VimoNetX1
Instruction Manual

May 2020

Benstone INSTRUMENTS

www.benstone.com

Contents

1. Introduction

The VimoNetX1 is an on-line protection and prediction maintenance module for the machine vibration monitoring application. The system monitors the vibration, record the events and alter the operator to the damage that may be caused by an unbalance, bad machining condition and collision. The benefits derived from this system include product quality and productivity, and as well as reducing the maintenance costs and increasing the machine safety.

These benefits can be summarized as below:

- In-process vibration control
- Reduces damages caused by accidental collision
- Improved product quality and productivity
- Increasing the bearing life of spindle and reduction in preventive maintenance costs

1.1. Applications

- Detecting accidental collisions during machine movement or machining
- Detecting excessive machine vibration levels
- Detecting tool and spindle unbalance vibration
- Detecting worn bearing
- Recording historical machine vibration data

1.2. Connected sensors

The IEPE power supply integrates inside the VimoNetX1. The input signal range is ±5V (AC/DC) or ±10V (option). It also provides a RPM TTL signal input to monitor the rotation speed of the machine. The VimoNetX1 is a DIN Rail type DAQ, and it is easy to install inside the control cabinet. The sensors can be as below:

- Accelerometer
- Piezovelocity transducers
- Displacement sensor
- Piezo-microphone
- RPM TTL signal

1.3. Modes selection

There are two modes being used in the monitoring application.

- Stand-alone mode:
  This mode can protect the machine through triggering the 5 sets of relay when the machine vibration is over the critical level. It can also transmit the vibration overall data, specified time domain and power spectrum data to the on-line monitoring system as well. The digital data and events can be stored inside the SD memory for historical review.

- Remote mode:
  This mode can transmit specified digital time domain data for the advanced application. It works as one channel DAQ.

1.4. Measured values

- Acceleration measured in g or GS (rms). The vibration acceleration is ideal for measuring the collision, bearing and machining condition.
- Velocity measured in mm/sec (rms). This vibration velocity is ideal for measuring the unbalance tool and spindle.
- Displacement measured in m (p-p). This vibration displacement is ideal for measuring the unbalance of grinding machine.
- Crest Factor is the ratio of acceleration true peak to rms. The factor is intended to monitor the bearing damages from the early warning stage to the maintenance action stage.
- Vibration time waveform and spectrum.

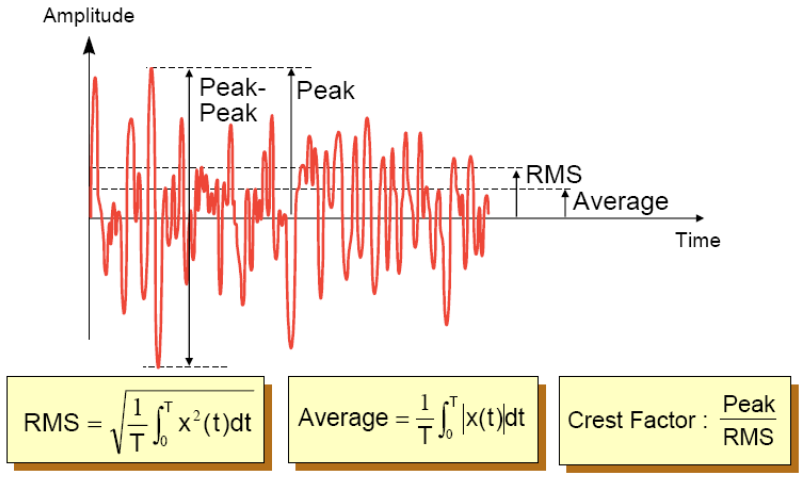


Figure1.1 RMS/ Crest Factor

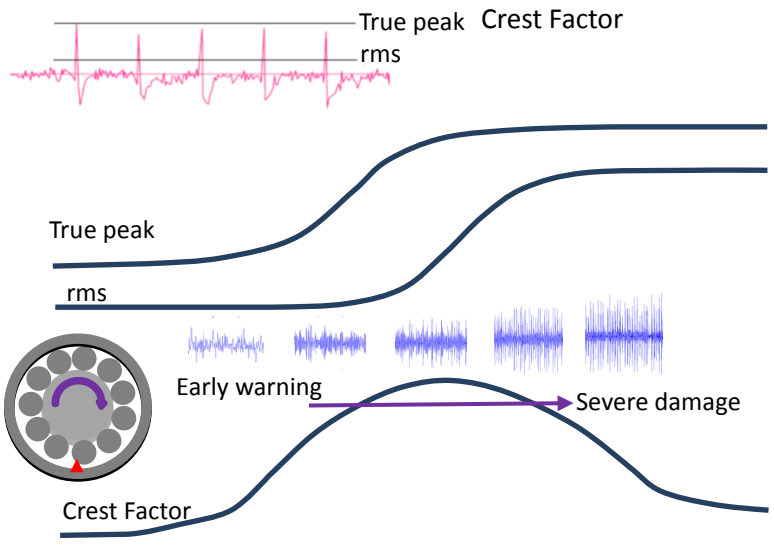


Figure1.2 Crest Factor

1.5. Band pass filters

- Acceleration: 10Hz~10kHz, 500Hz~10kHz, 2kHz~10kHz (ISO 17243-1)
- Velocity: 10Hz~5kHz (ISO 17243-1), 10Hz~1kHz (ISO 10816-3)
- Displacement: 10Hz~1kHz
- Time waveform and spectrum: 1kHz, 2kHz, 5kHz, 10kHz, 20kHz, 40kHz/ 800, 1600, 3200 lines

1.6. Quantifying the vibration level in accordance with the ISO

Vibration intensity is measured in terms of amplitude. The larger the amplitude, the more movement or stress is experienced by the machine, and the more prone the machine is to damage. Vibration amplitude is thus an indication of the severity of vibration.
The amplitude may be quantified in one of two ways:

- Peak value: The peak amplitude of a vibrating machine is the maximum (peak) vibration attained by the machine in a given time period, as can be seen from Figure 1., without providing any information about how the vibration developed. Peak value is useful to detect the collision and crash of machine.

- RMS value: The term 'root-mean-square' is often shortened to 'rms'. The rms amplitude of a vibrating machine tells us the vibration energy in the machine. The higher the vibration energy, the higher the rms amplitude.

The most important evaluation parameters when measuring vibrations on machine are:

- Acceleration (g): The acceleration is well represented at high frequency vibration. The vibration acceleration parameter can be used as an indication of short term spindle condition. This acceleration parameter is especially suitable for collision monitoring, and it is also intended to reflect problems that might lead to a catastrophic failure of the spindle within a reasonable short time period. The vibration acceleration quantity is selected because of its sensitivity to very short vibration impulses resulting from damaged rolling element bearings.

- Velocity (mm/sec): The velocity is well represented at both low and high frequency vibration. The velocity parameter can be used as an indication of long term spindle condition. The higher the vibration energy, the higher the rms velocity amplitude. The vibration velocity is selected because it has been found to reflect long term machine condition in a very consistent manner. In most situations it is the velocity amplitude of a machine that gives the most useful information about the condition of the machine. Even if the velocity parameter is very low, spindle lifetime can be shortened dramatically by inappropriate working conditions.

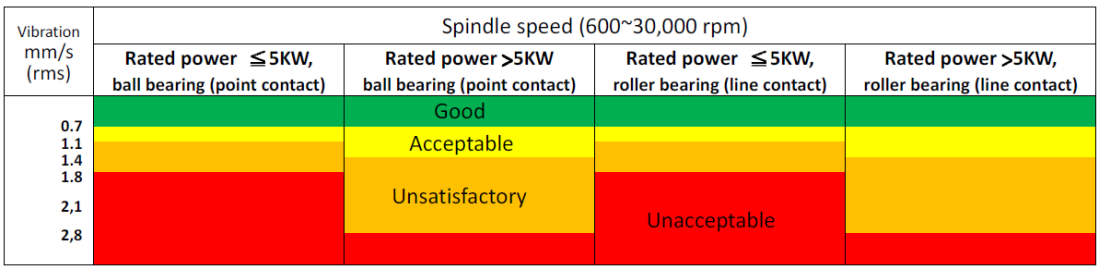
Thanks for the high speed TI DSP chips inside. The VimoNetX1 module provides the filtered overall vibration values in accordance with the recommendation of ISO 10816-3 and ISO 17243-1.

In the instruction you will learn the installation and configuration of the VimoNetX1. For the advanced application it provides the C++/C and LabView library for users to program their own monitoring software. The usage of the C++/C and LabView library utility will be illustrated in the instruction.

The VimoNetX1 module can be used for the vibration monitoring of machine tool machining, power plant, seismicity and etc.

Vibration Velocity		Class I	Class II	Class III	Class IV
mm/s rms	in/s rms	Small Machines P< 15KW	Medium Machines 15KW<P<75KW	Large Machines Rigid Foundation	Turbo- machines Flexible Foundation
0.28	0.01				
0.45	0.02	Good			
0.71	0.03				
1.12	0.04				
1.80	0.07		Acceptable		
2.80	0.11				
4.50	0.18				
7.10	0.28			Unsatisfactory	
11.20	0.44				
18.00	0.71				
28.00	1.10				Unacceptable
45.00	1.77				
P: Machine Power					

Table1. ISO 10816 Vibration Severity Chart



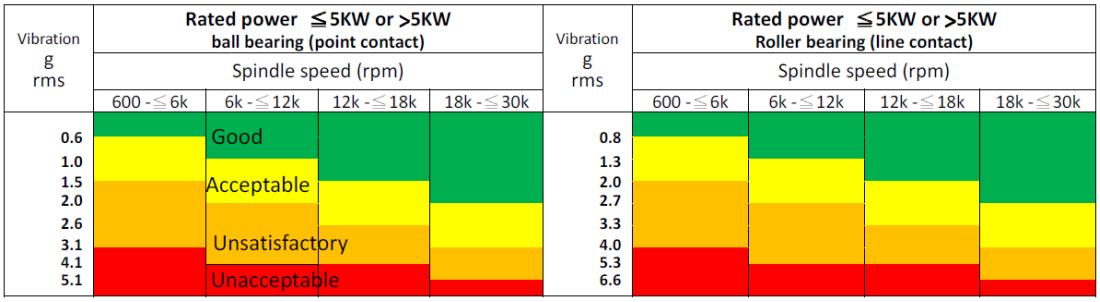


Table2. ISO 17243-1 Machine tool spindles (integral drives)

Evaluation of machine tool spindle vibrations by measurements on spindle housing

2. Hardware Specification

Input		
Input range	±5V (±10V optional)	
Coupling	AC/DC/IEPE	IEPE@AC only
IEPE	4mA/ 20V	
Resolution	24 bits	
Max. sampling rate	102,400Hz	
Input impedance	1MΩ	
Ethernet output	RJ45（2 ports）	
DSP	TMS320C6713B	
Memory	16GB	
Overall ACC	10Hz–10kHz (±5%)	
Overall VEL	10Hz–5kHz, or 10Hz–1kHz (±5%)	ISO-TR-17243-1, ISO-10816-3
Overall DISP	10Hz–1kHz (±10%)	
Overall ACC (band pass)	2kHz–10kHz, or 500Hz–10kHz (±5%)	ISO-TR-17243-1
Overall analog output	Voltage type: 0–10V or Current type: 4–20mA	Programmable setting
Overall limitation detection (5 sets)	Normal open, 60Vp, 30VDC, 500mA	Alarm trip relay
Overall limitation setting	Programmable	
Collision detecting response time	<0.8ms	
Spectrum bandwidth/ resolution	1kHz, 2kHz, 5kHz, 10kHz, 20kHz, 40kHz/ 1600 lines	
RPM (TTL) input	Trigger level: 3.3V, Frequency range: 2Hz–5kHz	
Raw signal output	±5V	
Digital data output interface and	Ethernet (Overall, Time waveform, Power spectrum)	
Power	DC +24V, Power consumption < 6W	
LED	Green: IEPE ON/OFF, Red: ERROR	
Operating temperature	-10℃~60℃	
Multi-VimoNet synchronized	Select option of sync. box	
Signal input overvoltage protection	±20V	
Physical		
Mounting	DIN RAIL type	
Dimensions	35 X 114.5 X 99 mm	
Weight	220gram	
Buttons	Restore Ethernet setting & Reset device	
Logs		
Data type	Overall data, Events, Time waveform, Power spectrum, Crest factor, Collision events	
Switch	Hardware ON/OFF to switch for data	

Input signal: ±5V or ±10V (AC/DC/IEPE) and 1 channel RPM (TTL)

Input sensors: Accelerometer, Piezovelocity transducers, Displacement sensor, Piezo-microphone

Analogue output: ± 5V, Raw data

Alarm relay: 5 sets, normal open, 60Vp, 30VDC, 500mA

Collision detection response time: < 0.8 ms

Standalone mode: directly connecting to PLC or DCS without PC, or connecting to PC for the on-line monitoring system

Remote mode: working like a DAQ to transmit digital time waveform data

2.1. System configuration

VimoNetX1 provides two modes for usage. One is standalone mode, the other is remote mode. The “Standalone Mode” means that it can work alone for the vibration monitoring, the severe vibration protection and data logging. The users can also connect it through the Ethernet port to PC for the transmission of digital current data and logged data in the “Standalone Mode”. Users can configure different setups of the VomoNetX1 as below.

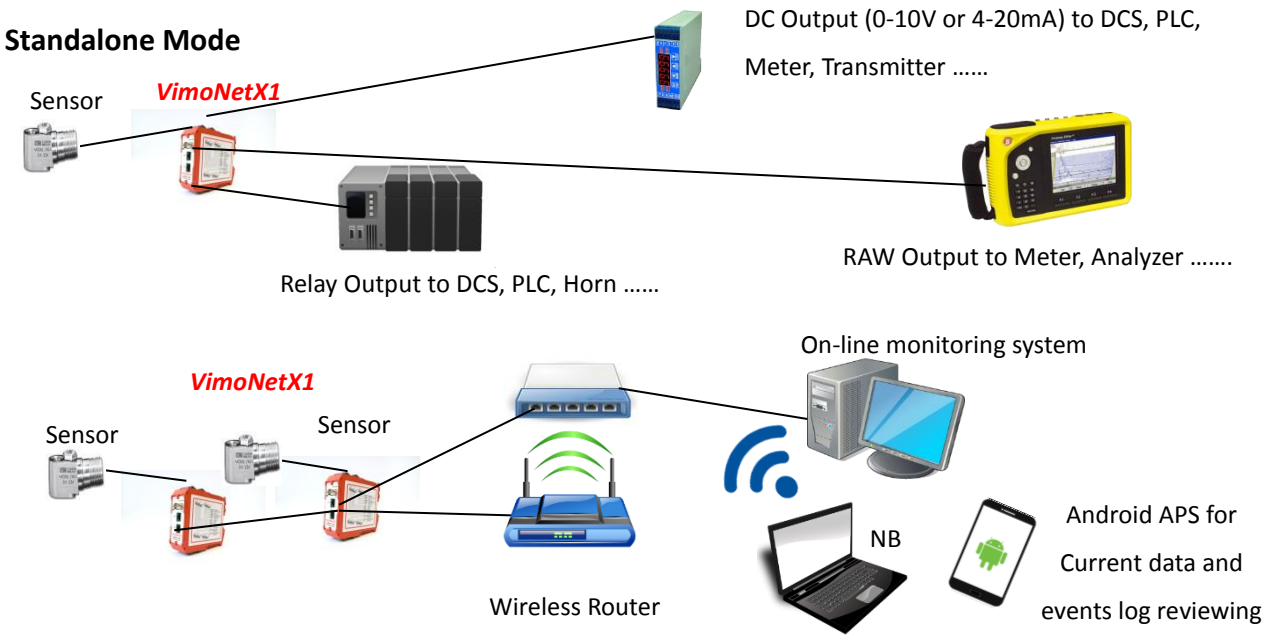


Figure2.1 Standalone mode system configuration

The “Remote Mode” works like a DAQ to transmit the digital data of raw vibration time waveform.

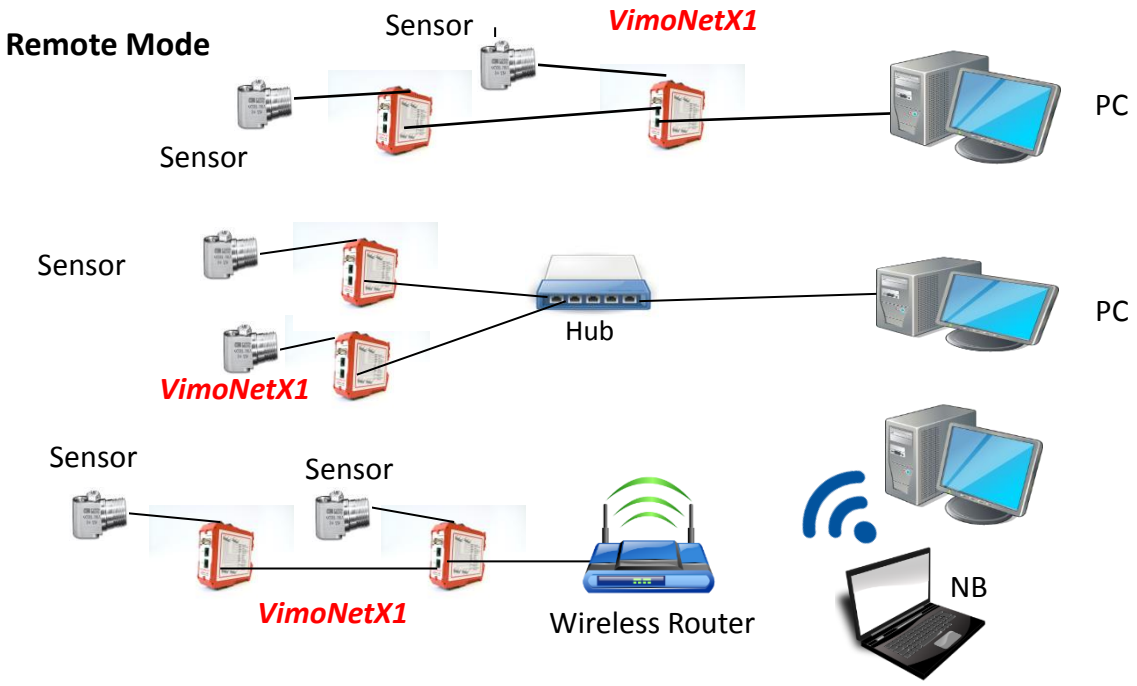


Figure2.2 Remote mode system configuration

2.2. Wiring and Connection

The dimension of the VimoNetX1 case is shown below.

