RECOVIB

MONITOR

SMART INDUSTRIAL MONITORING DEVICES

The Recovib.Monitor devices are industrial grade multi-purpose acquisition and monitoring systems. They provide a full embedded solution for connecting up to eight sensors (current loop, IEPE, single-ended/ differential voltage) to a hardware platform that can acquire, process, store and display data in several ways.

They can either stream raw sensor data to a local machine or send secured messages to the Recovib.io platform. In that mode, local processing can be remotely configured to fit customer's needs.

Based on our extensive background in wind turbine structural parts monitoring, the MONITOR devices provide flexibility, precision measurement, and dependability – even in harsh, remote environments.

FUNCTIONALITY

- Synchronized acquisition on all channels, ultra-low noise, high resolution (24-bit)
- Range of input front-end modules to accommodate diverse types of sensors (4-20mA, IEPE, Voltage etc.)
- Local processing
- Range of communication modules (LAN / 4G-LTE with world-wide coverage)
- Low-power, fanless operation
- Compact and rugged design for use in harsh environments
- Wide temperature operating range (-40° to +75°C) allowing use in temporary or permanent outdoor applications

CONFIGURATIONS

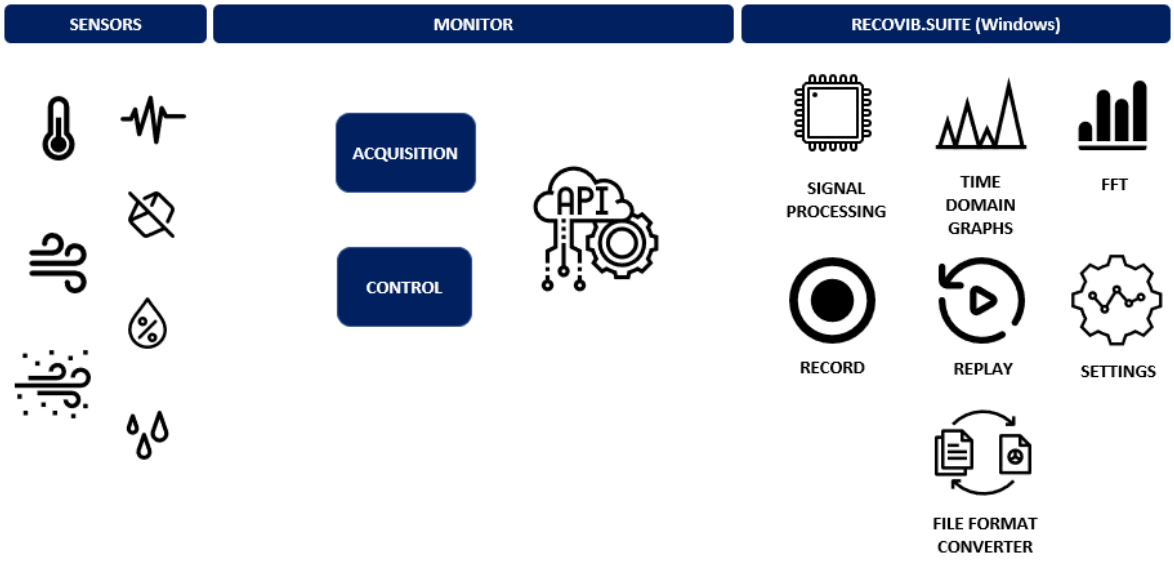
The MONITOR devices can address a wide variety of user applications in 3 different configurations:

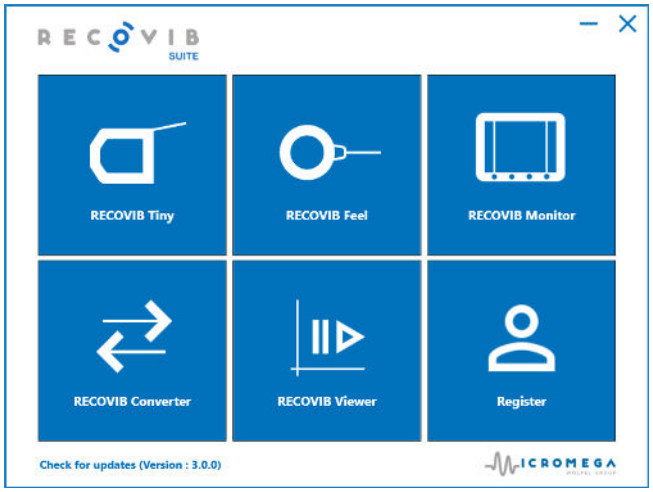
- Connecting MONITOR devices locally to a computer running the RECOVIB.SUITE software
- Connecting MONITOR devices to a customer application using the provided open telemetry API
- Connecting MONITOR devices to the recovib.io platform for visualization, analysis, alert and reporting for long term or permanent remote monitoring leading to end-to-end solutions

