25G HYBRID
signal management

visual engineering
LIGHTWARE

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LIGHTWARE

25G Hybrid by Lightware: Complex Signal Management at Incredible Speed

25G Hybrid is a comprehensive line of digital matrix switchers, transmitters and receivers, which enhances switching with a powerful suite of diagnostic software tools. A true technology for the digital age, delivering a superior user experience.

MultiLayer Switching for the flexibility and freedom of independent signal switching per Media Layer.

Advanced audio functions with 3 different audio Layers: Embedded Audio, Forward Audio and Return audio.

Control signal management including RS-232, Ethernet, KVM and IR.

The data rate of the 25G Hybrid allows transferring and switching all existing standard video formats, establishing a reliable and future-proof platform for all signal management purposes. It is the world's first fully compatible HDMI and DisplayPort matrix switcher that also provides ARC functions, supports 4K resolutions and full 3D formats. 25G Hybrid offers MultiLayer Switching, where signals are handled on eight, separate Media Layers. Inside a 25G Hybrid router there are as many Media Layers as signal types, which are managed by a router each. Media Layers, in a sense, add a third dimension to switching inputs and outputs.

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Advanced GUI

25G Hybrid matrices have a built-in front panel touch screen capable of showing the 25G control software with full control options. Unit information, crosspoint setup and switching, EDID Management, User & Room Management, maintenance, troubleshooting and every other tool is available on the front panel display.

The control interface for these routers has been designed to accomplish 3 main principles:

- **Simplicity.** Crosspoint switching has never been easier. By pressing the buttons on the touchscreen interface you can perform multiple switches. The colors and icons are very informative with meaningful details.
- **Seamless control.** Straightforward control interface for all of the inputs and outputs on all 8 Layers.
- **Exceptional diagnostics.** Maintain the strong diagnostic features already provided by present in Lightware architectures, such as Advanced EDID Management, Input Signal Analysis and the Frame Detector.

Room Management

As the maximal crosspoint area in the 25G Hybrid routers is a large switching plane, we have introduced 'Room Management'. All the user-created virtual rooms can be programmed with their own sources and destinations, but can also share some resources if required. If, for example, you want to prohibit an operator in one room from accidentally making switches in another, the maximal crosspoint area can be divided into smaller virtual matrices called 'rooms'.

User Access

For security, a user password can be set to access system control.

Reliability

The components used in this technology are industrial grade and typically designed for the telecom industry. All printed circuit boards are gold plated in order to achieve reliable and stable hardware performance. This technique results in better soldering and contact performance and eliminates corrosion problems caused by salt and humidity in naval military environments.

All boards that contain active electronic components are hot swappable. The front load design makes it easy to replace failed components. All fans and power supplies can also be replaced in a simple movement.

The 25G matrix routers are designed for 24/7 operation and optional redundant CPU and Power supplies can be also added for further reliability.

The 25G CPU stores the settings of all boards and sends backups for the second CPU. If the first CPU fails the second takes over automatically with the same settings. With the redundant power supplies N+1 and N+2 redundancies can be reached.

Configuration

To configure the best 25G solution for a particular application you need to choose a frame, need to find out what Media Layers you will use for your application and then populate the selected frame with the input and output boards. One of the main advantages of this structure is that you only need to pay for what you need and won't have extra unused functions.

FRAMES

The first step is to choose the right frame. The largest 25G frame handles 160 input and 160 output ports, this frame is also available with the same functionality but with fewer ports as well in sizes 120x120, 128x128, 144x144, 160x80 or 80x160. The smaller 25G frame has 80 inputs and 80 outputs.
CPU and power redundancy are available for the 25G matrices for a high level of security: it is possible to add a second redundant CPU and more redundant power supplies as well.

25G Hybrid Matrix Frame

25G-FR160x160 / 25G-FR144x144 / 25G-FR128x128
25G-FR120x120 / 25G-FR160x80 / 25G-FR80x160

Part No: 9121 0001 (FR160x160), 9121 0025 (FR144x144), 9121 0026 (FR128x128)
9121 0002 (FR120x120), 9121 0003 (FR160x80), 9121 0004 (FR80x160)

The 25G-FR160x160 Frame handles up to 160 input and 160 output ports, making this frame one of the largest on the market. This frame manages signals on eight different Layers which creates a three-dimensional signal management structure.
The 25G frames can transmit video signals up to 4K resolution, support all 3D formats, handle forward audio, transmit USB-KVM, Ethernet, bi-directional RS-232/RS-422, IR and CEC signals. The intuitive graphical user interface offers easy and user-friendly control accessing all available features. Advanced EDID Management is included in the frame which is also HDCP compliant.

Changing the configuration is easy and quick, as all boards are hot swappable: the system can work 24/7 without delays. In case of a malfunction, it can easily be fixed without switching the matrix off. Redundant power supplies, CPU boards are also available for this frame for fail safe operation in mission critical applications.

