EAGLOTEST

S185A

LIVE
CABLE IDENTIFIER



USER MANUAL

CATALOG

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SECTION 1

Safety Warnings

Thank you for purchasing our S185A Live Cable Identifier. To ensure safe and proper use of this product, please make sure to:

Read this user manual carefully. Operators must fully understand all instructions and be proficient in operating the instrument before performing any actual tests.

Strictly follow all safety rules and precautions listed in this manual.

- This instrument is designed, manufactured, and tested in accordance with IEC61010 safety standards.
- Under all circumstances, operators must exercise special caution when using this instrument.
- Pay attention to all labels, markings, and safety symbols on the instrument.
- Before use, ensure that the instrument and all accessories are in good condition. The insulation of the instrument and test leads must be free from damage, exposure, or breaks. Stop using the instrument immediately if the housing or test leads are damaged and metal parts are exposed.
- This instrument is intended only for energized low-voltage cables rated at 440 V or below. Do not use it on medium-voltage or high-voltage systems.
- Before operation, wear proper insulated gloves and shoes to ensure personal safety.
- To guarantee safety, always perform a proof-of-dead test on the confirmed cable before cutting or maintenance work.
- The transmitter must be correctly connected to the low-voltage system using the test leads. Ensure that the live and neutral wires (or phase-to-phase) are properly connected to avoid equipment damage or data deviation caused by wiring errors.
- Do not operate the instrument in humid conditions, rainy weather, or environments containing flammable or explosive gases, to prevent short circuits, electric leakage, or explosions.
- Keep the instrument dry, clean, and free from strong magnetic interference.

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- Do not store the instrument in high-temperature environments or under direct sunlight for extended periods.
- Unauthorized personnel must not disassemble or repair the equipment. If a fault occurs, it must be inspected and repaired by qualified technical personnel.
- If continued use of the instrument may pose a danger due to malfunction, stop using it immediately, seal it, and have it handled by an authorized organization.
- The“⚠”symbol shown on the instrument and in this manual indicates a safety warning. Operators must strictly follow all related instructions to ensure safe operation.

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SECTION 2

Introduction

The S185A Live Cable Identifier is a professional instrument specially designed for live operation in power systems. Based on advanced electromagnetic induction and signal analysis technology, it accurately identifies target cables while they remain energized. It effectively overcomes the low efficiency and power interruption issues of traditional energized testing, ensuring safe, fast, and precise detection. The device is widely used in urban power grid maintenance and power engineering construction, significantly improving the efficiency and safety of power operation and maintenance work.

Features

- Advanced electromagnetic induction and signal analysis technology
- Dual verification of polarity and signal amplitude to reduce the risk of misidentification
- The transmitter is powered directly from the connected low-voltage energized circuit and does not require an external power supply
- Precise DC pulse signal output from the transmitter for accurate identification
- Rogowski coil adaptable to large-diameter and conduit cables
- Intuitive color LCD for clear and reliable results
- Lightweight, portable design, simple operation
- Fully compliant with power grid live operation safety standards

Applications

- Power grid operation and maintenance
- Transformer and low-voltage cable matching verification
- Urban distribution network inspection and management
- Underground cable trench and distribution box identification
- Live electrical construction and on-site troubleshooting

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SECTION 3

Technical Specification

3.1 Receiver

Function	Energized cable identification
Power Supply	4 x AAA dry batteries
Display	2.19-inch color LCD screen indicating: ● Amplitude bar ● Signal strength ● Calibration status (CAL.) ● Battery level ● Gain level ● Polarity Indication
Amplifier Setting	10-level adjustment
Rogowski Coil Inner Diameter	200 mm (optional: 100 mm / 300 mm)
Weight	0.33kg
Dimension (W x L x H)	175mm x 82mm x 50mm
Operating Temperature & Humidity	-20°C to 40°C; ≤80% RH (non-condensing)
Storage Temperature & Humidity	-10°C to 60°C; ≤70% RH
Protection Class	IP54

