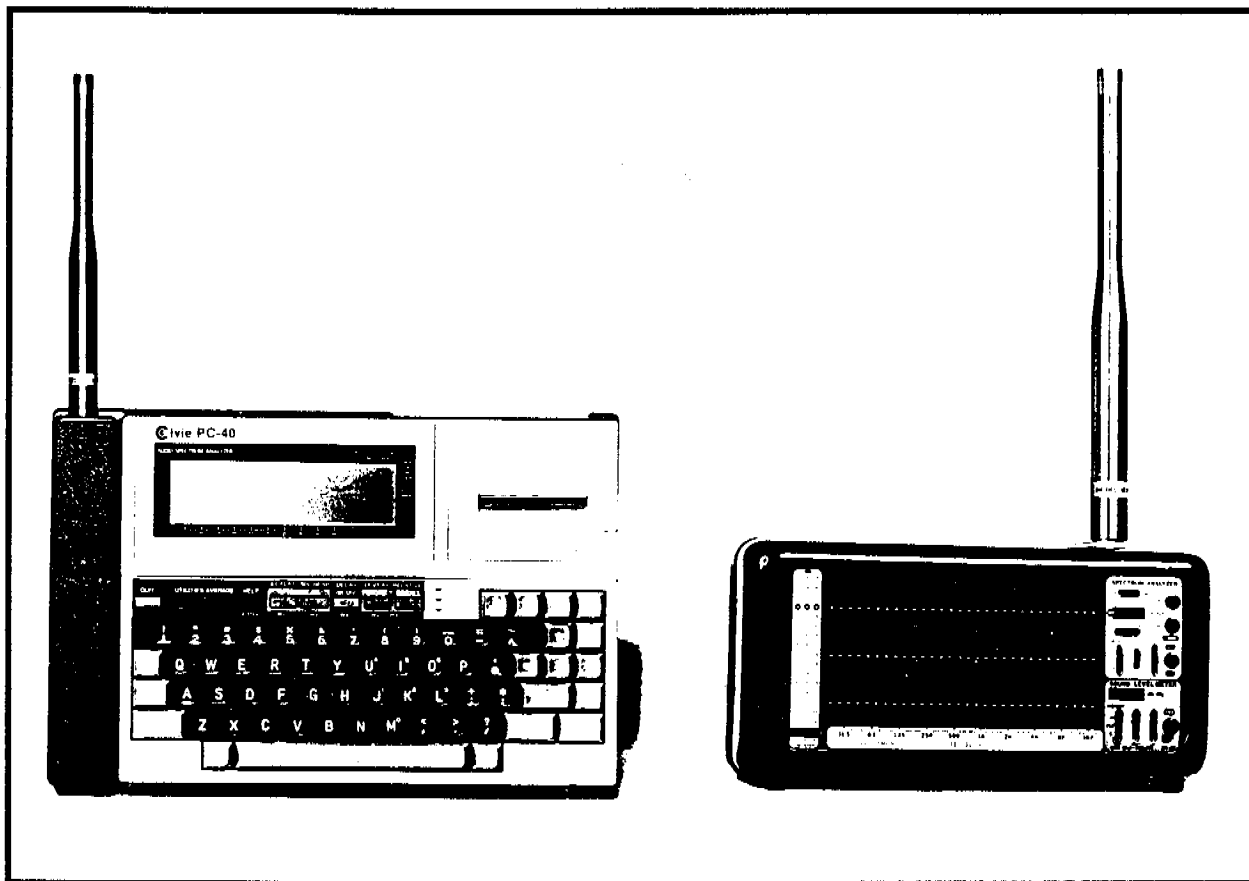




IVIE
TECHNOLOGIES, INC.

IE-2P MANUAL



Operation and Owners Manual for the
IE-2P Precision Preamplifier
for the IE-30A and the PC-40

Printed in U.S.A.

Introduction

The IE-2P is a power supply/preamplifier specifically designed to operate with Ivie, Brüel and Kjøer, ACO Pacific and other laboratory quality condenser microphones following the international thread standard and requiring a 200 volt, or 28 volt DC polarization (bias) voltage. The IE-2P plugs directly into the Ivie IE-30A and the Ivie PC-40, and accepts a 1/2 inch cartridge.