This frame can be configured with 120x120, 128x128, 144x144, 80x160 and 160x80 crosspoints. Software upgrade for these frames is available in case the user wants to raise the capacity up to 160x160.

Features:

- Multilayer signal management – signal switching in 3 dimensions
- 160x160, 120x120, 144x144, 128x128, 80x160, 160x80 video crosspoint versions
- 42 rack units high metal chassis
- Independent switching of audio and video
- USB KVM extension
- Built-in 320 port 100 Mbit Ethernet switch with 1 gigabit uplink
- Dual redundant CPU processor boards for fail safe operation
- Hot swappable components
- RS-232 / RS-422 bidirectional transmission and control
- IR and CEC transmission
- Intuitive GUI interface for easy handling of all functions
- Room Management
- Front panel touch screen
- Advanced error handling and logging with time code
- Combine non-HDCP and HDCP capable I/O boards in the same frame
- TCP/IP Ethernet control (multiple connections)
- Advanced EDID Management
- HDCP compliant
- Redundant power supplies – 24/7 secure operation
- Supports former LW protocols
- Barco Encore and Vista Spyder compatible
- Hybrid Modular technology

25G Hybrid 80x80 Crosspoint Matrix Frame

25G-FR80x80

Part No: 9121 0010

The 25G-FR80x80 frame handles 80 input and 80 output ports and manages the signals on eight different Layers resulting in a three-dimensional switching structure.
The 25G frames can transmit video signals up to 4K resolution, support all 3D formats, handle forward and return audio, transmit USB-KVM, Ethernet, bi-directional RS-232/RS-422, IR and CEC signals. The audio signals of the Forward and Return Audio Layers run through the same crosspoint which allows the user to switch Return Audio Signals to the Forward Audio Layer and vica-versa.

The intuitive graphical user interface offers easy and user-friendly control accessing all available features. Advanced EDID Management is included in the frame which is also HDCP compliant.

Changing the configuration is easy and quick, as each board are hot swappable: the system can work 24/7 without delays. In case of a malfunction, it can easily be fixed without switching the matrix off. Redundant power supplies, CPU boards are also available for this frame for fail safe operation in mission critical applications.

Features:

- Multilayer signal management – signal switching in 3 dimensions
- 80x80 video crosspoints
- 29 rack unit high metal chassis
- Independent switching of audio and video
- Same crosspoint for the Forward and Return audio layers
- USB KVM extension
- Built-in 160 port 100 Mbit Ethernet switch with 1 gigabit uplink
- Dual redundant CPU processor boards for fail safe operation
- Hot swappable components
- RS-232 / RS-422 bidirectional transmission and control
- IR and CEC transmission
- Intuitive GUI interface for easy handling of all functions
- Room Management
- Front panel touch screen
- Advanced error handling and logging with time code
- Combine non-HDCP and HDCP capable I/O boards in the same frame
- TCP/IP Ethernet control (multiple connections)
- Advanced EDID Management
- HDCP compliant
- Redundant power supplies – 24/7 secure operation
- Supports former LW protocols
- Barco Encore and Vista Spyder compatible
- Hybrid Modular technology

Second CPU for Redundancy

25G-CPUB1

Part No: 9121 0005

Features:

- Configuration of all other boards
- Controller connection (LAN, RS-232)
- LW3, LW2 protocol
- Advanced logging
- Redundant – hot swappable

The CPU board, which controls the whole system, can be doubled in the frames. In this case the first CPU is actively operating while the second is a “hot spare”. If the main CPU fails, the second takes over the control instantly and reports the failure of the previous one.

Additional Power Supply for Redundancy

25G-PSU-1600 (1200)

Part No: 9121 0006

Features:

- Up to N+2 redundancy
- 24/7 operation

Power supplies are arranged for N+1 or N+2 redundancy. Depending on the configuration, one or even two power lines can fail while the system remains active. In addition, our approach to power supplies is to ensure that the load never exceeds 60% of their maximum rated output level. These two features will go a long way to providing a robust system capable of 24/7 operation even in the harshest environments.

MEDIA LAYERS

The second step of building a configuration is to find out which Layers the application requires. The Video Layer with the Embedded Audio is always included in the frame by default. If an application requires more Layers you can select from the seven Media Layer options. Selecting the Layers means deciding what type of signals the 25G router will have to handle.

Video Layer with Embedded Audio
included in the frame by default

Features:

- Up to 160 inputs and 160 outputs
- 3D formats supported
- Featured video signals: VGA (input only), Single-Link DVI, Dual-Link DVI, HDMI 1.4, 3G-SDI (input only), DisplayPort 1.1

The Video layer comprises of up to 160 video inputs and 160 video outputs.

The video could be analog VGA, Interlaced Composite Video, DVI, Dual-Link DVI, HDMI1.4 with 3D, SDI, 3G-SDI and/or DisplayPort 1.1. No matter which video format you input, the pixels will be extended and switched by the 25G Hybrid router. Users can mix various video standards and any input signal can be switched to any output display.

