Digital POL GUI User Manual
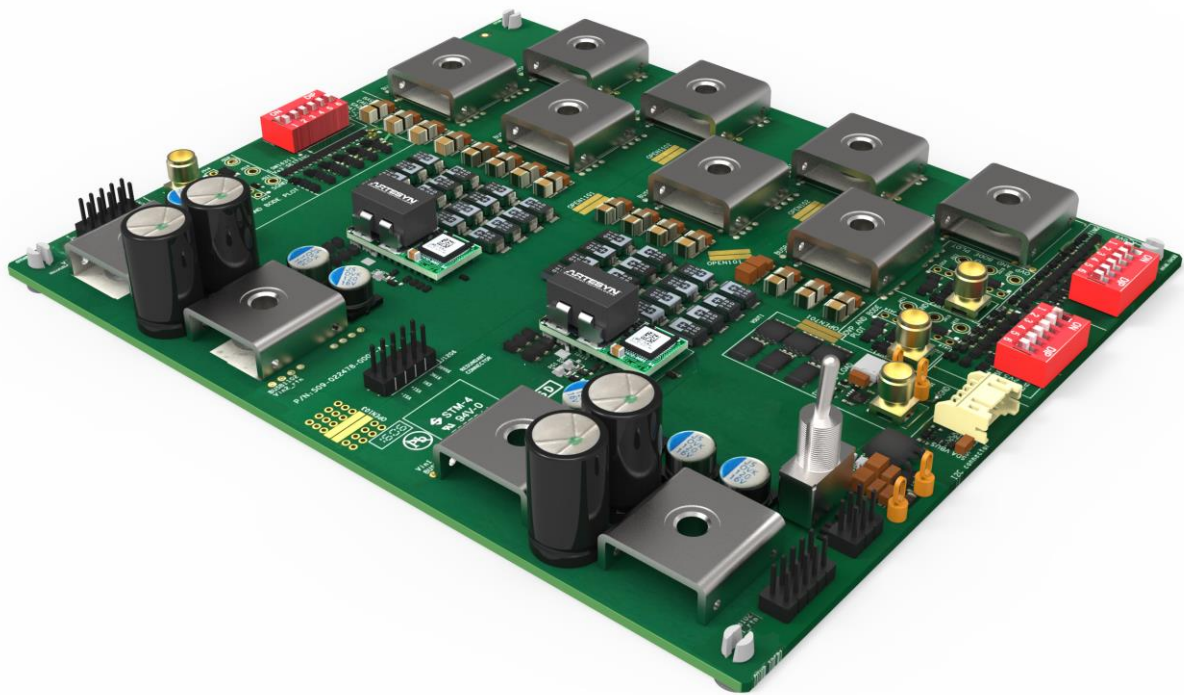
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GENERAL INFORMATION

This software is designed to allow the user to communicate with Artesyn's Digital DCDC LGA family of modules using the PMBus command protocol. It is intended to provide the information gathered from the modules and allow interactive controls of the basic capabilities of them.

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:

- Win7 (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 of the GUI.
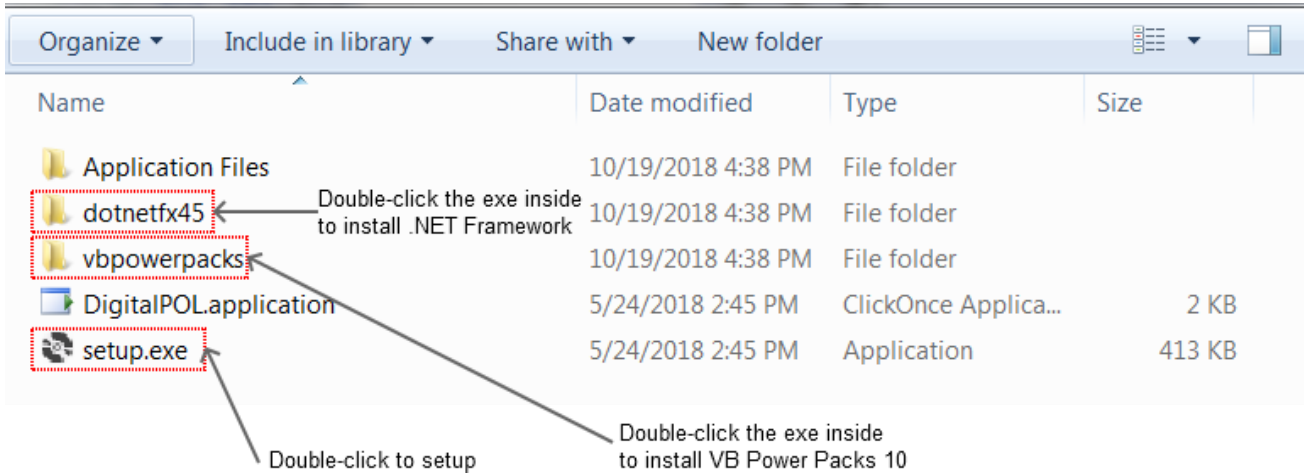

Fig. 1 – Setup package content

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 Artesyn's Digital DCDC LGA family of 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 Digital POL GUI requires two external libraries, namely,

- .NET Framework 4.5
- 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.

In some systems, the setup software might fail to install the aforementioned libraries for you automatically. In this case, you can install the libraries yourself.

To install the libraries manually, refer to Fig. 1 for the locations of them. The setup programs are located inside the indicated folders. Simply double-click the EXE file inside

the indicated folder to run the setup program. You are recommended to install .NET Framework 4.5 before trying to install VB Power Packs 10.0.

