Synapse

ASI10

Dual channel ASI/DVB monitor with 2x2 output switch and dual fan out per channel

Installation and Operation manual

DESIGNED FOR ASI/DVB

Committed.

AXON®

Synapse

TECHNICAL MANUAL

ASI10

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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.

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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.

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

Axon Digital Design ASI10 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 (RRC18/RRC10/RRC04/RRS18/RRS04) manual. The method of connection to a computer using Ethernet is described in the RRC/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

```
[No Alarms]
```

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 me u 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-In ut		525
					▼		
					H-Delay		
					▼		
					▼		

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

4 The ASI10 Card

Introduction

The ASI10 is a dual channel ASI/DVB integrity checker with a 2x2 output switch. Each output has a dual fan-out for distribution of the signal

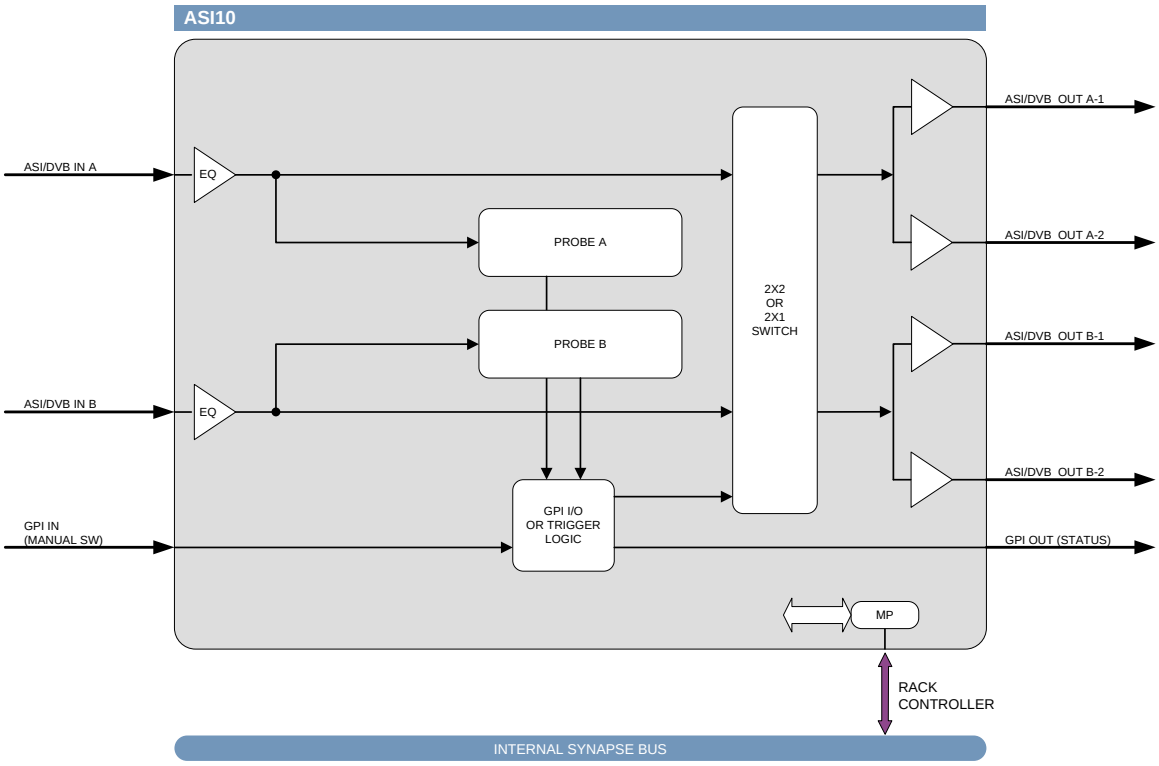
Features

- 2x2 or 2x1 (4 outputs) mode
- Monitor ASI/DVB streams and triggering of corresponding alarms. These can be used to trigger a switch over.
  - Loss of Transport Stream sync bytes
    - Alarm trigger: sync acquisition, fail
  - No Transport Stream
    - Alarm trigger: data, no data
  - Transport Stream-rate
    - Alarm trigger with lower and upper limit breach
  - Data-rate
    - Alarm trigger with lower and upper limit breach
  - Null packets / Active data ratio
    - Alarm trigger:
      - Null packets > preset
      - Null packets < preset
      - Data packets per second > preset
      - Data packets per second < preset
  - Number of PIDs in the stream
    - Alarm trigger:
      - Total number of unique PIDs < preset
      - Total number of unique PIDs > preset
- Monitoring only
  - ASI data link mode
    - Empty
    - Byte
    - Packet
    - Burst
  - 188/204 mode
    - 188 Mode
    - 204 Mode
    - Indeterminate
  - Numberrof PIDs in the stream
    - Total number of PIDs per second
    - Total number of unique PIDs per second
- 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 BNC inputs) or 2 fiber outputs (replacing 2 BNC outputs) on I/O panel

Applications

Generic ASI/DVB integrity monitoring and backup switching

Block schematic



5 Settings Menu

Introduction

The settings menu displays the current state of each ASI10 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.

