDC  $\pm 10\%$  @ 100mA (no 10 volt excitation)
- 15  $\pm 15$ VDC  $\pm 5\%$  excitation output voltage @ 30mA per voltage (no option 11 or 19)
- 16 4-20mA input (specify scaling). Maximum 250ohm input resistance. Typically 50ohm.
- 17J True RMS AC Reading Meter. (Refer to page 2 for
- 17K True RMS AC Reading Meter.Option 17 specifications)
- 18 Dead zero (LSD) for 5 1/2 digit display
- 19 Excitation output voltage to drive transducer. Normally set at 10VDC  $\pm 100$ mV  $\pm 10$ PPM/ $^{\circ}$ C. Will drive up to 100 ohm load. Other voltages available.
- 20 EOC pulse; 1msec; Negative going TTL compatible.
- 22 230VAC; 50-400hz input power.
- 23 Green display LED's
- 24 10-30VDC input power. 500mA max.
- 25 Special legends and/or logo (Special artwork to be supplied by customer).
- 26 No logo.
- 27 Screw terminal I/O connector.
- 28 Blank lens.
- 30 "MILLIVOLTS" legend.
- 31 "D.C. VOLTS" legend
- 37 "D.C. AMPERES" legend
- 38 "PSIG" legend
- 39 "PSIA" legend
- 40 "PSI" legend
- 50 Sunlight readable .6" LED display. No polarity available.

**Note:** Option 08, 09, and 17J or 17K cannot be installed together.

**MODELS:**

- 245C 19999, 0 to  $\pm 200$  millivolts DC one control set point
- 246C 19999, 0 to  $\pm 20$  volts DC one control set point
- 255C 19999, 0 to  $\pm 200$  millivolts DC with dual set point control
- 256C 19999, 0 to  $\pm 20$  volts DC with dual set point control

**REAR PANEL CONNECTORS PIN OUT AND DESCRIPTION**

**TB1**

- W** Analog input (LO)
- X** Analog input (HI)
- Y** Power supply input (Power in on DC models)
- Z** Power supply input (Power return on DC models)

**J1**

Analog Output	1	A	Excitation Output
Analog Ground	2	B	-15 VDC Out/Optional OEC Pulse
D.P. XXX.X	3	C	D.P. XX.XX
BCD Output Latch	4	D	External Convert/Hold
Tri-State Control	5	E	BCD Bit 1 Digit 5
BCD Bit 1 Digit 4	6	F	Polarity out
BCD Bit 8 Digit 4	7	H	Over-range out
BCD Bit 4 Digit 4	8	J	BCD Bit 1 Digit 3
BCD Bit 2 Digit 4	9	K	BCD Bit 8 Digit 3
BCD Bit 1 Digit 2	10	L	BCD Bit 4 Digit 3
BCD Bit 8 Digit 2	11	M	BCD Bit 2 Digit 3
BCD Bit 4 Digit 2	12	N	BCD Bit 1 Digit 1
BCD Bit 2 Digit 2	13	P	BCD Bit 8 Digit 1
Digital Common	14	R	BCD Bit 4 Digit 1
Digital + 5VDC	15	S	BCD Bit 2 Digit 1

**J2**

"HI" Logic Output	1	A	No Connection
"LO" Logic Output	2	B	No Connection
"IN" Logic Output	3	C	No Connection
NC Contact LO Relay	4	D	No Connection
NO Contact LO Relay	5	E	No Connection
C Contact LO Relay	6	F	No Connection
NC Contact HI Relay	7	H	No Connection
NO Contact HI Relay	8	J	No Connection
C Contact HI Relay	9	K	No Connection
No Connection	10	L	No Connection
No Connection	11	M	No Connection
No Connection	12	N	No Connection
No Connection	13	P	No Connection
Digital Common	14	R	No Connection
Digital + 5VDC	15	S	No Connection
Opt 10, RS232 Rec.	16	T	No Connection
Opt 10, RS232 Com.	17	U	No Connection
Opt 10, RS232 Trns.	18	V	No Connection
Opt 10, Setup	19	W	No Connection
Relay Latch	20	X	No Connection
Opt 10, Request Data	21	Y	No Connection
No Connection	22	Z	No Connection

Card edge connectors supplied.

