DUKANE™
Commercial Sound Technology

Amplifiers

1A4060, 1A4125, 1A4250, 1A881, 1B3125, 1B3250 and 3A230

Overview

1A4060, 1A4125, and 1A4250 Power Amplifiers

The Edwards Model 1A4xxx Power Amplifiers are rated at 60, 125, or 250 watts (rms), depending on the model. They mount in a standard 19-inch (48.3 cm) wide equipment rack and can be shipped mounted in a rack. These amplifiers can be used in sound reinforcement, general paging, and schoolcommunication systems applications. They are UL 813 listed.

1B3125, 1B3250 Power Amplifiers

The Edwards Model 1B3125 and 1B3250 Power Amplifiers provide continuous 125- or 250-watt output with the ability to automatically switch to battery operation in the event of a line voltage reduction or power failure. The patented circuitry can switch instantly in and out of battery operation and still maintain its state-of-the-art performance.

1A881 Remote Preamplifier

The Edwards Model 1A881 Remote Preamplifier is an externally powered single microphone preamplifier designed to provide a microphone input and control at locations remote from the main amplifier. Model 1A881 can also be used to supply a balanced or single-ended 600 ohm line. The DC voltage required to operate the preamplifier can be supplied over one twisted pair length as long as the voltage does not drop below 18 volts. The applications for the Model 1A881 are practically unlimited, and this unit will solve many installation problems by eliminating a bulky self-powered unit where a single microphone source is required.

3A230 Bridging Transformer

The Edwards Model 3A230 Bridging Transformer has a wide frequency range, low distortion, and minimal insertion loss. Model 3A230 is a high-impedance bridging transformer used primarily for equipment isolation.

Standard Features

1A4060, 1A4125, 1A4250 Power Amplifiers

- Broad frequency response
- Low distortion
- Dual independent electronic protection circuits
- Self-resetting heat sink thermal circuit breaker (1A4060, 1A4125)
- Self-resetting power transformer thermal circuit breaker (1A4060, 1A4125)
- Self-resetting thermal cutouts (1A4250)

1B3125, 1B3250 Power Amplifiers

- UL 1711 Listed and UL 813 Listed
- Patented 24Vdc Battery Backup
- Broad Frequency Response
- Low Distortion
- Thermal Circuit Breaker
- Electronic Overload Protection

1A881 Remote Preamplifier

- Excellent frequency response
- Less than one percent distortion, 60 to 20,000Hz at 2-volt output
- +8dBm across 600 Ohm line

3A230 Bridging Transformer

- Excellent frequency response
- Less than 0.5 percent distortion, 20 to 20,000Hz

DATA SHEET 85100-0127
Not to be used for installation purposes. Issue 3

Engineers' Specification

[1A4060] [1A4125] Power Amplifier

The power amplifier shall be Edwards Model [1A4060] [1A4125] or approved equal. It shall be capable of delivering [60] [125] watts (rms) power with less than 0.5% harmonic distortion from 45Hz to 20kHz (measured at the 70.7V tap, bandwidth limited 20Hz to 30kHz). The frequency response shall be 20Hz to 20kHz (+0/–1dB) per EIA standard SE-101A. The signal-to-noise ratio shall be better than 96dB below rated output for the 20Hz to 20kHz bandwidth. Input sensitivity shall be 0.5V (rms) at 1kHz for rated output, and input impedance shall be 20k ohms. Output load shall be 83 ohms (70.7V), 10 ohms (25V), and 8 ohms (22V), and there shall be a 25V center tap. Output regulation shall be better than 1dB, no load to full load.

A rear-mounted input level control shall be provided. The amplifier shall have dual independent electronic protection circuits as a safeguard against damage from overloads or shorted outputs. A self-resetting thermal circuit breaker shall be provided on the heat sink to open the primary power circuit, and a self-resetting thermal circuit breaker shall be contained within the unit's power transformer. The power source shall be 120Vac, 60Hz. The amplifier shall draw 1.4A at 120Vac. Terminations shall be to screw terminal strips (with barriers and wire capture plates on the output strip).

The power amplifier shall be 5-1/4 inches (13.3 cm) high, 19 inches (48.3 cm) wide, and 6-1/4 inches (15.9 cm) deep, and shall be finished in baked charcoal enamel. Net weight shall not exceed 12 pounds (5.4 kg). The amplifier shall be UL 813 (Commercial and Sound Equipment Standard) Listed. The amplifier shall mount in any standard 19-inch (48.3 cm) wide equipment rack and be capable of shipment while mounted in such a rack without requiring any additional support.

