Crystal Vision

ViViD
Video Delays

ViViD 3G..............
ViViD 3GS.........
ViViD 3G-20.......
ViViD 3GS-20......
ViViD HD-40.......

How many seconds of video delay do you need?

Providing up to ten seconds of 3Gb/s delay, 43 seconds of HD delay and four minutes of SD delay, the five ViViD variable video delay lines are ideal for matching any short or long delays in your system.

Features include integrated fibre I/O, relay bypass protection, video proc-amp, signal reporting and the ability to delay any embedded data. You can even use the ViViD 3GS and ViViD 3GS-20 to delay and synchronise at the same time – providing a neat single board solution.

You'll also save rack space: you can fit up to 12 of these space-saving modules in 2U.

No one else does the range of video delays that Crystal Vision does.

- **Choose the perfect variable video delay for your 3Gb/s, HD or SD application:** available in five versions

- **Match any video delays in your system:** including virtual studio graphics, MPEG encoders/decoders, audio processing, HD radio links, satellite links and profanity delays

- **Maximum SD delay:** 5.5 seconds (ViViD 3G/3GS), 110 seconds (ViViD 3G-20/3GS-20) and 238 seconds (ViViD HD-40)

- **Maximum HD delay:** one second (ViViD 3G/3GS), 20 seconds (ViViD 3G-20/3GS-20) and 43 seconds (ViViD HD-40)

- **Maximum 3Gb/s delay:** 0.5 seconds (ViViD 3G/3GS) and ten seconds (ViViD 3G-20/3GS-20)

- **Get the exact delay you need:** adjustable in steps of seconds, frames, lines and pixels

- **Delay *and* synchronise using one board:** ViViD 3GS and 3GS-20 include a framestore synchroniser timed to an external analogue reference

- **Optimise the video:** with RGB and YUV lift and gain adjustments on the ViViD 3G range

- **Protect your programme output:** with optional relay bypass protection

- **You won't be limited by cable lengths:** with optional integrated fibre input/output connectivity on the ViViD 3G range

- **Save yourself a DA in your system design:** with up to four delayed outputs (three on ViViD HD-40)

- **Space-saving:** 100mm x 266mm modules allow 12 video delays in 2U (six in 1U and two in desk top box)

- **Flexible control:** select from front and remote panels, GPIs, SNMP, protocols, PC software or your web browser

CONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SEC
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THE FIVE VIDEO DELAYS

Crystal Vision offers a range of five variable video delays to match every application and budget. So which one do you need?

Use **ViViD 3G** anywhere you need to match short delays in your system. It works with 3Gb/s, HD and SD sources.

Use **ViViD 3GS** to match short delays in your system when you also need to synchronise at the same time. It works with 3Gb/s, HD and SD sources.

Use **ViViD 3G-20** for matching long delays in your system. It works with 3Gb/s, HD and SD sources.

Use **ViViD 3GS-20** for matching long delays in your system when you also need to synchronise at the same time. It works with 3Gb/s, HD and SD sources.

Use **ViViD HD-40** for matching very long delays in your system – up to four minutes in SD! It works with HD and SD sources.

HOW MUCH DELAY DO YOU GET?

	ViViD 3G and ViViD 3GS	ViViD 3G-20 and ViViD 3GS-20	ViViD HD-40
Maximum SD delay	**5.5 secs** (625 line) **4.5 secs** (525 line)	**110 secs** (625 line) **91 secs** (525 line)	**238 secs**
Maximum HD delay	**1 sec** (1080i50, 720p50, 1080PsF23.98 and 1080PsF24) **0.8 secs** (1080i59.94 and 720p59.94)	**20 secs** (1080i50, 720p50, 1080PsF23.98 and 1080PsF24) **16 secs** (1080i59.94 and 720p59.94)	**43 secs**
Maximum 3Gb/s delay	**0.5 secs** (1080p50) **0.4 secs** (1080p59.94)	**10 secs** (1080p50) **8 secs** (1080p59.94)	

Want the delay figures in frames? Look at the comparison chart on page 4 for full information on the minimum and maximum delays available.

GET THE EXACT DELAY YOU NEED

Flexible adjustments make it very easy to select the exact delay time you require… down to the pixel! With a minimum setting of a few lines, the delay is adjustable in seconds, frames, lines and pixels.

