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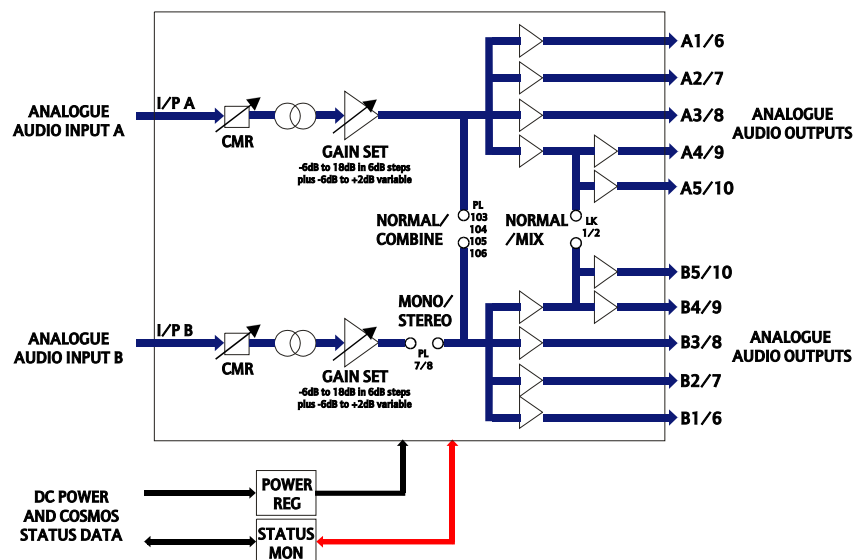
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1 Introduction

The 4430 is a flexible analogue audio distribution amplifier, with support for mono, dual mono and stereo applications. It is also possible to provide both mono and stereo outputs from a single module. Gain adjustment, over the range -6dB to +20dB is controlled by a combination of jumpers and card edge potentiometers. Frequency response is contoured to provide a smooth roll-off below 20Hz and above 20kHz to exclude out-of-band artefacts, whilst zero field transformers maintain a constant high input impedance over the entire audio band.

4430 feature summary:

- dual channel operation with up to 10 outputs per channel
- single channel operation with up to 20 outputs
- mono combining
- special mixed stereo/mono mode
- transformer coupled inputs
- electronically balanced outputs
- adjustable gain
- 20mm module width
- COSMOS status monitoring equipped



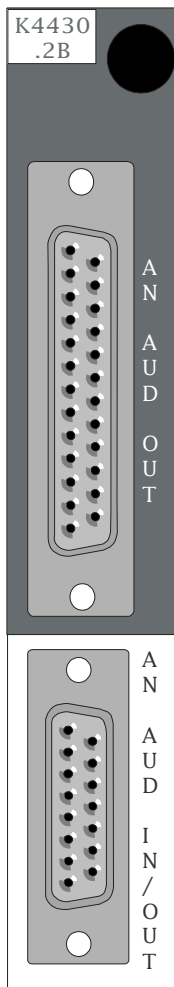
4430 analogue audio distribution amplifier

2 Installation

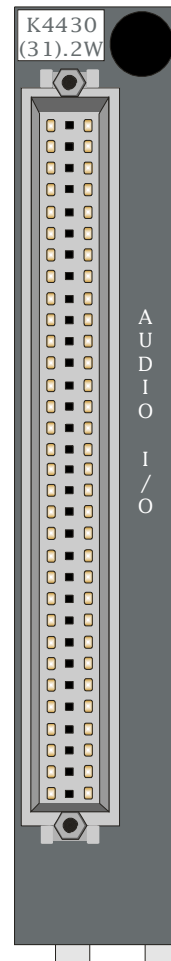
For module installation instructions please refer to the appropriate ICON rack frame section of the manual

2.1 Rear connector I/O

The 4430 is used with K4430-2B 20mm rear panel for a total of 10 outputs or with the K4430-2W rear panel for a total of 20 outputs.

