UNISON ISA100 Wireless Field Gateway Product Brief

PRODUCT OVERVIEW – Centero's UNISON Field Gateway is an ISA100 Wireless (IEC62734) compliant wireless process automation infrastructure device that manages ISA100 Wireless mesh field instrument networks and also includes industrial Wi-Fi Mesh+ backbone connectivity. It is a rugged Field Gateway, certified for deployment in hazardous areas that meets rigorous wireless process automation requirements for mission critical applications. In addition to monitoring, it also includes advanced wireless control features. It hosts a user-friendly monitoring application modeled on the field instrument's life cycle with clear functional segregation requiring minimal training for plant personnel. The integration of both ISA100 Wireless and Wi-Fi MESH+ technologies allow for the deployment of fully redundant, mesh field as well as backbone infrastructure networks.

PRODUCT HIGHLIGHTS

FEATURE	BENEFIT
ISA100 Wireless and Wi-Fi Mesh+ Connectivity	Deploy wireless networks formed of both ISA100 Wireless field and Wi-Fi backhaul self-forming and self-healing mesh networks.
Highly scalable ISA100 Wireless Deployments	Reduce CAPEX expenditures through versatile deployments with network topologies ranging from all-in-one networks to distributed networks composed of up to 20 ISA100 Wireless subnets connected via a Wi-Fi Mesh backbone covering a large geographic area.
UNISON Application	Minimum training for plant personnel due to intuitive and user-friendly UNISON application structured as a suite of "apps and wizards" modeled after field device lifecycle with clear functional segregation.
Monitoring and Control	Native support for ISA100 Wireless monitoring as well as advanced control features.
Extended ISA100 Wireless Connectivity Range	Based on Centero's WISA wireless transceiver with market leading sensitivity of -108 dBm and 122 dB link budget resulting in 1.2 miles (2000 meters) field instrument line-of-sight communication range.
Advanced Diagnostics	Native support for monitoring and trending field instrument diagnostics such as NAMUR diagnostics and advanced field instrument health diagnostics.
Over-the-Air Provisioning	Significantly reduced field instrument deployment duration and complexity through wireless provisioning capability supported by advanced security features.
Support for DD/CF files	Full field instrument capabilities are exposed in the UNISON application and available to users through native support for loading and parsing of DD/CF files.

FEATURE	BENEFIT
Industrial Wi-Fi MESH+ Connectivity	Native support for high-throughput, low-latency Wi-Fi Mesh connectivity and mobility for simultaneous support of telemetry field data, video and audio data streams. Configure the two internal Wi-Fi modules to operate independently in Wi-Fi Mesh, Access Point or Client modes.
Network Profiles	Optimal network profile results in optimized field instrument battery life, data latency, network deployment time and bandwidth allocation.
Mesh Networking Rules	Users can enforce and lock mesh network topologies and routes for highly predictable communications needed in safety and mission critical applications.
Security	Supports two-layered ISA100 Wireless authentication and AES-128 encryption, SSL/HTTPS certificate-based Gateway access and advanced OTA provisioning security mechanisms.
Variety of Models for Deployment in Hazardous or Non-Hazardous Areas	Variety of models (C1D2 and ATEX) certified for deployment in hazardous environments as well low-cost IP67 rated model for deployment in non-hazardous areas.
Multiple Plant Connectivity Interfaces	Monitor, configure and control field instruments via the Gateway from a wide gamut of plant network or cloud-hosted applications such as Distributed Control System, historians or vendor specific client applications.
Reporting Capabilities	Easily assess real-time health of assets deployed by accessing both field instrument and network level reports.
Remote Upgrade Capability	All software and firmware entities can be upgraded remotely via a securely encrypted and authenticated process.
Power Redundancy	Can be DC or Power-over-Ethernet (PoE) powered.

Meet the UNISON Family of Products

Note: All UNISON Gateways include all antennas (ISA100 Wireless and Wi-Fi), and wall mount kit. For additional or higher performance accessories, please consult the Accessories list included in this product brief.

The UNISON ISA100 Wireless product family includes both Field Gateways as well as Field Wireless Access Points. The UNISON Field Wireless Gateway (FWG) and Field Wireless Access Points (FWAP) are certified for operation in C1D2 and ATEX Zone 2 hazardous areas. They are also suitable for deployments where ruggedness and IP67 compliance is required. The entire product line complies with level 4 immunity criteria of the IEC 61000 standard for electrostatic discharge, surge and protection against electrical fast transients.

All UNISON family products can be powered by a wide-range 12-48 VDC power supply and/or PoE power input for power redundancy. Centero offers various models depending on the topology and size of the deployment, wireless connectivity desired and type of area where the equipment will be installed.

MODEL	DESCRIPTION
NIO200IAG – C1D2 or ATEX	Field Wireless Gateway – certified for operation in C1D2 or ATEX ZONE2 rated hazardous locations, includes Wi-Fi MESH+ wireless connectivity.
NIO200IRDK	Field Wireless Gateway – IP67 rated for deployment in harsh locations, does not include Wi-Fi MESH+ wireless connectivity.
NIO200IDR – C1D2 or ATEX	Field Wireless Access Point – certified for operation in C1D2 or ATEX ZONE2 rated hazardous locations, includes Wi-Fi MESH+ wireless connectivity.
NIO200 Privately Labeled	The UNISON family of products can also be privately labeled by interested parties. For additional information please contact Centero.