Flexible delay adjustments

WHAT CAN I USE THEM FOR?

Match your virtual graphics

The ViViDs are suitable for a wide variety of applications – wherever you need to match system delays elsewhere in your equipment chain.

Match your MPEG encoders and decoders

They are perfect for the virtual studio. Use them to offset the delay caused by the graphics generators – delaying the camera by the same amount as the virtual set graphics so that the video feed and graphics both reach the chroma keyer at the same time.

Compensate for MPEG encoders and decoders to co-time your transmissions.

Use them in audio processing applications – such as to match your video to audio that's been delayed by Dolby E encoding or decoding. You'll keep lip-sync and make cutting between video sources easy.

Help OB vehicles using MPEG-compressed HD radio links to remotely control wireless hand-held cameras by delaying the other signals.

Or match the delay caused by a satellite link.

The longer delay lines are perfect for use as part of a profanity delay system on live broadcasts – preventing expletives, bloopers, wardrobe malfunctions, fits of coughing or technical problems from making it to air.

Use as part of a profanity delay system

DELAY AND SYNCHRONISE – USING ONE BOARD

The ViViD 3GS and ViViD 3GS-20 variants both include a framestore synchroniser timed to an external Black and Burst or tri-level syncs analogue reference – meaning you can use one board to apply a long delay to a video path and lock the signal to a station reference at the same time.

DELAY EVERYTHING

The ViViDs delay the entire video stream, with embedded audio and ancillary data staying with the associated video – allowing use in embedded areas.

Compensate for audio processing delays

ECONDS 3Gb/s 238 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD 43 SEC
D 43 SECONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SECONDS SD
8 SECONDS SD 43 SECONDS HD 10 SECONDS 3Gb/s 238 SE

OPTIMISE THE VIDEO

The ViViD 3G range includes a video proc-amp for picture optimisation and to help maintain colour fidelity, with RGB and YUV lift and gain adjustments.

Optimise your picture

FIBRE CONNECTIVITY – ON THE BOARD

If you need to delay signals from beyond your local equipment bay, it's easy to give the ViViD 3G range integrated fibre connectivity – and still only use a single frame slot. Just order either the FIP fibre input option or FOP fibre output option.

Designed for SMPTE 297-2006 short-haul applications, the FIP is used to receive an optical input and the FOP to transmit an optical output using a Class I laser. With a FIP fitted you can select your video input source to be taken either from the input BNC or the optical input.

Having the fibre integral to the board reduces the need to use up additional rack space for separate fibre optic transmitters and receivers – as well as saving you money.

The ViViD 3G range can also support CWDM lasers if required.

SAVE YOURSELF A DA IN YOUR SYSTEM DESIGN

You will get four delayed outputs with the ViViD 3G range and three outputs with ViViD HD-40 – potentially removing the need for a distribution amplifier in the system, and so saving you money and rack space.

SAVE YOURSELF RACK SPACE – AND PROTECT YOUR OUTPUT

Offset satellite link delays

The ViViD video delays will save you rack space. These 100mm x 266mm modules are housed in Crystal Vision's standard rack frames, with up to 12 boards fitting in 2U.

ViViD HD-40 is used with the RM44 frame rear module to access the inputs and outputs, while the ViViD 3G range can be used with three different frame rear modules: either the standard RM41, the RM57 for fibre applications or the RM67 where relay bypass protection is required.

The RM44 and RM67 rear modules both help to maintain programme output by providing relay bypass protection of the input in the event of power failure or board malfunction or removal.
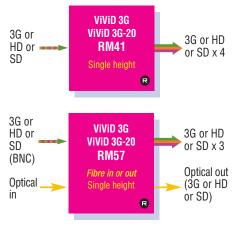
FLEXIBLE CONTROL

Easy to set up and use, the flexible control options include an integrated control panel on the AE frame, the VisionPanel remote control panel, the SBB-4 smart button box, SNMP, our ASCII and JSON protocols, the Statesman Lite PC software and the VisionWeb web browser control.

16 presets will save you time – allowing different delay values to be assigned then recalled automatically by the studio control system using GPIs.

