CAEN
Tools for Discovery

Electronic Instrumentation

UM2463

GECO2020 GEneral COntrol Software for CAEN HV Power Supplies

Rev. 12 - 11 May 2020

Purpose of this User Manual

This User's Manual contains the full description of the **GECO2020 GEneral COntrol Software for CAEN HV Power Supplies**.

Change Document Record

Date	Rev.	Changes
23 May 2013	0	First release
13 June 2013	1	N568E Support
13 September 2013	2	Updated to rel. 1.1.2; N568E no longer supported
8 November 2013	3	Updated to rel. 1.2; DT55xx supported
22 January 2014	4	Updated to rel. 1.3; New Advanced Features (Scripting)
14 February 2014	5	Updated to rel. 1.4; SYx527 auto detection, graphical trip setting
10 July 2014	6	Updated to rel. 1.5; System RESET FLAG and DT55xx parameters
14 January 2015	7	Updated to rel. 1.6; NIM, DESKTOP, Rack, VME, DT55xx system Log; R14xx support; VSET, ISET offset
3 April 2015	8	Updated enhancement activation
4 April 2016	9	Updated to rel. 1.7: support for DT55xxE units
8 June 2017	10	Udpated System panel
20 February 2019	11	Updated with "SMART HV" units
11 May 2020	12	Updated tables 1, 2, 3, 4; § 1, 4; fig. 11

Symbols, abbreviated terms and notation

N.A.

Reference Document

N.A.

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1 Introduction

GECO2020 is a graphical application that allows to manage all the CAEN Power Supplies whatever their form factor (Multichannel Power Supply System, VME, NIM, Rack or Desktop).

Operation with V65xx VME Power Supplies requires the use of CAEN VME Bridges; NDT-DT-R14xx NIM, Desktop, DT55xxE, Rack Modules can be controlled via USB and Ethernet; DT55xx Desktop Modules can be controlled via USB and Optical Link; N14xx NIM modules can be controlled via USB and Ethernet, if CAEN NIM8301 Crate is used.

The Multichannel Power Supply Systems can be controlled via Ethernet or Wi-Fi.

It is possible to connect up to four SYx527 systems and up to 20 VME, NIM, Rack or Desktop units.

All Mainframe, Board and Channel and parameters related to the SY4527 and SY5527 Power Supply Systems, and to the VME, NIM, Rack and Desktop Programmable HV Power Supplies can be easily monitored and programmed: from the speed of the rack cooling fans to the channel HV ramp rates.

Additional features include channel groups management, custom channel configuration.

System requirements

The host PC shall run Windows or Linux OS.

2 Installation

Download and launch the GECO2020 setup file supported by your OS and follow the installation wizard instructions. Click on the shortcut icon and Welcome Window appears as shown below

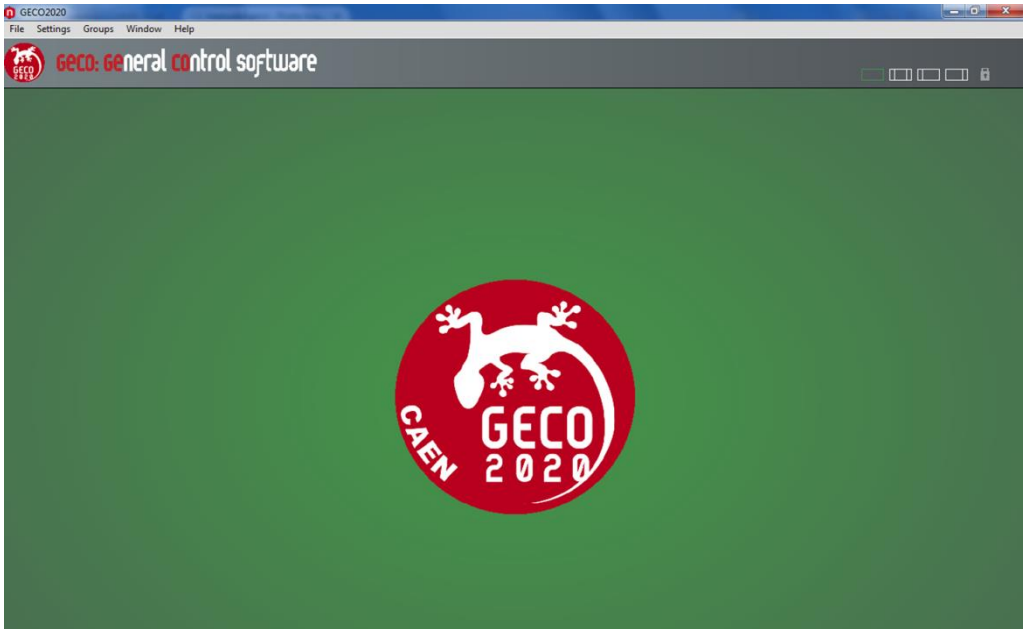


Fig. 1 – Welcome Window

GECO2020 enhancement activation

GECO2020 functionality enhancement is available for SYx527 Multichannel Power Supply System upon purchase. If you have purchased the "SW4536 - SY4527/SY5527 Control software functionality enhancement activation code" (ordering code WSW4536XAAAA), prior to installation of the GECO2020, you have to:

- access the System via the Web configurator (see SY4527 User's manual) as "admin"
- go to "Setting menu" > License Manager; the following window will open

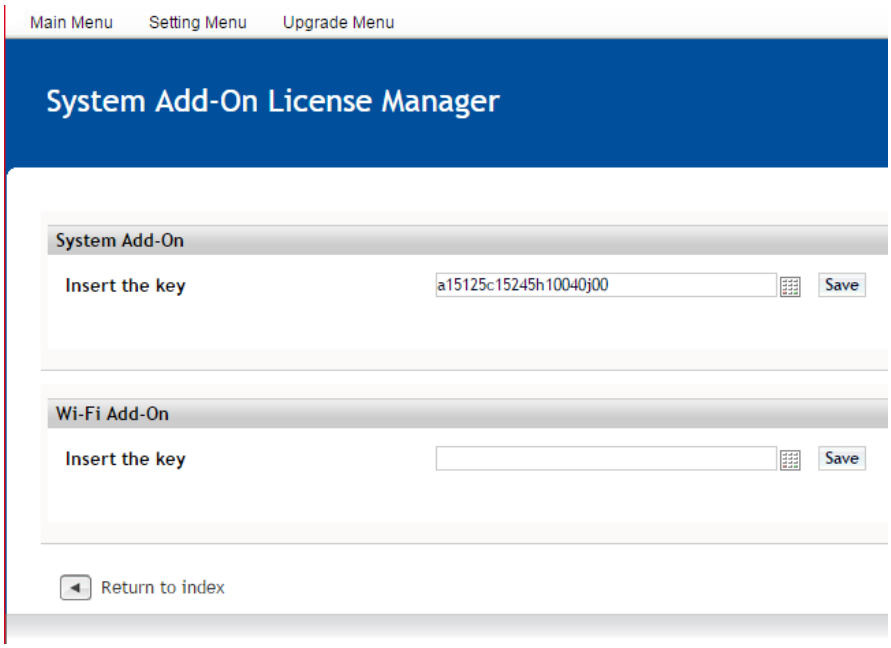


Fig. 2 – Add On License Manager of Web Configurator tool

- Type the "enhancement activation code" you received into the "Insert key" field than select save.
- Install GECO2020 as described above; the "Advanced Features" (see page 28) will work!

3 Log-in

SYx527 Log-in

In order to access the SYx527 Multichannel Power Supply System system, click on (on the Menu Bar, see page 11)

File > connect > The log-in form will be shown:

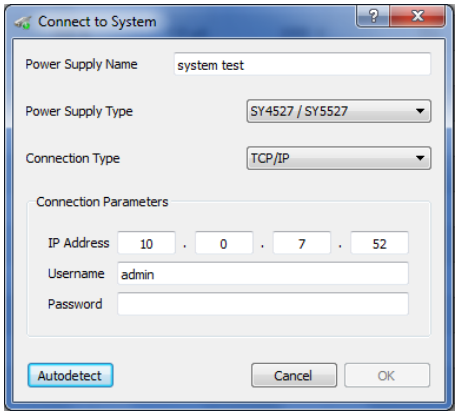


Fig. 3 – SYx527 Log-in form [IP Address shown is an example]

Select Power Supply and Connection type (N.B.: it is possible to connect to up to four SYx527's), then enter:

- System IP address (of your local network)
- System name (User defined)
- User name: admin (default)
- Password: admin (default)

click on OK and the Main Menu will be shown;

by clicking the "Autodetect" button, all the available systems[1] will be listed:

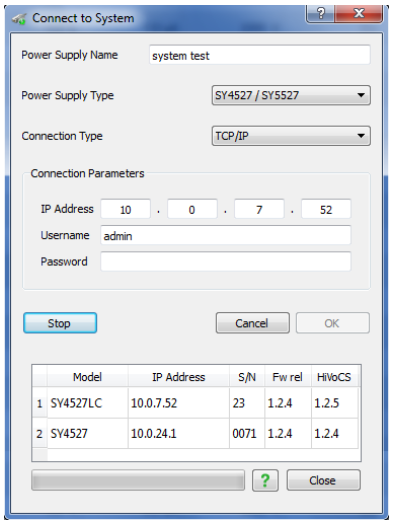


Fig. 4 – SYx527 Log-in form with "detected" systems [IP Addresses shown are an example]

- By double clicking on one of the available systems row, its IP address will be copied into the Connection options
- By clicking on "Close" button the Autodetect field will be hidden.

[1] This feature works only with SYx527 Systems running firmware rel. 1.3.0 and later.
IMPORTANT NOTICE: Systems outside the local network must also have Gateway set, in order to be detected; the connection with Systems outside the local network, requires the Host PC network properly set (same network as the system), to be achieved.

NIM and NIM/Desktop/Rack Board Log-in

In order to access the NIM and NIM / Desktop / Rack HV boards[2], click on (on the Menu Bar, see page 11)

File > connect

The log-in form will be shown (USB or TCP/IP):

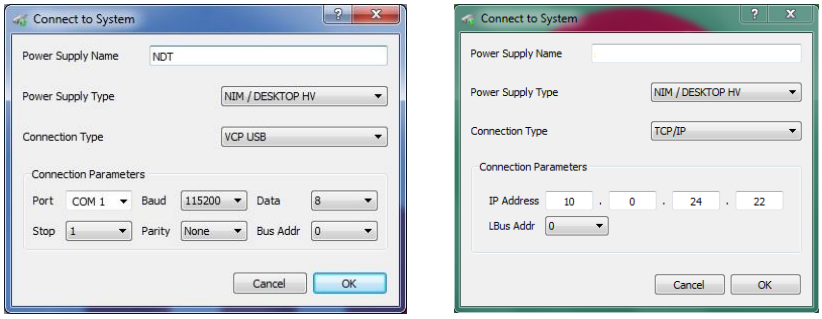


Fig. 5 – NIM and Rack / Desktop Log-in form [Port # and IP Address shown are an example]

Select Power Supply and Connection type, then enter:

- Connection Parameters (check PC control panel)
- Power supply name (User defined)
- click on OK and the Main Menu will be shown

VME Board Log-in

In order to access the VME HV Power Supplies, click on (on the Menu Bar, see page 11)

File > connect

The log-in form will be shown:

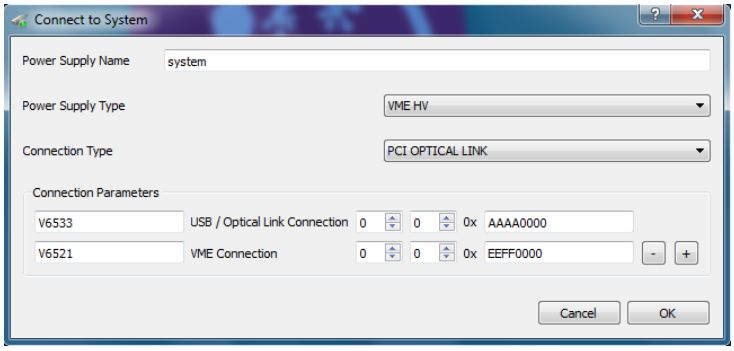


Fig. 6 – VME Log-in form [Port # shown are an example]

Select Power Supply and Connection type (USB or Optical Link, depending on used bridge), then enter:

- Connection Parameters
  - If USB is used, enter port number
  - If OPTICAL LINK is used, enter PCI slot and Link number
- VME HV Board Base Address
- Power supply name (i.e.: the name of the VME Crate; User defined)

[2] the present release supports connection with daisy chained modules only with N14xx NIM Power Supplies; this feature will be in the future extended also to NDT14xx units

- Board name (User defined)
- Click on [+] button to add other VME HV Boards (one or more) to connect with
- Click on [-] to remove relevant board
- Click on OK and the Main Menu will be shown

DT55xx Desktop Board Log-in

In order to access the DT55xx HV boards, click on (on the Menu Bar, see page 11)

File > connect

The log-in form will be shown:

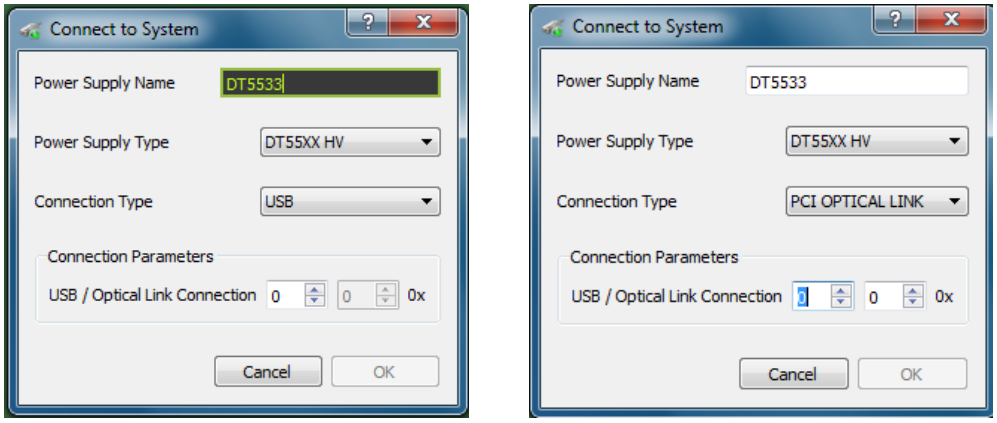


Fig. 7 – DT55xx Log-in form [Port # shown are an example]

Select Power Supply and Connection type, then enter (USB or Optical Link):

- Connection Parameters (check PC control panel)
  - If USB is used, enter port number
  - If OPTICAL LINK is used, enter PCI slot and Link number
- Power supply name (User defined)
- click on OK and the Main Menu will be shown

DT55xxE Desktop Board Log-in

In order to access the DT55xxE HV boards, click on (on the Menu Bar, see page 11)

File > connect

The log-in form will be shown:

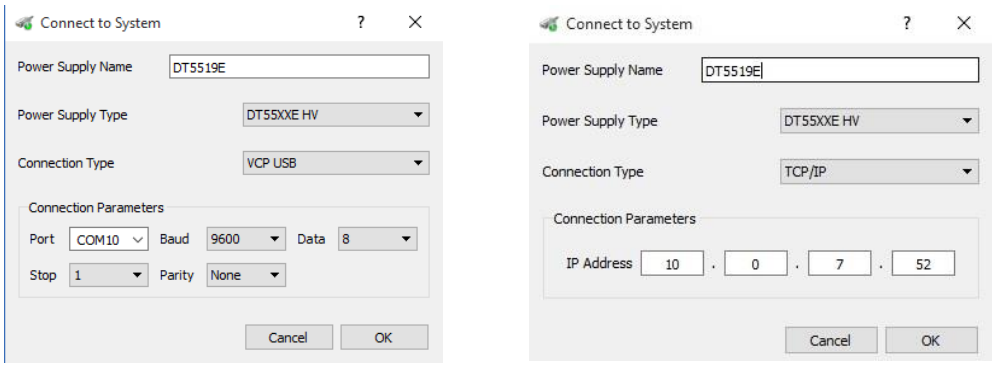


Fig. 8 – DT55xxE Log-in form [Port # and IP Address shown are an example]

Select Power Supply and Connection type, then enter (USB or TCP/IP):

- Connection Parameters (check PC control panel)
  - If USB is used, enter port number, baud rate, data format, stop bit and parity (see board manual)
  - If TCP/IP is used, enter IP address
- Power supply name (User defined)
- click on OK and the Main Menu will be shown

Smart HV Log-in

In order to access Smart HV modules, click on (on the Menu Bar, see page 11)

File > connect

The log-in form will be shown:

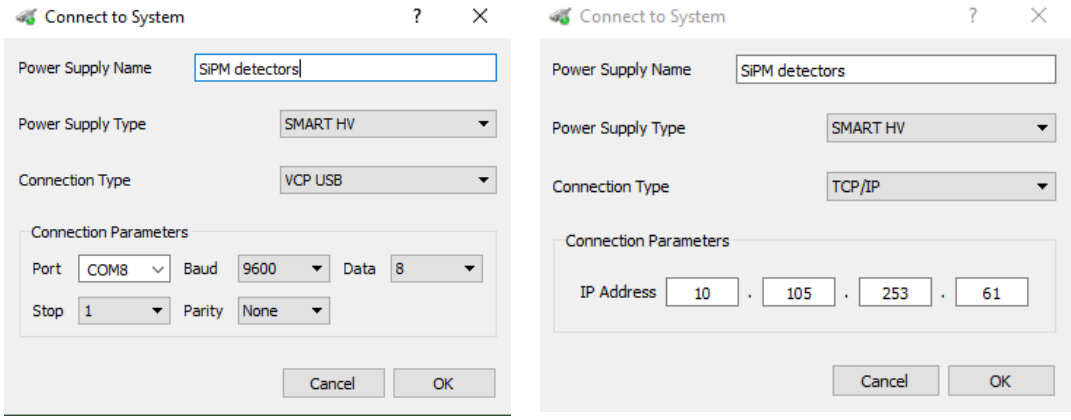


Fig. 9 – Smart HV Log-in form [Port # and IP Address shown are an example]

Select Power Supply and Connection type, then enter (USB or TCP/IP):

- Connection Parameters (check PC control panel)
  - If USB is used, enter port number, baud rate, data format, stop bit and parity (see board manual)
  - If TCP/IP is used, enter IP address
- Power supply name (User defined)
- click on OK and the Main Menu will be shown

4 GECO2020 configuration

Menu bar

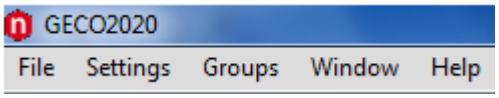


Fig. 10 – GECO2020 Menu bar

The Menu bar has the following options:

- File: allows to connect/quit the system; "Autosave" allows to store the present Panels layout menu settings
- Settings: allows Custom view design (see page 5); allows to load/save a configuration file (see page 19)
- Groups: allows to manage Groups (see page 33)
- Window: allows to set the layout of panels and main menu (see page 38)
- Help: contains software revision info

Main Window

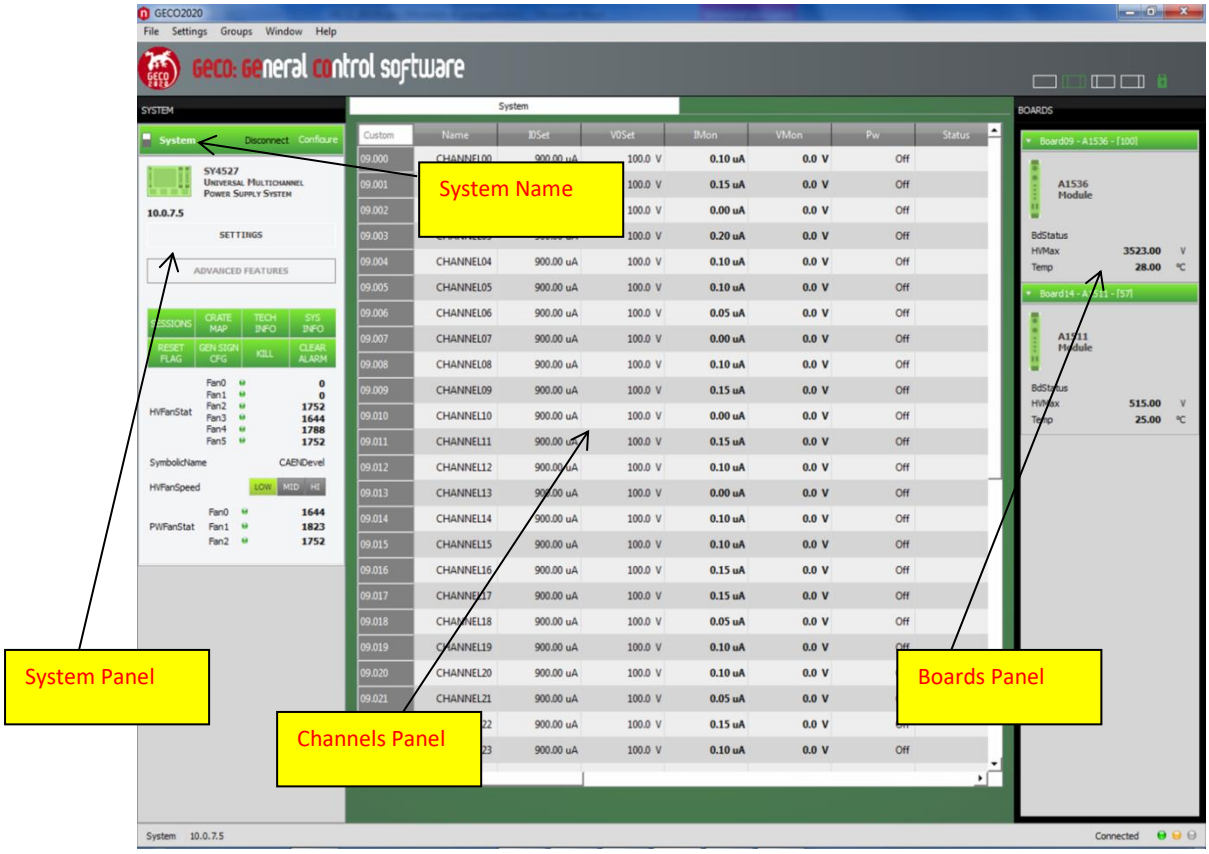


Fig. 11 – Main Window panels

The Main Window is split into three panels: System Panel (left; see p.17), Channels Panel (middle; see p. 12) and Boards Panel (right; see p.33). The buttons in the upper right corner (enabled by clicking the "lock" icon, see figure) allows to view:

- All panels
- Channel panel only
- System panel + Channels panel only
- Channels panel + Boards panel only

Fig. 12 – View buttons

Channels Panel

Custom	Name	I0Set	V0Set	IMon	VMon	Pw	Status
08.000	CHANNEL00	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.001	CHANNEL01	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.002	CHANNEL02	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.003	CHANNEL03	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.004	CHANNEL04	200.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.005	CHANNEL05	200.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.006	CHANNEL06	200.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.007	CHANNEL07	200.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.008	CHANNEL08	200.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.009	CHANNEL09	200.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.010	CHANNEL10	200.0 uA	100.0 V	0.0 uA	97.0 V	On	
08.011	CHANNEL11	200.0 uA	100.0 V	0.0 uA	100.0 V	On	
08.012	CHANNEL12	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.013	CHANNEL13	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.014	CHANNEL14	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.015	CHANNEL15	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.016	CHANNEL16	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.017	CHANNEL17	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.018	CHANNEL18	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.019	CHANNEL19	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.020	CHANNEL20	300.0 uA	100.0 V	0.0 uA	0.0 V	Off	
08.021	CHANNEL21	300.0 uA	100.0 V	0.5 uA	0.0 V	Off	
08.022	CHANNEL22	300.0 uA	100.0 V	0.5 uA	0.0 V	Off	
08.023	CHANNEL23	300.0 uA	100.0 V	0.5 uA	0.0 V	Off	

Fig. 13 – Channel Parameters panel

Channel Parameters Columns

All parameters and alarm messages from the Power Supply boards are listed in the Channel Parameters Columns (see p.11): these parameters allow for channel parameter setting and for status control of the channels and of the boards inserted into the crate; the leftmost column indicates slot and channel number. The scroll bars allow to display all the rows and columns. Channel rows are highlighted in red if alarm status is detected.

By left clicking on the item name, it is possible to “drag and drop” rows and columns; this is a “volatile” setting and it is not saved in the configuration file.

In order to update one settable parameter, simply left click on it and type the desired value, within the allowed range, then press <Enter>.

If one parameter has “discrete” allowed options (such as PW On/Off), double click on the current value to view all options, then left click to select; “space bar” can be used as well for this purpose.

Left click on a column header (set parameters), allow to select all the values in the column (the column will become light green) and the set value will be written to all channels; it is furthermore possible to select more channels with either combination <ctrl>+<left click> or <shift>+<left click>.

NOTICE! THE TYPES OF PARAMETERS AND ALARM MESSAGES DISPLAYED IN THE CHANNELS WINDOW DEPENDS ON THE TYPE OF BOARD USED!

The combo box in the upper left corner allows to select between Custom, Full and Minimal Tab: “custom” is the Tab with the settings programmed as explained by **System** Configure section (page 19); “full” Tab shows all channel and parameters and “minimal” Tab only a factory programmed subset of parameters. This option is not available when “Custom View” is used: in that mode the Tab is always “custom”. If more than one system is connected, they are “tabbed” in the System Panel; to view one system’s Channels Panel, simply click on the System name (see p. 11).

The parameters displayed in the Channels Window for each channel of each power supply type are:

Table 1 –SYx527 System Channel Parameters[3]

Parameter	Descritpion
CHANNEL NAME (settable):	descriptive name for the relevant channel;
V0SET (settable):	the first of the two allowed voltage programmable values.
I0SET (settable):	the first of the two allowed current limit programmable values
V1SET (settable):	the second of the two allowed voltage programmable values
I1SET (settable):	the second of the two allowed current limit programmable values
RUp (settable):	the Ramp-Up parameter value, i.e. the maximum voltage programmable increase rate.
RDWn (settable):	the Ramp-Down parameter value, i.e. the maximum voltage programmable decrease rate.
TRIP (settable):	the TRIP parameter value, i.e. the maximum time an Over Current condition is allowed to last.
SVMAX (settable):	the maximum voltage value programmable for the channel. If the value set as SVMAX is less than the current value of the V0SET/ V1SET parameter, the latter will automatically decrease to the SVMAX value.
VMON (monitor):	monitored voltage value
IMON (monitor):	monitored current value
ImAdj (monitor):	offset value which is added to IMon to adjust its value to zero
ImRange (settable):	Sets current monitor (IMON) range; high or low
STATUS (monitor):	it displays the channel status.
PW (ON/OFF):	the Power parameter shows the ON/OFF channel status. As this parameter is set ON, the channel is switched on (if the INTERLOCK is not active and if the channel is enabled either locally or remotely) highlighted in green when channel ON; onstate = ON; offstate = OFF
POn (EN/DIS):	Power-On option, which can be enabled or disabled. If this option is enabled, at Power-On or after a Restart each channel is restored in the same condition (defined by the Power parameter) it was before the Power-Off or Reset. If this option is disabled, at Power-On or after a Restart all the channels are off, independently from the condition in which they were before the Power-Off or Reset ; onstate = Enabled; offstate = Disabled
PDwn (Kill/Ramp):	Power-Down option, which can be set as KILL or RAMP. It affects the way the channels react at a Power-Off command caused by a TRIP condition. If the KILL option is selected, the relevant channel will be switched off at the maximum rate available. If the RAMP option is selected, the voltage will drop to zero at a rate determined by the value of the Ramp-Down parameter programmed for that channel; onstate = Ramp; offstate = Kill
TripInt:	2N-bit word (Dec. 0÷2^2N-1) maximum 16 lines, where N is the number of the board's Internal Trip Bus lines. Bits [0;N-1] allow the channel to sense the trip status from the corresponding lines when set to one; in the same way, bits [N;2N-1] allow the channel to propagate the trip status over the Trip Bus: bit N on line 0 and so on (see SY4527 User's manual). Please check also the Board User's Manual, since some boards provide a decimal TripInt parameter, while other boards provide a hexadecimal TripInt.
TripExt:	Must be set in the 0÷255 range. Bits [0;3] allow the channel to sense the trip status from the corresponding lines when set to one; in the same way, bits [4;7] allow the channel to propagate the trip status over the trip bus: bit 4 on line 0 and so on (see SY4527 User's manual). Please check also the Board User's Manual, since some boards provide a decimal TripExt parameter, while other boards provide a hexadecimal TripExt.
ZCDetect (settable)	On: enable the detection of leakage currents Off: disable the detection of leakage currents
ZCAdjust (settable)	En: the current offset due to leakage currents on cascaded channels is compensated Dis: the current offset due to leakage currents on cascaded channels is not compensated

Graphical Trip configuration

By clicking on the wrench icon next to the Trip items, it is possible to access a simplified configuration tool for the Internal and External Trip parameters:

[3] Different SYx527 System Board Series may have a different set of Channel Parameters; please check device manual

TripInt	TripExt
0x 00000000	0x 00000000
0x 00002002	0x 00000000
0x 00000000	0x 00000000
0x 00000000	0x 00000000
0x 00000000	0x 00000000
0x 00000000	0x 00000000

Fig. 14 – TripInt and TripExt items

This tool allows to link one or more channels to just one trip line, both in “sense” and “propagation” mode; in order to do this:

- select one line (the selection mark will be shown),
- click on the “Line” column, next to one or more channels (the box will show number and color of the Trip line)

This procedure can be repeated to link other lines to other channels.
The following setting links Channel 0 and 1 to Internal Trip Line 0 and Channel 5 , 6, 7 to Internal Trip Line 2:

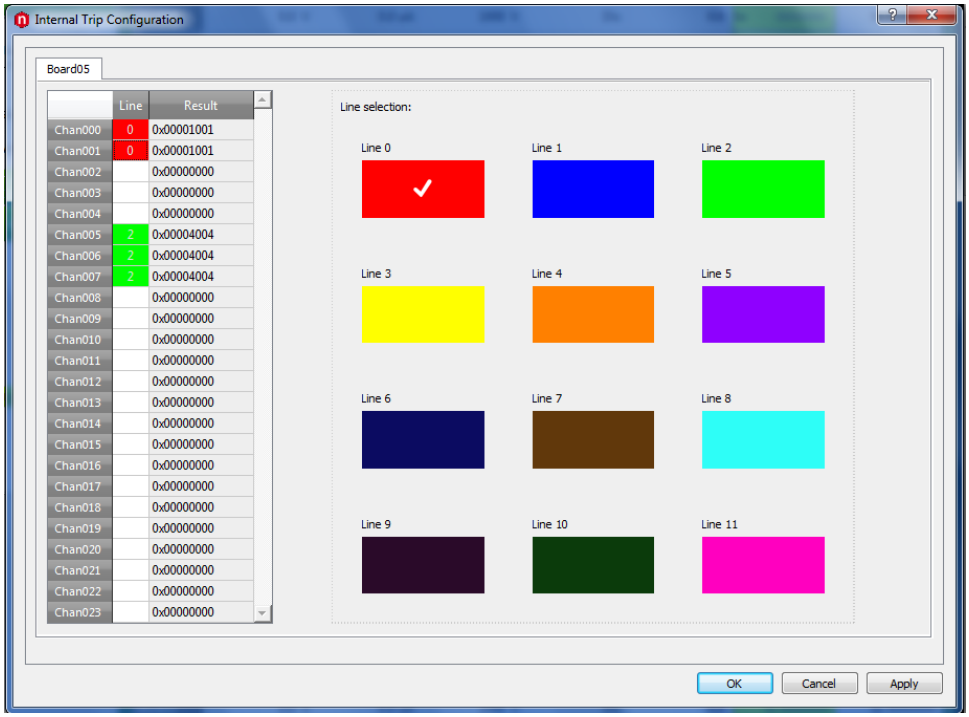


Fig. 15 – Graphical TripInt setting

This means that Ch0 will trip as Ch1 is tripping and vice-versa; Ch5 will trip as either Ch6 or Ch7 (or both) trip, etc.

Please note that, if the Trip parameter is already set, with some channels linked to more than just one trip line, by changing settings with the graphical tool, some links may be lost!

For example, if Channel 0 TripInt is set manually to 0x00000043 (sense on lines 0, 1; propagation on line 0), then, as it is modified with the graphical tool as shown in figure above, the Channel 0 TripInt will be updated to 0x00000041 (sense link to line 1 will be lost).

This tool allows to perform External Trip settings in the same way: with the following setting, Ch2 of the selected board will sense and propagate the Trip status on Line 2 of the System External Trip bus:

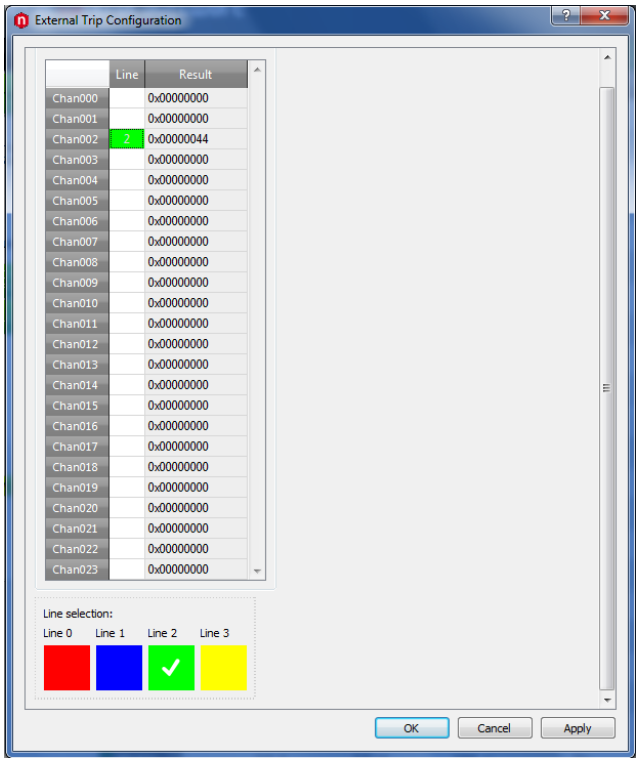


Fig. 16 – Graphical TripExt setting

Table 2 –NIM, Rack and Desktop Channel Parameters

Parameter	Function	Unit
(±)	Channel polarity	
Pw	Power ON/OFF; highlighted green when ON	
Vmon	High Voltage Monitored value	Volt
ImonH	Current Monitored value when Imon Range is set to HIGH	µA
ImonL	Current Monitored value when Imon Range is set to LOW	µA
ChStatus	ON/OFF; Ramp UP/DOWN; OVV; UNV; OVC; OVP; MAXV; TRIP; OVT; OFF; KILL; ILK; CAL_ERR	
Vset	High Voltage programmed value	Volt
Iset	Current Limit programmed value	µA
MaxV	Absolute maximum High Voltage level that the channel is allowed to reach	V
Ramp-Up	Maximum High Voltage increase rate	V/s
Ramp-Down	Maximum High Voltage decrease rate	V/s
Power Down	Power Down mode after channel TRIP	KILL or RAMP
Trip	Max time "overcurrent" allowed to last (1000 = ∞)	s
Imon Range	Current Monitor Zoom	High or Low

Table 3 –VME Channel Parameters

Parameter	Function	Unit
(±)	Channel polarity	
Pw	Power ON/OFF; highlighted green when ON	
Vmon	High Voltage Monitored value	Volt
ImonH	Current Monitored value when Imon Range is set to HIGH	µA
ImonL	Current Monitored value when Imon Range is set to LOW	µA
ChStatus	ON/OFF; Ramp UP/DOWN; OVV; UNV; OVC; OVP; MAXV; TRIP; OVT; OFF; KILL; ILK; CAL_ERR	
Vset	High Voltage programmed value	Volt
Iset	Current Limit programmed value	µA
MaxV	Absolute maximum High Voltage level that the channel is allowed to reach	V
Ramp-Up	Maximum High Voltage increase rate	V/s
Ramp-Down	Maximum High Voltage decrease rate	V/s
Power Down	Power Down mode after channel TRIP	KILL or RAMP
Trip	Max time "overcurrent" allowed to last (1000 = ∞)	s
Imon Range	Current Monitor Zoom	High or Low

Table 4 –DT55xx and DT55xxE Channel Parameters

Parameter	Function	Unit
VSet	High Voltage programmed value	Volt
ISet	Current Limit programmed value	µA
Ramp-Up	Maximum High Voltage increase rate	V/s
Ramp-Down	Maximum High Voltage decrease rate	V/s
VMax	Absolute maximum High Voltage level that the channel is allowed to reach	V
Status	ON/OFF; Ramp UP/DOWN; OVV; UNV; OVC; OVP; MAXV; TRIP; OVT; OFF; KILL; ILK; CAL_ERR	
VMon	High Voltage Monitored value	Volt
IMonH	Current Monitored value when Imon Range is set to HIGH	µA
IMonL	Current Monitored value when Imon Range is set to LOW	µA
Pw	Power ON/OFF; highlighted green when ON	
PwDown	Power Down mode after channel TRIP	KILL or RAMP
IMRange	Current Monitor Zoom	High or Low

VSet – ISet Offset

It is possible, for the VSet and ISet parameters, to either set directly the relevant value (default) or to add / subtract an offset value (option). In order to access offset mode:

- Right click on the parameter header

Custom	Name	I0Set	V0Set	IMon	VMon	Pw
01.000	CHANNEL00	10000.0 uA	120	6.8 uA	1189.80 V	On
01.001	CHANNEL01	10000.0 uA	1200.00 V	36.2 uA	1190.45 V	On
01.002	CHANNEL02	10000.0 uA	1200.00 V	23.8 uA	1194.10 V	On
01.003	CHANNEL03	10000.0 uA	1200.00 V	34.4 uA	1192.85 V	On
01.004	CHANNEL04	10000.0 uA	1200.00 V	32.6 uA	1191.60 V	On
01.005	CHANNEL05	10000.0 uA	1200.00 V	27.2 uA	1192.60 V	On

✔ Absolute
Offset

- Tag "Offset" (by default the "Absolute" option is tagged)
  - the "bidirectional arrow" icon will become green
  - The offset balue can be either positive or negative; negative values require "-" sign, positive offsets do not need to be signed, although "+" sign is recognized.
- Select the value to update, for example subtract 300V to Channel 4 V0Set;
  - select the relevant value and type "-300"

Custom	Name	I0Set	V0Set	IMon	VMon	Pw
01.000	CHANNEL00	10000.0 uA	1200.00 V	26.8 uA	1189.75 V	On
01.001	CHANNEL01	10000.0 uA	1200.00 V	36.2 uA	1190.45 V	On
01.002	CHANNEL02	10000.0 uA	1200.00 V	23.8 uA	1194.10 V	On
01.003	CHANNEL03	10000.0 uA	1200.00 V	34.4 uA	1192.85 V	On
01.004	CHANNEL04	10000.0 uA	-300 V	32.6 uA	1191.60 V	On
01.005	CHANNEL05	10000.0 uA	1200.00 V	27.2 uA	1192.65 V	On
01.006	CHANNEL06	10000.0 uA	1200.00 V	Minval : 0 Maxval : 10000	1186.60 V	On

- The relevant value will be updated to 900V

Custom	Name	I0Set	V0Set	IMon	VMon	Pw
01.000	CHANNEL00	10000.0 uA	1200.00 V	26.8 uA	1189.80 V	On
01.001	CHANNEL01	10000.0 uA	1200.00 V	36.2 uA	1190.45 V	On
01.002	CHANNEL02	10000.0 uA	1200.00 V	23.8 uA	1194.10 V	On
01.003	CHANNEL03	10000.0 uA	1200.00 V	34.4 uA	1192.85 V	On
01.004	CHANNEL04	10000.0 uA	900.00 V	32.6 uA	895.35 V	On
01.005	CHANNEL05	10000.0 uA	1200.00 V	27.2 uA	1192.60 V	On
01.006	CHANNEL06	10000.0 uA	1200.00 V	25.8 uA	1186.60 V	On

Important note: this feature is available for V0Set and I0Set parameters (SYx527) and for VSet and ISet parameters (other systems).

System Panel

The leftmost panel houses all the system settings (see p.11):

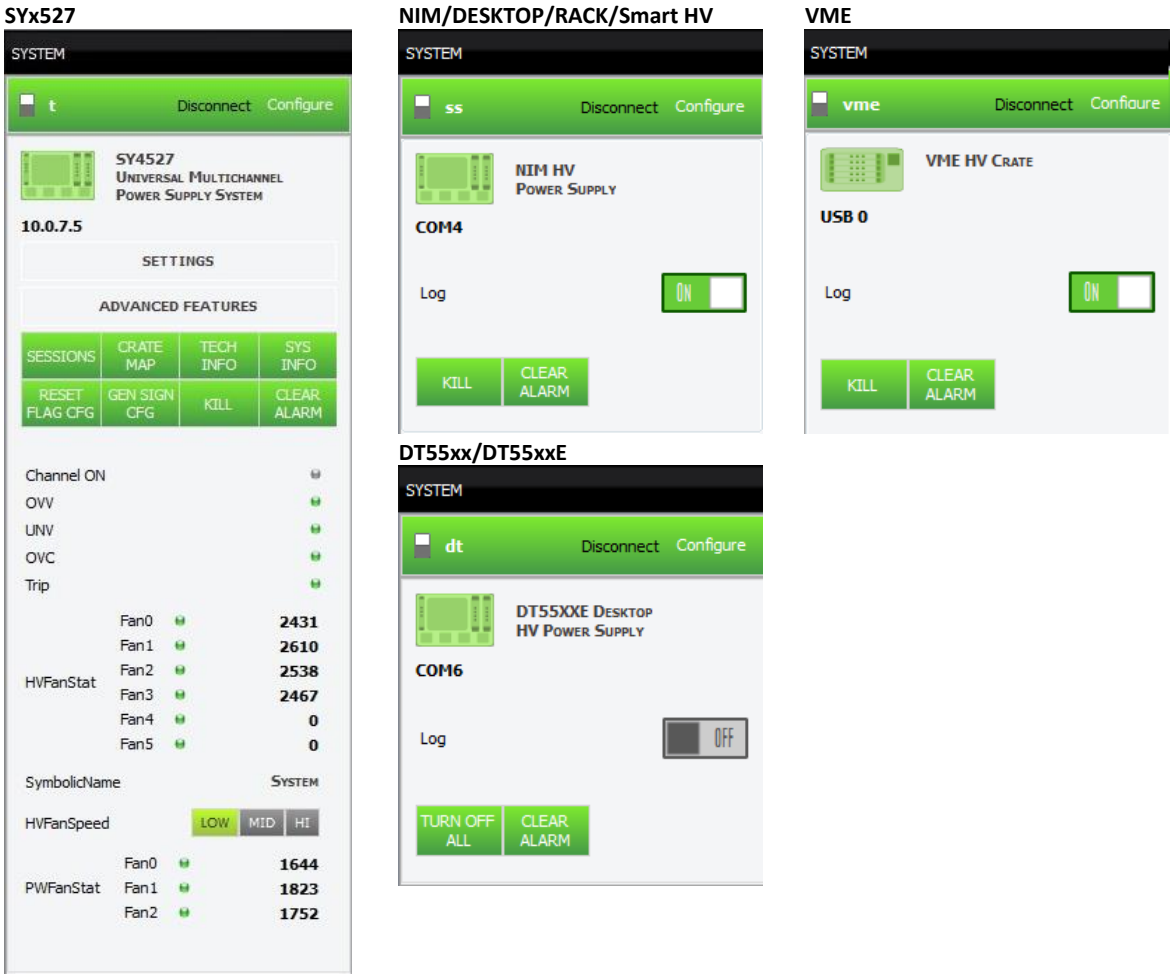


Fig. 17 – System settings

The SYx527 SYSTEM Panel allows also to:

- set Hv Fan Speed (LO, MD, HI), if foreseen, and Symbolic name
- monitor HV Fan Status and Power Fan Status
- if more than one system is connected, they are "tabbed" in the System Panel; to view one system's Channels Panel, simply click on the System name (see p. 11),

System bar

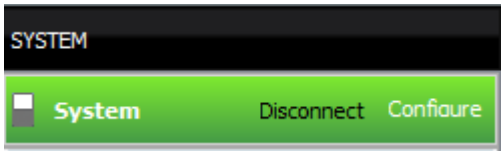


Fig. 18 – System bar options

This sub menu hosts two options:

System Disconnect

It allows to disconnect from the System; with VME systems it is possible to disconnect one or more boards per time.

