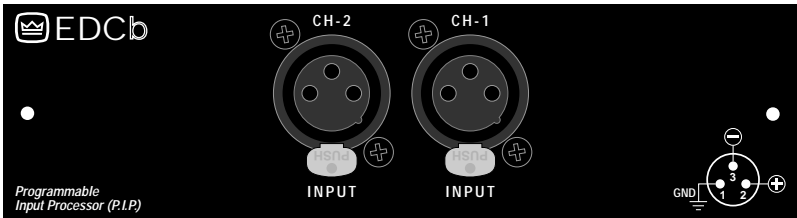


P.I.P.—EDCb

REFERENCE MANUAL



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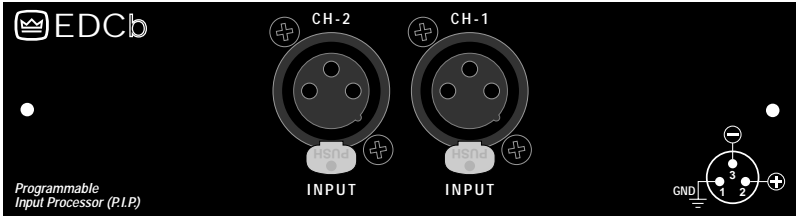


Fig. 1.1 P.I.P.-EDCb

1 Welcome

Thank you for purchasing the Crown *P.I.P.-EDCb*. *P.I.P.*® modules are designed to quickly install in the back of many Crown amplifiers. *P.I.P.* stands for “Programmable Input Processor.” Their versatile features expand the capabilities of your amplifier and enable you to customize it for your particular needs.

The *P.I.P.-EDCb* adds state-of-the-art error-driven compression, signal-driven input compression with adjustable threshold and a configurable subsonic (high-pass) filter to each input of your amplifier. Three conditions can cause a compressor to activate: (1) if the compressor receives an “error” signal from the amplifier’s input/output comparator (*IOC*®) circuitry, (2) if the input signal exceeds its adjustable threshold, or (3) if an excessively large

input signal level is sensed. The compressor circuits activate ahead of all preamp circuitry resulting in low distortion.

Each channel’s compressor can operate independently or both channels can be tied together causing the compressors to track each other.

Balanced XLR connectors are provided for quick connection.

Feature Summary

- ❑ Error-driven compression for each channel.
- ❑ Variable threshold, signal-driven compression for each channel.
- ❑ User-selectable fast/slow attack and release times.
- ❑ Each compressor can be turned off.
- ❑ Variable subsonic (high-pass) filter.

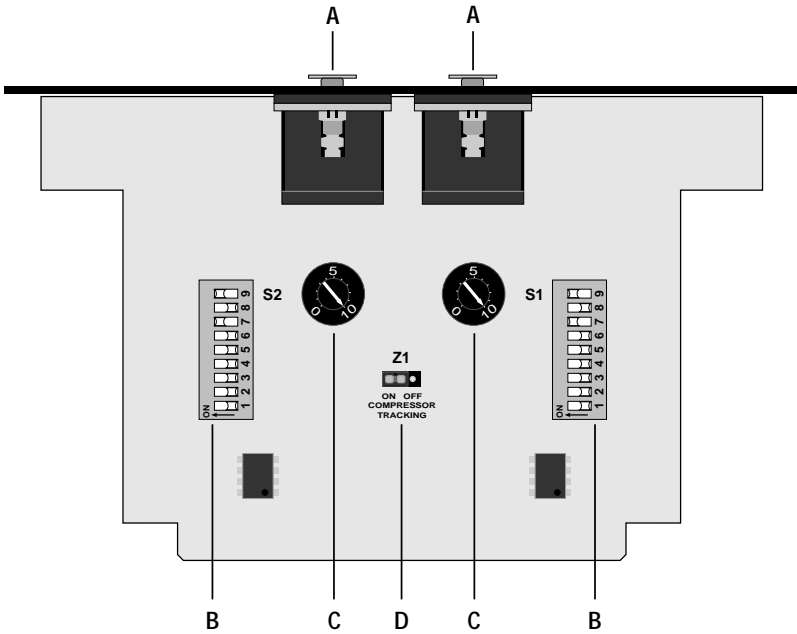


Fig. 2.1 P.I.P.-EDCb (Bottom View)

2 Facilities

A. Input Connectors

A balanced XLR connector is provided for input to each channel. The pin assignments are labeled on the face of the *P.I.P.* Refer to your amplifier *Owner's Manual* for wiring details.

CAUTION: Input channel 2 should NOT be used in either mono mode, and its level control should be turned off (fully counterclockwise).

