Synapse

GMA100/110/120/130/140
HMA100/110/120/130/140

Dual 3Gb/s, HD, SD embedded domain shuffler with MADI I/O and analog or digital audio I/O

Installation and Operation manual

3 TRIPLE RATE Gb/s, HD, SD

Upgradable to 3Gb/s

Powered by LINUX

Quad speed MASTER

AXON®
THE HEART OF BROADCAST

Synapse

TECHNICAL MANUAL

GMA100/110/120/130/140
HMA100/110/120/130/140

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WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

● ALWAYS disconnect your entire system from the AC mains before cleaning any component. The product frame (SFR18 or SFR04) must be terminated with three-conductor AC mains power cord that includes an earth ground connection. To prevent shock hazard, all three connections must always be used.
● NEVER use flammable or combustible chemicals for cleaning components.
● NEVER operate this product if any cover is removed.
● NEVER wet the inside of this product with any liquid.
● NEVER pour or spill liquids directly onto this unit.
● NEVER block airflow through ventilation slots.
● NEVER bypass any fuse.
● NEVER replace any fuse with a value or type other than those specified.
● NEVER attempt to repair this product. If a problem occurs, contact your local Axon distributor.
● NEVER expose this product to extremely high or low temperatures.
● NEVER operate this product in an explosive atmosphere.

Warranty: Axon warrants their products according to the warranty policy as described in the general terms. That means that Axon Digital Design BV can only warrant the products as long as the serial numbers are not removed.

Date created: 22-07-2015
Date last revised: 06-10-2015

This product complies with the requirements of the product family standards for audio, video, audio-visual entertainment lighting control apparatus for professional use as mentioned below.

EN60950	Safety
EN55103-1: 1996	Emission
EN55103-2: 1996	Immunity

Axon Digital Design
GMA100/110/120/130/140
HMA100/110/120/130/140

Tested To Comply With FCC Standards

FOR HOME OR OFFICE USE

This device complies with part 15 of the FCC Rules
Operation is subject to the following two conditions:
(1) This device may cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.

Table of Contents

1 Introduction to Synapse

An Introduction to Synapse

Synapse is a modular system designed for the broadcast industry. High density, intuitive operation and high quality processing are key features of this system. Synapse offers a full range of converters and processing modules. Please visit the AXON Digital Design Website at www.axon.tv to obtain the latest information on our new products and updates.

Local Control Panel

The local control panel gives access to all adjustable parameters and provides status information for any of the cards in the Synapse frame, including the Synapse rack controller. The local control panel is also used to back-up and restore card settings. Please refer to the RRC18, RRC10, RRC04, RRS18 and RRS04 manuals for a detailed description of the local control panel, the way to set-up remote control over IP and for frame related settings and status information.

Remote Control Capabilities

The remote control options are explained in the rack controller (RRCxx/ RRSxx/ERCxx/ERSxx) manuals. The method of connection to a computer using Ethernet is described in these RC/RRS manual.

! **CHECK-OUT:** "AXON CORTEX" SOFTWARE WILL INCREASE SYSTEM FLEXIBILITY OF ONE OR MORE SYNAPSE FRAMES

Although not required to use Cortex with a Synapse frame, you are strongly advised to use a remote personal computer or laptop PC with Axon Cortex installed, as this increases the ease of use and understanding of the modules.

2 Unpacking and Placement

Unpacking

The Axon Synapse card must be unpacked in an anti-static environment. Care must be taken NOT to touch components on the card – always handle the card carefully by the edges. The card must be stored and shipped in anti-static packaging. Ensuring that these precautions are followed will prevent premature failure from components mounted on the board.

Placing the card

The Synapse card can be placed vertically in an SFR18 frame or horizontally in an SFR04 and SFR08 frame. Locate the two guide slots to be used, slide in the mounted circuit board, and push it firmly to locate the connectors.

Correct insertion of card is essential as a card that is not located properly may show valid indicators, but does not function correctly.

NOTE: On power up all LED's will light for a few seconds, this is the time it takes to initialise the card.

3 A Quick Start

When Powering-up

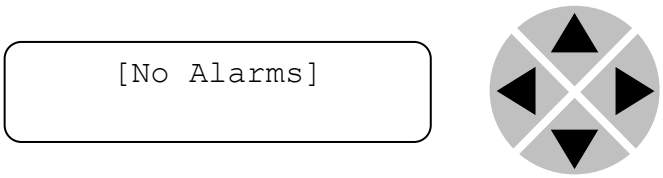
On powering up the Synapse frame, the card set will use basic data and default initialisation settings. All LED's will light during this process. After initialisation, several LED's will remain lit – the exact number and configuration is dependant upon the number of inputs connected and the status of the inputs.

Changing settings and parameters

The front panel controls or the Axon Cortex can be used to change settings. An overview of the settings can be found in chapter 5, 6 and 7 of this manual.

Front Panel Control

Front Panel Display and Cursor



Settings are displayed and changed as follows;

Use the cursor 'arrows' on the front panel to select the menu and parameter to be displayed and/or changed.

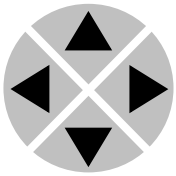
Pres ►	T go forward through the menu structure.
Press ◄	To go back through the menu structure.
Press ▲	To move up within a menu or increase the value of a parameter.
Press ▼	To move down through a menu or decrease the value of a parameter.

NOTE: Whilst editing a setting, pressing ► twice will reset the value to its default.

Example of changing parameters using front panel control

With the display as shown below

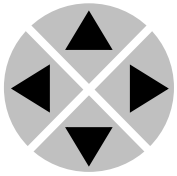
```
RRC18 [Select Card]
>S01=SFS10
```



Pressing the ► selects the SFS10 in frame slot 01.

The display changes to indicate that the SFS10 has been selected. In this example the `Settings` menu item is indicated.

```
SFS10 [Select Menu]
>Settings
```



Pressing the ► selects the menu item shown, in this example `Settings`.

(Pressing ▲ or ▼ will change to a different menu eg `Status, Events`).

The display changes to indicate that the SFS10 `Settings` menu item `SDI-Format` has been selected and shows that it current setting is `Auto`.

```
SFS10 [Settings]
>SDI-Format=Auto
```

Pressing the ► selects the settings item shown, in this example `SDI-Format`.

(Pressing ▲ or ▼ will change to a different setting, eg `Mode, H-Delay`).

The display changes to indicate that the SFS10 `Edit Setting` menu item `SDI-Format` has been selected.

```
SFS10 Edit Setting]
SDI-Format>Auto
```

To edit the setting of the menu item press ▲ or ▼.

All menu items can be monitored and/or changed in this way. Changing a setting has an immediate effect.

Axon Cortex Software

Axon Cortex can be used to change the settings of Synapse modules from a PC, either locally or remotely. The software enables communication based on TCP/IP between the Setup PC and Synapse frames/modules.

Each Synapse frame is addressed through its rack controller's unique IP address, giving access to each module, its menus and adjustment items. Axon Cortex has access to data contained within the Synapse module and displays it on a GUI. The software has an intuitive structure following that of the module that it is controlling.

For operation of Axon Cortex, please refer to the Cortex help files.

Menu Structure Example

Slot	Module		Item		Parameter		Setting
▲							
▲							
S02			Identity				
▲			▲				
S01	SFS10	►	Set-tings	►	Standard_dig	►	Auto
▼			▼		▼		▼
S00	RRC18		Status		Mode		625
			▼		▼		▼
			Events		Ref-Input		525
					▼		
					H-Delay		
					▼		
					▼		

NOTE: Further information about Front Panel Control and Axon Cortex can be obtained from the RRC/ RRS/ERC/ERS operational manuals and the Cortex help files.

4 The GMA100 Card

Introduction

The GMA100 is a dual SDI (up to 3Gb/s) embedded domain audio shuffler with a 64 channel MADI in and output.

The core of this card is a massive anything to anything shuffler/MUX. It allows for any available source to be placed on any available output. The total audio routing capability is a massive 136 channels to 136 channels.

