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ELPRO MQTT – SPARKPLUG
IoT CONNECTIVITY GATEWAY

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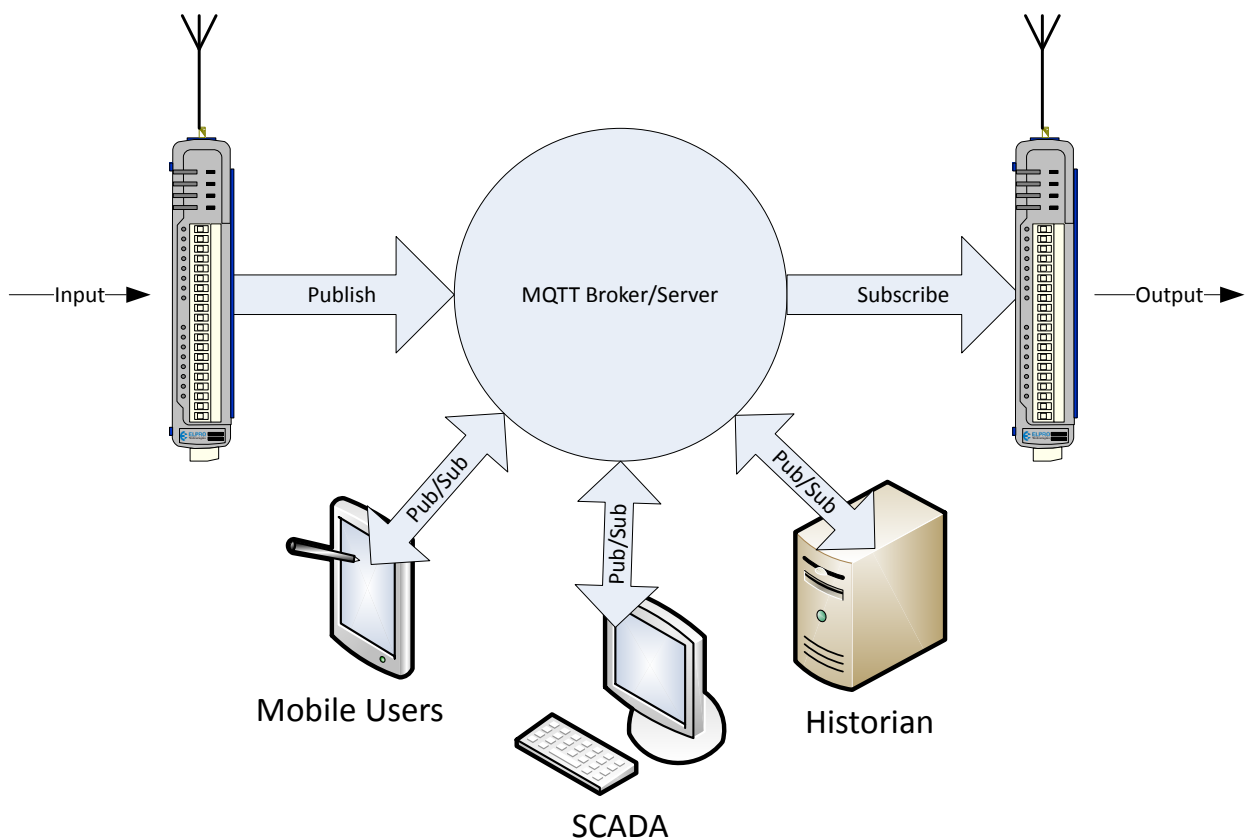
With the digital transformation of evironmental, industrial monitoring and control applications, secure and reliable data collection and control is critical to delivering safe, efficient and environmentally sustainable operations.

The ELPRO IoT Connectivity, MQTT Sparkplug Gateway enables your devices to access the Internet of Things (IoT) and Industry 4.0. Delivering a secure, fast, reliable, and simple way to 'IoT enable' devices for remote monitor/control of industrial plant/equipment and environmental applications.

The MQTT Sparkplug gateway is the new addition to the proven ELPRO 215U-2, 415U-2, 415U-E and 415U-1 Industrial Wireless I/O and modems.

