Model 2430GDAC-WARP
G-Link D to A Converter

Instruction Manual

EVERTZ MICROSYSTEMS LTD.
5288 John Lucas Drive,
Burlington, Ontario,
Canada, L7L 5Z9

Phone:	905-335-3700	
Sales Fax:	905-335-3573	
Service Fax:	905-335-0909	
Internet:	Sales:	sales@evertz.com
	Tech Support:	service@evertz.com
	Web Page:	http://www.evertz.com

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INFORMATION TO USERS IN EUROPE

NOTE

CISPR 22 CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the European Union EMC directive. 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.

INFORMATION TO USERS IN THE U.S.A.

NOTE

FCC CLASS A DIGITAL DEVICE OR PERIPHERAL

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to 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.

WARNING

Changes or Modifications not expressly approved by Evertz Microsystems Ltd. could void the user's authority to operate the equipment.

Use of unshielded plugs or cables may cause radiation interference. Properly shielded interface cables with the shield connected to the chassis ground of the device must be used

REVISION HISTORY

REVISION	DESCRIPTION	DATE
1.0	Original release version	May 04
1.1	Added Fiber handling instructions	Aug 04
1.2	Fixed formatting	Jun 08

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TABLE OF CONTENTS

Figures

Tables

1. OVERVIEW

The 2430GDAC-WARP G-Link D to A Converter provides a simple extension to Evertz MVP monitoring systems by converting G-Link video signals from coaxial cable or fiber optic cable into a digital DVI signal and an analog RGB signal that can be displayed on a computer monitor or flat panel screen. The converter features one G-Link fiber optic input, one G-Link coaxial input, one reclocked G-Link coaxial output, and one DVI-I video output. Figure 1-1 details the operational structure of the device. The 2430GDAC-WARP has been designed for use with the Evertz 3000PPMV and 3000PPMG Multi-video Monitoring Processors.

The 2430GDAC-WARP is an enhancement over the 2430GDAC. WARP resolutions (video dimensions that have a narrow aspect ratio) can be displayed in addition to all standard resolutions up to SXGA. Evertz MVP systems are capable of outputting WARP resolutions over G-Link signals.

Features:

- Display resolution capability up to SXGA (1280x1024) at a 60Hz refresh rate.
- WARP resolution capability.
- DVI-I Digital and Analog video output.
- Auto-detection of display resolution with manual override.
- One reclocked G-Link coaxial output for connection to a second 2430GDAC-WARP or other G-Link-compatible products.
- Auto-detection of G-Link signal loss.
- Operation with single-mode or multi-mode fiber optic cable.
- SC/PC, ST/PC, or FC/PC fiber connector options.
- Low power +12VDC operation.