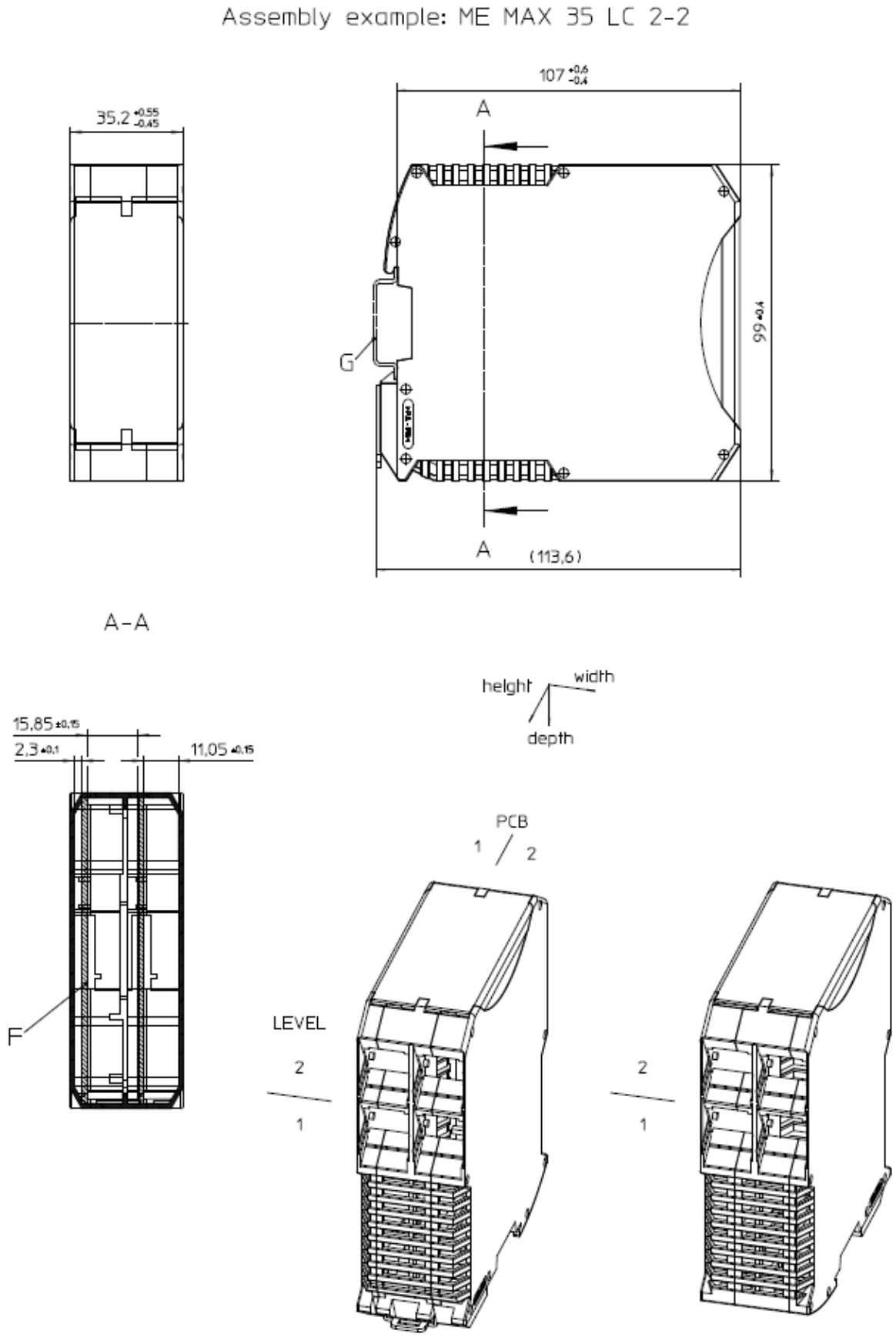


Figure2.3 Dimension of the device case

There are 12 pairs of connector on the up side and bottom side of the VimoNetX1. The vibration severity protection relay and the RPM input terminal on the bottom side. The power input, data log ON/OFF setting,sensor input,analog(voltage or current) output and raw data output are on the upside.

Terminals on bottom side:

- There are 5 relay terminals on the bottom side. (relay 1 COM, relay 1 NO,…) The relay is in normal open status before trigging.
- Relay #1 can be set to trigger the collision emergency stop of the machine.
- There is a RPM signal input terminals on the bottom side. (RPM COM, RPM IN)

Figure2.4 Wiring and terminals of the bottom side

Terminals on upside:

- DC power input (DC24V:+V, COM: -V, Power Ground)
- Data Log ON (connect DL to DC24V)/ OFF (open)
- Overall vibration output (current: 4-20mA, COM, or voltage: 0-10V, COM)
- Raw data analog output (RAW OUT, COM, SHLD), SHLD: shielding
- Sensor Input(Input,GND)
- Do not connection(DNC)

Figure2.5 Wiring and terminals of the upside

Connectors, push button and LED on front panel:

- Raw data analog output (RAW OUT)
- Ethernet ports (LAN 0 and LAN 1)
- RESTORE: Push the button before power on the module. And keep pushing the button about 5 seconds the module will load the default IP “192.168.1.127”.
- RESET: If the module crashes push the button to restart.
- Red LED:
  1) When the module works well the red LED is off.
  2) If the IEPE or sensor fails the red LED will flash.
  3) If the input signal is overload the red LED will light.
- Green Led:
  1) After plug in the power to the VimoNetX1 the green LED will flash 3 times, and the module is ready to work.
  2) If the module crashes the green LED is off.

Figure2.6 Front panel of the VimoNet

3. Software

Benstone provides different software for the users to monitor the current data and develop their application.

1. VimoNet Utility
   This is a real time vibration monitoring software. The users can monitor the current vibration overall data, time waveform and power spectrum. The configuration of relay, bandwidth of spectrum and storage layout all can be set up in the utility.
   Please install the “VimoNet.exe” in the PC for the utility software.

2. Real time on-line monitoring software in Android mobile device

3. VimoNet API for LabView and C++/C
   Benstone provides the library for users to develop their application in the on-line monitoring system of PC or built it in the controller of machine tool.

3.1. Ethernet Connection

Before launching the VimoNet Utility software you need to connect the Ethernet port between the PC and the VimoNetX1. There are two methods of connection. One is through the Ethernet cable, the other is through the Wi Fi if you have the extra Wi Fi module.

Power on the VimoNetX1 and connect the Ethernet cable to the PC that has already installed the VimoNet software. Find the “Network and Sharing Center” in the Control Panel if you have connected the Ethernet cable to PC. Please go to “Change adapters settings”, and find the “Properties” of Ethernet. Please change the IP address in the “Internet Protocol Version 4 (TCP/IPv4) to “192.168.1.1”. Then your PC has already connected the VimoNetX1.

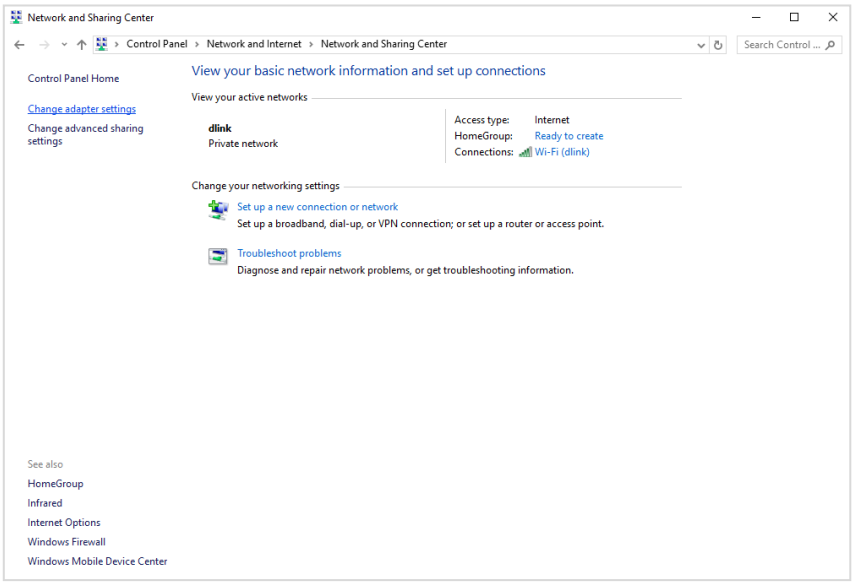


Figure3.1 Network and setting

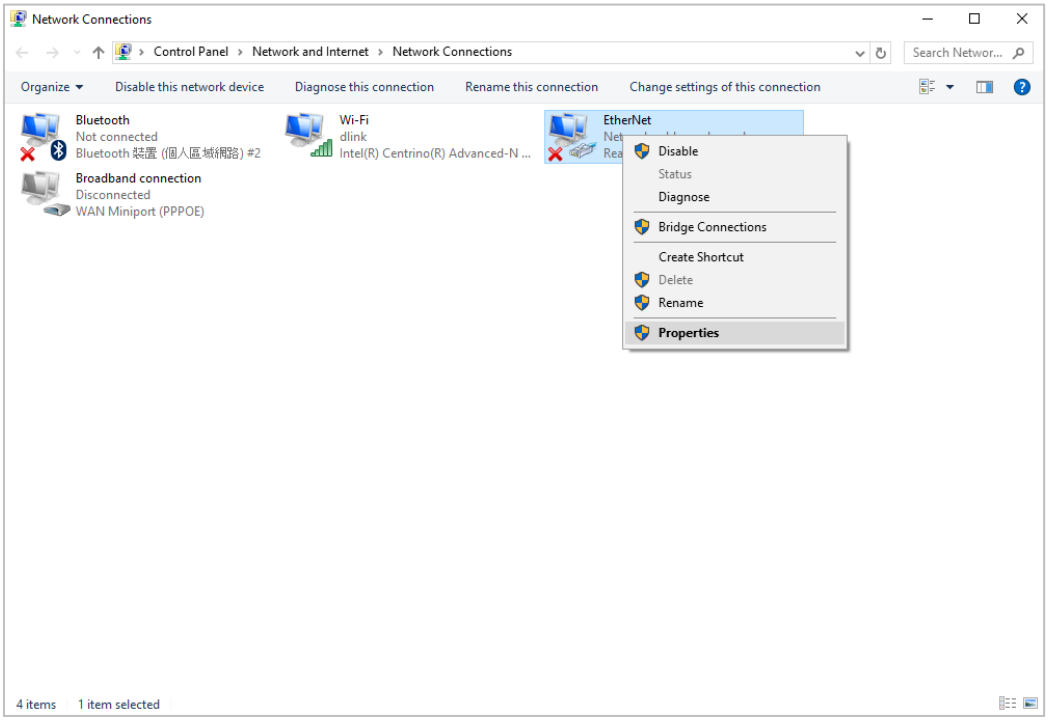


Figure3.2 Ethernet and properties

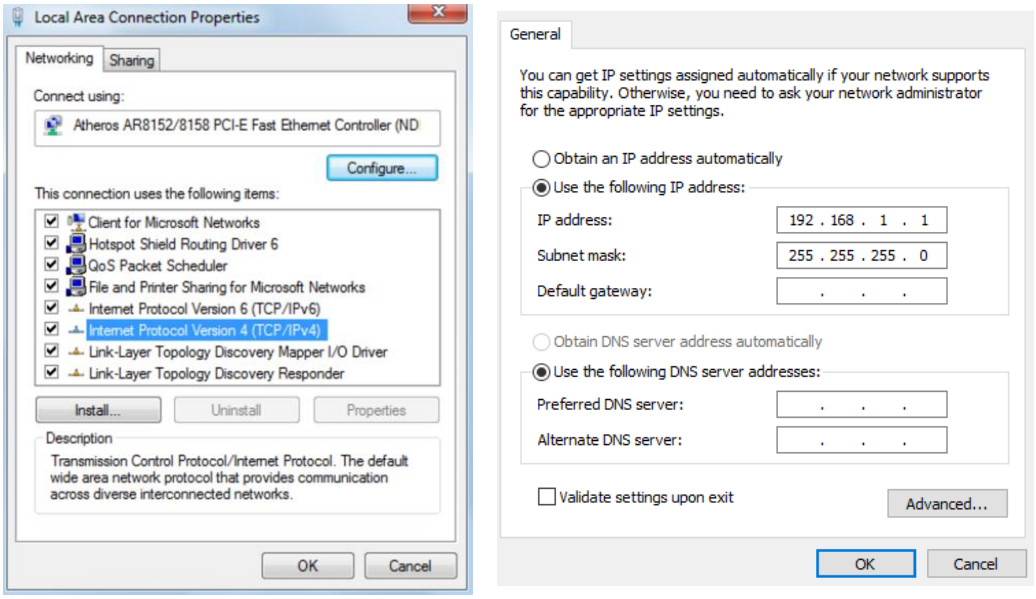


Figure3.3 IP address and setting

4. VimoNet Utility

Please launching the “VimoNet Utility” software then the main screen will show below. There are three areas in the screen. The top of the window lists the functions to active. The left area lists the connected devices. The middle is for device settings and data displays.
There are 5 functions on the top of the window as below.

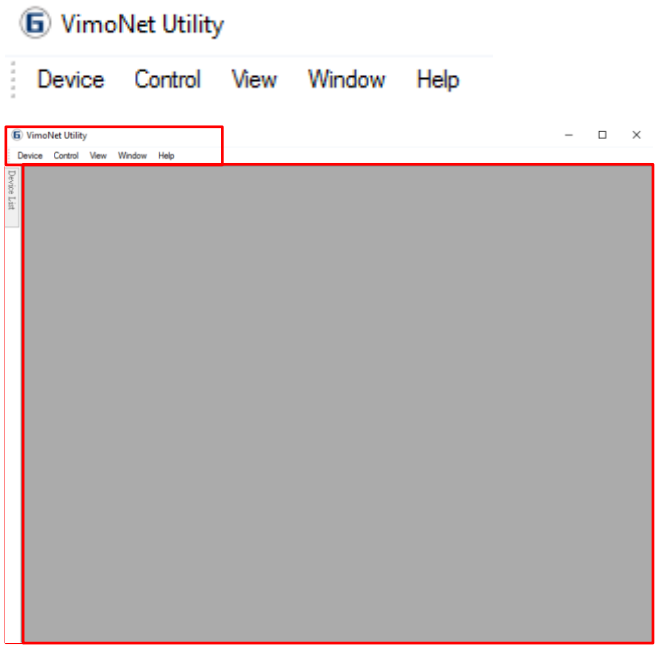


Figure4.1 VimoNet Utility and main window

4.1. Device

This function is for the device connection and disconnection.

1. Connect: Connect the listed device or remove the IP of devices.
2. Disconnect: Disconnect the devices.
3. Search: Search the IP of the connected devices.
4. Exit: Exit the software.

If this is the first time to connect between VimoNetX1 and PC or you don’t know the IP of the devices, please click the “Scan” button of the “Search” of the “Device” function to find the devices. The IP of device will be shown in the “Device List” then please click “Connect”. If there is no connection problem the “Search” screen shows “Connect successful!”.

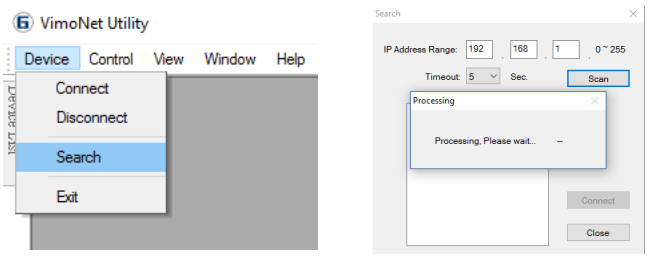


Figure4.2 Device/ Search

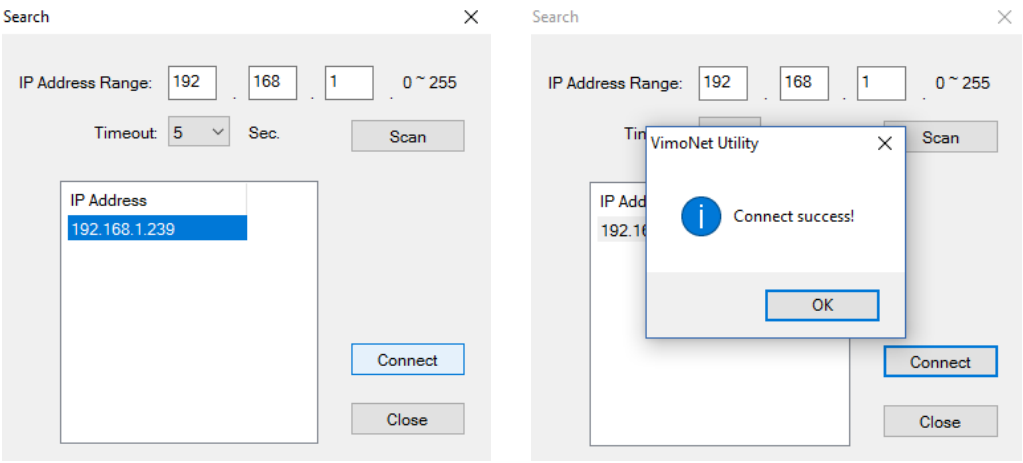


Figure4.3 Search device through IP address

If you know the IP of the device connected to PC, please select the IP that you want to connect. If you connect a multi-channel VimoNetX1 then all the IP of the device will be listed too.

