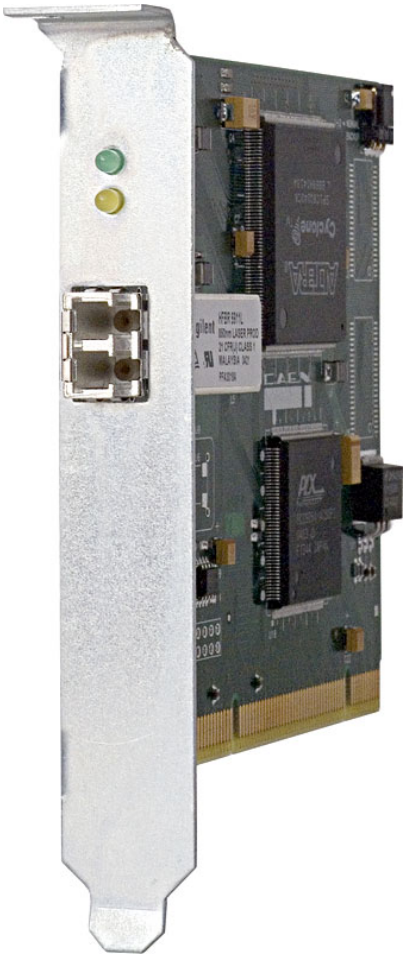
rev. 01 - 18/07/2008

A2818

PCI CONET Controller



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User Manual

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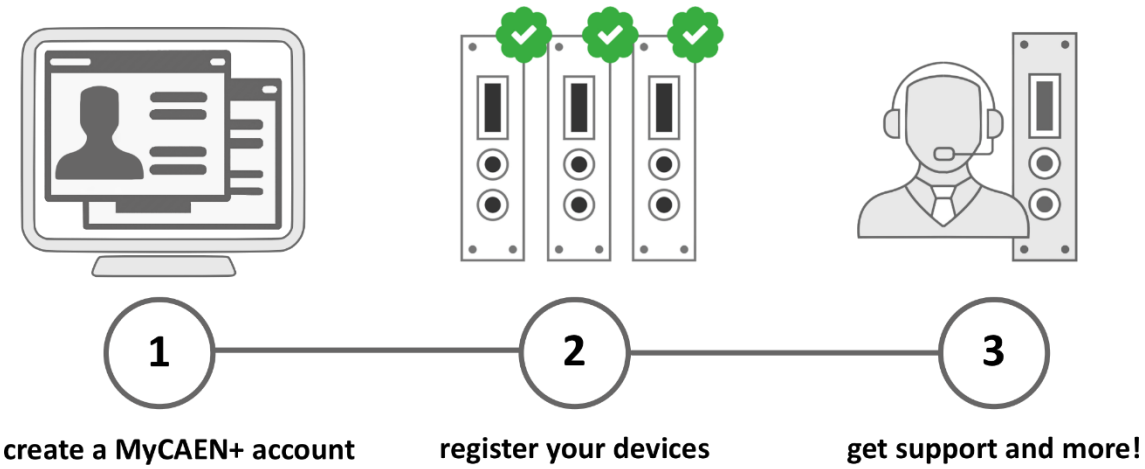
MyCAEN+ dashboard is designed to offer you a direct access to all our after sales services. Registration is totally free, to create an account go to https://www.caen.it/become-mycaenplus-user and fill the registration form with your data.



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Technical Information Manual

Revision n. 1
18 July 2008

MOD. A2818
PCI OPTICAL LINK

NPO:
00106/03:A2818.MUTx/01

CAEN will repair or replace any product within the guarantee period if the Guarantor declares that the product is defective due to workmanship or materials and has not been caused by mishandling, negligence on behalf of the User, accident or any abnormal conditions or operations.

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.

CE

CAEN reserves the right to change partially or entirely the contents of this Manual at any time and without giving any notice.

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1. Overview

The A2818 is a 32-bit 33 MHz PCI card which allows, through a standard PC, to handle up to 8 Front-end modules with CAEN built-in Optical Link (CONET Network).
The communication path uses optical fiber cables as physical transmission line (Mod. AY2705, AY2720, AI2705, AI2720).

