TTS2-L Spec-sheet

LoRaWAN®

LoRaWAN® Operated
Low Power Temperature Transmitter
for Liquid and Gas Media

- Compatible with all LoRaWAN® frequencies
- Wide range of industrial applications
- High accuracy
- Designed to meet outdoor applications
- Long-term durable performance in harsh environment
- Ultra-low power
- Suitable for liquids and gases compatible with SS

TECHNICAL SPECIFICATION

Sensor

• Range:	-50°C to +250°C (sensing element)	°C
	-10 ~ +70 (electronic housing)	
• Accuracy:	IEC 60751	°C
	• Class B (+ /- 0.12% or +/-0.3°C at 0°C)	
	• Class A (+ /- 0.15°C at 0°C),	
	• Class1/3DIN (+ /- 0.08°C at 0°C)	
	• Class1/10DIN (+ /- 0.03°C at 0°C)	
	Other accuracies available on request	
• Sensing Element:	Pt100	
	Pt1000	
	(or other sensors available on request)	
• Long term stability (1 year):	≤ 0.2	%Span

Power

• Power Supply:	Built-in Replaceable Lithium Battery, External Power (option)	
• Rated Voltage	3.6	V
• Battery Lifetime:	50,000+ readings and 10,000+ transmission	
	(More than 10 years for most of applications)	

Physical Specification

• Materials:	Sheath: SS316 (3mm or 6mm OD), Silicone Rubber Cable	
• Process connection:	G1/4 Male (only for type G)	
• Weight:	~450	g
• Protection rate:	IP65 /IP67, UV protected	-
	(other options available upon request)	

Communication

• LoRaWAN® Version, Class:	1.0.2revB, Class A (Class C on request)
• LoRaWAN® Frequency Zone:	AS923, EU868, US902-928, AU915-928
	(other zones available on request)
• LoRaWAN® Activation Type:	OTA (default), ABP
• Sampling Type:	Periodic (default), Event triggered
• Sampling Period:	Configurable via downlink (default 4 hours)
• Transmission Type	Per sample (default), Event triggered, Conditional
• Parameter Configuration:	Over-the-air via LoRaWAN® downlinks
	Locally via wireless connectivity
• Firmware update:	Locally via wireless connectivity, Over The Air

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NETWORK CONNECTION AND VISUALISATION

Network Integration

Integratable to all main networks (Actility, Alibaba, Cisco, Digita, Everynet, GeoWAN, Kerlink, kpn, Loriot, machine-Q, Objenious, Orange, Orbiwise, Proximus, Senet, Sens, Swisscom, TATA, The Things Network (TTN), TTI and any other network)

Visualisation and Data Management

Ellenex white label microservice platform and Integratable to all main IIoT platforms directly or through the API(AWS, Azure, PTC ThingWorx, Bosch IoT, Cisco Jasper & Kinetic, Sierra Numerex, MathWorks ThingSpeak, GE Digital Predix, LandisGyr, Siemens MindSphere, Cumulocity, myDevices, Ubidots, TagoIO, AllThingsTalk Maker, HPE IoT and any other major IoT platform).

Ellenex Platform Main Features

- Encrypted ultra-low power communication protocol
- Advanced device inventory
- Integration APIs for enterprise systems
- Multi-tenant role-based access control
- Data export and import
- White-label platform for enterprise runs on private account
- Variable alarm setting for high and low thresholds and multi-channel alerting
- Sampling and transmission interval configuration
- Transmission condition configuration
- Other configurations and customisation available on request

