

# HI-REL/HEAVY DUTY INDUSTRIAL DPM

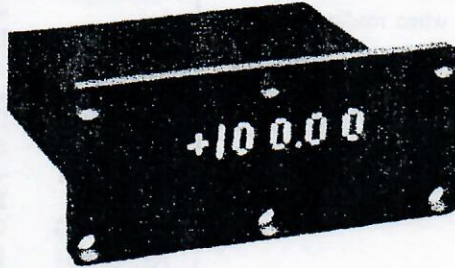
## To Mil-Spec (NSN: 711-1220-01-144-3867) 3½ or 4½ Digits

### VDC/VRMS/Current Loop/Frequency Inputs

**MODEL  
100/101**

**Features**

- EMI/RFI Filter
- Sub D Connector
- 4 X 7 Dot Matrix LED
- Aluminum Extrusion Case
- Aluminum Machined Bezel
- Serial BCD Output
- High Reliability



**Features**

- 150 Hour Burn-in
- VDC Multirange
- VRMS to 20KHz
- Frequency to 20KHz
- 4-20, 1-5 & 10-50mA Current Loops
- Microprocessor I/O

**DESCRIPTION:** High reliability through simple design, extensive testing and component selection makes the 100 Series ideal for critical applications such as nuclear, air, ground, space and water vessels. The Heavy Duty Industrial Model 101 is being successfully used in petrochemical installations, biomedical and other applications where reliability is of utmost importance. The 100 differs from the 101 in component selection and testing. The 100 has 883B REV. D Component Rating; the 101 does not. The 100 is subjected to applicable Mil Testing for shock, vibration, radiation, temperature and others. The 102 uses all ceramic & metal can components (not 883B) and EMI/RFI shield/gaskets and it is not subjected to all the tests that the 100 is.

**TRUE VRMS OPTION:** When this option is ordered, it converts the AC signal (Sine, Triangular, Pulsed, etc.) to its VDC equivalent to be digitized by the mainframe. Typical applications include: AC Volts/Amps, AC ripple measurements, transformers, generators, rectifiers, SCR measurements, etc.

**CURRENT LOOP OPTION:** This option converts typical current loop signals (1-5, 4-20 & 10-50 mA) into a 0-2 VDC signal for the mainframe. Zero and span controls allow a wide range of engineering units calibration.

**FREQUENCY OPTION:** When ordered, this option converts (via a highly stable, accurate F-V) signals in the 200-20 kHz F.S. range with amplitudes from 1-300 VRMS to a 0-2 VDC F.S. signal for the main-frame. Internal span adjustment allows wide calibration range.

**MULTIRANGE:** When this option is ordered, a high precision voltage divider is included and all that is required is an external 5 position Dual Deck Switch for Range and Decimal Point Selection. The ranges are (for VDC input only): 2, 20, 200 & 500 VDC.

**MULTIFUNCTION:** Incorporates VDC, RMS, Frequency and Current Loop in one.

**DISPLAY:** 4 X 7 Dot Matrix LED (0.3" high) for error free reading.

**CONNECTOR:** A 37 Pin "Sub D" Connector M24308/24-40F is used. Customer to supply mating connector.

**HOUSING:** Aluminum Extrusion and machine parts are per Mil-Specs. Customer to insure proper electrical contact on panel surface area for effective operation of RFI/EMI Shielding. Electrical conductive paint is used on all parts.

**EXPANSION:** Interface (internal to the unit) was designed to allow for future inclusion of functions such as RS232/422/485, Temperature, Strain Gage and other functions that customers might require. Please contact Otek for your special needs.

**I/O PORTS:** Such as Under-range, Over-range, Busy, Clock, Strobe, Hold, Display Blank and Multiplexed BCD are included.

**SPECIFICATIONS @ 25°C**

<b>Industrial Version (Model 101, mainframe only)</b>	
Accuracy and Linearity .....	±0.008% ±1 digit
Common Mode Rejection Ratio .....	90dB
Common Mode Voltage .....	<±2 (Analog gnd. to digital gnd.)
Noise Rejection .....	80 dB at 50/60 Hz
Overvoltage Protection .....	up to 750 VDC
Bias Current .....	7 pA maximum
Temperature Coefficient .....	±30 PPM/°C
Sample Rate .....	3/second nominal
Zero and Polarity .....	automatic
Power Consumption .....	½ Watt maximum
Digital Inputs/Outputs .....	1 low power TTL load
Input Impedance 2V Range .....	1000M
Input Impedance Multirange .....	10M
Operating Temperature .....	-10° to +60°C
Storage Temperature .....	-20° to +70°C

**SPECIFICATIONS FOR OPTIONS @ 25°C**

Note: These specifications govern the specs of the mainframe, other specs not listed are same as mainframe.

