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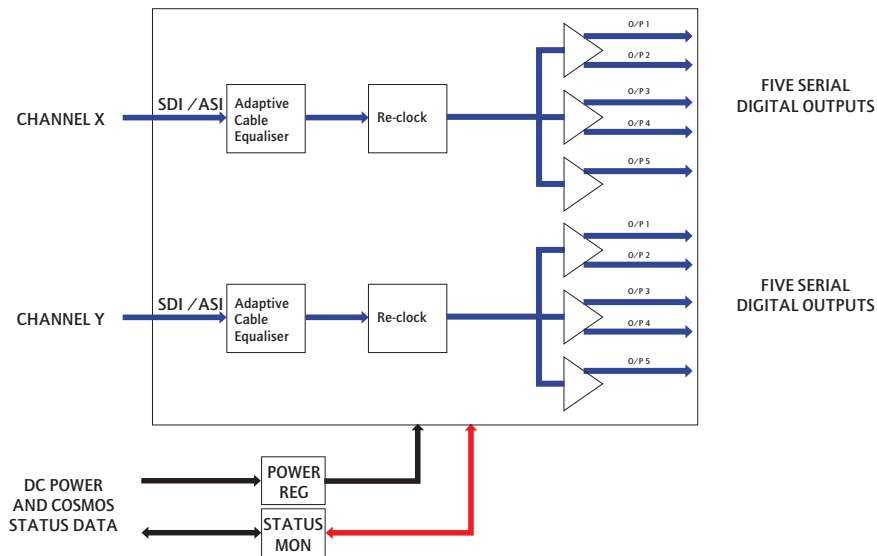
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1 Introduction

The 3406 is a dual 5 output re-clocking serial digital video distribution amplifier designed to be used in the ICON series of 1RU or 3RU frames. It offers five equalised and re-clocked serial digital outputs for each of two SDI, SDTI or ASI inputs. It takes a single 30mm rear connector. Automatic or manual standard selection of all data rates up to 360Mbit/s is provided.

The features available are:

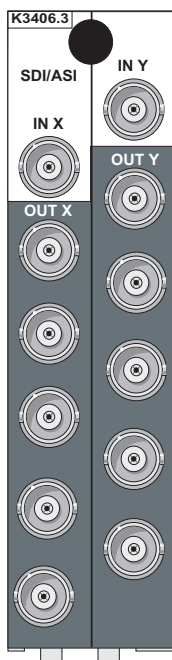
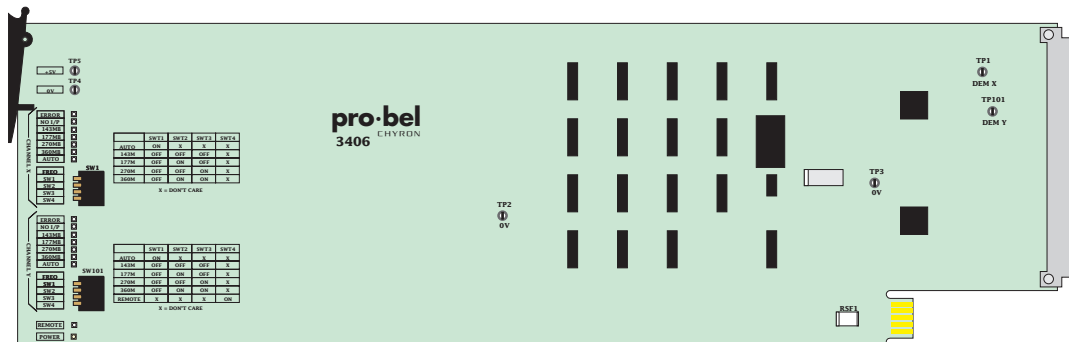
- two SDI, SDTI or ASI inputs
- five non-inverting outputs per input channel
- adaptive input equalisation
- re-clocking with automatic bit rate detection
- 143/177/270/360 Mbit/s modes
- COSMOS equipped



The 3406 dual 5 output SDI re-clocking DA

2 Installation

The 3406 is used with the 30mm K3406-3 rear connector providing five outputs per channel.



