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ALVA Series MFT

Quick Start Guide v1.1

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What's In The ALVA MFT Box!

ALVA MFT/ ALVA MFT Pro | 3-Wire Lead Set | Slimline GS38 Probes | Croc Clips | MFT Mains Lead | Neck Strap

ALVA Carry Case | 6 x Alkaline AA Batteries

Pro Additions

Remote Test Probe | NiMH Rechargeable Batteries | MFT Charge Plug

ALVA MFT Modes

- **Ω** 200mA Continuity — Auto-start feature
- **MΩ** 1000V Insulation — 50-1000V with Bargraph
- **AC DC** 550V AC/DC — CAT III 600V | CAT IV 300V
- **TP &E** 3-phase Rotation — 50V - 550V AC
- **Ze Zs** 2-wire Auto Loop — High current | ZAuto Start
- **Zs** Non-trip Loop — New RCD-LOC+
- **ΔV** Voltage Drop — With % Limit
- **BS** BS7671 Fuse Tables — Inbuilt pass/fail tables
- **R** RCD Test with Auto Test — Full RCD Range - AC|A|F|EV|B|B+
- **EV** 6mA RCD-PD/MD — 6mA DC Test for EV Chargers

Pro Features

- **EV** Auto EV Varification — Full EV Test Sequence inc Loop
- **Ω** Earth Resistance — 3/4-wire Re | Ro Earth Resisivity
- **Max** Zmax | Imax | Rmax — Maximum Loop, I_{PSC} & R2/R1+R2
- **Ω** 4mA Continuity — Low current for testing inductive loads
- **M** Data Logging Memory — Storage for 999 test results

Earth Resistance (Pro Only)

Earth Resistance (Re) – **3-Wire** and **4-Wire** Methods

The **AVLA MFT Pro** can measure earth resistance using either the **3-wire** or **4-wire** method.

Step 1: Select the Function by rotating the rotary dial
- Turn the function selector switch to **Earth Resistance**.
- Use the ▲▼ and ◄ ► keys to choose **Re mode**.
- The Earth Resistance menu will appear.

Step 2: Set the Limit
- Use the▲▼ and ◄ ► keys to set the **resistance limit value**.

Step 3: Make the Connections
- For **4-wire measurement**, follow the diagram on the ALVA MFT Help Screen.
- For **3-wire measurement** (connected ES to E), follow the diagram on the ALVA MFT Help Screen.

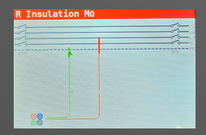
Step 4: Start the Test
- Check the display for any **warnings** or **voltage** issues.
- If all is OK and the ✅ symbol appears, press the **TEST** Button.
- The results will be shown on the screen.

Displayed Results
- **Re** – Earth resistance
- **Rs** – Resistance of the S (potential) probe
- **Rh** – Resistance of the H (current) probe

⚠ **Note:** If the voltage between test terminals is over **10V**, the test will not run.

Insulation Test

Insulation Resistance Measurement (50V to 1000V)



Step 1: Select the Function by rotating the rotary dial
- Turn the function selector switch to **Insulation mode**.
- The insulation resistance menu will appear.

Step 2: Set Insulation **Test Voltage** Parameters
- Use the ▲▼ and ◄ ► keys to choose **nominal test voltage**.
- Set the **minimum resistance value** (low limit).

Step 3: Make the Connections
- Ensure the test object or conductor is de-energized.
- Connect the Red & Green test leads to the ALVA MFT (L&PE).
- Attach test leads to to the conductors or object that require testing.

Step 4: Start the Test
- Check for **warnings** & **voltage readings** on screen.
- If safe, with no voltage present, press the **TEST** button.
- **Press and hold** for >3s to lock the button on, press to stop.
- Observe **V Out** display for output voltage confirmation.

Display Results
- Result is displayed on screen in MOhms.

⚠ Safety Warnings
- Only test **de-energized** equipment!
- **Disconnect** all loads and close all switches before testing.
- **Do not touch** the conductors or object during or immediately after testing.
- Never connect to voltages **>550V AC/DC**.

Introduction to ALVA

Di-LOG ALVA Series Multifunction Installation Tester (MFT) is designed to provide electricians with a high performance, next-generation testing solution that streamlines electrical inspections while ensuring compliance with 18th Edition regulations and affordability.

