

LGA80D GUI User Manual

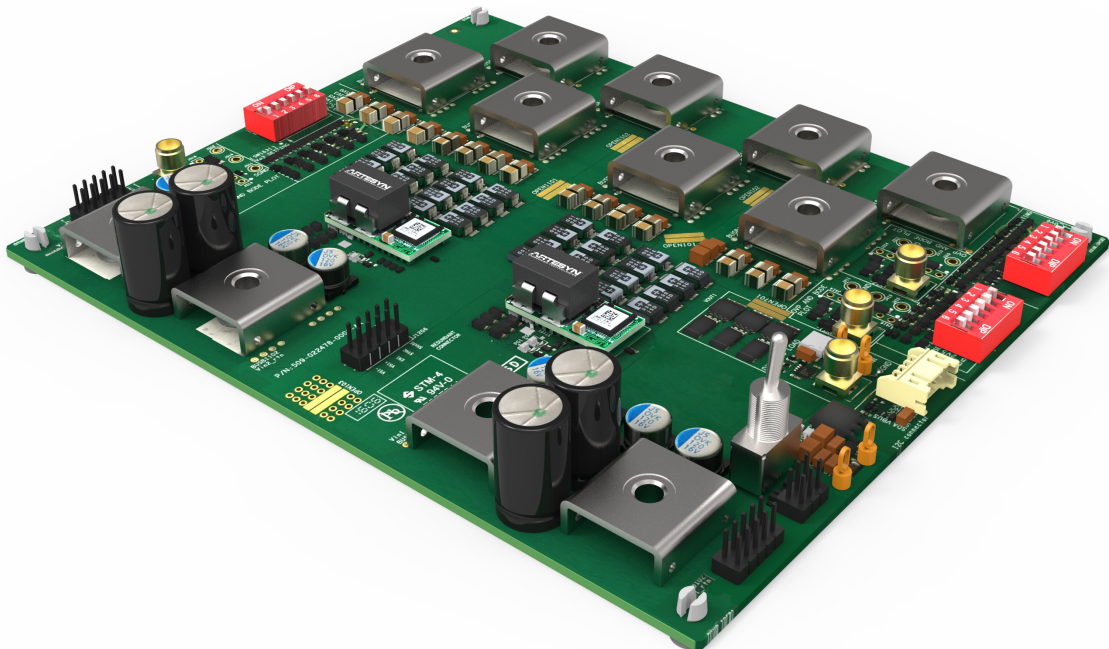


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GENERAL INFORMATION

This software is designed to allow the user to communicate with the LGA80D using the PMBus command protocol. It is intended to provide the information gathered from the LGA80D module and allow interactive controls of the basic capabilities of the LGA80D.

This software must be installed to a Windows-based personal computer before the user can make use all of the functions of this program.

Please refer to the system requirements before starting the installation.

SYSTEM REQUIREMENTS

Minimum Hardware Requirements:

- Intel/AMD Dual Core Processor 2GHz
- 4GB RAM
- Eastwood 73-769-001 Adapter

Software Requirements:

- Windows XP, Win VISTA (64-Bit), Win7 (64-Bit / 64-Bit)

INSTALLATION

- Download the software using the following link from Artesyn.com
<https://www.artesyn.com/power/LGA80D-eval-GUI>
- Extract the contents of the file until you find the folder that contains the setup software (Fig. 1). Note the illustrations that point to the setup software LGA80D.

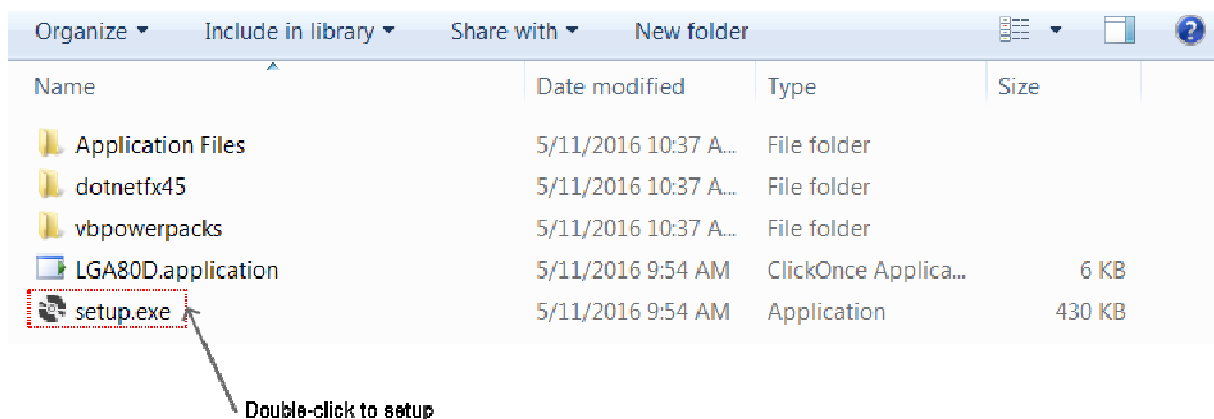


Fig. 1 – Setup CD content

- Connect the “Eastwood 73-769-001 Adapter” to the computer as well as any other relevant H/W, such as the load board containing the LGA80D module(s).
- Double click setup.exe to run the installer.
- Follow the on-screen instructions to complete the installation (Fig. 2). The software will start immediately after the installation completes.
- The LGA80D GUI requires two external libraries, namely,
 - .NET Framework
 - Visual Power Packs 10.0

The setup software will invoke the setup programs of these libraries if they are not previously installed on your computer. You may want to run the setup program as an administrator to allow the automatic installation of these libraries.