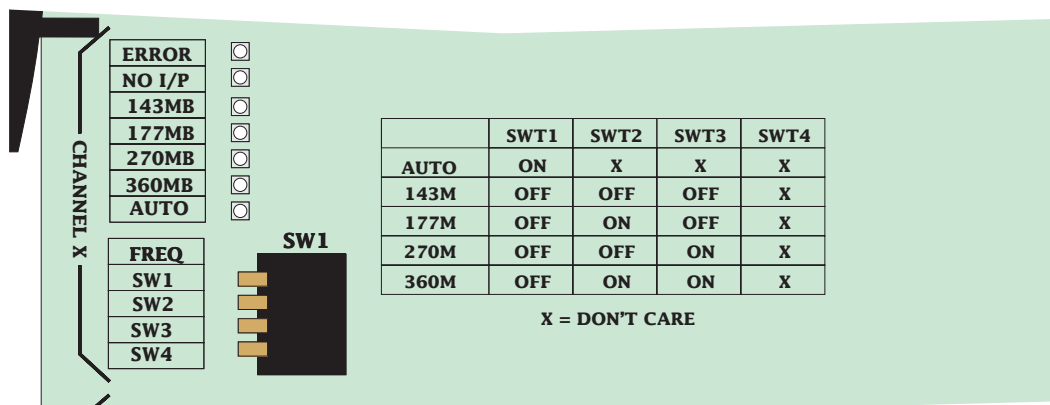
Please refer to the rackframe handbook for help with installing modules and rear connectors into the ICON frame.

3 Status Monitoring

All the status LEDs and controls are mounted on the front of the card.

3.1 Setting the re-clock speed

The re-clocking speed can be automatically determined for each channel or manually selected. If COSMOS control is used, the re-clock speed can also be made remotely. Use SW1 to make the selection for channel X and SW101 for channel Y.



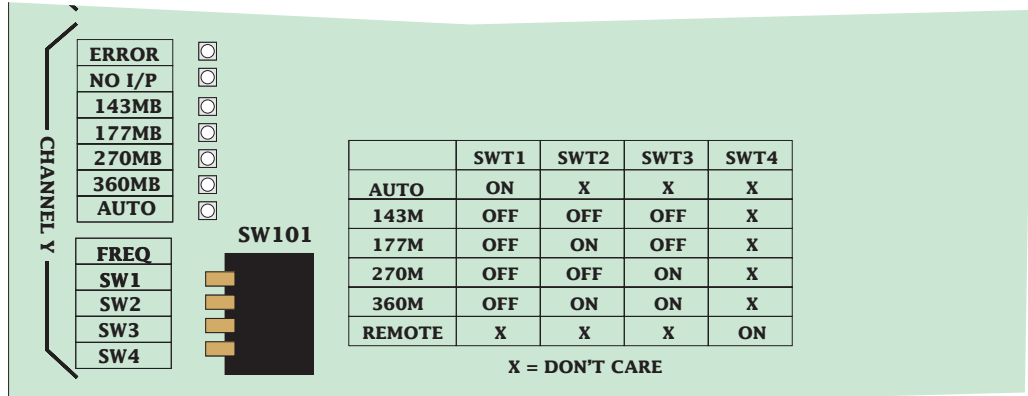
| Re-clock settings for channel X | | | |
|---------------------------------|-------|-------|-------|
| Mode | SW1-1 | SW1-2 | SW1-3 |
| AUTO | ON | X | X |
| 143 M/bit/s Composite NTSC 525 | OFF | OFF | OFF |
| 177 M/bit/s Composite PAL 625 | OFF | ON | OFF |
| 270 M/bit/s Component 4:2:2 | OFF | OFF | ON |
| 360 M/bit/s Widescreen | OFF | ON | ON |

Notes:

X= Don't care.

Move switch keys down for ON and up for OFF.