ISA100 WIRELESS UNISON NETWORK OVERVIEW

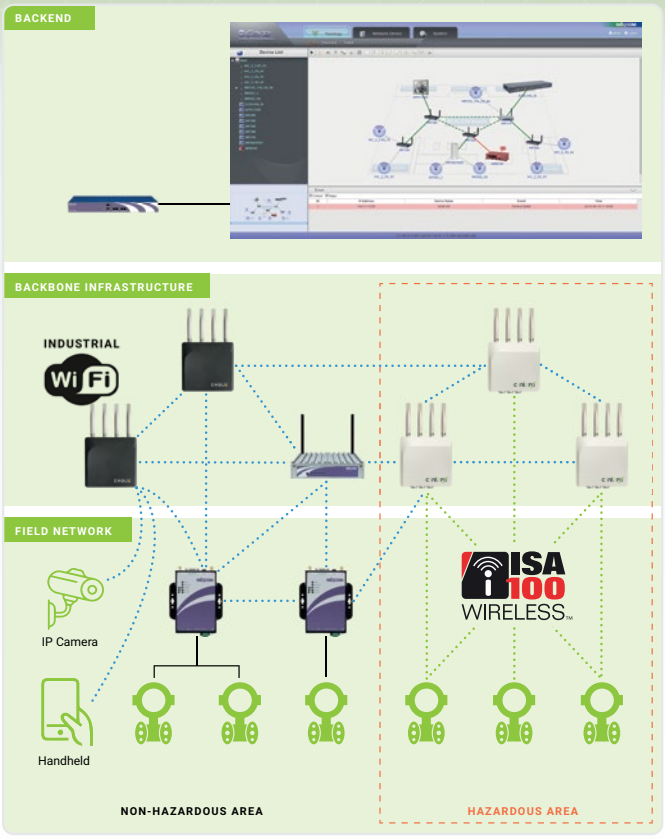
The UNISON ISA100 Wireless product family includes two infrastructure devices that meet the requirements for wireless IoT connectivity for wireless process automation.

The UNISON Field Wireless Gateway is an ISA100 Wireless compliant All-in-One Gateway that fulfills the ISA100 roles of System and Security Manager, Gateway and Backbone Router.

The UNISON Field Wireless Access Point is an ISA100 Wireless Backbone Router.

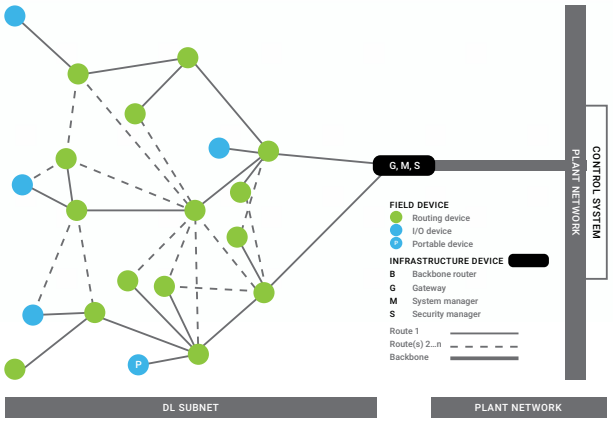
In addition to supporting ISA100 Wireless mesh connectivity, both the Field Gateway and the Field Wireless Access Point also support Wi-Fi Mesh+ connectivity. The two (2) Wi-Fi Mesh modules included in each product are independently configurable to operate in Wi-Fi Mesh, Wi-Fi Access Point of Wi-Fi client modes. Support for Wi-Fi Mesh allows for the deployment of wireless backbone networks that are self-forming and self-healing and offer a reliable and robust wireless mesh backbone for connecting field devices without any wiring constraints.

The UNISON Field Gateway can be deployed in a single subnet ("All-in-One") topology where it forms an ISA100 Wireless mesh network centered on the Gateway. This deployment topology is ideal for simpler deployments where all field instruments are in close proximity of each other and



can form a single wireless mesh subnet. Wi-Fi Mesh+ or Wi-Fi Client connectivity can be used to connect to the control room without the need for expensive wiring.

All-in-One Network Topology

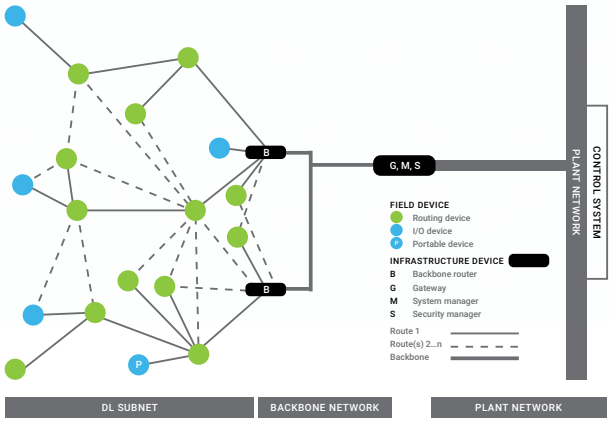


KEY CHARACTERISTICS

- Single subnet – no backbone infrastructure
- Typically scales to <100 field instruments
- Instruments deployed are in close proximity
- Cover smaller deployment areas
- Simplified network deployment

The UNISON Field Gateway can be deployed together with Field Wireless Access Points in multiple subnet ("Distributed") topologies where Wi-Fi Mesh+ connectivity is used to form a wireless backbone infrastructure. The Wi-Fi Mesh+ backbone infrastructure offers increased reliability through redundant communication paths back to the control room.

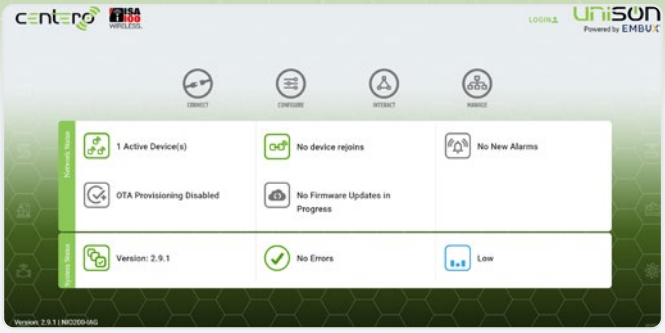
Distributed Network Topology

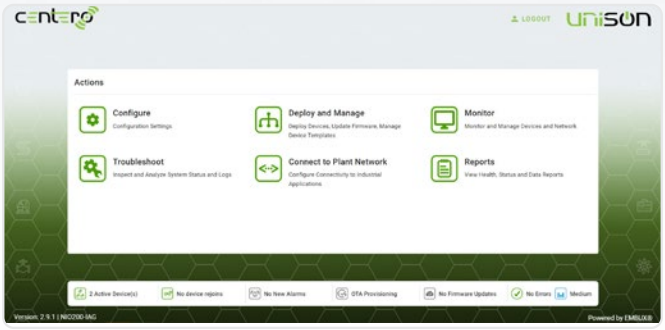


KEY CHARACTERISTICS

- Multiple ISA100 Wireless mesh subnets connected via Wi-Fi Mesh backbone
- Typically scales to hundreds of field instruments
- Instruments are scattered throughout the facility
- Extended geographic coverage (miles/kilometers)
- Plant wide wireless canopy

