

ESO-20/40 Cable for Ground Reference and Supply Offset Testing

For testing to these Specifications:

- LV 124 Section E-16
- LV 148 Section E48-12
- BMW GS95024-2 Section E-16
- VW 80000 E-16
- ISO 16750-2 Section 4.8
- FMC 1278 Section CI 250
- GM 3172 Sections 9.2.11 and 9.2.12

Application

The AE Techron **ESO-20/40 cable** was designed for use in ground reference and supply offset testing as required by ISO 16750-2 Section 4.8 and other similar automotive EMC standards.

This input cable allows AE Techron's 7000 series of amplifiers to be used for ground lift tests when paired with the 3110A Standards Waveform Generator. It connects from the 3110A's balanced output to the balanced input of an AE Techron 7000 series amplifier.

Description

The ESO-20/40 cable extends the common-mode rejection of AE Techron amplifiers, allowing the amplifier negative output terminal to be raised above ground by up to 40V (meeting requirements for systems up to 24V).

Features

- Up to 40Vp standoff voltage
- Provides the isolation necessary for Ground Reference and Supply Offset Testing in multiple automotive standards
- Increases output voltage accuracy and reduces system noise-floor for all standards
- Generous, 3-foot cable allows easy connection to all AE Techron amplifiers

When in use, the ESO-20/40 cable will reduce the amplifier's gain and increase output voltage accuracy for all standards. The ESO-20/40 cable must be used with an AE Techron 3110A Standards Waveform Generator and can be paired with any AE Techron 7000 series amplifier via its balanced signal input connection.

Unit Setup

Safety First

Throughout these instructions, special emphasis is placed on good safety practices. The LIGHTNING FLASH and EXCLAMATION POINT graphics are used to highlight certain topics that require extra precaution.

Watch for These Symbols:




The lightning flash with the arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of “dangerous voltage” inside the product that may constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.

Important Safety Instructions

1. Read and keep these instructions. Follow all instructions and heed all warnings.
2. Disconnect this product from all sources of electrical power  before cleaning. Use a damp cloth for cleaning. Clean the outside of the product only.
3. Install in accordance with the manufacturer’s instructions.
4. Refer all servicing to qualified service personnel. Servicing is required

when the apparatus has been damaged in any way or does not operate normally.



5. Operating conditions: 10°C to 40°C;
Humidity: 70% or less, non-condensing.

Unpacking

Carefully unpack and inspect the unit. Please note any damage for future reference and notify the shipping company immediately if damage is found. Also, please save the shipping carton and materials as evidence of damage and/or for returning the unit for repair.

Connecting the ESO-20/40 Cable

1. Before connecting the ESO-20/40 cable, make sure all equipment you are connecting are disconnected from AC power.
2. Your 7000 Series amplifier has a 2.7-ohm resistor connected between the Common output terminal (7224 and 7234 amplifiers) or Sampled Common output terminal (all other 7000 series amplifiers) and the Chassis Ground terminal on the amplifier’s back panel. See **Figure 1**. This resistor **MUST** be removed before using the ESO-20/40 cable.
3. Connect the cable end with one DB25 connector to the DB25 connector on the rear of your 3110A Standards Waveform Generator.
4. Select one of the 3-pin barrier block (WECO) connectors at the other end

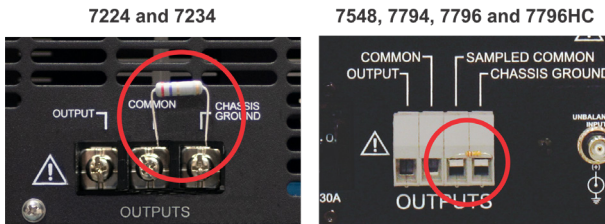


Figure 1 - Location of the 2.7-ohm resistor

of the ESO-20/40 cable to connect to your amplifier. Use the connector labeled "20" when using the amplifier in a system with an offset of 20V or less. Use the connector labeled "40" in a system with an offset of 40V or less.

5. Connect the 3-pin barrier block (WECO) connector to the balanced input connector on your amplifier's SIM-BNC input card located on the amplifier's back panel. Ensure that the input selector switch is in the balanced position.
6. Adjust the system gain on your 3110A. When the barrier block connector labeled "20" is used, the amplifier's gain will be reduced by 50%. When the barrier block connector labeled "40" is used, the amplifier's gain will be reduced by 75%. For more information on adjusting the 3110A's system gain, please refer to the **3110A Help/Operator's Manual**.

Cautions and Use



When the 2.7-ohm resistor is removed from the amplifier output, the reference of the amplifier's chassis is changed from ground to floating and the stability margin of the amplifier is reduced. Use caution when operating with a floating ground. Follow the directions for output connections as required by the Standard.

If you have any questions or concerns about using the ESO-20/40 cable with your system, please contact AE Techron Technical Support at tech@aetechron.com

Equipment Maintenance



Disconnect this product before cleaning. Use a damp cloth for cleaning. Clean the outside of the product only.

