DATASHEET

SM-TC1

Highlights

- Supports type K thermocouple sensors
- Single temperature input, 24-bit ADC
- Up to a 10-year battery life[1]
- Supports Over-the-Air (OTA) functionality for updating the device configuration[2]
- Self-contained, rugged design
- Installs in minutes
- IP66, -40 ˚C to 70 ˚C (-40 ˚F to 158 ˚F)
- 900 MHz
- Secure AES encryption
- Class I, Division 1 (Zone 0), Intrinsically Safe

US Patent #6,967,589

OTC Transmitters | OTC Gateway | Network Infrastructure | Cloud (Analytics)

Self-Contained Wireless Temperature Measurement Solution

Supports K Type Thermocouple Sensors

The OleumTech® OTC Wireless Thermocouple Transmitter supports third-party type K thermocouple sensors for monitoring extreme heat process conditions including flares, kilns, and gas turbines. The SM-TC1 features 24-bit analog to digital conversion (ADC) and provides reliable method of measuring temperature. The SM-TC1 provides a junction box and wiring terminal board for accepting a third-party thermocouple sensor. The temperature output can be reported in Fahrenheit, Celsius, or both. This ultra-low-power transmitter is powered by a replaceable battery pack that provides up to a 10-year life.[1]

Reliable, Scalable, and Safe

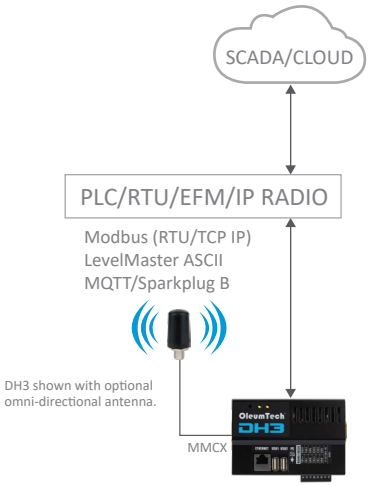
The field-proven wireless transmitter communicates with an assigned wireless gateway within the OTC Wireless Sensor and I/O Network, creating a highly scalable network, accommodating virtually any I/O requirement.

The OleumTech wireless transmitter is certified for use in Class I, Division 1 (Zone 0) hazardous locations. It is Intrinsically Safe, designed not to cause a spark, and can be serviced without being removed from a process.

Technical Specifications

HARDWARE FEATURES	
Device Functionality	· Temperature Sensing Wireless Transmitter Using a Thermocouple Sensor
Embedded Controller	· Ultra-Low Power RISC Microcontroller with Internal FLASH (Field Upgradeable)
Configuration	· Standard RS232 Serial / BreeZ® Software for PC
ADCResolution	· 24-bit High-Resolution Delta-Sigma ADC
Thermocouple Input	· Supports Type K (Temperature Range Depends on Actual Sensor)
Accuracy	· Accuracy Depends on Thermocouple Sensor
Power Source	· Self-Contained, Internal 3.6 Vdc Lithium Battery
Internal Battery Life	· Over 10 Years, Based on User Defined Reporting Intervals[1]
Device Diagnostics	· Health Tags: Battery Voltage, Received Signal Strength Indication (RSSI), RF Refresh, RF Timeout
WIRELESS COMMUNICATIONS	
Radio Band	· ISM Band (License-Free)
900 MHz	· FHSS, FSK, AES Encryption 256-bit (900 MHz)
Bit Rate	· 9600 bps
Output Power (Max)	· 10 mW
Receiving Sensitivity	· -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps
RF Range	· Up to 7500 Feet / 1.4 Miles / 2.3 km with Clear Line of Sight[2]
CERTIFICATIONS & COMPLIANCE	
EMC/EMI	· FCC Part 15 (USA), IC ICES-003 (Canada)
Safety	· Class I, Division 1, Groups A, B, C, D T3C; Ex ia IIC T3 · Class I, Zone 0; AEx ia IIC T3 · IECEx: SIR 13.0054X; Ex ia IIC T3 Ga
MECHANICAL SPECIFICATIONS	
Dimensions	· 5" (W) x 12.3" (H) x 6.4" (D) / 127 mm (W) x 313 mm (H) x 163 mm (D) Excludes Compression Fitting
Package Dimensions	· 10.25" (W) x 14" (H) x 6.5" (D) / 260 mm (W) x 356 mm (H) x 165 mm (D)
Package Weight	· ~7 lbs / 3.2 kg
Connection Fitting	· 3/4" NPT Female (Compression Fitting Provided)
Enclosure Casing Material	· Type 4X Aluminum; IP66
GENERAL SPECIFICATIONS	
Operating Conditions	· Ambient Temperature (Class I, Division 1 / Zone 0): -40 °C to 70 °C (-40 °F to 158 °F) · Ambient Temperature (Non-Hazardous Applications): -40 °C to 80 °C (-40 °F to 176 °F) · Humidity: 0 to 99 %, Non-Condensing
Warranty	· 2-Year Parts and Labor
Country of Origin	· USA
ORDERING INFORMATION	
Model Numbers	· SM5000-TC1
Wirelessly Connects To	· OTC Wireless Gateway
Configuration Cable	· SX1000-CC2, 20-ft All-in-One Configuration Cable
Replacement Battery	· Use OleumTech SX1000-BP3 Only

Networking Diagram



OTC GATEWAY

OTC TRANSMITTERS

Point-to-Multipoint
"Star Topology"

[1] Ambient temperature and one transmission per 1 min interval without any retries were used to calculate battery life. Actual battery life may vary depending on environmental factors, application, and usage. Use data shown above only as general point of reference. See OleumTech Battery Life Expectancy Chart for predicted battery life based on reporting interval.

[2] OTA functionality does not support changing the radio settings or upgrading the device firmware.

[3] The maximum RF range data was collected under optimal test conditions, including a clear line of sight between antennas. Actual wireless RF range may vary depending on location, RF interference, weather, antenna type, cable type, and line of sight.

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