IDEAL INDUSTRIES, INC.
TECHNICAL MANUAL
MODEL: 61-710(SPR-300)

The Service Information provides the following information:

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

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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 61-710 contains parts that can be damaged by static discharge.
Follow the standard practices for handling static sensitive devices.

For additional information about IDEAL INDUSTRIES, INC. and its products, and services, visit IDEAL INDUSTRIES, INC. 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.

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

General specifications

Characteristics	Description
Operating Environment: Relative Humidity	-10°C to 50°C (14°F to 122°F) 0 ~ 85% RH
Storage Environment:	-20°C to 60°C (-4°F to 140°F) at <85% relative humidity
Dimensions	8.66" H X 3.26" W X 1.57" D 220mm H X 83mm W X 40mm D
Maximum Cable Size	ACA 1.18" (30mm)
Weight:	Approximately 13.75 oz. or 390g

RANGES and ACCURACY SPECIFICATION
Accuracy: Accuracy specifications at 23°C ±5°C (73.4°F ±9°F) at Relative Humidity of 45~75%

Function Setting	**Ranges**	**Accuracy**
AC 6A	0~6A	±3.0% of maximum scale value(50Hz/60Hz) ±10.0% of maximum scale value(400Hz)
AC 20A	0~20A	±3.0% of maximum scale value(50Hz/60Hz) ±6.0% of maximum scale value(400Hz)
AC 60A	0~60A	±3.0% of maximum scale value(50Hz/60Hz) ±6.0% of maximum scale value(400Hz)
AC 200A	0~200A	±3.0% of maximum scale value(50Hz/60Hz) ±6.0% of maximum scale value(400Hz)
AC 600A	0~600A	±3.0% of maximum scale value(50Hz/60Hz) ±6.0% of maximum scale value(400Hz)
AC 150V	0~150V	±3.0% of maximum scale value(50Hz/60Hz) ±6.0% of maximum scale value(400Hz)
AC 300V	0~300V	±3.0% of maximum scale value(50Hz/60Hz) ±6.0% of maximum scale value(400Hz)
AC 600V	0~600V	±3.0% of maximum scale value(50Hz/60Hz) ±6.0% of maximum scale value(400Hz)
OHM	0~2KΩ (mid scale value 25Ω)	±3.0% of scale length

AC Converter: Model 61-710 Average sensing of a sine wave.

Overload Protection: When applying the following overload for 10 seconds,
there is no thermally. The accuracy, friction, and influence of attitude shall be met regulations.
But when the range is resistance range fuse will be shut out.

Range	AC 6A	AC 20A	AC 60A	AC 200A	AC 600A
Input	AC20A	AC60A	AC200A	AC600A	AC720A
Range	AC 150V	AC 300V	AC 600V	OHM	
Input	AC300V	AC600V	AC720V	230V	

Certifications and compliances

Safety	Designed to IEC 61010-1
Input rating	600A/600V Category III
Over voltage category	CAT III: Distribution level mains, fixed installation.
	CAT II: Local level mains, appliances, and portable equipment.
	CAT I: Signal level, special equipment or parts of Equipment, telecommunication, electronics.
Pollution Degree 2	Do not operate in environments where conductive Pollutants may be present.

Required Equipment

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

Table A. Required Equipment

Equipment	**Required Characteristics**	**Recommended Model**
Calibrator	**AC Voltage Range:** 0-600V ac **Accuracy:** ±0.07% (Basic) **AC Current Range:** 0 ~ 10A **Accuracy:** AC (50Hz to 400Hz): ±0.08% (Basic) **Ω range :** 1Ω ~ 2K **Accuracy:** ±0.03% (Basic)	Fluke 5500 or Wavetek 9100 Calibrator or equivalent
	Standard Coils: 1 turn, 10 turns and 100 turns	
	AC/DC Current Generator: 100 amps ± .38%(50/60 Hz) Trms	
	Variable 10V Power Supply	

PERFORMANCE VERIFICATIONS

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

Performance Verification Preparation

1. Turn on the Calibrator and allow calibrator to warm up. Temperature Stabilization should be reached after 30 minutes.
2. Input the values listed in Table B

