1864-9700 MEGOHMMETER WITH HIGH VOLAGE RELAY BOARD FOR REMOTE CONTROL OR FOOTSWITCH OPERATION

Relay Board Addendum

User Manual

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1864-9700 Relay Board IM Addendum Sept. 2014

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WARRANTY

We warrant that this product is free from defects in material and workmanship and, when properly used, will perform in accordance with applicable IET specifications. If within one year after original shipment, it is found not to meet this standard, it will be repaired or, at the option of IET, replaced at no charge when returned to IET. Changes in this product not approved by IET or application of voltages or currents greater than those allowed by the specifications shall void this warranty. IET shall not be liable for any indirect, special, or consequential damages, even if notice has been given to the possibility of such damages.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

WARNING

OBSERVE ALL SAFETY RULES
WHEN WORKING WITH HIGH VOLTAGES OR LINE VOLTAGES.

Dangerous voltages may be present inside this instrument. Do not open the case
Refer servicing to qualified personnel

HIGH VOLTAGES MAY BE PRESENT AT THE TERMINALS OF THIS INSTRUMENT

WHENEVER HAZARDOUS VOLTAGES (> 45 V) ARE USED, TAKE ALL MEASURES TO AVOID ACCIDENTAL CONTACT WITH ANY LIVE COMPONENTS.

USE MAXIMUM INSULATION AND MINIMIZE THE USE OF BARE CONDUCTORS WHEN USING THIS INSTRUMENT.

Use extreme caution when working with bare conductors or bus bars.

WHEN WORKING WITH HIGH VOLTAGES, POST WARNING SIGNS AND KEEP UNREQUIRED PERSONNEL SAFELY AWAY.

CAUTION

DO NOT APPLY ANY VOLTAGES OR CURRENTS TO THE TERMINALS OF THIS INSTRUMENT IN EXCESS OF THE MAXIMUM LIMITS INDICATED ON THE FRONT PANEL OR THE OPERATING GUIDE LABEL.

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Chapter 1
INTRODUCTION

1.1 Introduction

The 1864-9700 Relay Board is a standard 1684-9700 Megohmmeter modified with an additional HV relay board for remote control of **discharge, charge** and **measure** functions.

This modification adds a HV relay board in parallel with the front panel **FUNCTION SWITCH**.

The relays are controlled via 24 Vdc being applied between **ground** and **charge/measure** pins on a 5-pin DIN panel mount jack, Amphenol part number T3363009, on the rear panel of the 1864-9700. The mating plug Amphenol plug part number T3360001 is supplied with each 1864.

If there is no connection to the DIN connector the 1864-9700 functions normally and all specifications remain the same.

Figure 1-1 DIN Connector on rear panel of 1864 showing pins for Charge, Measure and Ground

Specification Change Notice

When the 1864-9700 is controlled via relays the 1864-9700 functions normally and with no change in specifications, for ungrounded operation with ground link connected between guard and ground.

The only change to specification is during operation when the ground-link is connected between + unknown and ground for grounded operation the voltage should be limited to 500 Vdc. Above 500 Vdc excessive leakage will cause meter to read low.

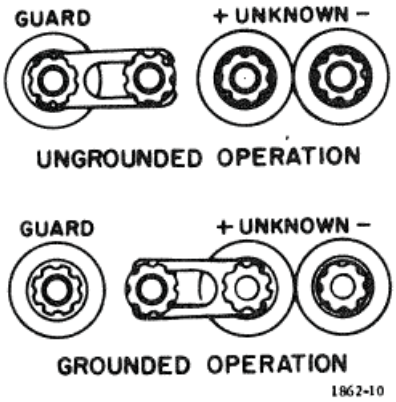

Figure 1-2 Ground-link connection to GUARD terminal (top) and to +UNKNOWN terminal (bottom)

Chapter 2

OPERATION

Shock Hazard

DANGER

The function switch must be in the DISCHARGE position whenever the unit is in a standby mode or before handling a DUT including resistors.

Every precaution has been taken in the design of the Types 1863 and 1864 Megohmmeters to reduce the possibility of shock. However, high voltage must be present at the terminals to make measurements at the required voltage levels, and the operator should be aware of the dangers involved.

