Key Features

- Real-time, high-speed wireless data acquisition at tens of kHz

- Tight sampling synchronization (<100ns) among sensor nodes

- 4 Mbps wireless bandwidth in the 2.4 GHz license-free frequency band

- Over-the-air setup and reconfiguration

- Powerful on-board micro controller with signal processing features

- Configurable analog inputs: IEPE/ICP®, charge, voltage, resistive

- On-board 3D digital accelerometer

- On-board micro-SD card for data storage

- Integrated USB interface

- Internal rechargeable battery with industrial operating range and 8+ hours operating time

- IP67 rating

Applications

- Industrial vibration monitoring

- Structural health monitoring

- Predictive maintenance

- Condition monitoring

- Active vibration control

INERTIA
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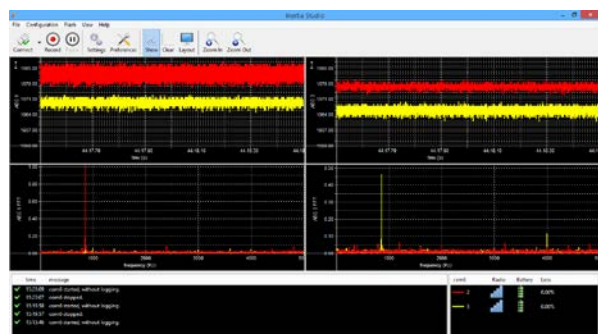   The Netherlands

Description

V-Mon 4000 sets a new standard in industrial vibration monitoring, achieving real-time wireless data acquisition at tens of kHz rates. V-Mon 4000 wireless protocol stack operates in the 2.4 GHz frequency band (license-free worldwide) and delivers 4 Mbps data rate. Multiple sensor nodes form a network and report vibration data synchronized within less than 100ns. The sensor data can also be stored locally on the on-board SD card and retrieved later over USB or wirelessly.

V-Mon 4000 has 4 analog inputs, which are compatible with a large range of industrial sensors: IEPE/ICP® accelerometers, charge mode sensors, microphones, force, pressure, tension and strain sensors. Additionally, V-Mon 4000 features an on-board 3D digital MEMS accelerometer.

V-Mon 4000 can operate for 8+ hours on its internal rechargeable battery. Alternatively, it can be powered from external sources, such as 24V standard industrial, 5V USB charger or energy harvester. The module is rugged IP67 and has industrial operating range (including the rechargeable battery).

Inertia Studio

Inertia Studio enables real-time visualization of the sensor data, as well as over-the-air reconfiguration of the sensors and wireless parameters. All data retrieved by Inertia Studio is logged for post-analysis and optionally made available for remote TCP/IP connections.

TECHNICAL SPECIFICATIONS
- PRELIMINARY -

PARAMETER	COMMENTS	VALUE	UNIT
Analog inputs			
No. of channels		4	-
Modes		IEPE/ICP®, charge, voltage, resistive	-
Resolution		12	Bits
Sampling rate	Max. per input	10	kHz
Voltage input range	Voltage mode, AC/DC, Gain ≥ 1	0 to 2.6	V
	Voltage mode, AC, Gain = 0.1 IEPE mode	0 to 26	V
Coupling		AC, DC	-
Gain		1 to 1000	-
Low pass filter cutoff freq.		100 to 10000	Hz
Voltage output	IEPE/ICP® mode	8 to 24	V
Current source	IEPE/ICP® mode	0.1 to 5.4	mA
Gain matching	Charge mode	Yes	-
Sampling		Simultaneous sample and hold	-
Signal to noise ratio	-20 dBFS, 100 Hz input	55	dB
Noise free bits		9.5	Bits
On-board 3D digital accelerometer			
Range		±2, 4, 8, 16	g
Resolution	±2 g range	1	mg
Sensitivity	±2 g range	1024	LSb/g
Sampling rate	Max.	5	kHz
Wireless communication			
Frequency band		2.4	GHz
Data rate	Max.	4	Mbps
TX Power	Max.	10	dBm
Range	LOS at max. TX power	30	m
Software			
Visualization software	Runs on Windows Vista, 7, 8, 8.1, 10, both 32 and 64 bits, Ubuntu Linux	Inertia Studio	-
Connectivity			
Mini-USB		USB interface for configuration SD card downloading and battery recharging	-
Analog inputs		M5 connectors	
External power input	M5 connector	8 to 24	V
	Mini-USB connector	5	V
Electrical characteristics			
Power consumption	At maximal TX power, without external sensors	340	mW
Internal battery capacity and operating temperature	3.75V Li-Ion rechargeable	2.6	Ah
	Charge / Discharge	-20 to +60 / -50 to +60	°C
Miscellaneous			
Dimensions	Without antenna	66x117x40	mm
Enclosure material		ABS Plastic	-