IDEAL® Test and Measurement

61-535
Automatic Circuit Breaker Identifier

Table of Contents

Introduction **3**
Contacting IDEAL INDUSTRIES, INC **3**
Safety Information **4-6**
Warnings 4-5
Caution 5
Symbols 6
Operation **7-15**
Identification and description of operating controls and functions 7-8
Operating Features 9
Turning Receiver On and Off 9
Using the Mute Button 9
APO (Auto Power Off) 9
Using the Work Light 9
Self-Test 10
Low Battery Detection 10
Non-Contact Voltage Sensing Mode Operation 10
Circuit Breaker Finder Mode Operation 11-13
Receiver Functions Operation Table 14
Transmitter Functions Operation Table 14
Wiring Condition Indications Table 14
Electrical Specifications **15**
Mechanical Specifications **16**
Environmental Specifications **16**
Safety Regulations **16**
Maintenance and Service **17**
Equipment Maintenance and Service 17
Disposal **18**
Warranty **18**

Introduction

The IDEAL 61-535 is a 120V AC Circuit Breaker Finder that automatically identifies a circuit breaker/fuse protecting a live branch circuit. It consists of a transmitter and a receiver. The Transmitter sends a signal over the conductors when connected to an energized circuit. It also identifies the presence of power and indicates corrector/ incorrect wiring conditions via illuminated Green and Red LED's and contains a GFCI Trip Tester. The receiver reads the transmitter's signal and identifies the breaker/fuse energizing the circuit by illuminating a flashing green LED and emitting beeps once it determines the breaker/fuse with the strongest signal. The receiver also senses the presence of AC voltage (80 - 300 V AC) via and non-contact voltage (NCV) sensor in the tip. The receiver indicates the presence of AC voltage by illuminating a red flashing LED and emitting a beeping sound. The audible tone for both the breaker finding mode and the NCV mode can be muted via a button for working in noise sensitive areas. The receiver also includes a work light that can be operated independently for work in poorly lit conditions.

Arc Flash and Shock Hazard, Proper PPE Required. Follow all safety procedures, wear proper PPE in accordance to NFPA 70E. Read and fully understand the instruction manual prior to using this product. Failure to comply can result in serious injury or death.

Safety Information

Warning - Identifies conditions and actions that could result in possible death or serious injury if the hazard is realized.

Caution - Identifies conditions and actions that could result in tester damage, equipment under test damage or data loss if the hazard is realized.

WARNING

Arc Flash and Shock Hazard, Proper PPE Required. Follow all safety procedures, wear proper PPE in accordance to NFPA 70E and follow the guidelines below and the instructions in this manual when operating the tester. Failure to comply can result in serious injury or death.

- Use only as specified in this manual or protection provided can be compromised.
- Before using, visually inspect to ensure the cases are not cracked and the battery cover is securely in place. Do not use if there appears to be any damage to the unit.
- Only experienced or technically competent consumers should use this equipment.
- When in doubt, call an experienced electrician to make all necessary repairs or installations.
- The equipment is intended for use by qualified electricians. Follow NFPA 70E Standards for Electrical Safety in the Workplace when using this equipment.
- Do not use without the batteries correctly in place and the battery cover closed and secured.
- Do not use if it operates incorrectly as protection may be compromised. When in doubt, have the unit serviced only by qualified service personnel.
- Do not use the equipment around explosive gas, dust, or vapor, or during electrical storms, or in wet environments.
- Do not submerge or expose the tester to water and do no use if the tester has ever been exposed to water or other fluids
- Not for use in ANY patient care area where/when patient support equipment may be plugged into the same branch circuit.
- Voltages exceeding 30VAC or 60VDC pose a shock hazard so use caution.
- If used on a circuit controlled by a dimmer, turn the dimmer to the highest on position.
- Use extreme caution when working around bare conductors. Contact with the conductor could result in electric shock.
- Adhere to local and national safety codes. Personal Protective Equipment (PPE) must be used to prevent shock and arc blast injury where hazardous live conductors are exposed.
- Before using the test leads (applies when using the TL-532A lead set), inspect carefully for damaged insulation, exposed metal or damaged protective hoods. Do not use leads if they appear damaged.

