Crystal Vision

SMART SWITCH

Intelligent SDI 2 x 1 Switch

Smart Switch is a product that gives you peace of mind when it matters. Providing intelligent SDI switching to a backup signal source, it will monitor two video inputs with embedded audio and can switch between the sources if a fault condition arises. In manual mode either input can be forced to be the output. In auto mode Smart Switch will act on any error conditions that meet the switching criteria.

Smart Switch is most commonly used with the Statesman PC Control System. Using the software Smart Switch can be set to either ignore or create an alarm on any of the numerous features it can measure. For those who want to work with GPIs, two GPI outputs are available and can be configured (using Statesman) to show an alarm condition for any individual or group of error conditions.

Smart Switch has three Statesman menu tabs, as shown on the right. The first provides status information, the second allows configuration of delay and assignment of the GPI outputs (if required), while the third allows the setting of the switching criteria and audio monitor.

Smart Switch makes the best possible decision when switching to backup. It gives you the ultimate choice of switching criteria, meaning you can choose to switch away from even the most subtle fault. The parameters which can be selected by checking boxes on the Control screen tab are video frozen, video black, audio group missing and silence on a specific audio channel, as well as three EDH errors: EDH missing, EDH full field error and EDH active picture error. It also includes latched EDH errors to show if a transitory error has occurred. Further flexibility comes from the option to set a time period of between 0 and 240 seconds before the video black, video frozen and audio silence parameters trigger a switch. Any number of criteria can be selected, while errors can be masked by leaving the relevant check boxes unticked.

Smart Switch will switch away from an error on the main input only if the backup is free of that fault. Should the main and standby inputs have different alarms set Smart Switch will work to the most significant feature to decide which input to select - with 'loss of input' having the highest priority and 'channel 4 audio silent' the lowest. Loss of input cannot be masked and causes an immediate switch. The main feed can be programmed to be re-selected when the fault is cleared, if required.

Statesman alarms can additionally be set from the main Alarm Settings menu to ensure you are personally notified of any fault conditions (via a flashing Statesman title bar, a sound, an e-mail message or a triggered macro), allowing you to react swiftly and send a maintenance engineer along to fix the problem.

Smart Switch is housed in the standard frames and is used with the RM04 frame rear module to give the switched SDI output along with a loop-through of the standby feed.

Especially popular for those using embedded audio, this 100mm x 266mm module is ideal for securing the video output in systems that need high reliability. Put simply, Smart Switch will keep you on air.

