INSTALLATION & CONFIGURATION MANUAL

GIX100-110 - HIX100-110

DUAL CHANNEL 3GB/S, HD, SD INTEGRITY CHECKING PROBE WITH OPTIONAL CLEAN AUDIO (2X1) SWITCH-OVER FUNCTION

SYNAPSE

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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, SFR08 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 EVS distributor.
● NEVER expose this product to extremely high or low temperatures.
● NEVER operate this product in an explosive atmosphere.

Warranty: EVS warrants their products according to the warranty policy as described in the general terms. That means that EVS Broadcast Equipment SA can only warrant the products as long as the serial numbers are not removed.

Date created: 01-11-2013
Date last revised: 28-06-2018

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

EVS Broadcast Equipment GIX100-110 - HIX100-110 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 EVS Broadcast Equipment SA Website at http://www.evs.com 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 rack controler 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 manual. The method of connection to a computer using Ethernet is also described in the ERC/ERS/RRC/RRS manual.

!

CHECK-OUT: "EVS 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 EVS Cortex installed, as this increases the ease of use and understanding of the modules.

2 Unpacking and Placement

Unpacking

The EVS 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 or 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.

NOTE: Please check appendix 1 before connecting any I/O-panel!

3 A Quick Start

When Powering-up

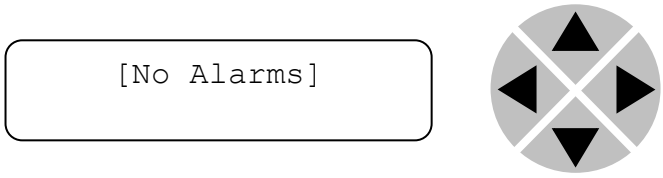
On powering up the Synapse frame, the card set will use basic data and default initialisation settings. All LED's will light during this process. After initialisation, several LED's will remain lit – the exact number and configuration is dependent upon the number of inputs connected and the status of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

Changing settings and parameters

The front panel controls or EVS Cortex Software 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.

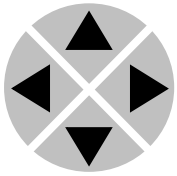
Press ►	To go forward through the menu struc ure.
Press ◄	To go ack through the menu structure.
Press ▲	To move up within a menu or increase the val e of a parameter.
Press ▼	To move down through a menu or ecrease the value of a parameter.

REMARK: 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 HD-`Format` has been selected and shows that it current setting is `Auto`.

