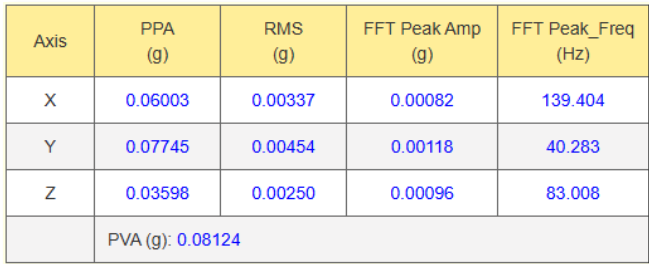


6311 Type - WiSenMeshWAN® Vibration Sensor Node																													
Basics																													
Battery Power	Qty. x 1 (3.6V Lithium primary D-Cell ER34615)																												
Mesh Stop Voltage	2.1VDC																												
Battery Connection	Standard Aluminium Battery Holder																												
Alternative DC Input	3.3VDC ± 0.3V																												
Local Storage	Min. 1500 Messages during Meshing at Mesh3.0 Protocol																												
Dimension (L x W x H)	100 x 100 x 60mm																												
Weight	≤ 0.65kg																												
Primary Sensor																													
Sampling Rate	1000Hz (Default), 125Hz (Changeable via command)																												
Vibration Frequency	Range: 0.5 to 200Hz, Resolution: 0.1Hz																												
Acceleration	Range	±8.0g (Default), ±4.0g, ±2.0g																											
	Noise Floor	0.7mg @ 1000Hz Sampling Rate 0.25mg @ 125Hz Sampling Rate																											
	Resolution	Better than 1.0mg																											
	FFT	Frequency Accuracy: ±2%																											
Velocity & Displacement	Measured Vibration	1Hz & 0 to 8g	20Hz & 0 to 8g	200Hz & 0 to 8g																									
	Velocity (PPV)	0 to 12000mm/s	0 to 620mm/s	0 to 62mm/s																									
	Displacement	0 to 1950mm	0 to 5.0mm	0 to 0.05mm																									
Data Output Categories 1), 2), 3) & 4) @ X/Y/Z-Axis																													
1) Acceleration, in g unit																													
A. In Time Domain, with attributes of:		B. In FFT-based Frequency Domain, with attributes of:																											
a. Peak Particle Acceleration (PPA); b. Root Mean Square (RMS) , in g unit; c. Peak Vector Acceleration (PVA), in g unit.		a. Peak Amplitude, in g unit; b. Peak resonant frequency, in Hz unit. at 1 st order resonant frequency.																											
 <table border="1" style="margin: auto;"> <thead> <tr> <th>Axis</th> <th>PPA (g)</th> <th>RMS (g)</th> <th>FFT Peak Amp (g)</th> <th>FFT Peak_Freq (Hz)</th> </tr> </thead> <tbody> <tr> <td>X</td> <td>0.06003</td> <td>0.00337</td> <td>0.00082</td> <td>139.404</td> </tr> <tr> <td>Y</td> <td>0.07745</td> <td>0.00454</td> <td>0.00118</td> <td>40.283</td> </tr> <tr> <td>Z</td> <td>0.03598</td> <td>0.00250</td> <td>0.00096</td> <td>83.008</td> </tr> <tr> <td colspan="5">PVA (g): 0.08124</td> </tr> </tbody> </table> <p>Figure. Screenshot from Wisen Web Platform.</p>					Axis	PPA (g)	RMS (g)	FFT Peak Amp (g)	FFT Peak_Freq (Hz)	X	0.06003	0.00337	0.00082	139.404	Y	0.07745	0.00454	0.00118	40.283	Z	0.03598	0.00250	0.00096	83.008	PVA (g): 0.08124				
Axis	PPA (g)	RMS (g)	FFT Peak Amp (g)	FFT Peak_Freq (Hz)																									
X	0.06003	0.00337	0.00082	139.404																									
Y	0.07745	0.00454	0.00118	40.283																									
Z	0.03598	0.00250	0.00096	83.008																									
PVA (g): 0.08124																													
2) Velocity, in mm/m unit		3) Displacement, in mm unit (Providing a Sine wave typed vibration)																											
In Time Domain, with attributes of:		In Time Domain, with attributes of:																											
a. Peak Particle Velocity (PPV); b. Root Mean Square (RMS); c. Peak Vector Sum (PVS).		a. Max. Amplitude; b. Root Mean Square (RMS); c. Peak Vector Displacement (PVD).																											

PPV (mm/s)	RMS (mm/s)
0.847	0.082
1.776	0.251
0.984	0.084
PVS (mm/s): 1.998	

Figure. Screenshot from Wisen Web Platform.

