WiHaRT WirelessHART™ Development Kit Product Brief

PRODUCT OVERVIEW – The WiHaRT development kit includes everything needed to develop a WirelessHART™ (IEC 62591) certified field instrument with minimal development effort. It is a comprehensive, user friendly, end-to-end development platform that includes pre-configured and fully integrated hardware, firmware and software components. It also includes training materials and step-by-step instructions needed to develop a WirelessHART™ connected field instrument. The WirelessHART™ (IEC 62591) industrial IoT standard provides a robust wireless protocol for the full range of process measurement, control, and asset management applications. Based on the proven and familiar HART™ protocol, it enables users to quickly and easily gain the benefits of wireless technology while maintaining compatibility with existing devices, tools, and systems.

PRODUCT HIGHLIGHTS

- Includes a WirelessHART™ (Fieldcomm) certifiable full instrument reference implementation

- Develop field instrument with minimal effort using sample application processor source code

- Application processor code includes full set of mandatory Universal, Common Practice and Wireless commands

- Includes IP67 rugged WirelessHART Gateway

- Gateway includes feature rich web-based Network Operation and Management System

- User friendly SPiN development board includes OLED display and a large variety of sensors

- Connect external processors, sensors or actuators via Arduino and Freedom form factor connector

- Implementation includes a fully compliant HART modem and FSK maintenance port as well as sensor and peripheral drivers and power optimization engine

Development Kit Components
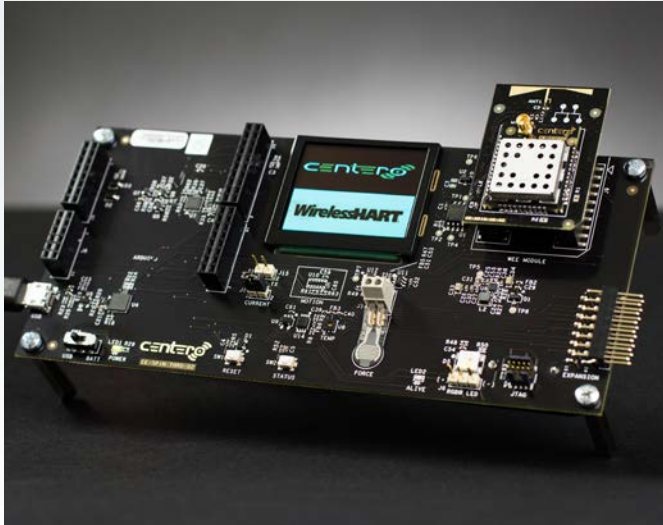
SPiN DEVELOPMENT BOARD

WirelessHART™ compliant field instrument implementation

Includes WiHaRT wireless modules that run WirelessHART™ communication stack

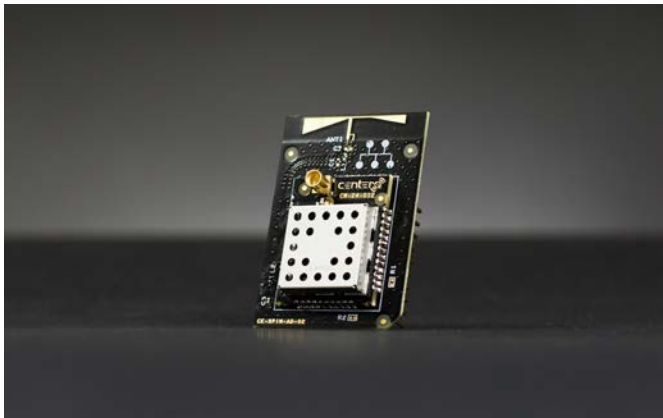On-board sensors: temperature, humidity, LIDAR range and motion, tactile/force and RGB LED

Connect other sensors, processors or actuators via Arduino or Freedom form factor connector

Graphic OLED display for local notifications

USB, DC or battery powered

Quantity included: 2

Add more SPiN development boards via expansion pack

X-MIKROBUS WiHaRT ADAPTER

Hosts WiHaRT surface mountable wireless module

Compliant to Mikrobus form factor

Exposes all WiHaRT module communication ports and pins

Suitable for inclusion in designs where module needs to be easily removed or replaced

