// ZGW-10

Industrial IoT Gateway

based on Raspberry Pi CM4

// Introduction

EpiSensor's Industrial IoT Gateway manages networks of EpiSensor wireless nodes and provides users with an intuitive web interface to quickly and easily build complete Industrial IoT solutions. The Gateway can be configured to push sensor data to edge or cloud software applications for archiving, and analysis and visualisation.

// Key Features

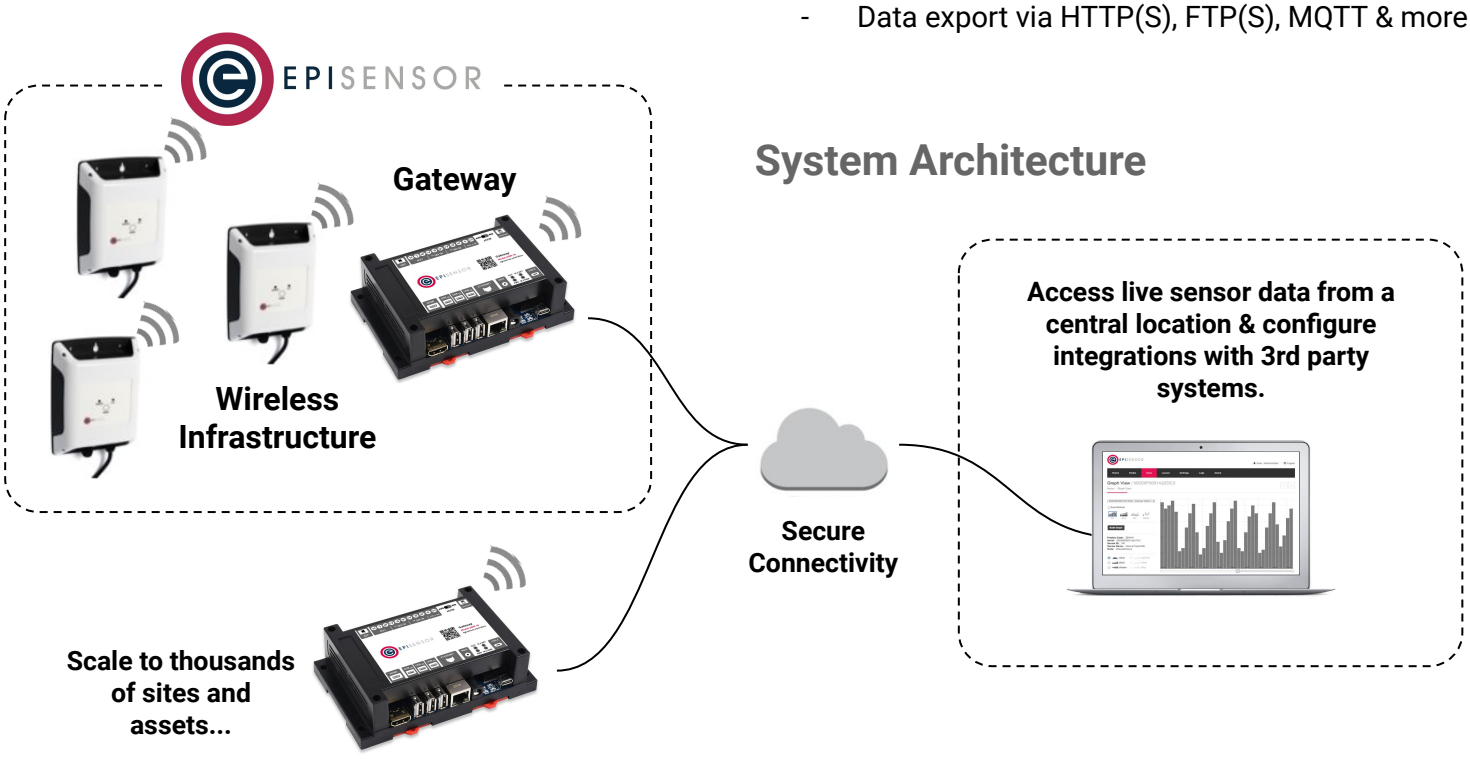
- Quad-core 1.5GHz ARM Cortex-A72 Processor
- Ubuntu Core operating system
- Gigabit Ethernet, 3G/4G/5G Cellular, USB, Wi-Fi, Bluetooth, CANbus, GPS & more
- HTTP API for control and management
- Connect up to 100 nodes / 1000 sensors
- 2.4GHz ISM band ZigBee® wireless radio
- Over-the-air software upgrade capability
- Data export via HTTP(S), FTP(S), MQTT & more

