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.

FlatMesh Millivolt Sensor Node

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

Millivolt Sensor Interface

Parameter	Value
Connector	M12 Female 5-pole A-coded Screw-in Type
Range	±0.625 V (±125 mV/V)
Resolution	74.5 nV (14.9 nV/V)
Repeatability	±2.5 µV (±0.5 µV/V)
Stimulus	5.0 ± 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
- RCM (Australia and New Zealand)

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