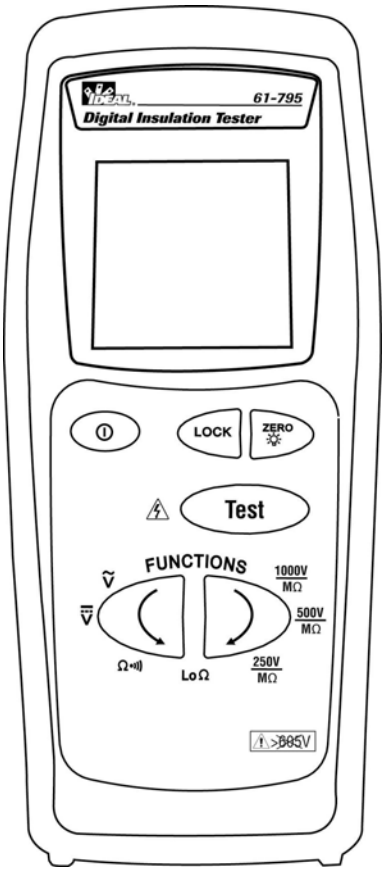
IDEAL INDUSTRIES INC.
TECHNICAL MANUAL
MODEL: 61-795

The Service Information provides the following:

- Precautions and safety information
- Specifications
- Performance test procedure
- Calibration and calibration adjustment procedure
- Basic maintenance (replacing the battery and fuses)



Form number: TM61795
Revision: 3. Date: June 2008

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Introduction

⚠ Warning
To avoid shock or injury, do not perform the verification tests or calibration procedures described in this manual unless you are qualified to do so.

The information provided in this document is for the use of qualified personnel only.

⚠ Caution
The 61-795 contains parts that can be damaged by static discharge. Follow the standard practices for handling static sensitive devices.

For additional information about IDEAL INDUSTRIES and its products, and services, visit IDEAL INDUSTRIES web site at:
www.idealindustries.com

SAFETY

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use the product only as specified.

It is recommended that you read through the Operation or User manual before starting. Not all Caution, Warning, or Danger precautions are listed in this manual.

⚠ CAUTION.
These statements identify conditions or practices that could result in damage to the equipment or other property.

⚠ WARNING.
These statements identify conditions or practices that could result in personal injury or loss of life.

Specific precautions

Use proper Fuse. To avoid fire hazard, use only the fuse type and rating specified for this product.

Do not operate without covers. To avoid personal injury, do not apply any voltage or current to the product without the covers in place.

Electric overload. Never apply a voltage to a connector on the product that is outside the range specified for that connector.

Avoid electric shock. To avoid injury or loss of life, do not connect or disconnect probes or test leads while they are connected to a voltage source.

Avoid electric shock. To avoid injury or loss of life, do not come in contact with tested material or probes while the Test Button is pressed. High Voltage potentials are present during Insulation Tests..

Do not operate in wet/damp conditions. To avoid electric shock, do not operate this product in wet or damp conditions.

Required Equipment

Required equipment is listed in Table B. If the recommended models are not available, equipment with equivalent specifications may be used. Only qualified personnel should perform repairs or servicing.

Table B. Required Equipment

Equipment	Required Characteristics	Recommended Model
Calibrator	**AC Voltage Range:** 0-750V ac **Accuracy:** ±0.04% (Basic) **Frequency Range:** 10 ~ 500KHz **Accuracy:** ± 2% **DC Voltage Range:** 0-1000V dc **Accuracy:** ±0.006% (Basic) **Current Range:** 0 ~ 10A **Accuracy:** AC (45Hz to 65Hz): ±0.05% (Basic) DC: ± 0.008% (Basic) **Frequency Source:** 0.01Hz ~ 2.0000MHz **Accuracy:** ±0.0025% **Amplitude:** 0.5V p-p ~ 1.0V p-p (square wave) **Accuracy:** ± 5%(45Hz-1KHz) Ω **range:** 0.01Ω ~ 330M **Accuracy:** ±0.007% (Basic) **Capacitance Range:** 1pF ~ 1.1mF **Accuracy:** ±0.19% (Basic) **Temperature Range:** -200°C ~ 1800°C **Accuracy:** ±0.1°C (Basic)	Fluke 5500A Calibrator or equivalent

Required fixed resistors: 0Ω, 5Ω, 19Ω, 190Ω, 0.0MΩ, 1MΩ, 10MΩ, 100MΩ, 1000MΩ
Simulated Test leads: With a total resistance of < .1Ω ±10mΩ or .05Ω per simulated lead.