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

Pressing the ► selects the settings item shown, in this example HD-`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 HD-`Format` has been selected.

```
SFS10 [Edit etting]
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.

EVS Cortex Software

EVS Cortex Software 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. EVS 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 downloading EVS Cortex, please refer to our website: https://mi-sftp.evs.com/. For instruction about how to use EVS Cortex, please check the EVS Cortex help files for details (press F1 in any window)

Menu Structure Example

Slot	Module		Item		Parameter		Setting
▲							
▲							
S02			Identity				
▲			▲				
S01	SFS10	▶	Settings	▶	SDI-Format	▶	Auto
▼			▼		▼		▼
S00	RRC18		Status		Mode		625
			▼		▼		▼
			Events		Ref-Input		525
					▼		
					H-Delay		
					▼		
					▼		

4 The GIX-HIX100-110 Card

Introduction

The GIX100-110 and HIX100-110 are dual channel high performance 3Gb/s, HD and SD SDI video and embedded audio probes (signal integrity monitor) with clean video switch-over function.

The switch function can be triggered by any of the integrity controls or by GPI. Besides the extensive probe functions, the cards also provide full line and frame synchronization on both inputs.

The '110' adds a smooth 16 channel audio change over with a V fade processing. An interesting feature is the ability to apply 4 individual sources and pre-route these signals to any of the main channels. This enables a backup functionality beyond two channels and can be used for adding a third or fourth backup channel.

Features

- 4 free selectable inputs per probe input
- Clean backup switching through built-in frame synchronizers
  - Input formats need to be equal
- Clean audio switch-over through V fade in '110'
- Tracking audio delay in '110'
- Output configuration of 2 x main + 2x backup or 4 x main (In 2x2 backup channel has no clean audio processing)
- Probe functions:
  - SDI carrier detect
  - TRS validation
  - ANC checksum validation
  - Video content freeze detection
  - Video content black detection
  - VANC WST and OP47 present detection
  - Time code availability
  - Audio channel detection (16 channels)
  - Audio silence detection (16 channels)
  - Audio Clip/5 sample full-scale indication (16 channels)
  - Dolby E detection (with disable of V fade function in '110')
- An extensive probing matrix allows adjustment of individual classes of importance of the channels next to the main and backup channels.
- Test pattern generator as 5th source for emergency and test.
- Quad Speed audio bus for post fade audio processing ('110' only)
- Locks to Bi-level, Tri-level or SDI input
- Full control and status monitoring through the front panel of the SFR04/SFR08/SFR18 frame and the Ethernet port (ACP)
- Optional 2 fiber inputs (replacing 2 SDI inputs) or 2 fiber outputs (replacing 2 SDI outputs) on I/O panel

Applications

- The GIXxxx family can be used as station output card, and ingest quality control card or a generic 2 x 2 switch.
- The integrity checking can also be performed for alarm monitoring purposes with the switch function disabled.
- Generic probing with automatic back-up switching
- Multi input backup capability allows for complex backup routing in multi platform environments

Block schematic

5 Settings Menu

Format

Allows you to set what the input format is on inputs A and B. Both inputs need to have the same format. Possible settings are:

- `1080p60`, `1080p50` (GIX only)
- `1080i60`, `1080i50`
- `1080p30`, `1080p25`
- `1080p24`, `1080p24sf`
- `720p60`, `720p50`
- `SD525`, `SD625`
- `Auto` (default, selects the input format automatically conform what has been detected)

IO-Map

With this setting you can select the 3Gb/s mapping in case the input format is 1080p50 or 1080p60. Can be manually set to Level A or `Level B`. You can also choose to set it to `Auto` (default), in which case the card will automatically detect whether the input is Level A or Level B

Output-Config

With `Ouput-Config` you can put the card in `2x2` mode (2 inputs, each put on to 2 outputs). When not switched, output-A has initial route to input-A, output-B has initial route to input-B. When switched output-A routes to input-B and output-B routes to input-A. Alternatively the card has a `2x1` mode (one input driven to all outputs). `2x1` with priority for input-A. When switched both output-A and output-B take the same input. When set to `Combined`, the initial route is similar to `2x2`, but the switch behaves like `2x1`. See appendix 1 for the exact switch behavior. Default is `2x2`. See appendix 1 for the output selections for the given input failures.

Input-Sel

With this setting you select automatic, manual or a GPI contact to drive the switch position. Can be set to `Input A`, `Input B`, `GPI-A`, `Auto-GPI` or `Auto` (default). In `Auto` mode the card automatically switches to the other input when error are detected in the currently active input. The `Input-A`, `Input-B` or `GPI-A` selections disable the automatic switching.

For versions before 0709, when in `GPI-only` the switch position follows GPI contact 1 when non-latching (level sensitive). See also setting GPI-Ctrl for the possible modes.

For versions from 0709 onwards, when `GPI-A` pool is chosen, the GPI_A status value 0 selects input A, value 1 selects input B.

For versions from 1823 onwards, the `GPI-Chan A` and `GPI-Chan B` settings are introduced. These settings use the GPI_A status value to force and invert the current route of the switch with one GPI bit. When GPI_A value equals 0, selecting `GPI-Chan A` sets the route to input A, `GPI-Chan B` sets the route to input B. GPI_A value 1 forces and inverts the route. Value 0 returns control to the menu item, thus returns to either input A or input B.

`Auto-GPI` only applies when used as backup-switch in `2x2` mode (`Output-Config` setting). Assumed is that Input-A is the main channel, Input-B is the backup. GPI contact 1 forces the Output-A to Input-B, regardless of an error condition for this input.

Switch-Back

When `Input-Sel` is set to `Auto`, this menu item decides on whether or not the input selection should switch back when the failed input is back to OK status. Set to `On` the input will switch back immediate when the failed input returned Ok.

Set to `Off`, the channels will not switch back after input recovers from an error, even when input B (the backup) has an error. The switch stays switched infinite, and is only reset if the configuration is changed manually.

Can also be set to `BackUp_Fail` in which case the input will switch back when input B (Backup) fails and the input A (Main) is Ok. This mode avoids the immediate switch-back of the `Switch-Back On` mode, until it really has to switch back to the Ok main channel. Default is `Off`. See appendix 1 for the exact switch behavior.

GPI-Ctrl

(Software versions before 0709)

`GPI-Ctrl` can be set to `Mode-1_Latching`, `Mode-1_Non-Latch or Mode-2`. Non-Latching when a contact is closed all the time `Latching` when a contact is closed momentarily. `Mode-2` works with GPI pulses, tapping GPI1 will select input 1, tapping GPI2 will select input 2. The default setting of `GPI_Mode` is `Mode-1_Non-Latch`.

Inp_SelA

Here you select which of the four SDI inputs will be used for the channel A probe (before the automatic backup switch function). Choices are `SDI-1`, `SDI-2`, `SDI-3`, `SDI-4` or `GPI-C` (only in software versions from 0709). Default is `SDI-1`.

Inp_SelB

Here you select which of the four SDI inputs will be used for the channel B probe (before the automatic backup switch function). Choices are `SDI-1`, `SDI-2`, `SDI-3`, `SDI-4` or `GPI-D` (only in software versions from 0709). Default is `SDI-2`.

Output_mux

When `Output-Config` is set to `2+2`, both main output A and the backup B are output. When set to `4` the main output A is routed to all four outputs. This output multiplexer is located after the backup switch function.

TestPatternA

With this setting you can enable a test pattern as frame synchronizer output on channel A. Can be a `Colorbar` or a `Zoneplate`.

TestPatternB

With this setting you can enable a test pattern as frame synchronizer output on channel B. Can be a `Colorbar` or a `Zoneplate`.

FS_Gen-Speed

This sets the speed of the colorbar or zoneplate generator on a scale from 0 (still) to 15 (fast). By default it is set to 1.

INTEGRITY CHECK

Carrier-Det

`Carrier-Det` allows the card to detect an SDI carrier loss.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a loss of carriers, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect a loss of SDI carrier on channel A and switch to the other channel when a loss is detected.
- `B`: the card will detect a loss of SDI carrier on channel B and switch to the other channel when a loss is detected.
- `A+B`: the card will detect a loss of SDI carrier on both channel A and B and switch to the other channel when a loss is detected.

The default setting is `A+B`.

CRC_EDH-Det