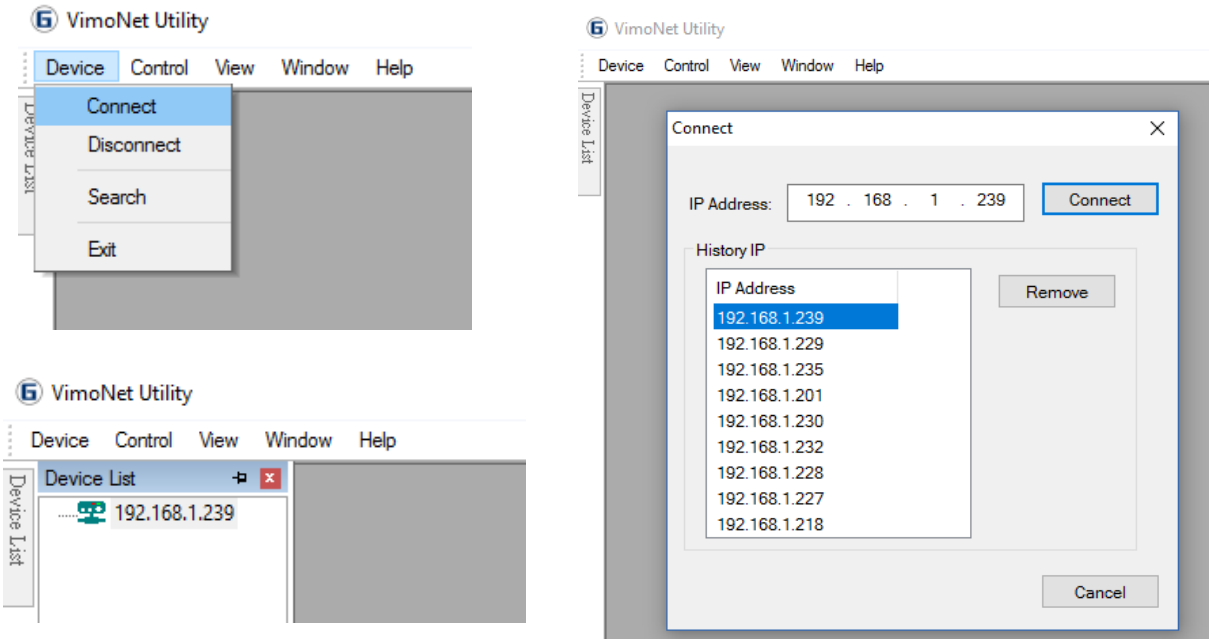


Figure4.4 Connect devices through IP address

4.2. Control

4.2.1. Setting

All of the settings of the device can be configured in this function. The system information including serial number, hardware version (2.1.0) and firmware version (2.4.2) are listed on the top of the window. Standalone mode and remote mode can be switched in this device information. The coupling of the connected sensor can be configured to AC/ DC/ IEPE. The Ethernet information and configuration can be edited and written to the device.

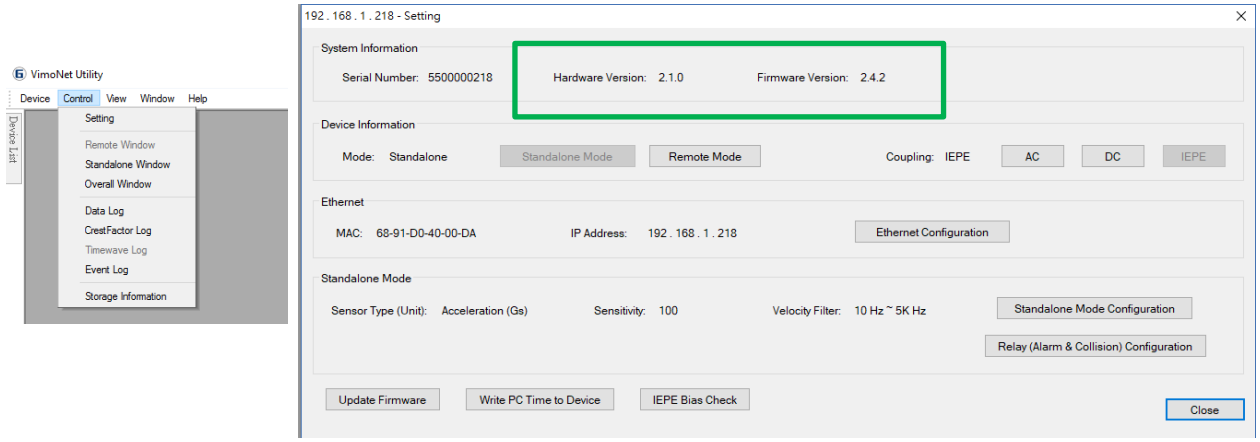


Figure4.5 Control/ Setting window

The IP address can be modified and rewritten to the device in the Ethernet configuration. The MAC ID number is a unique code for the device. You don't need to edit or change it.

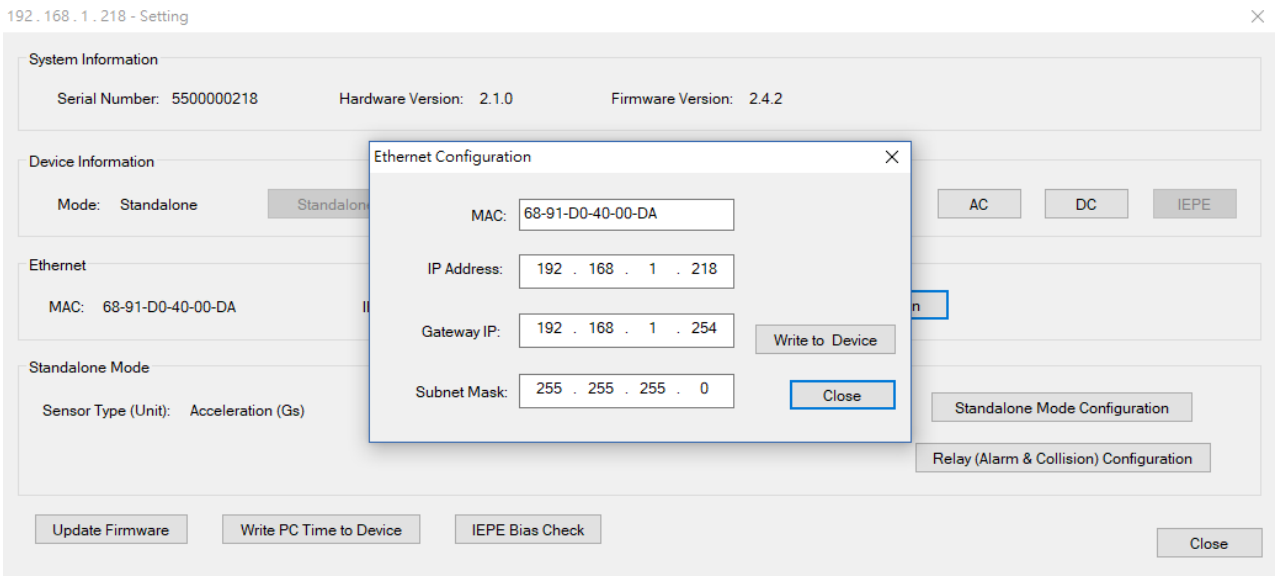


Figure4.6 Control/ Setting/ Ethernet Configuration window

“Standalone Mode”

The configuration provides the settings as follows:

- The sensor type selection, sensitivity, the signal bandwidth of time waveform and resolution of the spectrum.
- The filter of the overall vibration in displacement, velocity and acceleration is in accordance with ISO 10816-3 (Velocity:10Hz-1kHz) and ISO 17243-1 (Acceleration2:2kHz-10kHz, velocity: 10Hz-5kHz).
- The integration time and average mode can be selected to smooth the vibration values. If the integration time is set to 1/8 second and average mode off the vibration value will vary when the machine vibrates dramatically. Longer integration time will get a stable reading. Figure4.9, Figure4.10, Figure4.11 and Figure4.12.
- There is a default minimum integration time (1/32 second) to be calculated the overall vibration value, and this will be used to trigger the alarm level in time. Figure4.8.
- There are 3 options (moving 10, 20, 50) in the average mode. The number 10, 20, 50 means to average the last 10 (or 20, 50) sets of the integration data.
- The display unit provides vibration unit in acceleration g (Gs), velocity (mm/sec) and displacement m. The Imperial unit is also in the options.
- The analog output provides the overall vibration value related to a voltage (0-10V) or current output (4-20mA). The output unit can be the acceleration, velocity or displacement. The full range value is the scale of the selected vibration unit.
- Data logger and crest factor logger provide the data recording interval.
- Any changes of the configuration can be written to the device.

