Murata Power Solutions

OBSOLETE PRODUCT

Contact Factory for Replacement Model

DM-2000ab

Digital Panel Meter

DESCRIPTION

The Datel Datamite DM-2000 is the first LED 3½ digit panel meter to sell for below $100.00 in single quantities. This has been made possible by the wide acceptance of Datel Systems line of Datamite Digital Panel Meters which have a proven record of performance and reliability.

The DM-2000 combines the ease and accuracy of digital readout with high input impedance and noise rejection to provide an inexpensive digital panel meter (digital voltmeter) that will enhance the operation, performance and appearance of any instrumentation system.

The DM-2000 is ideal for new equipment design or may be utilized in updating existing instruments or systems that require a stable, accurate digital readout for voltage. Simple to install, the DM-2000 is supplied complete and ready to operate, requiring only a connection of an input signal and power cable. Applications include measuring or any parameter for which a suitable output voltage is available. These include absorption, acceleration, current, displacement, distortion, emission, flow, frequency, Ph, pressure, strain, torque, and many others.

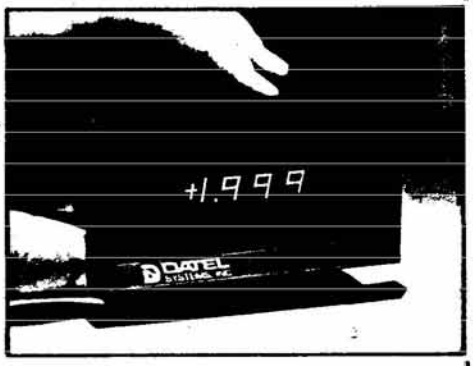
The DM-2000 provides a differential input with a 100 MegOhms input impedance and a common mode rejection of 70 db at 60 Hz. The input range is ±1.999 volts or ±199.9 millivolts. The display is 3½ digits including automatic polarity and overflow indication. In addition the output is presented to the I/O connector as BCD/TTL information.

High quality computer grade components, superior workmanship and wide-safety-margin designs combine to make Datamite DM-2000 a must in your present equipment or future generation designs.

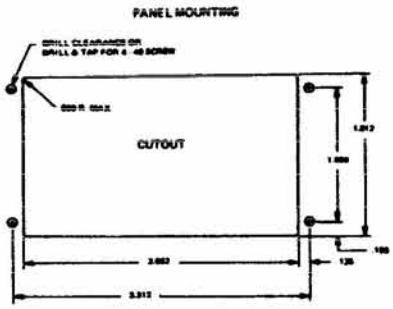
WORLD'S FIRST LED 3-1/2 DIGIT DPM FOR UNDER $100 IN SINGLE QUANTITY

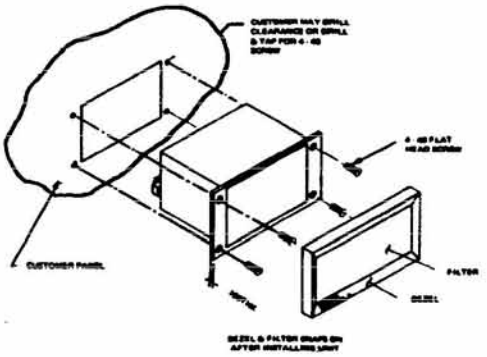
FEATURES

- ☐ ±199.9mV or ±1.999V Full Scale Inputs
- ☐ True Floating Bipolar Differential Input
- ☐ Automatic Polarity and Overflow Display
- ☐ Up to 200 Readings per Second
- ☐ Operates From Single +5VDC Supply
- ☐ Solid State Led Display
- ☐ Adjustable Zero Control Compensating For External Offset Voltages



MOUNTING DETAILS





Calibration Procedure (Using Trimpots Shown At Right)

The following adjustment procedure is recommended after allowing for a five minute warm-up.

Balance Control

1) Short the analog input terminals to analog common. (See I/O chart for proper pin connection.)
2) Rotate the balance control until the display is flickering between (+) zero and (–) zero.

