

DMtech AQ02

Multi-purpose indoor IoT device for NB-IoT and LTE-M* networks designed for integration into complex IoT / ICT solutions.

Use-cases and features

Environmental sensor

- sensing of air quality parameters
- evaluation of measured parameters with local and remote notifications
- suitable for installation in factories, retail stores, offices, schools, public organizations, residential buildings, etc.

Industrial sensor

- temperature in refrigerators and freezers (thermistor-based measurement)
- temperature of liquid or gas in a pipe (thermistor-based measurement)
- contactless measurement of electrical current magnitude (current transformer probe)
- reading of analogue industrial signaling values (0-10V, 4-20mA)
- reporting of binary states from integrated or external reed (magnetic) switch or external electro-mechanical switch, detection of status change (events)

Bluetooth LE gateway

AQ02 acts as a gateway for communication of Bluetooth LE devices (beacons, sensors, ePaper display devices, ...) to Internet via cellular connectivity (NB-IoT or LTE-M*). It can perform scanning and analysis of Bluetooth LE advertisement, connect to Bluetooth LE devices and read data or write data obtained from backend system / IoT platform.

Use-case examples:

- real-time seat occupancy monitoring based on accelerometer-based motion detection in smart offices
- inventory monitoring based on presence and accelerometer-based motion detection
- electronic shelf labels with ePaper display in retail stores and warehouses capable to update displayed content
- wireless temperature measurement in refrigerators (retail stores, warehouses)

Local alarm

Sound (piezo driver) and light (power LED) notification triggered in case of pre-defined events or if measured parameters are out of pre-defined ranges.

Wake-up feature

AQ02 stays in deep sleep state most of the time to reduce power consumption from limited power supply (battery). However, some of internal sensors and inputs may be monitored continuously and wake up the device in case of events (reed switch) or if measured parameters are out of pre-defined ranges (air temperature, relative humidity, thermistor temperature, current magnitude, analogue industrial signaling levels).

ePaper display

Located in an opening of top housing cover. It can display measured data and/or other information obtained from backend system. Displayed information is visible also in case the device is sleeping while consuming only limited amount of energy.

Technical specification

- air temperature measurement in range -20 to 70 °C (0 to 50 °C if equipped with NDIR CO₂ sensor) with wake-up feature
- relative humidity measurement in range 0 to 100 % (non-condensing) with wake-up feature
- NDIR-based CO₂ concentration measurement in range 0 to 40000 ppm with reference channel for improved long-term stability
- total VOC concentration measurement *
- particulate matter concentration measurement (PM1/PM2,5/PM4/PM10) *
- wired voltage input for thermistors and other peripherals with wake-up feature
- internal reed switch or external reed/electromechanical switch with wake-up feature
- NB-IoT / LTE-M* LPWAN interface for low power long range data transmission with integrated antenna
- WiFi and Bluetooth LE interfaces with integrated or external antenna
- powered by primary LiSOCl₂ C-size battery or rechargeable Li-ion 26500 accumulator
- optional external 5V supply voltage input with overvoltage and reverse voltage protection
- possibility to connect OLED display for measurement check and tool-free configuration *
- compact housing (39x96x71 mm) with white or black color
- over-the-air upgrade and remote configuration *
- Wi-Fi Access Point configuration mode with embedded web server *
- local alarm
- ePaper display in top cover of the housing *
- micro-SD card slot for long-term logging of events and measured data *
- possibility to implement custom communication protocol (proprietary UDP message format as default communication protocol)
- possibility of hardware customization

* available in future firmware releases



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Typical configurations

	measurement of air temperature and relative humidity	measurement of CO2 concentration	measurement of VOC concentration (Volatile Organic Compounds)	measurement of particulate matter concentration	measurement of temperature with external thermistor	on-board reed (magnetic) switch	Bluetooth LE gateway for 3rd party Bluetooth LE beacons and sensors	local alarm	ePaper display in top cover	micro-SD slot for long-term logging	external 5V power supply input with overvoltage and reverse voltage protection
AQ02CA	o	o	x	x	x	x	x	o	x	x	x
AQ02I	o	x	x	x	o	x	x	x	x	x	x
AQ02IM	o	x	x	x	o	o	x	x	x	x	x
AQ02ECB	o	o	x	x	x	x	o	x	x	x	o

Note: custom configurations available