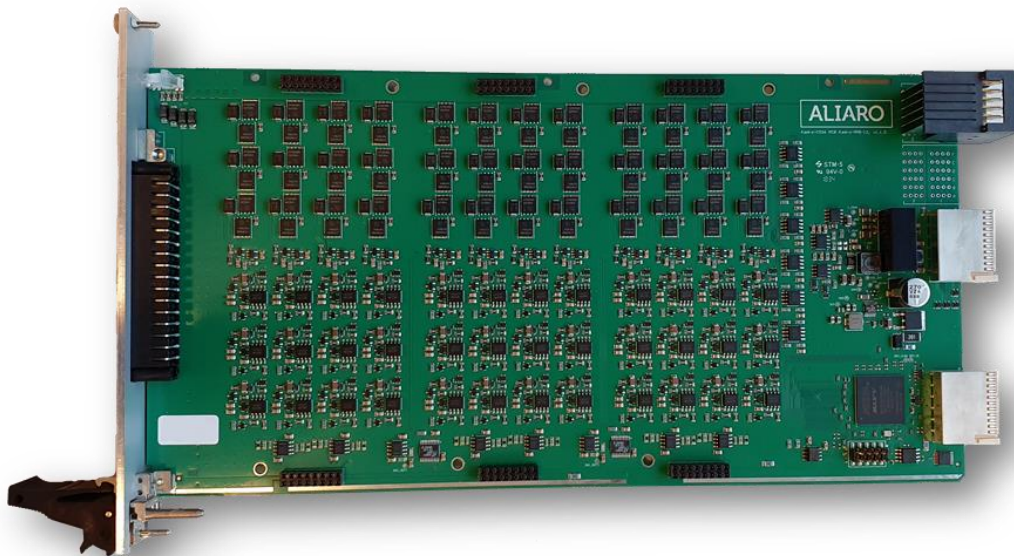


12 Channels Power Switch Board

AL-1020 for SLSC

This document describes the SLSC AL-1020 board for National Instruments SLSC-12001 chassis.



Definitions

Warranted specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

The following characteristic specifications describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- Typical specifications describe the performance met by a majority of models.
- Nominal specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are *Typical* unless otherwise noted.

Conditions

Specifications are valid under the following conditions unless otherwise noted.

The AL-1020 module is mounted in an SLSC chassis with the recommended cooling clearances and using a power supply that meets the specifications provided in the chassis user guide for the entire temperature range of the chassis.



Note These specifications only apply to the product as provided by Aliaro. Modifications to the module may invalidate these. Be certain to verify the performance of modified modules.




Caution Observe all instructions and cautions in the user documentation. Using the model in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to Aliaro for repair.

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Aliaro reserve the right to vary from the description given in this data sheet and shall not be liable for any errors.

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Description

Designed for applications where you control the power on and off the Devices under Test under testing.

Features

- ✓ 60V, 10A per channel
- ✓ 12 independent and isolated channels in three banks
- ✓ Two power source buses per bank with switches to each channel
- ✓ Power On/Off for each channel
- ✓ Programmable level threshold on each channel
- ✓ Parallel connection possibility for high current signals
- ✓ LabVIEW driver included

