HD-SD VariTime™ Sync Generator

PRODUCT CODE: PT5300

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In today's environment, sync requirements are becoming increasingly diverse, as they need to support multiple production formats. A new flexibility is called for in synchronising systems.

The PT5300 HD-SD VariTime™ Sync Generator is specially designed to fit into this new environment with all signals needed for synchronisation, fault finding and checking of the entire video chain. The generator conforms to the relevant ITU, SMPTE, EBU and AES standards.

PT5300 BASE UNITS

Two base units are available for the PT5300 series:

- The PT5300HD is a combined HD and SD sync generator providing both trilevel as well as NTSC and PAL black burst signals.
- The PT5300SD generates SD sync signals in PAL and NTSC, but may be extended to HD by adding the PT8611 quad Tri-level sync board.

In master sync applications both base units may be controlled by the internal, high precision internal XTAL oscillator, or locked to the GPS receiver. In slave applications PT5300 can be genlocked to PAL and NTSC video or black burst signals. All HD and SD outputs are individually timeable for synchronisation of sophisticated video installations.

FLEXIBILITY - MODULAR & MULTISTANDARD

Several generators can be added to the base unit making multiple HD and SD serial digital outputs available and also analogue PAL or NTSC at the same time. The configuration may also include several Tri-level or additional black burst outputs. This makes the generator perfect for use in a mixed SD and HD environment.

The modular approach enables multiformat configuration:

- 19 HD formats for Tri-level sync outputs.
- HD-SDI outputs selectable for HD formats in 720p, 1080i, and 1080p formats with 1,485 Mbit and in SD with 270 Mbit
- SD-SDI, 625-lines and 525-lines, and analogue composite PAL and NTSC.
- AES3 Audio Generators, a Digital Genlock input and a Time Clock input can also be added all in the same instrument.

TRI-LEVEL SYNC GENERATOR

The generator has up to 12 separately controllable Tri-level outputs. For each output any of 19 HD formats can be independently selected. For several HD formats genlocking to the frame rates of SD 525-line and 625-line systems will automatically take place. In this way frame synchronisation is ensured between SD and HD. Each of the 4 Tri-level outputs can be individually delayed or advanced with 6.7ns resolution in phase to each other and the mainframe system sync or genlock input.

HD-SD TEST SIGNAL GENERATOR

On any of its 4 independent HD and SD serial outputs the generator can supply test signals in 1080p, 1080i, 720p, and SD formats. The test signals include several colour bar signals, colour black, SDI checkfield, monitor alignment signals, and test pattern for "lip-sync" check.

All signals have embedded audio with test tones. A programmable text may be superimposed on any signal for identification.

Combination test pattern with clap tree for lip-sync check.

Features...

- Multi-format sync capability: 19 HD formats in addition to PAL, NTSC and standard definition SDI systems
- Master application with internal or external high stability reference
- VariTime™ subnanosecond delay Compensation
- Full genlock capability: 1 frame for HD; 2 fields for SDI; 4 and 8 fields for NTSC and PAL
- GPS Genlock and LTC Generator Option
- SNTP Server & Ethernet Remote
- Up to 8 individually timed HD and SD serial digital outputs and 2 SD serial digital outputs
- Up to 12 individually timed Tri-level sync outputs
- Dual Link HD-SD Test Signal Generator
- Analogue outputs in combination with SDI outputs
- Embedded audio in HD and SD serial digital outputs
- Dual AES3 digital audio generator
- Separate Word-clock output.
- "Lip Sync" moving element in SDI test patterns synchronised to embedded audio "click"
- Programmable text strings in test pattern generators can be placed on the screen where needed

The Next Generation

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HD-SD VariTime™ Sync Generator

DUAL LINK HD-SD TEST SIGNAL GENERATOR

Aimed at the high-end video production market, the PT8613 uses 1080p progressive scanning and 4:4:4 sampled component HD signals with up to 12 bit video resolution provides two independent multisystem generators each capable of providing configurable video interface systems as HD Dual Link, HD Single Link, and SD. The generated video components can be RGB 4:4:4, Y, C_b, C_r 4:4:4, or Y, C_b, C_r 4:2:2, and colour resolution can be configured to 12-bits or 10-bits. Each generator is independently timeable in the interval +/- 0.5 relative to the mainframe genlock time reference, to account for cable length and buffers in the signal path. All signals have embedded audio with test tones. A programmable text may be superimposed on any signal for identification.