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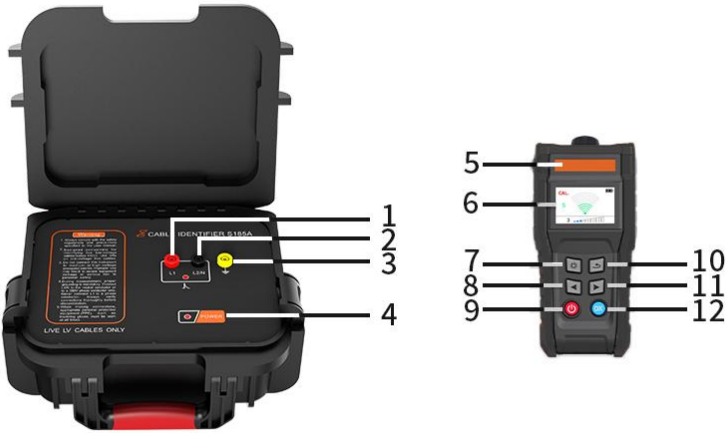
3.2 Transmitter

Function	Pulse current signal output for live low-voltage cable of 440V and below
Operating Method	Direct connection
Pulse Current	85 A±10 A
Pulse Frequency	30 pulses/ minute
Pulse Width	1.7 ms
Weight	1.78 kg
Dimension (W x L x H)	280mm x 220mm x 110mm
Operating Temperature & Humidity	-20°C to 40°C; ≤80% RH (non-condensing)
Storage Temperature & Humidity	-10°C to 60°C; ≤70% RH
Protection Class	IP54

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SECTION 4

Structure



1. Positive Output Terminal (Red)
2. Negative Output Terminal (Black)
3. Protective Grounding Socket (Yellow)
4. Power Button
5. Receiver Model Label
6. Receiver LCD Screen
7. Brightness Setting
8. Return Button
9. Left Button
10. Right Button
11. Power Button
12. Confirm Button

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SECTION 5

Operation

5.1 Basic Operation

5.1.1 Transmitter

After the transmitter is **properly connected**, it will **automatically power on** and start signal output.

5.1.2 Receiver

Press the power key  to switch on the receiver.

Use the  button to modify signal sensitivity. When the detected signal is stable and the amplitude bar appears green, the signal direction is correct. At this point, press the  key to calibrate. After calibration, the gain value cannot be modified. For best performance, adjust the gain so that the signal amplitude is within 7–8 bars. Once the gain is set, do not adjust it again (it will be automatically locked after calibration).

Indicator meanings

- **Red "CAL."** — Not Calibrated
- **Green "CAL."** — Calibrated
- **Green "+"** — Calibration data stored and correct target cable identified
- **Red "–"** — Calibration data stored but the identified cable is not the target

Press the  key and to open the confirmation window for deleting the stored calibration data. Use the  keys to select "√" or "×", then press the  key to delete or cancel. If no action is taken within 3 seconds, the interface will return automatically to the test screen. If no calibration data exist, the return key will have no effect.

Press the backlight key to adjust the display brightness.

When the receiver detects a pulse current signal, the signal amplitude indicator flashes accordingly.

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5.2 Cable Identification Operation

5.2.1 Preparation

- Ensure the instrument has sufficient battery power. Insufficient power may affect test accuracy or identification performance.
- Check all connection cables for damage. Replace them immediately if any defects are found.
- Make sure all personal protective equipment (insulated gloves, shoes, etc.) is properly worn.
- Verify that the target cable is a **live low-voltage line (440 V or below)**.

