

Series | 5000[®]

Reference Manual

PDM 5248 DO

PDM 5248 UO

12G-SDI Digital Audio Embedder / De-Embedder

Revision 1.1 – May 2025

This Manual Supports Device Revisions:	
PDM 5280 Firmware Revision	1247
LynxCentraal	8.2.0

LYNXTechnik **AG**[®]
Broadcast Television Equipment

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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 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, with shipping charges prepaid. LYNX Technik shall pay for the return of the product to the customer if the shipment is within the country which the LYNX Technik 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 shall not be obligated to furnish service under this warranty a) to repair damage resulting from attempts by personnel other than LYNX Technik 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 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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Regulatory information

Europe: Declaration of Conformity

We	LYNX Technik AG Brunnenweg 3 D-64331 Weiterstadt Germany
<i>Declare under our sole responsibility that the product</i>	
TYPE: PDM 5248 DO / PDM 5248 UO	
<i>To which this declaration relates is in conformity with the following standards (environments E1-E3):</i>	
EN 55103-1 /1996	
EN 55103-2 /1996	
EN 60950-1 /2006	
<i>Following the provisions of 2014/30/EU and 2014/35/EU directives.</i>	
	
Weiterstadt, Nov 2024	Winfried Deckelmann

USA: FCC 47 Part 15

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to the part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Getting Started

Most CardModules are installed into the rack frames and system tested in the factory. If this is an upgrade part or service exchange item then the module is supplied in a padded cardboard carton which includes the CardModule, rear connection plate and mounting screws.

Packaging

The shipping carton and packaging materials provide protection for the module during transit. Please retain the shipping cartons in case subsequent shipping of the product becomes necessary. Do not remove the module from its protective static bag unless observing adequate ESD precautions.

ESD Warning



This product is static sensitive. Please use caution and use preventative measures to avoid static discharge that could damage the card module.

Preventing ESD Damage

Electrostatic discharge (ESD) damage occurs when electronic assemblies or the components are improperly handled and can result in complete or intermittent failure.

Do not handle the module unless using an ESD-preventative wrist strap and ensure that it makes good skin contact. Connect the strap to any solid grounding source such as any exposed metal on the rack chassis or any other unpainted metal surface.

Caution

Periodically check the resistance value of the antistatic strap. The measurement should be between 1 and 10 Megohms.

Product Description

The PDM 5248 DO/UO Module is a high-performance 12G-SDI audio embedder and de-embedder designed for AES digital audio streams. It features eight external AES ports that can be individually configured by the user as inputs or outputs, with the DO variant providing balanced AES3 connections on a 25-pin D-Sub connector and the UO variant offering unbalanced AES3id connections on 75Ω Mini-DIN connectors, plus an optional optical SDI interface.

All audio streams (embedded and external) pass through the audio processor for mono gain, stereo downmix, muting, overload and silence detection, and a 1kHz test tone generator.

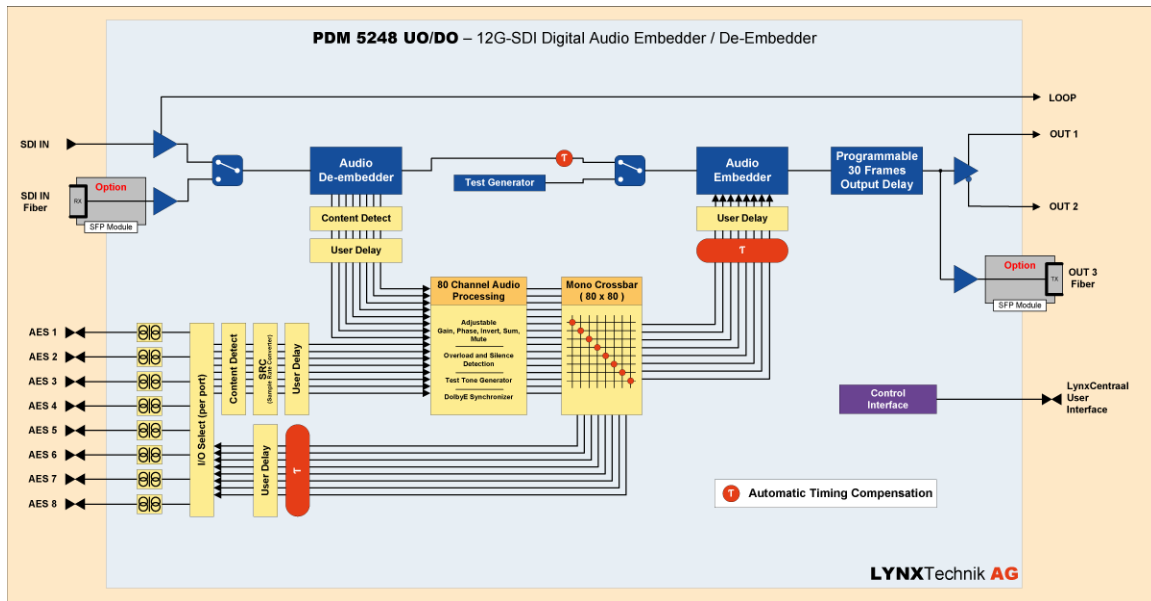
The PDM 5248 is factory-configured with four AES inputs and four AES outputs, and reconfiguration instructions are available on page 26.

Note: Please check connected peripheral equipment before using the PDM 5248 to make sure the audio ports are configured correctly, e.g. an output is not connected to an output of another device, this might damage the equipment.

Key Features

- Support for 4K DCI, UHD, HD and SD standards over 12G-SDI.
- Automatic video standard and format detection
- Audio ports can be individually configured as inputs or outputs
- Existing embedded audio can be de-embedded
- Delete, replace or shuffle existing embedded audio
- Mono audio crossbar
- Audio processing (mono gain, test tone, mute, phase invert, mix, overload and silence detection)
- Video delay of up to 30 frames in steps of frames, lines, and pixels
- Audio delay up to 10s in steps of audio samples
- Embedded audio group selection
- Embedding into test pattern output video frame with no SDI input signal
- Selectable Horizontal and Vertical Video Blanking
- Optional optical SDI interface (RX and/or TX)

Functional Diagram



Supported Video Input Standards

Input Video Formats

The module has one multi-format serial digital input with automatic input detection. The module will detect the following input standards and configure the input stage automatically for operation in the connected format.

Currently this module supports 4:2:2 YCbCr 10bit signals.

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
SMPTE 2081 (6G-SDI)	2160p	25	29.97	30					
SMPTE 2082 (12G-SDI)	2160p				47.95	48	50	59.94	60

Output Video Formats

Output Video Formats are identical to Input Video Formats.

Video and Audio Delay

The SDI output signal can be delayed up to 30 frames in steps of frames, lines and pixels. This user delay effectively modifies the total processing time of the device (input to output).