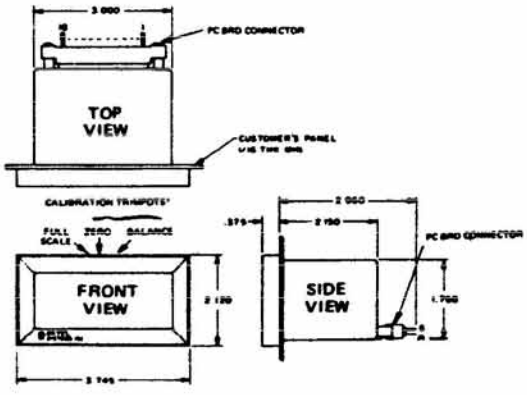
Zero Control

1) Connect a precision voltage reference source to the analog input terminals.
2) Adjust the voltage output from the reference source to .3LSD (30μV Model A, 300μV Model B). Rotate the zero control until the LSD (Least significant digit) flickers between zero and one.

Full Scale Control

1) Adjust the output from the reference source to 1.990 volts. Rotate the full scale control of the panel meter until the meter displays 1.990 volts.

MECHANICAL DIMENSIONS (INCHES)



*Calibration trimpots are behind pop-off front panel bezel

INPUT/OUTPUT CONNECTIONS

PC BRD CONNECTOR BOTTOM A	PC BRD CONNECTOR TOP B	
ANALOG INPUT (LO)	1	ANALOG INPUT (HI)
SHIELD GROUND	2	SHIELD GROUND
NOT USED	3	NOT USED
NOT USED	4	LOGIC GROUND
DECIMAL POINT 100	5	BIT 1 OUT
DECIMAL POINT 10	6	BIT 2 OUT
DECIMAL POINT 1	7	BIT 4 OUT
E.O.C. (STATUS)	8	BIT 8 OUT
OVERLOAD SCALE OUT	9	BIT 10 OUT
INT. START GATE	10	BIT 20 OUT
INT. START ADJ.	11	BIT 40 OUT
INT START OUT	12	BIT 80 OUT
START INPUT	13	BIT 100 OUT
LAMP TEST	14	BIT 200 OUT
1000 OUT	15	BIT 400 OUT
SIGN OUT	16	BIT 800 OUT
NOT USED	17	NOT USED
POWER INPUT, (+)5VDC RETURN	18	POWER INPUT, +5VDC

SPECIFICATIONS Typical @ 25°C, 5 minutes warm up, +5VDC ±.25V unless noted

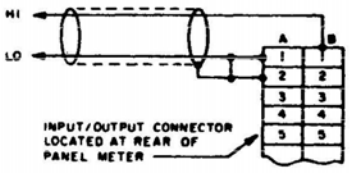
PARAMETER	MODEL DM-2000
Input	
Input Voltage Range	±199.9mV DM-2000A ±1.999V DM-2000B
Input Impedance	>100 MEGOHMS
Input Bias Current	20 nA
Input Configuration	Differential
Input Polarity	Bipolar – Automatic
Common Mode Rejection	70dB @ 60Hz
Common Mode Voltage	±2V max. to digital output common
Performance	
Accuracy @ 25°C	±0.05% of Reading ±1 Count
Resolution	100µVolts (DM-2000-A), 1mVolt (DM-2000-B)
Temperature Coefficient	50ppm/°C
Conversion Speed	0 to 200 Conversions/Second. See Diagrams below
Input Settling Time	50 µsec for a F.S. Change
Operating Temperature Range	0°C to +60°C
Storage Temperature Range	–20°C to +85°C
Warm Up Time	5 Minutes to Specified Accuracy
Adjustments	Zero, Balance, Full Scale Located Behind Snap On Front Bezel
Input Power	5VDC ±0.25VDC @ 750mA
Display Output	
Display Type	Solid State LED for Data Digits, 100% Overrange, Overflow, Decimal point and Polarity – Character Height .27 in.
Overflow	Indicated by the Letters "OF"
Decimal Points	Selectable at rear Connector
Data Outputs (1)	
BCD Outputs	12 Parallel Lines, BCD (8–4–2–1) Positive Logic Loading: 2TTL loads (1)
Overrange (Connection A15)	>1000 counts indicated with a HIGH. Loading: 2TTL loads (1)