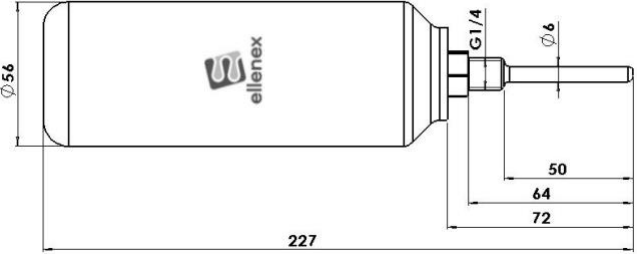|		
Encrypted & ultra-low power	Integratable	Dynamic alerting
Multi-tenant	Scalable	Composable& API first
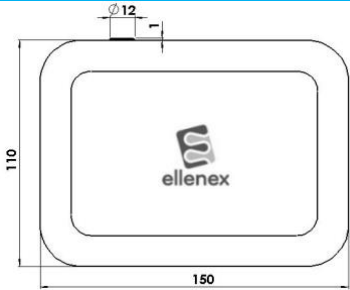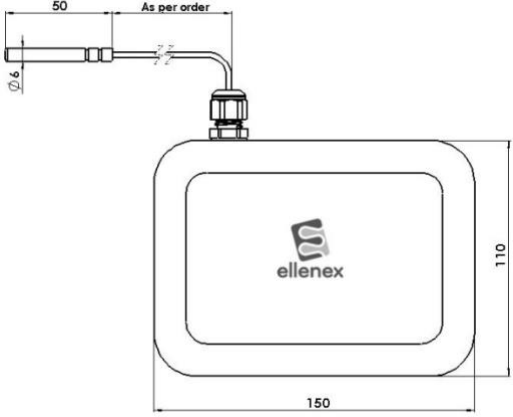
MODEL GUIDE

Model	Options:
M Model:	 **Type B (button type):** IP66 button type temperature sensor mounted on the housing
G Model:	 **Type 1:** IP66 (Sheath diameter of φ6 and length of 50mm temperature sensor mounted on the housing
C Model:	 IP68 sensor head and IP65 housing with cable (Length 3m or as per order), Sheath diameter of φ6 and length of 50mm or as per order

INDUSTRIES

 Food & Beverage

 Transport & Logistics

 Oil & Gas

 Marine& Oceanography

 Mining & Construction

 Hospitals, Restaurants &Smart Building

 Water & Environment

 Agriculture & Farming

 General Industrial Applications

APPLICATIONS

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- Food Delivery Systems
- Cold rooms Temperature Monitoring
- Pump Performance Monitoring
- Water Pipeline Temperature Monitoring

- Fridges and Hot Chambers
- Hydraulic and Pneumatic Systems Monitoring
- Water and Liquid Temperature Monitoring
- Chiller and Cooling System Monitoring

ORDERING CODE

TTS2-L									

Frequency Zone

AS (AS923)	**EU** (EU868)	**USx** (US902-928, sub-band x)	**AUx** (AU915-928, sub-band x)	Others

LoRaWAN® Activation

A (Over The Air Activation - OTAA)	**P** (Activation By Personalization ABP)

Temperature Range

A (Ambient: -20 to +85)	**Others** (on request)

Sensor Type

M (mounted on housing)	**G** (with thermowell and process port)	**C** (with extended cable)
	Process Port	**Cable Length**
	G1/2(1/2" BSPP male)	**3** (m)
	Others	**O**thers

Sensing Element

H: RTD PT100	**K:** RTD PT1000 (recommended for extended cable)

Sheath Type/ Dimension

B: Button Type	**1**: φ6x50mm
2: φ6x100mm	**3**: φ3x50mm

Accuracy Class

B: Class B	**A**: Class A	**3**	**5**: Class

Device Activation

S: on/off switch	**N:** NFC (by mobile phone)
X: No switch (always on)	**D:** Dual switch (on/off + Trigger)

Antenna

I: Internal	**E:** External

Options

(On request)

TTS2-L	AS	A	A	M	H	B	B	S	E

Sample Product Code:

- **TTS2-AS-A-A-M-H-B-B-S-E**

Temperature sensor operated on LoRaWAN®, frequency of AS923, Over The Air Activated, ambient temperature range, button type PT100 sensing element mounted on the housing, class B accuracy, activated by on-off switch and external antenna.

Integrated IoT Solutions

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