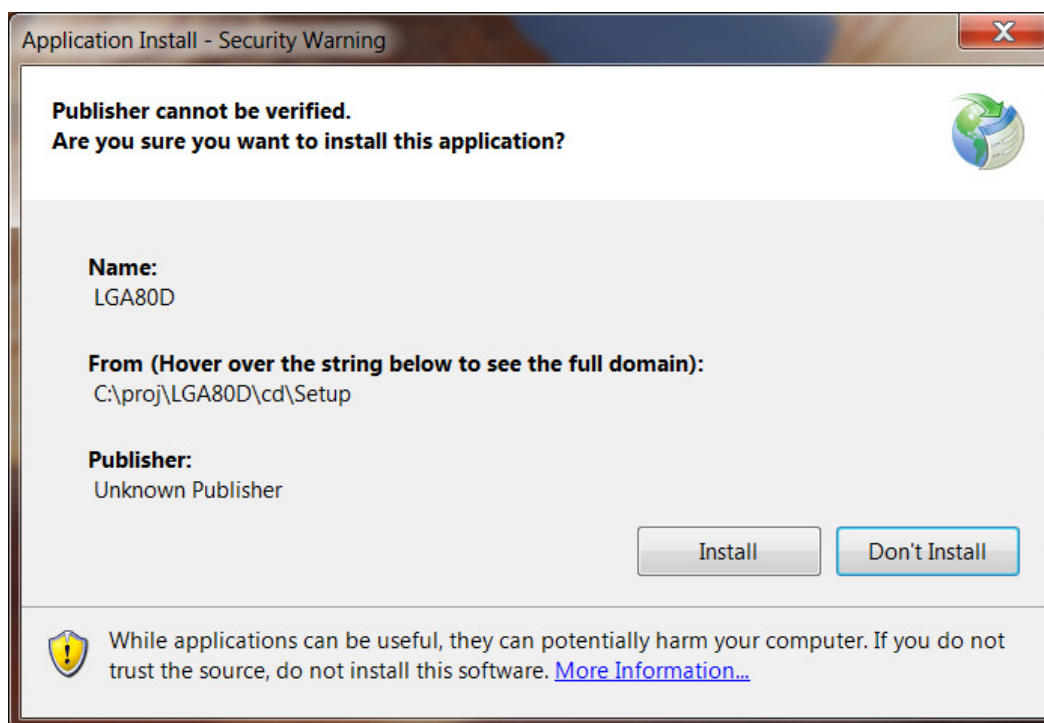
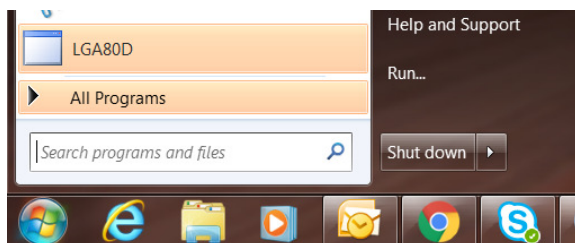


Fig. 2 – LGA80D setup

- To run the software, use the shortcut added to the Start menu or on the desktop (Fig. 3).



(a) – Shortcut of LGA80D in the Start Menu



(b) – Shortcut of LGA80D on the Desktop

Fig. 3 – Run LGA80D by using the shortcuts created by the setup program

GETTING STARTED

HARDWARE SETUP

The LGA80D modules must be installed on a load board, which is connected to the computer via the “Eastwood 73-769-001” adapter.

Power up all connected load boards and modules and then start the LGA80D GUI software.

The software will scan for any connected modules.

A dialog box will be displayed to show the progress of the scanning (Fig. 4).

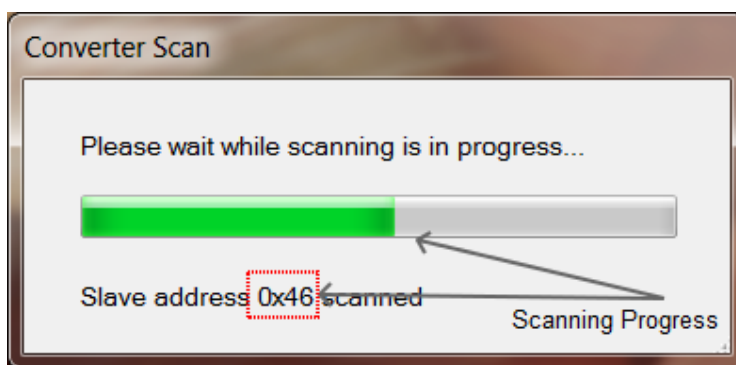


Fig. 4 – Scanning for connected DC-DC Converters

If no converter module is found, an empty GUI with an error message is displayed (Fig. 5).

LGA80D GUI
Jun 2016

GUI Overview

The LGA80D GUI provides a tabbed interface for monitoring and setting the connected LGA80D modules. There are two tabs.

The Monitor Tab displays the real time status of all connected modules. It is also used to enable/disable the converter modules. Lastly, monitored data may be saved to an external file for further processing.