Compliance & Safety

- Fully compliant with BS EN 61557 and 18th Edition Wiring Regulations.
- CAT III 600V / CAT IV 300V rated.
- Designed for domestic, commercial, and industrial environments

Display Warnings (In all instances, please refer to manual)

⚠ This warning symbol on the ALVA MFT requires special care to be taken for safe operation. This symbol requires you to take action.

⚡This warning symbol means Danger with the risk of high voltage!

⧈ This symbol located on the rear of the MFT means Class II - Double Insulated. There is no need for any safety connection to Earth (PE).

If the test equipment is used in a manner not specified in this user manual, the protection provided by the equipment could be impaired!

Initial Setup

Please follow these simple setup instructions to get you on your way to discovering your new ALVA Series MFT.

1. Test Selector Dial
2. Power On/Off
3. Back/previous screen
4. Global Settings
5. Help
6. Test Lead Zero
7. Screen Brightness/Memory (pro)
8. Left|Right|Up|Down|Arrow
9. Harness Point
10. Test Start/Stop (Hold to Lock)
11. TFT Colour Screen
12. Calibration USB-C Port
13. USB-B Download (Pro)
14. Charger Input
15. Remote Probe Input
16. Test Lead Input

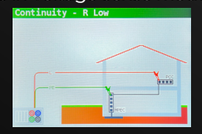
Insert Batteries

When the instrument is connected to an installation, the battery compartment may contain hazardous voltage. Before replacing batteries or opening the battery/fuse compartment cover, ensure all measuring accessories are disconnected from the instrument and the instrument is turned off.

Ensure the battery cells are inserted correctly, improper insertion may prevent the instrument from operating and could discharge the batteries.

R Low - Continuity

R Low can be set to automatically start in the Global Setting. When in Auto Start Mode, the MFT will **click every 2s** to indicate it is in voltage sense mode.



Step 1: Select the Function by rotating the rotary dial
- Turn function selector switch to **R Low Continuity**.
- Use ▲▼ and ◄ ►keys to choose **200mA (R Low)** mode.

Step 2: Set Limit
- Use ▲▼ and ◄ ► to set the **resistance limit value**.

Step 3: Compensate Test Leads
- Connect **Red & Green** test leads to the ALVA MFT (L&PE).
- Short the test leads together using **L and PE**
- Press **Zero** to compensate (indicator shows **Zero - On**).
- Press **Zero** again to remove compensation (**Zero - Off**).

Step 4: Connect to Conductors to Test Continuity
- Ensure item is **de-energized and discharged**.
- Connect test cables as shown in diagrams.

Step 5: Start Test (Automatically in **Auto Start Mode,** or **Press Test**)
- Check for warnings and voltage monitor.
- If clear & resistance is detected, test will start automatically.

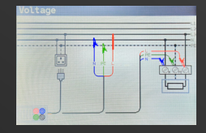
Step 6: Displayed Results
- Result is displayed on main display & held on secondary.

Rmax Maximum R2/R1+R2
- Use ▲▼ and ◄ ► keys to set **Rmax: On.**
- Connect MFT 3-wire Mains Plug to MFT L & PE
- Plug in to each socket on ring main to check polarity & measure the maximum R1+R2 value, R2 for lighting circuits.

⚠Warning: Only test **de-energised** conductors, **Parallel impedances** or **transients** may affect results. If voltage **>10V**, test will not run.

Voltage, Single & 3-Phase

Dynamic Voltage Indication auto detects single or 3-phase supply voltage.



Step 1: Select the Function by rotating the rotary dial
- Turn the function selector switch to **Voltage mode**.
- The voltage menu will appear.
- Use ◄ ► keys to choose **Auto** mode. Auto mode will automatically detect either single (1P) or 3-phase (3P).
- Selecting 1P or 3P enables manual voltage selection.

Step 2: Connect Test Leads
- Using the **3-wire lead** set or **mains adaptor,** connect the test leads to **L-PE, L-N or L-N-PE.** (minimum of two connections required to conduct measurement).

Step 3: Make the Connections
- With caution, connect the test leads or mains plug to the **voltage supply.**

Display Results
- Main display will indicate the **Voltage & Frequency.**
- **Single-Phase System:**
  - **L-N:** Voltage between Phase and Neutral.
  - **L-PE:** Voltage between Phase and Protective Earth.
  - **N-PE:** Voltage between Neutral and Protective Earth.
- **Three-Phase System:**
  - **U 1-2:** Voltage between **L1 and L2**.
  - **U 1-3:** Voltage between **L1 and L3.**
  - **U 2-3:** Voltage between **L2 and L3**.

