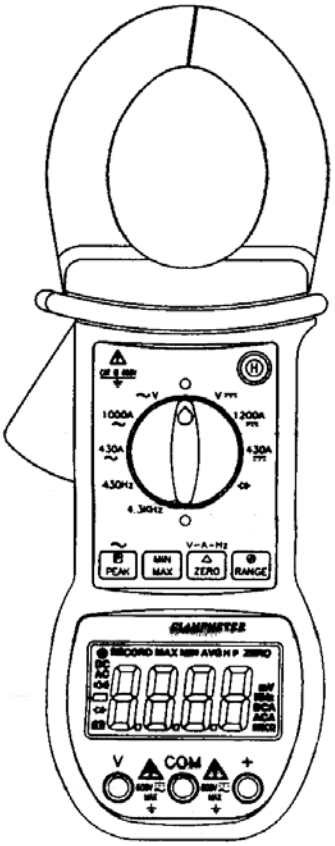
IDEAL INDUSTRIES, INC.
TECHNICAL MANUAL
MODEL: 61-726

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)



Form number: TM61726
Revision: 1. Date: Mar 2002

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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 61-726 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

Precautions and Safety Information

Use the Meter only as described in the *Users Manual*. If you do not do so, the protection provided by the Meter may be impaired.
Read the "Safety Information" page before servicing this product.
In this manual, a **Warning** identifies conditions and actions that pose hazard (s) to the user; a **Caution** identifies conditions and actions that may damage the Meter or the test instruments.

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.

⚠ 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

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
Display	3¾ Digit LCD display
Display Count	4000 count, maximum reading 3999
Over range Indication	"4000" with most significant digit blinking.
Sampling Rate Bar-graph Rate:	2.5 times /second 20 times /second
Operating Environment: Relative Humidity	0°C to 50°C (32°F to 122°F) 0 ~ 75% RH
Storage Environment:	-20°C to 60°C (-4°F to 140°F) at <80 relative humidity
Power source:	9V Battery (NEDA 1604)
Battery Live:	150 hours typical (alkaline)
Low Battery Indicator:	symbol indicates low battery voltage
Dimensions	9.7" H X 3.7" W X 1.8" D 247mm H X 94mm W X 46mm D
Maximum Cable Size	ACA 1.8" (46mm), DCA 1.9" (48mm)
Weight:	Approximately 13.4 oz. or 430g including battery

RANGES and ACCURACY SPECIFICATION
Accuracy: Accuracy specifications at 23 ± 5°C (73.4°F ± 9°F) less than 75% RH.
Temperature Coefficient: 0.1 times the applicable accuracy specification per degree C from 0°C to 18°C and 28°C to 50°C (32°F to 64°F and 82°F to 122°F)
Electrical Specification: Accuracy are ± (reading plus number of digits) at 23 ± 5°C <75% RH

Function Setting	**Ranges**	**Accuracy**
AC Voltage	4.0V/40V/400V/600V at 50- 60Hz 4.0V/40V/400V/600V at 40- 500Hzz	0.75% + 4 digits 2.0% + 4 digits
DC Voltage	400mV/4.0V/40V/400V/600V	0.25% ± 1 digit
AC Current	400A/1000A at 50-60Hz 400A/1000A at 40-500Hz	1.75% + 4 digits 3.5% + 5 digits
DC Current	400A/1200A	1.5% + 5 digit
Resistance	400/4.0K/40K/400K 4000K 40M	0.3% + 1 digit 0.5% + 1 digit 2.0% + 4 digits
Capacitance	4nF 40nF/400nF/4μF 40μF	3.0% + 20 digits 3.0% + 4 digits 6.0% + 4 digits
Frequency	100Hz/1kHZ/10kHz/100kHz/500kHz Sensitivity 80V RMS	0.1% +2 digits
Diode /Diode Check	1mA ± 0.6mA	3.0% + 1 digits
/ Continuity	Approximately < 40Ω ± 20Ω	

AC Converter: True RMS Responding Calibrated to Sine Wave
Overload Protection: AC and DC Voltage: 600 VDC or VAC RMS for no more than one minute.
Resistance, Diode check, Continuity.: 600 VDC or VAC rms
Current: Note to exceed 1200 amp DC or 1000 amp AC amps for no more than one minute.

PERFORMANCE VERIFICAITONS

Perform the following analysis; if the meter conforms to the limits listed in Table 1 through 9 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, allow calibrator to warm up. Temperature Stabilization should be reached after 30 minutes.
2. Remove battery cover and using a calibrated meter to ensure the battery measures a minimum of 7.5V DC. If the battery measures under 7.5V DC, replace the battery before beginning the performance test.
3. Input the values listed in Table 1 through 9

Table 1, DC Voltage Test

Function /Range	Source	Low Limit	High Limit
400mV	380mV	378.9	381.1
-400mV	-380mV	-378.9	-381.1
4V	3.8V	3.789	3.811
40V	38V	37.89	38.11
400V	380V	378.9	381.1
600V	500V	498	502

Table 2, AC Voltage Test

Function / Range	Source	Frequency	Low Limit	High Limit
4V	3.800	50Hz	3.767	3.833
4V	3.800	500Hz	3.720	3.880
40V	38.00	50Hz	37.67	38.33
40V	38.00	500Hz	37.20	38.80
400V	380.0	50Hz	376.7	383.3
400V	380.0	500Hz	372.0	388.0
600V	500	50Hz	492	507
600V	500	60Hz	486	514

Table 3, DC Current Test

Function / Range	Source	Low Limit	High Limit
400A	100A	98.0	102.0
1200A	1000A	980	1020

Table 4, AC Current Test

Function / Range	Source	Frequency	Low Limit	High Limit
400A	100A	60Hz	97.9	102.1
1000A	900A	60Hz	880	919

