Phoenix GM Lite

Machine Condition Monitoring and Recording Utility

User's Manual

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1. General

1.1 General Description of Phoenix GM Lite

The Phoenix GM Lite is a monitoring and recording utility with the following functions.

- User-defined scheduled measurement with real-time display
- Rotating device, such as motor, pump and gearbox, and others, vibration measured via accelerometer sensor
- Result display, trend analysis, threshold detection and alarm delivery
- 4CH AC/DC/ICP input
- 4CH FFT and OA calculation
- Support for ISO10816 vibration reference setting for alarm and threshold limit
- Adjustable sensor sensitivity
- Adjustable measurement bandwidth as well as OA calculation for acceleration, velocity, and displacement
- Automatic deletion of unneeded measurement data when storage space fills
- Autosave of measurement data when warning is generated
- Adjustable warning delay and notificatrion

1.2 System requirements

1. Microsoft® Windows 7, Server 2012, Windows 8, Windows 8.1 operating system or above
2. Microsoft® Office 2010 or above
3. Intel® Pentium 4 933 MHz CPU or above
4. RAM 512MB and above
5. Mouse
6. USB 2.0 or 3.0 port

2. Software Installation

2.1 Driver Installation for USB-2405

1. Download UD-DASK and DAQPilot drivers from http://www.adlinktech.com. Run the EXE file and follow instructions to install the driver
2. Follow the website_x86_v3.15.1.1217" directions
3. Run *DAQPilot_x86_v3.15.1.1217.exe* to install the hardware driver. The program installs accordingly
4. Restart the computer to complete the installation.

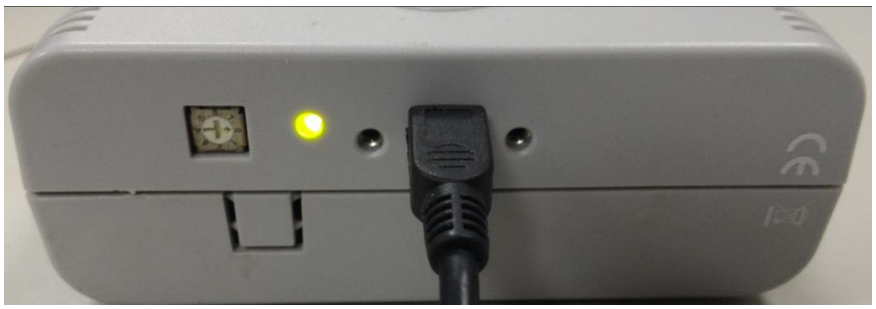
2.2 GM Lite Installation

1. Download GM Lite from http://www.adlinktech.com
2. Select PdmAInst\Volume to access the software program folder
3. Run Setup.exe and follow the instructions
4. Restart the computer to complete the installation.

3. Getting Started

3.1 Connecting the USB-2405 Module

1. Before executing GM Lite software, connect the USB-2405 to a USB 2.0/3.0 port on the computer using the included USB cable. When connected, the USB-2405 loads firmware and driver. When loading is complete, the LED indicator on the rear of the USB-2405 changes from amber to green.

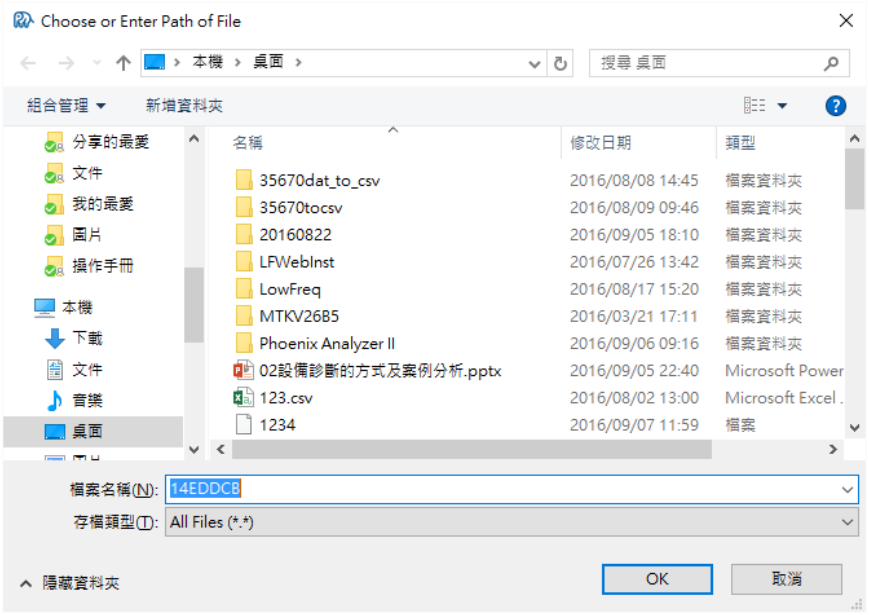


3.2 Activating GM Lite

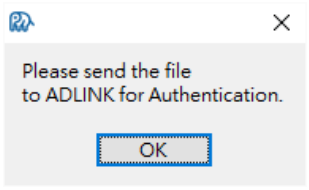
1. To obtain the license to activate GM Lite, with the USB-2405 connected to the computer, run *GMLiteLicense**GMLiteAuth.exe* in the GM Lite Installation Package downloaded from the ADLINK website:

Indicates that only 600 seconds of trial use remain without license acquisition

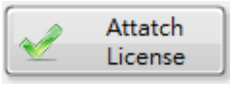
2. In the **CodeFromVendor** field, enter the serial number from the authorization included in the Starter Kit package.
3. Select **Generate File for Auth**. A folder directory appears.
4. Save the license file. The filename defaults as the serial number and can be changed.