The Quad Speed audio bus allows for implementation of 'in between' audio processing. So next to the massive shuffling we can add a Quad Speed ADD-ON card and allow for watermarking (DAW77/88/99), loudness control (DLA42/43) or additional AES/EBU I/O (DIO88)

There are five models identified in either 3Gb/s Video I/O (GMAxxx) or HD I/O (HMAxxx):
The GMA/HMA100 has only MADI I/O
The GMA/HMA110 has MADI I/O and 4 analog audio inputs
The GMA/HMA120 has MADI I/O and 4 analog audio outputs
The GMA/HMA130 has MADI I/O and 4 AES/EBU digital audio inputs
The GMA/HMA140 has MADI I/O and 4 AES/EBU digital audio inputs

Features

- MADI input (up to 64 channel)
- Dual MADI outputs (up to 64 channel each)
- Two MADI channels are bi-directional for future 128channel applications
- Additional MADI-I/O using an optional SFP-Fiber Transceiver Module
- 2 SDI (SD, HD and 3Gb/s) video inputs* (with auto switch on carrier loss, and switch back function)
- Dual SDI (SD, HD and 3Gb/s) video outputs
- 16 chn audio-embedders on each SDI video output (32 chn total)
- Compatible with the following input formats (auto selecting) (1080p only for GMA):
  - 1080p/59.94
  - 1080p/50
  - 1080i/59.94
  - 1080i/50
  - 1080p/29.97
  - 1080p25
  - 1080p(sf)/23.98
  - 720p/59.94
  - 720p50
  - SD525
  - SD625
- Video offset delay between 0 and 500ms per video output
- Quad Speed Audio ADD-ON bus for bidirectional audio processing (32 inputs & 32 outputs)
- 4 analog audio inputs (on G/HMA110)
- 4 analog audio outputs (on G/HMA120)
- 4 digital audio inputs (on G/HMA130)
- 4 digital audio outputs (on G/HMA140)
- Append and overwrite modes for audio embedders
- Audio level and phase control for the channels that enter the embedders

- Audio level and phase control for the channels that enter the local outputs
- Audio offset delay up to 5000 ms for the channels that enter the embedders
- Audio offset delay up to 5000 ms for the processed MADI outputs (controlled in groups of 8 channels)
- Peak detection 0dBFS
- Transparent for ATC time code RP188, RP196, RP215
- Locks to Tri-level, Bi-level syncs or input
- Full control and status monitoring through the front panel of the SFR04/SFR08/SFR18 frame and the Ethernet port (ACP)
- Optional 1 fiber in or output (replacing 1 SDI in or output) on the I/O panel
- Optional relay bypass (BHX18)

* (In dual or TWINS mode, the sources need to be running on the same clock, the phase is not critical)

Complementary cards:

- DLA41/42/43/44, DAW77/88/99 and DIO88 (plus all future quad speed audio ADD-ON cards)

Applications

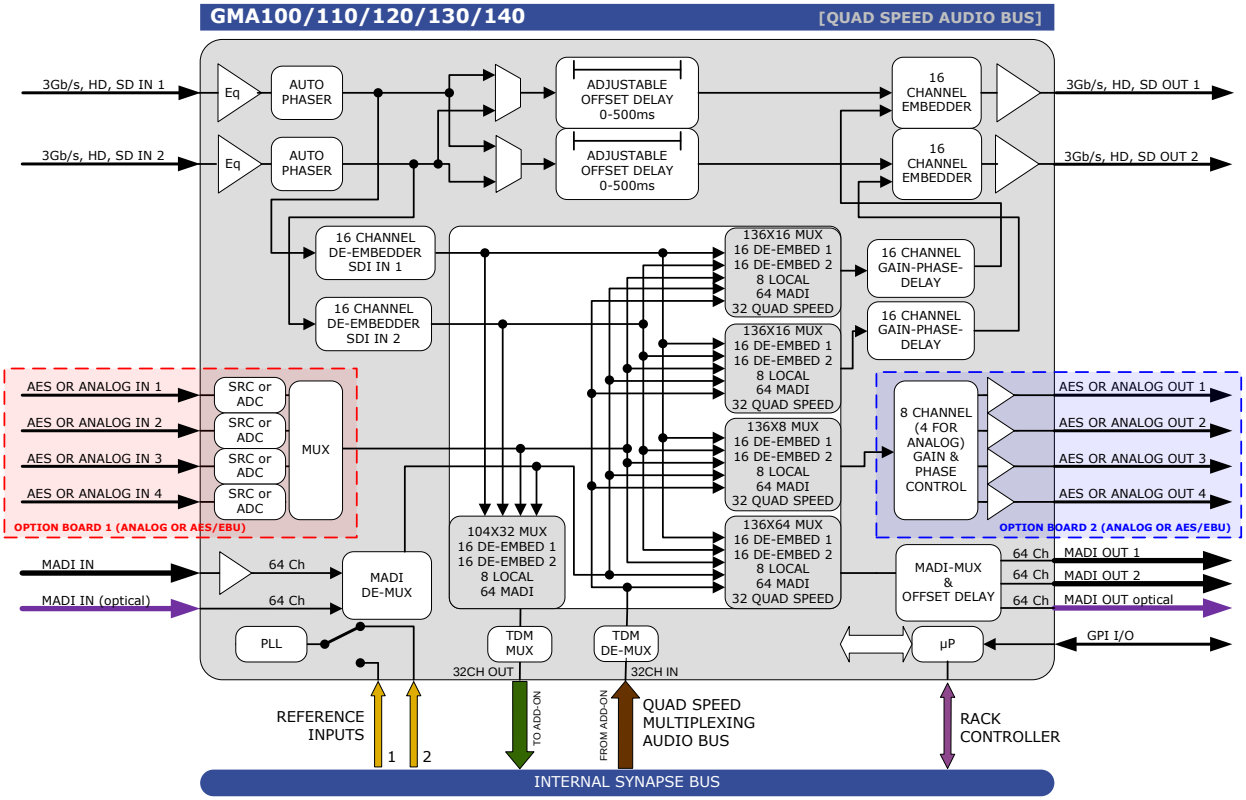
- 3Gb/s, HD and SD embedded domain to MADI and vice versa shuffler
- In video routing audio shuffler via MADI TDM bus (2 GMA100 will give a 4 Video 64 audio channel anything to anything shuffler
- MADI audio (mixing console) to embedded video converter.

Input/Output options

This platform has 4 option boards which define the inputs and outputs of the card. Refer to the block schematic for the position of the option boards. These are the options:

Card model	Board 1	Options board 2
GMA/HMA100	MADI Input/Output	None
GMA/HMA110	MADI Input/Output	4 analog inputs (4 channels)
GMA/HMA120	MADI Input/Output	4 analog outputs (4 channels)
GMA/HMA130	MADI Input/Output	4 AES/EBU inputs (8 channels)
GMA/HMA140	MADI Input/Output	4 AES/EBU outputs (8 channels)

Block schematic



5 Settings Menu

Introduction

The settings menu displays the current state of each GMA-HMA setting and allows you to change or adjust it. Settings can be changed using the front panel of the Synapse frame (SFR18, SFR08 or SFR04) or with Cortex. Also the SCP08 control can be used. Please refer to chapter 3 for information on the Synapse front panel control and Cortex.

Note: All items preceded with a #-sign are part of the presets.

SYSTEM SETTINGS

Inp_Select

With this item you can decide which of the 2 inputs is used and how the card will switch between the 2 inputs. Choices are:

- `Auto`: The card chooses input 1 if there is a source. If there is no input 1, the card will automatically switch to input 2.
- `TWINS`: The card will process both input 1 as well as input 2 as separate processed circuits. Be aware that these sources need to be running on the same clock, the phase is not critical
- `SDI-1`: only input 1 is used (disables detection of input 2)
- `SDI-2`: only input 2 is used (disables detection of input 1)

Switch-Back

With `Inp_Select` set to Auto, the card will automatically switch to the other input when the first input was lost. With `Switch-Back` set to `On`, the card will switch back to the first input if this it is back up again. Set to `Off` the card will keep using the other input even if the first input is back up again.

Lock-Mode

`Lock-Mode` determines whether the card is locked to input 1 (`SDI1`), input 2 (`SDI2`) or to the reference (`Ref1` or `Ref2`). Can also be set to `Auto-SDI`, automatically selecting the currently active SDI input to lock to. By default it is set to `SDI1`.