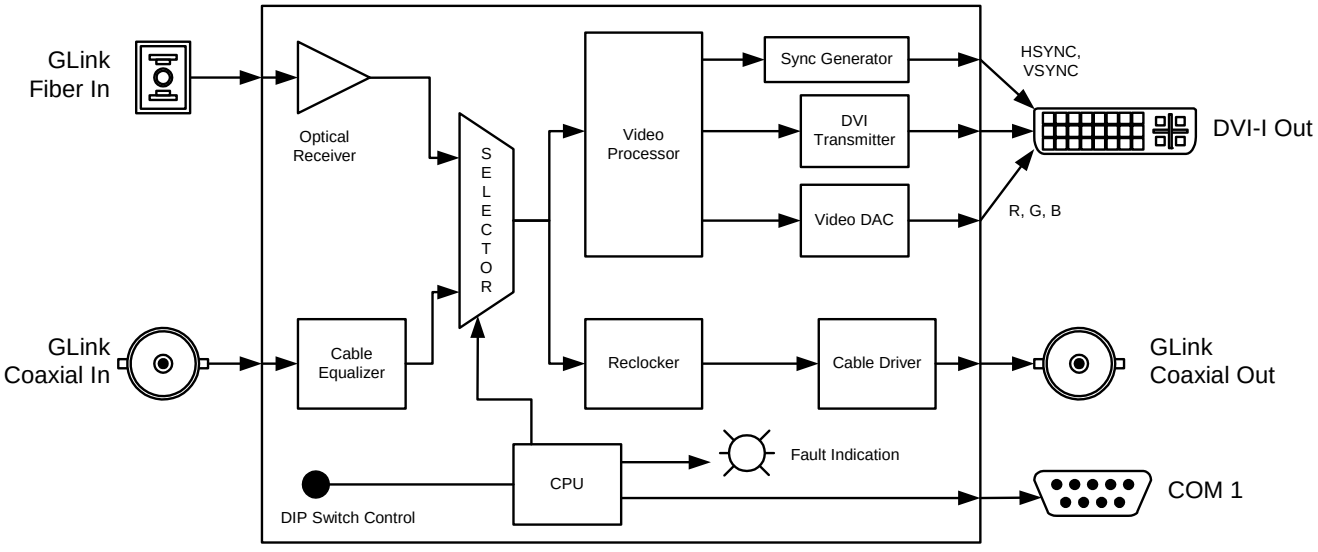


Figure 1-1: 2430GDAC-WARP block diagram

2. INSTALLATION

The 2430GDAC-WARP is a compact module that has two BNC connectors, one fiber optic connector, one DVI-I connector for video, and one DB-9 serial port connector for upgrades.

