

How to Order

2 **a** **b** 3¹ - 3 **c** **d** **e** **f**

Configuration
0 = 1/8 DIN 1 = UPM
2 = TRMS (Inst) 3 = TRMS (Power)

Display
1 = Non Bklt 3 = Pos Grn Bklt
4 = Neg Grn Bklt 5 = Neg Red Bklt
6 = Pos Red Bklt

DPM Power²
0 = loop power 1 = 9 VDC
2 = ±5VDC 3 = +5 volts
4 = 115VAC 5 = 230VAC
6 = 10 to 28VDC 7 = 12 or 24VDC (Iso)
8 = 12 VDC 9 = 24VDC

Input
00 = 100mVDC (1999 counts)
01 = 200mVDC scaled 0 to 199.9
02 = 2VDC scaled 0 to 1.999
03 = 20VDC
04 = 200VDC
05 = 1V to 5 VDC scaled 0 to 100.0
06 = 10VDC scaled 0 to 10.00
07 = 500VDC
10 = 200uADC
11 = 2mADC
12 = 20mADC
13 = 200mADC
18 = 4 to 20mADC Sq Rt³
19 = 4 to 20mADC scaled 0 to 100.0³
21 = 200.0mVAC RMS
22 = 2.000VAC RMS
23 = 20.00VAC RMS
24 = 200.0VAC RMS
25 = 500VAC RMS
27 = 500VAC Avg
28 = 80.0 - 130.0VAC Avg
29 = 80 - 260VAC Avg
30 = 250VAC RMS
31 = 2.000mAAC RMS
32 = 20.00mAAC RMS
33 = 200.0mAAC RMS
34 = 2.000AAC RMS
36 = 5.00AAC⁴ RMS
37 = 50.0AAC⁴ RMS
38 = 0 - 5AAC⁴ AVG
39 = 0 - 50AAC⁴ AVG
60 = 40 to 440Hz
61 = 40.0 to 199.9Hz
70 = 100 Ohms Pt 1[°] Resolution
71 = 100 Ohms Pt .1[°] Resolution
80 = Type J Thermocouple
81 = Type K Thermocouple
82 = Type T Thermocouple

Backlit Power²
00 = No Backlight 01 = 5VDC
02 = 12VDC 03 = 24VDC
04 = 115VAC 05 = 230VAC
06 = 10 to 28VDC 07 = 12 or 24VDC

Display⁵
1 = 2000 2 = 1500 3 = 1000
4 = 600 5 = 500 6 = 300
7 = 200 8 = 100

2000 and 2100 Series Specifications (continued)

DC Inputs	Accuracy	Input Resistance	Overload Protection
200mVDC & 2VDC	±(1% +1 count) typical ±(2% +1 count) max.	≥ 100 Meg Ohms	200V continuous 300V intermittent
20VDC & 200VDC	±(1% +1 count) typical ±(2% +1 count) max.	1 Meg Ohm	350V continuous 500V intermittent
DC Current	±(1% +1 count) typical ±(2% +1 count) max.	200mV drop full scale	3 times f.s. current
Universal Selectable Process	±(1% +2 counts)	4 to 20mA, 10 Ohms ≥ 200mV, ≥ 200K Ohms 2V and up, ≥ 1Meg Ohm	4 to 20 mA, ±100mA Voltage Inputs, 200V continuous 300V intermittent

AC Inputs	Accuracy	Input Resistance	Overload Protection
AC Voltage	±(5% +1 count)	1 Meg Ohm	350V continuous 500V intermittent
5A AC Current	±(5% +1 count)	Current transformer	3 times f.s. current
50A AC Current	±(5% +5 counts)	Current transformer	3 times f.s. current

Frequency Inputs	Accuracy	Distortion
40.0 to 199.9Hz	±.2Hz (40 to 70Hz) ±.5Hz (above 70Hz)	≤ .1 Hz for up to 20% third harmonic distortion
40 to 440Hz	±1Hz	≤ .1 Hz for up to 20% third harmonic distortion

Temperature Inputs	Accuracy	Input Characteristic	Overload Protection
Type J thermocouple -10°F to +1200°F (-23°C to +649°C)	±(1% +1 count) accuracy ±1.3°C (2.8°F) conformity error	45 uV max per 100 Ohms thermocouple lead resistance	200V continuous
Type K thermocouple -40°F to +1500°F (-40°C to +815°C)	±(1% +1 count) accuracy ±1.2°C (2.5°F) conformity error	45 uV max per 100 Ohms thermocouple lead resistance	200V continuous
Type T thermocouple -100°F to +600°F (-73°C to +315°C)	±(1% +1 count) accuracy ±1.5°C (3.5°F) conformity error	45 uV max per 100 Ohms thermocouple lead resistance	200V continuous
100 Ω Pt. α = .00385 -200°F to +600°F (-129°C to +315°C)	±(2% +1 count) max	1mA RTD current	±5V
100 Ω Pt. α = .00385 -100.0°F to +199.9°F (-73°C to +98°C)	±(2% +1 count) max	1mA RTD current	±5V

¹ Change Order Number to "4" for 200 VDC Input

² Backlit power must be the same as the selected DPM power.

³ Available on Non-Backlit meters only.

⁴ Rated for use with 5A or 50A external current transformer supplied with DPM. See high current connection on inside page.

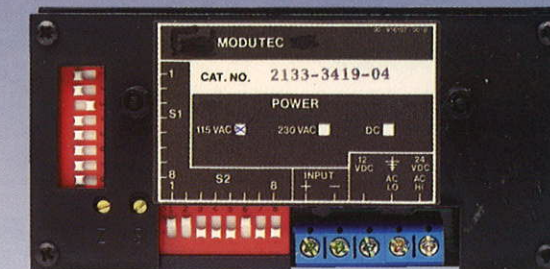
⁵ For 5A current transformer inputs only.