Signal monitoring is available on the ViViD 3G range, with warnings of any problems provided via SNMP traps or GPI outputs. The full list of available alarms are input missing, video black, video frozen and input audio missing – with reference missing and reference incompatible additionally available on ViViD 3GS and ViViD 3GS-20. The video black and video frozen parameters can be delayed before an alarm is asserted to prevent false alarming during brief video pauses.
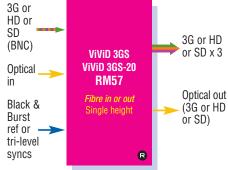
REAR MODULE INPUTS/OUTPUTS

3G or HD or SD → **ViViD 3G / ViViD 3G-20 RM41** (Single height) → 3G or HD or SD x 4

3G or HD or SD (BNC) / Optical in → **ViViD 3G / ViViD 3G-20 RM57** *Fibre in or out* Single height → 3G or HD or SD x 3 / Optical out (3G or HD or SD)

NB. Choose between fibre in or fibre out by selecting FIP or FOP fibre option

3G or HD or SD → **ViViD 3G / ViViD 3G-20 RM67 (Relay bypass protection)** Single height → 3G or HD or SD x 4

3G or HD or SD / Black & Burst ref or tri-level syncs → **ViViD 3GS / ViViD 3GS-20 RM41** Single height → 3G or HD or SD x 4

3G or HD or SD (BNC) / Optical in / Black & Burst ref or tri-level syncs → **ViViD 3GS / ViViD 3GS-20 RM57** *Fibre in or out* Single height → 3G or HD or SD x 3 / Optical out (3G or HD or SD)

NB. Choose between fibre in or fibre out by selecting FIP or FOP fibre option

3G or HD or SD / Black & Burst ref or tri-level syncs → **ViViD 3GS / ViViD 3GS-20 RM67 (Relay bypass protection)** Single height → 3G or HD or SD x 4

HD or SD → **ViViD HD-40 RM44 (Relay bypass protection)** Single height → HD or SD x 3

REAR MODULE CONNECTIONS

For standard applications

HD/SD IN | NC | HD/SD OUT 1 | HD/SD OUT 2 | HD/SD OUT 3 | HD/SD OUT 4

RM41 used with ViViD 3G and ViViD 3G-20

HD/SD IN | SYNC IN | HD/SD OUT 1 | HD/SD OUT 2 | HD/SD OUT 3 | HD/SD OUT 4

RM41 used with ViViD 3GS and ViViD 3GS-20

For fibre applications

HD/SD IN | NC | HD/SD OUT 1 | HD/SD OUT 2 | HD/SD OUT 3 | OPTICAL IN OR OUT

RM57 used with ViViD 3G and ViViD 3G-20

HD/SD IN | SYNC IN | HD/SD OUT 1 | HD/SD OUT 2 | HD/SD OUT 3 | OPTICAL IN OR OUT
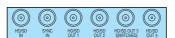
RM57 used with ViViD 3GS and ViViD 3GS-20

For relay bypass protection applications

HD/SD IN | NC | HD/SD OUT 1 | HD/SD OUT 2 | HD/SD OUT 3 (SWITCHED) | HD/SD OUT 4

RM67 used with VIVID 3G and VIVID 3G-20

HD/SD IN | SYNC IN | HD/SD OUT 1 | HD/SD OUT 2 | HD/SD OUT 3 (SWITCHED) | HD/SD OUT 4

RM67 used with VIVID 3GS and VIVID 3GS-20

For all ViViD HD-40 applications

HD/SD IN | HD/SD OUT 1 (SWITCHED) | HD/SD OUT 2 | HD/SD OUT 3 | NC
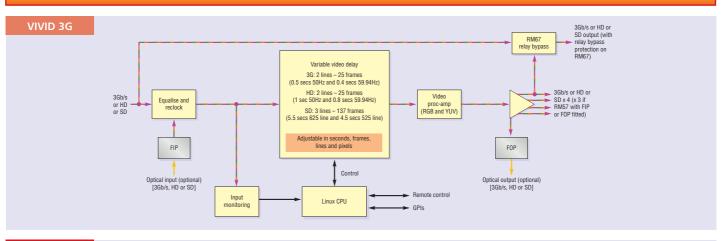
RM44 used with ViViD HD-40
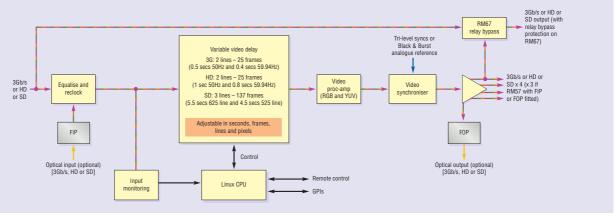
WHICH VIDEO DELAY DO YOU NEED?

