



Issues with CAEN SY4527 Software/Firmware and A7030TN Modules

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Contents

- Uploaded process variables' (PVs') values on the CAEN SY4527 Mainframe's CPU arbitrarily change.
- Bad contact on A7030TN module's Radiall 52 connector.

Issues

- Test Procedure
 1. Upload PV values on all channels at start of test.
 - Used CAEN GECO2020 software.
 2. Turn on a group of six channels.
 - Upon test completion, channels are highlighted in red (next slide).
- Noticed PV value changes during test.
 - On channels being tested and on channels not being tested.

Changes in IOSet, RUp Values ~45 minutes into Test

SYSTEM

hvcaestest2 Disconnect Configure

SY4527
UNIVERSAL MULTICHANNEL
POWER SUPPLY SYSTEM

129.57.86.124

SETTINGS

ADVANCED FEATURES

SESSIONS CRATE MAP TECH INFO SYS INFO

RESET FLAG CFG GEN SIGN CFG KILL CLEAR ALARM

Channel ON ●

OVV ●

UNV ●

OVC ●

Trip ●

Fan0 ● 3432

Fan1 ● 3289

Fan2 ● 3361

Fan3 ● 3468

Fan4 ● 3218

Fan5 ● 3397

SymbolicName SystemOne

HVFanSpeed LOW MID HI

Fan0 ● 1788

PWFanStat Fan1 ● 1716

Fan2 ● 1716

DHCPDstatus Disabled

Custom	Name	IOSet	VOSet	IMon	VMon	Pw	Status	RUp	RDWn	Trip
01.034	DSG-Lab	1000.00 uA	1500.00 V	-0.070 uA	1.21 V	Off		250 Vps	250 Vps	3.0 sec
01.035	DSG-Lab	1000.00 uA	1500.00 V	-0.026 uA	0.57 V	Off		250 Vps	250 Vps	3.0 sec
02.000	DSG-Lab	1000.00 uA	0.00 V	-0.022 uA	1.30 V	Off		250 Vps	250 Vps	10.0 sec
02.001	DSG-Lab	1000.00 uA	0.00 V	-0.032 uA	1.31 V	Off		250 Vps	250 Vps	10.0 sec
02.002	DSG-Lab	1000.00 uA	0.00 V	-0.104 uA	1.23 V	Off		250 Vps	250 Vps	10.0 sec
02.003	DSG-Lab	1000.00 uA	0.00 V	0.944 uA	1.57 V	Off		250 Vps	250 Vps	10.0 sec
02.004	DSG-Lab	1000.00 uA	0.00 V	-0.110 uA	0.36 V	Off		250 Vps	250 Vps	10.0 sec
02.005	DSG-Lab	1000.00 uA	0.00 V	-0.022 uA	1.57 V	Off		250 Vps	250 Vps	10.0 sec
02.006	DSG-Lab	1000.00 uA	0.00 V	-0.052 uA	1.77 V	Off		250 Vps	250 Vps	10.0 sec
02.007	DSG-Lab	1000.00 uA	0.00 V	-0.094 uA	1.11 V	Off		250 Vps	250 Vps	10.0 sec
02.008	DSG-Lab	1000.00 uA	0.00 V	-0.078 uA	1.23 V	Off		250 Vps	250 Vps	10.0 sec
02.009	DSG-Lab	1000.00 uA	0.00 V	-0.050 uA	1.63 V	Off		250 Vps	250 Vps	10.0 sec
02.010	DSG-Lab	1000.00 uA	0.00 V	-0.020 uA	1.69 V	Off		250 Vps	250 Vps	10.0 sec
02.011	DSG-Lab	1000.00 uA	0.00 V	-0.030 uA	1.23 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec
02.012	DSG-Lab	1000.00 uA	0.00 V	-0.078 uA	1.24 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec
02.013	DSG-Lab	1000.00 uA	0.00 V	-0.096 uA	1.23 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec
02.014	DSG-Lab	1000.00 uA	0.00 V	-0.030 uA	1.57 V	Off		250 Vps	250 Vps	10.0 sec
02.015	DSG-Lab	1000.00 uA	0.00 V	-0.068 uA	1.20 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec
02.016	DSG-Lab	1000.00 uA	1500.00 V	952.898 uA	1410.01 V	Off	Down	250 Vps	250 Vps	10.0 sec
02.017	DSG-Lab	1000.00 uA	0.00 V	-0.020 uA	1.23 V	Off		250 Vps	250 Vps	10.0 sec
02.018	DSG-Lab	600.00 uA	0.00 V	-0.018 uA	1.38 V	Off		250 Vps	250 Vps	10.0 sec
02.019	DSG-Lab	800.00 uA	0.00 V	-0.034 uA	0.08 V	Off		250 Vps	250 Vps	10.0 sec
02.020	DSG-Lab	1000.00 uA	0.00 V	-0.004 uA	1.32 V	Off		300 Vps	250 Vps	10.0 sec
02.021	DSG-Lab	1000.00 uA	0.00 V	0.004 uA	1.60 V	Off		250 Vps	250 Vps	10.0 sec
02.022	DSG-Lab	1000.00 uA	0.00 V	-0.046 uA	1.48 V	Off		250 Vps	250 Vps	10.0 sec
02.023	DSG-Lab	1000.00 uA	0.00 V	-0.038 uA	1.05 V	Off		250 Vps	250 Vps	10.0 sec
02.024	DSG-Lab	1000.00 uA	0.00 V	-0.046 uA	1.32 V	Off		250 Vps	250 Vps	10.0 sec
02.025	DSG-Lab	1000.00 uA	0.00 V	-0.006 uA	1.25 V	Off		250 Vps	250 Vps	10.0 sec
02.026	DSG-Lab	1000.00 uA	0.00 V	0.002 uA	1.82 V	Off		250 Vps	250 Vps	10.0 sec
02.027	DSG-Lab	1000.00 uA	0.00 V	-0.002 uA	2.00 V	Off		250 Vps	250 Vps	10.0 sec