Amp_Max (mm)	RMS (mm)
0.005	0.001
0.013	0.003
0.004	0.001
PVD (mm): 0.014	

Figure. Screenshot from Wisen Web Platform.

4) Static Tilt, in °unit

Range	-90° to +90°
Accuracy	Over (-90°, 90°) tilting range: Better than $\pm 0.01^\circ$ (36" or 0.1745mm/m) at Any 1° change (as specified in the Calibration Certificate) Or Better than $\pm 0.002^\circ$ (7.2" or 0.0349mm/m) at Any 0.2° change
Resolution	0.0001° (0.36" or 0.001745mm/m)

X (g)	Y (g)	Z (g)	X(°)	Y(°)	Z(°)
0.96602	0.00762	-0.05518	86.6997	0.4512	-3.2693

Figure. Screenshot from Wisen Web Platform.

Standard System Parameter

Temperature	Range: -40 to 85°C; Accuracy: $\pm 0.1^\circ\text{C}$; Resolution: 0.1°C
Humidity	Range: 0 to 100%RH; Accuracy: $\pm 1.5\%\text{RH}$
Voltage	Accuracy: $\pm 0.1\text{V}$

WSN Interface

Mesh Wireless Interface	WiSenMeshWAN® Protocol
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Industrial Standard

Casing and Painting Materials	Aluminium-Alloy Die Castings 12 (Epoxy Polyester Powder Coating)
IP Rating	$\geq \text{IP68}$
Operating Temperature	-40 to 85°C
Fire Proof	Approved

Designed based on the Standards (as shown below)

- A. BS7385-1-1990, Evaluation and Measurement for Vibration in Building - Part 1: Guide for measurement of vibration and evaluation of their effects on buildings;
- B. BS7385-2-1993, Evaluation and Measurement for Vibration in Building - Part2: Guide to damage levels from ground borne vibration;
- C. DIN-4150-2, Vibrations in buildings - Part 2: Effects on persons in buildings;
- D. DIN-4150-3, Vibrations in buildings - Part 3: Effects on structures;
- E. ISO8569.

Product Images



Figure. 6311 Type - Vibration Sensor Node Product Photos.

Highlights

Note:

There are 3 Modes in a Wisen Vibration Sensor Node, which performs different actions and therefore outputs different data.

Mode 1: Time Interval Based Sampling (over 4s)

Output:

- 1) **A**cceleration
- 2) **V**elocity
- 3) **D**isplacement (Providing a Sine wave typed vibration)
- 4) Static **T**ilt

The data output table at “/Data/Show Table” on Wisen Visualisation Platform is as below.

Serial Number	Last Seen	Type	Mesh_Batt_V	Temp (°C)	Hum (%RH)	Ref_V	Flag	X (g)
1993C9FF	2026-01-12 09:39:40	6311-Vibration	3.1	15.2	33.6	3.3	M1	0.0

Axis	PPA (g)	RMS (g)	FFT Peak Amp (g)	FFT Peak_Freq (Hz)	PPV (mm/s)	RMS (mm/s)	Amp_Max (mm)	RMS (mm)
X	0.06003	0.00337	0.00082	139.404	0.847	0.082	0.005	0.001
Y	0.07745	0.00454	0.00118	40.283	1.776	0.251	0.013	0.003
Z	0.03596	0.00250	0.00096	83.006	0.984	0.084	0.004	0.001
PVA (g): 0.08124			PVS (mm/s): 1.998			PVD (mm): 0.014		

Event Time	: 2026-01-12 09:39:40
Range (g)	: 6
Sample (s)	: 4.096
Sampling Frequency (Hz)	: 1000.000
Total_Event_Count	: 0
Vibration Threshold (g)	: 0.05
SD_Error	: No

Figure. Screenshot from Wisen Web Platform.

