

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 the 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

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	0.57kg
Housing Material	Die cast aluminium
Protection (BS EN 60529: 1992 + A2: 2013)	IP66 / IP67 IP68 at 1m for 24 hours
Mounting Options	Clearance holes for M4 socket head screw in bottom M4 blind holes in side
Operating Temperature Range	-40°C to +85°C

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 (EN 300 328 v1.8.1)	6.5dBm
Maximum Permitted Antenna Gain	2.2dBi
Range	Up to 300m 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	$\pm 0.625V$ ($\pm 125mV/V$)
Resolution	74.5nV (14.9nV/V)
Repeatability	$\pm 2.5\mu V$ ($\pm 0.5\mu V/V$)
Stimulus	5.0 \pm 0.1V 150mA max

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 Assumes a resistive bridge load of 350Ω 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-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	Vertical mounting plate Use with FF-MP-S360
FF-MP-H	Horizontal mounting plate
FF-MP-HM	Horizontal magnetic mounting plate
FF-MP-RA	Right angle mounting bracket Use with FF-MP-S360
FF-MP-T2	Track bed 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 168mm (approx.) when fitted Maximum gain +1.1dBi
FA-FM-LPS	Waterproof low profile straight antenna Minimum overall node height, perfect for track bed and tight spots Overall node height 92mm (approx.) when fitted Maximum gain 0dBi
FA-FM-ADJ	Adjustable angle antenna 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	Antenna cover kit Use with FA-FM-LPS antenna Overall node height 96mm (approx.) when fitted