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Reference Manual

CDE 1922

3G-SDI / ST 2110 Bi-Directional Converter

Revision 1.1 – October 2025

LYNXTechnik AG®

Broadcast Television Equipment

Contents

Warranty

LYNX Technik AG warrants that the product will be free from defects in materials and workmanship for a period of three (3) years from the date of shipment. If this product proves defective during the warranty period, LYNX Technik AG at its option will either repair the defective product without charge for parts and labor, or will provide a replacement in exchange for the defective product.

In order to obtain service under this warranty, customer must notify LYNX Technik AG of the defect before expiration of the warranty period and make suitable arrangements for the performance of service. Customer shall be responsible for packaging and shipping the defective product to the service center designated by LYNX Technik AG, with shipping charges prepaid. LYNX Technik AG shall pay for the return of the product to the customer if the shipment is within the country which the LYNX Technik AG service center is located. Customer shall be responsible for payment of all shipping charges, duties, taxes and any other charges for products returned to any other locations.

This warranty shall not apply to any defect, failure, or damage caused by improper use or improper or inadequate maintenance and care. LYNX Technik AG shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than LYNX Technik AG representatives to install, repair or service the product; b) to repair damage resulting from improper use or connection to incompatible equipment; c) to repair any damage or malfunction caused by the use of non-LYNX Technik AG supplies; or d) to service a product which has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty servicing the product.

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Product Overview

Product Description

The CDE 1922 is a compact and high-performance broadcast-grade SDI-IP gateway, designed to facilitate seamless bidirectional streams, providing two SDI-to-IP encoding paths and two IP-to-SDI decoding paths. Each SDI input and output operate independently and are fully compliant with SMPTE 424M (3G-SDI) signal standards. The CDE 1922 is well-suited for use in professional live production, remote broadcast workflows, and hybrid SDI-IP facilities requiring flexible interconnectivity and redundancy.

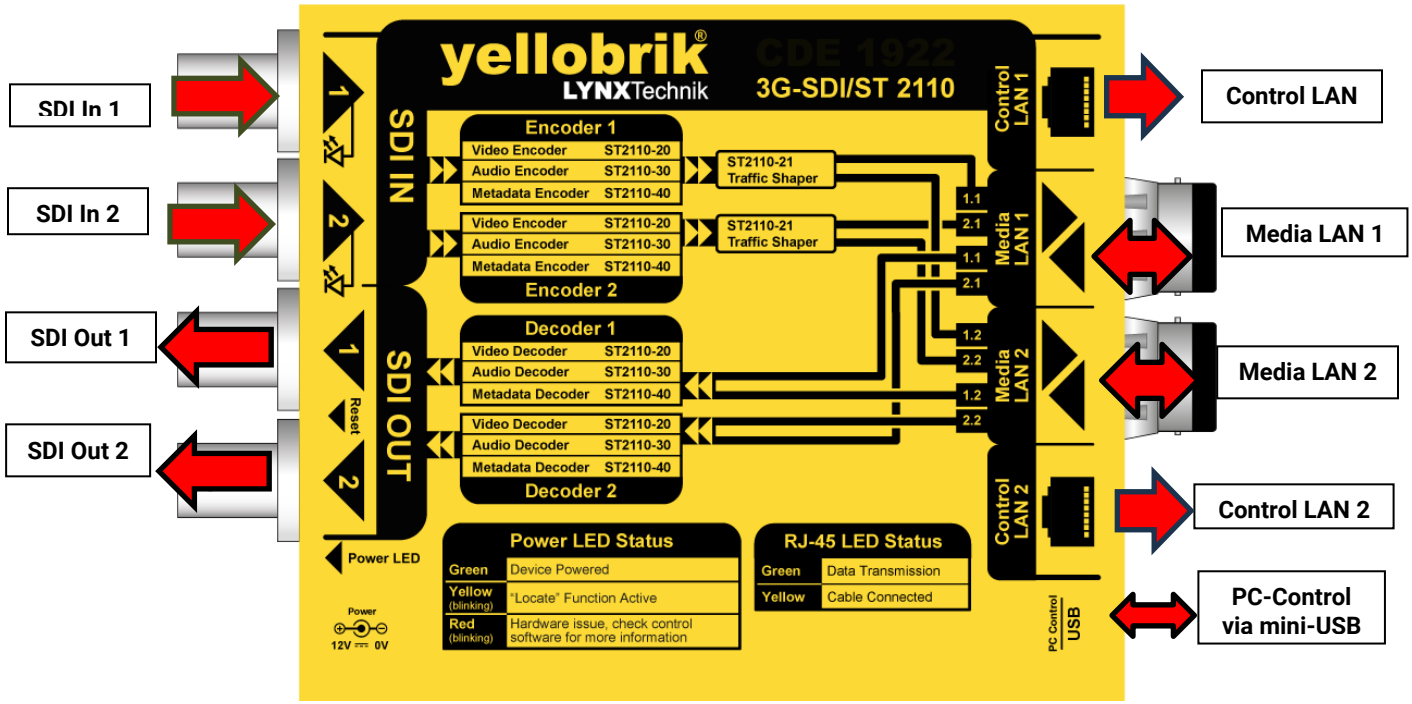
In terms of audio, CDE 1922 integrates dual audio encoders and dual audio decoders, enabling real-time handling of up to 16 audio channels per stream, for PCM and AES3 audio transport and supports ancillary data (ANC) through ST 2110-40, passed transparently between SDI and IP domains.