RECOVIB.SUITE SOFTWARE

With the free RECOVIB.SUITE visualization and analysis software, the MONITOR devices allow for:

- Online acquisition and visualization in both time and frequency domains
- Acquisition pre-processing, low-pass & high-pass filtering, integration, and double integration
- Statistics value calculation and display
- Acquisition logging and replay
- Conversion of RECOVIB projects into miscellaneous well-known file formats for further processing (CSV, MATLAB, LabVIEW, HDF5).



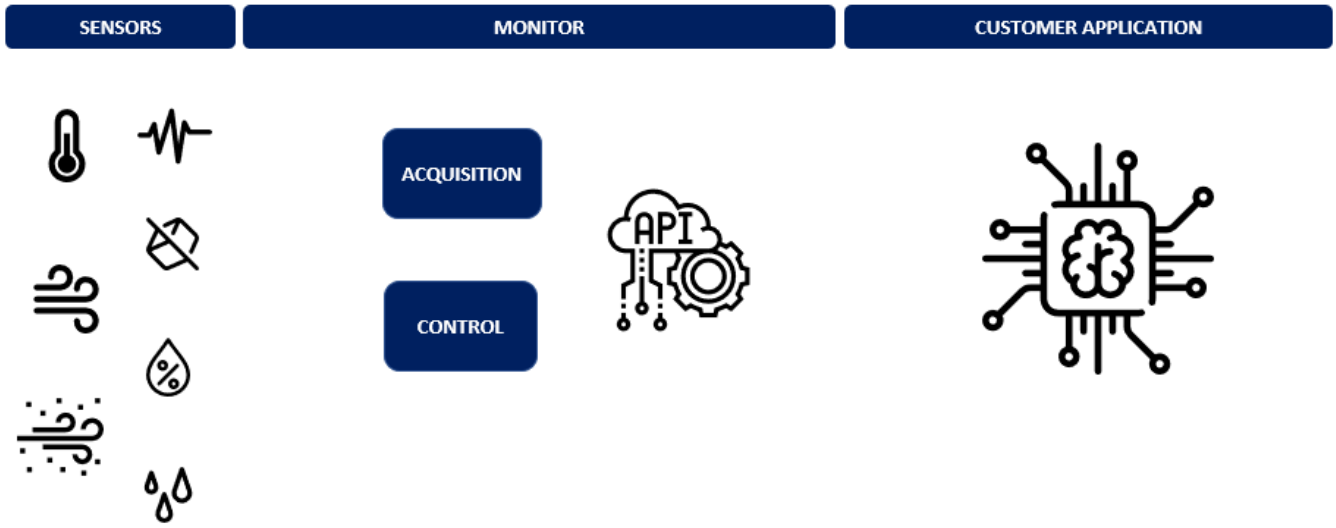


TELEMETRY API

In this configuration customers can use their own hardware and software to acquire sensor data for their own applications by connecting to the MONITOR device ethernet port. The open telemetry API allows for access to sensor measurements, acquisition control and dedicated TCP/IP ports.

The interchange format is MessagePack in order to be as compact, efficient and simple as possible.

The official implementation is available in a variety of languages.



The open telemetry API is fully documented, and examples are available on a free Gitlab repository account to allow customers to easily develop their own “User Software”.

