LYNXTechnik AG

Broadcast Television Equipment

Reference Manual

S VD 5842

3GBit/s SDI 4>2 Input Switch

Revision 1.1
February 2011

This Manual Supports Device Revisions:	
S VD 5812 Firmware Revision	422
Control System GUI Release	4.9.0

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Contents

Warranty

LYNX Technik AG warrants that the product will be free from defects in materials and workmanship for a period of three (3) years from the date of shipment. If this product proves defective during the warranty period, LYNX Technik AG at its option will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, customer must notify LYNX Technik of the defect before expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by LYNX Technik, with shipping charges prepaid. LYNX Technik shall pay for the return of the product to the customer if the shipment is within the country which the LYNX Technik service center is located. Customer shall be responsible for payment of all shipping charges, duties, taxes and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure, or damage caused by improper use or improper or inadequate maintenance and care. LYNX Technik shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than LYNX Technik representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non LYNX Technik supplies; or d) to service a product which has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty servicing the product.

THIS WARRANTY IS GIVEN BY LYNX TECHNIK WITH RESPECT TO THIS PRODUCT IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED. LYNX TECHNIK AND ITS VENDORS DISCLAIM ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. LYNX TECHNIK`S RESPONISIBILITY TO REPAIR AND REPLACE DEFECTIVE PRODUCTS IS THE SOLE AND EXCLUSIVE REMEDY PROVIDED TO THE CUSTOMER FOR BREACH OF THIS WARRANTY. LYNX TECHNIK AND ITS VENDORS WILL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTIAL, OR CONSEQUENTIAL DAMAGES IRRESPECTIVE OF WHETHER LYNX TECHNIK OR THE VENDOR HAS ADVANCE NOTICE OF THE POSSIBILITY OF SUCH DAMAGES.

Regulatory information

Europe

Declaration of Conformity

We LYNX Technik AG
Brunnenweg 3
D-64331 Weiterstadt
Germany

Declare under our sole responsibility that the product

TYPE: **S VD 5842**

To which this declaration relates is in conformity with the following standards (environments E1-E3):

EN 55103-1 /1996
EN 55103-2 /1996
EN 60950-1 /2006

Following the provisions of 89/336/EEC and 73/23/EEC directives.

Winfried Deckelmann

Weiterstadt, October 2010

Place and date of issue *Legal Signature*

USA

FCC 47 Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense

Getting Started

Most CardModules are installed into the rack frames and system tested in the factory. If this is an upgrade part, or service exchange item then the module is supplied in a padded cardboard carton which includes the CardModule, rear connection plate and mounting screws.

Packaging

The shipping carton and packaging materials provide protection for the module during transit. Please retain the shipping cartons in case subsequent shipping of the product becomes necessary. Do not remove the module from its protective static bag unless observing adequate ESD precautions. Please see below.

ESD Warning

This product is static sensitive. Please use caution and use preventative measures to prevent static discharge or damage could result to module.

Preventing ESD Damage

Electrostatic discharge (ESD) damage occurs when electronic assemblies or the components are improperly handled and can result in complete or intermittent failure.

Do not handle the module unless using an ESD-preventative wrist strap and ensure that it makes good skin contact. Connect the strap to any solid grounding source such as any exposed metal on the rack chassis or any other unpainted metal surface.

Caution
Periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 Megohms.

Product Description

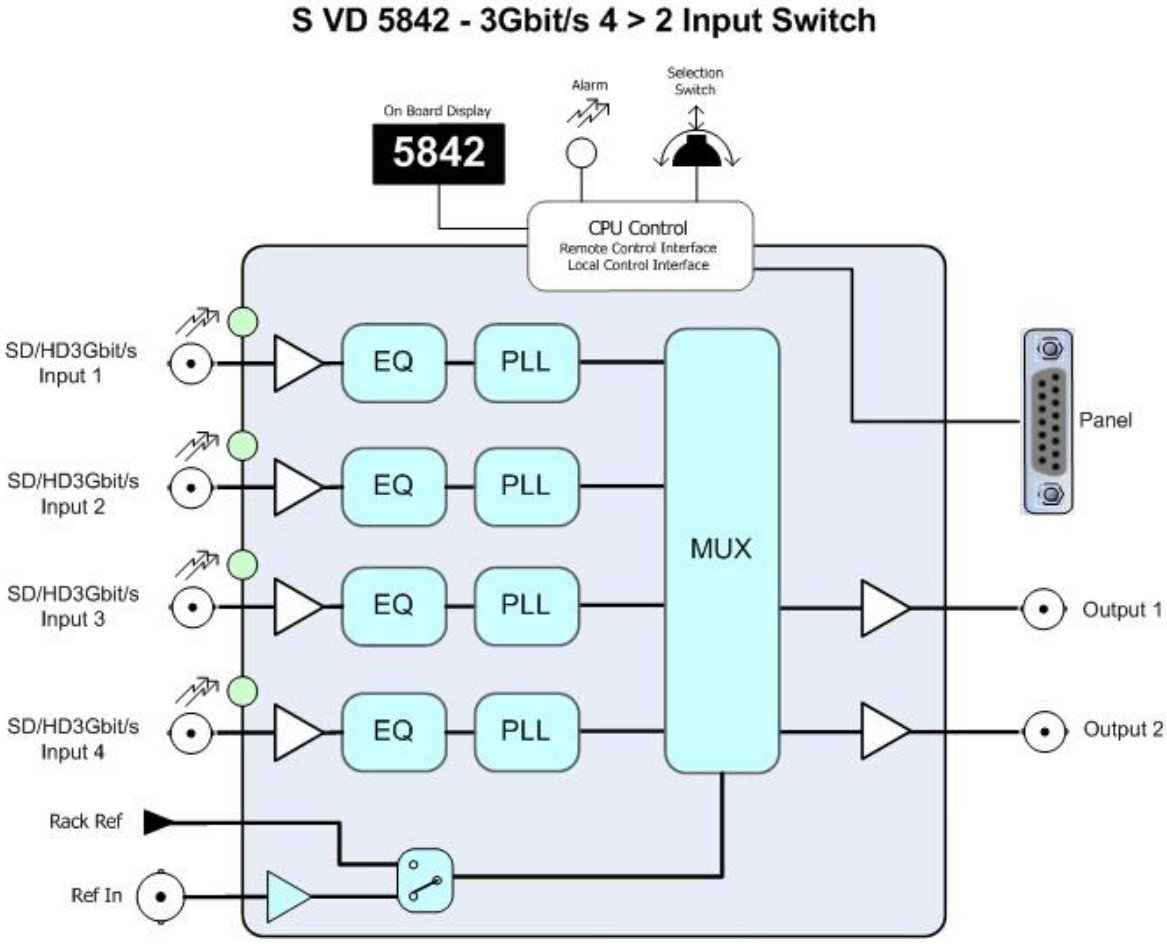
The S VD 5082 is a high quality 3GBit/s / HD / SD SDI/ASI digital video 4 > 2 input switch designed primarily for broadcast and professional applications.