Table B: Performance Verification

Function Setting/Range	Input	Low Limit	High Limit
AC 6A	4A AC @ 50Hz & 60Hz	3.84	4.16
	6A AC @ 50Hz & 60Hz	5.84	6.16
	6A AC @ 400Hz	5.46	6.54
AC 20A	20A AC @ 50Hz	19.46	20.54
	20A AC @ 400Hz	19.0	21.0
AC 60A	60A AC @ 50Hz	58.4	61.6
	60A AC @ 400Hz	56.8	63.2
AC 200A	200A AC @ 50Hz	194.6	205.4
	200A AC @ 400Hz	189.2	210.8
AC 600 A	300A AC@ 50Hz & 60Hz	283.8	316.2
	600A AC @ 50Hz & 60Hz	583.8	616.2
	600A AC @ 400Hz	567.6	632.4
AC 150V	100V AC @ 50Hz	96.0	104.0
AC 300V	150V AC @ 50Hz	291.9	308.1
AC 600V	300V AC @ 50Hz	283.8	316.2
	600V AC @ 50Hz	583.8	616.2
OHM	25Ω	24.2	25.8

CALIBRATION

Calibration Preparation

1. Turn on the Calibrator and allow calibrator to warm up. Temperature Stabilization should be reached after 30 minutes.
2. Disconnect the test leads.
3. Remove the screw from the case.
4. Check the battery and fuse.

Calibration Procedure

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

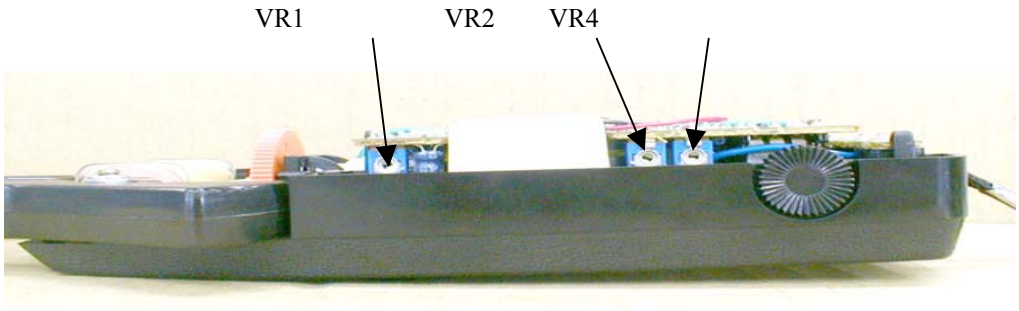
The class of calibrator or equipment should have an accuracy that exceeds, by an expectable ratio the accuracy of this instrument.

Volts AC Sensitivity adjustment

1. Set the function/range to AC 300V.
2. Connect the calibrator to the V and COM inputs on the meter.
3. Output 300V AC @ 50Hz.
4. Adjust VR4 until unit display 300V F.S.
5. When in AC600Vrange the scales value need to indicate 587.4V~612.6V.
6. When in AC150Vrange the scales value need to indicate 146.9V~153.1V.

AC current sensitivity adjustment
1. Set the range to AC 600A.
2. Set the clamp in the coil (100Turns) and clamp.
3. Clamp the generate AC600A/50Hz (coil) from the generator.
4. Adjust VR2 until unit display reads"600A F.S."
5. Using a generator in current AC600A/60Hz (coil) the generate current needs to be 587.4A~612.6A.
6. Using a generator in current AC600A/400Hz (coil) the generate current needs to be 574.8A~625.2A.
7. Adjust in AC 6A range.
8. Take off the magnetic from the jaws trigger doing core action (open and close many times the jaws trigger).
9. Clamp the generate current AC6A/50Hz (coil) from the generator.
10. With VR1adjust the indication on the instrument to be 6A F.S.
11. Using a generator in current AC6A/60Hz (coil) the generate current need to be5.87A~6.12A.
12. Using a generator in current AC6A/400Hz (coil) the generate current need to be5.58A~6.42A.

VR Position Adjustment



Calibration of the 61-710 is complete.
Remove all leads from the calibrator and equipment.
Return unit to proper operating condition.

Battery and Fuse Replacement
1. Disconnect the test leads from any circuit under test and turn off meter.
2. Use a Philips head screwdriver to remove the screw on housing case.
3. Remove battery and fuse from compartment.
4. Install new 1.5V battery and fuse (250V/0.5A). A Manganese type is recommended.
5. Install new battery and fuse into compartment.
6. Reinstall Housing case.