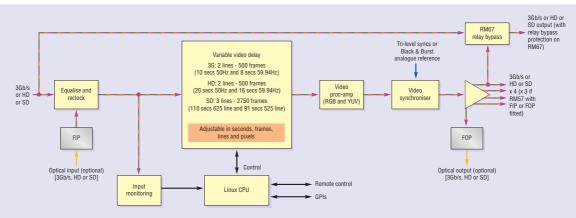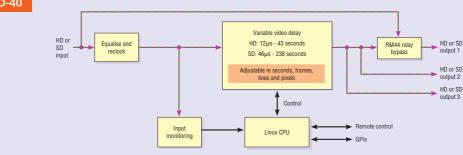|	ViViD 3G	ViViD 3GS	ViViD 3G-20	ViViD 3GS-20	ViViD HD-40
Works with SD	●	●	●	●	●
Works with HD	●	●	●	●	●
Works with 3Gb/s	●	●	●	●	
Maximum SD delay (in seconds)	5.5 secs (625 line) 4.5 secs (525 line)	5.5 secs (625 line) 4.5 secs (525 line)	110 secs (625 line) 91 secs (525 line)	110 secs (625 line) 91 secs (525 line)	238 secs
Maximum SD delay (in frames)	137 frames	137 frames	2750 frames	2750 frames	5950 frames (625 line) 7132 frames (525 line)
Minimum SD delay	3 lines	3 lines	3 lines	3 lines	46us
Maximum HD delay (in seconds)	1 sec (1080i50, 720p50, 1080PsF23.98 and 1080PsF24) 0.8 secs (1080i59.94 and 720p59.94)	1 sec (1080i50, 720p50, 1080PsF23.98 and 1080PsF24) 0.8 secs (1080i59.94 and 720p59.94)	20 secs (1080i50, 720p50, 1080PsF23.98 and 1080PsF24) 16 secs (1080i59.94 and 720p59.94)	20 secs (1080i50, 720p50, 1080PsF23.98 and 1080PsF24) 16 secs (1080i59.94 and 720p59.94)	43 secs
Maximum HD delay (in frames)	25 frames	25 frames	500 frames	500 frames	1075 frames (1080i50) 1280 frames (1080i59.94) 2150 frames (720p50) 2500 frames (720p59.94)
Minimum HD delay	2 lines	2 lines	2 lines	2 lines	12us
Maximum 3Gb/s delay (in seconds)	0.5 secs (1080p50) 0.4 secs (1080p59.94)	0.5 secs (1080p50) 0.4 secs (1080p59.94)	10 secs (1080p50) 8 secs (1080p59.94)	10 secs (1080p50) 8 secs (1080p59.94)	
Maximum 3Gb/s delay (in frames)	25 frames	25 frames	500 frames	500 frames	
Minimum 3Gb/s delay	2 lines	2 lines	2 lines	2 lines	
Video delay adjustable in	Seconds, frames, lines and pixels	Seconds, frames, lines and pixels	Seconds, frames, lines and pixels	Seconds, frames, lines and pixels	Seconds, frames, lines and pixels
Number of video outputs (max)	4 (3 if fibre I/O)	4 (3 if fibre I/O)	4 (3 if fibre I/O)	4 (3 if fibre I/O)	3
Video framestore synchroniser		●		●	
Analogue reference		SD Black and Burst or HD tri-level syncs		SD Black and Burst or HD tri-level syncs	
Passes entire video stream including embedded audio	●	●	●	●	●
Audio delay	Follows video	Follows video	Follows video	Follows video	Follows video
Video proc-amp (RGB and YUV lift and gain controls)	●	●	●	●	
Video and audio alarms	4	6	4	6	
Number of presets	16	16	16	16	16
Relay bypass protection	● (RM67 option)	● (RM67 option)	● (RM67 option)	● (RM67 option)	● (as standard)
Fibre I/O	●	●	●	●	
Boards in 2U	12	12	12	12	12
Rear module used	RM41, RM57 and RM67	RM41, RM57 and RM67	RM41, RM57 and RM67	RM41, RM57 and RM67	RM44

