

Instruction Manual

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2041EDA
WIDEBAND REAR EQUALIZING DA

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FAQ Database — Solutions to problems and troubleshooting efforts can be found by searching our Frequently Asked Questions (FAQ) database.

Software Downloads — Software updates, drivers, and patches can be downloaded.

Contents

- Preface**..... 5
 - About This Manual..... 5

- 2041EDA Wideband Rear Equalizing Distribution Amplifier**
 - Introduction..... 7
 - Installation..... 8
 - Module Placement in the 2000 Frame..... 8
 - Cabling..... 9
 - Inputs..... 9
 - Outputs..... 9
 - Power Up..... 10
 - Operation Indicator LEDs..... 10
 - Configuration and Monitoring..... 12
 - Remote Monitoring..... 12
 - Module Configuration Displays..... 13
 - Software Update Displays..... 13
 - Specifications..... 14
 - Service..... 15
 - Power-up Diagnostics Failure..... 15
 - Troubleshooting..... 15
 - Module Repair..... 15
 - Functional Description..... 16
 - Input Processing..... 16
 - Microprocessor..... 16
 - Output Processing..... 17
 - Power Supply..... 17

- Index**..... 19

Preface

About This Manual

This manual describes the features of a specific 2000 Series module in the Kameleon Media Processing System. As part of this module family, it is subject to Safety and Regulatory Compliance described in the 2000 Series frame and power supply documentation (see the 2000 Series Frames Instruction Manual).

2041EDA Wideband Rear Equalizing Distribution Amplifier

Introduction

The 2041EDA Wideband Rear Equalizing DA provides basic equalization and distribution of a single standard or high definition wideband signal (4 Mb/s to 1.5 Gb/s) to eight outputs. The single module resides in any rear slot of a Kameleon 2000 Series frame and is independent of any front card for operation.

The features of the 2041EDA include:

- Auto equalization of both SD and HD signals,
- Accepts a wide range of standard or high definition input signal standards,
- Use of non-inverted outputs allow distribution of compressed signals such as SMPTE 310M and DVB-ASI,
- Ideal for monitoring or distributing reclocked signals from adjacent 2000 modules, and
- Remote control and monitoring support.

Installation

Installation of the 2041EDA module is a process of:

- Placing the module in a rear frame slot, and
- Cabling signal ports.

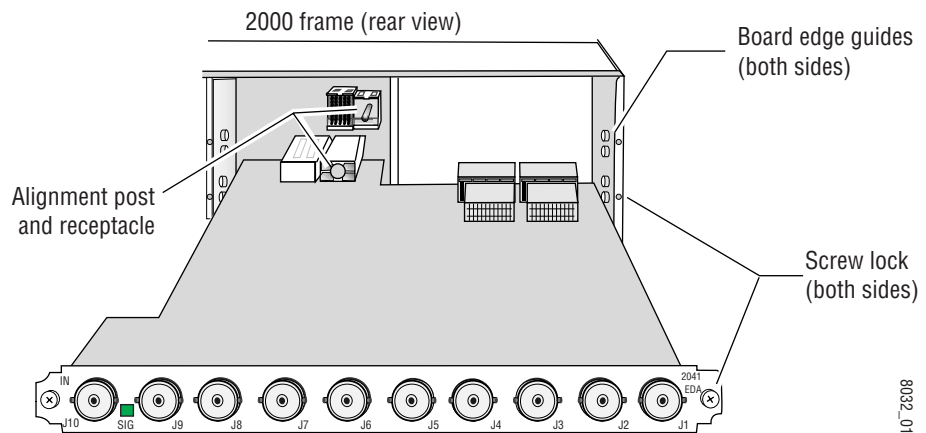
The 2041EDA module can be plugged in and removed from a Kameleon 2000 Series frame with power on. When power is applied to the module, LED indicators reflect the initialization process (see [Power Up](#) on page 10).

Module Placement in the 2000 Frame

There are twelve rear cell locations in the 3 RU frame to accommodate either analog or digital modules. The 2041EDA rear module plugs into any one of the rear slots of the Kameleon 2000 frame.

1. Install the module by inserting it into any rear slot of the frame as illustrated in [Figure 1](#).
2. Verify that the module connector seats properly against the midplane.
3. Secure the module to the rear of the frame with the two screw locks on either side of the back panel using a crossblade screwdriver.

Figure 1. Installing 2041EDA Module



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Cabling

Cabling to the 2041EDA module is done on the BNCs on the rear of the module. Refer to [Figure 2](#) for a detailed illustration of the rear connections referenced below.