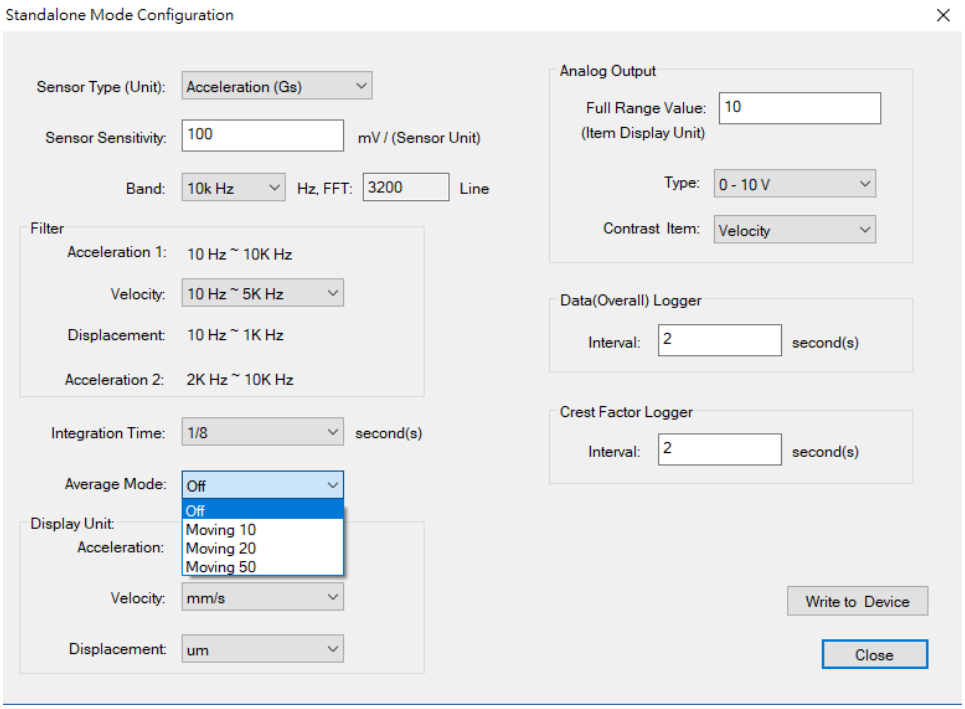


Figure4.7 Standalone mode configuration window

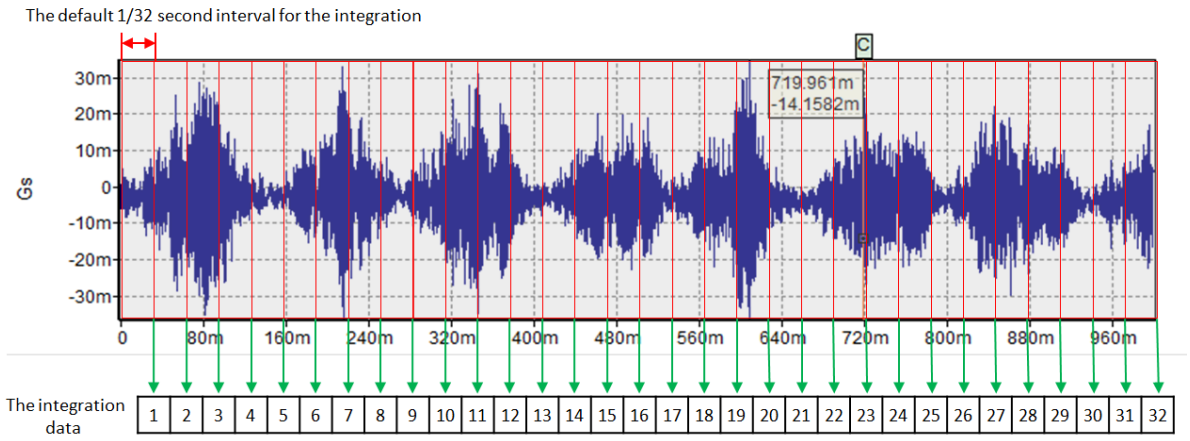


Figure4.8 Default minimum integration time 1/32 second

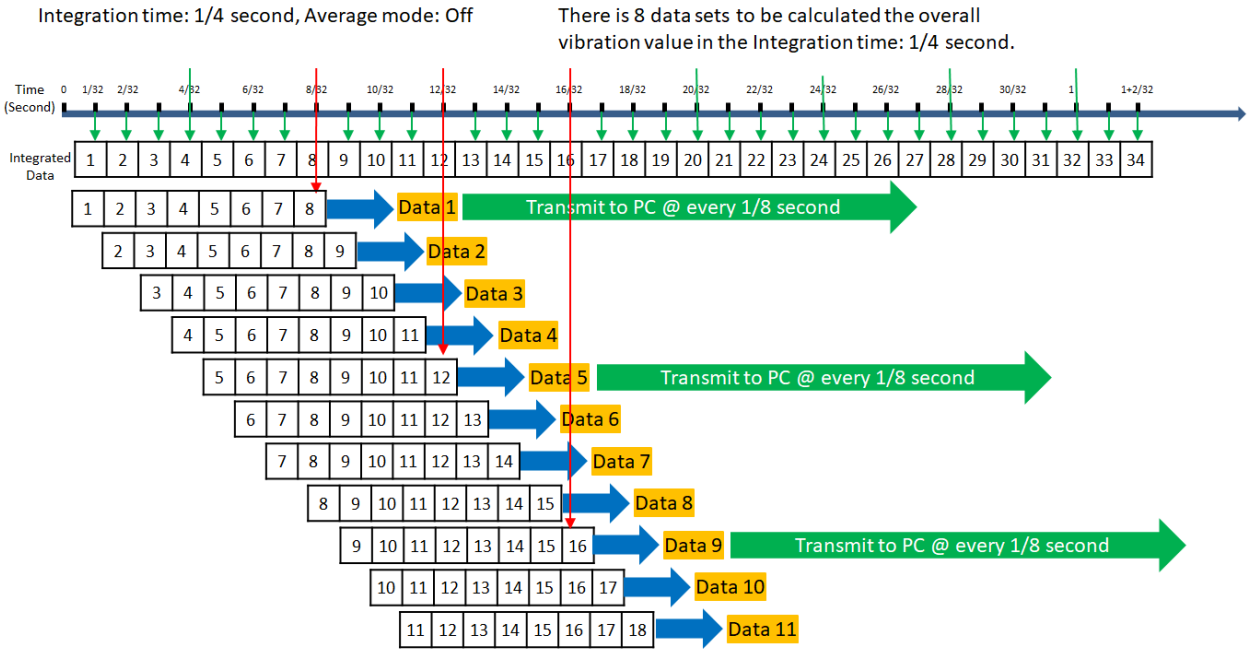


Figure4.9 Integration time: 1/4 second, Average mode: Off

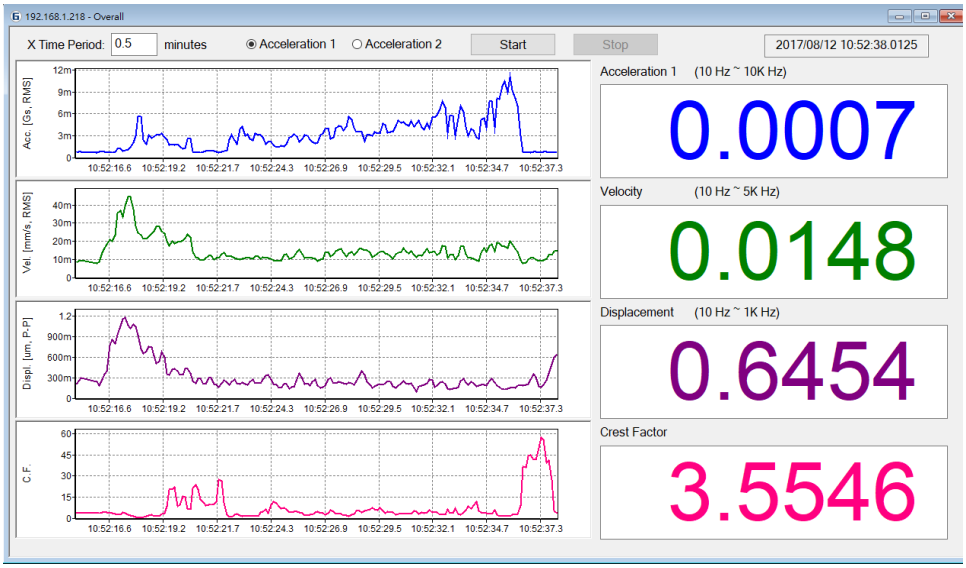


Figure4.10 Vibration value is smooth @ Integration time: 1/4 second

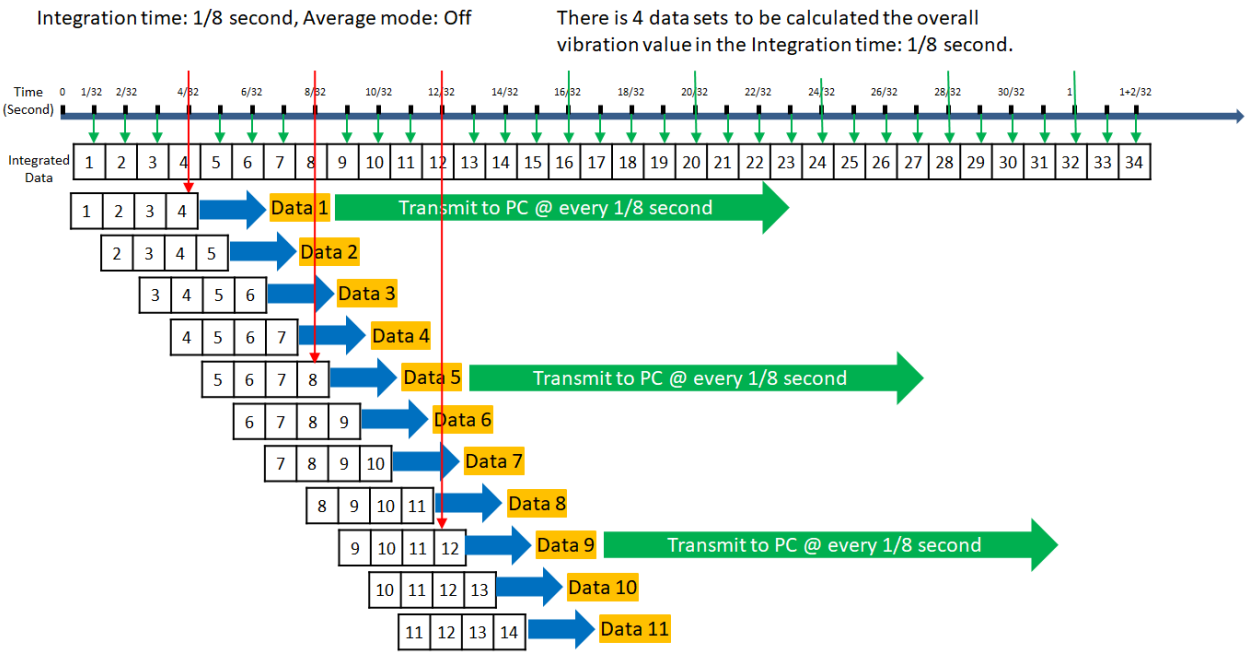


Figure4.11 Integration time: 1/8 second, Average mode: Off

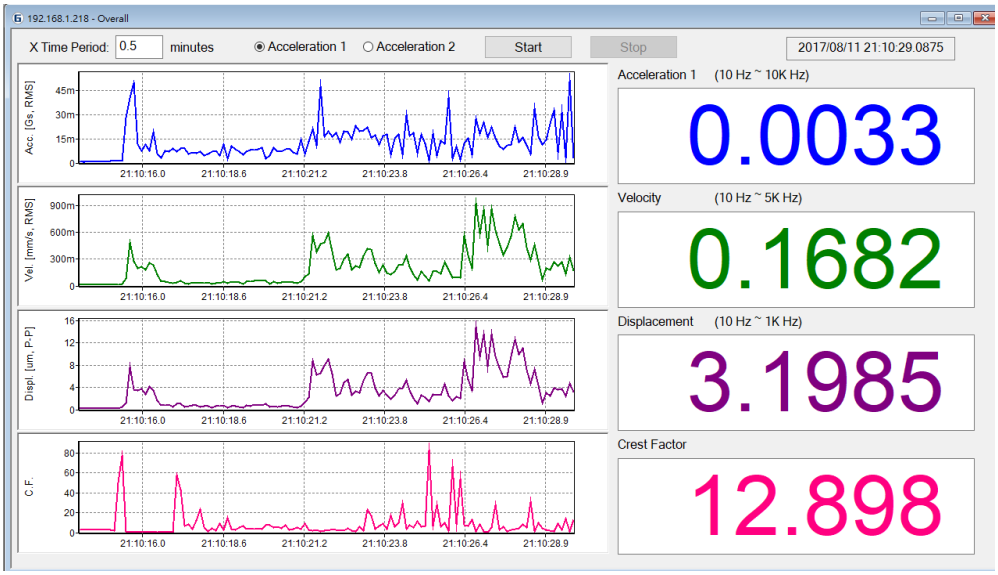


Figure4.12 Vibration value varies dramatically @ Integration time: 1/8 second

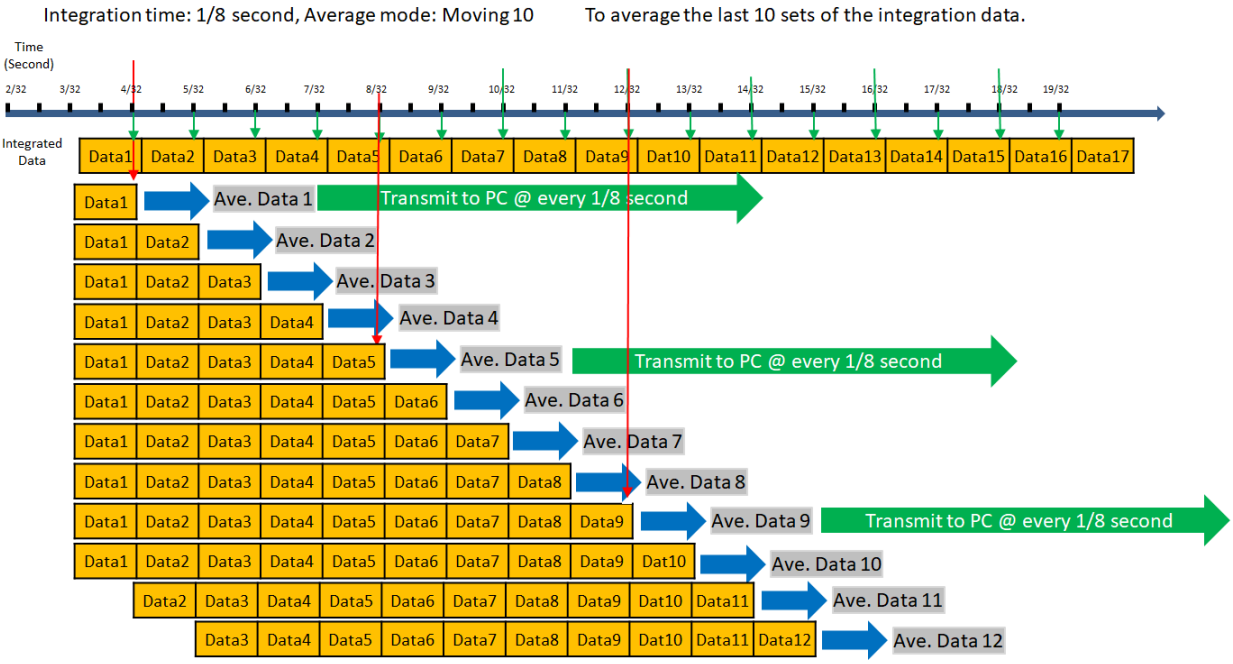


Figure4.13 Integration time: 1/8 second, Average mode: Moving 10

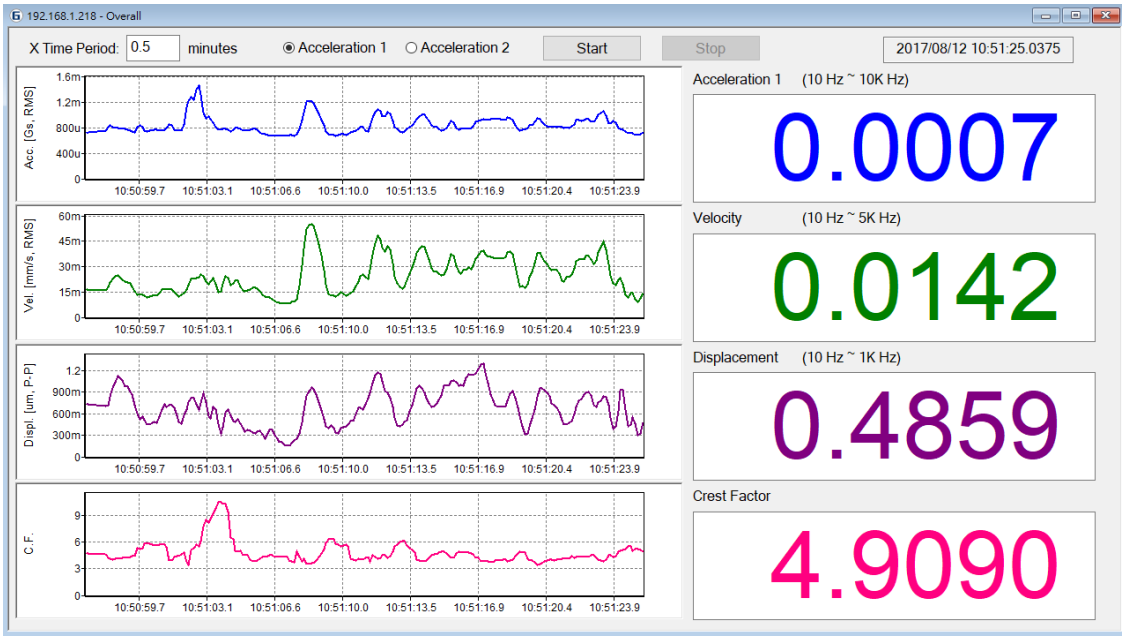


Figure4.14 Vibration value is stable @ Integration time: 1/8 second, Average mode: Moving 10

“Relay (Alarm & Collision) configuration”

It provides the trigger level of the relay.

- The relay #1 is only for collision detection if the “Enable Collision Detector” is enabled. The threshold is the critical value of collision accident occurred which is dependent to the size of machine and the machining experience. If the collision relay is triggered the relay #1 will be latched 10 seconds then released.
- The users can define any critical value of vibration unit from relay#2~ to relay#5 to trigger the relay for protection. The “Response Delay” is the period in seconds that the vibration value continues over the “trigger value”. That can prevent any fake noise to trigger the relay. After the vibration value is below the triggered value the relays will be released immediately.
- The relay#6 is not available in the new version of VimoNetX1.
- Any changes of the configuration can be written to the device.

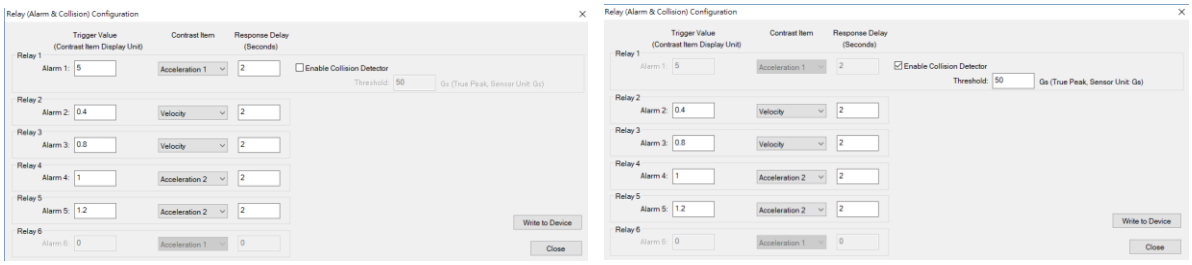


Figure4.15 Relay (Alarm & Collision) configuration window

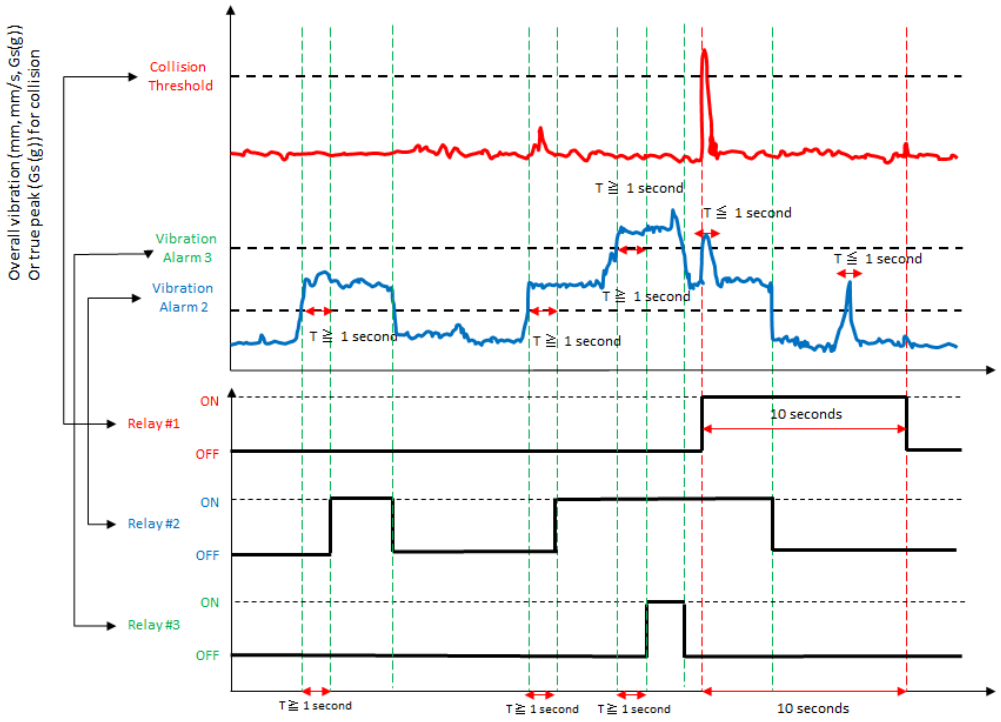


Figure4.16 Relay triggered condition and sequence

“Update Firmware” is for the users to update the firmware in the device.

“Write PC Time to Device” is for the users to update the local time to the device.

“IEPE Bias Check” is for the users to check if the IEPE sensor or the cable is broken or not.

“Remote Mode”

The configuration provides the specified bandwidth raw digital data transmitted to PC. After clicking the “Remote Mode” there will be showing the message below to ask you to confirm that the device will change and reset the device. Then the device will be set and reconnect again.

Please note that all the functions of the “Standalone Mode” will turn off after the device switches to “Remote Mode”. The unavailable functions include relay configuration, overall data calculation, time waveform, spectrum and logger of data.

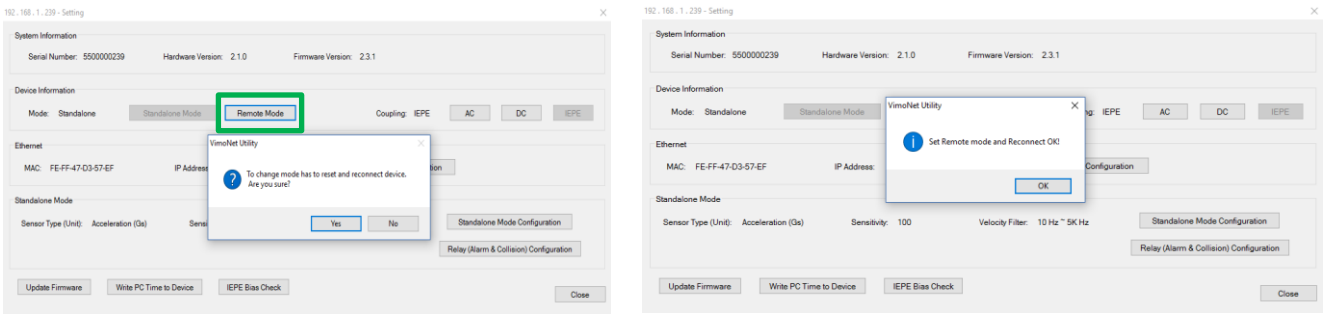


Figure4.17 Remote mode window

In the “Remote Window” the time waveform bandwidth can be configured from 1.25kHz to 40kHz. The time waveform data can be transmitted to PC through Ethernet. The unit of the time data is a voltage output directly from the sensor.

