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RCDR AMP

8029373

INSTRUCTION MANUAL

FOR THE

RECORDER AMPLIFIER SYSTEM

MODEL 29191-01,-02,-03

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SPECIFICATIONS

29191-01, -02, -03 RECORDER AMPLIFIER SYSTEM

AMPLIFIER	
Input Power	±15 Vdc at +16 mA and -17 mA
Input Signal	Bently Proximitor, Direct or Capacitance coupled (low frequency cutoff of capacitance coupling is ~0.2 Hz)
Frequency Response	DC to 20kHz ±0.2 dB
Input Impedance	100 K ohm
Gain	0.1 to 100, in calibrated steps 1,2, or 5
Gain Accuracy	±2%
AC Noise	Less than 5 mV
Output Signal Phase	Normal or inverted 180°
Maximum Linear Output Voltage	~ ±12 V
POWER SUPPLY	
Input Power Requirements	95 to 125 Vac or 190 to 250 Vac (switch selectable) 50 to 60 Hz, 1 Phase
Output Power	+15 Vdc, -15Vdc, ±1.5% at 300 mA each
Load	6, 8, 14 Amplifiers
DIMENSIONS	
Chassis	1 each, measuring 19" wide by 8.75" high (will fit in standard instrument rack cabinet)
Weight	Power Supply and Power Supply Housing ~9 3/4 lbs, 8 Channel Amplifier Rack ~ 27 lbs

TABLE OF CONTENTS

SECTION		PAGE
Specifications		iii
1.	General Description	1
2.	Operation	2
3.	DC Balance Adjustment	4
4.	Cable Connections	4
5.	Spares	4

1. GENERAL DESCRIPTION

The Amplifier System consists of 6, 8, or 14 single-channel amplifiers and a power supply to provide signal conditioning and preamplification of transducer signals. The output of the Amplifier System can be directly applied to an FM Tape Recorder. Table 1 provides the system's catalog number and option numbers.

Table 1. Amplifier System Option List

BNC CATALOG NUMBER

29191-☐☐

OPTION CODE	RACKS	AMPLIFIERS	POWER SUPPLY
01	1	8	1 (REMOTE, IN SEPARATE HOUSING)
02	1	6	1
03	2	14	1

A carrying case for the Amplifier System is available under BNC catalog number 29666-01. For Amplifier System options -01 and -02, one case is required. For option -03 system, two cases are required.

2. OPERATION

Each Amplifier preamplifies and conditions the input signal for use with an FM Tape Recorder. The front panel BIAS controls decrease or nullify positive or negative dc bias voltage that could overdrive the FM Tape Recorder. Two LED indicators on the front panel indicate the overdrive condition. A GAIN control provides gain factors from 0.1 to 100 for the input signal. A second signal can be connected to the Amplifier at the AUX connector. Both input signals are applied to a summing amplifier circuit, where the AUX input signal is subtracted from the NORMAL input signal (with the PHASE switch in the NORM position). The PHASE switch allows a 180° phase inversion of the input signal.

The system Power Supply provides regulated power outputs of +15 Vdc and -15 Vdc required to operate the Amplifiers. An external power input of 95 to 125 Vac or 190 to 250 Vac (switch selectable) 50 to 60 Hz, 1 Phase is applied to the Power Supply. The slide switch on the Power Supply front panel must be set to the proper operating voltage before connecting the power. An audio amplifier is included in the Power Supply. Connections to the audio amplifier are made at the rear panel of the Power Supply.

Table 2 lists the Amplifier and Power Supply operating controls, connectors, and indicators, and describes the function of each.