GPS GENLOCK & LTC GENERATOR

Photo courtesy of NASA

The GPS module is an option for the PT5300 mainframe. The PT8616 GPS Genlock module assures you precise video synchronisation, where ever you may be. By using ultra accurate clocks in the GPS satellites as a reference, you are always able to lock your main studio with a broadcast van or a remote studio without physical connection.

The PT8616 generates master clock reference for the PT5300 mainframe, as well as LTC timecode, for common video formats. Both are continuously kept stable and up to date by the GPS information. And as the satellites are calibrated by earth control-stations, the best long term stability is guaranteed. This means hassle free setup of the module, as the parameters only need to be setup once. Hereafter the module does not need further maintenance.

As GPS contact depends on a clear sky view, contact can be lost in case of heavy snow or rain, dense vegetation or tall buildings. The PT8616 is prepared to handle this situation, as a precise, fixed temperature oscillator takes over and becomes the reference clock. When satellite contact is re-established, the PT8616 smoothly regains the GPS lock without disturbing the system.

The LTC generator includes the following features:

- Time zone select
- Selectable switching for daylight saving time
- Individual timing offset for both LTC outputs
- +/- 500 ms offset range

The PT8616 is delivered with a rugged, weatherproof active 180° antenna, 12 m cable and a mounting kit. This assures the best possible communication with the GPS satellites.

GENLOCK AND TIMING ADJUSTMENT

The PT5300 is genlockable to a traditional black burst signal, but can also be locked onto continuous wave signals such as subcarrier, 5 MHz, and 10 MHz reference frequencies. It can even lock to a 525-lines video signal and still generate PAL and 625-line SDI signals. Next to the common genlock phase adjustment for the entire basic instrument, each generator is also independently timeable (infinite timing over 2 fields for SDI and 4 or 8 fields for respectively NTSC and PAL).

SD-SDI TEST SIGNAL AND PATTERN GENERATORS

The SD serial digital generators work both in 625 and 525 line formats, and there are also various versions to choose from:

- A basic Test Signal Generator contains less complex test signals, i.e., colourbars, PLUGE, crosshatch, window, etc
- An extended Test Pattern Generator has a broad range of test signals plus one complex test pattern: "Philips" Circle Pattern in 625 line, 4:3 format
- A high-end Test Pattern Generator contains a very wide range of test signals, like the "Philips" Circle pattern and FuBK test pattern in both 4:3 and 16:9 aspect ratios as well as other complex test patterns

Digital audio signals are embedded in all SDI outputs.

SNTP SERVER & ETHERNET REMOTE

The PT8643 NTP server and Ethernet remote acts as a 2 in 1 option. Using it together with the PT8616 GPS lock option, it serves as a precise (stratum 1) SNTP time server. This enables execution of automatic playlists in time, down to the millisecond and provides an Ethernet gateway to control your PT5300. Connects to LAN and, through Telnet, enables control of the PT5300 using the standard remote commands. This provides full access to PT5300 from any LAN connected computer in the facility.

- Enables the PT5300 to function as SNTP server
- Precise time information via GPS (requires PT8616)
- Remote control and status monitoring of PT5300 via Ethernet
- Control the PT5300 and options via Ethernet from anywhere
- Easy setup
- Static IP address or dynamic IP via DHCP
- Find your PT5300 on the Ethernet by the Netfinder protocol

ANALOGUE TEST SIGNAL GENERATOR

The analogue output module is a dual standard module (PAL or NTSC), which provides test signals and complex test patterns as the "Philips" Circle Pattern and the FuBK pattern for the analogue domain.

"LIP SYNC" MOVING ELEMENT IN PATTERN

To reveal that a serial digital video transmission is "live" and not in a "freeze" condition, a moving element can be selected for some of the complex SDI test patterns. The movement is synchronised with a "click" in the embedded audio signal.

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TEXT AND CLOCK

Three lines of text can be superimposed onto the video signals. In the complex test patterns the position of the text is optimized for the black text fields. Clock (date and time) can also be inserted. Date and clock are either controlled by LTC, VITC or from the internal reference.

AES3 DIGITAL AUDIO GENERATORS

The digital audio generators supply digital silence and a selection of reference test tones. The unit contains two independent audio generators and separate word-clock outputs. Some of the audio test signals include audible markers that make it possible to identify right and left channels by using a loudspeaker.