Channels being tested

Changes in SVMMax Values ~45 minutes into Test

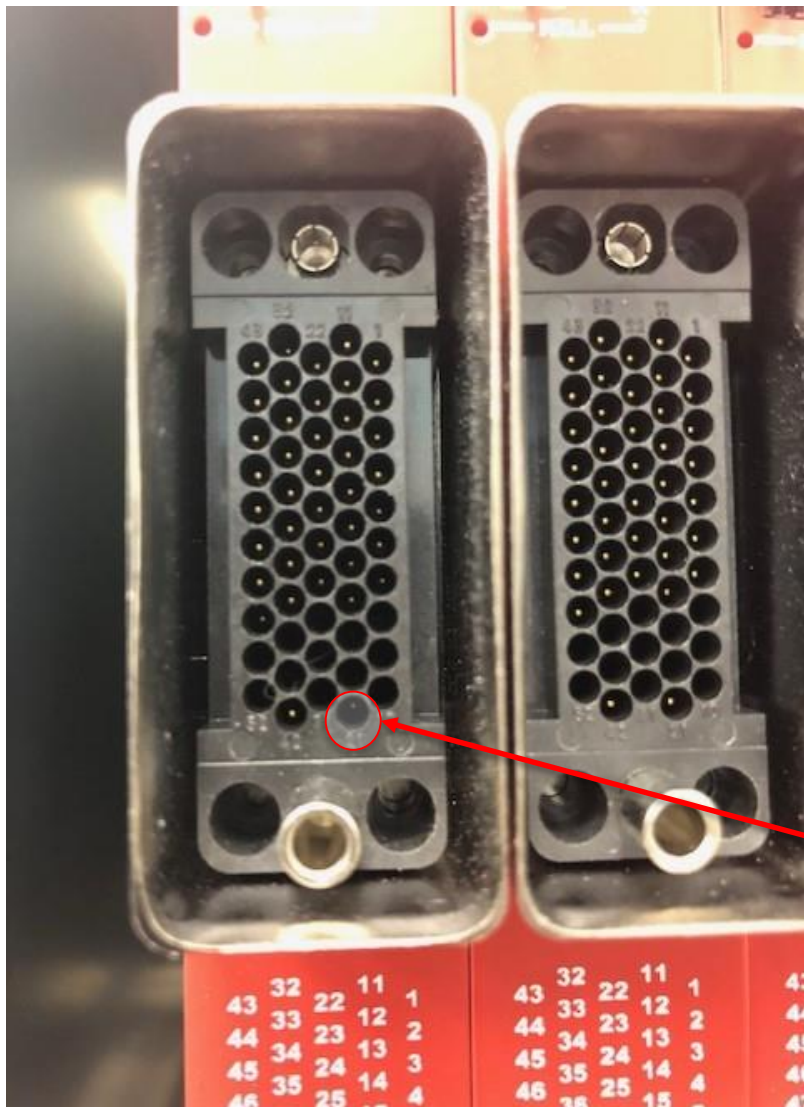
hvacentest2

Custom	VMon	Pw	Status	RUp	RDWn	Trip	V1Set	I1Set	SVMMax	POn
01.034	1.23 V	Off		250 Vps	250 Vps	3.0 sec	0.00 V	101.00 uA	1800 V	Dis
01.035	0.57 V	Off		250 Vps	250 Vps	3.0 sec	0.00 V	101.00 uA	1800 V	Dis
02.000	1.31 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.001	1.32 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.002	1.20 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.003	1.42 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.004	0.36 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.005	1.57 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.006	1.62 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.007	1.11 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.008	1.26 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.009	1.57 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.010	1.66 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.011	1.24 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.012	1.32 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.013	1.14 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.014	1.61 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	900 V	Dis
02.015	1.25 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.016	0.71 V	Off	Pwr Fail	250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	En
02.017	1.29 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.018	1.34 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	100 V	Dis
