

## CORE COMMUNICATIONS

# Thread X3

The Thread X3 is designed for customers needing broadband connectivity for high data-rate, high-power industrial projects. This autonomous device features an integrated 4G/LTE modem, wireless mesh networking, and a battery pack in a weather-resistant enclosure.

It integrates seamlessly with WorldSensing's Multi-net network deployments through CMT Cloud for a wide catalog of sensors. It can also operate via Bentley's software platform for alternative network operations.

## Multiple Modes of Communication

## WITH PRIORITISATION AND INTELLIGENT FAIL-OVER

**CELLULAR**

Deploy distributed devices connected to Cellular networks

**Globally Compliant Cellular**

Operate on 600+ cellular networks across 190 countries.  
No provisioning or carrier management required.

**WIRELESS MESH**

Extend sensor networks with resilient wireless mesh technology

**Wireless Gateway**

As a wireless gateway, the Thread X3 enables efficient connectionless low-power wide area (LPWA) wireless communication with compatible devices and smart sensors. The interface built on the MQTT-SN standard, provides scalable and secure wireless network management, security, and cloud connectivity.

**Intelligent Wireless Networking**

Automatic network role detection Gateway, Repeater, or Endpoint.

**Adaptive and Resilient**

Self-forming long-range wireless mesh networking.

**ETHERNET**

Connect to existing networks where wired Internet infrastructure exists

**Secure Wired Networking**

10/100 Ethernet interface with end-to-end encrypted communication secured by TLS 1.2



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## Configurable Sensor Interfaces

**DENSE SENSOR INSTALLATIONS**

Cost-effectively manage nested sensors. Attach multiplexer (MUX) devices to support up to 128 sensors.

**RELAY CAPABILITIES**

Each device port can output 12V that can be toggled on and off manually, via API integration, by alert trigger, or by recorded flow (flowmeter connected). The 12V output can be used to control a relay (like a solid state relay) or to just provide direct power for a simple audio/visual alarm.



## Thread Manager

### MANAGE YOUR BROADBAND CONNECTIVITY IN CMT CLOUD

Use the **Thread Manager** in CMT Cloud to easily configure and manage your Thread X3 device and connected sensors. Fully integrated with the CMT Cloud platform, it enables advanced data management and ready-to-use monitoring solutions. Securely stream data to your preferred visualization tools.

#### NETWORK MANAGEMENT

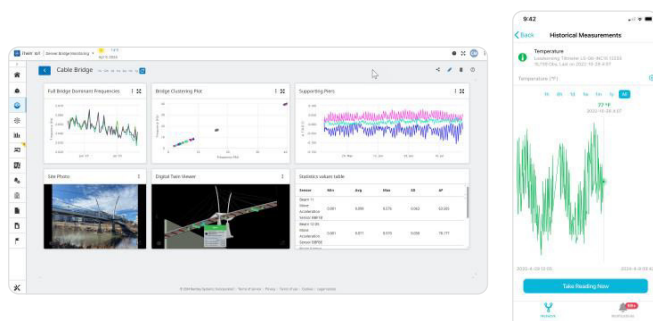
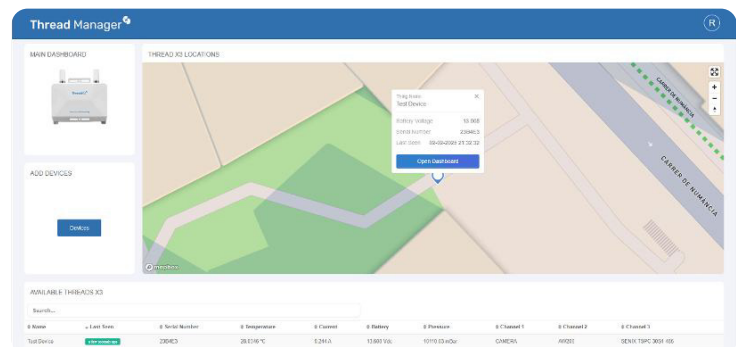
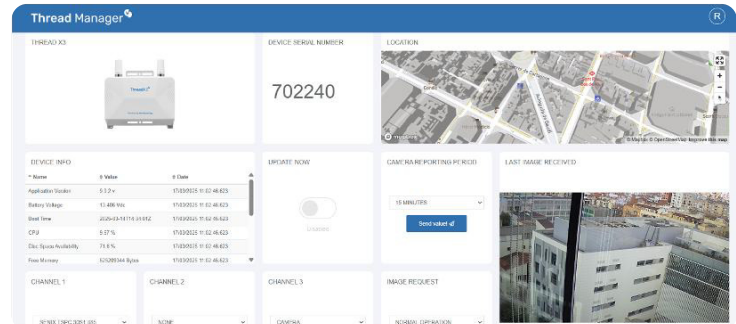
- Add/remove Thread X3 devices easily using a dedicated user interface.
- Assign coordinates to define device locations