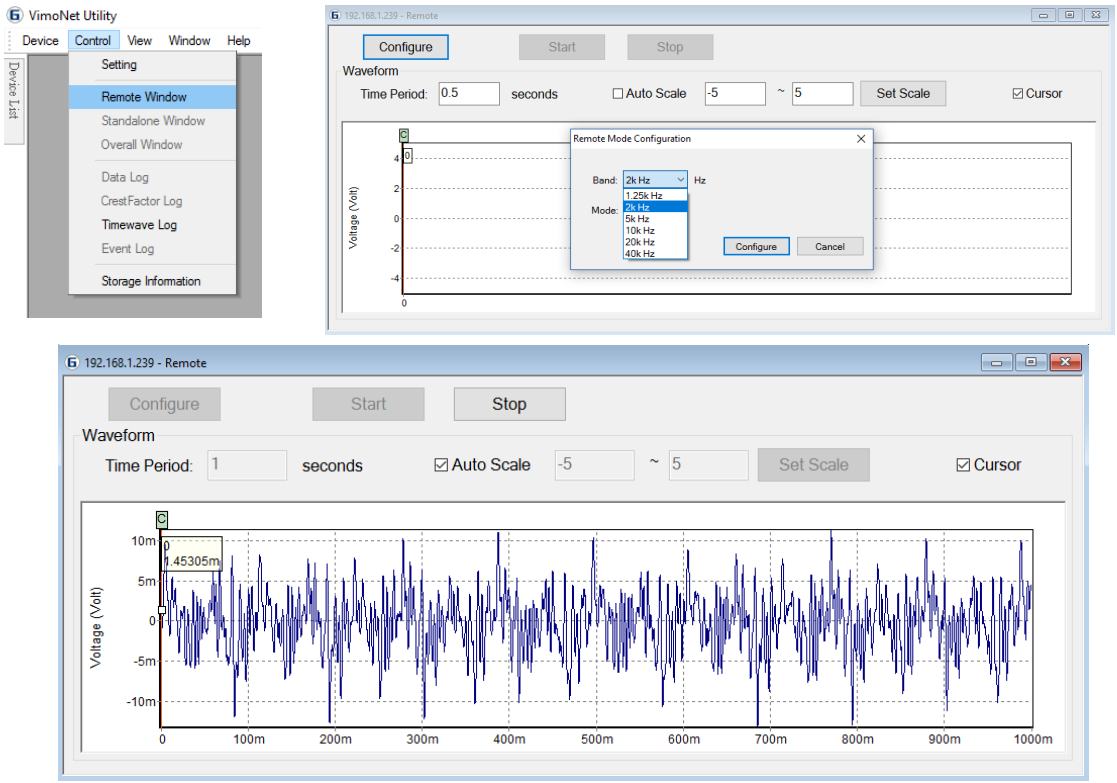


Figure4.18 Remote mode setting and display

4.2.2. Standalone Window

There are 6 overall vibration values, time waveform and power spectrum displays shown after clicking the “Standalone Window”. After clicking the “Start” button the current data will display on the screen. The left side area is the overall vibration data. The right top area is the time waveform data and the right bottom area is the spectrum of the vibration.

There are X/Y axis scale selection and cursor function in the screen.

All of the data are also transmitted to PC through the Ethernet simultaneously.

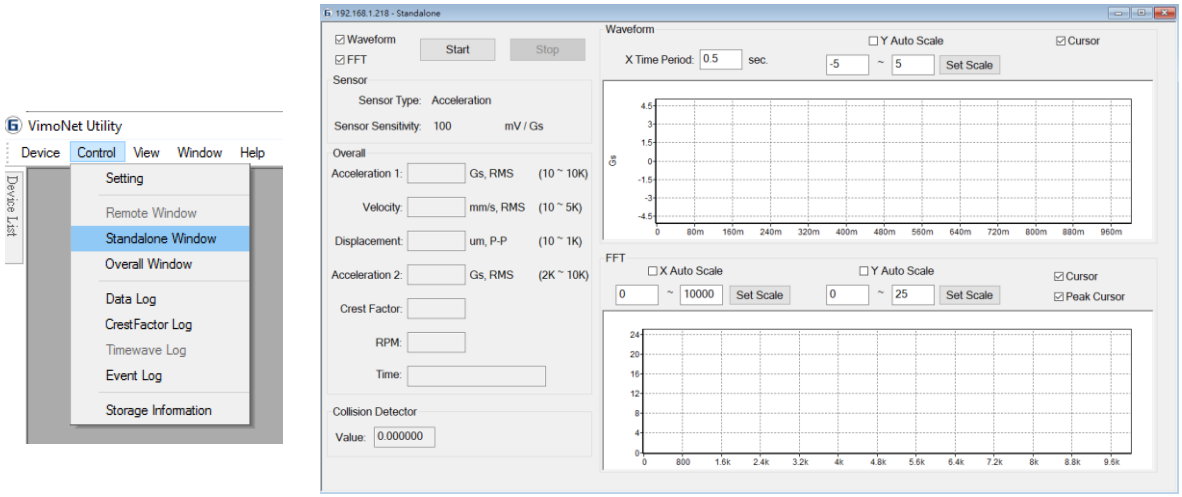


Figure4.19 Standalone mode display window

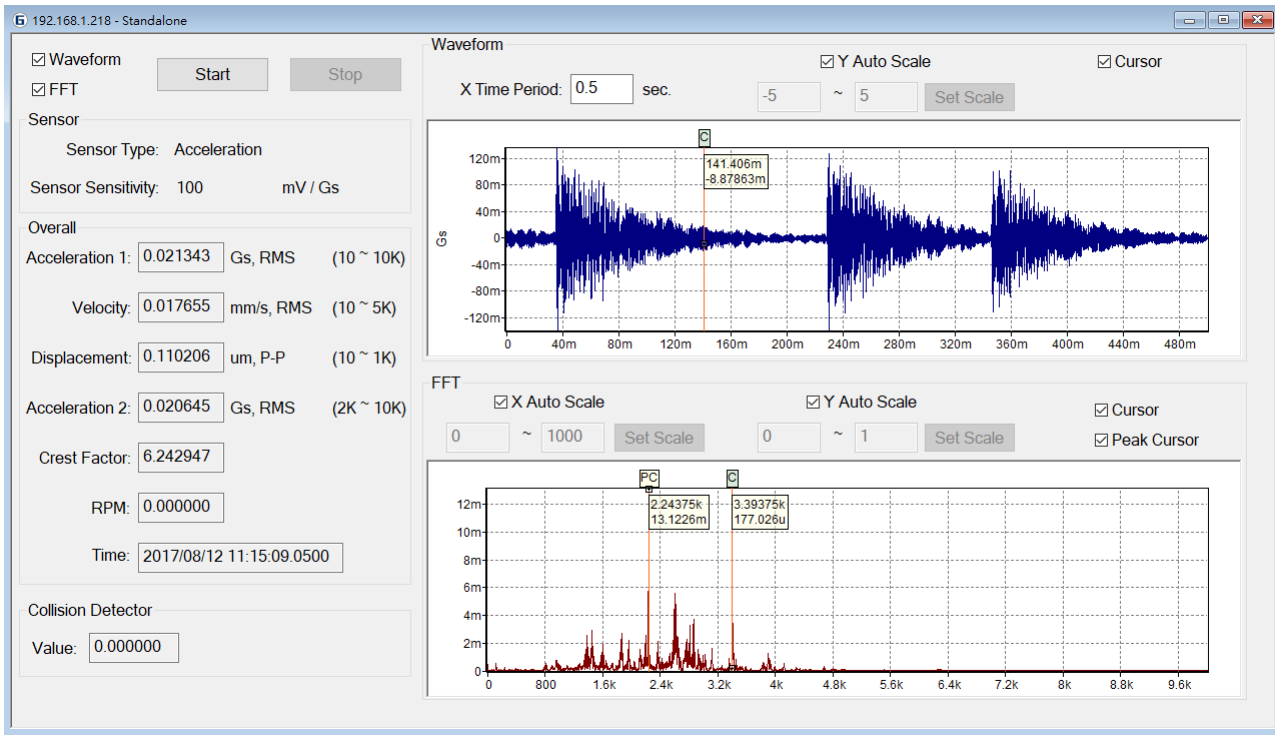


Figure4.20 Data display in Standalone window

4.2.3. Overall Window

There are 4 overall vibration trend charts and current vibration values shown after clicking the “Overall Window”. After clicking the “Start” button the current data will display on the screen. The “X Time Period” can be set from 0.1 minute to 5 minutes.

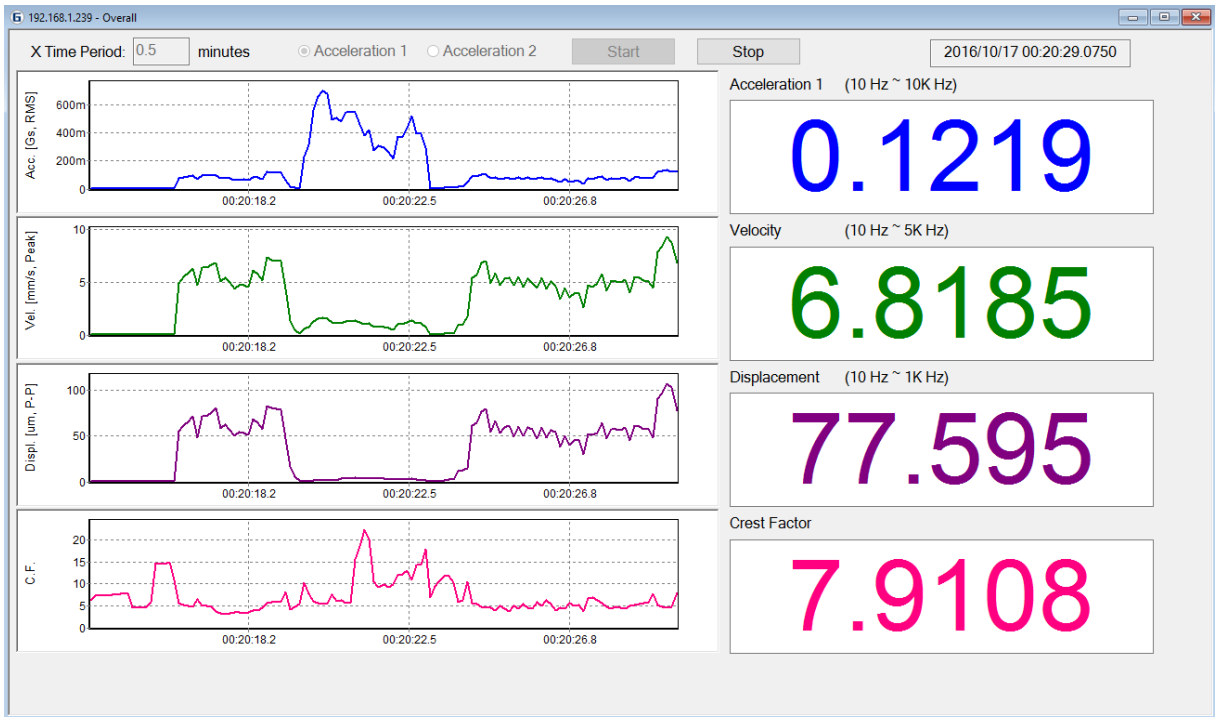


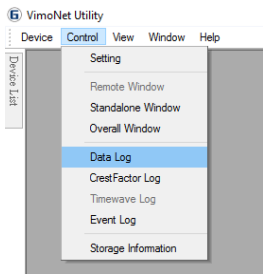
Figure4.21 Data display in overall vibration window

4.2.4. Data Log

The vibration data can be downloaded to PC from the device.

The data includes:

- Acceleration 1 (10Hz~10kHz)
- Acceleration 2 (2kHz-10kHz: ISO 17243-1)
- Velocity 1 (10Hz~1kHz: ISO 10816-3)
- Velocity 2 (10Hz~5kHz: ISO 17243-1)
- Displacement (10Hz~1kHz)
- Time waveform
- Spectrum



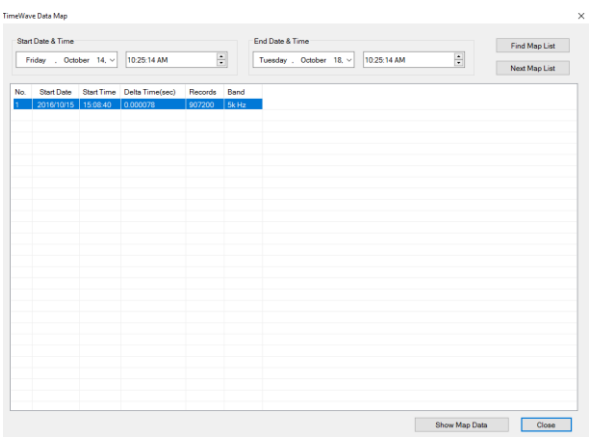
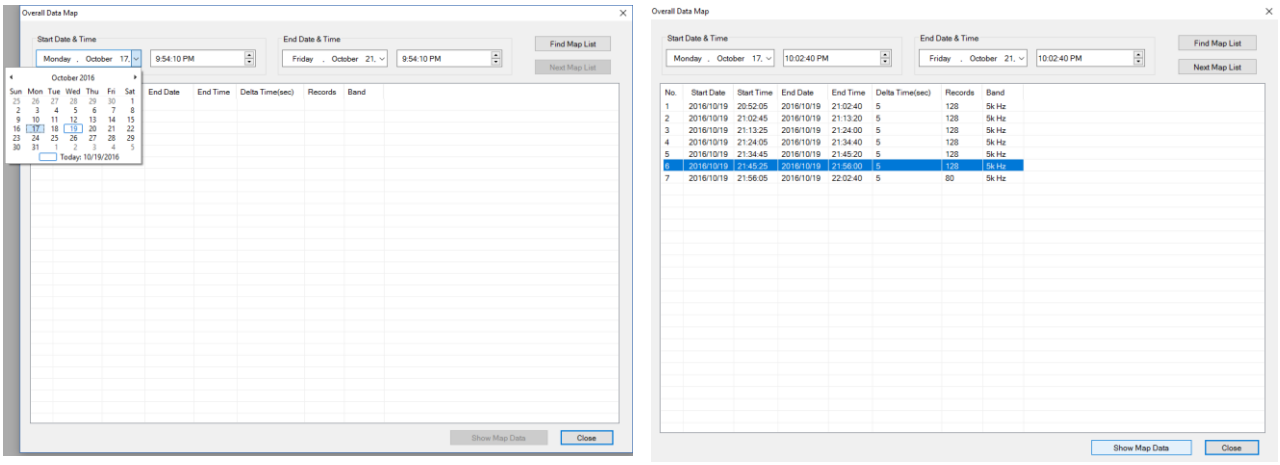


Figure4.22 Data log window

In the “Overall Data Map” window there is a time period filter to select the vibration data logged inside the device. Please click the “Find Map List” and “Next Map List” to list the logged data inside the device then click the “Show Map Data” to show the details.

The overall vibration data, time waveform and spectrum will be displayed in the “Storage Overall Log” window. These data are logged by an interval of seconds that is defined by the users in the function of “Data (Overall) Logger of “Standalone Mode Configuration”.



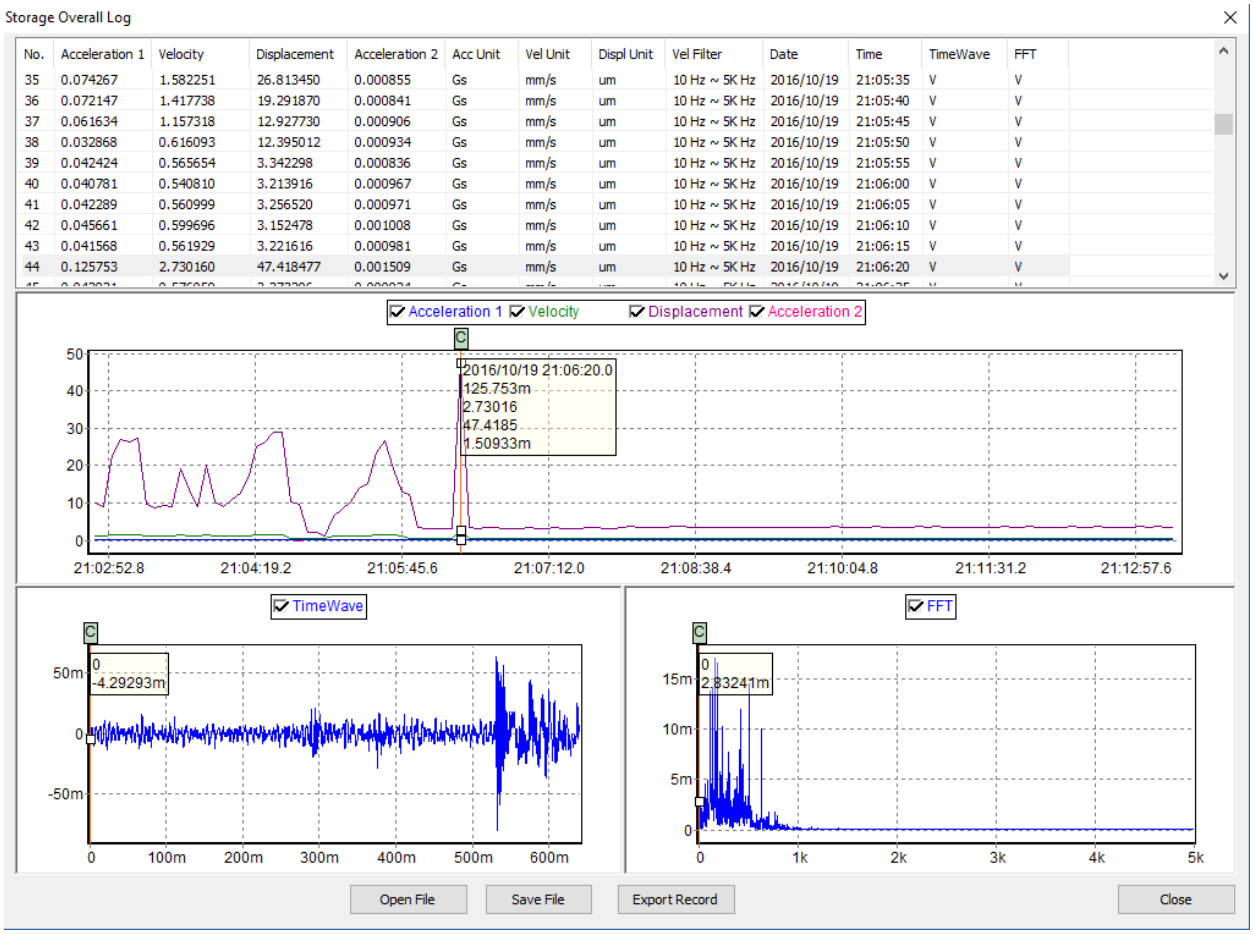
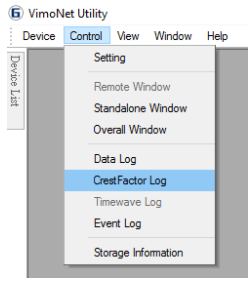
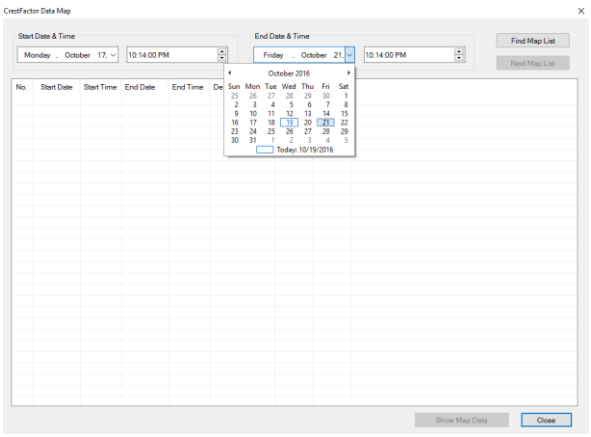


