Instrument Datasheet Addendum
Vibration Monitoring with ClampOn UIS

CLAMPON®
ULTRASONIC INTELLIGENT SENSORS

ClampOn DSP Vibration Monitor

Operation	
Calibrated uncertainty, acceleration[1]	±1 %
Accelerometer axes	X, Y and Z-direction
Acceleration range	2.5 *g* (default) or 7.5 *g* (configurable)
Frequency range, accelerometer[1]	0 Hz to 1 000 Hz
Noise characteristics	50 µ*g*/√Hz (0.4 m*g* R.M.S. @120 samples/second) @ ±2.5 *g* range
Anti-aliasing	Digital oversampling
ADC resolution	12 bit
Effective post-decimation resolution	>14 bit

Data specifications, raw data streaming	
Signal protocol[2]	RS-485 (half duplex), Proprietary DSP protocol
Output file format[2]	.wav 16-bit
Output resolution	76 µ*g* per LSB (5 *g*/2^{16}) @ ±2.5 *g* range

Data specifications, internally processed data	
Signal protocol[3]	RS-485 (half duplex), Modbus RTU CANopen (SIIS L2)
Internal data processing[4,5]	Spectrum estimation, unit/dimension conversion, R.M.S. calculation, relative phase between axes, peak-hold averaging, frequency zoom using complex modulation, raw data snapshots, conversion between amplitude and spectral density
Amplitude spectrum units	mm/s² (acceleration), mm/s (velocity) or mm (displacement)
Spectral density units	mm/s²/$\sqrt{Hz}$ (acceleration density), mm/s/$\sqrt{Hz}$ (velocity density) or mm/$\sqrt{Hz}$ (displacement density)
Spectrum resolution	Up to 800 lines, <0.05 Hz/line
Spectrum frequency range	Configurable upper and lower limits, maximum 0 Hz to 1 000 Hz[4]
Scalar outputs	R.M.S. velocity Peak acceleration
Spectrum estimation method	Bartlett's method, configurable window and averaging time

Notes

1. Accelerometer adjustment at 0 Hz is performed at factory against the gravitational acceleration. The lowest resonance frequencies of instrument housing and mounting brackets determine the bandwidth where the calibrated uncertainty holds. Typical lowest resonance frequencies are approximately 150 Hz.
2. Raw data streaming and logging: The sensor streams raw data to a ClampOn client running vibration data acquisition software (VDAQ). Some processing is performed in the software, and the results are presented in real-time. All raw data are stored to disk, enabling detailed post-processing and analysis.
3. See the Instrument Datasheet for the delivered instrument.
4. See ClampOn document 62-321-00068, System integration for ClampOn vibration sensors.
5. The sensor unit computes spectra and various other properties of the vibration signal internally. The results of the processing are output in real time over Modbus or CANopen.