



FlatMesh™



Product Data Sheet: FlatMesh Millivolt Sensor Node

The FlatMesh Millivolt Sensor Node brings a wide variety of resistive bridge sensors into 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.

Examples of sensors supported:

- Pressure sensors (differential, absolute)
- Foil strain gauges
- Torque sensors
- Load cells
- Load pins
- Moisture sensing
- Conductivity

Key features

- Waterproof, robust connectors for simple installation
- Regulated sensor stimulus
- 24-bit sensing performance
- 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

FlatMesh Millivolt 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
Protection (BS EN 60529: 1992 + A2: 2013)	IP66 / IP67 IP68 (1 m for 24 hours)
Mounting Options	M4 blind holes in side Clearance holes for M4 socket head screw 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. Assumes a resistive bridge load of 350 Ω Consult with Senceive for your application.

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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 v1.8.1)
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

Millivolt Sensor Interface

Parameter	Value
Connector	M12 Female 5-pole A-coded Screw-in Type
Range	$\pm 0.625 \text{ V}$ ($\pm 125 \text{ mV/V}$)
Resolution	74.5 nV (14.9 nV/V)
Repeatability	$\pm 2.5 \text{ }\mu\text{V}$ ($\pm 0.5 \text{ }\mu\text{V/V}$)
Stimulus	5.0 \pm 0.1V 150 mA max

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



FlatMesh Millivolt Sensor Node



Ordering Information and Accessories

Model	Description
FM3N-MV5	FlatMesh 3 5V mV/V Sensor Node
FS-MV5CON	Sensor Connector With screw terminals for easy installation
FF-MP-S360	Swivel mounting kit with 360-degree adjustment range
FF-MP-V Use with FF-MP-S360	Vertical mounting plate
FF-MP-H	Horizontal mounting plate
FF-MP-HM	Horizontal magnetic mounting plate
FF-MP-RA Use with FF-MP-S360	Right angle mounting bracket
FF-MP-T2	Trackbed mounting plate kit
FF-MP-M2	Magnetic mounting kit High degree of adjustability, perfect for cast iron lined tunnels
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 trackbed and tight spots Overall node height 92 mm (approx.) when fitted Maximum gain 0dBi
FA-FM-ADJ	Waterproof low profile straight antenna Flexible installation, perfect for use in tunnels and indoor environments Overall node height 202 mm (approx.) when upright Overall node height 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

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