Detailed description

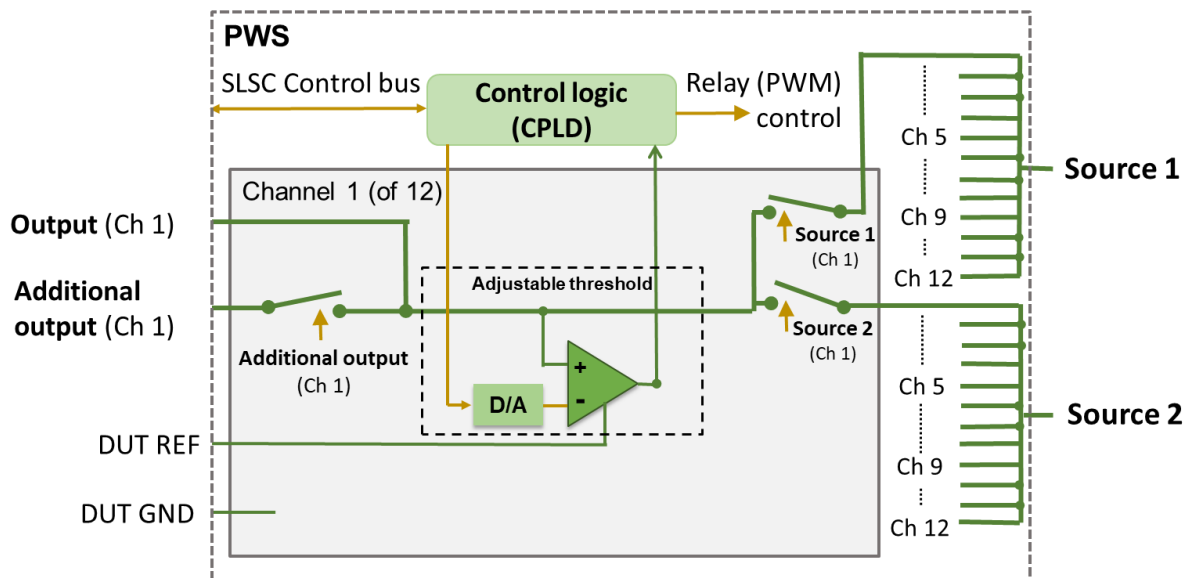
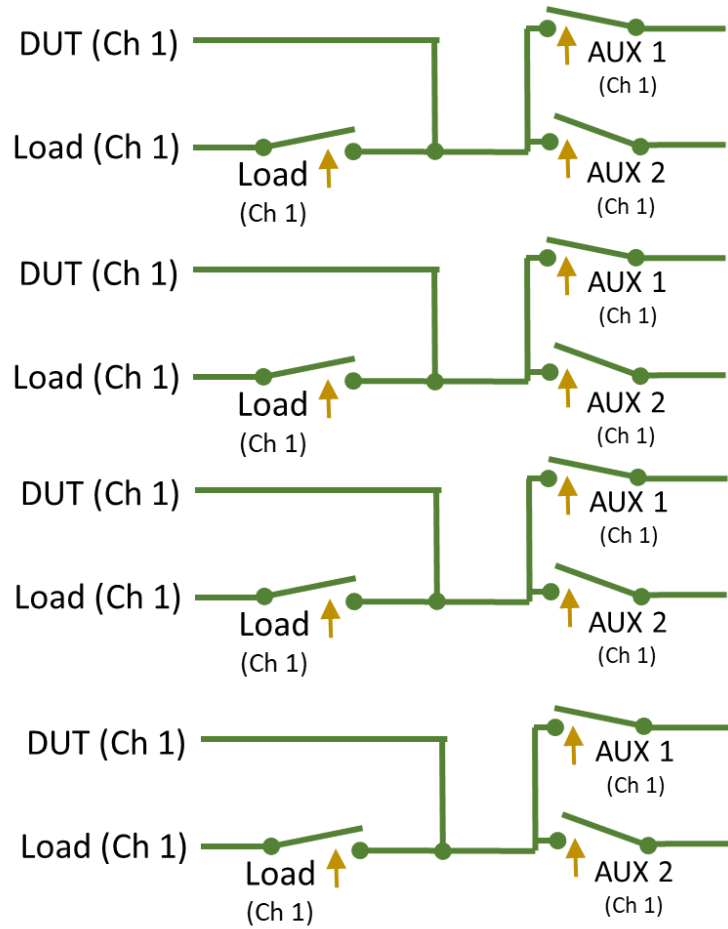


Figure 1, AL-1020 Block diagram

The AL-1020 board provides power switching of up to 40A / 60V

Functions:

- 12 channels power switching of two power sources
- Possible to configure parallel channels 2/4 in order to switch 20A / 40A
- Status monitoring with adjustable threshold
- Additional output switch of each channel



Installation

Electromagnetic Compatibility

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential or commercial areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any modifications to the product not expressly approved by Aliaro could void your authority to operate it under your local regulatory rules.



Caution To ensure the specified EMC performance, operate this product only with Shielded cables and accessories.

Unpacking the module

- Carefully inspect the shipping container and the module for damage. Check for visible damage
- to the exterior and interior of the damage. If damage appears to have been caused during
- shipment file a claim with the carrier. Retain the packing material for possible inspection
- and/or reshipment. If the chassis is damaged, do not install it and contact Aliaro.

Hardware Installation

To set up and use the module you need the following items:

Hardware

- – SLSC-12001 chassis
- – SLSC module(s)
- – Power cable
- – Power input connector
- – Grounding wire
- – Grounding lug

Tools

- – Screwdriver as needed for your application
- – Wire stripper

Documentation

- – SLSC-12001 Chassis Getting Started Guide and Specifications

Caution:



Do not touch the contacts or remove the I/O boards or cables while the system is energized.

The SLSC chassis and the AL-1020 do not support hot plug-in. The entire chassis must be powered off when a module is inserted or removed.

Installing the AL-1020



Caution Do not touch the contacts or remove the I/O boards or cables while the system is energized.

1. Power off the main DC power source or disconnect the power source from the chassis before installing any modules or RTIs.
2. Ensure that the chassis is powered off. The POWER LED should be off. If the POWER LED is not off, do not proceed until it is off.



