NODE+ SERIES

Datasheets

Sematics® introduces Node+ Series the next generation of LoRaWAN® enabled wireless sensor nodes, purpose built for precise environmental monitoring and industrial-grade compliance.

Engineered for mission-critical environments such as pharmaceutical storage, laboratories and healthcare facilities, to deliver real-time data, automated alerts, and audit-ready reporting. With seamless integration into the Sematics® platform to ensure continuous compliance and operational efficiency.

Node+ PT100 IO

Always Connected, Anywhere.

The SEN-BEP is a compact wireless node designed for use with external PT100 temperature probes. It supports high accuracy monitoring in extreme or specialised environments such as ultra-low freezers, fluid tanks, or medical fridges. The device also includes an internal high-accuracy temperature sensor for ambient readings and features a dry contact input for events like door monitoring. It integrates seamlessly with the Sematics® platform, offering real-time data, alerts, and actionable insights.

Typical Applications

- Cold stores and chill stores
- Fridges and freezers
- Ambient pharmaceutical storage
- Laboratory incubators (e.g. +37 °C)
- Pharma storage & shipping
- Food & cold chain logistics
- Labs and research centers
- Hospitals and healthcare settings

Key Features

Flexible Logging
Set how often data is recorded — default is every 5 minutes.

Built-in Backup Memory
Stores up to two weeks of data if the network goes down — nothing gets lost.

Long-Lasting, Replaceable Batteries
Runs over 4 years on standard settings — even longer with less frequent logging.

Extra Long Range
Covers up to 20 km outdoors and about 1 km indoors.

Automatic Data Recovery
If the connection drops, data is sent automatically when it's back.

Secure, Encryoted Transmissions
Encrypted, Reliable wireless transmissions on 868 MHz - low interference, Class A.

Highly Accuracy, Pre-Calibrated
Precise to ±0.1 °C - ideal for regulated environments (EN12830 Class 0.2).

Optional ISO 17025 Calibration
Available with UKAS-accredited certificate for compliance.

Tough, Waterproof Design
IP67-rated — fully sealed and water-resistant (1 m for 30 minutes).

Works with the Sematics Platform
Give live alerts, reports, dashboards and performance insights.

Technical Specifications

Measurement & Sensor Specifications

Parameter	Specification
Sensor Type	Digital (AMS AS6221)
Sensing Location	Internal (no external inputs)
Measurement Range	-40°C to +85°C
Accuracy	±0.1°C (see temperature accuracy by range below)
	±0.09°C from 20-42°C (typical)
Resolution	0.008°C
Calibration	Factory calibrated (NIST-traceable): ISO 17025 optional

External PT100 Sensor

Parameter	Specification
Supported Sensors	4-wire PT100 RTD (Class AA)
Temperature Range	—200°C to +200°C
Accuracy	±0.1°C (typical))
Input Resolution	0.01°C
Sensor Power Supply	Passive — excitation provided by Node
Calibration Options	Supports ISO 17025 external calibration by accredited laboratories

Optional Dry Contact (Door) Input

Parameter	Specification
Input Type	Volt-free dry contact (Normally Closed)
Detection Method	Interrupt-driven digital input (event triggered on state change)
Event Logging	State changes are timestamped with duration tracking (e.g. “door open for 2 min”)
Use Cases	Magnetic switches, access control relays, door sensors

Compatibility Matrix

Sensor / Input	SEN-AIN	SEN-AED	SEN-AEA	SEN-BEP	SEN-CED
External PT100 Sensor				◉	
Analog Cable (4-20mA / 0-5V / 0-10V)			◉		
External Temp & Humidity Sensor (Digital)					◉
Dry Contact (Door) Switch - Small		◉	◉	◉	◉
Dry Contact (Door) Switch - Industrial		◉	◉	◉	◉
2-Wire Dry Contact Input (Volt-free connection)		◉	◉	◉	◉
Dual Input - PT100 and Door					
Dual Input - Temp/RH and Door					
Dual Input - Analog Cable and Door					

Temperature Accuracy by Range

Temperature Range	Accuracy (± °C)
20°C to 42°C	0.09
—25°C to +55°C	0.10
—40°C to +70°C	0.12
70°C to 85°C	0.15

Accuracy based on sensor specification. Performance depends on temperature range and calibration method. See certificate for uncertainty values.