The UNISON product family is part of Centero's comprehensive industrial wireless IoT infrastructure offering that also includes Wi-Fi Mesh routers that are rated for operation in hazardous areas or in rugged environments as well as Wi-Fi field adapters and Wi-Fi asset management solutions.





UNISON Management and Control Application

The UNISON Field Gateway hosts a feature rich, user friendly and intuitive application. The UNISON Management and Control application is web-based and allows users to easily connect, control, manage, and monitor ISA100 Wireless field instruments engaged in various applications such as process automation monitoring and control, condition monitoring, steam trap and relief valve monitoring, gas detection and safety applications, valve control and monitoring, predictive maintenance, corrosion monitoring and many other. The UNISON application allows users to visualize process data, alerts and alarms as well as manage and configure all aspects of the ISA100 Wireless field instruments and network.

The UNISON application is structured as a suite of "apps and wizards" modeled based on the field instrument's lifecycle with clear functional segregation requiring minimal training for plant personnel. A Network Status banner that is continuously displayed at the bottom of the application gives the user real-time insights into what is currently happing in the ISA100 Wireless network and provides actionable shortcut icons that direct the user to the appropriate page. It displays actionable data such as number of field instruments active, device rejoins, alarms, state of the Over-the-Air provisioning and firmware upgrade processes as well as error notifications.

Configure – Centralized configuration settings for the ISA100 Wireless and Wi-Fi networks, the UNISON Gateway as well as various user preferences. It also includes an interactive Configuration Wizard that provides a guided step-by-step process for configuring the UNISON Gateway, ISA100 Wireless and Wi-Fi networks.

Deploy and Manage - Used during the deployment phase of the ISA100 Wireless network. Allows users to provision field instrument over-the-air, monitor the join process, load DD/CF field instrument files as well as upgrade the field instruments over-the-air.

Monitor – Monitoring of the field instruments during their normal operation. Includes an actionable device list of all ISA100 network devices, process and health diagnostics data as well as various topology views of all assets deployed.

Troubleshoot – Displays all alerts, alarms and events generated by the ISA100 Wireless field instruments. Also includes detailed logging capabilities for various device and network level events, alarms, and alerts.

Connect to Plant Network - Configure and manage Gateway high-side interfaces for connectivity to the plant network.

Reports – View, analyze and export various field instrument and network level reports.

ISA100 Wireless System Management

The UNISON Field Wireless Gateway hosts the ISA100 Wireless system manager entity. The ISA100 Wireless system manager is responsible for managing and ensuring the proper functioning of all ISA100 Wireless field instruments and backbone routers that are part of the ISA100 network. It manages all aspects of these devices throughout their entire lifecycle including the provisioning and joining phases as well as the operational and decommissioning phases.

OVER-THE-AIR AND OOB PROVISIONING

All ISA100 Wireless field devices including field instruments as well as Backbone Routers need to be provided the appropriate security credentials that will allow them to securely join an ISA100 Wireless network. These security credentials are provided during the provisioning phase. The UNISON Gateway supports ISA100 Wireless compliant Over-the-Air (OTA) as well as Out-of-Band (OOB) provisioning.

Over-the-air provisioning is an advanced feature supported by the ISA100 Wireless standard that allows the system and security manager to inject the credentials needed to join the network wirelessly. The UNISON Gateway supports various OTA provisioning flows all augmented by additional, robust security mechanisms that ensure that only authorized devices will have access to these security credentials.

JOIN AND NETWORK FORMATION

The system manager is also responsible for discovery of the field instruments and backbone routers that want to join the ISA100 Wireless network, and jointly with the security manager also responsible for the join process. Once devices have joined, the system manager will configure the field instruments to form mesh subnets that are optimized to ensure the highest level of reliability for the wireless communications as well as prolonging the battery life of these instruments. Reliability of the wireless communications is ensured through path diversity (mesh topologies), frequency diversity (frequency hopping) and time diversity (TDMA) as well as optimal wireless media contention/access. All these mechanisms are managed by the system manager that collects health diagnostics and continuously improves the reliability of communications of field instruments as well the health of the entire mesh network.

OPERATIONAL MANAGEMENT

Once the field instruments have joined the ISA100 Wireless network, the system manager is responsible for managing the day-to-day operation of these instruments according to their intended needs. This includes allocating network resources to meet the instrument's requirements. The UNISON ISA100 Wireless system manager accommodates field instruments that are engaged in both monitoring as well as control applications and use cases.

It will allocate network resources to allow the instruments to periodically publish the process values and health diagnostics based on their requirements. It will also allocate network resources to allow these instruments to have bi-directional communications with the Gateway as well as send alerts/alarms as needed.

OVER-THE-AIR FIRMWARE AND SOFTWARE UPGRADES

The UNISON Gateway boasts upgrade capabilities of all firmware/software entities that are operational in the ISA100 Wireless network. This includes native support for Over-the-Air firmware upgrades for all field instruments, including their wireless communication stacks and vendor specific firmware running on the application processor. It also hosts remote upgrade capabilities for all software and firmware entities running on the backbone routers as well as the Gateway itself via an AES-256 encrypted and authenticated, secure process.