EASE OF OPERATION

The main sync generator functions are controlled via separate pushbuttons. A "Compass Key" together with an LCD display guide the user through the menu selections with help of intuitive icons.

CHANGEOVER CONTROL

The PT5300 is the "New Generation" of the Varitime™ Sync Pulse Generator and they work together in an automatic change over set-up. Built-in fault detection circuitry determines when to send an error flag to the PT5211 Varitime™ Changeover unit.

PRESETS

Six complete instrument presets are stored in a non-volatile memory. This makes it simple to change the configuration of the outputs for different applications.

HD-SD FORMATS

	HD-SDI FORMATS SUPPORTED BY PT5300HD				
FORMATS	Tri-Level Sync	PT8612/PT8613 4:2:2 Mode	PT8613 4:4:4 Mode	Genlock to BB	
1080p/60	x				HD 1080p
1080p/59.94	x				
1080p/50	x				
1080p/30	x	x	x		
1080p/29.97	x	x	x	x	
1080p/25	x	x	x	x	
1080p/24	x	x	x		
1080p/23.98	x	x	x		
1080i/30	x	x	x		HD 1080i
1080i/29.97	x	x	x	x	
1080i/25	x	x	x	x	
720p/60	x	x	x		HD 720p
720p/59.94	x	x	x	x	
720p/50	x	x	x	x	
720p/30	x	x	x		
720p/29.97	x	x	x	x	
720p/25	x	x	x	x	
720p/24	x	x	x		
720p/23.98	x	x	x		
576i/25 (625)		x		x	SD
487i/29.97 (525)		x		x	

[1]) Format: "Number of Active Lines" "i (interlaced) or p (progressive)" / "Frame Rate". For Interlaced formats frame rate is equal to half of field rate.

REMOTE CONTROL

The RS-232 remote control interface provides control of the functions of the generator. Parameters for each output may be adjusted remotely and a complete set-up can be copied from one instrument to another. Instead of the RS-232 control, an internal configuration easily switches the interface to a simple ground closure control, which features a selection of presets and a few basic functions.

FAIL-SAFE SYNC GENERATOR SYSTEM

The fail-safe operation of the sync generator system is demanded wherever the interruption of the synchronising signals and thereby the breakdown of a video production or a TV transmission could cause major losses.

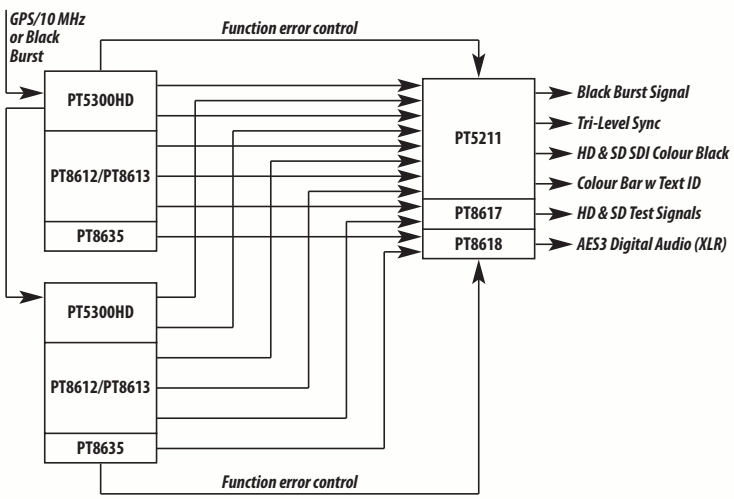
With a dual and independent sync generator system coupled to an automatic change-over unit from DKTechnologies the uninterrupted operation of the sync system is secured. A typical, fail-safe system is shown in the drawing. The system will work either as a Master Sync System or as a Slave System genlocked to a master.

The high flexibility of the PT5300 allows the configuration to meet specific requirements through the addition of optional modules. Up to 12 Tri-level sync outputs, 8 black burst outputs, multiple HD and SD-SDI test signal outputs, as well as analogue PAL and NTSC test signals can be added. All video signals can be timed individually and precisely over the full video frame. Audio signals are embedded in all SDI signals. A dual, separate AES digital audio generator can be added supplying audio tones, silence signal, and wordclock locked to video.

