

Operation Description

The HibouAir (PM,CO₂) is designed to provide users with rapid feedback on air quality and the potential presence of pollution in commercial, government, or consumer settings.

The device includes a default real time data sensors measurement, like temperature, humidity, atmospheric pressure, Gas (Volatile Organic Compounds) as well as ambient light intensity.

The device is powered via a micro USB connector with external wall socket power adapter.

The sensor measurement data are transmitted on two different communication channels, Bluetooth 5.0 and / or Wifi 2.4GHz.

The Bluetooth communication is a close-range link to communicate to a mobile application.

The IP connected based Wifi communication is a wide range and use to communicate data to the cloud with external router.

Nordic's nRF52832 SoC is used for Bluetooth LE and 2.4GHz ultra low-power wireless applications. The nRF52832 combines an 64MHz, 32-bit Arm Cortex M4F processor with a 2.4GHz multiprotocol radio (supporting Bluetooth 5 and proprietary 2.4GHz RF software) featuring -96dB RX sensitivity, with 512kB Flash memory and 64kB RAM.

The SoC is supplied with Nordic's S132 SoftDevice, a Bluetooth 5-certified RF software protocol stack for building advanced Bluetooth LE applications. The S132 SoftDevice features Central, Peripheral, Broadcaster and Observer Bluetooth LE roles, supports up to twenty connections, and enables concurrent role operation.

The data connection to the internet cloud services is via a TCP/IP data connection using the Texas instrument WIFI module CC3220MODA that includes internal antenna for 2.4GHz band. The module is FCC certified. the FCC ID is Z64-CC3220MOD.

The unit has link communication handshaking that permits turn off the Bluetooth channel while the Wifi channel is active.

There are one 32MHz crystal and one 32.768KHz crystal in BLE module.

The RF detailed information as below:

BLE

Antenna Gain:	-1.2dBi (Provided by manufacturer)
Antenna Type:	PCB Antenna
Bluetooth Version:	V5.0 LE
Channel Spacing:	2MHz
Modulation Type:	GFSK
Number of Channels:	40
Operation Frequency:	2402MHz to 2480MHz

WiFi

Antenna Gain:	2.5dBi (provided by Manufacturer)
Antenna Type:	PCB Antenna
Channel Spacing:	5MHz
Modulation Type:	802.11b: DSSS (CCK, DQPSK, DBPSK) 802.11g/n: OFDM (64QAM, 16QAM, QPSK, BPSK)
Number of Channels:	802.11b/g/n(HT20): 13
Operation Frequency:	802.11b/g/n(HT20): 2412MHz to 2462MHz
Power Class:	>=10mW