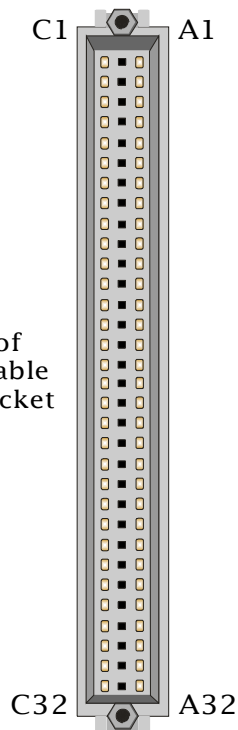


K4430.2B rear panel



K4430.2W rear panel

The K4430-2W rear panel audio pin-outs are as follows



Note. Pin location of mating cable ended socket

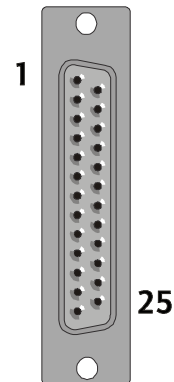
Note. Pin numbers of the panel mounted plug are reversed (1-32 etc) due to an inconsistency of the DIN 41612 range.

Row C	Pin Number	Row A
	1	0V
O/P A1+	2	O/P A1-
O/P A6+	3	O/P A6-
O/P A2+	4	O/P A2-
0V	5	0V
O/P A7+	6	O/P A7-
O/P A8+	7	O/P A8-
O/P A3+	8	O/P A3-
O/P A9+	9	O/P A9-
O/P A4+	10	O/P A4-
0V	11	0V
O/P A5+	12	O/P A5-
O/P A10-	13	O/P A10-
	14	
O/P B10+	15	O/P B10-
O/P B5+	16	O/P B5-
0V	17	0V
O/P B4+	18	O/P B4-
O/P B9+	19	O/P B9-
O/P B3+	20	O/P B3-
O/P B8+	21	O/P B8-
O/P B7+	22	O/P B7-
0V	23	0V
O/P B2+	24	O/P B2-
O/P B6+	25	O/P B6-
O/P B1+	26	O/P B1-
0V	27	0V
I/P A+	28	I/P A-
0V	29	0V
I/P B+	30	I/P B-
	31	
	32	0V

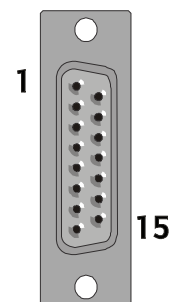
2.2 Audio pin-out

The K4430.2B rear panel analogue audio pin-outs are as follows:

Analogue audio output connector			
25 way 'D' female socket			
Pin	Function		Function
1	O/P A1-	14	O/P A2-
2	O/P A1+	15	O/P A2+
3	COM	16	COM
4	N/C	17	O/P A3-
5	N/C	18	O/P A3+
6	O/P A4-	19	O/P A5-
7	O/P A4+	20	O/P A5+
8	COM	21	O/P B5-
9	N/C	22	O/P B5+
10	N/C	23	COM
11	COM	24	O/P B3-
12	O/P B4-	25	O/P B3+
13	O/P B4+		



Analogue audio input/output connector			
15 way 'D' female socket			
Pin	Function		Function
1	N/C	9	N/C
2	COM	10	O/P B2+
3	O/P B2-	11	COM
4	O/P B1+	12	O/P B1-
5	COM	13	I/P A+
6	I/P A-	14	COM
7	I/P B+	15	I/P B-
8	COM		



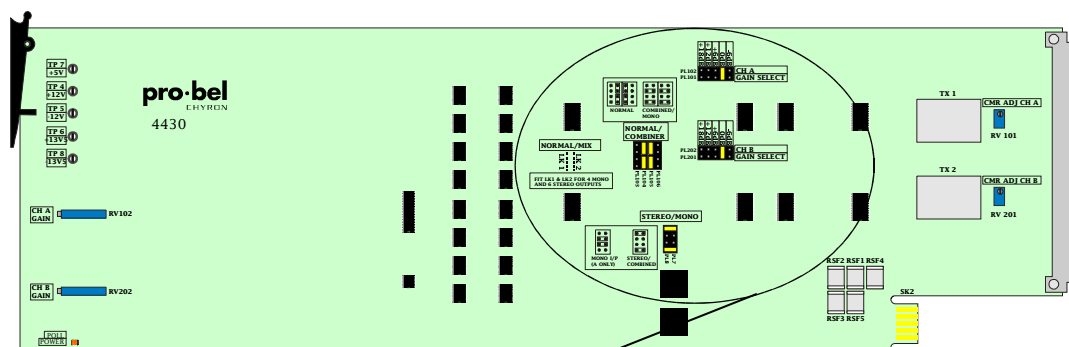
3 Configuration

3.1 Setting output modes

The 4430 can be operated in four distinct modes:

Output modes	
Mode	Description
Stereo DA	Two inputs each feeding five (ten) * outputs
Mono DA	Input A feeds all ten (twenty)* outputs
Mono combiner	Both inputs are combined to drive all outputs
Mono/Stereo Mix	Three (six)* stereo and four (eight)* mono combined outputs when used with stereo input

The four operating modes are selected by positioning jumpers and/or links on the module.

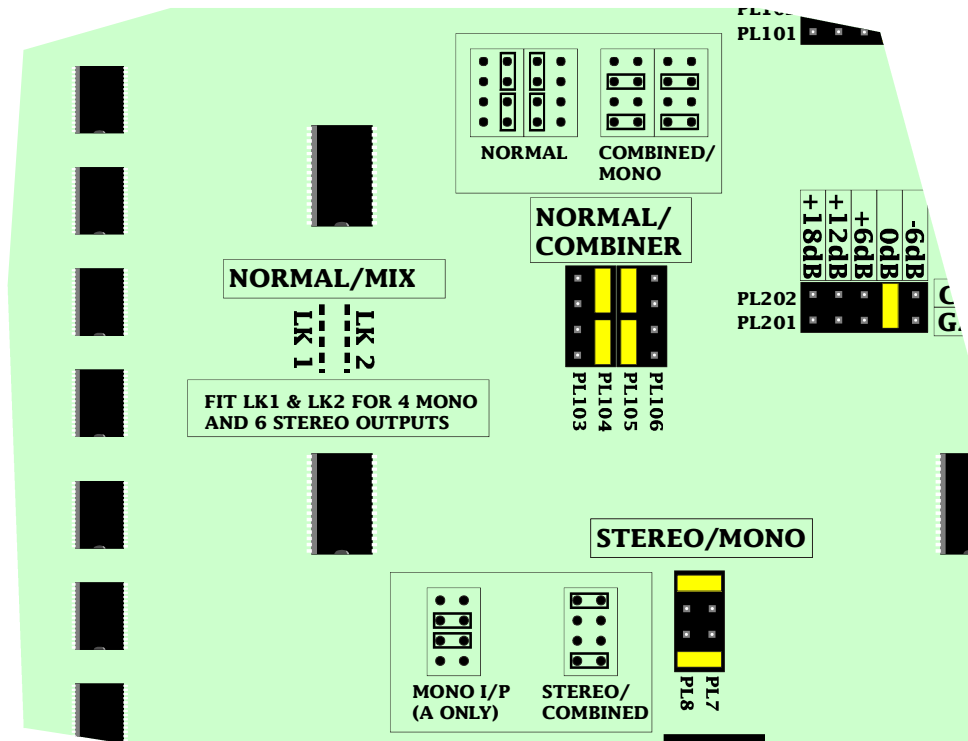


4430 configuration jumpers

*() indicates capabilities when K4430-2W 20 output rear connector panel fitted.

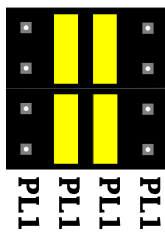
Stereo or dual channel operation

The default condition of the module configures two input channels, A and B each driving five (ten)* outputs. This is achieved by jumper settings as shown below:

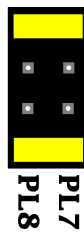


Note: Ensure that the solder-in links LK1 and LK2 are not fitted, unless channel mixing is required on outputs, A4, A5, B4 and B5 (A9, A10, B9 and B10) *