The 25G Hybrid architecture has 3 different audio layers: Embedded Audio, Forward Audio and a Return Audio. The embedded audio lies within the 25G video layer itself, carrying up to 8 high definition audio channels. This audio is always routed with the video and runs from source to display.

Forward Audio Layer
25G-LAYER-FWD-160, 25G-LAYER-FWD-80

Part No: 9121 0008 (160), 9121 0016 (80)

Features:

- A fully separate audio channel
- Supports Stereo PCM, 5.1 Dolby Digital, 5.1 DTS and other audio formats

The Forward Audio channel is a second independent S/PDIF audio stream not related to the Embedded Audio. A separate S/PDIF matrix switch manages Stereo PCM, 5.1 Dolby Digital and DTS, and various other formats.

Examples

- You have a set-top box that outputs the HDMI video and audio. The same set-top box outputs the audio with a different language on it's S/PDIF audio output. This box is connected to the 25G Hybrid network. Different customers can listen to the same content in different languages in different rooms.
- A media server is connected to the 25G Hybrid network inside the server room along with CD players and other equipment. The LCD displays are located in the demonstration rooms. On a certain display the picture may come from the media server, but the sound from the CD player.

Return Audio Layer
25G-LAYER-RET-80

Part No: 9121 0022

Features:

- A fully separate audio channel routed the opposite way to the Forward Audio Layer
- Supports Stereo PCM, 5.1 Dolby Digital, 5.1 DTS and other audio formats

Return Audio Layer creates the ability to send two different multichannel audio streams, one from source to display and another, a return channel in the opposite direction.

Audio Return Channel (ARC) was introduced by the HDMI 1.4.standard. This S/PDIF signal is sent in the opposite direction to the video signals. Usually displays send ARC to source devices - typically TV sound to audio receivers, or microphone sound from headsets to computers.

Examples

When using microphones in a KVM environment, the operator has an LCD display, 5.1 speakers, Keyboard, Mouse and a microphone. The microphone audio signal from his headset is sent in the opposite direction to the video and the embedded audio.

Ethernet Layer
25G-LAYER-ETH-160, 25G-LAYER-ETH-80
Part No: 9121 0015 (160), 9121 0017 (80)

Features:
- 1 Gigabit uplink
- 100 Mbit connection for all matrix I/O ports
- Ethernet extension over TPS cable and OPTS/OPTM fiber
- Layer 2 Ethernet switch

All built-in 100 Mbit Ethernet ports can be used for controlling devices such as projectors and media players or can provide Ethernet access for all connected devices from a 1 Gigabit uplink. Ethernet, as with every other Layer, can be extended over a single fiber or single CAT cable.

25G Hybrid matrix architecture is the world's first fully compatible HDMI1.4 matrix switcher that provides HEC and ARC functions, supports 4K resolutions and 3D formats.

Consumer Electronics Control Layer
25G-LAYER-CEC-160, 25G-LAYER-CEC-80
Part No: 9121 0013 (160), 9121 0020 (80)

Features:
- Point to point, point to multipoint connection and switching
- Full transparent platform
- Command injections
- CEC device discovery

Consumer Electronics Control (CEC) is also commonly used for remote control based applications like IR. Third party control systems can also send CEC control commands to endpoints turning them on and off or switching their inputs. CEC was introduced by HDMI standard, and is a bi-directional CEC channel.

We can link sources and destinations via CEC communication while the router itself can initiate its own commands for example:
„SYSTEM ON" or „STANDBY" commands.

USB KVM Layer
25G-LAYER-USB-KVM-160
25G-LAYER-USB-KVM-80
Part No: 9121 0014 (160), 9121 0021 (80)

Features:
- 2 USB HID devices per 25G I/O port
- Keyboard combinations for matrix control
- USB HUB can be connected to the outputs (Keyboard, Mouse, Smart Card)
- Point to point connections

With the USB KVM option, users can utilize the 25G Hybrid signal management for KVM matrix purposes. Up to 160 computers can be controlled by up to 160 operators. 25G allows point to point control. This method allows multiple operators to control one single computer or one operator to control multiple computers.

RS-232 & RS-422 Control Layer
25G-LAYER-RS232-160
25G-LAYER-RS232-80
Part No: 9121 0012 (160), 9121 0019 (80)

Features:
- Full transparent platform
- Bidirectional transmission
- Configurable baud rates per port (any user specified)
- Input baud rate could be different from output baud rate
- Standards: 9600, 14400, 19200, 38400, 57600, 115200

Full duplex bi-directional, more robust and more reliable than IR, RS- 232 and RS-422 have become the standard control media for professional AV systems. The 25G Hybrid architecture is a fully transparent platform for RS-232 and RS-422 control signals. Ports can be linked together or handled separately, allowing any third-party control systems to be connected.

