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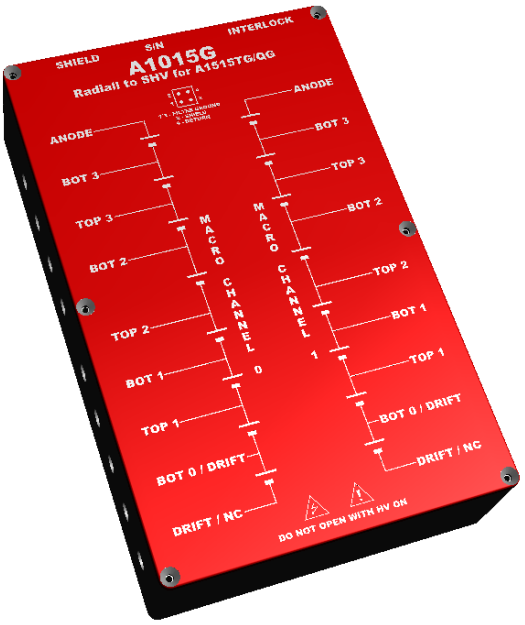
Electronic Instrumentation



A1015G & A1015 14/16 Channel Multipin Radiall to SHV Connector Adapters for A1515 HV Boards Series

Rev. 4 - 18 May 2020

Purpose of this Guide

This document is the A1015G & A1015 14/16 Channel Multipin Radiall to SHV Connector Adapters for A1515 HV Boards Series

User's Manual; it contains information about the installation, the configuration and the use of the board.

Change Document Record

Date	Revision	Changes
8 July 2016	0	PRELIMINARY RELEASE
2 February 2017	1	Updated Technical Specifications
15 March 2017	2	Updated Safety and installation requirements, Filtering on the load, A1015 specs.
18 June 2019	3	Updated Technical Specifications
18 May 2020	4	Updated pictures

Reference Documents

SY4527 Quickstart Guide

SY4527 User Manual

A1515 User Manual

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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

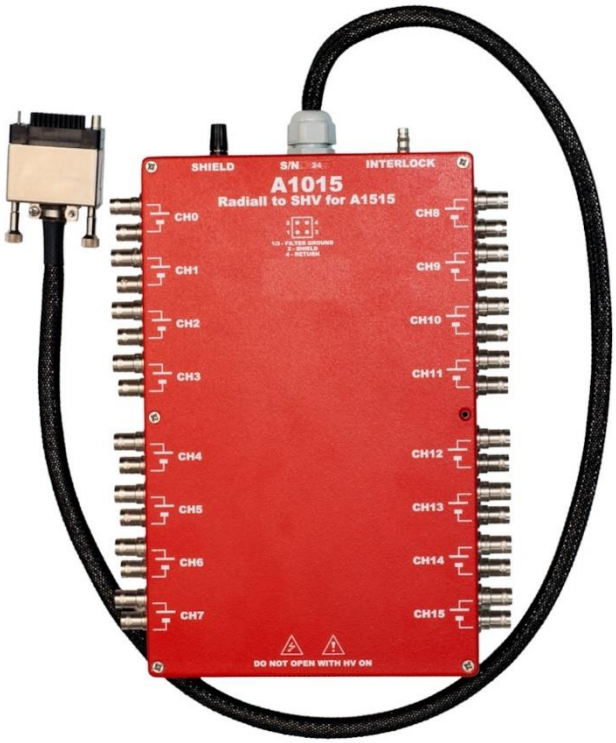
Installation

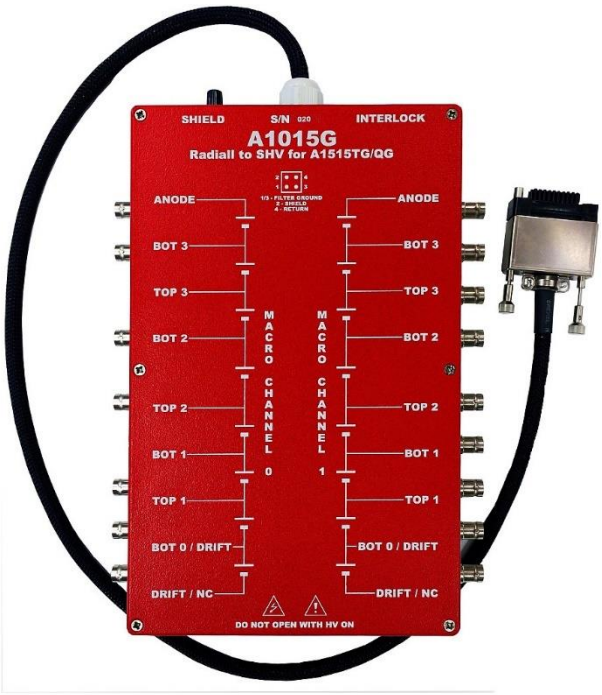
The CAEN Mod. A1015G is a 14/16 Stacked Channel Multipin Radiall to SHV connector Adapter for the A1515TG and A1515QG power supply modules.

