



DA-SDI

SDI Distribution Amplifier

User manual

Rev. H

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Revision history

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

Rev.	Repl.	Date	Sign	Change description
H	7	2015-05-14	MB	Cover page update; DoC removed; no other changes to content
7	6	2011-02-24	AA	New template. Updated Materials Declaration and Declaration of Conformity,
6	5	2008-07-22	AS	Added Declaration of Conformity
5	4	2007-10-25	AS	New front page.
4	3	2007-10-05	AS	Added Materials Declaration and EFUP
3	2	2007-01-24	SHH	Updated manual to DA-SDI-mkII design with 8 outputs.
2	1	2004-02-12		Added info about termination.
1	0	2003-04-25		Corrected printing errors
0	B	2003-04-23		First release
B	A	2003-04-07		Preliminary version 2
A	-	2003-04-03		Preliminary version

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1 Product overview

The Flashlink DA-SDI is a serial digital video distribution amplifier module providing high performance media distribution for various signal formats from 1Mbps up to 540Mbps. The unit can be configured to do cable equalising and reclocking of SMPTE 259M and DVB-ASI signal formats.

The input typically provides an automatic cable equaliser for up to 300 metres of cable (Belden 8281A at 270Mbps) with 8 re-clocked outputs. The re-clocker supports the bit-rates; 143, 177, 270, 360 and 540Mbps. For other rates, the re-clocker automatically switches to bypass mode, and the DA-SDI will work as a non-reclocking distribution amplifier with cable equaliser. The DA-SDI also has a special DVB-ASI mode, enabling all possible rates including empty transport streams with only K28.5 padding packets. Outputs 1-6 are non-inverting to support DVB-ASI compatibility. Outputs 7 and 8 are inverting.

The DA-SDI is designed for all distribution purposes in studio, duplication and Broadcast applications.

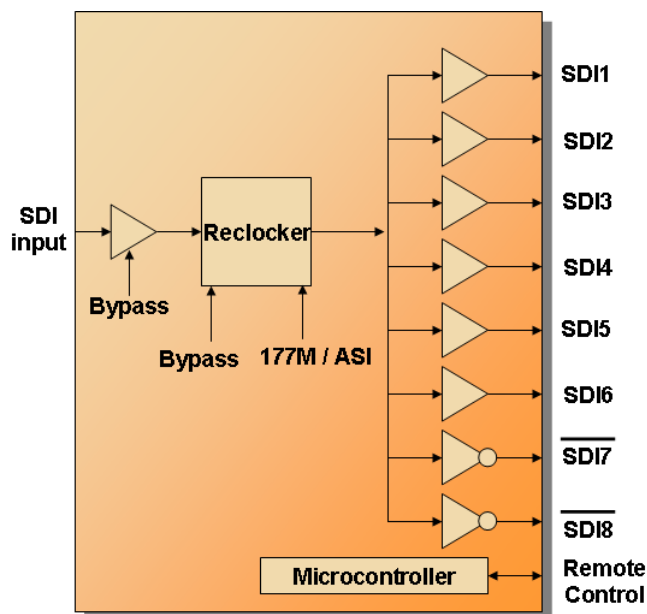


Figure 1: DA-SDI Serial Digital Video Distribution Amplifier

2 Specifications

Electrical Input

Data rate NRZ:	1 to 540 Mbps
Equalisation:	Automatic Cable equaliser and reclocker can be bypassed to support bitrates down to 1Mbps.
Impedance:	75 ohm
Return loss:	>15dB @ 540MHz
Signal level:	nom. 800mV approx. 200mV min. when equaliser switched to Bypass
Connector:	BNC

Electrical Output

Number of outputs:	8 (6)
Connector:	BNC
Impedance:	75 ohm
Return loss:	>15dB @ 540MHz
Jitter:	max 0.2UI
Peak to peak signal level:	0.8V ± 0.1V
Signal polarity	6 non inverting, 2 inverting

Features

Re-clocking:	Automatic clock rate detection Selectable loop bandwidth – Low: 500kHz – High: 1MHz Supported clock rates: 143, 177, 270, 360 and 540 Mbps
Input equaliser:	EQ bypass for non-video formats or low bit rates

Electrical

Power:	+5V DC / 3W Max.
Control:	Control system for access to setup and module status with BITE (Built-In Test Equipment) for use with GYDA Control System.

