Crystal Vision

ShARC-XP

HORIZONTAL ASPECT RATIO CONVERTER

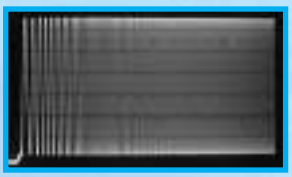
ShARC-XP is the answer for broadcasters who need inexpensive and high quality bi-directional horizontal aspect ratio conversion.

This 100mm x 266mm module performs two conversions - 16:9 to 4:3 Full Screen and 4:3 to 16:9 Pillarbox - which change the horizontal aspect ratio only. It converts a 16:9 picture to 4:3 by performing a centre cut, taking the middle 75% of the 16:9 picture width and stretching it to full screen so it fits on a 4:3 monitor. In the second conversion, a 4:3 picture is made suitable for showing on a 16:9 monitor by squeezing the 4:3 image horizontally and adding black bands to the left and right.

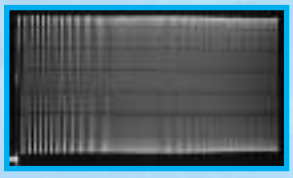
The 10 bit ShARC-XP provides an output picture of unparalleled quality. Because it only performs horizontal processing, ShARC-XP uses better filters which ensures the minimum possible distortion to the picture.

16:9 to 4:3 Full Screen *4:3 to 16:9 Pillarbox*

This high performance multi-tap filtering leads to a wide and flat frequency response with very low levels of measurable conversion artefacts such as aliasing, banding and ripples, and the result is that the broadcast engineer ends up with the most realistic conversion possible. Below is the result from a Waveform Parade performed by a Tektronix WFM 601M, clearly demonstrating the flat frequency response.



Luminance before conversion



Luminance after 16:9 to 4.3 conversion

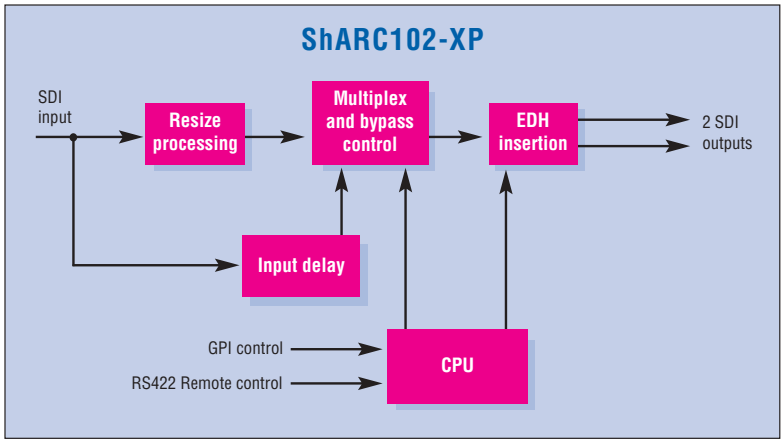
Vertical processing usually causes one frame of propagation delay, but the horizontal-only ShARC-XP has virtually zero delay - just ten microseconds. This means audio-video timing is preserved with no lip sync errors and no correction needed for external audio. Embedded audio and auxiliary data are passed with an appropriate compensating delay.

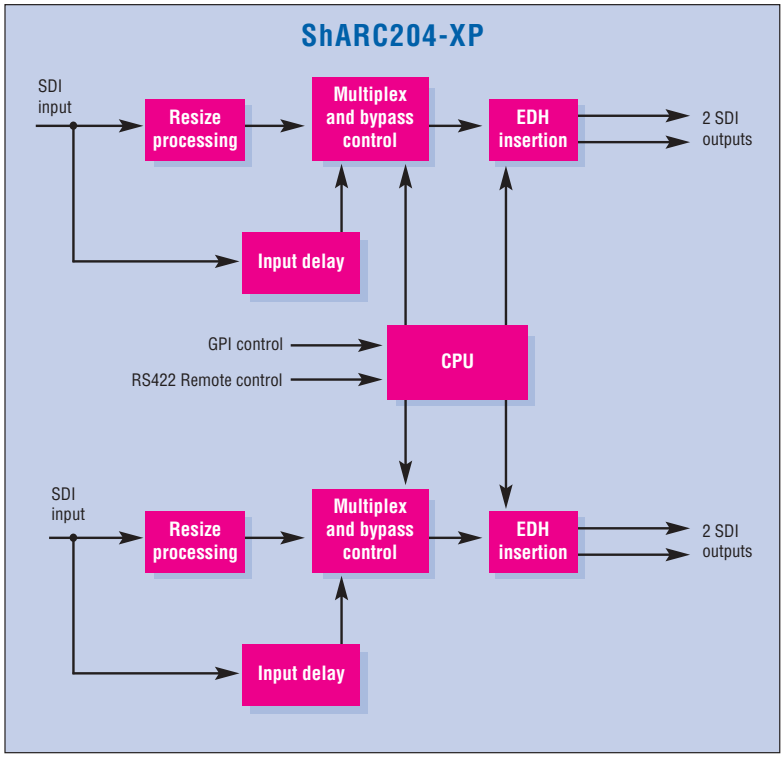
There are two operation modes - convert and bypass - with the latter used to delay unconverted video by the same amount as converted video so no timing changes occur when switching. EDH generation can be turned on or off.