**NORMAL/
COMBINER**



STEREO/MONO

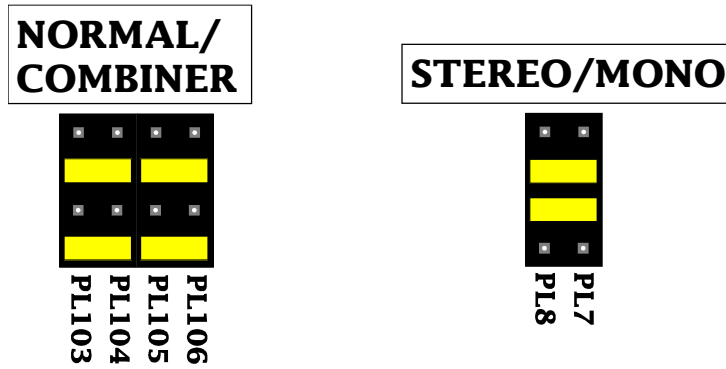


Jumper configuration for normal stereo or dual channel operation.

*() indicates capabilities when K4430-2W 20 output rear connector panel fitted.

Ten (twenty)* output mono operation

The module may be configured to operate as a ten (twenty)* output mono distribution amplifier, with channel A driving all outputs. This is achieved with jumper settings as follows:

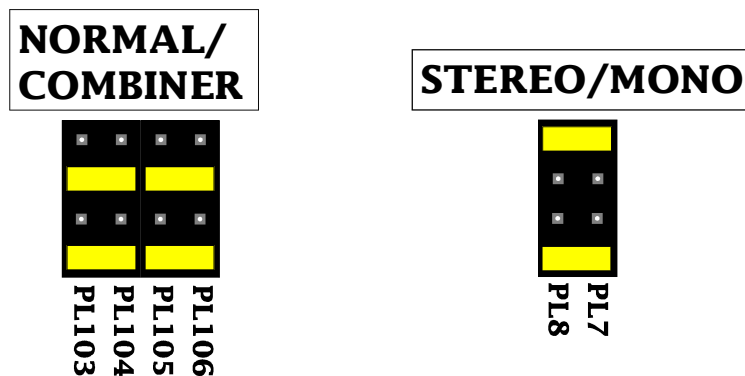


Combiner operation

The module may be used to combine the A and B inputs to drive all outputs or to only provide an (A+B)/2 sum on outputs A4, B4, A5 and B5 (A9, A10, B9 and B10)*.

Simple mono combiner

The jumper settings for summing the two inputs and driving all ten (twenty)* outputs with the result is as follows:



Notes:

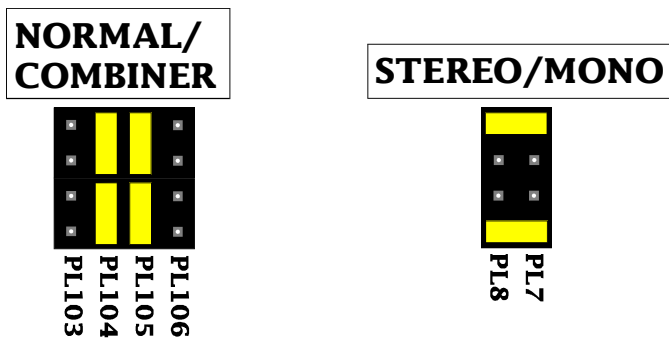
No change in level will be experienced if re-configuring from stereo or dual channel operation.

*() indicates capabilities when K4430-2W 20 output rear connector panel fitted.