- Use only approved test leads (TL-532A or equivalent). Do not use improvised connections that could present a safety hazard.
- Connect the common test lead before connecting the live test lead. When disconnecting test leads, disconnect the live test lead first.
- Do not apply more than the rated voltage.
- Do not work alone so that assistance can be rendered in an emergency.
- ⚠ Cancer and Reproductive Harm - www.P65Warnings.ca.gov

⚠ CAUTION

Tester damage, equipment under test damage or data loss can occur if the following guidelines are not adhered to.

- Use the proper terminals, function, and range for the measurement application.
- Clean the case and accessories with a damp cloth and mild detergents only. Do not use abrasives or solvents. Make sure the tester is completely dry before use.

Symbols & Descriptions

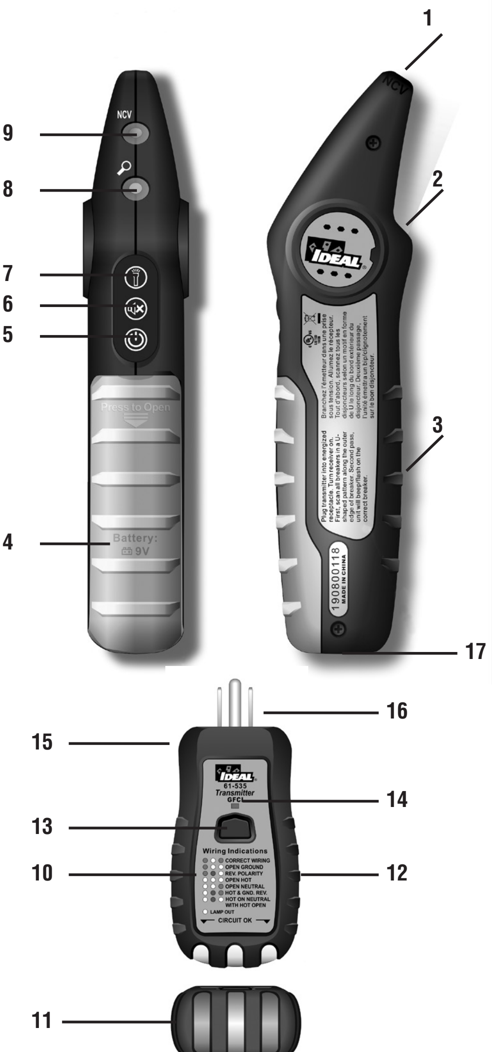
SYMBOL	DESCRIPTION
	Arc Flash and Shock Hazard
	Shock Hazard
	Warning or Caution
	AC (Alternating Current)
	Flashlight
	Earth Ground
CAT II	IEC Measurement Category II – CAT II has protection against transients in fixed and non-fixed power devices including appliances, lighting and 120V or 240V equipment inside a building.
CAT III	IEC Measurement Category III – CAT III has protection against transients in equipment in fixed-equipment installations such as distribution panels feeders and short branch circuits. Also included are lighting systems in larger buildings.
NCV	Non-Contact Voltage Sensing
 NCV	Non-Contact Voltage Sensing Point
V	Voltage AC
	Mute, Audible Tone or Beep On or Off
	Double Insulation
	Do not dispose of this product as unsorted municipal waste. It must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.erecycle.org for additional information.
	Conforms to applicable North American Safety Standards

NOTE: The Measurement Category (CAT) and voltage rating of any combination of test probe, test probe accessory, and the Tester is the LOWEST rating of any individual component.
This CAT II rated device is intended for indoor use only.

Operation

Identification and Description of Operating Controls and Functions for the 61-535 Automatic Circuit Breaker Identifier:

1. Breaker Finder/NCV Sensing Point
2. Work-light
3. Ergonomic Grip
4. Battery Cover
5. On/Off Button, Breaker Finder/NCV Select Button
6. Mute Button
7. Work-light Button
8. Breaker Finder LED Indicator (Green)
9. NCV/Battery Level LED Indicator (Red)
10. Wiring Indicator Legend
11. Wiring Indicator Lights
12. Ergonomic Grip
13. GFI Test Button
14. GFI Test LED
15. Tactile Barrier
16. Hot Neutral and Ground Prongs
17. Lanyard Tie-Off Point