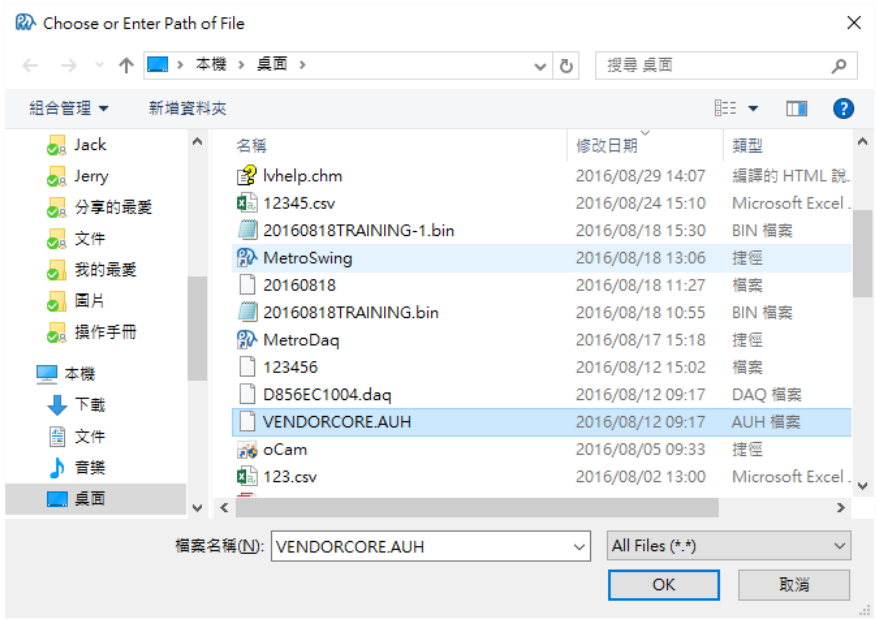
5. After saving is complete, a prompt appears to submit the license file to ADLINK.



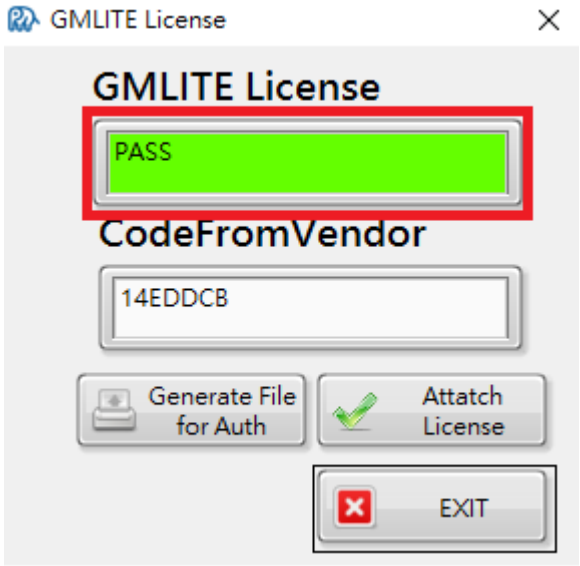
6. E-mail the authority file to ADLINK Service (service@adlinktech.com)
7. ADLINK returns the corresponding license file (.AUH)
8. Run “GMLiteAuth.exe” again and select



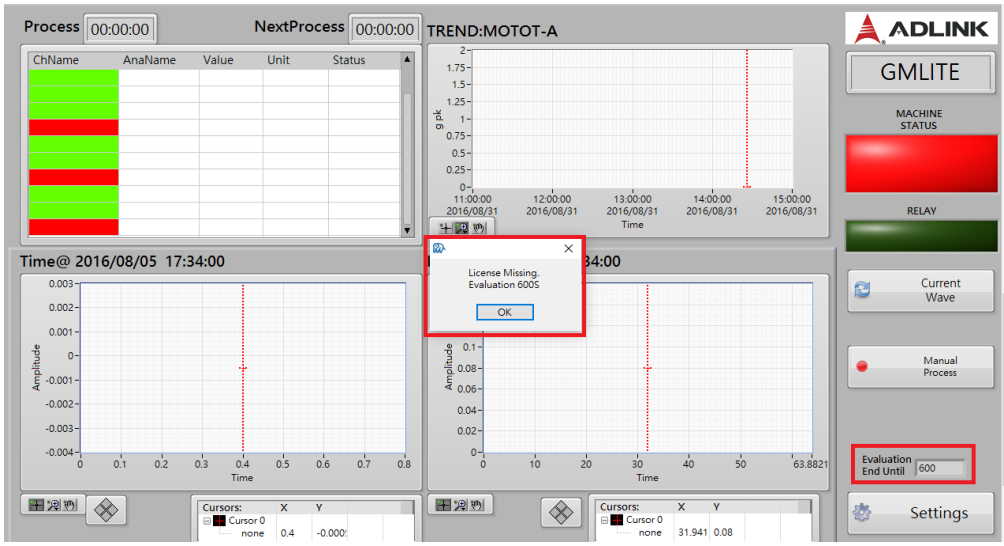
9. Select the license file (.AUH) provided by ADLINK. Select OK.



10. The license file loads automatically and the “PASS” message appears.



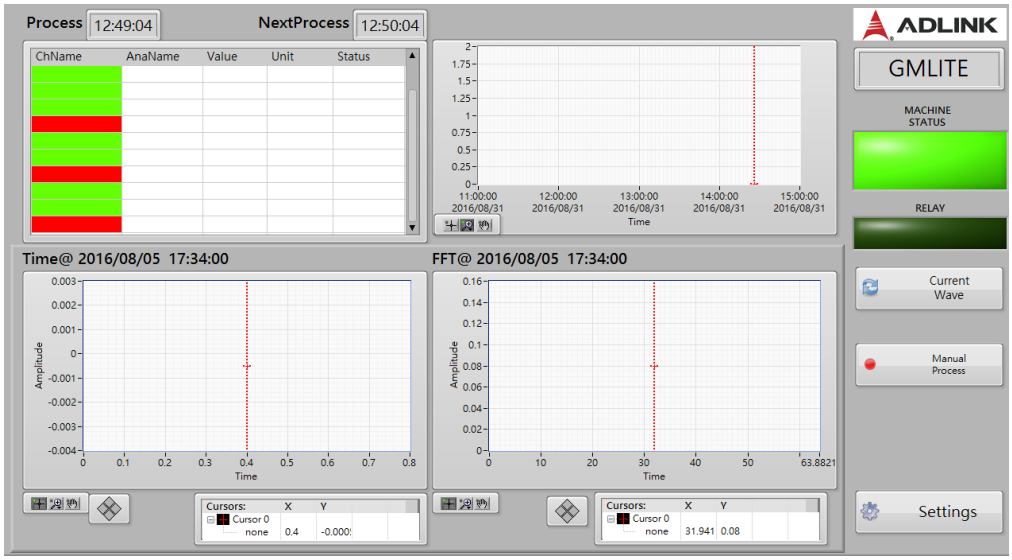
11. Select to close the program. GM Lite can begin.
12. If the following hint window appears, it means that the license file has not been acquired yet and GM Lite software can run for 600 seconds only. After the aforesaid 600 seconds have elapsed, the GM Lite will close automatically.