`CRC_EDH-Det` allows the card to detect EDH/CRC errors.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect an EDH/CRC error, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect EDH/CRC errors on channel A and switch to the other channel when an error is detected.
- `B`: the card will detect EDH/CRC errors on channel B and switch to the other channel when an error is detected.
- `A+B`: the card will detect EDH/CRC errors on both channel A and B and switch to the other channel when an error is detected.

The default setting is `A+B`.

EDH-Mode

`EDH-Mode` determines whether the EDH is monitored over the full field (`FF`) or the Active picture (`AP`). In case of `FF`, the vertical and horizontal blank interval is also included. The default setting is `AP`.

TRS-Error-Det

`TRS-Error-Det` allows the card to detect if the TRS signals are in the right place. When the amount of misplaced or missing TRS signals have reached the threshold set with `TRC_CRC_Thres` further down the settings menu an alarm is generated. TRS= Timing Reference Signal.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a TRS error, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect TRS errors on channel A and switch to the other channel when an error is detected.
- `B`: the card will detect TRS errors on channel B and switch to the other channel when an error is detected.
- `A+B`: the card will detect TRS errors on both channel A and B and switch to the other channel when an error is detected.

The default setting is `A+B`.

TRS_CRC_Thresh

Here you set a threshold when TRS errors should be alerted by the card. Can be set in any value between #1 and #1125. Default is #2

ANC-Error-Det

`ANC-Error-Det` allows the card to detect ancillary data errors. In case of errors in the checksum over the horizontal interval (embedded audio) an alarm is generated.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a ANC error, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect ANC errors on channel A and switch to the other channel when an error is detected.
- `B`: the card will detect ANC errors on channel B and switch to the other channel when an error is detected.
- `A+B`: the card will detect ANC errors on both channel A and B and switch to the other channel when an error is detected.

The default setting is `A+B`.

Freeze-Det

`Freeze-Det` allows the card to detect if the input signal is frozen. The measurement is performed in the complete active picture. The sensitivity can be set in `Frz_NrFrms` and `Frz_Thrs`. The region of interest can be set in `ROI_H-start`, `ROI_H-stop`, `ROI_V-start` and `ROI_V-stop`.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a video freeze, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect a video freeze on channel A and switch to the other channel when a freeze is detected.
- `B`: the card will detect a video freeze on channel B and switch to the other channel when a freeze is detected.
- `A+B`: the card will detect a video freeze on both channel A and B and switch to the other channel when a freeze is detected. (default)

Frz_NrFrms

When a picture freezes it can be reported by the GIX-HIX100-110. With this item it is possible to determine the sensitivity of this detection. It sets the number of frozen frames before a freeze is reported a freeze. This can be set in a range from 10 to 3000 frames. Default is `100`.

Frz_Thrs

`Frz_Thrs` determines the sensitivity level of the `Freeze-det`. Can be set between 10 (high threshold, for instance when the input is noisy) and 1 (low threshold, for instance when the input is clean). Can also be set to `Digital`, in which case there is no threshold. Default is `Digital`.

Black-Det

`Black-Det` allows the card to detect if the input signal is black. The measurement is performed in the complete active picture. The sensitivity can be set in `Blk_NrFrms` and `Blk_Thrs`. The region of interest can be set in `ROI_H-start`, `ROI_H-stop`, `ROI_V-start` and `ROI_V-stop`.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a video black, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect a video black on channel A and switch to the other channel when a black is detected.
- `B`: the card will detect a video black on channel B and switch to the other channel when a black is detected.
- `A+B`: the card will detect a video black on both channel A and B and switch to the other channel when a black is detected.

The default setting is `A+B`.

Blk_NrFrms

`Black-Frmnr` allows setting of the number of black frames that should initiate a changeover of the video black status. The related range is from 10 to 3000 frames. The default setting is 100.

Blk_Thrs

`Blk-Trsh` determines the sensitivity level of the Black detection. Can be set between 10 (high threshold, when source is noisy) and 1 (low threshold, when source is clean). Can also be set to `Digital` in which case there is no threshold. Default is `Digital`.

ROI_H-start

ROI stand for 'Region Of Interest'. With these settings you can define a specific region in the corresponding input in which the GIX-HIX100-110 should perform its integrity checking (black and freeze detection). With the H-start setting you define the horizontal start position of the region of interest between 0 and 100% of the total picture width. Default is 0%.

ROI_H-stop

With the H-stop setting you define the horizontal end position of the region of interest between 0 and 100% of the total picture width. Default is 100%

ROI_V-start

With the V-start setting you define the vertical start position of the region of interest between 0 and 100% of the total picture height. Default is 0%

ROI_V-stop

With the V-stop setting you define the vertical end position of the region of interest between 0 and 100% of the total picture height. Default is 100%

TC-Pres-Det

`TC-Pres-Det` allows the card to detect an ATC or VITC time code loss on the input. Whenever the time code is not detected in a frame, for as long as set with `TC-Pres-Thrs`, it is detected as a time-code presence error.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a time code loss, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect a time code loss on channel A and switch to the other channel when a time code loss is detected.
- `B`: the card will detect a time code loss on channel B and switch to the other channel when a time code loss is detected.
- `A+B`: the card will detect a time code loss on both channel A and B and switch to the other channel when a time code loss is detected.

The default setting is `A+B`.

TC-Pres-Thrs

Here you can set the error threshold when a time code loss is detected. Can be set between 1 and 255 frames. Default is 1 frame.

TC-Freeze-Det

`TC-Freeze-Det` allows the card to detect a frozen ATC or VITC time code on the input. Whenever the time code in a frame is the same as the previous frames, for as long as set with `TC-Freeze-Thrs`, it is detected as a time-code freeze.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a time code freeze, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect a time code freeze on channel A and switch to the other channel when a time code freeze is detected.
- `B`: the card will detect a time code freeze on channel B and switch to the other channel when a time code freeze is detected.
- `A+B`: the card will detect a time code freeze on both channel A and B and switch to the other channel when a time code freeze is detected.

The default setting is `A+B`.

TC-Freeze-Thrs

Here you can set the error threshold when a frozen time code is detected. Can be set between 1 and 255 frames. Default is 1 frame.

Timecode_ins
(Only in GIX-HIX 110)

Here you can set if the time code on the inputs should be copied to the outputs (`on`). You can also turn `off` time code re-insertion. Default is `off`.

S352_Insert

`S352_Insert` enables (`on`) the Video Payload Identifier insertion in the HANC space. Default is `on`. This packet is required for 3G standards. In HD 1080i for ATC-LTC transparency the user may switch it off to pass the ATC-LTC HANC packet on line 10.

VITC_Ln-In

`VITC_Ln-In` sets which line the time code reader reads the time code from. This in a range from line 7 to line 20. Default line is 8.

OP47-Error-Det

This item controls the presence detection of OP47 SDP VANC data packets. Whenever the OP47 is not detected in a frame, it is detected as an OP47 presence error. Empty OP47 packets are detected OK, and is thus not an error.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect an OP47 error, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect an OP47 error on channel A and switch to the other channel when an error is detected.
- `B`: the card will detect an OP47 error on channel B and switch to the other channel when an error is detected.
- `A+B`: the card will detect an OP47 error on both channel A and B and switch to the other channel when an error is detected.

The default setting is `A+B`.

WST-Error-Det

This item controls the presence detection of WST-B data packets in SD. Whenever the WST is not detected in a frame, it is detected as an WST presence error. Empty WST packets are detected OK, and is thus not an error.