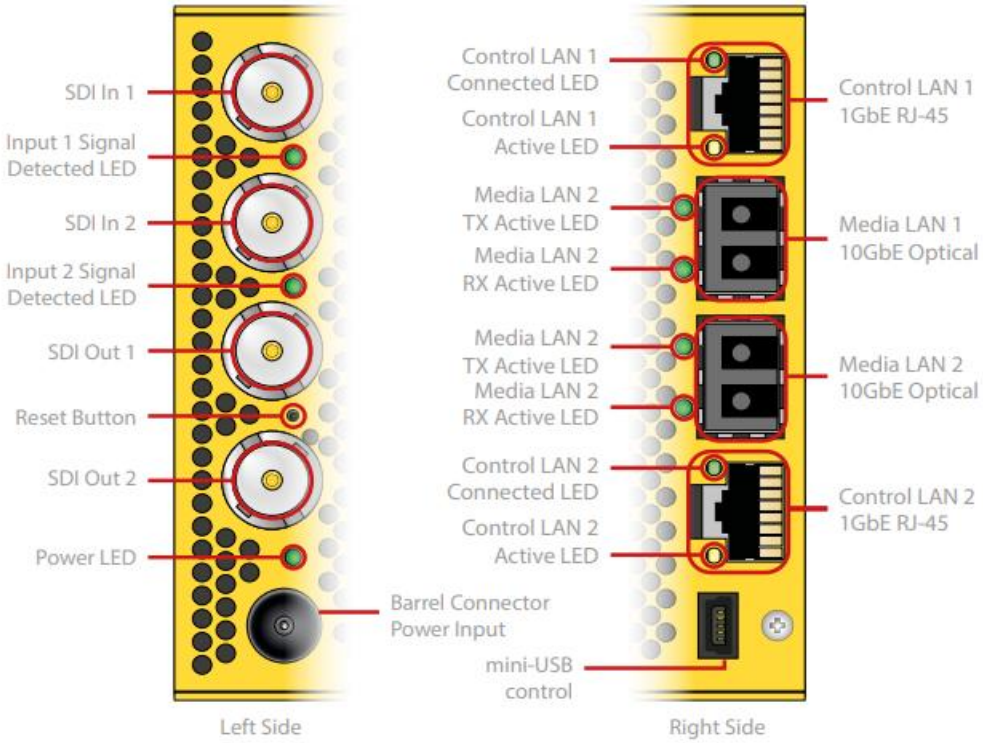
The CDE 1922 is compliant with SMPTE ST 2110 10/20/21/30/31/40 and IEEE 1588-2008 (PTP) synchronization via ST 2059 2, allowing for accurate timing alignment across all media streams and supports manual and DHCP-based network setup, NMOS support, and advanced configuration using LynxCentraal software.

Product Features

- Full 3G-SDI/1.5G-SDI Support
- Frame synchronizer to align SDI inputs to ST 2059
- Full redundancy for IP links
- NMOS Capability for:
    - IS-04 Discovery and Registration Specification
    - IS-05 NMOS Device Connection Management Specification
    - IS-08 Audio Channel Mapping
- Uncompressed Active Video (ST 2110-20)
- SMPTE ST 291-1 Ancillary Data Support
- Seamless Protection Switching ST 2022-7
- 2x 10GbE Media LAN Fiber In-/Output
- 2x 1GbE RJ-45 Management LAN
- 3G-SDI Level A and Level B support
- LynxCentraal & yelloGUI compatible

Connections and Local Controls





Interfaces

SDI In 1+2 / SDI Out 1+2

The SDI inputs and outputs on the CDE1922 serve as the primary gateway between traditional baseband video infrastructure and IP-based ST 2110 environments and are fully compatible with both 1.5 Gb/s (SMPTE 292M) and 3 Gb/s (SMPTE 424M) serial video signals with each designed to support 10-bit YCbCr 4:2:2 color precision, ensuring studio-grade fidelity during signal ingestion or playout.