THE INPUTS AND OUTPUTS

VIVID 3G

3Gb/s or HD or SD → Equalise and reclock → FIP / Optical input (optional) [3Gb/s, HD or SD]

Variable video delay
3G: 2 lines – 25 frames
(0.5 secs 50Hz and 0.4 secs 59.94Hz)
HD: 2 lines – 25 frames
(1 sec 50Hz and 0.8 secs 59.94Hz)
SD: 3 lines – 137 frames
(5.5 secs 625 line and 4.5 secs 525 line)
Adjustable in seconds, frames, lines and pixels

→ Video proc-amp (RGB and YUV)

RM67 relay bypass → 3Gb/s or HD or SD output (with relay bypass protection on RM67)

→ 3Gb/s or HD or SD x 4 (x 3 if RM57 with FIP or FOP fitted)

FOP → Optical output (optional) [3Gb/s, HD or SD]

Input monitoring → Linux CPU → Remote control / GPIs
Control

VIVID 3GS

3Gb/s or HD or SD → Equalise and reclock → FIP / Optical input (optional) [3Gb/s, HD or SD]

Variable video delay
3G: 2 lines – 25 frames
(0.5 secs 50Hz and 0.4 secs 59.94Hz)
HD: 2 lines – 25 frames
(1 sec 50Hz and 0.8 secs 59.94Hz)
SD: 3 lines – 137 frames
(5.5 secs 625 line and 4.5 secs 525 line)
Adjustable in seconds, frames, lines and pixels

→ Video proc-amp (RGB and YUV) → Video synchroniser

Tri-level syncs or Black & Burst analogue reference

RM67 relay bypass → 3Gb/s or HD or SD output (with relay bypass protection on RM67)

→ 3Gb/s or HD or SD x 4 (x 3 if RM57 with FIP or FOP fitted)

FOP → Optical output (optional) [3Gb/s, HD or SD]

Input monitoring → Linux CPU → Remote control / GPIs
Control

VIVID 3G-20

3Gb/s or HD or SD → Equalise and reclock → FIP / Optical input (optional) [3Gb/s, HD or SD]

Variable video delay
3G: 2 lines - 500 frames
(10 secs 50Hz and 8 secs 59.94Hz)
HD: 2 lines - 500 frames
(20 secs 50Hz and 16 secs 59.94Hz)
SD: 3 lines - 2750 frames
(110 secs 625 line and 91 secs 525 line)
Adjustable in seconds, frames, lines and pixels

→ Video proc-amp (RGB and YUV)

RM67 relay bypass → 3Gb/s or HD or SD output (with relay bypass protection on RM67)

→ 3Gb/s or HD or SD x 4 (x 3 if RM57 with FIP or FOP fitted)

FOP → Optical output (optional) [3Gb/s, HD or SD]

Input monitoring → Linux CPU → Remote control / GPIs
Control

VIVID 3GS-20

3Gb/s or HD or SD → Equalise and reclock → FIP / Optical input (optional) [3Gb/s, HD or SD]

Variable video delay
3G: 2 lines - 500 frames
(10 secs 50Hz and 8 secs 59.94Hz)
HD: 2 lines - 500 frames
(20 secs 50Hz and 16 secs 59.94Hz)
SD: 3 lines - 2750 frames
(110 secs 625 line and 91 secs 525 line)
Adjustable in seconds, frames, lines and pixels

→ Video proc-amp (RGB and YUV) → Video synchroniser

Tri-level syncs or Black & Burst analogue reference

RM67 relay bypass → 3Gb/s or HD or SD output (with relay bypass protection on RM67)

→ 3Gb/s or HD or SD x 4 (x 3 if RM57 with FIP or FOP fitted)

FOP → Optical output (optional) [3Gb/s, HD or SD]

Input monitoring → Linux CPU → Remote control / GPIs
Control

VIVID HD-40

HD or SD input → Equalise and reclock

Variable video delay
HD: 12µs - 43 seconds
SD: 46µs - 238 seconds
Adjustable in seconds, frames, lines and pixels

→ RM44 relay bypass → HD or SD output 1
→ HD or SD output 2
→ HD or SD output 3

Input monitoring → Linux CPU → Remote control / GPIs
Control

VIVID 3G, VIVID 3GS, VIVID 3G-20 AND VIVID 3GS-20

MECHANICAL
Standard Crystal Vision module 266mm x 100mm
Weight: 180g
Power consumption: 11.9 Watts (plus 0.6 Watts for FIP or FOP)