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-only`, `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-only` selections disable the automatic switching.

In `GPI-only` the switch position follows GPI contact 1, non-latching (level sensitive).

`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. This GPI is non-latching (level sensitive).

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` (input will switch back), output-A is biased to input-A, output-B is biased to input-B.

Set to `Off`, the input will stay on the selected input. Outputs not biased to a specific input.

Can also be set to `BackUp_Fail` in which case the input will always switch back to the other input when the Backup input is active and fails. Output-A is biased to input-A, Output-B is biased to input-A. Default is `Off`.

Rate-Status

With this setting you switch `on` or `off` the automatic status updates of the data, TS rates and PID totals. By default this is switched `off` to reduce control network traffic.

Rate-Units

When set to `Pkt/s` (packets per second), all reported bitrates and the bitrate thresholds are in packets per second. Set to `Bit/s` (bits per second) the unit changes to bits per second.

The `bit/s` value thresholds for an input channel are calculated using the `TS-Mode-Size_A` and `TS-Mode-Size_B` settings. Set these to the expected packet sizes for these inputs when using `Bit/s`.

Default is `Pkt/s`.

ASI-Link-Det

With this setting you can decide whether or not you want to check the ASI input datalink status and how the card should act to ASI input errors. For versions before 1623, the following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs.
- `A` or `B`: will monitor the status of the ASI link and will also switch when an error is detected in the corresponding ASI input.
- `A+B`: will monitor and switch when link errors are detected on either ASI inputs (default).
- `Off`: no link status detection will be performed.

For version 1623 onwards the A+B setting is mandatory, the other settings are not available.

TS-Stopped-Det

With this setting you can decide whether or not you want to check the Transport stream presence and how the card should act when a transport stream disappears. For versions before 1623, the following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs.
- `A` or `B`: will monitor the status of the transport stream presence and will also switch when a transport stream stop is detected in the corresponding ASI input.
- `A+B`: will monitor and switch when TS presence errors are detected on either ASI input (default).
- `Off`: no transport stream presence detection will be performed.

For version 1623 onwards the A+B setting is mandatory, the other settings are not available.

TS-SyncLoss-Det

With this setting you can decide whether or not you want to check a Transport stream synchronization loss and how the card should act to any detected sync-losses. For versions before 1623, the following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs.
- `A` or `B`: will monitor the status of the transport stream sync and will also switch when an error is detected in the corresponding ASI input.
- `A+B`: will monitor and switch when synclosses are detected on either ASI input (default).
- `Off`: no transport stream sync-loss detection will be performed.

For version 1623 onwards the A+B setting is mandatory, the other settings are not available.

DataRate-H-Det

With this setting you can decide whether or not you want to check on too high Data rates and how the card should act to too high data rates (threshold is set in the following menu items). The following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs (default)
- `A` or `B`: will monitor the height of the data rate and will also switch when the threshold in the following menu items is exceeded in the corresponding ASI input.
- `A+B`: will monitor and switch when datarate heights errors are detected on either ASI input.
- `Off`: no data rate height check will be performed.

Max-DataRate_A

This item sets the threshold at which data rate maximum the card should signal an error on input A. Can be set between 1 and 109050240 units per second for 208 byte mode (either packets or bits per second, dependant on the `Rate_units` setting). For 188 byte mode the limit is 98564640. For 204 byte mode the limit is 106953120. Default is 65535 unit/s

Max-DataRate_B

This item sets the threshold at which data rate maximum the card should signal an error on input B. Can be set between 1 and 109050240 units per second for 208 byte mode (either packets or bits per second, dependant on the `Rate_units` setting). For 188 byte mode the limit is 98564640. For 204 byte mode the limit is 106953120. Default is 65535 unit/s

DataRate-L-Det

With this setting you can decide whether or not you want to check on too low Data rates and how the card should act to too low data rates (threshold is set in the following menu items). The following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs (default)
- `A` or `B`: will monitor how low the data rate is and will also switch the corresponding ASI input when the rates goes under the threshold set with the following menu.
- `A+B`: will monitor and switch when too low datarates are detected on either ASI input.
- `Off`: no data rate low check will be performed.

