



Product Data Sheet: FlatMesh 3G Gateway

The FlatMesh 3G Gateway is a fully integrated unit which provides all the functionality required to operate a FlatMesh wireless sensor network in a remote location.

No fixed IP address is required for the cellular service; the Gateway simply initiates the connection with the FlatMesh Web Monitor software over the Internet.

Key features

- Integrated Five Band UMTS/HSPA+ and Quad Band GSM/GPRS/EDGE Modem
- Integrated solar charging circuit and internal rechargeable battery pack
- Fully operational, including FlatMesh and cellular radios, for three weeks (typical) on internal battery
- On-board industrial-grade flash memory card for data buffering and backup
- Incorporates bracket for mounting to pole or wall
- Waterproof connection to solar panel or other DC power supply
- All components waterproof to IP67
- Firmware is remotely upgradeable over the air reducing costly site visits
- Extended temperature range battery option available for extreme conditions
- Micro-USB connector for maintenance and local data access

FlatMesh 3G Gateway



Physical Specifications

Parameter	Value
Dimensions excluding antennas	218 x 68 x 126 mm
Dimensions including antennas	390 x 68 x 126 mm
Total Mass	1.1 kg (approx.)
Housing Material	Die cast aluminium body ASA polymer lid rated to UL94HB Die cast aluminium lid optional
Internal Protection Marking	IP67
Mounting Options	Combination wall / pole mount bracket included Low profile pole clamp available as an option

Internal Battery (Standard)

Parameter	Value
Battery Type	Lithium Ion, rechargeable
Nominal Voltage	3.6 V
Nominal Capacity	8800 mAh
Typical Runtime without charge	21 days
Operating Temperature Range	-20°C to +60°C
Charging Temperature Range	0°C to +40°C

Internal Battery (-T Version)

Parameter	Value
Battery Type	Lithium Ion, rechargeable
Nominal Voltage	3.6 V
Nominal Capacity	8800 mAh
Typical Runtime without charge	19 days
Operating Temperature Range	-30°C to +75°C
Charging Temperature Range	-30°C to +60°C

FlatMesh 3G Gateway



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	6.2 dBm (EN 300 328 v1.8.1)
Maximum Permitted Antenna Gain	4 dBi
Range	Up to 300 m depending on the environment and fitted antenna Consult with Senceive for your application
Maximum Network Size	Typically up to 100 nodes Consult with Senceive to determine optimal system configuration
RF Module	Senceive FM3Gateway

Cellular Radio Specifications (Standard)

Parameter	Value
Frequency Bands for GSM/GPRS/EDGE	850 / 900 / 1800 / 1900 MHz
Frequency Bands for UMTS/HSPA+	800 / 850 / 900 / 1900 / 2100 MHz
Output Power	Class 4 (+33 dBm) for EGSM850 / EGSM900 Class 1 (+30 dBm) for GSM1800 / GSM1900 Class E2 (+27 dBm) for GSM 850/900 8-PSK Class E2 (+26 dBm) for GSM 1800/1900 8-PSK Class 3 (+24 dBm) for UMTS 800/850/900/1900/2100, WCDMA FDD BdI, BdII, BdVIII, BdV, BdVI
Maximum Antenna Gain	+3.5 dBi
Supported SIM Cards	3 V and 1.8 V
RF Module	Gemalto PH8-P

FlatMesh 3G Gateway

Cellular Radio Specifications (-NA Version)



Parameter	Value
Frequency Bands for GSM/GPRS/EDGE	850 / 900 / 1800 / 1900 MHz
Frequency Bands for UMTS/HSPA+	800 / 850 / 1700 (AWS) / 1900 / 2100 MHz
Output Power	Class 4 (+33 dBm) for EGSM850 / EGSM900 Class 1 (+30 dBm) for GSM1800 / GSM1900 Class E2 (+27 dBm) for GSM 850/900 8-PSK Class E2 (+26 dBm) for GSM 1800/1900 8-PSK Class 3 (+24 dBm) for UMTS 800/850/AWS/1900/2100, WCDMA FDD BdI, BdII, BdIV, BdV, BdVI
Maximum Antenna Gain	+3.94 dBi (850 MHz) +1.81 dBi (1900 MHz)
Supported SIM Cards	3 V and 1.8 V
RF Module	Gemalto PH8 FCC Identifier QIPPH8

Power Input

Parameter	Value
Recommended Solar Panel Type	12 V 20 W
Target Voltage for MPPT	15.0 V
Maximum Input Voltage	32.0 V
Input Voltage for Charging	15.0 V – 32.0 V (recommended 24 V)

Mains Power Adaptor (FP-AC20-x)

Parameter	Value
Dimensions	99 x 42 x 31 mm
Operating Temperature Range	-20°C to +60°C
Input Voltage Range	90-264 VAC
Input Frequency	47-63 Hz
Input Power	0.5-23 W

