



DVI-SDI-2-SFP

Dual DVI to optical SDI converter

User manual

Rev. C

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Revision history

Current revision of this document is the uppermost in the table below.

Rev.	Repl.	Date	Sign	Change description
C	B	2014-05-22	AJM	Minor updates before release
B	A	2014-02-24	SHH	Updated manual
A	-	2012-02-28	AJM	First version

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1 Product overview

DVI-SDI-2-SFP will convert DVI-R or HDMI signal into an optical SDI. Used together with DVI-SDI-2-SFP this card can be used as an optical extender for transporting DVI signal.

The dual optical transmitter is SFP based and can be 1310nm for short haul application or 18 channel CWDM transmitter. The CWDM option can be combined with Flashlink CWDM-18 filter making it possible to transport 18 DVI signals over one fiber.

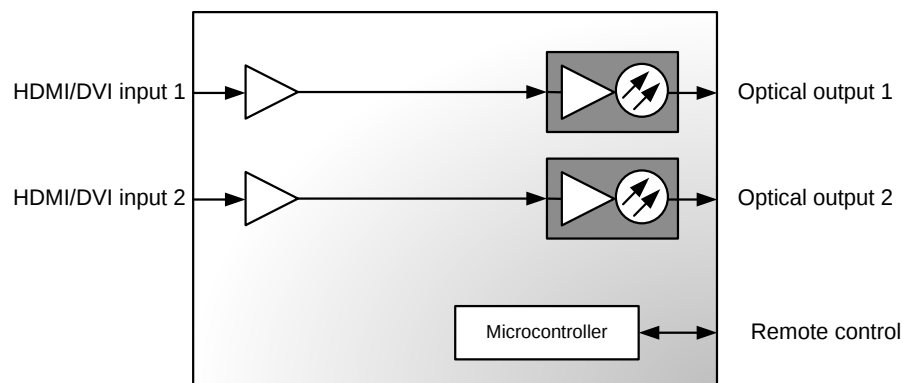


Figure 1 Block diagram of the DVI-SDI-2 converter



2 Specifications

2.1 General

Power	+5V DC / 5W, max
Control	Control system for access to setup and module status with BITE (Built-In Test Equipment)
Temperature range	0 to +40 °C

2.1 Electrical Inputs

Number of inputs	2
Connector	HDMI type D HDMI type A with use of adapter cable DVI-D with use of adapter cable
Supported format	525i/ 625i 720p/ 1080i, 50/59.94/60Hz 1080p, 50/ 59.94/ 60Hz 640x480: converted to 720p by adding black lines 800x600: converted to 720p by adding black lines. 1024x768: converted to 1080p by adding black lines. 1280x1024: converted to 1080p by adding black lines. Other graphical format may work.
Number of bits	24bit (3x8bit)
Bandwidth	165MHz
Format	RGB 4:4:4, YCbCr 4:2:2, YCbCr 4:4:4 Only non-HDCP protected signal
RGB Range	Full or SMPTE
Audio embedding	2 channels, AES 1 group. L-PCM, 48kHz

2.2 Optical output

Number of outputs	2
Connector	LC/UPC
SFP type	Nevion Video SFP range, Dual transmitter
See SFP datasheet for additional specifications	

2.3 Standards

SMPTE292M, SMPTE259M, SMPTE297M, SMPTE425A, SMPTE425B, SMPTE424M

3 Operation

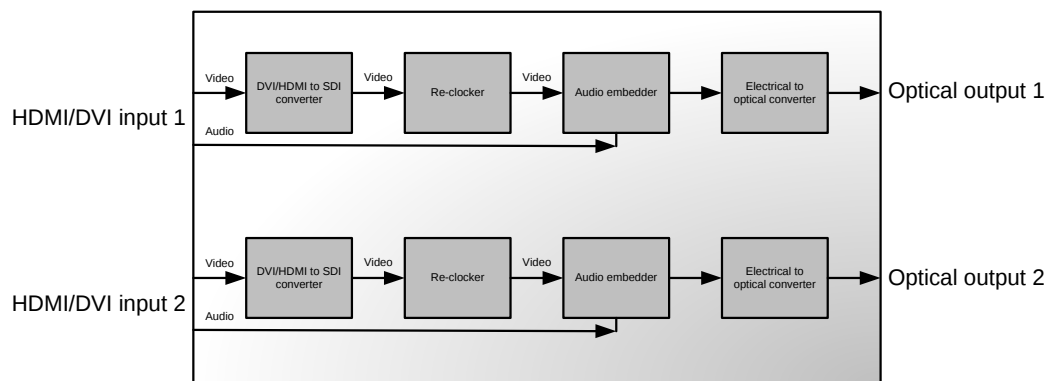


Figure 2 Signal flow

The electrical DVI/HDMI signal is converted into an electrical SDI signal. The audio is embedded into the SDI signal before the SDI is converted to optical by the optical SFP. In DVI mode no audio is embedded into the SDI signal.

