DATASHEET
SM-TC1

OTC

Highlights

- Supports type K thermocouple sensors
- Single temperature input, 24-bit ADC
- Up to a 10-year battery life[1]
- Self-contained, rugged design
- Installs in minutes
- IP66, -40 ˚C to 70 ˚C (-40 ˚F to 158 ˚F)
- 900 MHz / 915 MHz / 2.4 GHz / 868 MHz
- Secure AES encryption
- Class I, Division 1 (Zone 0), Intrinsically Safe

US Patent #6,967,589

| OTC Transmitters | OTC Gateway | Local Controller RTU/EFM/PLC/ DCS/HMI/ Long-Haul Radio | 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]
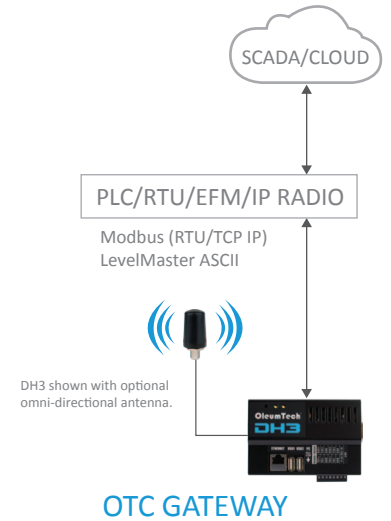
Reliable, Scalable, and Safe

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

Networking Diagram

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, Error Codes

WIRELESS COMMUNICATIONS

Radio Band	· ISM Band (License-Free)
900 MHz / 915 MHz	· FHSS, FSK, AES Encryption 256-bit (900 MHz), 128-bit (915 MHz)
2.4 GHz	· DSSS, AES Encryption 128-bit
868 MHz	· LBT-AFA, AES Encryption 128-bit
Bit Rate	· 900/915 MHz: 9600 bps / 115.2 kbps; 2.4 GHz: 250 kbps; 868 MHz: 80 kpbs
Output Power (Max)	· 900/915 MHz: 10 mW; 2.4 GHz: 63 mW; 868 MHz: 25mW
Receiving Sensitivity	· 900/915 MHz: -110 dBm @ 9600 bps, -100 dBm @ 115.2 kbps · 2.4 GHz: -101 dBm @ 250 kbps; 868 MHz: -106 dBm @ 80 kbps
RF Range	· 900/915 MHz: Up to 7500 Feet / 1.4 Miles (2.3 km) with Clear Line of Sight[2] · 2.4 GHz: Up to 4.3 Miles (7 km) with Clear Line of Sight[2] · 868 MHz: Up to 5.2 Miles (8.4 km) with Clear Line of Sight[2]

CERTIFICATIONS & COMPLIANCE

EMC/EMI	· FCC Part 15 (USA), IC ICES-003 (Canada), ACMA (Australia) · AS/NZS CISPR 32 (Australia), EN55032 & EN55024 (EU)
Safety	· Class I, Division 1, Groups A, B, C, D T3C; Ex ia IIC T3 · Class I, Zone 0; AEx ia IIC T3 · ATEX: Sira 13ATEX2142X; Ex ia IIC T3 Ga; II 1 G · 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 (900), SM5010-TC1 (915), SM5400-TC1 (2.4), SM5020-TC1 (868)
Wirelessly Connects To	· OTC Wireless Gateway
Configuration Cable	· SX1000-CC2, 20-ft All-in-One Configuration Cable
Replacement Battery	· Use OleumTech SX1000-BP3 Only

SCADA/CLOUD

PLC/RTU/EFM/IP RADIO

Modbus (RTU/TCP IP)
LevelMaster ASCII

DH3 shown with optional
omni-directional antenna.

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] 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.

MADE IN USA