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Purpose of this Manual

This document is the DT54xx User's Manual; it contains information about the installation, the configuration and the use of the unit.

Change Document Record

Date	Revision	Changes
15 April 2014	Rev. 0	Preliminary
14 November 2014	Rev. 1	New description, technical specifications and unit operation
4 December 2014	Rev. 2	Communication Protocol description
19 December 2014	Rev. 3	LabVIEW Instrument Driver description
19 January 2015	Rev. 4	Updated technical specifications
20 September 2016	Rev. 5	Updated Firmware upgrade
17 May 2017	Rev. 6	Updated technical specifications, unit operation
30 April 2019	Rev. 7	Updated Firmware upgrade
31 January 2020	Rev. 8	Updated technical specifications, unit operation
2 April 2021	Rev. 9	Updated technical specifications

Symbols, abbreviated terms and notation

N.A.

Reference Documents

N.A.

Disclaimer

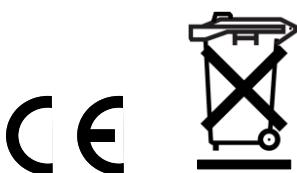
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CAEN declines all responsibility for damages or injuries caused by an improper use of the Modules due to negligence on behalf of the User. It is strongly recommended to read thoroughly the CAEN User's Manual before any kind of operation. *CAEN reserves the right to change partially or entirely the contents of this Manual at any time and without giving any notice.*

Disposal of the Product *The product must never be dumped in the Municipal Waste. Please check your local regulations for disposal of electronics products.*

Made In Italy : We stress the fact that all the boards are made in Italy because in this globalized world, where getting the lowest possible price for products sometimes translates into poor pay and working conditions for the people who make them, at least you know that who made your board was reasonably paid and worked in a safe environment. (this obviously applies only to the boards marked "Made in Italy", we cannot attest to the manufacturing process of "third party" boards).



Index

1. General description	5
Overview.....	5
2. Technical specifications	6
Packaging and Compliancy	6
Power requirements	6
Front and Back panel	6
External components.....	7
HV Channel Output	7
Earth.....	7
Interlock section.....	7
USB Port	8
Status LEDs.....	8
HV enable.....	8
HV Max.....	8
Technical specifications table	9
3. Unit operation	10
Initial inspection	10
Installation.....	10
Unit Control	11
Terminal Emulator control.....	11
Channels Menu	11
Firmware upgrade.....	12
Format EEPROM.....	13
4. USB Communication Protocol.....	14
Command Format string.....	14
Format of response string	14
Monitor Commands.....	14
Set Commands.....	15
5. LabVIEW Instrument Driver	17
System requirements and installation setup	17
Function Description	17
CAEN DT54XX.lvlib:Read out MAXVSET.vi.....	18
CAEN DT54XX.lvlib:Read out VSET.vi	18
CAEN DT54XX.lvlib:Read out RAMP UP.vi.....	19
CAEN DT54XX.lvlib:Debug Command.vi	20
CAEN DT54XX.lvlib:Module Info.vi	21
CAEN DT54XX.lvlib:Read out VMON.vi.....	22
CAEN DT54XX.lvlib:Initialize.vi	23
CAEN DT54XX.lvlib:Configure VSET.vi	24
CAEN DT54XX.lvlib:Read out POWER DOWN.vi	25
CAEN DT54XX.lvlib:Read out TRIP.vi	26
CAEN DT54XX.lvlib:Read out RAMP DOWN.vi.....	27
CAEN DT54XX.lvlib:Read out ISET.vi.....	27
CAEN DT54XX.lvlib:Close.vi	28
CAEN DT54XX.lvlib:Channel Power Enable.vi.....	29
CAEN DT54XX.lvlib:Read out IMON.vi.....	30
CAEN DT54XX.lvlib:Configure RAMP DOWN.vi	31
CAEN DT54XX.lvlib:Channel Status.vi.....	32
CAEN DT54XX.lvlib:Read out POLARITY.vi.....	33
CAEN DT54XX.lvlib:Configure IMON RANGE.vi	34
CAEN DT54XX.lvlib:Configure POWER DOWN.vi	34
CAEN DT54XX.lvlib:Configure ISET.vi.....	35
CAEN DT54XX.lvlib:Configure RAMP UP.vi.....	36
CAEN DT54XX.lvlib:Configure TRIP.vi	37
CAEN DT54XX.lvlib:Clear alarm signal.vi	37
DT54xx LabView Control Software	39
Control Software System requirements and installation setup	39
Control Software operation	39

List of Figures

Fig. 1: DT54xx USB High Voltage Power Supply	5
Fig. 2: DT54xx front and back panel	6
Fig. 3: HV Out connector	7
Fig. 4: Earth connection	7
Fig. 5: Interlock connector	7
Fig. 6: INTERLOCK electrical scheme	7
Fig. 7: USB Optical Connector	8
Fig. 8: LC Optical Connector	8
Fig. 9: Channel enable	8
Fig. 10: HVmax trimmer	8
Fig. 11: Main Menu	11
Fig. 12: Channels Menu	12
Fig. 13: Format EEPROM Menu	13
Fig. 14: DT54xx Graphical User Interface	39
Fig. 15: Connection Box	39
Fig. 16: Settings Box	40
Fig. 17: Power Enable Box	40
Fig. 18: Monitor Fields	40
Fig. 19: Channel Status box	40
Fig. 20: CLEAR ALARM button	41

List of Tables

Table 1: Available versions	5
Table 2: DT54xx Series Channel technical specifications	9

1. General description

Overview



Fig. 1: DT54xx USB High Voltage Power Supply

The DT54xx series modules house one High Voltage Power Supply Channel (1 W max), available with either positive or negative output polarity. The units are supplied and controlled via USB link; HV output is delivered through SHV connector.

The HV output RAMP-UP and RAMP-DOWN rates may be selected independently for each channel with 1 V/s steps.

Safety features include:

- OVERVOLTAGE and UNDERVOLTAGE warning when the output voltage differs from the programmed value ($\pm 2\%$)
- Programmable VMAX hardware protection limit
- OVERCURRENT detection: if a channel tries to draw a current larger than its programmed limit, it is signalled to be in "overcurrent" and works as a current generator; output voltage varies in order to keep the output current lower than the programmed value. "Overcurrent" lasting more than set value (1 to 999 seconds) causes the channel to "trip". Output voltage will drop to zero either at the Ramp-down rate or at the fastest available rate, depending on Power Down setting; in both cases the channel is put in the off state. If trip= INFINITE, "overcurrent" lasts until the unit is switched off manually.

