



LOCK-IN AMPLIFIER MODULE

LI 5501 / LI 5502

Sample Program Installation Manual

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———— Preface ————

Thank you very much for purchasing our “**LI5501 / LI5502 LOCK-IN AMPLIFIER MODULE**”

This manual describes how to install and use the sample program that can control the LI5501 / LI5502 remotely via USB or LAN interface.

●The chapter of this manual are described below.

1. OUTLINE

This chapter describes system requirements of the LI5501 / LI5502 sample program and configuration of the installation files.

2. INSTALLATION

This chapter describes how to install the LI5501 / LI5502 sample program.

3. CONNECTION

This chapter describes how to use the LI5501 / LI5502 sample program.

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1. OUTLINE

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1.1 Overview

This sample program written in LabVIEW can control the LI5501 / LI5502 remotely from a personal computer.

Follow the instructions below to install the program.

1.2 System requirements

[Personal computer]

Before installing the program, make sure that your system meets the following requirements.

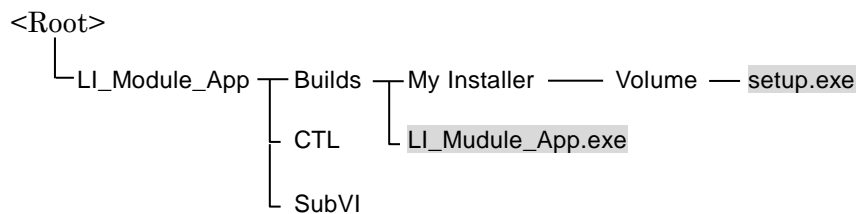
OS	Microsoft Windows 7	32-bit / 64-bit
	Microsoft Windows 8.1	32-bit / 64-bit
	Microsoft Windows 10	32-bit / 64-bit
	Microsoft Windows 11	
USB port	USB 2.0	

[USB cable]

USB 2.0, Type A Plug to Type B Plug

1.3 File configuration

The file configuration of the sample program is described below.



2. INSTALLATION

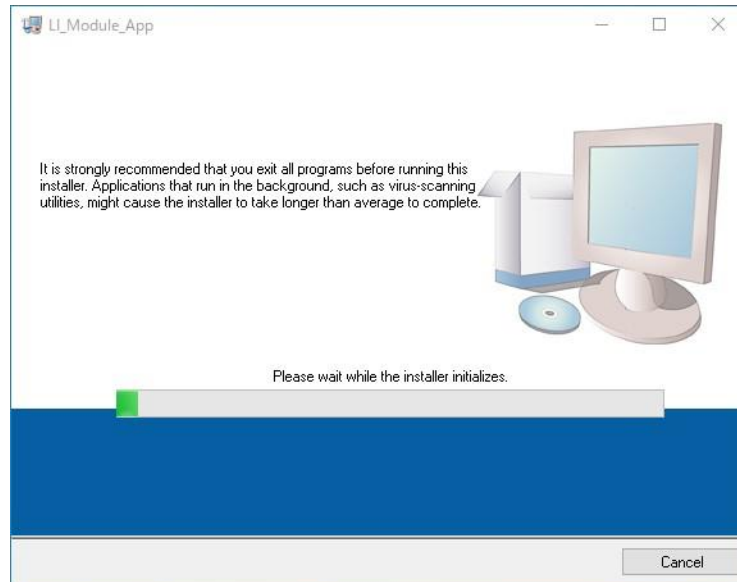
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2.1 Installation (including run-time)

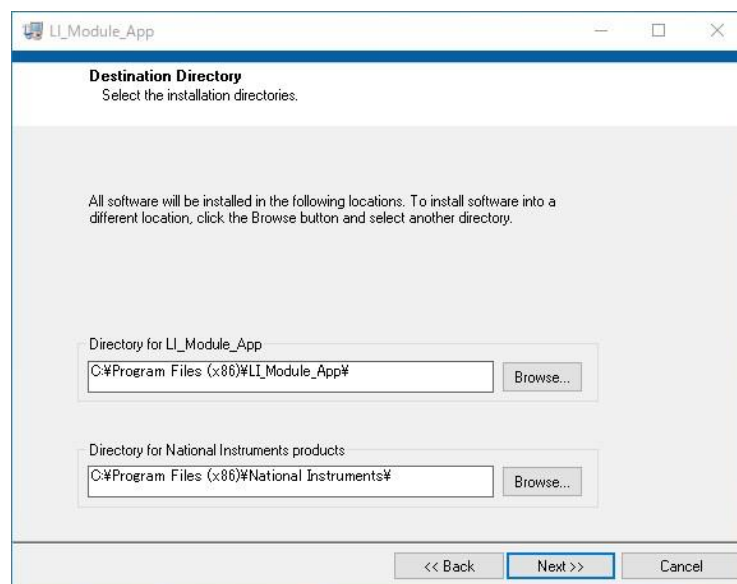
If LabVIEW files cannot be run, LabVIEW Runtime can be installed.