For more information, contact:

sales@episensor.com

visit http://episensor.com or call +353 61 512 500

System Architecture



Technical Specification

// System

Category	Parameter	Value
Computer	Processor	Quad-core 1.5GHz ARM
	RAM	2 GB, LPDDR4-3200 SDRAM
	Operating System	Ubuntu Core
Data Export	Transport Protocols	HTTP(S), FTP(S), MQTT & more
	Data Formats	JSON, CSV & more
	Software Integrations	50+ (see EpiSensor website)

// Electrical

Category	Parameter	Value
Power Supply	Input Voltage Range	5V (USB-C) or 7 - 36 V DC
	Power over Ethernet	N/A
	Wake up events	Wake on LAN, RTC
	Max Power Consumption	15 watts
	Idle Power Consumption	5 watts

// Communications

Category	Parameter	Value
WAN	Ethernet	1x Gigabit Ethernet (RJ-45)
	Cellular	3G / 4G / 5G (varies by country)
Wireless Sensor Network	Radio Technology	ZigBee Pro
	Radio Frequency	2.4 GHz ISM band
	Network Topology	Mesh
	Channels	16 (802.15.4 Channels 11 to 26)
	Max Tx Power	+8dBm
	Tx modulation	O-QPSK
	Rx Sensitivity	-101dBm
	Max Data Rate	256kbit/s
	Wireless Range	up to 50m indoor / 300m outdoor

Technical Specification

// Software & Security

Category	Parameter	Value
Real Time Clock & Sync	Real Time Clock Backup	Battery (3V, 38mAh, CR1220)
	Hold-up time	3+ years
	Synchronisation	NTP time server
	Timestamp Format(s)	ISO-8601, Unix Epoch
	Timestamp Resolution	1 second
Data Logging	Storage Type	Non-volatile flash (eMMC)
	Capacity	8GB
Security	Sensor Network Encryption	AES 128-bit
	Server Communications	TLS v1.3 / various

// Operating Conditions

Category	Parameter	Value
Operating Conditions	Operating Temperature	-20°C to 70°C (-4°F to 158°F)
	Storage Temperature	−40°C to 70°C (−40°F to 158°F)
	Operating Humidity Range	10% to 95% (non-condensing)
Physical	Weight	0.4kg +/- 0.05kg
	Dimensions (W x H x D)	185x155x34mm / 145x90x40mm

// Certifications

Category	Parameter	Value
Certifications	Safety	CE
	Environmental	RoHS, WEEE
	EMC/RF	IC, FCC

EpiSensor products are not suitable or specifically designed, manufactured or licensed for use in military, aviation, powerplant, medical or in other inherently dangerous or safety critical applications.