3.3 Measurement Setup

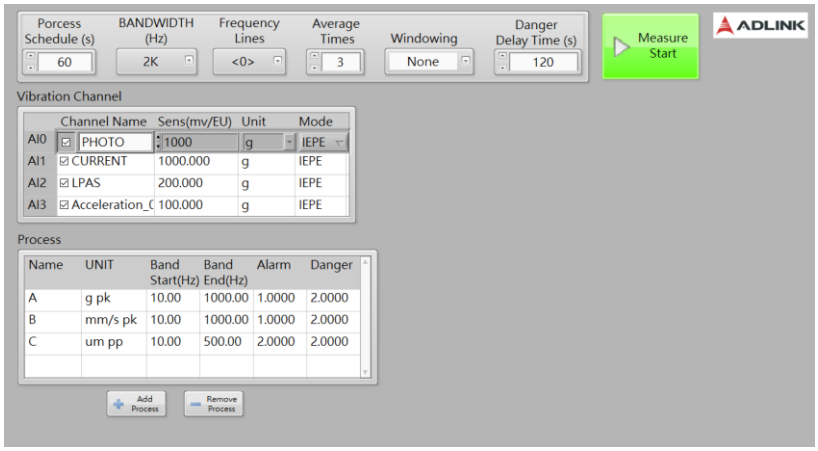
1. Select the M Lite shortcut on the desktop.

2. The Main window appears, as shown.

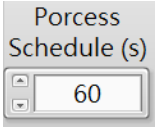


3. Select Settings.

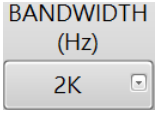
4. The Window Setup window appears



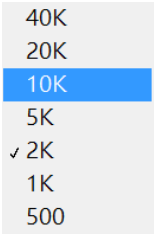
5. To set the time interval for periodic measurement, either select the Process Schedule field and enter the desired interval or use the arrow keys. The minimum interval is 60 seconds.



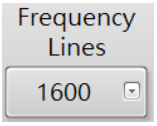
6. Choose the desired measurement bandwidth.



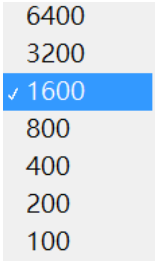
GM Lite supports bandwidth options as shown.



7. Select the desired number of frequency spectrum analytical lines.

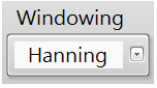


GM Lite supports options as shown.

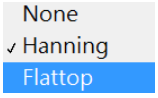


8. Select the average times of measurement for frequency spectrum calculation.

9. Select the desired type of windowing for FFT.

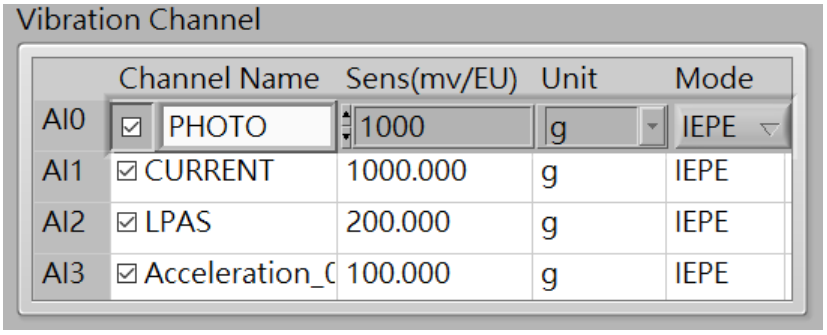


GM Lite provides options of hanning and flat-top.

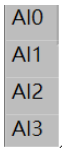


10. Set the warning delay time in seconds.

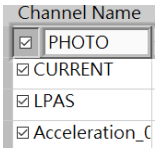
11. Use the Vibration Channel panel to configure the input channel for USB-2405.



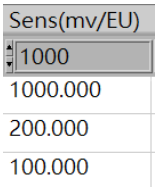
Channel hardware numbers are listed.



- Channel names are listed, with check boxes indicating whether the channel measures data according to the setting or the channel is disabled during measurement.

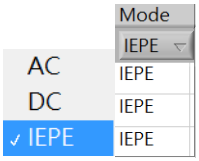


- Sensor sensitivity can be selected, in mV/EU.

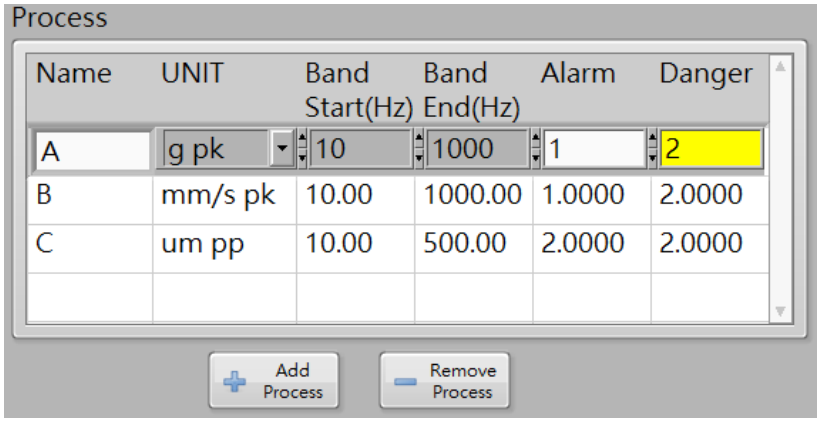


- Unit of measurement is preset to acceleration in g.