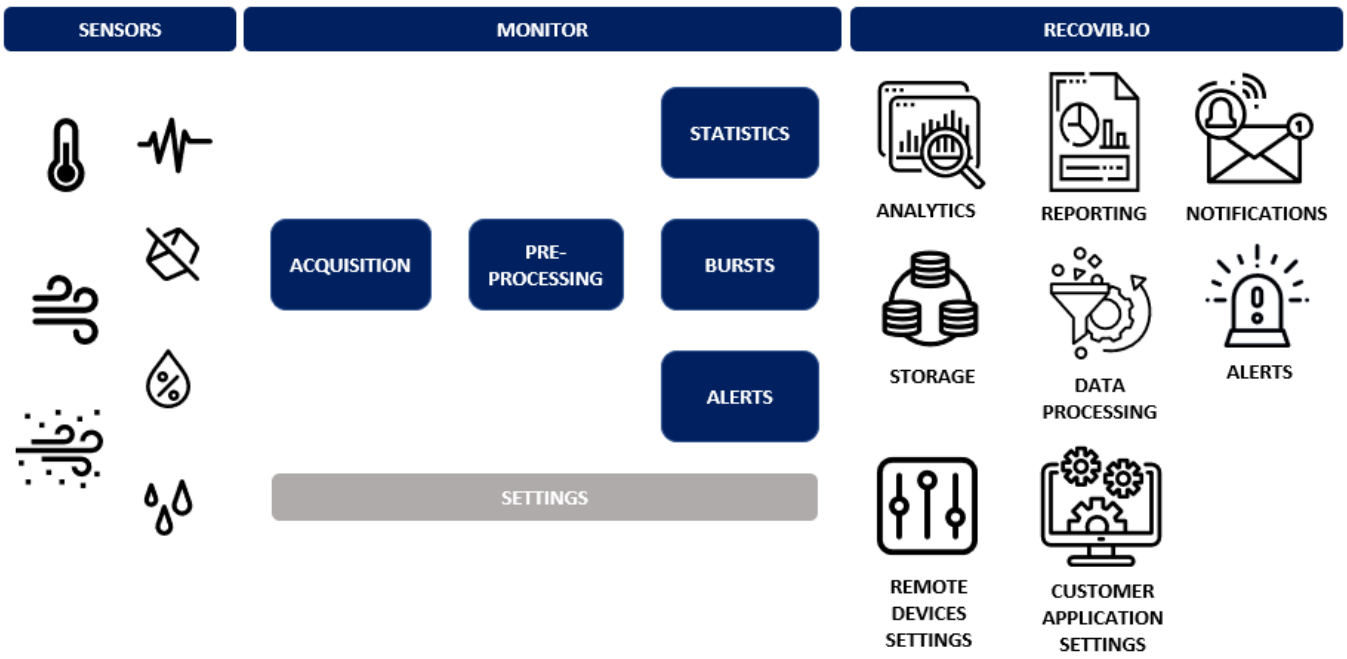
REMOTE MONITORING

MONITOR Devices can be located anywhere and connected to the RECOVIB.io platform through a wired ethernet link or through the mobile wireless network (global coverage). Each MONITOR is factory-configured with a connection key that allows for secured device identification on the recovib.io platform and communication encryption. The MONITOR embedded software automatically takes care of re-transmissions and device re-connections in the event of a poor quality communication link or connection loss to the RECOVIB.IO platform - allowing a high quality of service even from remote and unattended locations.

Monitoring Devices status, connectivity, and configuration can be managed remotely making deployment and installation a seamless operation.

High sampling rate measurements from sensors are scaled, combined, and pre-processed locally. Statistics and alerts are generated within MONITOR devices such that only useful information is transmitted - keeping mobile network transmission costs at a reasonable level.

Should access to high sampling rate measurements be required for further or more complex processing, conditions can be set for bursts to be transmitted directly to the recovib.io platform where such analysis will occur.



SPECIFICATIONS

		MONITOR 4	MONITOR 8
INPUT CHARACTERISTICS	Lower frequency limit	0Hz (DC)	
	Upper frequency limit	10kHz	2kHz
	Sampling rate per channel (local use)	Up to 42767sps	Up to 8000sps
	Sampling rate per channel (remote use)	Up to 8000sps	Up to 8000sps
	Number of channels [1]	4	8
	Current input	4-20mA	
	IEPE input	20VDC compliance voltage	
		4 mA constant current source	
	Unipolar input	0-5V	Not available
	Differential input	±5V	±4V
	Resolution	24-bits	
	Dynamics	>110dB	
	Synchronization	All channels sampled synchronously	
I/O	DI/DO	2DI +2DO	Available upon request
COM	Communication	LAN/4G	LAN/4G
POWER SUPPLY	Sensor Power Supply	20VDC / 30mA per channel max.	
	Device Power Supply [2]	24 ± 2 VDC @150mA	12 ± 2 VDC @300mA 24 ± 2 VDC @300mA or 100 - 240 VAC @50mA
	Device Power over Ethernet (PoE)	Yes	No
ENVIRONMENTAL CHARACTERISTICS	Operating Temperature range	-40 - 75°C	-40 - 75°C
	Non Operating Temperature range	-40 - 85°C	-40 - 85°C
	Protection grade	IP65	IP65
	Relative humidity	5 - 95% without condensation	5 - 95% without condensation
MECHANICAL DATA	Weight	400g	2kg
	Case Material	Plastic (ASA)	Aluminum
	Dimensions (WxDxH in mm)	110x150x40 or 130x180x50 [3]	180x150x90

