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UHDTV-1 (4K) Production



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4K

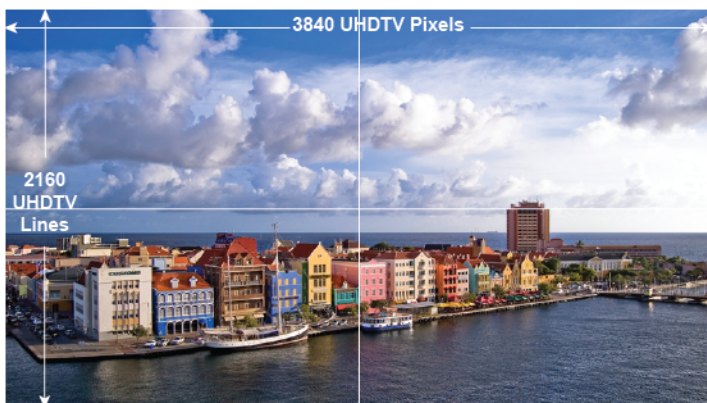


4K Production with Acuity is very straightforward as its design incorporates sufficient processing power to accommodate 4K signals without feature restriction or limitation.

Currently the typical signal interconnect for uncompressed UHD is accomplished using quad (4) HD-SDI links at 3Gb/s with each link containing a 1920x1080 progressive video signal that represents 1/4 of the original image. There are two formats possible for transporting UHD via quad link signals - square division quad split and 2 sample interleave.

Understanding Quad Links...

Square Division Quad Split - Each link contains one quarter of the original image