Min-DataRate_A

This item sets the threshold at which data rate minimum the card should signal an error on input A. Can be set between 1 and 109050240 units per second (either packets or bits per second, dependant on the `Rate_units` setting). Default is 1 unit/s

Min-DataRate_B

This item sets the threshold at which data rate minimum the card should signal an error on input B. Can be set between 1 and 109050240 units per second (either packets or bits per second, dependant on the `Rate_units` setting). Default is 1 unit/s

PAT-UD-Det

With this setting you can decide whether or not you want to check on infrequent Program Association Table (PAT) repetition, essentially detecting an undecodable TS due to missing PAT transmissions (threshold is set in the following menu items). The following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs (default)
- `A` or `B`: will monitor how frequent the PAT repetition rate is and will also switch the corresponding ASI input when the repetition exceeds the threshold set with the following menu.
- `A+B`: will monitor and switch when PAT UD errors are detected on either ASI input.
- `Off`: no PAT repetition check will be performed.

PAT_UpperDist_A

This item sets the threshold at which repetition frequency maximum the card should signal an error on input A. Can be set between 0 and 81.91 seconds. Default is 0.5 seconds.

PAT_UpperDist_B

This items sets the threshold at which repetition frequency maximum the card should signal an error on input B. Can be set between 0 and 81.91 seconds. Default is 0.5 seconds.

TS-Rate-H-Det

With this setting you can decide whether or not you want to check on too high transport stream rate and how the card should act to too high rates (threshold is set in the following menu items). The following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs (default)
- `A` or `B`: will monitor the height of the transport stream rate and will also switch when the threshold in the following menu items is exceeded in the corresponding ASI input.
- `A+B`: will monitor and switch when transport rate height errors are detected on either ASI input.
- `Off`: no transport stream rate height check will be performed.

Max-TS-rate_A

This item sets the threshold at which transport stream rate maximum the card should signal an error on input A. Can be set between 1 and 109050240 units per second for 208 byte mode (either packets or bits per second, dependant on the `Rate_units` setting). For 188 byte mode the limit is 98564640. For 204 byte mode the limit is 106953120. Default is 65535 unit/s

Max-TS-rate_B

This item sets the threshold at which transport stream rate maximum the card should signal an error on input B. Can be set between 1 and 109050240 units per second for 208 byte mode (either packets or bits per second, dependant on the `Rate_units` setting). For 188 byte mode the limit is 98564640. For 204 byte mode the limit is 106953120. Default is 65535 unit/s

TS-Rate-L-Det

With this setting you can decide whether or not you want to check on too low transport stream rates and how the card should act to too low rates (threshold is set in the following menu items). The following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs (default)
- `A` or `B`: will monitor how low the transport stream rate is and will also switch the corresponding ASI input when the rates goes under the threshold set with the following menu.
- `A+B`: will monitor and switch when too low transport streams are detected on either ASI input.
- `Off`: no transport stream rate low check will be performed.

Min-TS-rate_A

This item sets the threshold at which transport stream rate minimum the card should signal an error on input A. Can be set between 1 and 109050240 units per second (either packets or bits per second, dependant on the `Rate_units` setting). Default is 1 unit/s

Min-TS-rate_B

This item sets the threshold at which transport stream rate minimum the card should signal an error on input B. Can be set between 1 and 109050240 units per second (either packets or bits per second, dependant on the `Rate_units` setting). Default is 1 unit/s

PID-Tot-H-Det

With this setting you can decide whether or not you want to check on too many PIDs (packet identifiers) and how the card should act to too many PIDs (threshold is set in the following menu items). The following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs (default)
- `A` or `B`: will monitor the amount of PIDs and will also switch when the threshold in the following menu items is exceeded in the corresponding ASI input.
- `A+B`: will monitor and switch when PID total height errors are detected on either ASI input.
- `Off`: no PID maximum check will be performed.

Max-PID-Tot_A

This item sets the threshold at which PID amount maximum the card should signal an error on input A. Can be set between 0 and 8191.

Max-PID-Tot_B

This item sets the threshold at which PID amount maximum the card should signal an error on input B. Can be set between 0 and 8191.

PID-Tot-L-Det

With this setting you can decide whether or not you want to check on too few PIDs (packet identifiers) and how the card should act to too few PIDs (threshold is set in the following menu items). The following settings are possible:

- `Probe`: will only do the status detection, which can then be monitored in the status menu, but the card will not do any switches when an error occurs (default)
- `A` or `B`: will monitor the amount of PIDs and will also switch the corresponding ASI input when the PID total goes under the threshold set with the following menu.
- `A+B`: will monitor and switch when low amounts of PIDs are detected on either ASI input.
- `Off`: no PID minimum check will be performed.

Min-PID-Tot_A

This item sets the threshold at which PID amount minimum the card should signal an error on input A. Can be set between 0 and 8191.

Min-PID-Tot_B

This item sets the threshold at which PID amount minimum the card should signal an error on input B. Can be set between 0 and 8191.

ASI-Mode-Det_A

Alarms can be generated when the contents of the ASI stream on input A does not match this setting. Possible ASI-modes are:

- `Byte`
- `Packet`
- `Burst`

Can also be set to off, in which case no alarms will be generated by the card concerning the detected ASI mode on input A. Default is off.