1
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NCV
NCV
Press to Open
Battery:
9V
IDEAL
Branchez l'émetteur dans une prise sous tension. Allumez le récepteur. Tout d'abord, scannez tous les disjoncteurs selon un motif en forme de U le long du bord extérieur du disjoncteur. Deuxième passage, l'unité émettra un bip/clignotement sur le bon disjoncteur.
Plug transmitter into energized receptacle. Turn receiver on. First, scan all breakers in a U-shaped pattern along the outer edge of breaker. Second pass, unit will beep/flash on the correct breaker.
190800118
MADE IN CHINA
IDEAL
61-535
Transmitter
GFCI
Wiring Indications
CORRECT WIRING
OPEN GROUND
REV. POLARITY
OPEN HOT
OPEN NEUTRAL
HOT & GND. REV.
HOT ON NEUTRAL WITH HOT OPEN
LAMP OUT
CIRCUIT OK

Operations

Turning the Receiver On
Press the receiver's power button to turn the tester ON.
The unit will perform a self-test, emitting several beeps to ensure the receiver is properly operating and the green LED next to the magnifying glass symbol will illuminate indicating the receiver is in the Circuit Breaker Finding (CBF) mode. (See CBF Operation for instruction on how to use the CBF)

Pressing the power button again toggles the receiver to the Non-Contact Voltage Testing (NCVT) Mode and the red LED next to the NCV symbol will illuminate. (See NCVT Operation for instruction on how to use the NCVT)

Short presses on the power button Toggles the receiver between NCV and CBF Modes

Turning the Receiver Off
Press the receiver's power button and hold for 3 seconds to turn the receiver off.

Mute Button
The receiver defaults to the audible mode when turned On. The sound can be muted by pressing the Mute button less than 1 second which toggles the mute button on or off. Mute is confirmed with One Beep, unmute is confirmed with 2 beeps.

Auto Power Off (APO) Feature
The receiver automatically powers down after 5 minutes of detecting no activity. It will beep once prior to shutting off.

Work-light
Press the work light button on the receiver to turn the work-light on and off.

The white work-light will remain on for about 5 minutes before automatically turning off to conserve battery power.

NOTE: The 61-535 is only Rated to 150V AC MAX.

Operation (continued)

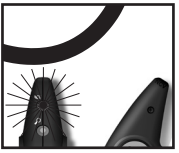
Self-Test

Depress the receiver's power button to turn the tester ON. The unit will perform a self-test and emit several beeps to ensure proper operation. The green light next to the magnifying glass symbol will illuminate. This indicates that the unit is in breaker finder mode.

Low Battery Detection

If the battery voltage drops below 6V, the Red and Green LED's flash 3 times, the buzzer beeps 3 times, then the unit powers off. Remove the old battery and replace it with a standard 9V DC battery.

Non-Contact Voltage Sensing Mode Operation



To enter into the NCV mode, with the unit on, and the green light illuminated, press the power button . The RED LED will illuminate. Point the receiver's nose towards a live AC receptacle or power cord. Once an AC Voltage field of 80 - 300V AC is sensed, The red LED flashes and the receiver will beep. The red LED flashing speed and the beeping speed increases when the receiver is moved closer to the AC power source, and slows when the receiver is moved further away. To switch back to breaker finding mode, press the power button again. The GREEN LED will illuminate. Use caution if the unit indicates that no voltage is present. Always test with a contact type voltage tester to ensure that no power is present before working with any bare conductors.

NOTE: While the NCV is a helpful function, it is ALWAYS RECOMMENDED that the operator verify that any electrical conductor is completely de-energized and that no voltage is present by measuring for voltage using a multimeter and probes AND CONFIRMING THAT NO VOLTAGE IS PRESENT and that all applicable PPE and lock out tag out procedures be followed **before** attempting any work on ANY electrical distribution system.

Note: A constant Green LED indicates breaker finding mode while a constant Red indicates NCV Mode.

Press the power button to switch back to the breaker finder mode.