Technical Specification

// Order Codes

SKU	Description
ZGW-10-DZ-4G-WB-NU-E2-UK	Ethernet, ZigBee USB dongle, 4G cellular, Wi-Fi / Bluetooth, no display, black DIN rail enclosure, UK power supply
ZGW-10-DZ-4G-NW-NU-E2-UK	Ethernet, ZigBee USB dongle, 4G cellular, no Wi-Fi / Bluetooth, no display, black DIN rail enclosure, UK power supply
ZGW-10-DZ-NC-NW-NU-E2-UK	Ethernet, ZigBee USB dongle, no cellular, no Wi-Fi / Bluetooth, no display, black DIN rail enclosure, UK power supply
ZGW-10-DZ-NC-WB-NU-E2-UK	Ethernet, ZigBee USB dongle, no cellular, Wi-Fi / Bluetooth, no display, black DIN rail enclosure, UK power supply
ZGW-10-DZ-4G-WB-NU-E2-EU	Ethernet, ZigBee USB dongle, 4G cellular, Wi-Fi / Bluetooth, no display, black DIN rail enclosure, EU power supply
ZGW-10-DZ-4G-NW-NU-E2-EU	Ethernet, ZigBee USB dongle, 4G cellular, no Wi-Fi / Bluetooth, no display, black DIN rail enclosure, EU power supply
ZGW-10-DZ-NC-NW-NU-E2-EU	Ethernet, ZigBee USB dongle, no cellular, no Wi-Fi / Bluetooth, no display, black DIN rail enclosure, EU power supply
ZGW-10-DZ-NC-WB-NU-E2-EU	Ethernet, ZigBee USB dongle, no cellular, Wi-Fi / Bluetooth, no display, black DIN rail enclosure, EU power supply

Product Code Example:	ZGW -	10 -	DZ -	4G -	WB -	NU -	E2 -	EU
Product Line	**ZGW:** IoT Gateway							
Version	**10:** first generation ZGW **20:** second generation ZGW - coming soon							
ZigBee	**DZ:** external (USB dongle) ZigBee Radio **UZ:** on-board (UART connected) ZigBee Radio - V.20 only							
Cellular / GPS	**4G:** on-board (M.2 connected) 4G modem based on Simcom SIM7600G **NC:** no cellular							
Wi-Fi / Bluetooth	**WB:** on-board Wi-Fi / Bluetooth **NW:** no on-board Wi-Fi / Bluetooth							
Hardware UI	**WU:** hardware user interface (eInk) - V.20 only **NU:** no hardware user interface							
Enclosure	**E1:** black/white, polycarbonate, wall mount enclosure - V.20 only **E2:** black, ABS, DIN rail mount enclosure							
Power Supply	**EU:** power adapter suitable for use in the EU (Europlug type C) **UK:** power adapter suitable for use in the UK **NA:** power adapter suitable for use in North America and Canada							

Technical Specification

Installation & Safety Notes
HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH ➔ EpiSensor equipment should be installed, operated, serviced and maintained only by qualified personnel. EpiSensor does not assume any responsibility for any consequences arising out of the use of this equipment. ➔ For detailed installation and safety information, consult the Install Sheet.

// Contact

For technical support, please contact **support@episensor.com** or phone +353 61 512 500

Address: EpiSensor Ltd. National Technology Park, Limerick, V94 C61W, Ireland

Manufactured in an ISO 9001 / ISO 14001 certified facility. Gateway 3002 Manufactured by Dell.

Designed and manufactured in Ireland

Dimensions & Mounting

FRONT VIEW

MOUNTING

DIN Rail:

- 2x mounting clips for 35mm DIN rail

Wall mounting holes (x4):

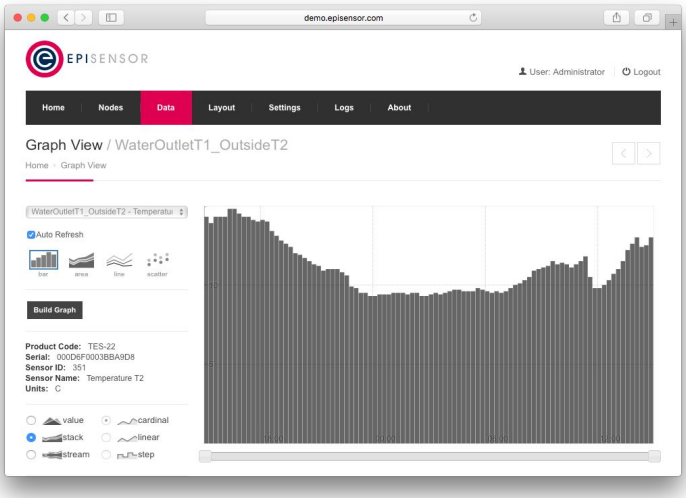
- Horizontal distance: 135mm
- Vertical distance: 70mm
- Screw head diameter: >= 6mm