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BEST CLASS



2000 Series Digital Panel Meters MODUTEC



2100 Series with DIP switch selections and multiple power options.

Backlighting Options

- **Positive Green** Black on Green Background
- **Negative Green** Green on Black Background
- **Positive Red** Black on Red Background
- **Negative Red** Red on Black Background
- **Non-Backlit LCD** Black on Grey Background

Customize for features that are important to you and rely on industry standards for routine digital PM elements.

You need flexibility. We provide it. We customize our meters to meet your specifications.

- **Scalable** in engineering units
- **Custom labels** for special readouts
- **User Selectable functions**, decimal point, offset, span, process voltage or current, DC voltage
- Red or green **backlit display**

You need reliability. The MODUTEC 2000 Series operates in the harshest environments.

- **Splash and hose proof** meeting NEMA 4, NEMA 12, and IPC 55 standards
- Resistant to damage with a **high impact polycarbonate case**
- Wide operating temperature ranging from **-4°F to +140°F (-20°C to +60°C)**

You need standards. The MODUTEC 2000 Series gives you industry standards designed in.

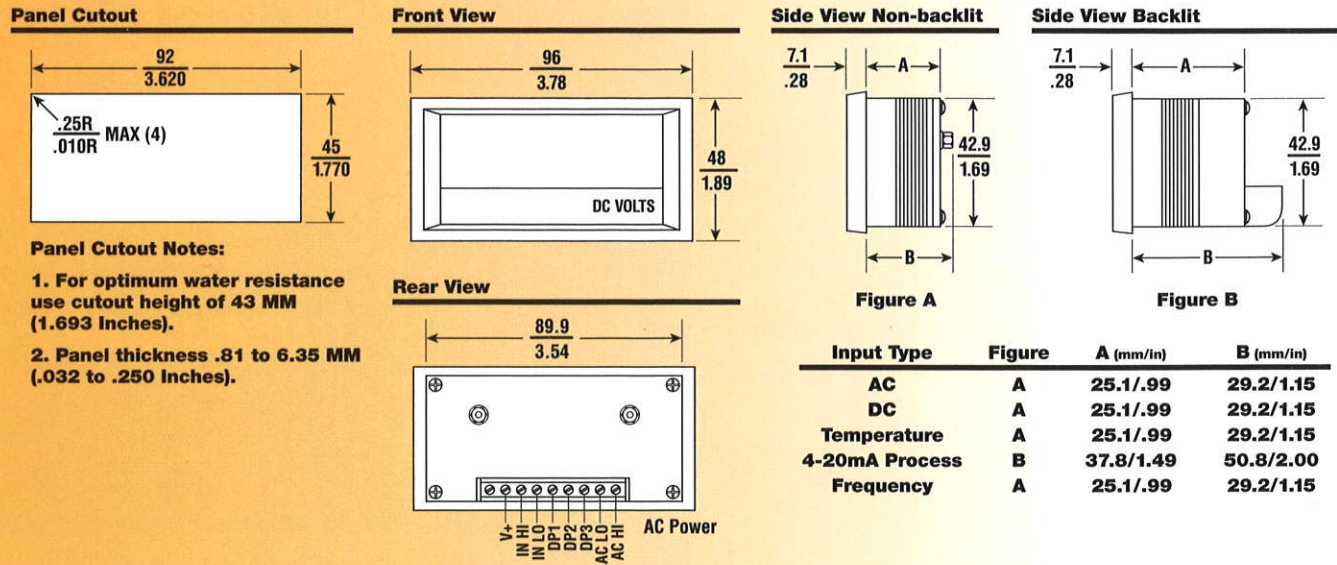
- **1/8 DIN** industry standard cut-out and **1 inch depth**
- Screw terminals
- **Over range indication**
- Low cost
- The MODUTEC 2100 includes **user-friendly dipswitch selection features**

Applications

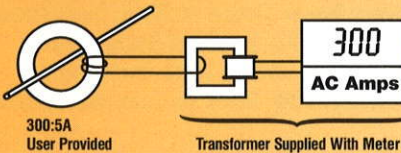
- **Telecommunications**
- **Water Purification**
- **Sewage Treatment**
- **Flow**
- **Process**
- **Desalinization**
- **Temperature**
- **AC & DC Amps**
- **AC & DC Volts**

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2000 & 2100 Series Dimensional Drawings (mm/in)



Connection for High Current Measurement



2000 and 2100 Series Specifications

Display	Digits: 3 1/2 digits, 7 segments Backlit LCD (1999)	Digit Height: 0.5" (12.7 mm)
	Polarity: Automatic (-) displayed	Decimal Point: Three positions, external selection
Performance	Overload: Three lower digits blank for readings greater than 1999	
Environment	Operating Range: -4°F to 140°F (-20°C to +60°C)	Storage Range: -22°F to 158°F (-30°C to +70°C)
Power Options	115V +10%, -15%	50Hz to 400Hz at 2VA
	230V +10%, -15%	50Hz to 400Hz at 2VA
Weight	10 to 28VDC	150 mA (including backlighting)
	10 to 15VDC or 20 to 32VDC	150mA (including backlighting)

