LYNX

TECHNIK AG

Reference Manual

C DA 5005

5 Channel SDI to CVBS Converter

Series 5000 *CardModule*
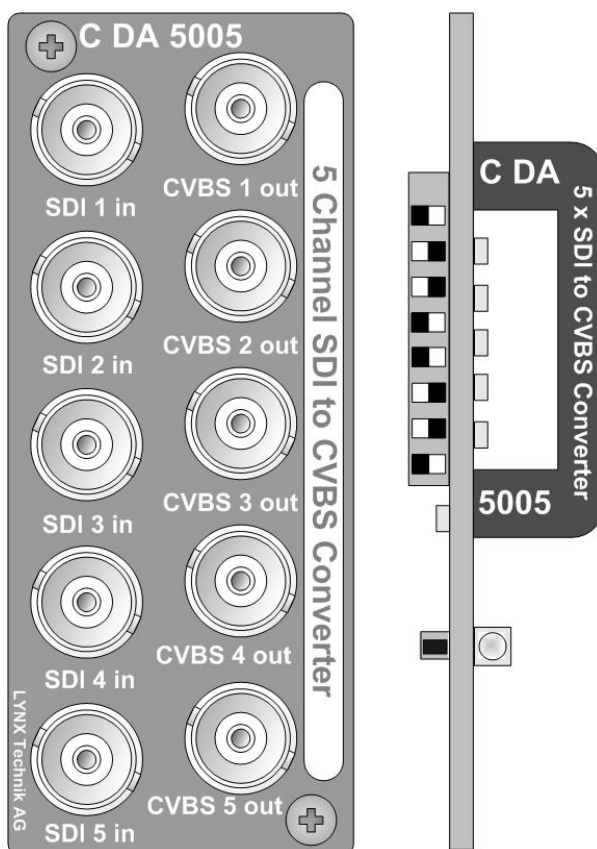
C DA 5005

SDI 1 in

CVBS 1 out

SDI 2 in

CVBS 2 out

SDI 3 in

CVBS 3 out

SDI 4 in

CVBS 4 out

SDI 5 in

CVBS 5 out

5 Channel SDI to CVBS Converter

LYNX Technik AG

C DA

5 x SDI to CVBS Converter

5005

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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: C DA 5005

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 /2001
 Following the provisions of 89/336/EEC and 73/23/EEC directives.

       Winfried Deckelmann

Weiterstadt, November 2003

 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

Contents

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Getting Started

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.

Product Description

The C DA 5005 is a 5 channel Monitoring 8 bit video D/A converter designed primarily for broadcast and professional applications.

The Module accepts 5 SDI input signals and provides one CVBS output per channel. The outputs can be switched to a test signal output (color bars).

The C DA 5005 has a variety of features, which includes:

- PAL or NTSC operation, auto detect
- Internal color bars
- Internal 2x over sampling (27MHz)
- Local DIP-switches and LED's for control and status monitoring.
- Microprocessor controlled.
- Remote control interface.

The module has a built in micro-controller with local controls, status and alarm indicators and well as internal flash ram for storing setups. Any operational parameters configured and stored into the module are recalled when powered up. Remote control and remote status monitoring is possible when using the optional rack controller

CardModules are installed in the series 5000 card frame that can accommodate up to 10 CardModules. All modules are hot swappable and options include full redundant power and a range of controller options.