Out-Frmt

With Out-Frmt you can set what the output should be. This setting is only used for the delay options. This will not up/down/cross convert your input signal. Possible settings are:

- `1080i60`, `1080i50`
- `1080p30`, `1080p25`, `1080p24`
- `720p60`, `720p50`
- `SD525`, `SD625`
- `1080p50`, `1080p60` (GMA only)
- `Auto` (Default)

Phaser1-Offset

The timing or offset of the autophaser of SDI Input 1 can be tuned with `Phaser1-Offset` (see block schematic) between 0 and 4124px. Default is 0px.
A correct function of the autophaser can be checked using status-items `Phaser1_H_Pos` and `Phaser1_Stat`. When `Phaser1_Stat` shows `Safe`, the autophaser is working in its `Safe`-region. When `Phaser1_Stat` shows `Warning` or `Critical`, the setting `Phaser1_Offset` can be used to tune the autophaser into its `Safe`-region.

The autophaser is enabled when the setting `Lock-Mode` is set to `Ref1` or `Ref2` and when a Ref is present, shown by the status-item `Ref-Format`.

Phaser2-Offset

The timing or offset of the autophaser of SDI Input 2 can be tuned with `Phaser2-Offset` (see block schematic) between 0 and 4124px. Default is 0px.
A correct function of the autophaser can be checked using status-items `Phaser2_H_Pos` and `Phaser2_Stat`. When `Phaser2_Stat` shows `Safe`, the autophaser is working in its `Safe`-region. When `Phaser2_Stat` shows `Warning` or `Critical`, the setting `Phaser2_Offset` can be used to tune the autophaser into its `Safe`-region.

The autophaser is enabled when the setting `Lock-Mode` is set to `Ref1` or `Ref2` and when a Ref is present, shown by the status-item `Ref-Format`.

Phaser-Status

It is possible to display the function of the autophasers in the status menu of the card. This setting enables or disables the status-items: `Phaser1_H_Pos`, `Phaser2_H_Pos`, `Phaser1_Stat` and `Phaser2_Stat`. Default setting is Off.

Delay-Bypass

You can bypass the delay block entirely by setting this to on. By default it is switched off.

Delay-mode_1

With this setting you decide whether the card should apply delay to video output 1 by means of time in milliseconds (defined with Time-Delay_1) or to apply delay by means of frames, lines and pixels (Fr-Ln-Px). Default is Fr-Ln-Px.

Time-Delay_1

This setting is only used when Delay-mode_1 is set to Time. It defines the delay that should be applied to video output 1 in milliseconds between 0 and 10000ms.

F-delay_1

`F-Delay_1` sets the amount of delayed Frames of output 1 when `Delay-mode_1` is set to `Fr-Ln-Px`. The available range is from 0 to 125 fields (dependent on the I/O). Default is `0F`.

V-delay_1

`V-Delay_1` setting allows adjustment of the vertical phase of output 1 with respect to the selected reference input, when `Delay-mode_1` is set to `Fr-Ln-Px`.

The `V-Delay` setting gives a delay in addition to the reference timing. For example: if the `V-Delay` is set to 10 TV HD lines, the output signal will be delayed by reference timing + 10 TV HD lines. The signal is delayed (advanced) with respect to the phase of the reference signal. The available range is from 0 to a maximum of 1124 lines (dependent on I/O format). The default setting is `0ln`.

H-delay_1

The `H-Delay_1` setting allows adjustment of the Horizontal phase of output 1 with respect to the selected reference input, when `Delay-mode_1` is set to `Fr-Ln-Px`.

The H-Delay setting gives a delay in addition to the reference timing. For example: if the H-Delay is set to 10 pixels, the output signal will be delayed by reference timing + 10 pixels. The signal is delayed (advanced) with respect to the phase of the reference signal. The available range is from 0 to a maximum of 4124 pixels (dependent on I/O format). The default setting is `0px`.

Delay-mode_2

With this setting you decide whether the card should apply delay to video output 2 by means of time in milliseconds (defined with Time-Delay_2 or to apply delay by means of frames, lines and pixels (Fr-Ln-Px). Default is Fr-Ln-Px.

Time-Delay_2

This setting is only used when Delay-mode_2 is set to Time. It defines the delay that should be applied to video output 2 in milliseconds between 0 and 10000ms.

F-delay_2

`F-Delay_2` sets the amount of delayed Frames of output 2 when `Delay-mode_2` is set to `Fr-Ln-Px`. The available range is from 0 to 30 fields (dependent on the I/O). Default is `0F`.

V-delay_2

V-Delay_2 setting allows adjustment of the vertical phase of output 2 with respect to the selected reference input, when Delay-mode_2 is set to Fr-Ln-Px.

The V-Delay setting gives a delay in addition to the reference timing. For example: if the V-Delay is set to 10 TV HD lines, the output signal will be delayed by reference timing + 10 TV HD lines. The signal is delayed (advanced) with respect to the phase of the reference signal. The available range is from 0 to a maximum of 1124 lines (dependant on I/O format). The default setting is 0ln.

H-delay_2

The H-Delay_2 setting allows adjustment of the Horizontal phase of output 2 with respect to the selected reference input, when Delay-mode_2 is set to Fr-Ln-Px.

The H-Delay setting gives a delay in addition to the reference timing. For example: if the H-Delay is set to 10 pixels, the output signal will be delayed by reference timing + 10 pixels. The signal is delayed (advanced) with respect to the phase of the reference signal. The available range is from 0 to a maximum of 4124 pixels (dependent on I/O format). The default setting is 0px.

Delay-Status

With this setting you switch on or off the delay status detection in the status menu. Default is Off.

PRESET

Control

With this setting you decide whether you want to manually change the presets, change preset via the GPI contacts or change it by signal loss detection (see setting LossDetect). A combination of GPI contact overrides together with loss detection is also possible. GPI+LossDetect only works in non-latch mode. Default is manual.

GPI-Ctrl

The GMA/HMA/100/110/120/130/140 has several physical GPI contacts to control the card's presets (if presets are set to be GPI controlled)

`Latch`: Latching GPI mode. When a contact is closed momentarily (edge triggered).

`Non-Latch`: Non-latching GPI mode. When a contact is closed all the time (level triggered).

`BCD`: Binary GPI mode. GPI contacts work viewed in the following table:

GPI 3	GPI 2	GPI 1	Activate preset
0	0	0	No change
0	0	1	Preset 1
0	1	0	Preset 2
0	1	1	Preset 3
1	0	0	Preset 4
1	0	1	Preset 5
1	1	0	Preset 6
1	1	1	Preset 7

ExtMode

With this item you set the purpose of pins 5 till 8 of the RJ45 connector on the backpanel. The pupose can be either additional `GPIO` contacts (resulting in 7 GPI contacts instead of 3) or to use those pins as a dolby `metadata` I/O. Default is `GPIO`.

LossDetect

With this setting you can set which source should be checked for the `LossDetect` function (see `Control` setting). When the here-set-source is lost, the card will switch to the preset set with the `Loss` setting. When the source returns, the card will switch to the preset set with the `Detect` setting.

Sources which can be checked on are `MADI-Coax1`, `MADI-Opt1`, `S2020-SDI1`, `S2020-SDI2` and `MD-LocalIn` (local metadata input). Default is `MADI-Coax1`.

Note: If `LossDetect` is being used settings `#Emb1-Mode`, `#Emb1_GrpSel`, `#Emb2-Mode` and `#Emb2_GrpSel` need to have the same values for both "loss" and "detect" presets to circumvent 'reset' of the embedders. This can result in Dolby and/or PCM CRC errors at the output of the embedders.

Loss

Here you select to which of the 7 preset the card should switch in case the source set with `LossDetect` is lost. When set to `off` the card will not switch presets when a loss is detected. Default is `off`.

Detect

Here you set a preset to which the card should switch in case a lost source (set with `LossDetect`) has returned. Besides the 7 presets, you can set it to `S2020-SDID`, `ProgramConfig`, `Previous` (previous active preset before the signal was lost) or `off` (don't switch presets when signal returns, default).