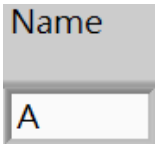
- Input configuration can be selected from among AC, DC, and IEPE.



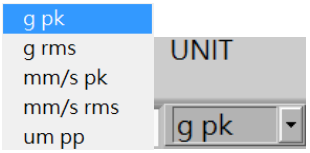
12. “PROCESS” is the calculation setting for the measurement channel. A number of settings can be concurrently programmed for each individual channel of USB-2405. For the Vibration Channel, selecting any channel setting displays the corresponding channel calculation setting.



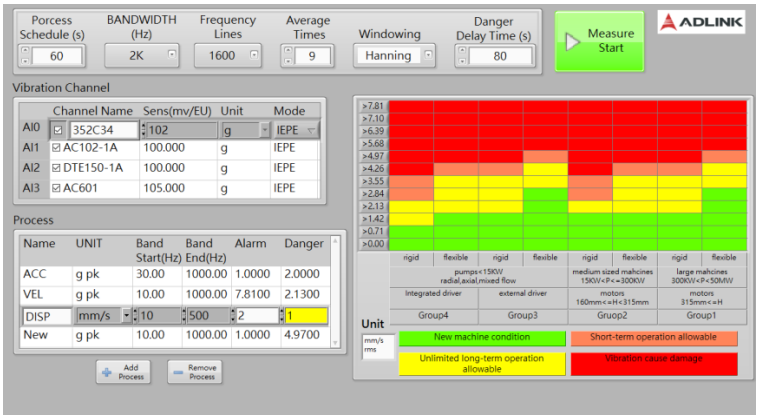
- Task name of the measurement.



- Unit of measurement data, supporting acceleration, velocity, and displacement.



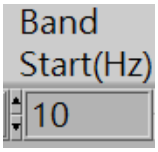
When mm/s pk or mm/s rms is selected as the velocity unit, the ISO 10816 secondary window appears, as shown



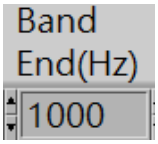
Alarm and danger thresholds can be set by referring to the recommended value based on machine type and alarm type at the bottom of the

window. Selection of the Alarm or Danger table automatically sets the corresponding value in the Alarm or Danger field. Selection of the non-speed measurement setting bar for setting the measurement point closes the secondary ISO 10816 window.

- Sets the starting frequency for OA calculation, either by direct entry or via arrow keys.

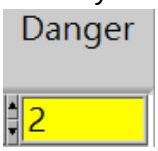


- Sets ending frequency for OA calculation, either by direct entry or via arrow keys.



- Sets Alarm threshold, either by direct entry or via arrow keys.

- Sets the Danger threshold, either by direct entry or via arrow keys.

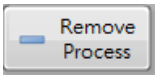


- Selecting Add Process adds new measurement settings at the lowest portion of the Process table under the selected channel, according to the procedures specified.

Process

Name	UNIT	Band Start(Hz)	Band End(Hz)	Alarm	Danger
A	g pk	30.00	1000.00	1.0000	2.0000
B	mm/s pk	10.00	1000.00	1.0000	2.0000
C	um pp	10.00	500.00	2.0000	2.0000
New	g pk	10.00	1000.00	1.0000	2.0000

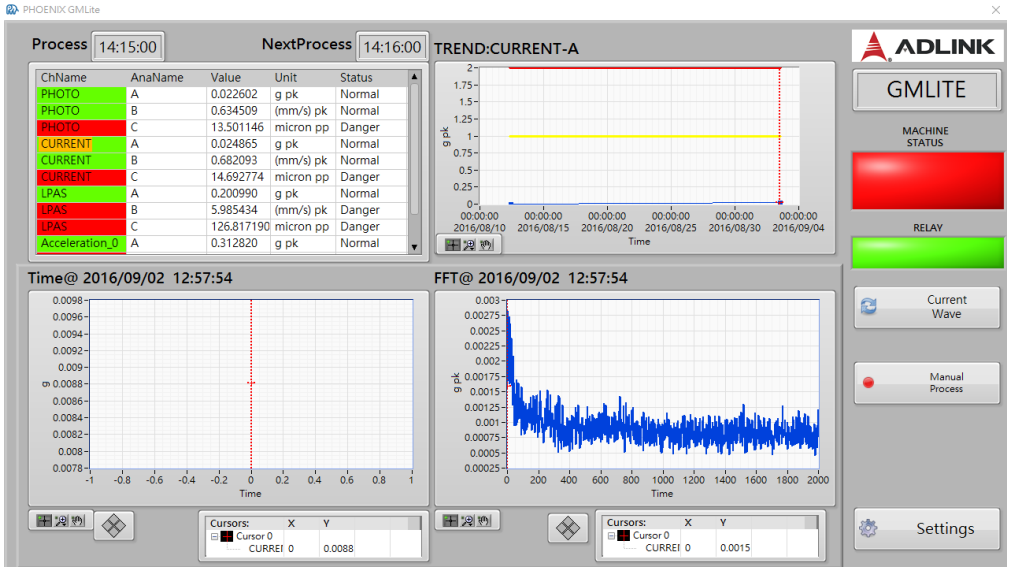
- Selecting a measurement setting name bar in the Process table and then selecting Remove Process deletes the measurement setting, after which Process updates the table display to reflect the deletion.



- Selecting Measure Start begins measurement, closing channel and measurement setting windows and switching to the Main Window.