The supported video formats range from HD 720p to 2K DCI with Level A and Level B support. Furthermore, it allows 16 channels of embedded PCM audio (per SMPTE 272M and 299M), including Dolby D/E non-PCM formats.

Media 1+2 (SFP) 10 Gbit/s

These serve as the primary IP transport interfaces, each operating at 10 Gb/s to accommodate high-bandwidth ST 2110 video, audio, and data streams and allow redundancy whereby if one fails or is interrupted, the receiving device automatically switches to the alternate path with zero packet loss.

These ports handle full compliance with the ST 2110 suite of standards like ST 2110-20, -30, -40 and support the IEEE 1588-based PTP per ST 2059-1/2, enabling highly accurate time alignment with a grandmaster clock.

NMOS (Networked Media Open Specifications) registration is supported, enabling automatic discovery and connection of streams in software-defined networks (SDNs).

USB Mini Type B

This port allows connection to a host PC running LynxCentraal for configuring or troubleshooting the device. IP settings, stream routing, firmware updates, and log file access.

Factory Reset

The module’s settings can be reset to factory defaults using the “Factory Reset” button on the device, using LynxCentraal or via command.

LED Description

SDI LED

Color		Description
	Red/Green Alternating	Input recognized, but video format not compatible
	Green	Valid Signal
	Off	No Signal Detected

Power LED

Color		Description
	Green	Power OK Factory Default settings
	Yellow	Power OK Some settings have been made using the Web GUI or LynxCentraal
	Red (blinking)	Hardware issues
	Off	Power not present

LAN LED

Color		Description
	Yellow (blinking)	Data transfer active (Upload, Download or both)
	Green	Ethernet Connection OK
	Off	Storage Media Disconnected (LED turns off after safely ejecting the device in the Web GUI

Supported Video Input Standards

SDI Input

SMPTE 292M (1.5G-SDI)	720p				50	59.94	60
	1080i				50	59.94	60
	1080p	25	29.97	30			
SMPTE 424M (3G-SDI)	1080p				50	59.94	60

Color precision: YCbCr 4:2:2 10-Bit

Network Connection

Default IP Settings & Web UI Access

By default, the CDE 1922 is set to DHCP. The device is assigned an IP address by the DHCP server. To access the Web UI through its IP address, please follow these steps:

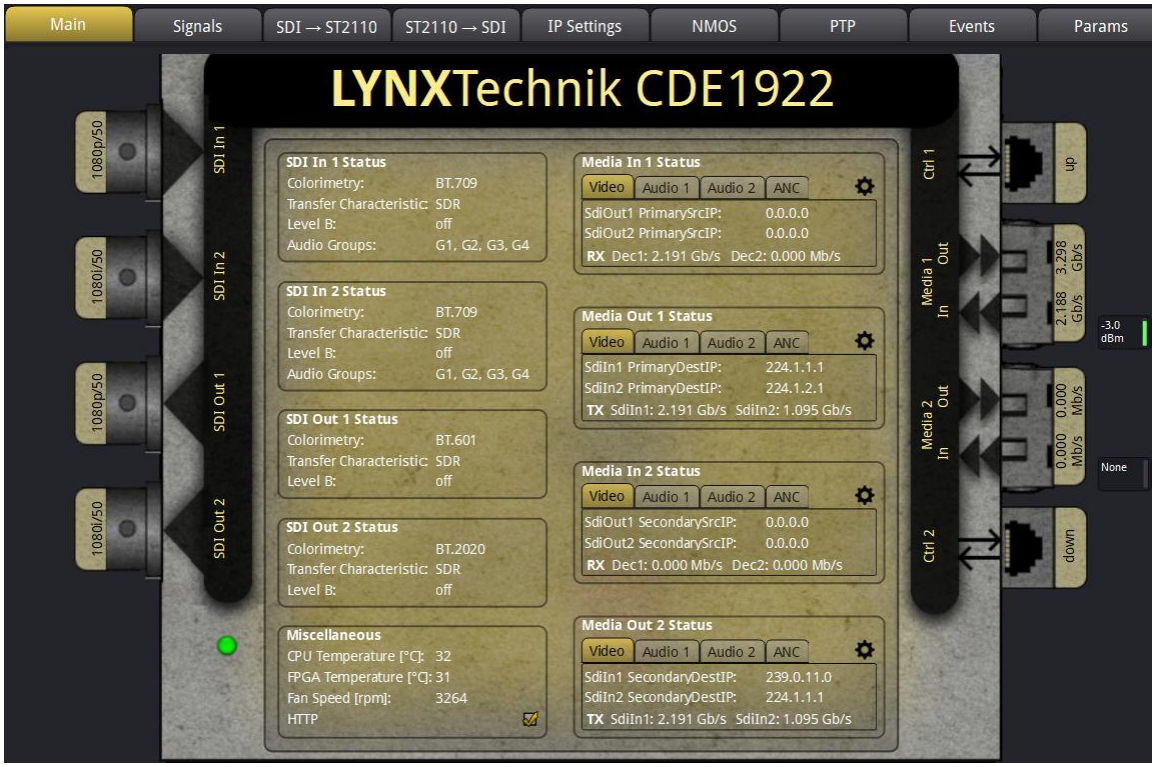
1. Connect the CDE 1922 via its USB Control Port to a PC or Mac.
2. Make sure to install the latest version of LynxCentraal or yelloGUI.
3. Navigate to the IP Settings tab. The IP address should be visible in the sections for each Control port.
4. Follow the hyperlink from the LynxCentraal or yelloGUI or copy the CDE1922 IP address into a web browser.