Functional Diagram

Figure 1 below is the basic functional diagram for the C DA 5005 CardModule.
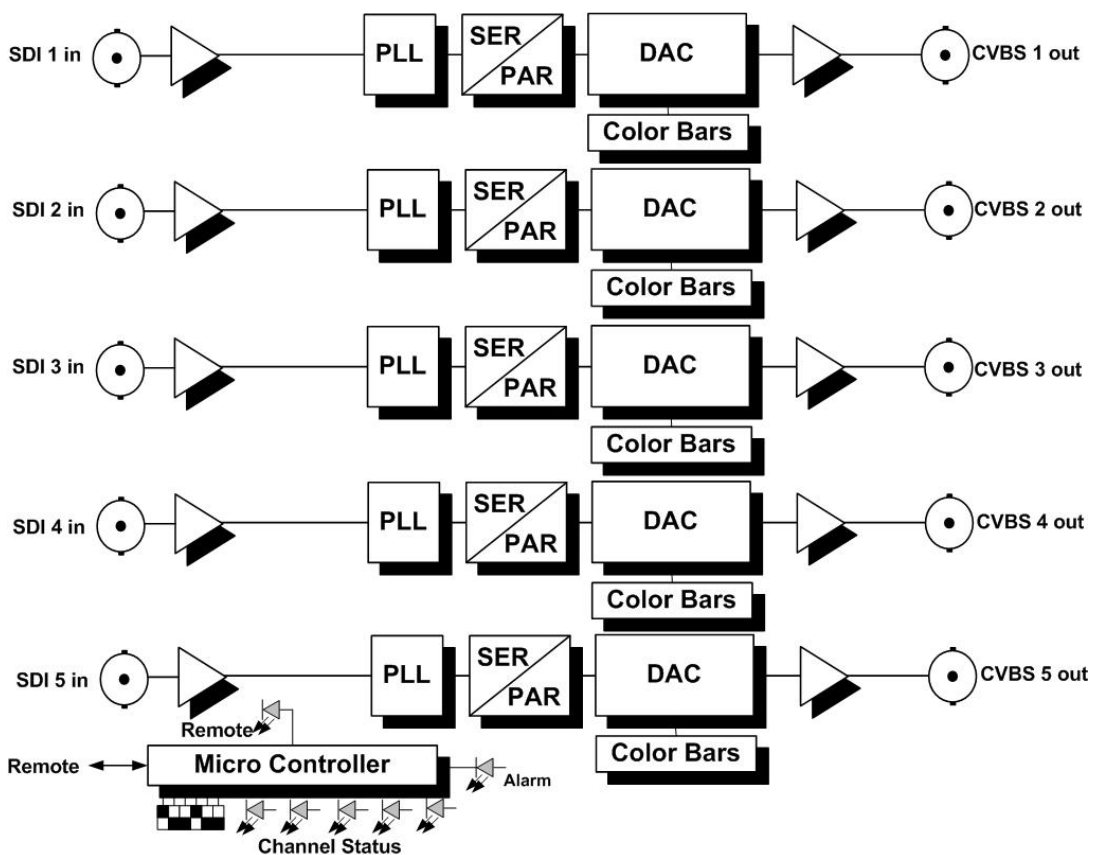
Figure 1- C DA 5005 Functional Diagram

Module Layout

Figure 2 shows the physical layout of the C DA 5005 CardModule and also the connection panel which is fitted to the rear of the rack.

PCB Layout

Rear Connection Panel

5 Channel SDI to CVBS Converter

C DA 5005

CVBS 1 out
CVBS 2 out
CVBS 3 out
CVBS 4 out
CVBS 5 out

SDI 1 in
SDI 2 in
SDI 3 in
SDI 4 in
SDI 5 in

LYNX Technik AG

PCB Front View

OFF ⟷ ON

8
7
6
5
4
3
2
1

8 Position Switch

C DA

5 x SDI to CVBS Converter

LED 1
LED 2
LED 3
LED 4
LED 5

5005

Local/Remote
LED

Button for
Reference
Configuration

Alarm
LED

Figure 2 – Module Layout

Caution

Use static precautions when handling the PCB. Static discharge could result in serious damage to the module.

