

# **INTEGRA III**

## **CARD FRAME SYSTEM**

Design Manual  
&  
Product Selector Guide

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## **PRODUCT SELECTOR GUIDE**

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# INTEGRA III SYSTEM OVERVIEW

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The Protech Audio INTEGRA III SYSTEM is a card frame based, modular audio system, designed for use in professional audio applications. The system has been meticulously engineered for reliable, continuous duty in professional broadcast, recording, intercom, and sound system applications. Attractively packaged for mounting in standard 19" racks, the system requires a minimum of space, while allowing the designer freedom to select modules to perform a wide variety of audio functions.

The design format of the INTEGRA III SYSTEM is structured to provide the system designer with a menu of audio modules for each audio function. This allows custom tailoring to individual system requirements. Changes or updating a system, can be accomplished with relative ease.

Card frame systems have three main advantages over discrete equipment packages.

- #1 They are the most economical to maintain over the life of the system.
- #2 They are the easiest to update if changes become necessary.
- #3 They require the least space.

When designing an audio system, using the INTEGRA III SYSTEM, the designer has a vast array of impedance and level choices, in addition to number of inputs and outputs, from which to choose.

A variety of audio modules may be mixed or matched within the same card frame, without sacrificing performance. Microphone preamplifiers, line amplifiers, compressors, limiters, mixers, distribution amplifiers, switching modules, and power amplifiers may all be mounted within a single card frame. Specialty devices, such as the audio supervisory modules and audio controlled duckers, may also be mounted in the same card frame with standard audio modules.

In order to help in the selection of individual audio modules, a product selector guide has been incorporated into this manual. The selector guide is separated by module function. There are individual sections covering microphone preamplifiers, line amplifiers, mic and line mixers, distribution amplifiers, compressors, limiters, power amplifiers, remote level controls, switchers, supervisory modules, tone and noise generators, and specialty devices.

By following the feature line across the page, the designer will select the proper combination of features required for each audio module, and arrive at the correct model number. This process has been designed to make module selection quick and easy.

## INTEGRA III SYSTEM OFFERS MORE DESIGN CHOICES

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### MICROPHONE PREAMPLIFIERS

9 Versions

### LINE AMPLIFIERS

14 Versions

### DISTRIBUTION AMPLIFIERS

9 Versions

### MIXERS

12 Versions

### LIMITERS

6 Versions

### COMPRESSORS

6 Versions

### POWER AMPLIFIERS

4 Versions

### SWITCHING DEVICES

6 Versions

### REMOTE LEVEL CONTROLS

8 Versions

### SPECIAL FUNCTION

Tone & Noise Generators

Noise Gates

Tone Supervisor Systems

Audio Controlled Switches

### POWER SUPPLIES & HARDWARE

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## GENERAL

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The easiest way to put together an audio system using the INTEGRA III Card Frame System, is to derive a comprehensive block diagram of the system needed, and then match the system cards to the audio block. Each audio function, mixing, switching, distribution, and remote control, is covered by a group of cards. The audio block can be drawn to the exact application requirements, and then matched perfectly with INTEGRA III cards. The product selector guide section of this manual, allows quick selection of just the right card for a particular portion of the block diagram.

An example of this approach would be a mixer requiring 4 microphone inputs and 8 line inputs. By selecting the 4 input microphone level mixer card, which is linkable, and two 4 input line level mixer cards, which are also linkable, you can derive the 12 input mixer required. This same technique can be applied to switching, distribution, and remote control. Control locations, and system monitoring devices, can be inserted at any point selected in the audio system.

Switching can be solid-state, standard relay, or reed relay. Switching can be controlled by a remote closure, or it can be activated automatically whenever audio is applied to an input (Models 588C and 589). The application of audio to one input, can be used to activate control functions in other audio circuits. There are also solid-state switching cards with built-in logic programs for lockout or last-on capability.

The only busses internal to the card frame assembly are +V, -V, and ground. All audio busses are created externally, through wire termination points. This provides maximum flexibility.

Gain trimpots, for most devices, are mounted on the backplane, to allow a replacement unit to be put into service, without the need for level realignment. This can be a great advantage when the system is maintained by non-technical personnel. All gain trimpots, whether on the audio module or on the backplane assembly, are mounted and prealigned by the factory.