Output can be enabled or disabled through the Interlock logic and the relevant switch. The following versions are available:

Table 1: Available versions

Code	Model
WDT5470XNAAA	DT5470N - USB High Voltage Power Supply -5kV/200uA (1W max)
WDT5470XPAAA	DT5470P - USB High Voltage Power Supply +5kV/200uA (1W max)
WDT5471XNAAA	DT5471N - USB High Voltage Power Supply -3kV/500uA (1W max)
WDT5471XPAAA	DT5471P - USB High Voltage Power Supply +3kV/500uA (1W max)
WDT5472XNAAA	DT5472N - USB High Voltage Power Supply -500V/1mA (0.5W max)
WDT5472XPAAA	DT5472P - USB High Voltage Power Supply +500V/1mA (0.5W max)

A software Graphical User Interface is available in order to program and monitor all functional parameters of the modules via USB.

For more info please visit www.caen.it (products>firmware/software section).

2. Technical specifications

Packaging and Compliancy

The unit is a Desktop module housed in a 12.7x81x43 mm³ alloy box.

Power requirements

The module is powered by the host PC USB link.

Front and Back panel



Fig. 2: DT54xx front and back panel

External components

HV Channel Output



Fig. 3: HV Out connector

HV OUT HV Channel Output; Mod. SHV RADIALL R317580; Impedance: 50 Ohm; Frequency range: 0 – 2 GHz; VSWR: <1.20 + 0.3 F (GHz) – (plug and jack); Test voltage: 10kV DC – 1mn (unmated connectors); Ratings: 12kV DC – 1mn (mated pairs); Current rating: 10 A



WARNING! These connectors produce extremely hazardous high voltages at a potentially lethal current level; never connect or disconnect the HV OUT connector with the power HV enable switch EN (see p. 8); always switch power DISABLE and wait at least 30s before connecting or disconnecting HV cables.

Earth



Fig. 4: Earth connection

RITEL 10mm industrial terminal 24 10 00 3

IMPORTANT: in order to reduce noise level and for safety reasons, always connect to Earth the unit through this terminal, before connecting HV Output to the load.

Interlock section



Fig. 5: Interlock connector

AMP 280371-2 connector & RED LED Input signal Interlock signal (channels hardware disabled)

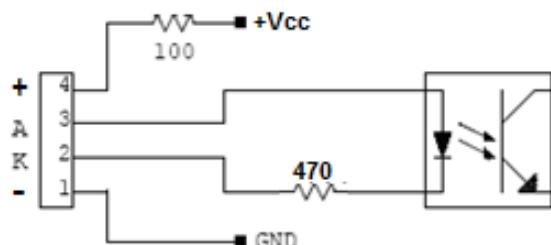


Fig. 6: INTERLOCK electrical scheme

A schematic diagram of the Interlock input is shown in the figure above, where the diode is part of opto-coupler stage. Interlock means that channel is hardware disabled. The interlock operation is as follows:

contact open	INTERLOCK
voltage level (0÷1V, ~5mA current) between pin 2 and pin 3	INTERLOCK
short circuit pin 1 with pin 2, and pin 3 with pin 4	ENABLED
voltage level (4÷6V, ~5mA current) between pin 2 and pin 3	ENABLED

The front panel Interlock LED is ON when the INTERLOCK is active; as INTERLOCK is active, channels are turned off at the fastest available rate, regardless the RAMP DOWN setting. To quit INTERLOCK status, go to Channels Menu (page 11) and type R (reset alarm).

USB Port



Fig. 7: USB Optical Connector

B TYPE USB port USB2.0 compliant (200cm max cable length)

Status LEDs



Fig. 8: LC Optical Connector

ON	GREEN LED	lights up when the channel is active
OVC	RED LED	lights up when channel draws a current larger than Iset (OVC detected)
POL	RED/YELLOW LED (always ON)	lights up RED (positive channel) or YELLOW (negative channel)

HV enable



Fig. 9: Channel enable

Lockable Toggle Switch: locks into selected position *Channel Enable and Disable*
by pulling actuator, prevents accidental switching

If “disabled”, the channel is turned off with the fastest available rate (no Ramp)

HV Max



Fig. 10: HVmax trimmer

Trimmer Hardware VMax setting

Technical specifications table

Table 2: DT54xx Series Channel technical specifications

Model	DT5470	DT5471	DT5472
Packaging	Desktop module housed in a 12.7x81x43 mm ³ alloy box; weight: 0.3kg		
Output channels	Positive and Negative Polarity available		
Maximum output power	1W	1W	0.5W
Out Range	5KV / 200µA	3KV / 500µA	500V / 1mA
Vset resolution	1V	500mV	100mV
Vmon resolution	100mV	50mV	10mV
Iset resolution	40 nA	100nA	200nA
Imon Resolution	400pA	1nA	2nA
	4nA	10nA	20nA
Vmax resolution	1V		
Ramp-Up / Ramp-Down	500V/s, 1V/s step		100V/s, 1V/s step
TRIP	Max. time an "overcurrent" is allowed to last (seconds). A channel in "overcurrent" works as a current generator; output voltage varies in order to keep the output current lower than the programmed value. "Overcurrent" lasting more than set value (0 to 999) causes the channel to "trip". Output voltage will drop to zero either at the Ramp-down rate or at the fastest available rate, depending on Power Down setting; in both cases the channel is put in the off state. If trip= INFINITE, "overcurrent" lasts indefinitely. TRIP range: 0 ÷ 999 s; 1000 s = Infinite. Step = 1 s		
Temp resolution	1°C		
Interlock input	LOW: <1V; current~5mA; HIGH: 4÷6 V		
Vmon vs. Vout	± 0.05% of full scale ±1V		
	± 0.05% of full scale ±1V		
Accuracy ¹	± 0.3% of full scale ±5V		
	±1% of read ±100 nA	±1% of read ±200 nA	±1% of read ±400 nA
	±1% of read ±100 nA	±1% of read ±200 nA	±1% of read ±400 nA
Voltage Ripple (Typical)	<20mV		<10mV
Humidity range	0 ÷ 80%		
Operating temperature	0 ÷ 45°C		
Storage temperature	-10 ÷ +70°C		
Vout / Temperature coefficient	100ppm		
Imon / Temperature coefficient	100ppm		
Long term stability Vout vs. Vset	0.05% after 1 week at constant Temperature		

¹ Accuracy values are measured from 10% to 90% of Full Scale Range

3. Unit operation

Initial inspection

Safety requirements and Initial inspection

N.B. read carefully the “Precautions for Handling, Storage and Installation” document provided with the product before starting any operation!