ASI-Mode-Det_B

Alarms can be generated when the contents of the ASI stream on input A does not match this setting. Possible ASI-modes are:

- `Byte`
- `Packet`
- `Burst`

Can also be set to off, in which case no alarms will be generated by the card concerning the detected ASI mode on input B. Default is off.

TS-Mode-Det_A

This item enables the generation of the `TS-Mode-Stat_A` alarm when set to On. When the detected packet size does not match the se `TS-Mode-Size_A` setting, the alarm is sent.

Default is `Off`

TS-Mode-Det_B

This item enables the generation of the `TS-Mode-Stat_B` alarm when set to On. When the detected packet size does not match the se `TS-Mode-Size_B` setting, the alarm is sent.

Default is `Off`

TS-Mode-Size_A

This selects the expected packet size for Input-A. This can either be 188 or 204 byte.

TS-Mode-Size_B

This selects the expected packet size for Input-B. This can either be 188 or 204 byte.

6 Status Menu

Introduction

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

Active_A

This status item displays which input is currently active on outputs A1 and A2. Can be `Input-A` or `Input-B`.

Active_B

This status item displays which input is currently active on outputs B1 and B2. Can be `input-A` or `Input-B`.

ASI-Link_A

Displays the ASI link status of Input A. Can be `OK` or `Error`. Will be `OK` when `ASI-Link-Det` is set to `off`.

ASI-Link_B

Displays the ASI link status of Input B. Can be `OK` or `Error`. Will be `OK` when `ASI-Link-Det` is set to `off`.

TS-Stopped_A

Indicates the status of the transport stream in input A. Can be `Error` or `OK`. In `Error`, an ASI link can be present, filled with ASI null words, without any TS packets. Will be `OK` when `TS-Stopped-Det` is set to `off`.

TS-Stopped_B

Indicates the status of the transport stream in input B. Can be `Error` or `OK`. In `Error`, an ASI link can be present, filled with ASI null words, without any TS packets. Will be `OK` when `TS-Stopped-Det` is set to `off`.

TS-Sync-Loss_A

Displays the status of the transport stream sync in input A. Can be `OK` (TS-sync is OK) or `Error` (TS-sync is lost). Will be `OK` when `TS-SyncLoss-Det` is set to `off`.

TS-Sync-Loss_B

Displays the status of the transport stream sync in input B. Can be `OK` (TS-sync is OK) or `Error` (TS-sync is lost). Will be `OK` when `TS-SyncLoss-Det` is set to `off`.

PAT-UD_A

Indicates the status of the PAT repetition detection of input A. Can be `OK` (PAT repetition is under the threshold set with `PAT-UpperDist_A`), `Error` (PAT repetition is more frequent than the threshold) or `NA` (not available). Will be `NA` when `PAT-UD-Det` is set to `off`.

PAT-UD_B	Indicates the status of the PAT repetition detection of input B. Can be `OK` (PAT repetition is under the threshold set with `PAT-UpperDist_B`), `Error` (PAT repetition is more frequent than the threshold) or `NA` (not available). Will be `NA` when `PAT-UD-Det` is set to `off`.
DataRate-High_A	Indicates the status of the data rate maximum detection of input A. Can be `OK` (data rate is under the threshold set with `Max-DataRate_A`), `Error` (data rate is above threshold) or `NA` (not available). Will be `NA` when `DataRate-H-Det` is set to `off`.
DataRate-High_B	Indicates the status of the data rate maximum detection of input B. Can be `OK` (data rate is under the threshold set with `Max-DataRate_B`), `Error` (data rate is above threshold) or `NA` (not available). Will be `NA` when `DataRate-H-Det` is set to `off`.
DataRate-Low_A	Indicates the status of the data rate minimum detection of input A. Can be `OK` (data rate is above the threshold set with `Min-DataRate_A`), `Error` (data rate is under threshold) or `NA` (Not Available). Will be `NA` when `DataRate-L-Det` is set to `off`.
DataRate-Low_B	Indicates the status of the data rate minimum detection of input B. Can be `OK` (data rate is above the threshold set with `Min-DataRate_B`), `Error` (data rate is under threshold) or `NA` (Not Available). Will be `NA` when `DataRate-L-Det` is set to `off`.
TS-Rate-High_A	Indicates the status of the transport stream rate maximum detection of input A. Can be `OK` (TS rate is under the threshold set with `Max-TS-Rate_A`), `Error` (data rate is above threshold) or `NA` (Not Available). Will be `NA` when `TS-Rate-H-Det` is set to `off`.
TS-Rate-High_B	Indicates the status of the transport stream rate maximum detection of input B. Can be `OK` (TS rate is under the threshold set with `Max-TS-Rate_B`), `Error` (data rate is above threshold) or `NA` (Not Available). Will be `NA` when `TS-Rate-H-Det` is set to `off`.
TS-Rate-Low_A	Indicates the status of the transport stream rate minimum detection of input A. Can be `OK` (TS rate is above the threshold set with `Min-TS-Rate_A`), `Error` (TS rate is under threshold) or `NA` (Not Available). Will be `NA` when `TS-Rate-L-Det` is set to `off`.

