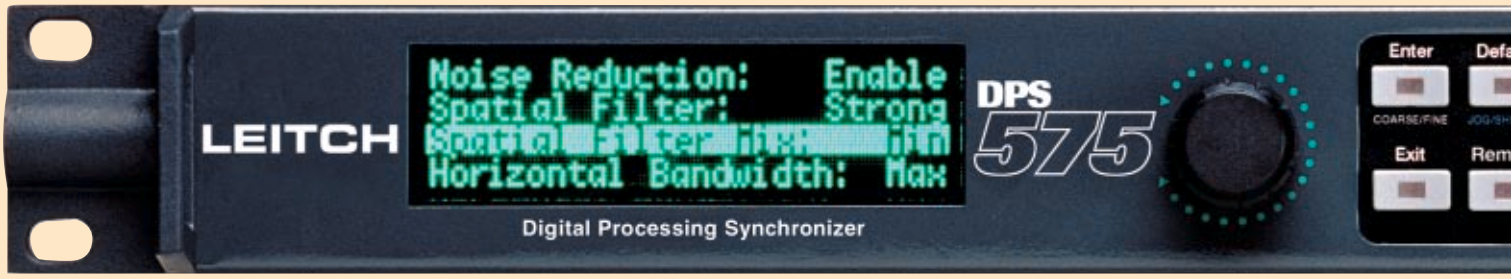
DIGITAL PROCESSING SYNCHRONIZER

DPS 575

- 12-Bit Video Encoder/Decoder
- Multi-Mode Adaptive Comb Filter Decoder with new Leitch PQM™ Technology
- DigiDuplex™ Mode Provides Bi-Directional Analog/Digital Interface
- Video Framestore with Linear Keyer
- Enhanced Digital Test Pattern Generator
- Built-in Audio Test Signal Generator
- Optional Spatial and Temporal Digital Noise Reduction plus Digital Bandwidth Filtering
- Integrated Animated Logo Inserter Option
- DV (IEEE 1394) I/O Option
- Audio Limiter Option

LEITCH®

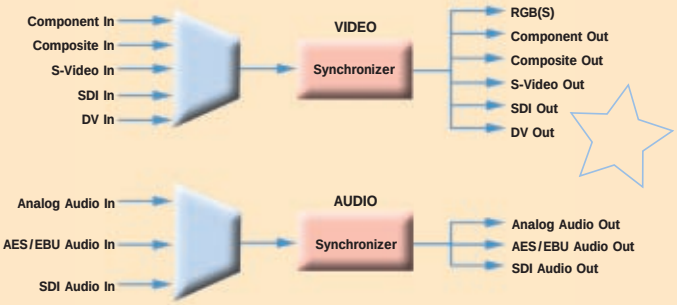


The Right Choice for Transitioning to Digital

More Than Just a Synchronizer

- *AV Synchronizer*
- *Audio Embedder/De-Embedder*
- *Bi-Directional Analog/Digital Transcoder*
- *Auto Switch Time Base Corrector*
- *Graphics Framestore*
- *Linear Keyer*
- *Video AGC*
- *VITS Inserter*
- *VideoTest Signal Generator*
- *Audio Test Signal Generator*
- *Animated Logo Inserter Option*
- *Digital Noise Reduction with Digital Bandwidth Filtering Option*
- *Audio Limiter Option*
- *DV (IEEE 1394) Transcoder Option*