FCC Compliance

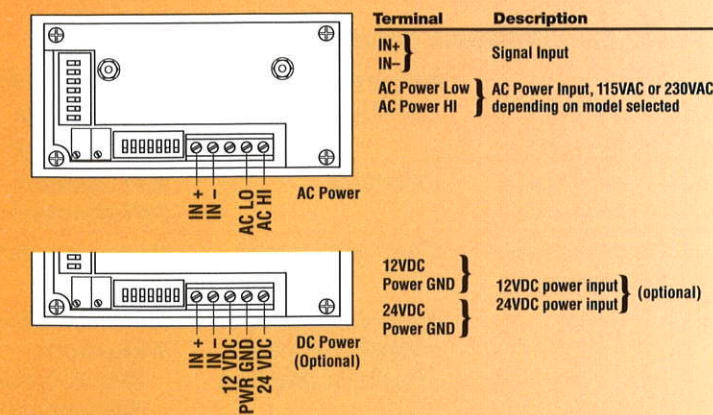
Complies with the class B Limits of FCC rules and regulations, part 15, sub part J for conducted and radiated emissions.

¹ except isolated DC powered which is ≥ 80 db 50 Hz-60Hz
² except thermocouple inputs which are .1°/ degree zero tempco for selectable process ranges is only ± 2 count/°C

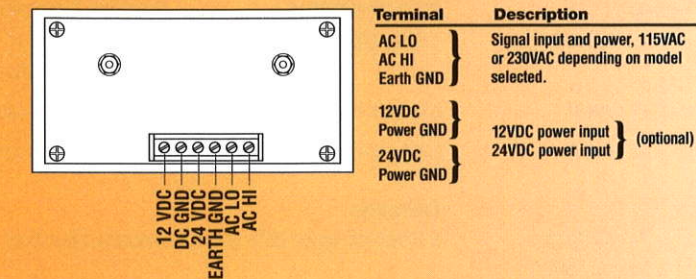
Specifications continued on back page.

2000 & 2100 Series Connection Drawings

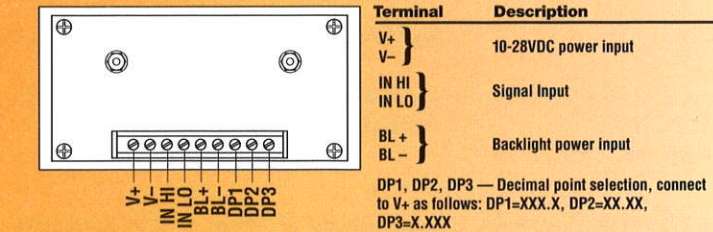
Universal Switchable — Model 2100



Frequency Input



DC Inputs (Non-Isolated DC Power)



2000 Series Scaling Chart

Model 2100, of the 2000 Series, provide the unique ability to switch-select a range and then scale and offset that range. Input will be displayed in engineering units. For example, by changing switch positions and recalibrating, a 2133-3419-04 may be set-up for any of the following displays:

- 4 to 20mA input display -48°F to 932°F (-100°C to +500°C) temperature
- 1 to 5V input displaying -60kPa to 300kPa differential pressure
- 0 to 10V input displaying +700°F to +950°F (+682°C to +932°C) temperature
- 0 to 50mV input displaying 0 to 300 amperes

Scaling Capability

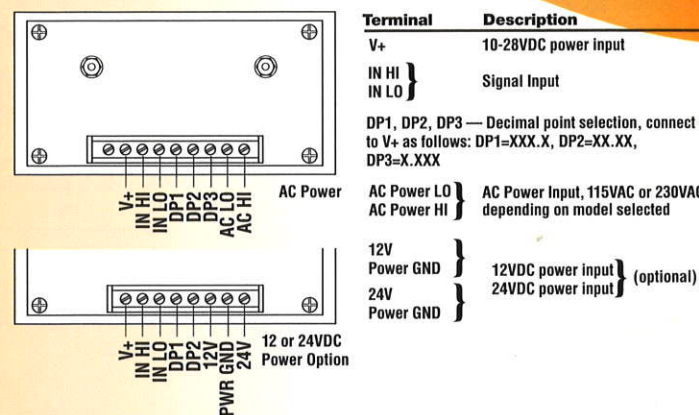
Zero Range Adjustment
4mA to 20mA, 1V to 5V
-1000 counts to +1500 counts. Switch selectable in four ranges: a 25-turn potentiometer enables continuous adjustment.

0 to 200mV, 0 to 2V, 0 to 10V
-1500 counts to +1500 counts. Switch selectable in six ranges: a 25-turn potentiometer enables continuous adjustment.

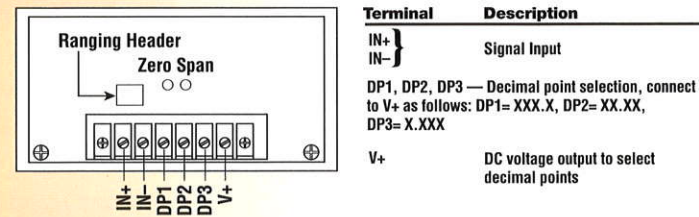
Full Scale Span Adjustment
All ranges
0 to 2000 counts. Switch selectable in four ranges: a 25-turn potentiometer enables continuous adjustment.

Other ranges and scaling available.