The current delivered by the megohmmeters under short-circuit conditions is approximately 5 mA. This 5-mA current is not lethal to most persons but might be lethal to those with poor hearts, and it is painful to all. The actual current that will flow through a person depends on the resistance of the part of the body that makes contact with the terminals. This resistance can be as low as 300 Ω. Note that any of the three insulated binding posts can be at high voltage, depending on the position of the shorting link.

When capacitors are tested, there is an especially dangerous condition because a charged capacitor can have enough energy to cause heart fibrillation and death. The capacitor should always be shunted before connecting to the megohmmeter, and the function switch should be set to **DISCHARGE** for a few seconds before the capacitor is disconnected.

We strongly recommend that additional precautions such as rubber gloves and insulated benchtops, chairs and shoes should be used by anyone making repetitive measurements with the megohmmeter, especially measurements on capacitors. These precautions should not take the place of careful discharge of the capacitors before and after measurement, but should be used as an additional safety measure.

OPERATION:

Operation using front panel:

The operation of the 1864-9700 via front panel is identical to the operation of a standard 1864-9700 Megohmmeter, as long as no voltage is applied to the rear panel DIN connector. See 1864 Instruction Manual for more information on normal operation.

Operation using relay control:

NOTE: Operation of the 1864-9700 via remote control requires the front panel **FUNCTION SWITCH** i.e. **Measure/Charge/Discharge switch** to be in Discharge Mode.

The 24Vdc supply used to drive the relays should be capable of suppling 200 mA of current.

When using relay control, if no voltage is applied between **charge** or **measure** pins and **ground o**f the rear panel DIN connector, then the 1864 is in **discharge** mode assumming **FUNCTION SWITCH** on front panel is set to Discharge.

Figure 2-1 DIN Connector on rear panel of 1864 showing pins for Charge, Measure and Ground

Applying 24 Vdc between charge and ground pin on the DIN connector places the 1864 in Charge Mode. See figure 2-1.

Applying 24 Vdc between charge and ground pins and measure and ground pins places the 1864 in Charge Mode. So for measurement mode the 24 Vdc needs to be applied to both charge and measurement pins on the rear panel DIN connector.

Table of Applied Voltage versus Function for Remote Control operation via rear panel		
Function	**Charge Pin**	**Measure Pin**
Discharge	No Voltage	No Voltage
Charge	24 V dc	No Voltage
Measure	24 V dc	24 V dc

NOTE: It is important to zero the 1864 when using relay operation as the zero will be different from operation using front panel **FUNCTION SWITCH Measure/Charge/Discharge switch**.

To set initial zero adjustments, proceed as follows:

1. Make sure the function switch is set to **DISCHARGE**.
2. Make sure that nothing is connected to the **UNKNOWN** terminals.
3. Set the multiplier dial to any range.
4. Adjust the **SET** ∞ control for an ∞ reading on the meter.
5. Set 1864 to required test voltage
6. Set the multiplier switch to the highest range.
   1864 -- 10-1T
7. Set the function switch to **MEASURE** using relay control.
8. Adjust the **SET** ∞ **HIGHEST RANGE** on the instrument for an ∞ meter reading.

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Chapter 3

MAINTENANCE

3.1 Preventive Maintenance

See 1864-9700 Instruction Manual

3.2 Customer Service

The IET warranty attests to the quality of materials and workmanship in our products. For application assistance or if difficulties occur, our engineers will assist in any way possible. If you cannot eliminate the difficulty, please e-mail, FAX, or phone our Service Department, giving full information of the trouble and of steps taken to remedy it. Be sure to include the type and serial number of the instrument.

For technical support, call 516-334-5959 or visit www.ietlabs.com.

3.3 Instrument Return

Before returning an instrument to IET for service please call our Service Department at 516-334-5959 for Return Material Authorization (RMA). Include a Purchase Order Number to insure expedient processing. Units under warranty will be repaired at no charge. For any questions on repair costs or shipment instructions, please contact our Service Department at the above number. To safeguard an instrument during shipment, please use packaging that is adequate to protect it from damage, (i.e., equivalent to the original packaging) and mark the box “Delicate Electronic Instrument”. Return material should be sent freight prepaid to:

IET Labs, Inc.
1202 VFW Parkway
West Roxbury, MA 02132
Attention: Service Department