VB Power Packs is bundled inside the GUI program folder so there is no need to install this library separately.
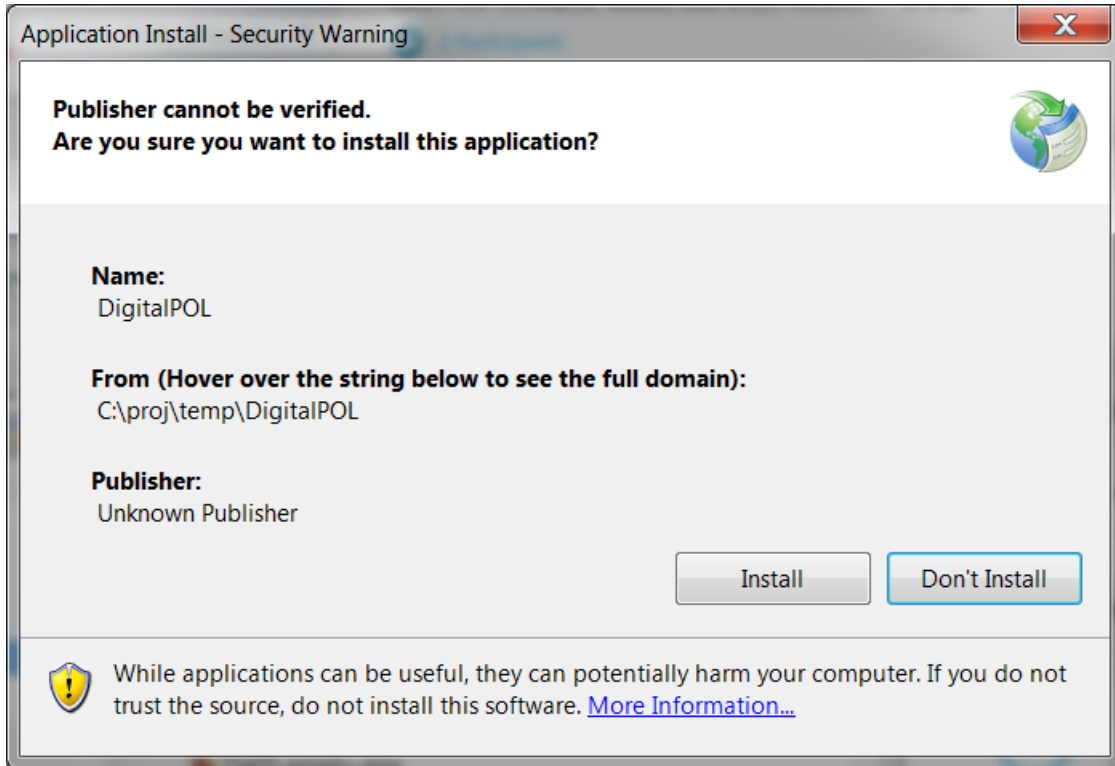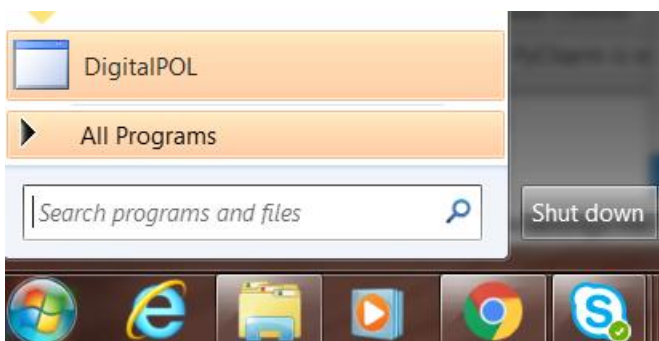

Fig. 2 – Digital POL setup

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 Digital POL by using the shortcuts created by the setup program

GETTING STARTED

HARDWARE SETUP

The modules to be used with the GUI 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 Digital POL 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).
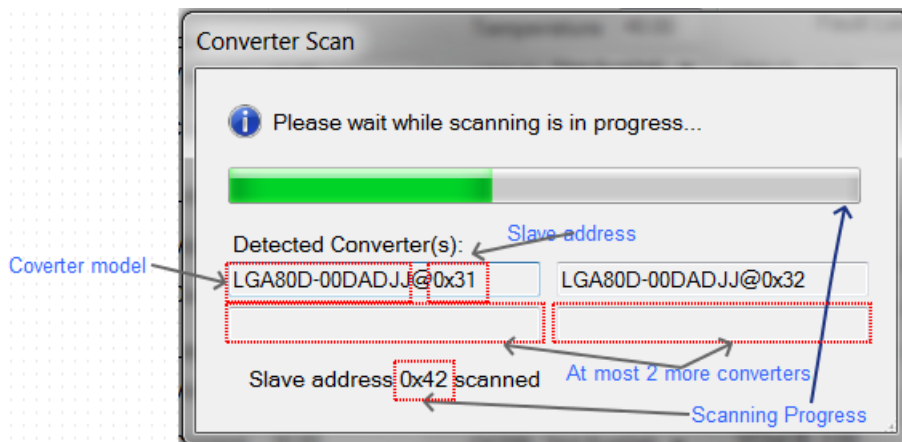
Fig. 4 – Scanning for connected DC-DC Converters

The GUI supports up to 4 DC-DC converter modules from Artesyn's Digital DCDC LGA family. As the GUI starts up, the scanning process is indicated as a progress bar as well as the latest slave address scanned.

Detected converter(s) are displayed at the middle of the dialogs. For each detected converter, the model name and the slave address are displayed.

In Fig. 4, slave addresses from 0x00 to 0x42 have been scanned. Two converters have been detected at slave addresses 0x31 and 0x32. If more converters are found after slave address 0x42, new detected converters will be populated to the remaining slots in the dialog.

If no converter module is found, an error message will be displayed on the dialog (Fig. 5). The user has no choice but to exit the program.

Fig. 5 – Empty GUI if no connected converter is found

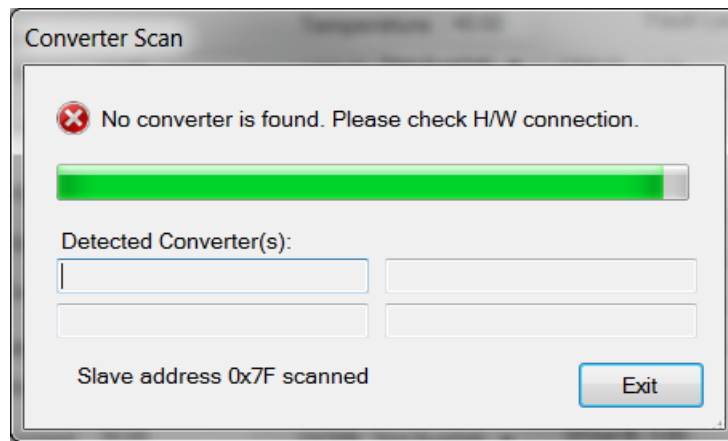If at least one converter module is found, the GUI may then be used to monitor or set operational values for all connected converter modules.

GUI Overview

The Digital POL GUI provides a tabbed interface for monitoring and setting the connected 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.

Both tabs also illustrate how power is converted by the connected converter modules. By default, each converter module converts power individually, i.e., each module produces two outputs (rails) in 1-phase working mode, or one merged output (rail) of larger current, in a 2-phase working mode.

Higher current, higher power rails may be produced by combining outputs of 2, 3, or even 4 converter modules. The combination of modules to build such an output is said to be produced by a 4-phase, 6-phase and 8-phase rail respectively.

Such configurations are referred to as the "Power Architecture" in the GUI.

In general, the Power Architecture must first be configured appropriately before any other tasks are performed using the GUI. (See section "Configure Power Architecture" for details of configuring the Power Architecture).

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.

