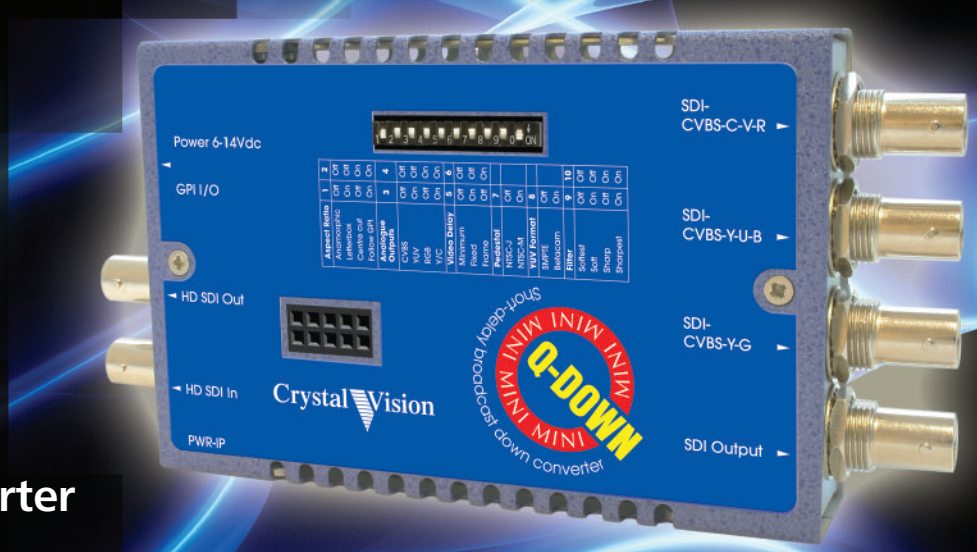
Crystal Vision



Minibox short-delay broadcast down converter

Q-Down Mini is a standalone down converter designed to meet the demanding requirements of broadcasters. Q-Down Mini combines the three winning advantages of outstanding picture quality, short processing delay and competitive pricing to create the perfect minibox for attaching directly to the back of SD monitors in space-challenged environments with no spare rack space.

Q-Down Mini provides a unique level of image quality in its price range – avoiding aliasing while retaining picture sharpness. The sophisticated two dimensional filtering gives broadcast results without the complication of looking at multiple fields or movement detection – resulting in reliable, artefact-free conversion. Should you want to optimise the performance for your material, you can also choose from four alternative vertical filter characteristics.

Q-Down Mini features flexible outputs, with a reclocked loop-through of the HD or SD input, a dedicated SDI output and three Standard Definition outputs individually link selectable between analogue (composite, Y/C, YUV and RGB) and digital. It can down convert 720p and 1080i High Definition at both 50Hz and 59.94Hz, with the down converter bypassed if the input is Standard Definition.

Q-Down Mini's short processing delay of just 16 lines eliminates the need to compensate audio or other signals for the video delay, keeping everything in sync and making your system design much simpler. There are also three fixed video delay settings available: 'minimum' (16 or 52 SD lines processing delay, depending on the conversion), 'fixed' (52 SD lines) and 'frame'. The 'fixed' 52 lines delay allows the aspect ratio to be changed live on air without any picture disturbance, while the 'frame' of delay can be used to match a variety of equipment or alternatively to connect with equipment that has no delay.

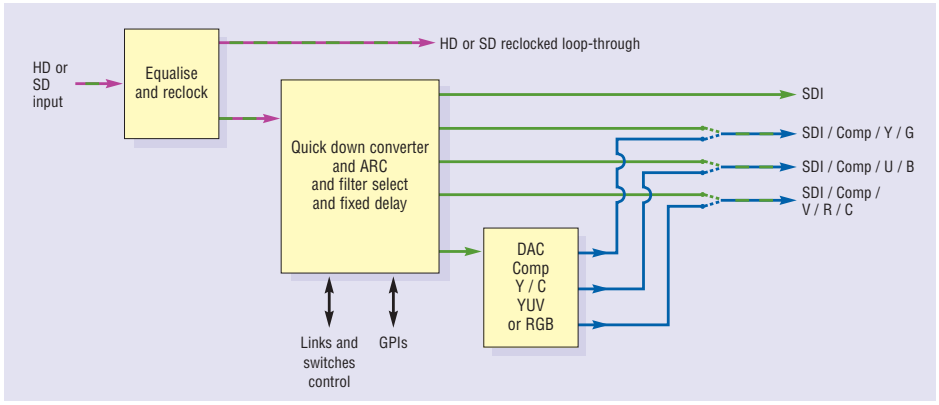
Other useful features include the ability to deal with any HD to SD aspect ratio conversion requirements, with the option of selecting a 16:9 Anamorphic output for 16:9 SD systems and either a 16:9 to 4:3 Letterbox or 16:9 to 4:3 Full Screen with centre cut for 4:3 SD systems. The aspect ratio can be controlled remotely by using the GPI connections, and setting DIP switches 1 and 2 to follow GPI.