- `Off`: the functionality is switched `OFF`.
- `Probe`: the card will detect a WST-B error, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card will detect a WST-B error on channel A and switch to the other channel when an error is detected.
- `B`: the card will detect a WST-B error on channel B and switch to the other channel when an error is detected.
- `A+B`: the card will detect a WST-B error on both channel A and B and switch to the other channel when an error is detected.

The default setting is `A+B`.

Audio-Det_A1/2 ~ Audio-Det_B15/16

Here you can set per audio channel pair if the status of this audio pair should only be shown, select if the card should switch inputs if PCM is lost (or has silence or clip), or if the selected Dolby AC-3, Enhanced AC-3 or Dolby-E is lost.

- `Off`: the functionality is switched OFF.
- `Probe`: the card detects if there is loss/clip/silence in the specified audio pair, but will only give this as a status item. The card will not switch to the other channel.
- `Switch-PCM`: The card switches to the other channel if anything is wrong with this specific PCM audio pair.
- `Switch-Dolby`: The card switches to the other channel if anything is wrong with this specific Dolby audio pair.

By default, these settings are set to `Probe`

Audio-Ch-Det

This item controls the presence detection of the embedded PCM audio pairs. Whenever PCM is lost on any of the selected PCM pairs, it is detected as an audio presence error.

- `Off`: the functionality is switched off.
- `Probe`: the card detects if there is PCM present, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card detects PCM presence on channel A and will switch to the other channel.
- `B`: the card detects PCM presence on channel B and will switch to the other channel.
- `A+B`: the card detects PCM presence on both channel A and B and will switch to the other channel.

The default setting is `Probe`

AC-3-Ch-Det

This item controls the presence detection the embedded AC-3 audio pairs. Whenever AC-3 is lost on any of the selected Dolby pairs, it is detected as an audio presence error.

- `Off`: the functionality is switched off.
- `Probe`: the card detects if there is AC-3 present, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card detects AC-3 presence on channel A and will switch to the other channel.
- `B`: the card detects AC-3 presence on channel B and will switch to the other channel.
- `A+B`: the card detects AC-3 presence on both channel A and B and will switch to the other channel.

The default setting is `Probe`

Enh-AC-3-Ch-Det

This item controls the presence detection the embedded Enhanced AC-3 audio pairs. Whenever Enhanced AC-3 is lost on any of the selected Dolby pairs, it is detected as an audio presence error.

- `Off`: the functionality is switched off.
- `Probe`: the card detects if there is enhanced AC-3 present, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card detects enhanced AC-3 presence on channel A and will switch to the other channel.
- `B`: the card detects enhanced AC-3 presence on channel B and will switch to the other channel.
- `A+B`: the card detects enhanced AC-3 presence on both channel A and B and will switch to the other channel.

The default setting is `Probe`

Dolby-E-Ch-Det

This item controls the presence detection the embedded Dolby E audio pairs. Whenever Dolby E is lost on any of the selected Dolby pairs, it is detected as an audio presence error.

- `Off`: the functionality is switched off.
- `Probe`: the card detects if there is Dolby E present, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card detects Dolby E presence on channel A and will switch to the other channel.
- `B`: the card detects Dolby E presence on channel B and will switch to the other channel.
- `A+B`: the card detects Dolby E presence on both channel A and B and will switch to the other channel.

The default setting is `Probe`

FullScale-Det

`FullScale-Det` allows the card to detect whether the signal has any PCM channels which exceed full scale and are therefore clipped.

- `Off`: the functionality is switched off.
- `Probe`: the card detects if there is PCM full scale, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card detects PCM full scale on channel A and will switch to the other channel.
- `B`: the card detects PCM full scale on channel B and will switch to the other channel.
- `A+B`: the card detects PCM full scale on both channel A and B and will switch to the other channel.

The default setting is `Probe`

Nr_Clip_Samples

`Nr_Clip_Samples` is the number of allowed PCM samples above `Clip_Level` before the actual PCM full scale error is determined. can be between 1 and 31 samples

Clip_Level

`Clip_Level` determines the level for full scale detection. This can be set in a range from -6dBFS to 0dBFS. The default setting is -0.3 dBFS. This is not a true peak (interpolated) measurement, but a straightforward level comparison.

Silence_Det

`Silence_Det` allows the card to detect whether the signal has any PCM channels which have silence for the given `Silence-time` and `Silence-level`.

- `Off`: the functionality is switched off.
- `Probe`: the card detects if there is PCM silence, but will only give this as a status item. The card will not switch to the other channel.
- `A`: the card detects PCM silence on channel A and will switch to the other channel.
- `B`: the card detects PCM silence on channel B and will switch to the other channel.
- `A+B`: the card detects PCM silence on both channel A and B and will switch to the other channel.

The default setting is `Probe`

Silence_Time

If the embedded audio contains silence, this can be reported by the GIX-HIX100-110. This setting allows you to determine how many seconds it takes before the card reports the silence. This setting can be set in a range from 1 sec to 255 sec. The default setting is 10sec.

Silence-Level

`Silence-level` determines the value that triggers a silent alarm. The silence threshold can be set between –100 and -20 dBFS. Default is –60 dBFS .

	SYNCHRONIZE
Dly_Frmt_Prst	With `Dly_Frmt_Prst` you can edit the delay values for the various video formats. This works as presets. All settings with a #-prefix are part of the preset. Set this to the video format for which you want to adjust the delay of the synchronizer. This setting is only used to display the correct delay settings. Possible settings are: ▪ `1080p60`, `1080p50` (GIX only) ▪ `1080i60`, `1080i50` ▪ `1080p30`, `1080p25` ▪ `1080p24`, `1080p24sf` ▪ `720p60`, `720p50` ▪ `SD525`, `SD625`
#F-delay_1	`F-Delay` sets the amount of delayed Frames. The available range is from 0 to 125 frames (dependant on the video format). Default is `0F`. The preset master for this is `Dly_Frmt_Prst`, hence the '#'-prefix.
#V-Delay_1	`V-Delay` setting allows adjustment of the vertical phase of the output signal with respect to the selected reference input. The `V-Delay` setting gives a delay in addition to the reference timing. For example: if `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 1125 lines (dependant on the video format). The default setting is `0ln`. The preset master for this is `Dly_Frmt_Prst`, hence the '#'-prefix.
#H-Delay_1	The `H-Delay` setting allows adjustment of the Horizontal phase of the output signal with respect to the selected reference input. The `H-Delay` setting gives a delay in addition to the reference timing. For example: if `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 5124 pixels (dependant on the video format). The default setting is `0px`. The preset master for this is `Dly_Frmt_prst`, hence the '#'-prefix.
Delay-Status	It is possible to display (in the status menu `IODelayA` and `IODelayB`) the processing time of the card in the status menu. This setting allows you to switch this function `ON` or `OFF`. Default setting is `OFF`

LockMode

Lock-Mode determines whether the card is locked to his input (input 1), to the reference (Ref1 or Ref2) or freerun (not locked). By default it is set to Ref1. Can also be set to RefAuto. Ref1 is default.

When set to RefAuto the card chooses ref1 as its source. Whenever ref1 fails, it will switch to ref 2 (only for SFR08 and SFR18 frames and only when ref2 offers the same ref format as ref 1). When ref 1 is back up again, it will only automatically switch back to ref 1 when ref 2 fails.

Ref-Type

Sets the type of incoming reference. Can be either Bi-Level or Tri-Level. Default is Bi-Level.

P60-P50_Sync

With this setting you can choose to synchronize each one frame or each two frames. Default is One Frame. The two-frame-synchronize mode only works for 720p60, 720p50, 1080p50 and 1080p60 standards.

Input_Loss_A

Input_Loss_A determines what the output of outputs A is in case of lost input:

- Freeze: a capture of the last good field or frame.
- Colorbar: a color bar
- Zoneplate: a zone plate
- Black: a black output.
- Grey: a grey output.
- Green: a green output.
- No-SDI-Out: no SDI carrier (completely mute output)

The default setting is freeze.