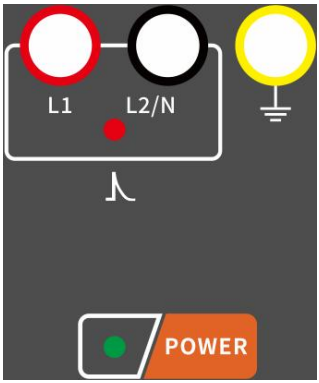
5.2.2 Transmitter Connection

When connecting the transmitter:

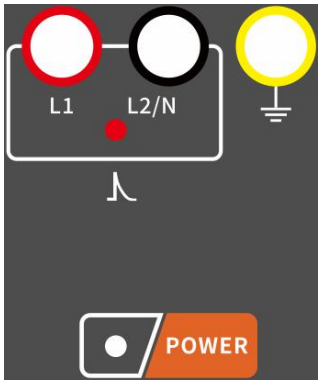
- First, securely connect the yellow protective grounding wire of the transmitter to the system ground
- Then, connect the black lead to the neutral wire or one phase of the live wire
- Finally, connect the red lead to another phase of the live wire



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Correct Connection



Incorrect Connection

Correct Connection

- The green indicator light stays on, the red indicator light flashes, and a beep sounds every 2 seconds.

Incorrect Connection

- The POWER indicator does not light up, and the red indicator light remains on continuously.

If an incorrect connection is detected:

1. Turn off the transmitter.
2. Disconnect the red wire from the live wire first.
3. Then disconnect the black wire from the neutral wire.
4. Wait approximately 3 seconds, until both indicator lights on the transmitter turn off.
5. Reverse the two connection leads to correct the wiring, or plug the power cord in the opposite direction.

If, after reversing the connections, the indicator lights do not change, it indicates that the protective grounding wire is not connected.

Without proper grounding, the transmitter cannot operate normally.

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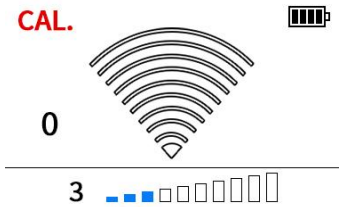
After confirming that all connections are correct, the transmitter enters the operating state.

The LED indicators display normal working status, and the transmitter emits a pulse current signal every 2 seconds.

Then, use the receiver with the clamp connected to identify the target cable.

5.2.3 Calibration Operation

Connect the rogowski coil or stethoscope to the receiver. The operator holds the receiver and presses the power button to turn it on. The interface after startup is shown in the following figure.



Point the arrow on the clamp toward the far end of the target cable, and clamp it around the cable to perform detection.

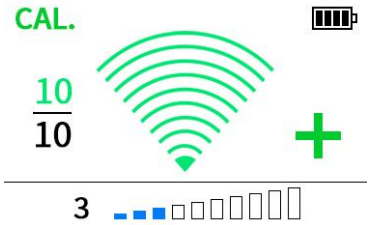
When the instrument displays a red “CAL.” icon, it indicates that no calibration data are stored. When it displays a green “CAL.” icon, calibration data are already available.

If the signal strength is too weak, press the ▶ button to increase the gain.

If the signal is too strong, the screen will display “OL”; Press the ◀ key to reduce the gain until the signal amplitude bar appears green, indicating proper signal level.

The screen will display related signal information such as direction and amplitude. At this point, press the OK key to perform calibration. The interface after calibration is shown in the figure below. A green “+” icon indicates that the target cable has been successfully identified. After calibration, the gain value cannot be adjusted further.

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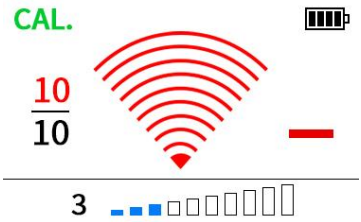
If the clamp is placed on other interfering cables, the receiver screen will display a red "–" symbol or no signal indication.

During identification, each cable at the current location must be clamped and tested to verify the uniqueness of the target cable.

When the cable direction is incorrect (as shown in the figure below), the receiver displays a red signal amplitude bar.



The following image shows the interface when a signal error is detected (signal is reversed).