Signals from the sync generators are applied to the PT5211 Change-Over Unit. Through relays either the main or reserve sync generator signals are switched through to the outputs of the PT5211. In each PT5300 the amplitude at the outputs are monitored as well as the internal supply voltages. By any malfunction in the main sync generator, a control signal switches the PT5211 to the reserve generator.

By placing the detectors in the sync generators, the change-over unit is kept the simplest possible to obtain a very high reliability. The MTBF of the total system is mainly determined by the PT5211, and is thus maximised.

The PT5211 base unit can switch up to 4 video and audio signals in 75 ohm BNC interfaced signals. Fully equipped with optional relay modules it can switch up to 12 BNC channels or up to 8 BNC channels and 2 XLR balanced channels.



Dual PT5300 sync generator system with PT5211 automatic change-over unit secures uninterrupted supply of synchronising signals for video and audio.

HD-SD VariTime™ Sync Generator

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RELATED PRODUCTS

PT5202 Compact VariTime™ Sync Generator

PT5202 is a cost effective stand-alone solution with an internal 10MHz TCXO master reference, genlockable, with a user-friendly front panel control and key features such as:

- Dual standard 625/50 PAL and 525/60 NTSC operations
- Genlock to PAL and NTSC
- 3 independent BB outputs, individually timeable
- 1 SD-SDI output, 625/50 and 525/60 with embedded audio incl. SD-SDI colour black
- Source identification as text element with up to 16 characters on colour bars
- 1 analogue video output PAL or NTSC
- 1 AES3 or analogue stereo output
- 1 Wordclock at 44.1 or 48 kHz
- 4 programmable presets directly selectable
- Operation also via RS-232 interface.

PT5211 VariTime™ Change-Over Unit

PT5211, is an extremely flexible Change-Over unit capable of switching all kinds of video, audio, and sync signals, and it is designed to meet the requirements for extremely high reliability offering a MTBF as high as 80.000 hrs.

- Switching analogue video, serial digital video, and digital audio (balanced and unbalanced) signals
- Basic version offering four channels expandable up to 12 channels (BNC)
- All unbalanced channels may be used for all types of signals
- Up to two XLR channels possible
- Free choice of generator as primary and back-up
- Configuration compatible with PT5210 and PT5300 series
- Continues operation with selected SPG in case of power failure on the Change Over unit.

ORDERING INFORMATION

Base units

PT5300HD
HD-SD VariTime™ Sync Generator, HD base unit, 4 Tri-level sync outputs, 2 black burst outputs, genlock to BB, subcarrier, 5 MHz, and 10 MHz

PT5300SD
SD VariTime™ Sync Generator, SD base unit, 2 black burst outputs, genlock to BB, subcarrier, 5 MHz, and 10 MHz

Options

PT8603
SDI Test Signal Generator 2

PT8604
Multiple Parallel Black Burst Output, 6 outputs

PT8606
SD-SDI Digital Genlock Module, 1 input

PT8607
Longitudinal Time Code module

PT8608
Dual Black Burst Generator, 2 outputs

PT8609
SDI Black/Colour Bar Generator

PT8611
Quad Tri-Level Sync Generator, 4 outputs

PT8612
Quad HD-SD Serial Digital Generator, 4 outputs

PT8613
Dual Link Serial Digital Test Signal Generator, 2 outputs

PT8616
GPS & LTC Generator

PT8631
Analogue Test Signal Generator

PT8632
SDI Test Pattern Generator, Extended

PT8632/10
SDI Test Pattern Generator (Extended) FuBK 4:3

PT8633
SDI Test Pattern Generator, High end

PT8635
Dual AES3 digital audio generator, 2 XLR outputs, 2 BNC outputs, Wordclock output

PT8637
Time & Clock Interface

PT8639
SDI Test Signal Generator, Basic signals

PT8643
SNTP Server & Ethernet Remote (requires PT8616)

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PRODUCT DATA

BASE UNIT

PT5300 conforms to the relevant ITU, SMPTE, EBU, and AES standards.