TS-Rate-Low_B	Indicates the status of the transport stream rate minimum detection of input B. Can be `OK` (TS rate is above the threshold set with `Min-TS-Rate_B`), `Error` (TS rate is under threshold) or `NA` (Not Available). Will be `NA` when `TS-Rate-L-Det` is set to `off`.
PID-Tot-High_A	Indicates the status of the maximum PID amount detection of input A. Can be `OK` (PID amount is under the threshold set with `Max-PID-Tot_A`), `Error` (PID amount is above threshold) or `NA` (Not Available). Will be `NA` when `PID-Tot-H-Det` is set to `off`.
PID-Tot-High_B	Indicates the status of the maximum PID amount detection of input B. Can be `OK` (PID amount is under the threshold set with `Max-PID-Tot_B`), `Error` (PID amount is above threshold) or `NA` (Not Available). Will be `NA` when `PID-Tot-H-Det` is set to `off`.
PID-Tot-Low_A	Indicates the status of the minimum PID amount detection of input A. Can be `OK` (PID amount is above the threshold set with `Min-PID-Tot_A`), `Error` (PID amount is under threshold) or `NA` (Not Available). Will be `NA` when `PID-Tot-L-Det` is set to `off`.
PID-Tot-Low_B	Indicates the status of the minimum PID amount detection of input B. Can be `OK` (PID amount is above the threshold set with `Min-PID-Tot_B`), `Error` (PID amount is under threshold) or `NA` (Not Available). Will be `NA` when `PID-Tot-L-Det` is set to `off`.
ASI-Mode_A	Displays the type of ASI stream detected on input A. Can be `Empty`, `Byte`, `Packet` or `Burst`.
ASI-Mode_B	Displays the type of ASI stream detected on input B. Can be `Empty`, `Byte`, `Packet` or `Burst`.
TS-Mode_A	Displays the mode of the transport stream detected on input A. Can be `188-bytes`, `204-bytes` or `SyncLoss`.
TS-Mode_B	Displays the mode of the transport stream detected on input B. Can be `188-bytes`, `204-bytes` or `SyncLoss`.
Transp-Error_A	This item indicates the Transport Error Indicator status bit of the transport stream on input A. Can be `OK`, `Error` or `NA`.

Transp-Error_B	This item indicates the Transport Error Indicator status bit of the transport stream on input B. Can be `OK`, `Error` or `NA`.
DataRate_A	Indicates the data rate on input A in packets per second (excluding null packets).
DataRate_B	Indicates the data rate on input B in packets per second (excluding null packets).
TS-Rate_A	Indicates the transport stream rate on input A in packets per second. This is the sum of data and null packet rate.
TS-Rate_B	Indicates the transport stream rate on input B in packets per second. This is the sum of data and null packet rate.
PID-Total_A	Displays the amount of PIDs detected on input A.
PID-Total_B	Displays the amount of PIDs detected on input B.
Max-Pkt-Sep_A	Displays the max separation of packets for input A in ASI words.
Min-Pkt-Sep_A	Displays the minimum separation of packets for input l A in ASI words.
Mean-Pkt-Sep_A	Displays the average separation of packets for input A in ASI words.
Max-Pkt-Sep_B	Displays the max separation of packets for input B in ASI words.
Min-Pkt-Sep_B	Displays the minimum separation of packets for input B in ASI words.
Mean-Pkt-Sep_B	Displays the average separation of packets for input B in ASI words.
Null-DataRatio_A	The ratio between null packets and data packets for input A.
Null-DataRatio_B	The ratio between null packets and data packets for input B.

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 ASI10 are as follows;

`Announcements` is not an event. This item is only used for switching the announcement of status changes on/off. 0=off, other =on. All other status can be selected between 0 .. 255. 0= no event, 1..255 is the priority setting. They are the following:

- `Active_Out_A`
- `Active_Out_B`
- `Input_A`
- `Input_B`
- `TS-Status_A`
- `TS-Status_B`
- `TS-Sync_A`
- `TS-Sync_B`
- `PAT-UD-Status_A`
- `PAT-UD-Status_B`
- `Data-High_A`
- `Data-High_B`
- `Data-Low_A`
- `Data-Low_B`
- `TS-High_A`
- `TS-High_B`
- `TS-Low_A`
- `TS-Low_B`
- `PID-High_A`
- `PID-High_B`
- `PID-Low_A`
- `PID-Low_B`
- `ASI-Mode-Stat_A`
- `ASI-Mode-Stat_B`
- `TS-Mode-Stat_A`
- `TS-Mode-Stat_B`

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).