3.4 Measurement and Display

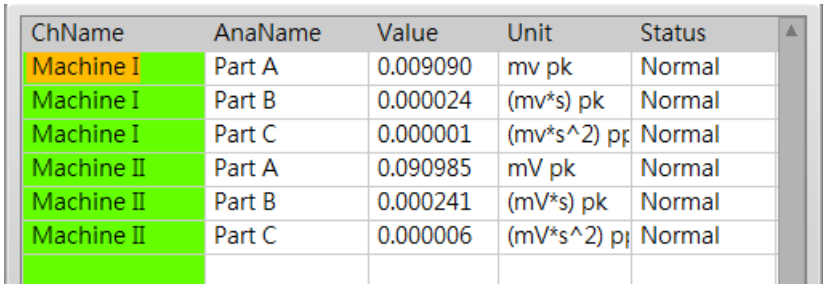
Main Window elements are as follows.



1. Time of the previous measurement.

2. Time of the next upcoming measurement.

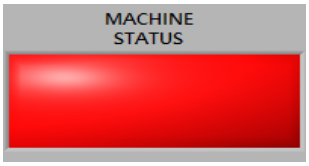
3. The channel pane displays measurement results and status, as follows



Item	Description
ChName	User-defined channel name. Color changes with the status of measurement result

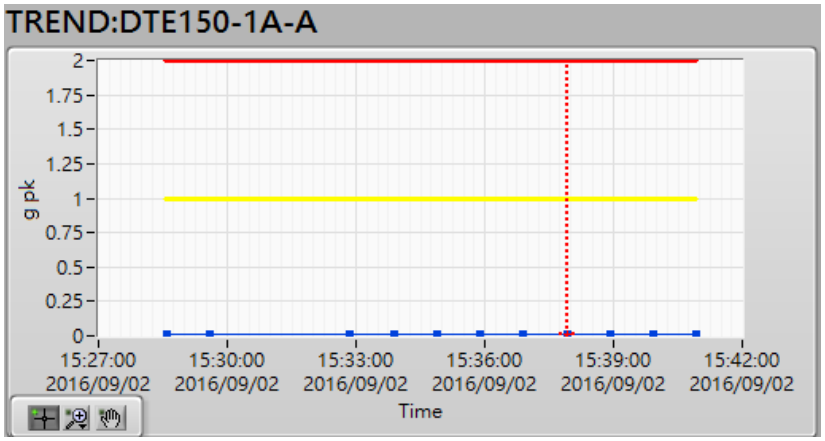
Item	Description
	• Green indicates normal • Yellow indicates alarm • Red indicates Danger If a setting is selected, text in the corresponding channel displays orange.
AnaName	Measurement calculation setting name
Value	OA value of most recent measurement
Unit	Unit of OA calculation
Status	Status of the current measurement result. •If OA value is below the Alarm threshold, displays as Normal •If OA value exceeds the Alarm threshold but is below the Danger threshold, displays as Alarm •If value exceeds the Danger threshold, displays as Danger

4. The alert level of the most recent measurement. When any OA value in the measurement results exceeds the Danger threshold, red is displayed. If no OA value exceeds the Danger threshold but any exceed the Alarm threshold, yellow is displayed, and if none exceed the Alarm threshold, green is displayed.

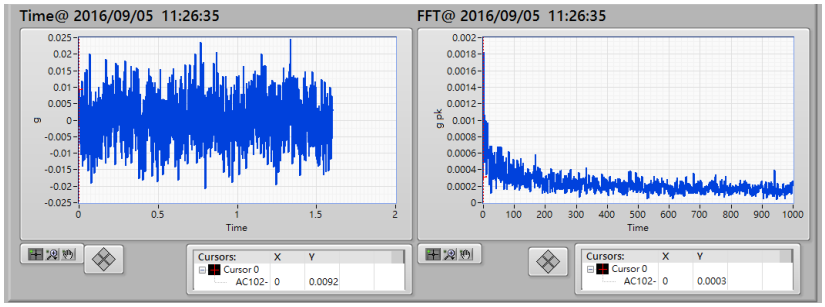


5. Output status of the USB-2405 GPIO0. When active, light green displays, changing to dark green color when inactive.

6. The Trend pane shows OA measurement results, and Alarm and Danger thresholds. Movement of the time cursor displays the corresponding time-domain data and spectrum in the lower display field.



Time-domain and spectrum waveforms corresponding to respective trend points are displayed. Moving the cursor on the time domain waveform displays corresponding time and value in the Cursor field. Moving the cursor on the spectrum waveform, the corresponding frequency and value will be displayed in the Cursor field.

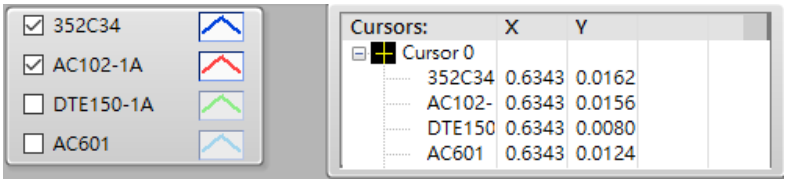


7. Selection of the Current Wave button

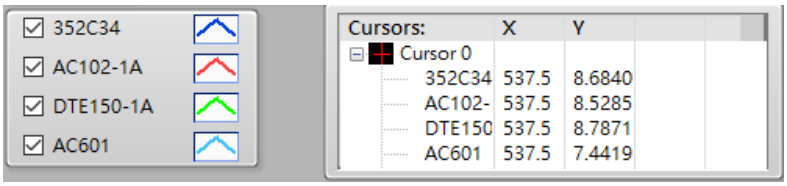
Changes its appearance to

And the time-domain and spectrum chart switches to display real-time waveform. Selection again returns the real-time display to the trend point waveform.