The S VD 5082 has 4 inputs for digital video signals, which can be switched to two independent outputs. A second input can be selected for emergency switching. Outputs can be reclocked, or non-reclocked. Auto detection of standard digital video bit rates in reclocked mode (270Mbit/s, 1.485GBit/s, 2.97GBit/s) and will transparently pass data from 50Mbits/s to 2.97 Gbits/s in non-reclocked mode.

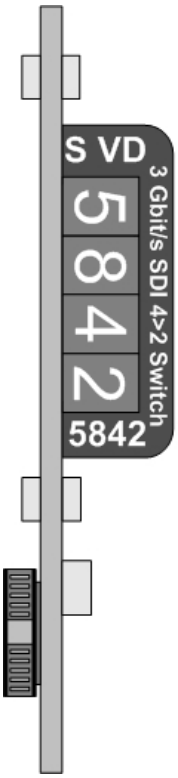
An analog reference input allows clean switching for synchronous inputs.
Inputs can be switched either via LYNX Control System and the associated PC GUI SW (LYNX c3_local) or via an optional remote control panel R CP 5842.

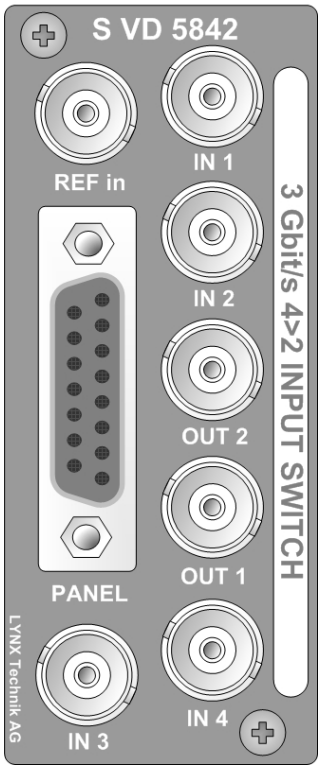
The S VD 5842 is part of the 5000 series of CardModules, which offer high quality, modularity and flexibility in a small form factor ideal for applications where space is at a premium.

Functional Diagram



Module Layout





Module Front **Termination Panel**

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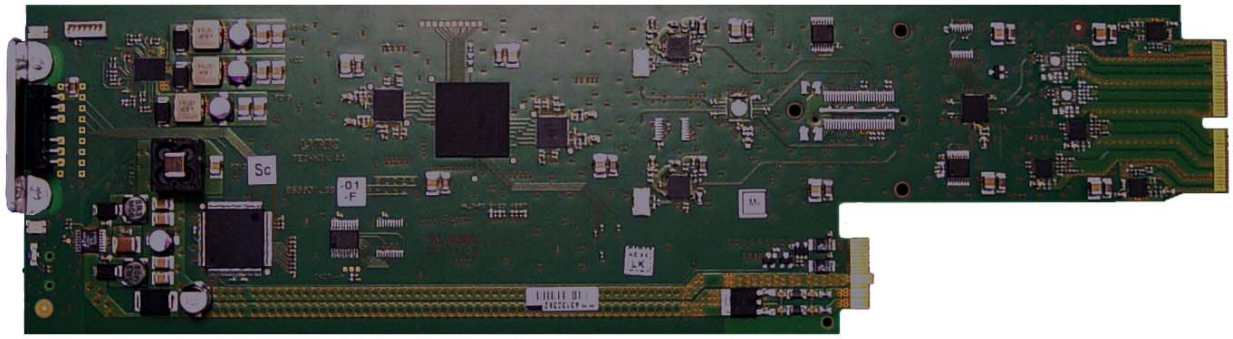


CardModule

Connections

Video

The S VD 5842 uses standard 75 Ohm BNC connectors. We recommend the use of high quality video cable for digital video connections to reduce the risk of errors due to excessive cable attenuation. Max cable lengths the module will support are shown below.

