CombiQ

CombiQ ISN

Industrial Sensor Node

Summary

The CombiQ ISN is a robust wireless Industrial Sensor Node designed to measure physical parameters such as shocks, vibration, temperature, energy, humidity, sound, air flow, magnetic field, and inclination. Ideal for continuous real-time monitoring and data analysis in industrial environments.

Key Features & Benefits

Versatile Measurements

Monitors shocks, vibration, temperature, energy, humidity, sound, air flow, magnetic field, and inclination.

Cloud Integration

Data is sent to a data cloud service for comprehensive analysis.

Wireless Communication

Uses Bluetooth 5.0 for reliable data transmission.

Industrial Grade

Designed for harsh industrial conditions with IP67 rating

Easy Installation

Simple mounting and setup process.

Applications

Manufacturing

Monitor manufacturing processes in real-time with data on shocks, vibrations, and temperature, ensuring optimal equipment performance and minimizing downtime.

Logistics

Improve warehouse safety with digital collision warnings for pallet racks. Collect critical data that aids in safety enhancements and operational efficiency.

Machinery Health

Assess machinery health by analyzing key metrics like vibrations and temperature, ensuring that equipment remains in optimal working condition.

Predictive Maintenance

Leverage trend analysis to forecast equipment issues before they arise, enabling proactive maintenance and reducing overall maintenance costs.

Technical Specifications

Physical	
Casing material	PC+ABS
Dimension	59 x 59 x 40mm
Weight	110g

Environment	
Operating temperature	-10 - 50˚ C
Max temperature	-20 - 80 C
Ingress protection rating	IP67

Sensors

Accelerometer	
Sampling frequency	up to 1600Hz
Selectable Ranges & Resolutions	±2 g: 0.06 mg
	±4 g: 0.12 mg
	±8 g: 0.24 mg
	±16 g: 0.49 mg

Gyroscope	
Sensitivity	±125 °/s: 262.4 LSB/°/s @ 3200Hz
	±250 °/s: 131.2 LSB/°/s @ 3200Hz
	±500 °/s: 65.6 LSB/°/s@ 3200Hz
	±1000 °/s: 32.8 LSB/°/s @ 3200Hz
	±2000 °/s: 16.4 LSB/°/s @ 3200Hz

Magnetometer	
Resolution	0.3µT
Range	± 1300µT (x,y-axis)
	± 2500µT (z-axis)

Temperature	
Range	-40° to +125˚ Celsius
Accuracy	0.3˚C
Max Sampling Rate	1 Hz

Microphone	
Resolution	24 bit
Frequency Response	60 Hz - 15 kHz
Sound Pressure	30 - 120dB SPL

Ambient Air Pressure	
Range	300 - 1100 hPa
Accuracy	± 1 hPa
Max Sampling Rate	26 Hz

External Sensors

Supported Sensors	
Port 1	4-wire RTD (Resistance Temperature Device) temperature sensor, PT100 (-50°C to 300°C, Max. Sampling Rate 1 Hz)
Port 2 & 3	Digital communications (3.3V range), full-duplex UART, power control
Ports and Pin Configurations		

Ports and Pin Configurations		
Port I	1	REFP0 (-)
Port I	2	AINO (measurement)
Port I	3	REFN1 (+)
Port I	4	AIN1 (Measurement)
Port I	5	EXT_REQ
Port II	1	GND
Port II	2	SDA/TX
Port II	3	VDD
Port II	4	SCL/RX
Port II	5	INT
Port III	1	GND
Port III	2	SDA/TX/D+
Port III	3	VDD
Port III	4	SCL/RX/D-
Port III	5	INT

Hardware

Component	
CPU	32-bit ARM Cortex-M4 @ 38.4 MHz with DSP and FP
RAM	64kB
Flash	512kB (Program), 8 MB (Storage)
Power	
Externally powered (option)	2-wire, 12V-48V (AC or DC)
Battery	2 x ½AA, LS14250 3.6 V
Nominal Input	7.2 VDC
Max Input	10 VDC
Min Input	3.8 VDC
Wireless	
Bluetooth	5.0, BLE
Receiver Type	CLASS 2
Transmitter Type	CLASS 2
Nominal RF Range	25 m
RF Output Power	+1 dBm

Safety Information and Regulations

Safety Instructions

- Changes or modifications not approved by the manufacturer could void the user's authority to operate the equipment.
- Use the product only for its intended purpose.
- Follow all operating instructions and technical data to avoid injury or property damage.
- Installation, electrical connection, operation, and maintenance should be performed by qualified personnel.
- The plant operator is responsible for the safety of the plant where the unit is installed.
- Protect devices, external sensors, and cables from damage.
- Do not use the device near explosive gases.
- Avoid water ingress to prevent electric shock or fire.

Symbols

Read Manual

Ensure you understand the instructions before using the device.

EC Compliance

This device complies with applicable EC directives.

Ecolabeling

Indicates the unit should be disposed of at a suitable recycling center.

Battery Safety

- Use only compatible batteries (SAFT LS14250 1/2AA).
- Avoid damage to the battery to prevent injury.
- Do not disassemble or expose the battery to high temperatures.

WEEE Directive

- This label indicates that the unit should not be disposed of with household waste but at a suitable recycling center.

Ordering Information

The ISN is a configurable product to match a large variety of use cases. Please send your orders with the complete ordering code as detailed below. Please feel free to contact one of our sales representatives if you require assistance in determining the exact configuration code you require.

Ordering code: ISN - [A] [ ] - [B] [ ]

Code A – Power Supply Options	
A1	Battery Powered
A2	2-Wire 12-48 V (AC/DC)

Code B – External Sensor Port III	
B1	STCEB - I2C serial communication bus
B2	FPCEB - RS232 (UART-communication), RS-485 (Modbus RTU)*****, I2C, 3 potential free connections
B3	BYCEB - 3 potential free connections
B4	without connectors
B5	12 VDC output, 12 V I/O, RS-485 (Modbus RTU)******

*cannot power a modbus sensor, maz 3VDC output
** can power modbus sensors, 12VDC output , max 100mA

Legal and Warranty Statement

Limitations of liability
CombiQ AB shall not be responsible for any direct or indirect damages, commercial losses, loss of profit in any way connected with CombiQ's devices.

Warranty
CombiQ AB warrants that the product is free from defects in materials and workmanship for a period of one year from the date of sale by CombiQ AB.

Additional Resources

More technical data, manuals, and regulations can be downloaded from **www.combiq.com**.

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www.combiq.com