ShARC-XP is available in single and dual channel versions. The single channel ShARC102-XP has one input and two outputs using the RM01 frame rear module. The dual ShARC204-XP has two inputs with two outputs of each channel, again using the RM01. With its ability to fit 48 channels in 4U ShARC204-XP is the choice for limited space applications, while each half may be set to a different aspect ratio for even further flexibility. These modular aspect ratio converters fit in the standard frames and can be easily integrated with Crystal Vision's full range of interface and keyers.

ShARC-XP also offers ease of operation and is extremely quick and straightforward to set up and use, with a choice of control methods: board edge, GPI, frame active front panel, remote panel and the Statesman PC Control System.

- **10 bit horizontal digital aspect ratio converter**
- **Two conversions: 16:9 to 4:3 Full Screen and 4:3 to 16:9 Pillarbox**
- **Exceptional quality - free from vertical processing artefacts**
- **Competitively priced**
- **Wide and flat frequency response**
- **Minimal delay (10 microseconds)**
- **Convert and bypass modes**
- **Selectable EDH generation**
- **Passes embedded audio with same delay as picture**
- **Single and dual versions: ShARC102-XP and ShARC204-XP**
- **Space-saving: 100mm x 266mm module allows 12 ShARC-XPs in 2U (24 in 4U, six in 1U and two in desk top box)**
- **ShARC204-XP ideal for limited space applications with 48 channels in 4U**
- **Flexible control, including PC software**





SPECIFICATION

MECHANICAL
Standard Crystal Vision modules 266mm x 100mm
Weight: 230g
Power consumption: 8 Watts (ShARC102-XP); 8.4 Watts (ShARC204-XP)

VIDEO SDI INPUTS
One input with ShARC102-XP
Two inputs with ShARC204-XP
SDI 270Mbit to EBU 3267-E & SMPTE 259M
Cable equalisation >200m Belden 8281 or equivalent
Auto 625/525 line selection
May contain embedded audio or data (10 bit data path)

VIDEO SDI OUTPUTS
Two outputs with ShARC102-XP
Two outputs of each channel with ShARC204-XP
SDI 270Mbit to EBU 3267-E & SMPTE 259M with EDH

HORIZONTAL PICTURE CONVERSIONS
16:9 to 4:3 conversion stretches middle 75% of picture to fill whole screen
4:3 to 16:9 conversion squashes picture to fill 75% of screen creating a pillarbox with black vertical bars
No vertical conversion
NB: 16:9 to 4:3 conversion is virtually distortion free. 4:3 to 16:9 output frequency response 0 to 5.5MHz. This corresponds to input frequencies of 0 to 4.1MHz. The squashing of the picture raises the frequency spectrum of the picture and so the anti-aliasing filters can cause a loss of very fine detail

DELAY THROUGH BOARD
10us

PICTURE PROCESSING
Processing is 10 bit with 10 bit data path in horizontal and vertical blanking interval to allow embedded audio or data

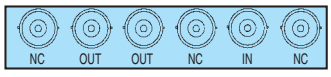
GPI INPUT LEVELS
Active: connect to ground
Inactive: high impedance, or 5 volts
Input current <50uA

GPI INPUTS
Convert or bypass
Stretch or squash

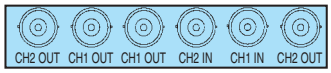
LED INDICATION OF:
Power supplies on board
SDI input present
625/525 input standard
Bypass

LOCAL CONTROL
Conversion set by DIP switches

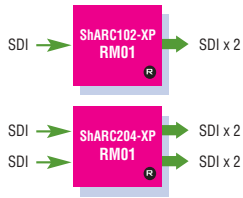
REMOTE CONTROL
Front panel control from frame active panel and remote panel
Statesman allows control from any PC on a network



RM01 used with ShARC102-XP



RM01 used with ShARC204-XP



ORDERING INFORMATION

ShARC102-XP	Single channel 10 bit horizontal digital aspect ratio converter
ShARC204-XP	Dual channel 10 bit horizontal digital aspect ratio converter
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 ShARC-XPs in frame (24 in 4U, 12 in 2U, six in 1U, two in desk top box). Gives access to one input and two outputs on ShARC102-XP. Gives access to two inputs with two outputs of each channel on ShARC204-XP
REMIND	19" remote control panel
Statesman	PC Control System

Crystal Vision Ltd.
Lion Technology Park,
Station Road East, Whittlesford,
Cambridge CB2 4NL, England.
Tel: +44 (0)1223 497049
Fax: +44 (0)1223 497059
E-mail: sales@crystalvision.tv
www.crystalvision.tv

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