Phase Rotation
- Phase rotation indication is automatically displayed when 3-phase supply is detected
- **1-2-3** = Correct | **3-2-1** = Not Correct

Z-Loop/Line High

Step 1: Select the Function by rotating the rotary dial
- Turn function selector switch to **Ze/Zs (Z-Line/Z-Loop)**.
- Use ▲▼ and ◄ ► keys to choose mode **: Line 1P | Line 3P | Ze/Zs 1P | Ze 3P | V Drop**

Step 2: BS7671 Fuse Tables (Type B | C | D)
- Use ▲▼ and ◄ ► keys to select **MCB Type**, Current & Time for fuse tables **Limit/Max**

Step 3a: Line 1P for Line Impedance and **Ipsc**
- Connect **Red & Blue** Test Leads **(L-N)** to MFT.
- Use Test Probes to connect to supply Line Neutral **(L-N).**

Step 3b: Line 3P for 3-phase Line Impedance and **Ipsc**
- Connect **Red & Blue** Test Leads to MFT.
- Use Test Probes to connect to supply **L1-N | L2-N | L3-N.**

Step 3c: Ze/Zs Loop 1P for Loop Impedance and **Ipfc**
- Connect **Red & Green** Test Leads **(L-PE)** to MFT.
- Use Test Probes to connect to supply Line Earth **(L-PE).**

Step 3d: Ze 3P for 3-phase Loop Impedance and **Ipfc**
- Connect **Red & Green** Test Leads to MFT.
- Use Test Probes to connect to supply **L1-L2 | L2-L3 | L3-L1.**

Step 4: Start the Test
- If **Zauto Start** is on, test will **Auto Start** following a 3s delay.
- If **Zauto Start** if off, press the **Test** button to start the test.

Step 5: Display Results
- **Loop & Line** Impedance displayed in Ohms.
- **Ipsc & Ipfc** displayed in A or kA.

Zmax & Imax Recording (Pro only)
- If **Zmax** is on, the maximum recorded Loop (**Zmax**) or Current (**Imax**) is recorded during that session.

⚠Warning: Accuracy is valid only if mains voltage is stable during the test. This test may trip RCD protected circuits.

RCD Testing (Trip Time)

Step 1: Turn the function selector to RCD Test.

Step 2: Use ▲▼ and ◄ ► keys to choose mode **: Time (also available - Current | Auto1 | Auto2 | Uc)**

Step 3: Select the RCD Type including General (G) or Selective/Time-delayed (S)
- AC (Alternating current)
- A (Pulsating DC)
- F (Mixed Frequency)
- B & B+ (Pure DC)
- EV (For EVSE)

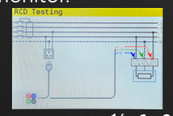
Step 4: Set Nominal Differential **Trip-Out Current** choosing the appropriate IΔn value:
- ALVA MFT: 6, 10, 30, 100, 300, 500, 1000 mA
  ALVA MFT Pro : 650 & 1000 mA

Step 4: Set the Multiplier Factor & Test Polarity : **½, 1, 2, or 5x | 0° or 180°**

Step 5: Connect Test Leads
- MFT Mains Lead to **Red, Blue & Green** Test Leads **(L-N-PE)** to MFT when testing on ring main.
- Connect the 3-wire Lead Set to **Red, Blue & Green** Test Leads **(L-N-PE)** to MFT when testing at distribution board (DB).

Step 6: Check for warnings and voltage monitor.
- If all is OK, press **TEST** Button.

Step 7: View results:
- **Trip-out time**
- **Uc:** Contact voltage

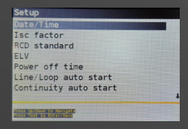


Auto Test Sequences
- **Auto1 w**ill run an automated RCD Test sequence: **½, 1, & 5x @ 0° & 180°**
- **Auto2 w**ill run an automated RCD Test sequence: **½ & 1x @ 0° & 180°**

⚠Important Notes:
- Test only runs if **Uc is below the set limit**.
- Pre-test voltage check may still cause RCD to trip if leakage is high.