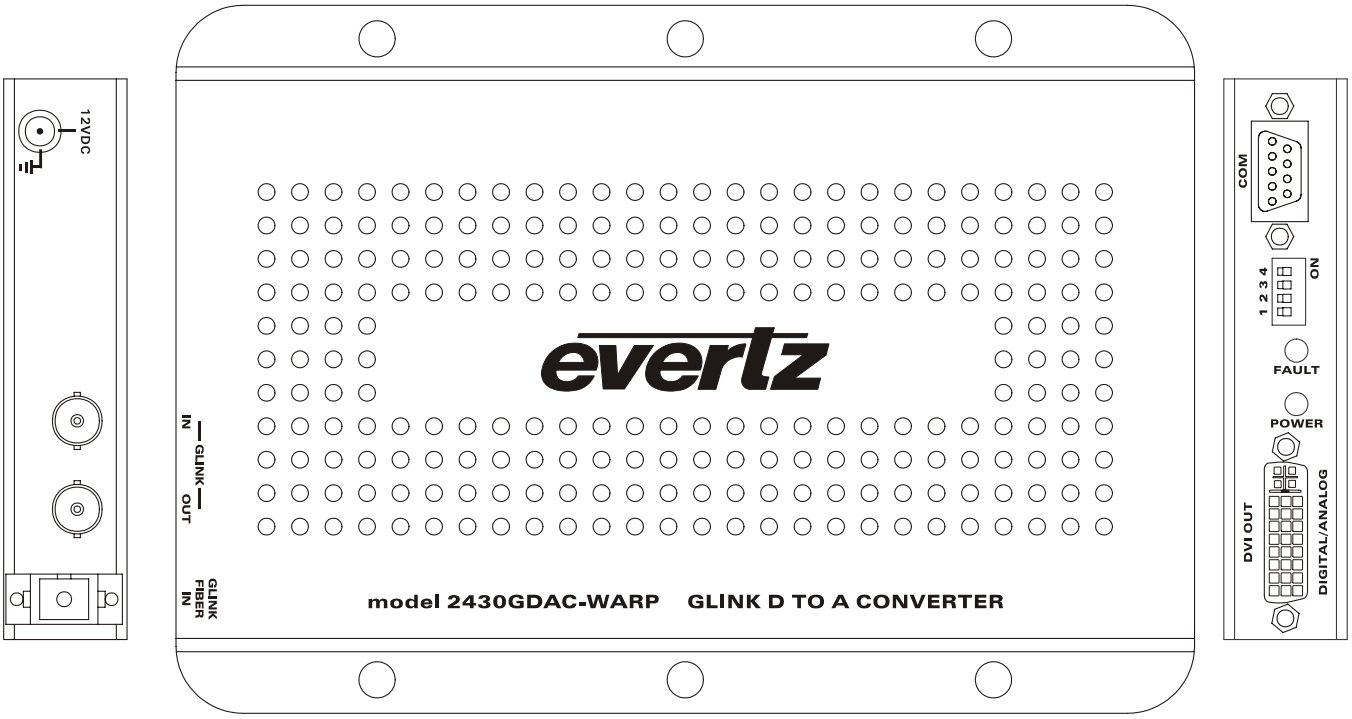


Figure 2-1: 2430GDAC-WARP Module Connections

2.1. POWER

The 2430GDAC-WARP comes with an auto-ranging DC voltage adapter that automatically senses the input voltage. Power should be applied by connecting a 3-wire grounding type power supply cord to the power entry module on the DC voltage adapter. The power cord should be minimum 18 AWG wire size; type SST marked VW-1, maximum 2.5 m in length. The DC cable of the voltage adapter should be connected to the DC power jack on the rear panel. A green LED located beside the DVI Out connector will be illuminated when there is power applied to the 2430GDAC-WARP.

2.2. GLINK IN AND OUT

FIBER GLINK IN: Input fiber connector for G-Link video signals over fiber optic cable.

GLINK IN: Input BNC connector for G-Link video signals over coaxial cable.

GLINK OUT: Output BNC connector for reclocked G-Link video signals over coaxial cable.

2.3. VIDEO OUT

DVI OUT: Output DVI-I connector for digital DVI video signals and analog RGB signals with HSYNC and VSYNC. For analog output, use a DVI to DB-15 adapter to connect to the computer monitor. Figure 2-1 lists the pins in the DVI-I Out connector.

Pin	Signal	Pin	Signal	Pin	Signal
1	Data2-	9	Data1-	17	Data0-
2	Data2+	10	Data1+	18	Data0+
3	Data2/4 Shield	11	Data1/3 Shield	19	Data0/5 Shield
4	Data4-	12	Data3-	20	Data5-
5	Data4+	13	Data3+	21	Data5+
6	DDC Clock	14	+5V Power	22	Data5/Clock Shield
7	DDC Data	15	Ground	23	Clock+
8	Analog VSYNC	16	Hot Plug Detect	24	Clock-
C1	Analog RED	C2	Analog GREEN	C3	Analog BLUE
C4	Analog HSYNC	C5	Ground		

Table 2-1: DVI-I output connector

2.4. FIRMWARE UPGRADE PORT

COM: Serial port connector for upgrading the 2430GDAC-WARP firmware. This is a female 9 pin D connector used for connecting to a standard computer serial port. Table 2-2 shows the pinout of the female DB-9 connector. See section 5 for information on upgrading the firmware in the 2430GDAC-WARP.

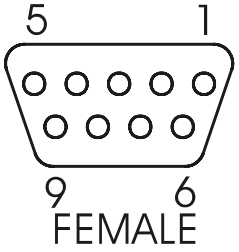
	Pin #	Name	Description
	1		
	2	TxD	RS-232 Transmit Output
	3	RxD	RS-232 Receive Input
	4		
	5	Sig Gnd	RS-232 Signal Ground
	6		
	7		
	8		
	9		

Table 2-2: COM port pinout

2.5. CARE AND HANDLING OF OPTICAL FIBER

2.5.1. Safety

Never look directly into an optical fiber. Non-reversible damage to the eye can occur in a matter of milliseconds.

The laser modules used in the Evertz 3000MVP modules are Class I, with a maximum output power of 7mW, and a wavelength of 1270 to 1610nm.