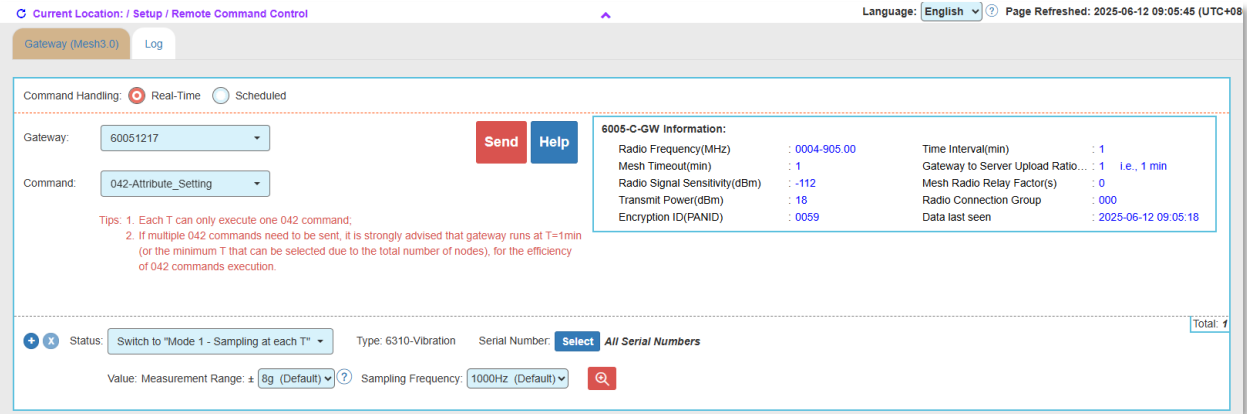


Figure. Switch to "Mode 1 - Sampling at each T" with Range, Sampling Frequency setting.

Mode 2: Event-driven Self-triggering

Output:

- 1) Acceleration over the biggest 3 vibration events that exceed the internal vibration threshold (configured via a remote command);
- 2) The settings of:
 - A. Vibration measure range (8g, 4g, 2g);
 - B. Sample time (4s, 8s, 12s, 16s, 20s);
 - C. Sampling frequency (1000Hz, 125Hz);
 - D. Triggered Event Time: YYYY-MM-DD hh:mm:ss;
 - E. Vibration_Threshold: 0.02g to 0.99g.

The data output table at "/Data/Show Table" on Wisen Visualisation Platform is as below.

Serial Number	Last Seen	Type	Mesh_Batt_V	Temp (°C)	Hum (%RH)	Ref_V	Flag	X (g)
1993CA59	2025-12-30 17:30:53	6311-Vibration	3.3	20.4	43.0	3.3	M2	-0.0

Axis	PPA (g)	RMS	FFT Peak Amp (g)	FFT Peak_Freq (Hz)	PPV (mm/s)	RMS (mm/s)	Amp_Max (mm)	RMS (mm)	Event Time
X	0.04945	0.00111	0.00060	11.963	1.299	0.058	0.007	0.001	2025-12-29 21:14:21
Y	0.04682	0.00127	0.00093	23.438	1.762	0.066	0.011	0.004	2
Z	0.35577	0.00806	0.00332	62.988	9.296	0.227	0.052	0.008	20.480
PVA (g): 0.35769					PVS (mm/s): 9.467		PVD (mm): 0.053		Sampling Frequency (Hz): 1000.000
									Total_Event_Count: 0
									Vibration_Threshold (g): 0.05
									SD_Error: No

Figure. Screenshot from Wisen Web Platform.

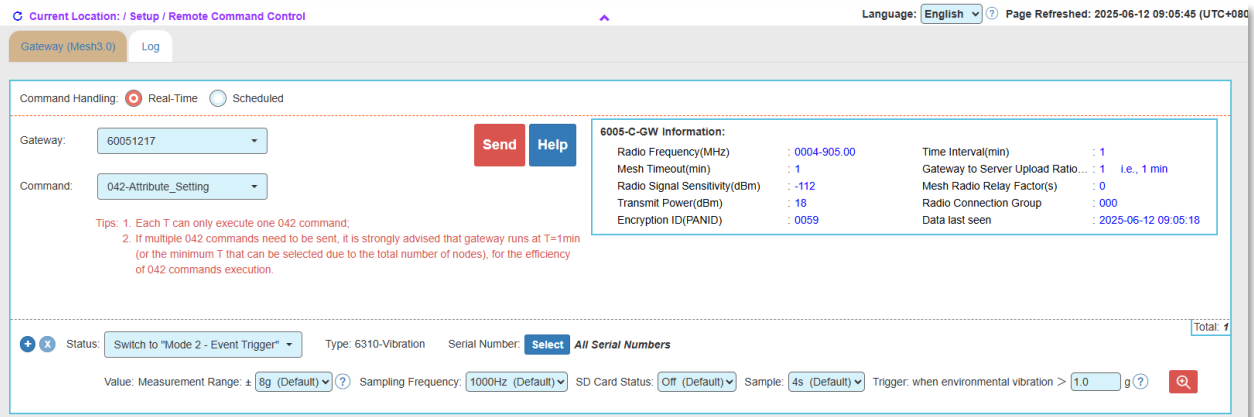


Figure. Switch to "Mode 2 - Event Trigger" with Range, Sampling Frequency, Trigger setting.