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.

Defining Tags

The tags defined for the card are:

Event Menu Item	Tag			Description
Announcements	0_{hex} or NA	80_{hex} or NA		Announcement of report and control values
Active_Out_A	19_{hex}=IN_B_->_OUT_A	99_{hex}=IN_A_->_OUT_A	TAG 25	Active A is input A or B
Active_Out_B	$1a_{hex}$=IN_A_->_OUT_B	$9a_{hex}$=IN_B_->_OUT_B	TAG 26	Active B is input A or B
Input_A	01_{hex}=INP_LOSS_A	81_{hex}=INP_RETURN_A	TAG 1	Input A OK or Error
Input_B	41_{hex}=INP_LOSS_B	$c1_{hex}$=INP_RETURN_B	TAG 64	Input B OK or Error
TS-Status_A	$1d_{hex}$=TS_STOPPED _A	$9d_{hex}$=TS_PRESENT_A	TAG 29	TS-status A OK or Error
TS-Status_B	$1e_{hex}$=TS_STOPPED _B	$9e_{hex}$=TS_PRESENT_B	TAG 30	TS-status B OK or Error
TS-Sync_A	$1f_{hex}$=SYNC_LOSS_A	$9f_{hex}$=SYNC_RETURN_A	TAG 31	TS-sync A OK or Error
TS-Sync_B	20_{hex}=SYNC_LOSS_B	$a0_{hex}$=SYNC_RETURN_B	TAG 32	TS-sync B OK or Error
PAT-UD-Status_A	21_{hex}=PAT_UD_ERR_A	$a1_{hex}$=PAT_UD_OK_A	TAG 33	PAT-UD A OK or Error
PAT-UD-Status_B	22_{hex}=PAT_UD_ERR_B	$a2_{hex}$=PAT_UD_OK_B	TAG 34	PAT-UD B OK or Error
Data-High_A	23_{hex}=DATA_HIGH_ERR_A	$a3_{hex}$=DATA_HIGH_OK_A	TAG 35	Data-High_A OK or Error
Data-High_B	24_{hex}=DATA_HIGH_ERR_B	$a4_{hex}$= DATA_HIGH_OK_B	TAG 36	Data-High_B OK or Error
Data-Low_A	25_{hex}=DATA_LOW_ERR_A	$a5_{hex}$=DATA_LOW_OK_A	TAG 37	Data-Low_A OK or Error
Data-Low_B	26_{hex}=DATA_LOW_ERR_B	$a6_{hex}$= DATA_LOW_OK_B	TAG 38	Data-Low_B OK or Error
TS-High_A	27_{hex}=TS_HIGH_ERR_A	$a7_{hex}$=TS_HIGH_OK_A	TAG 39	TS-High_A OK or Error
TS-High_B	28_{hex}=TS_HIGH_ERR_B	$a8_{hex}$=TS_HIGH_OK_B	TAG 40	TS-High_B OK or Error
TS-Low_A	29_{hex}=TS_LOW_ERR_A	$a9_{hex}$=TS_LOW_OK_A	TAG 41	TS-Low_A OK or Error
TS-Low_B	$2a_{hex}$=TS_LOW_ERR_B	aa_{hex}=TS_LOW_OK_B	TAG 42	TS-Low_B OK or Error
PID-High_A	$2b_{hex}$=PID_HIGH_ERR_A	ab_{hex}=PID_HIGH_OK_A	TAG 43	PID-High_A OK or Error
PID-High_B	$2c_{hex}$=PID_HIGH_ERR_B	ac_{hex}=PID_HIGH_OK_B	TAG 44	PID-High_B OK or Error
PID-Low_A	$2d_{hex}$=PID_LOW_ERR_A	ad_{hex}=PID_LOW_OK_A	TAG 45	PID-Low_A OK or Error
PID-Low_B	$2e_{hex}$= PID_LOW_ERR_B	ae_{hex}=PID_LOW_OK_B	TAG 46	PID-Low_B OK or Error
ASI-Mode-Stat_A	$2f_{hex}$=ASI_MODE_ERR_A	af_{hex}=ASI_MODE_OK_A	TAG 47	ASI-mode_A OK or Error
ASI-Mode-Stat_B	30_{hex}=ASI_MODE_ERR_B	$b0_{hex}$=ASI_MODE_OK_B	TAG 48	ASI-mode_B OK or Error
TS-Mode-Stat_A	31_{hex}=TS_MODE_ERR_A	$b1_{hex}$=TS_MODE_OK_A	TAG 49	TS-mode_A OK or Error
TS-Mode-Stat_B	32_{hex}=TS_MODE_ERR_B	$b2_{hex}$=TS_MODE_OK_B	TAG 50	TS-mode_B OK or Error

8 LED Indication

Error LED

The error LED indicates an error if the internal logic of the ASI10 card is not configured correctly or has a hardware failure.