Digital POL Workflow

It is recommended that the workflow shown in Fig. 6 is reviewed and understood before going into the details of the Digital POL GUI functions. This workflow, although not mandatory to be followed, provides a good introductory guide to a new user of this software.
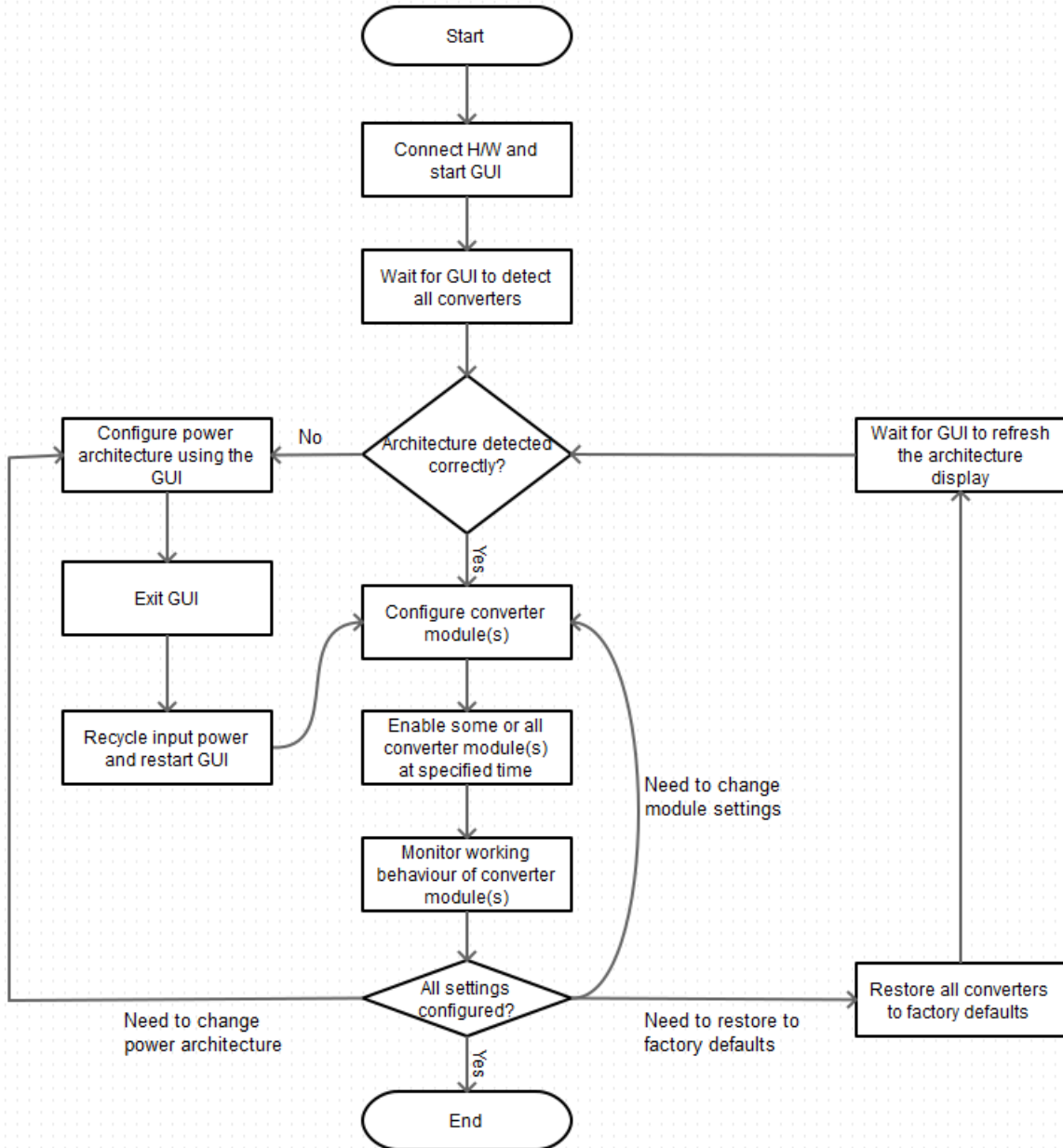

Fig. 6 – Digital POL Workflow

Tasks described in Fig. 6 are detailed below:

1) Connect and power up the H/W, i.e., provide power to the converter modules, and start up LGA80D GUI (see section "Hardware Setup")

2) Wait for the GUI to detect all connected converters (see Fig. 4)

3) If you have not yet configured the power architecture, (likely because the connected converter modules are brand new modules), click the Settings Tab and click the "Architecture Settings" button to open up the "Power Architecture Settings" dialog (see section "Configure Power Architecture")

   a) After configuring the architecture, quit the GUI

   b) Recycle input power

   c) Start the GUI again to refresh the display of the re-configured power architecture settings

   d) Note that you may skip this step if all your converters use 2-phase and/or 1-phase rails only. Consult the section "Configure Power Architecture" for more details.

4) Configure the converter module(s), one by one, using the Settings Tab (see section "Settings Tab")

5) Use the Monitor Tab to enable/disable some or all of them at one time or at specified durations (see section "Enabling/Disabling Converters")

6) Use the Monitor Tab to monitor if converters work as expected (see section "Monitor Tab")

7) If necessary, start over again from a previous step:

   a) If you want to change the power architecture, go back to Step 3

   b) If you want to restore the factory defaults, use the "Restore" in the Settings Tab (see section "Restoring Factory Defaults") to do so before going back to Step 3

   c) If you want to make more changes to converter settings, go back to Step 4

The GUI does provide other functional features not discussed or shown in the Fig. 6 workflow. These features are discussed in details in the sections "Monitor Tab" and "Settings Tab" respectively.

Monitor Tab

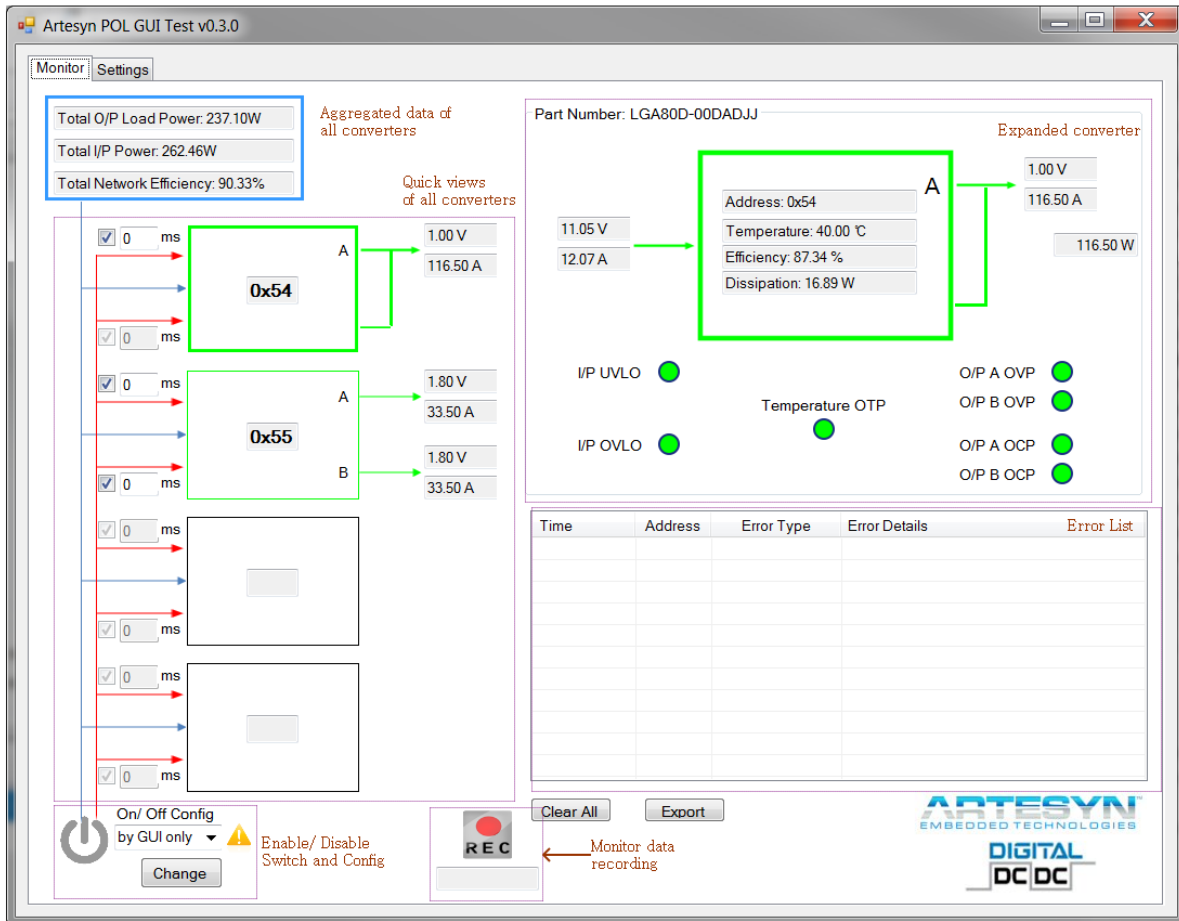Fig. 7 illustrates the main components of the Monitor Tab.