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## PACKAGING

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After the block diagram has been developed, and the INTEGRA III cards have been selected, it is time to select the packaging that best fits the system.

The INTEGRA III Card Frame System has two options for packaging. The Model 858B Card Frame Package is self-powered, and will accommodate up to 9 audio cards. The Model 857B Card Frame Package uses an external power supply (Model 66708), and will accommodate up to 10 audio cards.

The considerations for choosing the card frame package are;

How many cards are to be used?

How much current will these cards require?

Where will the cards be located?

The Model 858B is capable of holding up to 9 cards and supplying up to 0.6 amps of current. This is usually sufficient to accommodate any 9 cards, with the exception of the power amplifier cards.

When 36 or more cards are needed, or multiple power amplifier cards are to be used, the Model 857B is recommended. The exception to this rule is when cards will be mounted in various locations. Then, the Model 858B self-powered card frame may be more desirable.

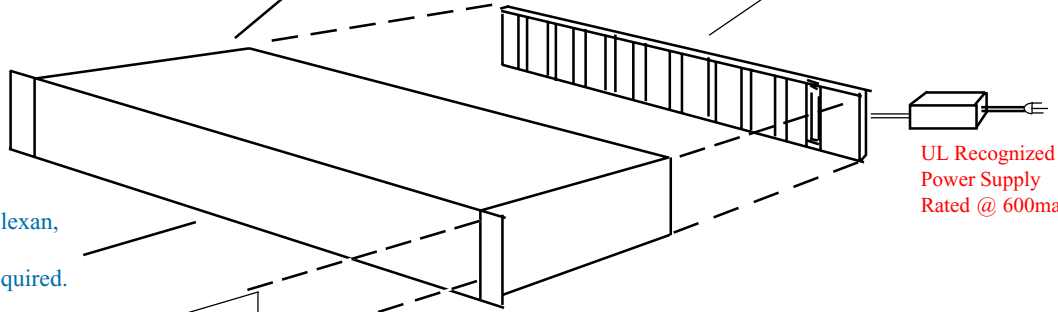
Our factory will provide design assistance during any phase of your project. If the block diagram for the project has been completed, a short phone call to our sales/engineering department may provide tips on how best to package your system. We also provide application notes, showing typical applications, and a design review service, at no charge, to all our customers.



Allows mounting of up to 9 modules, plus power supply module.

All steel wrap-around chassis, provides maximum shielding. Durable black powder coating.

Backplane buses power supply voltages and ground. All connections are made on fast, easy-to-use Euro-Style connectors.



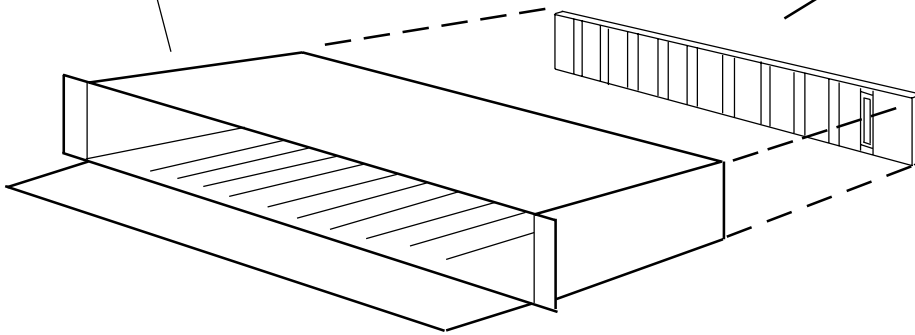
UL Recognized Power Supply Rated @ 600ma

Attractive smoked lexan, hinged front panel. No blank panels required.

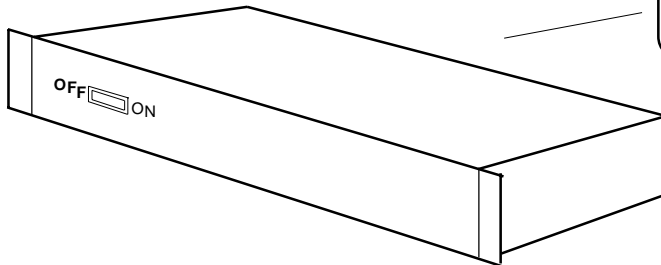
Model 2000-PSA Plug-In Regulator Module Supplies additional filtering, & voltage regulation.