Audio content can also be adjusted independently from the video content. The audio delay is always about the video delay and can be negative to the video, depending on the video delay.

Audio Processing

The module will de-embed the complete audio payload from the incoming SDI stream (4 AES groups = 8 AES streams = 16 mono channels), and passed to the AES audio processing infrastructure, along with up to 8 external AES inputs.

The type of audio (PCM, Audio Data) is detected by the module automatically.

PCM Audio will be free from any audio interference ("pops and clicks") when frames are dropped or repeated by the frame synchronizer.

Audio Embedding with no Video Input

With no SDI signal connected the module will switch to the last connected video standard (default) and will produce a test pattern video output with the audio embedded.

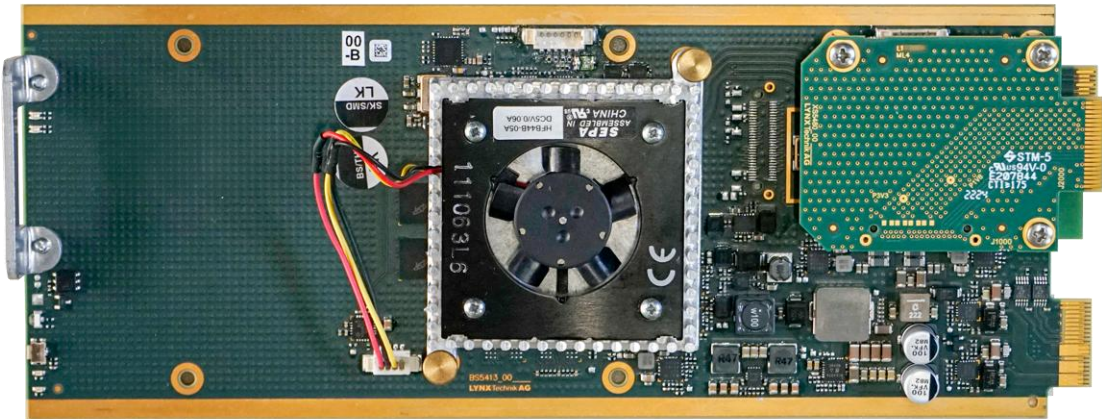
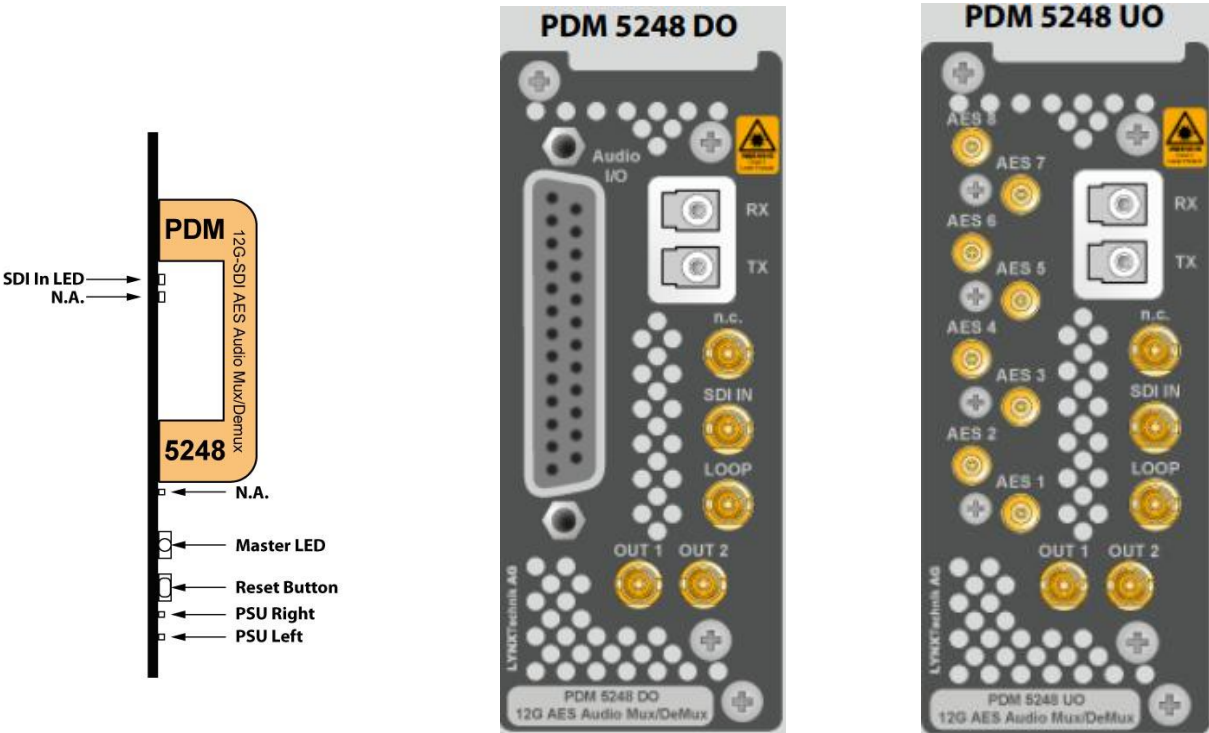
The test pattern can be selected using the LynxCentraal Control system.

NOTE: *It is possible to disable this automatic generation of an output SDI signal. When this function is disabled, and no SDI input is connected, the SDI output will not generate any signal at all.*

If used in standalone mode with no SDI input connected, the output standard can be changed from default, so that it generates a free-running SDI stream in any standard. If the SDI video input is removed during operation, then the embedder will continue to embed audio into a test pattern video frame in the selected format until the video input is restored.

NOTE: *The factory default setting is "default to the last connected video standard". This will be 1080i/50 for new modules when delivered from the factory. This can be cleared by connecting a different video input, or by selecting the required video format (using the selections provided).*

Module Layout



Connections

Video

The PDM 5248 uses standard 75 Ohm BNC connectors. We recommend the use of high-quality video cables for digital video connections to reduce the risk of errors due to excessive cable attenuation. The maximum cable lengths the module will support are shown below.

SDTV	250m	Belden 8281 (270Mbits/s)
HDTV	140m	Belden 1694A (1.4Gbits/s)
3GBit/s	80m	Belden 1694A (2.97Gbits/s)
12GBit/s	50m	Belden 4794-R (11.88Gbits/s)

Audio

The module provides for both Unbalanced (AES3id on MINI DIN connectors) and Balanced (AES3) external audio connections.