Input_Loss_B

Input_Loss_B determines what the output of outputs B is in case of lost input:

- Freeze: a capture of the last good field or frame.
- Colorbar: a color bar
- Zoneplate: a zone plate
- Black: a black output.
- Grey: a grey output.
- Green: a green output.
- No-SDI-Out: no SDI carrier (completely mute output)

The default setting is freeze.

	AUDIO PROC AMP These settings are only available in the GIX110 and HIX110
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 cannot 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 `Transparent` (same status bit on the outputs as on the inputs) or to `overwrite` them with new status bits.

Audio_Ctrl

This controls the selection of the currently active `Audio_Preset`.

Before using the audio presets, you need to select all audio sources and channels in each preset. To ease this process you can use the `Emb-Prst-Default` setting to reset all audio presets to factory default selections.

When `Follow` is chosen, the `Audio_Preset` follows the backup switch position automatically. It chooses preset A when channel A is output on the main channel A, or Preset B when preset B is output on the main channel A. This is the default setting.

When set to `Inv-Video`, `Audio_Preset` follows the backup switch position automatically, but selects the presets with inversion. So, Preset B when channel A is output on the main channel A, or Preset A when preset B is output on the main channel A.

When `A`, `B` or `C` are selected, the audio preset is selected manually, regardless of the bypass switch position.

For versions before 0709, when `GPI` is chosen, GPI In 2 (pin 7) selects either preset A (contact open) or B (contact closed).

For versions from 0709 onwards, when `GPI-B` pool is chosen, the GPI_B status value 0 selects audio preset A, value 1 selects B and 2 selects audio preset C.

Audio_Preset

Here you can select which of the 3 selectable audio 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 following audio settings that are preceded with a '`#`'-prefix are part of the preset.

#Audio_Delay

With this item you can delay all de-embedded audio on input channels A and B between -10000ms and 10000ms with 1ms increments. . Default is 0ms. This item is part of the audio presets.

EMBEDDER

These settings are only available in the GIX110 and HIX110

Emb_Prst_Default

`Emb-Prst-Default` sets all embedding presets to a factory default. Using this setting is a quick way to set up embedding.

Setting this to `On` performs a reset on embedder presets A,B and C, and will return to the `Off` position automatically after use. Preset A will use the channel A de-embedded audio (SDI1) as source. Preset B will use the channel B de-embedded audio (SDI2) as source. Preset C will use the AddOn channels 1 to 16 as source.

#Emb-Mode

With `Emb-Mode` you select how the audio should be embedded into the video: `overwrite` the exsisting audio, or `Append`. Default is `overwrite`.

#EmbA_Grp ~ #EmbB_Grp

With these settings you select into which audio group (= 4 audio channels) of the outputs you want to embed the corresponding 4 forwarded audio channels, coming from the de-embedder or add-on bus. Can be `group1`, `group2`, `group3` or `group4`. You can also choose to not use these 4 audio channels for anything by setting this item to `off`.

#SourceEmb-A1 ~ #SourceEmb-D4

With these settings you can select where the corresponding audio channels of the embedder outputs are coming from. Choices are:

- `SDI1`: source is the de-embedder on the input of channel A, after 4 to 1 pre-selection mux A.
- `SDI2`: source is the de-embedder on the input of channel B, after 4 to 1 pre-selection mux B.
- `Addon01/16`: Source is the first 16 channels of the add-on bus
- `Addon17/32`: Source is channels 17 till 32 of the Quad Speed add-on bus. This will not be available when working in normal add-on bus mode.

#EmbA1_Inp_Ch ~ #EmbD4_Inp_Ch

With these settings you can select which Channel of the selected source should be embedded to the corresponding output channel. Can be any channel between `Ch_1` and `Ch_16`.

Fade-Time (110 only)

With `Fade-Time` you set the amount of time needed to fade out to the lowest gain for the V fade and it delays the actual switch frame for the backupswitch! You will have to manually add `Switch_Delay` amount of frames to the video delay of the card to maintain AV synchronisation.

	GPI pool modes
Contact _1 ~ Contact_7	In this card it is possible to make the 7 available GPI contacts part of a GPI pool that can control the various functions in the card separately (all `Xx_Ctrl` items of the menu). With these item you can select which pool the corresponding GPI is part of. You can also choose to not use the corresponding GPI at all by setting it to `Off`. Possible settings are: ▪ `GPI A`: part of GPI-A pool, can be triggered using Take A. ▪ `GPI B`: part of GPI-B pool, can be triggered using Take B. ▪ `GPI C`: part of GPI-C pool, can be triggered using Take C. ▪ `GPI D`: part of GPI-D pool, can be triggered using Take D. Please refer to 'Appendix 2: GPI's explained' for a more elaborate explanation of the GPI settings and status items.
GPI_A-mode ~ GPI_D-mode	Selects the mode for the corresponding GPI pool. Possible settings are: ▪ `Prio`: Each contact triggers another value, so values are one-hot encoded. ▪ `Prio_latched`: This mode functions like `Prio` Mode, but the card latches the value. Each contact triggers another value, so values are one-hot encoded. Use this mode when using pushbuttons. ▪ `Binary`: Values are coded in a binary fashion, with code "0000000" coding for a starting value of 1, as can be seen in the GPI status items. Please refer to 'Appendix 2: GPI's explained' for a more elaborate explanation of the GPI settings and status items.
GPI_A-Take ~ GPI_D-Take	Selects a take contact for the corresponding GPI pool. Possible settings are: ▪ `Off`: No take contact is defined, and values on the GPI contact are taken instantly. ▪ `Contact_1 ~ Contact_7`: The selected contact is used as a Take command for the corresponding pool. Closing the selected contact results in the card latching the value provided on the selected contacts for that pool. Please refer to 'Appendix 2: GPI's explained' for a more elaborate explanation of the GPI settings and status
	NETWORK
IP_Conf0	With this setting you can let the card obtain an IP address automatically via `DHCP`, or appoint a `manual` set IP address. When set to `Disabled`, the Ethernet port will be disabled. By default this setting is set to `DHCP`.

mIP0	When `IP_Conf0` is set to `manual`, you can type in the preferred IP address here. By default it is set to 0.0.0.0
mNM0	With `IP_Conf0` set to `manual`, with this setting you can set a Netmask. Default is 255.255.0.0
mGW0	With `IP_Conf0` set to `manual`, this setting let you set a Standard Gateway. Default is set to 172.16.0.1
NetwPrefix0	With `IP_Conf` set to `manual`, this item lets you set a network mask prefix varying from 0 to 30 bit. The `mNM0` network mask changes accordingly.

6 Status Menu

Introduction

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

sInp1 ~ sInp4

These items display whether an input is present on inputs 1 to 4. Can be either `Present` or `NA`.

Ref

Displays whether a correct reference is found (`Present`) or not (`NA`)

INP_FORMAT_A

This status item indicates the presence and format of a valid signal for input channel A. This is displayed as:

- `1080i60`
- `1080i50`
- `1080p30`
- `1080p25`
- `1080p24`
- `1080p24sf`
- `720p60`
- `720p50`
- `720p30`
- `SD525`
- `SD625`
- `1080p60` (GIX only)
- `1080p50` (GIX only)
- `NA`

Inp-Map_A
(GIX only)

This indicates the mapping of input channel A when the input format is 3Gb/s (1080p50 or 1080p60). Can be `Level A` or `Level B`. When the input format is not 1080p60 or 1080p50, this item indicates `NA`.

INP_FORMAT_B

This status item indicates the presence and format of a valid signal for input channel B. This is displayed the same as with status item `INP_FORMAT_A`.

Inp-Map_B
(GIX only)

This indicates the mapping of input channel B when the input format is 3Gb/s (1080p50 or 1080p60). Can be `Level A` or `Level B`. When the input format is not 1080p60 or 1080p50, this item indicates `NA`.

Output

Displays the (last known) output format of the card. Displayed as listed under `INP_FORMAT_A`.

Output-Map

This indicates the mapping of the (last known) output when the output format is 3Gb/s (1080p50 or 1080p60). Can be `Level A` or `Level B`. When the output format is not 1080p60 or 1080p50, this item indicates `NA`.

CRC_EDH_A

Indicates CRC and EDH errors on input A, whenever CRC errors reached the threshold set with `TRS_CRC_Thres`. Whether the EDH is checked on Full field or Active Picture is set with `EDH-mode`.

CRC_EDH_B

Indicates CRC and EDH errors on input B whenever CRC errors reached the threshold set with `TRS_CRC_Thres`. Whether the EDH is checked on Full field or Active Picture is set with `EDH-mode`.

TRS-A

`TRS-A` detects the amount of TRS in the signal in probe A. When this reaches the threshold set with `TRS_CRC_Thres`, an error is displayed. TRS = Timing Reference Signal. For more information see SMPTE standard 259m.