MODEL 857 - Provides Mounting of 10 Audio Cards. Used With External Power Supply.

Backplane Assembly Brings Card Connections Out To Euro Style Connectors And Busses Power.



Model 66708 Rack Mount Power Supply Provides ±18VDC @ 4 amps





**RACK MOUNT CARD FRAME**

**FRONT VIEW**

	SLOT 1	SLOT 2	SLOT 3	SLOT 4	SLOT 5	SLOT 6	SLOT 7	SLOT 8	SLOT 9	SLOT 10*	
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**RACK MOUNT CARD FRAME**

**REAR VIEW**

	SLOT 10*	SLOT 9	SLOT 8	SLOT 7	SLOT 6	SLOT 5	SLOT 4	SLOT 3	SLOT 2	SLOT 1	
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# INTEGRA III SYSTEM

## Mic Preamps

			MODEL
<b>SINGLE CHANNEL</b>	Low Z Mic Transformer Input Transformer Isolated Output	Phantom Power	<b>808B</b>
	Low Z Mic Transformer Input Built-In Limiter Transformer Isolated Output	Phantom Power	<b>824B</b>
	Low Z Mic Transformer Input Built-In Compressor Transformer Isolated Output	Phantom Power	<b>840B</b>
<b>DUAL CHANNEL</b>	Low Z Mic Transformer Input Transformer Isolated Output	Phantom Power	<b>816B</b>
	Low Z Mic Transformer Input Built-In Limiter Transformer Isolated Output	Phantom Power	<b>832B</b>
	Low Z Mic Transformer Input Built-In Compressor Transformer Isolated Output	Phantom Power	<b>848B</b>
<b>SINGLE CHANNEL with/VCA</b>	Low Z Mic Transformer Input Remote Control of Gain Transformer Isolated Output	Phantom Power	<b>896</b>
<b>Dual Channel w/VCA</b>	Low Z Mic Transformer Input Remote Control of Gain Transformer Isolated Output	Phantom Power	<b>897</b>
<b>Dual Channel w/VCA &amp; Summing</b>	Low Z Mic Transformer Input Remote Control of Gain Transformer Isolated Output	Phantom Power	<b>898</b>

# INTEGRA III SYSTEM

## Line Amplifiers

			MODEL	
STANDARD LINE AMPLIFIER	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	806B
			10K OHM TRANSFORMER INPUT	807B
	DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	814B
			10K OHM TRANSFORMER INPUT	815B
LINE AMPLIFIER/ LIMITER	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	822B
			10K OHM TRANSFORMER INPUT	823B
	DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	830B
			10K OHM TRANSFORMER INPUT	831B
LINE AMPLIFIER/ COMPRESSOR	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	838B
			10K OHM TRANSFORMER INPUT	839B
	DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	846B
			10K OHM TRANSFORMER INPUT	847B
LINE AMPLIFIER/ W/VCA	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	10K OHM TRANSFORMER INPUT	892
	DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	10K OHM TRANSFORMER INPUT	893

# INTEGRA III SYSTEM

## Mixers

MODEL

### MIXERS

	TWO MICROPHONE INPUTS, Low Z Transformer Isolated	PHANTOM POWER	<b>870B</b>
<b>PREAMP/MIXER TRANSFORMER ISOLATED OUTPUT</b>	THREE MICROPHONE INPUTS, Low Z Transformer Isolated	PHANTOM POWER	<b>871B</b>
	FOUR MICROPHONE INPUTS, Low Z Transformer Isolated	PHANTOM POWER	<b>872B</b>
	FIVE MICROPHONE INPUTS, Low Z Transformer Isolated	PHANTOM POWER	<b>873B</b>
<b>LINE AMP/MIXER TRANSFORMER ISOLATED OUTPUT</b>	TWO LINE LEVEL INPUTS, 10K Ohm Transformer Isolated		<b>874B</b>
	THREE LINE LEVEL INPUTS, 10K Ohm Transformer Isolated		<b>875B</b>
	FOUR LINE LEVEL INPUTS, 10K Ohm Transformer Isolated		<b>876B</b>
	FIVE LINE LEVEL INPUTS, 10K Ohm Transformer Isolated		<b>877B</b>
<b>LINE AMP MIXER W/VCA</b>	2 X 1, 10K OHM TRANSFORMER INPUT TRANSFORMER ISOLATED OUTPUT		<b>891</b>
<b>PREAMP MIXER W/VCA</b>	2 X 1, LOW Z TRANSFORMER INPUT PHANTOM POWER TRANSFORMER ISOLATED		<b>895</b>

