



Rev. 3 - 16 December 2025

PRELIMINARY

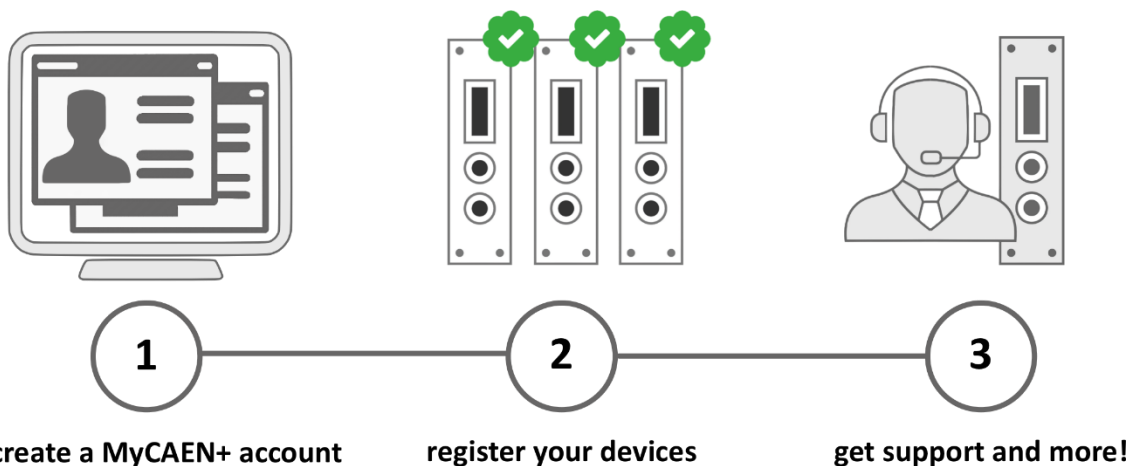
A2554 60W 64V Board



Register your device

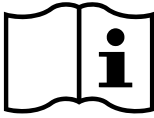
Register your device to your **MyCAEN+** account and get access to our customer services, such as notification for new firmware or software upgrade, tracking service procedures or open a ticket for assistance. **MyCAEN+** accounts have a dedicated support service for their registered products. A set of basic information can be shared with the operator, speeding up the troubleshooting process and improving the efficiency of the support interactions.

MyCAEN+ dashboard is designed to offer you a direct access to all our after sales services. Registration is totally free, to create an account go to <https://www.caen.it/become-mycaenplus-user> and fill the registration form with your data.



<https://www.caen.it/become-mycaenplus-user/>

Purpose of this User Manual



This document is the A2554 60W 64V Board User's Manual; it contains information about the installation, the configuration and the use of the device.

Change Document Record

Date	Revision	Changes
25 February 2021	0	PRELIMINARY Release
18 July 2025	1	Updated specifications
25 July 2025	2	Removed parallel option
16 December 2025	3	Channel Characteristic Table, Interlock operation, Sense Lines

Manufacturer Contacts



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Limitation of Responsibility

If the warnings contained in this manual are not followed, CAEN will not be responsible for damage caused by improper use of the device. The manufacturer declines all responsibility for damage resulting from failure to comply with the instructions for use of the product. The equipment must be used as described in the user manual, with particular regard to the intended use, using only accessories as specified by the manufacturer. No modification or repair can be performed.

Disclaimer

No part of this manual may be reproduced in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission of CAEN spa. The information contained herein has been carefully checked and is believed to be accurate; however, no responsibility is assumed for inaccuracies. CAEN spa reserves the right to modify its products specifications without giving any notice; for up to date information please visit www.caen.it.

Made in Italy

We remark that all our boards have been designed and assembled in Italy. In a challenging environment where a competitive edge is often obtained at the cost of lower wages and declining working conditions, we proudly acknowledge that all those who participated in the production and distribution process of our devices were reasonably paid and worked in a safe environment (this is true for the boards marked "MADE IN ITALY", while we cannot guarantee for third-party manufactures).