Operation (continued)

Circuit Breaker Finder Mode Operation

Locating a Circuit Breaker or Fuse

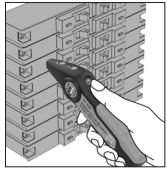


Figure 3

1. Plug the transmitter into the receptacle.
2. Go to the circuit breaker panel box.
3. Turn the receiver on.
4. Place the flat surface of the tapered end of the receiver directly onto the circuit breaker or fuse as shown. (Figure 3) If the receiver is held at any other angle, inaccurate readings may occur.
5. Slide the nose of the receiver along the outer edge of each row of breakers using a racetrack pattern as shown (Figure 4).
   Note: The receiver will beep frequently as it measures the relative signal strength during the first pass.
6. Repeat step 5. On the second pass, the green LED will flash and a continuous beeping sound will be emitted when the receiver tip is placed on the breaker powering the transmitter.
   Note: In some cases, a third pass may be required due to branch circuit conductors crossing over each other.
7. Trip the breaker off and check that the LED on the transmitter in the outlet is off to confirm you have found the correct breaker or fuse.

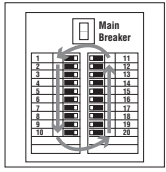


Figure 4

Locating a Circuit Breaker or Fuse Controlling an Incandescent Light Fixture

1. If the incandescent light fixture is controlled by a wall switch, make sure the wall switch is OFF.
2. Remove light bulb.
3. Install a Screw-in socket adapter (not included). (Optional part # TL-532A)
4. Plug the transmitter into the adapter.
5. Turn on the wall switch and follow the procedure described in Locating a Circuit Breaker or Fuse, steps 3 through 7.
   Note: If used on a circuit controlled by a dimmer, turn the dimmer to the highest on position.

Locating a Circuit Breaker or Fuse using the TL-532A Alligator Clip Lead Set

Arc Flash and Shock Hazard, Proper PPE Required. Follow all safety procedures, wear proper PPE in accordance to NFPA 70E. Read and fully understand the instructions below prior to using this product. Failure to comply can result in serious injury or death.

Shock Hazard, wear proper PPE in accordance to NFPA 70E. Do not touch the metal alligator clips on the TL-532A Lead set when attaching to live conductors. Keep your fingers on the protective hood. Failure to comply can result in serious injury or death.

1. Insert the 61-532 transmitter prongs into the plug at the end of the TL-532A Lead Set.
2. Carefully attach the black alligator clip to the white (Neutral) conductor, making sure your fingers stay on the protective hood of the alligator clip. DO NOT TOUCH THE METAL ALLIGATOR CLIP!
3 Carefully attach the red alligator clip to the black (Hot) conductor, making sure your fingers stay on the protective hood of the alligator clip. DO NOT TOUCH THE METAL ALLIGATOR CLIP!
4. The illuminated LEDs at the end of the transmitter will verify the presence of power.
   Note: The OPEN GROUND LED Indication is normal in this situation.
5. Follow the procedure described in Locating a Circuit Breaker or Fuse, steps 3 through 7.

Transmitter Operation

Verifying Receptacles for Correct Wiring:
Plug the transmitter into a standard 120 VAC receptacle. The three LEDs on the transmitter will indicate the wiring configuration while the label on the transmitter interprets the LED lighting combinations.

Caution: The tester is for indication purposes only and a correct indication does not guarantee the integrity of the wiring. Any incorrect or unclear indications should be referred to a licensed electrician for investigation and correction.

GFCI Testing (61-535)

1. Verify receptacle for correct wiring.
2. Consult the GFCI device manufacturer's instructions to determine that the GFCI is installed in accordance with the manufacturer's specifications.
3. Check for correct wiring of the receptacle and all remotely connected receptacles on the branch circuit.
4. Operate the test button on the GFCI installed in the circuit. The test light will turn on, indicating the activation of the GFCI test. The GFCI must trip. If the GFCI does not trip, consult a qualified electrician. If it does trip, reset the GFCI.
5. Activate the test button on the GFCI tester for a minimum of 6 seconds when testing the GFCI condition. Visible indication (ALL LED's will turn off and you will hear a click as the GFCI breaker functions) on the GFCI tester must cease when tripped.
6. If the tester fails to trip the GFCI, it suggests: (a) a wiring problem with a totally operable GFCI, or (b) proper wiring with a faulty GFCI. Consult with an electrician to check the condition of the wiring and the GFCI.