Certifications

- Tested to conformity with all the essential requirements of the Radio Equipment Directive 2014/53/EU and RoHS Directive 2011/65/EU
- Network Rail Acceptance PA05/O4146
- London Underground Approved

FlatMesh 3G Gateway



Ordering Information and Accessories

Model	Description
FM3G-HSPA	FlatMesh 3 HSPA+ /3G Gateway
FM3G-HSPA-NA	FlatMesh 3 HSPA+ /3G Gateway for North America
FM3G-HSPA-T	FlatMesh 3 HSPA+ /3G Gateway with Extended Temperature Battery
FM3G-HSPA-NA-T	FlatMesh 3 HSPA+ /3G Gateway for North America with Extended Temperature Battery
FM3G-HSPA-A	FlatMesh 3 HSPA+ /3G Gateway with Aluminium Front Panel
FP-SP20	20 W Solar Panel Pre-fitted with 2 metres of cable, includes pole mount kit
FP-SP30	30 W Solar Panel Pre-fitted with 2 metres of cable, includes pole mount kit
FP-AC20-UK	20 W Power Adaptor with UK Power Plug
FP-AC20-EU	20 W Power Adaptor with European Power Plug
FP-AC20-US	20 W Power Adaptor with USA / Canada Power Plug
FP-AC20-309Y44	20 W Power Adaptor with IEC60309 Yellow Power Plug, IP44 rated
FP-SPC	Gateway Power Connector To suit cable outside diameter 5.5 mm to 8.0 mm
FF-GW-PC	Pole Clamp for 3G Gateway Bolts directly into gateway enclosure for clamping to a pole
FF-GW-WB	Wall Bracket for 3G Gateway Can be screwed directly to a flat surface or attached with straps to a pole or other structure
FC-GA	Gateway Perspex Cover Clear plastic cover to protect gateway enclosure and antennas from frontal impact, includes masonry anchors
FA-3G-OMNI	Waterproof Omnidirectional antenna for GSM / 3G For use when the gateway location has poor cellular reception Includes 3 m cable and pole mount bracket



Product Data Sheet: FlatMesh 4G Gateway

The FlatMesh 4G Gateway is a fully integrated unit which provides all the functionality required to operate a FlatMesh wireless sensor network in a remote location.

No fixed IP address is required for the cellular service; the Gateway simply initiates the connection with the FlatMesh WebMonitor software over the Internet.

Key features

- Integrated Twelve Band **LTE**, Seven Band **UMTS/HSPA+** and Quad Band **GSM/GPRS/EDGE** Modem for worldwide use
- Integrated solar charging circuit connected to internal lithium-ion chargeable battery pack (no external battery pack)
- Fully operational, including FlatMesh and cellular radios, for up to three weeks on internal battery
- On-board industrial-grade flash memory card for data buffering and backup
- Incorporates bracket for mounting to pole or wall
- Waterproof connection to solar panel or other DC power supply
- All components waterproof to IP67
- Firmware is remotely upgradeable over the air reducing costly site visits
- Extended temperature range battery option available for extreme conditions
- Micro-USB connector for maintenance and local data access



FlatMesh 4G Gateway

Physical Specifications

Parameter	Value
Dimensions excluding antennas	218 x 68 x 126 mm
Dimensions including antennas	390 x 68 x 126 mm
Total Mass	1.1 kg (approx.)
Housing Material	Die cast aluminium body ASA polymer lid rated to UL94HB Die cast aluminium lid optional
Internal Protection Marking	IP67
Mounting Options	Combination wall / pole mount bracket included Low profile pole clamp available as an option

Internal Battery (Standard)

Parameter	Value
Battery Type	Lithium Ion, rechargeable
Nominal Voltage	3.6 V
Nominal Capacity	8800 mAh
Typical Runtime without charge	21 days
Operating Temperature Range	-20°C to +60°C
Charging Temperature Range	0°C to +40°C

Internal Battery (-T Version)

Parameter	Value
Battery Type	Lithium Ion, rechargeable
Nominal Voltage	3.6 V
Nominal Capacity	8000 mAh
Typical Runtime without charge	19 days
Operating Temperature Range	-30°C to +75°C
Charging Temperature Range	-30°C to +60°C



FlatMesh 4G Gateway

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	6.2 dBm (EN 300 328 v1.8.1)
Maximum Antenna Gain	4 dBi (2400 MHz to 2500 MHz range)
Range	Up to 300 m depending on the environment Consult with Senceive for your application
Maximum Network Size	Typically up to 100 nodes Consult with Senceive to determine optimal system configuration
RF Module	Senceive FM3Gateway