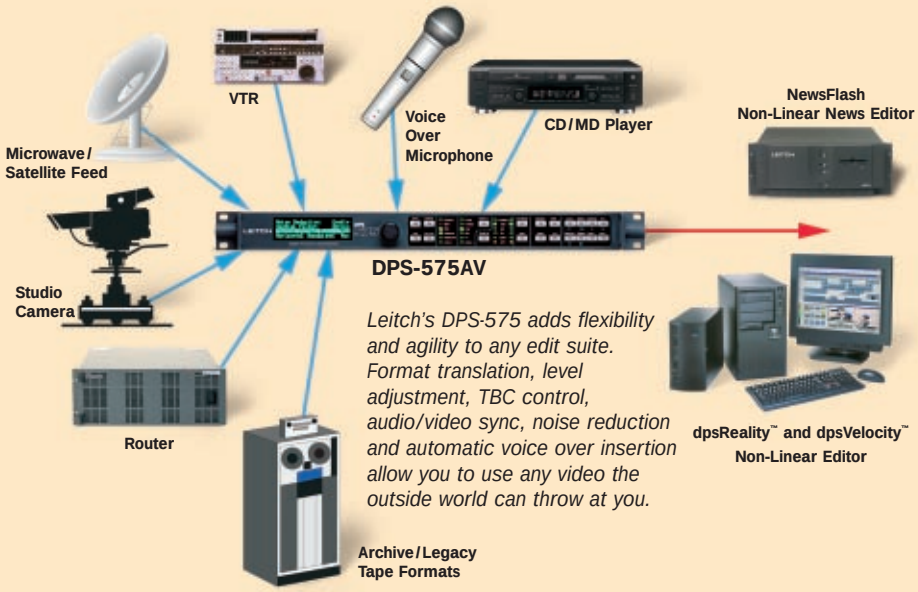
Normal Mode



The normal mode is designed to convert from one video format to another and from one audio format to another. Both the audio and the video signals are synchronized to the input genlock reference signal. Video and audio adjustments can be carried out on the input signals.

Edit Suites

Normal Mode



Leitch's DPS-575 adds flexibility and agility to any edit suite. Format translation, level adjustment, TBC control, audio/video sync, noise reduction and automatic voice over insertion allow you to use any video the outside world can throw at you.

Applications Facility-Wide

Offering maximum functionality and flexibility in a single unit of rack space, the DPS-575 Digital Processing Synchronizer is equally suited for use in analog, digital or hybrid facilities. Fully capable of bridging analog video signals (such as satellite and microwave feeds) to digital production facilities, these dexterous devices are the ideal choice for broadcasters beginning the transition to digital.

Applications Worldwide

The DPS-575 is available in either video only or audio/video configurations and is an auto-sensing, dual-standard (PAL/NTSC) device.

Testing, Testing, TSG

A built-in, 10-bit video test pattern generator allows the user to load any of the over 40 available patterns into the synchronizer's graphic display buffer — even allowing bounce to be specified between any two test patterns.

An integrated VITS inserter enables selected test signals to be displayed in the vertical blanking interval, while a source ID generator also allows a text message to be inserted into the VBI. When input video is lost, the synchronizer can be programmed to freeze, fade to black or drop to a user-defined trouble slide or test pattern.

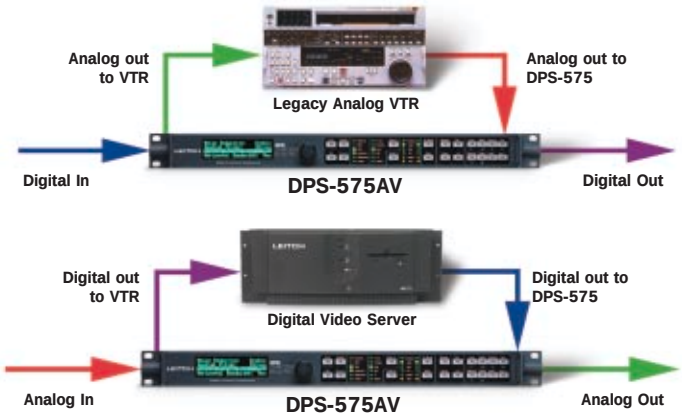
DPS 575

DigiDuplex™ Supports Bi-Directional Processing

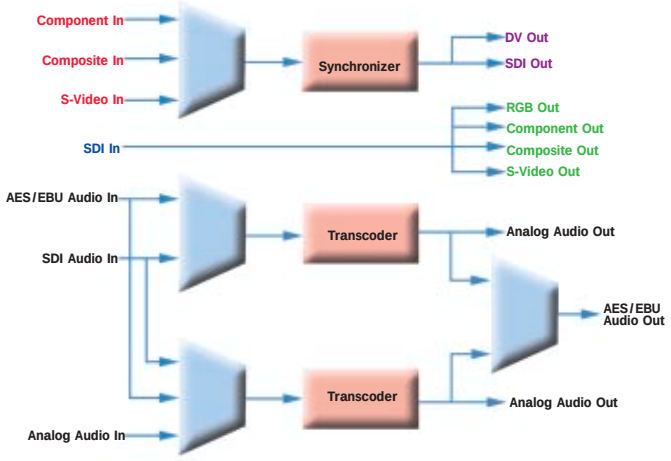
Leitch's exclusive DigiDuplex™ feature provides bi-directional connectivity between analog tape machines and digital routing systems. Enabling simultaneous transcoder and frame synchronizer operation, DigiDuplex mode routes the synchronizer's SDI input directly to the analog video outputs, which feed the inputs of an analog tape machine.