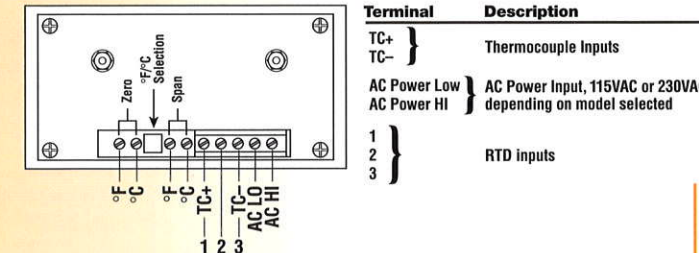
AC and DC Inputs (AC and Isolated DC power)



4-20mA Process & Flow Inputs



Temperature Inputs



SPACE SAVER DIGITAL INSTRUMENTATION

SERIES 300, 400, 500



BL-300 SERIES POSITIVE IMAGE DARK SEGMENTS ON GREEN BACKGROUND



BL-400 SERIES NEGATIVE IMAGE—GREEN SEGMENTS ON DARK BACKGROUND



BL-500 SERIES NEGATIVE IMAGE RED SEGMENTS ON DARK BACKGROUND

FEATURES

- Low Cost.
- Backlight for High Visibility.
- Choice of Red or Green color display.
- Small Panel Space (less than 2.3" x 1.0").
- Depth behind panel less than 1.3".
- Bezel or Window Mount.
- Over Range indication.
- Convenient screw terminal connector.
- Provides isolation between input and power source.

AC AND DC INPUTS

- Ideal for line monitoring.
- Input signal can be used to power meter.
- Multiple ranges for use with external current transformers.
- AC or DC Inputs available with isolated 12/24 VDC power.

TEMPERATURE (THERMOCOUPLE)

- Cold junction compensation internal.
- °F or °C user selectable.
- Linearized to match Types J, K or T.

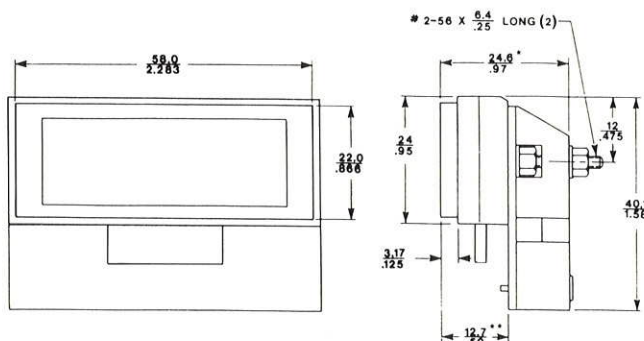
TEMPERATURE (RTD)

- 100 ohm Platinum RTD. $\alpha = .00385$.
- .1 degree or 1 degree resolution.
- 2- or 3-wire RTD connection.
- °F or °C user selectable.

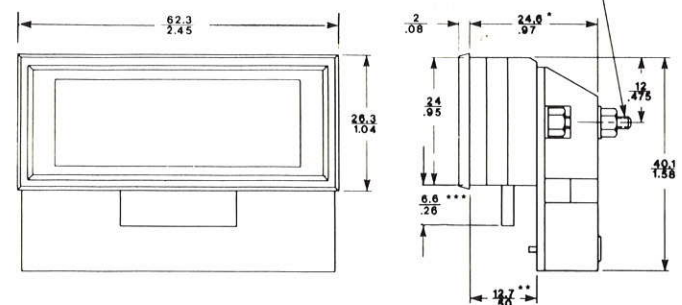
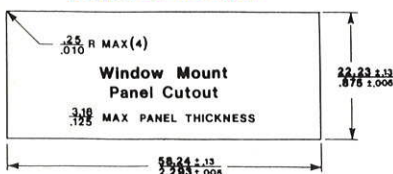
FREQUENCY

- .1 Hz or 1 Hz resolution.
- Ideal for Power line monitoring.
- Available with isolated 12/24 VDC power.

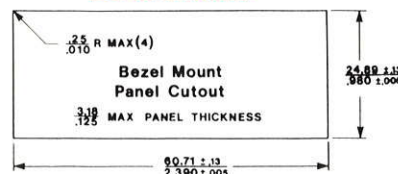
DIMENSIONS



Window Mount



Bezel Mount



On Non backlit units.

*Dim. is 19.3 / .68

**Dim. is 7.4 / .29

***Isolated dc powered DPM's only.

MM/INCHES

SPACE SAVER DIGITAL INSTRUMENTATION

SERIES 300, 400, 500

DISPLAY

- 1 = Non Backlit
- 3 = Positive Green Backlit
- 5 = Negative Red Backlit

DPM POWER*

- 4 = 115VAC
- 5 = 230VAC
- 7 = 12 or 24VDC (Isolated)

DC VOLTAGE AND CURRENT

- 01 = 200mVDC
- 02 = 2VDC
- 03 = 20VDC
- 04 = 200VDC
- 10 = 200uADC
- 11 = 2mADC
- 12 = 20mADC
- 13 = 200mADC

INPUT

See Tables below

AC LINE VOLTAGE AND CURRENT

- 28 = 80.0-130.0VAC
- 29 = 80-260VAC
- 38 = 0-5AAC**
- 39 = 0-50AAC**

FREQUENCY

- 60 = 40 to 440Hz
- 61 = 40.0 to 199.9Hz

DISPLAY***

- 1 = 2000
- 2 = 1500
- 3 = 1000
- 4 = 600
- 5 = 500
- 6 = 300
- 7 = 200
- 8 = 100

BACKLIT POWER*

- 00 = No Backlight
- 04 = 115VAC
- 05 = 230VAC
- 07 = 12 or 24VDC

TEMPERATURE (THERMOCOUPLE)

- 80 = Type J
- 81 = Type K
- 82 = Type T

TEMPERATURE (RTD)

- 70 = 100 Ohms Pt 1° Resolution
- 71 = 100 Ohms Pt .1° Resolution

Example: BL-333438-042 is a 115VAC Bezel Mount unit with positive green backlighting and an input via an external 5A current transformer and scaled to read 1500 for the 5A input to the transformer.

