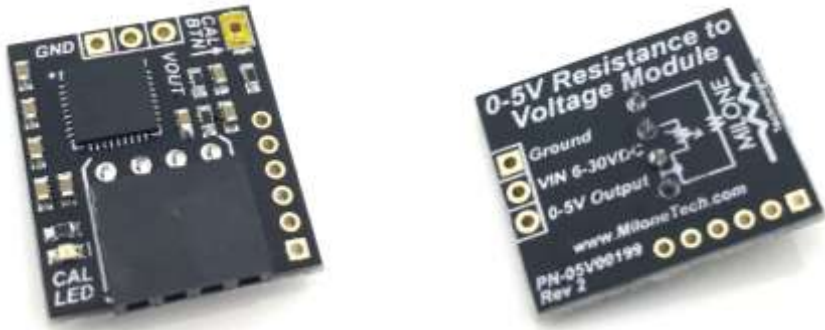


0-5VDC Linear Resistance to Voltage Module

PN-05V00199 REV 2

● 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 a microcontroller, PLC or other voltage monitoring device can more accurately measure and monitor the liquid level output of the eTape sensor. The module is calibrated using a five-point calibration process at 0%, 25%, 50%, 75% and 100% of full scale.



● Theory of Operation

The module converts the variable resistive output of the eTape sensor to a voltage using a programmable signal conditioning chip designed to amplify the change in resistance. The programmable chip conditions the eTape input signals by amplification and digitization through an analog front end channel. With the programmed firmware in the on-chip ARM Cortex M0 processor, the chip performs pre-programmed compensation algorithms. The module has a push button to calibrate the module across the complete range of 5-inch to 70-inch eTape sensors.

● Specifications

Thickness: 0.17" (4.3mm)

Length: 0.85" (21.6 mm)

Width: 0.75" (19.1 mm)

Voltage Output Range: 0 – 5 VDC +/-5%

Connector: 4 Pin Female & 3 Pin Male Header

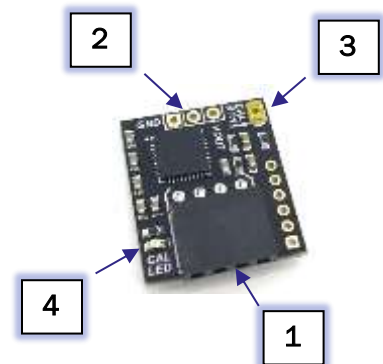
Temperature Range: -40°F - 257°F (-40°C - 125°C)

Power Requirements: 6 – 30VDC

● 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 – 24 VDC). Connect your voltage monitoring device to monitor the output (0-5V).

- 1- eTape Sensor Socket
- 2- Power and Output header
- 3- Calibration Button
- 4- Calibration LED



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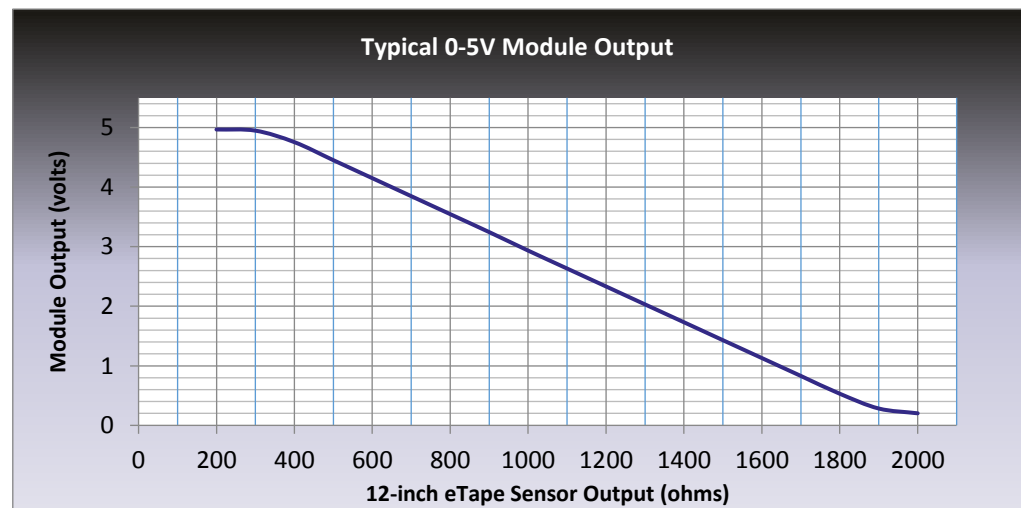
PN-05V00199 REV 2

