System HD Eight Output HD-SDI Distribution Amplifier Operation Manual

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Introduction to this Operation Manual

This manual covers the operation and use of the module described below.

WARNING…
THE FRONT PANEL OF THE UNIT MUST NOT BE OPENED BY THE OPERATOR. ACCESS IS ONLY PERMITTED TO FULLY QUALIFIED INSTALLATION ENGINEERS.

System HD Modules must only be installed and/or replaced by qualified service personnel, with reference to the System HD Installation guide. Refer all installation and servicing to qualified personnel only.

Manufacturers Notice

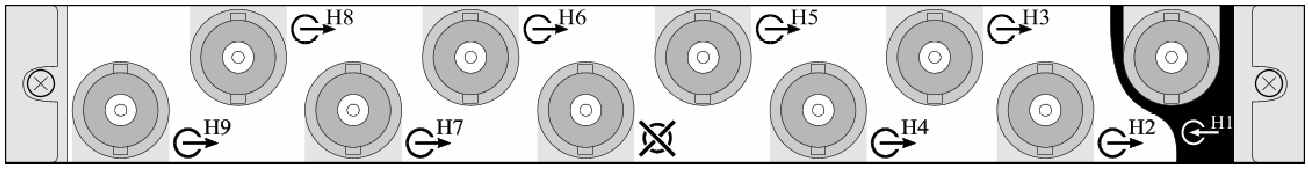
Important Notice

No responsibility is taken by the manufacturer or supplier for any non-compliance to EMC standards due to incorrect installation.

Scope of this Operation Manual

This is the operation manual for the System HD Single Channel Distribution Amplifier Module. It covers the modules ordered under the following codes :

SHDSDA1S-S1 – Standard 8 output distribution amplifier with basic reporting.
SHDSDA1E-S1 – 8 output distribution amplifier with enhanced reporting



SHDSDA1S-S1 and SHDSDA1E-S1 Distribution Amplifier, Rear Panel View

Module Description

The Eight Output HD-SDI Distribution Amplifier provides eight reclocked HD-SDI outputs from a single HD-SDI input.

The electrical high definition serial digital (HD-SDI) bitstream is input into the distribution amplifier main board via a 75Ω BNC connector on a rear panel interface card. The HD-SDI input signal is then equalised and re-clocked before being split to provide eight identical coaxial HD-SDI outputs for the user via 75Ω BNC connectors on the backpanel of the interface card.

Detailed performance information can be obtained via the RollCall interface.

Two levels of monitoring sophistication are available to the user. A standard operational level is available on all boards, covering parameters ranging from voltage supply status to the presence of an input signal. The optional enhanced monitoring level provides a comprehensive analysis of the incoming HD-SDI signal such as CRC error detection, line standard and frame rate identification.

WARNING…
THE FRONT PANEL OF THE UNIT MUST NOT BE OPENED BY THE OPERATOR. ACCESS IS ONLY PERMITTED TO FULLY QUALIFIED INSTALLATION ENGINEERS.

It is recommended that a record is made of the System HD Order Code for the module in the table on the following page. This will allow easy identification of the monitoring level of the main board when referring to this manual at a later date.

Quick guide to order codes:

Amplifier card Interface card

SHD SDA1 [X] S [X]

Dist. Amplifier Code	Properties
S	Standard reporting
E	Enhanced reporting

Interface card option code	Interface card supplied with main amplifier board
1	10 BNC labelled for 8 output

Codes other than those listed refer to custom options.

Features

- SMPTE292M 1.485Gbit/s HD-SDI data rate supported
- Eight equalised and reclocked HD-SDI data outputs
- Can equalise over 100m of cable
- Alarm functions for poor quality input signals and device malfunction
- Stand-alone or RollCall operation
- Incoming signal analysis available as an option, it includes:
  CRC status
  Line standard
  Frame Rate
  Error rate

Note:

RollCall™ enabled for remote system control & monitoring.

