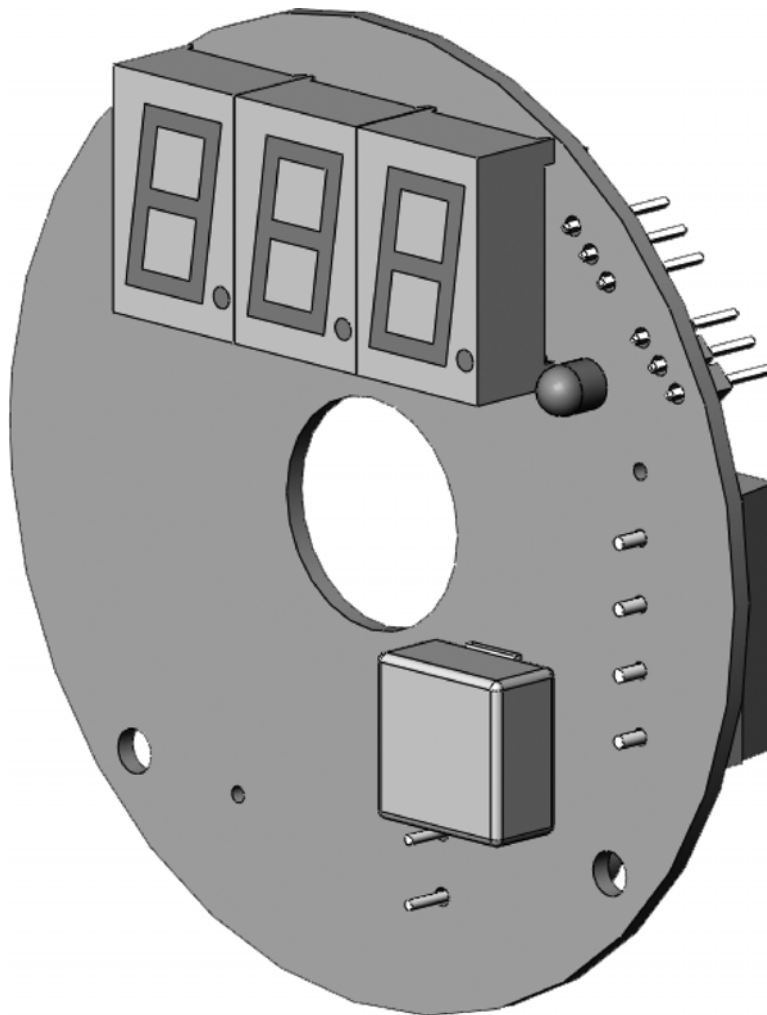


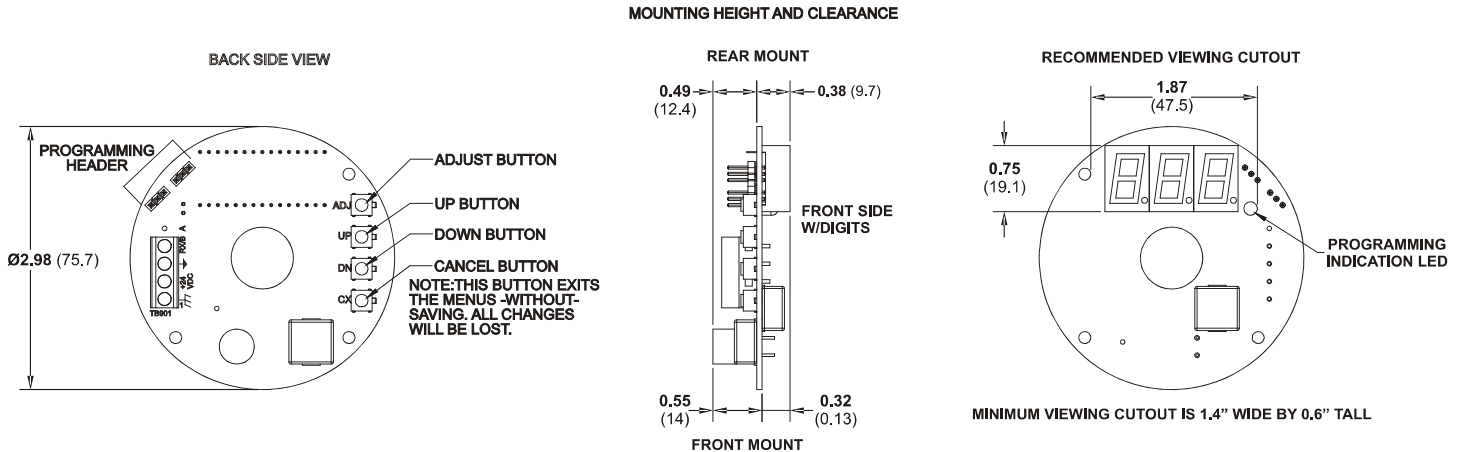
## 3-Digit Digital Tension Meter DTM3D

Option Insert  
DOC 801-2303



## GENERAL DESCRIPTION

The DTM3D (3-Digit Digital Tension Meter) is designed to provide a 3 digit digital readout representing tension. The DTM3D displays a tension reading based on a digital input signal from a specified DFE amplifier/indicator and a full scale tension value that can be programmed to any integer from 1 to 800 with four push-buttons located on the back of the board. When tension goes over-range the display flashes and when it goes negative a minus symbol appears in front of the reading.