1A4250 Power Amplifier

The power amplifier shall be Edwards Model 1A4250 or approved equal. It shall be capable of delivering 250 watts (rms) power with less than 0.5% harmonic distortion from 45Hz to 20kHz (measured at the 70.7V tap). The frequency response shall be 20Hz to 20kHz (+0/-1dB) per EIA standard SE-101A. The signal-to-noise ratio shall be better than 96dB below rated output for the 20Hz to 20kHz bandwidth. The input sensitivity shall be 0.5V (rms) at 1kHz for rated output, and the input impedance shall be 20k ohms.

The output load shall be 70.7 volts (20 ohms), 25 volts (2.5 ohms), 8 ohms, and 4 ohms, with a 25V center tap. The output regulation shall be better than 1dB, no load to full load. A rear mounted input level control shall be provided. The amplifier shall have dual independent electronic protection circuits as a safeguard against damage caused by overloads or shorted outputs. A self-restoring thermal circuit breaker shall be provided on the heat sink to open the output connection, and a self-resetting thermal circuit breaker shall be contained within the unit's power transformer.

The power source shall be 120Vac, 60Hz. At rated output, the amplifier shall draw 4.9A at 120Vac. Terminations shall be to screw terminal strips (with barriers and wire capture plates on the output strip). The amplifier shall be 5-1/4 inches (13.3 cm) high by 19 inches (48.3 cm) wide and 13 inches (33 cm) deep, finished in charcoal-colored baked enamel. The net weight shall not exceed 38 pounds (17.1 kg). The amplifier shall be UL 813 (Commercial and Sound Equipment Standard) listed. The amplifier shall mount in any standard 19-inch (48.3 cm) wide equipment rack.

[1B3125] [1B3250] Power Amplifier

The power amplifier shall be Edwards Model [1B3125] [1B3250] or an approved equal. It shall be able to continuously deliver [125] [250] watts (rms) for 250 hours in accordance with UL Standard 1711. The amplifier shall be acceptable for use in fire protective signaling systems per UL 1711 and for commercial/general applications per UL 813.

The amplifier's normal power source shall be 120Vac, 60Hz. The amplifier shall draw [3.0] [5.8] amps at 120Vac while operating at rated output. While operating from a 24Vdc backup power source, the amplifier shall draw [11.5Adc] [23Adc] while providing rated output. The built-in inverter shall provide automatic transfer to battery operation when the AC line voltage falls below 105Vac (nominal), and it shall automatically return to AC operation when the line voltage exceeds 105Vac (nominal). While operating from batteries, the built-in inverter shall be capable of being placed on standby to reduce battery drain with a single low-energy contact closure. The built-in inverter shall draw no current from the batteries while the amplifier is operating from the primary AC power source.

The full power response shall be 45Hz to 20kHz at rated output at THD less than or equal to 0.5% measured at the 70.7-volt tap. The frequency response shall be 20Hz to 20kHz (+0, –1dB) per EIA standard SE101-A (9dB below full output). The signal-tonoise ratio shall be better than 90dB below rated output for the 20Hz to 20kHz bandwidth, unweighted. Input sensitivity shall be 1Vrms at 1kHz for rated output, and input impedance shall be 75k ohms.

[1B3125: The amplifier's output shall be 70.7 volts (with a 40-ohm load), 25 volts (with a 5-ohm load), and 31.6 volts (with an 8-ohm load).]

[1B3250: The amplifier's output shall be 70.7 volts (with a 20-ohm load), 25 volts (with a 2.5-ohm load), and 44.7 volts (with an 8-ohm load).]

The amplifier shall have a 25-volt center tap. Output regulation shall be better than 1dB, no load to full load.

The amplifier shall have a 25-volt center tap. Output regulation shall be better than 1dB, no load to full load.

The amplifier shall have an electronic protection circuit as a safeguard against damage caused by overloads or shorted outputs. A thermal overload protection circuit shall be provided on the heatsink to open the primary power circuit. It shall illuminate a thermal overload LED whenever the amplifier overheats due to an overloaded or shorted output. Both protective circuits shall be self-restoring. Both the 120Vac and the 24Vdc inputs shall be fused. Fuses shall be rear panel accessible.

A rear-mounted input level control shall be provided. Terminations shall be to screw terminal strips with barriers on the output terminals. The power amplifier shall be 5-1/4 inches (13.3 cm) high, 19 inches (48.3 cm) wide, and [6-5/8 inches (16.8 cm)] [15 inches (38.1 cm)] deep, and finished in a charcoal-colored baked enamel. Net weight shall not exceed [22-1/2 pounds (10.1 kg] [50 pounds (22.5 kg)].