PERFORMANCE VERIFICATIONS

Perform the following analysis, if the meter conforms to the limits listed in Table 1 the meter is functioning correctly. If the meter does not conform to any of the listed limits, the calibration procedure must be performed.

Check the fuse as a BBS, 1A/600V, 10.4*35 (0.41x1.38 inch) UL/CSA, interrupting rating 10kA.
Check case, leads, display, etc, for any defects.

Table 1 Performance Verification: Model 61-795

Function Setting /Range	Apply	Reading	Specification
DCV	550V DC	547.2 to 552.8	[±0.5% ±1 digits]
ACV	550V AC	545.2 to 554.8	[±0.8% ±4 digits]
Continuity Ω/	<30Ω	Buzzer sounds	Not specified
Resistance:			
LOΩ	Simulated leads	.08 to .12	[±0.02Ω + 0.05 per lead]
LOΩ	0Ω	-0.03 to +0.03	[±0.03Ω]
LOΩ	5Ω	4.87 to 5.13	[±2.0% ±3 digits]
LOΩ	19Ω	18.59 to 19.41	[±2.0% ±3 digits]
Ω/	190Ω	185.9 to 194.1	[±2.0% ±3 digits]
LOΩ	10Ω	20.2mA to 25.8mA	Source check
LOΩ	1Ω	202mA to 258mA	Source check
Insulation Resistance:			
MΩ, 250V	10MΩ	250 to 275Vdc	Source Check
MΩ, 500V	10MΩ	500 to 550Vdc	Source Check
MΩ 1000V	10MΩ	1000 to 1100Vdc	Source Check
MΩ, 250V	0Ω	0.001 to 0.010	±10 digits
	100kΩ	0.090 to 0.110	±10 digits
	1MΩ	0.975 to 1.025	[±2.0% ±5 digits]
	10MΩ	9.75 to 10.25	[±2.0% ±5 digits]
	100MΩ	94.5 to 105.5	[±5.0% ±5 digits]
MΩ, 500V	100kΩ	0.085 to 0.115	±15 digits
	1MΩ	0.975 to 1.025	[±2.0% ±5 digits]
	10MΩ	9.75 to 10.25	[±2.0% ±5 digits]
	100MΩ	97.5 to 102.5	[±2.0% ±5 digits]
	1000MΩ	945 to 1055	[±5.0% ±5 digits]
MΩ, 1000V	100kΩ	0.085 to 0.015	±15 digits
	1MΩ	0.975 to 1.025	[±2.0% ±5 digits]
	10MΩ	9.75 to 10.25	[±2.0% ±5 digits]
	100MΩ	97.5 to 102.5	[±2.0% ±5 digits]
	1000MΩ	965 to 1035	[±3.0% ±5 digits]
MΩ, 500V	500KΩ	<500V	Source Check
Check on each Voltage range	0MΩ	<3.0mA	Source Check

CALIBRATION

Calibration Preparation

Required Equipment

The class of calibrator or equipment should have an accuracy that exceeds, by an expectable ratio, the accuracy of the instrument under test.

Required fixed resistors: 0Ω, 5Ω, 19Ω, 190Ω, 0.0MΩ, 1MΩ, 10MΩ, 100MΩ, 1000MΩ

Simulated Test leads. With a total resistance of < .1Ω ±10mΩ or .05Ω per simulated lead.

Calibration Procedure

It is recommended that all IDEAL meters undergo the following calibration procedure on an annual basis.