The analog output of the tape machine can be simultaneously connected to one of the synchronizer's analog inputs where it can be processed and output via the SDI port. Audio signals are handled in a similar fashion, with the DigiDuplex mode supporting both AES/EBU and embedded SDI audio.

DigiDuplex™ Mode Application



DigiDuplex™ Mode Function



"Gimme Bars" Automatic Proc Amp Setup

With a known input signal (75% color bars), the video proc amp controls can be set automatically and accurately with the press of a single button. Manual adjustments without the use of a scope or a monitor are also easy, since peak video levels are displayed as IRE units in real time.

The digital proc amp controls enable the adjustment of all signal parameters regardless of input source, meaning that corrections can even be made for color phase errors (hue) in SDI and component video streams. For dynamic level adjustments, a switchable video AGC circuit monitors sync-tip levels to continuously set video gain.

Proprietary 12-Bit Comb Filter Decoder with new PQM™ Technology

The most critical requirement for a component digital synchronizer is the ability to accurately decode composite NTSC or PAL signals. In that respect, the 12-bit adaptive 3-dimensional comb filter decoder used in the DPS-575 offers unparalleled decoding ability.

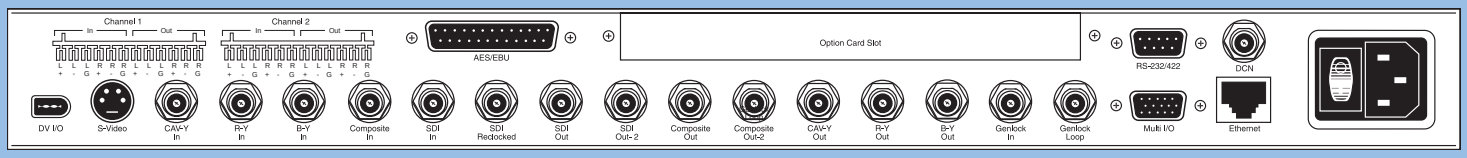
Three combing modes are available: Simple, Adaptive 2-dimensional and Adaptive 3-dimensional. Utilizing Leitch's new Phase Quadrature Mixing PQM™ Technology, the 3D Combing virtually eliminates residual subcarrier artifacts, such as cross luminance and cross chrominance. 3D processing can be engaged even when the composite input is not being utilized.

For example, if a component video source was originally decoded by a less sophisticated tape machine decoder, the 3D comb filter in the DPS-575 can be used to clean up the signal and remove the cross luminance and chrominance artifacts. Removing these artifacts will save bandwidth if you encode the output to MPEG, because the residual subcarrier artifacts create significant entropy.

Another unique feature broadcasters will appreciate is programmable, line-by-line, vertical interval comb filter bypass.

Proprietary 12-Bit Video Encoder

Incorporating a proprietary 12-bit video encoder, which provides wide-band digital oversampling for ultra-flat frequency response, extremely high-quality encoding and exceptional signal-to-noise performance for both NTSC and PAL applications.



Four video input and output formats are standard: Composite Video, Serial Digital Video (SDI), Component Analog Video (Betacam) and Y/C (S-VHS/Hi-8). A separate RGB output supports sync on green or RGBS modes and is ideal for driving video projectors. The RGB output can also be configured to provide an additional composite video output.

Infinitely Flexible I/O

The DPS-575 synchronizer provides separate connections for all video input and output formats. This allows for convenient front panel selection between multiple input devices, all of which may be connected simultaneously.

An optional DV I/O module makes it easy to interface DV camcorders and 1394-equipped digital VCRs. As an added convenience, front panel transport controls, including jog and shuttle, make it easy to control DV devices via the 1394 link.

Consumer DV Translation for News

Normal Mode

Leitch's DPS-575 connects to IEEE-1394 and provides transport controls and translation to professional broadcast video formats. The noise reduction and TBC features greatly improve picture quality for on-air broadcast.

