

WISA ISA100 Wireless Module

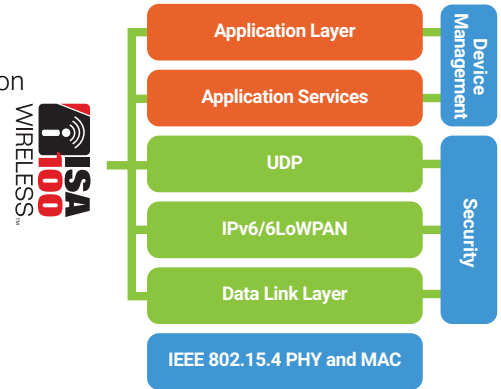
PRODUCT OVERVIEW – Empower your IoT connected field instrument with ISA100 Wireless compliant mesh connectivity and security. The WISA OEM wireless module is a key component of Centero’s standards compliant offering for the Industrial Internet of Things. It is designed for swift hardware and firmware integration within products without the need of an in-depth understanding of novel and complex IoT technologies. The WISA wireless module is also offered in ISA100/WirelessHART dual-boot mode.

KEY FEATURES AND BENEFITS

FEATURE	BENEFIT
ISA100 Wireless certified communication stack	Guaranteed interoperability with other vendor’s field instruments and Gateways
Router and I/O device roles	Dynamic device types and roles allow for optimal network topologies
Designed for intrinsic safe applications	Can be integrated in field instruments deployed in hazardous and intrinsically safe areas
Interoperability with other vendor’s Gateways	Extensively tested for interoperability with Honeywell’s WDM, Yokogawa’s YFGW410 and Centero’s NIO200IAG, NIO200IDR+NIO200IWR Gateways
Based on NXP’s third-generation KW21D512 SiP	Complete, low power, 2.4 GHz radio frequency transceiver, 32-bit ARM core based MCU, hardware acceleration for both the IEEE 802.15.4 MAC and AES security
On-board regulator provides power for external circuitry	No need for additional external voltage regulation results in low product cost and size
Configurable and accessible via feature rich API	Swift integration within product with minimal learning curve for complex IoT technologies
Optimized for battery and harvested powered operation	Prolonged product battery life
Market leading sensitivity of -108 dBm	Increased link budget results in extended indoor/outdoor range
Ready for automated assembly	Offered in JEDEC compliant trays for automated pick-n-place assembly
Multiple reception modes	Dynamically adaptive to range requirements
Miniaturized surface mount form factor	Suitable for real estate constrained products
Adjustable RF output power	Minimal power consumption adaptive to needs
On-chip OTA and serial firmware upgrades	No need for external memory results in low product cost and size

CONNECTIVITY AND NETWORKING

- ISA100 Wireless certified communication stack
- Architected and designed for low-latency monitoring and control automation
- Support for monitoring and control loops
- Mesh routing ensures path redundancy and optimal data reliability
- TDMA based wireless communication scheduling with guaranteed latency
- Frequency hopping ensures robustness to interference
- Includes native 6LoWPAN/IPv6 connectivity and addressing
- ISA100 Wireless compliant application layer data modeling
- Support for legacy application layer tunneling such as MODBUS, HART or Foundation Fieldbus
- Two-layered MAC/Transport security construct
 - MAC: IEEE 802.15.4 based security including AES-128 encryption and authentication
 - Transport: ISA100 authentication and AES-128 encryption
- Dynamic device types and roles allow for optimal network topologies
 - Router
 - I/O (end) device
 - Router and I/O (end) device



TARGET VERTICAL MARKETS AND APPLICATIONS

The WISA module can be deployed in any Industrial IoT project, large or small. The ISA100 Wireless compliant and certified stack along with the size makes the WISA module a viable solution for your connected field instruments and products.

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| • Process Automation | • Safety – Gas Monitoring | • Factory Automation |
| • Oil and Gas | • Predictive Maintenance | • Power Distribution Automation |
| • Condition Monitoring | • Petrochemical | |

PARAMETERS AND PERFORMANCE METRICS

GENERAL	
Chipset	NXP KW21D512 featuring an advanced hardware crypto engine
Memory	512 KB of Flash, 64 KB of RAM
On-board RF FEM (Front-end-module)	Adjustable output power and multiple LNA based reception modes
RX Modes	Bypass, Low-gain, High-gain
Serial Data Interfaces	UARTs (2), SPI, I2C
GPIOs	5 (dedicated)
ADC Inputs	3 inputs

RADIO	
Operating Frequency	ISM 2400 – 2475 MHz
Transmit Power	-10 to +14 dBm (programmable)
Sensitivity (1% PER)	-108 dBm
RX Modes	Bypass, Low-gain, High-gain
Data Rate	250 Kbps (IEEE 802.15.4)
RF Link Budget	122 dB
Indoor/Urban Range	1000 ft (300 m)
Outdoor Range (Line of Sight)	1.2 miles (2000 m)
Antenna Port	MMCX or external antenna port (50 Ω)

ELECTRICAL	
Supply Voltage	2.9 – 4.2 V
Regulated Voltage Output	3.0 V (max 25 mA) if VCC > 3.2 V, VCC-200mV non-reg if VCC <3.2 V
Transmit Current	37 mA @ 0dBm, 57 mA @ +14 dBm
Receive Current	18 mA (Bypass), 22 mA (Low Gain), 28 mA (High Gain)
Sleep Current	2 μ A

ENVIRONMENTAL AND MECHANICAL	
Operating Temperature	-40 - +85 °C
Humidity	90% (non-condensing)
Form Factor	Surface mount - castellated
Dimensions	1.0 x 0.8 x 0.2 inches (20.5 x 25.5 x 5.25 mm)

CERTIFICATIONS	
US and Canada	Yes
European Union	Yes
Japan	Yes

RELATED PRODUCTS	
Product	Part Number
WISA X-Mikrobus Adapter	CE-MKRBX-01-IS2
ISA100 Wireless Integration Kit	CE-ISA100-RDK
NIO200 ISA100 All-in-One Gateway	NIO200IAG
NIO200 ISA100 Distributed Gateway	NIO200IDG
NIO200 ISA100 Backbone Router	NIO200IDR
ISA100 Wireless Compliance Kits	STK and DTK

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 end-to-end, standards-based communication platforms that are swiftly integrated into novel or existing products.



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