When an error signal interface appears, the possible causes of signal direction error are as follows:

- Incorrect orientation of the rogowski coil

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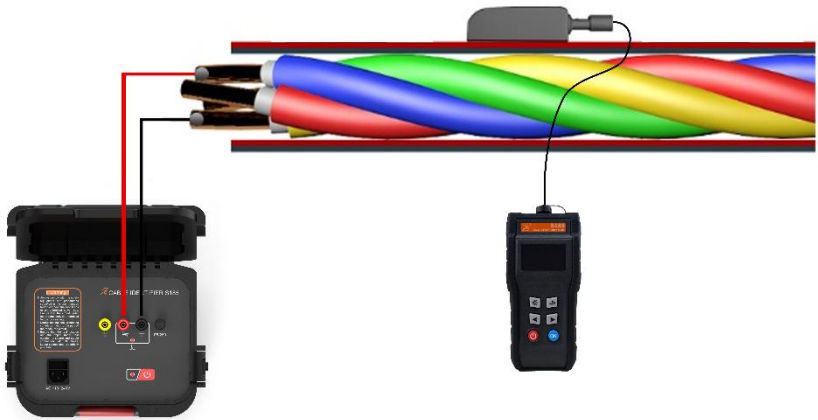
- Transmitter wiring error – the red and black test leads are connected in reverse

5.2.4 Stethoscope Mode

The Stethoscope Mode is designed for special applications where the standard identification clamp cannot be used, or where a defined return path for the injected signal does not exist.

Typical application scenarios include:

- IT (isolated-neutral) systems that lack an earth reference.
- PILC (paper-insulated lead-covered) cables or installations with multi-point bonded sheaths.
- Situations where the return conductor is not accessible or is shared with other circuits.



The stethoscope is intended exclusively for cable identification on twisted conductor systems and for detecting load current as described in this section. Use on untwisted or non-compatible cable types may result in incorrect identification or misleading test results.

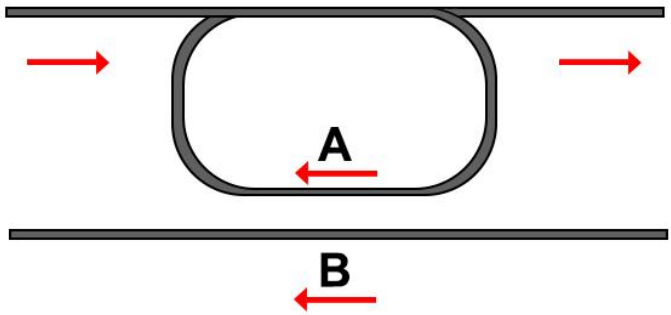
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5.2.5 Erroneous Measurements

Cable identification does not verify absence of voltage. After the cable has been isolated, always perform an approved proof-of-dead test and apply grounding/earthing before cutting or maintenance. The purpose of the identification is to minimize the risk of cutting a live cable, thereby avoiding danger to personnel and preventing possible equipment or power system damage.

Even if a cable has been positively identified, it should not be cut or opened immediately. In complex cable routes, cables may sometimes be laid with loops or reversed segments, which can cause the indicated signal direction to appear opposite to the actual current flow.

The diagram below illustrates such a situation: due to a loop in the cable, the signal direction detected at measurement point A may differ from that at point B. This can lead to an erroneous interpretation of the cable direction or identity, especially in substations or underground systems where cable loops are commonly installed.



5.2.6 Verification Requirements

Multiple Cable Response:

If more than one cable appears to indicate a “correct” signal (for example, similar amplitude pattern), the result must be verified before any operation continues.

Such multiple responses are often caused by magnetic coupling between closely installed cables or improper stethoscope placement.

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Recommended Verification Methods:

When advanced verification tools such as phase comparison or signal variation analysis are unavailable, the following procedures are recommended to confirm results:

1. **Rogowski coil confirmation** – At the transmitter side, check that only one cable actually carries the injected current.
2. **Continuity or resistance check** – With the system de-energized, verify end-to-end continuity between the same conductors used for signal injection.
3. **Physical tracing** – Compare the actual cable routing and sheath markings with the on-site drawings.
4. **Reverse-polarity check** – Repeat the stethoscope test with the transmitter leads reversed to confirm that the same cable responds consistently.