Factory Service

If the unit fails to perform, it may need to be returned for Factory Service. All units under warranty will be serviced free of charge (customer is responsible for one-way shipping charges as well as any custom fees, duties, and/or taxes). Please review the Warranty included with this Instruction Sheet for more information.

All service units must be given Return Authorization by AE Techron, Inc. before being returned. Return Authorizations can be requested on our website or by contacting our Customer Service Department.

Please take extra care when packaging your unit for repair. It should be returned in its original packaging or a suitable alternative. Replacement packaging materials can be purchased for a nominal fee.

Please send all service units to the following address and be sure to include your Return Authorization Number on the box.

AE Techron, Inc.
Attn: Service Department / RMA#
2507 Warren Street
Elkhart, IN 46516

Specifications

Performance Specifications

Maximum Standoff Voltage: 40Vp

Maximum Input Voltage: ± 10 Vp

Connectors

Balanced Input Connectors:

3-pin WECO barrier block (connect to amplifier)

Balanced Output Connector:

DB-25 connector (connect to 3110A)

Physical Characteristics

Operating Conditions,

Temperature: 10°C to 40°C (50°F to 104°F)

Humidity: 70% or less, non-condensing

Recommended Ambient Temperature: 25°C (77°F)

Length: 36 inches (91.44 cm)

Weight: 0.25 lbs. (0.11 kg)

Additional Product Information

This manual does not include all of the details of design, production, or variations of the equipment. Nor does it cover every possible situation which may arise during installation, operation or maintenance.

Additional information may be included with your unit via digital media and is also available at the AE Techron website at www.aetechron.com.

Information Accuracy

The information provided in this manual was deemed accurate as of the publication date. However, updates to this information may have occurred. To obtain the latest information for your unit, please visit the AE Techron website at www.aetechron.com.

Trademark Notice

AE Techron is a registered trademark of AE Techron, Inc. Other trademarks are the property of their respective owners.

Three-Year, No-Fault Warranty

SUMMARY OF WARRANTY

AE TECHRON INC., of Elkhart, Indiana (Warrantor) warrants to you, the ORIGINAL COMMERCIAL PURCHASER and ANY SUBSEQUENT OWNER of each NEW **AE TECHRON INC. product**, *for a period of three (3) years from the date of purchase, by the original purchaser (warranty period) that the product is free of defects in materials and workmanship and will meet or exceed all advertised specifications for such a product. We further warrant the new AE Techron product regardless of the reason for failure, except as excluded in the Warranty.*

ITEMS EXCLUDED FROM WARRANTY

This AE Techron Warranty is in effect only for failure of a new AE Techron product which occurred within the Warranty Period. It does not cover any product which has been damaged because of any intentional misuse, or loss which is covered under any of your insurance contracts. This warranty does not extend to any product on which the serial number has been defaced, altered, or removed. It does not cover damage to loads or any other products or accessories resulting from **AE TECHRON INC.** product failure. It does not cover

defects or damage caused by the use of unauthorized modifications, accessories, parts, or service.

WHAT WE WILL DO

We will remedy any defect, regardless of the reason for failure (except as excluded), by repair or replacement, at our sole discretion. Warranty work can only be performed at our authorized service centers or at our factory.

Expenses in remedying the defect will be borne by **AE TECHRON INC.**, including one-way surface freight shipping costs within the United States. (Purchaser must bear the expense of shipping the product between any foreign country and the port of entry in the United States and all taxes, duties, and other customs fees for such foreign shipments.

HOW TO OBTAIN WARRANTY SERVICE

When you notify us of your need for warranty service, we will give you an authorization to return the product for service. All components must be shipped in a factory pack or equivalent which, if needed, may be obtained from us for a nominal charge. We will take corrective actions within a reasonable time of the date of receipt of the defective product. If the repairs made by us are not satisfactory, notify us immediately.

DISCLAIMER OF CONSEQUENTIAL AND INCIDENTAL DAMAGES

You are not entitled to recover from us any consequential or incidental damages resulting from any defect in our product. This includes any damage to another product or products resulting from such a defect.

WARRANTY ALTERATIONS

No person has the authority to enlarge, amend, or modify this warranty. The warranty is not extended by the length of time for which you are deprived of the use of this product. Repairs and replacement parts provided under the terms of this warranty shall carry only the unexpired portion of this warranty.

DESIGN CHANGES

We reserve the right to change the design of any product from time to time without notice and with no obligation to make corresponding changes in products previously manufactured.

LEGAL REMEDIES OF PURCHASER

There is no warranty that extends beyond the terms hereof. This written warranty is given in lieu of any oral or implied warranties not contained herein. We disclaim all implied warranties, including, without limitation, any warranties of merchantability or fitness for a particular purpose. No action to enforce this Warranty shall be commenced later than ninety (90) days after expiration of the warranty period. This statement of warranty supersedes any others contained in this manual for AE Techron products.

AE Techron, Inc.

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