Wireless Networking

ROUTING AND TOPOLOGY RULES

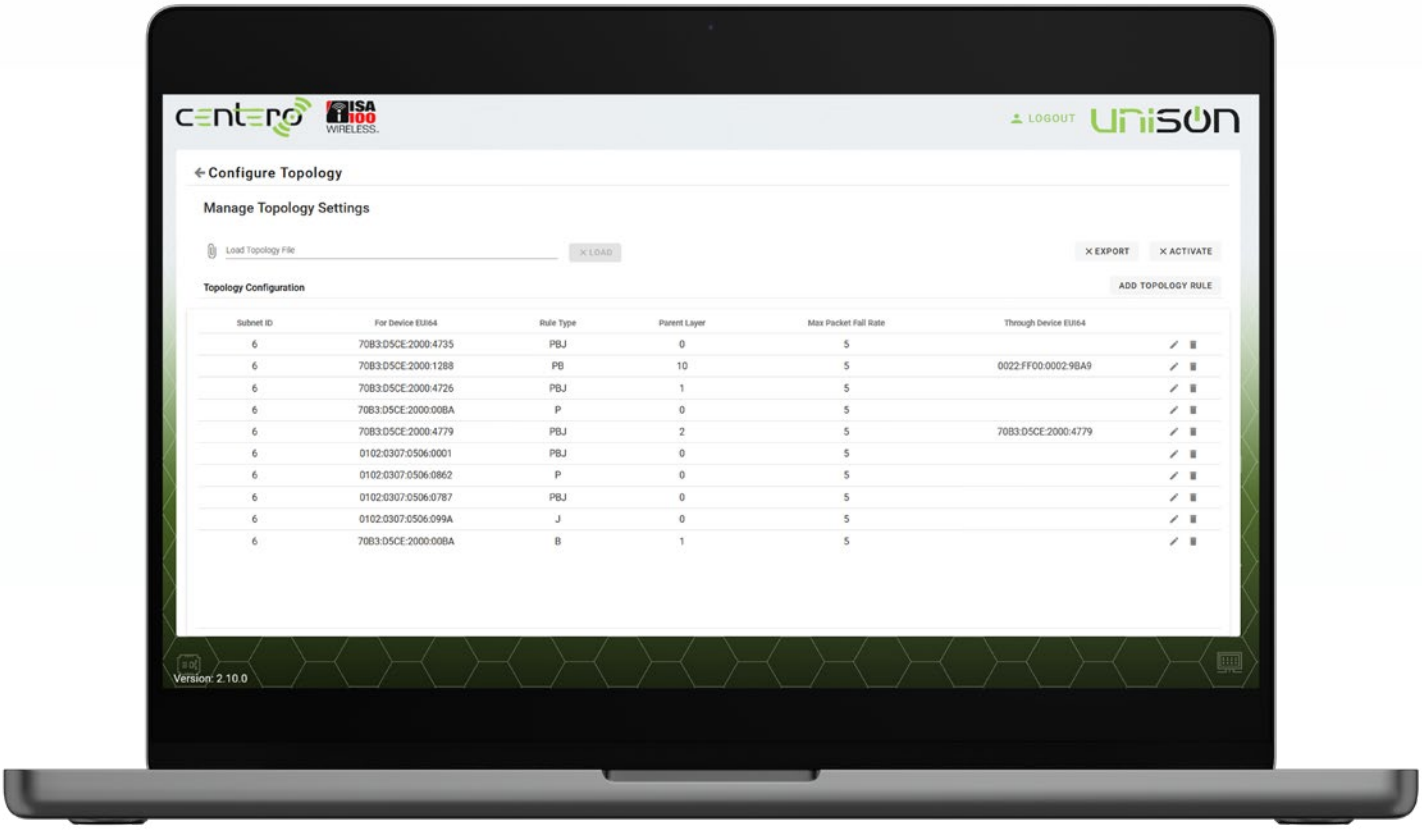
ISA100 Wireless field mesh networks consist of field instruments that route data on behalf of each other in a multi-hop topology. Routing decisions are continuously optimized by the System Manager that resides in the Gateway. Hence, mesh networks form self-healing, dynamic topologies with multiple routing options optimized to minimize hop count and maximize reliability and battery life.

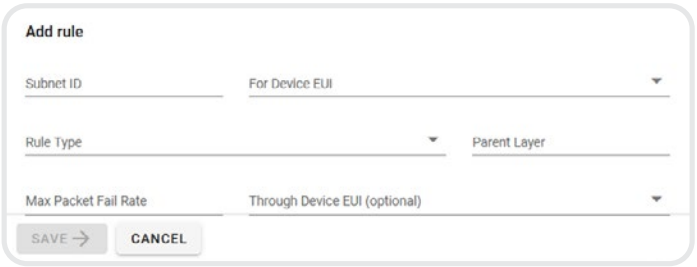
Safety applications have strict requirements for data availability, timeliness, reliability, and latency which can only be met by restricting the inherent dynamic nature of self-healing, mesh topologies.

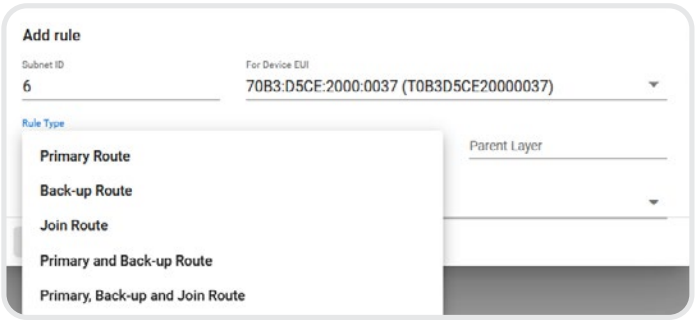
The UNISON Safe Gateway includes a Mesh Topology Configuration console that allows users to enforce or lock in specific, pre-determined mesh routes (source routing) to where reliability and latency are predictable.