1A881 Remote Preamplifier

The Remote Preamplifier shall be Edwards Model 1A881. The preamplifier shall have an output of +8dBm, gain of 60dB, and a frequency response of 20Hz to 20,000Hz ±2 dB with not more than1 percent distortion. Noise level shall be less than 0.8uV, Rs equals 150 ohms, BW equals 20kHz. The output impedance shall be less than 150 ohms, and the load impedance shall be 600 ohms.

The transistorized, plug-in printed circuit board shall operate on externally supplied 24Vdc at 5mA. The entire assembly, including the microphone receptacle and volume control, shall be mounting on a two-gang wall box with a minimum depth of 2-1/2 inches (6.4 cm).

3A230 Bridging Transformer

The bridging input transformer shall be Edwards Model 3A230 or an approved equal. It shall be enclosed in a Mumetal shield no larger than 1-3/4 inches (4.5 cm) high and 1-3/8 inches (3.5 cm) outside diameter. The input and output impedances shall be 15,000 ohms.

The frequency response shall be within ±1dB from 20Hz to 20,000Hz with distortion less than 0.5 percent over the entire frequency range. Maximum input level shall be 1 volt at less than 0.5% distortion, or 2.5 volts at less than 1% distortion. Transformer leads shall terminate in an octal plug.

Specifications

1A4060 Power Amplifier	
Power Output	60 watts (rms)
Frequency Response (@ 9dB below rated output*)	20Hz to 20kHz (+0/–1dB)
Power Response	45Hz to 20kHz, +0/–1dB (0dB = 60 watts), THD 0.5%
Harmonic Distortion	0.5%, 45Hz to 20kHz (bandwidth limited 20Hz to 30kHz) @ 1kHz at rated output (THD typically <0.05%)
Signal-to-noise Ratio	Better than 96dB below rated output
Input Sensitivity	0.5V (rms) at 1kHz for rated output
Input Impedance	20k Ohms
Outputs (All fully transformer isolated)	70.7V (83 Ohms) 25V (10 Ohms) balanced 25V center tap 8 Ohms (22V)
Output Regulation (no load to full load voltage change)	Better than 1dB
Control	Rear panel input level control
Terminations	Screw terminal strips (w/ barriers and wire capture plates on outputs)
Indicator	Power-on LED
Power Source	120Vac, 60Hz
AC Power Required	1.4A (120Vac) at rated output 0.18A at idle
Fuse	1.5A, slow-blow
Finish	Baked charcoal enamel
Dimensions	5-1/4” (13.3 cm) high, 19” (48.3 cm) wide, 6-1/4” (15.9 cm) deep

1A4125 Power Amplifier	
Power Output	125 watts (rms)
Frequency Response (@ 9dB below rated output*)	20Hz to 20kHz (+0/–1dB)
Power Response	45Hz to 20kHz, +0/–1dB (0dB = 125 watts), THD 0.5%
Harmonic Distortion	0.5%, 45Hz to 20kHz (bandwidth limited 20Hz to 30kHz) @ 1kHz at rated output (THD typically <0.05%)
Signal-to-noise Ratio	Better than 92dB below rated output
Input Sensitivity	0.5V (rms) at 1kHz for rated output
Input Impedance	20k Ohms
Outputs (All fully transformer isolated)	70.7V (40W) 25V (5W) balanced 25V center tap 8 Ohms (31.6V)
Output Regulation (no load to full load voltage change)	Better than 1dB
Control	Rear panel input level control
Terminations	Screw terminal strips (w/ barriers and wire capture plates on outputs)
Indicator	Power-on LED
Power Source	120Vac, 60Hz
AC ower Required	2.8A (120Vac) at rated output 0.22A at idle
Fuse	3A, slow-blow
Finish	Baked charcoal enamel
Dimensions	5-1/4” (13.3 cm) high, 19” (48.3 cm) wide, 6-1/4” (15.9 cm) deep
Net Weight	17 pounds (7.7 kg)

1A4250 Power Amplifier	
Power Output	Transformer output: 250W (rms) Direct coupled output: 280W (rms)
Frequency Response (@ 9dB below rated output per EIA standard SE-101A)	20Hz to 20kHz (+0/–1dB) for both transformer and direct outputs
Power Response	Transformer output: 45Hz to 20kHz, +0/–1dB (0dB = 250 watts), THD 0.5% Direct coupled output: 20Hz to 20kHz, +0/–1dB (0dB = 280 watts), THD 0.5%
Harmonic Distortion	0.5%, 45Hz to 20kHz (bandwidth limited 20Hz to 30kHz) THD typically <0.05% at rated output @ 1kHz
Signal-to-noise Ratio (20Hz to 20kHz bandwidth)	Better than 96dB below rated output
Input Sensitivity	0.5V (rms) at 1kHz for rated output
Input Impedance	20k Ohms
Outputs	70.7V (20 Ohms), transformer isolated 25V (2.5 Ohms), balanced, transformer isolated 25V center tap, transformer isolated 4 Ohms (33.5V), direct coupled
Output Regulation (no load to full load voltage change)	Better than 1dB
Control	Rear panel input level control
Terminations	Screw terminal strips (with barriers and wire capture plates on outputs)
Indicators	Power-on LED Thermal overload LED
Power Source	120Vac, 60Hz
AC Power Required	4.9A (120Vac) at rated output 0.27A at idle
Fuse	5A, slow-blow
Finish	Charcoal-colored baked enamel
Dimensions	5-1/4” (13.3 cm) high by 19” (48.3 cm) wide and 13” (33 cm) deep
Net Weight	38 pounds (17.1 kg)