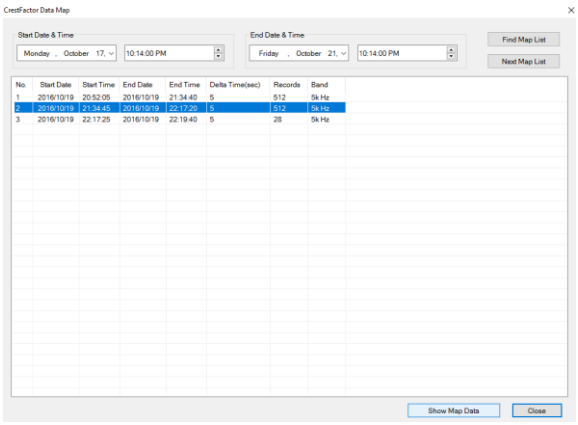
Figure4.23 Data log and review window

4.2.5. Crest Factor Log

The Crest Factor data can be downloaded to PC from the device. In the “Crest Factor Data Map” window there is a time period filter to select the Crest Factor data logged inside the device. Please click the “Find Map List” and “Next Map List” to list the logged data then click the “Show Map Data” to show the details.







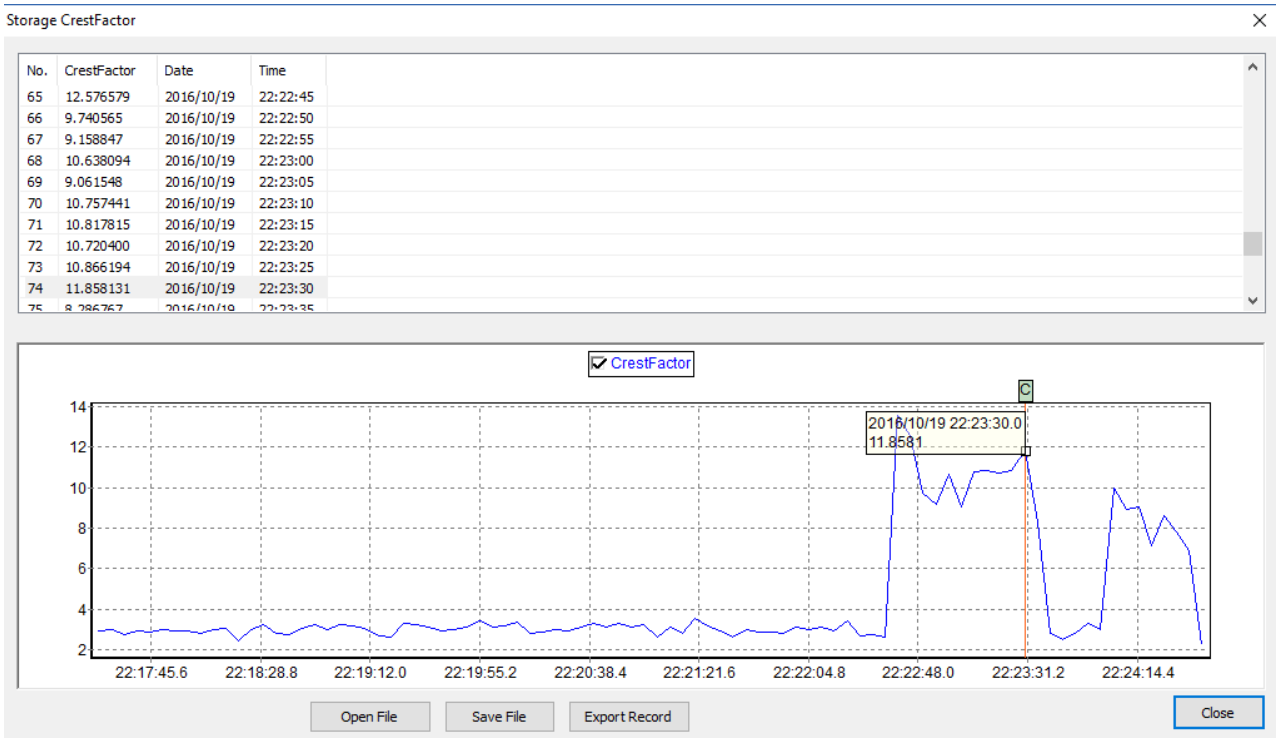
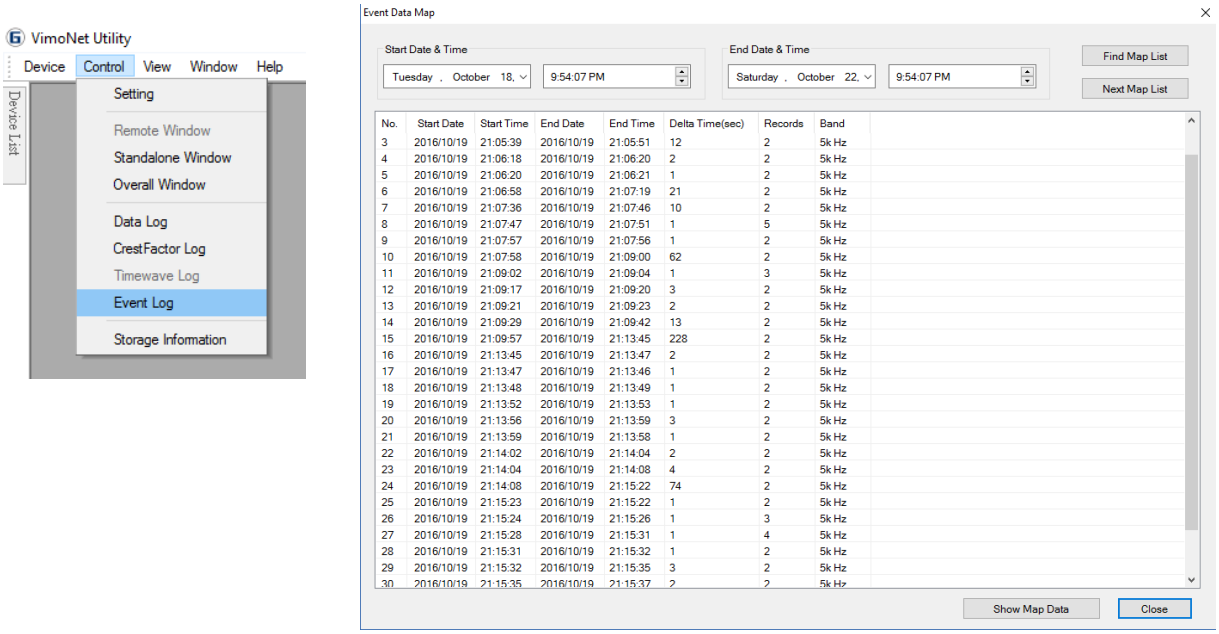


Figure4.24 Crest factor data log and review window

4.2.6. Event Log

The event logs are the defined alarm and collision events in the “Alarm & Collision Configuration” function. When the vibration values or the collision trigger the alarm level the device will recognize the even and log it to the event memory area of the device. The events can be downloaded to PC for the historical vibration review. In the “Event Data Map” window there is a time period filter to select the Event data logged inside the device. Please click the “Find Map List” and “Next Map List” to list the logged data then click the “Show Map Data” to show the details.



Vibration Alarm Events

Collision Events

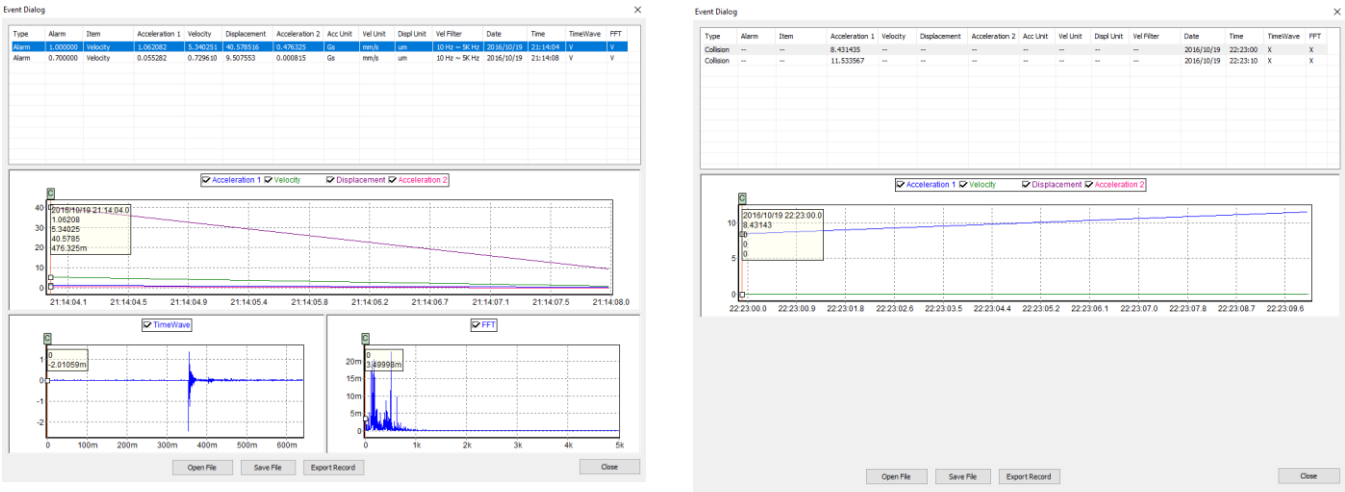


Figure4.25 Events data log and review window

4.2.7. Timewave Log

The “Timewave Log” is available when the remote mode is active. In the “Timewave Data Map” window there is a time period filter to select the time waveform data logged inside the device. Please click the “Find Map List” and “Next Map List” to list the logged data then click the “Show Map Data” to show the details.

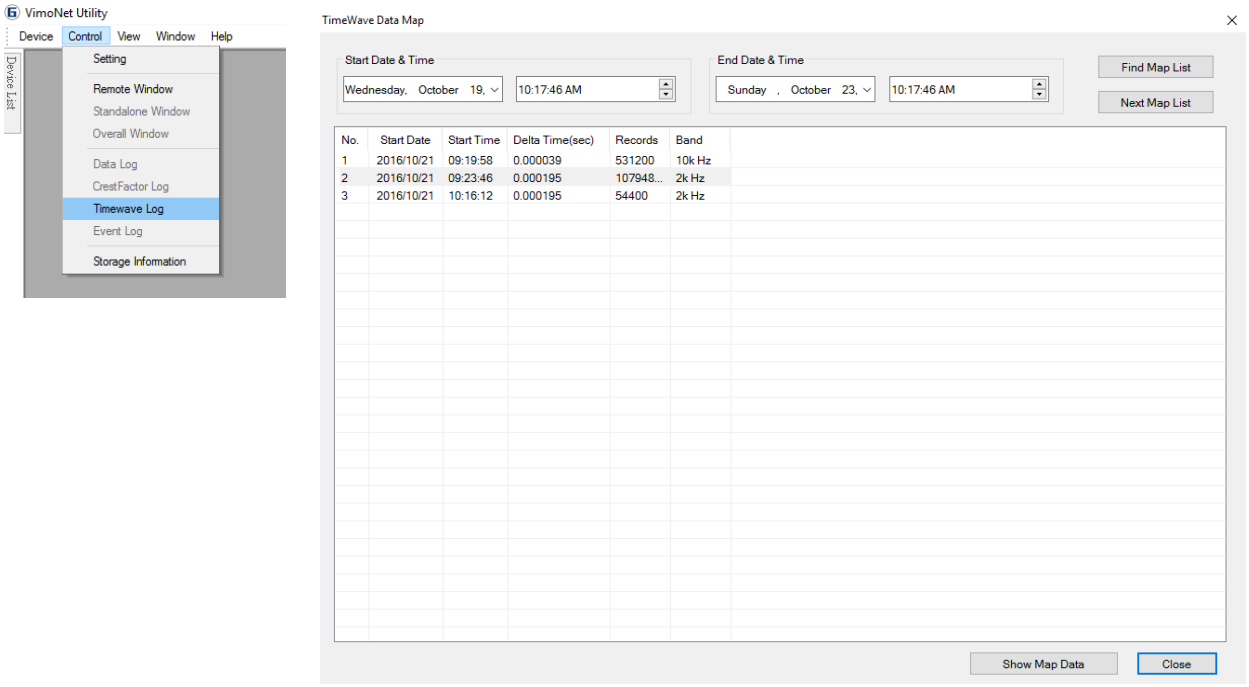


Figure4.26 Timewave data log window

The information of the time waveform data will show on the top of this window. That includes the total recorded data number and the start time. The data can be exported to a *.csv file or saved as a *.twe file.

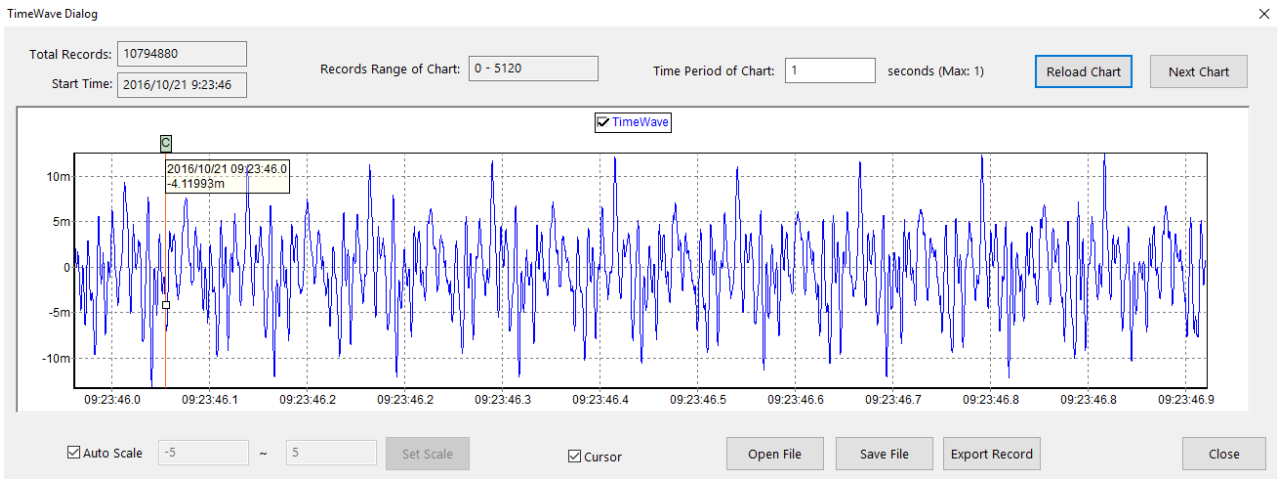
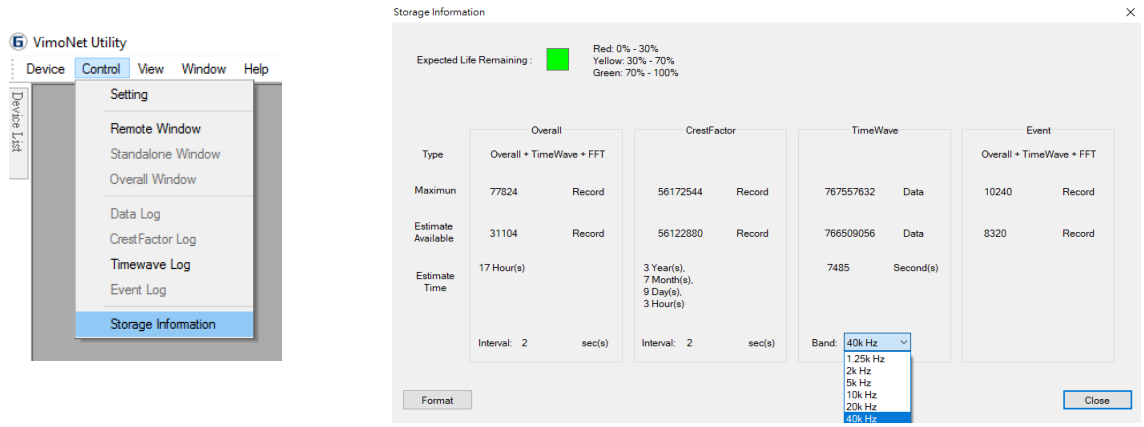


Figure4.26 Timewave data review window

4.2.8. Storage Information

The “Storage Information” provides the current available memory space, maximum space and the format function. On the top of the “Storage Information” there is life remaining information of the SD memory card. There are 4 types of data log in the SD card. The specified estimate time and log interval show below in every type of data log.