Hosts high-performance PCB Bow-tie antenna

Quantity included: 2

Add more X-Mikrobus adapters via expansion pack

INTREPID FIELD GATEWAY

WirelessHART™ compliant Network/Security Manager, Gateway and Access Point

Rugged IP67 WirelessHART field gateway

Includes high-throughput WiFi Mesh/Access Point connectivity

Supports data traffic with strict latency requirements
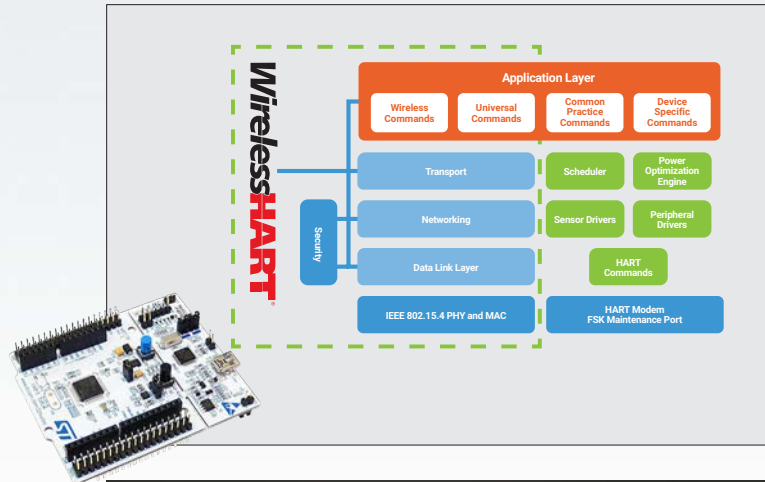
Can connect as client to existing WiFi infrastructure

Hosts intuitive web-based interface for:

– Process data monitoring/control

– Device management and configuration

– Network topology and health status

– Over-the-air upgrades of all platform components

MODBUS server and intuitive process value mapping

Quantity included: 1

Development Kit Components

APPLICATION PROCESSOR BOARD & SOURCE CODE

Application processor source code includes full WirelessHART™ compliant instrument implementation

Source code includes full set of mandatory Universal, Common Practice and Wireless commands

Low-power application layer code suitable for battery powered field instruments

Also includes HART FSK maintenance port, sensor and peripheral drivers and power optimization engine

Develop your own field instrument firmware using the IDE of your choice
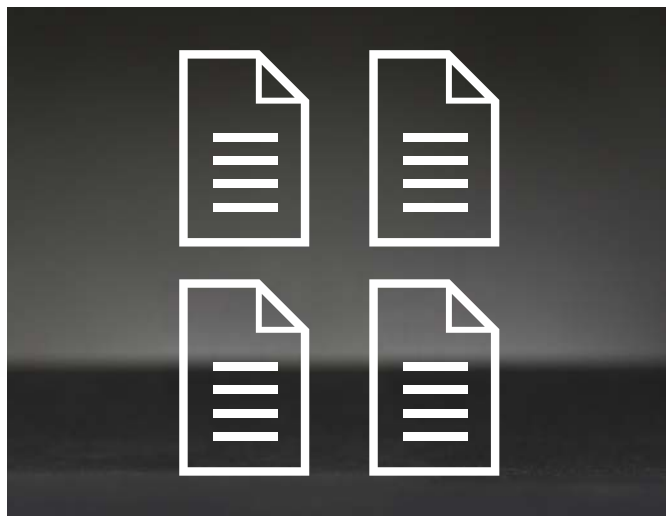
ENGINEERING UTILITY SOFTWARE

Feature rich Engineering Utility Software can be installaed on any PC

Communicates with the SPiN board via USB/serial port

Allows user to configure the WirelessHART™ communication stack

Full configuration of the process values published

Quantity included: 1

DOCUMENTATION PACKAGE

Product Documentation

– WiHaRT Kit User Guide

– INTREPID Gateway User Guide

– WiHaRT Radio Module - Hardware Integration Manual

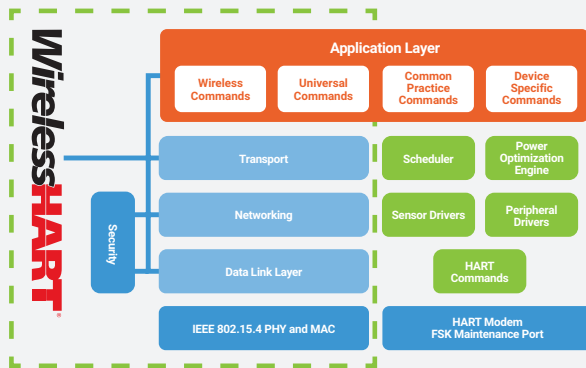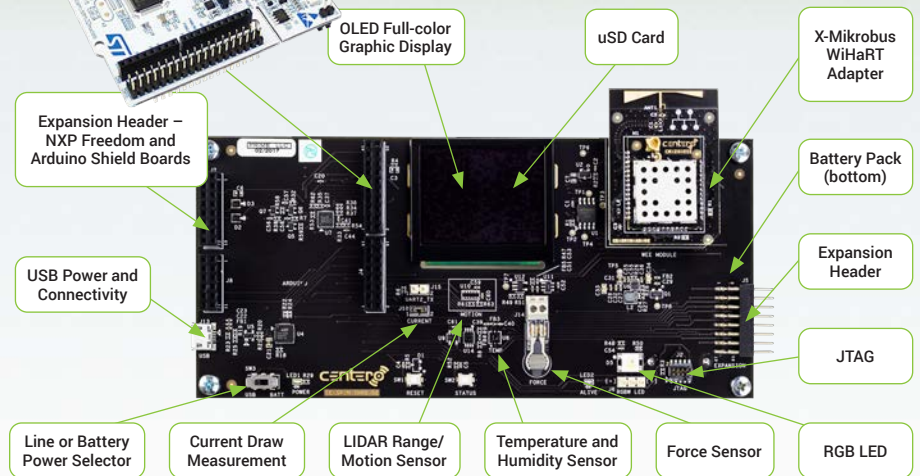– EASY API Manual