2.5.2. Handling And Connecting Fibers

Never touch the end face of an optical fiber.

The transmission characteristics of the fiber are dependent on the shape of the optical core and therefore care must be taken to prevent fiber damage due to heavy objects or abrupt fiber bending. Evertz recommends that you maintain a minimum bending radius of 3 cm to avoid fiber-bending loss that will decrease the maximum attainable distance of the fiber cable.

Fiber interconnections must be made securely. The Evertz fiber optical transmitters and receivers come with SC interconnection housings built into the module. With this style of connector, the fiber assembly and the housing assembly can only be connected in one way and with very good repeatability. The fiber interconnect panel that is provided with each product can be ordered with optional SC/PC, ST/PC or FC/PC connectors. The customer is required to provide the optical fiber with the correct connectors to connect the modules together. SC/PC, ST/PC and FC/PC interconnection housing and connectors as well as adapters are industry standards with many available sources.

2.5.3. Making Sure The Optical Fibers Are Clean

Dust particles on the ends of the optical fiber greatly increase the signal loss at interconnections, and large dust particles can even obscure light transmission altogether. To minimize the effects of dust contamination at the interconnections, the fiber should be cleaned each time it is mated or unmated. When using interconnection housings to mate two optical fibers it is good practice to remove dust particles from the housing assembly with a blast of dry air or by wiping the end of the fiber connector with the pre-moistened tissue you received with the optical module before mating it to the module. Whenever a fiber is unmated it must be covered immediately. Most fiber manufacturers provide a plastic boot that fits over the ferrule body for this purpose.

2.6. DISPLAY SETUP

When using standard video resolutions (XGA, SXGA, 720p, etc.), the 2430GDAC-WARP outputs video with an upright orientation. Orient the connected display device in it's upright position.

When using WARP resolutions (WXGA-WARP, etc.), the 2430GDAC-WARP outputs video that is rotated 90° clockwise. Orient the display such that it is rotated 90° counter-clockwise relative to its upright position (see Figure 2-2).

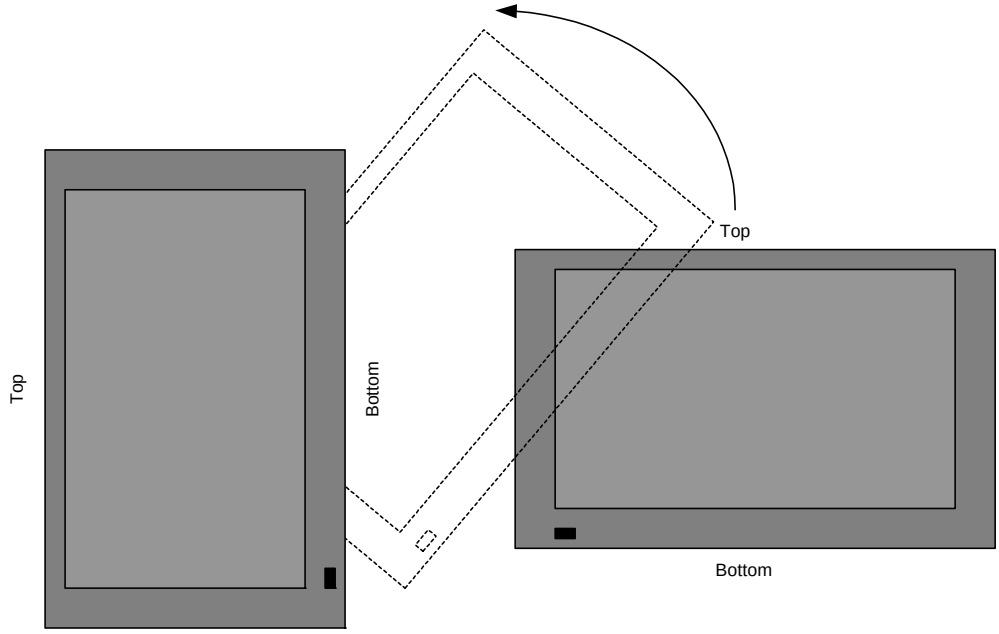


Figure 2-2: Screen orientation for WARP resolutions

It is recommended that WARP resolutions not be used with CRT displays. Most CRT displays exhibit colour distortions on screen when the CRT is not oriented in it's normal upright position. Only use LCD- and plasma-type displays when displaying WARP resolutions.