Providing a secure, reliable and cost-effective solution for a wide range of industrial applications. The ELPRO MQTT gateway includes a range of innovative class leading features:

• Direct 'At the source' data collection/timestamping to transmit as MQTT or Sparkplug

• Security with broker/server SSL connectivity

• MQTT Sparkplug applications can now be used easily with licensed radio systems

• Simple connection to local digital/analog inputs or outputs

• Powerful gateway to external Modbus TCP or RTU devices

• Local logging of timestamped messages compatible with Historian backfill

• Redundancy, up to 4 server/broker connections

APPLICATIONS

Suitalble for many applications including:

- Water/Waste Water municipal flow, level, tanks, pump control applications

- Oil & Gas well head monitoring, waste water management

- Mining dewatering, tailings dams

- Petrochemical product tank level, high/low alarms, temperature

- Factory automation applications

- Environmental flood mitigation, disaster management

- Agricultural applications, irrigations control, efficent water management

MQTT Sparkplug gateway product family and features

The ELPRO MQTT Sparkplug gateway is a soft feature for the proven ELPRO Industrial Wireless products. It is available across a wide range of wireless technologies to suit many appcliations.

The ELPRO product range covers a very large number of wireless connectivity options allowing the right fit for any
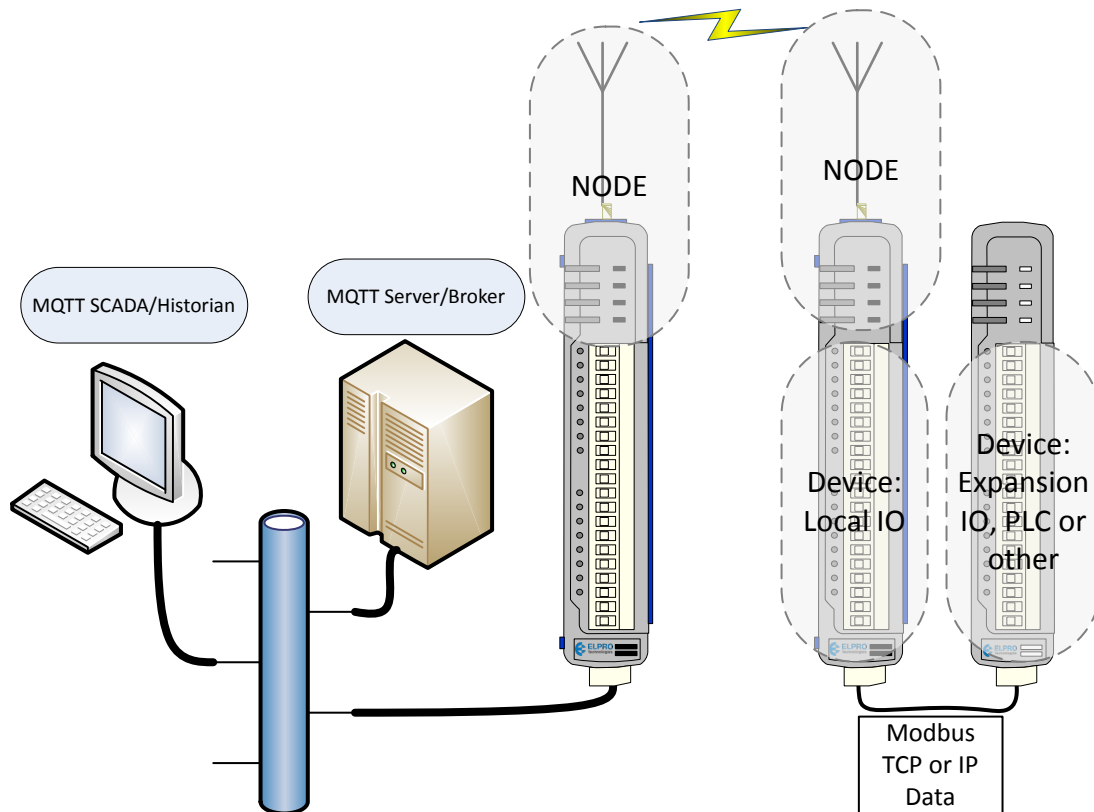
application. Each product allows a mix of input/output connectivity direct to sensor or indirect connections through other devices such as smart sensors, programmable logic controllers and many others.

Table below show an overview of features within the product family.