Global Setting

Accessing the Setup Menu
- Press the **SETUP Button** on the ALVA MFT.
- Use ▲▼ and ◄ ► keys to scroll through the available options pressing **TEST** to Select and Save.



Setup Options & How to Use Them

1. **Date/Time:** Set the **internal clock** and **date**
2. Isc Factor: Set the scaling factor for **Prospective Short/ Fault Current**
3. **RCD Standard:** Choose the **International Standard** for RCD testing, e.g **EN61008** or **BS7671**
4. **ELV Warning Voltage:** Set the voltage threshold for **Extra Low Voltage (ELV)** warnings.
5. **Power-Off Time:** Define how long the device waits before **auto power-off** when idle.
6. **Line/Loop Auto Start:** Set MFT to **Auto Start** when **voltage is detected.**
7. **Continuity Auto Start:** Set MFT to **Auto Start** when **resistance is detected.**
8. **Continuity Time Out:** Set the **Test Time-out Duration** for continuity measurements.
9. **Insulation Time Out:** Set the **Test Time-out Duration** for continuity measurements.
10. **Supply System:** Select your **Electrical Supply System** e.g **TN(TT)** or **IT**.
11. **Device Info:** View device details such as **Firmware Version & Calibration Information**
12. **Audible Tone Options:** Adjust MFT audible sounds including **All Sounds**, **Alarm and Errors** & **Alarms Only**
13. **Continuity Audible Tones:** Adjust MFT audible warning on **continuity limit alarm.**
14. **Backlight:** Adjust MFT **TFT Backlight Level** (high brightness can effect battery duration).

Charging & Accessories

⚠Only charge the ALVA MFT when the specified rechargeable batteries are fitted. DO NOT charge when non-rechargeable batteries are fitted.

Step 1: Connect the Power Supply
- Plug the supplied power adapter into the ALVA Series MFT
- Charging will begin automatically

Important: Only use the original power adapter provided by the manufacturer or an authorised distributor.

Step 2: Charging New or Long-Unused Batteries
If the battery is New, or Unused for over 3 months then:
- Use the optional **ALVABAT2** Di-LOG external intelligent battery charger kit.
- Run a full discharge/charge cycle.
- After the cycle, the battery should return to normal capacity and provide expected operating time.

Step 3: Monitor Charging Conditions
- The integral charger is a pack cell charger: all cells are charged in series.
- Ensure all cells are of the same type and age and in similar condition.

ALVA Accessories

TLERT3: 3-Pole Earth Resistance Accessory Kit for ALVAMFTPro inc Case

TLERT4: 4-Pole Earth Resistance Accessory Kit for ALVAMFTPro: 4 x Test Lead Reels, 4 x Earth Spikes & Carry Case

ALVABAT2: 2800mAh High Capacity Recharge Kit & MFT Plug for ALVAMFT
ALVABAT1 : for ALVAMFTPro

ALVARP: Remote Probe for ALVA Series MFT

Z-Loop (Zs) Non-trip

Earth Fault Loop Impedance RCD-LOC+ Non-Trip Measurement

Step 1: Select the Function by rotating the rotary dial
- Turn function selector switch to **Zs (Z-Loop Non-trip)**.
- Use ▲▼ and ◄ ► keys to choose mode **: RCD | Variable.**

Step 2: BS7671 Fuse Tables (B | C | D Type) RCD Mode Only
- Use ▲▼ and ◄ ► keys to select **MCB Type**, Current & Time for fuse tables **Limit/Max**

Step 3a: RCD (Non-trip mode)
- Connect the MFT Mains Lead to **Red, Blue & Green** Test Leads **(L-N-PE)** to MFT when testing ring mains.
- Connect the 3-wire Lead Set to **Red, Blue & Green** Test Leads **(L-N-PE)** to MFT when testing radials.
- Insert Mains Plug into socket or connect probes to light fitting using **(L-N-PE).**

Step 4: Start the Test
- Check for warnings and polarity,
- If **Zauto Start** is on, test will **Auto Start** following a 3s delay.
- If **Zauto Start** if off, press the **Test** button to start the test.

Step 5: Display Results
- **Loop** Impedance displayed in Ohms.
- **Ipfc** displayed in A or kA.

Zmax & Imax Recording (Pro only)
- If **Zmax** is on, the maximum recorded Loop (**Zmax**) or Current (**Iref**) is recorded during that session.