IR Layer
25G-LAYER-IR-160, 25G-LAYER-IR-80
Part No: 9121 0011 (160), 9121 0018 (80)

Features:
- Full transparent platform
- Bidirectional transmission
- Point to point, point to multipoint connection and switching

Infrared is commonly used for remote control based applications. This Media Layer helps maintain the structure of the overall AV system. Third party control systems may send IR control commands to endpoints turning them on and off or switching their inputs.

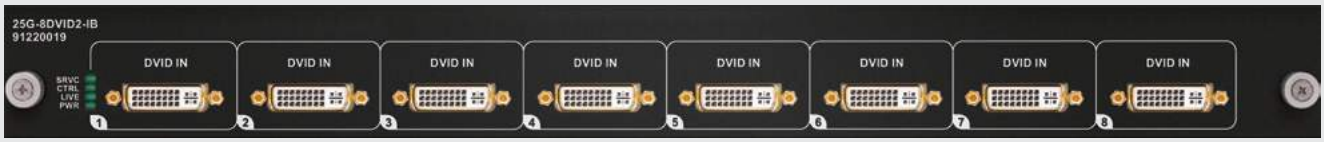
INPUT AND OUTPUT BOARDS

When we have selected the frame and picked the layers the third step is to populate the matrix with the Input and Output boards.

4K DVI-D Input Board

25G-8DVID2-IB series

Part No: 9122 0019



25G-8DVID2-IB

25G-8DVID2-IB provides fully transparent HDMI 1.4 connectivity to the latest high-end digital sources including 3D between the endpoints.

Features:

- HDMI 1.4, DVI and HDCP 1.4 compliant
- 8 DVI-D input connectors
- Resolutions up to 4k / UHD (30Hz RGB or YCbCr 4:4:4)
- 3D signal support
- 36-bit Deep Color support
- Static EDID emulation with EDIDs from the Advanced EDID Management system
- Available video test patterns
- Pass-through of HDMI 1.4 embedded uncompressed LPCM audio and compressed audio (AAC, ATRAC, DTS, DTS ES, DTS-HD, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, Dolby Digital TrueHD, DST, MPEG1 Layer 1, MPEG1 Layer2, MPEG1 Layer 3, MPEG2, WMA Pro)
- Embedding or de-embedding of two-channel LPCM, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, DTS, DTS ES
- Pixel Accurate Reclocking
- 30m input cable equalization at 1080p60Hz on all inputs

25G-8DVID2-K2-IB

4K DVI-D Input Board with KVM

25G-8DVID2-K2-IB

Part No: 9122 0058

Additional Features:

- Handles two USB 2.0 HID devices per port
- USB-B connector per port with integrated USB HUB

25G-8DVID2-A2-IB

4K DVI-D Input Board with Digital Audio

25G-8DVID2-A2-IB

Part No: 9122 0048

Additional Features:

- Bi-directional S/PDIF breakout for every port

25G-8DVID2-A3-IB

4K DVI-D Input Board with Analog Audio

25G-8DVID2-A3-IB

Part No: 9122 0047

Additional Features:

- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector

25G-8DVID2-A2K2-IB

4K DVI-D Input Board with Digital Audio and KVM

25G-8DVID2-A2K2-IB

Part No: 9122 0059

Additional Features:

- Bi-directional S/PDIF breakout for every port
- USB-B connector per port with integrated USB HUB

25G-8DVID2-A3K2-IB

4K DVI-D Input Board with Analog Audio and KVM

25G-8DVID2-A3K2-IB

Part No: 9122 0060

Additional Features:

- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector
- USB-B connector per port with integrated USB HUB

4K HDMI Input Board

25G-8HDMI2-IB

Part No: 9122 0057

25G-8HDMI2-IB

25G-8HDMI2-IB provides fully transparent HDMI 1.4 connectivity to the latest high-end digital sources including Audio Return Channel and 3D functions.

Features:

- HDMI 1.4 and HDCP 1.4 compliant
- Resolutions up to 4k / UHD (30Hz RGB or YCbCr 4:4:4)
- 3D signal support
- 36-bit Deep Color support
- Available video test patterns
- Static EDID emulation with EDIDs from the Advanced EDID Management system
- Pass-through of HDMI 1.4 embedded uncompressed LPCM audio and compressed audio (AAC, ATRAC, DTS, DTS ES, DTS-HD, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, Dolby Digital TrueHD, DST, MPEG1 Layer 1, MPEG1 Layer2, MPEG1 Layer 3, MPEG2, WMA Pro)
- Embedding or de-embedding of 2-channel LPCM, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, DTS, DTS ES
- Pixel Accurate Reclocking
- 30m input cable equalization at 1080p 60Hz on all inputs
- Audio Return Channel support
- CEC support

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25G-8HDMI-K2-IB

4K HDMI Input Board with KVM

25G 8HDMI2-K2 IB

Part No: 9122 0064

Additional Features:

- Handles two USB 2.0 HID devices per port
- USB-B connector per port with integrated USB HUB

25G-8HDMI-A2-IB

4K HDMI Input Board with Digital Audio

25G-8HDMI2-A2-IB

Part No: 9122 0028

Additional Features:

- S/PDIF breakout for every port

25G-8HDMI-A3-IB

4K HDMI Input Board with Analog Audio

25G-8HDMI2-A3-IB

Part No: 9122 0029

Additional Features:

- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector

25G-8HDMI-A2K2-IB

4K HDMI Input Board with Digital Audio and KVM

25G-8HDMI2-A2K2-IB

Part No: 9122 0065

Additional Features:

- Handles two USB 2.0 HID devices per port
- S/PDIF breakout for every port

25G-8HDMI-A3K2-IB

4K HDMI Input Board with Analog Audio and KVM

25G-8HDMI2-A3K2-IB

Part No: 9122 0066

Additional Features:

- Bi-directional, configurable analog stereo port with 5-pole Phoenix connector
- Handles two USB 2.0 HID devices per port

4K TPS Input Board with PoE Option

25G-8TPS2-IB

Part No: 9122 0067

25G-8TPS2-IB

Featuring eight HDBaseT™ input ports, this board is compatible with the full range of Lightware TPS extenders and HDBaseT compliant third party transmitters.

Features:

- Resolutions up to 4k / UHD (30Hz RGB or YCbCr 4:4:4)
- Pass-through of 4:2:0 3840x2160@60 Hz video input
- Support for HDMI 1.4 embedded uncompressed LPCM audio or compressed high bitrate audio (LPCM, AC-3, MPEG1 Layer 1, MPEG1 Layer2, MPEG1 Layer 3, MPEG2, AAC, DTS, ATRAC, Dolby Digital+, DTS-HD, Dolby Digital TrueHD, DST, and WMA Pro, Dolby Digital EX, Dolby Digital Surround EX)
- De-embedding of IEC 60958-1 (only stereo LPCM), and IEC 61937 (only AC-3, Dolby Digital Plus, Dolby Digital EX, Dolby Digital Surround EX, DTS, DTS ES)
- Signal extension to up to 160 m
- Video test pattern generation
- Cable length and link quality estimation
- Frame detector functionality with frame rate, color space, pixel clock rate, and active and total area detection
- HDCP 1.4 support
- Deep color support for up to 36 bpp
- Automatic Ethernet only mode support when an Ethernet only device is connected
- Extension for up to 160 meters over CAT6a or CAT7 depending on the video clock used

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25G-8TPS2-P1-IB

4K TPS Input Board with Remote Powering

25G-8TPS2-P1-IB

Part No: 9122 0070

Additional Features:

- Remote powering according to IEEE 802.3af-2003 with increased output power

25G-8TPS2-A2-IB

4K TPS Input Board with Digital Audio

25G-8TPS2-A2-IB

Part No: 9122 0068

Additional Features:

- Bi-directional S/PDIF breakout for every port

25G-8TPS2-A3-IB

4K TPS Input Board with Analog Audio

25G-8TPS2-A3-IB

Part No: 9122 0069

Additional Features:

- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector

25G-8TPS2-A2P1-IB

4K TPS Input Board with Digital Audio and Remote Powering

25G-8TPS2-A2P1-IB

Part No: 9122 0071

Additional Features:

- Bi-directional S/PDIF breakout for every port
- Remote powering according to IEEE 802.3af-2003 with increased output power

25G-8TPS2-A3P1-IB

4K TPS Input Board with Analog Audio and Remote Powering

25G-8TPS2-A3P1-IB

Part No: 9122 0072

Additional Features:

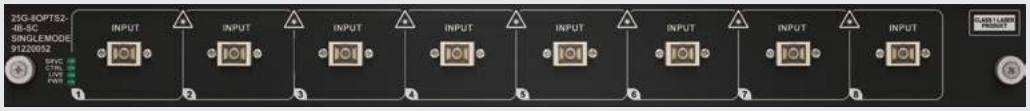
- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector
- Remote powering according to IEEE 802.3af-2003 with increased output power

4K Singlemode Optical Input Board

25G-8OPTS2-IB- LC, -SC, -ST, -NT

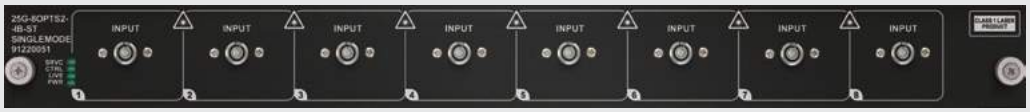
Part No: 9122 0049 (NT), 9122 0050 (LC), 9122 0051 (ST) 9122 0052 (SC)

25G-8OPTS2-IB-NT



25G-8OPTS2-IB-SC

25G-8OPTS2-IB-LC



25G-8OPTS2-IB-ST

25G-8OPTS2-IB-LC, -SC, -ST, -NT is a 4K compatible fiber optical input board for the 25G router family and available with a variety of fiber optical connectors LC, SC, ST or Neutrik OpticalCON. These optical boards can extend up to 10.000m distance with singlemode fiber technology. The OPTS technology provides a transparent medium for all existing video, audio and control signal formats according to the 25G multilayer architecture (Video, Audio, Ethernet, USB KVM, RS-232, IR and CEC transmission), and allows the extension from MODEX transmitter units.