Notice The SLSC chassis and the AL-1020 do not support hot plug-in. The entire chassis must be powered off when a module is inserted or removed.

3. Loosen the screws on the upper rear panel of the chassis.
4. Position the RTI backplane at the desired slot and insert the securing screws, but do not fully tighten them.
5. Insert a KADRO-PWS-16 module into the same slot as its corresponding RTI while firmly holding the RTI in place until the RTI is firmly connected to the module.

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6. Repeat steps 4 and 5 for all required RTIs.
7. Fully tighten the screws for all RTIs and the upper rear panel of the chassis. Note Waiting until all RTIs and modules are installed to fully tighten the screws ensures proper alignment for future connections between modules and RTIs.

Software Installation, SLSC LabVIEW drivers

When the module is used with LabVIEW or TestStand, Aliaro drivers need to be installed, see Aliaro driver installation instruction.

Software Installation, Aliaro custom devices

When KADRO-MPB-12 is used with VeriStand, Custom Devices needs to be installed, see the Custom Device installation instruction.

Software Installation, Aliaro Configurator (Option)



Note Description of the Aliaro Configuration can be found on www.aliaro.com

System Check

Finnish the installation by conducting a system check, see chapter: *Maintenance*

Operation

Safety



Caution Observe all instructions and cautions in the user documentation. Using the model in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to Aliaro for repair.

Maintenance

System check, using LabVIEW

This chapter requires LabVIEW development and installation of Aliaro LabVIEW drivers

To identify and control that the cards are inserted and work properly with the right firmware, LabVIEW provides basic VI scripts to check SLSC cards mounted in chassis

1. Open LabVIEW and select “**Help**” in the top menu bar and press “**Find Examples...**” (This opens a new window with pre-built VI (Virtual Instruments) for different applications).

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2. Switch to the “**Search**” tab and enter keyword “**SLSC**” and double click.
3. In the new filtered table (to the right) find and select VI called “**Configuration.vi**”. This VI can located every card(s) that is online in SLSC chassis.
4. To find the newly inserted cards look for the SLSC chassis IP-address (in the table to the right).
5. Count the showing card(s) in the table and make up that there are as many mounted in the SLSC chassis as there are in the VI table for that specific IP address. (Can be 1 up to 11 cards per SLSC chassis)

Calibration

Recommended warm-up time	30 min
Calibration interval	Not required, recommended on system level

Specification

Definition and conditions

Warranted specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

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- Typical specifications describe the performance met by a majority of models.
- Nominal specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are *Typical* unless otherwise noted.

Specifications are valid under the following conditions unless otherwise noted.

The KADRO-MPB-12 module is mounted in an SLSC chassis with the recommended cooling clearances and using a power supply that meets the specifications provided in the chassis user guide. For the entire temperature range of the chassis.



Note These specifications only apply to the product as provided by Aliaro. Modifications to the module may invalidate these. Be certain to verify the performance of modified modules.



Caution Observe all instructions and cautions in the user documentation. Using the model in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to Aliaro for repair.

Environmental Characteristics

Temperature and Humidity

Operating temperature	0 °C to 40 °C
Storage temperature range	-40 °C to 85 °C
Operating relative humidity range	10% to 90%, noncondensing
Storage relative humidity range	5% to 95%, noncondensing

Physical characteristics

Category	Condition	Value
Module Dimensions	Excluding front handle	144.32mm x 30.48mm x 281 mm (H x W x D)
Front Panel Connector		1 x female Weidmuller 32 high density

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General specification

Category	Condition	Value
No of channels		12
No of banks		3
Power supply		24VDC, +/-5%
Max. Operating Voltage	Any pin	+ 60V
Min. Operating Voltage	Any pin	- 60V

Safety Guidelines



Caution Ensure that hazardous voltage wiring is performed only by qualified personnel adhering to local electrical standards.



Caution Do not mix hazardous voltage circuits and human-accessible circuits on the same module



Caution When device terminals are hazardous voltage LIVE, you must ensure that devices and circuits connected to the device are properly insulated from human contact.



Caution All wiring must be insulated for the highest voltage used.

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information.

To obtain product certifications and the DoC for Aliaro products, visit aliaro.com/certification.

CE Compliance

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)

Electromagnetic Compatibility Standards

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 55011-2009 Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement CISPR 11:2009
- EN 55032:2012 Electromagnetic compatibility of multimedia equipment - Emission requirements CISPR 32:2012
- EN 61326-1-2013 Electrical equipment for measurement, control and laboratory use - EMC requirements - Part 1: General requirements IEC 61326-1:2012