



INMOTION ENERGY (OPC) PRIVATE LIMITED

Electrical Stability Tester

Precision Digital EST, Dual AC/DC — Complete with Aluminum Carrying Case, Probe Electrode & Power Cord

Model No: IM-EST-DWY

INSTRUCTION MANUAL

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Inmotion Energy (OPC) Private Limited

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Table of Contents

Introduction	3
Description.....	4
Components.....	5
Features	5
Specifications	6
Operation.....	7
Calibration	8
Maintenance.....	8
Troubleshooting.....	9
Warranty and Return Policy	10
Ordering & Replacement Parts	11
Company & Contact Information	12

Introduction

Water-in-oil emulsion drilling fluids rely on a stable emulsion to keep the water phase fully encapsulated — if that emulsion weakens, water can break out, contact the formation, and start corroding tools and hardware downhole. Electrical stability (ES) is the standard field and laboratory measurement used to track that emulsion strength.

The Inmotion Electrical Stability Tester (EST) applies a steadily rising voltage across a pair of electrodes immersed in the fluid sample and reports the voltage at which the emulsion finally breaks down and starts conducting current — a higher reading means a stronger, better-emulsified system. Beyond routine mud checks, the same instrument is useful for evaluating oil-based de-emulsifiers, cement slurries, and fracturing fluids.



The Inmotion EST ready for use, probe electrode connected and powered on

Description

The Inmotion EST is a self-contained, dual-power (AC/DC) instrument supplied with its probe electrode, power cord, and this manual in a rugged aluminum flight case. Inside, a microcontroller converts standard AC mains into a smoothly rising sine-wave output, applied across the probe's fixed electrode gap.

Pressing RUN starts the voltage climbing steadily from zero. When the sample's emulsion finally ionizes and breaks down, an internal feedback loop trips the buzzer and ALARM light and latches the peak reading on the 4-digit LED display for the operator to record. Because the output is a stable sine wave rather than an older square-wave design, the EST supports continuous, back-to-back testing with accurate, repeatable numbers.



The Inmotion EST, complete with foam-lined aluminum case and probe electrode

Components	Part Number	Description
	IM-EST-DWY-01	Electrical Stability Tester, Main Unit
	IM-EST-DWY-02	Probe Electrode Assembly (fixed-gap parallel electrodes)
	IM-EST-DWY-03	Electrode Connector Cable
	IM-EST-DWY-04	AC Power Cord
	IM-EST-DWY-05	Digital LED Display Module
	IM-EST-DWY-06	RUN / STOP / RESET Control Panel
	IM-EST-DWY-07	ON / OFF Power Switch
	IM-EST-DWY-08	Aluminum Flight Case, Foam-Lined
	IM-EST-DWY-09	Instruction Manual

Fig. 1 — Inmotion EST control panel, with major components labeled

A heat-resistant sample cup and cell (per API RP 13B-2) is required for testing. Confirm with your Inmotion sales contact whether one ships with your kit or needs to be ordered separately.

Features	
	Precision Sine-Wave Output — A smooth 0–2000V, 340Hz sine wave replaces older square-wave designs, enabling continuous, repeatable testing. Dual AC/DC Operation — Runs on AC220V 50Hz (standard) or AC120V 60Hz (USA), $\pm 10\%$ mains, or an internal 15V DC supply, which charges automatically whenever mains power is connected. Digital Readout with Auto-Latch — The 4-digit LED display holds the breakdown voltage (up to 2047) until manually reset, so no reading is missed. Audible & Visual Alarm — A buzzer and ALARM indicator trigger the instant breakdown occurs, confirming a valid reading without watching the display continuously. Rugged Aluminum Case — A foam-lined flight case with reinforced corners protects the meter and probe in transit between rig site and laboratory.

Specifications

Model Number	IM-EST-DWY
Working Power Supply	AC220V 50Hz (standard) or AC120V 60Hz (USA), $\pm 10\%$ / DC 15V (dual operation)
Output Voltage	0 – 2000V AC, 340Hz sine wave
Electrode Spacing	1.55mm $\pm$ 0.02mm
Rated Power	20W
Display	4-digit LED, 0 – 2047 range
Controls	RUN / STOP / RESET, ON/OFF power switch
Indicators	POWER, RUN, ALARM (with audible buzzer)
Housing	Aluminum flight case, foam-lined interior
Compliance / Target Standard	API RP 13B-2, Section 11



Probe electrode connector — fixed 1.55mm gap, per API RP 13B-2 Sec. 11 test geometry

Operation

1. Confirm the AC supply matches 220V $\pm 10\%$, 50Hz and is properly grounded; make sure the probe electrode is clean and completely dry before connecting it.
2. Plug in the power cord and switch the unit ON — the POWER light should illuminate, the display should read "0000", and the RUN indicator will blink on its regular cycle.
3. With no electrode connected, press RUN and let the unit cycle for about 30 minutes on first use (or after storage) to stabilize internal components before testing samples.
4. Heat the drilling fluid sample to the temperature specified by your test procedure and stir it thoroughly and uniformly immediately before testing.
5. Connect the probe electrode, then lower it into the sample so the electrodes are fully submerged without touching the cup's walls or bottom.
6. Press RUN. The reading on the display climbs steadily from "0000".
7. When the sample breaks down, the buzzer sounds and the ALARM light comes on as the display value holds steady — record this number as the electrical stability of the sample.
8. Press RESET to clear the display before the next test.
9. Switch off the power, disconnect and wipe the electrode clean with tissue or filter paper, and dry it fully before storing.