These allow users to control the stability of the mesh routes and the overall topology of the mesh network. For example, the settings can force a field instrument to communicate only with the Field Wireless Access Point or a single mesh parent. Users can also restrict the depth of the mesh network (hop count) or enforce rules that ensure that various communication reliability and bandwidth requirements are met.

Multiple rules can be set in parallel depending on the safety use case and the performance targets.



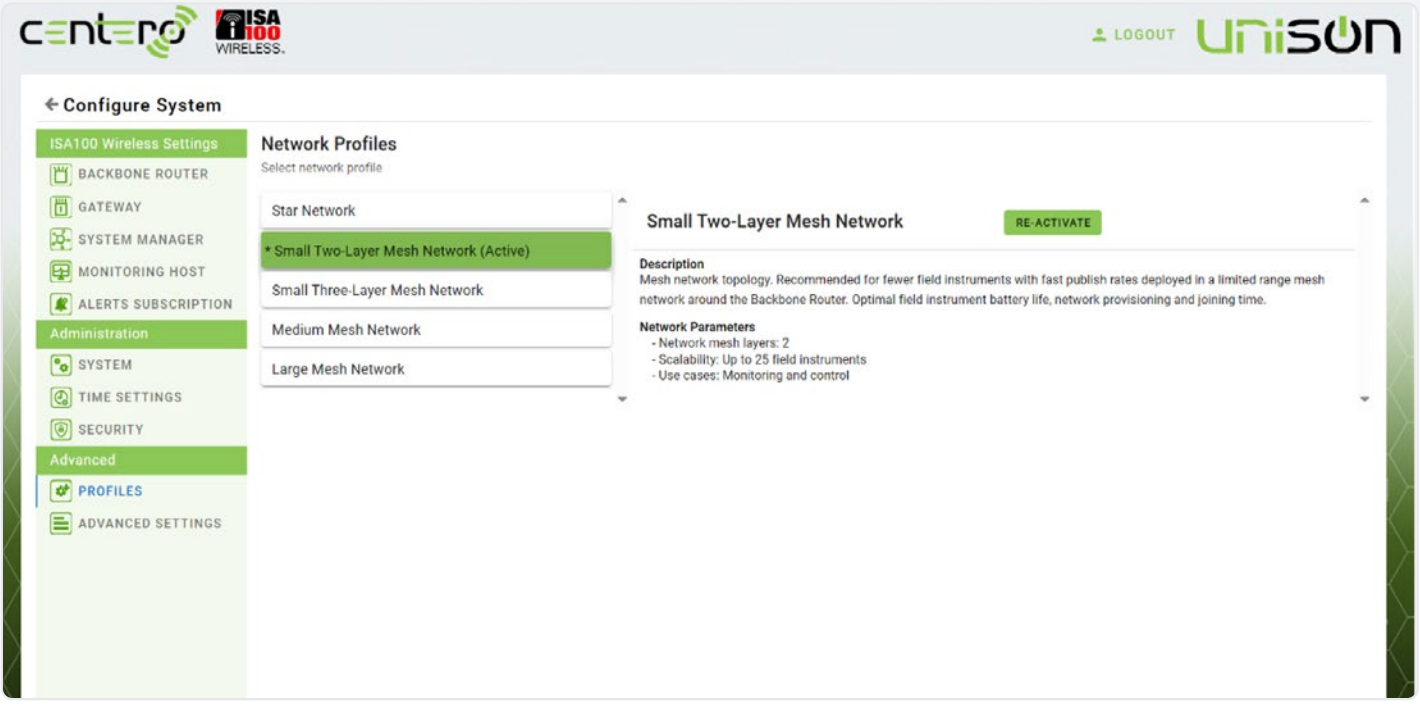




NETWORK PROFILES

The UNISON Gateway supports network profiles that are tailored to networks of various sizes and use cases. It includes five pre-defined network profiles. Users can also define their own network profile that is customized to their needs. Parameters that are customizable include the number of field instruments that will be deployed (scalability), mesh topology and mesh depth (hop count).

Choosing the optimal network profile will result in optimized field instrument battery life, data latency, network deployment time and bandwidth allocation.



Security Features

The UNISON Wireless Field Gateway includes advanced security features and mechanism that ensure data confidentiality, authenticity, integrity, and availability for the ISA100 Wireless as well as Wi-Fi Mesh+ connectivity.

ISA100 WIRELESS SECURITY

The UNISON Gateway hosts the ISA100 Wireless security manager entity that is responsible for managing all security facets of the ISA100 Wireless field devices and network. This includes the join and provisioning process for all ISA100 Wireless field devices and backbone routers. Once the ISA100 Wireless field devices have joined the network the security manager oversees all security aspects during the operational life of the field device.

Network Provisioning Phase

When the OOB provisioning method is used, an OOB provisioning tool is needed to inject the security credentials generated by the security manager into the field instrument. The UNISON Gateway includes various access control mechanisms that only allow accredited field instruments to join the ISA100 Wireless network.

When OTA provisioning is used, the UNISON Gateway will inject the security credentials into the field instrument wirelessly. The OTA provisioning mechanism supported by the UNISON Gateway also includes additional security mechanisms that allow for full control of the process via manual or automatic approval as well as access control lists that ensure that only pre-approved field instrument are allowed to be provisioned.

Network Join Phase

The security manager is also responsible for managing the network join phase. The UNISON Gateway also includes additional access control security features that ensure that only authorized field instruments are allowed to join the network. Following the successful completion of the join phase, the security manager hands out the appropriate cryptographic materials needed for the operational phase of the field instrument.

Operational Phase

ISA100 Wireless networks use a two layered security construct that consists of link-layer (hop-to-hop) and transport layer (end-to-end) security relationships. All data transactions are authenticated and optionally encrypted using AES-128 at the link-layer. Link-layer security (hop-to-hop) secures data transactions within the scope of the ISA100 mesh network and terminates at the Backbone Router. All data transactions are authenticated and encrypted using AES-128 at the transport layer. Transport layer security secures transactions within the scope of the entire ISA100 Wireless network and terminates in the Gateway. The security manager is responsible for security key management, including periodic key renewal and key revocation. Security alerts are also received and managed by the security manager and displayed in the UNISON Gateway.