System Configure

This option allows to select which boards, channels and parameters of the connected System, will be displayed in the Channels Panel.
By clicking on <Configure> the following window opens [Channels] tab:

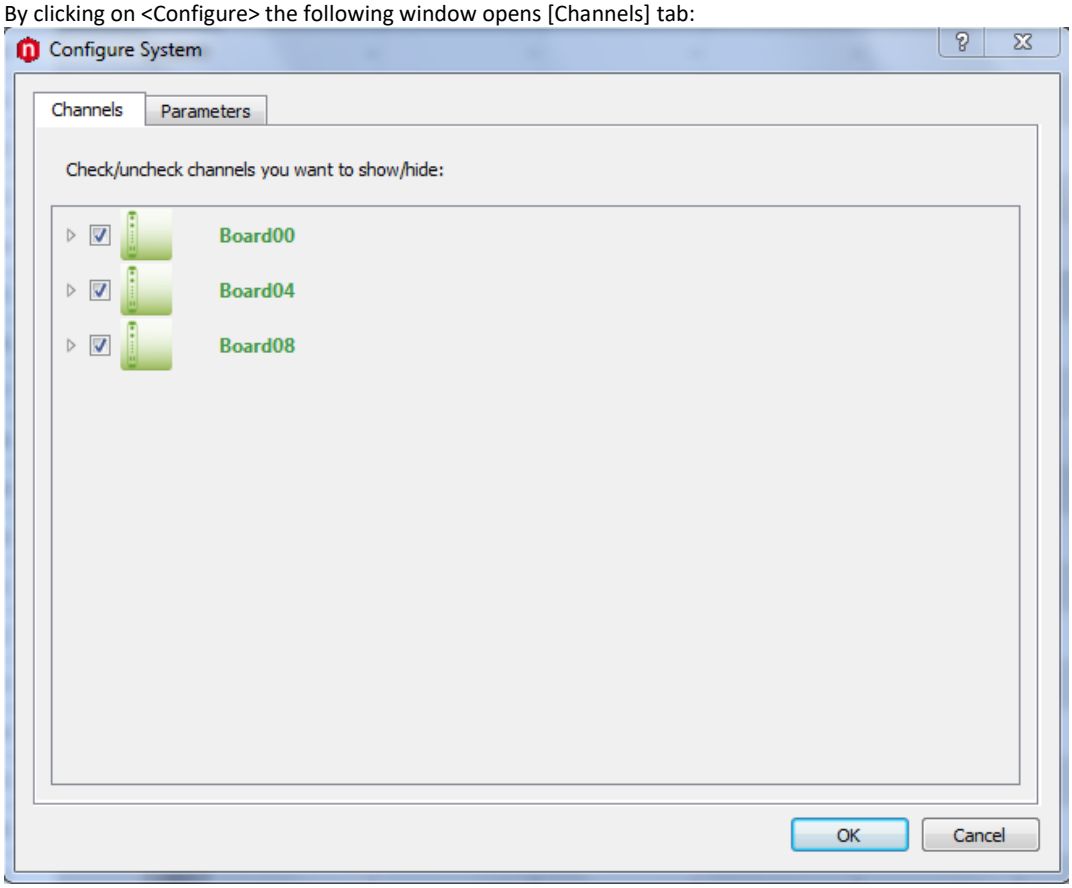


Fig. 19 – Boards configuration

The order of the boards to be displayed into the Channels Panel can be selected by the User, by dragging and dropping the icons with the mouse left button.
By clicking on the board icon pointer of the board, this one is “expanded” with the channels numbers:

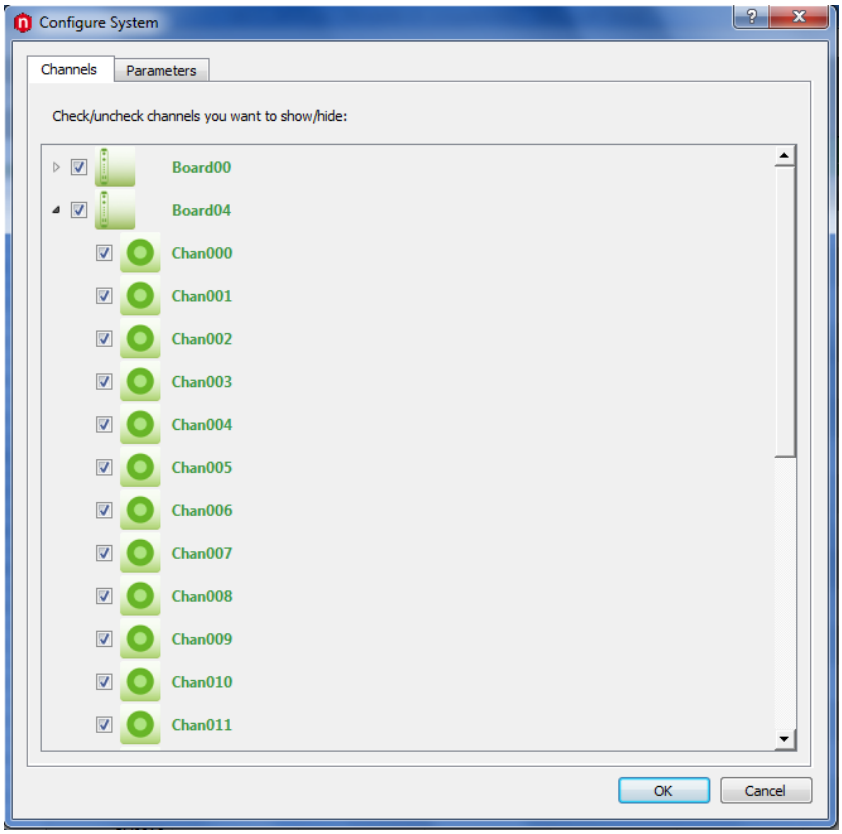


Fig. 20 – Channels configuration

In order to remove one channel or board from the Channels Panel (see page 12), click on the relevant name: the item name will become gray and the relevant rows in the Channels Panel, will be removed (background).
By opening the [Parameters] tab, the following window opens:

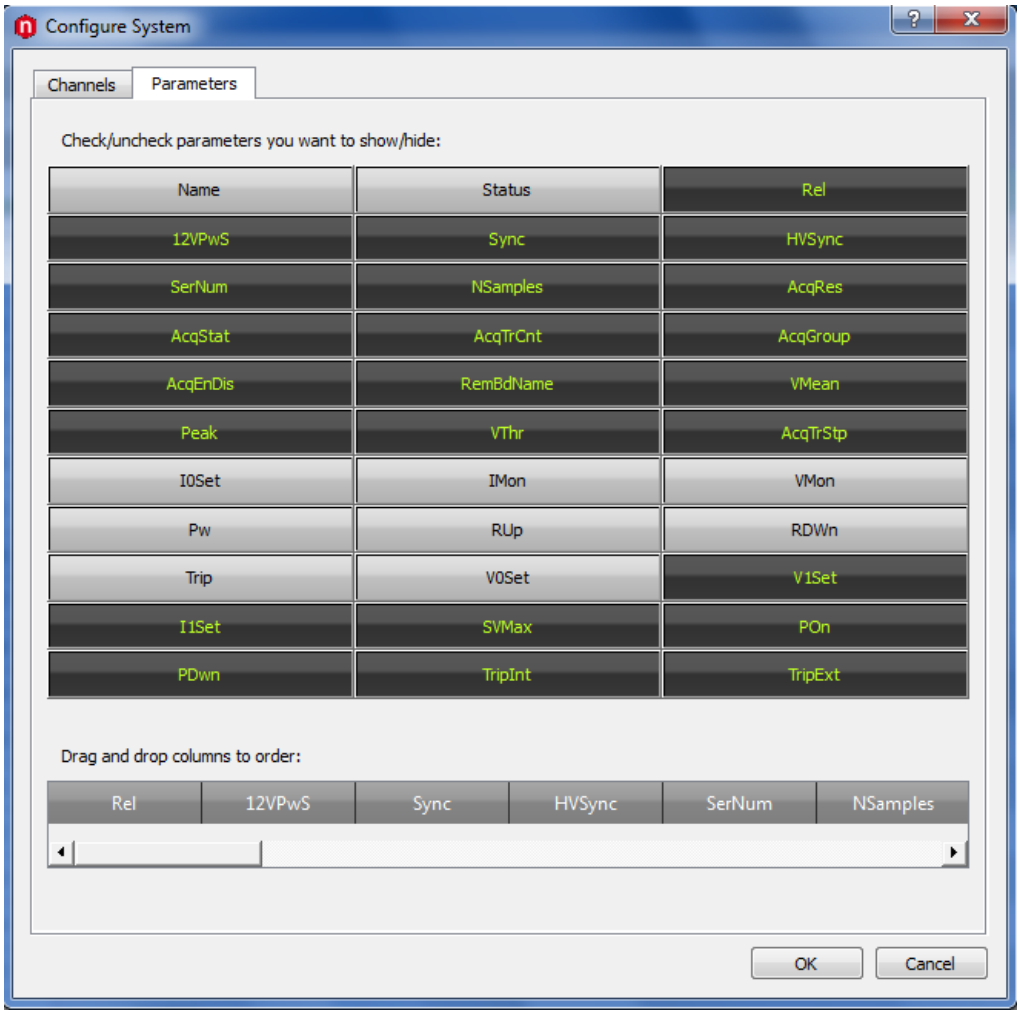


Fig. 21 – Parameters configuration

In order to remove one parameter from the **Channels Panel**, click on the relevant box: the item box will become gray and the relevant column in the **Channels Panel** will be removed.
The "enabled" parameters will be displayed "lit up"; the bottom row shows the enabled parameters; by left clicking on the item it is possible to "drag and drop" it along the row: this allows to select the column order in the **Channels Panel**.
Once these settings are done, the **Channels Panel** will display the updated configuration (only selected channels and parameters are shown); the configuration can be saved and retrieved it in a later moment, by using (on the Menu Bar) Settings > Save/Load;

The following pop up will be shown:

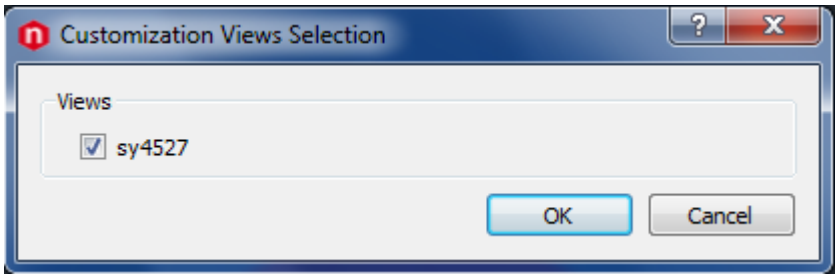


Fig. 22 – Configuration file record

Click on OK, then select the configuration file name (csc file type, for example "system.csc") and path:

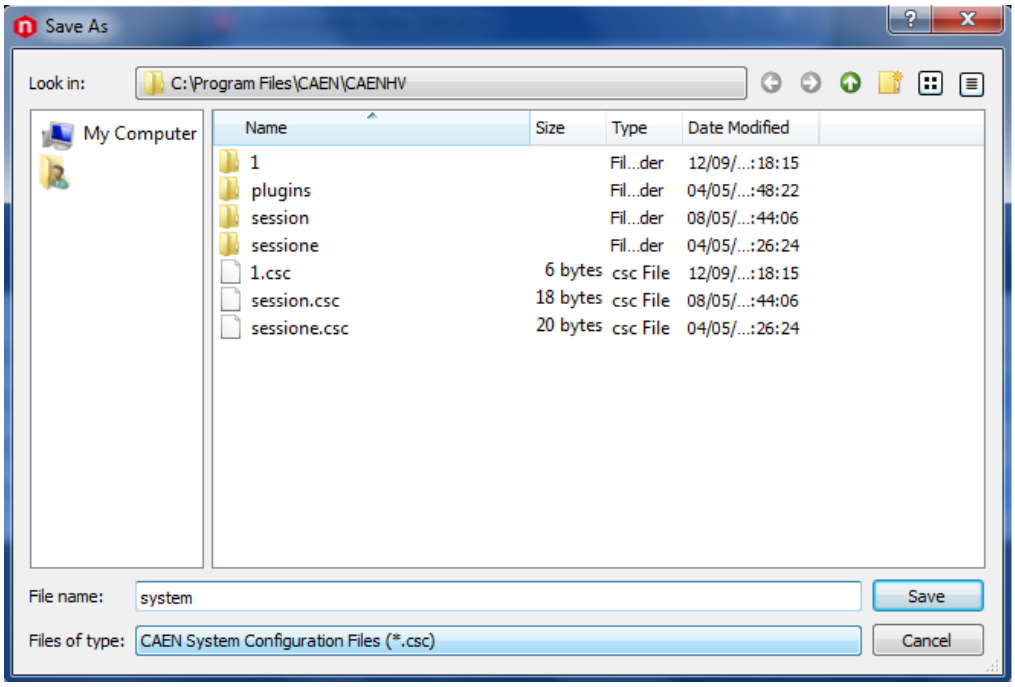


Fig. 23 – System Configuration file saving options

Then it will be possible to retrieve it in a later moment, by going to Settings > Load:

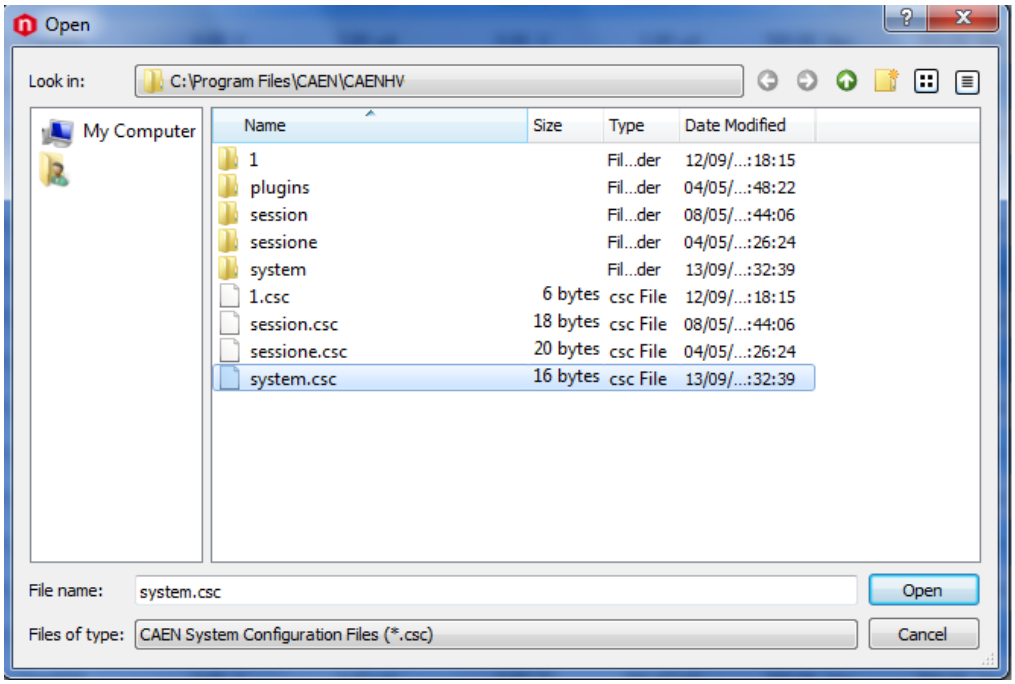


Fig. 24 – System Configuration csc file load

N.B.: A retrieved configuration file works properly if the System layout (board types and slots) has remained the same!