The Settings Tab also allows the user to monitor converter status. The principal function of this tab is to provide the user an interface to configure the converters. Configured settings may be exported for future reference.

Details of using these two tabs will be provided in later sections.

Over the whole course of using the software, the user may switch between the tabs freely. As will be discussed, the user may switch to monitor a different converter module by clicking on the rectangular block representing that converter.

Finally, the program can be terminated any time by clicking on the “X” button on the top right corner.

Monitor Tab

Fig. 6 illustrates the main components of the Monitor Tab.

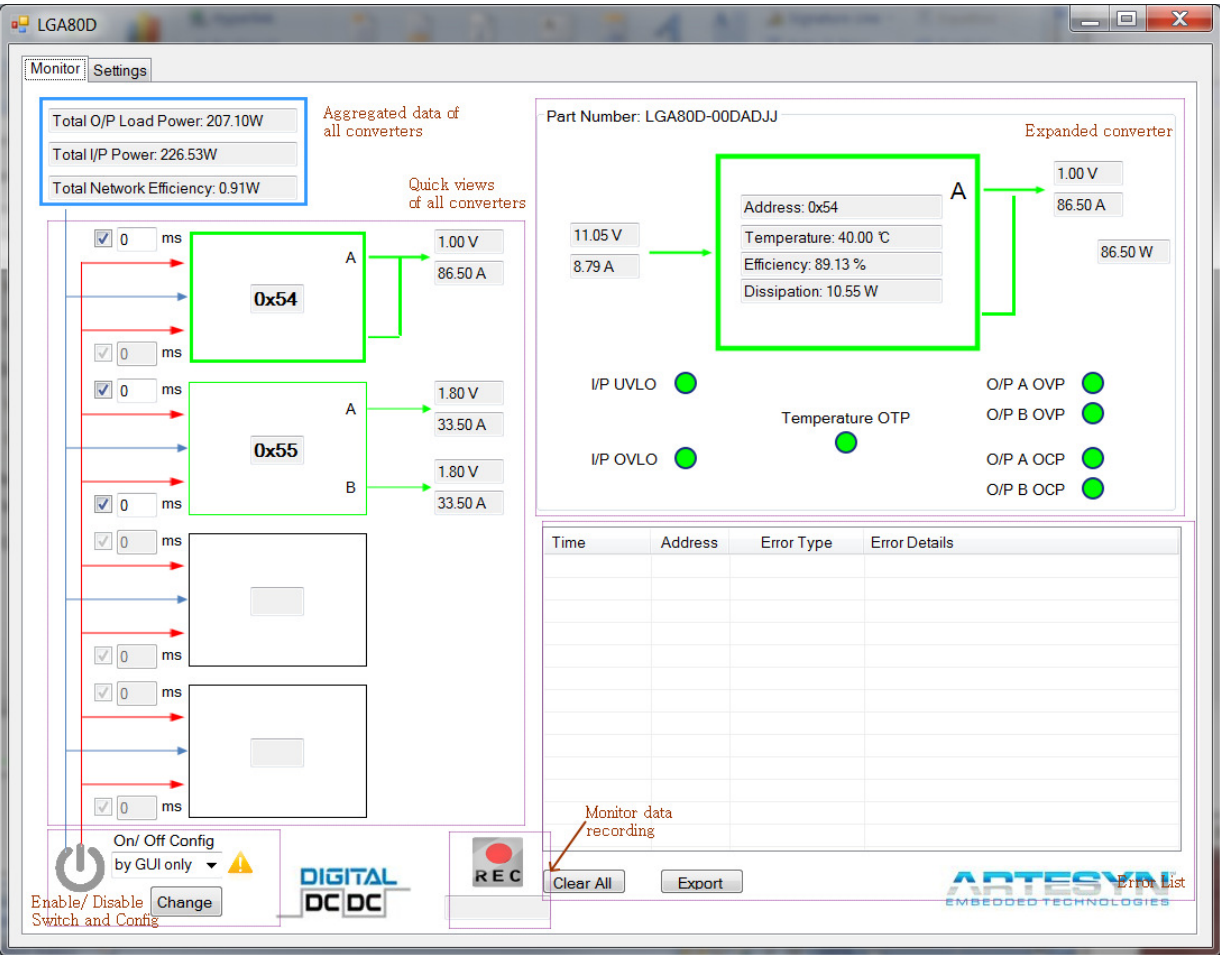


Fig. 6 – Monitor Tab

To illustrate the major components of the Monitor Tab, annotations in dark red text and rectangles have been added.

Details about these components and the related features are discussed in detail in the following sub-sections.

DC-DC Converters

The GUI is used to monitor and configure DC-DC converters based on the LGA80D module. This software supports a maximum of 4 converters loaded on 2 different load boards. The converters are reflected by the 4 rectangular blocks displayed on the left hand side of the Monitor Tab.

A larger block is used to show detailed monitor information of a selected converter. This is defined as “The Expanded Converter”. Depending on the type and status of a converter model, it may be displayed in one of several styles. These styles are illustrated in Fig. 7.

A connected converter module may have 1 output (Fig. 7(a)) or 2 outputs (Fig. 7(b)). The green border indicates that the converter module is online and can communicate with the GUI normally.

A red border indicates an offline converter (Fig. 7(c)). An unconnected converter has a grey border, as illustrated by Fig. 7(d).