Product	215U-2	915U-2	415U-E / 415U-2	415U-1	641M-2
Wireless	WiFi 4G Q2'22	900MHz SS	148-960MHz	148-960MHz 4G Q2'22	4G-LTE CAT 4
Inputs / Outputs	8 DIO / 4 PIN 4 AIO 2 AO	8 DIO / 4 PIN 4 AIO 2 AO	8 DIO / 4 PIN 4 AIO 2 AO	4 DIO 2 AIO 3 PIN	2 DI 2 DO
Internal Battery / Solar / Weatherproof				●	
Modbus Gateway	●	●	●	●	●
MQTT SpB	●	● No TLS	●	●	●
SpB Back Fill	●	●	●	●	
IOPlus	●		●		
Dash Board	●		●		
WiFi Hotspot	●				

ELPRO MQTT System Diagram

MQTT SCADA/Historian

MQTT Server/Broker

NODE

NODE

Device: Local IO

Device: Expansion IO, PLC or other

Modbus TCP or IP Data

Industrial reliability and redundancy

Applications in industrial environments are often monitoring or controlling critical plant or equipment. Reliable connectivity is very important and from time to time there can be failures in connectivity or IT infrastructure.

It is during these times that it becomes important for the Wireless Connectivity equipment to be able to report failures, adapt or use redundant paths. ELPRO MQTT Sparkplug gateway includes class leading capabilities to allow field equipment to manage the system during an outage.
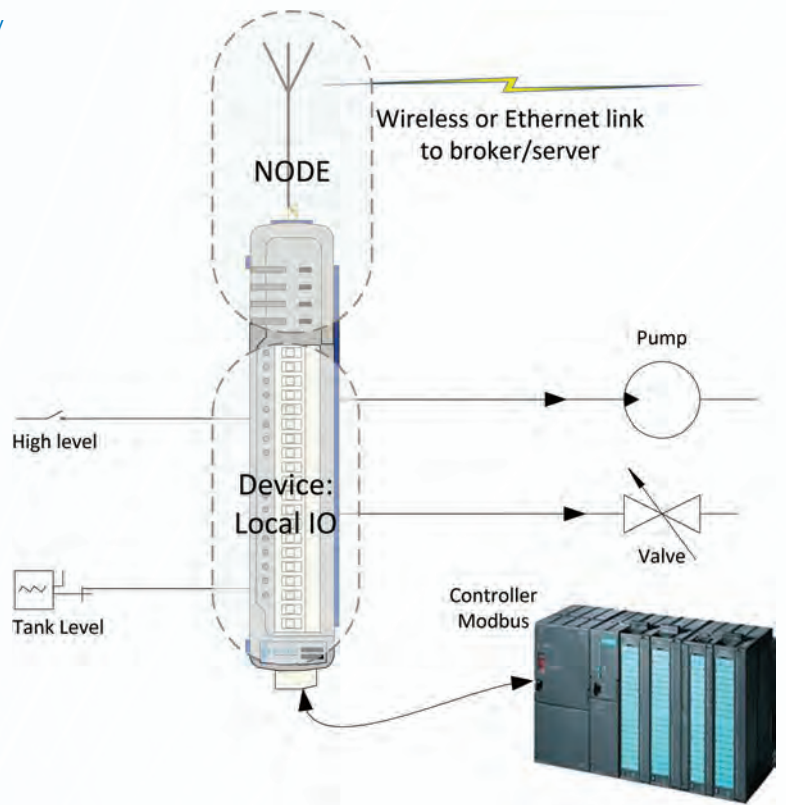
- Distributed gateway architecture allows a more robust distributed communications network removing single points of failure.

- Redundancy in networking with the ability to configure multiple server/brokers redundant options.

- Monitored or controlled field equipment/plant will locally timestamp data in times when communications is lost to the server/broker.

Powerful Input/Output and Gateway Connectivity

There is often a diverse array of input/output and device types and the ELPRO MQTT Sparkplug offers the flexibility to connect with a large variety of I/O and other devices.

Gateway remote sites can be individually configured to separate site functions through the assignment of devices. A device can be the local IO or an external device such as smart sensor, pump controller or PLC. Devices can be configured or mapped through to individual MQTT or Sparkplug namespace/topics or payloads. Raw values can also be scaled if required within the Wireless IO unit.