Input 1 LED

This LED indicates the presence of ASI on input A

Input 2 LED

This LED indicates the presence of ASI on input B

Reference LED

This LED has no function for this card.

ANC. Data 1 LED

This LED has no function for this card.

ANC. Data 2 LED

This LED has no function for this card.

Data Error 1 LED

The data error LED indicates an error if one of the probed errors occurred on input A.

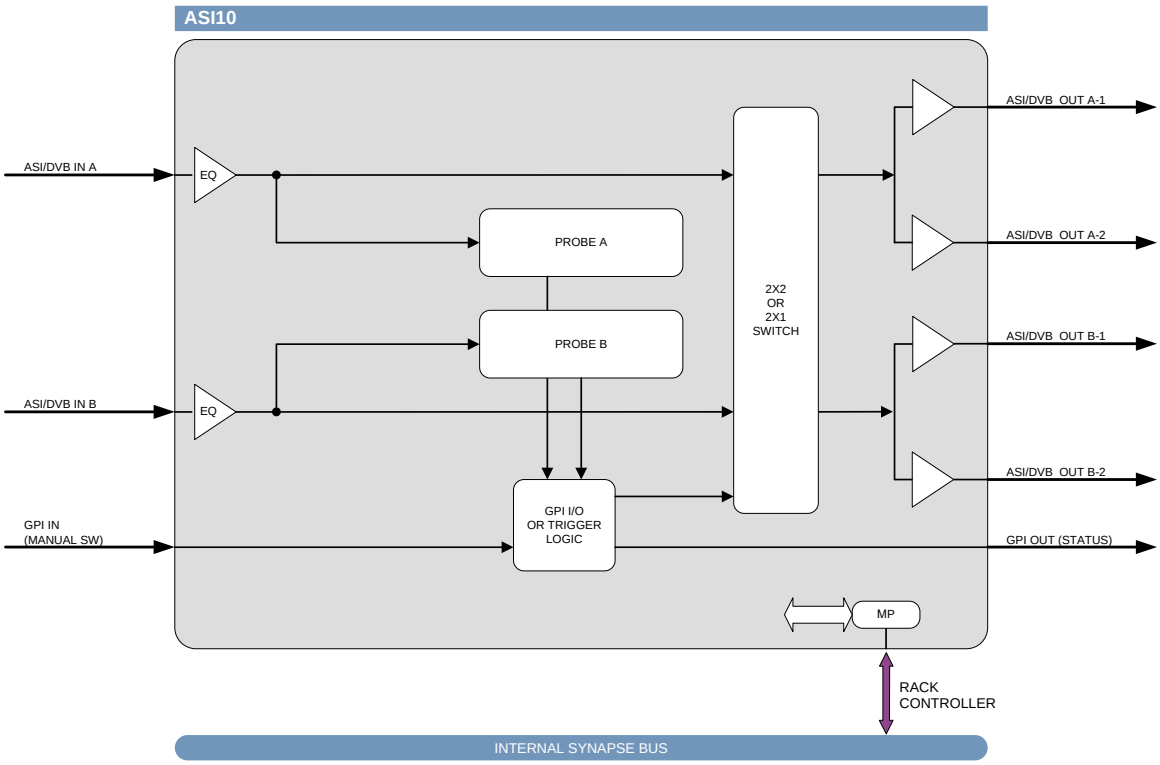
Data Error 2 LED

The data error LED indicates an error if one of the probed errors occurred on input B.

Connection LED

This LED illuminates after the card has initialised. The LED lights for 0.5 seconds every time a connection is made to the card.