Wireless Communication

Parameter	Specification
Protocol	LoRaWAN Class A
Frequency Band	868MHz (EU)
Typical Range	~1 km (in built environments)
Max Range	Up to 20km (line-of-sight, elevated antenna conditions)
Antenna Type	Integrated PCB antenna (Velox SR42I052)
Antenna Gain	-0.4 dBi typical
Radiation Pattern	Omnidirectional (approximate)
Module Certification	Pre-certified LoRa radio module (RED & FCC Part 15 compliant)
Network Compatibility	Private LoRaWAN networks; Sematics Platform

Power and Battery

Parameter	Specification
Battery Type	2x AA Lithium cells (replaceable)
Battery Capacity	~1500 mAh (typical)
Nominal Voltage	1.8 V per cell (3.6V combined nominal)
Battery Life	Up to 4 years @ 5-minute logging (typical)
	Up to 8+ years with 10-15 minute logging intervals
Power Management	Ultra-low power operation (LoRaWAN Class A protocol + sleep-mode optimisations)
Battery Replacement	Field-replaceable via sealed compartment (tool access required)

**Enclosure dimensions shown without mounting bracket in mm*

Mechanical & Environmental

Parameter	Specification
Enclosure Material	ABS, white
Ingress Protection	IP67 (dust-tight and submersible to 1 m for 30 mins)
Dimensions	99 × 56 × 32 mm (H × W × D)*
Mounting Options	Adhesive pad, cable ties, or screw mount (mounting accessories available)
Mounting Bracket	Included, ABS bracket with slotted holes for secure installation
Operating Temperature	-40°C to +85°C
Operating Humidity	0-95% RH (non-condensing)

Compliance and Certification

Standard / Directive	Description
CE Marking	Radio Equipment Directive (RED 2014/53/EU)
UKCA Marking	UK Radio Equipment Regulations
RoHS 3	Restriction of Hazardous Substances (2011/65/EU)
EN 12830:2018	Designed to meet Accuracy Class 0.2 - Temperature Data Loggers
ETSI EN 300 220	Radio performance (868 MHz)
ETSI EN 301 489-1 / EN 301 489-3	EMC for radio equipment
EN 62368-1	Electrical safety for communication equipment
FCC Part 15 Subpart C	US radio compliance (pre-certified module)
IP67	Dust-tight and submersible to 1m
WEEE	Waste Electrical & Electronic Equipment
NIST Traceability	Factory calibration traceable to NIST standards
ISO 17025	Optional UKAS-accredited calibration available

Smart Features & Software Integration

Feature	Description
Platform Integration	Fully integrated with the Sematics Platform
Logging Interval Config	Customisable logging interval via platform (default: 5 minutes)
OTA Firmware Updates	Over-the-air firmware upgrade support
Real-Time Alarms	Configurable threshold alerts with escalation paths
Data Visualisation	Live and historical graphing, trends, and compliance dashboards
Reporting & Compliance	Automated temperature reports and audit-ready logs
Wireless Backlog Recovery	Automatic wireless backfill of missed readings after connectivity interruption

JTF wireless monitoring

Delivering the Technology that's redefining monitoring standards

JTF Wireless is the trusted service partner of Sematics - delivering industry-leading monitoring systems across healthcare, life sciences, food production and logistics. We specialise in the deployment, calibration and support of cutting edge Sematics hardware and software, ensuring our clients benefit from seamless installations, reliable data and audit-ready compliance from day one. From system design and validation to proactive support and ongoing optimisation, our expert team helps you unlock the full value of your environmental monitoring investment.

Let's connect

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