`S2020-SDID` switches the card to a predefined preset according to the value of the SDID:

- 00 (none) → Preset 8
- 01 (Ch01/02) → Preset 8
- 02 (Ch03/04) → Preset 9
- 03 (Ch05/06) → Preset 10
- 04 (Ch07/08) → Preset 11
- 05 (Ch09/10) → Preset 12
- 06 (Ch11/12) → Preset 13
- 07 (Ch13/14) → Preset 14
- 08 (Ch15/16) → Preset 14

`ProgramConfig` switches the card to a predefined preset according to the value of the metadata program configuration:

- 7.1 → Preset 8
- 5.1+2 → Preset 9
- 5.1 → Preset 10
- 4x2 → Preset 11
- 3x2 → Preset 12
- 2+2 → Preset 13
- Other → Preset 14

Active-Preset

With this item you can manually change the currently active preset . Can be any preset between 1 and 7. By default it is set to 1. All menu settings that are preceded with a '`#`'-prefix are part of the preset.

Edit-Preset

Here you can select which of the 7 selectable presets you want to edit. Changing this will not change the active preset, unless the currently active preset is the same you are going to edit. All menu settings that are preceded with a '`#`'-prefix are part of the preset.

PrstEditView

With this setting set to `Follow Active`, the edit preset settings will follow the active preset when the active preset is changed. This to avoid confusion when changing the active. Set to `Independent` the edit preset will not automatically follow active preset changes. By default set to `Follow Active`.

#Preset_Name

Sets/displays the name of the currently displayed preset.

	DE-EMBEDDING
SDI1	The audio on SDI 1 (see block schematic) can be forwarded to the (de)embedding blocks before (`pre-delay`) or after (`post-delay`) the video-delay processing blocks. Default is `pre-delay`.
SDI2	The audio on SDI 2 (see block schematic) can also be forwarded to the (de)embedding blocks before (`pre-delay`) or after (`post-delay`) the video-delay processing blocks. Default is `pre-delay`.
	EMBEDDING SDI1
#Emb1_Mode	With `Emb1_Mode` you select how the audio of Embedder 1 should be embedded into video output 1: `overwrite` the existing audio, or `Append`. Can also be set to `off` (switching off embedding for groups 1, 2, 3 and 4 entirely). Default is `overwrite`.
#Emb1_GrpSel	With this setting you select which audio groups of embedder 1 should be enabled for embedding audio into video output 1. The groups `group1`, `group2`, `group3` or `group4` can be separately set to be ON or OFF in the selection list. You can also choose to not enable any of the audio groups by setting this item to "____". By default it is set to "`1234`", All groups active.

#Emb1_Ch01/04 ~ #Emb1_Ch013/16

With these settings you can select where the corresponding audio channels of embedder 1 are coming from. These settings are part of the main preset.

The object contains a string that holds 4 channels, 1 channel is 2 hexadecimal big. The string is from left to right up numbered.

For the possible values ranges for the 2 hexadecimal see the next table:

Source	Channel	Hex value
SDI1	Ch 01 to Ch 16	0x00 to 0x0F
SDI2	Ch 01 to Ch 16	0x10 to 0x1F
ADDON	Ch 01 to Ch 32	0x20 to 0x3F
MADI	Ch 01 to Ch 64	0x40 to 0x7F
LOCAL	Ch 01 to Ch 08	0x80 to 0x87
Reserved	Reserved	0x88 to 0xFF

The Local input selection depends on the GMA product. Only the GMA110 and GMA130 can select Local inputs. The GMA110 has 4 Channels, the GMA130 has 8 local Channels.

For example:

#Emb1_Ch01/04 = “09 21 43 84“

- Embedder Ch01 = 0x09 =SDI1 Ch10
- Embedder Ch02 = 0x21 =ADDON Ch02
- Embedder Ch03 = 0x43 =MADI Ch04
- Embedder Ch04 = 0x84 = LOCAL Ch05

Emb1_Gain01 ~ Emb1_Gain16

Adjusts the gain for the corresponding incoming audio channel between -60 and 12dB. -999dB means the audio will be muted.

Emb1_Delay01 ~Emb1_Delay16

Adjusts the delay of the corresponding audio channel between 0 and 5000ms.

Emb1_Phase01/16

Adjusts the audio phase of the corresponding audio channel to 0 deg or 180 deg. The numbering of the string is from left to right, and each place represents a channel number. A 0 sets the phase to 0 deg and an 1 will change the phase by 180 deg.

	EMBEDDING SDI2
#Emb2_Mode	With `Emb2_Mode` you select how the audio in Embedder 2 should be embedded into video output 2: `overwrite` the existing audio, or `Append`. Can also be set to `off` (switching off embedding for groups 1, 2, 3 and 4 entirely). Default is `overwrite`.
#Emb2_GrpSel	With this setting you select which audio groups of embedder 2 should be enabled for embedding audio into video output 2. The groups `group1`, `group2`, `group3` or `group4` can be separately set to be ON or OFF in the selection list. You can also choose to not enable any of the audio groups by setting this item to "____". By default it is set to "`1234`", All groups active.
#Emb2_Ch01/04 ~ #Emb2_Ch013/16	With these settings you can select where the corresponding audio channels of embedder 2 are coming from. See #Emb1_Ch01/04 for further description. These settings are part of the main preset.
Emb2_Gain01 ~ Emb2_Gain16	Adjusts the gain for the corresponding incoming audio channel between -60 and 12dB. -999dB means the audio will be muted
Emb2_Delay01 ~Emb2_Delay16	Adjusts the delay of the corresponding audio channel between 0 and 5000ms.
Emb2_Phase01/16	Adjusts the audio phase of the corresponding audio channel to 0 deg or 180 deg. The numbering of the string is from left to right, and each place represents a channel number. A 0 sets the phase to 0 deg and an 1 will change the phase by 180 deg.
	ADDON AUDIO OUT
#AddonOut01/04 ~ #AddonOut29/32	With these settings you can select where the corresponding audio channels of the addon bus are coming from. See #Emb1_Ch01/04 for further description. These settings are part of the main preset.

	LOCAL AUDIO OUT
#LocOut_B01/04 ~ #LocOut_B05/08	With these settings you can select where the corresponding audio channels of the local outputs are coming from. See #Emb1_Ch01/04 for further description. These settings are part of the main preset. The Local Outputs depends on the GMA product. Only the GMA120 and GMA140 have Local Outputs. The GMA120 has 4 Outputs, the GMA140 has 8 local Outputs.
LocGainOutB1 ~ LocGainOutB8	Adjusts the gain for the corresponding incoming audio channel between -60 and 12dB. -999dB means the audio will be muted The Local Gain depends on the GMA product. Only the GMA120 and GMA140 have Local Outputs. The GMA120 has 4 Outputs, the GMA140 has 8 local Outputs.
LocPhaseOutB1/8	Adjusts the audio phase of the corresponding audio channel to 0 deg or 180 deg. The numbering of the string is from left to right, and each place represents a channel number. A 0 sets the phase to 0 deg and an 1 will change the phase by 180 deg. The Local phase selection depends on the GMA product. Only the GMA120 and GMA140 have Local Outputs. The GMA120 has 4 Outputs, the GMA140 has 8 Outputs. The rest of the 16 character string is reserved and set to 0.
	MADI OPTIONS
#Madi_In_Sel	With this setting you select the MADI input source. This can be `Optical` or `Coaxial`. Default is `Coaxial`. This setting is part of the main preset.
MADI_Out_Coax_1	With this setting you select the source for MADI Coax1 output. Possible selections are `Off`, `MADI_In` or `MADI_Proc_Out`. The Option `Off` means the output is disabled. When `MADI_In` is selected the MADI input (selected by `MADI_In_Sel`) is routed to the Output. When `MADI_Proc_Out` is selected the processed MADI is routed to Coax1 output.