When microphones other than Ivie are used, they must operate with either 200 volt or 28 volt polarization voltages. One half inch microphones will screw directly to the IE-2P, but one eighth inch, one quarter inch and one inch microphones will require adaptors to adapt them to the standard one half inch threads of the IE-2P. These adaptors are normally available directly from the manufacturer of the microphone used. Most 1/8, 1/4 and 1/2 inch microphones require a 200 volt DC bias voltage, while some 1 inch microphones require 28 volts DC. The IE-2P can be switched to supply either of these voltages, and draws power from the IE-30A or PC-40 regulated, 12 volt power supply.

The IE-2P can be used as a microphone preamplifier separate from the IE-30A or the PC-40 if a power source is provided. This could be as simple as a small box containing batteries and the proper connectors to accept both the IE-2P and the input cable from the equipment being used with the IE-2P. The Appendix of this manual contains a circuit diagram for such a box.

Before Operation

Note: Due to the very high impedance/low capacitance of this device, certain precautions must be taken to protect the input circuitry. These include:

1. Do not remove the microphone cartridge when the IE-2P is on. When the circuitry is active, removal of the cartridge can cause shorting of the power supply to the spring loaded cartridge electrode. Damage will result. *It may also zap the operator with a full 200 volts. Even with the very low current involved, this is an unpleasant experience.*
2. Wait at least ten seconds after turning off the IE-2P before removing the cartridge. This allows a full discharge of the supply voltage.
3. The several giga ohm input impedance of the IE-2P renders it susceptible to static discharge damage. Care should be taken when handling the IE-2P to see that no static discharge reaches the spring loaded input electrode.

Using the IE-2P

The IE-2P comes from the factory adjusted for 200 volt bias operation, and with the Sensitivity Switch (see IE-2P drawing in Appendix of this manual) set for -0dB attenuation. The -0dB attenuation setting is intended for use with most 1/2 inch and all 1/4 and 1/8 inch microphones. Some very sensitive 1/2 inch, and most 1 inch microphones will require the -20dB attenuation setting to allow them to be properly calibrated to the IE-30A or the PC-40.

If the IE-2P must be disassembled in order to change the attenuation setting or the bias voltage, disassemble it in the following manner:

1. Loosen the Housing Lock Screw (see Appendix for IE-2P drawing). Once the screw is loosened, grasp the exposed end of the connector and firmly draw it straight back with a smooth motion, until the miniature rocker switches are exposed. Care should be taken while the PC board is extended out of the case so that the board is not allowed to bend or flex excessively, damaging solder joints or breaking the board itself.
2. Set the Bias Voltage Switch and the Attenuation Switch as necessary, depending on the requirements of the microphone being used.
3. Carefully slide the connector/PC board back into the housing, and secure with the Housing Lock Screw.

Calibration

Once a microphone cartridge has been connected to the IE-2P, plug it into the IE-30A or PC-40. Attach a calibrating device such as a pistonphone to the microphone cartridge and adjust the Calibration Control (see Appendix for IE-2P drawing and location of Calibration Control) to obtain the proper SPL. Make sure the Attenuation Switch and Bias Voltage Switch are in their proper positions as discussed above. After calibration, the IE-2P and microphone are ready for use.

Further Instructions and Cautions

Ivie 1/2 inch microphones and similar microphones from other manufacturers are capable of accurately responding to SPL's in excess of 140 to 150dB (check each manufacturer's

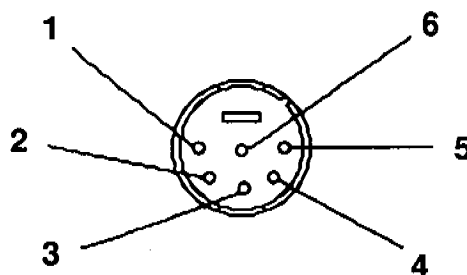
specifications for exact limits). However, the signal levels these microphones generate at these high SPL levels are excessive for the IE-2P. Ivie microphones used with the IE-2P can measure SPL's up to approximately 130dB. *Subjecting the Ivie microphone/IE-2P combination to SPL's higher than 130dB can cause damage to the IE-2P.* This damage shows up as a permanent loss in sensitivity. The higher the SPL to which the IE-2P is subjected, the more severe the sensitivity loss.