Supported standards

SMPTE:	SMPTE259M, SMPTE297M, SMPTE305M, SMPTE310M
DVB-ASI:	EN50083-9
AES:	AES-3id (with EQ and RCL switched off)

3 Format configuration

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

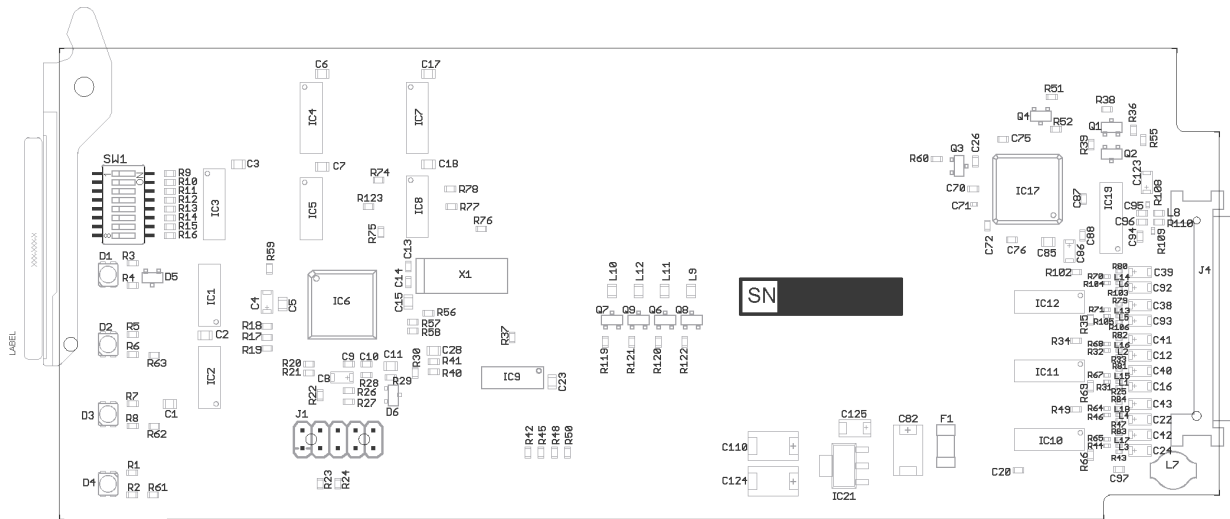


Figure 2: DA-SDI board layout.

DIP switch configuration must be set according to the table below:

Switch #	Label	Function DIP=OFF	Function DIP=ON	Comment
1	ARB	Output muted when reclocker not in lock	Automatic Reclocker Bypass. Output never muted	Output mute
2	EQM	Equaliser forced not to mute	Automatic muting of equaliser when signal strength is too low	Input mute
3	RCL	Reclocker Bypass	Reclocker ON	Reclocker mode
4	EQ	Cable equaliser Bypass	Cable equaliser ON	Equaliser mode
5	ASI	SDI 177Mbps Reclocker support	DVB-ASI Reclocker support	ASI mode
6	SLL	NA	NA	NA
7	BWL	Reclocker loop-bandwidth high. (apx. 1MHz)	Reclocker loop-bandwidth low. (apx. 500kHz)	Loop bandwidth select
8	OVR	GYDA control Config. with GYDA	Override GYDA control Config. with DIP switch	Select GYDA config. mode

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

When the default setting is selected, all clock rates for SDI and DVB-ASI are automatically configured by the module itself.

3.1 Configuration Examples

Typical configurations for DA-SDI:

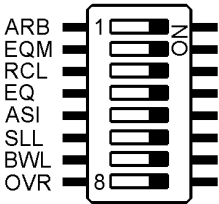


Figure 3: Default; SDI and DVB-ASI

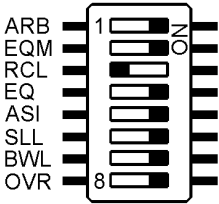


Figure 4: Transparent Mode with equalisation and no reclocking.

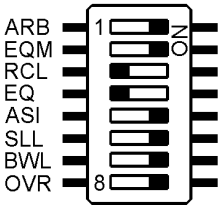


Figure 5: AES3id compatible and Transparent Mode without equalisation and reclocking.

4 Connector module

The DA-SDI has two dedicated connector modules: DA-SDI-C1 and DA-SDI-C2. These modules are mounted at the rear of the sub-rack. The modules are shown in Figure 6 and Figure 7.

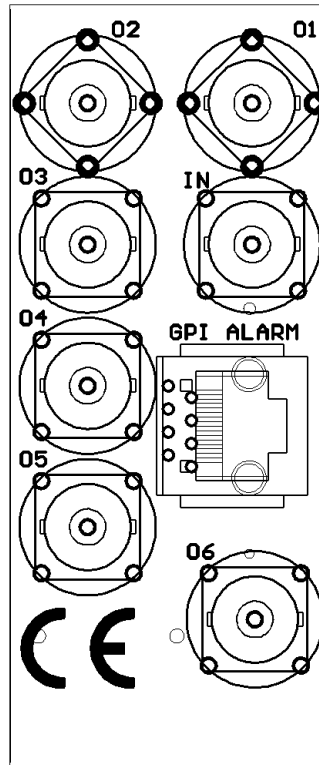


Figure 6: Overview of the DA-SDI-C1 connector module.

On DA-SDI-C1 the electrical input signal is connected to the IN BNC and the electrical outputs are connected to the O1 to O6 BNC's. Please note that all 6 outputs are non-inverted and suitable for DVB-ASI.