Operator Note:

The Stethoscope Mode should be used only when the standard identification clamp cannot be applied or when no defined return path exists.

If more than one cable appears to show a valid response, always confirm the identification result using at least one additional method, such as a current-clamp or continuity check.

5.3 Testing Procedure

5.3.1 Near-End Calibration

After completing the self-test and transmitter wiring, the Tx automatically power on and start signal output. The transmitter emits a pulse signal every 2 seconds, accompanied by a “beep” sound for each pulse.

Then power on the receiver. Clamp the rogowski coil around the target cable body (preferably at a section with armor or copper shielding). Ensure that the arrow on the clamp points toward the far end of the cable. Perform signal calibration at a position approximately 1 meter away from the transmitter’s red output lead.

5.3.2 On-Site Identification

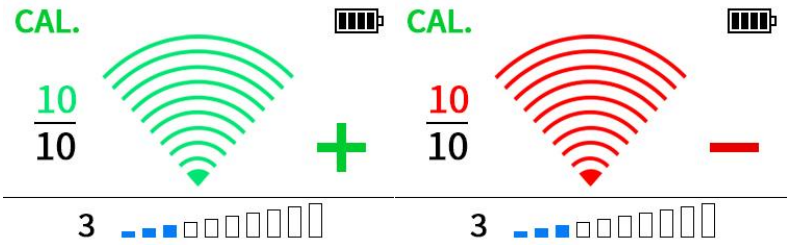
After completing near-end calibration, proceed to the target area that requires

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identification. Position the arrow on the clamp toward the far end of the cable, and clamp each cable in the area one by one.

In the target area, only one cable will be successfully identified as the correct target cable. The receiver display refreshes every 2 seconds, synchronized with the pulse signal frequency of the transmitter.

Note: The arrow on the clamp must point toward the far end of the cable, otherwise identification errors may occur!



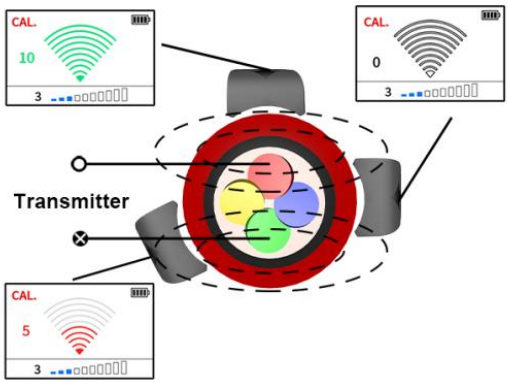
Signal Indication of Target Cable **Signal Indication of Non-Target Cable**

5.3.3 Stethoscope Identification

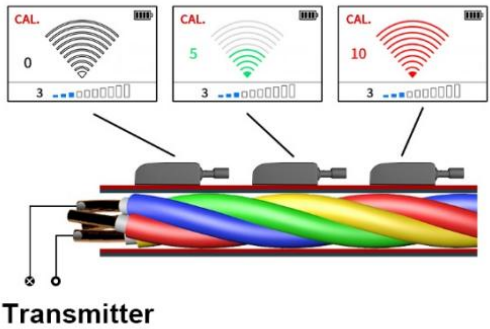
After the transmitter is properly connected and outputting signals, first perform confirmation at the near end.
If the signal amplitude is too high or too low, adjust the gain so that the amplitude level is approximately in the middle range. Once confirmed, press the Calibration button OK to calibrate the signal.

Move the stethoscope probe along the direction of the cable or rotate it around the cable to observe changes in the signal strength.

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Signal variation during stethoscope movement along the longitudinal direction of the cable.



Any attempt to use the stethoscope on untwisted or non-applicable cable types may result in false identification or misleading test results!