The PDM 5248 UO versions provide Mini-DIN (DIN1.0/2.3) connections for unbalanced AES3id

The PDM 5248 DO versions provide a D-Sub 25 connector for balanced AES3

Pin Number	Connection	Pin Number	Connection
1	AES 8 +	14	AES 8 -
2	AES 8 GND	15	AES 7 +
3	AES 7 -	16	AES 7 GND
4	AES 6 +	17	AES 6 -
5	AES 6 GND	18	AES 5 +
6	AES 5 -	19	AES 5 GND
7	AES 4 +	20	AES 4 -
8	AES 4 GND	21	AES 3 +
9	AES 3 -	22	AES 3 GND
10	AES 2 +	23	AES 2 -
11	AES 2 GND	24	AES 1 +
12	AES 1 -	25	AES 1 GND
13	n.c.		

It is recommended to use a high-quality screened (twisted pair) cable for balanced audio connections. LYNX Technik provides optional audio breakout cables which will bring out all audio connections to in-line XLR connectors. Model number RAC M 25-8 or RAC F 25-8

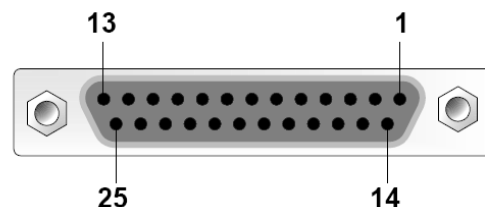


Figure 1: SubD25 Audio connector
(looking into connector from back of module)

Optional Fiber

The PDM 5248 UO/DO can be mounted with an optional fiber SFP. A wide range of SFPs can be purchased to match the fiber connectivity and requirements of the installation.

Multimode fiber cables can be used but will limit the maximum fiber length to approximatively 1km.

NOTE: Please take care that the surfaces of fiber cables and LC connectors are always protected against scratching and dust if fiber cables are connected. Dust and/or scratches will lead to high attenuation of the optical power transmitted.



Installation

If this module was supplied as part of a system, it is already installed in the rack enclosure. If the module was supplied as a field upgrade, please follow the installation procedure below.

Note: Observe static precautions when handling the card. Please see ESD warnings on Page 7.

This module has a single-width rear connection panel, it will occupy one slot of a standard Series 5000 Card Rack. This is to accommodate the additional connections needed for this module and to provide adequate space for cooling in the rack. Up to ten PVD 5400 modules can be accommodated in a single Series 5000 rack frame.

Note: When using this module, the RFR 5018 Fan Front Rack Frame should be used, which provides additional airflow into the rack.

Each Card Module is supplied with a rear connection panel and mounting screws. Please follow the procedure below for the installation of the card module into the Series 5000 Card Frame.

We recommend you power the rack down before installing any additional modules into an existing card frame.

1. Select a free slot space in the card frame where the CardModule will be located.
2. Remove the blank connection panels from the rear of the rack (if fitted)
3. Install the rear connection panel using the screws supplied. Do not tighten the screws fully
4. Slide the card module into the card frame and carefully check the CardModule connects to the rear connection plate. The card should fit easily and should not require excessive force to insert - if you feel any resistance, there could be something wrong with the rear connection panel location. **Do not** try and force the connection to damage the connectors. Remove the rear connection panel and check alignment with the CardModule.
5. Insert and remove the CardModule a few times to ensure correct alignment and then tighten the two screws to secure the rear connection plate.

6. Power up the rack and check the module LED's illumination. Check the module is automatically logged into the control system device tree
(It may take a few seconds for the control system to "discover" the new module)

Note: The use of the optional control system is mandatory for the control and setup of this module. If you do not have the control system, then please contact your LYNX representative for details on how to upgrade your installation with the LYNX control system.

Settings and Control

The PDM 5248 UO/DO has an integrated microcontroller, which enables the modules to be configured and controlled via remote when using one of the optional controllers and control software.

Once set, all settings are automatically saved in non-volatile internal memory. (Flash RAM) The module will always recall the settings used before power down.

Auto Store

If no parameters are changed for 10 seconds, then the current settings will be written into the flash memory automatically. This can be seen by the channel status LEDs flashing yellow three times.

Reset Button

If this button is pressed for 5 seconds all parameters will be reset to their factory default settings. To confirm this reset, the device will blink all LEDs once (OFF – ON – OFF) and then return to their normal state.

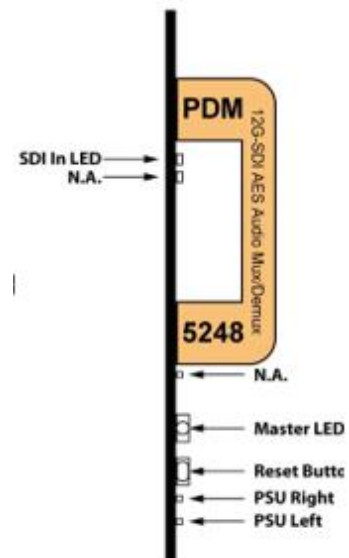
Alarm/LED Status Indicators

LED 1: SDI In Status

LED Color		Indication
Green	●	SDI input ok
Yellow	●	SDI ok but unsupported standard (no embedding takes place)
Red	●	SDI input missing

LED 2: Master LED

LED Color		Indication
Green	●	All used audio inputs present and ok
Red	●	- Over Temperature - Fan failure - Wrong backplane

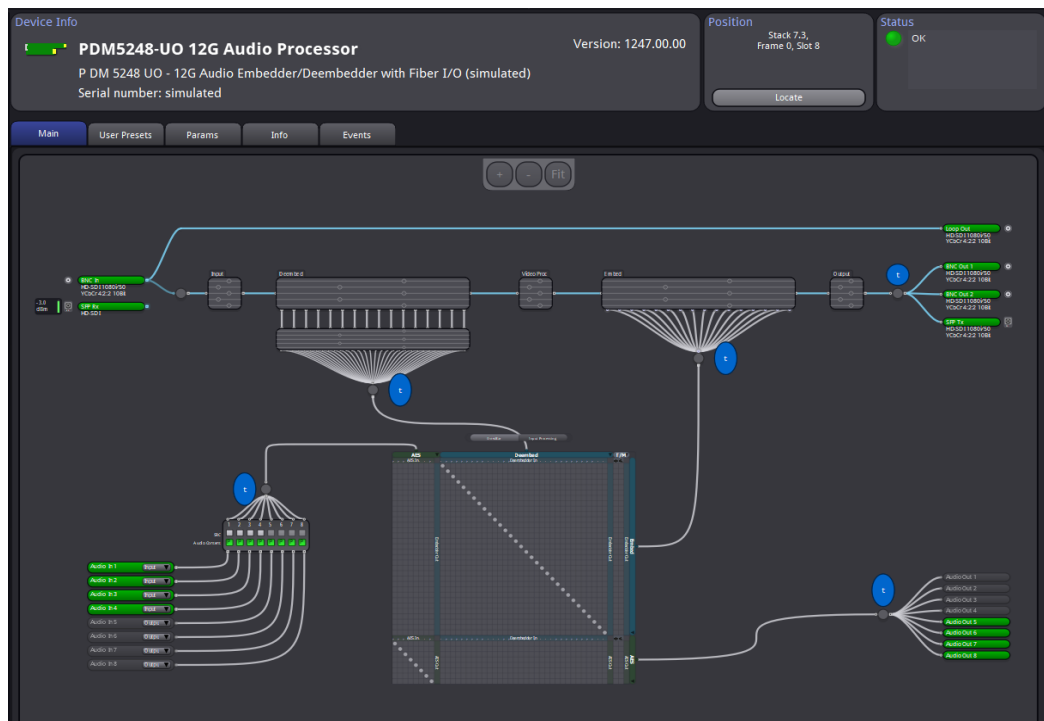


PSU LEDs

Power 1		Indication
Green	●	Power from Main PSU ok
Off	●	No power from Main Power Supply
Power 2		Indication
Green	●	Power from Redundant PSU ok
Off	●	No power from Redundant PSU
Blinking yellow	●	Local control via DIP switches active, all settings according to local DIP switches