4 Configuration

The correct configuration can either be set with a DIP switch or with the GYDA Control System. The layout of DVI-SDI-2 is shown in the drawing below with the DIP switch to the upper left position.

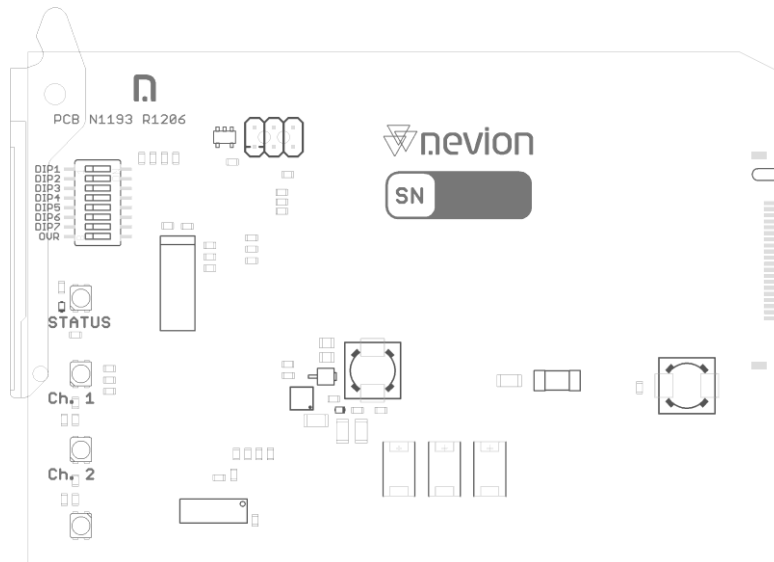


Figure 3 DVI-SDI-2 board layout

Switch #	Label	Function, DIP = ON	Function, DIP = OFF	Comment
1	DIP1			To be defined
2	DIP2			To be defined
3	DIP3			To be defined
4	DIP4			To be defined
5	DIP5			To be defined
6	DIP6			To be defined
7	DIP7			To be defined
8	OVR	Override GYDA control. Configuration with DIP switch	GYDA control. Configuration with GYDA	Select configuration from GYDA

All DIP switches are off when pointing towards the release handle.

5 Connections

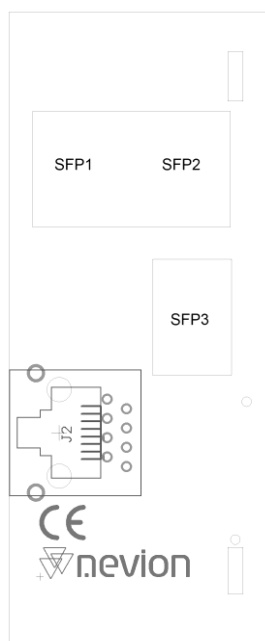


Figure 4 Connector module for DVI-SDI-2

5.1 Mounting the connector module

The details of how the connector module is mounted, is found in the user manual for the sub-rack frame FR-2RU-10-2.

This manual is also available from our web site:

<http://www.nevion.com/>.

5.2 Terminal ports

The connector module must be fitted with three SFP's. SFP3 is for the dual optical receiver module. While the SFP1 and SFP2 are for the HDMI/DVI SFP. The HDMI/DVI SFP are fitted with an HDMI type D connector, if other connect are preferred see chapter **Error! Reference source not found.** for alternatives.

Terminal	Function	Supported Format	Mode
SFP3	Optical output	Optical SD/HD/3G-SDI	Output
SFP1	Electrical input	HDMI or DVI	Input
SFP2	Electrical input	HDMI or DVI	Input
GPI ALARM	Open Collector Alarms	Wired alarms	OC Output

Unused inputs should be terminated to avoid alarms triggered by noise.

5.3 Cable adapter

5.3.1 HDMI type A

An HDMI type D to HDMI type A can be delivered with the module for interfacing for interfacing to HDMI type A equipment.



5.3.2 DVI-D

An HDMI type D to DVI-D can be delivered with the module for interfacing to DVI-D equipment.



6 Module status

The status of the module can be monitored in three ways.

1. Multicon Gyda System Controller (optional).
2. GPI at the rear of the sub-rack.
3. LED's at the front of the sub-rack.

Of these three, the GPI and the LED's are mounted on the module itself, whereas the GYDA System Controller is a separate module giving detailed information on the card status.

