FlatMesh™



Product Data Sheet:
FlatMesh PT100 RTD Sensor Node

The FlatMesh PT100 RTD Sensor Node allows precision temperature sensing in many different situations. It uses the integrated mesh radio transceiver to report its measurements through Senceive's FlatMesh wireless communications network to a FlatMesh Gateway.

Temperature monitoring applications:

- Steel structures
- Rail, for critical rail temperature alerting
- Concrete structures, including during curing
- Heating, Ventilation, and Air Conditioning (HVAC) systems
- Ambient/environment

Key features

- Waterproof, robust connectors for simple installation
- Accuracy of ±0.1 °C
- Can have an integrated triaxial tilt sensor for combined tilt and temperature sensing in one unit
- Integrated long life battery
- 12-15 year battery life, including when acting as a relay node within the mesh communications network
- Versatile mounting options
- Waterproof to IP66 / IP67 / IP68
- Firmware is remotely upgradeable over the air via the gateway reducing costly site visits
- Easily deployed

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FlatMesh PT100 RTD Sensor Node



Physical Specifications

Parameter	Value
Dimensions (excluding antenna and vent)	90 x 90 x 60 mm
Dimensions (excluding antenna)	90 x 96 x 60 mm
Total Mass	0.57 kg (approx.)
Housing Material	Die cast aluminium
Internal Protection Marking	IP66 / IP67 IP68 (1 m for 24 hours)
Mounting Options	M4 blind holes in side ¼" UNF holes in bottom
Operating Temperature Range	-40°C to +85°C

Internal Battery

Parameter	Value
Battery Type	Lithium Thionyl Chloride
Nominal Voltage	3.6 V
Nominal Capacity	19000 mAh
Typical Battery Life	12-15 years at 20/30 minute reporting intervals, including when acting as a relay node. Consult with Senceive for your application.

Channel Combinations

Model	Ports	Applications
FM3N-RTD	1 PT100 RTD Channel	Single point temperature monitoring
FM3N-IX-RTD	1 PT100 RTD Channel 1 Integrated high precision triaxial tilt sensor	Structural monitoring with precision temperature compensation Railway deformation and critical rail temperature monitoring
FM3N-IXH-RTD	1 PT100 RTD Channel 1 Integrated high precision high-g triaxial tilt sensor	Structural monitoring with precision temperature compensation Railway deformation and critical rail temperature monitoring

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FlatMesh Radio Specifications

Parameter	Value
Communication Type	Proprietary FlatMesh v3 Mesh Networking Protocols IEEE 802.15.4 compliant
Frequency Band	2400 – 2485 MHz ISM Band
Maximum Transmit Power	6.5 dBm (EN 300 328 v2.2.2)
Maximum Permitted Antenna Gain	2.2 dBi
Range	Up to 300 m depending on the environment and fitted antenna Consult with Senceive for your application
RF Module	Senceive FM3Node

RTD Interface

Parameter	Value
Connector	M12 Female 5-pole A-coded Screw-in Type
Accuracy	±0.1°C
Resolution	0.01°C
Stimulus Type	Constant Current

Tilt Sensor (-IX, -IXH variants only)

Parameter	Value
Resolution	0.0001° (0.00175 mm/m)
Repeatability (-IX variant)	±0.0005° (±0.0087 mm/m)
Repeatability (-IXH variant)	±0.0025° (±0.0436 mm/m)
Range	±90°

Certifications

- Tested to conformity with all the essential requirements of the Radio Equipment Directive 2014/53/EU and RoHS Directive 2011/65/EU
- FCC Grant of Equipment Authorization
- RCM (Australia and New Zealand)

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FlatMesh PT100 RTD Sensor Node

Ordering Information and Accessories

Model	Description
FM3N-RTD	**FlatMesh 3 PT100 RTD Sensor Node**
FM3N-IX-RTD	**FlatMesh 3 Triaxial Tilt Sensor and PT100 Sensor Node**
FM3N-IXH-RTD	**FlatMesh 3 Triaxial High-g Tilt Sensor and PT100 Sensor Node**
FS-PT100R-xxxxx	**Round Bead Temperature Sensor** For fluid temperature (and air temperature) sensing or for drilled holes xxxxx is the cable length in millimetres
FS-PT100S-xxxxx	**Surface Mount Temperature** Sensor Metal leaf can be glued or spot welded to a surface xxxxx is the cable length in millimetres
FS-PT100M-xxxxx	**Magnetic Temperature Sensor** Surface temperature of metal structures xxxxx is the cable length in millimetres
FF-MP-S360	**Swivel mounting kit with 360-degree adjustment range** - screw directly to vertical walls
FF-MP-V Use with FF-MP-S360	**Vertical mounting plate** - use U-bolts to fix to poles or stakes - use glue to fix to walls where drilling is not permitted
FF-MP-H	**Horizontal mounting plate** - screws to brick/concrete
FF-MP-HM	**Horizontal magnetic mounting plate**
FF-MP-RA Use with FF-MP-S360	**Right angle mounting bracket** - screw to concrete tunnel linings and inclined walls
FF-MP-T2	**Trackbed mounting plate kit**
FF-MP-M2	**Magnetic mounting kit** High degree of adjustability, perfect for cast iron lined tunnels
FF-BK-xxxx **FF-BE**	**Tilt beam kit** See separate datasheet for more information
FA-FM-WPS	**Waterproof straight antenna** Overall node height 168 mm (approx.) when fitted Maximum gain +1.1 dBi
FA-FM-LPS	**Waterproof low profile straight antenna** Minimum overall node height, perfect for track bed and tight spots Overall node height 92 mm (approx.) when fitted Maximum gain 0 dBi
FA-FM-ADJ	**Adjustable angle antenna** Flexible installation, perfect for use in tunnels and indoor environments Overall node height 202 mm (approx.) when upright; 102 mm (approx.) when at 90-degree angle Maximum gain +2 dBi
FC-NC Use with FA-FM-LPS	**Antenna cover kit** Overall node height 96 mm (approx.) when fitted
FS-PT100CON11	**Screw terminals - Connector for PT100 sensor (1-wire, 1 temp)**

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