The “Storage Format” function provides log data type setting, the calculation of estimate time and the percentage setting of 4 types of log data. After finishing the log data setup and click the “Format” there is a note window to inform user that “To format storage to CLEAR all RECORD(S)”. If clicking “Yes” the “Utility” will clear all of the records in the SD memory card.



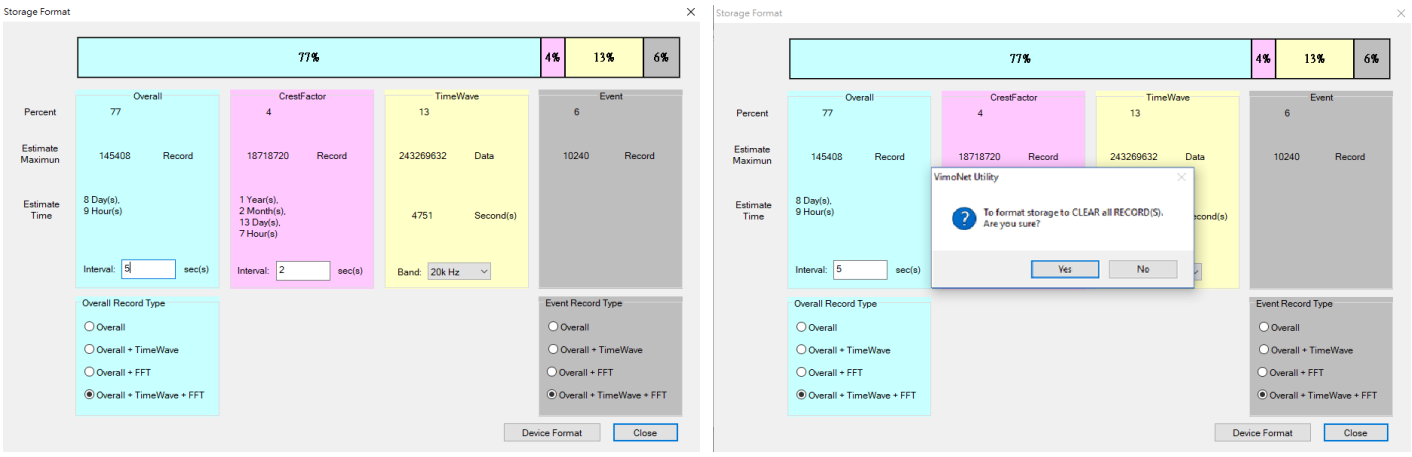


Figure4.26 Storage information and format setting window

4.3. View

The “Device List” of the “View” function lists the devices connected to the PC. The IP number of the devices will show in the left window.

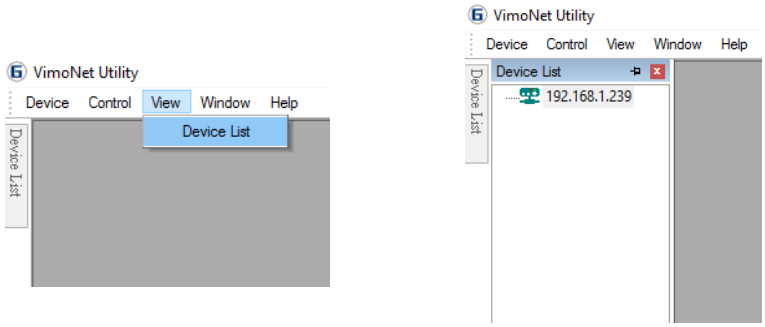


Figure4.27 Utility/ View/ Device List

4.4. Window

If there are many VimoNetX1 connected to the PC and all of the current data window can be shown in the “Utility”. The user can select anyone of the device and arrange the window in “Cascade”, “Tile” or “Arrange Icons” to show the current data of each device at the same time.

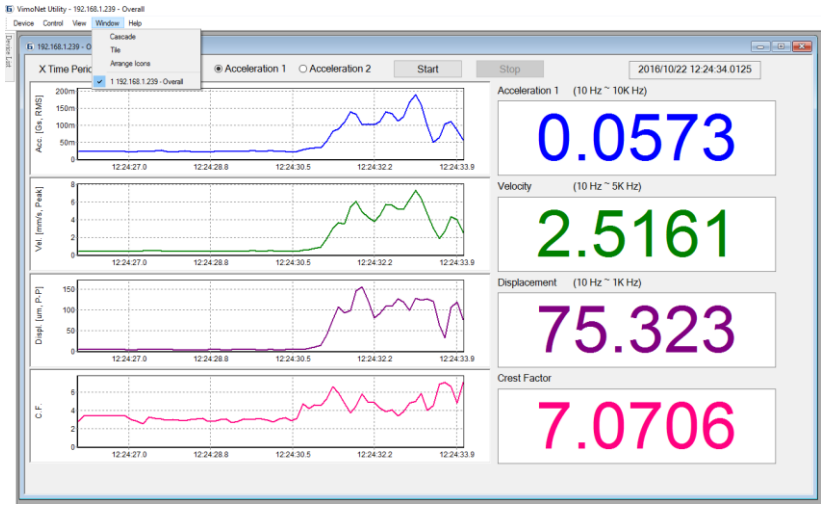


Figure4.28 Window arrangement

4.5. Help

The software version information of the “VimoNet Utility” is shown in the “Help” function.

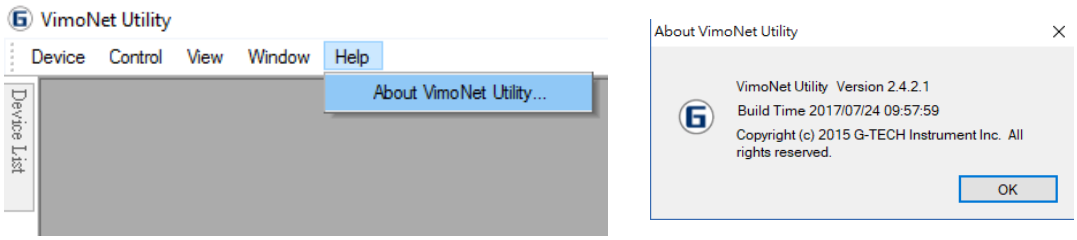


Figure4.29 VimoNet Utility Information

5. Real time monitoring APPS for Android

5.1. Setting up the device

From your smartphone Android 4.0 or higher, go to Settings, scroll down to Security, and select Unknown sources. Selecting this option will allow you to install apps outside of the Google Play store. Depending on your device, you can also choose to be warned before installing harmful apps. This can be enabled by selecting the Verify apps option in the Security settings. Then please install the “GTECH DEMO.apk” in your smartphone.

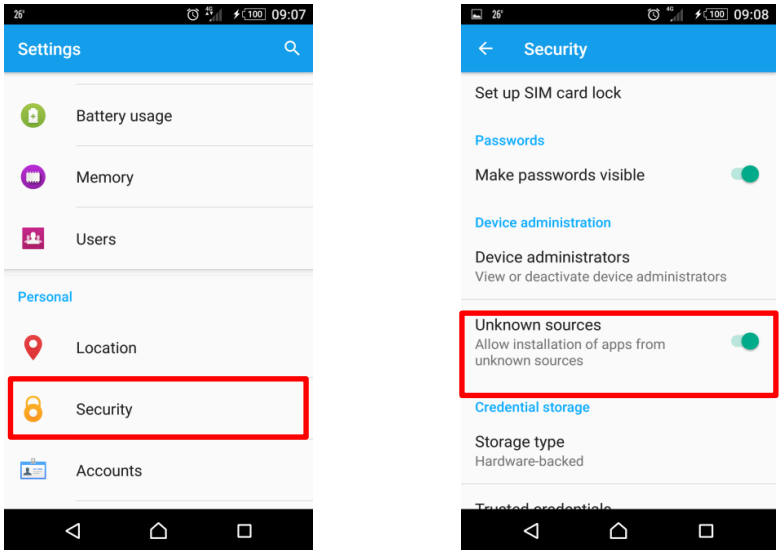


Figure5.1 APP Installation in Android

5.2. VimoNet Apps

There are two Apps in the “GTECHOnline”. One is ThermoMax. This Apps is for the machine temperature monitoring. The other is VimoNet. This is for the machine vibration monitoring.

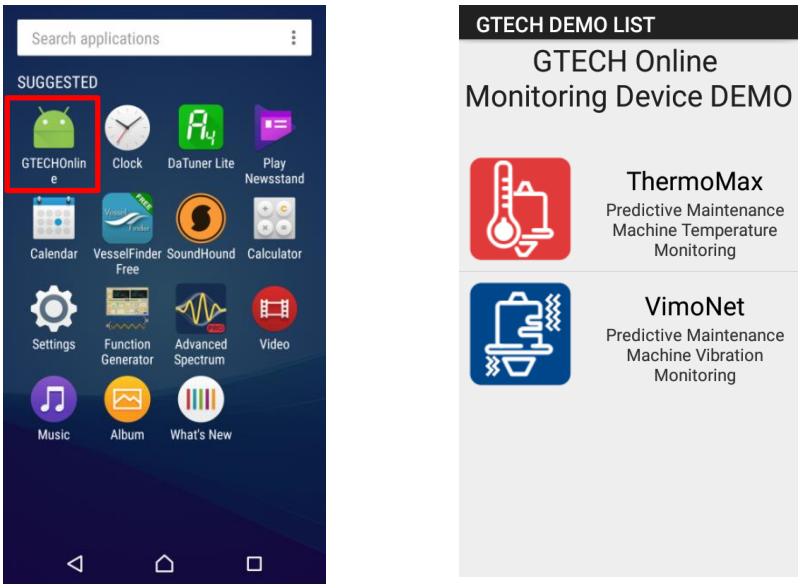


Figure5.2 APP in Android

Find the Wi-Fi which is connected to your Android smartphone and enter the IP address to link the device. There are four functions which are LIVE, SETTINGS, DATA LOG and EXIT in the screen.

The “LIVE” function is to monitor the current vibration values.

The “SETTINGS” is to show the settings of the connected device.

The “DATA LOG” is to log the logged data from the device.

The “Exit” is to exit the VimoNet Apps.

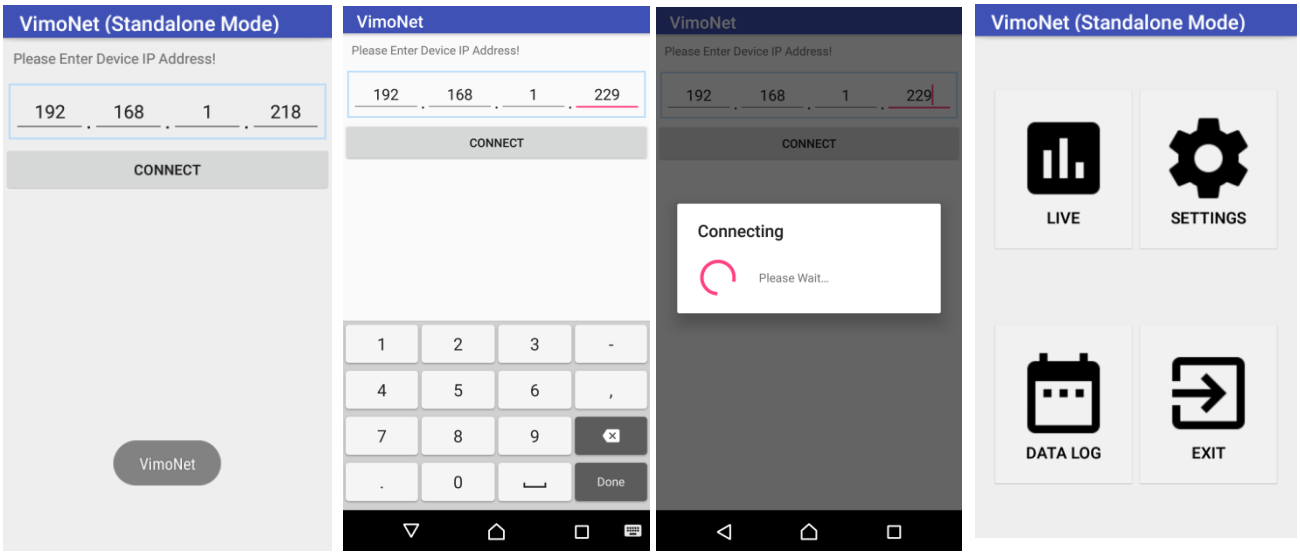


Figure5.3 Connection the device through WiFi

SETTINGS

This function shows the parameters of settings in the device. The user can’t change the settings in this Apps.

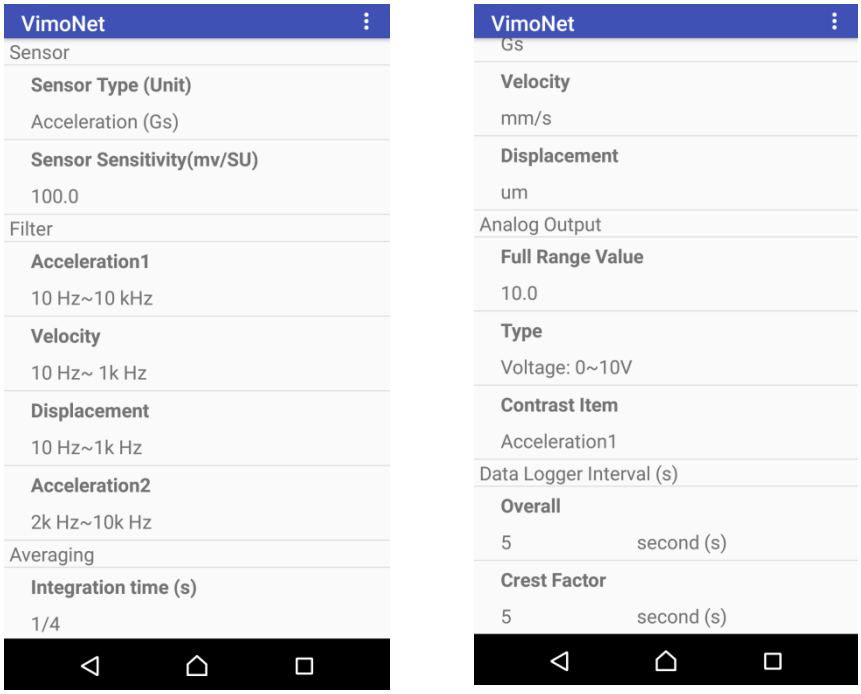


Figure5.4 Device setting review

LIVE

This function shows the current vibration values in acceleration 1 (10Hz-10kHz), Velocity, displacement, acceleration (2kHz-10kHz) and crest factor. If there is a vibration value over the alarm the reading will change in red and the trend of the vibration value and the critical line also show in the plot. The user can change the current trend in acceleration 1 (10Hz-10kHz), Velocity, displacement, acceleration (2kHz-10kHz) and crest factor.

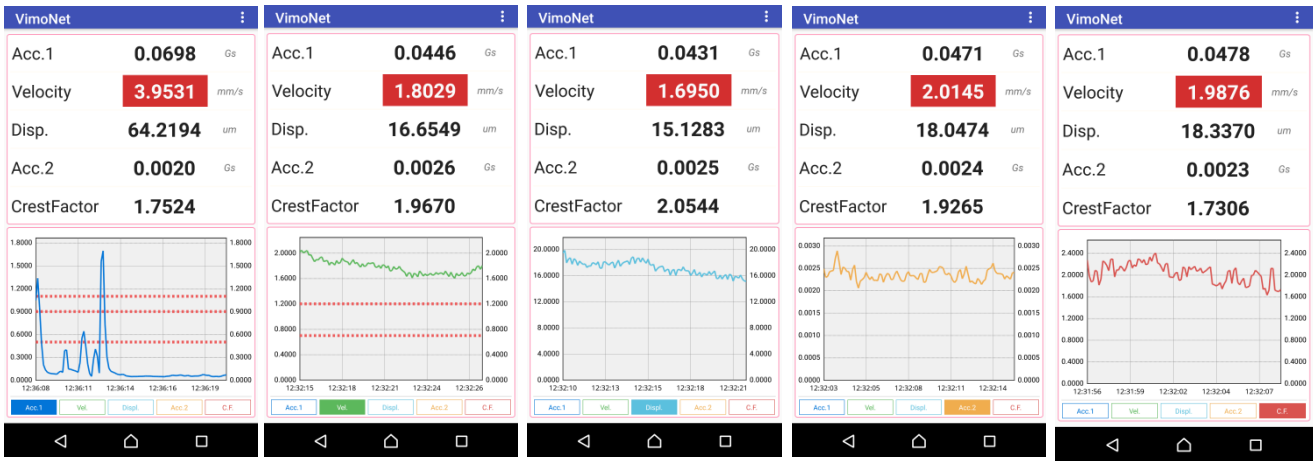


Figure5.5 Live display of the device

DATA LOG

This function shows the logged data in the device. The user can open the logged data from smartphone to review the historical data and events of the machine. There are three types of logged data which can be reviewed in this function. The first is “Overall”, the second is “Crest Factor” and the third is “Event”. The user can filter the log data by date period searching. After setting the date period filter and click the “search” there will show the logged data list.