NOTE: If one of the Power LEDs should be OFF while the corresponding PSU is working correctly, then please contact technical support for a verification of the board's power input fuse.

Control System GUI



All LYNX CardModules supports a computer interface that allows setting the module parameters using a simple GUI interface. Access to all standard features and in some cases extended features is possible using this interface. The complex nature and extensive user settings provided on the PDM 5248 require the use of the LynxCentraal control system.

Note: All settings are stored in an internal flash RAM and will survive power cycles and long-term storage.

Above is the complete module GUI. The “Device Info” area across the top contains information about the module including name and firmware revision. The “Position” area displays the module's position and physical location. This is useful if the device is installed as part of a larger installation.

NOTE: The Locate button (in the “Position” area) is a useful tool to quickly identify a module in larger systems. Activating “Locate” will flash the module's alarm LED in yellow color. (this does not affect the module's operation in any way). This function will be stopped automatically (timeout).

Overview

The MAIN Tab visualizes the module's functionality. The audio and video signals are presented flowing from left to right. Selections are made using onscreen sliders, radio buttons, drop-down selections and checkboxes. The screen can be zoomed in/out using the mouse wheel or the navigation tool in the top corner of the Main Tab. When zooming closer, the contents of the individual boxes will become visible.

Video Path

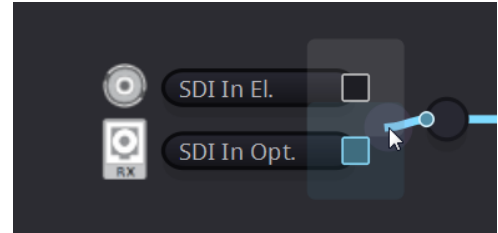
The SDI video input on the left can be selected from the electrical (SDI) or the optical (SFP) input. Only one of these two inputs can be used at any one time.

The chosen SDI input delivers its signal first to an Audio De-Embedder (for extraction of all contained audio channels).

The Auto-Test pattern section defines if a generated test image shall be generated on the output when no SDI input can be detected. If enabled, this test pattern will be generated in the same standard that was last detected on the SDI input. The generated standard can, however, be modified here.

NOTE: The standard of the generated SDI output can only be modified while there is NO current SDI input detected. Furthermore: as soon as a valid SDI input is detected, this setting will automatically fall back to the default setting "follow (last) input".

The Embedder will embed the specified groups into the SDI output stream, replacing an existing Audio Group, if already present. The resulting output SDI stream is available on both an electrical (BNC) as well as an optical (SFP) connector, if available.



Audio Routing

All 8 AES channels are de-embedded from the SDI input. In addition, up to 8 external AES inputs can be used. This makes a total of up to 16 AES inputs that can be processed and then assigned to any one of the outputs (SDI embedder and up to 8 external AES outputs). Further details can be found in the following sections.

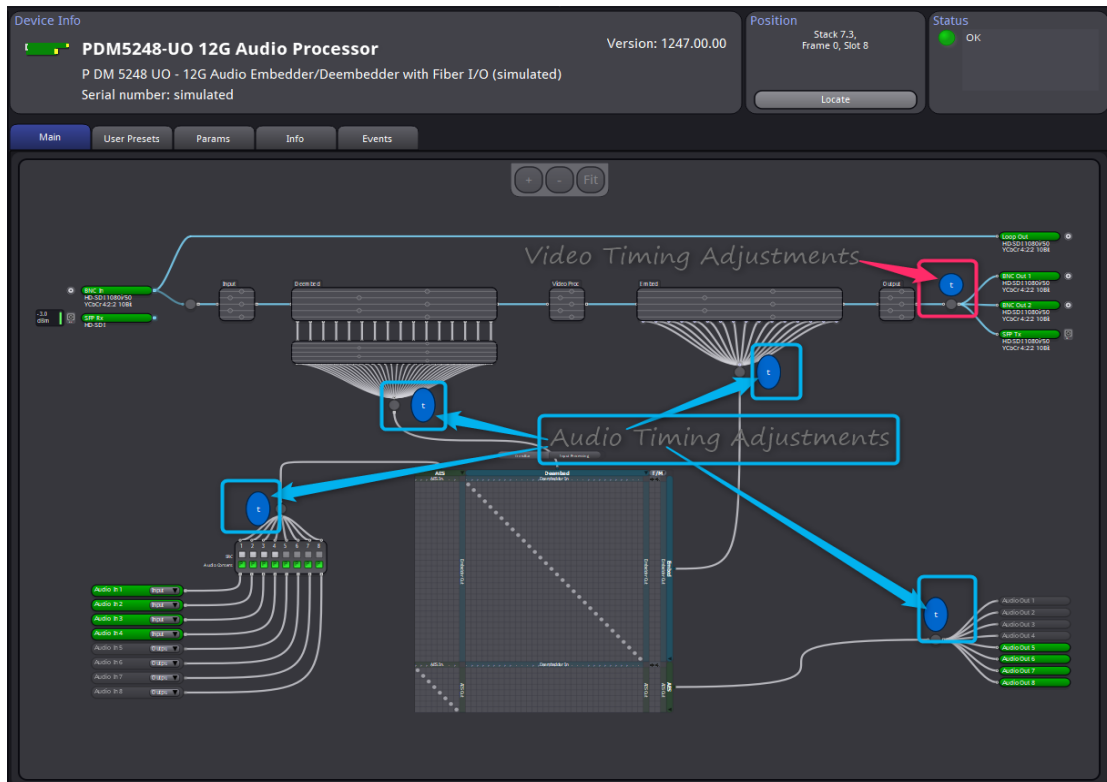
NOTE: There are a total of 8 external AES ports. Each of the ports can be configured to be an input or an output port.

flexGUI path highlighting and signal patching

The flexGUI shows all current signal connections as lines (i.e. it does not show any signal lines that are unused dead ends). Hovering the mouse pointer over any such signal line will highlight the complete signal path that leads to this point. This illustrates clearly where the signal is coming from. Similarly, the downstream path is highlighted to show where this signal is going.