*Backlit power must be the same as the selected DPM power.

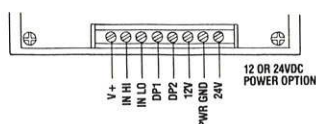
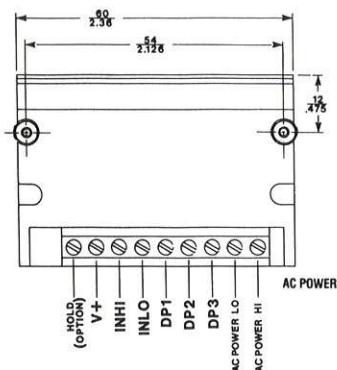
**Rated for use with 5A or 50A external current transformer supplied with DPM.

***For 5A current transformer inputs only.

FOR ELECTRICAL SPECIFICATIONS SEE PAGES 33 AND 34

CONNECTIONS

AC AND DC INPUTS (AC and Isolated DC Power)



TERMINAL

H

DESCRIPTION

Hold input (Optional) connect to V+ to hold displayed reading.

V+

DC voltage output to select decimal points or hold input.

IN HI
IN LOW }

Signal Input.

DP1, DP2, DP3

Decimal point selection connect to V+ as follows: DP1 = XXX.X, DP2 = XX.XX, DP3 = X.XXX

AC POWER LO
AC POWER HI }

AC power input, 115VAC or 230VAC depending on model selected.

12V
POWER GND }

12VDC power input

24V
POWER GND }

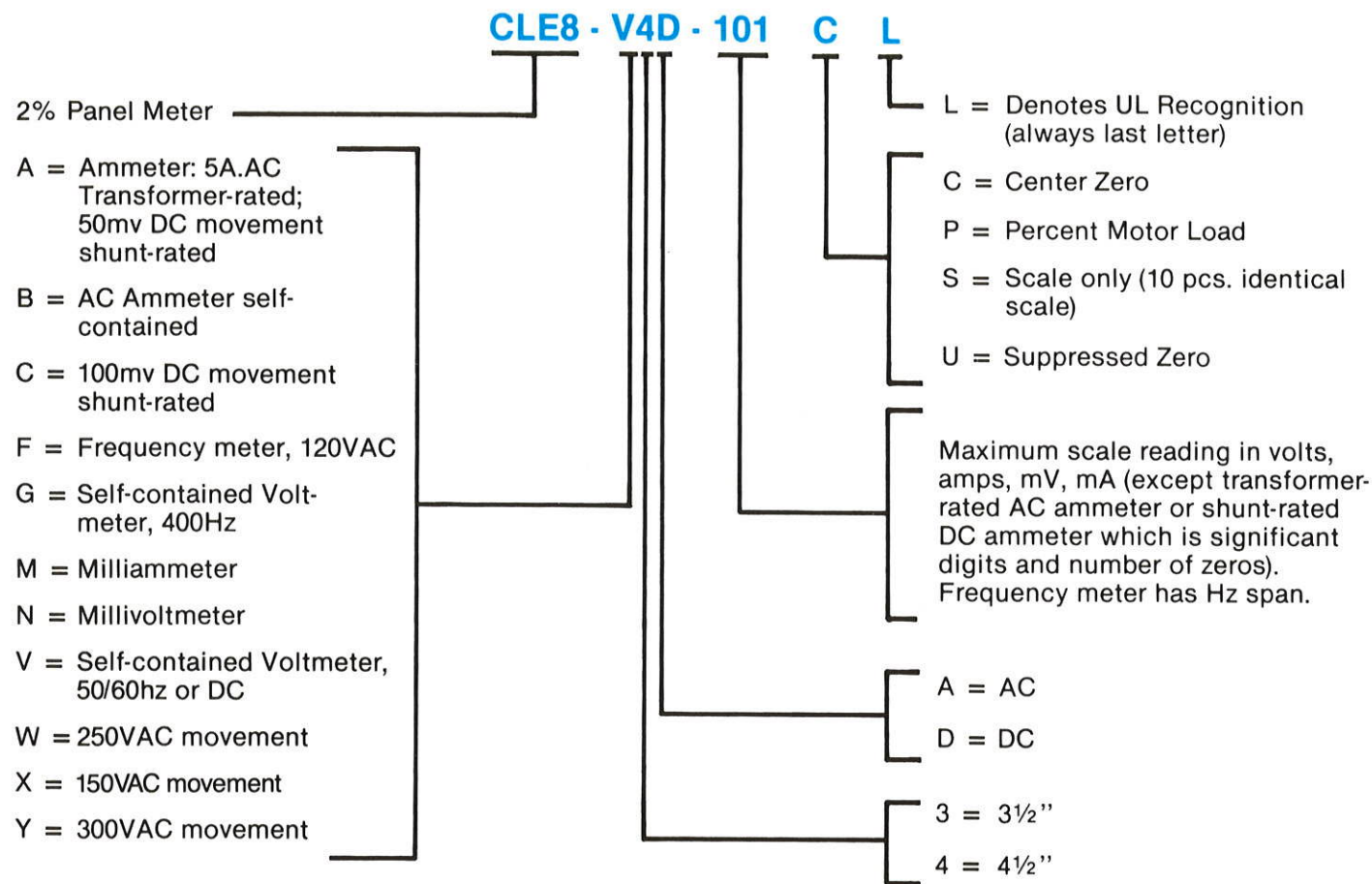
24VDC power input

(optional)

Note: Only DP1 and DP2 available on DC powered models.