VIDEO INPUT
One 3Gb/s or HD or SD input
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to EBU 3267-E, SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A
The video formats supported are 625, 525, 720p50, 720p59.94, 1080i50, 1080i59.94, 1080PsF23.98, 1080PsF24, 1080p50 and 1080p59.94
3Gb/s cable equalisation up to 80m using Belden 1694A. HD/SD cable equalisation up to 140m with Belden 1694A or equivalent (approx. 100m with Belden 8281)
Input return loss: -15dB for 50MHz to 1.5GHz
Auto data rate and video format selection

VIDEO OUTPUTS
Using RM41 rear module: Four reclocked and delayed 3Gb/s or HD or SD outputs
Using RM57 rear module with FIP fibre input option: Three reclocked and delayed 3Gb/s or HD or SD outputs. Select between one fibre and one electrical input
Using RM57 rear module with FOP fibre output option: Three reclocked and delayed 3Gb/s or HD or SD outputs, plus one copy of the output on fibre
Using RM67 rear module: Four reclocked and delayed 3Gb/s or HD or SD outputs. The RM67 provides relay bypass protection to help maintain programme output. An electromechanical relay switch needs power to hold the switch in one state and will revert to the other state (board bypass) on loss of power. It prevents signal loss by mechanically connecting the input to the third output on complete frame power failure or board removal
270Mb/s or 1.5Gb/s or 3Gb/s serial compliant to EBU 3267-E, SMPTE 259, SMPTE 292-1 and SMPTE 424/425-A
Output follows the input format

INTEGRATED FIBRE OPTIONS
ViViD 3G can be given integrated fibre connectivity by fitting either the FIP fibre input option or FOP fibre output option. The chosen option should be fitted at the factory
To access the optical inputs or outputs an RM57 frame rear module must be used
When fitted with a FIP or FOP, ViViD 3G can be housed in any frame slot position but due to its extra height it is not possible to place most Standard Definition or audio boards directly above it when the ViViD 3G is in even numbered slot positions. 3Gb/s and HD boards do not share this restriction
FIP and FOP meet the SMPTE 297-2006 short-haul specification, allowing operation with single-mode and multi-mode fibre
Connector type: SC/PC
FIP:
Optical wavelength: 1260-1620nm
Input level maximum: -1dBm
Input level minimum: Typical -20dBm (-18dBm 3Gb/s pathological)
FOP:
Optical power: Max -0.0dBm, min -5.0dBm (typical -2.0dBm or 630uW)
Fibre pigtail: Single-mode 8/125uM
Optical wavelength: 1290-1330nm (1310 typical)
Extinction ratio: 7.5dB
Laser safety classification: Class 1 (EN 60825), Class I (21CFR1040.10)

STANDARD DEFINITION DELAY
Minimum delay: 3 lines
Maximum delay:
ViViD 3G and ViViD 3GS:
5.5 seconds/137 frames (625 line); 4.5 seconds/137 frames (525 line)

ViViD 3G-20 and ViViD 3GS-20:
110 seconds/2750 frames (625 line); 91 seconds/2750 frames (525 line)
Adjustable in steps of seconds, frames, lines and pixels

HIGH DEFINITION DELAY
Minimum delay: 2 lines
Maximum delay:
ViViD 3G and ViViD 3GS:
1 second/25 frames (1080i50/720p50/1080PsF23.98/ 1080PsF24); 0.8 seconds/25 frames (1080i59.94/720p59.94)
ViViD 3G-20 and ViViD 3GS-20:
20 seconds/500 frames (1080i50/720p50/1080PsF23.98/ 1080PsF24); 16 seconds/500 frames (1080i59.94/720p59.94)
Adjustable in steps of seconds, frames, lines and pixels

3GB/S DELAY
Minimum delay: 2 lines
Maximum delay:
ViViD 3G and ViViD 3GS:
0.5 seconds/25 frames (1080p50); 0.4 seconds/25 frames (1080p59.94)
ViViD 3G-20 and ViViD 3GS-20:
10 seconds/500 frames (1080p50); 8 seconds/500 frames (1080p59.94)
Adjustable in steps of seconds, frames, lines and pixels

