

## Product Data Sheet: FlatMesh PT100 RTD Sensor Node

The FlatMesh PT100 RTD Sensor Node allows for precision temperature sensing of a variety of items using the FlatMesh system. 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

### Key Features

- Waterproof, robust connectors for simple installation
- Accuracy of 0.1°C
- Can have -IX triaxial inclinometer sensor integrated 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

## Channel Combinations

Model	Ports	Applications
<b>FM3N-RTD</b>	1 PT100 RTD Channel	Single point temperature monitoring
<b>FM3N-IX-RTD</b>	1 PT100 RTD Channel 1 Integrated high precision triaxial inclinometer	Structural monitoring with precision temperature compensation Railway deformation and critical rail temperature monitoring

## Physical Specifications

Parameter	Value
<b>Dimensions excluding antenna and vent</b>	90 x 90 x 60 mm
<b>Dimensions excluding antenna</b>	90 x 96 x 60 mm
<b>Total Mass</b>	0.57kg
<b>Housing Material</b>	Die cast aluminium
<b>Protection</b> (BS EN 60529: 1992 + A2: 2013)	IP66 / IP67 IP68 at 1m for 24 hours
<b>Mounting Options</b>	M4 blind holes in side ¼" UNF holes in bottom
<b>Operating Temperature Range</b>	-40°C to +85°C

## FlatMesh Radio Specifications

Parameter	Value
<b>Communication Type</b>	Proprietary FlatMesh v3 Mesh Networking Protocols IEEE 802.15.4 compliant
<b>Frequency Band</b>	2400 – 2485 MHz ISM Band
<b>Maximum Transmit Power</b> (EN 300 328 v1.8.1)	6.5dBm
<b>Maximum Permitted Antenna Gain</b>	2.2dBi
<b>Range</b>	Up to 300m depending on the environment and fitted antenna Consult with Senceive for your application
<b>RF Module</b>	Senceive FM3Node

## RTD Interface

Parameter	Value
Connector	M12 Female 5-pole A-coded Screw-in Type
Accuracy	< 0.1°C
Resolution	< 0.01°C
Temperature Range	<-40°C to >85°C
Stimulus Type	Constant Current

## Tilt Sensor (-IX variant only)

Parameter	Value
Resolution	0.0001° (0.00175mm/m)
Repeatability	±0.0005° (0.0087mm/m)
Range	±90°

## Internal Battery

Parameter	Value
Battery Type	Lithium Thionyl Chloride
Nominal Voltage	3.6V
Nominal Capacity	19000mAh
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

## Certifications

- Tested to conformity with all the essential requirements of RED Directive 2014/53/EU and RoHS Directive 2011/65/EU
- FCC Grant of Equipment Authorization: FCC ID 2AMFBFM3N

## Ordering Information and Accessories

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