Features:

- Up to 10km extension distance
- Video and audio transmission
- Ethernet, USB KVM, RS-232, IR, CEC transmission
- Extension from MODEX transmitters
- Resolutions up to 4K x 2K @ 30Hz,
  2560 x 1440 (WQXGA) @ 60 Hz YCbCr 4:2:2
- Deep color support up to 1920 x 1080 @ 36 bit, 60 Hz

Supported Maximum Resolutions at the Input Board

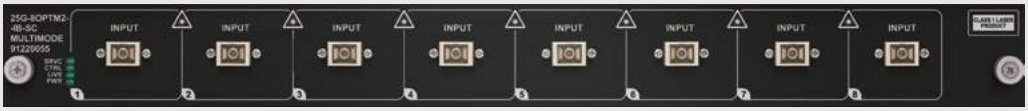
Resolution	Bit Depth	Color Space
1080p@50/60Hz	24-36 bit	RGB/YUV 4:4:4
1080p@120Hz	24 bit	YUV 4:2:2
3840x2160@24Hz	24 bit	YUV 4:2:2
3840x2160@30Hz	24 bit	YUV 4:2:2
3840x2160@50/60Hz	Not supported	

4K Multimode Optical Input Board

25G-8OPTM2-IB- LC, -SC, -ST, -NT

Part No: 9122 0045 (NT), 9122 0053 (ST), 9122 0054 (LC), 9122 0055 (LC)

25G-8OPTM2-IB-NT



25G-8OPTM2-IB-SC

25G-8OPTM2-IB-LC

25G-8OPTM2-IB-ST

25G-OPTM2-IB-LC, -SC, -ST, -NT is a 4K compatible fiber optical input board for the 25G matrix family and available with a variety of fiber optical connectors LC, SC, ST or Neutrik OpticalCON. These optical boards can extend up to a 300m distance with Multimode fiber technology. The OPTM technology provides a transparent medium for video, audio, Ethernet, USB KVM, RS-232, IR and CEC data according to the 25G multilayer architecture, and allows the extension from MODEX transmitter units.

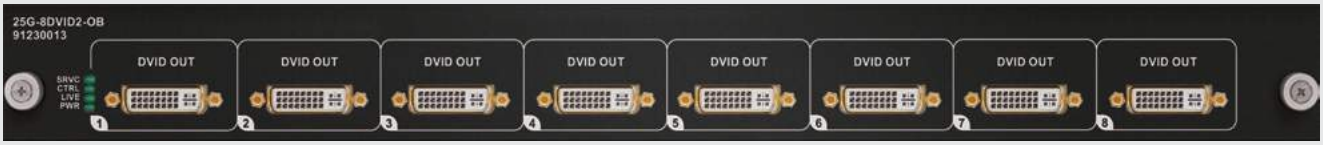
Features:

- Resolutions up to 4k / UHD (30Hz YCbCr 4:2:2)
- Up to 300m extension distance
- Video and audio transmission
- Ethernet, USB KVM, RS-232, IR, CEC transmission
- Extension from MODEX transmitters
- 3D signal support
- 36-bit Deep Color support for up to 1080p@ 60 Hz

Supported Maximum Resolutions at the Input Board

Resolution	Bit Depth	Color Space
1080p@50/60Hz	24-36 bit	RGB/YUV 4:4:4
1080p@120Hz	24 bit	YUV 4:2:2
3840x2160@24Hz	24 bit	YUV 4:2:2
3840x2160@30Hz	24 bit	YUV 4:2:2
3840x2160@50/60Hz	Not supported	

4K DVI-D Output Board
25G-8DVID2-OB
Part No: 9123 0013



25G-8DVID2-OB

25G-8DVID2-OB provides fully transparent HDMI 1.4 connectivity to the latest high-end digital sources including 3D between the endpoints.

