

# Crystal Vision

## SmartDA

### SDI Distribution Amplifier with signal reporting



The Smart DA brings a new level of intelligence to SDI distribution. In addition to producing eight relocked outputs, this low-cost SDI distribution amplifier will monitor the video and embedded audio and provide warnings should any problems occur.

The Smart DA is an essential tool for the broadcast engineer. You can use it as a signal probe, a distribution amplifier or both! The status of the signal can be viewed by using the 100mm x 266mm module in conjunction with the Statesman PC software. The Smart DA GUI is split into two sections, with one tab showing the current status and the other the set-up screen. The status indications available are numerous and include input present, input standard, video black, video frozen, audio group present, audio silence, EDH missing, EDH full field error and EDH active picture error. Also included are latched EDH errors, allowing you to check for any errors over a period of time. The status is additionally indicated on board edge LEDs.

Along with the status indications, the Smart DA can also provide warnings of any problems using either GPI or Statesman alarms. GPI 1 and GPI 2 can be configured to show an alarm condition for any individual or group of error conditions. For those using Statesman alarms, you can choose to be notified of a problem in a way that suits you, with options including a flashing title bar, a sound, a pop-up dialog box on another networked PC or an e-mail message. Warnings of video absent or audio absent are instant, while a black picture, frozen picture, or silent audio will trigger an alarm following a user selectable delay of up to 240 seconds. There are also three EDH alarms: EDH error found here, no EDH packet and EDH error rate exceeds threshold.

The Smart DA is housed in the standard frames and can be used with three different frame rear modules to suit your individual application, with the RM01 giving five SDI outputs and the RM02 and RM18 both giving the maximum eight.

The Smart DA is ideal for engineers who need a simple signal probe or for large systems needing immediate indication of signal or transmission problems, especially in unmanned automatic playout facilities.

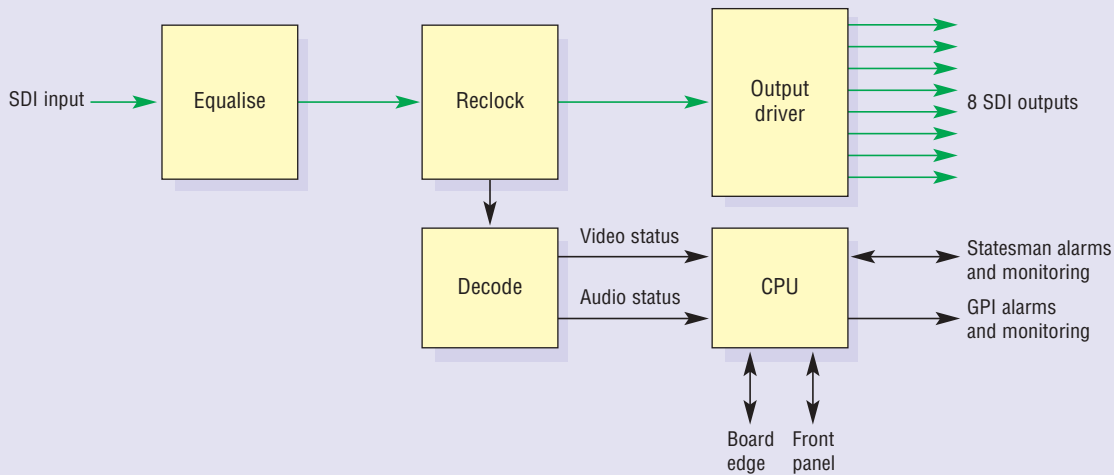


Status screen



Set-up screen

- S** SDI distribution amplifier with signal reporting
- S** Maximum of eight relocked outputs
- S** Use with Statesman to monitor status of video and embedded audio
- S** Numerous status indications: input present, input standard, video black, video frozen, audio group present, audio silence and various EDH errors
- S** Use Statesman or GPIs to set alarms
- S** High quality cable equalisation
- S** Competitively-priced - economical way of adding alarms to your system
- S** Space-saving: 100mm x 266mm module allows 12 Smart DAs in 2U (24 in 4U, six in 1U and two in desk top box)



## SPECIFICATION

### MECHANICAL

Standard Crystal Vision module 266mm x 100mm  
Weight: 155g  
Power consumption: 2 Watts

### VIDEO INPUT

One input  
SDI 270Mbit to EBU 3267-E and SMPTE 259M  
Cable equalisation >250m Belden 8281 or equivalent  
Auto 625/525 line selection

### VIDEO OUTPUTS

Maximum of eight relocked SDI outputs (five outputs with frame rear module RM01 and eight with RM02 and RM18)  
Will drive >250m Belden 8281 or equivalent