Master Frequency Reference

- 27 MHz internal master frequency: better than 0.25 ppm (0-50 °C)
- Ageing: <1 ppm/year

Analogue Genlock

- Inputs: 75 Ohm looped through input, or two switchable inputs terminated with 75 Ohm (menu configurable)
- Input signal: NTSC or PAL black burst, or continuous wave reference signal.
- Return Loss: >36 dB to 6 MHz
- Genlock Signal: M-NTSC or G-PAL
- Amplitude Nominal: ± 3 dB
- S/N Ratio required: > 26 dB
- Sc-H Phase Nominal: ± 45°
- Pull-in Range: fsc ± 20 Hz
- Burst Lock Jitter: < 0.5°
- Sync Lock Jitter: < 2 ns
- Timing range: ± 4 field (PAL) ± 2 field (NTSC)
- Timing resolution: 0.5° of subcarrier
- Continuous Freq. Reference:
  - Subcarrier, 5 MHz, and 10 MHz
  - Amplitude: 1 V ± 3 dB

Analogue Genlock Transparent Channel

The analogue genlock signal is transferred directly to a transparent output.

- Output Impedance: 75 Ohm
- Return Loss: >36 dB to 6 MHz

HD Tri-Level Sync Output (PT5300HD only)

- Number of outputs: 4 with independent timing and formats.
- HD formats: 720p, 1080i, 1080p.
- Connectors: BNC
- Output impedance: 75 Ohm ±1 %
- Return loss: >30 dB, up to 30 MHz
- Amplitude: 600 mVpp ±2%
- Jitter: <0.5 ns.

Analogue Black Burst Output

- Number of outputs: 2 with independent timing and formats.
- Connector: BNC
- Output impedance: 75 Ohm ±0.5 Ohm
- Return Loss: >36 dB to 5 MHz
- Sync amplitude: 300 mV ±2% (PAL) or 286 mV ±2% (NTSC)
- Timing range: ± 4 fields (PAL) ± 2 fields (NTSC)
- Timing resolution: 0.5° of subcarrier
- Sc-H phase: Default 0°, adjustment ± 180°, resolution <1°
- S/N Ratio: better than 60 dB unweighted to 5 MHz
- Jitter: <± 0.5 ns

Remote Control

The remote interface is configurable, RS-232 or GPI.

- RS-232 serial interface:
  - SCPI compliant protocol (1995 0)
  - Baud rate: 300 to 9600
  - Data bits: 7 or 8
  - Parity: None, Odd, or Even
  - Handshake: XON/XOFF or RTS/CTS
- GPI interface: The parallel remote interface enables selection among 6 presets and the genlock function via TTL compatible ground closure.
- Interface connector: 9 pole female D-Sub, internally configured to serial RS232C or parallel ground closure.

PT8603 SDI Test Signal Generator 2

- Patterns: Colour Bars (525: SMPTE; 625: EBU 75%, EBU 75% (8 bit), 100%, 75% with grey, 75% with red), SDI check field, Shallow Ramp, SDI Timing Test, Window 15%, Window 20%, Window 100%, Cross Hatch, Pluge, Staircase, Black, Multiburst and Red Embedded sound and EDH may be added to the test signals
- Source ID

PT8604 Multiple Parallel Black Burst Outputs

- An additional 6 outputs are connected in parallel to one of the Black Burst outputs included as standard

PT8606 SDI Digital Genlock

SD-SDI digital genlock module with active loop-through.

- Connector: BNC
- Input/output impedance: 75 Ohm
- Format: 270 Mb/s component.
- Complies with SMPTE 259M and ITU-R BT.656

PT8607 Longitudinal Time Code module

- The LTC module transfers VITC time code from the analogue genlock input to a balanced XLR LTC output

PT8608 Dual Black Burst Generator PAL/NTSC

- Number of outputs: 2 with independent timing and formats.
- Connector: BNC
- Output impedance: 75 Ohm ±0.5 Ohm
- Return Loss: >36 dB to 5 MHz
- Sync amplitude: 300 mV ±2% (PAL) or 286mV ±2% (NTSC)
- Timing range: ± 4 fields (PAL) ± 2 fields (NTSC)
- Timing resolution: 0.5° of subcarrier
- Sc-H phase: Default 0°, adjustment ± 180°, resolution <1°
- S/N Ratio: better than 60 dB unweighted to 5 MHz
- Jitter: <± 0.5 ns

PT8609 SDI Black/Colour Bar Generator

Each generator has two outputs.