**Figure 1 - DIGITAL METER DIMENSIONS AND PANEL CUTOUT DIMENSIONS**

## CHANGING THE FILTER DEPTH

The Digital Meter has been adjusted at the factory for a reasonable response to input changes without causing excess flickering of the display value. The filter depth can be programmed with the 4 buttons located on the right side (looking at the back) of the Meter as shown above, however, using the following procedure to accommodate unexpected rapid tension reading needs or to reduce flicker for an even/average tension reading.

- With power applied to the meter, press and hold the ADJUST button for 2 seconds. This will cause the meter to enter Menu Mode. "CAL" will be displayed and the status LED will turn on. The status LED remains on while in the user menu system. Using the UP or DOWN buttons, select "FIL" (for Filter) and press and hold the ADJUST key for 2 seconds to enter the FILTER ADJUST Mode.

**While in the menu systems, pressing CANCEL at any time will return the unit to Tension Display Mode. Your changes will not be saved.**

- The readout will show the current filter depth (factory default is 3). Decreasing the filter value will increase the response to input changes. Increasing the setting will slow the response time but may make the readout more stable by averaging the input signal over more time. The possible range is 1 to 10.
- Use the UP or DOWN buttons to select the desired filtering value (some experimentation may be required to achieve the desired results). Once the desired filter value has been navigated to, Press and Hold the ADJUST button for 2 seconds. The unit will save the new value and return to tension display mode. When a new value has been saved the status LED will flash for 2 seconds.

## CHANGING THE FULL SCALE TENSION RANGE

The Digital Meter should have been adjusted at the factory to accommodate the expected maximum tension. THEREFORE, NO CHANGES SHOULD BE NEEDED. Use the following procedure only if you need to change the full-scale tension from its factory setting.

The full scale value can be programmed to any integer value from 1 to 800. It should be selected as the maximum value for full scale tension output of the transducer. The format of the displayed output will depend on the programmed scale value. Smaller scales will display the tension with more decimal places as shown in the table below.

Full Scale Values	Display Format	Example Readout
Full Scale = 1	2 Decimal Places	0.57
$1 < \text{Full Scale} \leq 25$	1 Decimal Place	13.2
$25 < \text{Full Scale}$	No Decimal Places	68

The full scale value can be programmed with the 4 buttons located on the right side (looking at the back) of the Meter as shown on the previous page.

### Adjusting the full scale value is accomplished as follows:

1. With power applied to the meter, press and hold the ADJUST button for 2 seconds. This will cause the meter to enter Menu Mode. "CAL" will be displayed and the status LED will turn on. The status LED remains on while in the user menu system.

**While in the menu systems, pressing CANCEL at any time will return the unit to Tension Display Mode. Your changes will not be saved.**

2. Press and hold the ADJUST key for 2 seconds to enter the Full Scale Select Menu. The currently saved scale value will be displayed or the default value of 100 will be displayed if no prior value has been programmed. The UP and DOWN buttons can be used to cycle through the standard scale values (listed under Specifications). If a non-standard custom scale value is desired, scroll up past 750 until "non" (for non-standard) is displayed and press and hold the ADJUST key for 2 seconds. This will take you to the Non-Standard Scale Select Menu where the UP and DOWN buttons can be used to select any tension scale value from 1 to 800. If it is desired to return to the Standard Scale Select Menu, scroll up past 800 until "Std" (for standard) is displayed and press and hold the ADJUST button for 2 seconds.

While in either the Standard or Non-Standard Scale Select Menu, the UP or DOWN buttons can be held down to automatically scroll through scale values. When the UP or DOWN button is continuously held for 5 seconds after the automatic scrolling has begun in the Non-Standard Scale Select Menu, the speed of the scrolling will increase.

3. Once the desired full scale value has been navigated to with the UP and DOWN buttons, press and hold the ADJUST button for 2 seconds. The unit will save the new full scale value and return to Tension Display Mode. When a new value has been saved the status LED will flash for 2 seconds.

## SPECIFICATIONS

Power Input: Voltage	.....	24 Vdc +/- 10%
Current	.....	0.03Adc typical 0.3Adc internal fusing.
Weight:	.....	0.10 lbs (0.045X kg) (Board Only)
Tension Meter Scales:	.....	Standard Scales: 0-1, 5, 10, 25, 50, 75, 100, 150, 200, 250, 300, 400, 500, 750
Custom Scale:	.....	Any Integer: 1-800
Display Update Rate:	.....	10 updates/sec
Ambient Temperature Range:	..	32°F to 104°F (0°C to 40°C)

## ELECTRICAL CONNECTIONS

All electrical connections should already be made at the factory. If needed, wire the power supply as described in the drawing on the previous page. **Be sure to wire the shield lead to a proper chassis ground.** The DTM is designed to be powered from a 24VDC power supply.

Wire the specified DFE amplifier, indicator or controller's TX output to the RX input of the meter as shown on the previous page.