Connections

Video Connections

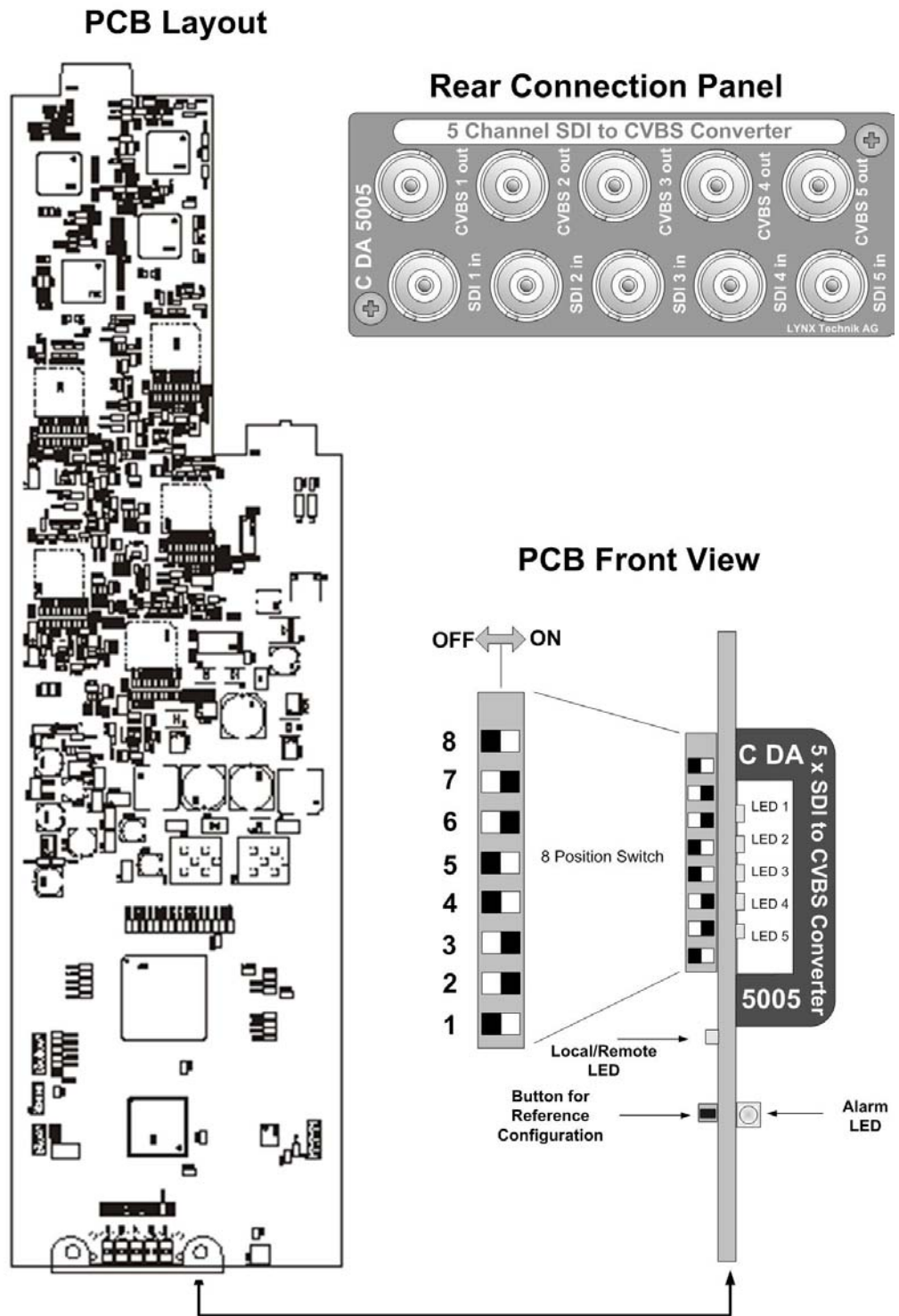The C DA 5005 CardModule is configured with standard 75 Ohm BNC connectors. Connection is self-explanatory. We recommend the use of high quality video cables for digital video connections to reduce the risk of interference or errors due to excessive cable attenuation. Some guidelines for max cable length are shown below.