- Signals: SDI black, SMPTE colour bar (525-lines), and EBU 75% and 100% colour bars (625-lines)
- Format: 270 Mb/s component, complies with ITU-R BT 656 and SMPTE 259M.
- Data format: Scrambled NRZI 270 Mbit/sec
- Connectors: 2 BNC
- Output impedance: 75 Ohm
- Return loss: >15 dB, 5 to 270 MHz
- Amplitude: 800 mV ±10%
- Jitter: <0.2UI
- Timing range: ± 1 field
- Resolution: 37.5 ns (one half clock cycle of the 13.5 MHz clock)
- Embedded audio: silence on/off
- Auxiliary data:
- EDH on/off
- Auxiliary data on/off

PT8611 Quad HD Tri-Level Sync Generator

- Number of outputs: 4 with independent timing and formats.
- HD formats: 720p, 1080i, 1080p. Frame rates are listed in table 1.
- Connectors: BNC
- Output impedance: 75 Ohm ±1 %
- Return loss: >30 dB, up to 30 MHz
- Amplitude: 600 mVpp ±2%
- Jitter: <0.5 ns

HD-SD VariTime™ Sync Generator

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PRODUCT DATA (continued...)

PT8612 Quad HD-SD Serial Digital Test Signal Generator

Four generators individually configurable with HD and SD signals.

- Signals:
  - Video: EBU CB, 75% CB, 100% CB, checkfield, PLUGE, window signals, luminance ramp, combination pattern with lip sync.
  - Text: moving with up to 3 lines of 16 characters inserted in test signals.
  - Audio: Test tones embedded in the SDI signals.
- HD formats: 720p, 1080i, 1080p. Frame rates are listed in table 1.
- SD formats: 525 lines and 625 lines
- Connectors: BNC, 75 Ohm
- Output resistance: 75 Ohm ±1 %
- Return loss: >15 dB, up to 1.5 GHz
- Amplitude: 800 mV ± 10%
- Timing Range: ± 1 field
- Timing resolution:
  - HD: 6,7 ns (one clock cycle)
  - SD: 37.5 ns

PT8613 Dual Link HD-SD Serial Digital Test Signal Generator

Video Systems

Any combination of the systems and interface below can be selected for the two generators independently.

- HD: 1080p/23.98, 24, 25, 29.97, 30.
  1080i/25, 29.97, 30.
  720p/23.98, 24, 25, 29.97, 30, 50, 59.94, 60.
- SD: 576i/25 (625) and 487i/29.97 (525)

Video Interface

- HD Dual Link: RGB 4:4:4 12-bit, RGB 4:4:4 10-bit, YCBCR 4:4:4 12-bit, YCBCR 4:4:4 10-bit, YCBCR 4:2:2 12-bit.
- HD: YCBCR 4:2:2 10-bit.
- SD: YCBCR 4:2:2 10-bit.

Video Test Patterns

- Black: Full field black.
- Colour Bars: 100%, 75%, and 75% with 100% white.
- White: Full field from -5% to 105% in 5% increments.
- White Window: Partial field from -5% to 105% in 5% increments.
- Crosshatch: 16 x 9 squares for geometry test.
- PLUGE Signal: -2%, 0, 2%, 16% (110 mV), 29% (200 mV), and 64% (450 mV).
- SDI Checkfield: Pathological patterns for PLL, and cable equaliser test.
- Clapper Board: Moving pattern for lipsync test.
- White Ramp: From 0% to 100%, including 0% and 100% bars.
- Combination: Containing selectable colour bar, white ramp, lip-sync, and 75% red.
  In Single Link operation Link B is black video.

Text insertion

Text can be inserted on top of all test patterns. Up to 3 lines of 16 characters each can be entered. The font size can be changed as well as the font colour and background. The text field can be fixed positioned or slide horizontally, vertical, or both.

Embedded Audio

16 channels of audio can be embedded into one video stream. In Dual Link operation the audio is embedded in link A.

- Audio Signals: Silence, Sine, Click.
- Audio Level: 0 dBFS to -60 dBFS.
- Lipsync Timing: +/- 500 ms relative to video.

Video Timing

Each of the two generators can be timed individually relative to the mainframe genlock is steps of 6.7 ns.

Interface Specifications

- Connectors: 4 BNC, 75 ohm
- Output resistance: 75 ohm, +/- 1%.
- Return Loss: >15 dB, up to 1.5 GHz.
- Amplitude: 800 mVpp +/- 10%.

