

Wireless Temperature Sensor

Temperature Sensor One (TS1)

Features:

- Probe Range of -100°C to 200°C
- ± 1°C Error band
- Stainless Steel Construction
- Integrated Antennea
- Internal Battery

Compatibility:

- IEEE 802.15.4 Transceiver
- ISM 2.4 GHz Frequency
- ZigBee/IEEE 802.15.4 Compliant

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Device Description

Measuring about 200 millimeters long, the patentpending Electrochem TS1 is a compact, self-contained wireless temperature sensor. Highly accurate temperature measurements are transmitted wirelessly to a suitable base station such as the Electrochem BS1, and passed to a host system such as a PC or PLC. The internal battery powers the sensor for the entire calibration period of one year.

Advanced Sensing

Of the many detectors devised for temperature measurement, the configuration that offers the best stability with the lowest hysteresis, is one in which a platinum coil is supported inside the capillaries of a two or four-bore, high-purity alumina insulator. We utilize this wire-wound type, in which the platinum winding is supported by a high temperature alumina powder inside a ceramic tube. This construction provides a detector in which stability, interchangeability, and accuracy are the highest available for industrial and scientific applications.

Integrated Data Acquisition

Signals are amplified, digitized into 24-bit words and converted to units of measure at a rate of up to 480 readings per second. This is all accomplished using a precision mixed-signal microcontroller (MCU) which integrates an analog-to-digital converter (ADC) and a high-speed microcontroller. Accurate measurements are passed to the wireless subsection for transmission.

Cutting Edge ZigBee

Our ZigBee/IEEE 802.15.4 compliant wireless interface combines an ultra-low power RF transceiver with protocol software to form a transparent wireless communication solution that has self-organizing and self-healing properties. This mesh network allows for ease of installation around obstructions, redundancy in communication paths, and longer range. The 2.4 GHz frequency band is suitable for worldwide use.

Capable Radio Hardware

The IEEE 802.15.4 Standard details the Physical Layer (PHY) and Medium Access Control (MAC) specifications, and offers the building blocks for different types of networking known as "star, mesh, and cluster tree." Network routing schemes are designed to ensure power conservation, and low latency through guaranteed time slots. Communication redundancy is a unique feature of the ZigBee network layer, eliminating "single point of failure" in mesh networks. Key features of the PHY include energy and link-quality detection, and clear channel assessment for improved coexistence with other wireless networks. The MAC specifies automatic packet acknowledgement, provides options for transmission in a range of pre-selected time intervals, and supports 128-bit AES security. The MAC and ZigBee application software is implemented in a code-efficient microcontroller that communicates digitally with the sensor data acquisition hardware.



Purchasing Information

TemperatureSensorOne TS	1-LENGTH (Replace LENGTH with selection from below.)
Parts:	Accessories:
Battery 10040	Port Adapters
Viton O-Ring 10011	6 1/4" NPTM to AS5202-04 100426
Silicone O-Ring 10011	7 1/4" NPTF to AS5202-04 100427
	Base Station One (USB) BS1-U
Weco is a registered trademark of FMC Technologie	s. Base Station One (RS-232) BS1-R

For complete product specifications, pricing and accessory information: Call (716) 759-5800 or visit www.ElectrochemSolutions.com

SPECIFICATIONS: Typical for 25° C unless otherwise specified.

PERFORMANCE

Probe lengths	. 36 mm (-1), 61 mm (-2)
Error band	±1°C
Output format	32-bit floating point (IEEE754)
Output rate	0.3 to 480 readings per second

ENVIRONMENTAL

Operating te	mperature	40°C t	o 85°C
Probe tempe	rature	100°C	to 200°C

ELECTRICAL

Type	. Lithium thionyl chloride
	(Li/SOCI2)
Size	2/3 AA
Voltage	. 3.6 V
Battery life	
Standard range	. 1 year
Extended range	2 months
Insulation resistance	>100 megohms @ 50 VDC

WIRELESS

Range

Extended

Indoor/urban 100 m Outdoor line-of-sight ... 1500 m

Operating frequency ISM 2.4 GHz

Agency approvals

Standard

FCC Part 15.247 OUR-XBEE Industry Canada (IC) 4214A-XBEE

Europe ETSI

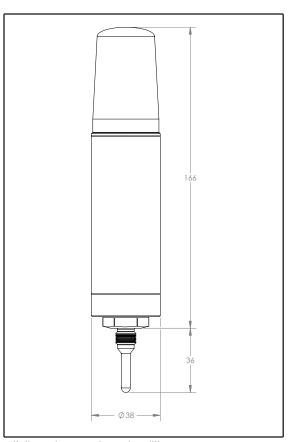
Extended

FCC Part 15.247 OUR-XBEEPRO Industry Canada (IC) 4214A-XBEEPRO

Europe ETSI

MECHANICAL

Media	Gas, liquid
Wetted parts material	15-5 PH, 316L stainless steel
Welds	None
Port burst pressure	40000 psi
Port	AS4395E04
	(mates with AS5202-04)
Weight	. 500 g



All dimensions are shown in millimeters.