### MATRIX MIXER

<b>INPUT CARD</b>	6 Inputs Per Card, Balanced or Unbalanced operation Maximum of 24 Inputs		<b>704-IN</b>
<b>OUTPUT CARD</b>	6 Outputs Per Card, Balanced or Unbalanced Operation. Maximum of 36 Outputs.		<b>704-OP</b>

**INTEGRA III SYSTEM  
Distribution Amplifiers**

		MODEL	
<b>DISTRIBUTION AMPLIFIERS</b>	<b>ONE 10K OHM LINE TRANSFORMER INPUT</b>	TWO OUTPUTS 600 Ohm Transformer Outputs, Linkable	<b>862B</b>
		THREE OUTPUTS 600 Ohm Transformer Outputs	<b>863B</b>
		FOUR OUTPUTS 600 Ohm Transformer Outputs, Linkable	<b>864B</b>
		FIVE OUTPUTS 600 Ohm Transformer Outputs	<b>865B</b>
	<b>ONE LOW Z MIC TRANSFORMER INPUT</b>	TWO OUTPUTS 600 Ohm Transformer Outputs, Linkable	<b>866B</b>
		THREE OUTPUTS 600 Ohm Transformer Outputs	<b>867B</b>
		FOUR OUTPUTS 600 Ohm Transformer Outputs, Linkable	<b>868B</b>
		FIVE OUTPUTS 600 Ohm Transformer Outputs	<b>869B</b>
<b>DUAL DISTRIBUTION AMPLIFIER</b>	DUAL 1 IN, 2 OUT Each One = 10K Ohm Input Two 600 Ohm Transformer Outputs (Total 4 Out)	<b>899</b>	

**INTEGRA III SYSTEM  
Power Amplifiers**

		MODEL
<b>POWER AMPLIFIERS</b>	<b>Power Amplifier, 10 Watts, Unbalanced Input, Unbalanced 8 Ohm Output</b>	<b>861A</b>
	<b>Power Amplifier, 10 Watts, 10K Ohm Transformer Input, Unbalanced 8 Ohm Output</b>	<b>883A</b>
	<b>Power Amplifier, 10 Watts, 600 Ohm Transformer Input, Unbalanced 8 Ohm Output</b>	<b>884A</b>
	<b>Power Amplifier, Dual Channel 4 Watts, 10K Ohm Transformer Inputs, Unbalanced 4-8 Ohm Outputs</b>	<b>701</b>

# INTEGRA III SYSTEM

## Compressors

				MODEL	
COMPRESSORS	LINE AMPLIFIER/ COMPRESSOR	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	838B
				10K OHM TRANSFORMER INPUT	839B
		DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	846B
				10K OHM TRANSFORMER INPUT	847B
	MIC PREAMP/ COMPRESSOR	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	150 OHM TRANSFORMER INPUT	840B
				150 OHM TRANSFORMER INPUT	848B
		DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	150 OHM TRANSFORMER INPUT	840B
				150 OHM TRANSFORMER INPUT	848B

# INTEGRA III SYSTEM

## Limiters

LIMITERS	LINE AMPLIFIER/ LIMITER	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	822B
				10K OHM TRANSFORMER INPUT	823B
		DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	600 OHM TRANSFORMER INPUT	830B
				10K OHM TRANSFORMER INPUT	831B
	MIC PREAMP/ LIMITER	SINGLE CHANNEL	TRANSFORMER ISOLATED OUTPUT	150 OHM TRANSFORMER INPUT	824B
				150 OHM TRANSFORMER INPUT	832B
		DUAL CHANNEL	TRANSFORMER ISOLATED OUTPUT	150 OHM TRANSFORMER INPUT	824B
				150 OHM TRANSFORMER INPUT	832B