PT8616 GPS Genlock and LTC Generator

GPS active antenna

- Impedance: 50 Ω
- Active amplifier supply voltage: 3.3 V
- Max. power consumption: 0.165 W

LTC outputs

- Balanced out: 1 x XLR
  Or
- Unbalanced out: 2 x BNC
- Output voltage pp: 1 Vpp
- Output impedance: 50 Ω
- Timing: ± 500 ms
- Step Size: 6,7 ns

Stability

- Accuracy: 15 ns
- Absolute long term drift: < 15 us
  (Fixed oscillator, when no GPS contact, 1 hr)
- Absolute short term drift: < 1 us
  (Fixed oscillator, when no GPS contact, 5 min).

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Supported LTC formats
- 625 lines, 25 FPS (PAL)
- 525 lines, 30/1,001 FPS (NTSC – dropframe)
- 525 lines, 30/1,001 FPS (NTSC – non dropframe)
- 30 FPS
- 24 FPS

Standard boot up time (depending on sky view)
- Cold start: 44 sec
- Warm start: 18 sec

The LTC generator includes the following features:
- Time zone select
- Selectable switching for daylight saving time
- 1: NONE
- 2: CONFIRM
- 3: AUTO
- Individual timing offset for both LTC outputs
- +/- 500 ms offset range

PT8631 Analogue Test Pattern output

Contains a wide range of most commonly used test signals in PAL and NTSC, i.e., Colourbars, PLUGE, Multibursts, Multipulse, Ramp, Staircase, Testlines, Window and Flat field signals. The generator also contains the complex "Philips" Circle Pattern in both 525 and 625 lines, in 4:3 and 16:9 aspect ratios.

Each generator has two parallel outputs.
- Output impedance: 75 Ohm ±0.5 Ohm
- Return Loss: >36 dB, to 5 MHz
- Sync amplitude: -300mV ±2% (PAL) or -286mV ±2% (NTSC)
- Video amplitude (100%):
  - 700mV± 1 % (PAL);
  - 714 mV±1 % (NTSC).
- Timing range:
  - ± 4 field (PAL)
  - ± 2 field (NTSC)
- Timing resolution: 0.5° of subcarrier
- Sc-H phase: Default 0°, adjustment 180°, resolution <1°
- S/N Ratio: better than 60 dB unweighted up to 5 MHz
- Jitter: <± 0.5 ns

  Also the FuBK Pattern is available in 625 lines, 4:3 and 16:9 aspect ratios.
- Source Identification Text string:

  Three text strings with up to 16 characters can be added to the signal. Position on the screen can be selected to be standard, free or optimized for the black windows in the "Philips" or FuBK patterns.

PT8632 SDI Test Pattern Generator, extended

This generator features an extended range of the commonly used test signals compared to the Basic SDI TSG. The PT8632 Test Pattern Generator also contains the complex "Philips" test pattern in 625-lines, 4:3 aspect ratio. Output can be configured to include EDH, and embedded audio with a selection of test tones/silence and levels.
- Source identification Text String: Three text strings with up to 16 characters can be added to the signal. Position on the screen can be selected to be standard, free or optimized for the black windows in the "Philips" pattern.

Each generator has two parallel outputs.
- Format: 270 Mb/s component, complies with ITU-R BT 656 and SMPTE 259M
- Data Format: Scrambled NRZI 270 Mbit/sec
- Output impedance: 75 Ohm
- Return Loss: >15 dB, 5 to 270 MHz
- Amplitude: 800 mV ±10%
- Jitter: <0.2UI
- Timing Range: ± 1 field
- Resolution: 37.5 ns (one half clock cycle on the 13.5 MHz clock)

PT8632/10 SDI Test Pattern Generator, extended FuBK 4:3

As PT8632 but with addition of FuBK 4:3 test pattern

PT8633 SDI Test Pattern Generator, high end

This generator features even more test signals than the PT8632 SDI TPG. The PT8633 Test Pattern generator also contains the complex "Philips" Circle and FuBK test patterns in both 525 and 625-lines, in 4:3 and 16:9 aspect ratios. Moving element synchronised to "Click" in the embedded sound, can be selected.

Output can be configured to include EDH, and embedded audio with a selection of test tones, silence, and levels.
- Source identification Text String: Three text strings with up to 16 characters can be added to the signal. Position on the screen can be selected to be standard, free or optimized for the black windows in the "Philips" pattern or FuBK patterns.
- Each generator has two parallel outputs.
- Format: 270 Mb/s component, complies with ITU-R BT 656 and SMPTE 259M
- Data Format: Scrambled NRZI 270 Mbit/sec
- Output impedance: 75 Ohm
- Return Loss: >15 dB, 5 to 270 MHz
- Amplitude: 800 mV ±10%
- Jitter: <0.2UI
- Timing Range: ± 1 field
- Resolution: 37.5 ns (one half clock cycle on the 13.5 MHz clock)

PT8635 Dual AES3 Digital Audio Generator

Two independent digital audio generators in one unit, with tone, silence or wordclock. Separate wordclock output is available. A second wordclock output can be implemented on request.