User Interface

Overview LynxCentraal

Main

The Main Page of LynxCentraal provides a centralized summary of the current signal states, media flows, temperatures, and overall hardware health. It offers real time diagnostics to assess connectivity, stream integrity, and system performance

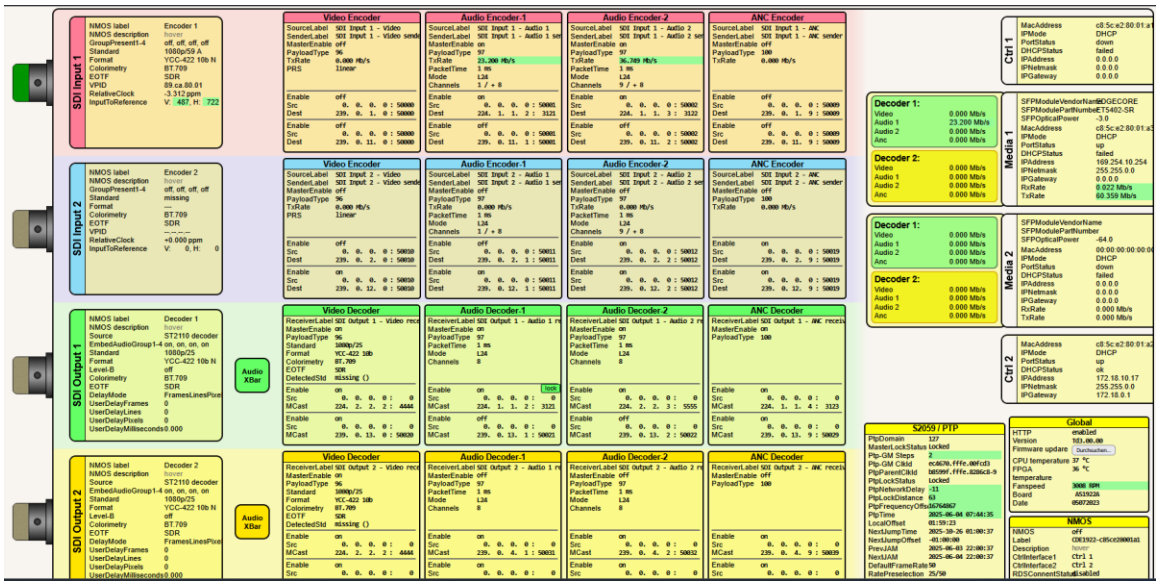


Access via the Web User Interface

The Web User Interface (Web UI) is an intuitive way to configure the CDE 1922.

This provides a system-level status overview including the SDI I/O activity, PTP sync state, decoder/encoder lock, and error alerts. Customers should ensure all indicators are green before starting any IP-SDI routing workflow.

Follow the hyperlink from LynxCentraal or yelloGUI or copy the device IP address into your web browser.



Click on a functional block to access more detailed settings.

Supported Browsers:

Desktop browsers	Mobile browsers (iOS)	Mobile browsers (Android)
Chrome Version 57+	Chrome Version 57+	Chrome Version 57+
Firefox Version 45+	Firefox Version 45+	Firefox Version 45+
Safari Version 10+	Safari Version 10+	Safari Version 10+
Microsoft Edge 13+	Microsoft Edge 13+	Microsoft Edge 13+