SW1-4 is not used.



| Re-clock settings for channel Y | | | |
|---------------------------------|---------|---------|---------|
| Mode | SW101-1 | SW101-2 | SW101-3 |
| AUTO | ON | X | X |
| 143 M/bit/s Composite NTSC 525 | OFF | OFF | OFF |
| 177 M/bit/s Composite PAL 625 | OFF | ON | OFF |
| 270 M/bit/s Component 4:2:2 | OFF | OFF | ON |
| 360 M/bit/s Widescreen | OFF | ON | ON |

Notes:

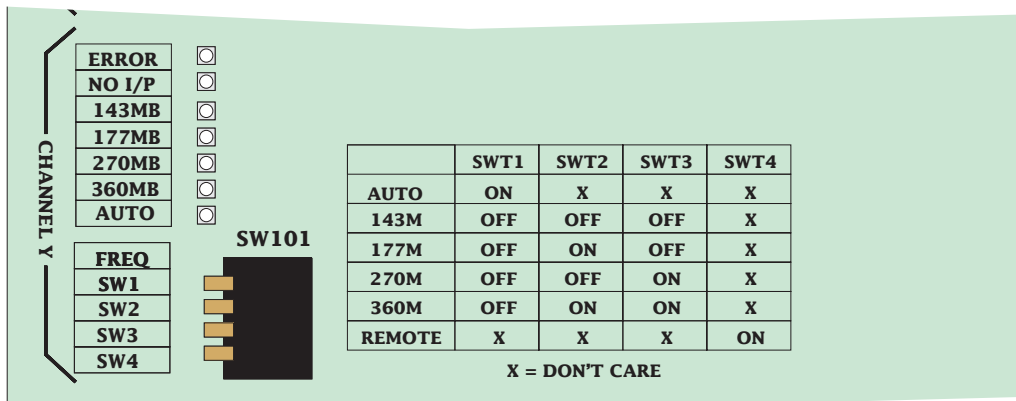
X= Don't care.

Move switch keys down for ON and up for OFF.

SW101-4 should be OFF for local control.

3.2 Selecting remote operation

Remote operation may be selected with SW101-4.



Selecting remote operation

| Mode | SW101-1 | SW101-2 | SW101-3 | SW101-4 |
|--------|---------|---------|---------|---------|
| REMOTE | X | X | X | ON |

Notes:

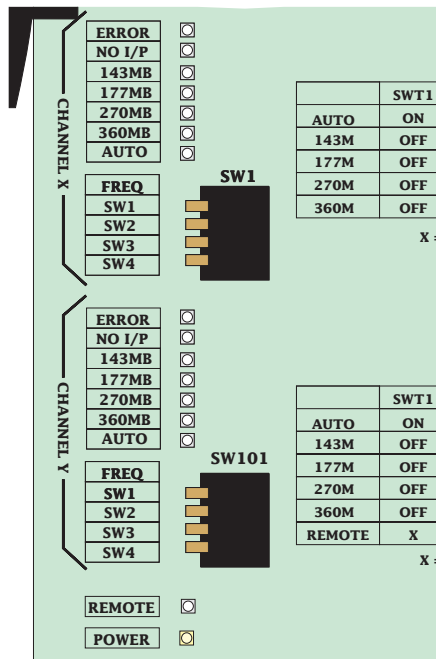
X= Don't care.

Move switch keys down for ON and up for OFF.

Selecting remote operation with SW101-4 ON overrides all other switch settings for both channels.

4 Trouble shooting

The module is equipped with indicators to provide a means of monitoring operation:



| Indicators | | |
|------------|--------|-----------------------------------|
| LED | Colour | Function |
| 2 x Error | Red | Internal PLL not locked |
| 2 x No I/P | Red | No input detected |
| 2 x 143Mb | Yellow | 143M bit/s re-clock speed |
| 2 x 177Mb | Yellow | 177M bit/s re-clock speed |
| 2 x 270Mb | Yellow | 270M bit/s re-clock speed |
| 2 x 360Mb | Yellow | 360M bit/s re-clock speed |
| 2 x Auto | Yellow | Automatic re-clock speed selected |
| Remote | Yellow | Remote COSMOS operation selected |
| Power | Green | Power OK |

In normal local operation with automatic re-clock selected only two yellow LEDs per channel and one green Power LED should be lit.