SDTV = 250m Belden 8281 (270Mbits/s)
HDTV = 140m Belden 1694A (1.485Gbits/s)
3GBit/s = 80m Belden 1694A (2.97Gbits/s)

Note. *Due to the compact design of the connection plate it will be necessary to use a connection tool to secure the BNC video connectors.*

Installation

If this module was supplied as part of a system it is already installed in the rack enclosure. If the module was supplied as a field upgrade please follow the installation procedure below.

NOTE *Observe static precautions when handling card. Please see ESD warnings on Page 5.*

Each Card Module is supplied with a rear connection panel and two mounting screws. Please follow the following procedure for installation of the card module into the Series 5000 Card Frame.

1. Select a slot in the card frame where the CardModule will be located.
2. Remove the blank connection panel from the rear of the rack (if fitted)
3. Install the rear connection panel using the screws supplied. Do not tighten the screws fully
4. Slide the card module into the card frame and carefully check the CardModule connects to the rear connection plate. The card should fit easily and should not require excessive force to insert, if you feel any resistance, there could be something wrong with the rear connection panel location. Do not try and force the connection this may damage the connectors. Remove the rear connection panel and check alignment with the CardModule.
5. Insert and remove the CardModule a few times to ensure correct alignment and then tighten the two screws to secure the rear connection plate.

Settings and Control

The S VD 5842 has an integrated micro-controller, which enables the module to be configured and controlled locally using the multifunction switch and 4 character dot matrix display, or from remote when using one of the optional controllers and control software.

Once set, all settings are automatically saved in non-volatile internal memory. (Flash ram) The module will always recall the settings used prior to power down.

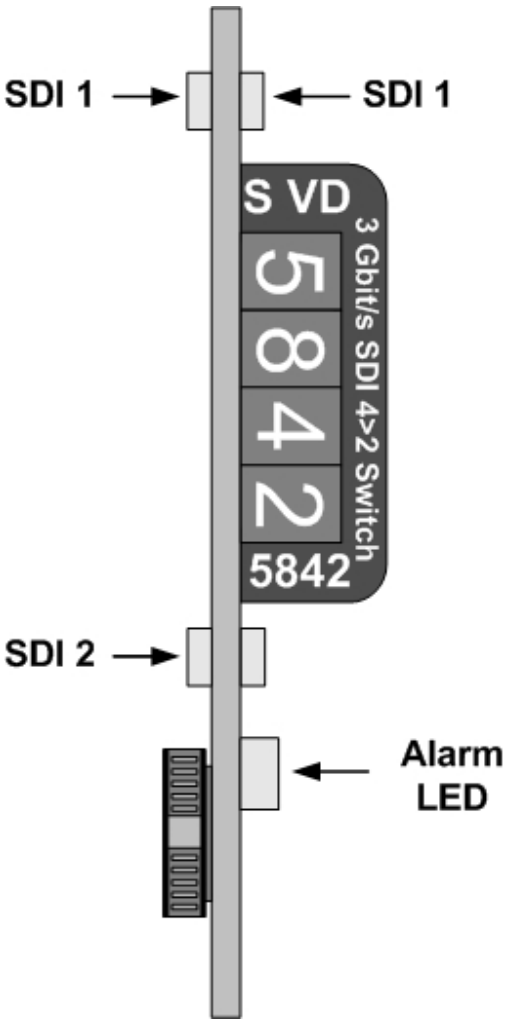
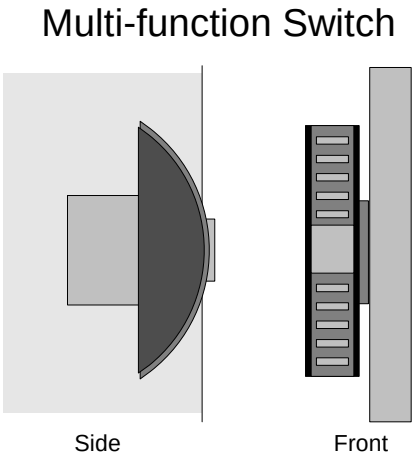


Figure 3 – Switch and Display Location

Multi Function Switch

The CardModule is equipped with a multi-function switch located on the front bottom edge of the card (refer to figure 3)



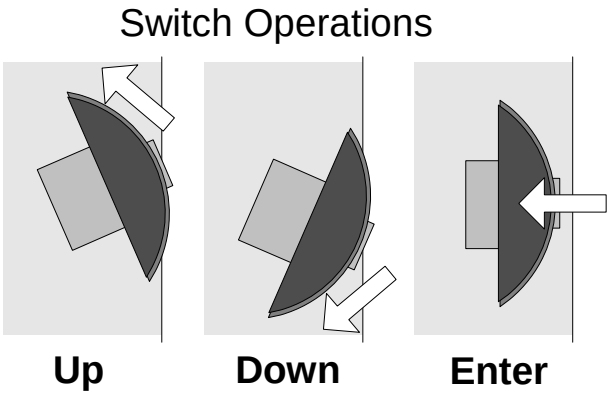


Figure 4 – Switch Operation

Figure 3 – Switch and LED locations

Using the Local Display Menus

Making local adjustments to the module is done using the multifunction switch and the integrated 4-character dot matrix display (figure 3).