SDI Input and Output

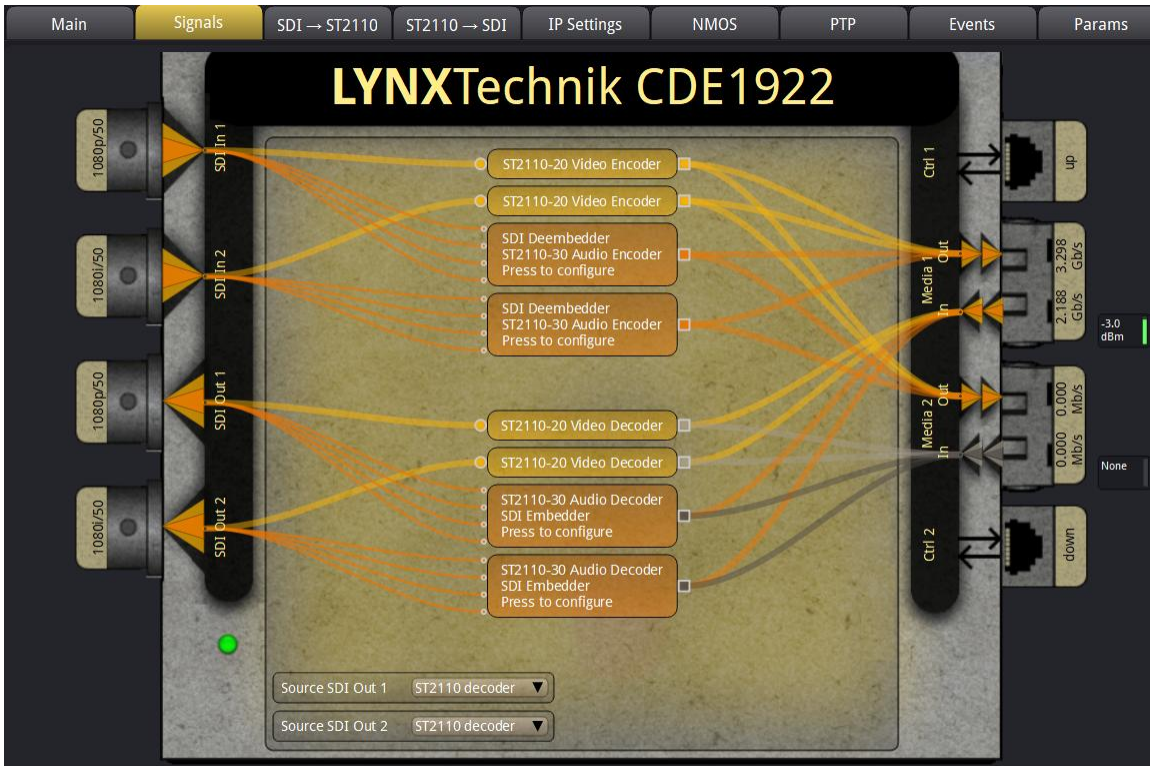
The left column shows the status of SDI Inputs 1 and 2, and SDI Outputs. Each input and output lists its active colorimetry, transfer characteristics, Level B detection, and any audio group presence. For example:

SDI In 1 & 2 both show BT.709 colorimetry with SDR transfer characteristics and no Level B detected. This implies that a progressive Level A video format is being received. Audio presence is detected in all four embedded groups (G1–G4), confirming embedded audio integrity.

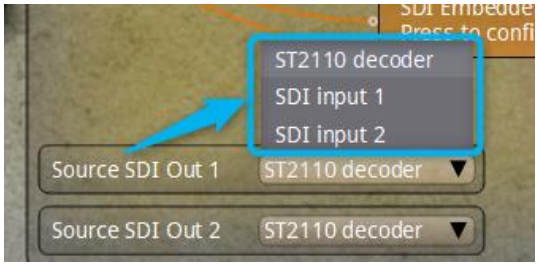
Signals

LynxCentraal provides a dynamic, visual overview of the real-time signal routing within the SDI to ST 2110 gateway. This interface illustrates how the incoming SDI signals (SDI In 1 and 2) are routed through internal processing modules, such as ST 2110-20 video encoders and SDI audio de-embedders, before being directed to the Media 1 and Media 2 outputs.

This bidirectional mapping reflects the CDE1922's role as both an encoder and decoder, enabling true gateway functionality between SDI and IP.



At the bottom, two dropdown menus let users select the source for each SDI output — for instance, routing decoded ST 2110 video and audio flows to SDI Out 1 or 2. This configurable routing capability empowers operators to control stream flow, while the configuration prompts within the GUI give access to settings for each encoder or decoder block.



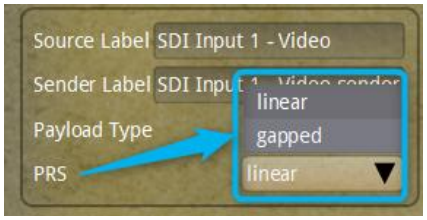
SDI to ST2110

This is where incoming SDI signals are deconstructed, packetized, and routed into an IP-based media environment. It provides both high-level automation and low-level customization, supporting multicast delivery, payload shaping, and redundancy protocols.