Block Schematic



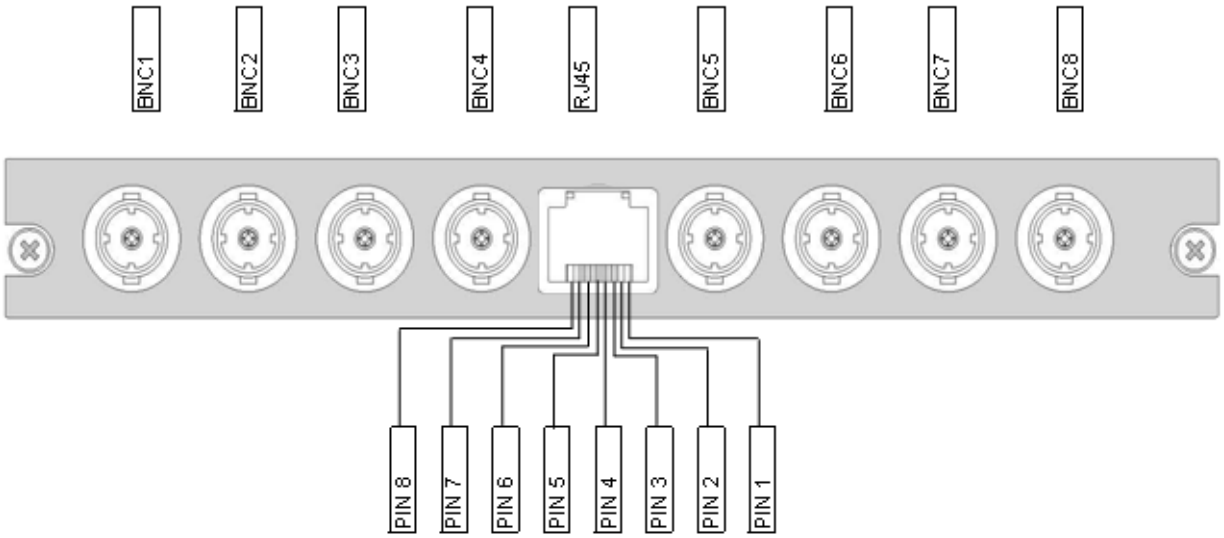
10 Connector Panels

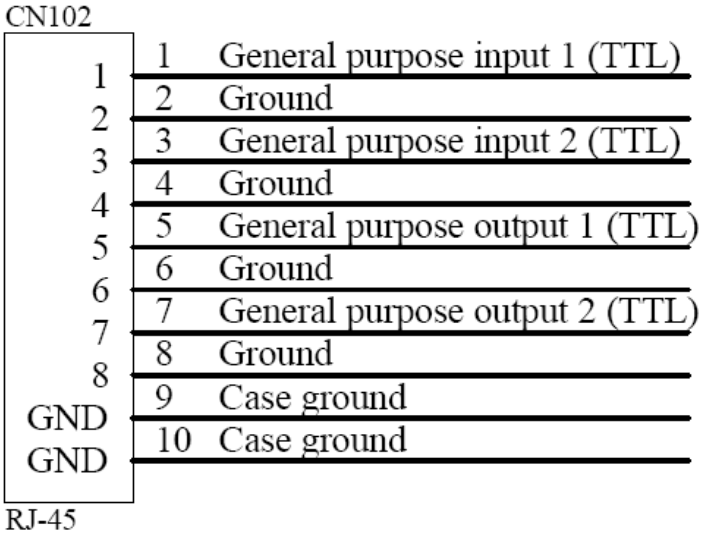
The ASI10 can be used with the BPL11 or BPX04. The following table displays the pinout of these backpanels.

	BPL11	BPX04
ASI/DVB INPUT A (OPTIONAL FIBER INPUT)		
NC		
ASI/DVB OUTPUT A-1		relay bypass
ASI/DVB OUTPUT A-2 (OPTIONAL FIBER OUTPUT)		
GPI INPUT/OUTPUT		
ASI/DVB INPUT B (OPTIONAL FIBER INPUT)		
NC		
ASI/DVB OUTPUT B-1		relay bypass
ASI/DVB OUTPUT B-2 (OPTIONAL FIBER OUTPUT)		

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

GPI pinout:





- GPI1 is the non-latching input. On contact closure to ground, Input-B is selected. When left open, Input-A is selected.
- GPI2 is not used
- GPO1 outputs the routing state for output A. '0', low level = Input-A, '1', high level = Input-B
- GPO2 outputs the routing state for output B. '0', low level = Input-A, '1', high level = Input-B

Appendix 1 ASI10 Switching modes (versions before 1220)

Switching in 2x1 mode

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

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

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

Switching in 2x2 mode

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

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

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

Switching in Combined mode

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

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

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

Appendix 2 ASI10 Switching modes (versions 1220 and later)

Switching in 2x1 mode

Switch-Back = Off (after power-up, or when previous route to input A)

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

Switch-Back = Off (only when previous route to input B)

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

Switch-Back = BackUp_Fail (after power-up, or when previous route to input A)

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

Switch-Back = BackUp_Fail (only when previous route to input B)

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

Switching in 2x2 mode

Switch-Back = Off (after power-up, or when previous routes to input A,B)

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

Switch-Back = Off (only when previous routes to input B,A)

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

Switch-Back = BackUp_Fail (after power-up, or when previous routes to input A,B)

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

Switch-Back = BackUp_Fail (only when previous routes to input B,A)

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

Switching in Combined mode

Switch-Back = Off (after power-up, or when previous route to input A)

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

Switch-Back = Off (only when previous route to input B)

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

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

Switch-Back = BackUp_Fail (after power-up, or when previous route to input A)

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

Switch-Back = BackUp_Fail (only when previous route to input B)

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