`Error` indicates that the input of probe A is producing an error. `OK` indicates that the TRS in the signal is OK. `No_Input` indicates that there is no signal input at all and `Off` indicates that TRS-detection is switched off.

TRS-B

Same as `TRS-A`, but then for probe B.

ANC-A

`ANC-A` detects the state of the horizontal ancillary data in probe-A, which contains the embedded audio.

- `OK`: no error
- `Error`: input of probe-A has ANC errors
- `No_input`: there no input at all on probe-A
- `Off`: ANC detection is switched off.

ANC-B

Same as `ANC-A`, but for probe-B.

Freeze-A

`Freeze-A` detects whether the inputs are frozen in Probe A,

- `OK`: no freeze is detected
- `Error`: input of Probe-A is frozen
- `No_input`: there no input at all on probe-A
- `Off`: freeze detection is switched off.

Freeze-B

Same is `Freeze-A`, only for probe-B.

Black-A

`Black-A` detects whether the input of probe-A is black.

- `OK:` probe-A input signal is not black
- `Error:` probe-A input is black
- `No_input:` there no input at all on probe-A
- `Off:` Black detection is switched off.

Black-B

Same is `Black-A`, only for probe-B.

TC-Stat_A

Indicates the status of the time code on input channel A. Can be `NA` (not available), `running`, `Stalled` (freeze), `No_input` (when there's no signal at all present on input A) or `Off` (when TC detection is switched off).

TC-Stat_B

Same is `TC-Stat_A`, only for probe-B.

OP47-Det-A

Indicates the presence of OP47 SDP VANC packets on input channel A. Can be `OK` (present), `Error` (missing), `No_input` (when there is no signal at all present on input A) or `Off` (when OP47 detection is switched off).

OP47-Det-B

Same as `OP47-Det-A`, only for probe-B

WST-Det-A

Indicates the presence of SD WST packets on input A. Can be `OK` (present), `Error` (missing), `No_input` (when there is no signal at all present on input A) or `Off` (when WST detection is switched off).

WST-Det-B

Same as `WST-Det-A`, only for probe-B.

Aud-Stat_A1/2 ~ Aud-Stat_A15/16	These status items indicate the detected audio format of each audio pair in the de-embedder of input channel A. Can be one of the following formats: ▪ N/A ▪ PCM ▪ Null ▪ AC-3 ▪ TimeStmp ▪ MPEG-1 ▪ MPEG-2 ▪ SMPTE-KLV ▪ Dolby E ▪ Caption data ▪ UserDef ▪ Rsvd ▪ Enh Ac-3
Aud-Stat_B1/2 ~ Aud-Stat_B15/16	These status items indicate the detected audio format of each audio pair in the de-embedder of input channel B. Can be the same formats as listen under Aud-Stat_A1/2.
ChA_1_FS ~ ChA_16_FS	These items indicate the Full Scale (audio clipping) status of all the individual audio channels of input channel A. Can be Off (card is set to not detect full scale audio) OK, Error, NA or NoPCM (audio is not PCM so FS cannot be detected).
ChB_1_FS ~ ChB_16_FS	These items indicate the Full Scale (audio clipping) status of all the individual audio channels of input channel B. Can be Off (card is set to not detect full scale audio) OK, Error, NA or NoPCM (audio is not PCM so FS cannot be detected).
ChA_1_Sil ~ ChA_16_Sil	These items indicate the Silence status of all the individual audio channels of input channel A. Can be Off (card is set to not detect silent audio) OK, Error, NA or NoPCM (audio is not PCM so silence cannot be detected).
ChB_1_Sil ~ ChB_16_Sil	These items indicate the Silence status of all the individual audio channels of input channel B. Can be Off (card is set to not detect silent audio) OK, Error, NA or NoPCM (audio is not PCM so silence cannot be detected).
Active_A	Active-A shows which channel is being output from main output A of the backup switch function. Can be either Input_A or Input_B

Active_B	`Active-B` shows which channel is being output from main output B of the backup switch function. Can be either `Input_A` or `Input_B`
Routing_A	`Routing-A` shows which SDI input is being output from main output A of the backup switch function. This primarily depends on the input mux and the backup switch function. Can be `SDI-1`, `SDI-2`, `SDI-3` or `SDI-4`.
Routing_B	`Routing-B` shows which SDI input is being output from main output B of the backup switch function. This primarily depends on the input mux and the backup switch function. Can be `SDI-1`, `SDI-2`, `SDI-3` or `SDI-4`.
IODelayA	Displays the total delay in ms of framesync output A. Can be a value between 0ms and 15000ms.
IODelayB	Displays the total delay in ms of framesync output B. Can be a value between 0ms and 15000ms.
Contact-Status (software versions 0709 and later)	Displays the currently closed GPI contacts. This is displayed as for instance 1010000 when contacts 1 and 3 are closed and for instance 0111000 when contacts 2, 3 and 4 are closed.
GPI_A ~ GPI_D (software versions 0709 and later)	Displays the current value of GPI pool A, B, C or D.
InpStat_SelA	Displays input multiplexer status for input A. Can be `SDI-1`, `SDI-2`, `SDI-3` or `SDI-4`.
InpStat_SelB	Displays input multiplexer status for input B. Can be `SDI-1`, `SDI-2`, `SDI-3` or `SDI-4`.
Switch_Delay (110 only)	The amount of video frames delay for the backup-switch resulting from the `Fade-Time`. Add this value to the `#F-delay_1` to maintain AV synchronisation.

GPI (software versions before 0709)	Displays the currently closed GPI contacts. This is displayed as for instance `1_3` when contacts 1 and 3 are closed and for instance `_23` when contacts 2 and 3 are closed.
InputA-Error	This is the overall Error status of Input A. It's a gathering of all possible errors. When this is in error, the card has switched to input B.
InputB-Error	This is the overall Error status of Input B. It's a gathering of all possible errors. When this is in error, the card has switched to input A.
InputA-Probe	This is the overall Probe status of Input A. It's a gathering of all possible probes.
InputB-Probe	This is the overall Probe status of Input B. It's a gathering of all possible probes.
	NETWORK
IP_Addr0	This item displays the status of the IP address. It can be `manual`, `DHCP asking`, `DHCP Leased`, `DHCP Infin`, `Disabled` or `No Cable`.
MAC0	This item displays the MAC address of the card.
IP0	This item displays the current IP address of the card.
NM0	This item displays the current Netmask of the card.
GW0	This item displays the current Standard Gateway of the card.

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.

GIX-HIX100-110 Events

Each event item can be set between 0 .. 255. 0= no event, 1..255 are the priority setting. If set to `0` no events will be generated. This information is only needed when the GPI16 card is used or when (Cortex) software is implemented. The events reported by this 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.

Ref-Status

`Ref-Status` If the reference is lost an Event will be generated at the set priority.

Input_A

If input A is lost, an Event will be generated at the set priority.

Input_B

If input B is lost, an Event will be generated at the set priority.

TRS-Status_A

If probe A detects TRS errors, an Event will be generated at the set priority.

TRS-Status_B

If probe B detects TRS errors, an Event will be generated at the set priority.

Active_Out_A

If probe A detects a change on the active output, an event is generated at the set priority.

Active_Out_B

If probe B detects a change on the active output, an event is generated at the set priority.

Freeze-Status_A	If probe A detects a freeze, an Event will be generated at the set priority.
Freeze-Status_B	If probe B detects a freeze, an Event will be generated at the set priority.
Black-Status_A	If probe A detects a black, an Event will be generated at the set priority.
Black-Status_B	If probe B detects a black, an Event will be generated at the set priority.
Audio-Data_A	If probe A detects audio silence or data errors, an Event will be generated at the set priority.
Audio-Data_B	If probe B detects audio silence or data errors, an Event will be generated at the set priority.
GENERIC_1	If probe A detects CRC errors, an Event will be generated at the set priority.
GENERIC_2	If probe B detects CRC errors, an Event will be generated at the set priority.
GENERIC_3	If probe A detects TC presence errors (when `TC-Pres-Det` is switched on) or a TC freeze is detected (when `TC-freeze-Det` is switched on), an Event will be generated at the set priority.
GENERIC_4	If probe B detects TC presence errors (when `TC-Pres-Det` is switched on) or a TC freeze is detected (when `TC-freeze-Det` is switched on), an Event will be generated at the set priority.
GENERIC_5	Probe A Total sum of errors. When there's 1or more errors detected, an event is generated at the set priority.
GENERIC_6	Probe B Total sum of errors. When there's 1or more errors detected, an event is generated at the set priority.
GENERIC_7	If probe A detects clipping audio, an Event will be generated at the set priority.

GENERIC_8

If probe B detects clipping audio, an Event will be generated at the set priority.

GENERIC_9

Probe A Total sum of probed errors. When there's 1or more errors detected, an event is generated at the set priority.