Calibration

1. Press the key to switch off the instrument.
2. Remove test leads from the input terminals.
3. Remove hood and battery compartment cover by using a screwdriver. ***(Refer to Figure 2)***
4. Loosen the screws from the case bottom. Remove the case bottom.
5. Short JP1, then replace the case bottom and battery compartment cover. ***(Refer to Figure 1)***
6. Press the key to turn on the instrument. The LCD displays the version of the software.
7. Push the "TEST" key to enter the calibration mode.
8. Press the key to select the range to calibrate.
9. Input the range standard value as listed in Table 2. Push the "TEST" key for more than 2 seconds. The LCD will display the A/D reading value.
10. Push the "TEST" key to save the range. Calibration is complete for that range.
11. If you want to calibrate the other ranges, repeat steps 8 - 10.
12. When complete, exit the calibration mode. Press the key to switch off the instrument.
13. Remove the case bottom and remove the short on JP1. ***(Refer to Figure 1)***
14. Replace the case bottom and battery compartment cover, pressing to close it, and secure with screw.
15. Install the hood.

Table 2 Calibration Range Inputs: Model 61-795

Range	Function	Input the calibrator standard value
1	DCV	DC600.0V
2	ACV	AC600.0V
3	Ω•))	190.0Ω
4	Ω•))	0.00Ω
5	LOΩ	19.00Ω
6	LOΩ	0.00Ω
7	LOΩ	5.00Ω
8	LOΩ	0.00Ω
9	250V/MΩ	1000MΩ
10	250V/MΩ	100.0MΩ
11	250V/MΩ	10.00MΩ
12	250V/MΩ	1.000MΩ
13	250V/MΩ	0.000MΩ
14	500V/MΩ	1000MΩ
15	500V/MΩ	100.0MΩ
16	500V/MΩ	10.00MΩ
16	500V/MΩ	1.000MΩ
18	500V/MΩ	0.000MΩ
19	1000V/MΩ	1000MΩ
20	1000V/MΩ	100.0MΩ
21	1000V/MΩ	10.00MΩ
22	1000V/MΩ	1.000MΩ
23	1000V/MΩ	0.000MΩ

Battery Replacement (Refer to Figure 2)

1. Disconnect the test leads from any circuit under test.
2. Press the ⏻ key to switch off the instrument.
3. Remove the hood and battery compartment cover by using a screwdriver.
4. Remove the batteries replacing them with new ones all of the same type (1.5×6 NEDA 15F IEC R6 JIS UM-3) (Alkaline batteries are recommended.) making sure of polarity while installing.
5. Install bottom case cover and secure with screws.
6. Install the hood.

Replacing Fuse (Refer to Figure 2)

1. Disconnect the test leads from any circuit under test.
2. Press the ⏻ key to switch off the instrument.
3. Remove the hood and battery compartment cover by using a screwdriver.
4. Loosen the screws from the case bottom. Remove the case bottom.
5. Remove input cover using a screwdriver.
6. Check the fuse with a digital multimeter with a source current < 10mA in low resistance range. (Replace fuse with a BBS 1A/600V, 10.3*38 (1.5x0.41 inch) UL/CSA, interrupting rating 10kA.)
7. Install input cover and secure with screw.
8. Replace the case bottom and secure with screw.
9. Replace the battery compartment cover, pressing to close it, and secure with screw.
10. Install the hood.