Fig. 7 – 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 Artesyn's Digital DCDC LGA family of modules. This software supports a maximum of 4 converters loaded on a single load board. 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. 8.

By default, a connected converter module may have 1 output (Fig. 8(a)) or 2 outputs (Fig. 8(b)). This is configured through pin-strapping and the GUI will detect the configuration automatically.

Refer to the section "GUI Overview" that multiple (2-4) converters may work together to produce a larger rail. In this case, only one of these converters will be the master and it is drawn in a style similar to Fig. 8(a).

A slave will not "produce" any output since its output is merged to the master. Thus, a slave is illustrated as Fig. 8(c), indicating its output is merged to the upper part of the rail.

 A complete 4-phase rail is shown in the top two converters in Fig. 8(d).

Fig. 8(d) also shows how converters are ordered in the monitor tab. The larger rail is always displayed at a higher position. In addition, in a 4-, 6- or 8-phase rail, the master is always displayed at the top.

The converter 0x54 is displayed at a higher position than the converter 0x55. This is because converter 0x54 is actually a 2-phase rail (the two outputs are merged into one) and therefore is a larger rail than the rails in converter 0x55 (the two outputs are actually two 1-phase rails).

(a) – Single output or master converter

(b) – Dual output converter

(c) – Slave converter
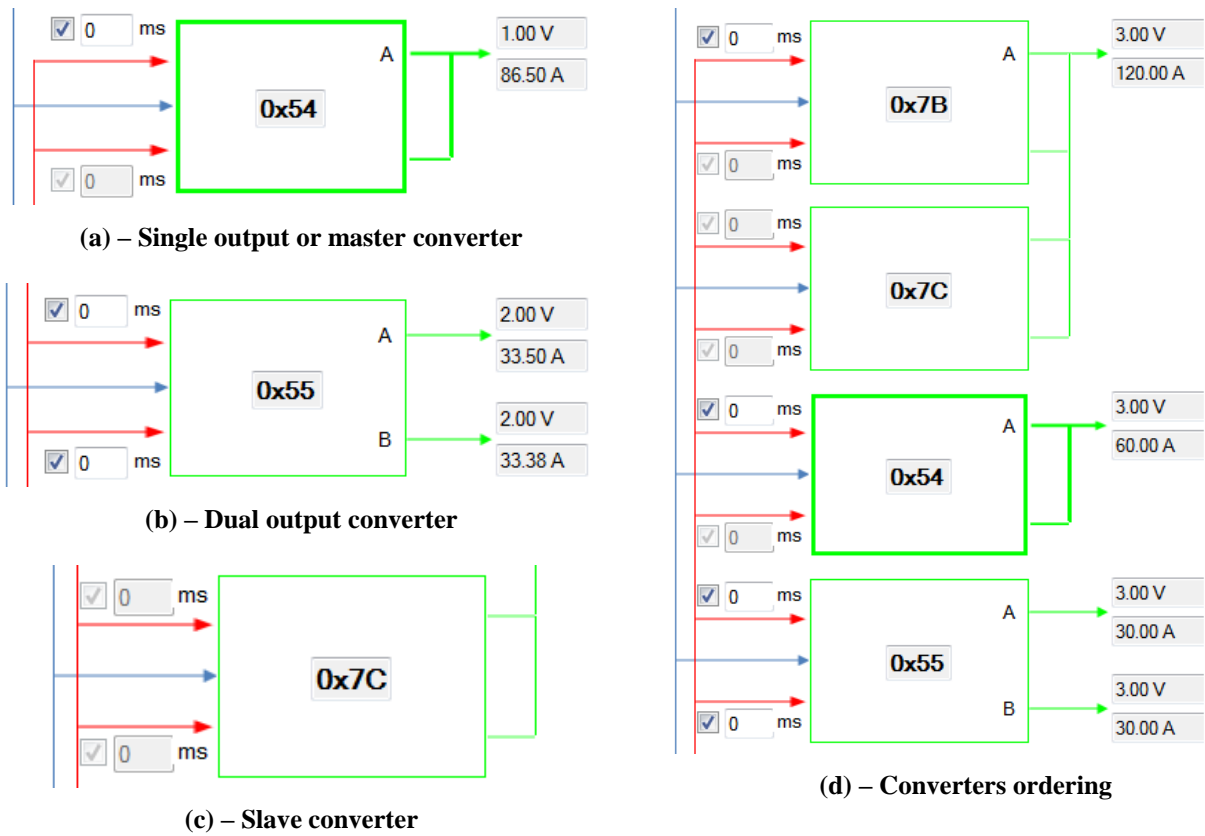
(d) – Converters ordering

Fig. 8 – Illustration of how the definitions of converter are shown

In Fig. 8, green border indicates that the converter module is online and can communicate with the GUI normally.

A red border indicates an offline converter (Fig. 9(a)). An unconnected converter has a grey border, as illustrated by Fig. 9(b).

(a) – Offline converter
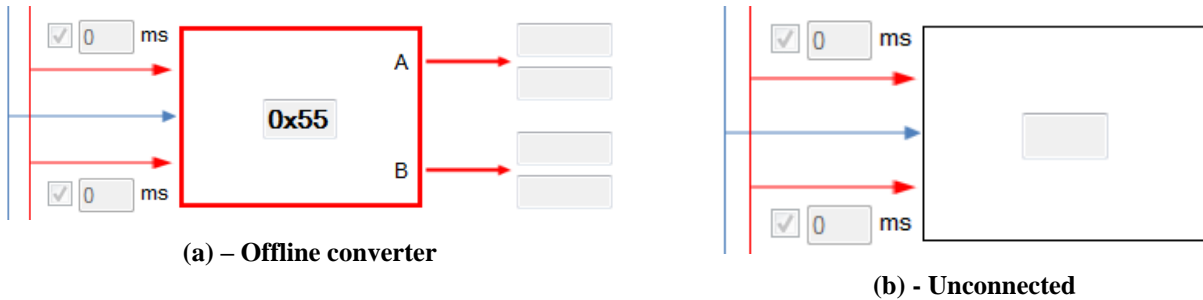
(b) - Unconnected

Fig. 9 – Offline and unconnected converter

The border of the rectangular blocks in Fig. 8(a) and 9(a) are thicker than the other illustrations in Fig. 8 and Fig. 9.