The following HAZARD SYMBOLS are reported on the unit:



CAUTION: indicates the need to consult the “Precautions for Handling, Storage and Installation” document provided with the product. **A potential risk exists if the operating instructions are not followed**



HIGH VOLTAGE: indicates the presence of electric shock hazards. Enclosures marked with these symbols should only be opened by CAEN authorized personnel.

To avoid risk of injury from electric shock, do not open this enclosure

To avoid potential hazards, use the product only as specified. Only qualified personnel should perform service procedures.

Avoid Electric Overload. To avoid electric shock or fire hazard, do not power a load outside of its specified range.

Avoid Electric Shock. To avoid injury or loss of life, do not connect or disconnect cables while they are connected to a voltage source.

Do Not Operate without Covers. To avoid electric shock or fire hazard, do not operate this product with covers or panels removed.

Do Not Operate in Wet/Damp Conditions. To avoid electric shock, do not operate this product in wet or damp conditions.

Do Not Operate in an Explosive Atmosphere. To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Do Not Operate with Suspected Failures. If you suspect this product to be damaged, have it inspected by qualified service personnel.

Prior to shipment this unit was inspected and found free of mechanical or electrical defects. Upon unpacking of the unit, inspect for any damage, which may have occurred in transport. The inspection should confirm that there is no exterior damage to the unit, such as broken knobs or connectors, and that the panels are not scratched or cracked. Keep all packing material until the inspection has been completed. If damage is detected, file a claim with carrier immediately and notify CAEN. Before installing the unit, make sure you have read thoroughly the safety rules and installation requirements, then place the package content onto your bench; you shall find the following parts:

- DT54xx desktop power supply unit
- USB cable

Moreover, in order to operate the DT54xx, an external Personal Computer is required.

Installation

- Connect the DT54xx to the PC via the USB cable
- Download and install the USB driver for your OS, available at the DT54xx page on the www.caen.it site

Now the DT54xx is ready for operation, upon installation of one of the available tools.

Unit Control

The remote control of the unit via USB can be performed through one of the following ways:

- LabVIEW Instrument Driver; see p.17
- Terminal Emulator control; see p.11

Both ways allow to set and monitor all the available parameters, that are the following:

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

Terminal Emulator control

The connection can be performed via terminal emulator, we suggest to use [Tera Term](#) (see <https://ttssh2.osdn.jp/index.html.en>); select the used USB (COM) port and configure it as follows:

- baud rate 9600
- Data bits: 8
- Parity: none
- stop bit: 1
- Flow control: hardware

In order to launch the communication, type CAEN and then <Enter>; as the communication is established, the Main Menu will be displayed:

