

0-5VDC Linear Resistance to Voltage Module PN-05V00199

● Description

The linear resistance to voltage module was designed for the eTape liquid level sensors. The eTape sensor plugs directly into the four pin header on the module. The module is designed to convert the variable resistance output of the eTape liquid level sensor, to a linear output voltage between ~0 volts to ~5 volts DC. Applying the output voltage of the module to an ADC or microcontroller can more accurately measure and monitor the liquid level output of the eTape sensor.



● Theory of Operation

The module converts the variable resistive output of the eTape sensor to a voltage using a dual operational amplifier designed to amplify the change in resistance. The first stage of the amplification circuit is a "difference amplifier" followed by a "unity gain amplifier". This module has a trimmer potentiometer which is used to adjust the gain to calibrate the module across the range of 8-inch to 32inch eTape sensors.

● Specifications

Thickness: 0.17" (4.3mm)

Length: 0.85" (21.6 mm)

Width: 0.75" (19.1 mm)

Voltage Output Range: ~0.2 – ~4.9 VDC +/-5%

Connector: 4 Pin Female & 3 Pin Male Header

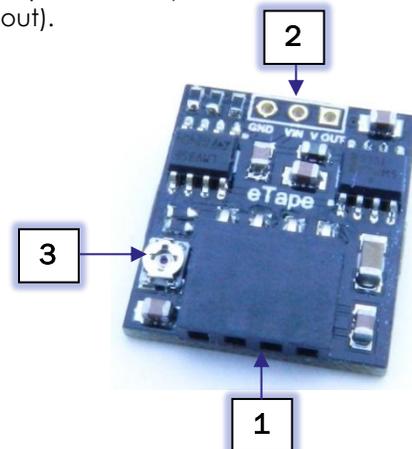
Temperature Range: -40°F - 257°F (-40°C - 125°C)

Power Requirements: 6 – 32VDC

● Connection and Installation

Connect to the module by attaching the eTape sensor to the four pin socket [1] located at the bottom of the module. Then connect Power (VIN) and ground (GND) to the three pin header [2] located at the top of the module (6 – 32 VDC). Connect your ADC, microcontroller or other voltage monitoring device to the output pin (Vout).

- 1- eTape Sensor Socket
- 2- Power and Output header
- 3- Calibration Trimmer Pot



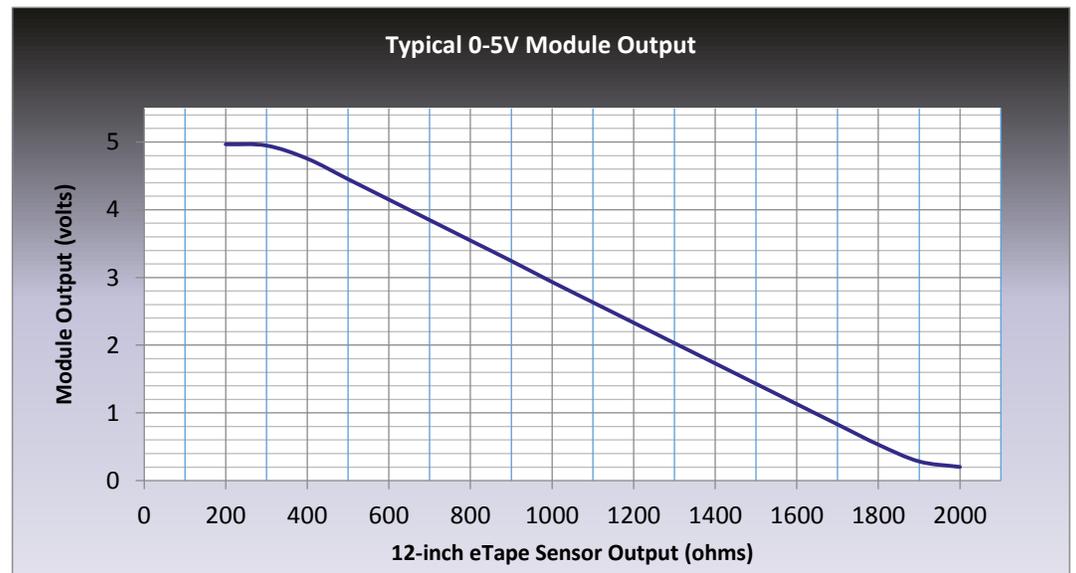
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● Calibration

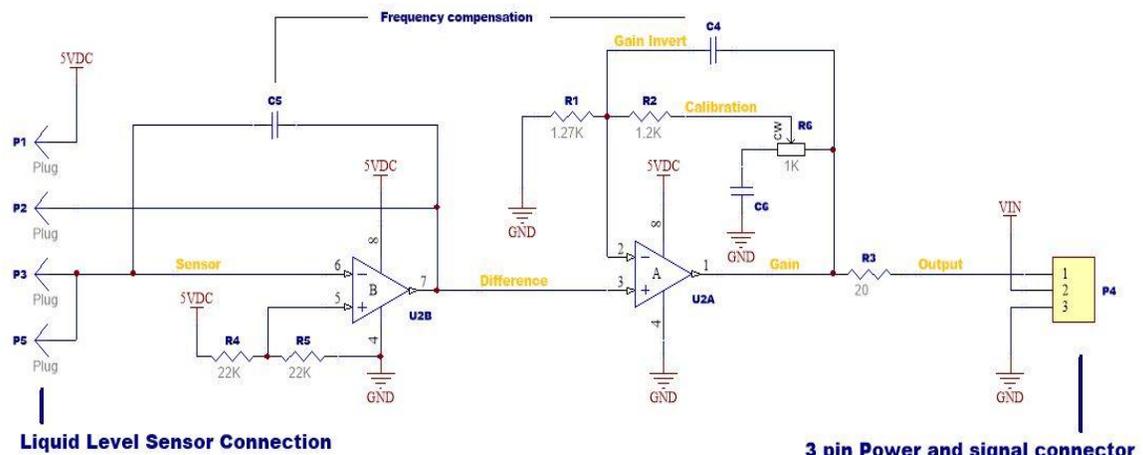
To calibrate the module, submerge the eTape sensor to the maximum level. The output voltage will be at a maximum at this level (approximately 4.9VDC). Monitor the output voltage (Vout) using a digital multi-meter (DMM). Adjust the trimmer pot using a small flat head or Philips screwdriver until maximum voltage of approximately 4.9V is displayed. Then adjust the trimmer pot in the opposite direction until the voltage just starts to drop in value. Be sure not to overturn the trimmer pot which has a 250 degree maximum turning angle. For example, if the maximum output is 4.899 and you start to turn the trimmer in the other direction, wait until you see a definite drop from 4.899 to 4.891 or something similar. The module is now calibrated to the eTape sensor. Note: Using Loctite or other adhesives to seal or hold the trimmer pot in place may change the resistance value and thereby change the calibration.

● Sensor Output

The following graph represents the typical 0-5V module output with a gain setting of 2X and an idealized 12" eTape sensor input resistance range of 300 to 2000 ohms.



● Circuit Diagram



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- **Technical Support**

If you require technical support for the 0-5V module or eTape liquid level sensor, please contact our technical support department by email at: techsupport@milonetech.com.

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