The menu system is layered, and navigation through the system is done using the **UP** and **DOWN** functions of the switch. **ENTER** is used to move between menu levels and also enter a selection.

Navigation

Switch Function	Operation
UP	Move UP within a level
DOWN	Move down within a level
ENTER	Change levels / Make selection

Menu Structure

The Menu structure is defined in the next table, and can be used to help navigating through the menu system.

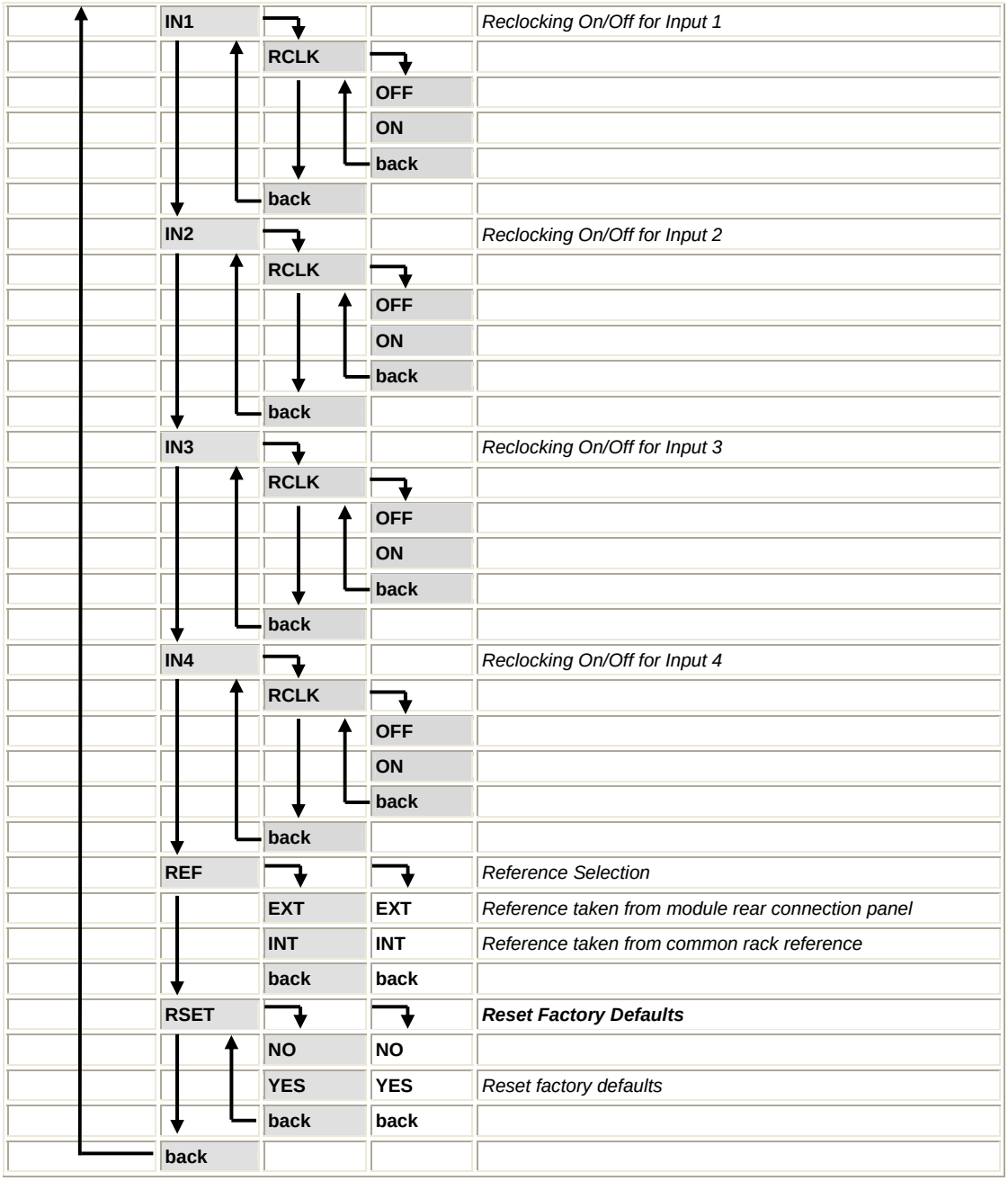
ENTER moves between levels

UP/DOWN moves between items within the level

When a new setting is entered the system will jump back one level in the menu system.

- The “back” selection in the menu structure will take you back one level when selected.
- When an item is selected which has several setting possibilities the first value displayed will be the value currently stored in the system. The order of the available settings for any menu item in the table supplied does not represent the order the settings will actually be displayed.
- If left unattended, the menu will default to the root display after a short timeout.

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	Notes
S VD 5842				***Root Display***
	OUT1			*Select Input Channel for Output1*
		IN1		
		IN2		
		IN3		
		In4		
		back		
	OUT2			*Select Input Channel for Output2*
		IN1		
		IN2		
		IN3		
		In4		
		back		



Auto Store

If no parameters are changed for 10 seconds then the current settings will be written into flash memory automatically, this can be seen by the channel status LEDS flashing yellow four times.