MADI_Out_Coax_2	With this setting you select the source for MADI Coax2 output. Possible selections are `Off`, `MADI_In` or `MADI_Proc_Out`. The Option `Off` means the output is disabled. When `MADI_In` is selected the MADI input (selected by `MADI_In_Sel`) is routed to the Output. When `MADI_Proc_Out` is selected the processed MADI is routed to Coax2 output.
MADI_Out_Opt_1	With this setting you select the source for MADI Optical1 output. Possible selections are Off, MADI_In or MADI_Proc_Out. The Option Off means the output is disabled. When MADI_In is selected the MADI input (selected by MADI_In_Sel) is routed to the Output. When MADI_Proc_Out is selected the processed MADI is routed to Optical1 output.
MADI_Out_Frmt	This setting sets the MADI Output format to 64-channel mode or 56-channel mode.
	MADI PROC OUT
#MADI_Proc01/04 ~ #MADI_Proc61/64	With these settings you can select where the corresponding audio source channels for the MADI Processed outputs are coming from. See `#Emb1_Ch01/04` for further description. These settings are part of the main preset.
MADI_DelOut01/08 ~ MADI_DelOut57/64	Adjusts the delay of the MADI Processed audio channels between 0 and 5000ms. The delay adjustment is grouped per 8 Channels.
	MISC
SRC_AES-B1/2 ~ SRC_AES-B7/8	Only available in the 130 model. These settings adjust the sample rate converter of AES/EBU inputs 1 till 4. Can be set to `Transparent` (no sample rate conversion), `On` (always converting) or `Auto` (automatically switch to transparent in case dolby is detected).
0dBFS-IN	The setting 0dBFs-In sets the analog audio level that gives a full-scale digital input. The available settings are +12 dBu, +15dBu, +18dBu and 24dBu. Only available when GMA110.
0dBFS-OUT	The setting 0dBFs-Out sets the analog audio output level for a digital full-scale output signal. The available settings are +12 dBu, +15dBu, +18dBu and 24dBu. Only available in the GMA120.

NonPCM-Bypass	With this setting you can switch to bypass audio processing for all non-PCM audio `on` or `off`.
Audio-Phase	If this setting is set to *Align*, the card ensures audio-phase alignment between multiple audio channels and audio groups, which is necessary for multi-channel (surround) purposes. If errors in the signal-chain occur the de-embedder blocks reset synchronously to maintain audio-phase-alignment. If this setting is set to *Off*, the card *eats-all* audio including errors. Even if there are DBN/ANC/ECC or channel-sequence errors, the de-embedder will pass them. Be aware that audio-phase-alignment between multiple audio channels and audio groups can not be maintained if this setting is set to *Off*. **Note:** This setting can be helpful to solve problems in the field using equipment which doesn't follow the standards correctly.
AudioStatusBits	With this setting you select whether the audio status bits should be `Transparant` (same status bit on the outputs as on the inputs) or to `overwrite` them with new status bits.
	METADATA
Extract_Line	With this item you set a line between line 0 and line 1125 from where you want to extract the metadata from the input. By default it is set to line 0, which indicates Auto-Mode.
Extract_Ass_Ch	One attribute of the S2020 metadata is the association channel. The association channel is the channel to which the metadata is connected. You can select the S2020 metadata to be extracted from one of the possible associated channel pairs ranging from `Ch01/02` to `Ch15/16`. Can also be set to `None` (in case there is no association set in the S2020 source or to `Auto` (in which case the S2020 is extracted from the first available associated channel).
S2020-Emb-1	With this setting you decide whether you want to `overwrite` or to switch `off` metadata (S2020) inserting into video output 1.
S2020-Emb-2	With this setting you decide whether you want to `overwrite` or to switch `off` metadata (S2020) inserting into video output 2.

S2020Emb_MD_src

With this setting you select whether metadata should come from input 1 (`SDI1`) input 2 (`SDI2`) or from the `Local` RJ45 input (requires the setting `ExtMode` to be set to `Metadata`). Default is `SDI1`.

Insert_Line

With this setting you set a line to which the S2020 data should be inserted. Can be set between line 1 and line 1125. Default is line 9.

Insert_Method

There are 2 methods to insert S2020 (refer to the S2020 SMTPE document). Can be set to `Method A` or `Method B`. Default is `B`.

Insert_Ass_Ch

With this setting you select one of the 8 channel pairs (`Ch1/2` till `Ch15/16`) to which the metadata should be associated. Can also be set to `None` (which is also a valid value of the metadata item).

LocalOut_MD_Src

With this setting you decide which of the metadata sources you want to use as the local metadata output on the I/O-panel. Can be the metadata from the SDI input (`SDI`, default), from the SDI2 input or from the I/O-panel RJ45 metadata input (`Local`).

6 Status Menu

Introduction

The status menu indicates the current status of each item listed below.

SDI-Input_1

This status item indicates the presence and format of a valid signal in input 1. This is displayed as:

- 1080P60
- 1080p50
- 1080i60
- 1080i50
- 1080p30
- 1080p25
- 1080p24
- 1035i60
- 720p60
- 720p50
- SD525
- SD625
- NA

SDI-Input_2

This status item indicates the presence and format of a valid signal in input 2. This is displayed as listed under SDI-Input1.

SDI-Map_1

Displays whether the 3Gb/s input on input 1 is mapped as Level A or Level B. If the input is not 3Gb/s (1080p50 or 1080p60) this item indicates NA.

SDI-Map_2

Displays whether the 3Gb/s input on input 2 is mapped as Level A or Level B. If the input is not 3Gb/s (1080p50 or 1080p60) this item indicates NA

SDI-Freq_1

Inidcates the frequency of SDI input 1. Can be 1:1, 1:1.001 or NA.

SDI-Freq_2

Inidcates the frequency of SDI input 2. Can be 1:1, 1:1.001 or NA.

CRC-Stat_1

Displays if there are CRC errors on input 1.

CRC-Stat_2

Displays if there are CRC errors on input 2.

Ref-Format

Displays the reference format. Can be one of the following:

- NA
- NTSC/480i
- PAL/576i
- 480p
- 576p
- 720p
- 1080i
- 1080p

Phaser1_H_Pos

his item shows the distance of SDI-Input1 to REF timing (write-read timing) of the autophaser. It is directly related to a correct function of the autophaser. When the SDI-Input1 to REF-timing is close, the function of the autophaser gets critical. The setting Phaser1-Offset can be used to tune the Phaser1_H_Pos.

When phaser-Status setting is set to Off, or when Lock Mode is set to SDI1, SDI2 or Auto-SDI, or when Lock-Mode is set to Ref1 or Ref2 and status-item Ref-Format shows NA, then Phaser1_H_Pos will show: 0px.

Phaser2_H_Pos

This item shows the distance of SDI-Input2 to REF timing (write-read timing) of the autophaser. It is directly related to a correct function of the autophaser. When the SDI-Input2 to REF-timing is close, the function of the autophaser gets critical. The setting Phaser2-Offset can be used to tune the Phaser2_H_Pos.

When Phaser-Status setting is set to Off, or when Lock Mode is set to SDI1, SDI2 or Auto-SDI, or when Lock-Mode is set to Ref1 or Ref2 and status-item Ref-Format shows NA, then Phaser2_H_Pos will show: 0px.

Phaser1_Stat	This item shows the status of the autophaser. It uses the value shown in `Phaser1_H_Pos` to calculate 3 working regions for the autophaser: `Safe`, `Warning` and `Critical`. `Safe`: `Phaser1_H_Pos` shows a value >50px `Warning`: `Phaser1_H_Pos` shows a value >20px and <50px `Critical`: `Phaser1_H_Pos` shows a value <20px When `Phaser-Status` setting is set to `Off`, or when `Lock Mode` is set to `SDI1`, `SDI2` or `Auto-SDI`, or when `Lock-Mode` is set to `Ref1` or `Ref2` and status-item `Ref-Format` shows `NA`, then `Phaser1_Stat` will show: `NA`.
Phaser2_Stat	This item shows the status of the autophaser. It uses the value shown in `Phaser2_H_Pos` to calculate 3 working regions for the autophaser: `Safe`, `Warning` and `Critical`. `Safe`: `Phaser2_H_Pos` shows a value >50px `Warning`: `Phaser2_H_Pos` shows a value >20px and <50px `Critical`: `Phaser2_H_Pos` shows a value <20px When `Phaser-Status` setting is set to `Off`, or when `Lock Mode` is set to `SDI1`, `SDI2` or `Auto-SDI`, or when `Lock-Mode` is set to `Ref1` or `Ref2` and status-item `Ref-Format` shows `NA`, then `Phaser2_Stat` will show: `NA`.
SDI1-Ref_Offset	This status item shows the offset of SDI1 compared to the reference. Displayed in µs.
SDI2-Ref_Offset	This status item shows the offset of SDI2 compared to the reference. Displayed in µs.
Locked-To	Displays to what the card is locked: `Ref`, `SDI1`, `SDI2` or `Not Locked`.
Active-Out1	Indicates what the current source is of output 1, can be `SDI1` or `SDI2`.
Active-Out2	Indicates what the current source is of output 2, can be `SDI1` or `SDI2`.
IO-Delay_1	This indicates the delay of input 1 compared to the output. Displayed in ms.