Status screen

Set up screen

Control screen

- ➤ Intelligent SDI 2 x 1 switch
- ➤ Monitors two video inputs with embedded audio - can switch between sources if specified fault condition arises (and standby is free of that fault)
- ➤ Numerous switching parameters: input present, video black, video frozen, audio group present, audio silence and various EDH errors
- ➤ Will work to the most significant feature to decide which input to select
- ➤ Two reclocked outputs: switched SDI and standby loop-through
- ➤ Use Statesman PC software or GPIs to set alarms
- ➤ Space-saving: 100mm x 266mm module allows 12 Smart Switches in 2U (24 in 4U, six in 1U and two in desk top box)
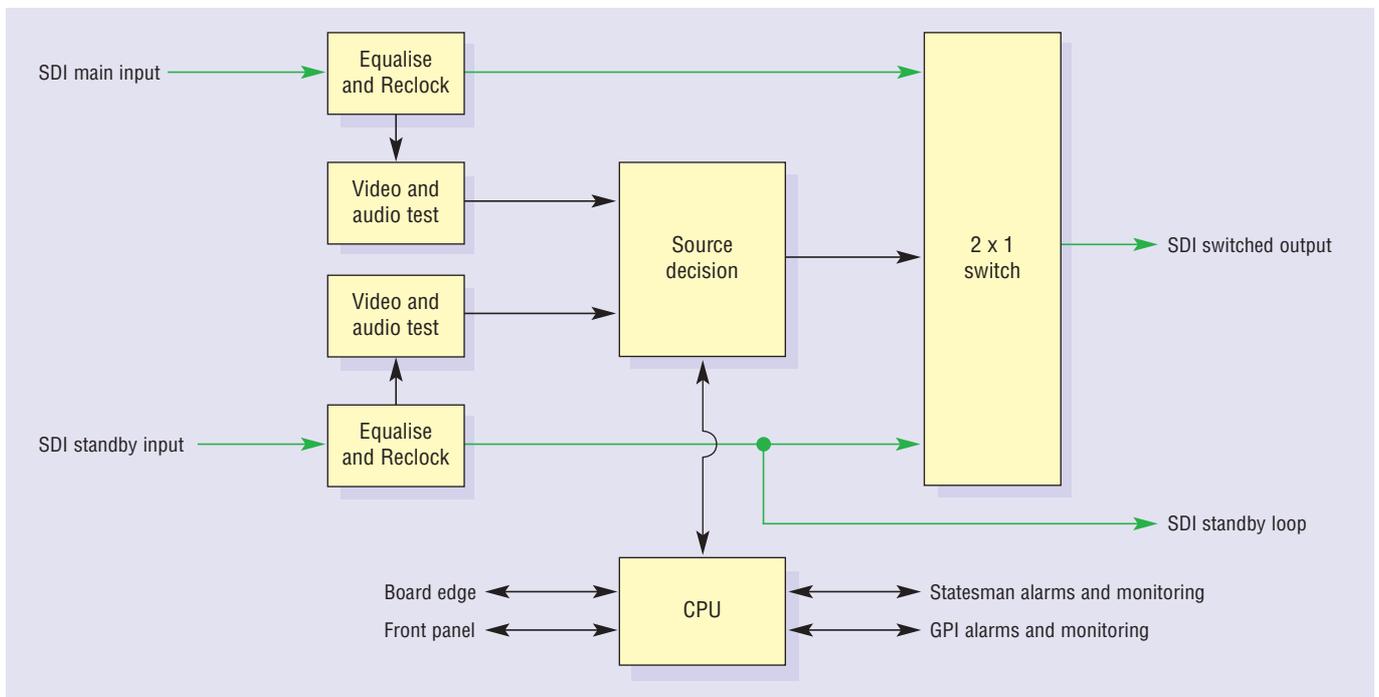
MECHANICAL
Standard Crystal Vision module 266mm x 100mm
Weight: 155g
Power consumption: 6 Watts

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

VIDEO OUTPUTS
Reclocked switched SDI output
Reclocked SDI standby loop-through
Will drive >250m Belden 8281 or equivalent

DELAY THROUGH BOARD
<1us

SIGNAL CHECKS
Smart Switch performs checks on the following
parameters, which are listed in order of priority:
• 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
• EDH missing or EDH error rate above a selected
  threshold sets an alarm. This is monitored for either
  full field or active picture EDH
• 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
• 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
• 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 from 0 to 240 seconds, then
  an alarm is triggered. Each audio channel has its own
  alarm state

SWITCHING
Electronic switching between SAV and EAV at line 6 or
immediate switching if primary input is faulty and
standby is free of that fault
The output can be programmed to return to the primary
input when the fault is cleared

GPI OUTPUT LEVELS
Electrically: Open collector transistors 30V, 330Ohm
current limit resistors. Pulled up to +5V through 10kOhm
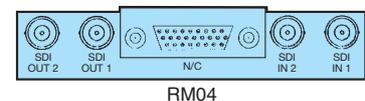
GPI OUTPUTS
Two GPI outputs
Local mode: SDI input present and picture frozen or black
Remote mode: Both GPIs are user configurable, and
using Statesman can be set to monitor both SDI inputs
for specific alarm conditions

LOCAL CONTROL
Selection of:
Auto/manual output selection
Output selection if manual
Audio monitoring on/off
Audio group to be 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

RM04

ORDERING INFORMATION

Smart Switch	Intelligent SDI 2 x 1 switch
Indigo 4	4U frame with passive front panel for up to 24 Crystal Vision modules
Indigo 4SE	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 2AE	2U frame with active front panel for up to 12 Crystal Vision modules
Indigo 2SE	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
RM04	Single slot frame rear module. Allows maximum number of Smart Switches in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to one reclocked SDI switched output and one reclocked SDI loop-through of the standby signal
Statesman	PC Control System

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Performance and features are subject to change. Figures given are typical measured values.   SMARTSWITCH1006