

X1 Synap Outdoor Gateway

X1 is a ruggedised outdoor IoT gateway that implements the patented SynapMesh communication protocol for Low-Power Wide-Area Network(LPWAN). The advanced industrial design of X1 uses state of the art manufacturing technologies and materials to resulting in an extremely reliable hardware for all deployment scenarios. Designed for scalability and high security, the Synap X1 gateway is configuration free and fully managed in the centralised SynapCloud network controller.

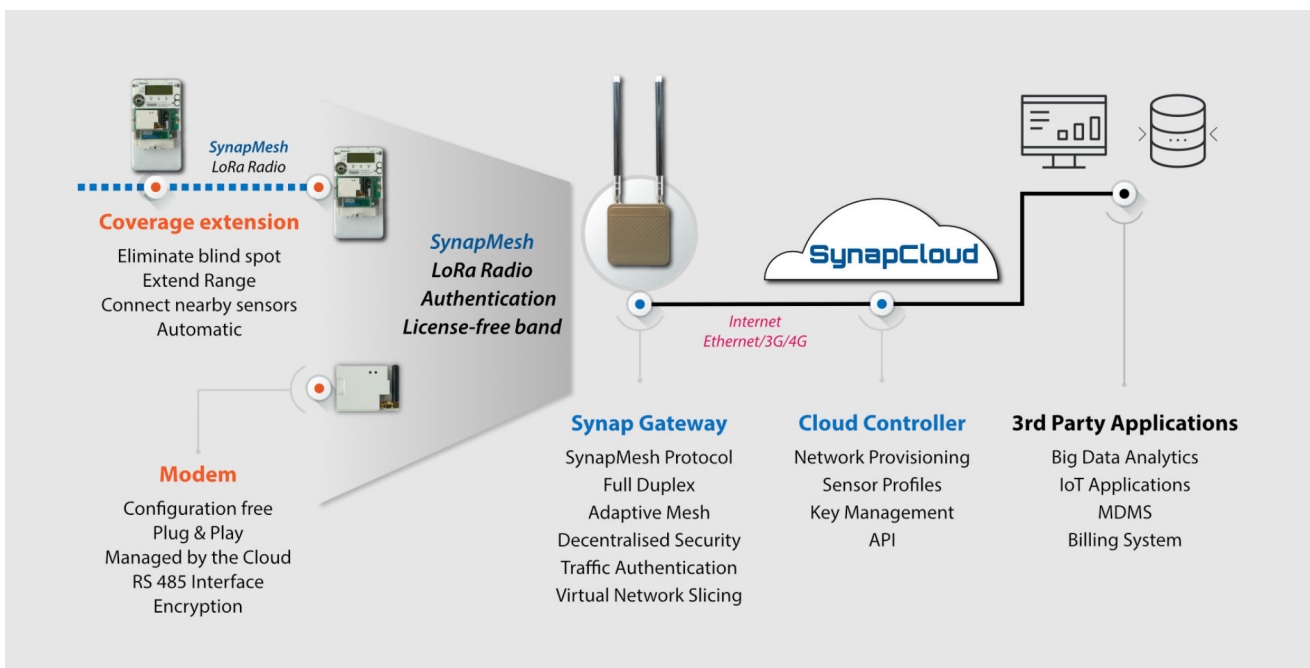
SynapMesh is a tailored communication protocol for wireless sensor networks operating in the sub-GHz frequency region using the LoRa narrowband radio technology. It forms the network automatically and provides meshing between devices to extend the network reach, solving the last-mile connectivity problem.



- ⬢ **Integrated GPS**
- ⬢ **Full Duplex**
- ⬢ **PoE powered**
- ⬢ **Cloud managed**

- ⬢ **DuPont Engineering Polymer chassis**
- ⬢ **Excellent electrical insulation**
- ⬢ **UV, heat and chemicals resistance**
- ⬢ **Industrial grade material strength and stiffness**

Solution Overview



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Product Specification

Radio Parameters

Radio frequency:	868MHz or 915Mhz ISM bands
Radio modulation:	LoRa
Radio connectivity:	Full duplex. 8 channels RX, 1 channel TX
Channel size:	125kHz
RX sensitivity:	-135dBm
TX power:	27dBm
Free space communication range:	up to 20 km to Synap modem with 20 dBm TX and -100 dBm RX
Antenna connection:	N-type coaxial female x 2
Max. client connection:	up to 500 modems

Connectivity

Backhaul connectivity:	Ethernet 10/100 Mbps - RJ45 connector
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Hardware

Processor:	Quad-core Cortex A7 (up to 1.2GHz) 512 MB internal memory
Radio Hardware:	Semtech SX1301 + Semtech SX1276

Power

Power supply:	PoE+ (802.3at) External
Power consumption:	10 W (average)
Surge protection:	6kV common surge

Security features (SynapShield)

Encryption:	AES-256 encryption
Data Integrity:	SHA-256
MAC layer address authentication:	SynapMesh protocol
Security key:	SynapShield Secure dynamic key generation

Other features

Built-in GPS with antenna:	Supports GPS/GNSS
Firmware upgrade:	Support remote network upgrade

Physical Characteristics

Weight:	1kg (without mounting kit)
Dimensions:	193x193x53 mm
Chassis material:	Engineering polymer certified by DuPont
Weather protection:	IP67 Pressure balancing valve 6kV common surge protection 5-95% humidity, non-condensing
Operation temperature:	-40° to +70°C ambient temperature
LED lights:	3 LED indications of network status: On/Off, Ethernet, Radio
Mounting:	Pole mount (mounting kit included)

Accessories

Antenna:	Dual band 868 / 915 MHz, 2 dBi omnidirectional. N-type coaxial male
PoE adaptor:	PoE+ (802.3at) adapter
PoE switch:	4 ports PoE+ (802.3at). Unmanaged

Standards and regulations

Radio & EMC:	RED 2014/53/EU Directive article 3 ETSI EN 300 220-2 EN 61000-6-1:2007 IEC 61000-6-1:2005 (ed. 2.0) ETSI EN 301 489-3 v1.6.1:2013 FCC 47 CFR part 15: 2014 - Part 15- Radio frequency devices RSS-Gen - Issue 5, April 2018 RSS-247 Issue 2, February 2017 - Digital Transmission Systems (DTSS), Frequency Hopping Systems (FHSS) and License- Exempt Local Area Network (LE-LAN) Devices
Human Safety:	EN 62209-2 (SAR) IEC/EN 62479-1
Electrical:	EN 60950
Environmental:	WEEE, RoHS

Warranty

Basic hardware warranty:	1 year
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