– Engineering Utility Software - User Guide

– WiHaRT Configuration and Firmware Upgrade Process

Training Materials

– Developing WirelessHART™ Compliant Products - Training Course

SPiN DEVELOPMENT BOARD

The SPiN development board allows users to evaluate and communicate with the WiHaRT wireless module that runs a WirelessHART™ compliant communication stack. It also includes a color OLED display and a wide variety of sensors that offer a unique out-of-the-box user experience. Users can easily connect and integrate external sensors, actuators or processors via a simple, feature-rich API to swiftly develop a WirelessHART™compliant field instrument. The sample application processor firmware is offered as a source code project and allows users to quickly develop their own WirelessHART™ compliant field instrument.

OLED Full-color Graphic Display
uSD Card
X-Mikrobus WiHaRT Adapter
Expansion Header – NXP Freedom and Arduino Shield Boards
Battery Pack (bottom)
Expansion Header
USB Power and Connectivity
JTAG
Line or Battery Power Selector
Current Draw Measurement
LIDAR Range/ Motion Sensor
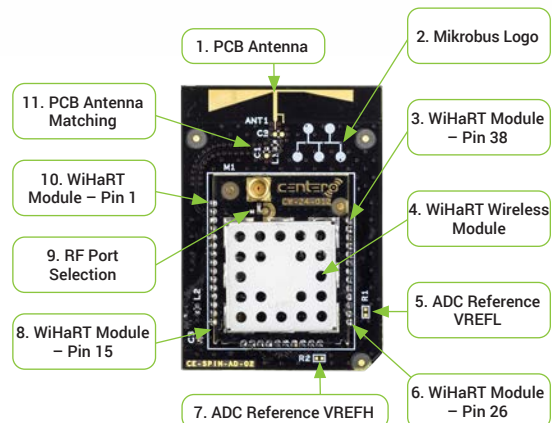Temperature and Humidity Sensor
Force Sensor
RGB LED

WIRELESSHART™ APPLICATION PROCESSOR SOURCE CODE

The development kit includes a fully certifiable WirelessHART™ field instrument implementation. This is offered as a source code package for an application processor that includes the following components needed to develop a certified field instrument:

- Full set of mandatory Universal, Common Practice and Wireless commands
- Application processor scheduler, power optimization engine and sensor/peripheral drivers
- Fully compliant HART FSK maintenance port driver

WirelessHART

Application Layer
Wireless Commands | Universal Commands | Common Practice Commands | Device Specific Commands
Transport | Scheduler | Power Optimization Engine
Networking | Sensor Drivers | Peripheral Drivers
Security
Data Link Layer | HART Commands
IEEE 802.15.4 PHY and MAC | HART Modem FSK Maintenance Port

THE WiHaRT X-MIKROBUS ADAPTER

The WiHaRT X-Mikrobus board is an adapter board that allows users to incorporate the WiHaRT wireless module in their products using headers. This is for products where users require that the WiHaRT module can easily be removed or replaced since the WiHaRT module is a surface mount module. It hosts a high-performance PCB Bow-tie antenna. The RF port can be routed to either the PCB Bow-tie antenna or to the on-module MMCX connector (external antenna).

1. PCB Antenna
2. Mikrobus Logo
11. PCB Antenna Matching
3. WiHaRT Module – Pin 38
10. WiHaRT Module – Pin 1
4. WiHaRT Wireless Module
9. RF Port Selection
5. ADC Reference VREFL
8. WiHaRT Module – Pin 15
6. WiHaRT Module – Pin 26
7. ADC Reference VREFH

NIO200HRDK GATEWAY AND MONITORING HOST APPLICATION

The NIO200HRDK is a WirelessHART™ (IEC 62591) compliant System and Security Manager, Gateway and Access Point. WirelessHART™ compliance allows the NIO200HRDK to establish full mesh field network topologies to ensure robust and reliable communication for mission-critical industrial wireless applications.