Alarm/LED Status Indicators

The S VD 5842 module has integral LED indicators, which serve as alarm and status indication for the module. Function is described below.

Channel Condition Indicators

4 status LEDs are provided on the top edge of the module, one for each channel (figure 3)

LED Color	Indication
Green	Input Present
Yellow	Input incompatible to reference (if attached)
Red	Input missing

Alarm Indicator

There is also a single alarm LED on the lower edge of the module (figure 3). This is visible through the card frame front cover and provides a general indication of the module status.

LED Color	Indication
Green	All Signals Present (locked)
Yellow	One signal or more signals missing
Red	All Input signals missing

LED **OFF** indicates power is lost, or there is a power supply fault.

Remote Control Panel

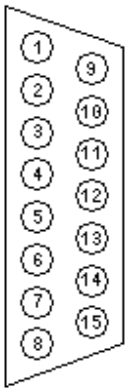
A remote control panel can be connected to the S VD 5842 via the SubD 15 female connector on the connection plate of the S VD 5842.
Below is a description of the required connections.

There are two versions possible:

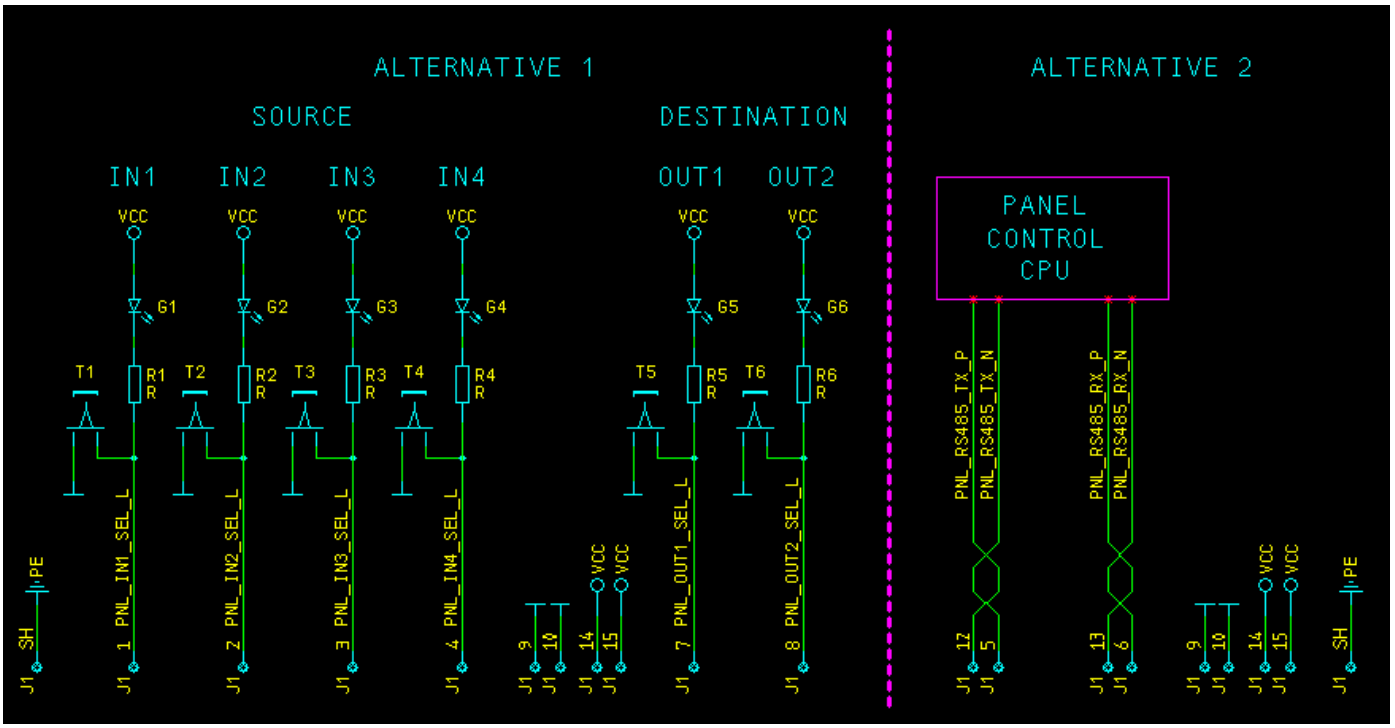
- a simple panel driven directly from the S VD 5842 (parallel interface)
- panels with serial interface

SVD5842 Panel Connector

SVD 5842 – Panel Link D-Sub 15 female		
Pin	**Function**	**Signal**
1	Control	PNL_IN1_SEL_L
2	Control	PNL_IN2_SEL_L
3	Control	PNL_IN3_SEL_L
4	Control	PNL_IN4_SEL_L
5	Com	PNL_RS485_TX_N
6	Com	PNL_RS485_RX_N
7	Control	PNL_OUT1_SEL_L
8	Control	PNL_OUT2_SEL_L
9	Ground	GND
10	Ground	
11	Control	PNL_TAKE_L
12	Com	PNL_RS485_TX_P
13	Com	PNL_RS485_RX_P
14	Power	VCC max. 100 mA
15	Power	
Shield	Ground	PE