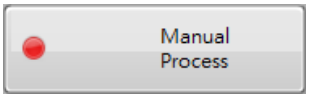
Under the time-domain waveform is the display setting of selected channel(s) and corresponding waveform. Selection of the checkbox on the left side of the Channel Name enables waveform display of the selected channel. Selection of the waveform color figure on the right side of Name sets the waveform color. Cursor movement on the time domain waveform displays corresponding time and value in the Cursor field.



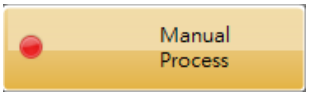
Under the spectrum waveform is the display setting of selected and corresponding waveforms. Selection of the checkbox on the left side of Channel Name enables waveform display of the selected channel. Selection of the waveform color figure on the right side of Name sets the waveform color. Cursor movement on the spectrum waveform displays corresponding frequency and value in the Cursor field.



8. Selection of the Manual Process button advances to the next scheduled measurement. change



The button changes its appearance to

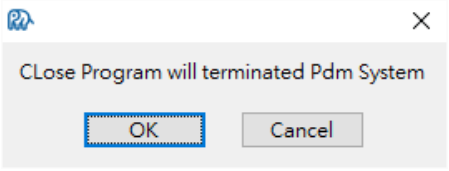


Indicating that the measurement is in progress. Status reverts after the measurement is compete.

9. Selection of the Settings button terminates measurement and opnes the Settings window.

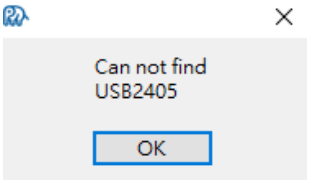
Selecting Close in the Main Window

Before closing, a prompt appears.

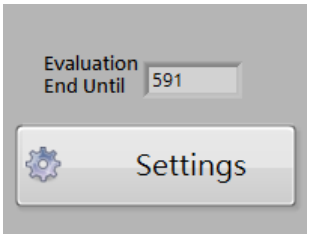


Select OK to close the program. Select Cancel to abort shutdown.

10. If no USB-2405 is connected to the PC before starting the program, a reminder message appears

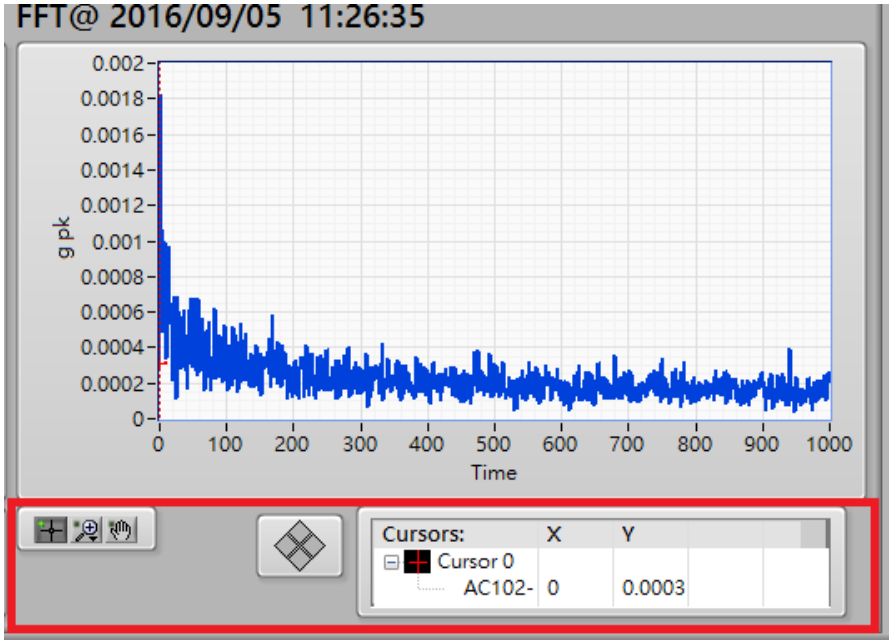


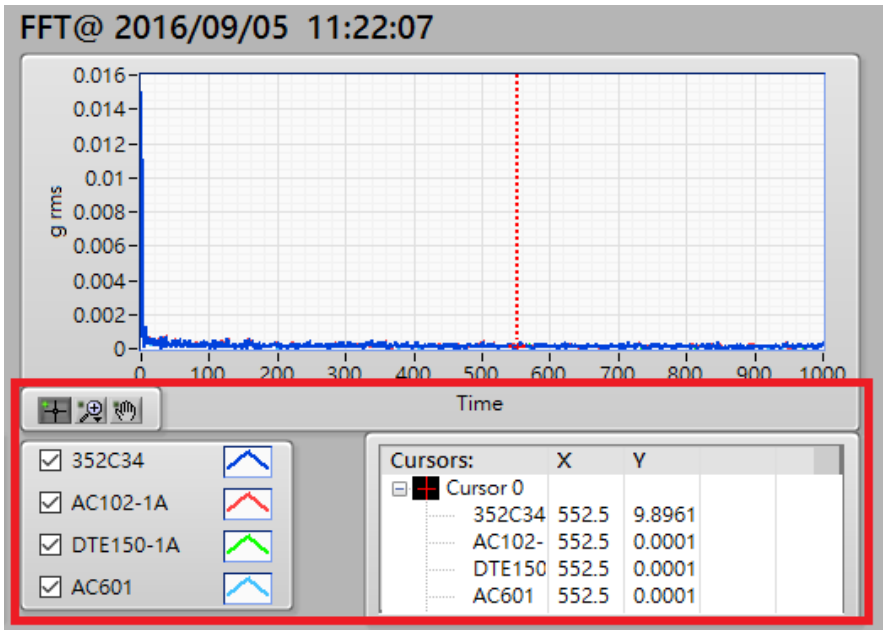
The GMLite utility commences counting down automatically and closes after 600 seconds.



3.5 Waveform Analysis

The waveform analysis tool is in the lower portion of time-domain and spectrum waveform. Functions are as follows.

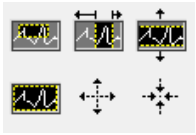




1. Analysis Tools

Zoom In/Out:

When pressing this button, the following figures will be displayed with functions as follow.