# INTEGRA III SYSTEM

## Remote Level Controls

MODEL

**VCA  
LEVEL  
CONTROLS**

	Dual Line Amp. & Summed Output, Bridging Transformer Inputs Transformer Isolated Outputs	893
<b>DUAL CHAN- NEL VCA W/O PRESETS</b>	Dual Line Amplifier, Bridging Transformer Inputs, Transformer Isolated Outputs	894
	Dual Channel Mic Preamp., Low Z Mic Transformer Inputs, Transformer Isolated Outputs.	897
	Dual Channel Mic Preamp. & Summed Output, Low Z Mic Transformer Inputs, Transformer Isolated Outputs.	898
	2 x 1 Mixer, Bridging Transformer Inputs, Transformer isolated Output.	891
<b>MIXER/VCA W/O PRESETS</b>	Dual Line Amp. & Summed Output, Bridging Transformer Inputs, Transformer Isolated Outputs.	894
	2 x 1 Mixer, Low Z Mic Transformer Inputs, Transformer Isolated Output	895
	Dual Channel Mic Preamp. & Summed Output, Low Z Mic Transformer Inputs, Transformer Isolated Outputs	898
<b>SINGLE CHANNEL VCA W/PRESETS</b>	Line Amplifier, Bridging Transformer Input, Transformer Isolated Output	892A
	Mic Preamp., Low Z Mic Transformer Input, Transformer Isolated Output	896A
	Dual Channel Line Amp., Bridging Transformer Inputs, Transformer isolated Outputs	893A
<b>DUAL CHAN- NEL VCA W/PRESETS</b>	Dual Channel Line Amp. & Summed Output, Bridging Transformer Inputs Transformer Isolated Outputs	894A
	Dual Channel Mic Preamp., Low Z Mic Transformer Inputs, 600 Ohm Transformer Outputs	897A
	Dual Channel Mic Preamp. & Summed Output, Low Z Mic Transformer Inputs, Transformer Isolated Outputs	898A
	2 x 1 Mixer, 10K Ohm Transformer Inputs, Transformer Isolated Output.	891A
<b>MIXER/VCA W/PRESETS</b>	Dual Line Amp. & Summed Output, Bridging Transformer Inputs, Transformer Isolated Outputs	894A
	2 x 1 Mixer Low Z Mic Transformer Inputs, Transformer isolated Output.	895A
	Dual Line Amp. & Summed Output, Low Z Mic Transformer Inputs, Transformer Isolated Outputs	898A

<b>INTEGRA III SYSTEM</b> <b>Tone/Noise Generators</b>			MODEL
		Oscillator, 25 Hz, Unbalanced Output, +4dBm Out	<b>562</b>
		Oscillator, 1 KHz, (Other Frequencies Available) Unbalanced Output, +4dBm Out	<b>546</b>
		White/Pink Noise Generator 600 Ohm Transformer Output, +10dBm Out	<b>586</b>
<b>TONE/NOISE GENERATORS</b>			
		Tone Ctrl. Base $\pm$ 12dB, Treble $\pm$ 12dB, Transformer Balanced In and Out	<b>882</b>
<b>Switchers</b>			
		DOUBLE THROW	1 X 4PDT 2 X DPDT
		REED RELAY	8 X SPST
		SOLID STATE	Five DPST Closures Logic & PGM. LINKABLE
		SWITCHER	5 X 1 Priority
		GATE/DUCKER	2 X 1
		AUTOMATIC	Audio Controlled Relay/Solid State Built In Preamp
<b>SWITCHES</b>			
			<b>571B</b>
			<b>655B</b>
			<b>590B</b>
			<b>697B</b>
			<b>588C</b>
			<b>589</b>
<b>Supervisory System</b>			
		Supervisory Tone Detector, Built-In Relay Closures	<b>685</b>
		Oscillator, 25 Hz, (Other Frequencies Available) Unbalanced Output, +4dBm Out	<b>562B</b>
		Notch Filter, 40dB Notch Unbalanced Input, Unbalanced Output	<b>517B</b>
<b>SUPERVISOR SYSTEM</b>			