Features:
- HDMI 1.4, DVI and HDCP 1.4 compliant
- Resolutions up to 4k / UHD (30Hz RGB or YCbCr 4:4:4)
- 3D signal support
- 36-bit Deep Color support
- 30m copper cable compensation
- Submission of EDID information read from the sink to the Advanced EDID Management system
- Available video test patterns
- Pass-through of HDMI 1.4 embedded uncompressed LPCM audio and compressed audio (AAC, ATRAC, DTS, DTS ES, DTS-HD, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, Dolby Digital TrueHD, DST, MPEG1 Layer 1, MPEG1 Layer2, MPEG1 Layer 3, MPEG2, WMA Pro)
- Embedding or de-embedding of two-channel LPCM, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, DTS, DTS ES
- Standard compliant output

25G-8DVID2-A2-OB

4K DVI-D Output Board with Digital Audio
25G-8DVID2-A2-OB
Part No: 9123 0034

Additional Features:
- Bi-directional S/PDIF breakout for every port

25G-8DVID2-A3-OB

4K DVI-D Output Board with Analog Audio
25G-8DVID2-A3-OB
Part No: 9123 0033

Additional Features:
- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector

4K HDMI Output Board
25G-8HDMI2-OB
Part No: 9123 0044

25G-8DVID2-OB provides fully transparent HDMI 1.4 connectivity to the latest high-end digital sources including 3D between the endpoints.

Features:
- HDMI 1.4, DVI and HDCP 1.4 compliant
- Resolutions up to 4k / UHD (30Hz RGB or YCbCr 4:4:4)
- 3D signal support
- 36-bit Deep Color support
- 30m copper cable compensation
- Submission of EDID information read from the sink to the Advanced EDID Management system
- Available video test patterns
- Pass-through of HDMI 1.4 embedded uncompressed LPCM audio and compressed audio (AAC, ATRAC, DTS, DTS ES, DTS-HD, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, Dolby Digital TrueHD, DST, MPEG1 Layer 1, MPEG1 Layer2, MPEG1 Layer 3, MPEG2, WMA Pro)
- Embedding or de-embedding of two-channel LPCM, Dolby Digital, Dolby Digital EX, Dolby Digital Plus, Dolby Digital Surround EX, DTS, DTS ES
- Standard compliant output

25G-8HDMI2-A2-OB

4K HDMI Output Board with Digital Audio
25G-8HDMI2-A2-OB
Part No: 9123 0016

Additional Features:
- Bi-directional S/PDIF breakout for every port

25G-8HDMI2-A3-OB

4K HDMI Output Board with Analog Audio
25G-8HDMI2-A3-OB
Part No: 9123 0017

Additional Features:
- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector

4K TPS Output Board with PoE Option

25G-8TPS2-OB

Part No: 9123 0045

25G-8TPS2-OB

Featuring eight HDBaseT™ output ports, the board is compatible with the full range of Lightware TPS extenders and HDBaseT compliant 3rd party transmitters. The HDBaseT technology provides a transparent medium for all video, audio, data and control signals in line with the 25G multilayer architecture and allows for a cost effective extension solution for up to 160 meters.

Features:

- Resolutions up to 4k / UHD (30Hz RGB or YCbCr 4:4:4)
- Pass through of 4:2:0 3840x2160@60 Hz video
- Support for HDMI 1.4 embedded uncompressed LPCM audio or compressed high bitrate audio (LPCM, AC 3, MPEG1 Layer 1, MPEG1 Layer2, MPEG1 Layer 3, MPEG2, AAC, DTS, ATRAC, Dolby Digital+, DTS HD, Dolby Digital TrueHD, DST, and WMA Pro, Dolby Digital EX, Dolby Digital Surround EX)
- De-embedding of IEC 60958 1 (only stereo LPCM), and IEC 61937 (only AC 3, Dolby Digital Plus, Dolby Digital EX, Dolby Digital Surround EX, DTS, DTS ES)
- Video test pattern generation
- Cable length and link quality estimation
- Frame detector functionality with frame rate, color space, pixel clock rate, and active and total area detection
- HDCP 1.4 support
- Deep color support for up to 36 bpp
- Automatic Ethernet only mode support when an Ethernet only device is connected
- Extension for up to 160 meters over CAT6a or CAT7 depending on the video clock used

HDBaseT™ and the HDBaseT Alliance logo are trademarks of the HDBaseT Alliance

25G-8TPS2-P1-OB

4K TPS Output Board with Remote Powering

25G-8TPS2-P1-OB

Part No: 9123 0048

Additional Features:

- Remote powering according to IEEE 802.3af-2003 with increased output power

25G-8TPS2-A2-OB

4K TPS Output Board with Digital Audio

25G-8TPS2-A2-OB

Part No: 9123 0046

Additional Features:

- Bi-directional S/PDIF breakout for every port

25G-8TPS2-A3-OB

4K TPS Output Board with Analog Audio

25G-8TPS2-A3-OB

Part No: 9123 0047

Additional Features:

- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector

25G-8TPS2-A2P1-OB

4K TPS Output Board with Digital Audio and Remote Powering

25G-8TPS2-A2P1-OB

Part No: 9123 0049

Additional Features:

- Bi-directional S/PDIF breakout for every port
- Remote powering according to IEEE 802.3af-2003 with increased output power

25G-8TPS2-A3P1-OB

4K TPS Output Board with Analog Audio and Remote Powering

25G-8TPS2-A3P1-OB

Part No: 9123 0050

Additional Features:

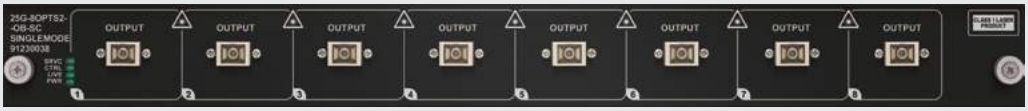
- Bi-directional, configurable analog stereo ports with 5-pole Phoenix connector
- Remote powering according to IEEE 802.3af-2003 with increased output power

4K Singlemode Optical Output Board

25G-8OPTS2-OB- LC, -SC, -ST, -NT

Part No: 9123 0035 (NT), 9123 0036 (LC), 9123 0037 (ST), 9123 0038 (SC)

25G-8OPTS2-OB-NT



25G-8OPTS2-OB-SC

25G-8OPTS2-OB-LC

25G-8OPTS2-OB-ST

25G-8OPTS2-OB-LC, -SC, -ST, -NT is a 4K compatible fiber optical output board for the 25G matrix family available with LC, SC, ST or Neutrik OpticalCON. type fiber optical connectors. These optical boards can extend up to a 10,000m distance using singlemode fiber technology. The OPTS technology provides a transparent medium for video, audio, Ethernet, USB KVM, RS-232, IR and CEC data according to the 25G multilayer architecture and allows the extension to MODEX receiver units.

Features:

- Resolutions up to 4k / UHD (30Hz YCbCr 4:2:2)
- Up to 10km extension distance
- Video and audio transmission
- Ethernet, USB KVM, RS-232, IR, CEC transmission
- Extension to MODEX receivers
- 3D signal support
- 36-bit Deep Color support for up to 1080p60

Supported Maximum Resolutions at the Output Board

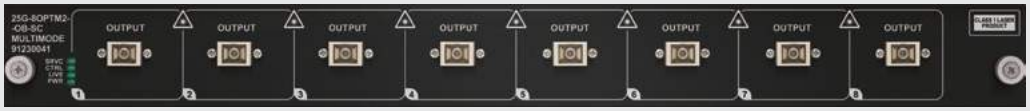
Resolution	Bit Depth	Color Space
1080p@50/60Hz	24-36 bit	RGB/YUV 4:4:4
1080p@120Hz	24 bit	YUV 4:2:2
3840x2160@24Hz	24 bit	YUV 4:2:2
3840x2160@30Hz	24 bit	YUV 4:2:2
3840x2160@50/60Hz	Not supported	

4K Compatible Multimode Optical Output Board

25G-8OPTM2-OB- LC, -SC, -ST, -NT

Part No: 9123 0031 (NT), 9123 0041 (SC), 9123 0039 (ST) 9123 0040 (LC)

25G-8OPTM2-OB-NT



25G-8OPTM2-OB-SC

25G-8OPTM2-IB-LC

25G-8OPTM2-IB-ST

25G-OPTM2-OB-LC, -SC, -ST, -NT is a 4K compatible fiber optical output board for the 25G matrix family and available with a variety of fiber optical connectors: LC, SC, ST or Neutrik OpticalCON. These optical boards can extend up to a 300m distance with Multimode fiber technology. The OPTM technology provides a transparent medium for video, audio, Ethernet, USB KVM, RS-232, IR and CEC data according to the 25G multilayer architecture. It also allows extension to MODEX receiver units.

Features:

- Resolutions up to 4k / UHD (30Hz YCbCr 4:2:2)
- Up to 300m extension distance
- Video and audio transmission
- Ethernet, USB KVM, RS-232, IR, CEC transmission
- Extension to MODEX receivers
- 3D signal support
- 36-bit Deep Color support for up to 1080p@60Hz

Supported Maximum Resolutions at the Output Board

Resolution	Bit Depth	Color Space
1080p@50/60Hz	24-36 bit	RGB/YUV 4:4:4
1080p@120Hz	24 bit	YUV 4:2:2
3840x2160@24Hz	24 bit	YUV 4:2:2
3840x2160@30Hz	24 bit	YUV 4:2:2
3840x2160@50/60Hz	Not supported	

There are six main types of 25G compatible boards available at request, please enquire at a Lightware sales or distributor office. The available 25G MX boards are the following:

25G-MX-3GSDI-IB	25G MX 3GSDI Input Board
25G-MX-DVII-HDCP-IB	25G MX DVII HDCP Input Board
25G-MX-DVI-OPT-IB-LC-NT-SC-ST	25G MX DVI Optical Input Board
25G-MX-HDMI-OPT-IB-LC-NT-SC-ST	25G MX HDMI Optical Input Board
25G-MX-DVI-OPT-OB-LC-SC-ST	25G MX DVI Optical Output Board
25G-MX-HDMI-OPT-OB-LC-NT-SC-ST	25G MX HDMI Optical Output Board

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