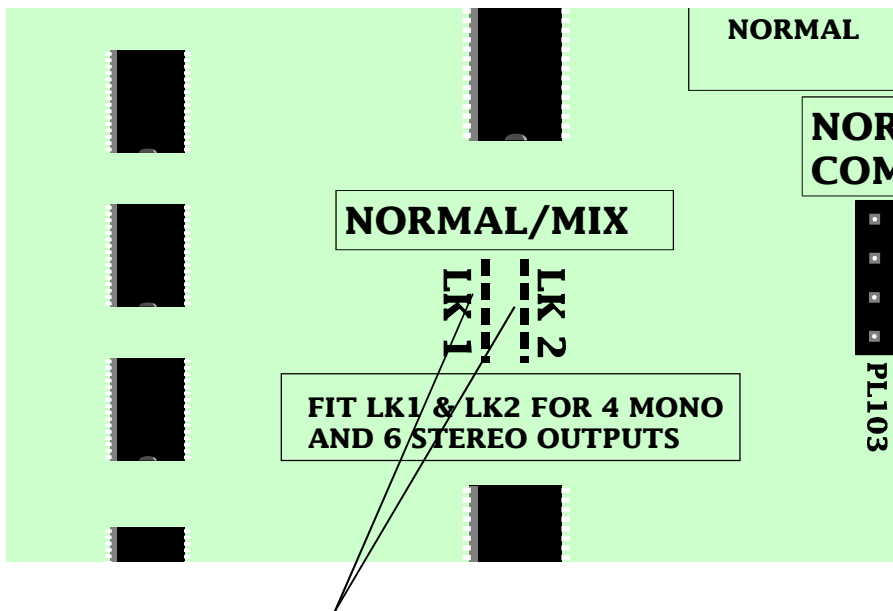
Mixed stereo and mono operation

The module may be configured to provide operation as both a stereo or dual channel distribution amplifier and as a mono combiner on certain outputs. This is achieved by setting the module for stereo or dual channel operation and fitting solder-in links LK1 and LK2. In mix mode, two inputs will give three (six)* stereo or dual channel outputs and four (eight)* mono outputs.

The configuration jumper settings are as follows:



Solder wire links in position LK1 and LK2 as shown:



Fit wire links LK1 and LK2 for mono/stereo mix mode

*() indicates capabilities when K4430-2W 20 output rear connector panel fitted.

With jumpers set as shown and LK1 and LK2 fitted module outputs are as follows:

Mix mode outputs	
Output	Status
A1	A
A2	A
A3	A
A4	$(A+B)/2$
A5	$(A+B)/2$
B1	B
B2	B
B3	B
B4	$(A+B)/2$
B5	$(A+B)/2$

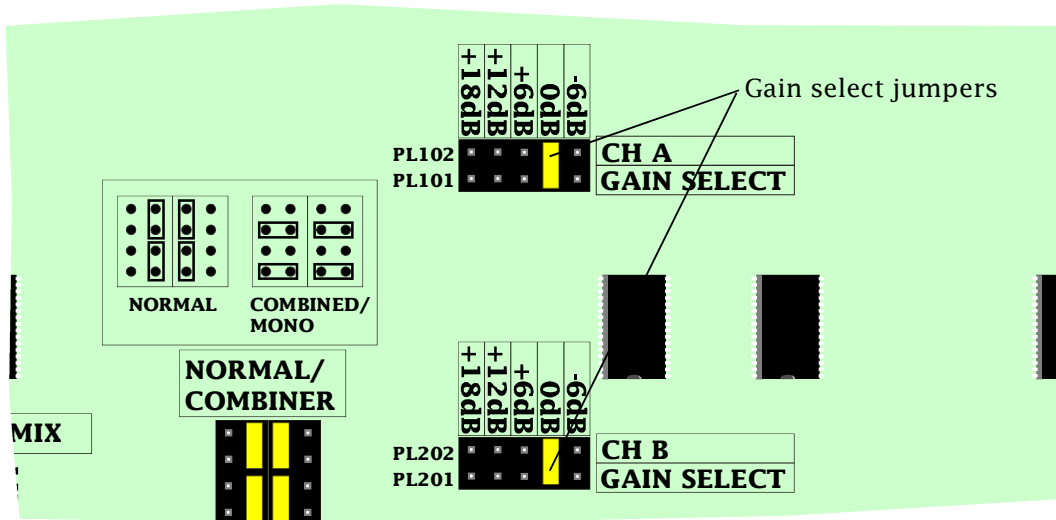
Note: The summed output $(A+B)/2$ will be the same level as the non-summed outputs, providing the two inputs have identical voltage and phase.