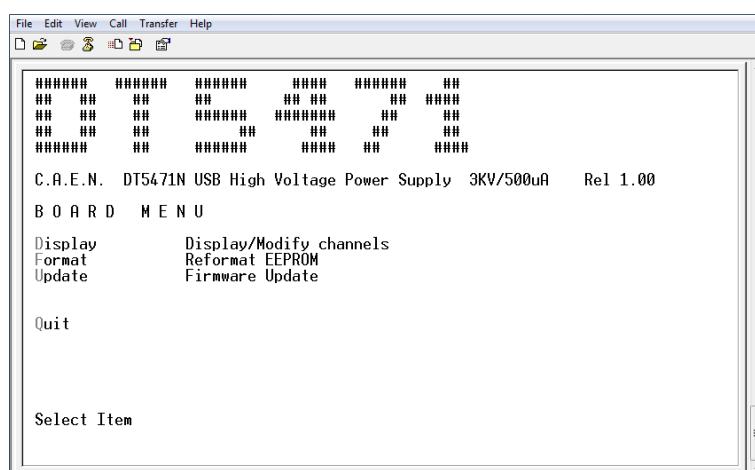


Fig. 11: Main Menu

Type **P** to set/monitor channel parameters

Type **F** to format the EEPROM

Type **U** to upgrade the firmware

Type **Q** to exit the program

Channels Menu

By typing **D** it is possible to monitor and set all the channel parameters

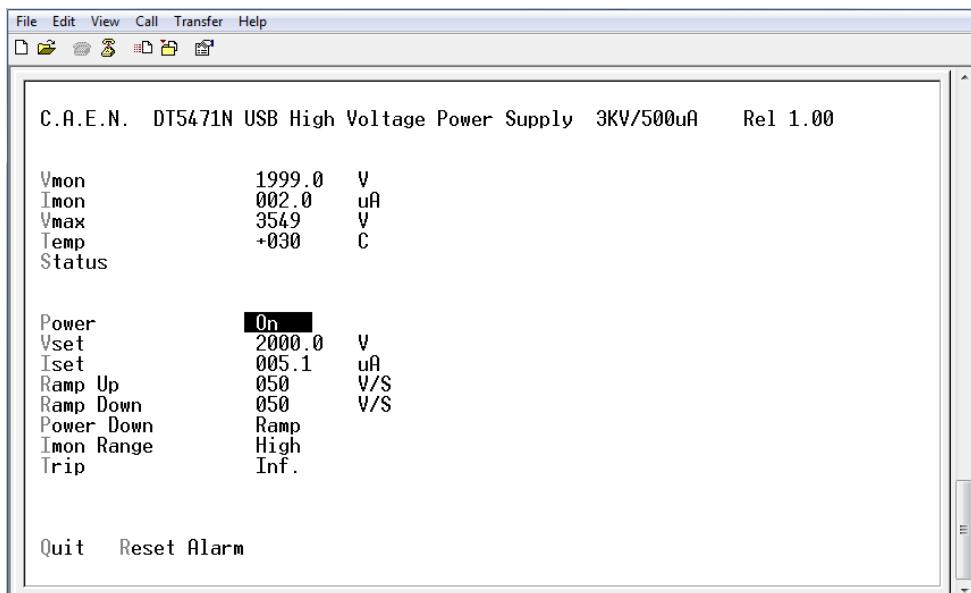


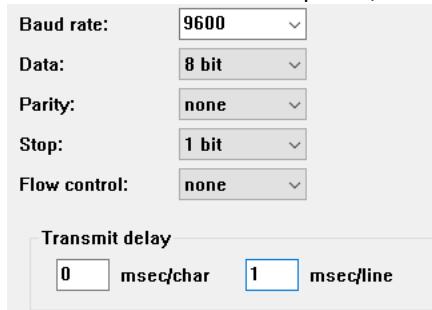
Fig. 12: Channels Menu

In order to change one parameter: point the parameter with the arrow keys and type the desired value, confirm by pressing <Enter>; Power and Power Down can be changed using the <Space> bar. Type R to clear an alarm status (e.g. Interlock). Type Q to exit the Menu.

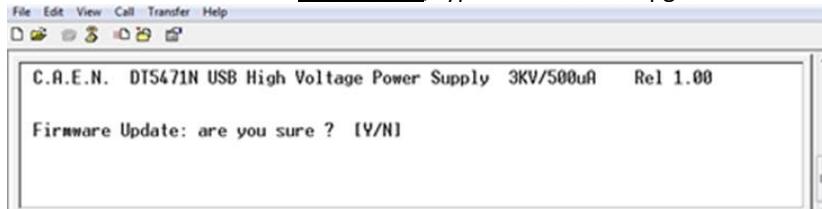
Firmware upgrade

In order to upgrade the firmware:

- download from www.caen.it unit page the most recent firmware revision for your module
- connect to the module via USB using [Tera Term VT Emulator](#)
- in the Tera Term options, select “set up” > “serial port” and enter the following settings



- click OK to confirm
- with reference to [Main Menu](#), type U in order to upgrade the firmware



- Type y
- The following message will be shown:

Disconnect link and cable then reconnect to enter boot mode.

- Select “File” > disconnect
- unplug the USB cable
- connect once again to the module, via USB
- the following message will be shown:

!!! Checksum Error
Firmware Update...press any key to start

- Press any key
- Wait until the following message is shown:

Flash Erased!!!
Send file to upload

- Select “File” > send file
- Browse the image file (for example DT54XX.102)

- Select “open”
- Wait the upload to complete until this message is shown:

File Loaded.

Disconnect link and cable then reconnect to launch application...

- Select “File” > disconnect
- unplug the USB cable
- connect once again to the module, via USB

now the unit is ready to operate running the upgraded firmware

Format EEPROM

By typing **F** it is possible to access the format EEPROM menu:

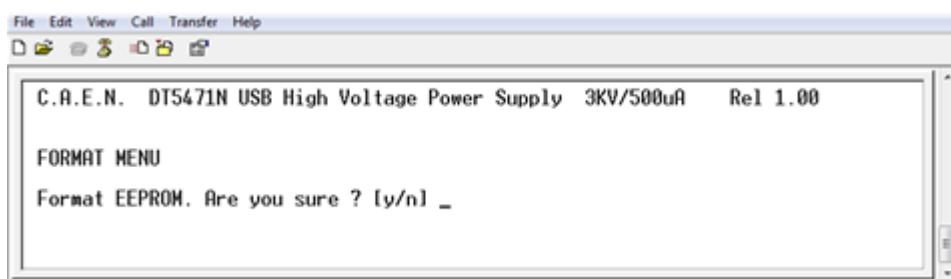


Fig. 13: Format EEPROM Menu

4. USB Communication Protocol

The following Protocol allows to communicate with the module. The Protocol is based on commands made of ASCII characters strings.

The recognized values are as follows:

Version		DT5472	DT5471	DT5470
Parameter	unit			
VSRES	V	0.1	0.5	1
VMRES	V	0.1	0.5	1
RAMPMAX	V/s	500	500	500
RAMPMIN	V/s	1	1	1
TRIPMAX	s	1000	1000	1000
IMAX	µA	1050	510	210
ISRES	µA	0.2	0.1	0.04
IMRESH	µA	0.2	0.1	0.04
IMAXL	µA	105	51	21
IMRESL	µA	0.02	0.01	0.004

Command Format string

```
$CMD:***,PAR:***,VAL:xxx.xx<CR,LF>
CMD : SET, MON
PAR : VSET, ISET, ON ..
VAL : value
```

Format of response string

```
#CMD:***,VAL:xxx.xx<CR,LF>
CMD : OK, ERR.
VAL : value
All fields are in ASCII format
Resolution values are passed as real numbers
```

Monitor Commands

```
$CMD:MON,PAR:BDNAME<CR,LF>
Read out module name
DT5472 500V/1mA
DT5471 3kV/500uA
DT5470 5kV/200uA
```

```
$CMD:MON,PAR:TYPE<CR,LF>
Read out the channel type:
0: 500V/1mA
1: 3kV/500uA
2: 5kV/200uA
```

```
$CMD:MON,PAR:POLARITY<CR,LF>
Read out channel polarity.
```

```
$CMD:MON,PAR:VSET<CR,LF>
Read out VSET value
```

\$CMD:MON,PAR:ISET<CR,LF>

Read out ISET value

\$CMD:MON,PAR:VMON<CR,LF>

Read out VMON value

\$CMD:MON,PAR:IMON<CR,LF>

Read out IMON value

\$CMD:MON,PAR:RUP<CR,LF>

Read out RUP (RAMP UP) value

\$CMD:MON,PAR:RDW<CR,LF>

Read out RDW (RAMP DOWN) value

\$CMD:MON,PAR:PDWN<CR,LF>

Contains 'RAMP' or 'KILL'

\$CMD:MON,PAR:IMRANGE<CR,LF>

Contains 'HIGH' or 'LOW'

\$CMD:MON,PAR:TRIP<CR,LF>

Read out TRIP value

\$CMD:MON,PAR:MAXV<CR,LF>

Read out Vmax hardware value

Vmax can be set via hardware.