CAUTION: When testing GFCIs installed in 2-wire systems (no ground wire available), the tester may give a false indication that the GFCI is not functioning properly. If this occurs, recheck the operation of the GFCI using the test and reset buttons ON THE GFI, not the 61-535 transmitter. The GFCI button ON THE GFI test function will demonstrate proper operation.

NOTE:

- All appliances or equipment on the circuit being tested should be unplugged to help avoid erroneous readings.
- Not a comprehensive diagnostic instrument but a simple instrument to detect nearly all probable common improper wiring conditions.
- Refer all indicated problems to a qualified electrician.
- Will not indicate quality of ground.
- Will not detect 2 hot wires in circuit.
- Will not detect a combination of defects.
- Will not indicate reversal of grounded and grounding conductors.

Receiver Functions Operations Table

Button	Response	Default Function	Operation
	Power Button	Off	Short press (<1s) for breaker finder Short press again (<1s) for NCV Short press again (<1s) to Toggle between NCV & breaker finder modes Long press (>3s) to Power Off
	Mute Button	Beep On	Short press (<1s) to Mute Short press again to Unmute
	Work-Light Button	Off	Short press (<1s) to Turn On Short Press again to Turn Off

Transmitter Functions Operations Table

Button	Response	Default Function	Operation
	GFCI Test Button	Off	Press and hold until GFCI trips, no longer than 7 seconds.
	GFCI Trip Test Indicator	Light Off	Red LED illuminates under GFCI letters when GFCI Test Button is pushed and goes out when GFCI is tripped.

Wiring Condition Indications Table (see Legend on Transmitter)

Description	LED display	Remarks
CORRECT	● ○ ●	Correct Wiring
OPEN GND	● ○ ○	Open ground
REV POLARITY	● ● ○	Polarity reverse
OPEN HOT	○ ○ ○	Open hot
OPEN NEUTRAL	○ ○ ●	Open neutral
HOT & GND REV	○ ● ●	Hot and Ground reverse
HOT ON NEUTRAL WITH HOT OPEN	○ ● ○	Hot on neutral with hot open

● Green (G) Outer Columns Only
● Red (R) Center Column Only
○ LED Off (O)

Electrical Specifications

	Item	Range/Specs	Remarks
Receiver	NCV Range	80-300VAC, 60Hz, 1" of the energized conductor	The receiver tip must be within 2cm of the energized conductor in order to sense the presence of AC voltage.
	NCV Signal Indications	The red LED flashes and the buzzer beeps intermittently (beeps frequency according to the sense voltage, 35V: 2Hz flash/beep; 60V: 4Hz flash, 4Hz beep; 85V: 10Hz flash, 10Hz beep)	
	Battery	9V	
	Power Consumption	Max 60mA @ 9V	Power off: 2uA
	Battery Life	2.5 hrs.	
	Buzzer Volume	Approximate 60dB @ 10cm	
Transmitter	Item	Range/Specs	Remarks
	Operating Voltage	100-120V AC	Use for 3 wire North American outlets only (100-120V AC).
	Operating Frequency	60Hz	
	GFCI Trigger Current	6.0mA-9.0mA	GFCI test voltage range AC: 102V (6mA) - 132V(9mA), only GFCI trip is triggered(under normal voltage range and correct wiring, pressing the GFCI button will trigger GFCI function)
	Power Consumption	120V AC Max 1.5W	
	GFCI Button	Press the GFCI button to start the GFCI test; release the GFCI button to stop the GFCI test; (Note: Pressing time is less than 6 seconds, it should trigger the switch to trip. If the pressing time is greater than 6 seconds, and the breaker/outlet does not trip, the breaker/outlet may be broken or the GFCI function is not working.) Note: A valid ground conductor must be present for this test method to work.	
	Wiring Condition Indications	100 ~ 120V AC	