Avoiding such damage is a simple matter. If it is known that very high levels of SPL are going to be encountered, it is a simple thing to add an attenuation pad. These are available from Brüel and Kjør and others. Readings will then need to be adjusted for the proper SPL reading. If such a pad is not available, the 20dB pad in the IE-2P can be switched in. This will, of course, require that a 20dB adjustment be added to each SPL reading. Another option is to offset the calibration of the IE-30A or PC-40 by 20dB. If a calibration device such as a pistonphone generates 124dB, for example, the analyzer can be set for 104dB. Then, of course, a 20dB correction is added to the SPL of each measurement taken.

If measurement offsets are undesirable, a 1/4 or 1/8 inch microphone can be used instead of a 1/2 inch microphone. The signal level they generate at higher SPL levels is significantly less than 1/2 inch microphones generate, so the IE-2P will not be damaged. These smaller microphones can be exactly calibrated to Ivie analyzers, requiring no adjustment in SPL readings.

IE-2P Output Pin Assignments

The output pin configuration of the IE-2P is shown below:



Pin assignments are:

- Pin 1. Audio Output (less than 25 Ω)
- Pin 2. Gain Trim. Activates gain trim circuit in IE-30A or PC-40 to allow for level calibration.
- Pin 3. No connection.
- Pin 4. Power input (6 to 12 VDC at 7Ma).

Pin 5. Attenuation pin. IE-2P Sensitivity Switch shorts this pin to pin 4, providing -20dB of attenuation.

Pin 6. Ground

Specifications

Input Capacitance: ----- <.25 pf

Input Impedance: ----- 2 giga Ω at 100 Hz

Dynamic Range: ----- See Appendix, Figure 1

Bandwidth: ----- See Appendix, Figure 2

Flatness: ----- See Appendix, Figure 2

Supply Voltage Range: ----- +6 to +12 VDC

Current Drain: ----- 7 Ma

Frequency Response: ----- See Appendix, Figure 2

Polarization Voltage: ----- 200 VDC, or 28 VDC ($\pm 1\%$)

Output Impedance: ----- <25 Ω

Temperature Range:

Operating: ----- -10 deg. C to +50 deg. C

Storage: ----- -30 deg. C to +65 deg. C

Attenuation and Gain:

Insertion: ----- +6.85 \pm .5dB

Switch: ----- 0 or -20dB

Preamplifier Noise:

Capacitance Cartridge	Noise (Linear)	Noise (A Weighted)
60pf (1 inch)	8.0 μ V 18.06dB μ V	2.0 μ V 6dB μ V
18pf (1/2 inch)	20.0 μ V 26.02dB μ V	4.5 μ V 13.06dB μ V
6pf (1/4 inch)	40.0 μ V 32.04dB μ V	13.0 μ V 22.28dB μ V
3.5pf (1/8 inch)	55.9 μ V 35.9dB μ V	20.0 μ V 26.02dB μ V
dead short	2.6 μ V 8.3dB μ V	1.2 μ V 1.58dB μ V

Dimensions: ----- Length: 8.2" (20.8cm); Max. Diameter: .75" (19mm)