Gateway Access

Gateway access from the plant network is secured using SSL/HTTPS certificates. An airgap between the ISA100 Wireless network and data accessed from the plant network ensures that the two networks are segregated from a security standpoint. All ISA100 Wireless data transactions terminate in the Gateway, are buffered or stored and are accessible via various standards based high-side protocol such as MODBUS, GSAP/GCI or OPC UA. This adds to the robustness of the security construct by protecting the ISA100 Wireless network from cybersecurity attacks that could potentially be initiated via the plant network.

WI-FI MESH+ SECURITY

All Wi-Fi Mesh+ data transactions are secured using standard based IEEE 802.11 security mechanisms that include both authentication and encryption. The Wi-Fi security scheme is configurable via the UNISON Gateway.

ISA100 Wireless Gateway Features

The ISA100 Wireless Gateway software entity is responsible for the application layer connectivity between the ISA100 Wireless field instruments and the plant network. It is responsible for receiving and sending as well as buffering, caching and storing application payloads. The Gateway also provides plant network connectivity via various standard based high-side interfaces.

The Gateway supports various data flows including published data that is periodically sent by the field instruments (monitoring) or Gateway (control). It also supports bi-directional client/server data exchanges between the field instruments and the Gateway as well as alarms and alerts.

Device Description (DD) and Capability Files (CF)
The UNISON Gateway boasts native support for ISA100 Wireless DD/CF files. DD and CF files contain a full description of the field instrument's capabilities including ISA100 Wireless standard based as well as vendor specific capabilities.

The DD/CF files allow vendors to easily integrate their field instruments with Distributed Control Systems or other software entities running on the plant network. These files also enable and greatly simplify configuration and/or commissioning of the device. The UNISON Gateway allows users to upload DD/CF files that are then automatically associated with the field instruments that operate in the ISA100 Wireless network. The DD/CF files are parsed, and the field instrument's capabilities are exposed in the UNISON application and available to users.

Advanced Control Features
The UNISON Gateway supports a set of features specifically intended for wireless process control use cases and field instruments such as valve positioners, valve controllers, switches, or relays. The UNISON Gateway includes control capabilities that allow it to periodically publish control values to the field instrument. Field instruments can subscribe to these output data channels that are periodically published by the Gateway. These control values can be mapped into the Gateway via the MODBUS high-side interface.

Advanced Diagnostics
The UNISON Gateway boasts native support for various advanced field instrument diagnostics. If the field instrument supports these diagnostics the Gateway will allow users to proactively receive, observe and clear various advanced diagnostics.

DEVICE SELF-DIAGNOSIS NAMUR 107 DIAGNOSTICS
Device diagnostics that are based on the NAMUR NE107 "Self-Monitoring and Diagnosis of Field Devices" standard are natively supported by the UNISON Gateway. These diagnostic flags give a lot of insight into the health of the field instrument including proper hardware and firmware operation. All four categories (types) of diagnostics are supported including Failure, Function Check, Maintenance Required and Out-of-Specification NAMUR diagnostics.

ADVANCED BATTERY LIFE DIAGNOSTICS
The UNISON Gateway supports various advanced real-time battery life diagnostics that allow for accurate and precise battery life prediction. These diagnostics also allow users to troubleshoot battery life issues in real-time and are invaluable when auditing the field instrument's battery life in field deployments.

ADVANCED WIRELESS HEALTH DIAGNOSTICS
Advanced wireless real-time health diagnostics are also exposed in the UNISON Gateway assuming the field instrument reports these diagnostics. Advanced wireless health diagnostics are very useful when doing real-time troubleshooting of wireless mesh connectivity issues in field deployments.

Reports
Advanced reporting capabilities allow users to easily assess the real-time health of assets deployed by accessing both field instrument and network level reports. The Network Health Report gives the user insights into the overall functioning of the entire ISA100 Wireless network. The Devices Health Report provides insights into the health of each ISA100 Wireless device operating in the network. The Battery Life Status Report gives a centralized view of the battery life status of all operational ISA100 Wireless field instruments. The Device Readings Report collects and lists the process values and parameters reported by all operational ISA100 Wireless field instruments.

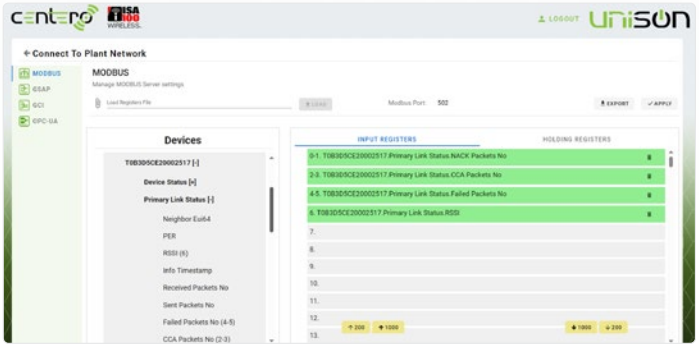
Plant Network Connectivity Interfaces
The UNISON Gateway provides connectivity to the plant network through various standards-based interfaces.

ISA100 Wireless Gateway Features

MODBUS TCP

The UNISON Gateway hosts a MODBUS TCP server that allows software entities running on the plant network to extract data reported by the ISA100 Wireless field instruments. Any of the data parameters reported by the field devices can be mapped into MODBUS registers including process data as well as health and diagnostics data. Gateway and Wireless Access Point diagnostics can also be mapped into MODBUS registers. It also supports control use cases by allowing users to map process values into holding registers that are then periodically published to the field instruments.

Mapping parameters into the MODBUS TCP server is done via a user-friendly, drag-and-drop interface.