\$CMD:MON,PAR:IMAX<CR,LF>

Read out ISET maximum value

\$CMD:MON,PAR:STAT<CR,LF>

Read out Status word

Bit 0 → ON	1 : ON 0 : OFF
Bit 1 → RUP	1 : Channel Ramping UP
Bit 2 → RDW	1 : Channel Ramping DOWN
Bit 3 → OVC	1 : Over current
Bit 4 → OVV	1 : Over voltage
Bit 5 → UNV	1 : Under voltage
Bit 6 → MAXV	1 : VOUT in MAXV protection
Bit 7 → TRIP	1 : Current generator
Bit 8 → OVP	1 : Over temperature
Bit 9	reserved
Bit 10 → DIS	1 : Ch disabled
Bit 11 → KILL	1 : Ch in KILL
Bit 12 → ILK	1 : Ch in INTERLOCK
Bit 13 → NOCAL	1 : Calibration Error
Bit 14, 15 → N.C.	reserved

Set Commands

\$CMD:SET,PAR:VSET,VAL:xxx.xx<CR,LF>

Set VSET value

\$CMD:SET,PAR:ISET,VAL:xxx.xx<CR,LF>

Set ISET value

\$CMD:SET,PAR:RUP,VAL:xxx.<CR,LF>

Set RUP (RAMP UP) value

\$CMD:SET,PAR:RDW,VAL:xxx.<CR,LF>

Set RDW (RAMP DOWN) value

\$CMD:SET,PAR:TRIP,VAL:xxx.xx<CR,LF>

Set TRIP value

\$CMD:SET,PAR:PDWN,VAL:RAMP/KILL<CR,LF>

Set power down mode 'RAMP' or 'KILL'

\$CMD:SET,PAR:IMRANGE,VAL:HIGH/LOW<CR,LF>

Set range 'HIGH' or 'LOW'

\$CMD:SET,PAR:ON<CR,LF>

Set CHANNEL ON

\$CMD:SET,PAR:OFF<CR,LF>

Set CHANNEL OFF

\$CMD:SET,PAR:BDCLR<CR,LF>

'VAL' field contains BDCLR (CLEAR)

5. LabVIEW Instrument Driver

CAEN provides a set of VI's developed for LabVIEW™ 2009 and later releases (LabVIEW™ is a Trademark of National Instruments Corp.) that allow to configure and monitor all parameters of DT54xx HV Power Supply modules. A LabView Demo Control Software is also provided; see p. 39.

System requirements and installation setup

Host PC running LabVIEW 2009 or later releases and NI-VISA Run-Time Engine 5.3



In order to install the DT54XX LabVIEW Instrument Driver:

- Go to CAEN web site in the "Software" area of DT54xx HV Power Supply page.
- Download the DT54XX LabVIEW Instrument Driver installation package
- Extract files related to your host PC
- Follow the Set Up wizard instructions

Function Description

The present sections describe in detail the DT54XX LabVIEW Instrument Driver available items; the data types are the following:

 Cluster (error codes)
 Cluster (various)
 Cluster (numeric)
 Input / Output name
 Boolean
 String
 32bit integer
 32bit unsigned integer numeric
 16bit unsigned integer numeric
 8-bit unsigned integer numeric
 Single-precision, floating-point numeric
 Double-precision, floating-point numeric

CAEN DT54XX.lvlib:Read out MAXVSET.vi

This function returns MaxV value

Connector Pane



Controls and Indicators



error in (no error): error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



Status: status is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



Code: code is the error or warning code.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



Source: source describes the origin of the error or warning.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



VISA resource name BoardHandle is a reference to an open board.



error out: error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



Status: status is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



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Source: source describes the origin of the error or warning.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



VISA resource name out



Voltage max values (V)

CAEN DT54XX.lvlib:Read out VSET.vi

This function returns VSet value

Connector Pane



Controls and Indicators



error in (no error): error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **Status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name** BoardHandle is a reference to an open board.

 **get more? : If get more?** is TRUE, get more constant information related to this parameter and return these in a cluster. The default is FALSE. **If is TRUE the VI require more time to execution.**

 **error out: error out** passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name out**

 **VSet constants** array of cluster with constant information for this parameter.

 **VSet constant**

 **Min**

 **Max**

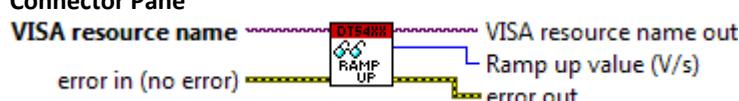
 **Digits of precision**

 **Vset value (V)**

CAEN DT54XX.lvlib:Read out RAMP UP.vi

This function returns Ramp Up rate

Connector Pane



Controls and Indicators

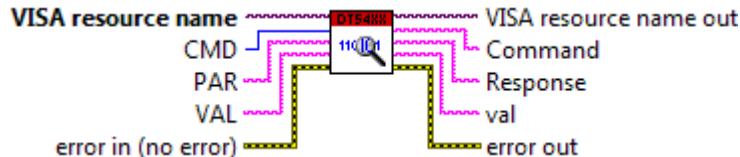
 **error in (no error) : error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

-  **status:** **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code:** **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source:** **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name** BoardHandle is a reference to an open board.
-  **error out:** **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status:** **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code:** **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source:** **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name out**
-  **Ramp up value (V/s)**

CAEN DT54XX.lvlib:Debug Command.vi

This function can be used for debug purpose. This allows to prepare and forward a command and view the received response string.

Connector Pane



Controls and Indicators

-  **error in (no error):** **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

-  **status:** **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code:** **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source:** **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

- I/O** VISA resource name BoardHandle is a reference to an open board.
- US** CMD Command type: MON (monitor) or SET.
- abc** VAL If required, value to set
- abc** PAR
- error out**: error out passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 - TF** **status**: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 - I32** **code**: **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 - abc** **source**: **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

- I/O** VISA resource name out
- abc** val If expected, the value field in the response
- abc** Response Response received from board
- abc** Command Command sent to board

CAEN DT54XX.lvlib:Module Info.vi

This function returns some information of the board.

