



# FlatMesh™



## 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.

### Successfully applied 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 year battery life, including when acting as a relay node within the mesh communications network
- Integrated temperature sensor
- One and two channel variants readily available
- 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



# FlatMesh Crack Sensor Node



## Physical Specifications

Parameter	FM3N-CS/CS2
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
Housing Material	Die cast aluminium body
Internal Protection Marking	IP66 / IP67 IP68 (1 m for 24 hours)
Mounting Options	1/4" UNF holes in bottom, M4 blind holes in side
Operating Temperature Range	-40°C to +85°C

## Internal Battery

Parameter	FM3N-CS/CS2
Battery Type	Lithium Thionyl Chloride, non-rechargeable
Nominal Voltage	3.6 V
Nominal Capacity	19000 mAh
Typical Battery Life	12-15 years at 30 minute reporting intervals, including when acting as a relay node. Consult with Senceive for your application.

# FlatMesh Crack 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

## Crack Sensor Interface

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

## 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 Crack Sensor Node

## Ordering Information and Accessories

Model	Description
FM3N-CS	<b>FlatMesh 3 Crack Sensor Node (one port)</b>
FM3N-CS2	<b>FlatMesh 3 Crack Sensor Node (two port)</b>
<b>FS-CS25</b> Use with FF-CS1	<b>Potentiometric 25 mm crack sensor</b> IP67 rated, with 1 metre cable and connector Other cable lengths available on request
<b>FS-CS125</b> Use with FF-CS1	<b>Potentiometric 125 mm crack sensor</b> IP67 rated, with 1 metre cable and connector Other cable lengths available on request
<b>FS-CS200</b> Use with FF-CS1	<b>Potentiometric 200 mm crack sensor</b> IP67 rated, with 1 metre cable and connector Other cable lengths available on request
<b>FS-DW150</b>	<b>Potentiometric 150 mm draw wire sensor</b> IP65 rated, with connector fitted
<b>FF-CS1</b>	<b>Crack Sensor mounting kit (pair)</b>
<b>FF-CS1-060</b>	<b>Crack Sensor mounting kit (pair, low-profile)</b>
<b>FF-MP-S360</b>	<b>Swivel mounting kit with 360-degree adjustment range</b> Screw directly to vertical walls
<b>FF-MP-V</b> (Order with FF-MP-S360)	<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
<b>FF-MP-T2</b>	<b>Trackbed mounting plate kit</b>
<b>FF-FM-WPS</b>	<b>Waterproof straight antenna</b> Overall node height 168 mm (approx) when fitted Maximum gain +1.1 dBi
<b>FA-FM-LPS</b>	<b>Waterproof low profile straight antenna</b> Minimum overall node height, perfect for trackbed and tight spots Overall node height 92 mm (approx) when fitted Maximum gain 0 dBi
<b>FA-FM-ADJ</b>	<b>Adjustable angle antenna</b> Flexible installation, perfect for use in tunnels and indoor environments Overall node height 202 mm (approx) when fitted and upright Overall node height 102 mm (approx) when fitted and at 90-degree angle Maximum gain +2 dBi
<b>FC-NC</b>	<b>Antenna cover kit</b> Use with FA-FM-LPS antenna Overall node height 96 mm (approx) when fitted
<b>FS-CSCON11</b>	<b>Premium Connector for Potentiometric Crack Sensor</b>