Table 5, Resistance Test

Function / Range	Source	Low Limit	High Limit
400Ω	100Ω	99.6	100.4
4KΩ	1.000KΩ	.996	1.004
40KΩ	10.00KΩ	9.96	10.04
400KΩ	100.0KΩ	99.6	100.4
4000KΩ	1000KΩ	994	1006
40MΩ	10.00MΩ	9.76	10.24

*Lead resistance on the 400 Ω range is not included in error

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Table 6, Capacitance Test

Range	Source	Low Limit	High Limit
4nF	1.000nF	.950	1.050
40nF	10.00nF	9.66	10.34
400nF	100.0nF	96.6	103.4
4µF	1.0000µF	.966	1.034
40µF	10.00µF	9.36	10.64

*Lead capacitance on the 4nF, 40nF, and 400nF range is not included in error

Table 7, Frequency Test

Range	Source	Level	Low Limit	High Limit
100Hz	100Hz	80V RMS	99.7	100.3
1kHz	1kHz	80V RMS	.997	1.003
10kHz	10kHz	80V RMS	9.97	10.03
100kHz	100kHz	80V RMS	99.7	100.3
500kHz	400kHz	80V RMS	399.4	400.6

Table 8, Diode Test: All Models

Range	Source	Reading
⊣◀	500mV DC	Approx. .485 - .515

Table 9, Continuity Beep Test: All Models

Range	Source	Test
•))	20Ω	Beeper on
•))	60Ω	Beeper off

Buzzer will Alarm if resistance is less than approximately 40Ω

CALIBRATION

Calibration Preparation

1. Turn on the Calibrator, allow calibrator to warm up. Temperature Stabilization should be reached after 30 minutes.
2. Disconnect the test leads and turn the range switch to "OFF".
3. Remove the screws holding the battery cover and one at the jaw.
4. Remove the case bottom using care not to damage the battery connector and leads to the continuity beeper. (Beeper is attached to the bottom case cover.)
5. Using a calibrated meter ensure the battery measures a minimum of 7.5V dc. If the battery measures under 7.5V DC, replace the battery.

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 DC Calibration

1. Set the function / range to DC Volts {auto-range 400mV}
2. Connect the calibrator to the **V** and **COM** inputs on the meter.
3. Output 380mV DC.
   Adjust R42 until unit display reads 380.0mV ±0.1 digit
   De-energize source and remove test leads

ACA Zero Calibration

1. Set the function / range to 400A AC
2. With out any signal applied (keeping Jaw away from any other device)
   Adjust R212 until the display reads 000.0

DCA Zero Calibration:

1. Set the function / range to the 400A DC
2. With out any signal applied (keeping Jaw away from other devices)
   adjust R54 for a display reading of 0.0 ±1 digit

DCA Balance Calibration

1. Set the function / range to the 400A DC.
2. Clamp the unit to a 380A DC source.
   - 2.a Move the jaw to the top of the clamp {see figure 1a} and note reading
   - 2.b Move the jaw to the bottom of the clamp {see figure 1b} and note reading
   - 2.c Repeating steps 2a and 2b, Adjust R581 until the difference of measured readings in step 2a and 2b is within 5 digits

DCA Calibration

1 Set the function / range to 400A DC
2. Clamp the unit to a 380A DC Source
   Note: Use care to keep the Jaw (CT) of the unit properly centered to the Source
3. Adjust R62 until the display reads 380.0 ± 5 digit

Calibration of the 61-726 is complete.
Remove all leads from the calibrator and equipment.
Return unit to proper operating condition.

Placement of source for DC Balance Calibration

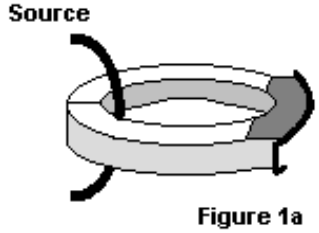

Figure 1a

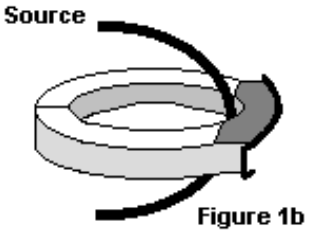

Figure 1b

Battery Replacement (refer to Figure 2)
1. Disconnect the test leads from any circuit under test and turn off meter.
2. Use a Philips head screwdriver to remove the two screws on battery cover.
3. Remove battery from compartment and unsnap the battery connector.
4. Install new 9V battery (NEDA #1604). An alkaline type is recommended.
5. Install new battery into compartment using care not to pinch or bind battery leads.
6. Reinstall battery cover.

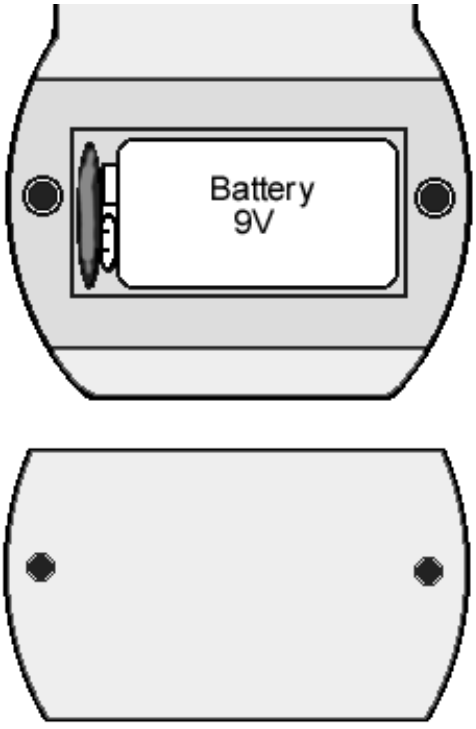

Figure 2