Zooms in the selected field to full page.

Zooms in the selected X-axis field to full page.

Zooms in the selected Y-axis field to full page.

Automatically adjusts to optimum display graduation according to waveform size.

Zooms in the figure based on the position of cursor.

Zooms out the figure based on the position of cursor.

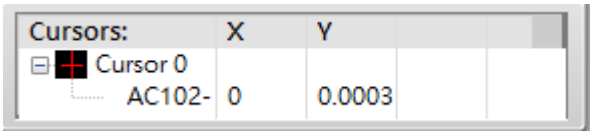
Cursor:

When selected, cursor can be moved by dragging.

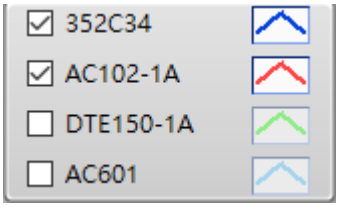
Movement of display area:

Selection moves the waveform horizontally.

2. The function key  moves the cursor line. Selecting the left arrow moves the cursor line one coordinate point leftward, selecting the right moves the cursor line one coordinate point rightward. Cursor value is displayed on the right side.



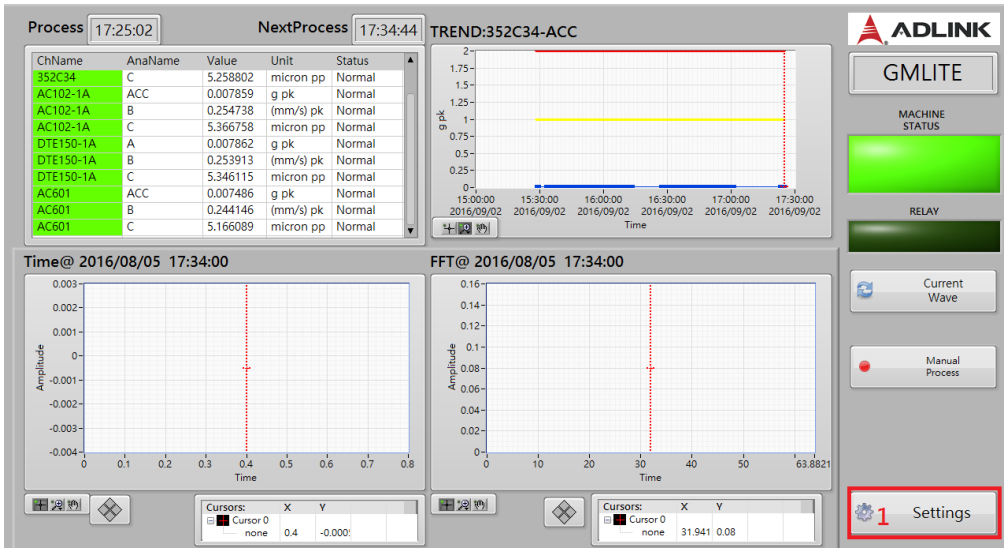
3. In real-time waveform mode, selection of whether to display and color of waveforms is available as shown.

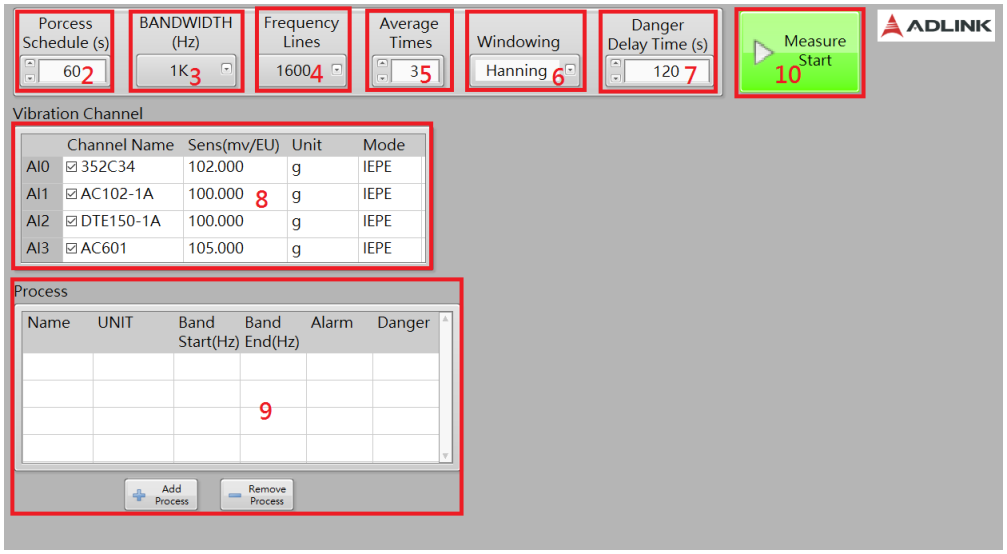


3.6 Operating Process

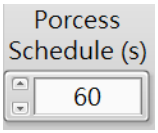
Select the desktop GM Lite shortcut to launch the utility.

1. Select the Settings button to access the Setup window.

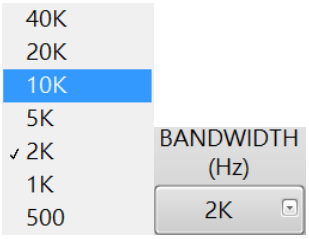




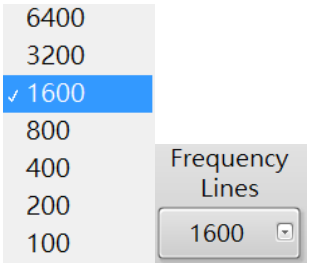
2. Set the time interval for periodic measurement.