This interface includes configuration panels for SDI Input 1 and 2, each offering four distinct sub-tabs for Video, Audio 1, Audio 2, and ANC (Ancillary Data). These tabs allow the user to manage the transport parameters of each signal type individually.

Within each sub-tab, the user can define both the Source and Destination IP settings for the corresponding stream. For instance, SDI Input 1's video is routed to the multicast group 224.1.1.1 on port 3120, while its ancillary data (ANC) is directed to 224.1.1.4 on port 3123, clearly separating video and metadata flows across the environment.

The Master Enable and Primary Enable checkboxes activate or disable the entire flow or just the primary stream, respectively, with a Secondary tab available for ST 2022-7 seamless protection switching configurations. This ensures redundancy and synchronization in mission-critical broadcast workflows.



Additional controls such as Source Label, Sender Label, Payload Type, and PRS (Packet Rate Shaping) give users further flexibility. The **PRS option** lets the user choose between linear and gapped transmission patterns, where *linear* ensures tightly packed RTP streams and *gapped* introduces time gaps between packets to accommodate downstream buffering strategies or constrained network conditions.

ST 2110 to SDI

IP settings for both control and media interfaces can be configurable here. Control ports (Ctrl 1 & Ctrl 2) can use DHCP, while media ports (Media 1 & Media 2) are set manually. Media ports are critical for RTP/UDP transmission of video, audio, and ANC streams over ST 2110. IP addresses, gateways, and subnet masks must align with the media network topology.

The user can control conversion from ST 2110 IP streams to physical SDI outputs (SDI Out 1 and SDI Out 2). Multicast IP and port fields are configured to receive streams. Payload type, detected standard, and manual override for video format (e.g., 1080p/50), colorimetry (BT.601, BT.2020), and transfer characteristic are configurable per output.

Audio 1& 2

The Audio Decoders 1 and 2 are responsible for receiving, processing, and embedding IP-based ST 2110-30 audio streams back into the SDI outputs of the device. Each tab corresponds to one of the SDI inputs (SDI In 1 or SDI In 2) and supports configuration of up to eight channels of uncompressed PCM audio. The user can independently assign each audio flow to *Media LAN 1* or *Media LAN 2*, offering redundancy or network segmentation options. The configuration interface includes controls for specifying source and destination IP addresses and ports for multicast streaming. When enabled via the *Master Enable* checkbox, the selected audio stream becomes active and is broadcast using the assigned multicast group. For example, in Audio 1, audio from SDI Input 1 is streamed to 224.1.1.2:3121, while Audio 2 from SDI Input 2 can be streamed to 239.0.12.2:50012.

Additionally, each audio tab supports NMOS IS-04/IS-05 registration by automatically generating *NMOS Source* and *Sender labels*, enabling seamless discovery and control from IP-based orchestration platforms. The *Payload Type* is typically set to 97, and the *Packet Time* is defaulted to 1 ms, ensuring compatibility with low-latency real-time workflows. These parameters ensure encapsulation and stream behavior on the network. This tab is important in modern IP infrastructures where audio must be routed independently of video, synchronized via **PTP**.

ANC Configuration

The ANC sub-tab allows users to configure the transmission of Ancillary Data (ANC) from the SDI input into an IP-based ST 2110-40 multicast stream. By extracting this ANC data and repackaging it for transport over IP using SMPTE ST 2110-40, the CDE1922 ensures that downstream IP devices can interpret and utilize all production-critical metadata accurately.

The configuration panel offers a similar structure to the other tabs, with Source and Destination fields for setting IP routing. The Source Label and Sender Label allow logical identification of this stream in NMOS environments or by third-party receivers, with defaults such as “SDI Input 1 – ANC” and “SDI Input 1 – ANC sender.” The Payload Type is preset to 100, adhering to standard RTP payload conventions for ST 2110-40 data.

Note: Enabling both the Master Enable and Primary Enable checkboxes activates the ANC data stream. This enables full preservation of original SDI functionality.

Delay Configuration on the SDI Out

This enables the user to delay SDI output based on either frame/line/pixel values or absolute millisecond values.

Note: *A max. of 100-ms delay or 5-frame delay can be applied.*

IP Settings

The user can have a comprehensive overview and configuration interface for the device’s four primary network ports in both the Web and LynxCentraal. These settings are vital for CDE 1922's operation.

Each port's configuration block displays and allows modification of IP networking parameters, including IP Mode (DHCP or manual), IP Address, Gateway, Netmask, and MAC Address. The Control Ports are typically used for management and NMOS communications, while the Media Ports handle real-time ST 2110 video, audio, and ANC transmission.

Both Media Port 1 and Media Port 2 can be manually configured, which is often preferred in deterministic production environments to maintain strict multicast routing and consistency. Media Port 1 and 2 can be set to identical gateway and subnet mask settings. Configuration changes can be staged and then either applied or reverted, giving the user control over pending modifications.