Technical Profile

INPUT

Electrical	1.485GBit/s HD-SDI
Connector Format	BNC 75ohm panel jack
Input Cable Length	100m
Peak-to-peak signal amplitude	800mV ± 10%
D.C. offset	0V ± 0.5V
Rise time (20-80%)	< 270ps
Fall time (20-80%)	< 270ps
Difference	≤100ps
Return loss	>15dB

OUTPUTS

Electrical	1.485Gbit/s HD-SDI
Connector Format	BNC 75ohm panel jack
Outputs	8
Peak-to-peak signal amplitude	800mV ± 10%
D.C. offset	0V ± 0.5V
Rise time (20-80%)	< 270ps
Fall time (20-80%)	< 270ps
Difference	≤100ps
Return loss	>15dB

INDICATOR LEDS

Not available to the Operator

Standard

Power	Power supplies valid
Fault	Board fault

Enhanced Monitoring Option

CPU	Valid CPU activity
PLL Lock	Output locked to input standard
CRC Error	Data error
Line	Indicates line standard
Frame	Indicates frame rate
Prog/Int	Indicates progressive or interlaced frames

RollCall™

'Standard' RollCall monitoring options:	General alarm Supply voltage levels Board temperature
'Enhanced' RollCall monitoring options:	CRC status Line standard Frame rate Error rate

POWER CODE 1

WEIGHT <750gm (Main Board plus Interface Board)

OPTIONS

See page 2

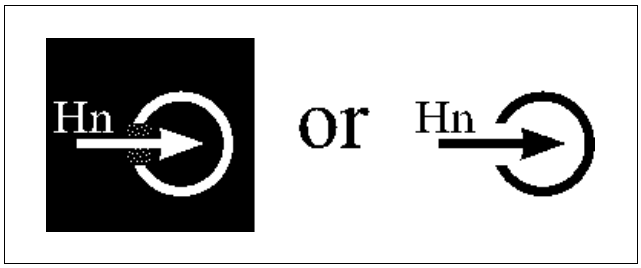
Notes…

1. **The eight output HD-SDI distribution amplifier (DA) is available with two levels of monitoring sophistication. A standard option which provides board level information such as supply faults and minimum incoming signal analysis. The enhanced monitoring option adds a comprehensive incoming signal analysis capability, including the detection of CRC errors and identification of the line standard/frame rate of the signal being distributed. Refer to the** monitor option code **on page 2 to identify what monitoring level is fitted to the DA board.**
2. **The interface card for the single channel eight output DA contains ten BNC connectors (see following page for drawing) of which only nine are actually required for full operation (one IN, eight OUT), the middle BNC not being used. A dual channel version of the DA card is also available (order number SHD_SDA2x S2) which contains two separate four output amplifiers. A dual channel DA also has a 10 BNC rear interface card (two lots of 1 IN, four OUT). The only difference between the rear interface cards for the two types of DA is in the backpanel labelling. Mechanically these two different types of rear interface card are completely compatible with each other and can be interchanged between the different types of DA board. Refer to the** interface card option code **on page 2 to identify what interface card has been supplied with the eight output DA main board.**

CAUTION: Confusion could arise if single/double channel rear interface cards are assigned to the wrong type of DA board. Though full functionality will be maintained for both types of DA, the difference in labelling could be misleading if all such occurrences are not fully documented at a system level.

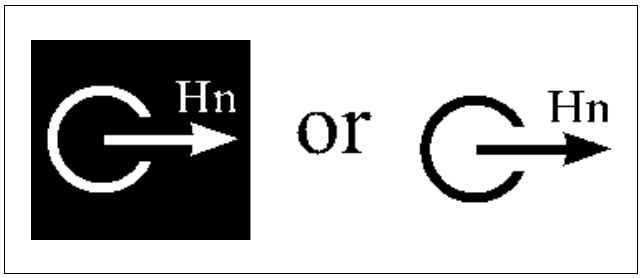
Rear Interface Connections

Rear Interface Notation Guide



Electrical HD-SDI Input

A High Definition Serial Digital electrical input though a 75Ω BNC connector is denoted in the way shown opposite. The " **H** " denotes the High Definition element and the " **n** " is the connection number for that particular rear interface.



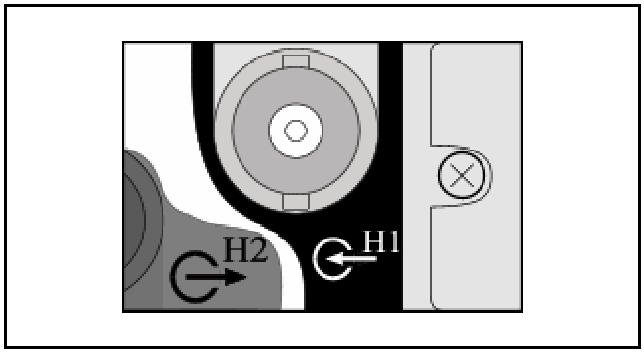
Electrical HD-SDI Output

A High Definition Serial Digital electrical output though a 75Ω BNC connector is denoted in the way shown opposite. The " **H** " denotes the High Definition element and the " **n** " is the connection number for that particular rear interface.