5.3.4 On-Site Precaution

- Under correct operation, only one cable in the target area should display a valid identification signal.
- All cables at the site must be clamped and tested—none should be omitted.
- The clamp interface must not come into contact with other cables.

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- If cables are coiled, make sure to determine the direction of the cable within the coil, and ensure the arrow on the clamp points toward the far end.
- Ensure that the target cable is within the designated target area. If uncertain, use a professional cable locator to trace and verify the cable route.

5.3.5 Completion of Identification

After completing the identification process, clearly mark the identified target cable, then power off the instruments before disconnecting any cables.

Shutdown and Disconnection Sequence:

- Confirm the target cable is clearly and permanently labelled before any further work.
- Power off the receiver first, then power off the transmitter.
- Disconnect the red lead from the cable core first, then the black lead, then the yellow grounding wire last.
- Remove the rogowski coil or stethoscope from the cable.
- ⚠ WARNING: Always perform a final earth/ground verification (proof-of-dead) test on the identified cable before any cutting or maintenance work begins.

Properly store the transmitter, receiver, and all accessories, and clean the equipment promptly after use.

5.4 Troubleshooting

If abnormal indications occur during cable identification, stop the test and check the following items before continuing.
Do not proceed to cutting or maintenance unless one cable only shows the expected positive response and the identification result has been confirmed where required.

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5.4.1 Common Problems and Corrective Actions

Symptom	Possible Cause	Recommended Action
No signal on receiver	Gain set too low	Press ▶ (Right) to increase gain
Screen displays "OL"	Gain set too high	Press ◀ (Left) to reduce gain until bar turns green
Signal direction reversed (red bar)	Clamp arrow pointing wrong direction	Flip clamp — ensure arrow points toward far end
	Red/black leads connected in reverse	Reconnect leads: red to phase, black to ground
	Adjacent cable carrying return current	Test all cables; only target should show forward signal
Multiple cables show "+"	Incorrect clamp orientation	Re-verify arrow direction on all clamps
	Unintended loop in cable route	Trace cable route physically; refer to site drawings
Weak signal despite high gain	High loop impedance	Loop Rogowski Coil TWICE around cable to improve coupling
	Poor earth connection at far end	Verify and re-establish far-end grounding
Receiver auto powers off	Battery depleted	Replace 4x AAA batteries in receiver
Transmitter not outputting signal	Battery low	Recharge transmitter lithium battery
CAL. remains red after OK pressed	Signal below minimum threshold	Ensure minimum 2 bars displayed before calibrating; increase gain

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Equipment Maintenance

- If the instrument will not be used for a long period, remove the dry batteries to prevent leakage and corrosion of the circuit board.
- Do not perform testing if the battery cover is not properly installed.
- When replacing batteries, observe correct polarity to avoid damaging the instrument.

1. During transmitter charging, the orange indicator light remains on; it will turn green once fully charged.

2. During use, the receiver screen displays a battery icon in the upper-right corner.

- A full icon indicates full power.
- An empty red icon indicates low battery voltage.
- When the battery is depleted, the receiver will automatically power off after a few seconds.

3. After use, clean the instrument promptly, and store the transmitter, receiver, and accessories in a dry, ventilated place.

If the device is not used for an extended period, power it on periodically to check performance and ensure proper functionality.

4. When the instrument will not be used for a long time, remove the dry batteries from the receiver to prevent leakage and corrosion.

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SECTION 7

Packing List

Transmitter	1
Receiver	1
Rogowski Coil	1
Stethoscope	1
Direct Output Cables	1 (One red 5m and one black lead 3m)
Protective Grounding Wire	1 (Yellow 3m)
AAA Dry Batteries	4
Portable Carrying Case	1
Grounding Rod	1
User Manual, Warranty Card, Certificate	1

Note:

- Use of this product must follow the instructions in this manual and applicable local safety procedures.
- The manufacturer reserves the right to revise this manual without prior notice.
- The Company reserves the right to modify the contents of the user manual. In the case of modification, no further notice will be given.

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