**RMS OPTION**

Accuracy and Linearity .....	±0.1% of F.S. ±1 digit (SCR ±1%)
Frequency Response .....	DC to 20KHz at rated accuracy
Input Impedance .....	100KΩ/0.1 μF
Input Type .....	single ended
Input Bias Current .....	40 pA
Input Protection .....	350 VRMS
Temperature Coefficient .....	50 ppm/°C

**CURRENT LOOP OPTION**

Accuracy and Linearity .....	±0.01% of F.S. ±1 digit
Input Type .....	single ended
Termination Impedance .....	10 ohms (4-20 mA range)
Zero and Span Adjustment Range .....	±500 (5000) counts
Temperature Coefficient .....	50 ppm/°C

**FREQUENCY OPTION**

Accuracy and Linearity .....	±0.1% of F.S. ±1 digit
Input Signal Range (must cross zero) .....	1 to 300 VRMS
Input Protection .....	to 500 VRMS
Input Range .....	200, 2K and 20KHz F.S.
Input Type .....	square, sine, pulsed (30% minimum)
Input Impedance .....	500KΩ
Temperature Coefficient .....	50 ppm/°C

\*Hi-REL Version Per NAVSEA Drawing No. 5499620 Specs on Request.

**ORDERING INFORMATION (11/1/00)**

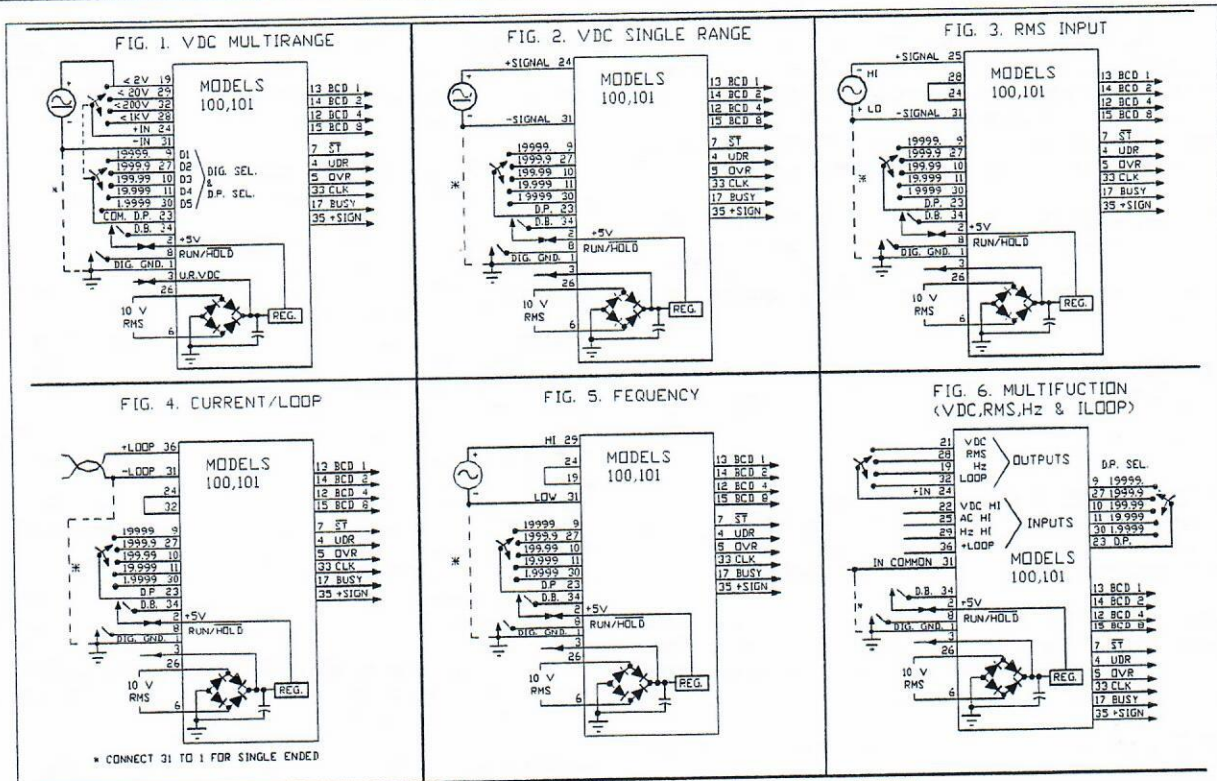
<p><b>VERSION</b></p> <p>0 HI-REL to 5499620 DRWG</p> <p>1 ..... Industrial Grade</p> <p>2 ..... To MIL-38510</p> <p><b>FUNCTION &amp; RANGE</b></p> <p>0 ..... Multirange VDC only</p> <p>1 ..... 2VDC Full Scale</p> <p>2 ..... 2VRMS</p> <p>3 ..... 4-20mADC</p> <p>4 ..... 2kHz Frequency</p> <p>5 Multifunction (options 1,2,3, &amp; 4)</p>	<p><b>MODEL</b> [ ] [ ] [ ] [ ] [ ]</p> <p><b>POWER INPUT</b></p> <p>0 ..... 10VRMS</p> <p>1 ..... 5VDC</p> <p>2 ..... 7-15VDC</p> <p><b>NUMBER OF DIGITS (RESOLUTION)</b></p> <p>0 ..... 3½ Digits</p> <p>1 ..... 4½ Digits</p> <p>(1) Other ranges available</p> <p>(2) For Mil Spec and 38510 versions, request "Mil-Spec-100" specs</p> <p>(3) Specifications subject to change without notice</p>
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MIL-SPEC & MISC.