250m (820 feet) Belden 8281 (270Mbits/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

Caution
The CardModule is shipped in a protective anti-static bag. Please take suitable precautions to avoid static discharge onto any part of the PCB or components when handling module or serious damage could result.

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.

a) Select a slot in the card frame where the CardModule will be located
b) Remove the blank connection panel from the rear of the rack (if fitted)
c) Install the rear connection panel using the screws supplied. Do not tighten the screws fully
d) Slide the card module into the card frame and carefully check the CardModule easily 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. Remove the rear connection panel and check alignment with the CardModule.
e) 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 C DA 5005 has an integrated micro-controller, which enables the module to be configured and controlled locally using integral 8 position dip switch and the multifunction switch 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.
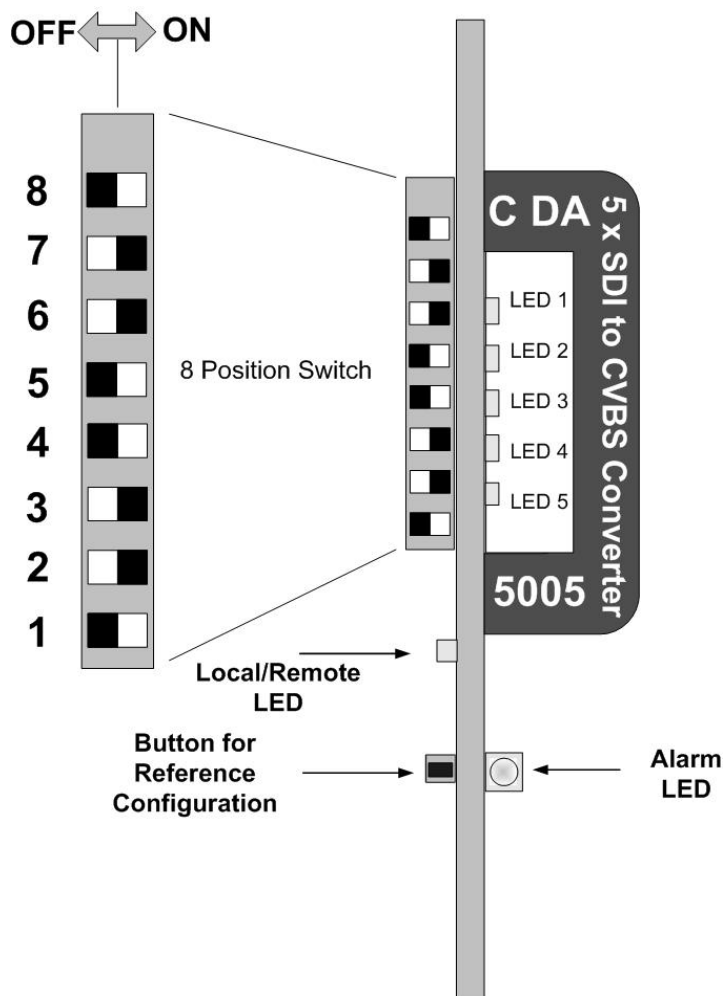

Figure 3 – Switch and LED locations

Control Modes

There are two modes for the use of the dip switches and the corresponding LEDs:

Channel Status Mode:
In this mode the Dip Switches are used to switch the test signal (color bars) ON or OFF for the corresponding channel. The corresponding LED is then GREEN for "Signal Present", YELLOW for "Test Signal ON" and RED for "Signal Lost".

Alarm Enable Mode:
This mode is used to define which channels are part of the combined alarm indication provided on the single *Alarm LED*.

Any channels (used or unused) can be configured to be part of the unified alarm reporting.

Example. If only three of the five channels are being used, with the remaining two disconnected then these channels will report a continuous "input missing" alarm condition and the Alarm LED would be constantly red. Removing unused channels from the alarm reporting will prevent this.

Switch Settings

Below the switch settings for the 8-position dip-switch are defined. Please see the section following the table for more detail on the switch function.