SYNCHRONISER TIMING ADJUSTMENTS (VIVID 3GS/3GS-20 ONLY)
ViViD 3GS takes its timing from the external analogue reference and will automatically synchronise sources up to one frame apart in timing
The timing can be fully adjusted using horizontal and vertical settings. Increasing the vertical setting will delay the output relative to the reference in increments of one line. Increasing the horizontal setting will increase this delay in increments of approx. 74ns for SD and 13.5ns for HD

ANALOGUE REFERENCE (VIVID 3GS/3GS-20 ONLY)
Tri-level syncs or analogue Black and Burst or video
3Gb/s, HD or SD source can use either type of reference
When cross-locking it is necessary for both the video input and reference to share the same frame rate
Amplitude of syncs 150mV to 600mV
Link on PCB selects 75 ohm termination or high impedance

VIDEO PROCESSING
Video proc-amp for picture optimisation and to help maintain colour fidelity
RGB lift: Offset the colour component by +/- 10%
RGB gain: Modify the gain of the colour component from +80% to +120%
YUV lift: Offset the luminance, U and V components by +/- 10%
YUV gain: Modify the luminance, U and V gain from 0% to +200%

SIGNAL CHECKS
Checks can be performed on a selection of video and audio parameters, with warnings of any problems provided via SNMP traps. Two GPI outputs can also be assigned to monitor some of the video parameters – see GPI OUTPUTS section for details
The video parameters are: input missing, video black, video frozen, reference missing (ViViD 3GS/ 3GS-20 only) and reference incompatible (ViViD 3GS/3GS-20 only). The audio parameter is: input audio missing
The video black and video frozen parameters can be delayed before an alarm is asserted to prevent false alarming during brief video pauses

ANCILLARY DATA/ EMBEDDED AUDIO
Passes entire video stream, including embedded audio and HANC and VANC

PRESETS
16 user defined presets allow the storing of board configurations

GPI INPUT LEVELS
Active: pull to ground, pulled up to +5V through 10 kohm

GPI OUTPUT LEVELS
Electrically: Open collector transistors 30V, 270 ohm current limit resistors. Pulled up to +5V through 6800 ohm

GPI INPUTS
Four GPI inputs can recall one of 16 presets

GPI OUTPUTS
Two GPI outputs are reserved for alarm indication and may be assigned any number of the following video alarms: input missing, video black, video frozen and (ViViD 3GS/3GS-20 only) reference missing

LED INDICATION OF:
Power supplies okay
Input present
SD/HD input
GPI output 5 active
GPI output 6 active

LOCAL CONTROL
Intuitive board edge interface with two select buttons, shaft encoder and ten character alphanumeric display

REMOTE CONTROL
Control from frame active front panel and remote panel
Statesman allows control from any PC on a network
SNMP monitoring and control available as a frame option

VIVID HD-40

MECHANICAL
Standard Crystal Vision module 266mm x 100mm
Weight: 200g
Power consumption: 12 Watts

VIDEO INPUT
One HD or SD input
270Mb/s or 1.5Gb/s serial compliant to EBU 3267-E, SMPTE 259 and SMPTE 292-1

The video formats supported are 625, 525, 720p50, 720p59.94, 1080i50 and 1080i59.94
HD cable equalisation up to 140m with Belden 1694A or equivalent (approx. 100m with Belden 8281).
SD cable equalisation >250m Belden 8281 or equivalent
Input return loss: -15dB for 5MHz to 1.5GHz
Auto data rate and video format selection

VIDEO OUTPUTS
Three reclocked and delayed HD or SD outputs using RM44 frame rear module
270Mb/s or 1.5Gb/s serial compliant to EBU 3267-E, SMPTE 259 and SMPTE 292-1
Relay bypass protection on the RM44 helps maintain programme output. An electromechanical relay switch needs power to hold the switch in one state and will revert to the other state (board bypass) on loss of power. It prevents signal loss by mechanically connecting the input to main output 1 on complete frame power failure or board removal
Output follows the input format

STANDARD DEFINITION DELAY
Minimum delay: 46us
Maximum delay: 238 seconds/5950 frames (625 line) and 7132 frames (525 line)
Adjustable in steps of seconds, frames, lines and pixels