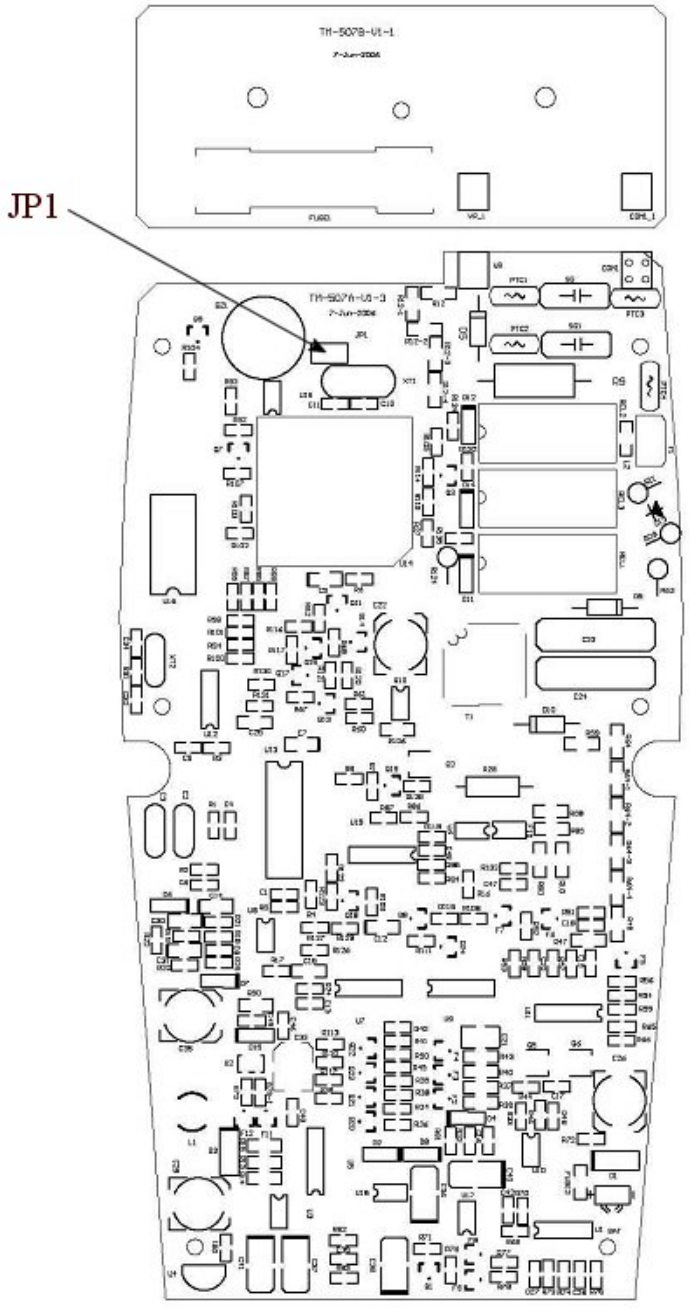

Figure 1

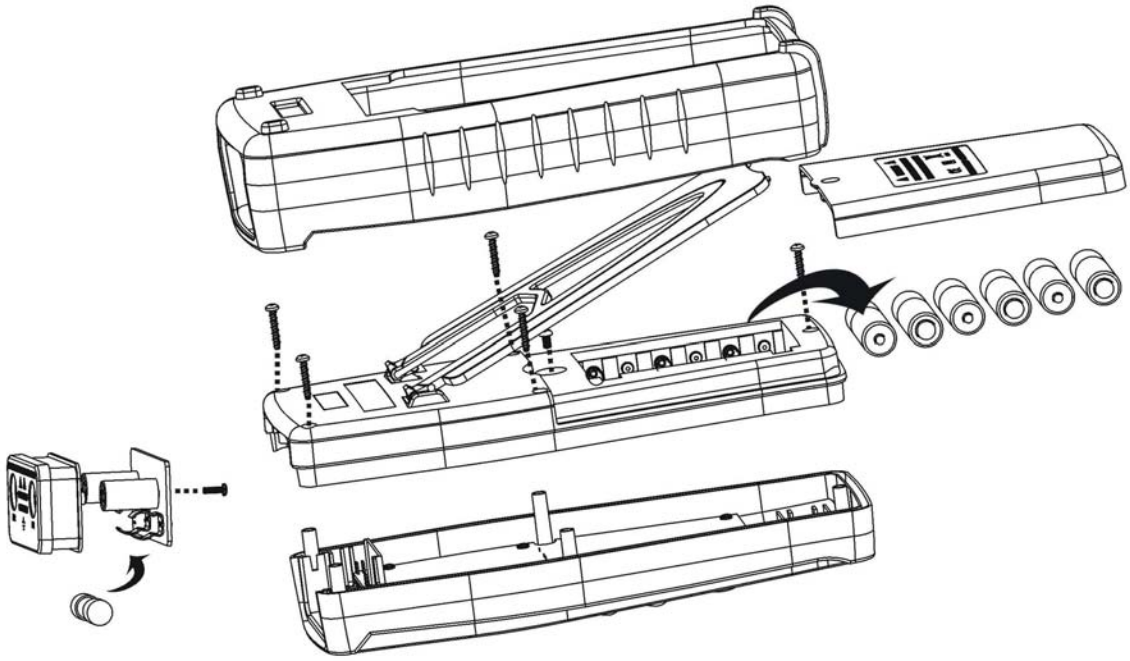

Figure 2