Inputs

The 2041EDA will accept any of the video standards listed in the Input specifications in [Table 3](#) on page 14. Connect a video input to BNC J10.

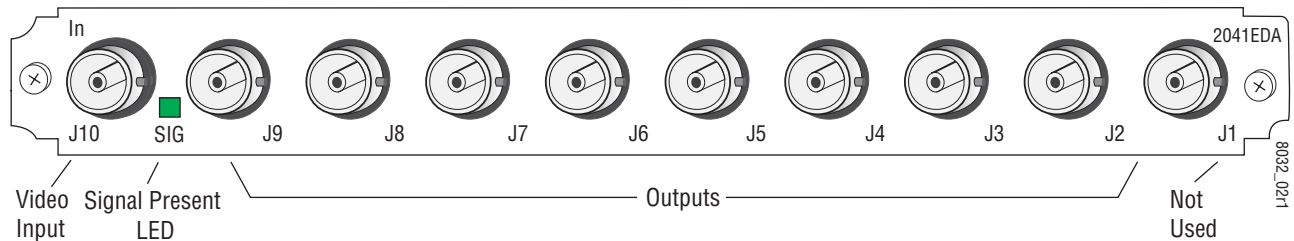
Outputs

The 2041EDA outputs conform to the video standards listed in the Output specifications in [Table 3](#) on page 14.

Connect video destinations to any of the eight outputs at connectors J2 – J9. Terminate any unused outputs.

Note BNC J1 is not used on this module. On earlier versions of the 2041EDA labeled with part number 671-5248-00, BNC J1 provided an output.