GCI/GSAP

The GCI (Gateway General Client Interface) is a standard based, feature rich, high-side interface specifically developed for ISA100 Wireless field instruments and networks. The General Client Interface provides an open and interoperable multi-vendor interface between a GCI server residing on the UNISON Gateway and a GCI client running on the plant network. It is compliant to the Wireless Compliance Institute (WCI) standard specification and promotes easier integration of information from the ISA100 Wireless field instruments with higher level monitoring and control applications, enterprise wide as well as vendor specific applications.

It allows plant network client applications to configure field instruments and receive/send process data as well as health diagnostics to/from the ISA100 Wireless field instruments. The ISA100 protocol also supports tunneling of other protocols at the application layer. Tunneling and encapsulation of other standard based or proprietary application layer protocols is supported by the GCI interface.

The GSAP (Gateway Service Access Point) is the legacy precursor of the GCI interface. It is supported by the UNISON Gateway for legacy connectivity to client application that predate the GCI specification and interface.

OPC UA

OPC is the interoperability standard for the secure and reliable exchange of data and information in the industrial automation space and in other industries. It is platform independent and ensures the seamless flow of information among devices from multiple vendors. OPC UA is a platform independent, service-oriented, secure, and extensible framework that allows for information modelling for various protocols and technologies.

The UNISON Gateway hosts an OPC UA server that is compliant to the ISA100 Wireless information model that was standardized jointly by the OPC Foundation and the WCI (Wireless Compliance Institute). It includes comprehensive information models for ISA100 Wireless field instruments, backbone routers and networks. The ISA100 Wireless information models allows OPC UA client applications to extract rich data sets from ISA100 Wireless field instruments, backbone routers and networks that cover all functional facets of these devices.

TARGET VERTICAL MARKETS AND APPLICATIONS

The UNISON ISA100 Wireless Field Gateway can be deployed in any Industrial IoT project, large or small.

Verticals

- **Oil and Gas**
- **Petrochemical**
- **Paper and Pulp**
- **Mining**
- **Factory Automation**
- **Power Generation**
- **Power Distribution**

Applications and Use Cases

- **Process Automation**
- **Temperature and Pressure Monitoring**
- **Condition Monitoring**
- **Valve Positioning and Control**
- **Steam Trap and Relief Valve Monitoring**
- **Predictive Maintenance**
- **Gas Monitoring**
- **Safety applications**
- **Corrosion Monitoring**
- **Tank Level Monitoring**

Specifications

ISA100 WIRELESS SPECIFICATIONS		
Wireless Communication	Standard: IEEE 802.15.4 Data Rate: 250 kbps Modulation: Q-PSK Spread Spectrum: DSSS RF Output Power: Max +14 dBm Sensitivity: -108 dBm Link budget: 122 dB Communication Range: 1.2 miles (2000 meters LoS) Connector: N type	
Scalability	200 ISA100 Wireless field instruments Field Wireless Access Points (subnets): up to 20 with up to 100 field instruments per subnet	
Mesh Network Depth	Configurable, up to 3 hops	
Publish Report Rates	Configurable: 0.5s, 1s, 2s, 5s, 10s, 30s, 1m, 5m, 15m, 30m and 60m	
Scalability for Publish Rates Supported	Publish Rate	Number of Field Instruments
	0.5 seconds	25 field instruments[1,2]
	1 second	50 field instruments[1,2]
	2 seconds	100 field instruments
	5 seconds	150 field instruments
	10s, 15s, 20s, 1m, 30 m, 60 m	200 field instruments
	[1] Client/server (bidirectional) communication rate at max 7 seconds for each field instrument	
	[2] Number of concurrent wireless firmware upgrades - 3 field instruments	
Plant Network Interfaces	MODBUS TCP, GCI/GSAP, OPC UA	

WI-FI WIRELESS SPECIFICATIONS	
Wi-Fi Mesh+ Radios	Two (2) modules – independently configurable
Modes of Operation	Mesh, Access Point, Client
Wireless Radio	IEEE802.11a/n x 2, MIMO 2 x 2
Frequency Bands	USA: 5.15~5.25 GHz, 5.725~5.825 GHz Europe: 5.47~5.725 GHz
RF Output Power: IEEE 802.11a	802.11a - 28 dBm with 2 antennas 802.11n (HT20) - 27 dBm with 2 antennas 802.11n (HT40) - 27 dBm with 2 antennas
Security (AP Mode)	WEP (64/128/152) WAP/WPA2 mixed WPA2-personal (PSK+CCMP/AES) Hidden ESSID support MAC address filtering (MAC ACL) Station isolation