#### DEVICE MANAGEMENT

- Monitor diagnostic metrics, manage firmware updates, and change the reporting period for connected devices like cameras.
- Integrate connected sensors into risk management systems to act on potential anomalies.
- Link up to three cameras or other sensors to respond effectively.

#### DATA MANAGEMENT

- Export data via MQTT or advanced API integrations to third party software.



## iTwin by Bentley

### ALTERNATIVE FOR ADVANCED DATA VISUALIZATION TOOLS

#### MAIN FEATURES

- Thread X3 configuration and management
- Sensor Integration Builder (SIB) and sensor driver library
- Data visualization and analytics
- Alert configuration
- Productivity Applications (reports, slope stability, remote sensing, environmental, groundwater management)

#### MOBILE APP ENABLED

Commission sensor networks using only your phone. Scan the unique Thread QR code using your phone camera to easily add a Thread device to your account. Instantly access your data from any sensor, anywhere.



## TECHNICAL SPECIFICATIONS

MECHANICAL

Dimensions:

14.76 in [37.49 cm] x 12.47 in [31.63 cm] x 3.39 in [8.61 cm]

Weight:

8.6 lbs (3900 grams)

IP-Rating:

66

Humidity:

5 to 95% non-condensing

Operating Temperature:

-40°F to 158°F (-40°C to 70°C)

Wireless Connector:

N-type female coaxial

Cellular Connector:

N-type female coaxial

Network Connector:

Lemo 8-pin

Sensor Connector:

Lemo 12-pin

GENERAL

EMMC Flash Memory:

8 GB

MESH WIRELESS NETWORKING

Mesh Wireless Frequency:

870 MHz

900 MHz LP

900 MHz HP

Mesh Wireless Range:

0.5 miles

3.5 miles

7.5 miles

Output Power:

25mW

250mW

1000mW

RF Data Rate (max):

80 kbps

250 kbps

250 kbps

POWER

Input Voltage:

Nominal voltage 24 VDC, range 15-26 VDC

Power Input:

Up to 2500mA (Charge mode)  
200mA RMS (Standard mode)  
20mA RMS (Low power mode)  
@24 VDC

Direct Connect Solar Panel:

Maximum Peak Power (Pmax): 160 W  
Maximum open circuit voltage (Voc): 22.9 V  
Optimum operating voltage (Vmp): 20.2 V  
Maximum operating current (Imp): 7.92 A

Battery

12.8V 9.9AH (126.72Wh) LiFePO4

INTERNAL SENSORS

System Temperature:

-40°F to 158°F (-40°C to 70°C), precision +/- 0.5°F

Barometer:

measurement range 0.26 bars - 1.26 bars, precision 0.00025 bars RMS

WIRED INTERFACES

Communication

Power

Network I/O:

10/100 Ethernet

None

Sensor I/O:

Interface 01: USB, RS232, RS485, 4-20mA  
Interface 02: RS232, RS485, 4-20mA  
Interface 03: RS232, RS485, 4-20mA

12 or 15VDC Out, up to 20 watts

CELLULAR NETWORKING

4G Bands

3G Bands

2G Bands

North America:

B2[1900], B4[1700], B5[850],  
B12[700], B13[700], B14[700],  
B66[1700], B71[600]

B2[1900], B4[1700], B5[850]

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Europe:

B1[2100], B3[1800], B7[2600],  
B8[900], B20[800]

B1[2100], B8[900]

GSM900, DCS1800

Australia:

B1[2100], B3[1800], B5[850],  
B8[900], B9[1800], B18[850],  
B19[850], B26[850], B28[700]

