// TES-21, TES-22

Wireless Probe Temperature Sensor

// Introduction

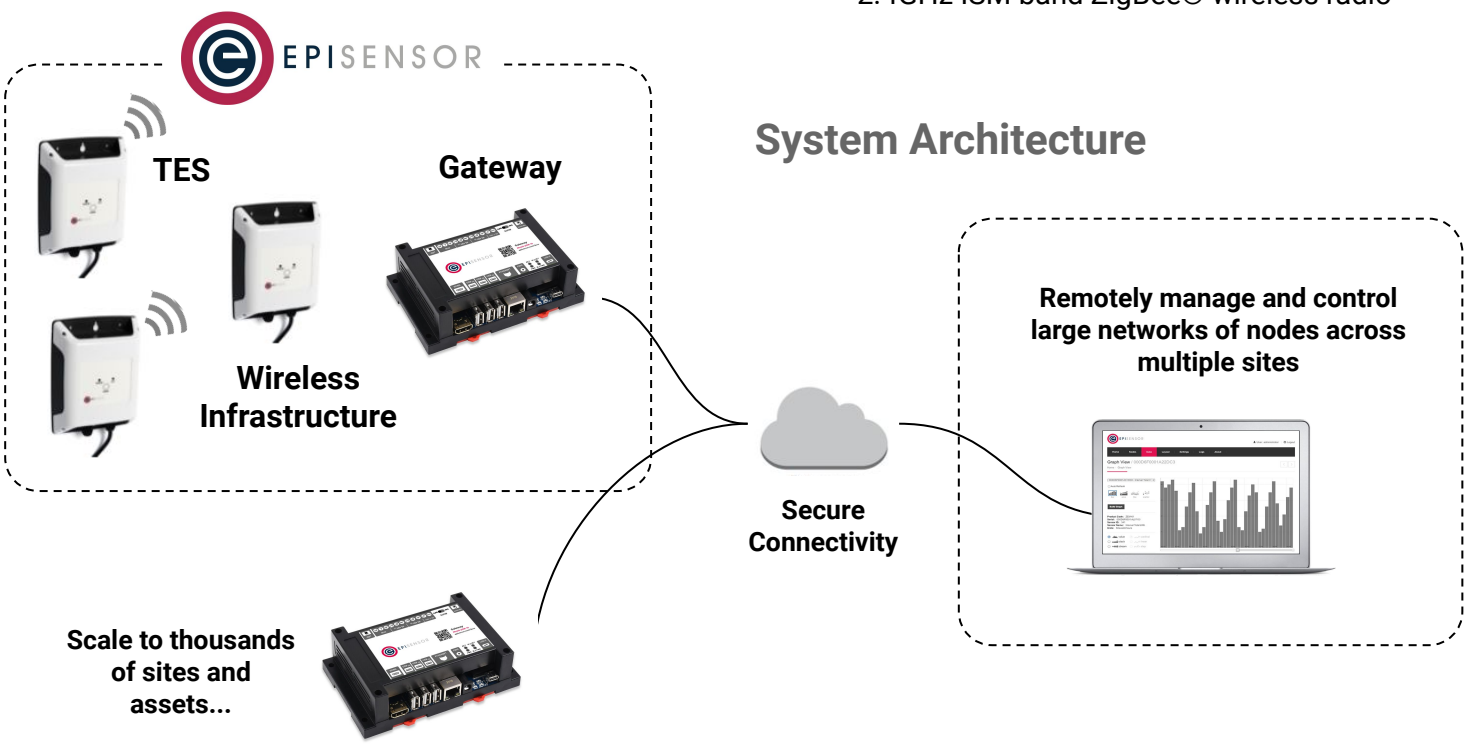
EpiSensor's TES is a flexible, highly accurate wireless single or dual-channel probe temperature sensor. It can monitor environmental conditions in buildings and assets remotely and securely via the EpiSensor Gateway, providing facility managers with the granular real-time data they need to improve efficiency, reduce costs and improve performance.

// Key Features

- Security from edge to cloud
- Fully wireless communications
- Various probe and mounting options available
- Waterproof IP67 Polycarbonate Enclosure
- Over-the-air software upgrade capability
- Local data logging (up to 2 years)
- Self-healing mesh network
- 2.4GHz ISM band ZigBee® wireless radio

For more information, contact:
sales@episensor.com
visit http://episensor.com or call +353 61 512 500