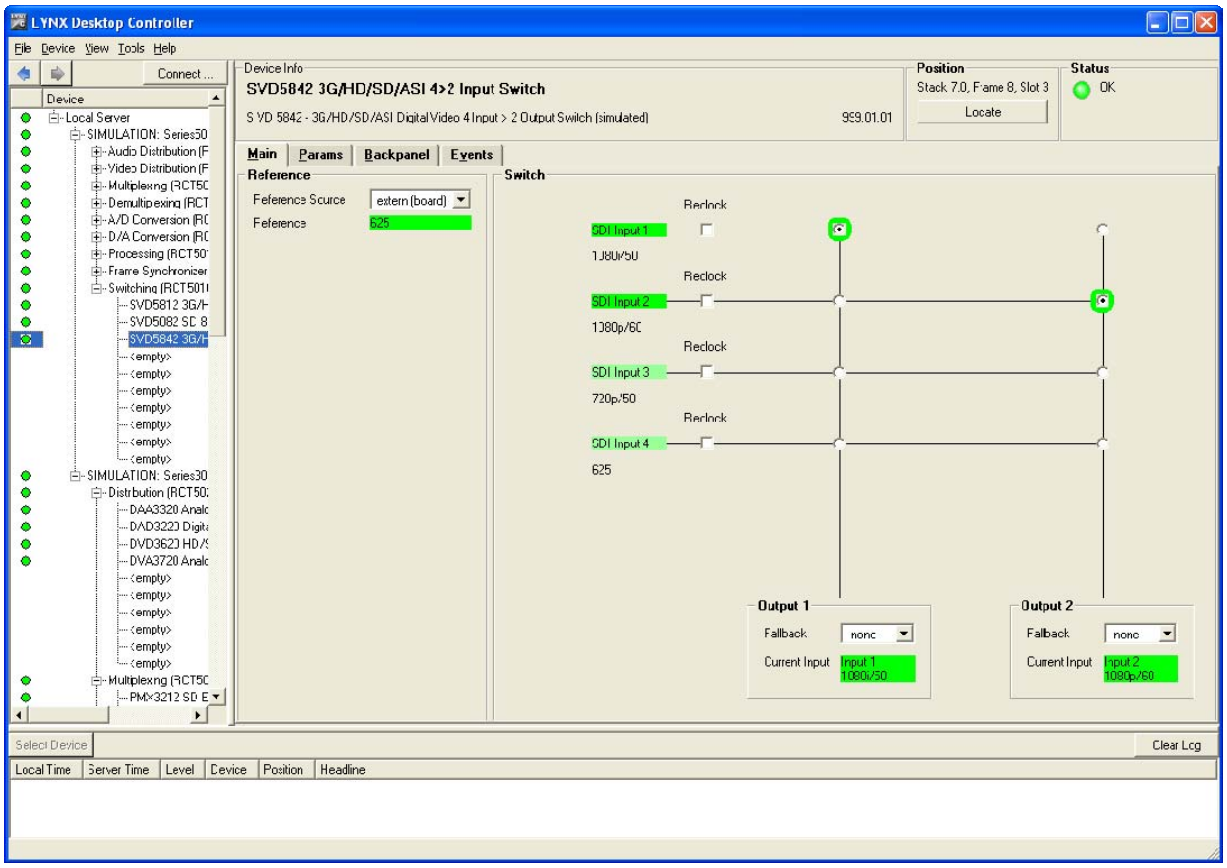
SVD5842 - Basic Panel Schematic



Note: The maximum current to be drawn on VCC is 100mA!

Control System GUI

When using the module in a system with the optional LYNX control system all module settings are available on an intuitive Windows GUI interface.
Any settings made using the control system will override any settings made locally. All settings are stored automatically in the module flash RAM.



The above screenshot shows the complete module GUI. The Device info area contains information about the module including name and firmware revision. If used as part of a larger system (using the LYNX central control system) the modules position and physical location is displayed above the “locate” button.

> ***Note.*** *The Locate function is a tool used to quickly identify a module in larger systems. Selecting “locate” will flash the module alarm LED yellow. (This does not effect module operation)*