⚠ IMPORTANT

The instrument runs on AC power by default whenever the power cord is connected, even if the ON/OFF switch is off. To test on the internal DC supply instead, unplug the AC cord first, then switch the unit on and follow the same procedure. If DC and AC readings on the same sample differ by 10 units or more, the internal battery is likely low and should be replaced.

Calibration

Verification Check

1. Inspect the probe electrode and its cable for any visible wear, corrosion, or damage before calibrating.
2. Confirm AC input is 220V $\pm 10\%$, 50Hz and the electrode is clean and dry; electrode gap should measure 1.55mm ± 0.02 mm.
3. Check that no residue or scale has built up in the electrode gap and that the connector-to-body joint is clean and dry.
4. With no probe connected, press RUN and confirm the display climbs to the unit's maximum reading of 2047.
5. Reconnect the probe and repeat the same run in open air — the display should again reach 2047; if it doesn't, clean, dry, or replace the probe and connector.
6. Repeat the run with the probe submerged in ordinary tap water — the reading should not exceed 30V. A higher reading means the electrode needs cleaning, drying, or replacement.

✓ TIP

Run this quick verification any time results seem inconsistent, and always before a critical test series — it takes only a few minutes and catches most probe and connector issues early.

Maintenance

- Keep the instrument in a clean, dry environment; avoid humidity and dust exposure between uses.
- Make sure anyone operating the unit is trained on the full test procedure and aware of the electrical hazards involved.
- Handle the case and probe gently during transport or storage — physical shock can throw off the electrode geometry and affect accuracy.
- Always disconnect power before opening the case or servicing the instrument.
- Never clean the electrode jack or contacts with a metal tool — this can cause arcing and burn out the connector.
- Wipe the unit down and store it dry after every use.
- Confirm the instrument and power cord are properly earthed/grounded before each use.

Troubleshooting

Symptom	Possible Cause	Recommended Action
Pressing RUN doesn't change the display reading	Button's internal contact has weakened or lost spring tension	Replace the button with one of the same rating
Display stays blank after power-on	Loose plug/socket connection, or internal transformer failure	Reseat and tighten the power connection; if that doesn't help, have a technician replace the transformer
Readings vary significantly between repeat tests	Electrode surface is oxidized or corroded	Lightly polish the electrode with fine sandpaper; replace it if variation continues
Empty-air test (no sample) won't reach 2047	Damaged electrode cable, or a damp/dirty electrode	Replace the cable, or clean and thoroughly dry the electrode before retesting

Still stuck after trying the above? Set the instrument aside and get in touch with Inmotion Energy (see Company & Contact Information, page 12).



Inspect the control panel and electrode jack regularly for wear, corrosion, or loose connections

Warranty and Return Policy

Warranty

Inmotion Energy (OPC) Private Limited stands behind the materials and workmanship of every instrument it ships. For eighteen (18) months from the invoice date, if a product turns out not to meet its stated specifications through no fault of the buyer, and we're notified in writing once the issue is found, we'll repair or replace it at our discretion, subject to the exclusions below.

This coverage assumes normal use, in line with the operating conditions described in this manual. It does not stretch to cover use outside those conditions, nor to flaws that were plainly visible on arrival but went unreported.

Beyond what's stated here, Inmotion Energy doesn't offer any other express or implied warranty — including, to the extent the law allows, implied warranties of merchantability or fitness for a particular purpose.

Coverage does not extend to damage or loss caused by:

- Installation, operation, or upkeep that doesn't follow this manual
- Misuse, carelessness, or accidental damage
- Adjustment or repair carried out by anyone other than Inmotion Energy or an authorized service provider
- Storage conditions or exposure beyond what normal field use implies
- Parts or components sourced from outside Inmotion Energy
- Ordinary wear items — the probe electrode and connector cable, for example

Returns and Repairs

Pack anything you're sending back carefully — Inmotion Energy can't take responsibility for damage caused by inadequate packaging in transit.

If you're returning a unit that isn't defective, do so within thirty (30) days of your invoice; a restocking charge may apply, and the item needs to arrive in its original condition to qualify for a refund.

Before shipping anything back, reach out to us with your invoice number, a description of the issue, and your contact details so we can set expectations. Send equipment to:

Inmotion Energy (OPC) Private Limited

Attn: Service & Repair

186, 1st Main Road, Vijaya Bank Layout, Bilekahalli

Bangalore, Karnataka – 560076, India

Questions before then? Reach our support team at info@inmotionenergy.in.

Ordering & Replacement Parts

Send the Inmotion Energy sales team a note about what you're working on, and we'll get back with a recommendation and a quote. Probe electrodes and connector cables are kept in stock and shipped on request.

Have this ready when you reach out:

- Model / catalog number (IM-EST-DWY)
- The part number and description you need (see Components, page 5)
- How many you need
- Your company name, shipping address, and a contact point



Aluminum carrying case with probe electrode cable and AC power cord, as supplied with each unit

Company & Contact Information

Inmotion Energy has spent years supplying precision testing instruments and drilling tools to operators working with drilling fluids, cements, and completion fluids. Working out of our Bangalore facility, we serve customers across India and the Middle East. Being an independent manufacturer means our customers come first, not a parent company's agenda.

Industries We Serve

- Onshore & offshore drilling contractors
- National & independent oil companies
- Mud engineering & testing laboratories
- Well completion & workover operations

Why Choose Us

- Every unit goes through rigorous checks before it ships
- Spares and replacements move fast, so downtime doesn't stack up
- Designs proven in the field, built to keep working

Contact Details

Inmotion Energy (OPC) Private Limited

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Phone: +91 96637 44619

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Every Inmotion EST ships complete and ready to test