To re-connect a signal (change the routing) you can think of a signal line as a patch cable that has to be connected to the desired source. Hovering the mouse pointer over a flexible signal will show a handle. Grab the handle (click-and-hold) with the left mouse button and drag and drop it to the new desired source. More details are shown below.

Timing and Delays



Different internal processing paths for audio and video signals require different internal processing times. Independently from these internal processing delays, a sophisticated algorithm will make sure that all signals that are received on the input will be delivered from the outputs in the same relative timing.

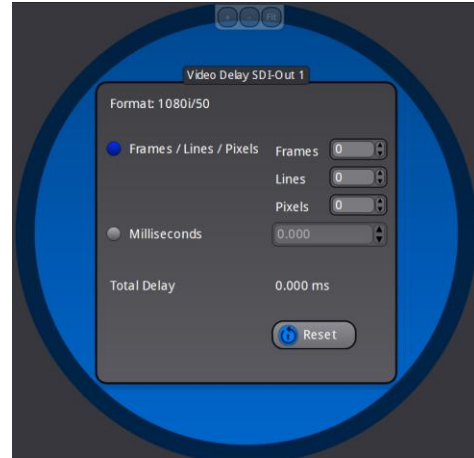
As an example, embedded audio streams, which are separated from the video by the audio-de-embedder near the input, and which are then routed on internal channels that are independent and separate from the video infrastructure, will be embedded back into the video after they have been timing-adjusted to match the processing delay of the video path.

Video Timing Adjustments

By default, the video output is set to “Frame Delay Mode”, which means that the SDI stream is delivered with a correct H/V alignment relative to the SDI input. Alternatively, the device can be configured to work in “Minimum Delay Mode”. In this case, the total processing time through the device will be reduced to a few lines of video. Consequently, the SDI output will NOT be vertically aligned with the SDI input.

An additional manual User Delay can be applied to the SDI output, offering an additional delay of up to a maximum of 30 additional video frames. This manual user video delay is adjustable in one of two dimensions:

- User Delay in Frames, Lines, Pixels.
The equivalent number of Milliseconds will be calculated (depending on the current video standard) and displayed as a read-only value.
- User Delay in Milliseconds.
The equivalent number of Frames, Lines and Pixels will be calculated (depending on the current video standard) and displayed as read-only values.



When the current video standard changes (e.g. because a different source signal is detected at the input), then the manual delay settings in the current dimensions are kept constant, while the corresponding other dimension might change their current values (depending on the current video standard).

NOTE: Adjusting the Video Output delay always delays embedded audio content together with the video content. It is NOT possible to influence the relative timing between audio and video contents with these controls. Relative audio-video timing (aka lip-sync) can only be influenced while audio and video are kept on independent paths. See "Audio Timing Adjustments" below.

Audio Timing Adjustments

Audio signals are, by default, processed as fast as possible. The minimum processing delay across the complete internal infrastructure is approx. 3ms. When an individual audio signal is embedded into the SDI output stream, then the audio content is implicitly delayed by the appropriate amount of time, so that the relative timing (lip-sync) between the affected audio and video content on the input (as these signals reached the device) is replicated on the output.

Additional User Audio Delay can be applied to any internal audio stream. This can be used to correct mismatched audio timing (lip-sync), e.g. by delaying an early-audio signal by the appropriate number of milliseconds (i.e. when the video is later than the audio). Such user delay will simply be added to the internal audio delay that is applied anyway "under the hood" (to compensate for video processing, see above).

Even a late-audio situation (when video is earlier than audio) can be corrected by entering negative values as user audio delay. These negative values will then be subtracted from the internal audio compensation delay (see above).

Input vs. Output Delay

User Audio Delay values can be manipulated in the context of Audio Inputs (next to the Audio Inputs on the left side of the GUI) as well as the Audio Outputs (audio destinations on the right side of the GUI). Technically, there is no difference between these two locations. Internally, both values will be added up, and the resulting total delay will be applied (i.e. it makes no difference if a signal is delayed in the context of the input or the output, or even both). The main difference is the presence of the audio crossbar between those two locations.

The general recommendation is to correct for input-related timing problems with the controls that are located at the inputs. And output-related timing adjustments (e.g.

compensating for a problem downstream) shall be corrected with the output-related controls. Following this rule will make it easy to operate the audio crossbars later, without having to re-adjust the timing compensation afterwards.

NOTE: The PDM 5248 provides the tools to correct a timing problem in audio-video (lip-sync) relations. The measurement or verification of such lip-sync problems must be done by use of external equipment.

Audio Infrastructure

The complete audio payload of 32 AES is de-embedded from the SDI input stream. In addition, up to 8 external AES inputs can be applied to the module. All AES streams are supplied to the internal audio processing path.

Phase Aligned De-Embedding

The SDI Audio De-Embedder de-embeds all the embedded audio groups simultaneously. When the de-embedder detects a new SDI stream (e.g. after connecting the signal or after a change of video standard), the de-embedding process starts for all groups, and all groups will be de-embedded with correct phase alignment between all channels.

There is, however, a particular situation in which a phase-aligned de-embedding across all de-embedded groups is NOT guaranteed by default: Consider the following scenario:

1. SDI contains audio groups 1 and 2 (audio groups 3 and 4 are not present in the SDI stream). Both groups are de-embedded with a correct phase alignment between all AES streams.
2. While the SDI stream is being received without interruption, audio group 3 is added by the upstream embedder, i.e. the HANC content is re-arranged dynamically, and another additional audio group appears, which was not present initially.
3. The SDI Audio De-Embedder will start to de-embed the content of the additional group and deliver the AES content, as usual. The content of new group 3 is not guaranteed to be phase-aligned with the content of groups 1 and 2 (which were already there).

If the content of the HANC space is re-arranged to accommodate an additional audio group while other audio groups remain present, the additional groups are, by default, not guaranteed to be de-embedded phase-aligned to the previous content.

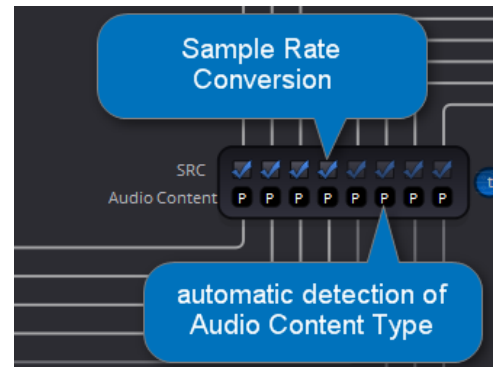
Such phase-aligned de-embedding can optionally be guaranteed, even in the above case. This can be achieved by enabling the Parameter "DeembPhaseSync" on the "Params" tab. Therefore, all de-embedding will be re-initialized on a re-arrangement of the HANC content. In the above scenario, there would be an audible disturbance in the contents of groups 1 and 2 when group 3 appears in the HANC.