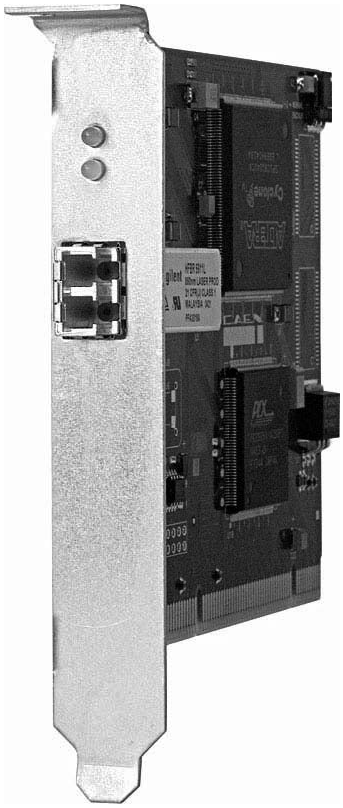

Fig. 1.1: Mod. A2818 PCI Optical Link

2. Configuration and installation

2.1. Getting started

The Mod. A2818 is a “Plug and Play” card, any Operating System detects its installation or removal from the PC automatically; the card does not need to be manually configured by the User.

2.2. CONET Layout

Up to 8 Modules can be controlled by one A2818 CONET controller. For this purpose, various types of cables are available:

Table 2.1: CONET cables specifications

Cable:	Length:	Connector:
X-20	20 m	1 LC Duplex + 2 LC Simplex
X-5	5 m	1 LC Duplex + 2 LC Simplex
I-20	20 m	2 LC Simplex
I-5	5 m	2 LC Simplex

If the network is composed by one A2818 and only one module then it is suggested to use X-type cables: such cables have a duplex connector on the A2818 side and two simplex connectors on the crate side; the simplex connector with the black wrap is for the RX line and the one with the red wrap is for the TX; if more than one module is present, the best solution is to use the X-type cable for connecting the A2818 with the first and the last module and the I-type for connecting intermediate modules, as shown in Figure.

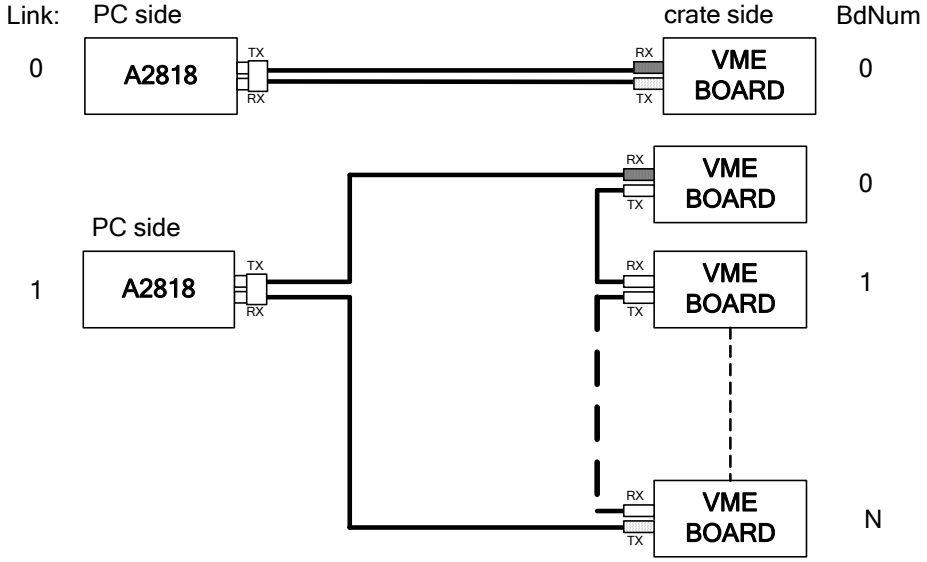

Fig. 2.1: CONET cables layout

2.3. Internal jumpers

Firmware sel. jumper allows to select whether the “Standard” or the “Back up” firmware must be loaded at power on; jumpers’ position is shown in Fig. 3.3. The A2818 is supplied by the PCI bus; Power supply jumper allows to select the power supply (+3.3V or +5V); if you are using a +5V PCI bus, then jumper position must be 1-2, if you are using a +3.3V PCI bus, then jumper position must be 2-3; please refer to the used PCI bus specification in order to select the proper power supply.

