

C31 Live Line Indicator Operating Instructions

7. Apply the HV probe to the overhead line by the hook at the tip of the probe.
The tester has an over-reach collar that also acts as a rain hood. The over-reach limit is indicated by a fluorescent yellow band at the top of the rain hood.



8. Take great care not to overshoot the overhead line and make contact with the metal casing of the C31 as this would cause irreparable damage to the tester. Once applied to the line, the C31 will indicate the precise voltage on the analogue meter, also the LED indication will change over from green to red if the line voltage exceeds 11kV $\pm 500V$, in accordance with Rail track specification.
9. When using the C31 to prove isolation before working on the OHL system, always test on a live conductor first to prove the instrument is working properly, then check again after the line has been isolated.
10. The C31 will turn itself off after 5 minutes. However, the analogue meter operates from the power in the overhead line and will read continuously for as long as there is power on the line. To prevent overheating do not keep the C31 tester attached to a live conductor for longer than 10 minutes at a time.
11. HANDLE WITH CARE - When removing the tester from the overhead line, take care not to drop the tester on the ground. Although the gauge is resistant to shock, the instrument's internal movement may be permanently damaged by a heavy impact.

Specifications

For use upon overhead a.c. rail electrification systems at 30kV nominal voltage.
12kV $\pm$ 5% Threshold voltage.
Compatible with standard Westminster operating poles and Primary Insulator pole.

Specification

Range	0 to 40 kV ac
LED change over	11kV $\pm 500V$
Test duration	<25 kV 10 minutes >25 kV 1 minute
Absolute Maximum Rating	40 kV ac
Accuracy	Analogue 2%
Operating temperature	Analogue: -40° to +70°C LED: -10° to +50°C
Test Current	0.200µA
Seal Rating	Tester body IP65 (HV probe & gauge IP68)

If you have any questions or queries about any of our products please don't hesitate to contact us.

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This equipment is designed for use upon overhead a.c. rail electrification systems operating at 25 kV nominal voltage to indicate the presence of extra high voltages to aid safe working practices.



The C31 kit comprises the following:
the **live line indicator** which comes in a tough protective carry case, a **high voltage probe and hook** - shrouded for use in wet weather - and an **8 metre length of 50mm² aluflex cable** with a **rail clamp**. Also included is a **battery charger** for charging the C31's internal **Nickel Metal Hydroxide batteries**.

The C31 incorporates a number of important safety features including:
Dual independent circuitry, meaning the analogue meter and the LED indicators work completely independent of each other. If one circuit fails, the other will keep on working for your safety.

Automatic 'Meter Prover' operates every time the tester is turned on, proving the electrical and mechanical operation of the analogue meter.

Triple Resistor Sets ensure that, in the unlikely event of one HV resistor failing, the remaining ones are sufficient to safely protect the operator and the equipment. The resistors are tested at 40 kV AC.

The 50mm² Aluflex grounding cable will safely conduct the full force of the OHL system in the event of a catastrophic failure of the equipment, such as direct contact with the overhead line. Automated Test Cert Validation, warning lights flash when test certificate has expired.

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C31 Operating Instructions

Safety Advice: please read this first BEFORE using this equipment

This equipment should be used only by competent trained personnel.

1. First check that the equipment has a valid test certificate, this should be displayed on labels affixed to both halves of the tester. Also ensure that the HV probe and the tester bear exactly the same serial number, with the tester suffixed 'A' and the HV probe suffixed 'B'.
2. Visually inspect the equipment for signs of damage, check along the length of the HV probe for any splits or cracks, and check the aluflex cable is not damaged. Also confirm that the crimped lugs are soundly fastened. If in doubt, do not use.
3. Make sure that the tester HV Probe is clean and free from any contamination that may be conductive at high voltages.
4. Always use the C31 tester in conjunction with approved operating rods and a primary insulator pole with a valid test certificate.
5. Do not use the C31 tester in extreme wet weather.
6. ALWAYS ensure that the rail clamp is firmly attached to the rail track BEFORE the C31 tester is applied to the overhead line. NEVER move or remove the clamp while the tester is still attached to the overhead line.

WARNING – failure to observe procedure 6 may result in the operator receiving a low current but very high voltage electric shock.

Precautions during wet weather use

Although the C31 is designed for use in all weather conditions, care must be exercised to ensure that the tester is kept as dry as practicable during use and completely dry and clean when not in use. Keep the time to a minimum that the tester is in contact with a live conductor and, in any case, do not exceed one minute.

Storage and maintenance of Voltage Detector

Disassemble the tester after use and place the C31 instrument body back into its protective case (especially during transport).

Take care to protect the male thread on the HV probe from damage. Store the tester in a dry place if at all possible.

If the tester is not going to be used for a long period, fully charge the batteries before storage and recharge every six months.

Keep the tester clean by using a damp cloth and wipe dry with a clean paper towel. Grease can be removed using a cloth and a mild detergent solution and wiping dry with a clean paper towel. Never immerse any part of the HV probe in water.

Clean threads and treat occasionally with a very small amount of lubricant, such as 'copper slip'.

The C31 tester requires calibration testing and certification once a year. The HV probe should be replaced after 5 years or at any time if its resistance falls below 35 Megohms.



Take care not to over tighten

1. Before each test; observe the safety advice given in the previous section.
2. Screw the HV probe into the body of the tester, taking care not to over tighten, then fit the hook into the top of the probe and again avoid over tightening.



Screwing the probe into the body



Fitting the hook

6. Depress the button at the rear of the meter housing and hold for approximately one second. The C31 will then commence a startup diagnostic routine.

(a) First the C31 will perform a lamp test; this is indicated by both red and green LEDs flashing brightly. If you do not see both colours return the tester for repair.

(b) At the same time as the lamp test, the meter prover should rotate the pointer to read 30KV

(c) Following the lamp test/meter prover there will be a short pause while the C31 checks the internal battery, if the battery level is low the operator will next see a single red LED flashing slowly. **Please note:** a low battery warning will not prevent the test from proceeding, but the operator is advised to recharge the batteries at the earliest opportunity.

(d) The battery check is immediately followed by a system check. If all is well the next thing the operator will see is a steady green light, this means the C31 is active and you can proceed with live line testing.



Steady green light

3. Insert standard primary insulator pole (check certificate is in date) then fit the standard operating poles into the bottom of the primary insulator pole.

4. Attach the aluflex cable to the tester at the fastening point below the meter. Ensure that the mating surfaces are clean and that the lug is firmly attached to the tester body, using a 13m spanner.

5. Fasten the other end of the aluflex cable firmly to the rail track using the rail clamp, again ensuring that the mating surfaces achieve a good electrical connection.