Sample problems and their solution

The Error and No I/P LEDs are lit on one or more channels

- check that a serial digital video signal is connected to the appropriate rear connector input BNC

The Error (No lock) LED is lit on one or more channels

- check that the input signal is a valid serial digital video signal with a clock rate of 143, 177, 270 or 360 M bit/s

The Power LED is not lit

- check mains power to the frame is turned on
- if necessary check the PSU as explained in the ICON frame manual
- check the card is plugged in securely
- check to see if the re-settable fuse has operated. To do this turn the power off, wait for thirty seconds and then restore the power.

5 Status Monitoring

The 3406 module will provide the following information to the COSMOS status monitoring controller (if fitted):

- auto/manual select switch status
- data rate select switch/auto detect status
- no input present detect status
- error or PLL lock status
- local/remote control select switch status

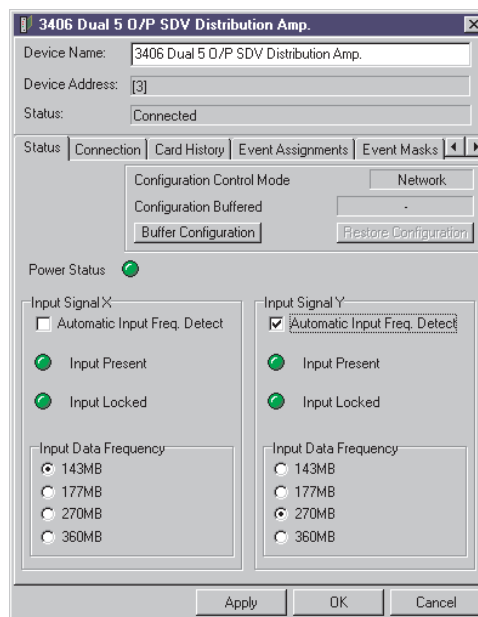
In remote mode, the auto/manual mode select and manual data rate selection may be controlled through COSMOS.

In addition, the module is programmed with the following information, which can be read by the status monitoring controller:

- module present
- module type
- module bar code
- module issue no

For further details of the Pro-Bel status monitoring system please refer to the COSMOS status monitoring manual.

The 3406 COSMOS status screen



6 Specification

Inputs

Number and type: Two serial digital video input to EBU Tech 3267E, SMPTE 259M - ABCD

Impedance: 75 Ω unbalanced

Outputs

Number and type: 2 x five as input equalised and re-clocked

Compatibility: All outputs are non-inverting and compatible with SDI, SDTI and ASI format signals

Impedance: 75 Ω unbalanced

Performance

Input return loss: > 15dB to 300MHz, > 12.5dB to 400MHz

Max output level: 800mV into 75 Ω load

Output return loss: > 15dB to 300MHz, > 12.5dB to 400MHz

Output rise time: <500ps

Re-clocking jitter: <400ps

Cable equalisation: > 250 metres of Belden 8281 or PSF1/2, 290 metres typical at 270Mbit/s
> 200 metres of PSF1/3, 225 metres typical at 270Mbit/s

Re-clocking frequencies: 143, 177, 270, 360 Mbit/s

On-card controls

2 x Auto/manual select switch

2 x Data rate select switch

Local/remote select switch

LED indicators

2 x Data rate 143Mbit/s - yellow
2 x Data rate 177Mbit/s - yellow
2 x Data rate 270Mbit/s - yellow
2 x Data rate 360Mbit/s - yellow
2 x Auto re-clock - yellow
2 x No Input - red
2 x Error, PLL not locked - red
Remote control mode - yellow
Power OK - green

7 **Ordering information**

| Part number | Description |
|---------------|--|
| ICO-3406-3000 | Dual 5 output SDI re-clocking DA, 30mm |