1A881 Remote Preamplifier	
Gain	60dB
Output Level	+8dBm
Input Impedance	Designed for 150/200 Ohm microphone
Output Noise	Less then 0.8uV, Rs = 150 Ohms
Load Impedance	600 Ohms single-ended or balanced
Power Requirement	24Vdc at 5mA
Frequency Response	20Hz to 20,000Hz ± 2dB
Distortion	1%, 60 to 20,000Hz at 2V output
Dimensions	4-1/2” (11.4 cm) square, 2-5/16”(5.9 cm) deep (below plate)
Finish	Stainless steel and black
Mounting	2-gang electrical wall box with minimum depth of 2-1/2” (6.4 cm)
*Per EIA Standard	

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3A230 Bridging Transformer	
Function	Bridging
Primary Impedance	15,000 Ohms
Secondary Impedance	15,000 Ohms
Maximum Input Level	1V or 2.5V with less than 1% distortion
Frequency Response	20 to 20,000Hz ±1dB
Distortion	Less than 0.5%
Insertion Loss	Less than 1.5dB
Dimensions	1-3/4 in (4.5 cm) seated height, 1-3/8 in (3.5 cm) diameter
Terminations	Octal plug

	1B3125		1B3250	
Power Output	125W (rms) continuous		250W (rms) continuous	
Full Power Response	45Hz to 20kHz at rated output at THD £ 0.5%			
Frequency Response	20Hz to 20kHz (+0, –1dB) per EIA standard SE101-A (9dB below full output)			
Signal-to-noise Ratio	Better than –90dB (0dB = rated output) (20Hz to 20kHz bandwidth, unweighted)			
Input Sensitivity	1Vrms at 1kHz for rated output			
Input Impedance	75k Ohms			
Output	OUTPUT 70.7V 25V 31.6V	LOAD 40 Ohms 5 Ohms 8 Ohms	OUTPUT 70.7V 25V 44.7V	LOAD 20 Ohms 2.5 Ohms 8 Ohms
Output Transformer	Fully isolated. Broad bandwidth. 25V center tap.			
Output Regulation	Better than 1dB, no load to full load			
Control	Input level control on rear panel			
Terminations	Screw terminal strips with barriers on output terminals			
Indicators	Power And Thermal Overload Leds.			
Power Sources	120Vac, 60Hz; 24Vdc battery supply			
Ac Amps Required (120Vac Operation)	0.3Arms—at idle. 3.0Arms—amplifier operating at rated output.		0.3Arms—at idle. 5.8Arms—amplifier operating at rated output.	
Dc Amps Required (24Vdc Operation)	0.06Adc—inverter on standby 1.2Adc—at idle. 11.5Adc—amplifier operating at rated output.		0.06Adc—inverter on standby. 2.4Adc—at idle. 23.0Adc—amplifier operating at rated output.	
Battery Transfer Point	105Vac—nominal			
Fuses	One 4A slow-blow (AC), one 15A (DC)		One 6.25A slow-blow (AC), one 25A (DC) (Rear panel accessible)	
Finish	Charcoal-colored baked enamel			
Dimensions	5-1/4" (13.3 cm) high by 19" (48.3 cm) wide and 6-5/8" (16.8 cm) deep.		5-1/4" (13.3 cm) high by 19" (48.3 cm) wide and 15" (38.1 cm) deep	
Net Weight	22-1/2 lb (10.1 kg)		50 lb (22.5 kg)	
Associated Equipment	Model 3A130 Input Transformer Model 3A230 Bridging Transformer Model 110-1188 Input Transformer Adapter			

Ordering Information

Model	Description
1A4060	Power Amplifier , 60 watts
1A4125	Power Amplifier, 125 watts
1A4250	Power Amplifier, 250 watts
1B3125	Power Amplifier, 125 watts
1B3250	Power Amplifier, 250 watts
1A881	Remote Preamplifier
3A230	Bridging Transformer
110-1188	Line Transformer Mounting Bracket