B. DIP Switches (S1, S2)

A nine-segment DIP switch is provided for each channel. Segments 1–6 select the sub-sonic corner frequency and segments 7–9 configure the compressor. S1 controls channel 1; S2 controls channel 2.

C. Compressor Threshold

Each channel's compressor threshold can be adjusted with these controls. They set the

maximum output voltage and can be used to protect loudspeakers and listeners. When turned to the maximum setting (fully clockwise), the compressor responds only to the channel's *IOC* error signal. When set lower, the compres-

sor responds to a maximum audio level (see Figure 3.4).

D. Tracking Jumper (Z1)

Moving this jumper to the "ON" position causes the compressors to track each other.

3 Installation

Before installing the *P.I.P.* module, it should first be configured.

3.1 *P.I.P.* Configuration

1. Set the corner frequency (–3 dB frequency) for each **subsonic filter** with DIP switches S1 and S2 (see Figure 3.2). Notice that the first six switch segments control the corner frequency.

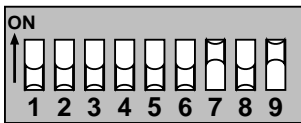


Fig. 3.1 S1/S2 DIP Switch

2. Use DIP switches S1 and S2 to configure each compressor's **attack and release times** (fast or slow), or turn each compressor off (see

Compressor Setting	Approximate Time	
	Attack	Release
Slow Attack / Slow Release	5 msec	900 msec
Slow Attack / Fast Release	10 msec	220 msec
Fast Attack / Slow Release	1.25 msec	900 msec
Fast Attack / Fast Release	1.5 msec	220 msec

Fig. 3.3 Compressor Attack and Release Times (Approximate)

Figure 3.2). Notice that the last three DIP switch segments control attack and release times. The actual attack time depends on the release time. Figure 3.3 provides approximate times for each setting.

3. Adjust each channel's **compressor threshold** using the compressor threshold pots (see Figure 2.1, “C”). Each

	Function	DIP Switch (S1 or S2)								
		1	2	3	4	5	6	7	8	9
Subsonic Filter	36 Hz Corner Frequency	ON	ON	ON	ON	ON	ON			
	32 Hz Corner Frequency	ON	OFF	ON	OFF	ON	OFF			
	28 Hz Corner Frequency	OFF	ON	OFF	ON	OFF	ON			
	24 Hz Corner Frequency	OFF	OFF	OFF	OFF	OFF	OFF			
Compressor	Slow Attack / Slow Release							OFF	OFF	OFF
	Slow Attack / Fast Release							OFF	OFF	ON
	Fast Attack / Slow Release							ON	OFF	OFF
	Fast Attack / Fast Release							ON	OFF	ON
	Compressor OFF									ON

Fig. 3.2 S1/S2 DIP Switch Settings

Mark	Macro-Tech 3600VZ and 36x12 (Channel 1)		All Others	
	Max Sine Wave RMS Voltage	Watts into 8 Ohms	Max Sine Wave RMS Voltage	Watts into 8 Ohms
0	13.5	23	9.5	11
	14	25	10	12
1	14.5	26	10.5	14
	15	28	11	15
2	16	32	11.5	17
	17	36	12	18
3	18	41	13	21
	19	45	14	25
4	20	50	15	28
	22	60	16	32
5	24	72	17	36
	26	85	19	45
6	29	105	21	55
	32	128	23	66
7	37	171	26	85
	42	220	30	113
8	48	288	35	153
	57	406	41	210
9	70	612	50	313
	92	1058	71	630
10	96	1152	102	1300

Fig. 3.4 Compressor Threshold Settings

pot has a scale with ten marks (or settings) which correspond to the typical thresholds shown in Figure 3.4.

4. Move the *P.I.P.*'s **tracking jumper** (Z1) to the "ON" position to make the compressors track each other. In the "OFF" position, each compressor will operate independently (refer to Figure 2.1, "D").

3.2 Installation Procedures

You may need a phillips screwdriver to remove the existing *P.I.P.* module or panel from your amplifier.

CAUTION: Before connecting this or any *P.I.P.* to your amplifier, it is important to turn its level controls down, turn it off

and remove the AC power. Don't touch the circuitry. Even though the amplifier is off, there could still be enough energy remaining to cause electric shock.