• Calibration

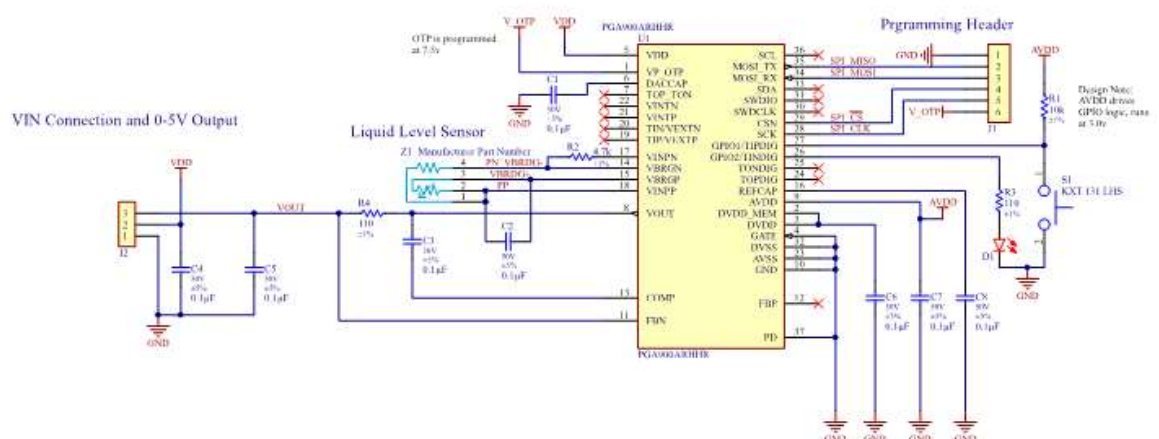
The module is calibrated using a five-point calibration process at 0%, 25%, 50%, 75% and 100% of full scale. Connect the e-Tape sensor to be calibrated using the 4-pin socket. **(1)** Hold down the calibration button while powering on the module. The red calibration LED will light up solid. **(2)** With the sensor not submerged in liquid, press the calibration button once. The LED will flash slowly after a couple of seconds. Once the LED stops flashing, the zero point of the sensor is calibrated. **(3)** Add liquid to submerge the eTape sensor to 25% level and press the calibration button again. The LED will flash slowly and once the LED stops flashing the 25% is calibrated. Repeat step 3 for the 50%, 75% and 100% levels. Following the 100% calibration, the LED will flash fast for several seconds. Once the LED stops flashing and stays off, the module and eTape are now calibrated. The module can be reset and recalibrated by repeating the process. **Note:** The calibration process can be done in reverse so that the measurement output is reversed (0V output for high level and 5V output for low level).

• Sensor Output

The following graph represents the typical 0-5V module output per the calibration sequence above and an idealized 12" eTape sensor input resistance range of 300 to 2000 ohms.



• Circuit Diagram



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- **Complete eTape Assemblies**

If you purchase a complete assembly with the polycarbonate tube and housing cap, the 0-5V module will come pre-calibrated and potted inside the black housing cap. Therefore, there is no access to the module for re-calibration. There are three wires with the complete assemblies: red (Vin), Black (Gnd) and White (Vout) as shown below:



- **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.

Innovative Fluid Sensing