System Options

Fig. 25 – System buttons

Listed above are System buttons available for each system, which allow to access the following options:

System KILL

As Kill is selected, the pop-up window shown below will appear: if you want to forward the KILL command, select the YES button

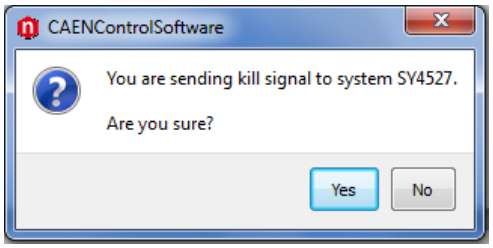


Fig. 26 – System KILL dialog box

System CLEAR ALARM

The Clear Alarm command allows to remove all the alarm conditions which appeared in the Channel Status column of the Channel Window. This operation automatically resets the alarm conditions without requiring the power on of the channels. Moreover, it sets the TRIP counter again to its initial programmed value, so that the TRIP counter will start again from the programmed TRIP value as soon as another Over Current condition occurs.

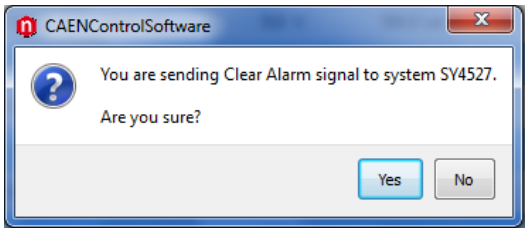
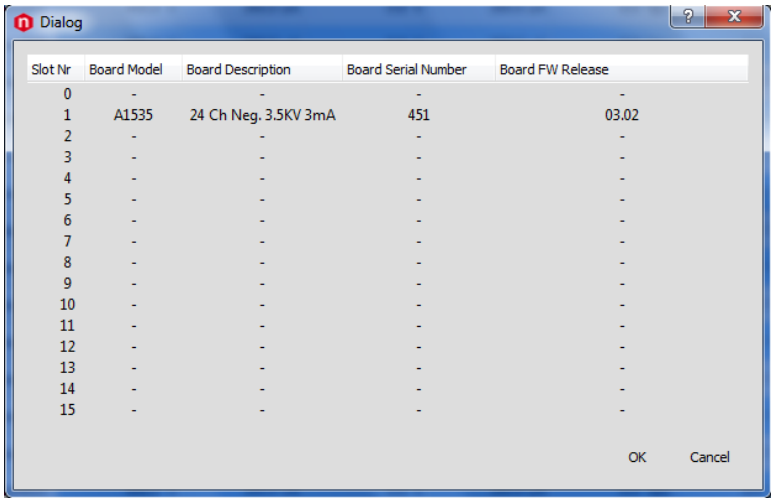


Fig. 27 – System Clear Alarm dialog box

System CRATE MAP

Crate Map shows what types of boards are inserted into the crate and in which slot they are plugged into.
The Crate Map Window is shown below: the first column on the left indicates the number of the Slot (depending on the crate) together with the model of the board inserted into the slot (if any). A short description of the board with its features and serial number follows the board model. Last column shows the firmware release.



Slot Nr	Board Model	Board Description	Board Serial Number	Board FW Release
0	-	-	-	-
1	A1535	24 Ch Neg. 3.5KV 3mA	451	03.02
2	-	-	-	-
3	-	-	-	-
4	-	-	-	-
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-
8	-	-	-	-
9	-	-	-	-
10	-	-	-	-
11	-	-	-	-
12	-	-	-	-
13	-	-	-	-
14	-	-	-	-
15	-	-	-	-

Fig. 28 – System Crate Map dialog box

System LOG

The Log option, available for the NIM-DESKTOP-RACK, DT55xx, DT55xxE and VME systems, allows to create a Log file of the values of VMon and IMon parameters. In order to do this, set [Log] button to ON:

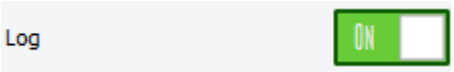


Fig. 29 – System Log Option

The CAENGECO2020.log file will be created in the User/Documents destination folder and will look like this (example of VMon logging):

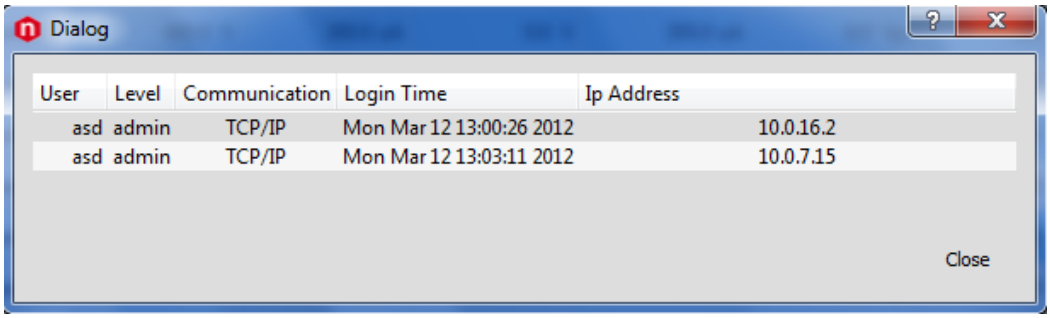
[2015-01-09T09:59:18]: [ss] bd [0] ch [0] par [VMon] val [200.03];

[2015-01-09T09:59:19]: [ss] bd [0] ch [0] par [VMon] val [200.04];

[2015-01-09T09:59:21]: [ss] bd [0] ch [0] par [VMon] val [200.03];

System SESSION

The Session Window displays all the users (Username) presently connected to the system and gives information about their Access Level as Guest, User or Administrator (Level), the Communication Line (Comm Line) they are using, Login Time: the time (day, month, hour, year) at which they started the connection and the IP Address used.



User	Level	Communication	Login Time	Ip Address
asd	admin	TCP/IP	Mon Mar 12 13:00:26 2012	10.0.16.2
asd	admin	TCP/IP	Mon Mar 12 13:03:11 2012	10.0.7.15

Fig. 30 – System Session dialog box

System GENERAL SIGNAL CONFIGURATION

This command allows to define the condition to assert the GEN signal and light up the relevant LED. The relevant pop-up window contains a list of quantities which allow to define the condition for asserting the GEN signal according to the following relation:

GEN = ENABLE ∧ (OVC ∨ OVV ∨ UNV ∨ TRIP ∨ ALWAYS) .

To select any of these quantities flag the relevant field then select OK.

ENABLE corresponds to enable the GEN signal generation and consequently must be always selected in order to assert the GEN signal.

OVC, OVV, UNV, TRIP are signals for system status monitoring, If one or more of them are selected and the ENABLE is selected too, the GEN signal is asserted TRUE at the occurrence of any of the selected conditions.

ALWAYS allows to assert the GEN signal TRUE anyway. If it is selected and the ENABLE is selected too, it asserts the GEN signal TRUE anyway, independently from the status of the other signals mentioned above (OVC, OVV , UNV and TRIP).

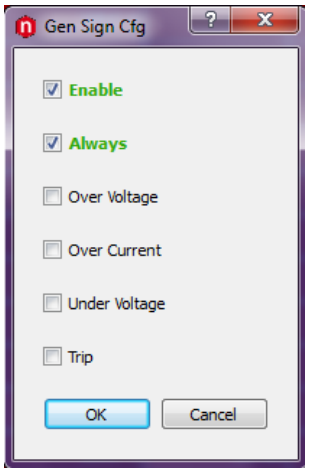


Fig. 31 – System GEN signal Configuration dialog box

System RESET FLAG CONFIGURATION

The SYx527 system allows to configure different reset conditions, in order to set the system behavior after reset signals. Such settings can be performed by accessing the ResFlagCfg, as follows:

- backplane reset due to CPU failure: system cannot recover after CPU error; board section backplane is reset
- backplane reset due to front panel reset input signal (pushbutton or logic level)
- CPU reset due to front panel reset input signal (pushbutton or logic level)

This setting allows to enable the relevant reset condition. If the corresponding flag is tagged, it is enabled; if it is not tagged, it is disabled. For example, if front panel reset is not tagged, a signal sent through the CPU front panel RESET Input connector (if available) does not reset the CPU.

CPU front panel RESET Input Signal (if available) must be compliant to the specifications described in the SYx527 User manual.

If more than one reset type is selected in the ResFlagCfg, the system will be reset according to the occurrence of any of them.

Default settings are shown in the figure below:

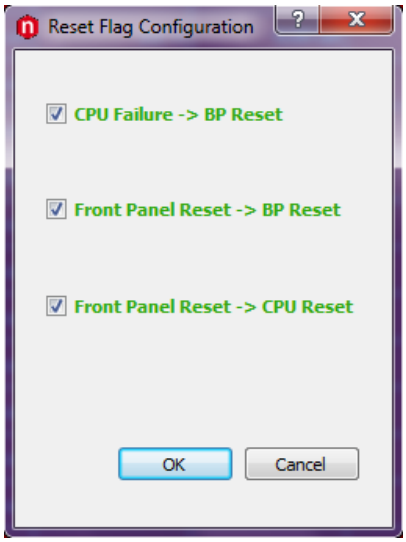


Fig. 32 – System Reset Flag Configuration dialog box

System TECH INFO

This command allows to access to the following dialog tabs:
CPU and Power modules information; provides some data about CPU and FPGA running firmware, power supplies status.

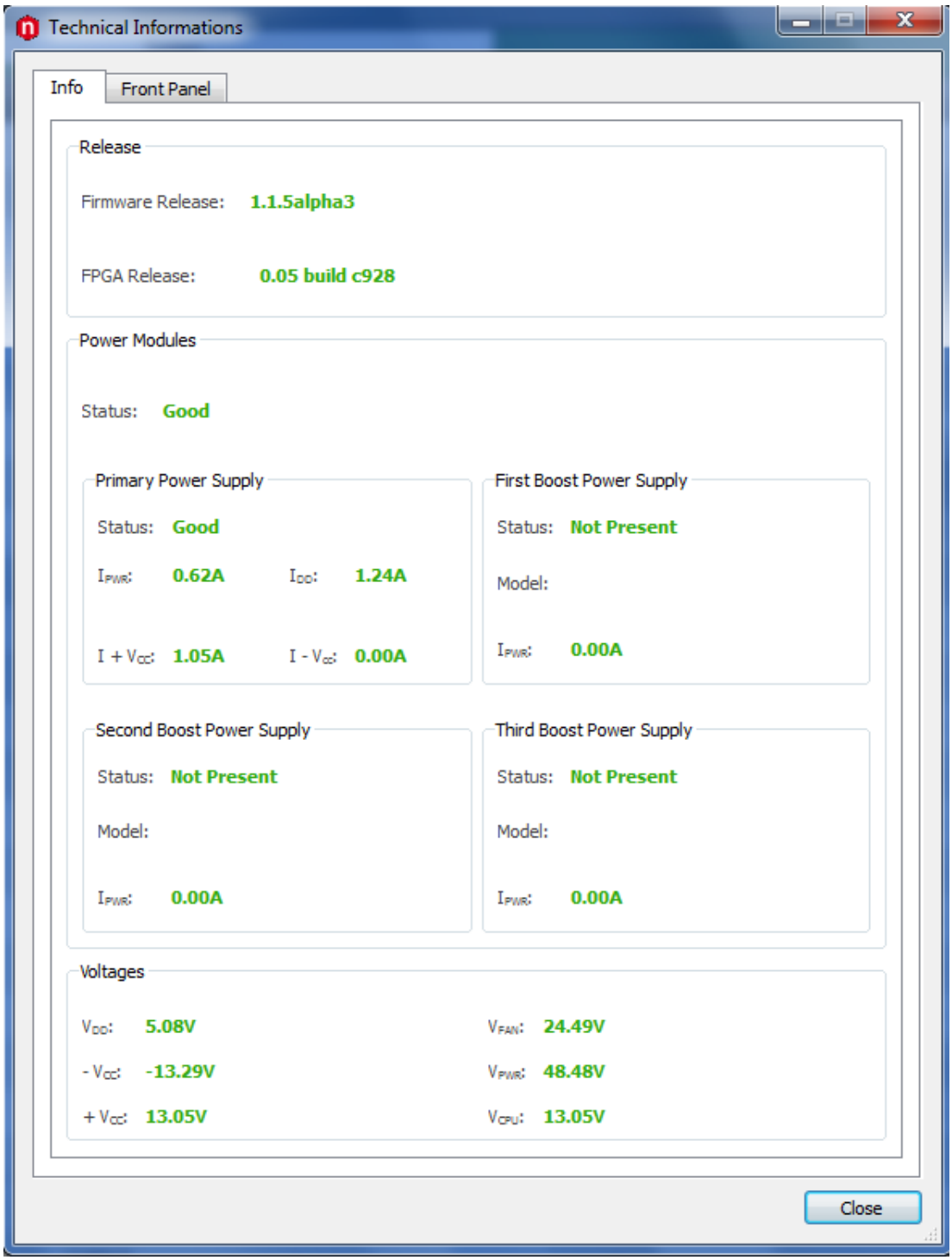


Fig. 33 – System CPU and Power supplies info

Front panel tab; provides the status of the CPU front panel monitors and allows to set CPU front panel output signals levels (NIM or TTL); selected level is signalled by relevant front panel led on. With CAENGECO2020 1.7.4 and later releases, Front Panel Outuput indicators are available also on the System Panel (see p.18).