Procedures:

- A. Set up the trigger limit from remote command page, by default, it is Xg;
- B. During each T, when vibration in g unit is over the limit (ranged from 0.02 to 0.99g), the biggest 3 events of accelerations are calculated and outputted with:
 - Time Domain with RMS and Max. Amplitude in g unit
 - FFT-based Frequency Domain with:
 - 1st order resonant frequency;
 - in frequency in Hz unit and Amplitude in g unit.
- C. Report all the info. in Step B, at each Time Interval;
- D. On board SD card of 8GB capacity records all the raw data of accelerations at three axes, over the biggest 3 events. Then customer can retrieve the SD card from a node, insert it into a SD reader, and read out the data from Wisen Vibration software on a Windows PC.

Mode 3: USB to Type-C Cable - real time output to a PC.

Please refer to “/Technical Support / Document & Software”, instruction document namely, “Real-time Data to a PC from Vibration Sensor Node via WiSen Acoustics & Vibration Software”.

Switch at “Mesh”: Enables wireless modes.

- A. Mode 1: Time Interval Based Sampling;
- B. Mode 2: Event-driven Self-triggering.

Switch at “USB”: Enables **Mode 3 - USB Real-time Data Streaming** to a Windows PC.

- *For indoor use only. Power is supplied via the PC's USB port; no battery is required.*

Figure. Clarifications on Modes 1, 2 & 3 Relations.

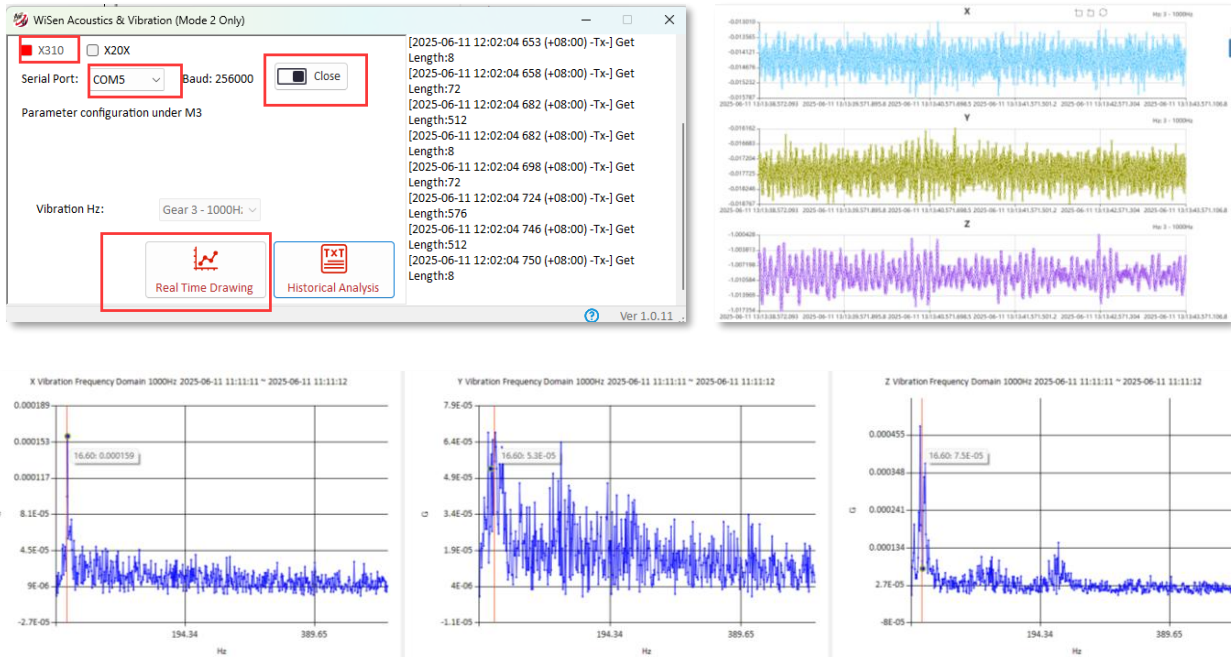


Figure. Mode 3 Operation Window, Real Time Plot and FFT Display.

Internal Battery Life Table @ Mode 1 & Mode 2						
T (min)	M1 - Static (Month)	M2 - Event Trigger (Month)				
		Max. Triggers	10 Triggers	5 Triggers	3 Triggers	0 Trigger
1	0.8	0.6	0.6	0.6	0.6	0.9
5	3.7	1.0	1.0	1.3	1.7	3.8
15	10.2	1.2	2.2	3.4	4.4	8.3
30	21.0	1.6	3.7	5.4	6.6	10.3
60	35.6	1.7	6.0	8.0	9.3	12.6