Table 2. Amplifier and Power Supply Controls, Connectors, and Indicators

ITEM	FUNCTION
AMPLIFIER	
BIAS Vernier Control	Adjust to decrease or nullify the dc bias voltage of the input signal. (Observe the signal at the NORMAL OUTPUT connector.)
Bias Mode Switch: POS, NEG, AUX, OFF	Set for use with a positive (POS) or negative (NEG) bias voltage (with dc coupled signal). The AUX position allows a second signal to be applied to a summing amplifier in the Amplifier (at AUX connector). Set this switch to the OFF position when none of the above functions are used.
COUPLING AC/DC Switch	Selects either dc coupled input (direct) or ac coupled input (capacitance coupled).
PHASE NORM/INVERT Switch	Selects normal (non-inverted) output signal or inverted (180·) output signal at the NORMAL OUTPUT connector.
GAIN Switch	Selects a gain factor of 0.1 to 100 for the input signal in steps of 1,2, or 5.
NORMAL INPUT Jack	NORMAL input to the Amplifier (in parallel with the rear panel NORM INPUT BNC connector).
AUX INPUT Jack	Use to connect a second input signal to the internal summing amplifier circuit. Bias Mode switch should be set to AUX position (in parallel with the rear panel AUX INPUT BNC connector).
COM Connectors	System common; all voltages measured with respect to this point (in parallel with the rear panel COM jack).
NORMAL OUTPUT Jack	Presents Amplifier output signal (in parallel with the rear panel NORM OUTPUT BNC connector).

Table 2. Amplifier and Power Supply Controls, Connectors, and Indicators (Continued)

ITEM	FUNCTION
LED (+) (top)	Provides visual indication of positive over range of the tape recorder input (whenever amp output exceeds +1.4 Vdc).
LED (-) (bottom)	Provides visual indication of negative over range of the tape recorder input (whenever amp output exceeds -1.4 Vdc).
DIFF OUTPUT Jack	Use to observe the output of the first stage amplifier for calibration purposes only (in parallel with the rear panel DIFF OUTPUT BNC connector).
POWER SUPPLY	
115/230 Slide Switch	Set slide switch to proper operating voltage before connecting power.
ON/OFF Switch	Use to activate the Power Supply.
95 to 125 Vac/190 to 250 Vac (switch selectable) 50 to 60 Hz, 1 Phase	Input power.
1 AMP FUSE	1 amp fuse and fuse holder.
AUDIO INPUT BNC Connector	Use to connect a signal to the audio amplifier.
AUDIO VOLUME Control	Use to control volume of the audio amplifier.
-15 VDC Jack	-15 Vdc output of Power Supply.
COM Jack	System common; all voltages measured with respect to this point.
+15 VDC Jack	+15 Vdc output of the Power Supply.
POWER Lamp	Red lamp; when lit indicates the presence of line voltage (ON/OFF switch set to ON).
DC POWER OUT/IN Connectors and Cord	Use to connect dc power between the Power Supply and 8 Amplifier Rack assembly.

3. DC BALANCE ADJUSTMENT

The Amplifiers are factory calibrated to provide an output signal of the same level whether the PHASE switch is in the NORMAL or the INVERTED position. The only adjustment that may be required periodically is the dc balance adjustment to compensate for component aging. One trimpot (located in the top of the board) is used to adjust the dc balance.

1. To locate the trimpot, remove the Amplifier being calibrated from the rack by loosening the top and bottom lock screws and pulling the chassis straight out from the rack. The trimpot is accessible through the chassis top.

2. Connect the Amplifier to the system Power Supply with a Blue Ribbon extension cable.

3. Set the Bias Mode switch to OFF. Set the GAIN control to 100, and the COUPLING switch to DC. Set the PHASE switch to NORMAL. Connect the NORMAL INPUT to the COM connector.

4. Connect a DC Voltmeter to the NORMAL OUTPUT connector. Adjust the trimpot (R11) located at the top of the Amplifier, for an indication of zero.

4. CABLE CONNECTIONS

Input and output signal connections to the Amplifier System are made at the Amplifier rear panel with coax cables. This leaves the Amplifier front panel jacks clear for monitoring the signals with other instruments.

NOTE

BNC-to-binding post (jack) adaptors are available where common signal wire cables are used with the rear panel BNC connectors.

5. SPARES

Part Number	Nomenclature
5248-02	Amplifier
29657-01	Power Supply with Audio Amp
9787-01	Rack Assembly 6P + PS
9787-02	Rack Assembly 8P