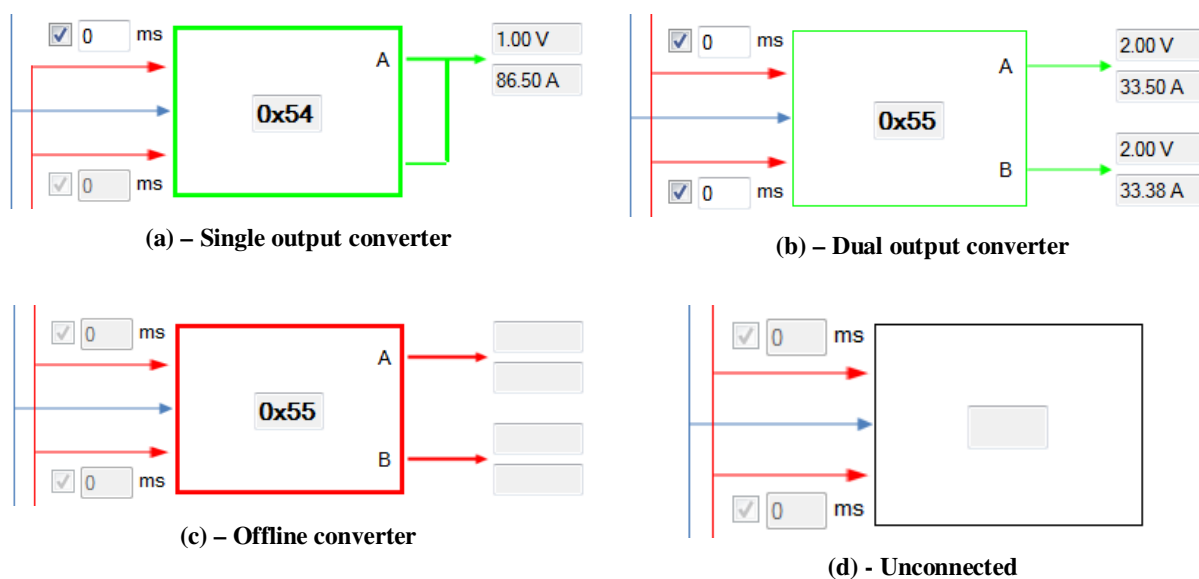


Fig. 7 – Types of Converter

Note that connected converters are scanned only during the startup of the software. The user should restart the GUI in order refresh the list of modules connected.

The border of the rectangular blocks in Fig. 7(a) and 7(c) are thicker than the other two. This indicates that the converter module is being “expanded”, i.e., its detailed information is displayed in the expanded converter view on the right hand side of the Monitor Tab (Fig. 6).

Note the expanded converter view applies the same color and style scheme illustrated in Fig. 7.

Converter Monitoring

The two views of the converter collectively display real-time status of the following items:

- Addr: Slave Address
- Vout A: output voltage of output A
- Iout A: output current of output A
- Vout B: output voltage of output B
- Iout B: output current of output B
- Vin: input voltage
- *Iin: input current
- P: total output power
- T: temperature
- E: efficiency
- D: dissipation
- **UVLO: status of UVLO
- **OVLO: status of OVLO
- **OTP: status of temperature OTP
- **OVPA: status of OVP of output A
- **OCPA: status of OCP of output A
- **OVPA: status of OVP of output A
- **OCPA: status of OCP of output A
- PN: Part Number

Remarks:

* Iin is actually not reported from LGA80D. It is an estimated value of the input current, using a pre-defined formula. This estimation is only available if the output voltage is set to 1V, 1.8V, 2.5V, 3.3V or 5.0V for single output module. For dual outputs converter, both outputs must be the same and set to one of the aforementioned voltage values in order that the input current may be estimated.

** Statuses are displayed as colored circles. Green = Normal; Yellow = Warning; Red = Fault

Fig. 8 illustrates how these items are displayed on the converter views.

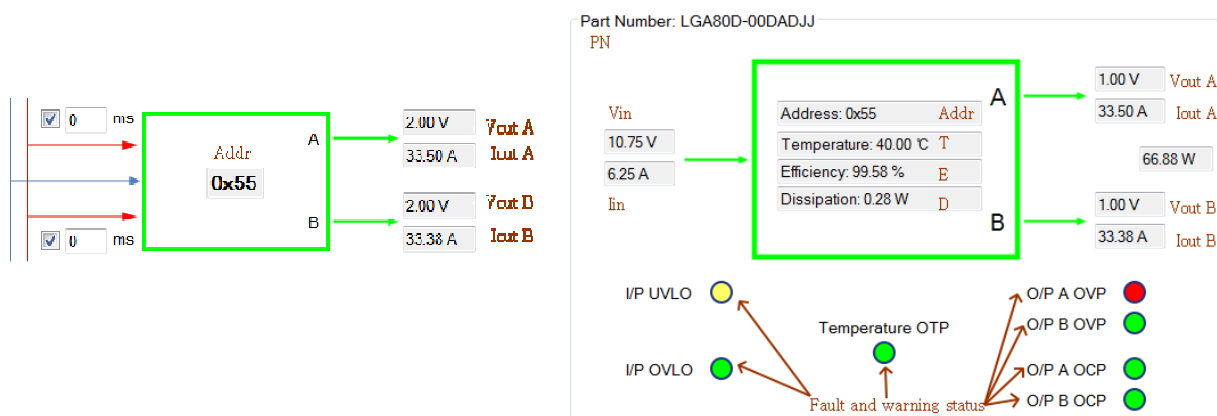


Fig. 8 – Monitor items of converter

A monitored item may be hidden or left empty if it is not available (e.g., lin and related items that are calculated from it, or loading information of output B for a single output converter).