Figure 2. 2041EDA Input/Output Connectors



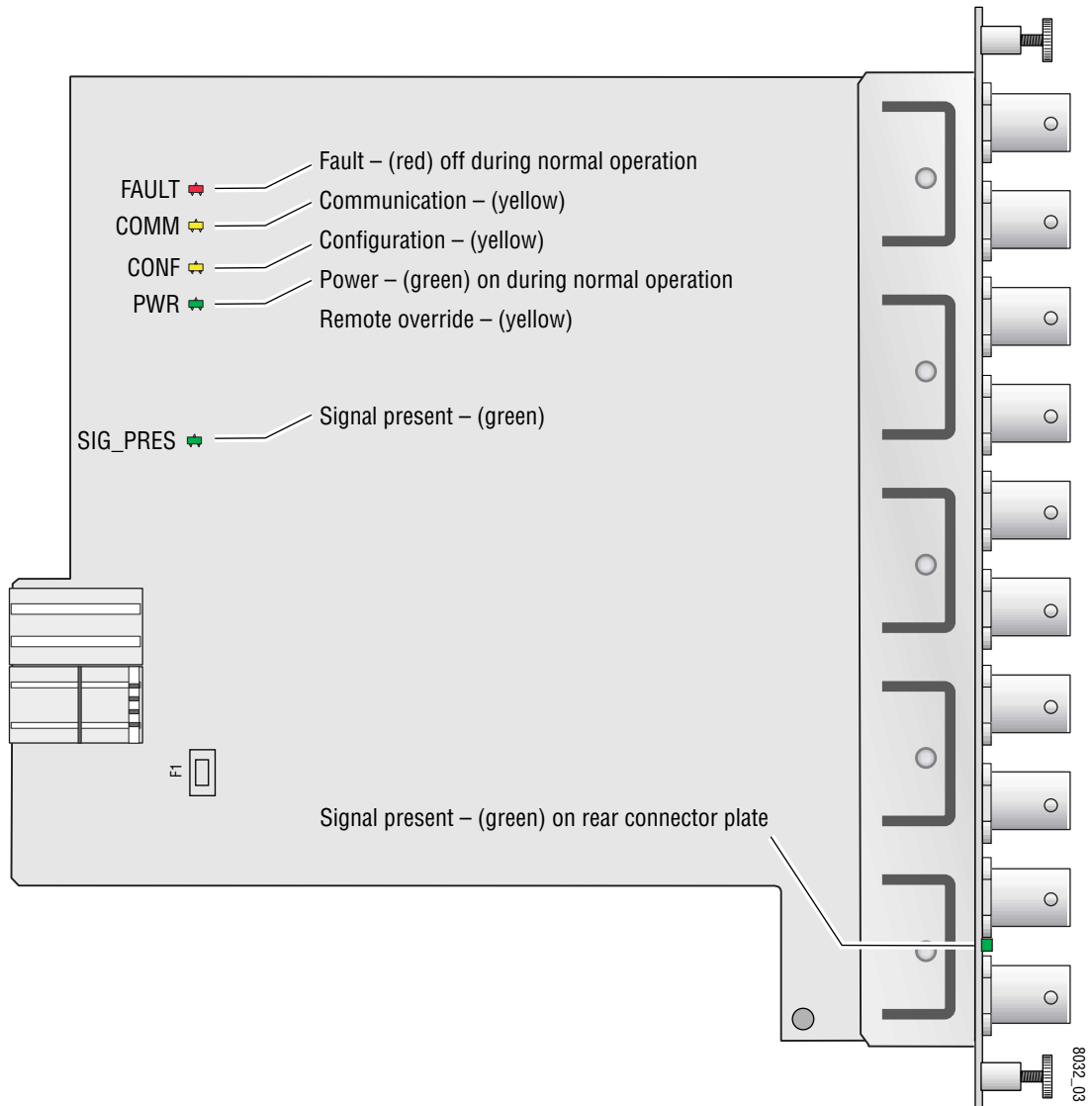
Power Up

The on-board LED indicators are illustrated in [Figure 3](#). Upon power-up, the green PWR LED should light and the yellow CONF LED should illuminate for the duration of module initialization.

Operation Indicator LEDs

With a valid input signal connected, the green on-board PWR LED, SIG_PRES LED and the SIG LED (visible from the rear) should be on. Refer to [Table 1 on page 11](#) to see a complete list of possible operating conditions and the resulting indicator status.

Figure 3. LEDs and Configuration Switches



A red FAULT LED indicates an error situation and, when noted with the other indicator LEDs, can indicate a specific problem area. [Table 1](#) describes signal output and LED indications for the various input/reference combinations.

Table 1. Indicator LEDs and Conditions Indicated

LED	Indication	Condition
FAULT (red)	Off	Normal operation
	On continuously	Module has detected internal fault
	Long flash	No input signal
COMM (yellow)	Off	No activity on frame communication bus
	Long flash	Location Command received by the module from a remote control system
	Short flash	Activity present on the frame communication bus
CONF (yellow)	Off	Module is in normal operating mode
	On continuously	Module is initializing, changing operating modes or updating firmware
PWR (green)	Off	No power to module or module's DC/DC converter failed
	On continuously	Normal operation, module is powered
SIG_PRES	Off	Indicates no signal carrier present
	On continuously	Indicates signal carrier present
SIG (rear view)	Off	Indicates no signal carrier present
	On continuously	Indicates signal carrier present

[Table 2](#) provides the possible input and output conditions that result from different input signals and conditions.

Table 2. Input and Output Conditions

Input Condition	Output Condition
Serial Digital Component (SDI)	Serial Digital Component (SDI)
HD Digital Component (SDI)	HD Digital Component (SDI)
Other carrier	Other carrier
No input	Muted
Cable exceeding 200 meters	Muted

Configuration and Monitoring

The 2041EDA has no configuration requirements. There are no local jumpers or controls on the 2041EDA module.

Remote Monitoring

2041EDA monitoring can be performed remotely using the 2000NET interface (see Figure 4). This section describes the GUI access to the module configuration and monitoring functions. Refer to the 2000NET Network Interface Module Instruction Manual for information on setting up and operating the 2000 frame network.

Note The physical appearance of the menu displays shown in this manual represent the use of a particular platform, browser and version of 2000NET module software. They are provided for reference only. Displays will differ depending on the type of platform and browser you are using and the version of the 2000NET software installed in your system.

The 2000 modules can be addressed by clicking on a specific module icon in the frame status display or on a module name or slot number in the link list on the left.

Figure 4. 2000NET GUI

The Links section lists the frame and its current modules. The selected link's Status page is first displayed and the sub-list of links for the selection is opened. The sub-list allows you to select a particular information page for the selected device.

Content display section displays the information page for the selected frame or module (frame slot icons are also active links).