FOR FREQUENCY AND TEMPERATURE CONNECTIONS SEE PAGE 34

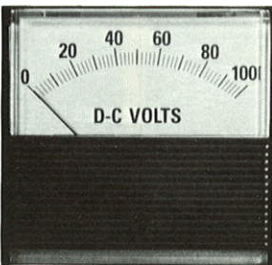
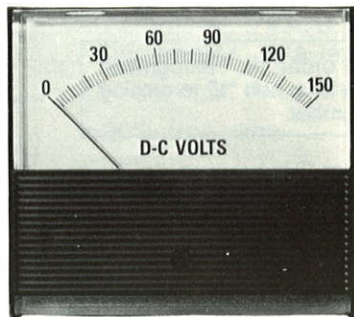
Catalog Number Identification



"2810" SERIES

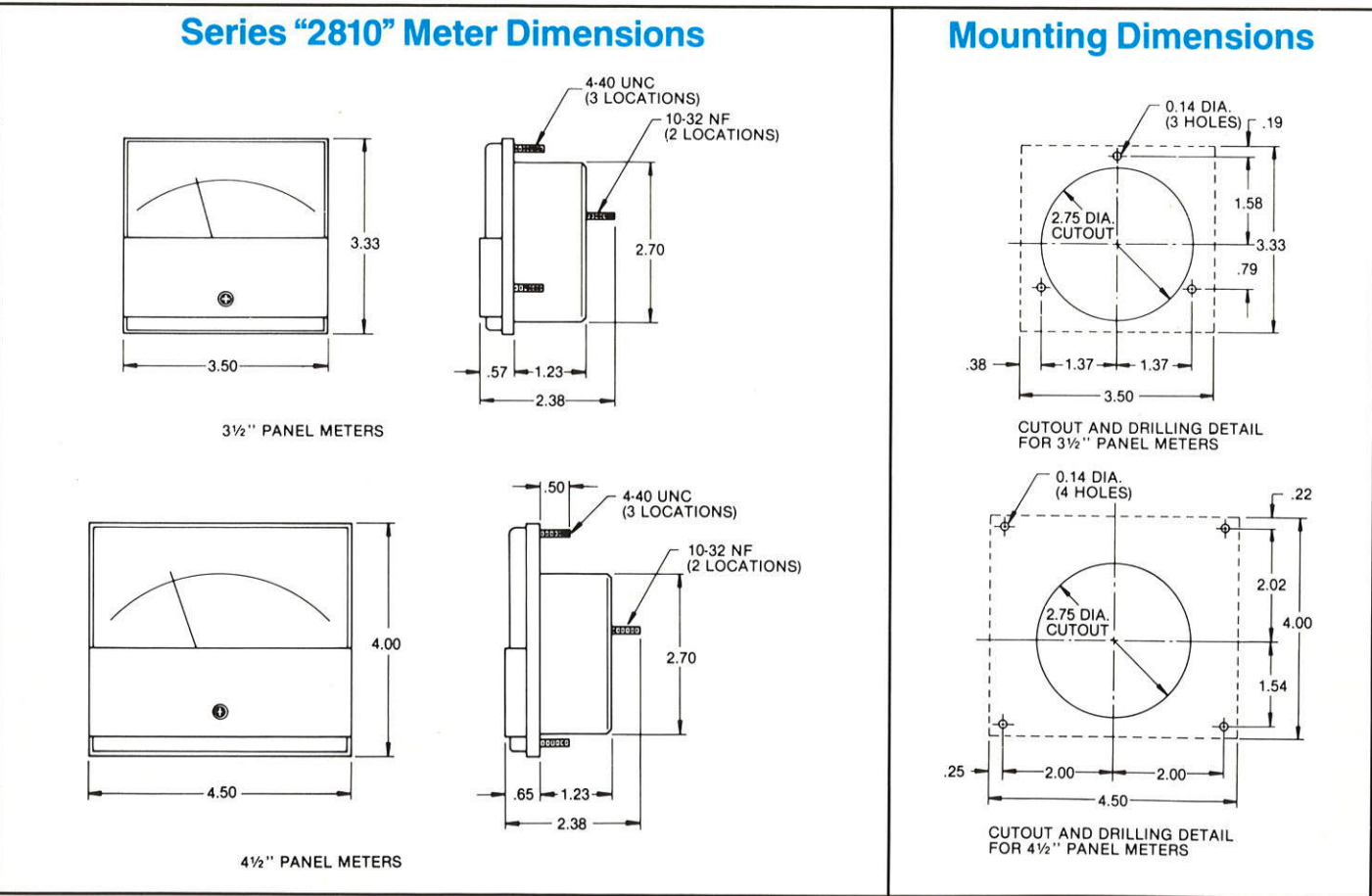
SPECIFICATIONS

- Accuracy*: ± 2% of fullscale
- ANSI Specification: All meters meet ANSI C-39.1 — 1981
- Overload:
- Voltmeters: 150% momentary; 120% sustained
- Ammeters: 10 x rated current, 10 consecutive intervals of 1/2 second with a 4 minute interval between successive applications, 120% for 6 hours.
- Scale length: 3 1/2" — 3.05"; 4 1/2" — 3.82"
- Scale degrees: 90°arc
- Insulation level: 2600VRMS, 1 min.
- Response time: 1.5 sec.
- Resistance: ± 10%



*On zero-center meters, specification applies to full scale, not end scale value, e.g. 50-0-50mv is 100mv full scale.

To order UL Recognized meters, add "L" to catalog number.

