

ENCORE ELECTRONICS INC.
Model FL644-002
Isolation Shunt Voltage Amplifier

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SPECIFICATIONS
Model FL644-002
Isolation Shunt Voltage Amplifier

INPUT SIGNAL	0 - 2VDC, 0 - 1VAC RMS
INPUT-OUTPUT ISOLATION	±1000VDC
OVERALL GAIN	5.0 (1VRMS input gives 5VRMS output)
OUTPUT	0-7VAC RMS, at 5 mA max
FREQUENCY RESPONSE	DC - 15kHz, ±5%
POWER	±15VDC, regulated, at 65 and 5 mA
CONNECTIONS	Six front panel wireclamp terminals for power supplies and output two two-pin removable wireclamp terminal connectors for high and low inputs
MECHANICAL	2.9" x 3.1" x 0.9" plastic enclosure, mounts on standard 35mm DIN-rail
WEIGHT	4 ounces

OPERATION
Model FL644-002
Isolation Shunt Voltage Amplifier

1. Connect the FL644-002 to a source of regulated $\pm 15\text{VDC}$ power, such as the FL854 power supply.
2. Connect the low-voltage shunt signal (maximum 1.5VAC RMS) to the +IN and -IN screw terminals on the front panel. These connectors may be unplugged for ease of wiring, if desired.
3. Connect the OUT and COM terminals to your voltmeter or data recording equipment as needed.

ACCEPTANCE TEST PROCEDURE
Model FL644-002
Isolation Shunt Voltage Amplifier

1. Connect regulated +15VDC and -15VDC supplies to the module. With no input signal connected, verify the output offset is 0mVDC \pm 5mV.
2. Connect a 1kHz, 1V RMS signal to the +IN and -IN terminals. Verify that the output from the unit under test is approximately 5VRMS.
3. Increase the frequency of the input signal, until the output voltage drops to 71% of the output voltage at 1kHz. This frequency is the -3dB filter cutoff point, which should be greater than 15kHz.
4. Connect the amplifier under test as shown in the lower half of Test Schematic B14248. Adjust the function generator for a measured input voltage of 1.00VRMS at 1kHz. Verify that the output is 5.00VRMS, \pm 1% (4.95 - 5.05 VRMS).
5. Increase the variac which is supplying the DC high voltage source until its output is 1000VDC. Verify that the output signal is still 5.00VRMS. Turn off and remove the high voltage source.

FACTORY TEST
Model FL644-002
Isolation Shunt Voltage Amplifier

1. Connect regulated +15VDC and -15VDC to the module. With no input signals connected, adjust the zero trimpot (R10) for 0mVDC \pm 2mV at the output.
2. Connect a 1kHz, 700mVRMS input signal to the +IN and -IN terminals. Check that the gain jumper, J1, is set to the 10 position. Measure the output signal. It should be 7VRMS, for an overall gain of 10.
3. Increase the frequency of the input signal, until the output voltage drops to 71% of the output voltage at 1kHz. This frequency is the -3dB filter cutoff point, which should be greater than 15kHz.
4. Return the input signal to 1kHz, and adjust the input amplitude to 70mVRMS. Set J1 for a gain of 100. The output signal should be 7VRMS. Move J1 to the 1K position, and reduce the input to 7mV. The output signal should be 7VRMS. Set the input voltage to 1.0VRMS, move J1 to the VAR position, and turn R6 fully counter-clockwise. The output should be 4.5VRMS or less. This corresponds to a variable gain of less than 4.5. Turn R6 fully clockwise, and check for an output of 5.5VRMS or more. This corresponds to a variable gain of greater than 5.5.
5. Adjust the function generator for an input signal of 1.00VRMS. Adjust R6 for a gain of 5.00 \pm 0.5%, and secure the trimpot. Increase the input signal to 1.5VRMS, and check for 7.50VRMS at the output, with no distortion.
6. Connect the amplifier as shown in the lower half of Test Schematic B14248. Adjust input amplitude for 7.00VRMS output, to compensate for transformer errors. Increase the variac which is supplying the DC high voltage source until its output is 1000VDC. Verify that the output signal is still 7.00VRMS. Turn off and remove the high voltage DC source.

FACTORY TEST DATA SHEET
Model FL644-002
Isolation Shunt Voltage Amplifier

S/N: _____ Tech: _____ Date: _____

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|----|---------------------------------|-----------|
| 1. | Zero offset adjusted | [] |
| 2. | Gain with J1 at 10 | _____ |
| 3. | Frequency response | _____ kHz |
| 4. | Gain with J1 at 100 | _____ |
| | Gain with J1 at 1000 | _____ |
| | Gain adjust range in VAR | [] |
| 5. | Gain set to 5.00 ±0.5% | _____ |
| | Full output voltage check | [] |
| 6. | High voltage DC isolation check | [] |