On the top left hand corner, the total output power, input power and network efficiency are also reported. See Fig. 6 for an illustration.

Error List

The GUI software reports errors using the error list table underneath the expanded converter view. The table reports the time, slave address, type and details of the error. As an example, Fig. 9 illustrates an error displayed on the error list. This error is reported due to the fault status of UVLO.

[illegible]

Fig. 9 – Error List

The error list may be exported using the Export button below it. When it is clicked, a dialog box will pop up to let the user select export settings (Fig. 10) such as the path of the exported file.

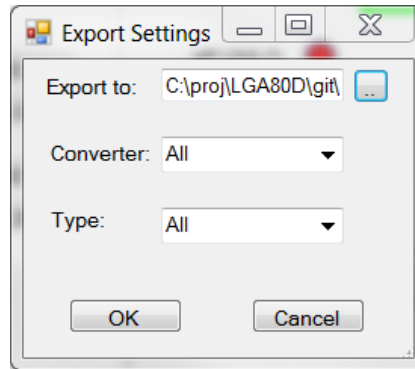


Fig. 10 – Export settings

The export file is a CSV file that is readily opened by Excel, as illustrated in Fig. 11.

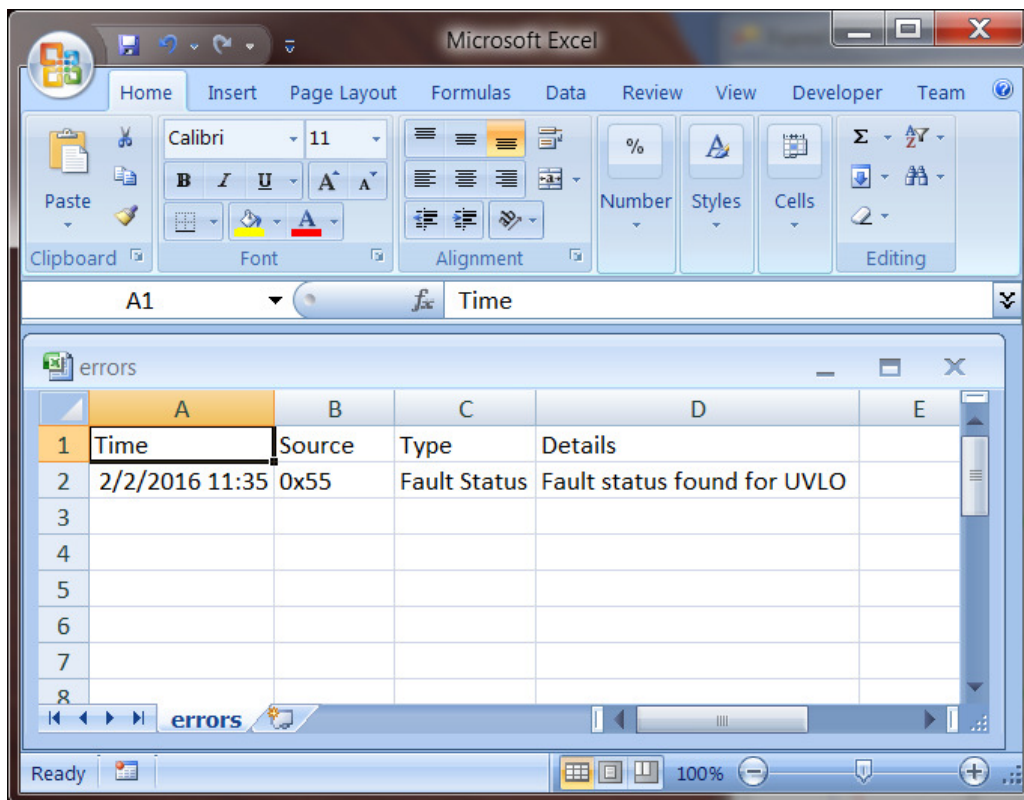


Fig. 11 – Exported error list

Enabling/Disabling Converters

Enabling/Disabling Converters by PIN and by GUI

It is possible to enable converter modules by using the H/W pins or by using the LGA80D GUI. These methods, however, can only be applied independently. Thus, if a converter module is configured to be enabled or disabled by HW PIN, the GUI will not be able to enable or disable the converter using PMBus directly. Conversely, the HW PIN will be ignored if the converter is configured to be enabled/disabled by the GUI.

Changing Enabling/Disabling Method

The User Interface components (On/Off config) in Table 1 allow the user to change the aforementioned settings.

Current settings on converter modules	Selected option is different as configured option on modules	Selected option is same as configured option on modules
All converters are enabled/ disabled by PIN	On/ Off Config by GUI only ▼ ⚠ Change	On/ Off Config by PIN only ▼ Change
All converters are enabled/ disabled by GUI	On/ Off Config by PIN only ▼ ⚠ Change	On/ Off Config by GUI only ▼ Change
Otherwise (treated as if all converters are configured to be enabled by PIN)	On/ Off Config by GUI only ▼ ⚠ Change	On/ Off Config by PIN only ▼ Change

Table 1 – On/Off config

The table is organized in two dimensions. Converter modules may be configured to be enabled/disabled by GUI or by PIN only.