Don't Forget the Sound

With the addition of an optional four-channel audio synchronizer module, it can provide dual stereo audio and video synchronization, supporting balanced or unbalanced analog, AES/EBU digital and embedded SDI audio I/O. All outputs are simultaneously active, which allows both analog and digital audio devices to be connected at the same time. Incoming stereo audio pairs can be selected from the analog, digital or embedded SDI inputs.

All four audio channels dynamically track the internal delay of the video synchronizer whenever auto-track mode is enabled. Up to 1.75 seconds of total delay can be specified, ensuring proper lip sync regardless of the program source. All audio parameters are controlled from an easy to use front panel menu. Four separate audio tone generators enable different frequency test tones to be applied to each channel for easy left/right channel identification.

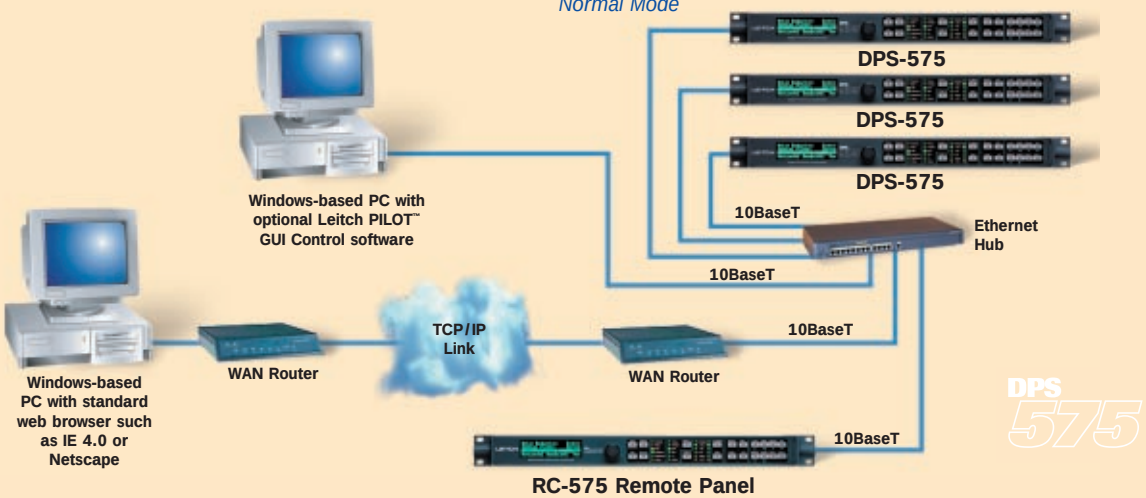
The optional Audio Limiter feature will provide improved audio output performance by limiting the hard clip effect and in preventing audio distortion. This is ideal for all broadcasters, post production facilities, cable companies, telcos and many other applications requiring added audio control.

Designed for a Changing World

With firmware updates easily installed in the field, this sleek, sophisticated and superbly engineered synchronizer is able to stand the test of even the most unpredictable times, making the DPS-575 a solid investment for a market in motion.