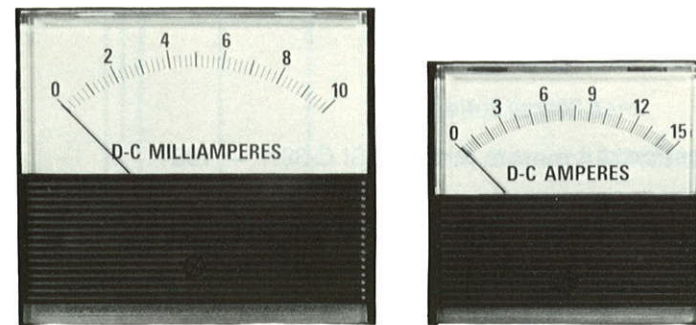


DC VOLTMETERS

Type	Rating and Scale	Terminal Resistance (Ω)	CATALOG NUMBER			
			3 1/2"	Price Code	4 1/2"	Price Code
DC MILLIVOLTMETER Zero-left	0-50mv	50	CLE8-N3D050	PAA	CLE8-N4D050	PAB
	0-100mv	100	CLE8-N3D100	PAA	CLE8-N4D100	PAC
DC MILLIVOLTMETER Zero-center	50-0-50mv	50	CLE8-N3D050C	PAA	CLE8-N4D050C	PAC
	100-0-100mv	100	CLE8-N3D100C	PAA	CLE8-N4D100C	PAC
DC VOLTMETERS Zero-left	0-10V	1000 ohms/Volt	CLE8-V3D10	PAB	CLE8-V4D10	PAC
	0-30V		CLE8-V3D30	PAB	CLE8-V4D30	PAC
	0-50V		CLE8-V3D50	PAB	CLE8-V4D50	PAC
	0-100V		CLE8-V3D100	PAB	CLE8-V4D100	PAD
	0-150V		CLE8-V3D150	PAB	CLE8-V4D150	PAD
	0-200V		CLE8-V3D200	PAB	CLE8-V4D200	PAD
DC VOLTMETERS Zero-center	0-300V	1000 ohms/Volt	CLE8-V3D300	PAE	CLE8-V4D300	PAF
	10-0-10V		CLE8-V3D10C	PAB	CLE8-V4D10C	PAC
	10-0-30V		CLE8-V3D30C	PAB	CLE8-V4D30C	PAC
	50-0-50V		CLE8-V3D50C	PAB	CLE8-V4D50C	PAC
	100-0-100V		CLE8-V3D100C	PAB	CLE8-V4D100C	PAD
	150-0-150V		CLE8-V3D150C	PAB	CLE8-V4D150C	PAD
	200-0-200V		CLE8-V3D200C	PAB	CLE8-V4D200C	PAD
	300-0-300V		CLE8-V3D300C	PAE	CLE8-V4D300C	PAF

DC AMMETERS (Taut-Band) "2810" SERIES

UL To order **UL** Recognized meters, add "L" to catalog number.



Type	Rating and Scale	Terminal Resistance (Ω)	CATALOG NUMBER			
			3 1/2"	Price Code	4 1/2"	Price Code
DC MILLIAMMETERS Zero-left	0-1mA	43.0	CLE8-M3D001	PAG	CLE8-M4D001	PAB
	0-5mA	3.8	CLE8-M3D005	PAG	CLE8-M4D005	PAB
	0-10mA	2.2	CLE8-M3D010	PAG	CLE8-M4D010	PAB
	0-50mA	1.0	CLE8-M3D050	PAG	CLE8-M4D050	PAB
	0-100mA	.5	CLE8-M3D100	PAG	CLE8-M4D100	PAB
	0-500mA	.10	CLE8-M3D500	PAG	CLE8-M4D500	PAB
	0-1000mA	.05	CLE8-M3D1000	PAA	CLE8-M4D1000	PAC
DC MILLIAMMETERS Zero-center	1-0-1mA	35.0	CLE8-M3D001C	PAG	CLE8-M4D001C	PAB
DC MILLIAMMETERS Zero-Suppressed	1-5mA	5	CLE8-M3D005U	PAA	CLE8-M4D005U	PAC
	4-20mA	6.6	CLE8-M3D020U	PAA	CLE8-M4D020U	PAC
	10-50mA	2.0	CLE8-M3D050U	PAA	CLE8-M4D050U	PAC
DC AMMETERS Zero-left 50mV Shunt-rated.	0-15A	10	CLE8-A3D150	PAA	CLE8-A4D150	PAC
	0-20A	10	CLE8-A3D200	PAA	CLE8-A4D200	PAC
	0-25A	10	CLE8-A3D250	PAA	CLE8-A4D250	PAC
	0-30A	10	CLE8-A3D300	PAA	CLE8-A4D300	PAC
	0-50A	10	CLE8-A3D500	PAA	CLE8-A4D500	PAC
	0-75A	10	CLE8-A3D750	PAA	CLE8-A4D750	PAC
	0-100A	10	CLE8-A3D101	PAA	CLE8-A4D101	PAC
	0-150A	10	CLE8-A3D151	PAA	CLE8-A4D151	PAC
	0-200A	10	CLE8-A3D201	PAA	CLE8-A4D201	PAC
	0-300A	10	CLE8-A3D301	PAA	CLE8-A4D301	PAC
	0-500A	10	CLE8-A3D501	PAA	CLE8-A4D501	PAC
	0-750A	10	CLE8-A3D751	PAA	CLE8-A4D751	PAC
	0-1000A	10	CLE8-A3D102	PAA	CLE8-A4D102	PAC
	0-1200A	10	CLE8-A3D122	PAA	CLE8-A4D122	PAC
	0-1500A	10	CLE8-A3D152	PAA	CLE8-A4D152	PAC
	0-2000A	10	CLE8-A3D202	PAA	CLE8-A4D202	PAC
	15-0-15A	10	CLE8-A3D150C	PAA	CLE8-A4D150C	PAC
	20-0-20A	10	CLE8-A3D200C	PAA	CLE8-A4D200C	PAC
	25-0-25A	10	CLE8-A3D250C	PAA	CLE8-A4D250C	PAC
	30-0-30A	10	CLE8-A3D300C	PAA	CLE8-A4D300C	PAC
	50-0-50A	10	CLE8-A3D500C	PAA	CLE8-A4D500C	PAC
	100-0-100A	10	CLE8-A3D101C	PAA	CLE8-A4D101C	PAC
	150-0-150A	10	CLE8-A3D151C	PAA	CLE8-A4D151C	PAC
	200-0-200A	10	CLE8-A3D201C	PAA	CLE8-A4D201C	PAC
	300-0-300A	10	CLE8-A3D301C	PAA	CLE8-A4D301C	PAC
	500-0-500A	10	CLE8-A3D501C	PAA	CLE8-A4D501C	PAC