“setup.exe” is located in ¥LI_Module_App¥Builds¥My Installer¥Volume.

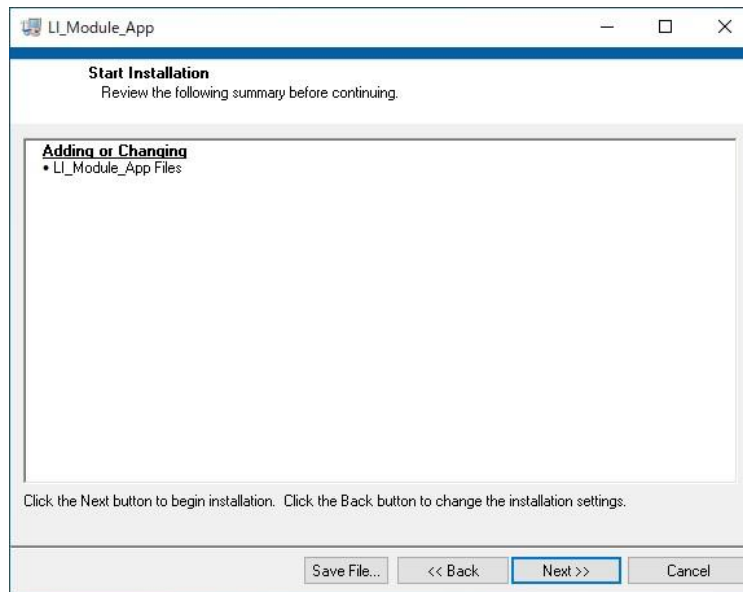
Double-click “setup.exe” to start the installer.



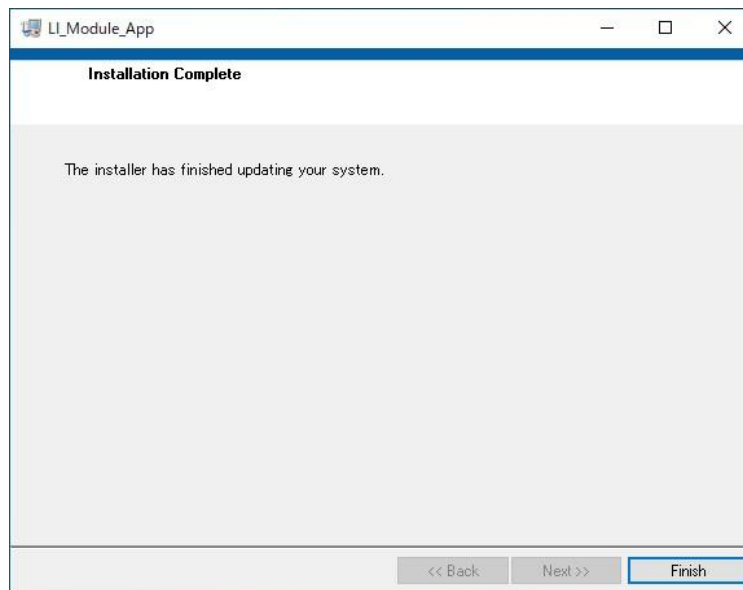
Select the installation directory and click the “Next” button.



The files to be installed are displayed.
Click the “Next” button.



When the installation is complete, click the “Finish” button.



2.2 Executable file

If LabVIEW or LabVIEW Runtime is available, copy the executable file.

“LI_Module_App.exe” is located in ¥LI_Module_App¥Builds.

Copy the file to your PC and double-click to run the program.

2.3 LabVIEW project file

If you have LabVIEW, you can edit the project file of the sample program.