[1] See ordering code for different allocation of channels to front connectors

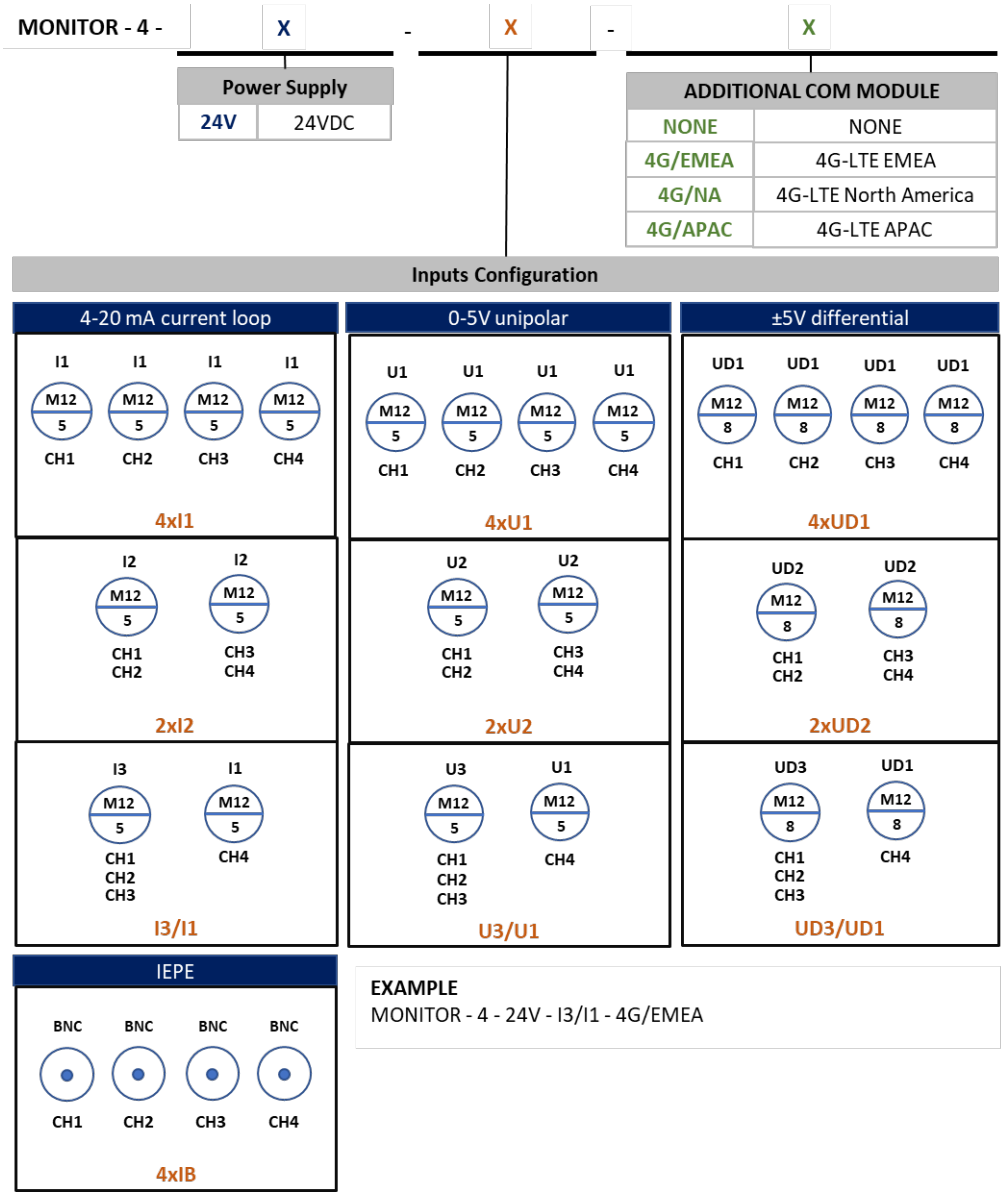
[2] Current does not consider sensors power consumption

[3] Size differs if 2 or 4 analog inputs connectors

CERTIFICATIONS

	STANDARD	STANDARD REFERENCE	LIMIT LEVEL
EMC COMPLIANCE	Radiated Emission	EN 55016-2-3/CISPR 16-2-3	EN/IEC 61000-6-3 30MHZ - 1 GHZ
	Electrostatic Discharge Immunity	EN / IEC 61000-4-2	4 kV by contact 2, 4 & 8kV in air Criterion B
	Magnetic Field Immunity	EN / IEC 61000-4-8	80 A/m 50 & 60 Hz Criterion A
	Radiated, radio-frequency, electromagnetic field immunity	EN/IEC 61000-4-3	80 MHz - 1 GHz 10 V/m 1.4 - 2.0 GHz 3 V/m 2.0 - 2.7 GHz 1 V/m AM 80% 1 kHz Criterion A
DUST & WATER INGRESS PROTECTION LEVEL	Degree of Protection provided by enclosures (IP code)	IEC 60529	IP65