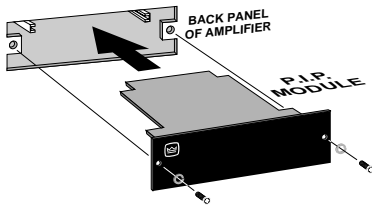


Fig. 3.5 Installation into a Standard P.I.P. Amplifier

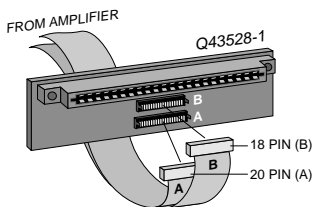


Fig. 3.6 PIP2 Input Adapter Connection

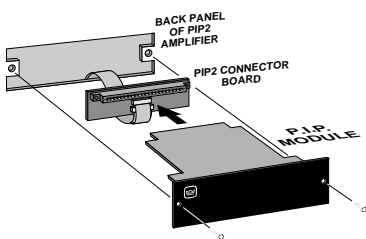


Fig. 3.7 Installation into a PIP2 Amplifier

1. Turn down the level controls (full counterclockwise), turn off the amplifier and unplug it from the AC power source.
2. Remove the existing *P.I.P.* module or panel (two screws). For *PIP2* amplifiers, this may involve disconnecting the *P.I.P.* from a *PIP2* input adapter (see Figures 3.6 and 3.7). If a *PIP2* input adapter is already present, do not remove the ribbon cables from the adapter. Otherwise you will have to reconnect them in the next step.
3. Standard P.I.P. Amplifiers: Align the edges of the *P.I.P.-EDCb* in the *P.I.P.* card rails and firmly push the unit in until it is seated against the mounting bracket (see Figure 3.5).

PIP2 Amplifiers: (Requires a *PIP2* input adaptor. Crown part number Q43528-1.) Connect the *PIP2* input adapter to the two input cables of the amplifier (see Figure 3.6). Notice that the *PIP2* input adapter should be positioned with the *P.I.P.* edge connector on top and facing away from the amplifier. The 20 pin cable (A) is connected first, then the 18 pin cable (B) is connected. Both ribbon cables should extend below the *PIP2* input adapter.

Next, insert the edge connector of the *P.I.P.-EDCb*

into the *PIP2* input adapter (see Figure 3.7) and insert the assembly into the *P.I.P.* opening in the back of the amplifier.

4. Secure the *P.I.P.–EDCb* with the two screws and lock washers provided. (The lock washers are important because they bond the *P.I.P.* to the chassis ground of the amplifier.)
5. Connect input and output wiring.
6. Plug in the amplifier and turn it on. Adjust its level controls to a desired setting.

Do not tamper with the circuitry. Circuit changes made by unauthorized personnel, or unauthorized circuit modifications are not allowed.

Remember: Crown is not liable for any damage resulting from overdriving other components in your sound system.

CAUTION: IF PHONE JACKS ARE PROVIDED ON THE AMPLIFIER BACK PANEL, DO NOT USE THEM AS INPUTS WITH THIS *P.I.P.* INSTALLED.

The amplifier phone jacks are in parallel with the *P.I.P.* outputs, so they can be used to “daisy chain” the inputs of several amplifiers. If you do this, remember that the signal feeding the other amplifiers will be filtered and compressed too.

Important: If the amplifier is used in either Bridged-Mono or Parallel-Mono mode, you must turn the Ch. 2 amplifier level control off (fully counterclockwise). The input and level control of Ch. 2 are not defeated in mono mode so any signal applied to Ch. 2 will beat against the signal in Ch. 1.

Refer to the amplifier *Reference Manual* for more information about Bridged-Mono or Parallel-Mono modes of operation.

Electronic image for this figure were not included due to quality considerations. Please refer to the printed documentation.

Only one channel shown.

*Electronic image for this figure
were not included due to quality
considerations. Please refer to
the printed documentation.*

Notes:

- 1. All resistor values are in ohms, $\frac{1}{8}$ W, 1% unless otherwise specified.*
- 2. All capacitor values are in micro-farads unless otherwise specified.*

4 Specifications

Note: All specifications are referenced to a 0.775 volt input signal.

Signal to Noise: Greater than 95 dB from subsonic filter corner frequency to 20 kHz.

Frequency Response: ± 0.1 dB from 70 Hz to 30 kHz with subsonic filter corner frequency set to 36 Hz. +0, -3 dB from subsonic filter corner frequency to 30 kHz.

Harmonic Distortion (THD): Less than 0.01% THD at 1 kHz.

Common Mode Rejection: Greater than 65 dB at 1 kHz.

Crosstalk: Less than 0.5 mV at 20 kHz.

Connectors: 3-pin female XLR for each input.

Input Impedance: Nominally 30 K ohms balanced. 15 K ohms unbalanced.

Maximum Input Level: 35 VAC.

Maximum Output Level: +18 dB with 600 ohm load.

Nominal Gain: Unity ± 0.5 dB.

Dimensions: $6\frac{3}{8} \times 1\frac{7}{8} \times 3\frac{7}{8}$ in. (16.2 x 4.8 x 9.8 cm).

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