NOTE: The Params-Tab contains another parameter with a similar name: "DeembPhaseSyncVerify*". This parameter is ON by default, and it guarantees phase alignment within a stereo-pair. This is not the same as guaranteeing phase alignment across groups, as explained above.

Audio Content Detection

For every input AES channel, the content type is automatically detected and displayed in the LynxCentraal by a single upper-case Letter. The following indications are supported:

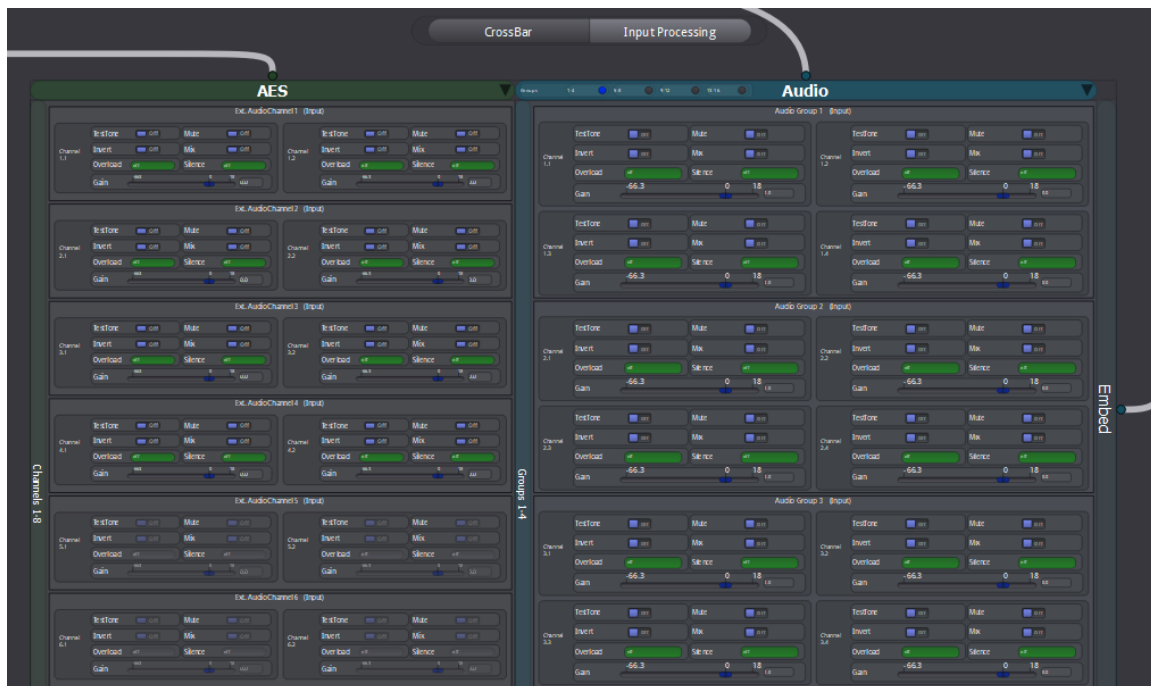
- P** PCM stream (transparent stereo)
- E** DolbyE encoded stream
- D** Other encoded data (e.g. AC-3)
- <none>** If no letter is displayed at all, then this AES channel does not currently carry any data.



NOTE: Automatic Content Detection can be overwritten by manual decision (click on the box with the letter 'P'). This is, however, only recommended for testing purposes. I.e. to achieve the best possible signal integrity, it is strongly recommended to leave the Content Detection algorithm in "automatic" mode.

Audio Processing

The Audio Processing block provides access to detailed audio processing functionality. The following functions are available per mono-channel.

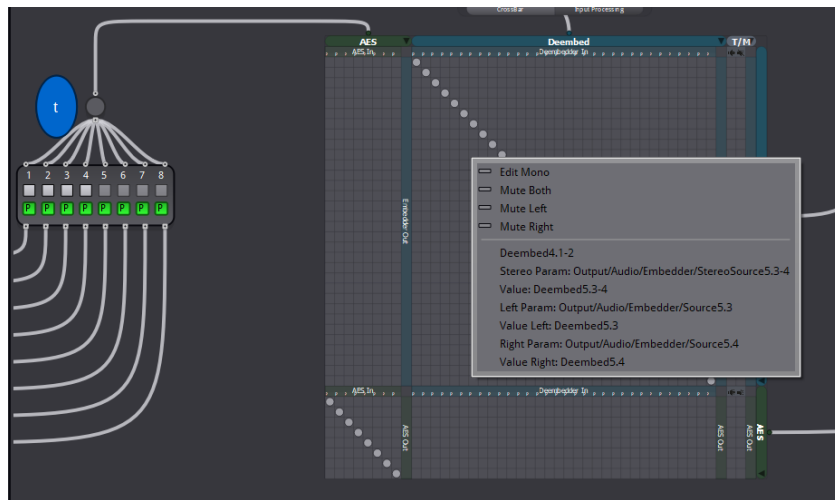


- | | |
|-----------------|---|
| Gain Adjustment | [-66.3dB ... +18dB] |
| Mute | [on / off] |
| Mono Downmix | per output mono-channel: enable the addition of the other (sibling) mono-channel as a simple (a+b)/2 downmix. |

- Over level Detection a yellow warning indication will be displayed if the signal content reaches the potential digital clipping (code values reach 0xFFFF).
- Silence Detection a yellow warning indication will be displayed if the signal content is detected as silent (<60dB) for more than 10 sec)
- Test Tone A 1000 Hz Test Tone can be generated and applied to both mono channels at the same time. If enabled, the AES input stream is ignored and NOT delivered at the output.

NOTE: All AES processing is automatically disabled (neutralized) when the content type is NOT PCM audio.

You can also mute single audio channels by using the corresponding function in the pop-up menu.



Embedder

All four embedded audio groups can be re-embedded into the SDI output. An existing embedded group can also be removed from the SDI stream, even without embedding anything. (Re-) embedding a group will implicitly remove this same group from the input SDI stream, if applicable.

An embedded audio group can only be embedded as a complete group containing two AES streams. If you want to replace only one out of the two AES streams in the SDI, you need to feed the other AES stream from the De-embedder (on the left) through the audio-processing block and the output crossbar to the Embedder and re-embed it together with that other (new) AES content into the same group. This will, technically, replace the complete embedded group in the SDI stream.

Embedding audio for 4K DCI, UHD and HD into a 12G-SDI or 3G-SDI stream will always be done in 24-bit resolution. When embedding SD into 1,5G-SDI, 24-bit embedding is activated by default but can be de-activated (reducing the embedding to 20-bit). This may be required to satisfy some non-standard-compliant SDI de-embedder.