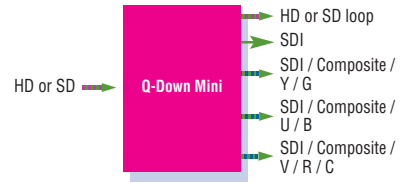
Q-Down Mini's compact 165mm x 80mm x 28mm size means it fits easily on the back of a monitor – with the flexibility to be orientated in any direction to fulfil the requirements of your application. The base includes two M3 threaded inserts which make it easy to mount it to a suitable back plate.

Q-Down Mini is ideal for providing down converted feeds for SD monitors – or for any other down conversion application. All settings are configured by ten mini DIP switches on the outside of the box, with the Standard Definition outputs selected by using a combination of these switches and internal moveable links. Two LEDs indicate the presence of power and an active HD or SD serial input. Q-Down Mini features six BNCs for the video signals and a 9-way D-Type plug for the power connections and access to the GPIs, with a separate external universal AC power supply available.

Q-Down Mini – for when you want to keep the maximum quality of your HD signals and get exceptional value for your money.

- Short-delay broadcast down converter in a minibox
- Ideal for attaching directly to the back of a monitor and providing down converted feeds
- Accepts HD or SD input
- Allows flexible configuration of the three Standard Definition video outputs, with mixtures of SDI, composite, Y/C, YUV and RGB
- Short processing delay of just 16 lines means no need to compensate audio signals
- Unique level of image quality at this price level
- Sophisticated two dimensional filtering – avoids aliasing while retaining picture sharpness
- Optimise your performance: select from four different filter characteristics
- Includes aspect ratio converter, with Anamorphic, Letterbox and centre cut conversions
- Three fixed delay settings to match other equipment
- Configure settings with mini DIP switches on the box or GPIs
- Separate external universal AC power supply available





Q-Down Mini – ideal for attaching to the back of a monitor

Use switches 1 and 2 to set the aspect ratio conversion

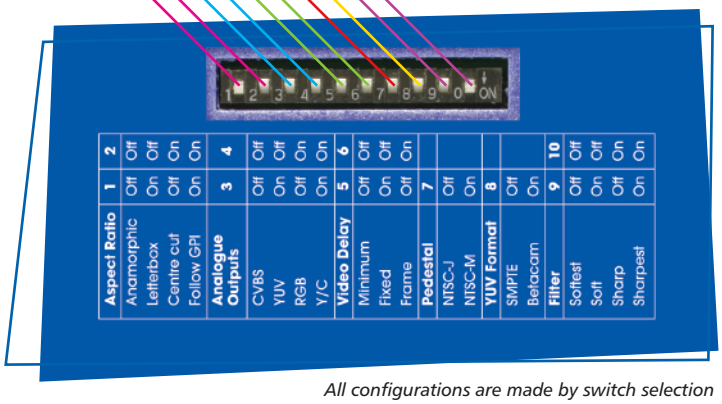
Use switches 3 and 4 to select the analogue output format

Use switches 5 and 6 to set the video delay

Use switch 7 to add or remove a +7.5IE pedestal for NTSC-M or NTSC-J

Use switch 8 to select Betacam levels when the output format is set to YUV

Use switches 9 and 10 to select the filter characteristic



All configurations are made by switch selection

Q-Down Mini PSU

SPECIFICATION

MECHANICAL

Crystal Vision minibox 165mm x 80mm x 28mm
Weight: 480g
Power consumption: 6.5 Watts
Power input 7-14V DC. Separate external universal AC power supply available
Connectors: Six BNCs for the video signals and a 9-way D-Type plug for the power connections and access to the GPIs
Mounting: Two M3 threaded inserts (50mm apart) facilitate mounting to a suitable back plate. Q-Down Mini can be orientated in any direction