Remote Control via LAN/WAN Network

Normal Mode

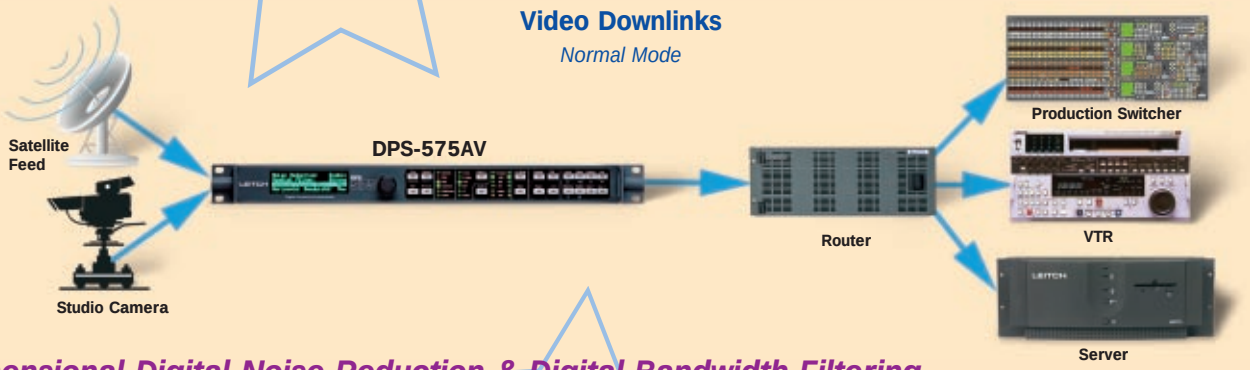


Engineered for the Real World

The rugged yet lightweight chassis is plenty tough for mobile use. The all-metal front panel provides expanded function buttons and additional status LEDs. A vacuum fluorescent graphical display (VFD) features variable sized fonts for readability and can be dimmed to suit control room lighting conditions. The VFD also provides real-time audio VU meter and video level indicators for peak luminance, minimum black and peak saturation.

Video Downlinks

Normal Mode



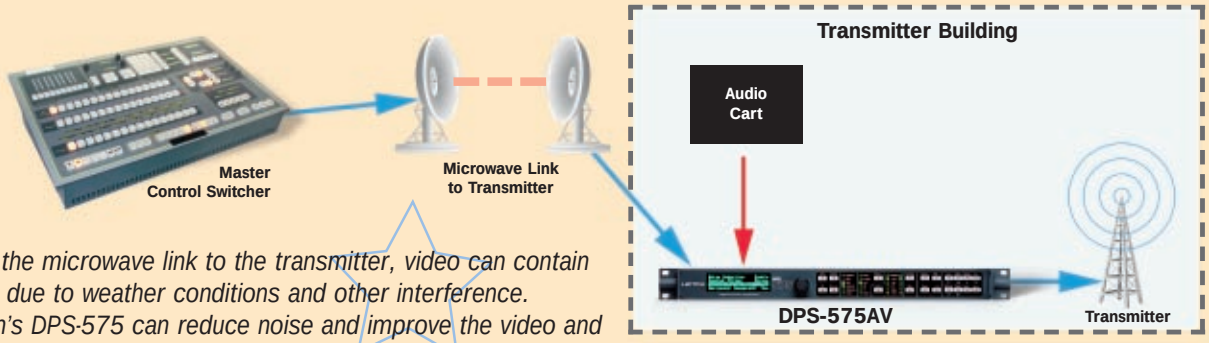
3-Dimensional Digital Noise Reduction & Digital Bandwidth Filtering

With the optional Digital Noise Reduction feature, convenient front panel controls permit adjustments for both spatial and temporal noise reduction.

In addition, 2D filtering with separate horizontal and vertical bandwidth adjustments are available with the optional Digital Bandwidth Filtering feature which is included with the Digital Noise Reduction feature. For MPEG pre-processing applications, this option provides entropy reduction prior to encoding.

Post Microwave / Noise Reduction / Emergency Switch

Normal Mode



After the microwave link to the transmitter, video can contain noise due to weather conditions and other interference. Leitch's DPS-575 can reduce noise and improve the video and audio quality. The DPS-575 also provides a trouble slide and a voice over in the transmitter building. During a loss of video the DPS-575 can automatically switch to an alternate source or trouble slide.

Video Framestore, Linear Keyer & Logo Inserter

An entire frame of video can be stored in the synchronizer's non-volatile memory, and the still image can be displayed full screen or keyed over live video. Stored images can include an associated linear key. Fill and key information can be grabbed from live video in separate passes, or graphic files can be uploaded to the synchronizer using a PC.

The built-in framestore/keyer also makes an ideal logo inserter or source I.D. generator. Multiple logos can easily be stored in the available RAM. For even more pizzazz, animated logos are optionally available. Logo insertion can be initiated from the front panel or via GPI trigger. Two GPI inputs and one GPI output are standard.