KIT INCLUDES

- **IoT Gateway**
- **Primary Cellular Antenna**
- **Secondary Cellular Altenna**
- **Wi-Fi / Bluetooth Antenna**
- **GPS Antenna**
- **ZigBee Dongle**
- **Mains Power Supply**

Note: Package contents will vary depending on the version of ZGW selected.

Screenshots

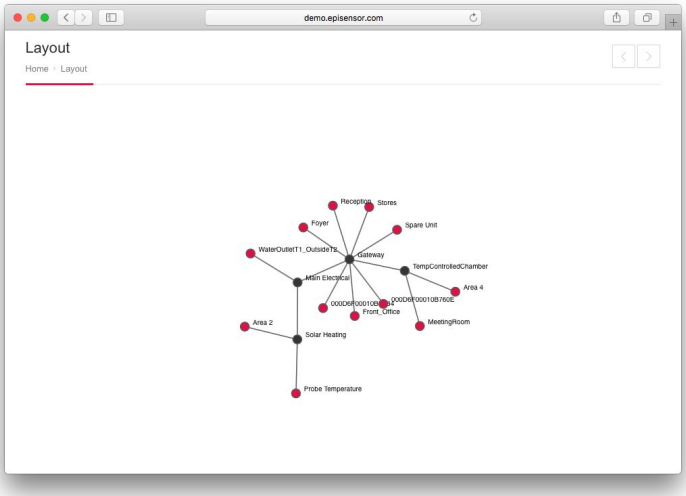


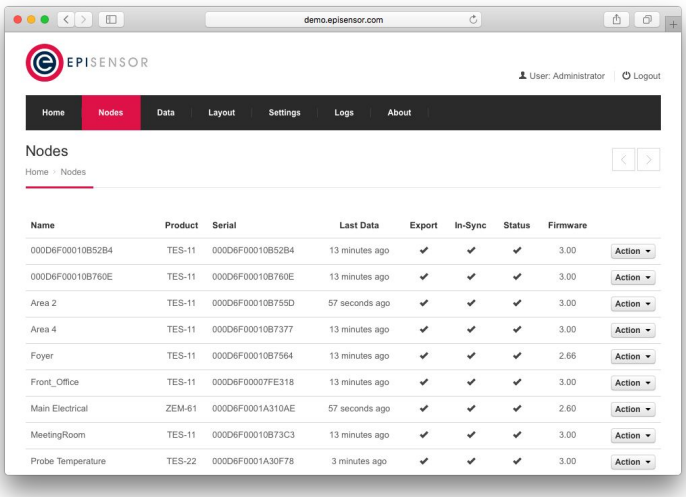
// Graph View

From the Graph view on EpiSensor's Industrial IoT Gateway, users can view live sensor data from any browser or mobile device. Up to 24 hours of live data is available from each sensor, which is intended to assist installers with confirming that the sensors joined to the Gateway are reporting data as expected, so they can leave site with confidence that the system is working.

// Layout View

EpiSensor wireless nodes form a mesh network using the ZigBee® Pro wireless communications standard. Mains-powered nodes will route data for other nodes close by, so wireless coverage can be extended by up to 10 'hops' covering very large areas. The Layout View shows the path that nodes are using within the mesh network to communicate with the Gateway.





// Nodes List

Every aspect of how a node communicates and sends data is configurable from the Nodes List page on the Gateway. Users can easily drill-down into the settings of a specific node or sensor, and get an overview of the firmware version, status, and configuration, and make changes to how data should be produced and exported. This can also be automated using the Gateway's API.