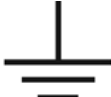


Index

	Purpose of this User Manual	3
	Change Document Record	3
	Manufacturer Contacts.....	3
	Limitation of Responsibility	3
	Disclaimer	3
	Made in Italy	3
1	Safety Notices	5
2	A2554 Overview	7
3	Channel Characteristic Table.....	8
4	Technical description.....	9
	Front Panel.....	9
	External connections	10
	Output connectors	10
	Service connector.....	10
	Interlock operation	10
	Status operation.....	11
	Sense Lines.....	11
5	Safety and installation requirements	12
	General safety information.....	12
	Injury Precautions	12
	Safety Terms and Symbols on the Product.....	12
	Installation	12
6	Operating modes.....	13
	Output control and monitoring	13
7	Instructions for Cleaning.....	15
	Cleaning the Touchscreen	15
	Cleaning the air vents	15
	General cleaning safety precautions	15
8	Device decommissioning	16
9	Disposal	17
10	Technical Support.....	18


1 Safety Notices

N.B. Read carefully the “SAFETY, STORAGE AND SETUP INFORMATION PRODUCT SUPPORT SERVICE AND REPAIR” document provided with the product before starting any operation.

The following HAZARD SYMBOLS may be reported on the unit:

	Caution, refer to product manual
	Caution, risk of electrical shock
	Protective conductor terminal
	Earth (Ground) Terminal
	Alternating Current
	Three-Phase Alternating Current

The following symbol may be reported in the present manual:

	General warning statement
---	---------------------------

The symbol could be followed by the following terms:

- **DANGER:** indicates a hazardous situation which, if not avoided, will result in serious injury or death.
- **WARNING:** indicates a hazardous situation which, if not avoided, could result in death or serious injury.
- **CAUTION:** indicates a situation or condition that, if not avoided, could cause physical injury or damage to the product and / or its environment.

CAUTION: To avoid potential hazards



**USE THE PRODUCT ONLY AS SPECIFIED.
ONLY QUALIFIED PERSONNEL SHOULD PERFORM SERVICE PROCEDURES**

CAUTION: Avoid Electric Overload



**TO AVOID ELECTRIC SHOCK OR FIRE HAZARD, DO NOT POWER A LOAD
OUTSIDE OF ITS SPECIFIED RANGE**

CAUTION: Avoid Electric Shock



**TO AVOID INJURY OR LOSS OF LIFE, DO NOT CONNECT OR DISCONNECT
CABLES WHILE THEY ARE CONNECTED TO A VOLTAGE SOURCE**

CAUTION: Do Not Operate without Covers



**TO AVOID ELECTRIC SHOCK OR FIRE HAZARD, DO NOT OPERATE THIS
PRODUCT WITH COVERS OR PANELS REMOVED**

CAUTION: Do Not Operate in Wet/Damp Conditions



**TO AVOID ELECTRIC SHOCK, DO NOT OPERATE THIS PRODUCT IN WET
OR DAMP CONDITIONS**

CAUTION: Do Not Operate in an Explosive Atmosphere



**TO AVOID INJURY OR FIRE HAZARD, DO NOT OPERATE THIS PRODUCT
IN AN EXPLOSIVE ATMOSPHERE**



**THIS DEVICE SHOULD BE INSTALLED AND USED BY SKILLED TECHNICIAN
ONLY OR UNDER HIS SUPERVISION**



**DO NOT OPERATE WITH SUSPECTED FAILURES.
IF YOU SUSPECT THIS PRODUCT TO BE DAMAGED, PLEASE CONTACT
THE TECHNICAL SUPPORT**

2 A2554 Overview

The Mod. A2554 is a single width (5 TE wide) board housing 8 floating channels, delivered by DB37 connectors, with 64V / 1.5A output (60W max), compatible with the CAEN Universal Multichannel Power Supply System (SY4527, SY5527).

The floating return allows on-load grounding reducing the noise level; the floating channels are insulated from each other and from Ground up to ± 500 V.

Each output channel is provided with individual remote sensing lines to compensate for the voltage drop over the connection cables

The Output Voltage RAMP-UP and RAMP-DOWN Times may be selected independently for each channel in the $1 \div 500$ V/s range (1 V/s step).

Safety features include:

OVERVOLTAGE: if a channel monitored voltage goes above the programmed Overvoltage threshold value (OVVThr), it is signalled to be in "overvoltage" and is switched off.

UNDERVOLTAGE: when the monitored voltage goes below the programmed undervoltage threshold (UNVThr), the channel is switched off.

OVERCURRENT: if a channel tries to draw a current larger than its programmed limit, it is signalled to be in "overcurrent"; when overcurrent is detected, the relevant channel can be programmed either to turn off after a programmable trip time or to keep on providing the maximum allowed current: this feature allows the module to work as current generator.

The output channels can be enabled according to the interlock logic (see Interlock operation).

A global enable/disable connector allows to disable the channels and it is also possible, via front panel logic signals, to enable individually each channel.