The CAEN Mod. A1015 is a 16 Floating Channel Multipin Radiall to SHV connector Adapter for the A1515 power supply series.

N.B.: All cable connections must be done when SYx527 power is OFF!

Overview





The CAEN A1015G is a 14/16 Stacked Channel Multipin Radiall to SHV connector Adapter for the A1515TG and A1515QG power supply modules; it allows to adapt the Radiall 691803004 type Multipin connector into Radiall SHV R317580-type HV coaxial connectors. Moreover, it is possible to configure the output stages with a RC filter. Please check the internal settings before each use.

The CAEN Mod. A1015 is a 16 Floating Channel Multipin Radiall to SHV connector Adapter for the A1515 power supply series; it allows to adapt the Radiall 691803004 type Multipin connector into Radiall SHV R317580-type HV coaxial connectors.

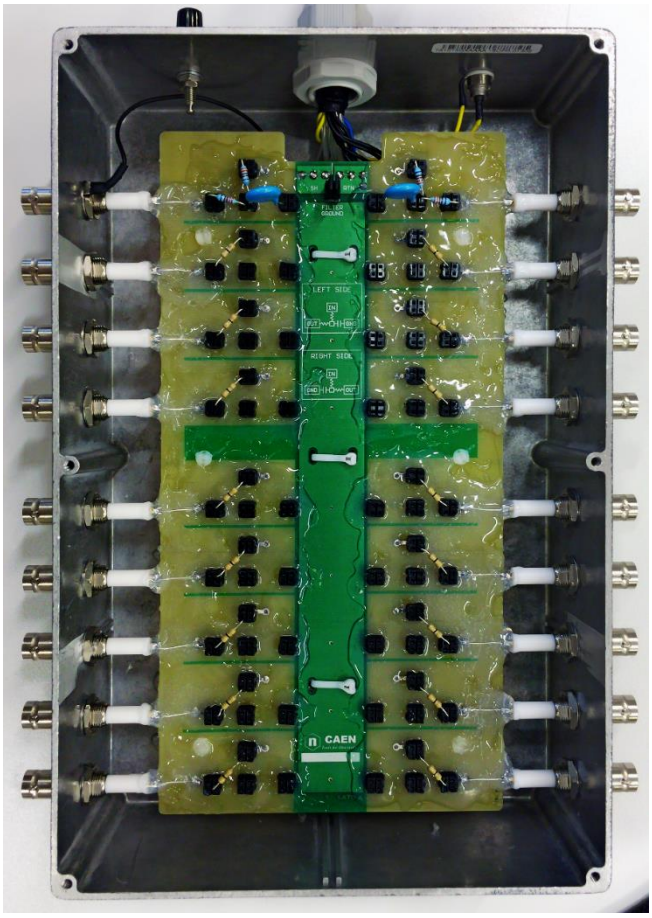
Packaging

The A1015 series adapters are housed in a shielded box for desktop use; the cabled Radiall Multipin connector must be inserted into the A1515s' HV output connector. HV channels are provided through the SHV connectors, refer to the A1515 User manual for channels' description.

Output filtering (A1015G)

N.B.: it is MANDATORY to disconnect the A1015G from the A1515 power supply channels PRIOR to begin output filter configuration.

The output stages of the A1015G can be provided with a RC filter; for this purpose, unscrew the upper cover to have access to the internal circuitry:

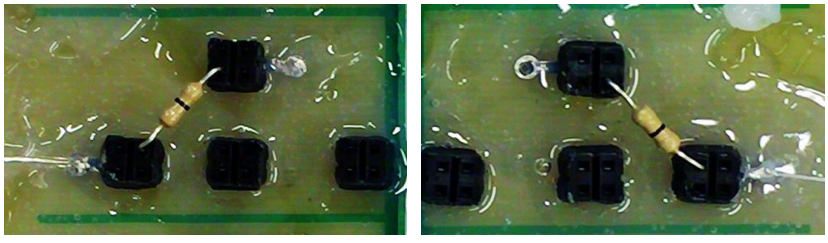


Each output stage can be configured as “direct” or “filtered”; see below:

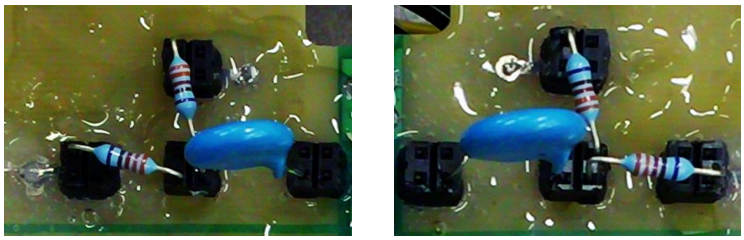
Left side **Right side**

Filter scheme

Direct Output



Filtered Output

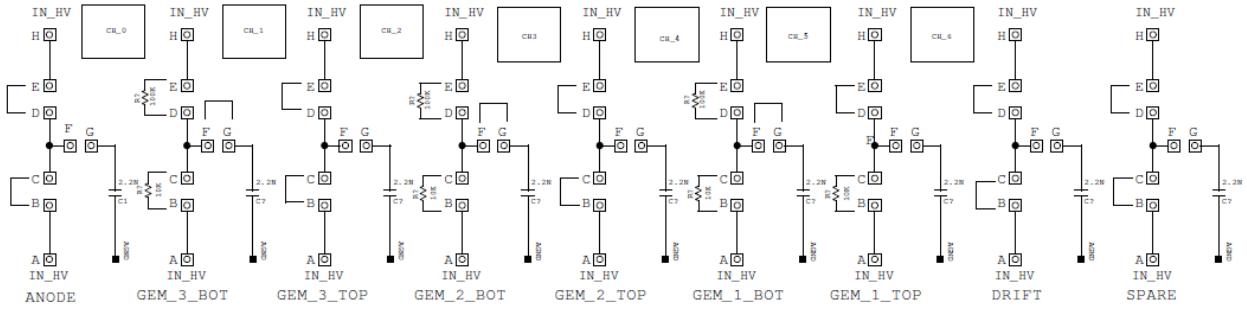


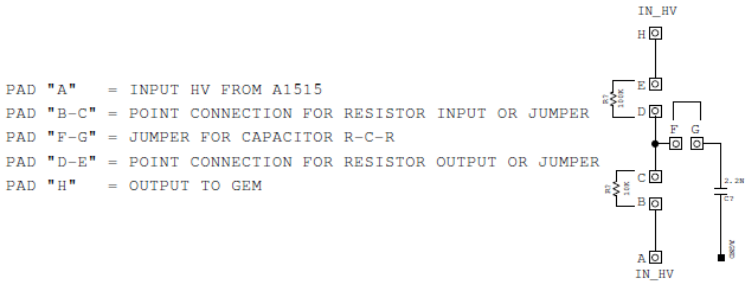
Moreover, two jumpers allow to connect the filter GND to the RTN and Shield references of the Radiall Multipin connector (refer to A1515 User manual for details):

Once the Internal settings are done, close the upper cover with screw before turning HV ON.

Filtering on the load (A1015G)

Although the A1515 ripple is quite low, it is suggested to introduce a R-C-R filter in the detector vicinities, to reduce further common mode noise.
The correct values of the filtering components should be evaluated in the experimental area, with the actual detector and the foreseen gain and rate values.
The following scheme reports the filter used for RD 51 and Tif-CMS test set ups (CERN): only BOTTOMs and GEMs are filtered; on the TOPs, the resistors, implemented to limit the discharge inside the GEM, manage to reduce the residual noise.





External Connections

Technical features	
Mechanics	Desktop module; aluminium case 275x175x63mm^3 ; weight ~1.7kg
Input connector	52-pin Radiall 691802002 [SCEM 09.41.34.700.2]
Output connectors	Radiall SHVR317580-type HV coaxial
INTERLOCK	00-type LEMO connector; insert 50Ohm termination (provided with the kit) to refer INT_A to INT_B pin of the 52-pin Radiall 691802002 (see also board manual)
Shield	Industrial Terminal for 4mm plug and wire connection up to 2mm Ø; the terminal is connected with chassis and multipin cable shield. It can be referred to GND or RETURN (see also A1515 board manual)
Cable	HV type, shielded, ~100cm length
Maximum ratings	5 kV
Refer to A1515 User manual for further details	

CAEN SpA is acknowledged as the only company in the world providing a complete range of High/Low Voltage Power Supply systems and Front-End/Data Acquisition modules which meet IEEE Standards for Nuclear and Particle Physics. Extensive Research and Development capabilities have allowed CAEN SpA to play an important, long term role in this field. Our activities have always been at the forefront of technology, thanks to years of intensive collaborations with the most important Research Centres of the world. Our products appeal to a wide range of customers including engineers, scientists and technical professionals who all trust them to help achieve their goals faster and more effectively.

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