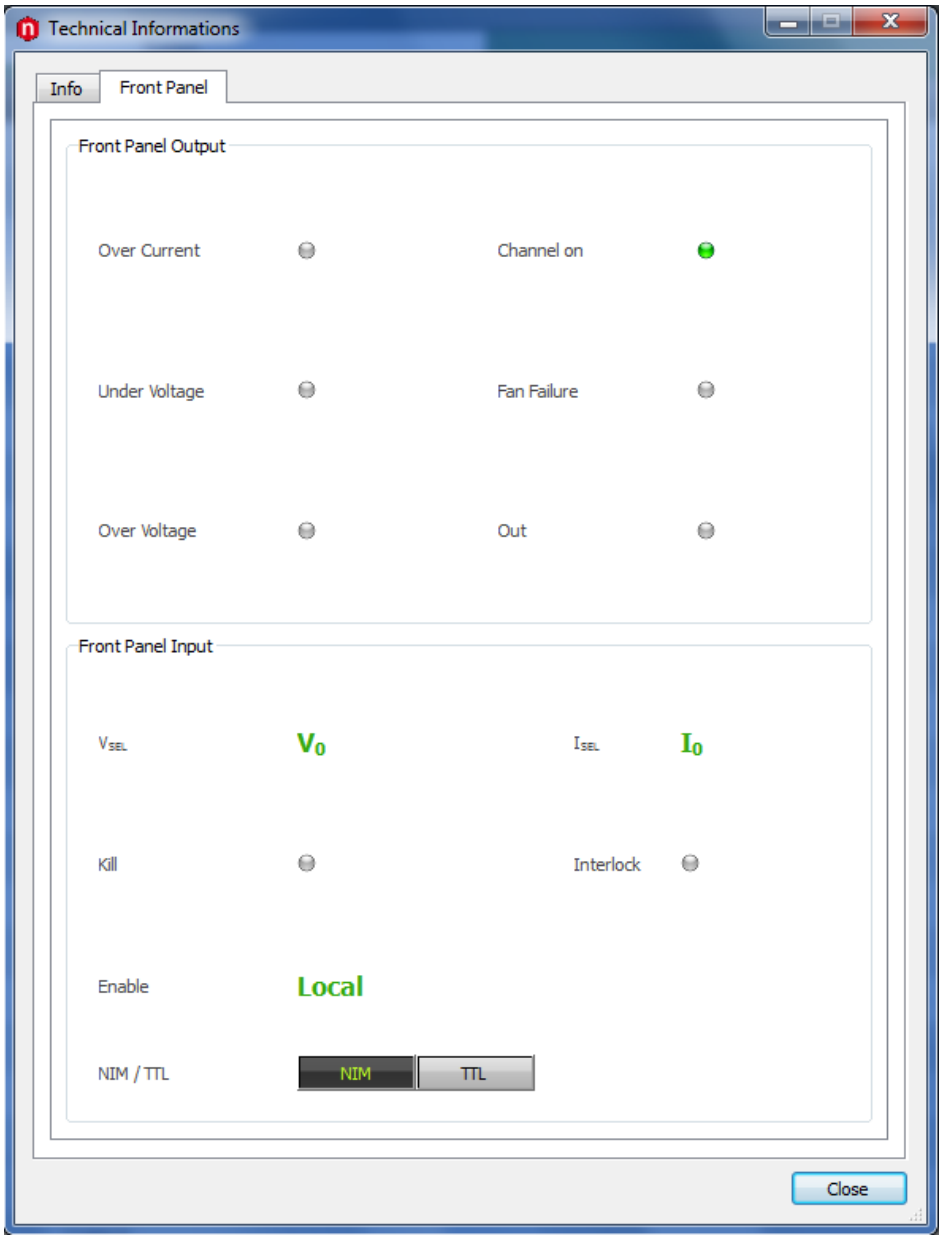


Fig. 34 – System CPU front panel info

System Settings

The Settings options allows to access the SY4527 Web configurator, described in the UM2462 - SY4527 User Manual

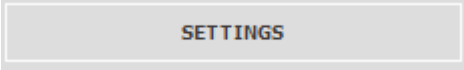


Fig. 35 – Settings Button

SYx527 System Advanced Features

IMPORTANT!: Advanced Features are available only if SY4527/SY5527 GECO2020 functionality enhancement is INSTALLED on the A4528 CPU, and ACTIVATED (see page 7)

The Advanced Features option allows to:

- Create a script
- Create a log file

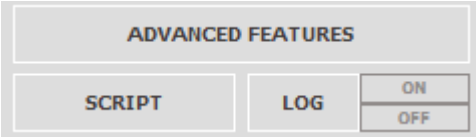


Fig. 36 – Advanced Features button

System Advanced Scripting

By clicking on Advanced Features > Script the following dialog window opens:

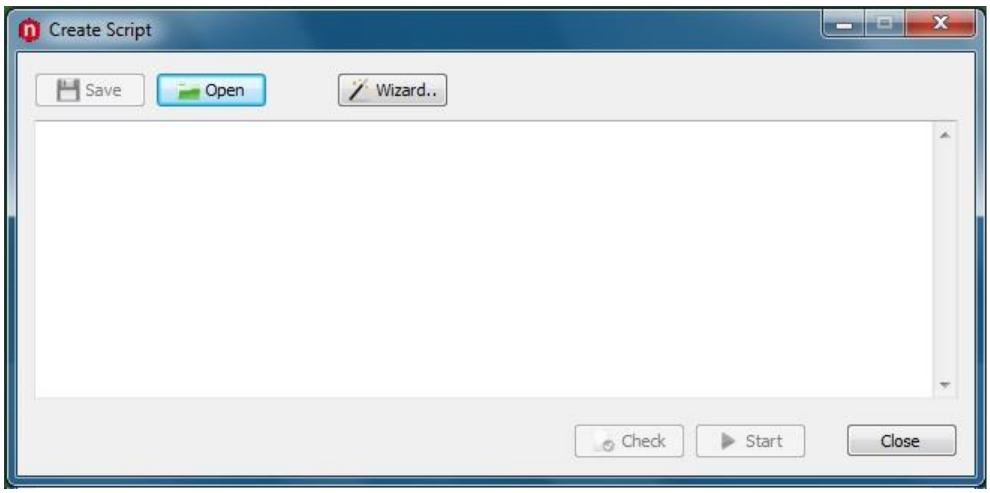


Fig. 37 – Script Create Pop up

This option allows to create or retrieve a "script" that allows to perform one or more setting on a set of channels in the system.

The syntax to perform one setting is as follows:

[action][parameter][channel_list][value];

Possible actions are: set, wait

- set: allows to set one settable parameter (see Table 1);
- wait: wait a programmed time interval (expressed in ms)
- parameter: one settable parameter (see Table 1);
- channel list: board#{chanl#, chanl#,…}:board#{chanl#, chanl#,…} ; * indicates either all boards or all channels
- value: parameter set value; refer to Table 1 for units

Example 1: in order to set V0 to 400V to channel 0, 1, 2, of board 9, and to channel 4, 5, 10 of board 7, the script is:

set V0Set 9{0,1,2}:7{5,10,4} 400;

Example 2: in order to set V0 to 400V to channel 0, 1, 2, 3 of all boards, the script is:

*set V0Set *{0,1,2,3} 400;*

Example 3: in order to set V0 to 400V to all channels of board 5 and board 8, the script is:

set V0Set 5{}:8{*} 400;*

Example 4: in order to set V0 to 400V to all channels of all boards, the script is:

*set V0Set * 400;*

In order to set a Boolean parameter, the value is 0 for the OFFSTATE and 1 for the ONSTATE (see Table 1); the values can be also acknowledged by the Channels Panel parameters *tool tips*.

Example 5: in order to turn Off board 6, the script is set Pw 6{*} 0

The syntax to forward a "wait" command is

[wait][time];

Where "time" is expressed in ms

Example 6: in order to wait 3s, the script is:

wait 3000;

The following figure shows an example to set V0 on channel 0, 1, 2, 3 of Board 2 to 500V, then wait for 10s:

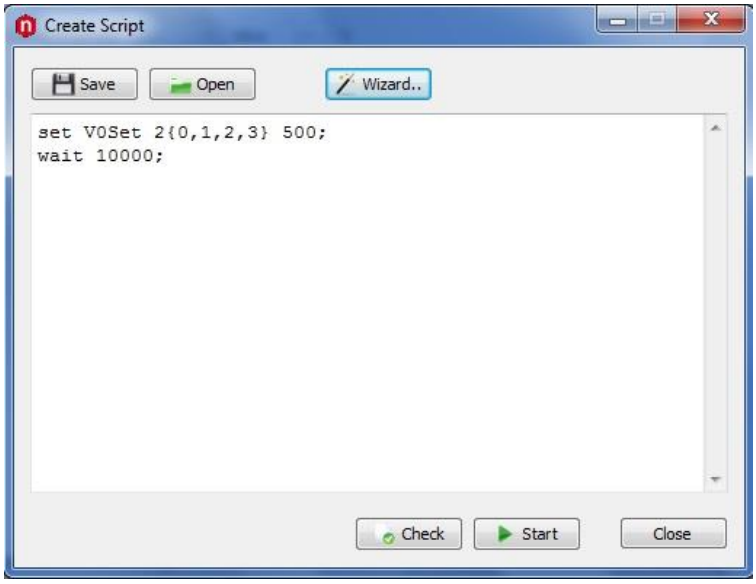


Fig. 38 – Script Example

The "save" button allows to save the script as *.cas (CAEN Action Script) file; in order to load it in a later time, use the "open" button.

The "Wizard" button opens a tool that allows to create a script, through a guided procedure:

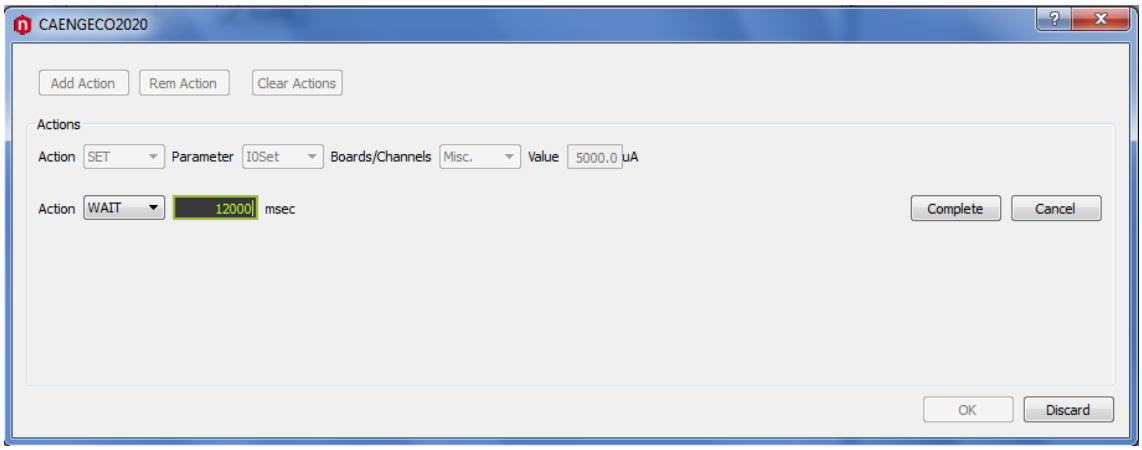


Fig. 39 – Script Wizard Pop up

This option allows to create or retrieve a "script" that allows to perform one or more setting on a set of channels in the system.

For example we want to program the following sequence (see Fig. 39):

1. set to 5000µA the I0set parameter on channels 0, 1 of the A1538D Board in slot 2
2. wait 12 seconds

It is necessary to add these actions to the script:

1. choose: Add action > Action [Set] > Parameter [Iset] > Board Channels [Misc: *select board and channels in the same way described by Configure option on page 19*] > Value [*write the desired value, for example 5000µA*]
2. click [complete]
3. select Add action > Action [wait], and then type the delay value (12000msec)
4. click [complete]
5. click [ok]

At this point the new script will be shown in the "create script" pop up:

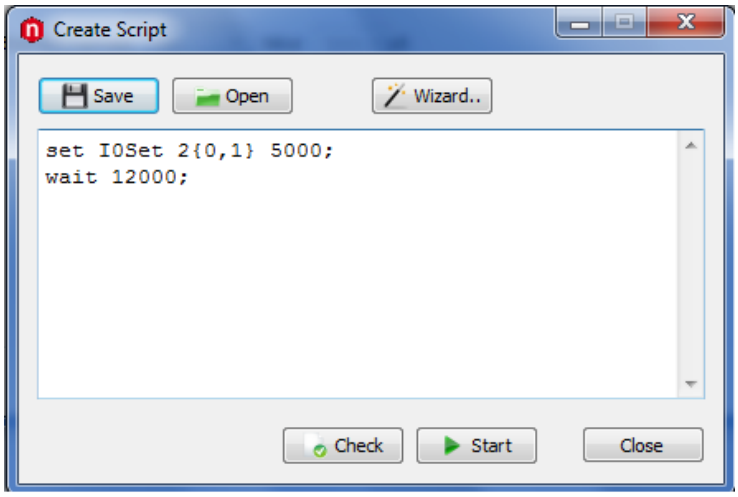


Fig. 40 – Script Example (Wizard outcome)

click [Start] and the "script" will be executed: the state of the script will be shown at the bottom of the main menu:

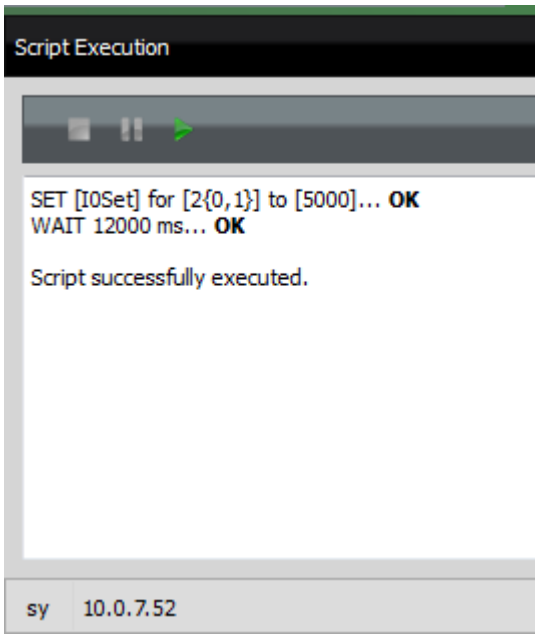


Fig. 41 – Script Execution

The execution can be Paused or Stopped with the relevant buttons (stop, pause, play); after a "pause" the script can be continued, with the "play" button; after a "stop" it must be restarted.
[Save] button allows to record the script as .cas (CAEN Action Script) file, and [Open] to retrieve it in a later moment.

