SENSEOR
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EVAL KIT T01

Wireless Temperature SAW Sensor Evaluation Kit

Surface Acoustic Wave Breakthrough Technology

Key Features

- Optimal technology evaluation tool
- State-of-the-art components
- Flexible use for testing in various configurations and environments
- Wireless, batteryless, robust sensors
- Accurate, precise, reliable measurement system
- Easy installation and integration to existing solutions through standard interfaces
- Continuous real-time monitoring of data
- Temperature range: -15°C, 165°C

Benefits

This technology enables new measurements

- on moving and rotating parts
- in explosive, corrosive, radiated environments
- in confined and inaccessible places
- where cabling costs too much or is impossible

For process optimization and better equipment utilization through condition monitoring and process control

Components

- **3 SAW temperature sensors with antennas**, based on TSE AS10 SAW sensor (see related specifications), designed for temperature measurement in a temperature range from -15°C to 165°C.
- **WR C001 transceiver** for SAW sensors with antenna (Monopole 15 cm)
- **Software with Graphic User Interface**

Working Principle

An electromagnetic wave is sent by the transceiver and converted into a mechanical wave on the surface of the acoustic wave chip. The mechanical wave is reflected and sent back to the transceiver, which allows SENSeOR to measure physical phenomena. SENSeOR's sensors are based on two resonators working at two different frequencies in the 434 MHz ISM band [433.05 MHz, 434.79 MHz]. Use of a differential structure offers improved accuracy in measurements and enables SENSeOR to provide the most time stable devices in the industry.

Applications

For OEM's and end-users in Energy, Transportation, Aerospace

- Temperature measurement on rotors inside turbines, generators, motors
- Temperature measurement on moving carriers in industrial automation
- Temperature monitoring of bearings inside engines and machinery

TSA D031

Fixture mounted SAW sensor and antenna

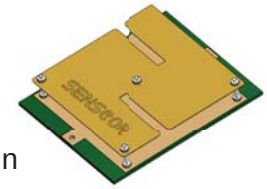
Antenna type: Monopole 4 cm, SMA connector

Mechanical specifications	
Fixture material	Aluminium
Length (typical)	44.7 mm
Width (typical)	16.5 mm
Height (typical)	47.5 mm
Mounting	2 M2 screws

TSA D003

Antenna mounted SAW sensor

Antenna type: M PIFA (Meandered Planar Inverted-F Antenna), SENSeOR specific design



Mechanical specifications	
Length (typical)	97.2 mm
Width (typical)	82 mm
Height (typical)	17.5 mm
Mounting	2 M3 screws

TSA D100

Thermowell packaged SAW sensor and antenna

Antenna type: Monopole 4 cm, SMA connector

Mechanical specifications	
Thermowell material	Stainless steel
Insertion length	80 mm (typical)
Probe diameter	9 mm (typical)
Connection size	½" G male

WR C001

Transceiver for Wireless SAW Sensors

(1) WR C001 can either be connected to a computer using the RS232 interface or the included RS232/USB converter.

(2) Sweep time can be optimized depending upon application.

(3) Interrogation distance is application and system dependant and can be extended.

(4) WR C001 is CE certified. Performances are compliant with norms: RADIO EN 300 220-2: 2006 v 2.1.1, EMC EN 301 489-3: 2002 V1.4.1, security EN 60950-1: 2006.

Parameter	Specifications
Consumption	138 mA/12 V
Frequency band	434 MHz European ISM band [433.05 MHz, 434.79 MHz]
Digital output	RS232 (1)
Analogue output	Yes
Maximum RF Power	+10 dBm
50 ohms RF output (antenna connection)	1 (SMA connector)
Sweep time of the ISM band (typical value)	For a temperature sensor (based on two resonators) 13 ms (2)
Operating temperature range	-20°C, 55°C
Storage temperature range	-40°C, 55°C
Interrogation distance (typical values)	0.1m, 3m (3)
Dimensions (typical values)	18.4x10.9 x3 cm
CE certified	Yes (4)

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