3 Channel Characteristic Table¹

Mechanics		1 unit (5 TE) wide; 6U – High; 2kg
No. of Channels		8
Polarity		Individual Floating ($\pm 500V$ isolation)
Output Voltage		0 ÷ 64V
Max Output Current		1.5A
Max Output Power (connector Output)		60W
Vset Resolution		2mV
Iset Resolution		50 μ A
Vmon Resolution		2mV
Imon Resolution		50 μ A
Ramp Up/Down		1-500V/s (1 V/s step)
Voltage Ripple (10Hz ÷ 20MHz) ²		Typ
		Max
Accuracy ³	Vout/Vmon; Vset/Vout	Sense wires
		No sense wires
	Iout/Imon	
Hardware OVV Protection		70V typ
Trip		0 to 999.9s; 1000s = Infinite; step 0.1s
Stability (No Load – one day after 1 hour warm up)		<5mV (Vset = 45V)
Long Term Stability (No Load – one week after 1 hour warm up)		<5mV (Vset = 45V)
Temperature Coefficient		± 25 ppm/ $^{\circ}$ C
Load regulation (1m AWG20 cable / 1m AWG20 sense wire)		< 0.05% (Vset = 40V, Iout from 0.1A to 1.25A)
Operating temperature		0 ÷ 45 $^{\circ}$ C
Storage temperature		-10 ÷ 70 $^{\circ}$ C
Humidity		0 – 80% non condensing
Altitude		2000m
Safety Standard – ROHS – Halogen free		ROHS
MTBF		Base: 120000 hours
EMC qualification		CE Standards

¹ Ratings are guaranteed from 5% to 95% of Full Scale Range

² Full Load / 1m AWG20 cable / 1m AWG20 sense wire / 100nF ceramic and 20 μ F EL std on load

³ \pm % read value \pm % FS; accuracy values are valid when the sense wires are connected (see p. 11)

4 Technical description

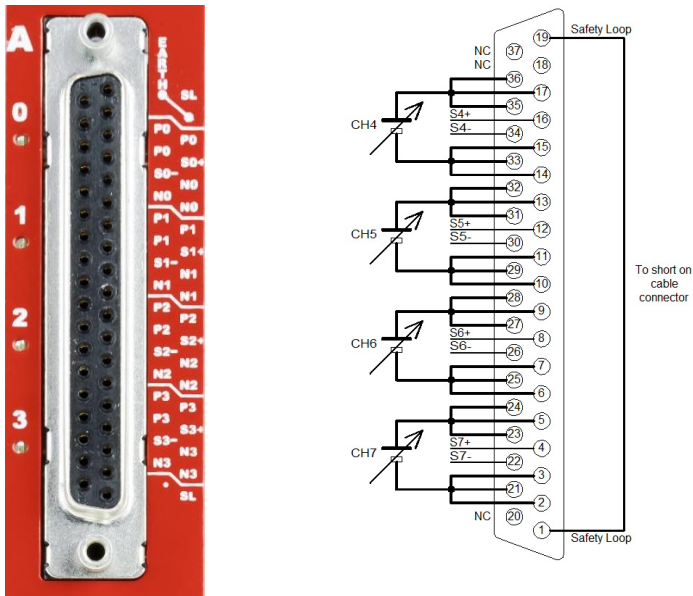
Front Panel



External connections

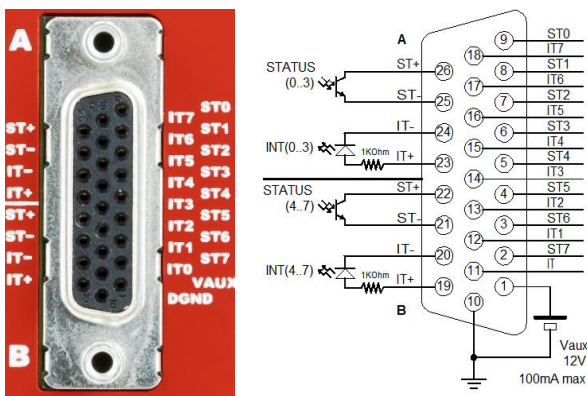
Output connectors

WARNING! Despite relatively Low Voltage, the risk of electric shock still exists; never connect or disconnect the Output connector with the SYx527 power ON/OFF switch ON; always switch SYx527 power OFF and wait at least 30s before connecting or disconnecting output cables.