IO-Delay_2	This indicates the delay of input 2 compared to the output. Displayed in ms.
GPI	Indicates the current GPI value
ATC-Stat_1	Detects a `present` ATC timecode signal at input 1. When no ATC signal is detected, `NA` is indicated. When an invalid ATC signal is detected, this item indicates `Error`.
ATC-Stat_2	Detects a `present` ATC timecode signal at input 2. When no ATC signal is detected, `NA` is indicated. When an invalid ATC signal is detected, this item indicates `Error`.
ANC_In1-Stat	Shows the status of the ancillary data in SDI input 1. Can be NA, OK or error.
ANC_In2-Stat	Shows the status of the ancillary data in SDI input 2. Can be NA, OK or error.
GrpInUse_In1	Displays which groups are in use at input 1. Displayed as for instance 1_3_ when groups 1 and 3 contain audio and for instance _234 when groups 2, 3 and 4 contain audio.
GrpInUse_In2	Displays which groups are in use at input 2. Displayed as for instance 1_3_ when groups 1 and 3 contain audio and for instance _234 when groups 2, 3 and 4 contain audio.
Grp-Ins_1	When the setting `#Emb1-Mode` of embedder 1 is set to `Append` and the video source at embedder 1 already contains embedded audio, this status item will generate an `Error` if the selection `#Emb1_GrpSel` is set to the same group number as the present audio. Embedder 1 will stop embedding. If `#Emb1-Mode` is set to `Overwrite` the present audio data will be lost, and replaced by the new audio data. If `#Emb1-Mode` is set to `Overwrite`, no `Grp-Ins_1` error can occur. If an error does not occur `Grp-Ins_1` will indicate `Ok`.

Grp-Ins_2

When the setting #Emb2-Mode of embedder 2 is set to Append and the video source at embedder 2 already contains embedded audio, this status item will generate an Error if the selection #Emb2_GrpSel is set to the same group number as the present audio. Embedder 2 will stop embedding. If #Emb2-Mode is set to Overwrite the present audio data will be lost, and replaced by the new audio data. If #Emb2-Mode is set to Overwrite, no Grp-Ins_2 error can occur. If an error does not occur Grp-Ins_2 will indicate Ok.

SDI1DEMFrmt01/02 ~ SDI1DEMFrmt15/16

Displays the format of the 16 embedded audio channels (in 8 stereo pairs) at SDI input 1. Can be one of the following:

- NA
- PCM
- Null
- AC-3
- TimeStmp
- MPEG-1
- MPEG-2
- SMPTE-KLV
- Dolby E
- Caption data
- UserDef
- Enhanced AC-3
- Rsvd

SDI2DEMFrmt01/02 ~ SDI2DEMFrmt15/16

Displays the format of the 16 embedded audio channels (in 8 stereo pairs) at SDI input 2. Can be one of the formats listed under SDI1DEMFrmt01/02.

Emb1_Frmt01/02 ~ Emb1_Frmt15/16

Displays the format of the 16 audio channels (in 8 stereo pairs) at the input of embedder 1. Can be one of the formats listed under SDI1DEMFrmt01/02.

Emb1AudStat1/16

Display the status of each individual audio channel at the input of embedder 1 in a string of 16 characters long. Can be NA, Present, Silence or Clipped (meaning the audio is clipping due to a gain adjustment). The string is number from left to right. The characters are: '_' for NA, 'P' for Present, 'S' for Silence and 'C' for Clipped.

Emb2_Frmt01/02 ~ Emb2_Frmt15/16

Displays the format of the 16 audio channels (in 8 stereo pairs) at the input of embedder 2. Can be one of the formats listed under SDI1DEMFrmt01/02.

Emb2AudStat1/16	Display the status of each individual audio channel at the input of embedder 2 in a string of 16 characters long. Can be NA, Present, Silence or Clipped (meaning the audio is clipping due to a gain adjustment). The string is number from left to right. The characters are: '_' for NA, 'P' for Present, 'S' for Silence and 'C' for Clipped..
AddOnFrmtIn01/02 ~ AddOnFrmtIn31/32	Displays the format of the 32 audio channels (in 16 stereo pairs) at the input of the quad-speed addon-bus. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtInB1/2	Displays the format of local audio input 1 and 2, in case of a 110 or in case of a 130. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtInB3/4	Displays the format of local audio input 3 and 4, in case of a 110 or in case of a 130. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtInB5/6	Displays the format of local audio input 5 and 6, in case of a 130. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtInB7/8	Displays the format of local audio input 7 and 8, in case of a 130. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtOutB1/B2	Displays the format of local audio output 1 and 2, in case of a 120 or in case of a 140. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtOutB3/B4	Displays the format of local audio output 3 and 4, in case of a 120 or in case of a 140. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtOutB5/B6	Displays the format of local audio output 5 and 6, in case of a 140. Can be one of the formats listed under `SDI1DEMFrmt01/02`.
LocFrmtOutB7/B8	Displays the format of local audio output 7 and 8, in case of a 140. Can be one of the formats listed under `SDI1DEMFrmt01/02`.

LocStatOutB1/8	Display the status of each individual local audio channel in a string of 16 characters long. Only the 8 most left characters are used when model is GMA140. When model is GMA120 only the 4 left characters are used. The rest of the characters are reserved. The other models don't have this status. Can be NA, Present, Silence or Clipped (meaning the audio is clipping due to a gain adjustment). The string is number from left to right. The characters are: '_' for NA, 'P' for Present, 'S' for Silence and 'C' for Clipped.
MADI-Coax1-In	Shows the availability of the input of MADI Coax1. Can be NA or Present.
MADI-Coax1-Stat	Shows the status of the input of MADI Coax1. Can be NA, OK or Error.
MADI-Coax1-Chn	Shows the input format of MADI Coax1. Can be NA, 64, 56, 32, 28, 28, 16, 14 or Error.
MADI-Coax1-Freq	Show the Frequency of the input of MADI Coax1. Can be NA, <32, 32, <44.1, 44.1, <48, 48, <64, 64 <88.2, 88.2, <96, 96, <128, 128, <176.4, 176.4, <192, 192 or >192
MADI-Opt1-In	Shows the availability of the input of MADI Optical1. Can be NA or Present.
MADI-Opt1-Stat	Shows the status of the input of MADI Optical1. Can be NA, OK or Error.
MADI-Opt1-Chn	Shows the input format of MADI Optical1. Can be NA, 64, 56, 32, 28, 28, 16, 14 or Error.
MADI-Opt1-Freq	Show the Frequency of the input of MADI Optical1. Can be NA, <32, 32, <44.1, 44.1, <48, 48, <64, 64 <88.2, 88.2, <96, 96, <128, 128, <176.4, 176.4, <192, 192 or >192
SDI1S2020Stat	This item indicates the status of the SDI1 S2020 metadata input. Can be OK, error or NA.
SDI1S2020AssChn	Shows the S2020 SDID association channel for SDI1. Can be None, NA (not available) or Ch01/02~Ch15/16.

SDI1S2020Prog

This status indicates the program config as present on the current SDI1 S2020 source. Can be one of the following values:

- 5.1+2
- 5.1+1+1
- 4+4
- 4x2
- 8x1
- 5.1
- 3x2
- 6x1
- 2+2
- 7.1
- Other
- NA

SDI2S2020Stat

This item indicates the status of the SDI2 S2020 metadata input. Can be OK, error or NA.

SDI2S2020AssChn

Shows the S2020 SDID association channel for SDI2. Can be None, NA (not available) or Ch01/02~Ch15/16.

SDI2S2020Prog

This status indicates the program config as present on the current SDI2 S2020 source. Can be one of the following values:

- 5.1+2
- 5.1+1+1
- 4+4
- 4x2
- 8x1
- 5.1
- 3x2
- 6x1
- 2+2
- 7.1
- Other
- NA

LocMetaStat

Detects whether or not metadata is present on the Metadata input of the backpanel. Can be `Present`, `NA` or `Error`.