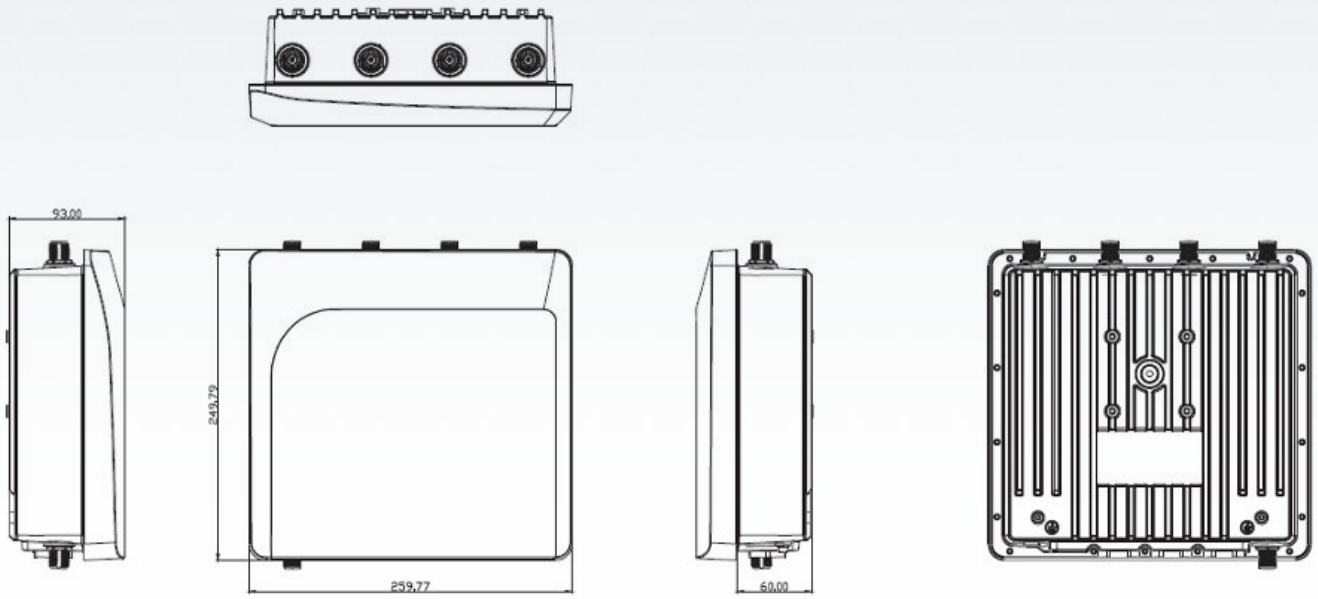
Specifications

CERTIFICATIONS AND COMPLIANCE	
Hazardous Certifications	UL: Class I, Division 2, Groups A, B, C, D, T4 ATEX: Zone 2; II 3G Ex nA IIC T4 Gc
Safety Compliance	UL 60950-1; 60950-22 IEC 60950, 2nd edition EN 60950, 2nd edition IEC 61000-4-2 level 4 ESD immunity IEC 61000-4-5 level 4 AC surge immunity IEC 61000-4-4 level 4 electrical fast transient burst immunity
Wireless Certifications	FCC Part 15.247, 15.407 EN 300 328 EN 301 893
EMI and Immunity	EN 301 489-1, -17 FCC Part 15.107, 15.109

HARDWARE SPECIFICATIONS	
Weight	2.50 kg (5.5 lbs)
Dimensions	260 x 250 x 93 mm (10.23 x 9.84 X 3.66 in)
Power	12~48 VDC Power-over-Ethernet (standard PoE 802.3at) wall/pole mountable
Ethernet	WAN: 10/100/1000 Base-TX MDI/MDIX LAN: 10/100/1000 Base-TX MDI/MDIX Ethernet compliant with: IEEE802.3/802.3u Hardware based 10/100/1000, full/half, flow control auto negotiation
Buttons and Indicators	Push buttons: 1 x reset/restore to default LEDs: 2 x Ethernet 2 x Wi Fi radio 1 x ISA100 Wireless radio 1 x Power/Status
Mounting Methods	Wall and pole
Environment Protection	Operating temperature: -40~75°C (altitude: up to 3000m) Storage temperature: -40~80°C Humidity: 0% to 95% maximum (non-condensing) Vibration: random 0.3g

WARRANTY AND LICENSING	
Warranty	2 years
Licensing	No recurring license fees

Dimensional Drawings



Units: mm

Ordering Information

Model	Part Number	Description
UNISON NIO200IAG	NIO200IAG-C1D2	UNISON ISA100 Wireless Field Gateway, Wi-Fi Mesh+ connectivity, UL C1D2 certified
UNISON NIO200IAG	NIO200IAG-ATEX	UNISON ISA100 Wireless Field Gateway, Wi-Fi Mesh+ connectivity, ATEX certified
UNISON NIO200IRDK	NIO200IRDK	UNISON ISA100 Wireless Field Gateway, No Wi-Fi

Related Products

Model	Part Number	Description
UNISON NIO200IDR	NIO200IDR-C1D2	UNISON ISA100 Wireless Field Access Point, Wi-Fi Mesh+ connectivity, UL C1D2 certified
UNISON NIO200IDR	NIO200IDR-ATEX	UNISON ISA100 Wireless Field Access Point, Wi-Fi Mesh+ connectivity, ATEX certified
ISA100RDK Essential	ISA100RDKES	ISA100 Wireless Rapid Development Kit – Essential Source Code Package
ISA100RDK Enterprise	ISA100RDKEN	ISA100 Wireless Rapid Development Kit – Enterprise Source Code Package
NIO200WMR	NIO200WMR	Industrial Wi-Fi Mesh Router C1D2/ATEX certified
IW610	IWF610	Rugged IP67 Wi-Fi Mesh Router
IWF310	IWF310	Rugged IP40 Wi-Fi Mesh Router
NIO51	NIO51	MODBUS/Serial/Ethernet to Wi-Fi Mesh Field Adapter and Router
nCare IWF800	IWF800	Industrial Wi-Fi Asset Manager

Accessories

Part Number	Description
603ANT0008X01	Omnidirectional 2.4 GHz, 9 dBi gain antenna
603ANT0014X00	High-gain, omnidirectional dual band 2.4/5 GHz with 4.5/7.0 dBi gain ***(antennas included with the UNISON Gateway)***
603ANT0011X01	High-gain, omnidirectional 5.0 GHz, 10 dBi gain antenna (Wi-Fi antenna)
603ANT0013X01	Extreme-gain, directional, single band 5GHz MIMO panel, 23 dBm gain antenna (Wi-Fi antenna)
603ANT0009X00	High-gain, Directional MIMO Panel 2300~2700 MHz, 17 dBi gain antenna
IWF310	Rugged IP40 Wi-Fi Mesh Router
PI100GA	Power-over-Ethernet Injector, IEEE 802.3at/af,
5040210012X00	Wall mount kit – ***included with the UNISON Gateway***
5040410110X00	Pole mount kit
7A00000066X00	RF lighting arrester N-MALE to N-FEMALE

Centero is a provider of wireless technologies, products and services for the Internet of Things.

Centero is a privately owned technology company headquartered in Atlanta, Georgia. We are the forefront of the Industrial Internet of Things revolution which is transforming a wide array of vertical markets. Centero offers standards-based products and solutions for wireless Industrial IoT connectivity.

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