DPS 575 Digital Processing Synchronizer

Video Specifications:

Inputs:
- Composite Video (BNC) . . . . . 1 V p-p, 75Ω
- Component Analog Video (BNC):
  - Y . . . . . 1V p-p, 75Ω
  - R-Y, B-Y . . . . . 0.7V p-p, 75Ω
- S-Video (4P Mini-DIN):
  - Y . . . . . 1V p-p, 75Ω
  - C (Burst Level). . . . . 300 mV NTSC
- Serial Digital SDI (BNC). . . . . 75Ω, Auto EQ to 300M (With Reclocked & Buffered BNC Output)
- DV I/O Option (6-Pin Molex) . . . IEEE-1394
- Genlock Reference (BNC Loop) 1V p-p, 75Ω

Outputs:
- Composite Video (BNC x2) . . . 1V p-p, 75Ω
- Component Analog Video (BNC):
  - Y . . . . . 1V p-p, 75Ω
  - R-Y, B-Y . . . . . 0.7V p-p, 75Ω
- S-Video (4P Mini-DIN*):
  - Y . . . . . 1V p-p, 75Ω
  - C (Burst Level). . . . . 300 mV NTSC
- RGB/RGBS Analog (BNC)*†:
  - RGB. . . . . 1V p-p, 75Ω
  - Sync . . . . . 300 mV or 8V p-p (Selectable)
- Serial Digital SDI (BNC x2) . . . 75Ω
- DV I/O Option (6-Pin Molex) . . . IEEE-1394

Signal Processing:
- ADC/DAC and Composite
- Encoding/Decoding 12-bit
- Component YUV Pipeline 10-bit
- Synchronizing Range . . . . . Infinite

Frequency Response:
- Synchronizer Mode . . . . . +/- 0.25 dB (0 - 5.5 MHz) -1dB (5.5 - 5.75 MHz)
- TBC Mode . . . . . -3 dB (0 – 4.2 MHz, Notch at 3.58/4.43 MHz)

Signal to Noise:
- TSG/SDI Input Modes . . . . . >75 dB Luminance Weighted
- Synchronizer Mode . . . . . >70 dB Luminance Weighted
- TBC Mode . . . . . >62.7 dB Luminance Weighted

Differential Phase . . . . . <1° (Modulated Ramp)
Differential Gain . . . . . <1% (Modulated Ramp)
K-Factor (2T) . . . . . <0.5% (2T Pulse)
Luminance Jitter (TBC Mode). . . . . <15 nS

Processor Controls:
- Video Level. . . . . +/-3dB
- Setup Level . . . . . +/-20 IRE
- Chroma Level . . . . . +/-6dB
- Hue Phase . . . . . +/-45° to +/-90°
- Horizontal Adjustment . . . . . 0 to 63.5µS
- Horizontal Genlock Delay . . . . -18.52nS to +13.89nS
- Vertical Line Advance . . . . . Normal or 1 line early
- Vertical Timing Adjustment . . . 1 line adv./0 to 524 lines (NTSC)/0 to . . . . . 624 lines (PAL)
- Subcarrier Genlock Timing . . . 360°
- Input Y/C Delay Adj . . . . . -1185nS/+1111nS
- Luma. . . . . set to unity (0.0dB)

Test Generator Mode . . . . . Select from 40+ 10-bit Test Patterns (Available at all Outputs)

VITS/VIRS Inserter. . . . . Select any two (line repetitive) test patterns to display on alternate fields of lines 16-19

Remote Control:
- Serial Remote Port (DB-9F) . . . RS-232/RS-422 Levels @ 9,600/38,400 BPS
- Ethernet (RJ-45) 10-Base-T
- GPI Input (x2, RCA)*. . . . . TTL or Contact Closure
- GPI Output/Audio
- Sync Pulse (RCA)* . . . . . TTL Pulse

Audio Specifications:

Analog Inputs:
- Number of Inputs. . . . . 2 Stereo Channels (Balanced or Unbalanced)
- Resolution 24-bit
- Input Impedance . . . . . 600 Ω or 18KΩ
- Maximum Input Level . . . . . +24 dBu
- Input Sampling Rate . . . . . 32 kHz, 44.1 kHz, 48 kHz
- Connection. . . . . Removable Barrier Strip

AES/EBU Inputs:
- Inputs . . . . . 2 AES/EBU Stereo Streams
- Resolution . . . . . 24-bit, 96 kHz
- Input Type (Menu Selectable) . . AES3-1992 Balanced XLR or Unbalanced BNC (AES Data on Coax SMPTE 276)
- Input Termination . . . . . 110Ω Balanced or 75Ω Unbalanced
- Connection . . . . . BNC Connectors on Supplied Breakout Cable
- Channel Status Information . . . Professional, S/PDIF