Connector Type: ----- Switchcraft A6F 6 Pin

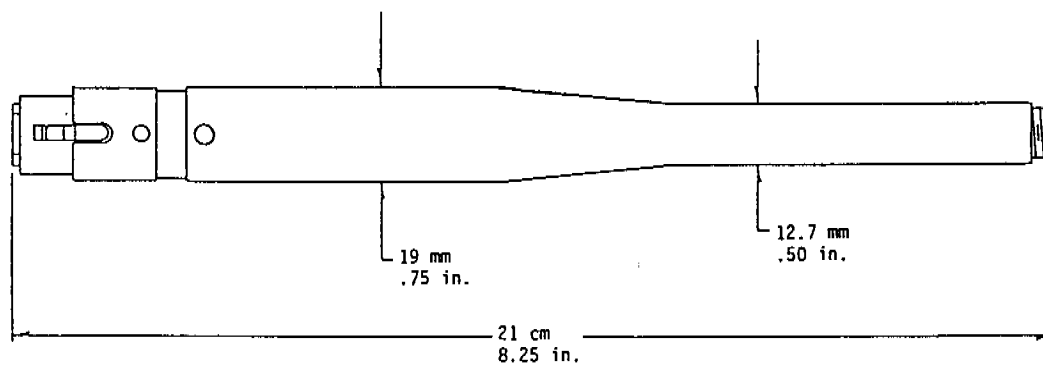
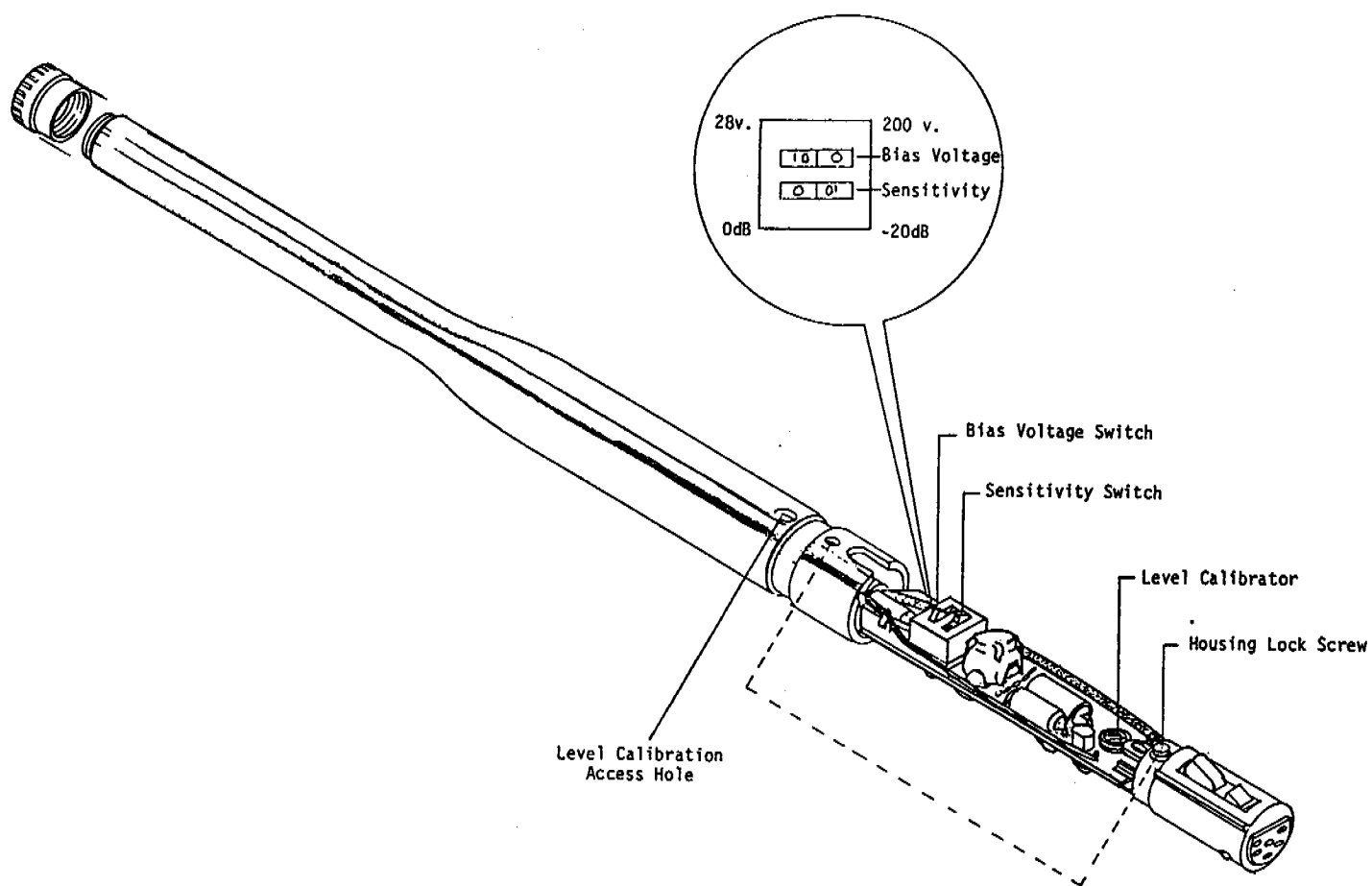
Weight: ----- 5 ounces (139 grams)