There are two modes for the use of the dip switches and the corresponding LEDs:

1) Channel Status Mode: The Dip Switches switch the test signal (color bars) ON or OFF for the corresponding channel. The corresponding LED is GREEN for "Signal Present", YELLOW for "Test Signal ON" and RED for "Signal Lost".

2) Reference Configuration Mode: The Dip switches define which channels form part of the combined alarm reporting for the module. Any channel (used or unused) can be added or removed from the Alarm configuration

CHANNEL STATUS MODE

Switch	Setting	Function
1		Toggle on-off-on: Re-acquire local control
2	ON	Alarm Enable Mode
	OFF	Channel Status Mode
3	ON	Color bars if no input
	OFF	Black if no input
4	ON	Test signal (color bars) ON for Channel 5
	OFF	Test Signal (color bars) OFF for Channel 5
5	ON	Test signal (color bars) ON for Channel 4
	OFF	Test Signal (color bars) OFF for Channel 4
6	ON	Test signal (color bars) ON for Channel 3
	OFF	Test Signal (color bars) OFF for Channel 3
7	ON	Test signal (color bars) ON for Channel 2
	OFF	Test Signal (color bars) OFF for Channel 2
8	ON	Test signal (color bars) ON for Channel 1
	OFF	Test Signal (color bars) OFF for Channel 1

ALARM ENABLE MODE

Switch	Setting	Function
1		Toggle on-off-on: Re-acquire local control
2	ON	Alarm Enable Mode
	OFF	Channel Status Mode
3	ON	Color bars if no input
	OFF	Black if no input
4	ON	Channel 5 Alarm Enabled
	OFF	Channel 5 Alarm Disabled
5	ON	Channel 4 Alarm Enabled
	OFF	Channel 4 Alarm Disabled
6	ON	Channel 3 Alarm Enabled
	OFF	Channel 3 Alarm Disabled
7	ON	Channel 2 Alarm Enabled
	OFF	Channel 2 Alarm Disabled
8	ON	Channel 1 Alarm Enabled
	OFF	Channel 1 Alarm Disabled

Switch Function Detail

All settings are stored in Flash Ram inside the module (see Auto Store section in this manual). Settings will be recalled on power up.

Dip Switch 1

This switch enables local control using the dip-switches. **ON** enables local control and makes selections on the dipswitch active, and **OFF** disables local control (locking out any local changes)

Note.

*When Switch 1 is initially switched to **ON**, the static settings currently set on the dip-switches may not reflect the actual configuration stored in the module. This is because all settings can be changed from the remote control system. This overrides the local dip switches regardless of Switch 1 ON/OFF setting. To ensure the module reads the local dip switch settings it is recommended to toggle Switch 1 **ON-OFF-ON** before making any local changes to the dip switches.*

Dip Switch 2

This switch selects either the Channel Status Mode or Reference Configuration Mode as described above. **ON** = Channel Status Mode, **OFF** = Alarm Enable Mode

Dip Switch 3

This is used to select what type signal is output for channels with input signal lost. **ON** selects Color Bars and **OFF** selects black as output.

Dip Switch 4-8 (CHANNEL STATUS MODE)

Switch 4 = Channel 5 **… Switch 8 =** Channel 1: **ON** selects test signal color bars **OFF** selects normal operation.

Dip Switch 4-8 (ALARM ENABLE MODE)

Switch 4 = Channel 5 **… Switch 8 =** Channel 1: **ON** Channel alarm is enabled **OFF** Channel alarm disabled

Factory Preset Condition

The C DA 5005 is delivered preset for the following mode of operation:

- Local control ENABLED
- Channel Status Mode
- Test Signal Color Bars
- Test Signal OFF – Normal operation for all channels
- All channels "Alarm Enabled"

If this is the mode of operation required, then no adjustments are necessary.

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 alarm LED flashing yellow four times.

Alarm/LED Status Indicators

The C DA 5005 module has six LED indicators, which serve as alarm and status indication for the module (Figure 2 or 3). Function is described below.