AES Port Setup

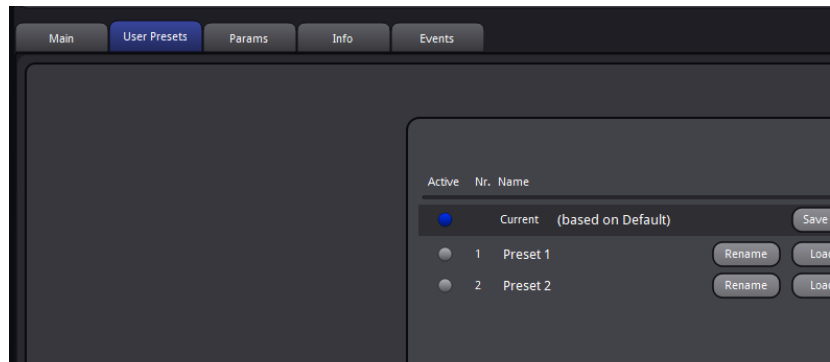
The PDM 5248 provides a total of 8 external AES ports. Each of these ports can be configured to be an AES input (receiver) or an AES output (source). By default, i.e. when delivered from the factory, AES ports 1 through 4 are configured as AES inputs, while AES ports 5 through 8 are configured as outputs.

This default port configuration can be modified at any time. An explicit unlocking of these configuration switches is required to prevent accidental changes to these fundamental configuration settings.

A modified AES port configuration will NOT be reset by a “Reset to Factory Default” operation.

NOTE: Please make sure NOT to configure an AES port as an output, while an external signal source might send a signal into that port. This misconfiguration might potentially result in permanent damage to hardware components.

User Presets



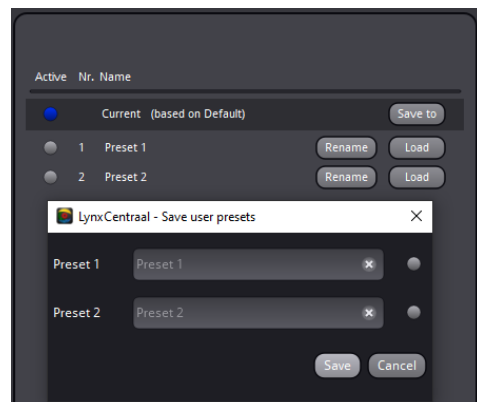
The User Presets Tab provides the ability to store and recall two different sets of User Presets. Each such User Preset contains a current value for all settings (parameters) of the complete device. Restoring a User Preset means applying these current values to all parameters at once. i.e. it is not possible to restore a User Preset and thereby modify only a subset of the internal parameters.

All User Presets are stored in on-board flash-RAM, where they are preserved even during long periods of no power supply.

Saving a User Preset

The current configuration of the complete device is stored in one of the User Presets by following these steps:

1. On the “User Presets” Tab, click the button “Save To” to open the dialog box.
2. Select one of the User Preset slots (click the button to the right). Optionally: rename the User Preset. (max 8 characters).
3. Click “Save”



Loading a User Preset

An existing User Preset can be restored into the Current Settings of the complete device by following these steps:

1. On the “User Presets” Tab, click the “Load ...” button next to the User Preset.
2. In the next dialog, confirm that this is what you want.

Device Event Tab

The Events Tab is where the module alarm and error notifications are configured for the module. Any of the possible Events that the device can generate can be disabled here, which will declare such Events as irrelevant. Once an Event has been disabled in this Events-Tag, the Event will not be reported to LynxCentraal, it will not be logged in the logfiles, and it will not even influence the local LEDs of the device.

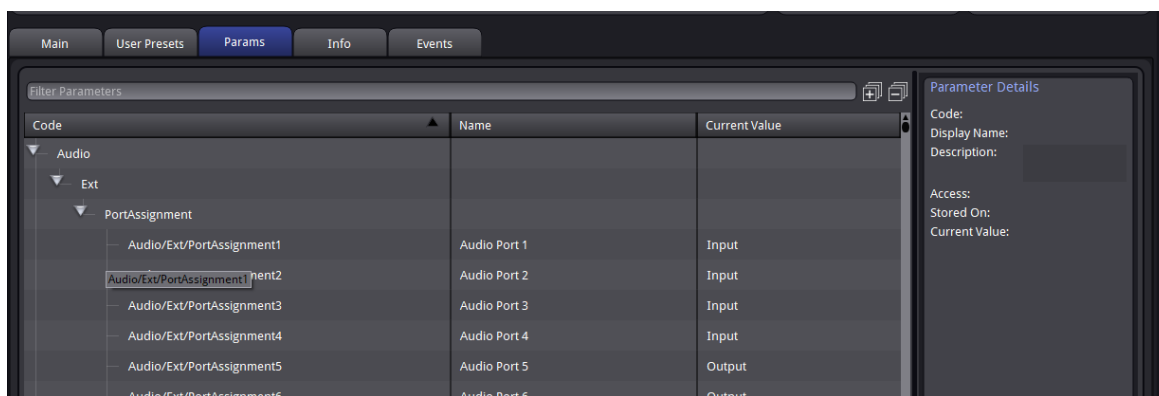
For all Events that are enabled (which is the default): as soon as the monitored condition becomes critical (e.g. input signal lost), the Event becomes ACTIVE. This change of state generates a message in LynxCentraal. This message is stored in the APPolo Server logfile. Later, when the condition is not critical anymore (e.g. input signal present again), another message is logged in the LynxCentraal Event System and saved in the logfile.

Additionally, these messages can be displayed in the APPolo GUI’s Event Log (bottom part of LynxCentraal, enabled from the “View” menu). However, this can be disabled by removing the checkboxes from the “Log in GUI” columns (separately for “Event becomes Active” and “Event not active anymore” messages).

Similarly, an SNMP trap can be generated from the APPolo Server for any message in the APPolo Event System. Refer to the LYNX Remote Control Guide for more information on SNMP.

Parameters

The “Params” tab lists all available control parameters of the complete device. Every switch and function in any other part of the GUI is just a graphical control of a parameter listed on this page. There are, however, several parameters for more detailed control that are only accessible in this list of parameters on the “Params” tab.



All parameters are defined by the following aspects:

- **Code:** This is a unique code to identify the parameter. The Code can contain the slash-character '/', to provide some structure to the total collection of parameters. The Parameter Code is always to be specified as the complete text string (i.e. including all slashes).
- **Name:** a human-readable short parameter name, which is used as the default text label in most parts of the GUI, as well as in any CustomControl Panel.
- **Access:** read-write or read-only accessibility. Note that for some parameters, the accessibility status may potentially change, depending on the current value of other parameters. E.g. the value of parameter A might be controlled automatically by default, so the accessibility of A will be displayed as "read-only". However, a Boolean parameter B might be provided to switch off the automatic behavior. So, when parameter B is set to MANUAL, then parameter A would dynamically change to "read-write".
- **Current Value:** This is the current value of the parameter. If Accessibility is "read-write" (see above), then the Current Value can be modified.
- **Description:** a textual explanation of the behavior of the individual parameter.