6.1 Multicon Gyda

6.2 GPI ALARM – Module Status Outputs

These outputs can be used for wiring up alarms for third party control systems. The GPI outputs are open collector outputs, sinking to ground when an alarm is triggered. The GPI connector is shown in figures below.

Electrical Maximums for GPI outputs

Max current : 100mA

Max voltage : 30V

6.2.1 GPI connections

DVI-SDI-2 module GPI pinning:

Signal	Name	Pin #	Mode
Status	General error status for the module.	Pin 1	Open Collector
LOS1	Loss of signal or missing SFP on channel 1.	Pin 2	Open Collector
LOS2	Loss of signal or missing SFP on channel 2.	Pin 3	Open Collector
Ground	0V / gnd pin.	Pin 8	0V.

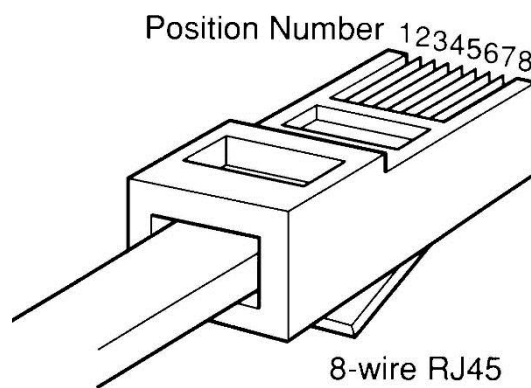
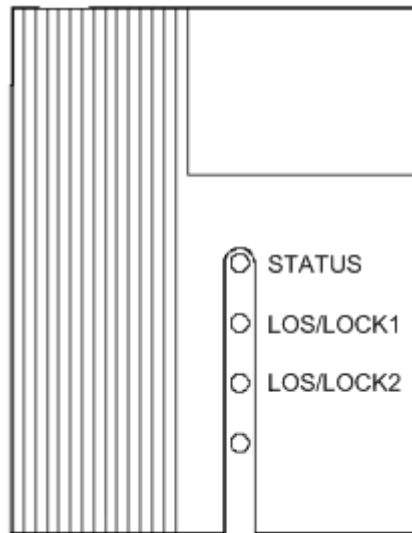


Figure 1 GPI connector

6.3 Front panel – Status monitoring

The status of the module can be easily monitored visually by the LED's at the front of the module. The LEDs are visible through the front panel as shown in the figure below.



The DVI-SDI-2 has 4 LED's each showing a status corresponding to the GPI pinning.

Diode \ State	Red LED	Yellow LED	Green LED	No light
Status	Module is faulty, or module is initializing.	N/A	Module is OK Module power is OK	Module has no power
LOS/LOCK1	No input signal on input 1.	Channel 1 is not in lock or unsupported format.	Channel 1 is in lock and supported format.	Missing SFP on signal 1
LOS/LOCK2	No input signal on input 2.	Channel 2 is not in lock or unsupported format.	Channel 1 is in lock and supported format.	Missing SFP on signal 1
Transmitter SFP	Missing SFP	NA	Present SFP	NA

Table 1: LED states and what they mean

General environmental requirements for Nevion equipment

1. The equipment will meet the guaranteed performance specification under the following environmental conditions:
 - Operating room temperature range: 0°C to 45°C
 - Operating relative humidity range: <90% (non-condensing)
2. The equipment will operate without damage under the following environmental conditions:
 - Temperature range: -10°C to 55°C
 - Relative humidity range: <95% (non-condensing)

Product Warranty

The warranty terms and conditions for the product(s) covered by this manual follow the General Sales Conditions by Nevion, which are available on the company web site:

www.nevion.com

Appendix A Materials declaration and recycling information

A.1 Materials declaration

For product sold into China after 1st March 2007, we comply with the “Administrative Measure on the Control of Pollution by Electronic Information Products”. In the first stage of this legislation, content of six hazardous materials has to be declared. The table below shows the required information.

組成名稱 Part Name	Toxic or hazardous substances and elements					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六价铬 Hexavalent Chromium (Cr(VI))	多溴联苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
<Product>	○	○	○	○	○	○
<Power supply, if delivered with unit>	○	○	○	○	○	○
O: Indicates that this toxic or hazardous substance contained in all of the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.						
X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.						

This is indicated by the product marking:



A.2 Recycling information

Nevion provides assistance to customers and recyclers through our web site <http://www.nevion.com/>. Please contact Nevion's Customer Support for assistance with recycling if this site does not show the information you require.

Where it is not possible to return the product to Nevion or its agents for recycling, the following general information may be of assistance:

- Before attempting disassembly, ensure the product is completely disconnected from power and signal connections.
- All major parts are marked or labeled to show their material content.
- Depending on the date of manufacture, this product may contain lead in solder.
- Some circuit boards may contain battery-backed memory devices.