LocMetaProg

This status indicates the program config as present on the current metadata input. Can be one of the following values:

- 5.1+2
- 5.1+1+1
- 4+4
- 4x2
- 8x1
- 5.1
- 3x2
- 6x1
- 2+2
- 7.1
- Other
- NA

SFP1-Vendor

Displays the Vendor of the SFP module when one is inserted in the backplane. The status is NA when no SFP module is available. The common SFP Vendor used is “GENNUM” and the status will show the vendor name. The SFP status item will refresh every 30seconds.

SFP1-Type

Display the Type of the SFP module when one is inserted in the backplane. The status is NA when no SPF is available. The SFP status items will refresh every 30seconds.

SFP1-Port-Type

Displays the Port Type of the SFP module when one is inserted in the backplane. The status is NA when no SFP module is available. When SFP module is inserted the status can be RxTx, TxTx or RxRx. The SFP status items will refresh every 30seconds.

SFP-Stat

Shows the status of the SFP module. Can be Testing, OK, Failed, Error or NA.

DM-A_Type

Displays which type of board is currently detected on circuit A. Should be MADI In/Out for all the GMA models.

DM-A_Status

Indicates the status of I/O board A. can be OK, NA, Error or NA_Error.

DM-B_Type

Displays which type of input or output board is currently detected on circuit B. Can be Digital input (GMA130) or output (GMA140), Analog input (GMA110) or output (GMA120) or NA(GMA100).

DM-B_Status	Indicates the status of I/O board B, can be OK, NA, Error or NA_Error.
FPGA-Stat	Displays the status of the FPGA chip. Can be error or OK.

7 Events Menu

Introduction

An event is a special message that is generated on the card asynchronously. This means that it is not the response to a request to the card, but a spontaneous message.

What is the Goal of an event?

The goal of events is to inform the environment about a changing condition on the card. A message may be broadcast to mark the change in status. The message is volatile and cannot be retrieved from the system after it has been broadcast. There are several means by which the message can be filtered.

Events

The events reported by the card are as follows;

Announcements

`Announcements` is not an event. This item is only used for switching the announcement of status changes on/off. 0=off, other =on

Input_1

Input_1 can be selected between 0 .. 255. 0= no event, 1..255 is the priority setting.

Input_2

Input_2 can be selected between 0 .. 255. 0= no event, 1..255 is the priority setting.

CRC-Status1

CRC-Status1 can be selected between 0 .. 255. 0= no event, 1..255 is the priority setting.

CRC-Status2

CRC-Status2 can be selected between 0 .. 255. 0= no event, 1..255 is the priority setting.

Ref-Status

Reference can be selected between 0 .. 255. 0= no event, 1..255 is the priority setting.

Lock-Status

Lock status can be selected between 0 .. 255. 0= no event, 1..255 is the priority setting

What information is available in an event?

The message consists of the following items;

1) A message string to show what has happened in text, for example: “INP_LOSS”, “REF_LOSS”, “INP_RETURN”.
2) A tag that also shows what happens, but with a predefined number: e.g. 1 (= loss of input), 2 (= loss of reference), 129(= 1+128 = return of input). For a list of these predefined tags see the table on the next page.
3) A priority that marks the importance of an event. This value is defined by the user and can have any value between 1 and 255, or 0 when disabled.
4) A slot number of the source of this event.

The Message String

The message string is defined in the card and is therefore fixed. It may be used in controlling software like Cortex to show the event.

The Tag

The tag is also defined in the card. The tag has a fixed meaning. When controlling or monitoring software should make decisions based on events, it is easier to use the tag instead of interpreting a string. The first implementation is the tag controlled switch in the GPI16.

In cases where the event marks a change to fault status (e.g. 1 for Loss of Input) the complement is marked by the tag increased by 128 (80_{hex}) (e.g. 129 (81_{hex}) for Return of Input).

Defining Tags

The tags defined for the card are:

Event Menu Item	Tag		Description
Announcements	0 or NA	0 or NA	Announcement of report and control values
Input1	01_{hex}=INP1_LOSS	81_{hex}=INP1_RETURN	input 1 lost or returned
Input2	12_{hex}=INP2_LOSS	92_{hex}= INP2_RETURN	input 2 lost or returned
CRC-Status1	03_{hex}=CRC1_ERROR	83_{hex}=CRC1_OK	CRC on input 1 error or OK
CRC-Status2	43_{hex}=CRC2_ERROR	$C3_{hex}$=CRC2_OK	CRC on input 2 error or OK
Reference	02_{hex}=REF_LOSS	82_{hex}=REF_RETURN	reference lost or returned
Silence_LocInA1	05_{hex}=LOC_A1_SILENCE	85_{hex}=LOC_A1_OK	Audio channel A1 silence or OK
Silence_LocInA2	05_{hex}=LOC_A2_SILENCE	85_{hex}=LOC_A2_OK	Audio channel A2 silence or OK
Silence_LocInA3	05_{hex}=LOC_A3_SILENCE	85_{hex}=LOC_A3_OK	Audio channel A3 silence or OK
Silence_LocInA4	05_{hex}=LOC_A4_SILENCE	85_{hex}=LOC_A4_OK	Audio channel A4 silence or OK
Silence_LocInA5	05_{hex}=LOC_A5_SILENCE	85_{hex}=LOC_A5_OK	Audio channel A5 silence or OK
Silence_LocInA6	05_{hex}=LOC_A6_SILENCE	85_{hex}=LOC_A6_OK	Audio channel A6 silence or OK
Silence_LocInA7	05_{hex}=LOC_A7_SILENCE	85_{hex}=LOC_A7_OK	Audio channel A7 silence or OK
Silence_LocInA8	05_{hex}=LOC_A8_SILENCE	85_{hex}=LOC_A8_OK	Audio channel A8 silence or OK

The Priority

The priority is a user-defined value. The higher the priority of the alarm, the higher this value. Setting the priority to Zero disables the announcement of this alarm. Alarms with priorities equal or higher than the Error Threshold setting of the RRC will cause the error LED on the Synapse rack front panel to light.

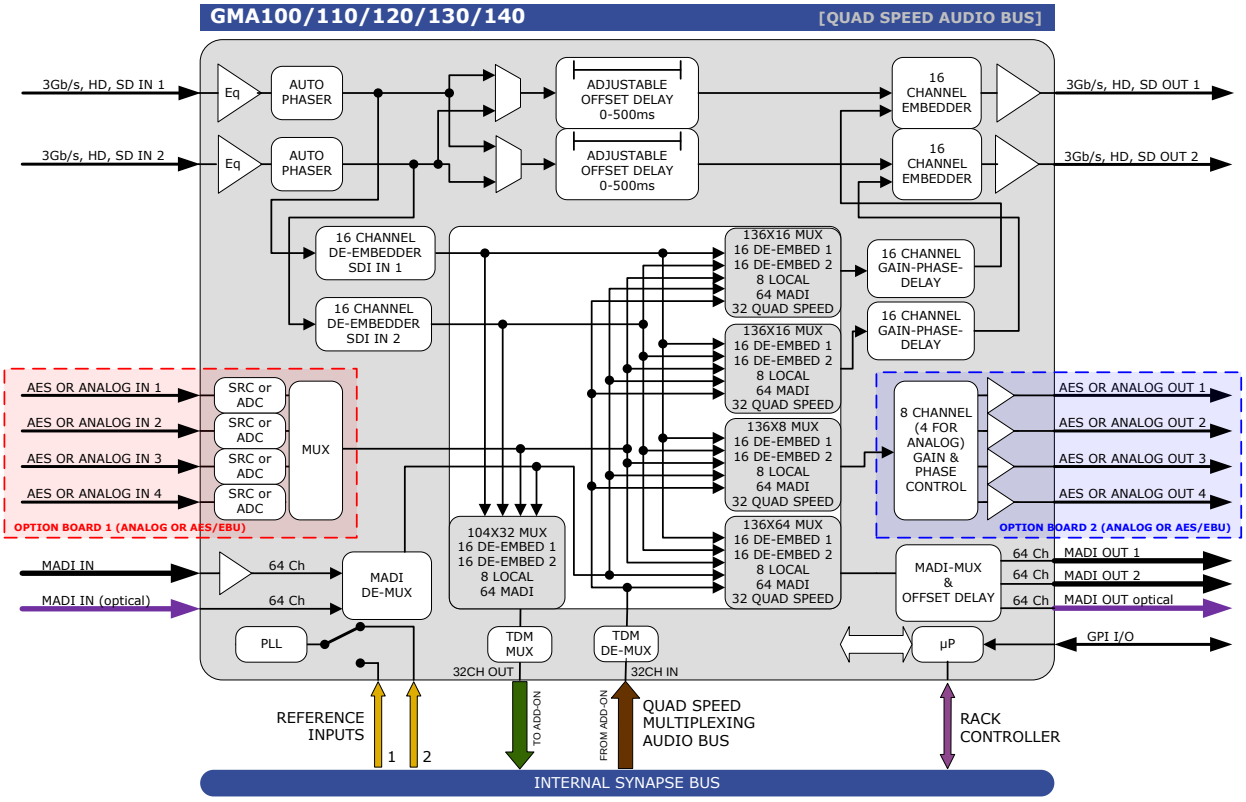
The Address

Together with the message string or the tag, the slot number or address of the card is relevant to be able to assign the event to a certain card.