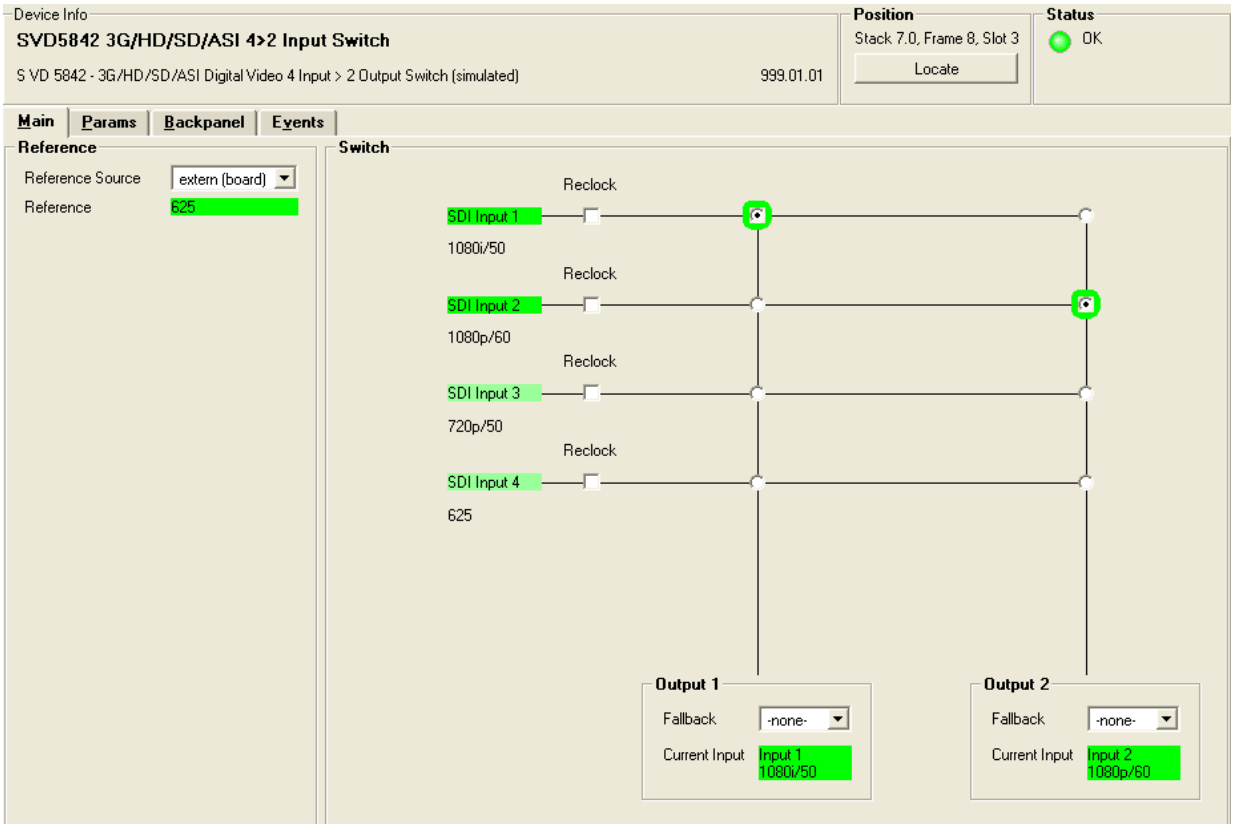
The first screen displayed when the module is selected is the ***Main Tab*** this is a graphical representation of the modules overall function and signal flow (left to right).

The area at the bottom of the screen is the error log. Any fault condition (or event) will be time stamped and entered into the log.

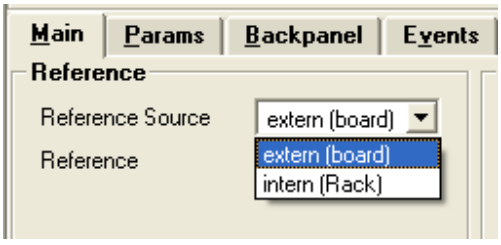
There are a number of “Tabs” along the top of the screen which splits up the module settings into a number of logical displays. The various GUI screens and primary functions are described below.

Main Tab

This screen is the main interface and is presented first when the module is displayed in the GUI.



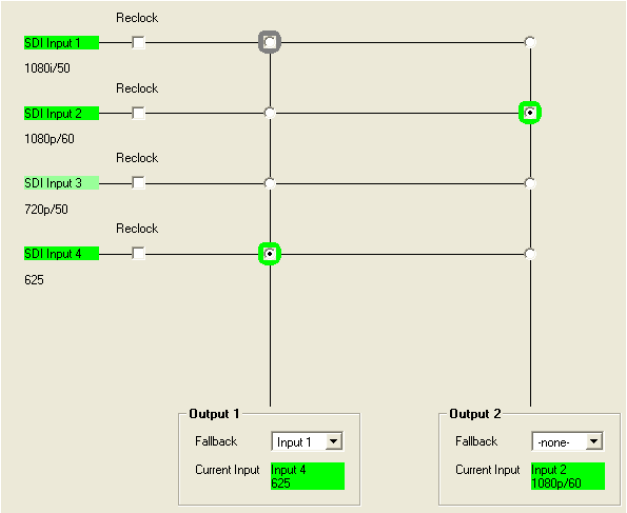
On the left side the reference standard of a connected video reference signal is indicated. The drop down menu allows selection of the reference source, i.e. the general rack reference or the reference from the rear connection panel of the module.

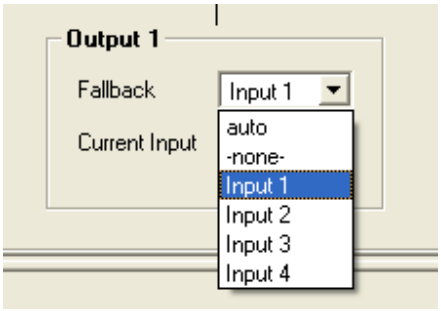


The input detection for SDIIN1…4 indicates the bit rate of a connected signal. If no signal is detected the color of the input detection will turn red.

The check boxes next to the input detection enable or disable the reclocking of the inputs.