PARAMETER	MODEL DM-2000
Polarity	Input signal polarity indicated with a HIGH-positive. LOW-negative. Loading: 2TTL loads (1)
Overflow (OF) >±.2V(A)>±2V(B) (Connection A9)	HIGH-input signal within range. LOW-input signal outside range. Loading: 2TTL loads (1)
End of Conversion (EOC) (Connection A8)	HIGH – During the reset and conversion period. LOW – Conversion complete. Loading: 2TTL loads (1)
Input/Output Control	
External Start Conversion Command (Connection A13)	Positive pulse 100 nsec min. Transition from "LOW" to "HIGH" resets output register and blanks readout. The conversion process is initiated upon return from "HIGH" to "LOW". Loading: 1TTL load. (1)
Internal Start Gate (Connection A10)	Controls internal start clock "HIGH" – Run "LOW" – Stop loading: 1TTL load (1)
Internal Start Adjust (Connection A11)	Controls Rate of Internal Start Clock – see Applications Section.
Internal Start Out (Connection A12)	Positive Pulse Output of Internal Start Clock– see Applications Section.
Lamp Test Input (Connection A14)	Grounding this input displays + 1888 for testing all display segments. Loading: Sink 35mA
Decimal Point Inputs (DP1, DP10, DP100)	Grounding inputs illuminates corresponding decimal points on the display. Loading: Sink 15mA
Physical (2)	
Case Size	3"W x 1.75"H x 2.25"D
Case Material	Black LEXAN
Weight	6 oz. Approx.
Mounting	Through a 1.75" x 3.00" Cut-Out and Secured with Four 4-40 Tapped Holes

Notes:
(1) Low: V out ("0") = <+0.8V. HIGH: V out ("1") = >+2.4V.
(2) Module is fully repairable and features snap-together PC Boards.

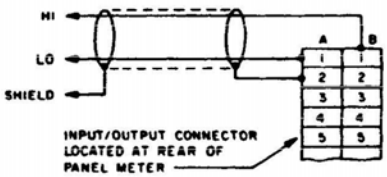
APPLICATIONS

SINGLE ENDED INPUT



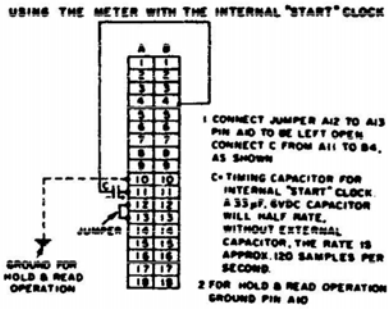
FOR SINGLE ENDED INPUT, CONNECT "LO" AND "SHIELD" TOGETHER AT THE CONNECTOR (A1 TO A2)

DIFFERENTIAL INPUT



FOR DIFFERENTIAL INPUT THE COMMON MODE VOLTAGE BETWEEN "LO" AND "SHIELD" MUST NOT EXCEED THE MAXIMUM SPECIFIED COMMON MODE VOLTAGE

USING THE METER WITH THE INTERNAL "START" CLOCK

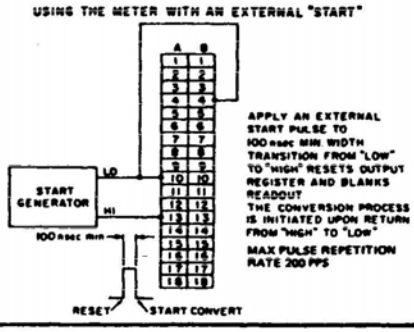


1 CONNECT JUMPER A12 TO A13 PIN A10 TO BE LEFT OPEN CONNECT C FROM A11 TO B4, AS SHOWN

C= TIMING CAPACITOR FOR INTERNAL "START" CLOCK A 33pF, 6VDC CAPACITOR WILL HALF RATE. WITHOUT EXTERNAL CAPACITOR, THE RATE IS APPROX. 120 SAMPLES PER SECOND.

2 FOR HOLD & READ OPERATION GROUND PIN A10

USING THE METER WITH AN EXTERNAL "START"



APPLY AN EXTERNAL START PULSE TO 100 nsec MIN. WIDTH TRANSITION FROM "LOW" TO "HIGH" RESETS OUTPUT REGISTER AND BLANKS READOUT

THE CONVERSION PROCESS IS INITIATED UPON RETURN FROM "HIGH" TO "LOW"

MAX PULSE REPETITION RATE 200 PPS

Murata Power Solutions

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