

The MEMSIC MTLT110S-R series is a static tilt sensor with programmable tilt threshold alarm and RS232 Interface. The MTLT110S-R integrates highly reliable MEMS inertial sensors, microprocessor, and algorithms to compute tilt angles under static conditions to achieve a 1° accuracy over a broad range of operating environments. The MTLT110S-R also includes a programmable tilt alarm for tilt safety applications. It can be programmed to be triggered to go active high when the tilt exceeds a specified threshold. The tilt alarm can be used to lock out controls or trigger an alarm or warning light. It is an all-in-one tilt safety solution eliminating the need for an external microprocessor to interpret tilt angles. The MTLT110S-R also includes a standard RS232 communication port to digitally sample the real-time angles. MTLT110S-R is available in a fully enclosed IP67 plastic enclosure.



## Applications

- Construction (boom tilt measurement)
- Safety control systems for static Forklifts and Aerial Lifts
- Equipment lockout for unsafe tilted environments
- Platform Leveling
- Robotics Control



Tilt Safety



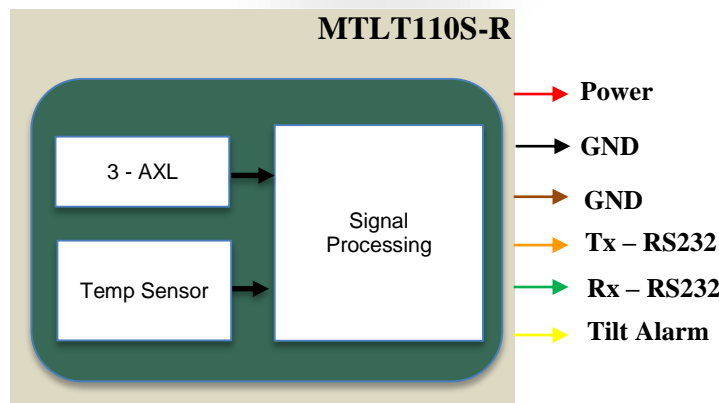
Platform Leveling



Aerial Lift Safety

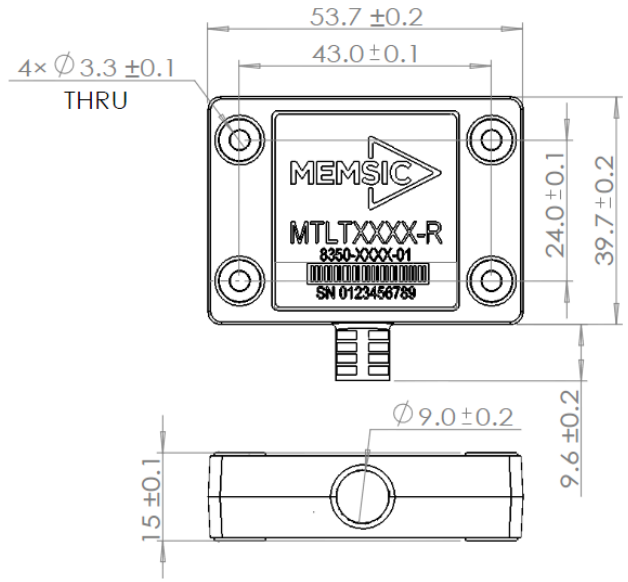
## Features

- High Performance 3 axis MEMS Sensors
- 1° accuracy in static conditions
- Programmable Tilt Alarm
- RS232 Interface
- Miniature IP67 enclosure (54 x 40 x 15 mm)
- Wide Temp Range, -40C to +70C
- High Reliability, MTBF > 50k hours
- ITAR- Free



Performance Characteristics  
 Ta = 25°C, VDC = 15.0V, unless otherwise stated

Sensor Performance	
Axes	Pitch, Roll
Range	±90°, ±180°
Resolution	0.05°
Static Accuracy <sup>1</sup>	1.0°
Programmable Tilt Alarm	
Vout (V)	3.3
Bandwidth(Hz)	5 – 50 (User Configurable)
Electrical	
Input Voltage (V)	9 to 32
Power Consumption (mW)	< 400
Interface	RS232
Environment	
Operating Temperature (°C)	-40 °C to 70°C
Non-Operating Temperature (°C)	-55 °C to 85
Physical	
Enclosure	Plastic
Size (mm)	54 x 40 x 15
Protection Class	IP67



\* All dimensions in mm

## Tools and Support

NAV-VIEW provides an easy to use graphical interface to display, record, playback, and analyze all of the MTLT110S-R parameters.

NAV-VIEW can also be used to set a wide range of user-configurable fields in the MTLT110S-R to optimize the system performance for highly dynamic applications.

NAV-VIEW software is available for download from MEMSIC's website at: [www.memsic.com/support](http://www.memsic.com/support)

Pin Out Description		
Pin Number	Flying Lead Color	Pin Description
1	Red	Power
2	Black	GND
3	Brown	GND
4	Orange	RS232 Tx
5	Green	RS232 Rx
6	Yellow	Tilt Alarm

Part Ordering Information	
MTLT110S-R	1° High Performance Static Tilt Sensor Module

This product has been developed exclusively for commercial applications. It has not been tested for, and makes no representation or warranty as to conformance with, any military specifications or its suitability for any military application or end-use. Additionally, any use of this product for nuclear, chemical or biological weapons, or weapons research, or for any use in missiles, rockets, and/or UAV's of 300km or greater range, or any other activity prohibited by the Export Administration Regulations, is expressly prohibited without the written consent and without obtaining appropriate US export license(s) when required by US law. Diversion contrary to U.S. law is prohibited. Specifications are subject to change without notice.

<sup>1</sup> RMS Error