In the special case indicated on the last row, the GUI treats all converters as if they were all configured to be enabled/disabled by PIN only.

Depending on which option the user selects, the software immediately determines if a change is necessary. If yes, an exclamation icon is displayed and the Change button is enabled (Left column). Otherwise, the display will look like those shown in the right column.

Enable/Disable Converters by GUI

The UI components next to the On/Off Config UI components are used to display the enable/disable status and to allow the user to enable/disable converters through the GUI. The possible displays are summarized as follows:

On/Off Config	Enable status	Display	On clicking the icon
by PIN	Don't care		None
by GUI	All converters are disabled		Enable
	All converters are enabled		Disable
	Otherwise		Disable

Table 2 – Enable/ Disable Converters

Note that the color of the icon indicates whether converters have been enabled. The text label below the icon indicates what action to take if the icon is clicked.

By default, clicking on the Enable/Disable button turns on/off all converter outputs all at once. This behavior may be changed in two ways.

First, the GUI may simulate the delay time taken to enable each output of the converters. These times are entered using the text boxes on the left hand side of the converters view (Fig. 7). Note that if a converter module has only one output, the delay time of output B is disabled.

Second, it is also possible to turn on/off outputs individually. The checkboxes beside the delay times are used for this purpose. If the enable/disable button is clicked, the software will only enable/disable checked outputs.

Monitoring Data Recording

The GUI includes a feature that records real-time monitoring data to an external CSV file for later processing.

To trigger this feature, click the “Rec” button located at the bottom of the Monitor Tab.

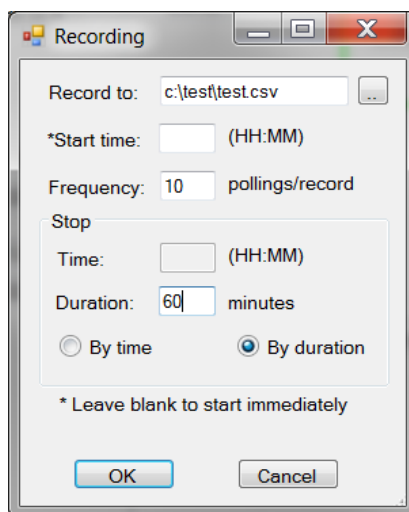
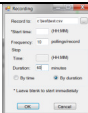
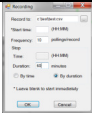
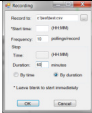


Fig. 12 – Monitor data recording options

A dialog box (Fig. 12) will pop up to let the user configure how the data recording should be carried out.

If the user clicks OK to confirm the recording, the “REC” icon will be changed and a text label will be shown to display when a recording is going started or will be stopped. The process of starting and stopping a recording is best illustrated in a table as follows:

Before	Status	Action	After
	No recording is requested	User clicks on the icon	 (See Fig. 12)
	Asking user for recording options	User clicks OK on the dialog and the starting time has not been reached	 Starting 12:00
	Asking user for recording options	User clicks OK on the dialog and the starting time has been reached	 Stopping 12:06
 Starting 12:00	Waiting for recording to start at the time displayed under the icon	Start time is reached	 Stopping 12:06

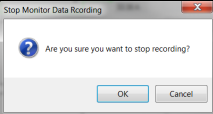
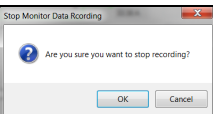
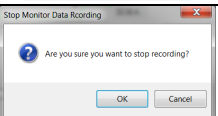
 Stopping 12:06	Recording in progress until the stopping time (displayed below the icon)	Stop time is reached	 Stopped
 Stopped	Notify user that the recording has stopped	User clicks on the icon	 Stopped
 Starting 12:00	Waiting for recording starting time (12:00 for this example)	User clicks on the icon	 (A standard confirmation dialog)
 Stopping 12:06	Recording in progress until displayed time (12:06 for this example)	User clicks on the icon	 (A standard confirmation dialog)
	Waiting for the user to confirm if s/he wants to stop recording immediately	User clicks OK	 Stopped

Table 3 – Starting and stopping monitor data recording

Settings Tab

Fig. 13 illustrates the main components of the Settings Tab.