02.019	0.06 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.020	1.39 V	Off		300 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.021	1.19 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.022	1.47 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.023	1.35 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.024	1.30 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.025	1.27 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.026	1.62 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis
02.027	2.06 V	Off		250 Vps	250 Vps	10.0 sec	0.00 V	101.00 uA	3000 V	Dis

Channels being tested



Radial 52 Pin Connector Issue



- Connector's pin retention inadequate.
- Installing process of mating connector often pushes pins backwards.
 - Common on the safety loop contacts.

Safety loop contact pushed in

CAEN Application Note for R52 Plug Assembly

CAEN 
Tools for Discovery

Application Note AN6224
Mount A996 (52 pin cable connector)
on a high voltage cable

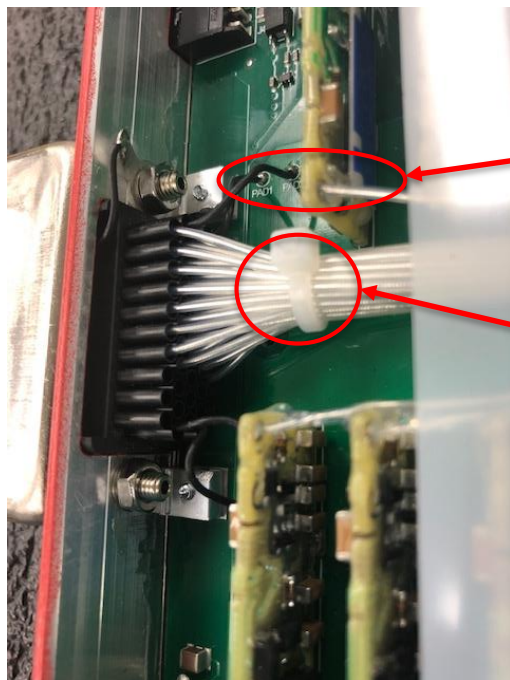
- CAEN recognized issue (Application Note AN6224 3/2017).
- Instructs end user to epoxy connectors to prevent pushback.

Step 17

Fix Plug connector (2)
The figure shows the plug connector [A1] with high voltage single cables glued and blocked



epoxied connector



Safety loop and returns have no strain relief.

Strain relief.

R52 connector of an A7030TN module

Conclusion

- Detected issues with software/firmware of the SY4527.
- Noticed issue with Radiall 52 pin connectors.
 - CAEN acknowledged Radiall connector issue, but does not apply that information to manufacturing process of HV module.