SDI Embedded Input:
- Input . . . . . 2 Stereo AES/EBU Channels
- Resolution 20-bit
- Sampling Rate. . . . . 48 kHz Synchronous
- Channel Status Format . . . . . AES3-1992 (Professional Mode)
- Connection . . . . . BNC (via SDI video input)

Analog Outputs:
- Number of Outputs . . . . . 2 Stereo Channels (Balanced or Unbalanced)
- Resolution 24-bit
- Maximum Output Level . . . . . +24 dBu (-23 dBu into 600Ω)
- Connection . . . . . Removable Barrier Strip

AES/EBU Outputs:
- Number of Outputs . . . . . 2 Stereo AES/EBU Channels
- Output Type . . . . . Balanced (AES3-1992) or Unbalanced (AES Data on Coax SMPTE 276)
- Impedance . . . . . 75 Ω or 110Ω (Transformer Isolated)
- Connection . . . . . BNC Connectors on Supplied Breakout Cable

SDI Embedded Output:
- Number of Outputs . . . . . 2 Stereo Channels of Embedded Audio
- Channel Status Format . . . . . AES3-1992 (Professional Mode)
- Connection . . . . . BNC (via SDI Video Output)

Processing. . . . . 24-bit Audio System
Sampling Frequencies . . . . . 32 kHz, 44.1 kHz, 48 kHz, 64 kHz, 88.2 kHz, 96 kHz
Maximum Total Delay . . . . . 1.75 seconds at 48 kHz
Delay Resolution . . . . . <1 mS
Frequency Response . . . . . 50 Hz to 20 kHz +/- 0.05 dB
THD+N . . . . . <0.005% (Typical at +21dBu, 1 kHz)
Total Dynamic Range . . . . . >90dB
Signal to Noise Ratio . . . . . >70dB (Full Scale Output)
Channel Separation . . . . . >85dB
Audio Test Tone Generators (x4) . . 100 Hz to 20 kHz, 100 Hz steps, 0 dBFS to -38 dBFS levels

General Specifications:

Size . . . . . 17" x 1-3/4" x 20" (WHD), 43.2cm x 4.4cm x 50.8cm
Power Requirements . . . . . 70 Watts, 100-240 VAC, 50/60 Hz

** These connectors located on supplied breakout cable.*
† RGB port can alternately provide additional composite video output or framestore alpha channel output for use with external keyers.
Specifications and designs subject to change without notice. Features and options subject to model, configuration and availability.

DPS-575 series synchronizers can also be ordered as "LC" models, less front panel controls.

RC-575 Multi-Channel Remote Synchronizer Control With Ethernet Port

Compact 1U remote panel provides same controls as synchronizer front panel. Enables one or more DPS-575 series (including LC models) synchronizers to be operated via DCN or 10-base T Ethernet.

DVM-5010 DV I/O Module

The DVM-5010 module adds DV (1394) I/O connectivity to the DPS-575 synchronizer. A rear panel 6-pin molex connector provides a means to connect DV devices, such as camcorders and DV decks. Digital video, audio and transport commands are supported via the IEEE 1394 link. For added convenience, the DPS-575 even provides front panel DV device transport controls, including jog and shuttle.

Ordering Information:

DPS-575 . . . . . Dual Standard (PAL/NTSC) Auto-Switch Video Synchronizer

DPS-575AV . . . . Dual Standard (PAL/NTSC) Integrated Audio/Video Synchronizer

DPS-575LC . . . . DPS-575 without front panel controls

DPS-575LCAV . . DPS-575AV without front panel controls

Options:

NR-575 . . . . . Digital Noise Reduction & Bandwidth Filter (PAL/NTSC)

AL-475 . . . . . Animated Logo Option (NTSC)

AS-575 . . . . . Four Channel Digital Audio Synchronizer Module (Upgrade DPS-575 to DPS-575AV)

AL-575 . . . . . Animated Logo Option (PAL)

ASL-575 . . . . . Audio Limiter Option (must have existing AS-575 module) (PAL/NTSC)

AS-575L . . . . . Audio Synchronizer module with Audio Limiter Option (PAL/NTSC)

774-470A . . . . . Audio Breakout Cable with XLR and BNC connectors

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