Connector Pane



Controls and Indicators

- error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 - TF** **status**: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 - I32** **code**: **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 - abc** **source**: **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I/O** VISA resource name BoardHandle is a reference to an open board.
- error out**: error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status:** **status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code:** **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source:** **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name out**

 **Module Info** is a cluster with some information on the board

 **Name**

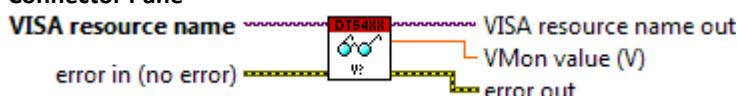
 **Firmware Release**

 **Serial Num.**

CAEN DT54XX.lvlib:Read out VMON.vi

This function returns VMon value

Connector Pane



Controls and Indicators

 **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status:** **status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred.

Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code:** **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source:** **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name** BoardHandle is a reference to an open board.

 **error out:** **error out** passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

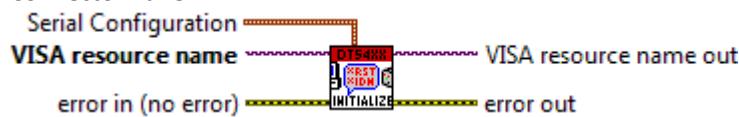
 **status:** **status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

- ▶ I32 **code**: **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- ▶ abc **source**: **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- ▶ I/O **VISA resource name out**
- ▶ DBL **VMon value (V)**

CAEN DT54XX.lvlib:Initialize.vi

Establishes communication with the instrument. Therefore, call this VI before calling other instrument driver VIs for this instrument. Generally, you need to call the Initialize VI only once at the beginning of an application.

Connector Pane



Controls and Indicators

- ▶ error in (no error): **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- ▶ TF **status**: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- ▶ I32 **code**: **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- ▶ abc **source**: **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- ▶ I/O **VISA resource name**: Specifies which instrument to use. Instruments that are powered on and connected to your computer are visible in the **VISA resource name** pull-down menu. Select the resource name from the **VISA resource name** pull-down menu.
- Examples:**
- Serial**: COM1
Refer to the LabVIEW Help for more information about specifying a VISA resource name.
- ▶ RS232 **Serial Configuration**: This control sets the settings that will be used if initializing a device with a serial interface.
These settings must match those on the actual instrument.
 - ▶ U32 **Baud Rate**: Specifies the rate at which data is transmitted across the serial interface.
 - ▶ U16 **Parity**: Specifies which kind of parity is used for error checking.
 - ▶ U16 **Data Bits**: Specifies the number of bits used for data transmission.
 - ▶ U16 **Stop Bits**: Specifies the number of stop bits in each frame.
 - ▶ U16 **Flow Control**: Specifies the protocol that is used across the interface for data transmission.
- ▶ error out: **error out** passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

-  **status: status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code: code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source: source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name out** A copy of the reference to the instrument in use. The reference to the resource name is created in the Initialize VI. Wire the **VISA resource name out** terminal of the Initialize VI to subsequent **VISA resource name** input terminals. You chain instrument driver VIs together by wiring the **VISA resource name out** terminal to subsequent **VISA resource name** input terminals.

CAEN DT54XX.lvlib:Configure VSET.vi

This function allows to configure Vset.

Connector Pane



Controls and Indicators

-  **error in (no error):** **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status: status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code: code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source: source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **Voltage Level (0.0 V)** High Voltage programmed value
-  **VISA resource name** BoardHandle is a reference to an open board.
-  **error out: error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status: status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code: code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name out**

CAEN DT54XX.lvlib:Read out POWER DOWN.vi

This function returns Power Down mode

Connector Pane



Controls and Indicators

 **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name BoardHandle** is a reference to an open board.

 **error out: error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

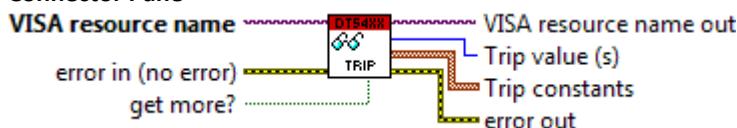
 **VISA resource name out**

 **Power down**

CAEN DT54XX.lvlib:Read out TRIP.vi

This function returns Trip time

Connector Pane



Controls and Indicators

- VISA resource name**  **BoardHandle** is a reference to an open board.
- error in (no error)**  **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- status**  **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- code**  **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- source**  **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- get more?**  **get more?** : If **get more?** is TRUE, get more constant information related to this parameter and return these in a cluster. The default is FALSE. **If is TRUE the VI require more time to execution.**
- error out**  **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- status**  **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- code**  **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- source**  **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- VISA resource name out** 
- Trip constants**  **array of cluster** with constant information for this parameter.
 - Min** 
 - Max** 
 - Digits of precision** 
- Trip value (s)** 

CAEN DT54XX.lvlib:Read out RAMP DOWN.vi

This function returns Ramp Down rate

Connector Pane



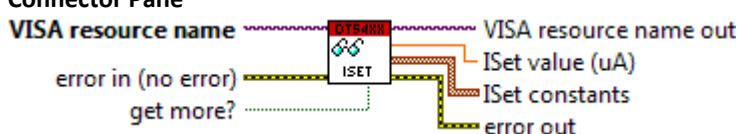
Controls and Indicators

-  **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status**: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code**: **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source**: **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name** BoardHandle is a reference to an open board.
-  **error out**: **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status**: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code**: **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source**: **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name out**
-  **Ramp down value (V/s)**

CAEN DT54XX.lvlib:Read out ISET.vi

This function returns Iset value

Connector Pane



Controls and Indicators

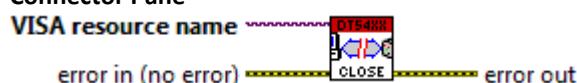
-  **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

- TF **status:** **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I32 **code:** **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- abc **source:** **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I/O **VISA resource name** **BoardHandle** is a reference to an open board.
- TF **get more?** : If **get more?** is TRUE, get more constant information related to this parameter and return these in a cluster. The default is FALSE.
If is TRUE the VI require more time to execution.
- F6 **error out:** **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- TF **status:** **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I32 **code:** **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- abc **source:** **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I/O **VISA resource name out**
 - F6 **ISet constants** array of cluster with constant information for this parameter.
 - F6 **VSet constant**
 - DBL **Min**
 - DBL **Max**
 - I32 **Digits of precision**
 - DBL **ISet value (uA)**

CAEN DT54XX.lvlib:Close.vi

This function terminates the software connection to the instrument.