Non-trip Variable Mode & EV Chargers
Varies the non-trip loop test current dependent on RCD current selected & required to test Earth Loop when connected to an EV Charger

⚠**Important Information** - This test **typically does not trip an RCD.** However, **RCD tripping may occur** if:
- Leakage current flows through the PE conductor.

or
- There is a capacitive connection between L & PE.

Auto EV Test Sequence (Pro)

⚠Please note, an additional EVSE Type-1 or Type-2 Adaptor is required to use this feature. We recommend the **DLEVLite** or **DLEV1.**

The Auto EV Test Sequence is designed to test and verify the safety devices installed in the Electric Vehicle Supply Equipment (EVSE). **Tests conducted include:**
- **Non-trip Loop Test**
- **6mA/30mA DC Tests**
- **30mA AC Tests**
- **Ramp Test (Optional)**
- **Voltage Verification**

Step 1: Turn the function selector to EV Auto Test.

Step 2: Use ▲▼ and ◄ ► keys to choose protection type**: 6mA RDC-PD | 30mA Type B RCD**

Step 3: Select if RAMP (Tripping Current) is required.

Step 4: Connect Test Leads to the MFT & EVSE Adaptor
- Connect the 3-wire Lead Set to **Red, Blue & Green** Test Leads **(L-N-PE)** to MFT and L1/L2/L3-N-PE on EVSE Adaptor.

Step 5: Check for warnings and voltage monitor.
- If all is OK, press **TEST** Button.

Step 6: Reset CP (Control Pilot State) on EV Adaptor by switching between A & C following each RCD/RDC trip

Step 7: View results ◄ ► keys to select results page:
- **Loop:** Earth Fault Loop of EV Circuit
- **DC Test:** DC Trip Times
- **AC Tests:** AC Trip Time
- **Ramp:** Option AC & DC Tripping Currents
- **Voltage:** Voltage report (L-N | L-PE | N-PE | Hz)

⚠**Important Notes:**
- Test only runs if **Uc is below the set limit**.
- Pre-test voltage check may still cause RCD to trip if leakage is high.

Trouble Shooting

The instrument comes supplied with either AA Alkaline batteries (ALVA) or rechargeable 2100mAh NiMH battery cells (ALVA Pro). High capacity 2800mAh NiMH batteries can be purchased as an additional accessory. Do not use standard alkaline battery cells while the optional power supply adapter is connected, this may result in damage to the instrument and cause risk of fire.
- Do not operate the ALVA MFT whilst the tester is on charge.
- Replace (ALVA) or recharge (ALVA Pro) the batteries when the battery indicator goes red indicating a low battery.

Replacing Fuses
Although the instrument is fuse protected, for e.g. against accidental connection to voltage on insulation & continuity, In certain rare conditions, the fuse my blow. In this instance, please refer to the guide below:
- **F1 & F2** - Fuse, Fast Acting, 6.3mm x 32mm, 4A, 500V
- **F3** - Fuse, 5mm x 20mm Ceramic Slow Blow 315mA, 250V
- Please contact us for information on the correct replacement fuse.
- Only fit the recommended fuse specified in this document, installing the wrong fuse will damage the MFT and would invalidate your warranty.

Poor Battery Performance
If battery life remains poor after several charge/discharge cycles: Use the optional **ALVABAT1 or 2** Di-LOG external intelligent smart battery charger kit to discharge and recharge each cell independently.
- Test individual cells using a cell charger or by comparing voltages.
- Replace any deteriorated cells.

⚠**Important Note:** Gradual capacity loss over time is normal for rechargeable batteries. Refer to the technical documentation for expected lifespan.

Warranty, Service & Calibration

Di-LOG instruments are subject to stringent quality controls. If in the course of normal daily use a fault occurs we provide a 24-month warranty (only valid with proof of purchase). Faults in manufacture and material defects will be rectified by us free of charge, provided the instrument has not been tampered with and returned to us unopened. Damage due to dropping, abuse or misuse are not covered by the warranty.

Product Support
support@dilog.co.uk

Service & Calibration
www.recal.biz

To maintain the specified accuracy of the measurement results, the instrument must be recalibrated at regular intervals by Di-LOG. Di-LOG's service partner, Re-CAL Calibration, are the only authorised agent with the facility to adjust and service the ALVA Series MFT We recommend an annual recalibration period from the date of purchase.

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Di-LOG
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