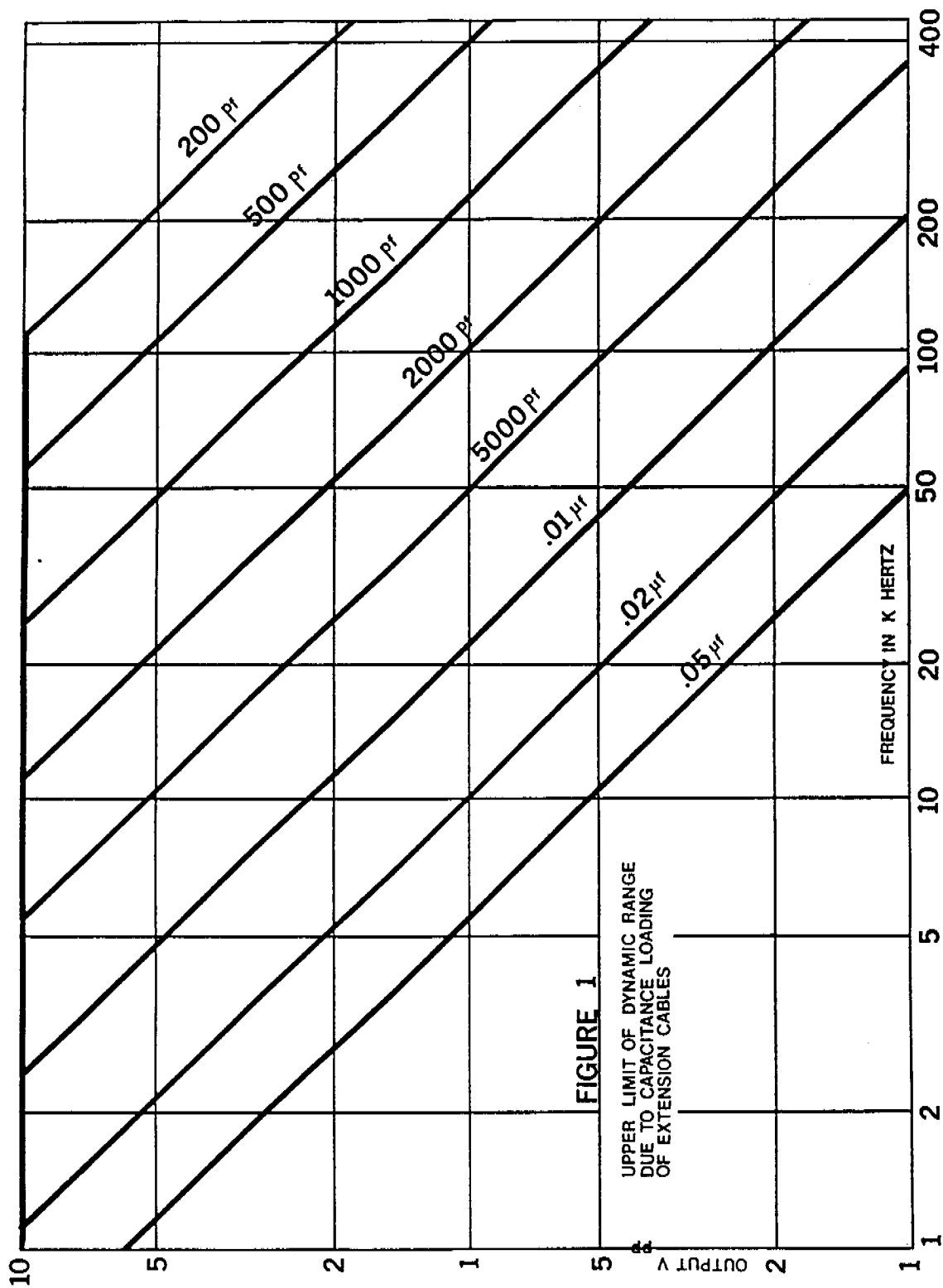
Accessories Available: ----- Model DL 18, 18pf dummy load (1/2 inch)