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. 7).

Note that the expanded converter view applies the same color and style scheme illustrated in Fig. 8 and Fig. 9.

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
- **OVPB: status of OVP of output B
- **OCPB: status of OCP of output B
- PN: Part Number

Remarks:

* Iin is actually not reported from the converter. It is an estimated value of the input current, using a pre-defined formula. Depending on the converter model and settings, this value may or may not be available.

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

Fig. 10 illustrates how these items are displayed on the converter views.
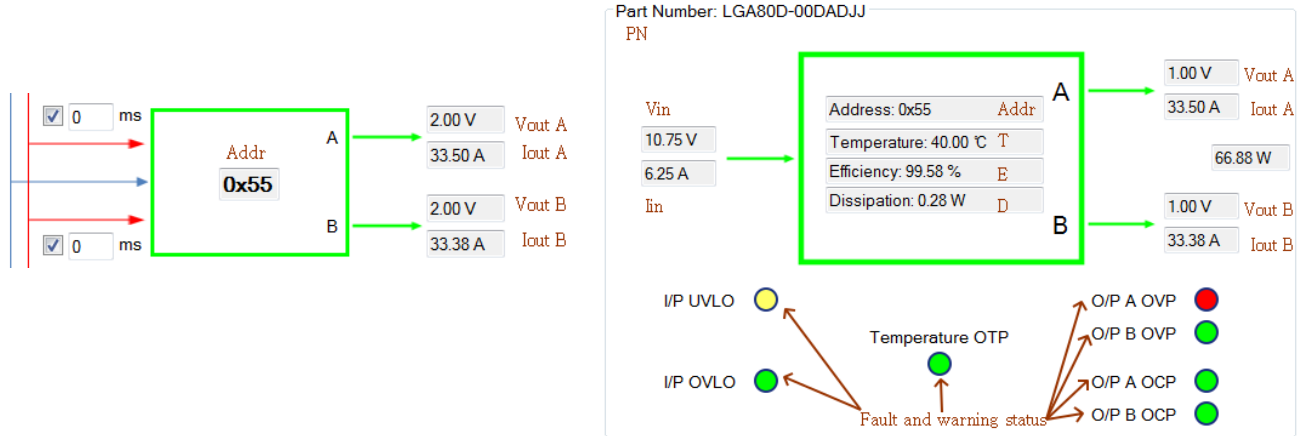

Fig. 10 – Monitor items of converter

A monitored item may be hidden or left empty if it is not available (e.g., Iin and related items that are calculated from it, or the loading information of output B for a 2-phase converter).

On the top left hand corner, the total output power, input power and network efficiency are also reported. See Fig. 7 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. 11 illustrates an error displayed on the error list. This error is reported due to the fault status of UVLO.

Time	Address	Error Type	Error Details
02-02 11:35:43	0x55	Fault Status	Fault status found for UVLO

Fig. 11 – Error List

The detected errors 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. 12) such as the path of the exported file.
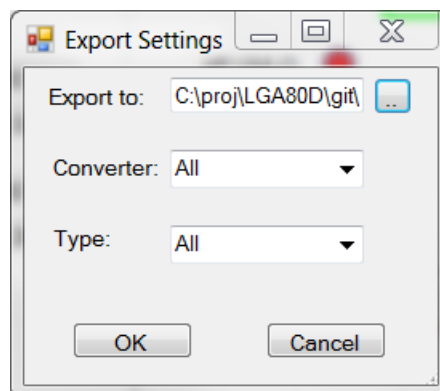

Fig. 12 – Export settings

The export file is a CSV file that is readily opened by Excel, as illustrated in Fig. 13.
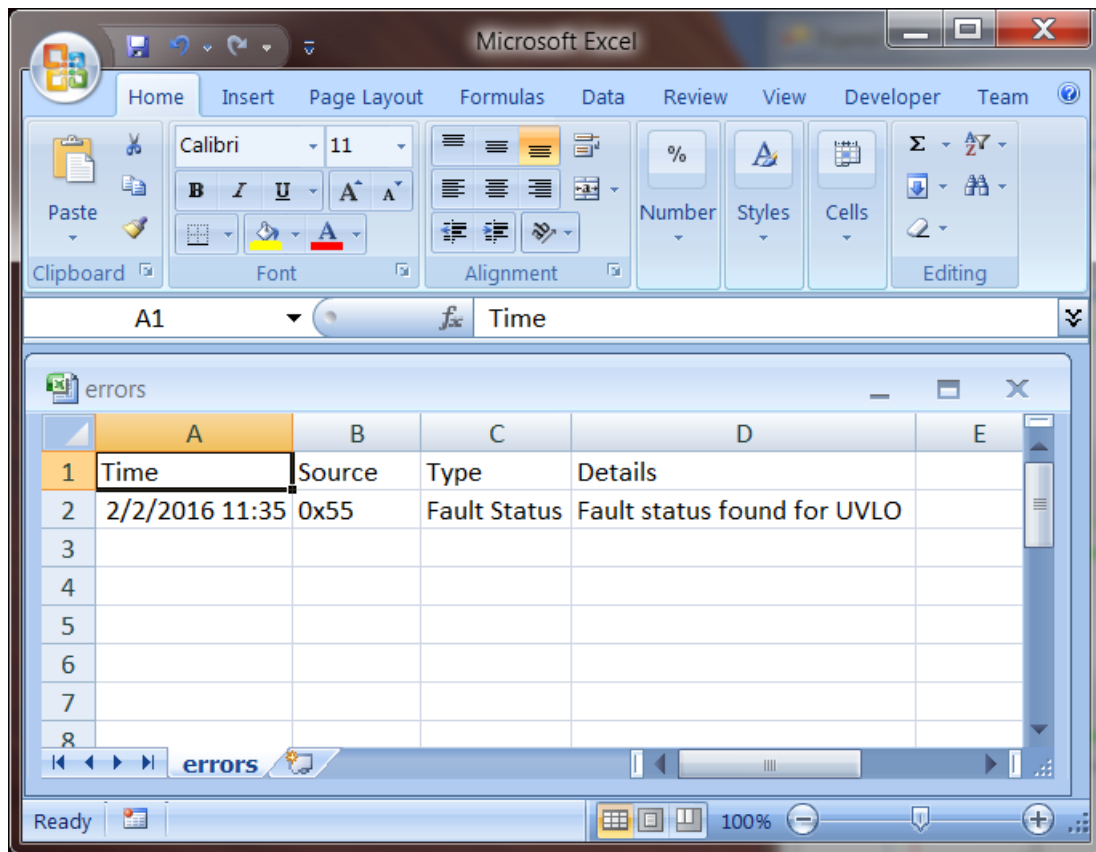
Fig. 13 – Exported error list

If the error list has already been populated with detected errors, it is possible to remove them by using the Clear All button. As one might expect, this button simply clears the content of the list.