Sparkplug Store and Forward (backfill)

Protection of data is important in today's industrial processes. The ELPRO MQTT Sparkplug gateway application provides the ability to be able to store MQTT Sparkplug messages during periods when there is loss of communications to the server/broker.
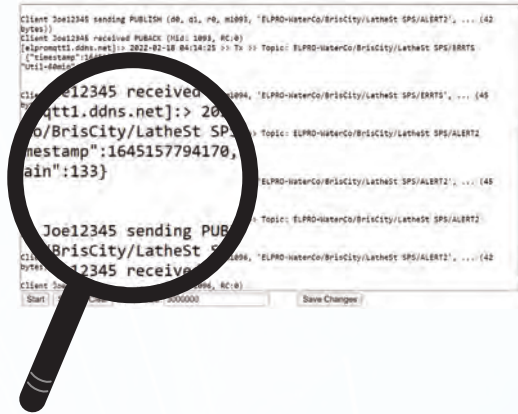
Intelligent queuing (or store and forward) allows the unit to push messages to a queue until the communications is restored and it can intelligently transmit the messages to allow remote SCADA or Historian to backfill databases. When transmitting stored data, the unit will perform a process of concentration which groups up data for common topics into single messages.

Strong Diagnostics allows fast system commissioning and issue resolution

The MQTT Sparkplug gateway provides a wide range of diagnostics providing insight into wireless and server/broker connectivity. These diagnostics are accessible as reported metrics or through web pages either remotely or directly at the unit. Some of the available metrics are:

- Wireless connection: state, bytes transmitted/received, channel utilization, channel error rates
- Server/broker: connectivity, amount of data transferred, MQTT errors, number of queued messages.
- The communications monitor allows direct view of MQTT or Sparkplug communications for deeper dives.

SPECIFICATIONS*

Supported Products	215U-2, 415U-2, 415U-E, 415U-1 (released in 2022), 915U-2
Devices	Up to a maximum of 20 can be configured
Server/Broker	
Connections	Up to a maximum of 4 can be configured
Security	TLS 1.2, Client ID, Username/password
IO configuration	
IO mapping lines	Up to a 1000 configuration lines
IO points	Up to 250 per configuration line
Queuing	
Storage Capacity	Up to a maximum of 10000 messages total for all four brokers
Configuration	Queue delay in seconds
	Connection Keep Alive in Seconds

* Specifications are subject to change.

ORDERING

Wireless Connectivity	Part Number	Description
WiFi IO	EL-215U-2-BGN	215U-2 WIRELESS I/O TELEMETRY, 200mW, 2.4GHz, 802.11b/g/n, Modbus/MQTT/Sparkplug Gateway
Licensed or Unlicensed Fixed Frequency	EL-415U-2	415U-2 WIRELESS I/O, 5mW-10W (model specific), 148-960Mhz, 6.25/12.5/25kHz, 96kbps QAM, Modbus/MQTT/Sparkplug Gateway
Licensed or Unlicensed Fixed Frequency	EL-415U-E	415U-E WIRELESS ETHERNET MODEM, 5mW-10W (model specific), 148-960Mhz, 6.25/12.5/25kHz, 96kbps QAM, Modbus/MQTT/Sparkplug Gateway
Licensed or Unlicensed Fixed Frequency Battery Powered	EL-415U-1	Condor 415U-1 Wireless Battery I/O, 5mW-10W (model specific), 148-960MHz, 6.25/12.5/25kHz, 96kbps QAM, Modbus/MQTT/Sparkplug Gateway
Unlicensed Spread Spectrum	EL-915U-2	915U-2 RADIO TELEMETRY MODULE, 8DIO, 4 AI, 2AO, ETHERNET, 900MHz, 1W, Modbus/MQTT/Sparkplug Gateway
4G-LTE Router Gateway	EL-641M-2	4G/LTE Cellular IoT Modem/Router, 2DI, 2DO, 2 Ethernet, RS232, RS485

HOW TO ORDER

Simply send us an email at sales@elpro.com.au, contact your local distributor, or phone +61 7 3352 8600.

ABOUT ELPRO TECHNOLOGIES

ELPRO Technologies has over 35 years of history in providing secure industrial communications globally. We are an industrial wireless manufacturer with full engineering design, manufacture, supply and support of secure and flexible wireless solutions. Our products allow customers to gain control of their assets and improve their operations. As a global leader

Pericom AG

Waldstr. 7   D 78262 Gailingen   t 07734 48 70 343

Moskau 314B   CH 8262 Ramsen   t 052 740 00 55

www.pericom.biz

info@pericom.biz

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