Connector Pane



Controls and Indicators

- I/O **VISA resource name** A reference to the instrument in use. The reference to the resource name is created in the Initialize VI. Therefore, before calling this VI, you need to call the Initialize VI. To run this VI interactively, select the previously initialized resource name from the pull-down menu. To run this VI programmatically, wire the **VISA resource name out** terminal of the Initialize VI to subsequent **VISA resource name** input terminals. You chain instrument driver VIs

together by wiring the **VISA resource name out** terminal to subsequent **VISA resource name** input terminals.



error in (no error) : error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: status is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: code is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: source describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



error out: error out passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: status is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred.

Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: code is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: source describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

CAEN DT54XX.lvlib:Channel Power Enable.vi

Enables or disables the output of the power supply.

Connector Pane



Controls and Indicators

VISA resource name BoardHandle is a reference to an open board.

Enable (OFF) if TRUE set the channel ON; if FALSE set the channel OFF



error in (no error) : error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: status is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: code is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: source describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



error out: error out passes error or warning information out of a VI to be used by other VIs.

Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: code is the error or warning code. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: source string describes the origin of the error or warning. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

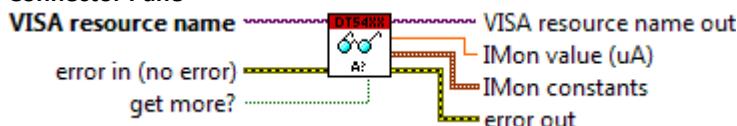


VISA resource name out

CAEN DT54XX.lvlib:Read out IMON.vi

This function returns Imon value

Connector Pane



Controls and Indicators



error in (no error) : error in can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: code is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: source describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



VISA resource name BoardHandle is a reference to an open board.



get more? : If **get more?** is TRUE, get more constant information releated a this parameter and return these in a cluster . The default is FALSE.

If is TRUE the VI require more time to execution.



error out: error out passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: status is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



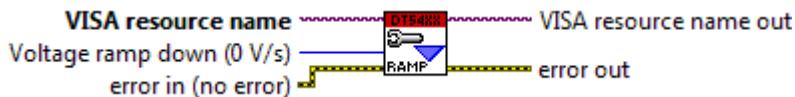
code: code is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

-  **source:** **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name out**
-  **IMon value (uA)**
-  **IMon constants**
-  **Range**
-  **Digits of precision**

CAEN DT54XX.lvlib:Configure RAMP DOWN.vi

This function allows to configure Voltage Ramp Down rate.

Connector Pane



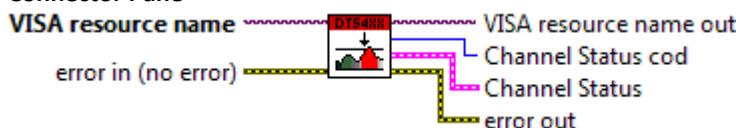
Controls and Indicators

-  **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status:** **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code:** **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source:** **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **Voltage ramp down (0 V/s)** Maximum High Voltage decrease rate
-  **VISA resource name** BoardHandle is a reference to an open board.
-  **error out:** **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status:** **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code:** **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source:** **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name out**

CAEN DT54XX.lvlib:Channel Status.vi

Returns status for channels or a desired channel.

Connector Pane



Controls and Indicators

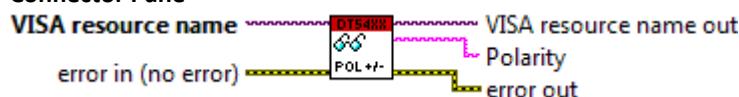
-  error in (no error)**: **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  status**: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  code**: **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  source**: **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  VISA resource name** BoardHandle is a reference to an open board.
-  error out**: **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 -  status**: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 -  code**: **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
 -  source**: **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  VISA resource name out**
-  Channel Status cod**
-  Channel Status**
 -  ON** indicates whether the channel is powered
 -  RUP** indicates whether the channel is performing a voltage ramp-up
 -  RDW** indicates whether the channel is performing a voltage ramp-down
 -  OVC** indicates whether the channel is Over Current
 -  OVV** indicates whether the channel is Over Voltage
 -  UNV** indicates whether the channel is Under Voltage

- TF **MAXV** indicates whether the channel is in MAXV protection
- TF **TRIPPED** indicates whether the channel will shutdown due to the trip time
- TF **VCC FAIL** indicates whether there is a fault in the internal power of the channel
- TF **OVT** indicates whether the channel is Over Temperature
- TF **CAL_CHKERR** unused
- TF **DISABLED** indicates whether the channel is in disabled via switch
- TF **INTLCK** indicates whether the channel is in INTERLOCK via frontal panel

CAEN DT54XX.lvlib:Read out POLARITY.vi

This function returns channels polarity

Connector Pane



Controls and Indicators

- EIN **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- TF **status: status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I32 **code: code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- abc **source: source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I/O **VISA resource name** BoardHandle is a reference to an open board.
- EOT **error out: error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- TF **status: status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I32 **code: code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- abc **source: source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
- I/O **VISA resource name out**
- abc **Polarity**

CAEN DT54XX.lvlib:Configure IMON RANGE.vi

This function allows to enable Current Monitor Zoom 10x (optional)

Connector Pane



Controls and Indicators

 **VISA resource name** BoardHandle is a reference to an open board.

 **IMon range (LOW)** Current Monitor Zoom 10x (optional). The admitted values are: HIGH or LOW.

 **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status: status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **error out: error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status: status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** string describes the origin of the error or warning. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name out**

CAEN DT54XX.lvlib:Configure POWER DOWN.vi

This function allows to configure Power Down mode.

Connector Pane



Controls and Indicators

 **VISA resource name** BoardHandle is a reference to an open board.

 **Power down (KILL)** Power Down mode after channel TRIP. The admitted values are: RAMP or KILL.

 **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status**: **status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code**: **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source**: **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **error out**: **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status**: **status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code**: **code** is the error or warning code. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source**: **source** string describes the origin of the error or warning. Right-click the **error out** indicator on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name out**

CAEN DT54XX.lvlib:Configure ISET.vi

This function allows to configure ISet.