GENERIC_10

Probe B Total sum of probed errors. When there's 1or more errors detected, an event is generated at the set priority

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 Synapse Set-up 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 GIX-HIX100-110 are:

Event Menu Item	Tag		Description
Announcements	01_{hex}=NA	81_{hex}= 1	Announcing of report and control values
Ref-Status	02_{hex}=REF_LOSS	82_{hex}=REF_RETURN	Reference lost or returned
Input_A	01_{hex}=INP_LOSS	81_{hex}=INP_RETURN	Input A lost or returned
Input_B	41_{hex}=INP_LOSS	$c1_{hex}$=INP_RETURN	Input B lost or returned
TRS-Status_A	17_{hex}= TRS_ERROR_A	97_{hex}= TRS_OK_A	TRS A in error or OK
TRS-Status_B	48_{hex}= TRS_ERROR_B	$c8_{hex}$= TRS_OK_B	TRS B in error or OK
Active_Out_A	19_{hex}= IN_B -> OUT_A	99_{hex}= IN_A -> OUT_A	Output A is input B or A
Active_Out_B	$1a_{hex}$= IN_B -> OUT_B	$9a_{hex}$= IN_A -> OUT_B	Output B is input B or A
Freeze-Status_A	$0e_{hex}$=FREEZE_ERROR_A	$8e_{hex}$=FREEZE_OK_A	Probe A freeze error/OK
Freeze-Status_B	$4e_{hex}$=FREEZE_ERROR_B	ce_{hex}=FREEZE_OK_B	Probe B freeze error/OK
Black-Status_A	$0f_{hex}$=BLACK_ERROR_A	$8f_{hex}$=BLACK_OK_A	Probe A black error/OK
Black-Status_B	$4f_{hex}$=BLACK_ERROR_B	cf_{hex}=BLACK_OK_B	Probe B black error/OK
Audio-Data-A	05_{hex}=AUDIO_ERROR_A	85_{hex}=AUDIO_OK_A	Probe A audio sil-err/OK
Audio-Data-B	45_{hex}=AUDIO_ERROR_B	$c5_{hex}$=AUDIO_OK_B	Probe B audio sil-err/OK
GENERIC_1	$3a_{hex}$=GENERIC_1_ON	ba_{hex}=GENERIC_1_OFF	CRC error/ok on probe A
GENERIC_2	$3b_{hex}$=GENERIC_2_ON	bb_{hex}=GENERIC_2_OFF	CRC error/ok on probe B
GENERIC_3	$3c_{hex}$=GENERIC_3_ON	bc_{hex}=GENERIC_3_OFF	TC error/ok on probe A
GENERIC_4	$3d_{hex}$=GENERIC_4_ON	bd_{hex}=GENERIC_4_OFF	TC error/ok on probe B
GENERIC_5	$3e_{hex}$=GENERIC_5_ON	be_{hex}=GENERIC_5_OFF	sum error/ok on probe A
GENERIC_6	$3f_{hex}$=GENERIC_6_ON	bf_{hex}=GENERIC_6_OFF	sum error/ok on probe B
GENERIC_7	40_{hex}=GENERIC_7_ON	$c0_{hex}$=GENERIC_7_OFF	FS error/ok on probe A
GENERIC_8	65_{hex}=GENERIC_8_ON	$e5_{hex}$=GENERIC_8_OFF	FS error/ok on probe B
GENERIC_9	66_{hex}=GENERIC_9_ON	$E6_{hex}$=GENERIC_9_OFF	Sum probe error/ok on probe A
GENERIC_10	67_{hex}=GENERIC_10_ON	$E7_{hex}$=GENERIC_10_OFF	Sum probe error/ok on probe B

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 card is not configured properly, or when there is a hardware failure.

Input_1 LED ~ Input_4 LED

These LEDs indicate the presence of a valid SDI (SD or HD) video input signal on each input.

ANC Data Probe A LED

This LED indicates the presence of embedded audio on Probe-A.

ANC Data Probe B LED

This LED indicates the presence of embedded audio on Probe-B.

Reference LED

Indicates the presence of a valid reference signal on the selected reference input connector (ref-1 or ref-2).

Data Error LED

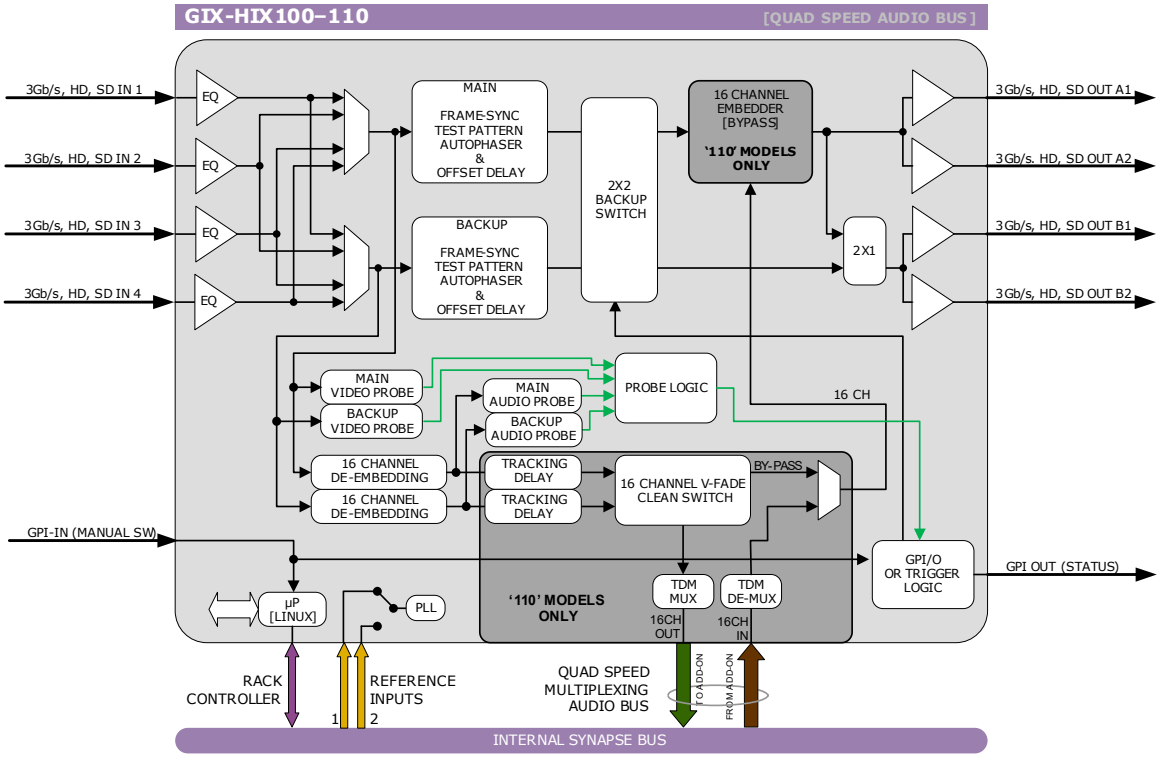
This LED indicates an HD CRC error or SD EDH error.

Connection LED

This LED illuminates after the card has initialized. The LED lights for 0.5 seconds each time a card is connected.

All LED’s will illuminate several seconds during start-up.

9 Block Schematic



10 Connector Panel

The GIX-HIX100-110 can be used with the following backplanes: BPH17, BPH17b

BPH17 BHX17b

3Gb/s, HD, SD INPUT 1 (OPTIONAL FIBER IN)

3Gb/s, HD, SD INPUT 2 (OPTIONAL FIBER IN)

3Gb/s, HD, SD MAIN OUTPUT 1 (OPTIONAL FIBER OUT)

3Gb/s, HD, SD MAIN OUTPUT 2

GPI I/O

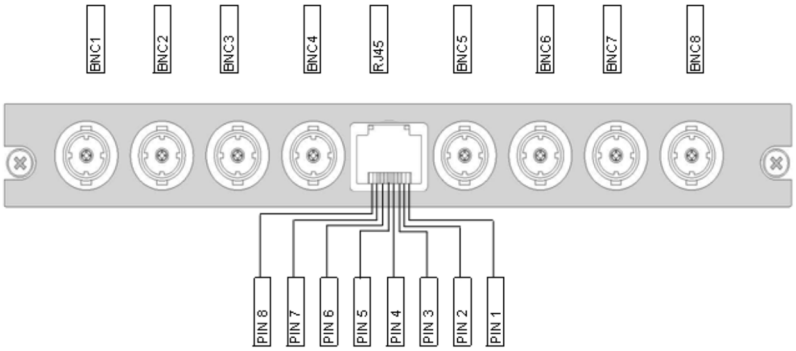
3Gb/s, HD, SD BACKUP OUTPUT 1 (OPTIONAL FIBER OUT)

3Gb/s, HD, SD BACKUP OUTPUT 2

3Gb/s, HD, SD INPUT 3

3Gb/s, HD, SD INPUT 4

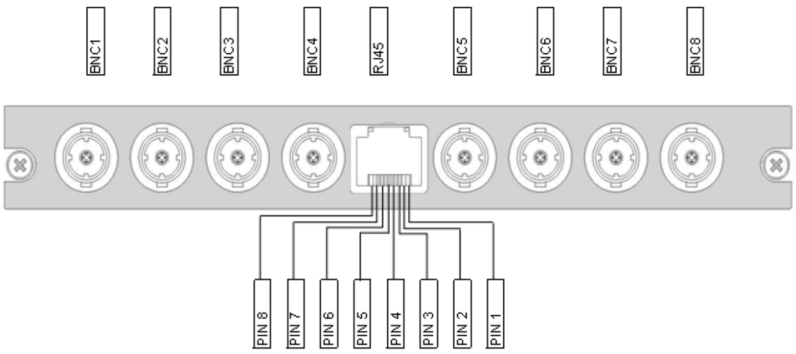
GPI pinning
(software versions before 0709)



Pin 1	GPI input 0
Pin 2	GPI input 1
Pin 3	Probe-A status Ok='0', Error='1' (video and audio alarms for channel A)
Pin 4	Probe-B status Ok='0', Error='1' (video and audio alarms for channel B)
Pin 5	Output-A route A='0', B='1' (Active-A status)
Pin 6	Output-B route A='0', B='1' (Active-B status)
Pin 7	GPI In 2 Audio preset selection (110 only)
Pin 8	Ground

GPI pinning

(software version 0709 and later)



Pin 1	GPI input 0
Pin 2	GPI input 1
Pin 3	GPI input 2 or GPO output 0
Pin 4	GPI input 3 or GPO output 1
Pin 5	GPI input 4 or GPO output 2
Pin 6	GPI input 5 or GPO output 3
Pin 7	GPI input 6
Pin 8	Ground

Using BHX17b

When using the backpanel with bypass relay (BHX17b), you must first set the **bottom-side** dip-switch **on the card** to 'on'. This will pass 5 volt to the backpanel. If this is not done, the relays won't work at all.

On the BHX17b itself there are also 2 dipswitches (see picture on the next page). The bottom dipswitch is not connected. With the top switch you can choose the Bypass function. There are 2 possible function indications "on" (printed on the dip switch itself) and "off":

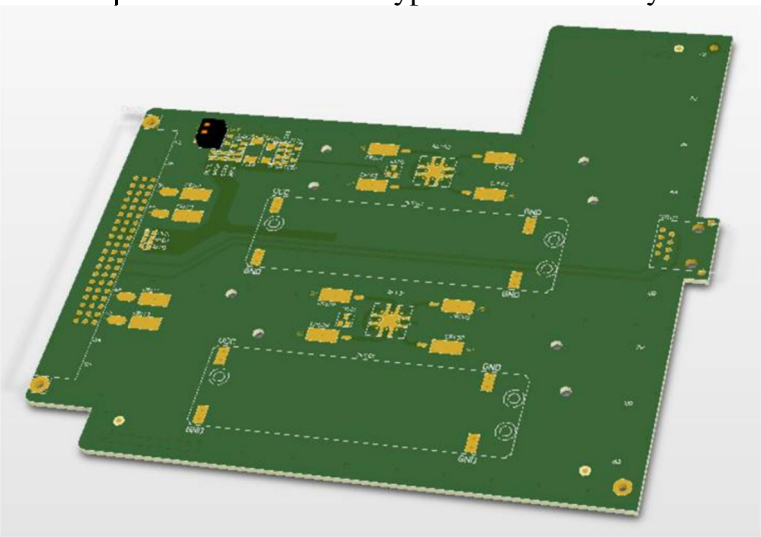
"**Direct Backpanel Switchover**" dipswitch set to **ON**:
Will make the BHX-backpanel switch over to the processed signal as soon as it detects the trigger signal from the connected synapse card. This setting will minimize the bypass time and ensures fast recovery of processed signals.
The **ON** setting is recommended if the BHX-backpanel is used in combination with synapse cards:

- which have a short initialization time, or
- which have a delayed trigger-signal onboard.

"**Direct Backpanel Switchover**" dipswitch set to **OFF (default)**:
Will make the BHX-backpanel switch after about 15 seconds from the moment the BHX-backpanel detects the trigger signal from the connected synapse card. This setting will allow more time for complex synapse cards to finish initialization and stabilize proper signal processing before the backpanel switches over to the processed signal.
The **OFF** setting is recommended if the BHX-backpanel is used in combination with synapse cards:

- which are more complex and thus need longer initialization time and do NOT have a delayed trigger-signal onboard.

Note: In case of power failure or when the synapse board is extracted from the frame the bypass is immediately active.



Appendix 1: Switching in 2x2 and 2x1 modes

Switching in 2x1 mode

The following three tables apply when the switch is configured for Auto switching. The `Inp-sel` setting is `auto`, the `Output-Config` is `2x1` and `Switch-Back` setting is varied for each of these tables. Please read the table from top to bottom, this is the order of the events that occur on the inputs.

Switch-Back = Off

A Input	B Input	A output	B Output
Good	Good	Input A	Input A
Fail	Good	Input B	Input B
Good	Good	Input B	Input B
Good	Fail	Input B	Input B
Good	Good	Input B	input B

Switch-Back = On

A Input	B Input	A output	B Output
Good	Good	Input A	Input A
Fail	Good	Input B	Input B
Good	Good	Input A	Input A
Good	Fail	Input A	Input A
Good	Good	Input A	Input A

Switch-Back = BackUp_Fail

A Input	B Input	A output	B Output
Good	Good	Input A	Input A
Fail	Good	Input B	Input B
Good	Good	Input B	Input B
Good	Fail	Input A	Input A
Good	Good	Input A	Input A

Switching in 2x2 mode

The following three tables apply when the switch is configured for Auto switching. The `Inp-sel` setting is `auto`, the `Output-Config` is `2x2` and `Switch-Back` setting is varied for each of these tables. Please read the table from top to bottom, this is the order of the events that occur on the inputs.

Switch-Back = Off

A Input	B Input	A output	B Output
Good	Good	Input A	Input B
Fail	Good	Input B	Input A
Good	Good	Input B	Input A
Good	Fail	Input B	Input A
Good	Good	Input B	Input A

Switch-Back = On

A Input	B Input	A output	B Output
Good	Good	Input A	Input B
Fail	Good	Input B	Input A
Good	Good	Input A	Input B
Good	Fail	Input A	Input B
Good	Good	Input A	Input B

Switch-Back = BackUp_Fail

A Input	B Input	A output	B Output
Good	Good	Input A	Input B
Fail	Good	Input B	Input A
Good	Good	Input B	Input A
Good	Fail	Input A	Input B
Good	Good	Input A	Input B

Switching in Combined mode

The following three tables apply when the switch is configured for Auto switching. The `Inp-sel` setting is `auto`, the `Output-Config` is `Combined` and `Switch-Back` setting is varied for each of these tables. Please read the table from top to bottom, this is the order of the events that occur on the inputs.

Switch-Back = Off

A Input	B Input	A output	B Output
Good	Good	Input A	Input B
Fail	Good	Input B	Input B
Good	Good	Input B	Input B
Good	Fail	Input B	Input B
Good	Good	Input B	Input B
A Input	**B Input**	**A output**	**B Output**
Good	Good	Input A	Input B
Good	Fail	Input A	Input A
Good	Good	Input A	Input A
Fail	Good	Input A	Input A
Good	Good	Input A	Input A

Switch-Back = On

A Input	B Input	A output	B Output
Good	Good	Input A	Input B
Fail	Good	Input B	Input B
Good	Good	Input A	Input B
Good	Fail	Input A	Input A
Good	Good	Input A	Input B
A Input	**B Input**	**A output**	**B Output**
Good	Good	Input A	Input B
Good	Fail	Input A	Input A
Good	Good	Input A	Input B
Fail	Good	Input B	Input B
Good	Good	Input A	Input B

Switch-Back = BackUp_Fail

A Input	B Input	A output	B Output
Good	Good	Input A	Input B
Fail	Good	Input B	Input B
Good	Good	Input B	Input B
Good	Fail	Input A	Input A