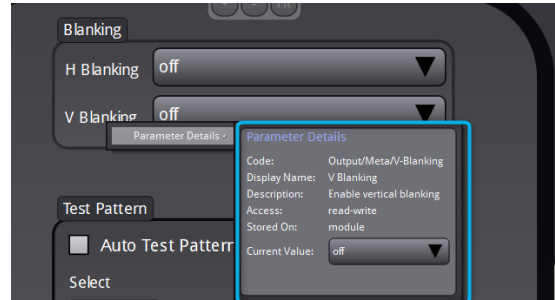
Based on textual filtering, you can use the "Filter" function (located above the actual list of parameters) to show only a subset of the complete list. The filter will search in any part of the parameter definition, including the parameter code, the textual description and even the Current Value.

All Control is through Parameters

As stated above, the complete behavior of any LYNX Device can be controlled and monitored through the parameters listed on the "Params" tab. All other parts of the LYNX APPolo Control System use this parameter to access any aspect of the device.

- The LYNX CustomControl feature connects the individual elements of a custom-made Design to real device parameters by their Code.
- The LYNX AutoControl automation rules access the individual Parameters (for both Conditions and Actions) by their Code.
- The LYNX Remote API addresses individual Parameters by Code.
See <https://support.lynx-technik.com/support/solutions/articles/1000037159-appolo-controlsystem-quickstart-guide> for details.
- The LYNX SNMP Control provides one OID (numerical address in the MIB) per individual Parameters. The exact mapping of the Parameter Code to OID is provided in the MIB files. See <https://support.lynx-technik.com/support/solutions/articles/1000037159-appolo-controlsystem-quickstart-guide> for details.

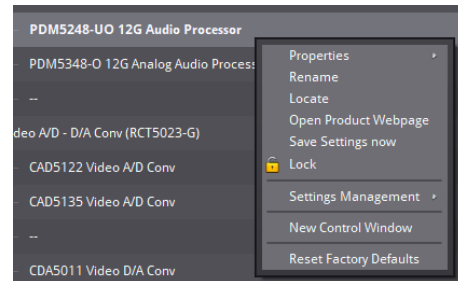
Finding the Parameter Code name for a given Parameter in the graphical GUI is made easy by clicking the Right-Mouse-Button on the graphical control anywhere in the GUI and then selecting the “Parameter Details” option.



General GUI functions

There are several functions and commands of the LynxCentral Control System which are common for all LYNX devices.

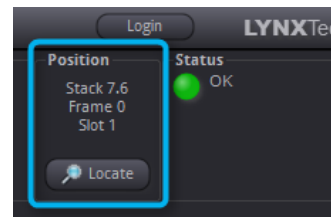
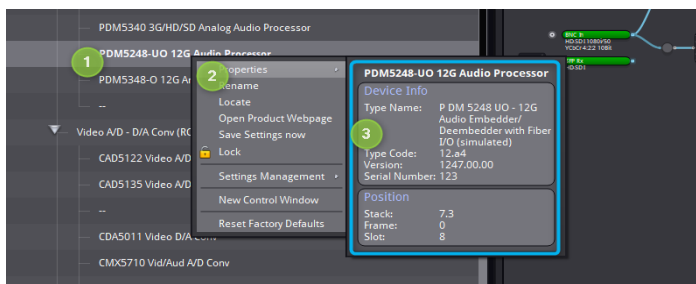
A click with the Right-Mouse-Button on any module in the Device Tree will generate the same menu that is available from the “Device” menu. This menu provides the following options:



Device Properties

The first entry in the Device menu opens a sub-menu page that shows the device-specific properties of the selected module.

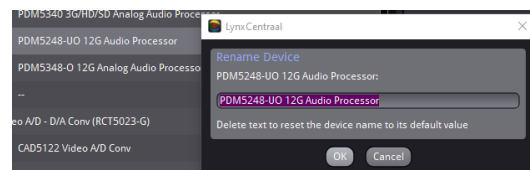
Locate



This function is useful if you need to physically locate a module in a larger system quickly (for removal or maintenance purposes) When Locate is selected this will flash the module alarm LED yellow. This function does not impact normal module operation and will timeout after a short period.

New Control Window

Selecting this option will open a separate GUI window showing just the controls for the current module. This new window can be used to arrange multiple devices on your desktop or similar.



Rename

It is possible to rename individual items (RackFrames and individual devices) in the APPolo Device Tree. The default name of a device is the LYNX product name. This name can be modified at any time. The original (default) name can be restored by simply removing the custom name from that renaming field (save this as an empty name).

NOTE: The names are stored inside the flash memory of a LYNX server (if installed) or the hard disk of the connected Computer respectively.

Save Settings Now

Any modification to any parameter of a device is immediately propagated from LynxCentraal to the hardware device (card) and made effective. The current settings are saved in the local Flash RAM of the device so that the device will continue to work in the same configuration after a power cycle. But to reduce the number of write-operations on the physical Flash RAM, the actual storage of a modified configuration into the Flash RAM is only executed approximately 10 seconds after the last change to any setting in the whole card. This operation is visualized on the board by all local LEDs flashing three times in yellow color.

Consequently, if you remove a card from a system BEFORE the last changes have been saved to Flash RAM, those last changes will not be available on the next power-up.

The "Save Settings Now" operation in this menu can force the current configuration of this device to be stored in the local Flash RAM now. If in doubt, this function should be executed before a device is physically removed from the system, or before electrical power is shut down.

Lock

Selecting this will lock the device to prevent any accidental changes from being made to the module settings. The module status can be seen but all the controls will be grayed out. To unlock simply deselect the lock control from the menu.

Reset Factory Defaults

Executing this function will reset all the individual settings of all parameters of the device back to the predefined state that has been defined by the manufacturer. All custom adaptations will be lost. This operation cannot be undone.

Settings Management

The complete current configuration of one device can be copied into an internal "clipboard" and pasted onto a different device of the same type. Alternatively, the complete current configuration can be stored in a local file (as a very simple single-device backup).

Service

Parts List

Due to the very dense design and high level of integration there the module is not user serviceable. Please contact LYNX for repairs or to request an exchange unit.

There is one consumable part used on this module which is the cooling fan. A service kit is available to exchange the fan. Ordering information below.

Part type: **Cooling Fan Service Kit Series 5000 CardModules**

Technical Support

If you are experiencing problems, or have questions please contact your local distributor for further assistance.

Technical support is also available from our website.

www.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:

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.

Address LYNX Technik AG
Brunnenweg 3
D-64331 Weiterstadt
Germany

Website www.lynx-technik.com

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.