3. SPECIFICATIONS

3.1. COAXIAL GLINK INPUT

Connector: BNC
Equalization: Automatic up to 10m

3.2. FIBER GLINK INPUT

Connector: SC/PC, ST/PC, or FC/PC female housing
Maximum Input Power: -3dBm
Wavelength: 1270 nm to 1610nm
Optical Sensitivity: -18dBm
Fiber Size: 62μm core / 125μm overall

3.3. RE-CLOCKED COAXIAL GLINK OUTPUT

Connector: BNC
Signal Level: 750mV minimum

3.4. VIDEO OUTPUT

Connector: DVI-I (digital + analog)
Output Resolution: SXGA (1280x1024) @ 60Hz/50Hz maximum,
WXGA-WARP (768x1280) @ 60Hz/50Hz

3.5. DVI DIGITAL VIDEO OUTPUT

Voltage Swing: 400mV minimum
Output Clock Jitter: 150ps maximum
Differential Skew: 50ps maximum

3.6. RGB ANALOG VIDEO OUTPUT

Signal Level:
Video: 1Vpp nominal RGB
Sync: 4V
Impedance: 75Ω
DC Offset: 0V ±0.5V

3.7. ELECTRICAL

Voltage: +12VDC
Power: 12 Watts
EMI/RFI: Complies with FCC regulations for class A devices
Complies with EU EMC directive

3.8. PHYSICAL

Dimensions: 7.2” L x 4.3” W x 1.0” H
(166mm L x 110mm W x 26mm H)
With mounting flanges: 7.2” L x 5.3” W x 1.0” H
(166mm L x 136mm W x 26mm H)
Weight: 0.85 lbs. (0.38 kg)

4. STATUS LED’S

The locations of the status indicators are shown in Figure 2-1.

POWER: Indicates that the 2430GDAC-WARP is receiving electrical power.

FAULT: When on, indicates that the input G-Link signal (either coaxial or fiber) is not being received.

5. USER CONTROLS

The 2430GDAC-WARP has a 4 position DIP switch that is used to configure several features. The On position is down or closest to side of the unit with the flanges. Table 5-1 gives an overview of the DIP switch functions.

DIP Switch	Function
1	Fiber/coaxial input select
2	Auto/manual resolution select
3	Resolution select
4	

Table 5-1: DIP Switch functions

5.1.1. Input Source Selection

DIP switch 1 selects the input G-Link source.

DIP 1	Video Source
Off	Fiber Input
On	Coaxial Input

Table 5-2: Input Source Switch Settings

5.1.2. Video Resolution

DIP switch 2 selects the output resolution mode.

DIP 2	Video Source
Off	Manual Resolution Select
On	Automatic Resolution Detect

Table 5-3: Input Source Switch Settings

When in automatic resolution detection mode, the 2430GDAC-WARP determines the resolution and refresh rate of the incoming G-Link video, and automatically configures its video output to match.

When in manual resolution mode, the output video resolution and refresh rate of the 2430GDAC-WARP is manually configured using DIP switches 3 and 4. Table 5-4 lists the available video resolutions and their corresponding DIP switch settings.

DIP 3	DIP 4	Resolution/Refresh Rate
Off	Off	UXGA @ 60Hz (Future)
Off	On	SXGA @ 60Hz
On	Off	WXGA @ 60Hz
On	On	XGA @ 60Hz

Table 5-4: Manual Resolution settings

For proper display of incoming video when in manual resolution mode, the output video resolution setting must correspond to video being output by the G-Link video source.