Recall that the Export button is used to export the detected errors to an external file, regardless if they are being displayed on the error list. Therefore, even if you have just cleared the content of the error list using the Clear All button, the recorded errors will still be exported when you later click the Export button.

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 Digital POL GUI. These methods, however, can only be applied exclusively.

If a converter module is configured to be enabled or disabled by HW PIN, the user will not be able to enable or disable the converter using the GUI. 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 from configured option on modules	Selected option is same as configured option on modules
All converters are enabled/ disabled by HW PIN	On/ Off Config · by GUI only ⚠ · Change	On/ Off Config · by HW only · Change
All converters are enabled/ disabled by GUI	On/ Off Config · by HW only ⚠ · Change	On/ Off Config · by GUI only · Change
Otherwise (treated as "different" for whatever choice the user selects)	On/ Off Config · by GUI only ⚠ · Change OR On/ Off Config · by HW 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 HW 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.

In the special case indicated on the last row, whatever the user chooses, s/he may click the "Change" button to change the settings of all converter modules to create a consistent setting among all converter modules.

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 HW	**Don't care**		**None**
	All converters are disabled		**Enable**
by GUI	**All converters are enabled**		**Disable**
	Otherwise		**Disable**
Otherwise	**Don't care**		**None**

Table 2 – Enable/ Disable Converters

As in Table 1, the last row represents the special cases that some converters/rails are enabled/disabled by HW PIN but others are by GUI. In this case, the GUI will not help the user to enable/disable any modules so the Enable/Disable button is disabled.

Note that the colour 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. 8). Note that if a converter module has only one output, the delay time of output B is disabled. If the converter is a slave, both delay times will be 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 the 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. 14 – Monitor data recording options
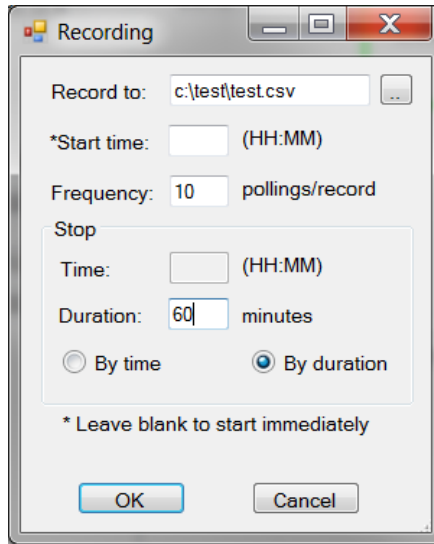
A dialog box (Fig. 14) will pop up to let the user configure how the data recording should be carried out.

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 to be 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. 14)
	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	R E C
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	R E C

Table 3 – Starting and stopping monitor data recording

Settings Tab

Fig. 15 illustrates the main components of the Settings Tab.
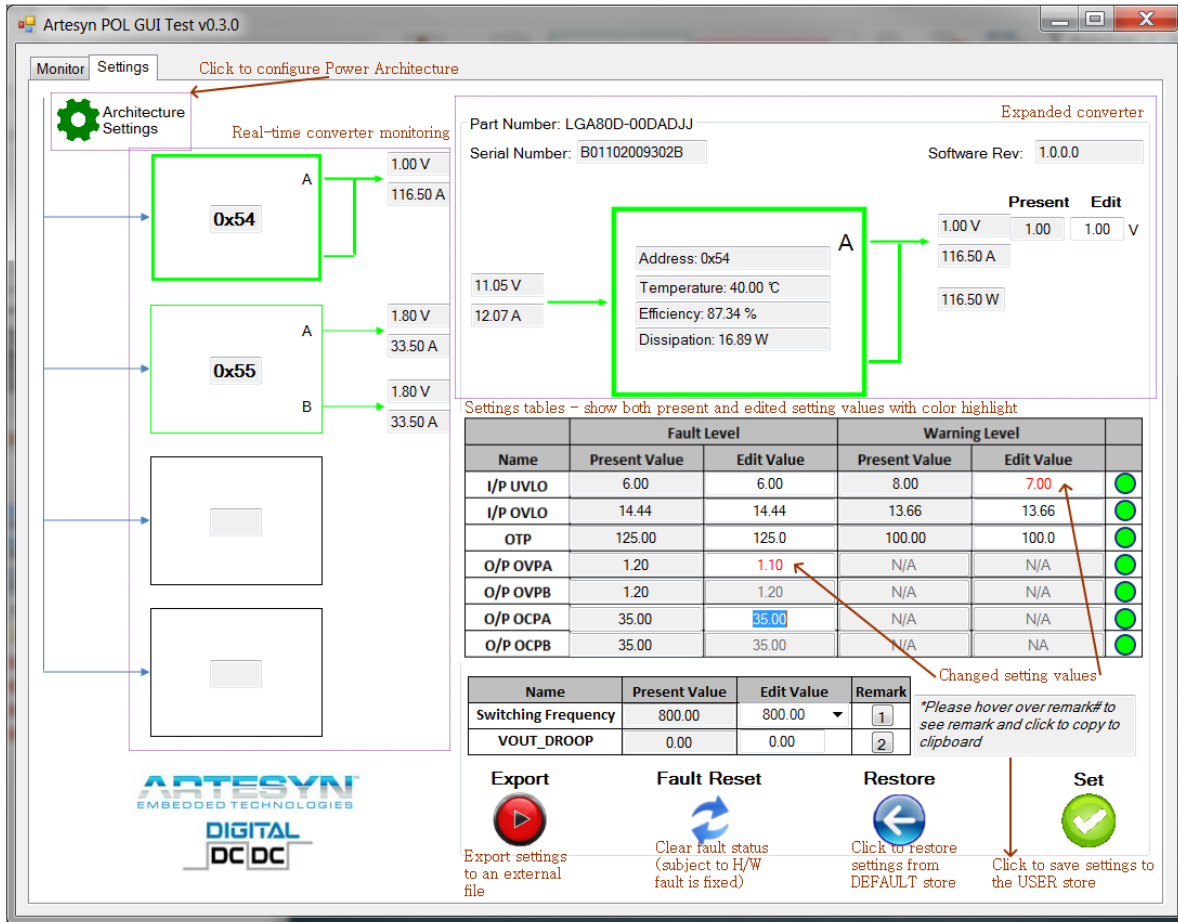

Fig. 15 – Settings Tab

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

The converter and expanded converter view look and work similarly to 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(s) and 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.

Configure Power Architecture

As recommended by the Digital POL workflow, to start working on a set of new converter module(s), the first step is to configure the power architecture correctly. This is because the Digital POL GUI will clear any stored settings when the power architecture is changed.