The integration of both IEEE 802.11 WiFi Mesh and WirelessHART™ technologies ensures a fully redundant, mesh powered infrastructure for both the field network and the backbone infrastructure. It is CID2 and ATEX compliant for deployment in hazardous environments and is a perfect solution for critical data monitoring and control in process automation verticals such as oil & gas. It hosts an intuitive web interface that allows end users to visualize process data, alerts and alarms as well as manage and configure WirelessHART™ compliant field instruments. Application specific data can be visualized in real-time as well as device health diagnostics and connectivity parameters. It includes a MODBUS server that allows for intuitive process value mapping.
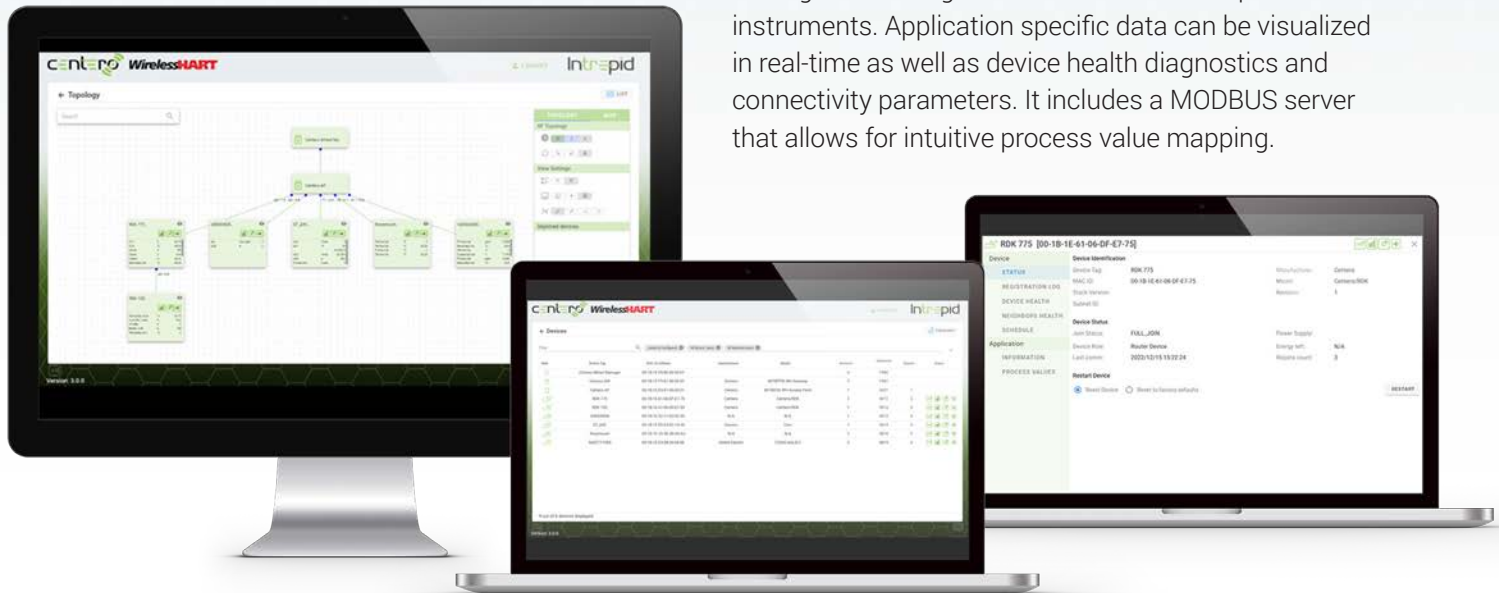
TARGET VERTICAL MARKETS AND APPLICATIONS

The WiHaRT development platform and its components have been architected, designed, hardened and tailored to meet the requirements for a wide variety of products in several markets and verticals.

- Process Automation and Control
- Oil and Gas
- Offshore platforms and maritime applications
- Mining
- Petrochemical plants
- Paper and pulp

RELATED PRODUCTS

Product	Part Number
WiHaRT Wireless Module	CW-24-012-WHT
WiHaRT SPiN Board	CE-WHT-BRD-01
INTREPID WirelessHART Field Gateway	NIO200HAG
X-Mikrobus WiHaRT Adapter	CE-MKRBX-01-WHT
Centero Utility Application	CE-ENG-APP-02

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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