Standard Input

Electrical HD-SDI

Used On : SHDSDA1S-S1
SHDSDA1E-S1



The high definition serial digital electrical input is connected to a 75Ω BNC connector. The connector is shown opposite and is labelled **H1** on the rear panel.

Standard Outputs

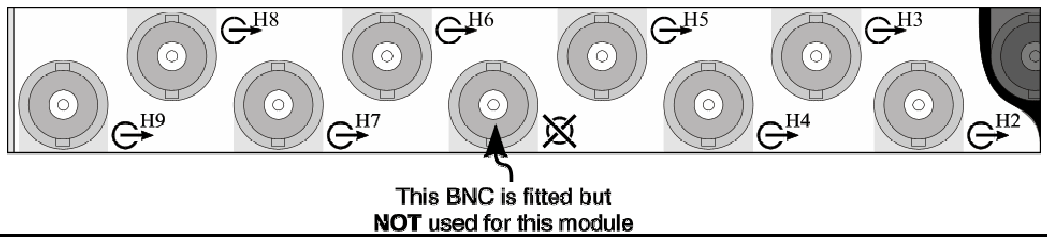
Electrical HD-SDI

Used On : SHDSDA1S-S1
SHDSDA1E-S1

The high definition serial digital electrical output is available from eight 75Ω BNC connectors, each providing identical outputs. These connectors are shown below and are labelled **H2**, **H3**, **H4 H5**, **H6**, **H7**, **H8** and **H9.**

Note…

The connector at the middle of the backpanel is not used with this main board but could be used if a dual channel main board is inserted *(see Technical Profile, OPTIONS)*.



Rollcall Menu System

When a System HD Control and Monitor board is fitted in the enclosure a range of monitoring information is available via RollCall™

External Monitoring	Description
General alarm	Input power fault or overcurrent trip or system failure
Supply voltage levels	Actual voltage levels
Board temperature	Actual board temperature
CRC Status	
Line Standard	
Frame Rate	
Bit error rate	Error rate over defined time period

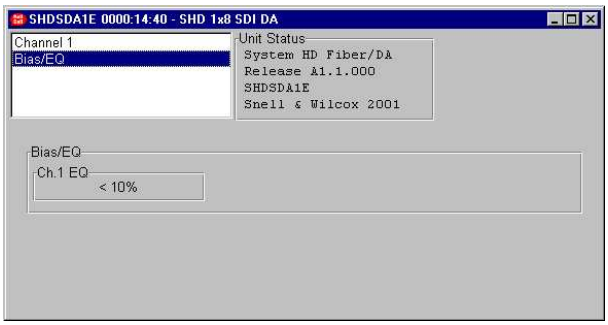
Rollcall Monitoring Features

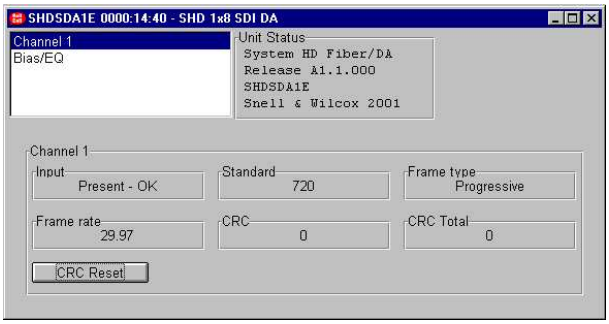
- Module Infrastructure:
  - General Alarm
  - Supply Voltage Levels
  - Board Temperature

- Incoming Signal analysis:
  - Input Status
  - Line Standard
  - Frame Type
  - Frame Rate

- CRC Error analysis:
  - CRC Error Count
  - CRC Error Total
  - CRC Reset

- Bias/EQ – The value in this field is a guide to the strength of equalisation that is being applied to the input signal for longer cable runs. The lower the value, the less equalisation is being employed. It is intended as a guide for troubleshooting the system. It should be noted that when an equalisation of 100% is shown, it doesn't necessarily mean that the maximum input cable length has been reached. As soon as CRC errors are being reported then the input cable length should be decreased until an error free signal can be received.





Manual Revision Record

Date	Version No.	Issue No.	Change	Comments
16/06/01	1	1		First draft document Issued
051001	1	2	Edited current feature list Only states features that are present in current release A1.0.000	New issue released
030402	1	3	New monitoring features added	New issue released