Link 1 1920 x 1080



Link 2 1920 x 1080

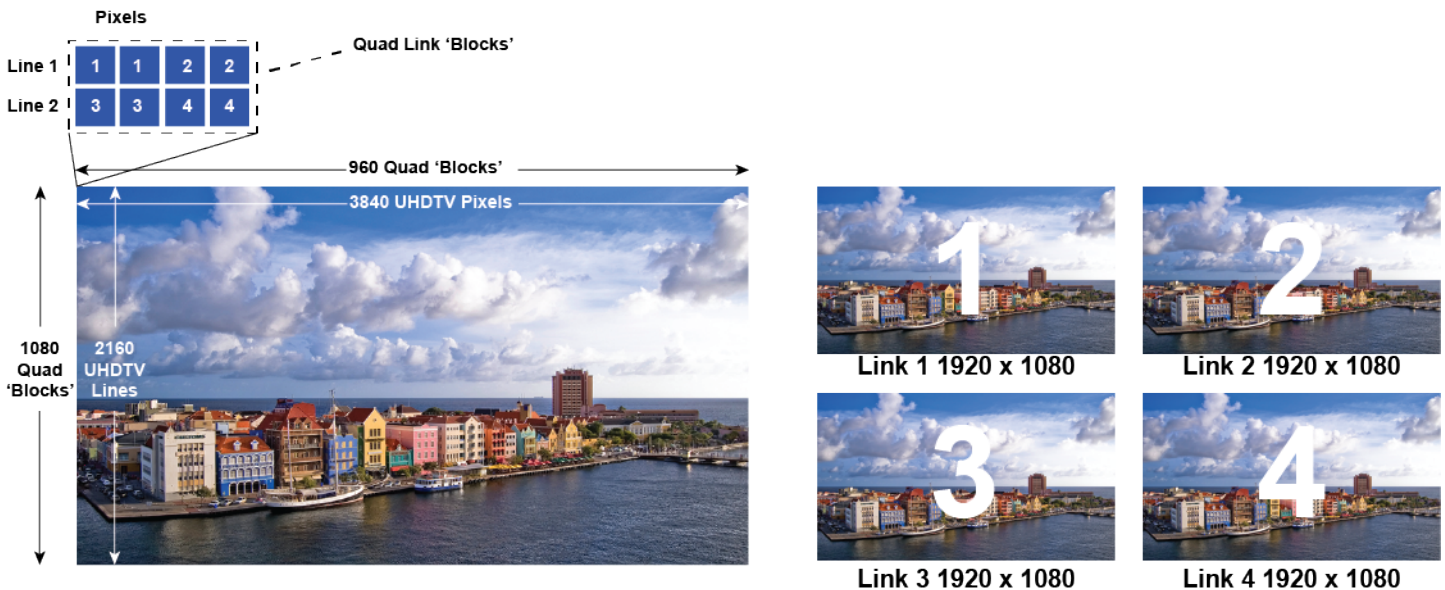


Link 3 1920 x 1080



Link 4 1920 x 1080

Quad Link 2 Sample Interleave (2SI) - Each link contains a full image at 1/4 resolution.



Using the square division quad split method it is necessary to reassemble the quad split in a 4K display for monitoring purposes, whereas the 2SI method allows picture monitoring on standard 1080P displays as each link carries the whole image at 1/4 of its original resolution.

Of these two schemes 2SI offers greater flexibility but is only just being implemented by manufacturers of mainstream camera, server or graphics systems. Acuity can accommodate either interconnect method however these two methods of transport are incompatible and cannot be mixed together in a production without conversion which will introduce processing delays that may be undesirable.

Naturally an eventual goal is to allow UHD-1 transport via single 12G links, currently technologies for 12G interfaces are being researched but at this date further development is necessary before these can be implemented for practical production application.

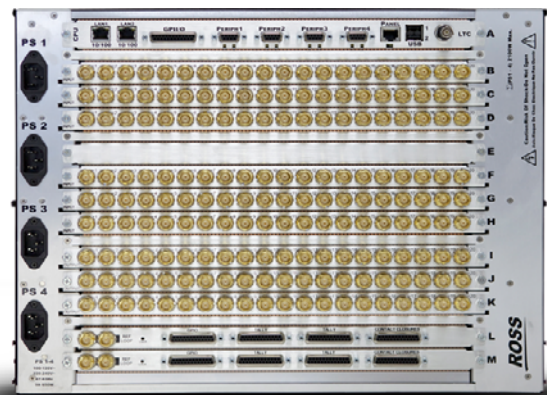
4K Production with Acuity

I/O and ME Resources. As each 4K signal input is carried on 4 x 3G HD-SDI links, the physical I/O must be divided by four. Acuity is available in two frame sizes, 4RU and 8RU. The 4RU has a maximum I/O count of 60 x 40 and can accommodate up to 6 full ME's, while the 8RU frame has up to 120 x 60 inputs and outputs with 8 ME's. Therefore the 4RU frame can accommodate 15 x 10 4K signals and the 8RU 30 x 15.



Acuity 4RU Production Engine

4K ME's are created by linking or combining the resources of 2 or 4 individual 1080P ME's, depending on how many keyers the production requires. Acuity's unique MultiFeed™ feature allows a single 8 keyer ME to be split in to two when used for 4K, allowing two eight key 1080P ME's to become one 4K ME with 4 keyers. The 4RU frame offers up to 3 x 4K ME with 4 keys, the 8RU frame provides a maximum of 4 x 4K ME's with 4 keys. Naturally in either frame 4K and 1080P production can be conducted simultaneously. Whichever configuration is chosen all production resources are available regardless of the operating standard selected.



Acuity 8RU Production Engine

MultiViewers. Any unused ME may be repurposed as a 20 source, Dual Head Multiviewer for production monitoring and can display square division quad link sources on a standard 1080 display by selecting an appropriate layout. Of course 2SI sources can be monitored in any window by selecting any one of the 4 links.

AuxKeys. A unique Ross development that provides additional Keyers / Mixers downstream of the main ME's. Up to 10 AuxKeys are available in a fully loaded 4RU frame and 15 in the 8RU frame. Using AuxKeys it is possible to add keys downstream of the main 4K or 1080 program outputs.