Cellular Radio Specifications

Parameter	Value
Frequency Bands for GSM/GPRS/EDGE	850 / 900 / 1800 / 1900 MHz
Frequency Bands for UMTS/HSPA+	800 / 850 / 900 / 1700 / 1800 / 1900 / 2100 MHz
Frequency Bands for LTE	700 / 800 / 850 / 900 / 1700 / 1800 / 1900 / 2100 / 2600 MHz
Maximum Antenna Gain	+3.5 dBi
Supported SIM Cards	3 V and 1.8 V
RF Module	Thales/Gemalto PLS62-W FCC Identifier QIPPLS62-W



FlatMesh 4G Gateway

Power Input

Parameter	Value
Recommended Solar Panel Type	12 V 20 W
Target Voltage for MPPT	15.0 V
Maximum Input Voltage	32.0 V
Input Voltage for Charging	15.0 V – 32.0 V (recommended 24 V)

Mains Power Adaptor (FP-AC40-x)

Parameter	Value
Dimensions	116.3 x 52.4 x 31.3 mm
Operating Temperature Range	0°C to +65°C
Input Voltage Range	90-264 VAC
Input Frequency	47-63 Hz
Input Power	0.5-23 W

Certifications

- CE, FCC, ISED
- Network Rail Acceptance PA05/O4146



FlatMesh 4G Gateway

Ordering Information and Accessories

Model	Description
FM3G-LTE FM3G-LTE-T FM3G-LTE-A	FlatMesh 3 LTE/4G Gateway FlatMesh 3 LTE/4G Gateway with Extended Temperature Battery FlatMesh 3 LTE/4G Gateway with Aluminium Front Panel
FP-SP20	20 W Solar Panel Pre-fitted with 2 metres of cable, includes pole mount kit
FP-SP30	30 W Solar Panel Pre-fitted with 2 metres of cable, includes pole mount kit
FP-AC40-UK	40 W Power Adaptor with UK Power Plug
FP-AC40-EU	40 W Power Adaptor with European Power Plug
FP-AC40-US	40 W Power Adaptor with USA / Canada Power Plug
FP-AC40-ANZ	40 W Power Adaptor with Australia / New Zealand Power Plug
FP-AC40-309Y44	40 W Power Adaptor with IEC60309 Yellow Power Plug, IP44 rated
FP-AC40-309B44	40 W Power Adaptor with IEC60309 Blue Power Plug, IP44 rated
FP-SPC	Gateway Power Connector To suit cable outside diameter 5.5 mm to 8.0 mm
FF-GW-PC	Pole Clamp for 4G Gateway Bolts directly into gateway enclosure for clamping to a pole
FF-GW-WB	Wall Bracket for 4G Gateway Can be screwed directly to a flat surface or attached with straps to a pole or other structure
FC-GA	Gateway Perspex Cover Clear plastic cover to protect gateway enclosure and antennas from frontal impact, includes masonry anchors
FA-3G-OMNI	Waterproof Omnidirectional antenna for 2G / 3G / 4G For use when the gateway location has poor cellular reception Includes 3 m cable and pole mount bracket



Product Data Sheet: FlatMesh USB Gateway

The FlatMesh USB Gateway provides all the functionality required to operate a FlatMesh wireless sensor network in conjunction with a PC.

Combine with the FlatMesh Data Logger software for simple text file logging or the FlatMesh WebMonitor software for real-time visualisation and alerting.

Key features

- On-board industrial-grade flash memory card for data buffering and backup
- No separate power connection required
- Robust USB connector to avoid accidental disconnection
- Firmware is upgradeable over USB

FlatMesh USB Gateway



Physical Specifications

Parameter	Value
Dimensions	125 x 66 x 41 mm
Total Mass	0.35 kg (approx.)
Housing Material	Die cast aluminium enclosure Metallised plastic USB connection
Mounting Options	35 mm DIN rail
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	6.2 dBm (EN 300 328 v1.8.1)
Maximum Permitted Antenna Gain	4 dBi
Range	Up to 300 m depending on the environment and fitted antenna Consult with Senceive for your application
Maximum Network Size	Typically up to 100 nodes Consult with Senceive to determine optimal system configuration
RF Module	Senceive FM3Gateway

FlatMesh USB Gateway



USB Interface

Parameter	Value
Standard	USB 2.0
Connector Type	Standard A Plug
Cable Length	1 metre
Type of Device	Virtual COM Port
Power Requirement	5 V, 500 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
- Network Rail Acceptance PA05/O4146
- London Underground Approved

FlatMesh USB Gateway



Ordering Information and Accessories

Model	Description
FM3G-USB	FlatMesh 3 USB Gateway
FA-FM-ADJ	Adjustable angle antenna Flexible installation, perfect for use in tunnels and indoor environments Maximum gain +2 dBi
FA-FM-WPS	Waterproof straight antenna Maximum gain +1.1 dBi