

Product Data Sheet: FlatMesh Crack Sensor Node

The FlatMesh Crack Sensor Node interfaces to a linear displacement sensor. Its high precision sampling circuit powers the sensor and reports its measurements through Senceive's FlatMesh wireless communications network to a FlatMesh Gateway.

It has been successfully used in many applications, including those measuring:

- Crack movement
- Pile separation
- Structural movement
- Expansion joint monitoring



Key Features

- Waterproof, robust connectors for simple installation
- Automatic sensor type detection
- Extremely low noise performance
- 16-bit resolution (65,536 steps over the full scale)
- Integrated long life battery
- 12-15 years' battery life, including when acting as a relay node within the mesh communications network
- Integrated temperature sensor
- One and two channel variants readily available, up to six channels available on request
- Waterproof to IP66 / IP67 / IP68
- Firmware is remotely upgradeable over the air via the gateway reducing costly site visits
- Variety of fixings available for easy installation on site

Physical Specifications

Parameter	Value
Dimensions excluding antenna and sensor connector	90 x 90 x 60 mm 90 x 96 x 60 mm (including vent)
Total Mass	0.5 kg (approx.)
Housing Material	Die cast aluminium
Protection (BS EN 60529: 1992 + A2: 2013)	IP66 / IP67 IP68 at 1m for 24 hours Includes connectors while unmated
Mounting Options	Clearance holes for M4 socket head screw in bottom, M4 blind holes in side Plates and brackets available for magnetic fixing, track bed, stake and pole mounting, and many other applications
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

Crack Sensor Interface

Parameter	Value
Circuit Topology	Voltage divider
Stimulus	2.5V, 100mA max
Resolution	0.0015% of full scale
Noise Level	0.005% of full scale (typical peak to peak)

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 R&TTE Directive 1999/5/EC and RoHS Directive 2011/65/EU
- Network Rail Acceptance PA05/04146
- London Underground Approved

Ordering Information and Accessories

Model	Description
FM3N-CS	FlatMesh 3 Crack Sensor Node (one port)
FM3N-CS2	FlatMesh 3 Crack Sensor Node (two port)
FS-CS25	Potentiometer 25mm crack sensor IP66 rated, with connector fitted Use with FF-CS1
FS-CS125	Potentiometer 125mm crack sensor IP66 rated, with connector fitted Use with FF-CS1
FF-CS1	Crack Sensor mounting kit
FF-MP-S360	Swivel mounting kit with 360-degree adjustment range Mounting bracket for node
FF-MP-V	Vertical mounting plate <ul style="list-style-type: none"> - 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
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 fitted and upright Overall node height 102mm (approx) when fitted and 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