Overload Protection 240 RMS

Mechanical Specifications

Dimensions (L x W x H)	Receiver	7.56 in. x 1.44 in. x 1.36 in. (192 mm. x 3.65 mm. x 34.5 mm.)
	Transmitter	4.69 in. x 2.13 in. x 1.22 in. (119 mm. x 54 mm. x 31 mm.)
Weight	Receiver	2 ounces (56.7 grams)
	Transmitter	1 ounce (28.35 grams)
Indicators	Green and/or Red LEDs	

Environmental Specifications

Operating Temperature	32 ~ 122°F (0 ~ 50°C)
Operating Humidity	>85% (non-condensing)
Storage Temperature	14 ~ 140°F (-10 ~ 60°C)
Altitude	< 2000m

Intended for Indoor Use

Safety Regulations

Complies with cULus, UL1436 and CSA C22.2 No. 160
CAT II 150V

Overvoltage CAT II 150V. Any voltages exceeding the defined maximum voltage measurement categories described above are outside the normal use of the equipment and protection cannot be guaranteed. Pollution Degree Class 2.

Maintenance and Service

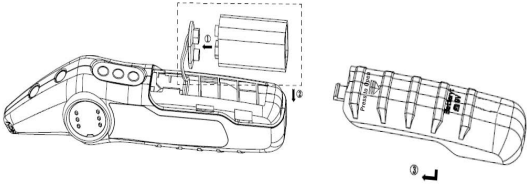
Equipment Maintenance and Service

Tester Inspection

Do not use if tester appears damaged. Visually inspect the tester to ensure receiver and transmitter cases are not cracked.

Battery Inspection/Replacement

Inspect the battery compartment monthly for any signs of degradation. Low battery voltages will cause inaccuracies in readings. Remove the batteries for storage or if the tester will not be used for longer than one month. Battery leakage will compromise the safety of the tester and cause irreparable damage to internal components.



Maintenance and Storage

Switch off and disconnect the tester completely after use. Clean the case with a damp cloth and mild detergent. Do not use abrasives or solvents. Keep away from liquids and ensure the tester is completely dry before use.

Service and Replacement Parts

This unit has no user-serviceable parts.

Disposal of Waste, Electrical & Electronic Equipment 

In order to preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally, the user should return unserviceable product to relevant facilities in accordance with statutory regulations. The crossed-out wheeled bin indicates the product needs to be disposed separately and not as municipal waste.

Do not dispose of this product as unsorted municipal waste. It must be properly disposed of in accordance with local regulations. Please see www.epa.gov or www.erecycle.org for additional information.

Disposal of Used Batteries/Accumulators

The user is legally obliged to return used batteries and accumulators. Disposing used batteries in household waste is prohibited! Batteries/accumulators containing hazardous substances are marked with the crossed-out wheeled bin. The symbol indicates that the product is forbidden to be disposed via domestic refuse. The chemical symbols for the respective hazardous substances are **Cd** = Cadmium, **Hg** = Mercury, **Pb** = Lead.

You can return used batteries/accumulators free of charge to any collecting point of your local authority, our stores, or where batteries/accumulators are sold. Consequently, you must comply with your legal obligations and contribute to environmental protection.

TWO YEAR LIMITED WARRANTY

This tester is warranted to the original purchaser against defects in material and workmanship for a period of two (2) years from date of purchase. With proof of purchase from an authorized IDEAL distributor, a defective tester will be repaired or replaced with the same product or a functionally equivalent product, at the option of IDEAL INDUSTRIES, INC. during the warranty period, subject to verification of the defect or malfunction. Warranty does not cover consumables such as fuses, batteries, and excludes defects caused by leakage from batteries, abuse, mishandling, dropping, ordinary wear and tear, misuse, neglect, unauthorized repair, improper use, alterations, accidents or any causes beyond IDEAL's reasonable control. Consequential or incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This LIMITED WARRANTY gives you specific legal rights, which vary from state to state. This warranty constitutes the sole and exclusive remedy of the purchaser and the exclusive liability of IDEAL, and is in lieu of any and all other warranties, and expressly disclaims all other warranties, implied, or statutory as to merchantability, fitness for purpose sold, description, quality productiveness, or any other matter. No agent, distributor or other supplier has the authority to modify or amend this warranty or make other representations or warranties other than those contained in this warranty without express written authorization from IDEAL. For warranty service, call IDEAL customer service at 1-800-435-0705.

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