Status Indicators

5 Status LEDs are provided on the module edge

LED 1 – 5	Channel Status Mode
Red	Input signal missing
Yellow	Test Signal ON
Green	Input signal present

LED 1 – 5	Alarm Enable Mode
Green	Channel Alarm Enabled
OFF	Channel Alarm Disabled

Alarm Indicator

There is also a general alarm LED on the lower edge of the module, which can be seen when the rack front cover is fitted. The status of this LED is defined by the alarm enable settings as explained above.

LED Color	Indication
Green	All input signals present
Yellow	Test pattern selected (color bars)
Red	One or more input signals missing

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

Locate Function

For larger systems which may have multiple MiniModules of the same type in a single rack, or multiple rack systems on a large central control system we have added a useful utility which will help to visually locate a suspect module quickly (When used in conjunction with the optional control system and software)

Once the specific module has been selected on the control system there is a locate button on the top of the GUI:

Locate Function in Control System

When Locate is selected the status indicator on the GUI and the module LED`s will flash yellow in the following continuous sequence.

3 short flashes…. Pause…. 3 short flashes …

This uses the alarm LED located on the front of the module and in some cases any channel or status LED`s that may be used in the module.

Use of the locate function will not interfere with the normal operation of the module.

For more details on this feature please check the documentation supplied with the controller software.

Specifications *(C DA 5005)*

Inputs

Signal	Serial 4:2:2 SMPTE 259M-C (270 Mbit/s) Standards NTSC-(M/N), PAL (B/D/G/H/I/N/60) Auto detection
Return Loss	>15dB (270MHz)
Cable Equalization	250 m (Belden 8281)
Connection	BNC
Impedance	75 Ohms

Outputs

Signal (composite)	CVBS
Return Loss	>35dB (5,75MHz)
Signal to noise	>56dB
Connections	BNC
Impedance	75 Ohms

Operating Modes

Conversion	D/A conversion for SDI-Signals
TV Standard	NTSC or PAL (Auto detect)
Test	Internal Color Bars

Performance

Quantization	8 Bits
Sampling	27 MHz (2x Over sampling)

Electrical Specifications

Operating Voltage	+ 5VDC
Power Consumption	10 W
Safety	IEC 60950/ EN 60950/VDE 0805

Mechanical

Size	283mm x 78mm
Weight	Card module 120g, connection panel 50g

Ambient

Temperature	5°C to 40°C Maintaining specifications -20°C to +70°C Storage
Humidity	Max 90% non condensing

Supplied Accessories

Documentation	C DA 5005 Reference Manual

Available Options

Below is a list of related products for the C DA 5005 CardModule. Please refer to product brochures or our web site for more detailed information.

Model	Description
R FR 5010	Series 5000 Rack Frame (empty) with single power supply
R PS 5010	Redundant power supply for the R FR 5010 Card Frame
R CT 5020	Rack controller for the R FR 5010 Card Frame
R CT 5010	Rack Bus Extension for the R FR 5010 Card Frame. In combination with R CT 5020

Parts List

Due to the very dense design and miniature surface mount technology the module is not field serviceable. The information for a replacement assembly is below.

C DA 5005 CardModule (complete)
Description   5 x SDI to Ana. Video Conv.
Model Number   C DA 5005
Part Number   6.155.008.221

Sub Assemblies:

C DA 5005 Processing Board only (BS 5002)
Part Number   6.155.005.270

Rear Connection Panel for C DA 5005 (MA3001_B)
Part Number   6.155.001.250

Rear Connection Foil for C DA 5005
Part Number   6.155.008.721

Service

If you are experiencing problems, or have questions concerning your C DA 5005 CardModule please contact your local distributor for assistance.

We offer a fixed cost service exchange program for defective Series 5000 CardModules out of Warranty. Please contact your distributor or check our web site for details on this program.

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

www.lynx-technik.com

You will also find links to contact us directly for assistance.

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.

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Notes