BNC Outputs: 2
- Single-ended in compliance to AES3id
- Output impedance: 75 Ohm ±20%
- Amplitude: 1.0 V ±10% into 75 Ohm

XLR output 1 (2)
- Balanced in compliance to AES3 1992
- Output impedance: 110 Ohm ± 20%
- Amplitude: 3 Vpp typical into 110 Ohm
- Rise and Fall Times: 10-30 ns
- Jitter: <20 ns

Signal specification:
- Sampling Frequency: 48 kHz
- Data rate: 3.072 Mbit/s
- Coding: Linear PCM, 20 bit two's complement binary, bi-phase mark coding.
- Levels: Silence, 0, -9, -12, -15, - 16, -18, - 20 dBFS
- Pre-emphasis: None
- Outputs signals:
  - Stereo 1 KHz
  - Stereo 800 Hz
  - Stereo 1 kHz with click in Ch.A
  - Stereo 1 kHz with normal click in Ch.A and long click in Ch.B
  - Dual 1 kHz in Ch A and 400Hz in Ch.B
  - Mono 1 kHz
  - Mono 1 kHz with click in Ch.A and Ch.B

HD-SD VariTime™ Sync Generator

DK - Technologies

PRODUCT DATA (continued...)

PT8635 (cont...)

Word-clock output:

- Single ended BNC.
- Output impedance: 75 Ohm ±10%
- Levels: High >2.3V; Low<0.2V into 75 Ohm
- TTL compatible when unterminated

PT8637 Time Clock Interface

Reference for the time clock

- VITC in genlock signal
- LTC on separate XLR connector
- Internal video clock reference
- When power is off: XTAL osc. with battery back-up.

The XLR input can be configured for a 1 sec. pulse input.

- LTC Input impedance: > 10kOhm
- LTC Input level: 0.8 - 5 Vpp
- Pulse input impedance: 1 kOhm ±10% (selectable internally: 50 Ohm ±10%)
- Pulse input level: 1.8 - 22 Vpp
- Pulse duration: 18µs - 0.7s

PT8639 Basic SDI Test Signal Generator

Contains the most commonly used test signals, e.g. colour bars, PLUGE, SDI checkfield, staircase, black, etc. Output can be configured to include EDH, and embedded audio with a limited selection of test tones, silence, and levels.

Each generator has two parallel outputs.

- Format: 270 Mb/s component, complies with ITU-R BT 656 and SMPTE 259M
- Data Format: Scrambled NRZI 270 Mbit/sec
- Output impedance: 75 Ohm
- Return Loss: >15 dB, 5 to 270 MHz
- Amplitude: 800 mV ±10%
- Jitter: <0.2UI
- Timing Range: ± 1 field
- Resolution: 37.5 ns (one half clock cycle on the 13.5 MHz clock)

PT8643 Server & Ethernet Remote

Ethernet

- Connector : RJ45
- Speed : 10 Mbit/s
- Protocol : Telnet
- DHCP : yes
- Static IP : yes

SNTP

- Stratum level : level 1
- Precision : < 50ms
- Requests pr. Second : max 10

General Specifications

Power Supply

- Voltage: 90-250VAC
- Frequency 48 - 62 Hz
- Power consumption < 90 W maximum with options

Mechanical Data

- 19" rack mount cabinet
- Height: 44 mm (1.73")
- Width: 483 mm (19")
- Depth: 490 mm (19.3")
- Weight: 6 kg (13.2 lbs)

Environmental Conditions

- Storage temperature: -20° to +70°C (-68° to 158°F)
- Operating temperature: +5° to +45°C (41°-113°F)
- Humidity: Non condensing (IEC 721)

Electromagnetic compatibility

- Complies with EN50081-1 /1994 (emission) and EN 50082-1/1997 (immunity).
- Complies with FCC Rules & Regulations, Part 15, subpart J, level B (emission).

Safety

- Complying with IEC1010-1

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