HIGH DEFINITION DELAY
Minimum delay: 12us
Maximum delay: 43 seconds/1075 frames (1080i50), 1280 frames (1080i59.94), 2150 frames (720p50) and 2500 frames (720p59.94)
Adjustable in steps of seconds, frames, lines and pixels

ANCILLARY DATA/EMBEDDED AUDIO
Passes entire video stream, including embedded audio and HANC and VANC

PRESETS
16 user defined presets allow the storing of board configurations

GPI INPUTS
Four GPI inputs can recall one of 16 presets
Active: pull to ground, pulled up to +5V through 10 kohm

GPI OUTPUTS
One GPI output shows input present
Electrically: Open collector transistors 30V, 270 ohm current limit resistors. Pulled up to +5V through 6800 ohm

LED INDICATION OF:
Power supplies okay
Input present
SD/HD input

REMOTE CONTROL
Software:
VisionWeb Control is available via the web server on the frame and allows operation using a standard web browser on a computer, tablet or phone
Statesman Lite allows control from any PC on a network
SNMP monitoring and control available as a frame option
Control using ASCII and JSON protocols
Hardware:
Control from integrated control panel on Indigo 1AE-DP frame
Control from VisionPanel 3U remote panel
SBB-4 smart button box connects to the frame via Ethernet and provides four programmable LCD switches (which are configured for each order). The SBB-4 uses information from VisionWeb for settings. Uses Power over Ethernet so must be used with PoE enabled switch

ORDERING INFORMATION

ViViD 3G	3G/HD/SD variable video delay line
ViViD 3GS	3G/HD/SD variable video delay line with framestore synchroniser
ViViD 3G-20	3G/HD/SD long variable video delay line
ViViD 3GS-20	3G/HD/SD long variable video delay line with framestore synchroniser
ViViD HD-40	HD/SD long variable video delay line
FIP	Fibre input option for ViViD 3G range motherboard
FOP	Fibre output option for ViViD 3G range motherboard (For CWDM laser output options, please contact Crystal Vision)
Indigo 2SE	2U frame with active front panel featuring smart CPU for up to 12 Crystal Vision modules
Indigo 1AE-DP	1U frame with active front panel featuring smart CPU and integrated control panel for up to six Crystal Vision modules, with included power supply redundancy
Indigo 1SE-DP	1U frame with active front panel featuring smart CPU for up to six Crystal Vision modules, with included power supply redundancy
Indigo DT	Desk top box with passive front panel for up to two Crystal Vision modules
Indigo DTSE	Desk top box with active front panel featuring smart CPU for up to two Crystal Vision modules
RM41	Single slot frame rear module used for ViViD 3G range. Allows maximum number of ViViD 3G in frame (12 in 2U, six in 1U, two in desk top box). Gives access to one 3Gb/s, HD or SD input and four 3Gb/s, HD or SD outputs
RM44	Single slot frame rear module used for ViViD HD-40. Allows maximum number of ViViD HD-40 in frame (12 in 2U, six in 1U, two in desk top box). Provides relay bypass protection of the input to the main output. Gives access to one HD or SD input and three HD or SD outputs
RM57	Single slot frame rear module used for ViViD 3G range. Allows maximum number of ViViD 3G in frame (12 in 2U, six in 1U, two in desk top box). Designed for applications using fibre inputs or outputs. When using fibre input, allows you to select between one fibre and one electrical 3Gb/s, HD or SD input and gives out three 3Gb/s, HD or SD outputs. When using fibre output, gives access to one 3Gb/s, HD or SD input and four 3Gb/s, HD or SD outputs (one on fibre and three on BNC)
RM67	Single slot frame rear module used for ViViD 3G range. Allows maximum number of ViViD 3G in frame (12 in 2U, six in 1U, two in desk top box). Provides relay bypass protection of the input to the third output. Gives access to one 3Gb/s, HD or SD input and four 3Gb/s, HD or SD outputs
VisionPanel	3U Ethernet remote control panel with touch screen
SBB-4	Smart button box with four programmable LCD switches. It is powered by PoE (Power over Ethernet) and therefore needs to be connected to a PoE enabled switch
VisionWeb Control	VisionWeb web browser control included within frame software
Statesman Lite	PC Control System
SNMP	SNMP monitoring and control

Performance and features are subject to change. Figures given are typical measured values. VIDEODELAYS1220