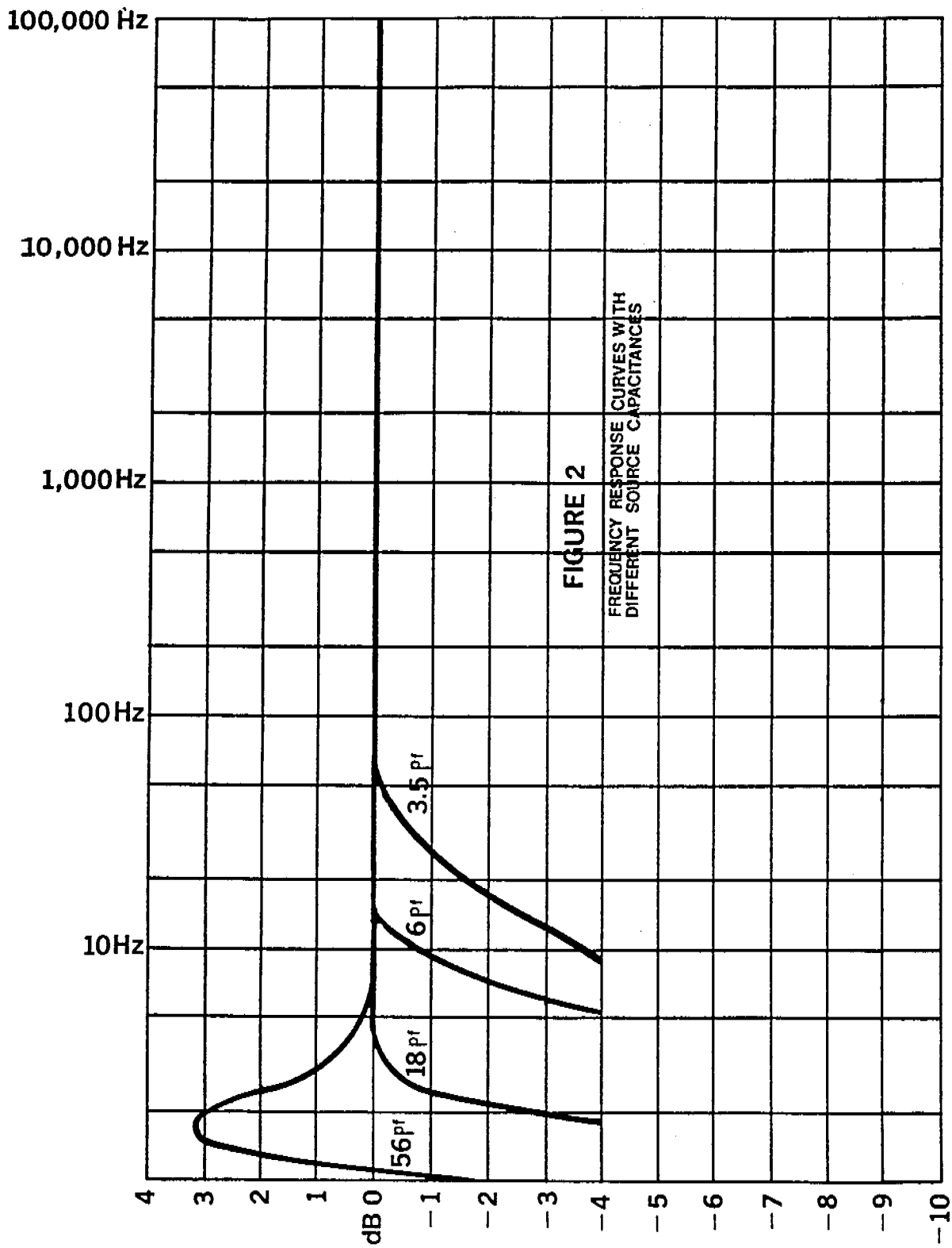
Model DL 60, 60Pf dummy load (1 inch)

Model DLZ, shorting dummy load (1/2 inch)

Appendix







Power Supply for the IE-2P

Since the IE-2P Precision Preamplifier will accept most air condenser microphones including Ivie, Brüel and Kjøer, ACO Pacific, Rion, and others which conform to international size and thread specifications, it may sometimes be desirable to use the IE-2P for the front end of an instrument other than an Ivie instrument.

To accomplish this, a simple, external power supply is required. Below is a diagram of how this power supply should be interfaced with the IE-2P. In addition to the power supply, appropriate cables and connectors would be required. The IE-2P and Ivie microphone extension cables use Switchcraft A6F and A6M, six pin connectors.