Shunts are user supplied.
See pages 38 - 40.

Shunts are user supplied.
See pages 38 - 40.

AC METERS "2810" SERIES

SPECIFICATIONS

Accuracy: ± 2% Iron-Vane, 50/60Hz
± 3% Rectifier Type, 60Hz
When standard 60Hz ammeters are used on the extreme limits of 25 or 400Hz, an additional 0.75% error may be experienced.

ANSI Specification: All meters meet ANSI C39.1 — 1981

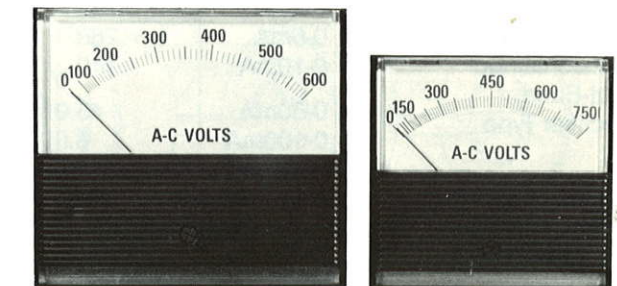
Overload:
Voltmeters: 150% momentary; 120% sustained
Ammeters: Momentary — 10 x rated current, 10 consecutive internals of 1/2 second with a 1 minute interval between successive applications; sustained, 120% for 6 hours.

Scale length: 3 1/2" — 3.06"; 4 1/2" — 3.82"

Scale arc: 90° arc

AC VOLTMETERS

Insulation level: 2600VRMS, 1 min.
Burden data: AC ammeter: .7VA, 0.7PF lag
AC voltmeter: .8VA unity PF
Response time: 2.5 sec. max.
Resistance: ± 30% iron-vane
Shielding: All high current AC meters contain internal shielding.



Type	Rating and Scale	Terminal Resistance (Ω)	CATALOG NUMBER			
			3 1/2"	Price Code	4 1/2"	Price Code
AC VOLTMETERS (self-contained) Iron-Vane 50/60Hz	0-150V	30K	CLE8-V3A150	PAA	CLE8-V4A150	PAE
	0-300V	60K	CLE8-V3A300	PAC	CLE8-V4A300	PAD
	0-500V	100K	CLE8-V3A500	PAL	CLE8-V4A500	PAM
	0-600V	120K	CLE8-V3A600	PAL	CLE8-V4A600	PAM
AC VOLTMETERS (Transformer-rated)* 0-150V rated. Iron-Vane 50/60Hz	0-600V	30K	CLE8-X3A600	PAA	CLE8-X4A600	PAE
	0-750V	30K	CLE8-X3A750	PAA	CLE8-X4A750	PAE
	0-3000V	30K	CLE8-X3A3000	PAA	CLE8-X4A3000	PAE
	0-5250V	30K	CLE8-X3A5250	PAA	CLE8-X4A5250	PAE
	0-6KV	30K	CLE8-X3A6K	PAA	CLE8-X4A6K	PAE
	0-9KV	30K	CLE8-X3A9K	PAA	CLE8-X4A9K	PAE
	0-15V	30K	CLE8-X3A15K	PAA	CLE8-X4A15K	PAE
	0-18KV	30K	CLE8-X3A18K	PAA	CLE8-X4A18K	PAE
	0-600V	60K	CLE8-W3A600	PAC	CLE8-W4A600	PAD
	0-5000V	60K	CLE8-W3A5000	PAC	CLE8-W4A5000	PAD
AC VOLTMETERS (self-contained) Iron-Vane 400Hz	0-50V	5K	CLE8-G3A50	PAH	CLE8-G4A50	PAI
	0-150V	30K	CLE8-G3A150	PAA	CLE8-G4A150	PAE
	0-300V	60K	CLE8-G3A300	PAC	CLE8-G4A300	PAD

Iron-vane meters are pivot and jewel

UL To order **UL** Recognized meters, add "L" to catalog number.

AC FREQUENCY METERS

Type	Scale HZ	Center Frequency Hz	Voltage Nom.	CATALOG NUMBER			
				3 1/2"	Price Code	4 1/2"	Price Code
FREQUENCY METERS Accuracy: 3% of Span	45-55	50	120	CLE8-F3A4555	PAN	CLE8-F4A4555	PAP
	45-65	55	120	CLE8-F3A4565	PAN	CLE8-F4A4565	PAP
	55-65	60	120	CLE8-F3A5565	PAN	CLE8-F4A5565	PAP
	380-420	400	120	CLE8-F3A380420	PAO	CLE8-F4A380420	PAQ

*Transformers are user supplied. See page 41.