### DELAY THROUGH BOARD

<1us

### SIGNAL CHECKS

- Input present: Based on correctly positioned valid sync words in the data stream to avoid high levels of spurious noise or non-valid SDI signals such as ASI from setting the state to valid. If a valid input is not present then an alarm will be raised
- Input video standard: Displays if incoming signal is PAL (625 lines) or NTSC (525 lines)
- Input video standard changed: If the standard changes then an alarm can be triggered
- Active video black: If all the luma within the active picture area is less than 13mV from nominal black value then an alarm will be triggered. The period of time for which the picture must remain black can be set from 0 to 240 seconds
- Active video frozen: An active picture checksum is calculated, and if it remains unchanged then an alarm condition will be set. The period of time for which the picture must remain frozen can be set from 0 to 240 seconds
- Selected audio group present: The user defines which embedded audio group they wish to monitor in the video stream. If that audio group is missing, an alarm is triggered
- Audio silence: A separate audio level check is performed for each of the four audio channels in the selected group. If the audio signal level falls below -66dBm (-84dBFS) relative to full scale for a period of time defined by the user, then an alarm is triggered. Each audio channel has its own alarm state and therefore normally silent channels (often 3 and 4) can be set to be ignored

The following can also be monitored if the incoming video includes EDH packets:

- EDH missing. If the incoming SDI has EDH and it disappears then an alarm condition is set

- EDH active picture. As part of the EDH standard (SMPTE RP165) a checksum is calculated for just the active picture of the video. If an error is detected in the active picture then an alarm condition is set
- EDH full field error: The full field error compares the checksum for the whole field, including picture and ancillary data

### LED INDICATION OF:

Power supplies on board  
SDI input present  
Audio channel silence  
Video/audio error

### GPI OUTPUT LEVELS

Electrically: Open collector transistors 30V, 330Ohm current limit resistors. Pulled up to +5V through 10kOhm

### GPI OUTPUTS

Two GPI outputs

Local mode: SDI input present and picture frozen or black

Remote mode: Both GPIs are user configurable. The following alarm conditions can be set to trigger GPI 1, GPI 2 or No GPI: input missing, input standard changed, input black, input frozen, audio group missing, silence on audio 1 to 4, EDH error and EDH missing. The user can set a number of different alarm conditions to trigger GPI 1 or GPI 2 allowing, for example, one GPI to signal major alarms and one to signal minor alarms

### LOCAL CONTROL

Selection of:

Audio monitoring on/off

Audio group to be monitored

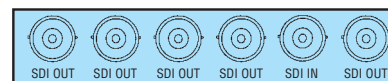
GPI alarm for silence on audio channels in group being monitored

### REMOTE CONTROL AND MONITORING

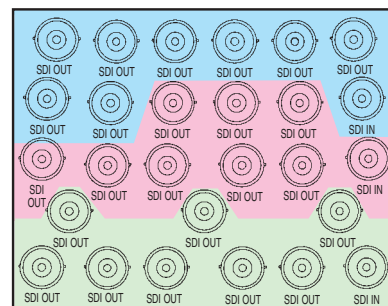
RS422/485

19200 baud, 8 bits, 1 stop no parity

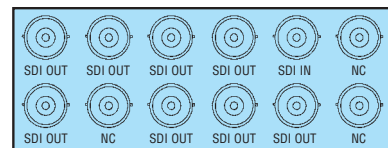
Statesman allows control and status monitoring from any PC on a network



RM01



RM02



RM18



## ORDERING INFORMATION

Smart DA	SDI distribution amplifier with signal reporting giving up to eight relocked outputs
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4S	4U frame with passive front panel fitted with Statesman CPU for up to 24 Crystal Vision modules
Indigo 2	2U frame with passive front panel for up to 12 Crystal Vision modules
Indigo 2A	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2S	2U frame with passive front panel fitted with Statesman CPU for up to 12 Crystal Vision modules
Indigo 1	1U frame with passive front panel for up to six Crystal Vision modules
Indigo 1A	1U frame with active front panel for up to six Crystal Vision modules
Indigo 1S	1U frame with passive front panel fitted with Statesman CPU for up to six Crystal Vision modules
Indigo DT	Desk top box with passive front panel for up to two Crystal Vision modules
Indigo DTA	Desk top box with active front panel for up to two Crystal Vision modules
Indigo DTS	Desk top box with passive front panel fitted with Statesman CPU for up to two Crystal Vision modules
RM01	Single slot frame rear module. Allows maximum number of Smart DAs in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to five relocked SDI outputs
RM02	Four slot frame rear module. One rear module used for three Smart DAs, allowing 18 Smart DAs in 4U and nine in 2U. Gives access to eight relocked SDI outputs
RM18	Two slot frame rear module. Allows 12 Smart DAs in 4U, six in 2U, three in 1U and one in desk top box. Gives access to eight relocked SDI outputs
Statesman	PC Control System

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