System Advanced Logging

The Log option allows to create a Log file of the values of a certain parameter out of a set of channels in the system. In order to do this, click [Log] button; the following dialog tab will open:

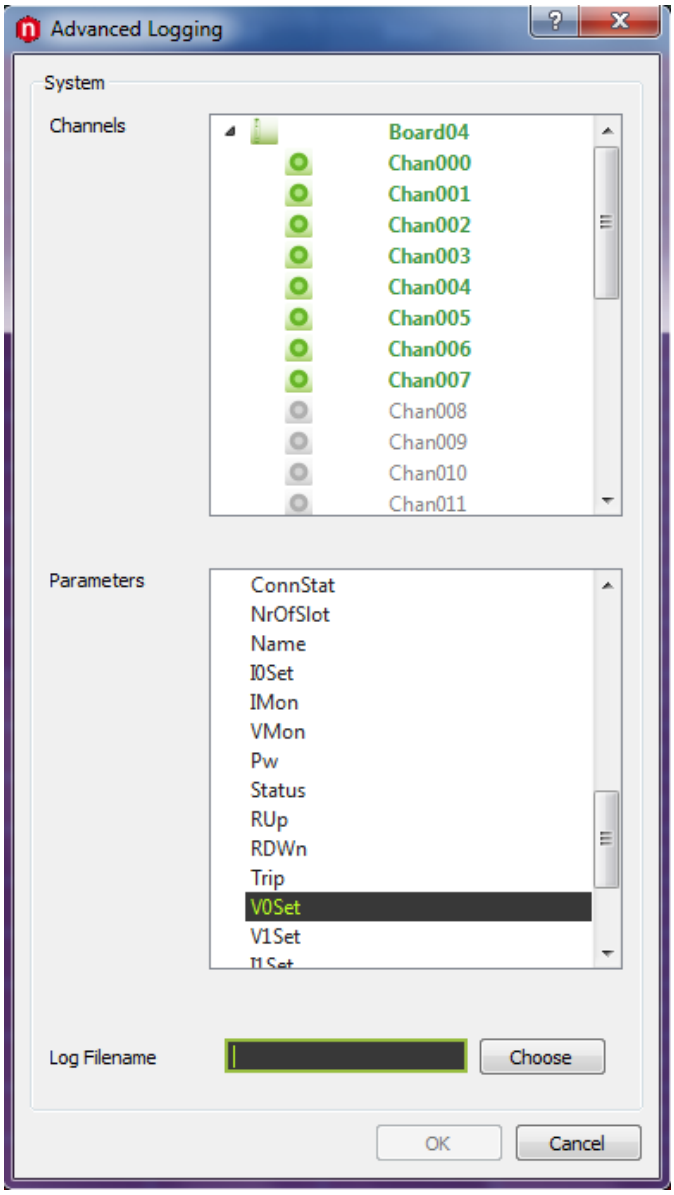


Fig. 42 – Create Log file Pop up

This tab allows to select the System, board and channels parameters to be monitored. Once selection is performed, it is necessary to type Log Filename: the file where the selected parameters will be tracked; at this point click “OK”. Logging wil be started by set “Log” to “ON” (it will become RED, see Fig. 36);

Log files look like this:

[2012-09-26T17:52:50]: [sy4527] live inserted/removed board;
[2012-09-26T17:53:23]: [sy4527] live inserted/removed board;
[2012-09-26T18:02:31]: [sy4527] live inserted/removed board;

If, for example, we monitor V0set parameter of channel 0 of board slot 11, log file will be:

[2012-12-05T11:26:25]: [sy4527] bd [11] ch [0] par [V0Set] val [1000];
[2012-12-05T11:30:02]: [sy4527] bd [11] ch [0] par [V0Set] val [900];

Boards Panel

The rightmost panel of the main tab (see p.11): houses the list of the Boards in the system and the board parameters; board serial number is between [].

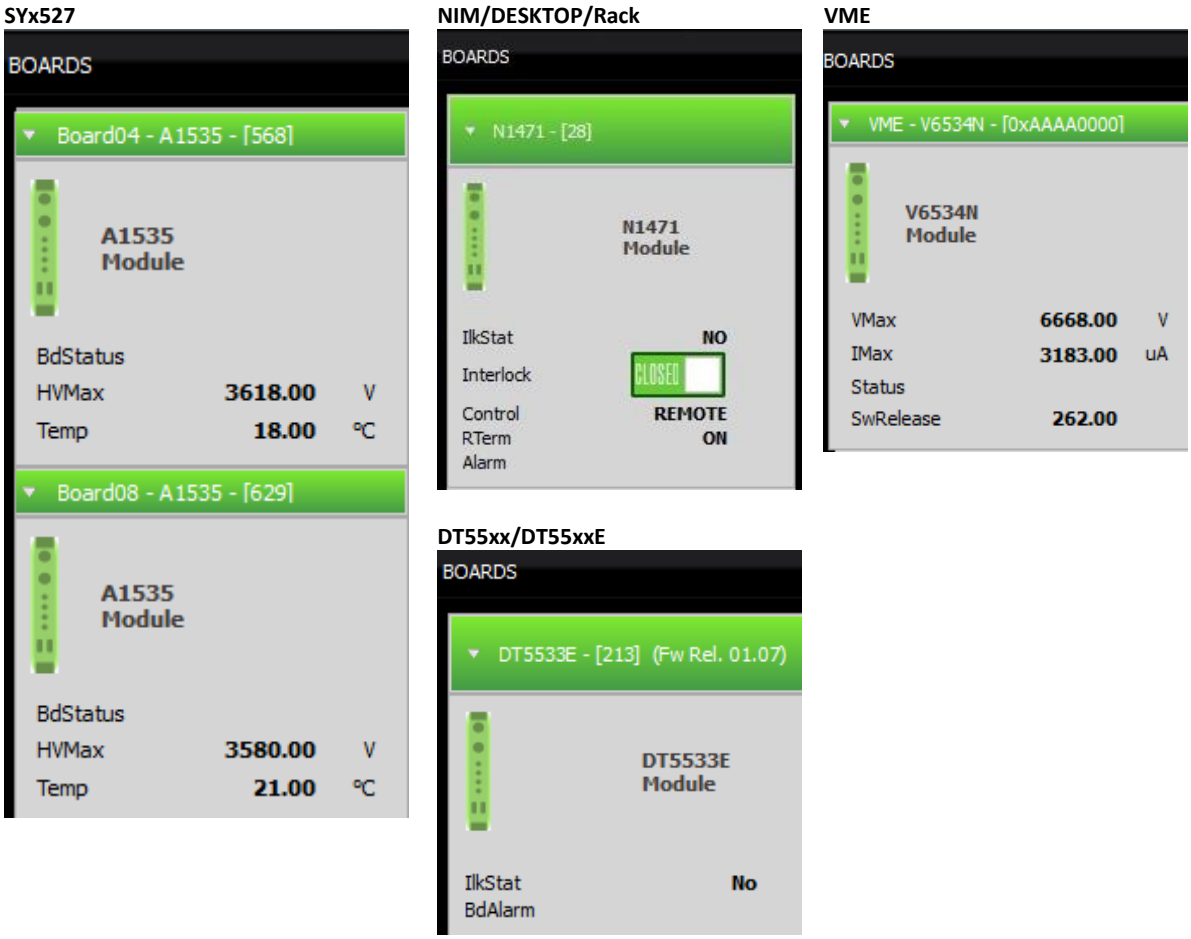


Fig. 43 – System Boards panel

Groups configuration

The Groups Menu allows to create custom groups of channels, containing a subset of the channels available.
In order to create a new group, follow this procedure:

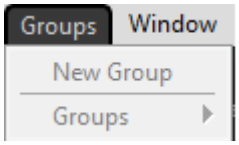


Fig. 44 – Groups Menu

Select Groups (Groups entry on Menu bar) > New group

- Enter new Group Name,
- Select parameter
  - the channels tab will show boards and channels to add
- Add channels

Selected items are listed in green, de-selected ones are gray

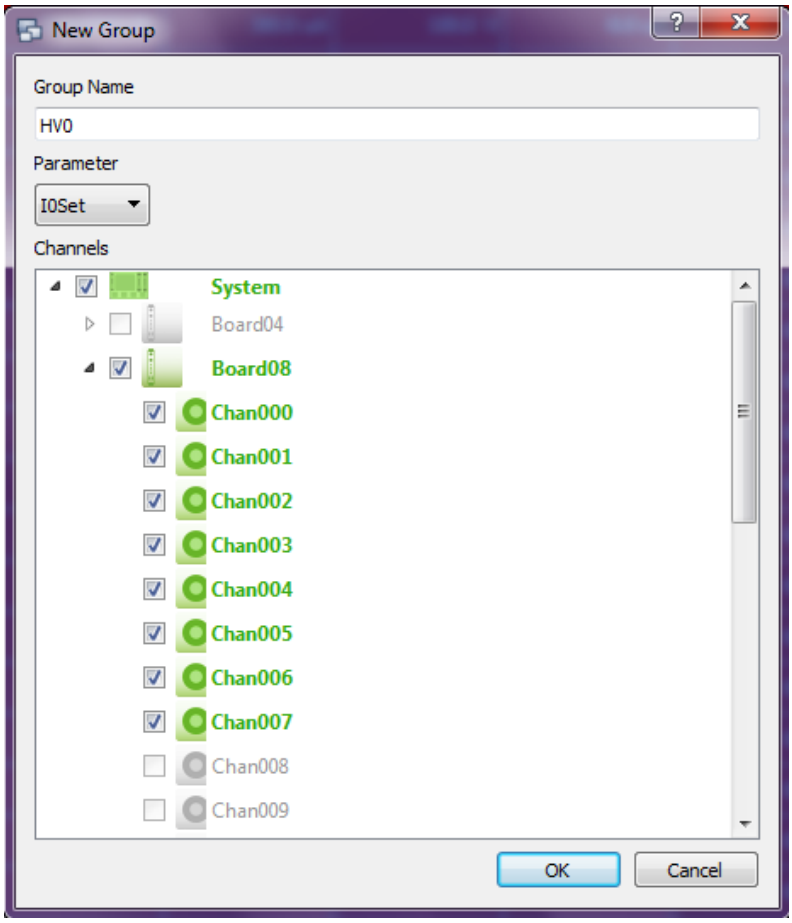


Fig. 45 – Group selection

In order to edit one settable parameter value, select it (for example VSet) then click OK; the parameter value will be boxed in red

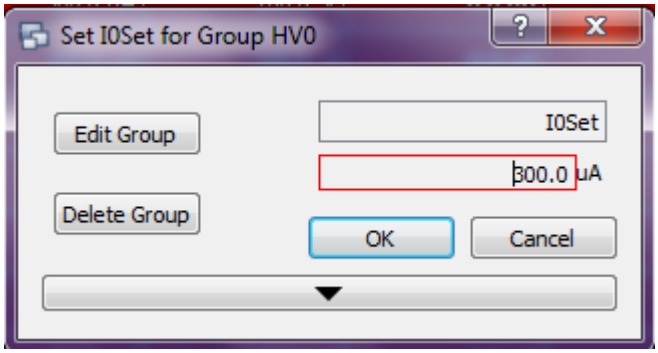


Fig. 46 – Group parameter setting

Type the parameter value (within the allowed range) then click OK, the value will be updated on all group channels (unless VSet in some channels would exceed Software Max value; in that case the parameter will be set equal to the programmed maximum on those channels).
Existing Groups can be retrieved and edited by clicking the Groups entry on menu bar (select by group name); see figure below:

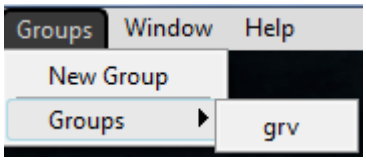


Fig. 47 – Open Existing Group

5 Custom View

GECO2020 allows to display a set of channel and parameters among those in the controlled system network; in order to do this, go to (on Menu Bar)

Settings > Custom View

As the Custom View pop up windows opens, select “parameters” tab and add items to be displayed by clicking on them; they will be hi-lighted:

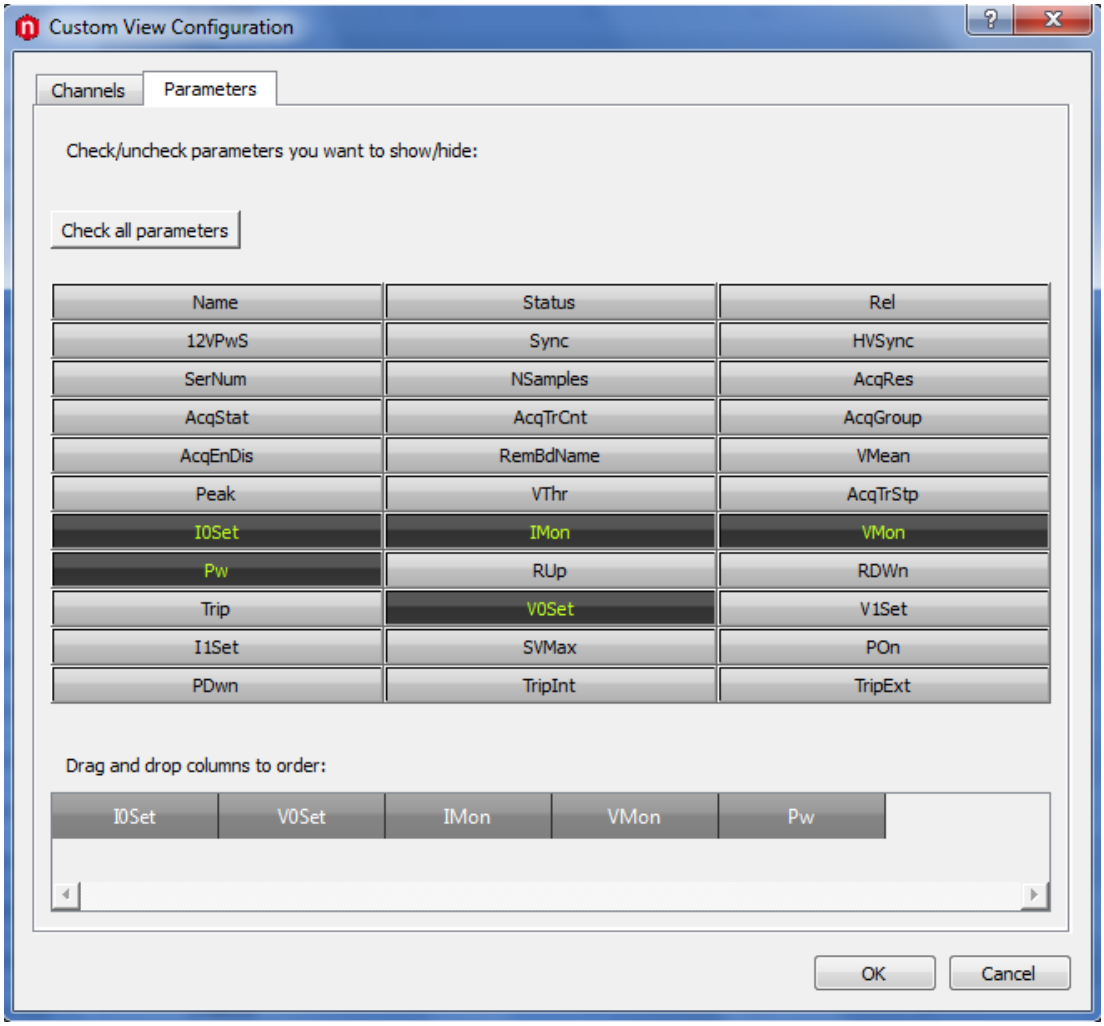


Fig. 48 – Custom View parameter selection

The “enabled” parameters will be displayed in dark grey; the bottom row shows the enabled parameters; by left clicking on the item it is possible to “drag and drop” it along the row: this allows to select the column order in the Channels panel..