3. CONNECTION

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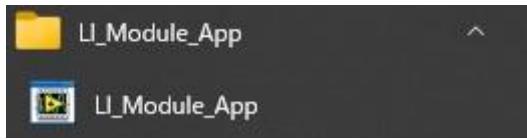
3.1 Connection

Connect the LI5501 / LI5502 and a PC using a commercial USB or LAN cable.
For information on how to switch between USB and LAN communication, refer to the LI5501 / LI5502 instruction manual.

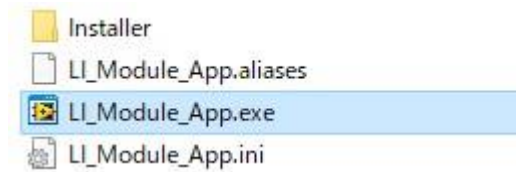
This sample program requires VISA (Virtual Instrument Software Architecture).
We recommend using NI-VISA. Please prepare it yourself.
(<https://www.ni.com/ja-jp/support/downloads.html>)

3.2 Start the sample program

Start the sample program from the Windows start menu or in the copied folder.

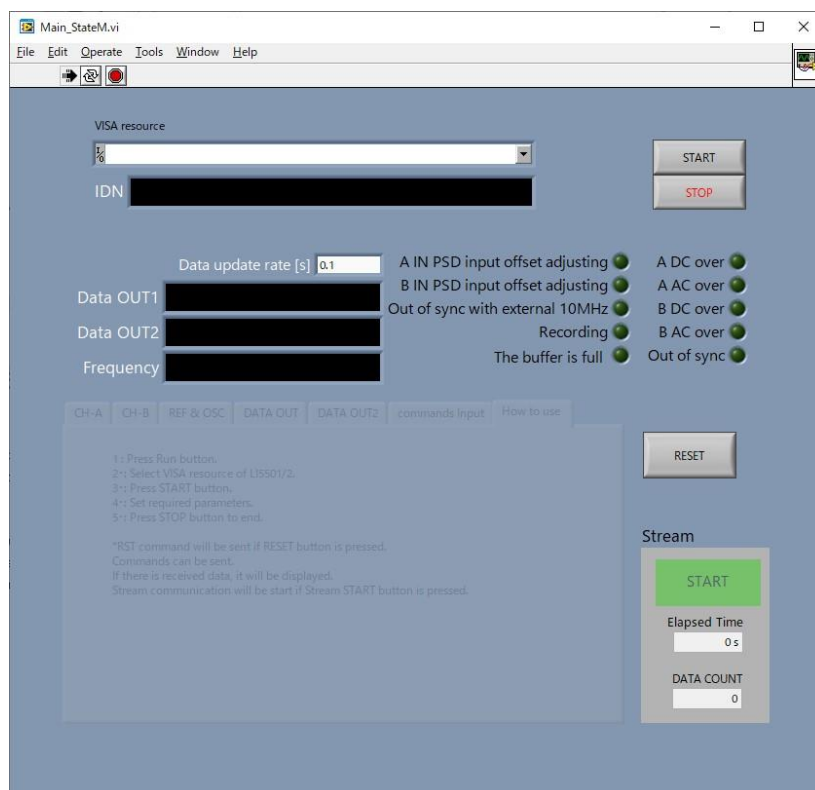


Windows start menu



Copied folder

When starting the program, the following screen appears.

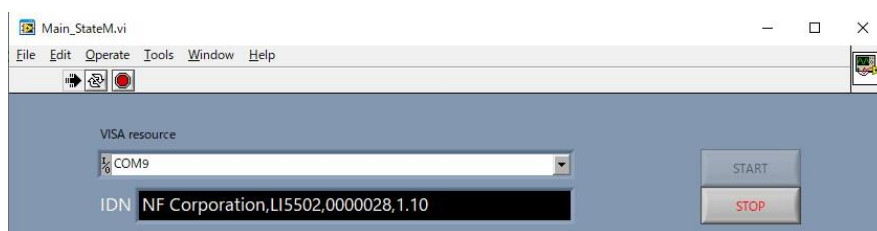



3.3 Communication establishment


Select a connectable device from the pull-down menu.
Then, click the “START” button.



When communication is established, the manufacturer, model number, serial number, and firmware version are displayed in the IDN field and the measurement starts.



To stop the program, click the “STOP” button or  button.

To resume the program, click  button and then the “START” button.

3.4 Various settings

This section describes the screens of the sample program.



●Data OUT1/2

The measured values are displayed.

Measurement parameters can be set in the DATA OUT tab.

●Frequency

The frequency of the external reference signal or the internal oscillator is displayed.