Connector Pane



Controls and Indicators

 **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status**: **status** is TRUE (X) if an error occurred or FALSE (checkbox) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code**: **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source**: **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **Current Limit (0.00 uA)** Current Limit programmed value

 **VISA resource name** BoardHandle is a reference to an open board.



error out : **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



VISA resource name out

CAEN DT54XX.lvlib:Configure RAMP UP.vi

This function allows to configure Voltage Ramp Up rate.

Connector Pane



Controls and Indicators



error in (no error) : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: **code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: **source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



Voltage ramp up (0 V/s) Maximum High Voltage increase rate



VISA resource name BoardHandle is a reference to an open board.



error out : **error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



status: **status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



code: **code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



source: **source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.



VISA resource name out

CAEN DT54XX.lvlib:Configure TRIP.vi

This function allows to configures Ouput Trip time.

Connector Pane



Controls and Indicators

-  **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code: code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source: source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **Trip (0.0 s)** Maximum time an "overcurrent" is allowed to last expressed in seconds
-  **VISA resource name** BoardHandle is a reference to an open board.
-  **error out: error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **code: code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **source: source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.
-  **VISA resource name out**

CAEN DT54XX.lvlib:Clear alarm signal.vi

Resets the status of alarms that occurred.

Connector Pane



Controls and Indicators

-  **error in (no error)** : **error in** can accept error information wired from VIs previously called. Use this information to decide if any functionality should be bypassed in the event of errors from

other VIs. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error in** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name** is a reference to an open board.

 **error out: error out** passes error or warning information out of a VI to be used by other VIs. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **status: status** is TRUE (X) if an error occurred or FALSE (checkmark) to indicate a warning or that no error occurred. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **code: code** is the error or warning code. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **source: source** describes the origin of the error or warning. Right-click the **error out** control on the front panel and select **Explain Error** or **Explain Warning** from the shortcut menu for more information about the error.

 **VISA resource name out**

DT54xx LabView Control Software

The present section describes an application, provided as example of DT54XX LabView Instrument Driver usage; it is provided both as executable file and source code.

This demo control software allows to set and monitor, through a Graphical User Interface, all the unit's functional parameters.

Control Software System requirements and installation setup



Host PC running LabVIEW 2009 or later releases and NI-VISA Run-Time Engine 5.3

LabVIEW™ is a Trademark of National Instruments Corp.

In order to install the DT54xx LabView Control Software:

- Go to CAEN web site in the DT54xx page
- Download DT54xx Control Software package
- Unzip the package and launch the set up executable file
- Follow the installation wizard instructions, until the procedure is completed
- DT54xx LabView Control Software will be listed in the application menu

Control Software operation

Launch the DT54xx LabView Control Software, the following Graphical User Interface will open:

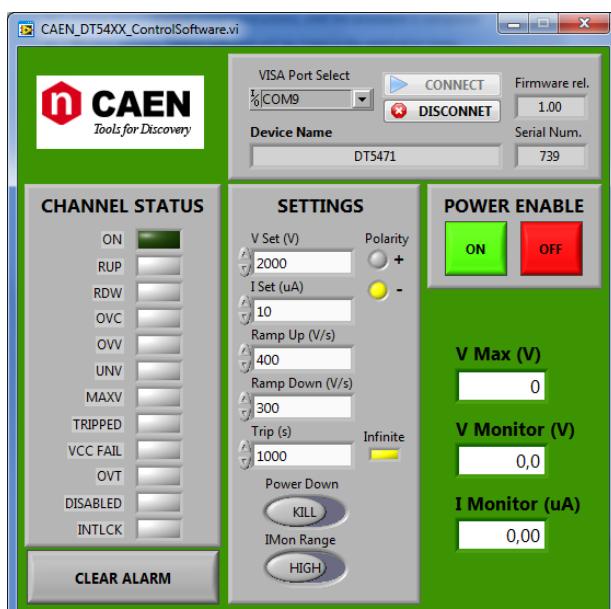


Fig. 14: DT54xx Graphical User Interface

Select the used port (VISA Port Select on the "Connection Box") and click "Connect"; now the unit is ready to be operated. Device Name and serial number will be displayed:



Fig. 15: Connection Box

The “Settings Box” allows to configure the channel; settings values can be typed or changed using the buttons:

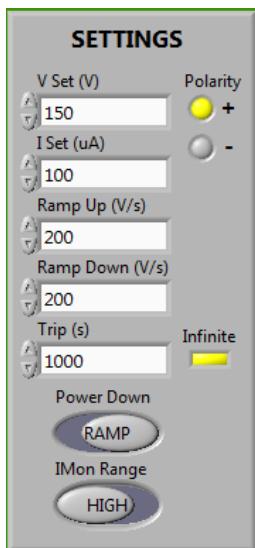


Fig. 16: Settings Box

The “Power Enable Box” allows to power on/off the unit; the HV switch on the unit must be set on “Enable”, to do this.

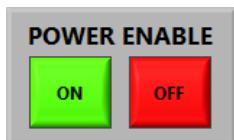


Fig. 17: Power Enable Box

The Monitored values are reported by the relevant fields:

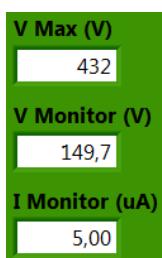


Fig. 18: Monitor Fields

The “Channel Status” box reports the actions that are going on:

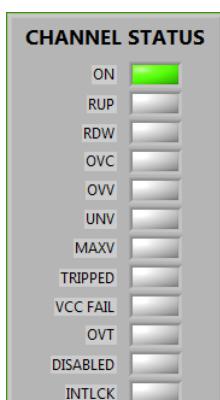


Fig. 19: Channel Status box

The CLEAR ALARM button performs a software Alarm condition removal (e.g. Interlock):

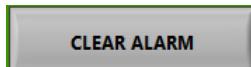


Fig. 20: CLEAR ALARM button

In order to disconnect from the Unit, click the relevant button on the Connection Box.

While the DT54xx LabView Control Software is running, a `datalog.txt` file is created in the sub folder `CAEN_DT54XX_ControlSoftware` of the default User's destination folder; `datalog.txt` records all the changes of the parameters running. This function can be disabled, by writing the text `disable` into the `datalog.txt` file and saving it.

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