Good	Good	Input A	Input A
A Input	**B Input**	**A output**	**B Output**
Good	Good	Input A	Input B
Good	Fail	Input A	Input A
Good	Good	Input A	Input A
Fail	Good	Input B	Input B
Good	Good	Input B	Input B

Appendix 2 GPI's explained

Introduction

This appendix describes the functionality of the GPI's generally used within the Synapse based products.

General functionality

The physical contacts of a General Purpose Interface can be assigned by the user. In our cards the General Purpose Interface contacts (GPI contacts) will be named as General Purpose Input (GPI) or General Purpose Output (GPO). The GPI inputs and outputs are assignable to different preset banks. These preset banks (GPI pools) can be used to switch multiple settings at once.
Some examples of these functions:

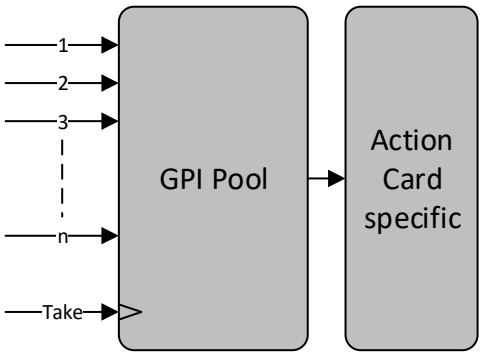
- Input selection
- Output mode
- Up conversion aspect ratio for channel A and B
- Down conversion aspect ratio for channel A and B
- Cross conversion aspect ratio for channel A and B
- Transparent aspect ratio (equal in-output) for channel A and B
- Insertion of VI, WSS, AFD (S2016) for channel A and B
- Audio shuffling, gain and phase

Contact assignment

The physical contacts can be assigned as input or output. In the menu of a card, these will be called `Contact_N` depending on the amount of contacts available. Contacts could be Inputs, outputs or bi-derictional I/O. The `Contact_N` menu item will be used to assign this specific contact to input or output pools. The choices are `Off`, `GPI_A`, `GPI_B`, `GPI_C`, …, `GPI_N`, `GPO_A`, `GPO_B`, `GPO_C`, …, `GPO_N` depending on the amount of contacts and pools.

Pools

A GPI/GPO pool is a place where contacts are collected to form an output trigger.



Take

The GPI contacts not only can be used as GPI contact but also can be assigned as Take contact. The menu item is called `GPI_n-Take`. Where n is the amount of GPI pools in the product. Every pool can only have one Take contact. There will be no restrictions in assigning the contact to a GPI pool and Take function at the same time. The values will be 1 to x. When assigning a take pin to a pool set to `Prio_Latched` mode, the pool will behave the same as when set to `Prio` mode with a take pin assigned. This is because the take pin overrules the latched functionality of the `Prio_Latched` mode.

Pool Mode: GPI

Every GPI pool can be set up to process the input contacts in three ways. This setting is called `GPI_n-Mode` and can be set into priority `(Prio)`, priority latched (`Prio_Latched`) and `Binary` mode. N is defined as a character in the range from A-Z depending on the number of pools. The default output value of a pool is always 0. This translates to preset 1 in EVS products.
In priority mode, the contact which has the highest priority defines the pool value. Priority is defined as ranging from the least significant bit (low priority) to the most significant bit (high priority). This is essentially a one-hot coding of preset values.
If a pool has three contacts connected and all inputs are high, the output value of the pool will be 3. Another example is when three contacts are connected to a pool with the first and third contact are low and the second contact is high the output value is 1.

Input 1	Input 2	Input 3	Pool value	Preset nr
0	0	0	1	1
1	0	0	1	1
X	1	0	2	2
X	X	1	3	3

Table 1 Pool value in prio and prio_latched mode

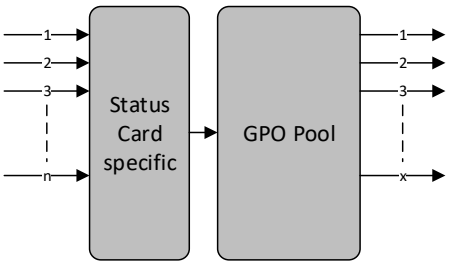
In binary mode, the contacts are interpreted as a binary value of concatenated contacts available in a pool. E.g. assigning two contacts to a GPI pool translates to the following output values.

Input 1	Input 2	Pool value	Preset nr
0	0	1	1
0	1	2	2
1	0	3	3
1	1	4	4

Table 2 Pool value in binary mode

Pool Mode: GPO

Every GPO pool can be set up to process the input values in two ways. This setting is called `GPO_n-Mode` and can be set into Priority (`Prio`) or `Binary` mode. N is defined as a character in the range from A-Z depending on the number of pools. The default output value of a pool is always 0.



Every GPO pool can be set up to process the input values in two ways. This setting is called `GPO_n-Mode` and can be set into Priority (`Prio`) or `Binary` mode. N is defined as a character in the range from A-Z depending on the number of pools. The default output value of a pool is always 0.

In priority mode, the value is translated to one-hot encoding on the output contacts. See table below.

Preset nr	Output 1	Output 2	Output 3	Pool value
1	1	0	0	1
2	0	1	0	2
3	0	0	1	3

Table 3 Pool value in priority mode

In binary mode the input value is exposed on the output contacts as binary value.

Preset nr	Output 1	Output 2	Pool value
1	0	0	1
2	0	1	2
3	1	0	3
4	1	1	4

Table 4 Pool value in binary mode

`GPO_n-Source` is the setting with which a function is assigned to a GPO pool. E.g. when the output format needs to be reflected on the output contacts, this setting may be set to something like `Output_Format`. The contents of the enumeration are product specific.

Statuses: Contact direction

This status `Contact-Dir` shows the direction of the physical contacts. The value will be presented as a concatenated string containing one character per pin: `I` for Input, `O` for output and _ for unassigned contacts.

Statuses: Contact status

`Contact-Status` shows the current logical value of the physical contacts, formatted as a concatenated string containing one character per pin: `1` for asserted, `0` for non-asserted and _ for unassigned.

Statuses: GPI status

`GPI_n` is an integer which reflects the value of the pool.

Statuses: GPO status

`GPO_n` is an integer which reflects the value of the pool.

Example 1: Two pools in binary mode

We are controlling the up-converter presets using Pool A (`Up_CtrlA` set to `GPI_A`) and the output mode setting using Pool B (`Out-mode-Ctrl` set to `GPI_B`). Both pools are working in priority mode. The GPI's need to be set-up in the following way:

- Set GPI_A-Mode to Prio
- Set Contact_1 to GPI_A
- Set Contact_2 to GPI_A
- Set Contact_3 to GPI_A
- Set Contact_4 to GPI_A
- Set GPI_B-Mode to Prio
- Set Contact_5 to GPI_B

Pool A now consists of GPI 1, GPI 2, GPI 3 and GPI 4 in a priority mode, controlling the up-converter preset. Pool B consists only of GPI 5 (also in priority mode), controlling the output mode setting.Pool A now works as follows:

Contact_1 status	Contact_2 status	Contact_3 status	Contact_4 status	GPI_A value
0	0	0	0	Up-conv Preset 1
1	0	0	0	Up-conv Preset 1
0	1	0	0	Up-conv Preset 2
0	0	1	0	Up-conv Preset 3
0	0	0	1	Up-conv Preset 4
0	1	1	0	Up-conv Preset 3 (highest gets priority)
1	1	1	1	Up-conv Preset 4 (highest gets priority)

Table 5 Pool value in priority mode

Pool B now works as follows:

Contact_5 status	GPI_B value
0	A out only
1	B out only

Table 6 Pool value in priority mode

Example 2: One pool in binary mode and one in priority mode

Let's say we would like to control the GXG up-converter presets using Pool A (`Up_CtrlA` set to `GPI_A`) in binary mode and the audio presets using Pool B (`Audio_Ctrl` set to `GPI_B`) in priority mode. We could do the following:

- Set GPI_A-Mode to binary
- Set Contact_1 to GPI_A
- Set Contact_2 to GPI_A
- Set GPI_A-Take to Contact_3
- Set GPI_B-Mode to Prio
- Set Contact_4 to GPI_B
- Set Contact_5 to GPI_B

Pool A now consists of GPI 1, GPI 2 and GPI 3 (as take) in binary mode, controlling the up-converter preset. Pool B now consists of GPI 4 and GPI 5 in priority mode, controlling the audio presets.
Pool A now works as follows:

Contact_1 status	Contact_2 status	Preset value (when Contact_3 (take) is closed)
0	0	Up-converter Preset 1
1	0	Up-converter Preset 2
0	1	Up-converter Preset 3
1	1	Up-converter Preset 4

Table 7 Pool value in binary mode

Pool B now works as follows:

Contact_4 status	Contact_5 status	Preset value
0	0	Audio Preset 1
1	0	Audio Preset 1
0	1	Audio Preset 2
1	1	Audio Preset 2 (because highest gets priority)

Table 8 Pool value in priority mode

Example 3: Two pools in priority mode

Let's say we would like to control the up-converter presets using Pool A (`Up_CtrlA` set to `GPI_A`) in priority mode and the audio presets using Pool B (`Audio_Ctrl` set to `GPI_B`) in priority mode. We could do the following settings:

- Set GPI_A-Mode to Prio
- Set Contact_1 to GPI_A
- Set Contact_2 to GPI_A
- Set GPI_B-Mode to Prio
- Set Contact_3 to GPI_B
- Set Contact_4 to GPI_B

Pool A now consists of GPI 1 and GPI 2 in a priority mode, controlling the Up converter preset. Pool B now consists of GPI 3 and GPI 4 in a priority mode, controlling the audio presets.
Pool A now works as follows (next page):

Contact_1 status	Contact_2 status	Preset value
0	0	Up-converter Preset 1
1	0	Up-converter Preset 1
0	1	Up-converter Preset 2
1	1	Up-converter Preset 2 (because highest gets priority)

Table 9 Pool value in priority mode

Pool B now works as follows:

Contact_3 status	Contact_4 status	Preset value
0	0	Audio Preset 1
1	0	Audio Preset 1
0	1	Audio Preset 2
1	1	Audio Preset 2 (because highest gets priority)

Table 10 Pool value in priority mode

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