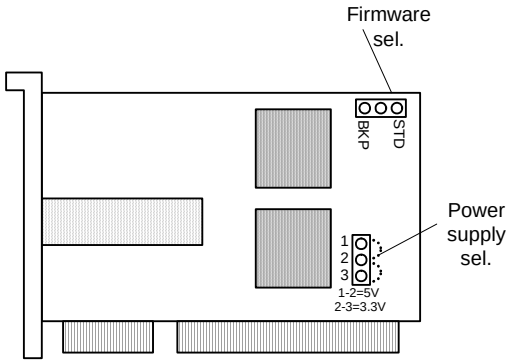

Fig. 2.2: Component Location

2.4. Front panel components

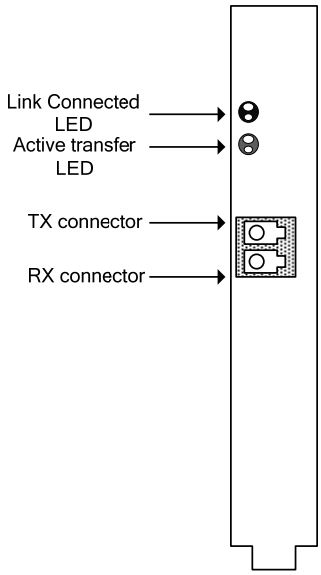

Fig. 2.3: Led and connector location

TX/RX: LC type connector; to be used with Multimode 62.5/125µm cable with LC connectors on both sides

Leds: green = connection active, yellow = data transfer (active = ON)

2.5. Hardware installation

The card must be plugged into one PCI slot (either 5 V or 3.3 V supplied) of the PC motherboard.

1. The A2818 is a plug-and-play PCI card and must be plugged into one PCI slot (either 5 V or 3.3 V supplied) of the PC motherboard.
2. Connect the TX connector of the A2818 to the RX connector of the first Module of the CONET network, via the optical fiber cable.
3. If you are using I-type cables, then connect the TX connector of the first Module of the CONET network to the RX connector of the second Module (if existing) and so on, until the last module in the chain, whose TX connector must be connected to the A2818 RX connector ; if only one Module is present, then its TX connector must be connected to the RX connector of the A2818.
   If you have only one Module in your network and you are using X-type cables, then simply plug it into the TX/RX connectors of the A2818 and Module.
4. Now the network is ready for operation.

2.6. Firmware upgrade

The A2818 PCI board can store two firmware versions each, called STD and BKP respectively; at Power On, a microcontroller reads the Flash Memory and programs the module with the firmware version selected via the relevant jumper, which can be placed either on the STD position, or in the BKP position. It is possible to upgrade the board firmware via optical link, by writing the Flash; for this purpose, download the software package available at: http://www.caen.it/nuclear/software_download.php

CAENVMEUpgrade A2818 <PCI INDEX> A2818PCB_RevXY.rbf [standard|backup] *for the A2818*
The PCI INDEX refers to the PCI slot of the A2818 and depends on the PC host motherboard; the first A2818 plugged in the PC motherboard has PCI INDEX=0, whatever the slot.
If an error occurs during the upgrading, turn off and then on the board (it might be necessary to shift the jumper in order to launch the non-corrupted resident firmware) and then try again. Upgrades become effective after a Power cycle.
N.B.: it is strongly suggested to upgrade ONLY one of the stored firmware revisions (generally the *Standard* one): if both revision are simultaneously updated, and a failure occurs, it will not be possible to upload the firmware via optical link again!

2.7. Software installation

The Optical Link can be operated through the CAENVMELib library: a set of ANSI C functions which permits an user program the use and the configuration of the modules.
The CAENVMELib, is available in the following formats:

- Win32 DLL (CAEN provides the CAENVMELib.lib stub for Microsoft Visual C++ 6.0)
- Linux dynamic library

CAENVMELib is logically located between an application like the samples provided and the device driver.

Refer to the VME modules User's manual for the list and the description of the supported functions.

In order to install CAENVMELib library:
Place the CD provided with the VME modules in the CD tray in your PC
Click on "Programmer's Interface" on the MAIN MENU in order to install the provided Software Library, which allows experienced developers to build their own applications for the module control; a C example program file is installed too.

The CD also includes also a Demo Software; an "user friendly" interface which allows an easy and immediate control of the module.

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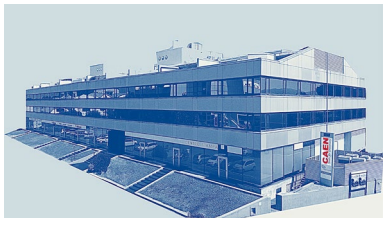

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