VIDEO INPUT

One HD or SD input with reclocking
270Mbit or 1.485Gbit serial compliant to EBU 3267-E, SMPTE 259M and SMPTE 292M
HD cable equalisation up to 140m with Belden 1694 or equivalent (approx. 100m with Belden 8281). SD cable equalisation >250m Belden 8281 or equivalent
Input return loss: -15dB for 50MHz to 1.5GHz
Input fail output: Blue

DOWN CONVERSIONS

720p50 to 625/50
720p59.94 to 525/59.94
1080i50 to 625/50
1080i59.94 to 525/59.94

VIDEO OUTPUTS

One loop-through of the HD or SD input, one dedicated SDI output and three video outputs
The three video outputs can be a mixture of SDI and analogue (PAL/NTSC, Y/C, YUV and RGB) and are configured using combination of switches on the outside of the box and three internal moveable links
Output frame rate same as input frame rate
Component: YUV and RGB 1 Volt +/- 2% into 75 ohm. Syncs on R, G and B
Composite: 1 Volt +/- 2% with syncs into 75 ohm. Selectable setup and Betacam levels

ANALOGUE COMPONENT PERFORMANCE

Sampling: Video input is 10 bit processed for 12 bit output DACs
Frequency response:
Luminance: +/- 0.3dB to 5.5MHz
Chrominance: +/- 0.4dB to 2.5MHz
Noise: <-67dB weighted luminance or chrominance
Gain error: < 1%

ANALOGUE COMPOSITE PERFORMANCE

Sampling: Video input is 10 bit processed for 12 bit output DACs
Frequency response:
Luminance: +/- 0.3dB to 5MHz
Noise: <-67dB weighted luminance or chrominance
Differential gain: < 2% typ.
Differential phase: +/- 1 degree typ.

PICTURE PROCESSING (HD TO SD)

Sophisticated two dimensional filtering gets broadcast results and avoids the complication of looking at multiple fields or movement detection. It avoids aliasing while retaining picture sharpness, and results in reliable, artefact-free conversion with broadcast filter quality
When down converting the performance can be optimised by choosing one of four alternative filter characteristics (softest, soft, sharp and sharpest)
When the input is SD the processing is bypassed, so that the signal is passed without degradation

ASPECT RATIO CONVERSION

16:9 Anamorphic (for 16:9 SD systems) and either 16:9 to 4:3 Letterbox or 16:9 to 4:3 Full Screen with centre cut (for 4:3 SD systems)
Selected by using the switches on the outside of the box or GPIs

FIXED VIDEO DELAY

There are three video delay settings available:

- 'minimum' – the video processing delay. With an HD input the delay is 16 SD lines (Anamorphic or Full Screen) or 52 SD lines (Letterbox). With an SD input the delay is 3.8us
- 'fixed' (52 SD lines) – this allows the aspect ratio to be changed live on air without any picture disturbance, for example
- 'frame' – can be used to match a variety of equipment or to connect with equipment that has no delay

LED INDICATION OF:

Power present
Input present

GPI INPUT LEVELS

Active pull to ground, pulled up to +5V through 10 kohm

GPI OUTPUT LEVELS

Electrically: Open collector transistors 48V, 270 ohm current limit resistors. Pulled up to +5V through 6800 ohm

GPI INPUTS

Four GPI inputs – two used to select aspect ratio (switch 1 and 2 should be set to follow GPI)

GPI OUTPUTS

Two GPI outputs – one indicating loss of input

LOCAL CONTROL

All settings are configured by mini DIP switches on the outside of the box:
Switches 1 and 2 set the aspect ratio conversion
Switches 3 and 4 select the analogue output format (used in combination with three internal links that select analogue or SDI output)
Switches 5 and 6 set the video delay
Switch 7 adds or removes a +7.5IE pedestal for NTSC-M or NTSC-J (ignored if the analogue video is PAL)
Switch 8 selects Betacam levels when the output format is set to YUV
Switches 9 and 10 select the filter characteristic

ORDERING INFORMATION

Q-Down Mini Minibox broadcast down converter with one reclocked HD or SD input loop-through, one dedicated SDI output and three configurable Standard Definition outputs
Q-Down Mini PSU External universal AC power supply for Q-Down Mini

Performance and features are subject to change. Figures given are typical measured values. Q-DOWNMINI1109

Crystal Vision

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