When you are ready, select “Channels” tab;

Then select by clicking, the system and/or board to be ‘customized’:

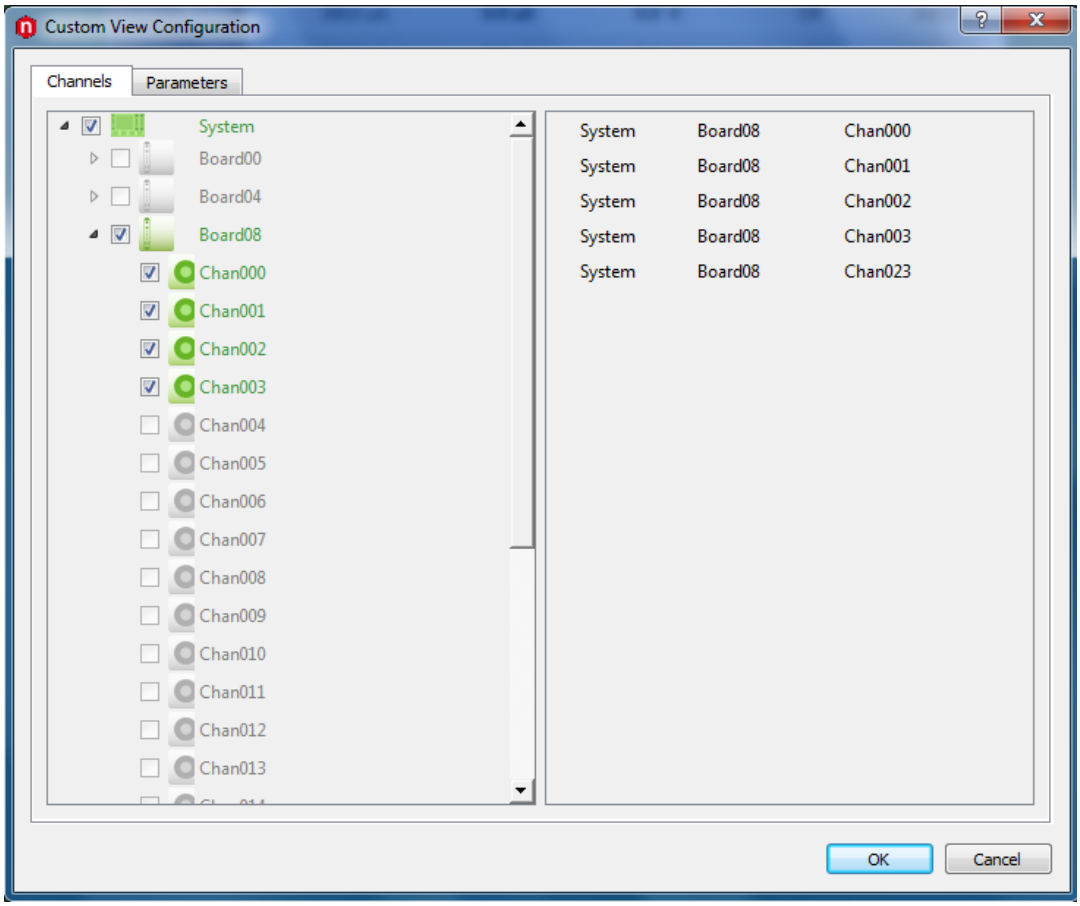
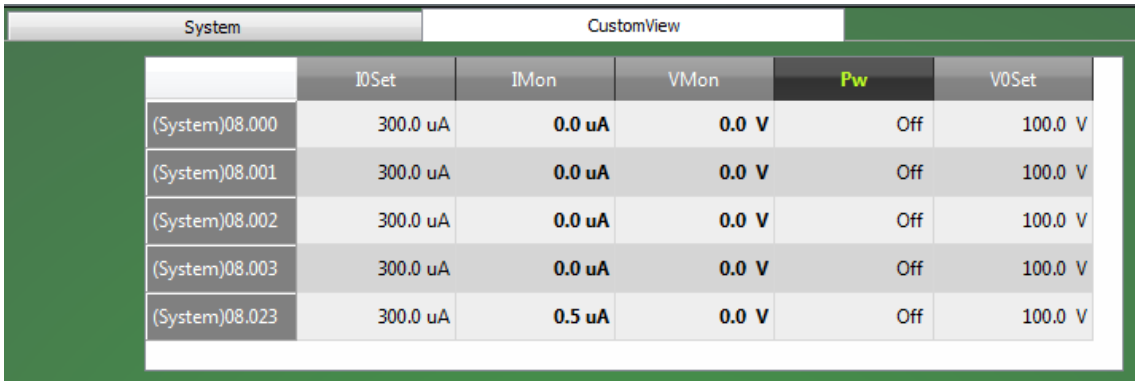


Fig. 49 – Custom View Channel selection

It is possible to add channels to Custom View by clicking on them; selected channels will be shown in the right column.

The order of the Systems, Boards and Channel in the network is the same sequence used when they have been selected.

At this point click [OK]. You will be re-directed to Main Menu. Now, if you click the Custom View thumbnail in the Channel section, only the selected parameters and channels will be shown:



	I0Set	IMon	VMon	Pw	V0Set
(System)08.000	300.0 uA	0.0 uA	0.0 V	Off	100.0 V
(System)08.001	300.0 uA	0.0 uA	0.0 V	Off	100.0 V
(System)08.002	300.0 uA	0.0 uA	0.0 V	Off	100.0 V
(System)08.003	300.0 uA	0.0 uA	0.0 V	Off	100.0 V
(System)08.023	300.0 uA	0.5 uA	0.0 V	Off	100.0 V

Fig. 50 – Custom View Channel section

Configuration files

Configuration files of Custom view and System settings can be saved and retrieved by using Settings > Save/Load;

The following pop up will be shown; it is possible to save the configuration of all connected systems or only a selection of these, besides for example we decide to save the custom view setting:

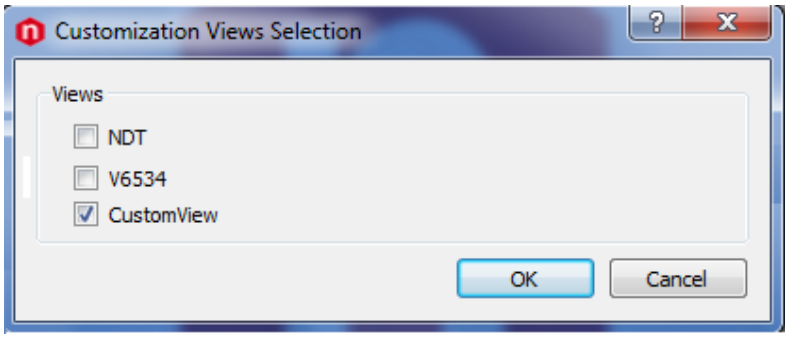


Fig. 51 – Custom View Configuration file record

The configuration file will be saved as csc file:

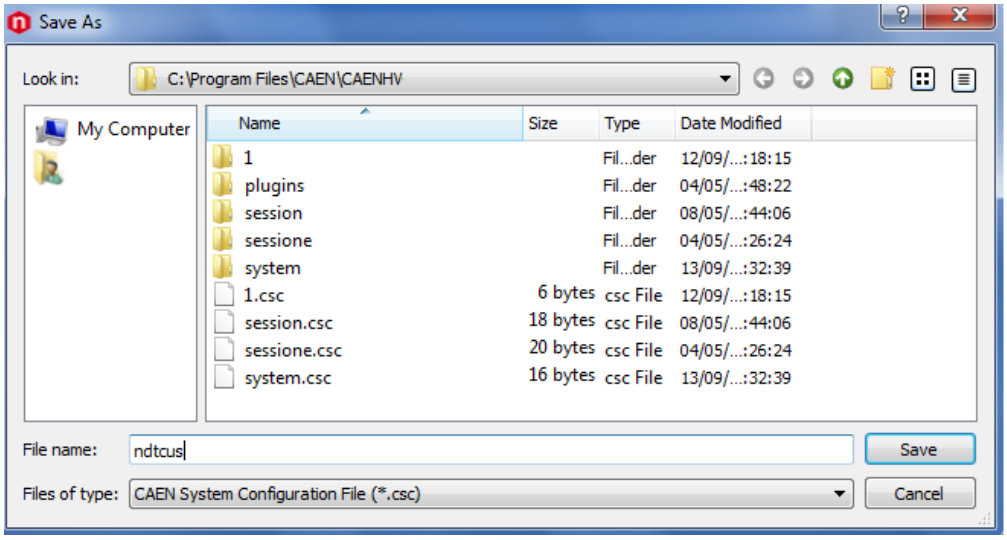


Fig. 52 – Custom View Configuration file saving options

Then it will be possible to retrieve it in a later moment, by going to

Settings > Load:

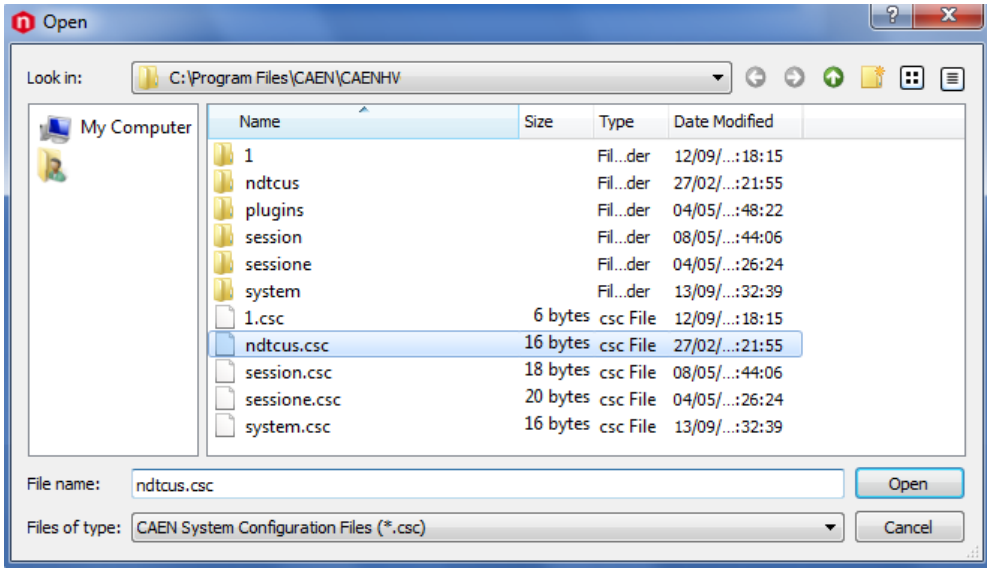


Fig. 53 – Custom View Configuration file load

Once selected the desired file, a dialog box will allow to select the configurations for the used systems; if it is necessary to connect to one or more selected items, connection parameters must be entered.

6 Window settings

Window option allows to set the visualization of the channles tab, by selecting “Window” in the upper Menu bar; three options are available (Tabbed, Tiled or Floated).

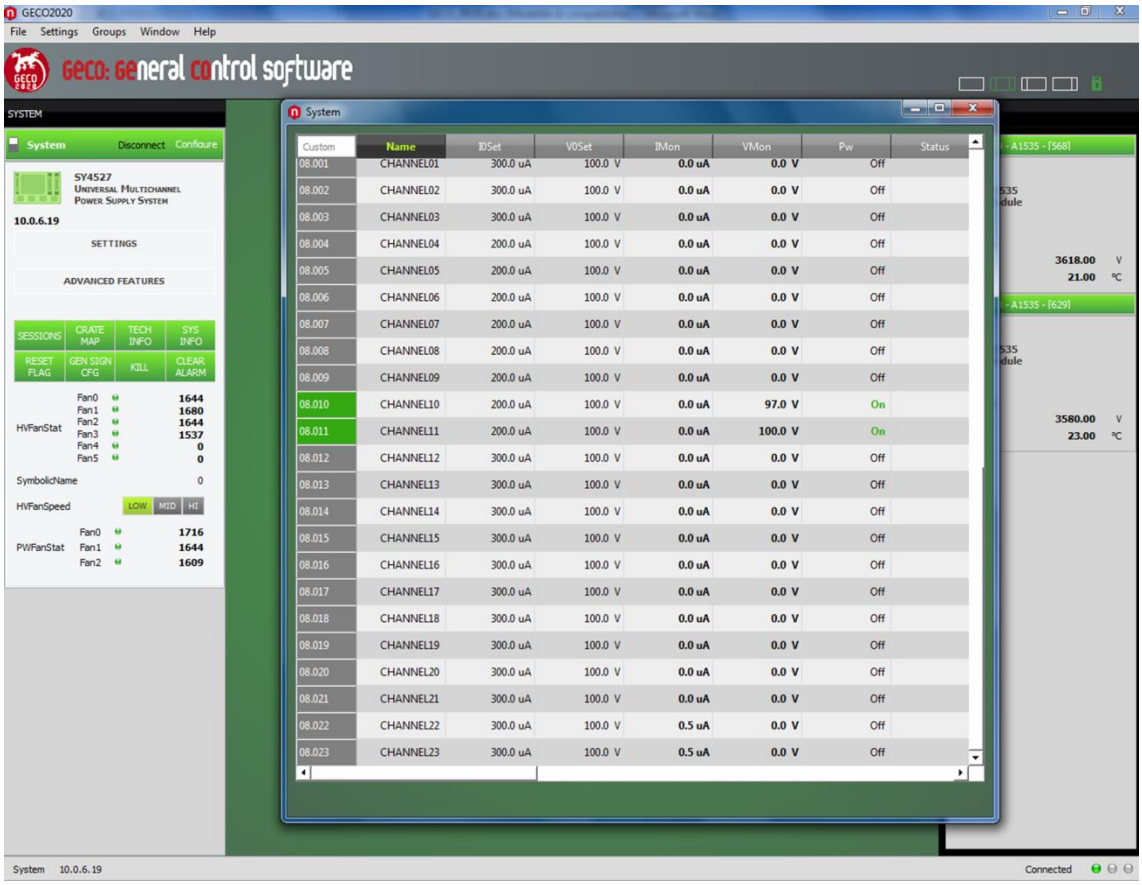


Fig. 54 – System Window “floated” view

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