FCI DCPV37S300GT DB37; cable connector: Amphenol FCI DC37P064TXLF; Out Channels (0÷3; 4÷7) Positive, Negative; Sense± (0÷3; 4÷7)

Service connector



Group Interlock (insulated); Group Status (insulated); Individual Interlock (GND); Individual Status (GND); VAUX, DGND

Interlock operation

One Group (channels 0..3 and 4..7) can be ENABLED in one of the following ways:

- Short circuit IT- with DGND and IT+ with VAUX pins on service connector; short circuit Safety Loop pins on output connector; enable board IntckA, IntckB parameters
- Send signal 4÷6V, ~5mA current between IT- and IT+; short circuit Safety Loop pins on output connector; enable board IntckA, IntckB parameters

One channel can be ENABLED in one of the following ways:

- Short circuit IT# with VAUX pins on service connector; short circuit Safety Loop pins on output connector; enable channel Intck parameter
- Send signal 4÷6V, ~5mA current between IT# and DGND; short circuit Safety Loop pins on output connector; enable channel Intck parameter

Status operation

- Contact closed between ST+ and ST- when no FAIL is present on one Group channel (0..3 and 4..7)
- Contact open between ST+ and ST- when FAIL is present on one Group channel (0..3 and 4..7)
- Level high on ST# when no FAIL is present
- Square wave (TTL grounded) on ST# when FAIL is present

Sense Lines

Output channels have Sense Lines (see p.10) to compensate for the voltage drop over the cable. Voltage is monitored directly at the load by a high input impedance differential amplifier through the sense wires. When the sense wires are connected to the load, the Vset value equals the voltage on the load; if the sense wires are not used, they must be left not connected, and Vset will equal the voltage on the connector. Please note also that, when the sense wires are not connected, the voltage is regulated on the connector and the accuracy performances could not be optimal.

5 Safety and installation requirements

General safety information

This section contains the fundamental safety rules for the installation and operation of the board. Read thoroughly this section before starting any procedure of installation or operation of the product.

Injury Precautions

Review the following precautions to avoid injury and prevent damage to this product or any products connected to it. 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.

Safety Terms and Symbols on the Product

These terms may appear on the product:

DANGER indicates an injury hazard immediately accessible as you read the marking.

WARNING indicates an injury hazard not immediately accessible as you read the marking.

CAUTION indicates a hazard to property including the product.

The following symbols may appear on the product:



DANGER
High Voltage



WARNING
Refer to Manual

Installation

The A2554 is a single-width board. At power ON the SYSTEM, the processor will scan all the slots in the crate to find out where the module is plugged and what kind of module it is.

6 Operating modes

The A2554 boards can be controlled, either locally or remotely, through the SYx527 System software interface. For board installation and details on SYx527 System operation, please refer to the User's Manual of this product. The following sections contain a description of commands available for the board control and status monitoring.

Output control and monitoring

The following board parameters are available:

Parameter	Description
BdStatus (monitor)	bit 0: PowerFail; if 1, failure in the channels local power supply bit 1: Firmware Checksum Error; if 1, error in the board firmware checksum bit 2: HVMax Calibration Error; if 1, the board HVMax parameter (if present) is not calibrated bit 3: Temperature Calibration Error; if 1, the board temperature sensor (if present) is not calibrated bit 4: Under Temperature; if 1, the board temperature sensor (if present) signals a board temperature < 5 °C bit 5: Over Temperature; if 1, the board temperature sensor (if present) signals a board temperature > 65 °C bits 6..31: Reserved
BdClr (settable)	Clear alarm signal
Intck A (settable)	Enable /disable operation of IT+/IT- signals (section A); Enable /disable safety loop operation (section A)
Intck B (settable)	Enable /disable operation of IT+/IT- signals (section B); Enable /disable safety loop operation (section B)

For each output channel, the following parameters are available:

Parameter	Description
CHANNEL NAME (settable)	Descriptive name for the relevant channel
VOSET (settable)	Output voltage programmable value (make sure it is between UNVTTHR and OVVTTHR)
IOSET (settable)	Current limit programmable value
UNVTTHR (settable)	Set output under voltage threshold
OVVTTHR (settable)	Set output over voltage threshold
RUp (settable)	Set voltage ramp-up
RDWn (settable)	Set voltage ramp-down
TRIP (settable):	Set TRIP parameter value, i.e. the maximum time an Over Current condition can last.
VMON (monitor)	Monitored voltage value
VCON (monitor)	Monitored connector voltage value
IMON (monitor)	Monitored current value
STATUS (monitor)	Displays the channel status bit 0: PowerFail; if 1, it indicates a failure in the channels local power supply bit 1: Firmware Checksum Error; if 1, it indicates an error in the board firmware checksum bit 2: HVMax Calibration Error; if 1, it indicates that the board HVMax parameter (if present) is not calibrated bit 3: Temperature Calibration Error; if 1, it indicates that the board temperature sensor (if present) is not calibrated bit 4: Under Temperature; if 1, it indicates that the board temperature sensor (if present) signals a board temperature < 5 °C bit 5: Over Temperature; if 1, it indicates that the board temperature sensor (if present) signals a board temperature > 65 °C bits 6..31: Reserved for future use
PW (ON/OFF)	Power parameter shows the ON/OFF channel status; when set to ON, the channel is switched on (if the INTERLOCK is not active and if the channel is enabled either locally or remotely)
TripInt (settable)	2N-bit word (Dec. $0 \div 2^{2N-1}$) max 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)
TripExt (settable)	Must be set in the $0 \div 255$ 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)
TEMP (monitor)	Monitored channel temperature
Intck	Enable/Disable operation of channel interlock signals (only A255xA versions)

The following messages may be returned by the SYSTEM when monitoring the channel status:

OFF (channel turned OFF)
OVC (channel in OVERCURRENT condition)
OVV (channel in OVERVOLTAGE condition)
UNV (channel in UNDERVOLTAGE condition)
EXTTRIP (channel OFF due to external TRIP line signal)⁴
INTTRIP (channel OFF due to internal OVERCURRENT condition)
EXT_DIS (channel disabled by board INTERLOCK protection)
PWR_FAIL (channel OFF due to a Power failure)
OVV_PROT (channel with connector over voltage detected)
TEMP_ERR (channel over >85°C / under <5°C temperature)

After an ALARM notification, it is necessary to perform a CLEAR ALARM cycle, before turning the channel ON. If, after the CLEAR ALARM cycle, voltage and/or current monitored values still exceed the channel range by more than 10%, then it is necessary to perform a Power Cycle over the board.

⁴ EXTTRIP and INTTRIP parameters are expressed in Hexadecimal format

7 Instructions for Cleaning

The equipment may be cleaned with isopropyl alcohol or deionized water and air dried. Clean the exterior of the product only.

Do not apply cleaner directly to the items or allow liquids to enter or spill on the product.

Cleaning the Touchscreen

To clean the touchscreen (if present), wipe the screen with a towelette designed for cleaning monitors or with a clean cloth moistened with water.

Do not use sprays or aerosols directly on the screen; the liquid may seep into the housing and damage a component. Never use solvents or flammable liquids on the screen.

Cleaning the air vents

It is recommended to occasionally clean the air vents (if present) on all vented sides of the board. Lint, dust, and other foreign matter can block the vents and limit the airflow. Be sure to unplug the board before cleaning the air vents and follow the general cleaning safety precautions.

General cleaning safety precautions

CAEN recommends cleaning the device using the following precautions:

Never use solvents or flammable solutions to clean the board.

Never immerse any parts in water or cleaning solutions; apply any liquids to a clean cloth and then use the cloth on the component.

Always unplug the board when cleaning with liquids or damp cloths.

Always unplug the board before cleaning the air vents.

Wear safety glasses equipped with side shields when cleaning the board

8 Device decommissioning

After its intended service, it is recommended to perform the following actions:

Detach all the signal/input/output cable

Wrap the device in its protective packaging

Insert the device in its packaging (if present)



**THE DEVICE SHALL BE STORED ONLY AT THE ENVIRONMENT
CONDITIONS SPECIFIED IN THE MANUAL, OTHERWISE PERFORMANCES
AND SAFETY WILL NOT BE GUARANTEED**

9 Disposal

The disposal of the equipment must be managed in accordance with Directive 2012/19 / EU on waste electrical and electronic equipment (WEEE).



The crossed bin symbol indicates that the device shall not be disposed of with regular residual waste.



10 Technical Support

To contact CAEN specialists for requests on the software, hardware, and board return and repair, it is necessary a MyCAEN+ account on www.caen.it:

<https://www.caen.it/support-services/getting-started-with-mycaen-portal/>

All the instructions for use the Support platform are in the document:



A paper copy of the document is delivered with CAEN boards.

The document is downloadable for free in PDF digital format at:

<https://www.caen.it/safety-information-product-support>

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