The radio buttons allow the selection of the input for the two outputs (green circle will appear around the radio button). Clicking on the radio buttons with the right mouse button will select a fallback input (grey) circle will appear around the radio button. The fallback input will be used in case the primary input is missing. It will switch back to the primary input as soon it is detected. In the example right input 4 is the primary input for output 1 and input 1 is the fallback

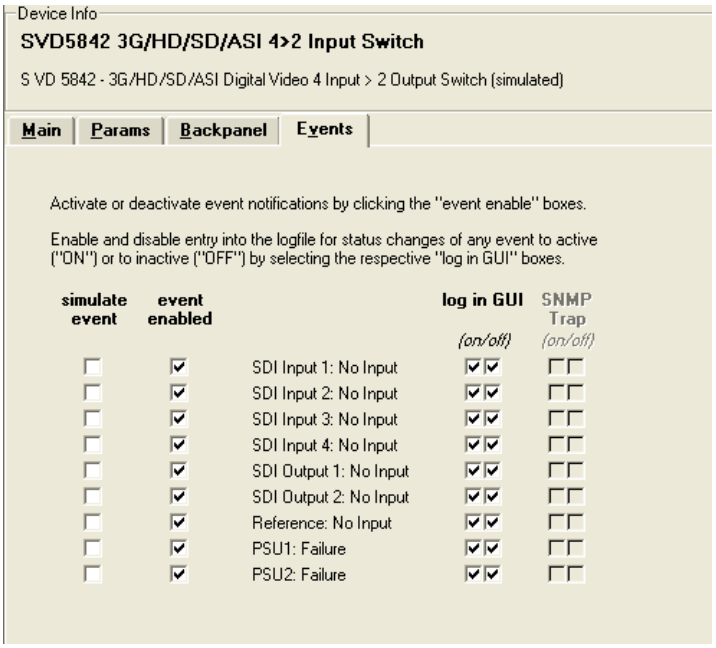




Alternatively the fallback can be selected from the drop down list at the bottom of the Main page.
If “auto” is selected the module will automatically switch to the next available input in case the primary input is missing.

Events Tab

The Events Tab is where the module alarming and error notifications are configured for the module.



The GUI has an integrated error log, which is a simple text log file stored in the controller PC. This will record an event and timestamp it. The log can be seen at the bottom of the GUI screen and can be scrolled through using the scrolling bar.

Log in GUI Function

Events are selectable, you can chose if you want to record a particular event in the log (or not) or configure it to only record one side of the event. (*For example you might want to log when a SDI input was removed but do not want to log when it came back*). The ON/OFF trigger can be configured for each of the available events shown in the list and is setup using the checkboxes provided.

Event Enabled

By default all alarm conditions are activated (checked), by de-selecting a specific alarm condition in this column you are telling the module to ignore this condition completely. It will not color the Alarm LED, log and event in the GUI or send a SNMP trap. This is useful if for example you never have anything connected to input 2 and want the card to ignore this input condition completely you would simply de-select “SDI Input 2 No Input” and it will be ignored.

SNMP Support

If the system is using a RCT 5031 Master Controller and the SNMP option is installed then the “SNMP Trap” columns become available.

Here you can configure what events you would like to transmit a “SNMP trap” for over the network. (This has no impact or influence over the internally error log maintained by the LYNX control system)

(Internal LYNX error logging and external SNMP traps can be configured independently).

> **Note.** *The simulated event is part of the GUI simulator and allows us to force a particular error condition for testing and demonstration purposes.*

Specifications

Video Inputs	
Signal Type	Serial digital video SMPTE 292M, 259M-C, 424M
No. of inputs	4
Connector	BNC
Impedance	75 Ohm
Cable Equalization	Up to 250m Belden 8281 (270MBit/s) Up to 140m Belden 1694A (1.485GBit/S) Up to 80m Belden 1694A (2.97GBit/s)
Return Loss	> 15 dB (270MBit/s) > 10dB (1.485GBit/s)
Digital Video Outputs	
Signal Type	Serial digital video SMPTE 259M-C, 292M, 424M
No. of outputs	2
Connector	BNC
Impedance	75 Ohms
Jitter	< 0.2 UI (270MHz) < 0.2 UI (Alignment Jitter); < 1.0 UI (Timing Jitter); (1.485GHz) < 0.3 UI (Alignment Jitter); < 3.0 UI (Timing Jitter); (2.97GHz)
Return Loss	> 15 dB (1.5GBit/s)
Control	
Local Controls	Matrix display and push button
Remote Control	Comprehensive remote control and status monitoring supported when used with a LYNX Controller option
Electrical Specifications	
Voltage	12 VDC
Power	<4 W
Safety	IEC 60950/ EN 60950/ VDE 0805
Mechanical	
Size	283mm x 78mm
Weight	CardModule 150g, connector plate 70g
Ambient	
Temperature	5°C to 40°C Maintaining specifications
Humidity	90% Max non condensing

Service

Parts List

Due to the very dense design and high level of integration there the module is not user serviceable. Please contact LYNX for repairs or to request an exchange unit.

Technical Support

If you are experiencing problems, or have questions please contact your local distributor for further assistance.

Technical support is also available from our website.

Please do not return products to LYNX without an RMA. Please contact your authorized dealer or reseller for more details.

More detailed product information and product updates may be available on our web site:

www.lynx-technik.com

Contact Information

Please contact your local distributor; this is your local and fastest method for obtaining support and sales information.

LYNX Technik can be contacted directly using the information below.

Address LYNX Technik AG
Brunnenweg 3
D-64331 Weiterstadt
Germany

Website www.lynx-technik.com

E-Mail info@lynx-technik.com

LYNX Technik manufactures a complete range of high quality modular products for broadcast and Professional markets, please contact your local representative or visit our web site for more product information.