The user can toggle between DHCP and manual configurations. Precise IP addressing guarantees seamless communication with PTP Grandmasters, NMOS registries, and multicast destinations. For example, Media Port IPs must align with pre-defined ST 2110 multicast subnet plans to ensure that video, audio, and ANC streams are properly received by other compliant devices.

IP Mode	Manual (Static)	DHCP
IP Address	Shows the current IPv4 Address in an editable text field.	Automatically populated
IP Subnet Mask	Shows the current subnet mask in an editable text field.	Automatically populated

IP Gateway	Shows the current Gateway in an editable text field.	Automatically populated
MAC Address	Shows the MAC Address of the device (read only)	
Apply Changes	IPv4 Address of the DNS Server (Optional).	Automatically populated
Revert Changes	DNS Domain Name (Optional).	Automatically populated

NMOS

NMOS (Networked Media Open Specifications) lets the user find, connect, and configure media devices within the Audio, Video networks and serves as the configuration hub for the device's registration and discovery in an IP-based media infrastructure, compliant with the AMWA NMOS standards.

Enabling the checkbox activates NMOS operation. When enabled, the CDE1922 becomes a visible node within an NMOS-compliant network, allowing it to advertise its encoders and decoders for control by an NMOS controller such as a broadcast orchestration platform.

The Primary Control Interface and Secondary Control Interface drop-down menus allow the user to define which of the device's network interfaces will be used for NMOS registration. Options include *Ctrl 1*, *Ctrl 2*, *Media 1*, and *Media 2*, or it can be *disabled* entirely.

If NMOS registration is enabled, the device communicates with a Registration and Discovery Service (RDS), whose IP address can be specified under the *RDS Address* field.

The RDS Status indicates whether a connection with the NMOS registry is established.

PTP (Precision Time Protocol)

PTP, or Precision Time Protocol, is a time synchronization method used to ensure that all devices in a broadcast IP network operate on the same precise timing reference. It is critical to align the video, audio, and ancillary data streams according to SMPTE ST 2059 standards. This synchronization guarantees frame-accurate transmission and reception across different network nodes, enabling seamless real-time media transport. The CDE1922 utilizes PTP to synchronize with a grandmaster clock, maintain consistent timing offsets, and coordinate its internal clocks with the broader media network for seamless signal encoding, decoding, and synchronization.

Framerate Pre-selection

The Rate Preselection menu allows the user to define timing behavior according to the desired video frame rates. Options such as 25/50, 23.98/29.97/59.94, 24/30/60, and S2059 default rate reflect common broadcast standards. It also allows the device to align its internal timing to match those used in an environment.

Grandmaster & Parent

The critical information about the upstream clocking source is displayed to give the user insight into which external PTP clock the unit is synchronized with. The PTP GrandMaster indicates the number of hops between the CDE1922 and the PTP Grandmaster, which can help assess timing quality and potential jitter or delay.

The Locking section confirms whether the device is successfully synchronized to the grandmaster, with status indicators such as PTP Lock, Master Lock Status, and PTP Lock Distance providing clarity on the health and precision of the time sync.

Offsets & Timing

The current PTP Time, Local Offset, and scheduled Next Jump Time refer to when the clock will realign to compensate for drift. The JAM Time entries further help diagnose synchronization stability by showing when previous and future "jam syncs" are expected.