Refresh button for manual refresh of page

Online Manual Link

Media Module	Net Card	Media Module	Power Card
Media Module		Media Module	
Media Module	Aux Card	Media Module	Fan Sled
Media Module		Media Module	
Media Module		Media Module	
Empty		Media Module	Empty

Properties
 Vendor Grass Valley Group Software Version 3.1.0
 Media Slots 13

8046-13-11

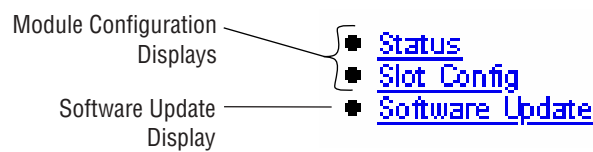
Module Configuration Displays

The 2000 GUI provides the following links and displays for the 2041EDA module (Figure 5):

- Module Configuration displays showing slot configuration information (location and user assigned names), and
- Software Update display.

The Module Configuration displays operate in the same manner for all remote controllable 2000 modules. Refer to the 2000NET manual for more information on these displays. Some functions listed may not be supported by a particular module. These will be indicated as not supported.

Figure 5. 2041EDA Display Links



Software Update Displays

The Software Update display allows you to download new software versions for the module. Refer to the 2000NET manual and the Grass Valley web site at <http://www.thomsongrassvalley.com> for complete details and new software versions.

Specifications

Table 3. 2041EDA Specifications

Parameter	Value
Input	
Number and type of inputs	1 BNC
Input impedance	75 Ohm
Input signal type	Serial digital component conforming to the following formats: <ul style="list-style-type: none"> • SMPTE 292M • SMPTE 259M (143 Mbps, 177 Mbps, 270 Mbps, 360 Mbps) • EBU 1697 • 4 Mbps to 1.5 Gbps with PN20 pseudonoise sequence, maximum ratio of 19/1 • SMPTE 310M • DVB-ASI
Signal level	SDI 800 mV p-p $\pm 10\%$ max
Return loss	>15 dB 0.004 to 1.5 GHz
Differential mode range	<5 V up to 60 Hz
Equalization	Auto equalizing: HD signals up to 90 m of Belden 8281 or 120 m of Belden 1694a SD signals up to 100 m of Belden 8281 or equivalent
Outputs	
Number and type of outputs	8 BNCs
Output impedance	75 Ohm
Signal type	Serial digital component conforming to the following formats: <ul style="list-style-type: none"> • SMPTE 292M • SMPTE 259M (143 Mbps, 177 Mbps, 270 Mbps, 360 Mbps) • EBU 1697 • 4 Mbps to 1.5 Gbps with PN20 pseudonoise sequence, maximum ratio of 19/1 • SMPTE 310M • DVB-ASI
Signal level	SDI 800 mV p-p $\pm 10\%$
Return loss	>15 dB 0.004 to 1.5 GHz
Error Checking	Transparent to embedded EDH
Electrical length	10 ns
Signal polarity	Non-inverted
Mute	Between 200-300 m of Belden 8281
Rise and fall time	160-270 ps between 20-80%
Power	
Input power maximum	< 7W
Environmental	
Frame temperature range	0 to 45 ° C
Operating humidity range	0 to 90% non condensing
Non-operating temperature	-10 to 70 ° C

Service

The 2041EDA modules make extensive use of surface-mount technology and programmed parts to achieve compact size and adherence to demanding technical specifications. Circuit modules should not be serviced in the field unless otherwise directed by Customer Service.

Power-up Diagnostics Failure

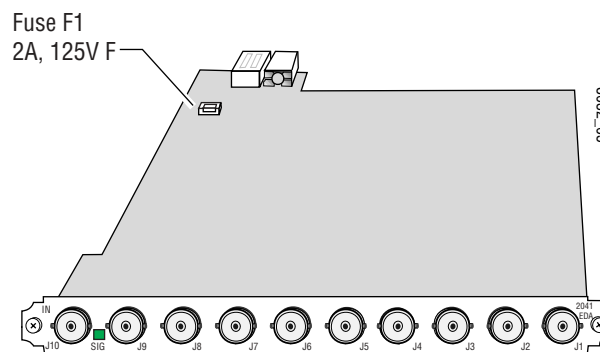
If the module has not passed self-diagnostics, do not attempt to troubleshoot. Return the unit to Grass Valley (see [Module Repair](#)).

Troubleshooting

If your module is not operating correctly, proceed as follows:

- Check frame and module power. If power is not present, check the fuse on the module as illustrated in [Figure 6](#).
- Check for presence and quality of input signals.
- Verify that source equipment is operating correctly.
- Check cable connections.

