

iCOMOX: Condition Based Monitoring Development Platform

Open Embedded Sensor-to-Cloud Building Blocks for Prototyping and Quick Deployment

Unplanned equipment downtime causes significant disruption to operations and productivity which directly impacts a company's bottom line. This problem is further compounded with legacy equipment that is prone to frequent failures. Current inspection methods mainly involve maintenance personnel physically checking equipment on a periodic basis. This approach is resource intensive and cannot be scaled easily. Further, complexity and cost of repairs increase after equipment failures occur, compared to preventive measures.

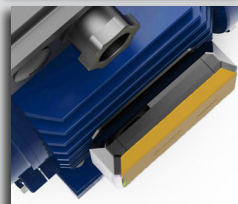
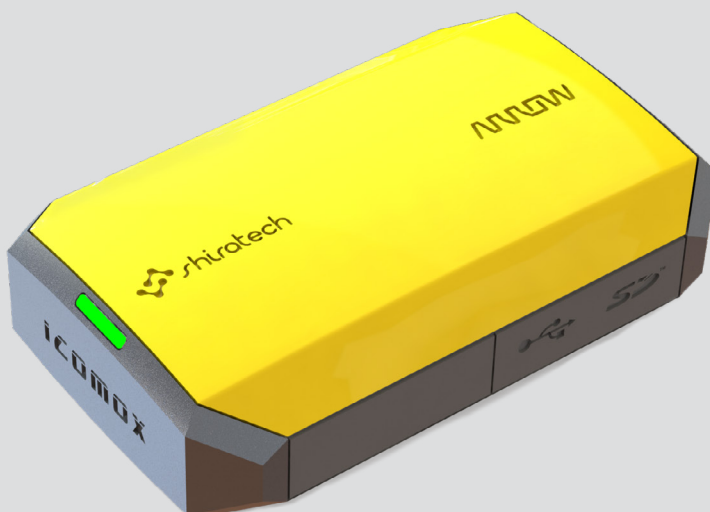
iCOMOX (Intelligent Condition Monitoring Box) – is a portfolio of open development platform for Condition Based Monitoring (CBM) of industrial equipment, assets, and structures. iCOMOX monitors operating conditions from the surface of the equipment to identify potential faults and reduce risks associated with equipment operation and maintenance. This extends the lifetime of the equipment, reduces unplanned downtime, cuts maintenance costs and unlocks potential for energy savings.

Benefits of the iCOMOX Platform

- > **Serves multiple use cases** – As a rapid prototyping and development platform for Original Equipment Manufacturers (OEMs) or as a starting point for end-users looking to deploy iCOMOX in their applications
- > **Seamless out-of-the-box experience** – Demos, software and application support for testing functionality. CE and FCC certified
- > **Reliable and accommodates a wide range of monitored equipment** - Small form-factor and options for mounting adapters
- > **Quick customization services** – Add new functionality, lower BOM cost, or have the complete product designed

Newly released versions offer three options for backhaul connectivity - NB-IoT, Power over Ethernet (PoE) or SmartMesh™ IP

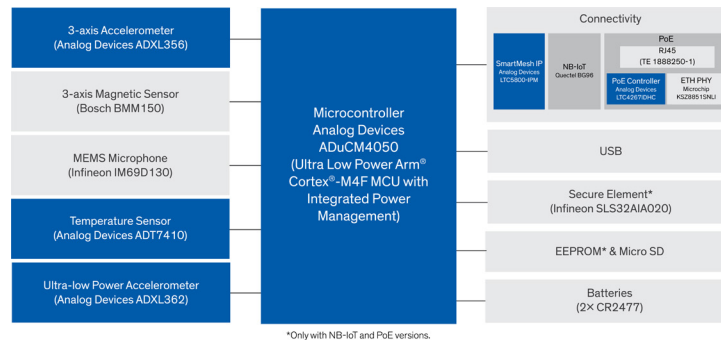
Multi-sensing condition monitoring solution:
Vibration, magnetic field, temperature, and sound sensors



Target Applications

- > Manufacturing facilities: Motors, pumps, gearboxes, etc.
- > Construction facilities: Drills, motors, heavy equipment
- > Buildings: Elevators, moving walkways, escalators, refrigeration, HVAC systems
- > Healthcare: Large medical equipment with motors
- > Oil & gas: Pumps, drills
- > Transportation: Fleet management
- > Structures: Bridges, towers, pipelines

iCOMOX Block Diagram



Hardware Features

- > Multi-sensing: Vibration, magnetic field, temperature, and sound sensors
- > Three options for backhaul communication - cellular (NB-IoT), Power over Ethernet (PoE) or the highly reliable SmartMesh™ IP protocol
- > Compact form-factor and various mounting adapters to accommodate a wide range of monitored equipment
- > CE and FCC certified with an IP66 enclosure

Software Features

- > Embedded intelligence for early detection of machine failures
- > Ability to configure warning and alarm levels and timestamp events for each sensor
- > Seamless integration into existing systems and to the portal
- > AI enables predictive and smart preventive maintenance

Portal Features

- > Centralized management of all assets and related maintenance processes
- > Real-time reporting and dashboards for visualization
- > User-friendly interface that can be accessed from anywhere, via a computer or a mobile device

Key Components

- > **Analog Devices ADuCM4050:** Ultra-low power Arm® Cortex®- M4F MCU with integrated power management
- > **Analog Devices ADXL356:** 3-axis accelerometer serves as a vibration sensor
- > **Analog Devices ADXL362:** Ultra-low power, low-g accelerometer
- > **Analog Devices ADT7410:** Temperature sensor with $\pm 0.5^\circ\text{C}$ accurate with 16-bit resolution
- > **Analog Devices LTC5800-IPM:** SmartMesh IP 2.4 GHz, 802.15.4e SoC as either a wireless mote, e-manager, or access point mote in a SmartMesh IP network
- > **Analog Devices LTC4267IDHC:** Power over Ethernet IEEE 802.3af PD interface with integrated switching regulator
- > **Microchip KSZ8851SNLI:** Single-Port Ethernet MAC controller with 8/16-bit or 32-bit non-PCI interface
- > **Quectel BG96:** LTE Cat M1/NB1/EGPRS Module with maximum data rates of 375Kbps downlink and uplink



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Ordering Information

Part #	Description	Availability
SRT-ICOMOX-NBIOT-SEC	Monitoring module with NBIOT and a secure element (contains mounting hardware)	Now
SRT-COMOX-SM	Monitoring module with SmartMesh wireless backhaul to gateway	Now
SRT-ICOMOX-KIT	iCOMOX module, Wireless SmartMesh USB Dongle, mounting kit, USB cable, Monitor Software	Now
SRT-SMARTMESH-USB-DONGLE	SmartMesh Dongle only	Now
SRT-MOUNTING-KIT	Mounting hardware only	Now
SRT-ICOMOX-POE-SEC*	Monitoring module with power over Ethernet wired backhaul to gateway	Q2 2020