ORDERING REFERENCE



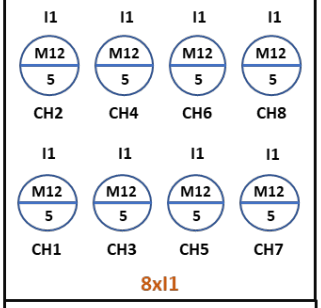
MONITOR - 8 - X - X - X

Power Supply	
24V	24VDC
12V	12VDC
AC	100-250VAC

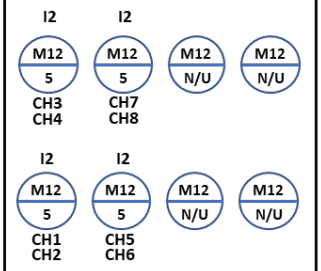
ADDITIONAL COM MODULE	
NONE	NONE
4G/EMEA	4G-LTE EMEA
4G/NA	4G-LTE North America
4G/APAC	4G-LTE APAC

Inputs Configuration

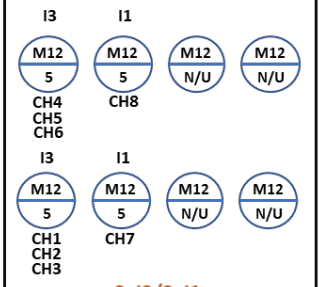
4-20 mA current loop



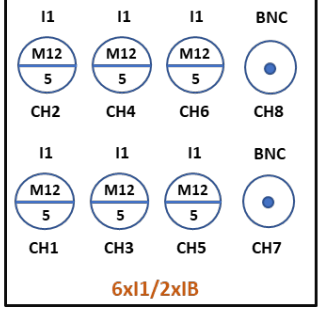
8xI1



4xI2

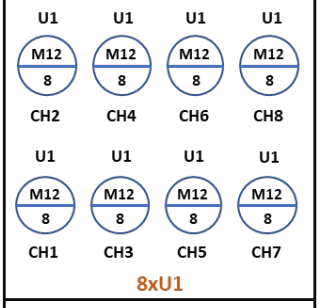


2xI3/2xI1

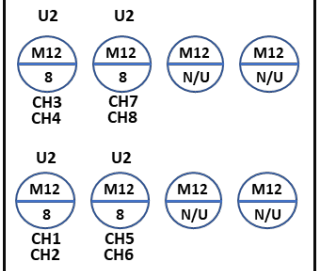


6xI1/2xIB

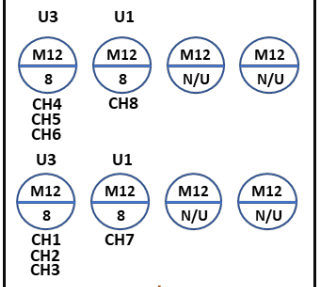
±4V Differential



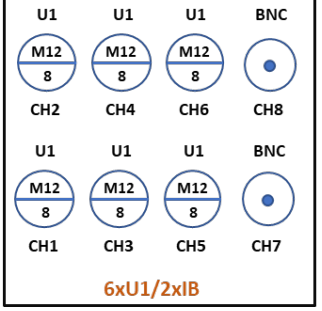
8xU1



4xU2

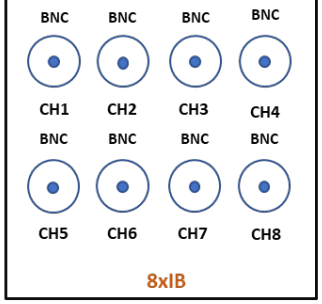


2xU3/2xU1



6xU1/2xIB

IEPE



8xIB

EXAMPLE
MONITOR - 8 - 24V - 8xI1 - 4G/EMEA

RELATED DEVICES

- RECOVIB Industrial Accelerometers
- RECOVIB structural health sensors
- RECOVIB inclinometers

ENGINEERING SERVICES

- Other mixed input channel configurations
- Different sensor voltage
- Equipped electrical enclosure
- Solar panels, batteries and charge controllers

MICROMEGA
WÖLFEL GROUP

Rue du Trou du Sart 10
B-5380 Fernelmont | Belgium
EU ID.:BE0466034916

Tel. +32(0)81248100 | Fax. +32(0)81248101
info@micromega-dynamics.com
www.micromega-dynamics.com