8 LED Indication

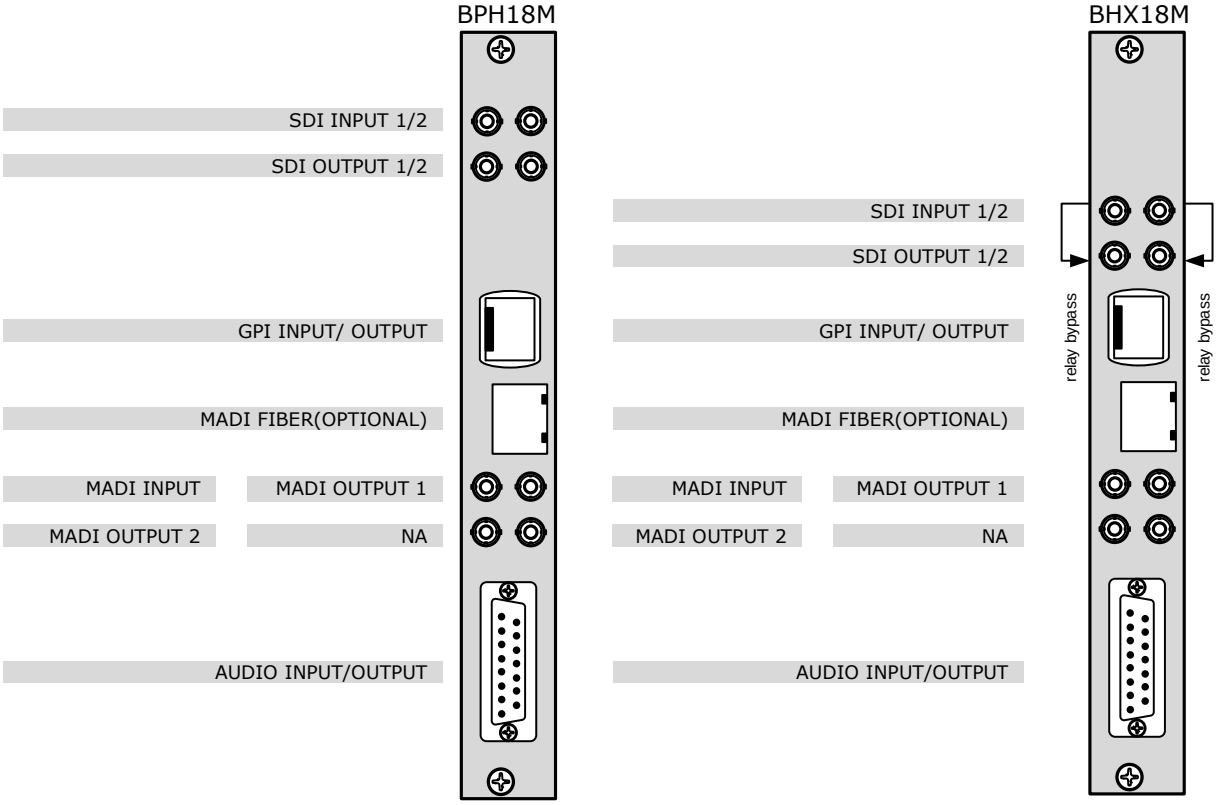
Error LED	The error LED indicates an error if the internal logic of the GRB/HRB550/990 card is not configured correctly or has a hardware failure.
Input_1 LED	This LED indicated the presence of a valid SDI video signal on input 1.
Input_2 LED	This LED indicated the presence of a valid SDI video signal on input 2.
ANC Data_1 LED	Indicates the presence of embedded audio within input 1.
ANC Data_2 LED	Indicates the presence of embedded audio within input 2.
Reference LED	Indicated the presence of a valid reference signal on the selected reference input connector (ref-1 or ref-2).
Data Error_1 LED	This LED indicates a CRC error in input 1.
Data Error_2 LED	This LED indicates a CRC error in input 2.
Connection LED	This LED illuminates after the card has initialized. The LED lights for 0.5 seconds every time a connection is made to the card.
Error LED	The error LED indicates an error if the internal logic of the card is not configured correctly or has a hardware failure.
DM_Pres_A	This LED illuminates when a I/O board is present on position A
DM_Pres_B	This LED illuminates when a I/O board is present on position B
DM_Error_A	Indicates an error on the I/O board on position A
DM_Error_B	Indicates an error on the I/O board on position B

9 Block Schematic



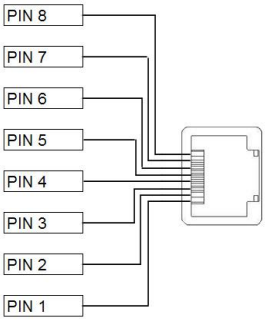
10 Connector Panels

The GMA/HMA can be used with the BPH18M and the BHX18M. The following table displays the pinout of these backpanels in combination with the card.



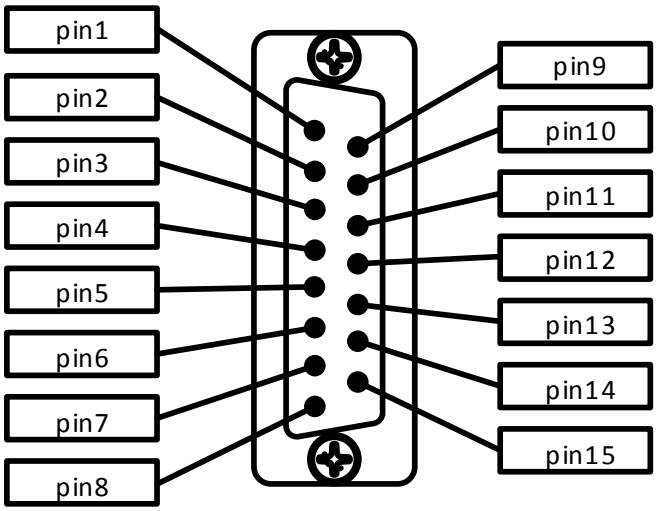
!Unused inputs and outputs must be terminated with the correct impedance!

GPI pinning



Pin	Function
1	Ground
2	GPI 1
3	GPI 2
4	GPI 3
5	GPI 4 / TXA(+)
6	GPI 5 / TXB(-)
7	GPI 6 / RXA(+)
8	GPI 7 / RXB(-)

D-sub pinning



Pin	G/MA110	G/HMA120	G/HMA130	G/HMA140
1	A1neg IN	A1neg OUT	D1neg IN	D1neg OUT
2	A1pos IN	A1pos OUT	D1pos IN	D1pos OUT
3	A2neg IN	A2neg OUT	D2neg IN	D2neg OUT
4	A2pos IN	A2pos OUT	D2pos IN	D2pos OUT
5	A3neg IN	A3neg OUT	D3neg IN	D3neg OUT
6	A3pos IN	A3pos OUT	D3pos IN	D3pos OUT
7	A4neg IN	A4neg OUT	D4neg IN	D4neg OUT
8	A4pos IN	A4pos OUT	D4pos IN	D4pos OUT
9	GND	GND	GND	GND
10	GND	GND	GND	GND
11	GND	GND	GND	GND
12	GND	GND	GND	GND
13	GND	GND	GND	GND
14	GND	GND	GND	GND
15	GND	GND	GND	GND

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