B1[2100], B5[850], B6[800],  
B8 [900], B19[800]

GSM850/900, DCS1800,  
PCS1900

South America:

B1[2100], B2[1900], B4[1700].  
B5[850], B8[900]

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COMPATIBLE SENSORS VIA THREAD MANAGER

MANUFACTURER	SENSOR NAME	SENSOR TYPE
DGSI Slope	GeoFlex	In-place inclinometers
Campbell Scientific	AVW200 VW Analyser Module	Interface Module
General	Warning Light (example)	Relay-triggered audio/visual alarm
Leica	Total station TM/TS/MS series	Total Station
Senix	ToughSonic Ultrasonic Distance Sensor	Distance sensor
Worldsensing	In-field Camera	Camera
Vaisala	WXT536 Weather Monitoring Station	Weather Station



Geoflex In-Place Inclinometer



AVW200 VW Analyser Module



Warning Light



Total station TM/TS/MS series



ToughSonic Ultrasonic Distance Sensor



In-field Camera



WXT536 Weather Monitoring Station



## COMPATIBLE SENSORS VIA iTWIN

MANUFACTURER	SENSOR NAME	SENSOR TYPE
Advantech	ADAM 4000 Series	Interface Module
Badger Meter	380 Series BTU Meter M2000 Flowmeter M5000 Flowmeter	BTU Meter Flowmeter Flowmeter
BeadedStream	M-Link Connection for Digital Temperature Cable Recite Connection for Digital Temperature Cable	Temperature Sonde Temperature Sonde
Call & Nicholas	Instruments SlideMinder	Linear Displacement
Campbell Scientific	AVW200 VW Analyser Module LevelVUEB10 Bubbler Water Content Reflectometer CS725 Snow Water Equivalent Sensor	Interface Module Water level Reflectometer Snow Depth Sensor
DGSI	MEMS Tiltmeter	Tiltmeter
DYWIDAG (DSI)	DYNA Force	Elasto-Magnetic Sensor
Euromag International	MC608 Converter	Flowmeter
FloWav	PS1000 SDE	Flowmeter
Geosense	Smartmux Tilt Meter	Interface Module Tiltmeter
Geokon	8960 VW Data Logger Horizontal IPI 6155 IPI 6180 Thermistor String 3810A Triaxial Tilt Beam 6195	Vibrating Wire datalogger In-Place Inclinator Vertical In-Place Inclinator Thermistor String Tiltbeam
Gill	Maximet	Weather Station
In-Situ	AquaTROLL 500 Data Logger AquaTROLL 200 Data Logger Level Troll 200, 400 and 700 RuggedTROLL Data Logger 200	Water quality Water quality Water level Water level
Jewell Instruments	Lily Borehole Tiltmeter Tuff Tilt Digital Tiltmeter D801	Tiltmeter Tiltmeter
Leica	GMX910 Total station TM/TS/MS series	GNSS Total Station
Measurand	ShapeArray (Current Models) ShapeArray XYZ (Older Models)	Shape Array Shape Array



MANUFACTURER	SENSOR NAME	SENSOR TYPE
RocTest	RT-VLOG VW Logger RxTx Remote Reading Pendulum Station	Vibrating Wire Datalogger Pendulum
SLB (Schlumberger)	VDF (AC) Power Houses	Variable frequency drive
Schneider	ALTIVAR 630	Variable frequency drive
Seafloor Systems	Hydrolite Plus Single Frequency Hydrolite Plus Dual Frequency	Single Beam Sonar
Senix	ToughSonic Ultrasonic Distance Sensor	Distance sensor
Solinst	Solinst Levelogger 5	Water level
Somfy	Universal RTS Interface II (URTSI II-16 Channel)	Interface module
Topcon	GNSS AGM-1	GNSS
Turner Designs	C3 Submersible Fluorometer	Fluorometer
Vaisala	AQT530 Air Quality Monitoring Station WXT536 Weather Monitoring Station	Air quality monitor Weather station
Worldsensing	In-field Camera	Digital Camera
YieldPoint	d-Exto Multiple Rod Extensometer d-MPBX Multiple Point Borehole Extensometer	Extensometer Extensometer
YSI	IQ SensorNet VisoTurb®	Turbidity probe

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