3. Set the bandwidth.

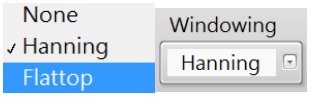


4. Set the frequency spectrum analytical lines.



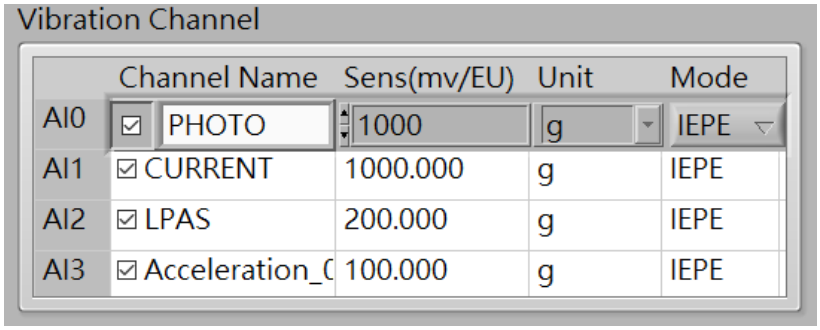
5. Set the average measurement times for frequency spectrum.

6. : Set the windowing type for FFT.

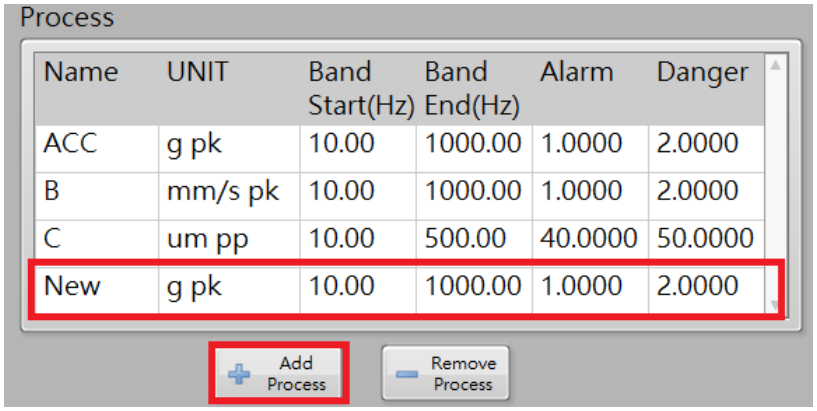


7. Set the warning delay time, in seconds.

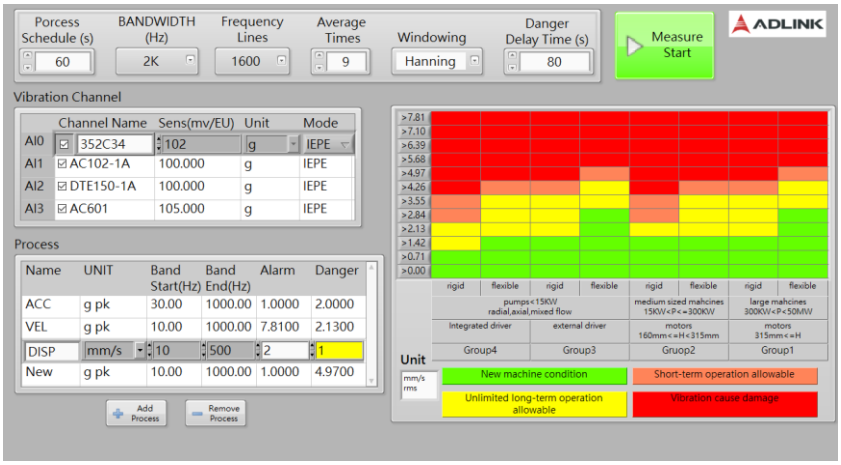
8. Select a channel to be activated and set channel name, sensitivity, measurement unit and the coupling mode of input signal.



9. Multiple settings can be concurrently programmed for each individual channel.
10. Selecting Add Process to add measurement settings

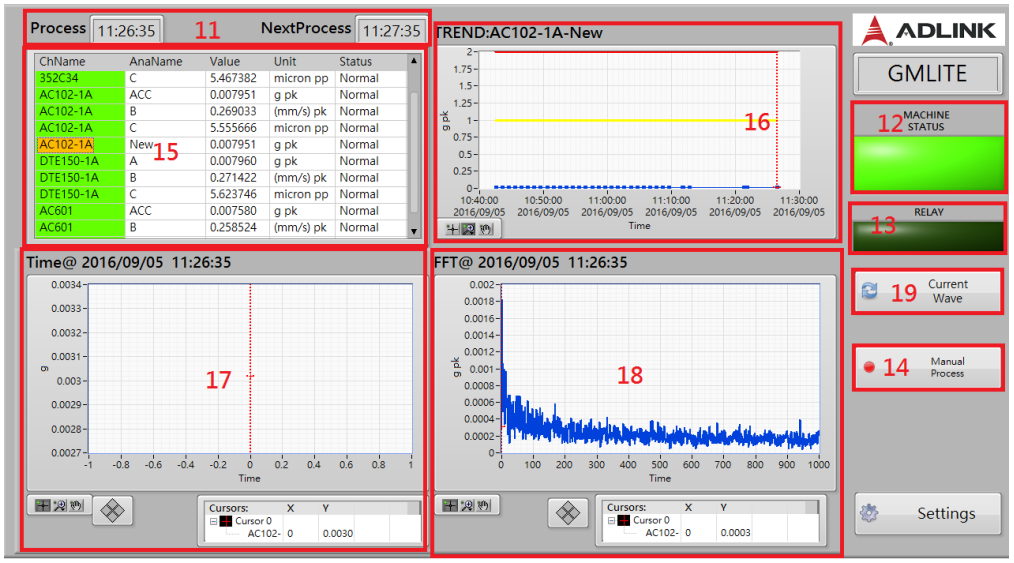


When mm/s pk or mm/s rms is selected as velocity unit, the ISO 10816 secondary window appears, as shown.



11. Selecting Measure Start initiates measurement.

12. The channel and measurement Setting window closes and returns to the Main Window.



13. Begin machine condition monitoring. Refer to section 3.4 and 3.5 for details of Main Window function.