Unused outputs should be terminated with 75 ohm.

DA-SDI-C1 also has GPI ALARM outputs on a RJ45 connector.

On DA-SDI-C2 the electrical input signal is connected to the IN BNC and the electrical outputs are connected to the O1 to O8 BNC's. Please note that outputs 1 to 6 are non-inverted and suitable for DVB-ASI, while outputs 7 and 8 are inverting and cannot be used for DVB-ASI.

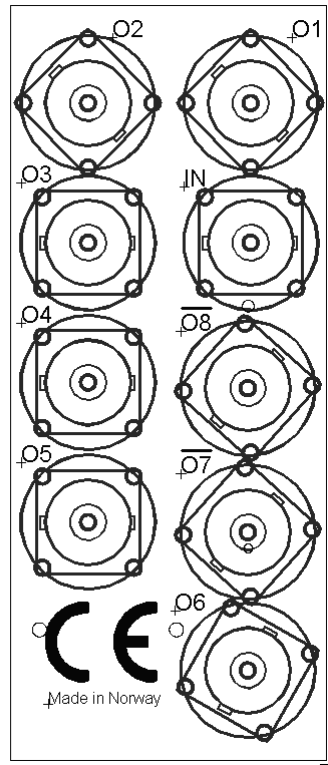


Figure 7: Overview of the DA-SDI-C2 connector module.

Unused outputs should be terminated with 75 ohm.

DA-SDI-C2 does not have any GPI alarm outputs.

4.1 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 Module status

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

1. 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. The functions of the GPI and the LED's are described in sections 5.1 and 5.2. The GYDA controller is described in a separate user manual.

5.1 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 Figure 8.

Electrical Maximums for GPI outputs

Max current: 100mA

Max voltage: 30V

DA-SDI module GPI pinning (Only supported by DA-SDI-C1 backplane):

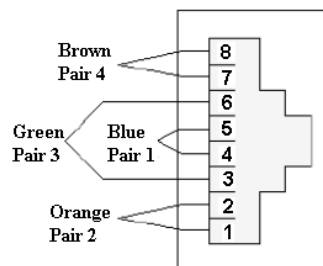
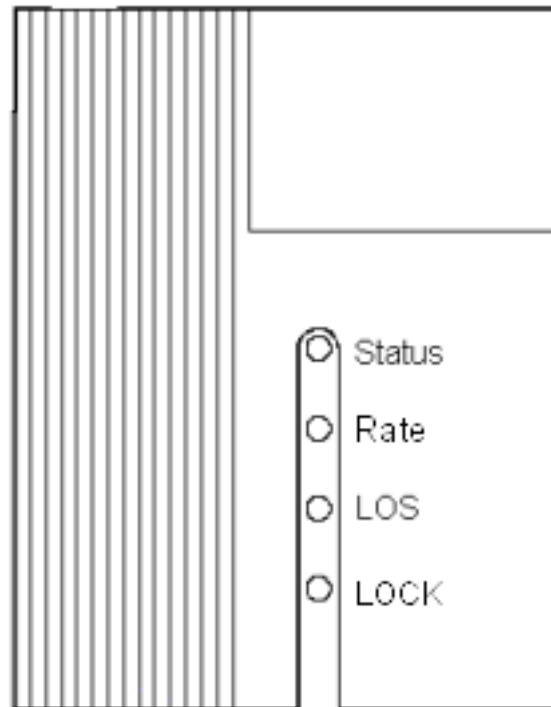


Figure 8: GPI Outlet

Signal	Name	Pin #	Mode
Status	General error status for the module.	Pin 1	Open Collector
Rate	Rate SD	Pin 2	Open Collector
LOS	Los Of Signal	Pin 3	Open Collector
LOCK	Reclocker in Lock	Pin 4	Open Collector
Ground	0 volt pin	Pin 8	0V.

5.2 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 LED's are visible through the front panel as shown in Figure 9 below.



(Text not printed on the front panel).

Figure 9: Front panel indicator overview for DA-SDI.

The DA-SDI has 4 LED's each showing a status corresponding to the GPI pinning. The position of the different LED's is shown in Figure 9.

Diode/state	Red LED	Yellow LED	Green LED	No light
Status	Module is faulty		Module is OK Module power is OK	Module has no power
Rate	Rate not detected	SD rate, non 270Mbps, found	SD 270Mbps rate found	
LOS	Loss of signal No input signal.	LOS detection de-activated (EQM=off)	Input signal present	
LOCK	Re-clocker is out of lock	Re-clocker switched off	Re-clocker is in lock on a supported signal format	

General environmental requirements for Nevion equipment

1. The equipment will meet the guaranteed performance specification under the following environmental conditions:
 - Operating room temperature 0°C to 40°C
range:
 - Operating relative humidity range: <90% (non-condensing)
2. The equipment will operate without damage under the following environmental conditions:
 - Temperature range: -10°C to 50°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)
DA-SDI	O	O	O	O	O	O
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.