Figure 6. Location of Module Fuse



Module Repair

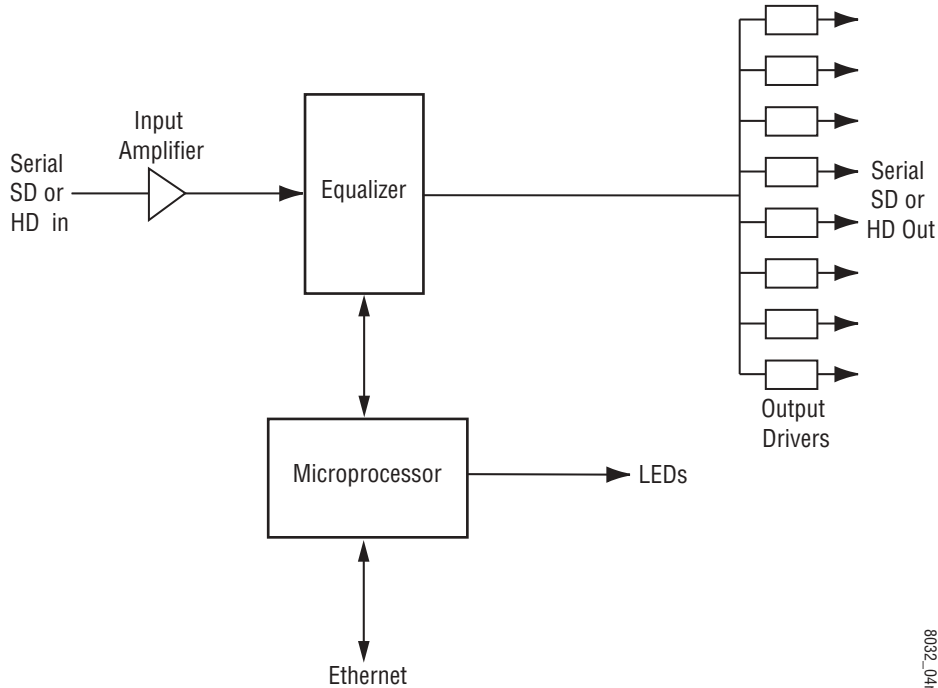
If the module is still not operating correctly, replace it with a known good spare and return the faulty module to a designated Grass Valley repair depot. Call your Grass Valley representative for depot location.

Refer to [Contacting Grass Valley Group](#) at the front of this document for the Grass Valley Customer Service Information number.

Functional Description

A block diagram of the 2041EDA is shown in [Figure 7](#).

Figure 7. 2041EDA Block Diagram



Input Processing

The wideband serial SD or HD signal enters the module from rear BNC J10 (labeled In) to an input amplifier. It is then equalized for the specified cable lengths in the equalizer circuit.

Microprocessor

The main functions of the microprocessor include:

- Providing remote control and monitoring capability for the module (through ethernet),
- Communicating with equalizer IC to monitor signal present status,
- Relaying module status through on-board LEDs, and
- Configuring module components at power up.

Output Processing

Driver circuits drive each of the eight serial digital outputs to the rear BNCs J2 through J9. These outputs are non-inverting and are in-phase with each other.

Power Supply

Power is fed from +24 V rails of the frame's switching power supply. Each stage of the module receives its own, separate, highly regulated and filtered power source. The power input is protected by a socketed fuse ([Figure 6](#)).

Index

Numerics

2000NET module [13](#)

B

block diagram [16](#)

C

cabling

inputs [9](#)

outputs [9](#)

circuit descriptions [16](#)

COMM LED [11](#)

CONF (configuring) LED [11](#)

D

documentation online [2](#)

E

environmental [14](#)

equalization [7](#)

F

FAQ database [2](#)

FAULT LED [11](#)

fault table [11](#)

frame status display [12](#)

frame, 3RU [8](#)

frequently asked questions [2](#)

fuse [15, 17](#)

G

Grass Valley Group website [2](#)

GUI [12, 13](#)

I

inputs [9](#)

specifications [14](#)

installation [8](#)

L

LEDs [10](#)

M

monitoring

remote [12](#)

N

network [12](#)

O

online documentation [2](#)

outputs [9](#)

specifications [14](#)

P

PWR LED [10, 11](#)

R

repair depot [15](#)

S

SIG LED (rear) [10, 11](#)

SIG_PRES LED [10, 11](#)

software download from web [2](#)

software update [13](#)

specifications [8, 14](#)

Index

T

troubleshooting [15](#)

W

web site documentation [2](#)

web site FAQ database [2](#)

web site Grass Valley Group [2](#)

web site software download [2](#)