



LoRaWAN® Operated IP68 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 (or other ranges up to 200) -10 ~ +70 (electronic housing)	°C
• Accuracy	IEC 60751 • Class B ($\pm 0.12\%$ or $\pm 0.3^\circ\text{C}$ at 0°C) • Class A ($\pm 0.15^\circ\text{C}$ at 0°C) • Class 1/3DIN ($\pm 0.08^\circ\text{C}$ at 0°C) • Class 1/10DIN ($\pm 0.03^\circ\text{C}$ at 0°C) <i>other accuracies available on request</i>	°C
• Sensing Element	Pt100 Pt1000 <i>(or other sensors available on request)</i>	
• 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	100,000+ readings and 20,000+ transmission <i>(More than 10 years for most applications)</i>	

Physical

• Materials	Sheath: SS316 (3mm or 6mm OD), Silicone Rubber Cable	
• Process connection	G1/4 Male (only for type G)	
• Weight	~450	g
• Protection Rate	IP68, UV Protected <i>(other options available upon request)</i>	

Communication

• LoRaWAN® Version, Class	1.0.2revB, Class A (Class C on request)
• LoRaWAN® Frequency Zone	AS923, EU868, US902-928, AU915-928 <i>(other zones available on request)</i>
• 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

NETWORK CONNECTION AND VISUALISATION

Network Integration

- Integratable to all main networks (Actility, Alibaba, Cisco, Digita, Everynet, Helium, Kerlink, kpn, Lorient, 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, TagIO, ALSO AllThingsTalk, 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

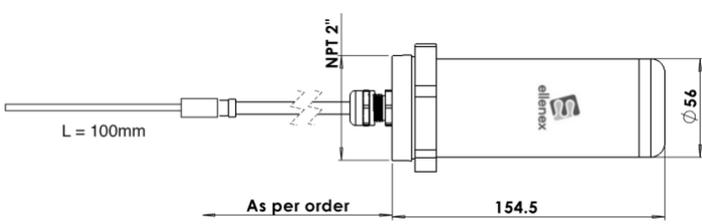
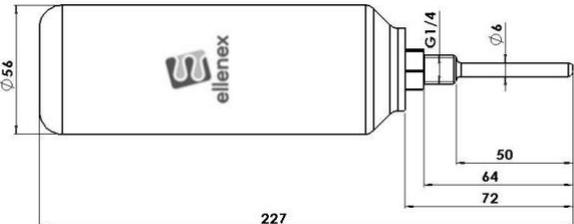


Scalable



Composable & API first

MODEL GUIDE

Model	Option / Schematic
<p>C Model</p> 	 <p>IP68 sensor head and IP68 housing with cable (Length 3m or as per order), Sheath diameter of $\phi 6$ and length of 50mm or as per order</p>
<p>G Model</p> 	 <p>IP68 temperature sensor with Thermowell diameter of $\phi 6$ and length of 50mm mounted on the housing</p>

INDUSTRIES



Food & Beverage



Transport & Logistics



Oil & Gas



Marine & Oceanography



Mining & Construction



Hospitals, Restaurants & Smart Buildings



Water & Environment



Agriculture & Farming



General Industrial Applications

APPLICATIONS

- 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

TTS3-L										
LoRaWAN Frequency Zone										
AS (AS923)			AUx (AU915-928) <small>(Sub Band x)</small>			EU (EU868)		USx (US902-928) <small>(Sub Band x)</small>		
LoRaWAN Activation										
A (Over The Air Activation - OTAA)						P (Activation By Personalization - ABP)				
Temperature Range										
A: Ambient (-20°C to +85°C)						Other options available on request				
Sensor Type										
C3: ϕ 6x110mm sensor head with 3m cable						G1/2: with 1/2" BSPP male thermowell and process port				
Sensing Element										
H: RTD PT100						K: RTD PT1000 <small>(recommended for extended cable)</small>				
Accuracy Class										
B: Class B						A: Class A				
Other options available on request										
Device Activation										
X: No Switch <small>(always on)</small>										
Antenna Option										
E: External						I: Internal				
Options										
<small>(On request)1</small>										
TTS3-L	AS	A	A	C3	H	B	X	I		

Sample Product Code:

- TTS3-L-AS-A-A-C3-H-B-X-I

LoRaWAN® IP68 temperature sensor, frequency of AS923, Over The Air Activated, standard B class RTD PT 100 for ambient temperature range, with 3m cable and cylindrical housing, without on-off switch and equipped with internal antenna.