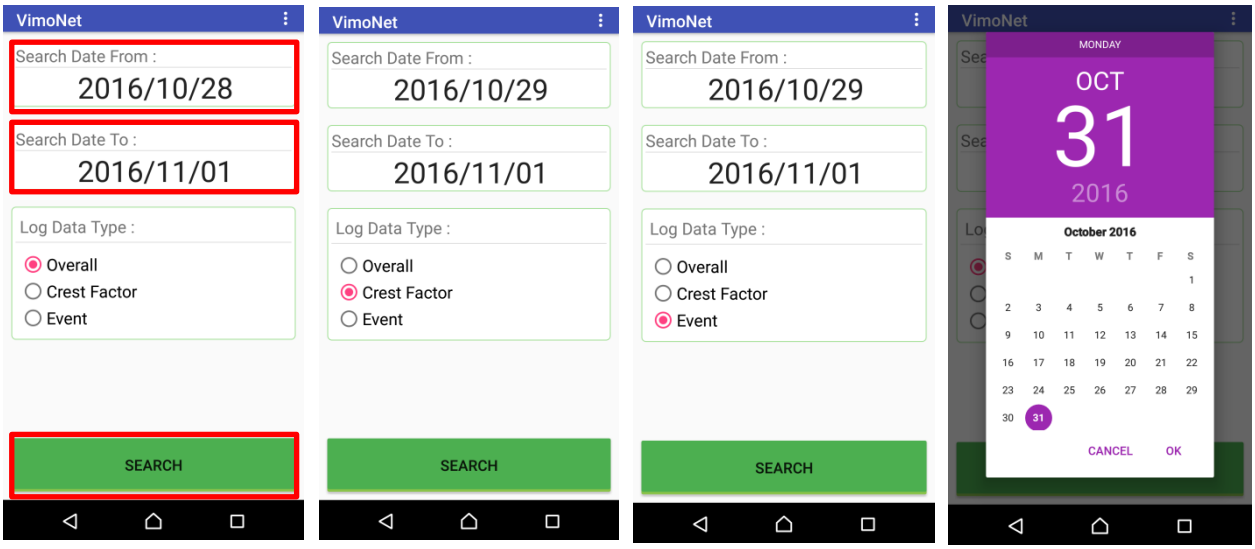
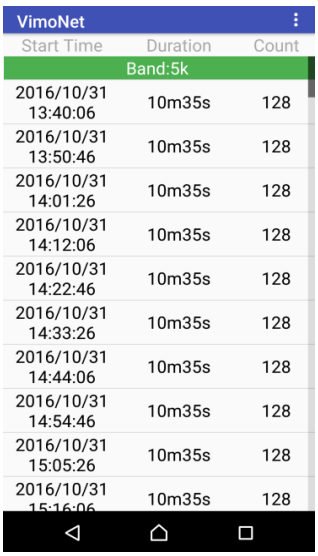


Figure5.6 Data log review in the device

Overall data list



Crest Factor data list

Event data list

Figure5.7 Data log list

The start time, duration and count number will show in the data list. You can select anyone record that you concern to review the details.

You can select the vibration unit to review the trend and pick the peak by the cursor to review the details.

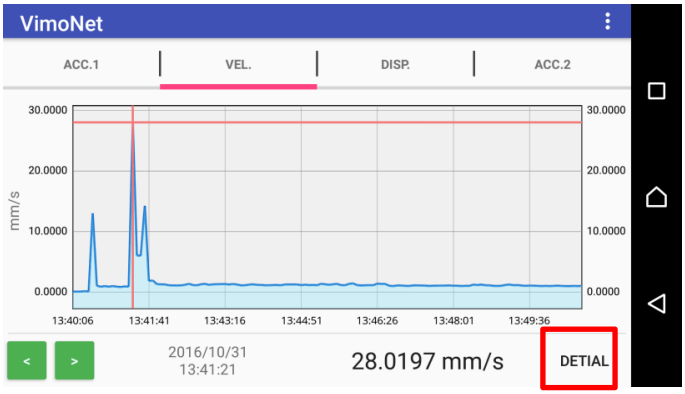


Figure5.8 Overall log data trend

The details will show the overall vibration values in different unit, time waveform and the power spectrum (FFT).

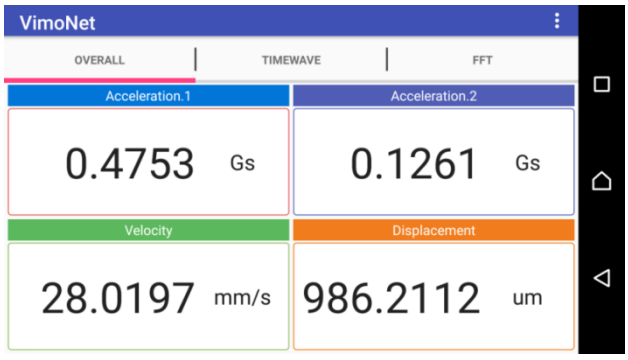


Figure5.9 Overall vibration data in the log data

Time waveform FFT

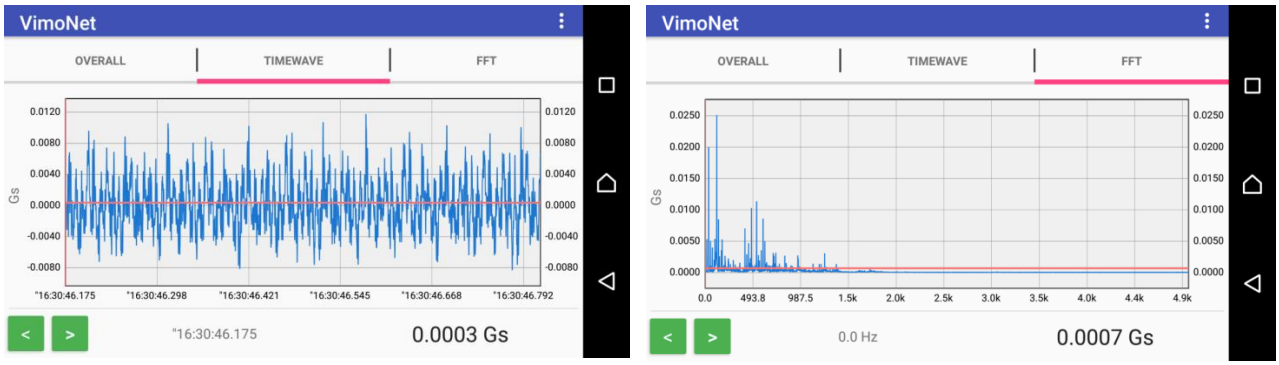


Figure5.10 Time waveform and FFT in the log data

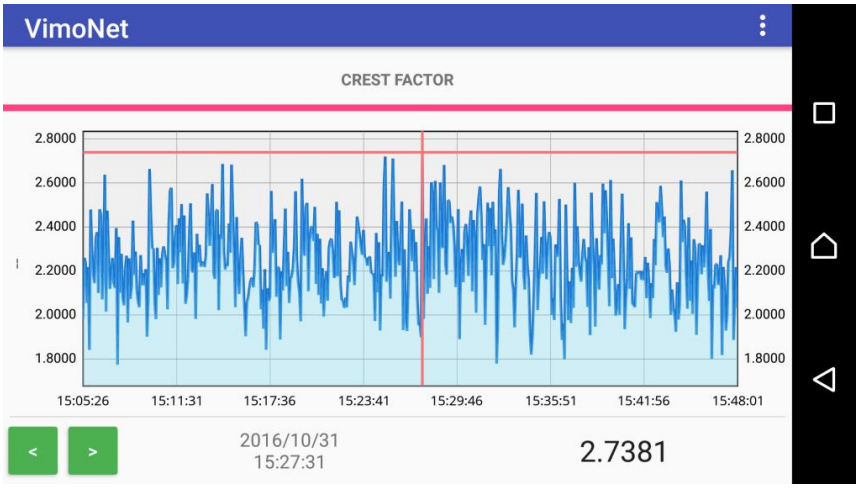


Figure5.11 Crest Factor trend

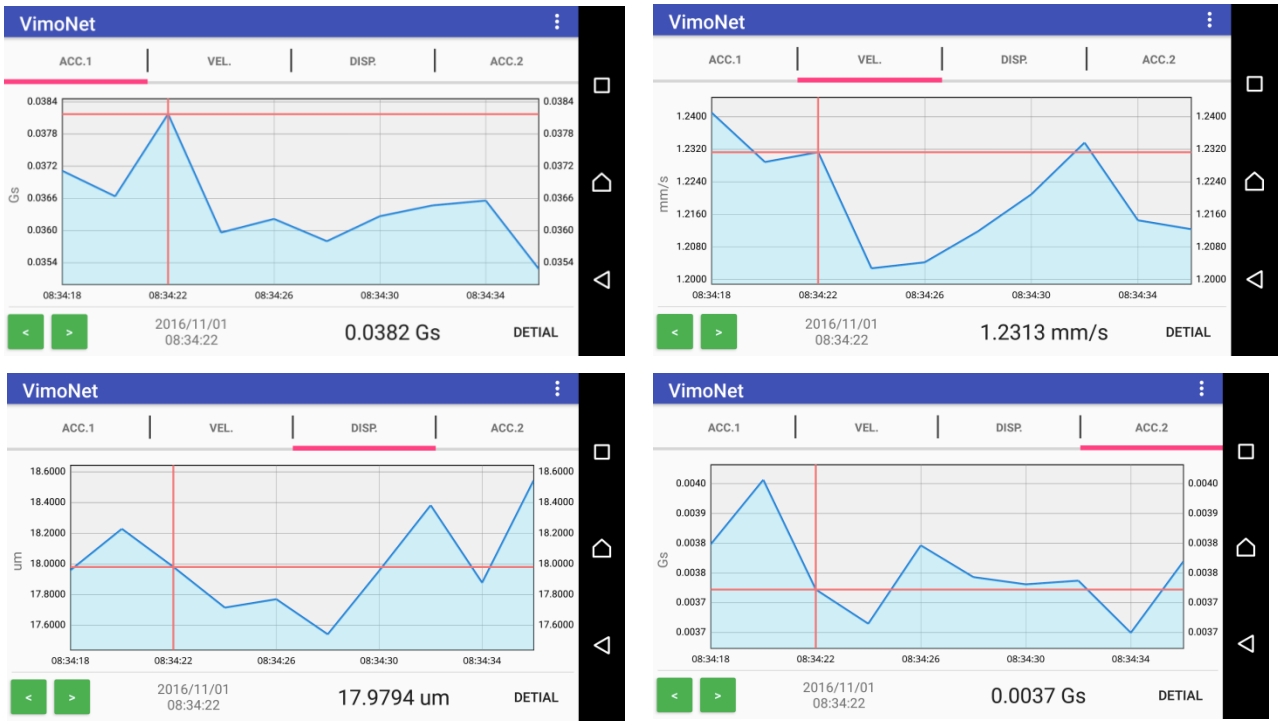
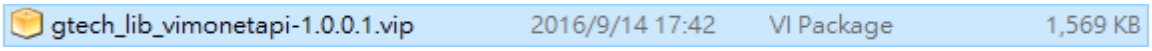


Figure5.12 Event log

6. VimoNet API for LabView and C++/C

6.1.1. VimoNet API for LabView

Before launching the VimoNet API of LabView please install VI Package Manager (VIPM) from JKI first. Once VIPM has been installed please download the attached*.vip file below.



Then follow the instructions to complete the installation.

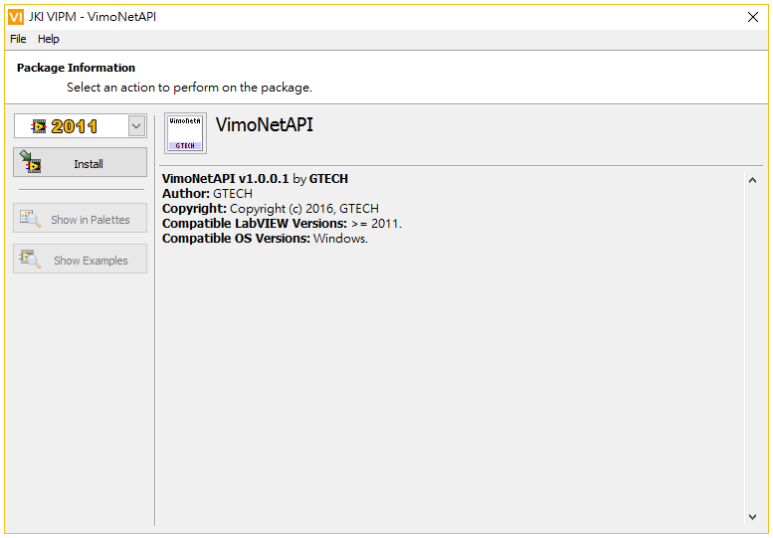


Figure6.1 VimoNetAPI installation in Labview

Open the functions palettes to view the VimoNet API.

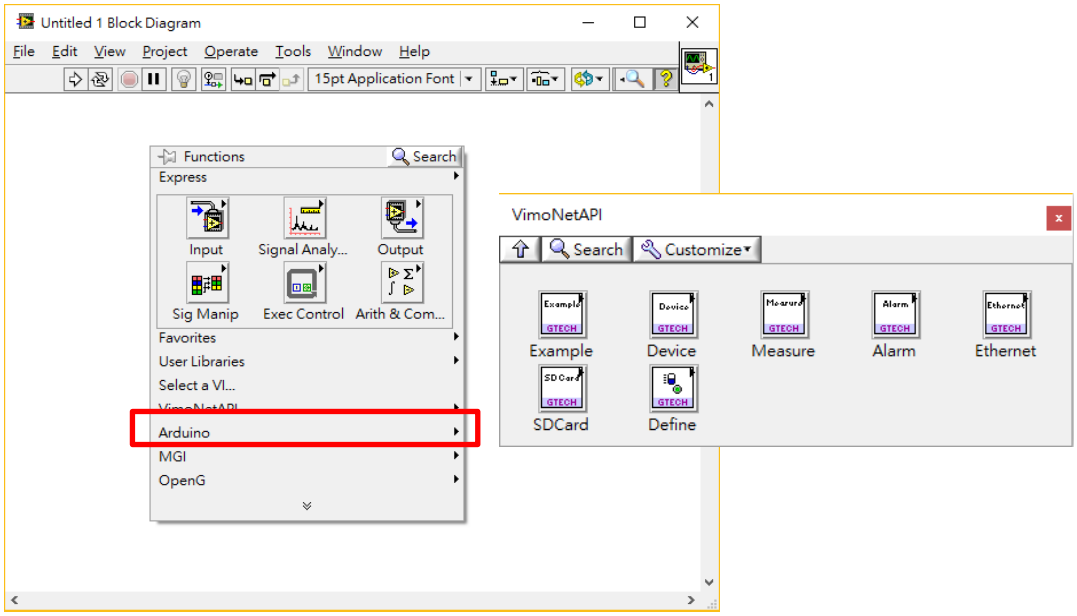


Figure5.2 Function in Labview

6.1.2. Example

Example folder includes a number of example programs that illustrate how to perform data acquisition operations and set up parameter on VimoNet devices. You can easily modify these examples to speed up building UI.

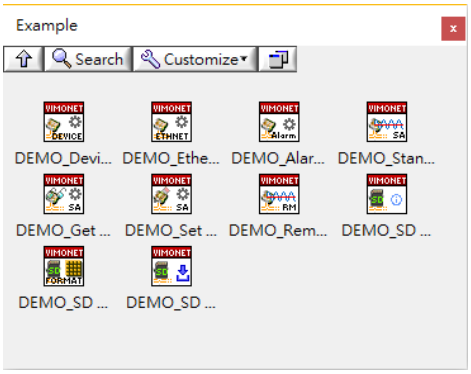


Figure5.3 Examples in Labview

Example	
DEMO_DeviceSettings	Demonstrates how to create device task and set up device options, including the coupling (AC/DC/IEPE), measurement mode (remote/standalone)and other device's information.
DEMO_EthernetSettings	Demonstrates how to configure the Ethernet settings (IP/Gateway/Sub Mask).
DEMO_AlarmSettings	Demonstrates how to configure alarm settings in standalone mode.
DEMO_StandaloneRealTimeMeasure	Demonstrates how to acquire real-time overall, time wave, spectrum data while the device is in standalone mode.
DEMO_Get StandaloneSettings	Demonstrates how to get standalone settings, including bandwidth, sensor sensitivity, sensor unit, display unit and analog output configuration.
DEMO_Set StandaloneSettings	Demonstrates how to set standalone settings.
DEMO_RemoteRealTimeMeasure	Demonstrates how to continuously acquire data from an analog input channel while the device is in remote mode.
DEMO_SD Card_Information	Demonstrates how to get the information about SD card usage.
DEMO_SD Card_Format	Demonstrates how to get storage capacity estimates for SD card and format SD card.
DEMO_SD Card_ReadDataLog	Demonstrates how to get record data from SD card.

6.2. VimoNet API for C++/C

Please contact Benstone Instruments Inc. for details if you need.