●Status display

The status of the LI5501 / LI5502 is displayed.

●Various settings

LI5501 / LI5502 settings can be changed.

●RESET

When the RESET button is clicked, the *RST command is executed and the LI5501 / LI5502 is initialized.

<CH-A/B settings>

The following items can be set on this tab.

- Time constant and attenuation slope of the TC filter
- Voltage sensitivity
- Dynamic reserve
- Offset value
- Averaging time of the MOV filter
- EXPAND value

The screenshot shows the 'CH-A' tab selected. The settings are as follows:

Parameter	Value
CH-A TC	100ms
CH-A slope	24dB
CH-A sensitivity	1V
CH-A DR	MED
CH-A X-offset	0.00
CH-A Y-offset	0.00
CH-A MOV filter	OFF
CH-A expand	1

<REF & OSC settings>

The following items can be set on this tab.

- Reference signal source and waveform
- Reference frequency source
- Waveform, frequency, amplitude and DC offset of the internal oscillator and the internal oscillator ON/OFF
- Harmonic order and phase shift amount

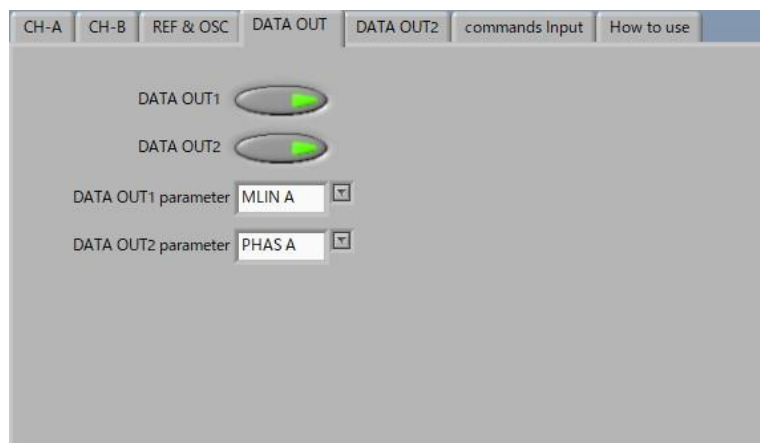
The screenshot shows the 'REF & OSC' tab selected. The settings are as follows:

Parameter	Value
Reference signal source	REF IN
Reference frequency source	INT
Reference signal waveform	SIN+
CH-A/B subharmonic order m	1
OSC waveform	SIN
OSC frequency	1000.0000
OSC amplitude	0.000
OSC DC offset	0.000
OSC ON/OFF	<input checked="" type="checkbox"/>
CH-A harmonic order n	1
CH-B harmonic order n	1
OSC harmonic order n	1
CH-A phase shift	0.000
CH-B phase shift	0.000
OSC phase shift	0.000

<DATA OUT settings>

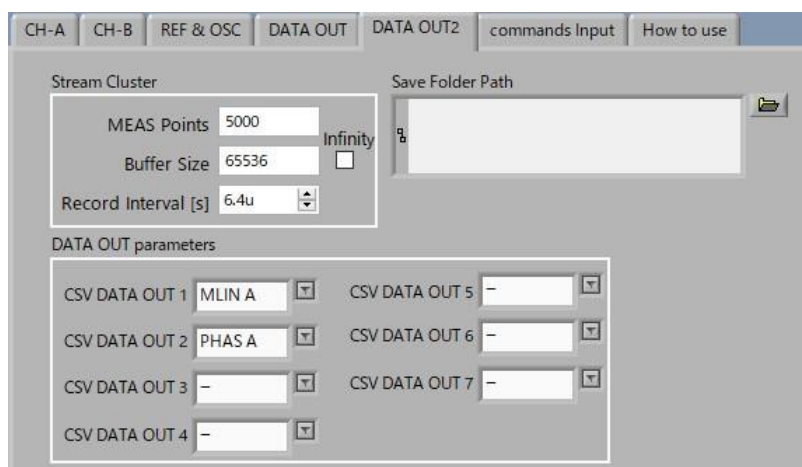
The following items can be set on this tab.

- DATA OUT1/2 (DATA 1/2 analog data output terminal) ON/OFF
- Measurement parameter of DATA OUT1/2

**<DATA OUT2 settings>**

Stream communication settings can be set on this tab.