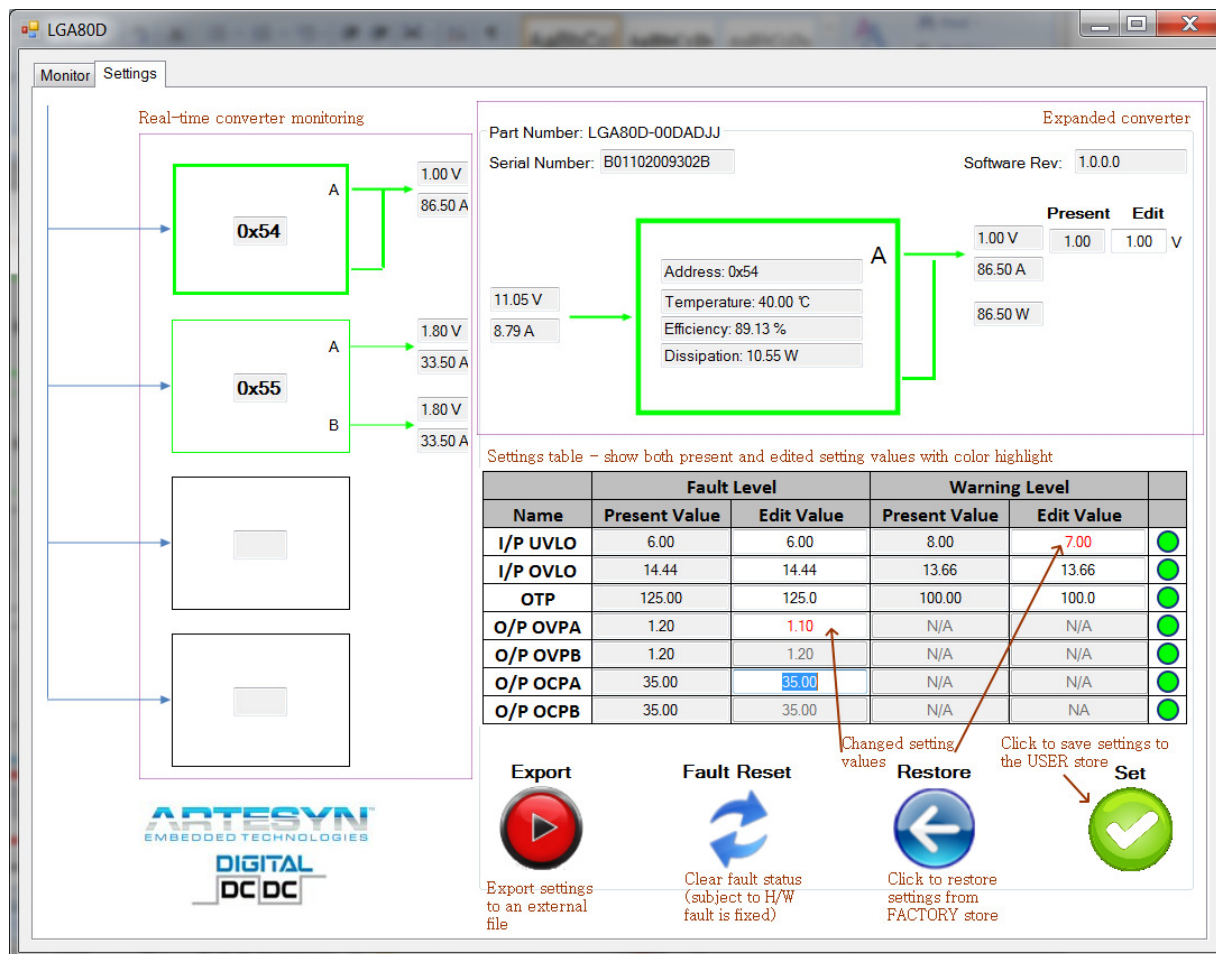


Fig. 13 – Settings Tab

The Settings Tab includes real-time monitoring of converters data and status.

The converter and expanded converter views look and work similarly as their counterpart in the Monitor Tab.

One notable change is that the hardware status indicators are moved to the Settings table. Also, the settings of output voltage(s) are placed beside the output current output voltage(s).

In addition to data monitoring, the Settings Tab provides features for setting and restoring operation data of converters.

These features are explained in details in the following sub-sections.

Configuring Converters

The following parameters are configurable with the GUI:

- OVA: output voltage of output A
- OVB: output voltage of output B (only available for dual output converters)
- UVLO: undervoltage lockout fault and warning levels
- OVLO: overvoltage lockout fault and warning levels
- OTP: overtemperature protection fault and warning levels
- OVPA: overvoltage protection fault level for output A
- OCPA: overcurrent protection fault level for output A
- OVPB: overvoltage protection warning level for output B (only available for dual output converters)
- OCPB: overcurrent protection warning for output B (only available for dual output converters)

When the Settings table is first displayed, the GUI will populate the Settings table, as well as OVA and OVB, using the currently configured settings as the default values. The user may then freely edit the values and notice that edited values are highlighted in red.

The GUI is able to check edited values for valid range, according to the physical specification of LGA80D. Whenever the user has entered an invalid value, the GUI will display an error dialog to ask the user to correct the value.

After all settings have been entered, the user can click the “Set” button to send the settings to the converter to store them in the USER store. However, before this, the GUI will also validate the data and ask the user to correct if any invalid data is found.

If the operation is successful, a dialog will be displayed to tell the user (Fig. 14).

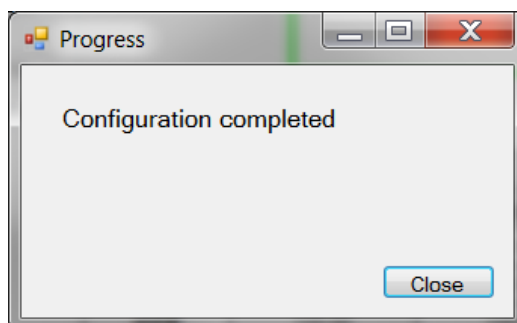


Fig. 14 – Configuration Completed

If the operation failed, another dialog will be displayed to tell the user why the operation failed.

Please note that the Set button only configures the current expanded converter. If you click another converter before saving the settings, the edited settings will be lost.

