

## WiHART Wireless Module

**PRODUCT OVERVIEW** – Empower your industrial IoT connected field instrument with WirelessHART compliant mesh connectivity and security. The WiHART OEM wireless module is a key component of Centro’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 communication stack and reference field instrument implementation are compliant to the latest HART 7.6 specification. The WiHART certifiable field instrument implementation includes all the components needed to develop and certify a WirelessHART instrument, including all mandatory Universal, Common Practice and Wireless commands and an FSK HART maintenance port. The WiHART wireless module is also offered in WirelessHART/ISA100 dual-boot mode.

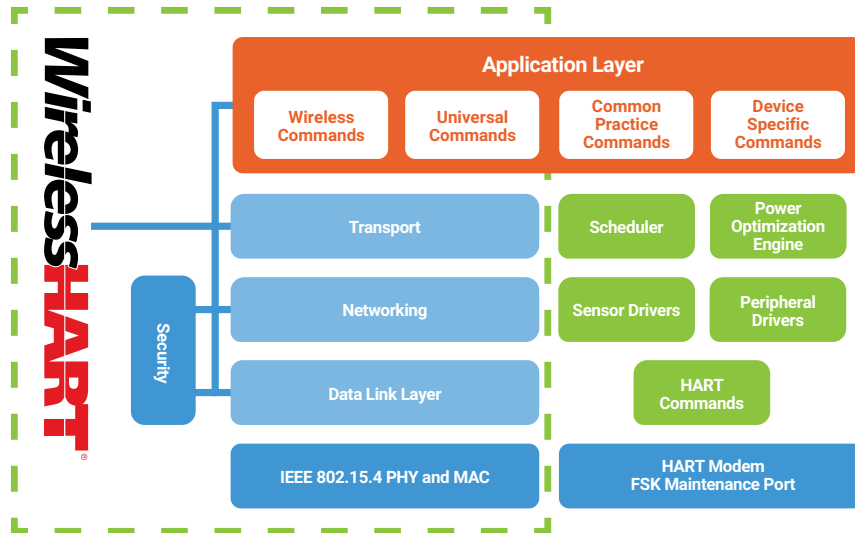
### KEY FEATURES AND BENEFITS

FEATURE	BENEFIT
WirelessHART (Fieldcomm) certifiable instrument implementation	Guaranteed interoperability with other vendor’s WirelessHART compliant field instruments and Gateways
HART/WirelessHART Compliance	Compliant to the HART 7.6 specifications
Interoperability with other vendor’s Gateways	Extensively tested for interoperability with Emerson’s 1420, Pepperl+Fuchs WHA-GW-F2D2-0-A*-Z2-ETH and Centro’s NIO200HAG Gateways
Designed for intrinsic safe applications	Can be integrated in field instruments deployed in hazardous and intrinsically safe areas
Market leading sensitivity of -108 dBm	Increased link budget results in extended indoor/outdoor range
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
Multiple reception modes	Dynamically adaptive to range requirements
Ready for automated assembly	Offered in JEDEC compliant trays for automated pick-n-place assembly
Miniaturized surface mount form factor	Suitable for real estate constrained products
Adjustable RF output power	Minimal power consumption adaptive to needs

## CONNECTIVITY AND NETWORKING

- WirelessHART (Fieldcomm) certifiable field instrument implementation
- Extensively tested for interoperability with the Emerson 1420, P+F WHA-GW-F2D2x and Centero NIO200IAG Gateways
- Includes full set of mandatory Universal, Common Practice and Wireless commands
- Implementation includes a fully compliant HART modem and FSK maintenance port as well as sensor and peripheral drivers and power an optimization engine
- Market leading average current draw results in typical field instrument battery life of 3-7 years
- Supports additional product differentiators such as low power optimizations and enhanced discovery process
- 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
- Two-layered MAC/Network security construct

### WiHART Field Instrument Reference Implementation



## TARGET VERTICAL MARKETS AND APPLICATIONS

The WiHART module can be deployed in any Industrial IoT project, large or small. The WirelessHART compliant communication and application stack along with the wireless performance make the WiHART module the market leading solution for connected field instruments and products.

- Process Automation
- Oil and Gas
- Condition Monitoring
- Safety – Gas Monitoring
- Predictive Maintenance
- Petrochemical
- Factory Automation

## 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) – 10 dBm max for WiHART
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 µA

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
WiHART Integration Kit	CE-WiHART-DEV1
NIO200 WirelessHART All-in-One Gateway	NIO200HAG

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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