DVE / Resizers. Every ME has 16 channels of 2D DVE / Resizers with key combiner as standard. Allowing up to 16 DVE boxes to be keyed over any ME in the 8 available keyers. Each ME has the option to add 2 channels of full 3D DVE, each channel containing both Key and Fill signals.

Media Stores. Acuity houses four channels of media store for every ME as well as four channels of global media storage. These stores can be simply linked together to allow instant synchronous playback of 4K stills, animations and media or graphic transitions. Media store content can be quickly saved and loaded from the internal 240GB SSD drive and drive content is easily managed via FTP connection.

Key 4K Feature Recap:

- 15 x 10 quad link I/O for square division or 2SI links in 4RU
- 30 x 15 quad link I/O for square division or 2SI links in 8RU
- 6 Control Panel sizes to choose from
- Up to 4 x 4K ME's (8RU Frame)
- Independant 4K DSK's via Unique AuxKeys
- 36 (9x4K) Channels of Media Stores with full Still, Animation and Media Transition Playback
- 16 Channels of 2D DVE with Key Combiners per ME
- Internal MultiViewers via unused ME's

Acuity Production Engine Specifications:

- Multi-Definition support for any of the following formats:
525, 625, 1080i 50, 1080i 59.94, 720P 50, 720P 59.94, 1080P 24, 1080PSF 24, 1080PSF 23.98, 1080p50 A, 1080p59.94 A UHD/4K - 3680x2160p50, 3680x2160p59,94 (Quad Link)
- MultiFeed™ - 8 Configurable outputs per ME, 6 PGM and 2 PVW
- Full 10-Bit Processing in both HD and SD modes
- 2 UltraChrome™ Chroma Keyers with Super Fine Keying Quality in every ME
- Up to 36 Channels of Media Store
- Dual Channel Border Generator with advanced Key Trails and Key Smear effects per ME
- 16 Channels of 2D DVE's per ME with Key Combiner
- 2 Powerful 3D DVE's with Warp per ME (Optional)
- 6 Powerful Pattern Generators and 2 Complex Wash Generators per ME
- Proc AMP and RGB Colour Correction - 7 Per ME for Bus and Input Modes, can be assigned to Outputs
- AuxKeys for Mixing and Keying on Aux Outputs. Uses no ME Resources

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- MultiDSK and Half ME Included. Outputs combined to create additional Keyers and Buses
- Hard Disk Drive for Storing Configurations, Stills, Animations and Clips
- 1000 Event Memory System and 2304 Custom Control Macros per Setup File
- Preview Overlay™ Safe Area/Title and Operator Heads-Up Information Display
- 10 GPI, 10 GPO, 24 User Configurable GPIO, 36 Tally and 24 Contact Closures
- VTR Control Protocol (BVW-75)
- Video Server Protocols (VDCP/AMP) see supported list of servers
- RossTalk Protocol see supported list of Devices
- Serial Tally Protocol see supported list of Protocols
- Audio Server Protocol see supported list of servers
- Monitor Wall Control of Miranda K Series Systems
- Peripheral Bus II Interface (Pbus)
- SmartConversion TieLine Management
- 4:3/16:9 Switchable
- Lifetime Software Updated via Ross Website, Lifetime Telephone Support

In a modern production environment, no product should be an island. To ensure efficient workflow, flexible operations, seamless interoperability and multiple points of control, all system components must be able to communicate with one another. Acuity is fully integrated with Ross Video's OverDrive APC system and Dashboard system wide control manager, and offers the industry's largest library of third-party control protocols. This unprecedented integration makes Acuity the best-connected production system on the market today. Acuity also integrates seamlessly with Ross XPression Graphics Systems, BlackStorm Video Servers, Ross Camera Robotics and Inception News and Social Media.

Please Visit www.rossvideo.com/acuity for complete product specifications and device interface lists.