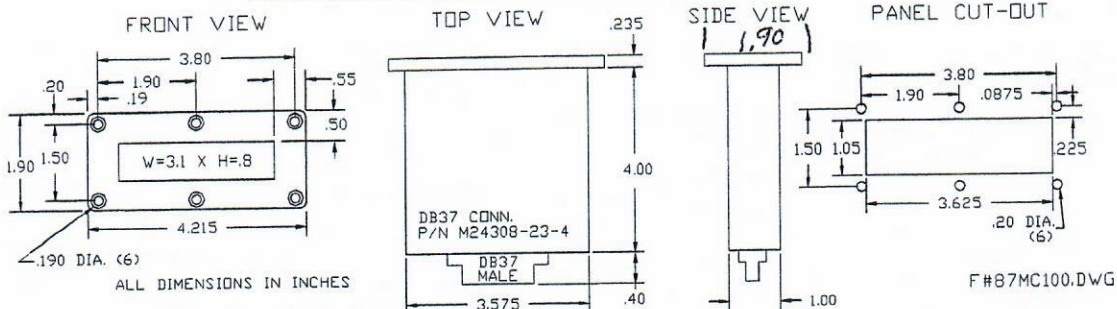
## TERMINAL DESCRIPTION

Description is given for all terminals, however, some do not apply to certain models. Please contact Otek if any questions.

Terminal 1	Digital Common (5VDC or UR VDC return)	Terminal 17	Busy, Logic 1 = conversion in progress
Terminal 2	+5VDC I/O	Terminal 20	-5VDC Out (5mA maximum).
Terminal 3	Unregulated D.C. I/O	Terminal 23	Decimal Point Common. Connect desired digit select (D1-D5) to this terminal. See diagram in Instruction Manual.
Terminal 4	UDR will switch to Logic 1 when reading is below 180 counts.	Terminal 24	+Signal Input
Terminal 5	OVR will be at Logic 1 when reading exceeds 1999 counts.	Terminal 26	VAC High (10VRMS maximum)
Terminal 6	VAC Low	Terminal 27	D2
Terminal 7	Strobe, five negative pulses (one for each digit select at the end of the conversion).	Terminal 30	D5 (MSD)
Terminal 8	Hold open for conversion. Connect to terminal 1 to hold last reading.	Terminal 31	-Signal Input (see External Switch diagram in Instruction Manual).
Terminal 9	D1 (LSD)	Terminal 33	Oscillator Clock Out (100KHz Nominal)
Terminal 10	D3	Terminal 34	Display/Blank Power. Normally connected to terminal 2 (+5VDC/150mA). Open for Display Blank.
Terminal 11	D4	Terminal 35	+Sign, High for +, Low for -.
Terminal 12	BCD		
Terminal 13	BCD 1		
Terminal 14	BCD 2	Terminal 15	BCD 8



### MECHANICAL DIMENSIONS FOR 100 SERIES



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Section 7 - 2

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