6. UPGRADING THE FIRMWARE

The 2430GDAC-WARP module contains firmware that is contained in a FLASH EPROM device. From time to time firmware updates will be provided to add additional features to the unit. The 2430GDAC-WARP module is fitted with a COM port connector that can be connected to a PC with a straight through cable. The following procedure will allow you to upload new firmware from your computer.

6.1. REQUIREMENTS

You will need the following equipment in order to update the 2430GDAC-WARP Firmware:

- PC with available communications port. The communication speed is 57600 baud, therefore a 486 PC or better with a 16550 UART based communications port is recommended.
- "Straight-thru" serial extension cable (DB9 female to DB9 male).
- Terminal program that is capable of Xmodem file transfer protocol (such as HyperTerminal).
- New firmware supplied by Evertz.

6.2. UPDATE PROCEDURE

6.2.1. Part 1 – Configuring the Unit for Firmware Upgrades

1. Connect the 9 pin male connector on the straight through serial extension cable to the COM port on the end of the 2430GDAC-WARP. Connect the 9 pin female connector to the PCs' RS-232 communications port.

6.2.2. Part 2 – Terminal Program Setup

2. Start the terminal program.
3. Configure the port settings of the terminal program as follows:

Baud	**57600**
Parity	**no**
Data bits	**8**
Stop bits	**2**
Flow Control	**None**

4. Apply power to the 2430GDAC-WARP. After the unit powers up, a banner with the boot code version information should appear in the terminal window. The cursor to the right of the word "BOOT>" should be spinning for about 5 seconds then the unit will continue to boot.

   For example:

```
EVERTZ MCF5272 MONITOR 2.3 BUILD 3 (66 MHZ)
COPYRIGHT 1997, 1998, 1999, 2000, 2001, 2002 EVERTZ MICROSYSTEMS LTD.
28F160C3B FLASH DETECTED
PROD=2430GDAC-WARP
MCF5272 COLD BOOT> |
```

5. The following is a list of possible reasons for failed communications:

   - Defective serial cable.
   - Wrong communications port selected in the terminal program.
   - Improper port settings in the terminal program (Refer to step 3 for settings).

6. While the cursor is spinning press the <CTRL> and <X> keys on your computer keyboard at the same time, this should stop the cursor from spinning. The spinning prompt will only remain for about 5 seconds. You must press <CTRL-X> during this 5 second delay. If the unit continues to boot-up, simply cycle the power and repeat this step.
7. Hit the <ENTER> key on your computer once.
8. Type the word "upgrade", without quotes, and hit the <ENTER> key once.
9. The boot code will ask for confirmation. Type "y", without quotes.
10. You should now see a prompt asking you to upload the file.

6.2.3. Part 3 – Uploading the New Firmware

11. Upload the "*.bin" file supplied using the X-Modem transfer protocol of your terminal program. If you do not start the upload within 10 minutes the 2430GDAC-WARP boot code will time out. You can restart the upgrade process by cycling the power to the unit.
12. The boot code will indicate whether the operation was successful upon completion of the upload.

    For example:

```
UPLOAD OKAY
MCF5272 COLD BOOT> |
```

13. The following is a list of possible reasons for a failed upload:

    - If you get the message "transfer cancelled by remote" you must restart the terminal program and load the bin file, then cycle power to the unit.
    - The supplied "*.bin" file is corrupt.
    - Wrong file specified to be uploaded.
    - The PC's RS-232 communications port cannot handle a port speed of 57600.
    - Noise induced into the serial cable.

6.2.4. Part 4 – Completing the Upgrade

14. Type the word “boot”, without quotes, and hit the <ENTER> key once or power cycle the unit. The unit should now reboot.
15. You can now close the terminal program and disconnect the serial cable.

The update procedure is now completed.

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