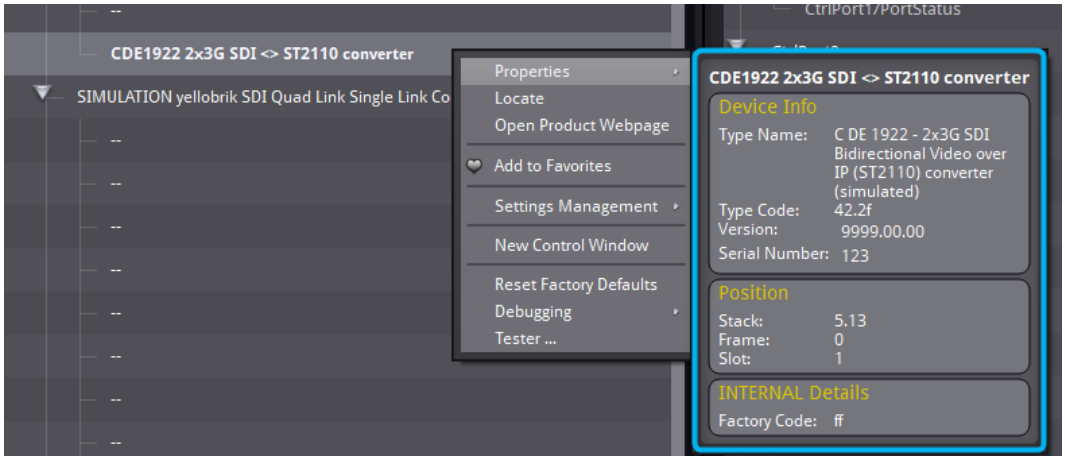
Events

The CDE 1922 also functions as an integrative part of a larger broadcast monitoring infrastructure, capable of delivering real-time feedback and alerts for streamlined maintenance and operations, allowing the user to manage, simulate, and respond to system-level occurrences such as signal loss or input errors for connected systems or SNMP-based alarms to remote network monitoring tools. To enhance diagnostic capabilities, a user can enable or disable each event individually using the "*Enable event*" checkbox in LynxCentraal and determine whether it should influence the physical LED indicators on the unit through the LED Color Influence option.

General Device Information

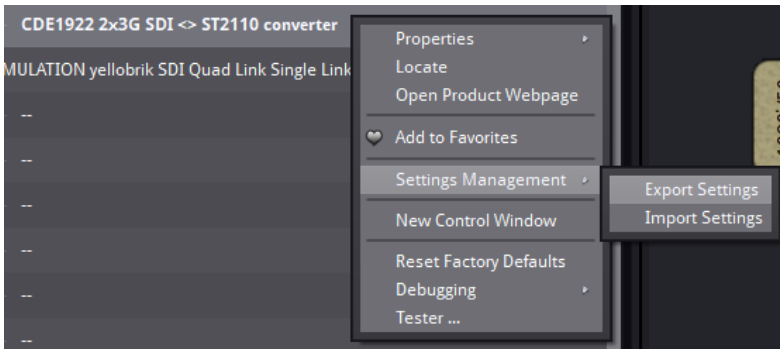
The information and configurations for the CDE 1922 can be done via LynxCentraal, WebGUI or through NMOS. Several device-related options, including Properties, Locate, Open Product Webpage, Settings Management, and tools for debugging and resetting factory defaults.

This combination of metadata ensures clear traceability, status visibility, and easy access to device-level management tasks, critical for maintaining an infrastructure workflow.



Settings Management

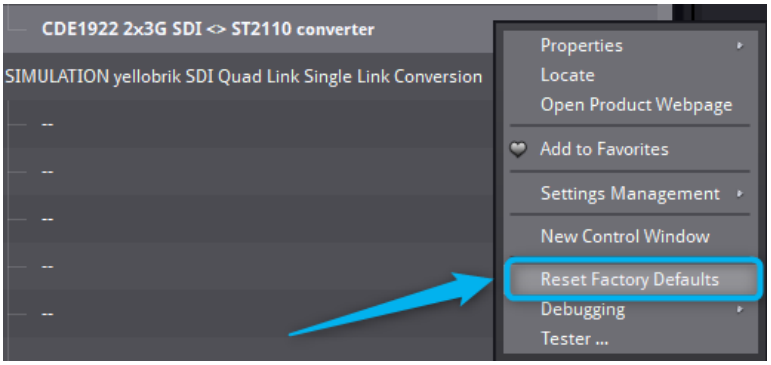
The user can access more device information and configurations by right-clicking the CDE1922 in LynxCentraal.



The Export Settings option allows users to save the current configuration of the CDE1922 device into a file, enabling easy backup, documentation, or duplication of settings across multiple devices. Conversely, the Import Settings enables the user to load a previously saved configuration file onto the device, ensuring fast restoration or uniform configuration in standardized workflows.

Factory Reset

This function allows users to restore the device to its original factory configuration, effectively clearing all custom settings, IP addresses, stream routing, encoder/decoder assignments, and any user-defined parameters. A physical button is also available to perform the same function.



It's advisable to first use the "Export Settings" feature to back up the existing configuration if restoration is likely needed afterward.

Update and Service

Version	Shows the current firmware installed on this CDE 1922	Read Only
Firmware	Upload firmware updates for the CDE 1922	File Upload
Service Information	Downloads a zip of configuration, device status and general system information.	File Download

Technical Support

If you have any questions or require support, please contact your local distributor for further assistance.

Technical support is also available from our website:

http://support.lynx-technik.com/

Please do not return products to LYNX without an RMA. Please contact your authorized dealer or reseller for more details.

More detailed product information and product updates may be available on our web site:

www.lynx-technik.com

Contact Information

Please contact your local distributor; this is your local and fastest method for obtaining support and sales information.

LYNX Technik can be contacted directly using the information below.

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E-Mail info@lynx-technik.com

LYNX Technik manufactures a complete range of high-quality modular products for broadcast and Professional markets. Please contact your local representative or visit our web site for more product information.