If the power architecture contains only 1-phase and 2-phase rails, this architecture can be configured with H/W directly. Refer to the "Technical Release Note" of the corresponding converter models for details of this task.

If you would like to use a 4-, 6- or 8-phase rail, you need to create this architecture using the Power Architecture Settings dialog. This dialog is opened using the "Architecture Settings" button, located at the top left corner of the Settings Tab.

Fig. 16 shows the Power Architecture Settings dialog, annotated with the major features of the dialog.
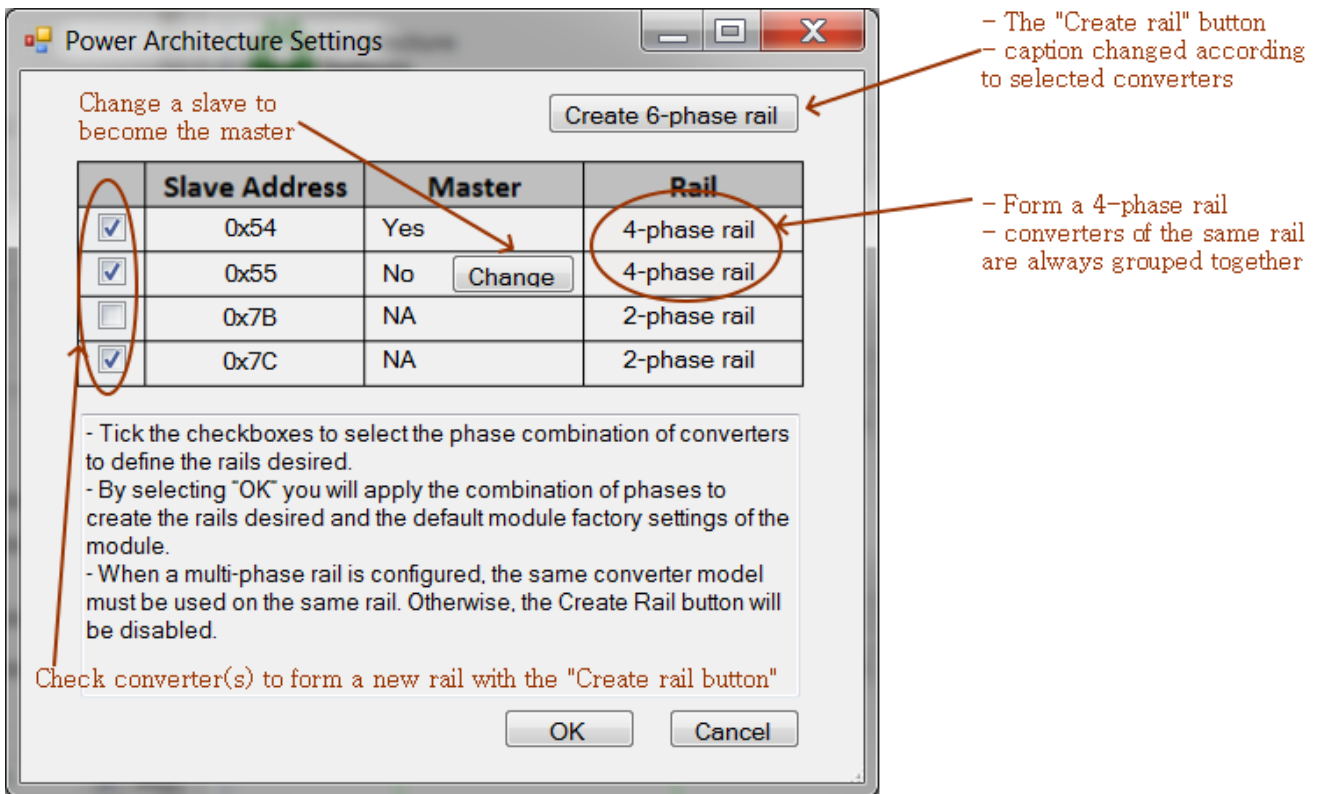

Fig. 16 – Power Architecture Settings Dialog

The content of the table is a summary of the detected converters and the current power architecture configuration. When the dialog is opened, this table is initialized and populated with the power architecture detected from the H/W.

The content of the table is self-explanatory. Slave addresses, master/slave indication, as well as the information of the rail associated with the corresponding converter are displayed. A checkbox is also provided to select/deselect any detected converter(s).

As an example, consider the detected configuration shown in Fig. 16. There are 4 converters detected. The converters with slave addresses 0x54 (master) and 0x55 (slave) form a 4-phase rail, i.e., the outputs of them form a single output.

A button with caption "Change" is displayed for the slave (0x55). This button allows the user to assign this converter to be the master. The original master will be changed to a slave automatically. There will be more than 1 slaves in a 6-phase and 8-phase rail. The "Change" button will be displayed for each slave in these cases.

The converter of slave address 0x7C forms a 2-phase rail, implying that this converter produces a single merged output. The last converter, with address 0x7B, has two 1-phase rails so it produces two outputs. The concept of master/slave does not apply to these converters so the label "NA" is displayed on the "Master" column.

To combine 2 or more converters to form a 4-, 6- or 8-phase converter, select the checkboxes associated with the converters you want to combine. In the example in Fig. 16, the user has just selected converters 0x54, 0x55 and 0x7B.

Since there are three selected converters, the GUI assumes that the user would like to create a 6-phase rail. The caption of "Create rail" button, located on the top-right corner, becomes "Create 6-phase rail".

In general, the caption of this button will be changed to a message that will describe which type of rail will be created on clicking the button, according to the selected converter(s). Using the example in Fig. 16, Table 4 summarizes the various combinations of checked converters and the resulting caption.

Selected converters	Interpretation	Caption	Action
All converters	4 converters form an 8-phase rail	Create 8-phase rail	A 8-phase rail will be created and the original rails are all removed
0x54, 0x55, 0x7B	3 converters form a 6-phase rail	Create 6-phase rail	The rails of the selected converters are removed while a 6-phase rail is created. The 2-phase rail of 0x7C is left unchanged
0x55, 0x7C	2 converters form a 4-phase rail	Create 4-phase rail	A new 4-phase rail is created to replace the original rails in 0x55 and 0x7C. The converter 0x54, originally part of a 4-phase rail, becomes a 2-phase converter.
0x54, 0x55	These converters already form a 4-phase rail		The button is disabled since no rail will be created
0x7C	The 2-phase converter is converted to 1-phase	Create 1-phase rails	The 2-phase rail in 0x7C is replaced 1-phase rails in this converter
0x7B	The 1-phase converter is converted to 2-phase	Create 2-phase rail	The 1-phase rails in 0x7B is replaced a 2-phase rail in this converter

After clicking the "Create rail" button, the table will be updated to reflect the currently configured, albeit unconfirmed, power architecture. At this point, no command is sent to the H/W. The user is free to make any further changes until the correct architecture has been specified.

