

# Battery Free Multi Sensor Tag

## AST-01-MS



### Description

The AST family of sensor tags allows wireless measurements to be taken from remote locations. The devices are powered by microwave energy, harvested from a dedicated RF power source and need no batteries or wires.

The AST-01-MS sensor tag features built-in sensors for humidity, pressure, acceleration, light presence and magnetic field strength. It covers a wide spectrum of industrial applications.

The device can be operated in continuous or pulsed mode, depending on the application and working distances. In continuous mode, the sensor connected to the tag has sufficient energy to perform measurements and send/receive data at any time. In pulsed mode, the sensor measures and sends data only when the tag's capacitor is fully charged.

### Features

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2450 MHz harvesting frequency

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Maintenance-free:  
no embedded battery, no wiring

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Integrated 868 MHz bi-directional radio

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Operation down to - 8 dBm input power

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Up to 100 m working distance  
(application dependent)

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Pressure, humidity, acceleration, ambient  
light and magnetic field integrated sensors

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RoHS compliant

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CE certified

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# AST-01-MS

## Characteristics

<b>Regulatory approvals</b>	EN 301489 EN 60950 EN 300220	
<b>Harvesting frequency</b>	2450 MHz	
<b>Integrated Sensor Ranges</b>		
Relative Humidity	Range: 0 % / 100 % Accuracy: ± 4.5 % rH (20 % / + 80 % rH), ± 6 % rH (0 % / +100 % rH)	
Pressure	Range: 300 mbar / 1100 mbar Accuracy: ± 1.5 % (25 °C, 700 /1100 mbar), ± 3.5% (- 20 / + 85 °C, 300 / 1100 mbar)	
Accelerometer	Range: ± 2, ± 4, ± 8, ± 16 g Accuracy: ± 40 mg	
Magnetic Field	Range: ± 1300 uT (x, y-axis), ± 2500 uT (z-axis) Sensitivity: 15 nT	
Ambient light	Range: 0 (Dark) to 32767 (Bright)	
<b>Integrated Radio</b>		
Operating frequency	868.300 MHz (868.900 MHz alternate)	
Modulation (Rx & Tx)	2-GFSK / 50 kHz	
Data bit rate (Rx & Tx)	100 kbps on air	
<b>Integrated Power Storage</b>	100 µF capacitor (other capacitor sizes upon request)	
<b>DAC resolution</b>	16 bits	
<b>Maximum Data Refreshing Frequency</b>	100 ms	
<b>RF Sensitivity</b>	from - 8 dBm to + 15 dBm (max)	
<b>Mounting</b>	4x metallic holes Ø = 3.5 mm	
<b>Dimensions</b>	80 mm x 80 mm x 14 mm (with vertically mounted SMA) 80 mm x 93 mm x 12 mm (with horizontally mounted SMA)	
<b>Operating Temp.</b>	- 20 °C / + 70°C	
<b>Storage Temp.</b>	- 40 °C / + 85°C	
<b>Weight</b>	40 g (with 2 SMA connectors)	

## Ordering Options

Part Number	Configuration Description
AST-01-MS- <b>A1-A2</b>	<p><b>A1: Power RF Input</b></p> <p><b>PVJ</b> : Jack connector for external 50 Ω antenna (vertically mounted)  <b>PVP</b> : Plug connector for external 50 Ω antenna (vertically mounted)  <b>PHJ</b> : Jack connector for external 50 Ω antenna (horizontally mounted)  <b>PHP</b> : Jack connector for external 50 Ω antenna (horizontally mounted)</p> <p><b>A2: Data RF Input/Output</b></p> <p><b>DA</b> : Integrated 868 MHz - 2,5 dBi antenna  <b>DVJ</b> : Jack connector for external 50 Ω antenna (vertically mounted)  <b>DVP</b> : Plug connector for external 50 Ω antenna (vertically mounted)  <b>DHJ</b> : Jack connector for external 50 Ω antenna (horizontally mounted)  <b>DHP</b> : Jack connector for external 50 Ω antenna (horizontally mounted)</p>