System Architecture



Technical Specification

// Sensor Options

Category	Parameter	Value
Waterproof Probe	Sensor Technology	Thermistor, NTC, 10K Ohm
	Probe Type	Waterproof, IP68, Black TPE
	Probe Cable Length(s)	80mm, 1.5m
	Probe Tip Dimensions	20mm x 5mm
	Normal Temperature Range	-20°C ~ 70°C
	Full Temperature Range	-40°C ~ 105°C
	Accuracy (Normal Range)	± 0.2°C
	Accuracy (Full Range)	± 0.5°C
	Resolution	0.01°C
Stainless Steel Probe	Sensor Technology	Thermistor, NTC, 10K Ohm
	Probe Type	Stainless steel cap, IP68
	Probe Cable Length(s)	2m
	Probe Tip Dimensions	30mm x 6mm
	Normal Temperature Range	0°C ~ 70°C
	Full Temperature Range	-40°C ~ 105°C
	Accuracy (Normal Range)	± 0.2°C
	Accuracy (Full Range)	± 0.5°C
	Resolution	0.01°C
Pipe Probe	Sensor Technology	Thermistor, NTC, 10K Ohm
	Probe Type	Stainless steel, flattened tip
	Probe Cable Length(s)	2m
	Probe Tip Dimensions	50mm x 6mm
	Normal Temperature Range	0°C ~ 70°C
	Full Temperature Range	-40°C ~ 105°C
	Accuracy (Normal Range)	± 0.2°C
	Accuracy (Full Range)	± 0.5°C
	Resolution	0.01°C

Technical Specification

// Power

Category	Parameter	Value
Battery	Nominal Voltage	3.6V
	Capacity	3.6Ah
	Chemistry	Lithium Thionyl Chloride
	Size	A
	User Replaceable	Yes
	Estimated Lifetime	up to 10 years, 15 min reporting
	Estimate based on	NTC temperature sensing only, 23° C, full wireless coverage

// Communications

Category	Parameter	Value
Wireless Sensor Network	Radio Technology	ZigBee Pro
	Radio Frequency	2.4 GHz ISM band
	Network Topology	Mesh
	Channels	16 (802.15.4 Channels 11 to 26)
	Max Tx Power	+8dBm
	Tx modulation	O-QPSK
	Rx Sensitivity	-101dBm
	Max Data Rate	256kbit/s
	Wireless Range	up to 50m indoor / 300m outdoor

// Software & Security

Category	Parameter	Value
Real Time Clock & Sync	Real Time Clock Backup	Battery
	Synchronisation	NTP time server via Gateway
	Timestamp Format(s)	ISO-8601, Unix Epoch
	Timestamp Resolution	1 second
Data Logging	Storage Type	Non-volatile flash
	Capacity	up to 70,000 data points

Technical Specification

// Software & Security (continued)

Category	Parameter	Value
Security	Sensor Network Encryption	AES 128-bit
	Server Communications	TLS v1.2 / various

// Operating Conditions

Category	Parameter	Value
Operating Conditions	Operating Temperature	−30°C to 55°C (−22°F to 131°F)
	Storage Temperature	−40°C to 70°C (−40°F to 158°F)
	Operating Humidity Range	up to 100%
Physical	Weight	0.35 kg
	Dimensions (W x H x D)	144 x 112 x 45mm
Enclosure	Material	Polycarbonate
	IP degree of protection	IP67 (IEC 60529)

// Certifications

Category	Parameter	Value
Certifications	Safety	CE
	Environmental	RoHS, WEEE
	EMC/RF	Contains FCC ID: S4GEM35XB
		Contains IC ID: 8735A-EM35XB

EpiSensor products are not suitable or specifically designed, manufactured or licensed for use in military, aviation, powerplant, medical or in other inherently dangerous or safety critical applications.

Technical Specification

// Order Codes

SKU	Description
TES-21-w0	Single channel, battery powered, short waterproof probe
TES-21-w1.5	Single channel, battery powered, waterproof probe, 1.5m length
TES-21-w2.5	Single channel, battery powered, waterproof probe, 2.5m length
TES-21-p2.0	Single channel, battery powered, pipe probe, steel, 2m length
TES-21-s2.0	Single channel, battery powered, general purpose probe, steel, 2m length
TES-22-w1.5	Dual channel, battery powered, waterproof probes, 1.5m length
TES-22-w2.5	Dual channel, battery powered, waterproof probes, 2.5m length
TES-22-p2.0	Dual channel, battery powered, pipe probe, steel, 2m length
TES-22-s2.0	Dual channel, battery powered, product probe, steel, 2m length

// Accessories & Services

SKU	Description
SV-CAL-EPI	EpiSensor calibration, Single Probe, 1 calibration point
SV-CAL-SP-Q1	UKAS Calibration, Single Probe, 3 calibration points (default: 0°C, 5°C and 10°C)

Installation & Safety Notes

CONTAINS LITHIUM METAL BATTERY
For more information,
call +353 61 512 500

- EpiSensor equipment should be installed, operated, serviced and maintained only by qualified personnel. EpiSensor does not assume any responsibility for any consequences arising out of the use of this equipment.
- For detailed installation and safety information, consult the Install Sheet.

// Contact

For technical support, please contact **support@episensor.com** or phone +353 61 512 500

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Manufactured in an ISO 9001 / ISO 14001 certified facility.

Designed and manufactured in Ireland