With 20 output K4430-2W rear panel	
Output	Status
A6	A
A7	A
A8	A
A9	$(A+B)/2$
A10	$(A+B)/2$
B6	B
B7	B
B8	B
B9	$(A+B)/2$
B10	$(A+B)/2$

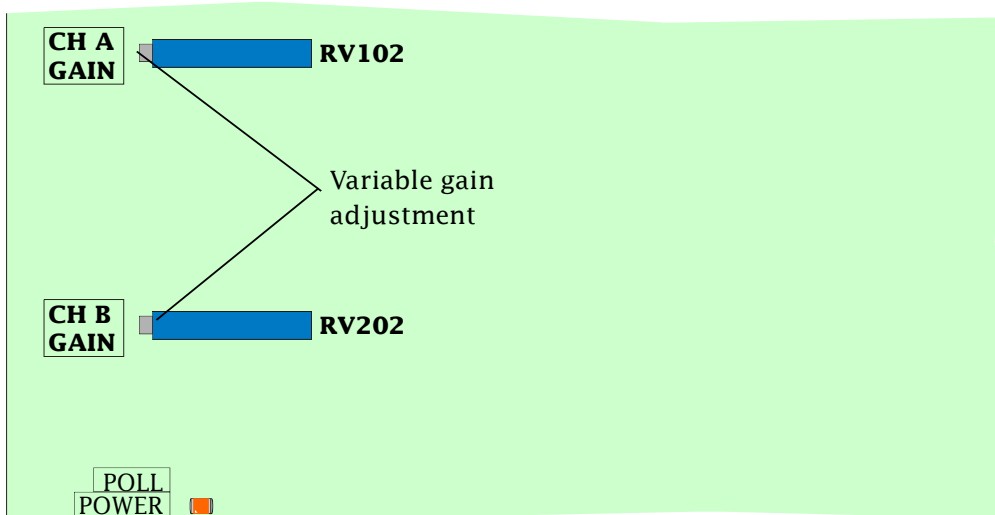
3.2 Adjusting output levels

The gain of each channel is independently adjustable in steps of 6dB from -6dB to +18dB and continuously variable to provide a total gain range of -12dB to +20dB.

Select channel gain with the jumpers provided closest to the desired value as follows:



Adjust the variable gain for the desired value for each channel using a small flat bladed screwdriver:



Note: Two further factory set adjustments for Common Mode Rejection (CMR) are fitted for each channel. These adjustments should never need to be re-set.

4 **Trouble shooting**

Combined output levels are different in mono mode

- input voltages may have different phases

Outputs are mono in stereo or dual channel mode

- check combine mode jumpers for correct position
- check that LK1 and LK2 are not fitted

The POWER LED is not illuminated

- check mains power to the frame is turned on
- if necessary check the PSU as explained in the power supply section
- check the card is plugged in securely
- check to see if one of the re-settable fuses have operated. To do this turn the power off, wait for thirty seconds and then restore the power.

5 **COSMOS Status Monitoring**

If the frame is equipped with a COSMOS controller card the following parameters will be reported back to the COSMOS status monitoring system.

- Normal/combine status
- mono/stereo status
- power status

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.

6 Specification

Inputs

Number and type:	Two independent transformer coupled analogue audio, earth free
Max input level:	+21dBu
Impedance:	>20k Ω

Outputs

Number and type:	Two x 10 electronically balanced about 0v
Impedance:	< 40 Ω , 20Hz to 20kHz

Performance

Max output level:	+24dBu into one 600 Ω load
Gain:	Adjustable -6dB to +18dB in 6dB steps, jumper selected, variable -6dB to +2dB
Frequency response:	± 0.1 dB 40Hz to 15kHz ± 0.25 dB 20Hz to 20kHz Smooth roll-off below 20Hz and above 20kHz
Distortion:	(-10dBu to +20dBu) <0.05% 80Hz to 10kHz <0.1% 30Hz to 80Hz
Noise:	(Unity gain, input terminated) < -90dBu RMS, DIN audio band < -80dBu ITU-R 468-4 weighted

Indicator

Power status	Green LED
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On-card controls

1 in to 10 (20)* out or dual 1 in to 5 (10)* out
Mono combining (A+B/2)
Mixed dual channel/mono operation (soldered links)
Gain -6dB, 0dB, +6dB, +12dB, +18dB
Gain, adjustable -6dB to +2dB

*() indicates capabilities when K4430-2W 20 output rear connector panel fitted.

7 **Ordering information**

ICO-4430-2BT0	10 (or dual 5) output Audio Distribution Amplifier with 20mm rear panel (K4430-2B)
ICO-4430-2BW0	20 (or dual 10) output Audio Distribution Amplifier with 20mm rear panel (K4430-2W)