Restoring Factory Defaults

The factory defaults are stored in the FACTORY store in the converters. The GUI will send a command to restore the converter settings from the FACTORY store. These settings will then be refreshed and loaded into the Settings Tab. Like the Set button, a dialog will be displayed to tell the user that the operation is successful (Fig. 15).

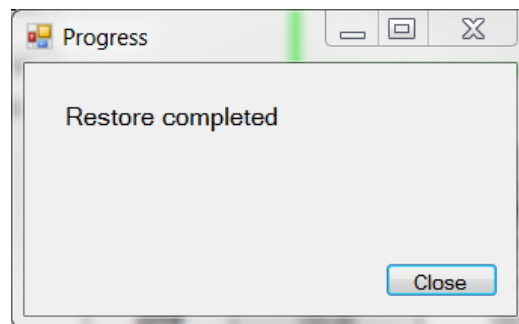


Fig. 15 – Restore completed

Like the Set button, a dialog will also be displayed that reports the error if the operation fails.

Clear Faults Status

Fault and warning status may be cleared with a PMBus command. This is the function of the “Fault Reset” button. It works in the same way as the Set and Restore buttons (Fig. 16).

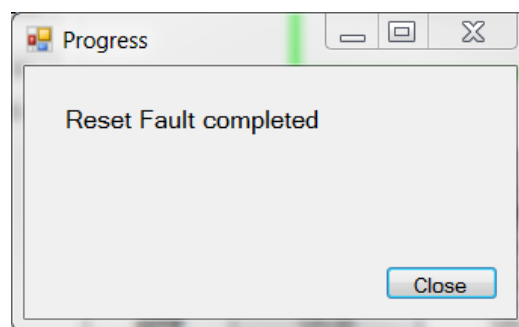
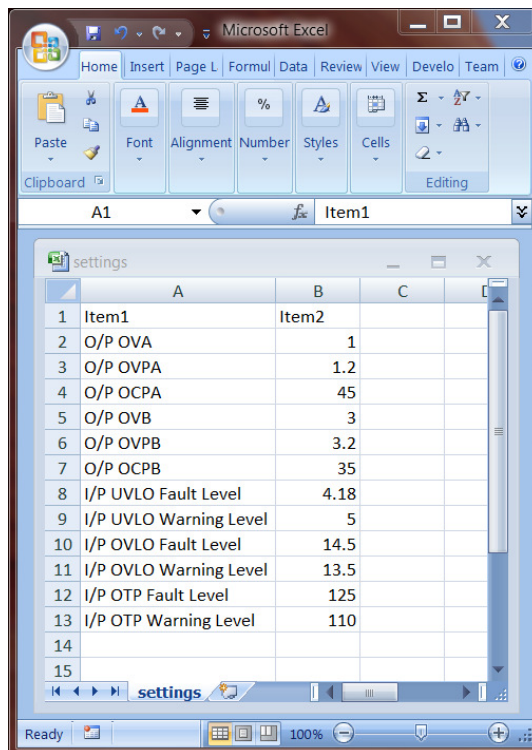


Fig. 16 – Successfully result fault status

Export Configured Settings

The “Export” button is used to export configured settings to an external file. When the button is clicked, a dialog will be prompted to ask the user for the location and filename of the file.

If the user selects a file and clicks OK, the settings will be exported as a CSV file. An example is shown on Fig. 17.



	A	B	C	D
1	Item1	Item2		
2	O/P OVA	1		
3	O/P OVPA	1.2		
4	O/P OCPA	45		
5	O/P OVB	3		
6	O/P OVPB	3.2		
7	O/P OCPB	35		
8	I/P UVLO Fault Level	4.18		
9	I/P UVLO Warning Level	5		
10	I/P OVLO Fault Level	14.5		
11	I/P OVLO Warning Level	13.5		
12	I/P OTP Fault Level	125		
13	I/P OTP Warning Level	110		
14				
15				

Fig. 17 – Exported converter settings

As with the other buttons on the Settings Tab, this feature is also used for the expanded converter only. It exports the currently edited settings, regardless of if these settings have been sent to the converter module.

System Operation Parameters

The GUI relies on some global constant parameters, as follows:

- `poll_time` (5000ms): duration between polling of converter status
- `retry` (3): the total number of attempts to be made for a query or command before it is considered failed
- `error_buffer` (100): the maximum number of records kept in the error list. The oldest records will be purged to make room for new records if there are too many errors.
- `settings_store` (User): This parameter affects where converters settings are saved. By default, i.e., this parameter has the value "User", settings are saved to the "User" store when the Set button is clicked and are restored from the "Default" store when the Restore button is clicked. The roles of these stores will be reversed if this parameter takes the value of "Default".

It is usual that a typical user does not need to worry about these parameters.

If, in an unlikely situation, you would need to change one of these values, you may contact a local engineering support of Artesyn to help you to change them.

DOCUMENT REVISION HISTORY

REV	DATE	SOFTWARE DESCRIPTION	S/W REV.	REMARKS
01	Feb 15, 2016	LGA80D GUI User Manual	1.0	First Issue
02	May 11, 2016	LGA80D GUI User Manual	1.1	Revised for simplified setup procedure and updated features
03	Jun 1, 2016	LGA80D GUI User Manual	1.2	Revised for updated screen designs
04	June 8 2016	LGA80D GUI User Manual	1.2	Updated link for GUI location on the website

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