Finally, after the user has finished configuring the power architecture, click the OK button to confirm the change. If the configuration succeeds, a dialog (Fig. 17) will be displayed to notify you of the result. Otherwise, a similar dialog will be displayed with an error message.
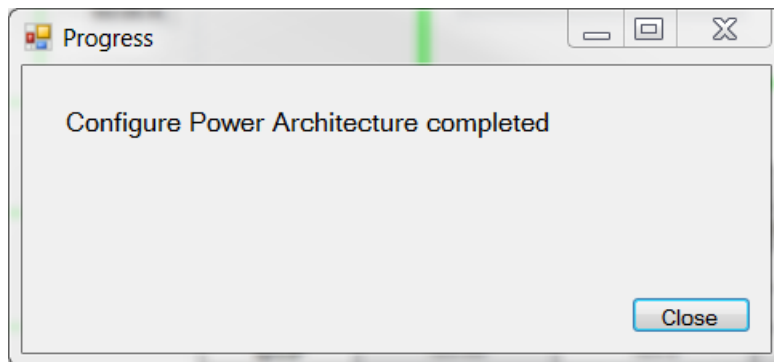

Fig. 17 – Power Architecture Configuration Completed

The factory default settings will be restored before the commands are sent to configure the rails according to the defined configuration. (This design decision is made to make sure that a power architecture is always initialized with a known initial setting).

In addition, due to hardware limitation, the input power must be recycled before the known factory settings are fully restored. Therefore, please recycle the input power after you have seen the completion dialog (Fig. 17). As a precaution to avoid the GUI displaying errors during power recycling, we suggest you to quit the GUI before power recycling, as discussed in the recommended workflow discussed in the section "Digital POL Workflow".

Mixing Converter Models

Recall that the GUI automatically detects and displays connected converters when the software startups. The example in Fig. 4 shows that two LGA80D converters have been found.

It is possible that two different models of converters are found in the same system. In this case, the GUI will still start successfully but these converters cannot be grouped to form a 4-, 6- or 8-phase rail.

If the selected converters contain more than one converter models, the "Create rail" button will be disabled. Therefore, the user will not be able to create a multi-phase rail with mixed converter models.

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)
- Switching Frequency
- VOUT_DROOP

There are two Settings tables. The first one is used to configure protection limits such as OTP and OVLO. The real-time warning/fault alerts of these status are also displayed in the table.

The second table is used to configure the switching frequency and Vout Droop. Further information about these settings are accessible by hovering on the corresponding remark button (move the mouse cursor over the button).

When the Settings tables are first displayed, the GUI will populate the Settings tables, 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 converter models at hand. 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.

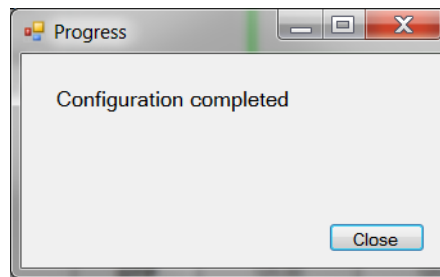If the operation is successful, a dialog will be displayed to tell the user (Fig. 18).

Fig. 18 – Configuration Completed

If the operation has 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. Note also that in a multi-phase rail, only the settings of the master converter can be configured. Appropriate settings values will be sent to the slaves automatically when the Set button is clicked.

Restoring Factory Defaults

The factory defaults are stored in the DEFAULT store in the converters. The GUI will send a command to restore the converter settings from this 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. 19).
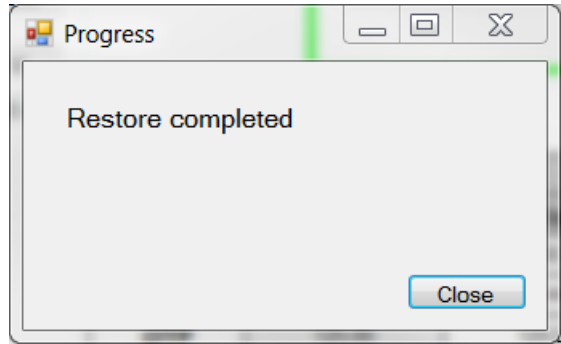

Fig. 19 – Restore completed

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. 20).
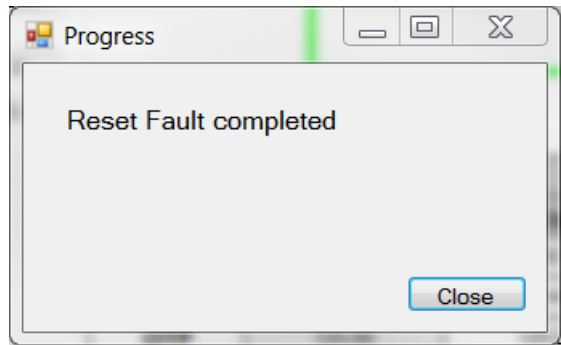

Fig. 20 – Successfully result fault status

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. 21.
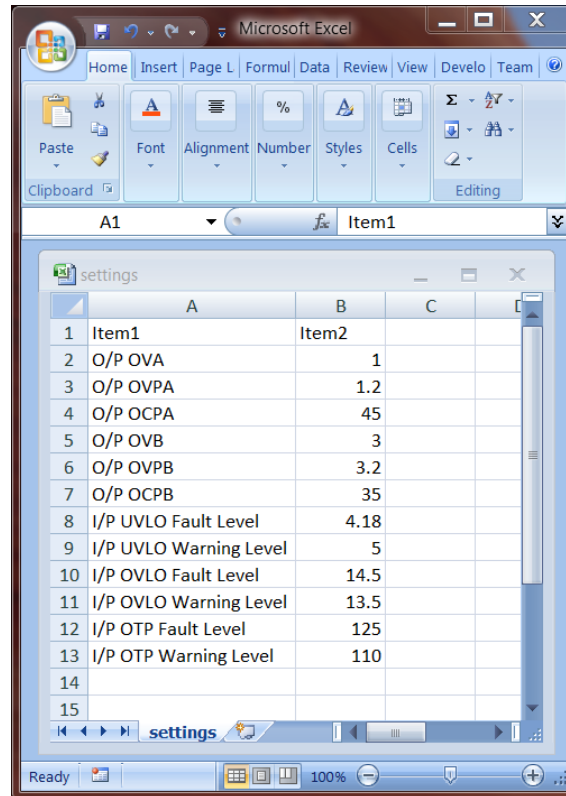

Fig. 21 – Exported converter settings

As with most other buttons on the Settings Tab, this feature is also used for the expanded converter only. It exports the currently edited settings, regardless 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.

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
05	Oct 12, 2016	LGA80D GUI User Manual	2.0	Updated for 4/6/8 phase rail
06	Oct 19, 2016	LGA80D GUI User Manual	2.0	Revised the recommended workflow to ask the user to recycle power after power architecture settings
07	Nov 24, 2016	LGA80D GUI User Manual	2.3	Added instructions on setting up external libraries for LGA80D GUI
08	Dec 19, 2016	LGA80D GUI User Manual	2.4	Table 1 and its corresponding descriptions are updated, due to improvement in the GUI.
09	Nov 6, 2018	Digital POL User Manual	0.9	Fully revise document to reflect latest features of the GUI

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