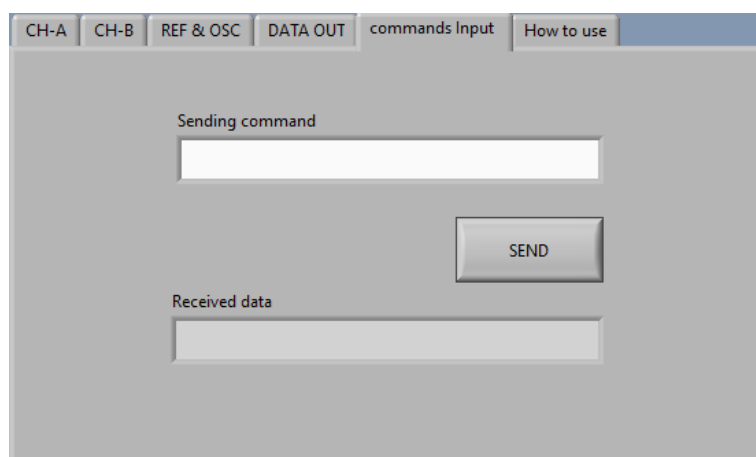
For more information, see chapter 3.5 How to use Stream Communications.



<Commands input>

On this tab, remote commands can be sent.

However, commands for items that are always set in this program are not applicable.



The screenshot shows a software window with a tabbed interface. The tabs are labeled 'CH-A', 'CH-B', 'REF & OSC', 'DATA OUT', 'commands Input', and 'How to use'. The 'commands Input' tab is currently selected. Inside this tab, there is a section labeled 'Sending command' with a text input field below it. To the right of this field is a button labeled 'SEND'. Below the 'Sending command' section is a section labeled 'Received data' with a corresponding text input field.

3.5 How to use Stream Communications

This section demonstrates an example of stream communications described in Section 6.1.4 "Sample programs of data acquisition" of LI5501 / LI5502 instruction manual, Example 2) Reads out measurement data while recording it.

3.5.1 Settings

This section describes the setting items for stream communication in Section 3.4

<Stream Cluster>

- MEAS Points

Set the number of measurement data to be acquired in one communication.

Its range is 1 to 65536.

- Buffer Size

Set the data buffer size. Its range is 1 to 65536.

Check Infinity to allow continuous operation until the measurement buffer is full.

- Record Interval

Set the interval at which measurement data is recorded in the data buffer.

Its range is 0.4 μ s to 26.2ms. 0.4 μ s is required for measuring one DATA OUT parameter.

[Note] This setting item is not the recording interval of measurement data.

<DATA OUT parameters>

Set the parameters of the measurement data to be acquired. Up to seven parameters can be set.

<Save Folder Path>

Specify a folder where measurement data converted to CSV files is to be saved. When the measurement is started, a folder is created in the specified folder in the format of the measurement start time "yyMMdd". The measurement data will be saved in that folder with the name "Feature_yyMMddHHmmss.csv".

Example:

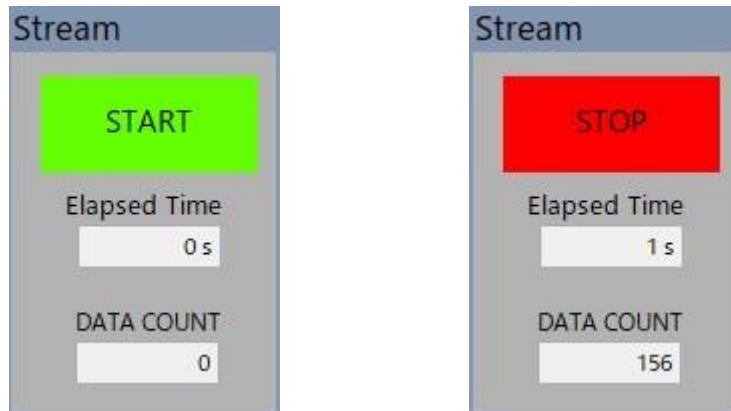
If the measurement start time is May 23, 2024 01:23:45,

"Feature_240523012345.csv" will be created in the folder "240523".

3.5.2 How to Start Stream Communication

① Start/Stop button

Pressing the Start Measuring button starts stream communication. The button then changes to the Stop button. Pressing the Stop button stops stream communication. The button then changes back to the Start button again.



② Elapsed Time

The elapsed time since the start of stream communication is displayed.

③ DATA COUNT

The number of data points recorded in the measurement data buffer is displayed.

NOTES

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