



## V-M.O.L.E.® Solar Profiling System used by:

- Research Institutes
- Oven Furnace OEM
- Thermal Process Developers
- Production Engineers/Operators



## ECD's V-M.O.L.E.® Solar Profiling System for solar cell metallization *Easy-to-use ~ Value-priced*

Critical solar device efficiencies resulting from the “Metallization process” are driven by key process parameters:

- *Temperature Ramp Rate*
- *Hold Time (Dry Time)*
- *Time Above Temperature*
- *Peak Temperature*
- *Cooling Rate*

ECD's V-M.O.L.E.® Solar Profiling System is designed to provide assurance that these key process parameters are met *quicker* and *easier* than any other profiler on the market.

ECD's V-M.O.L.E.® Solar Profiling System comes complete to have you up and profiling in mere minutes.

### System Includes

- V-M.O.L.E.® Thermal Profiler
- Solar (Metallization) Thermal Barrier
- High-Temp Stainless Steel Thermocouples
- M.O.L.E.® MAP Software
- USB Cable (charge; upload; download)
- Quick Reference Guide
- Convenient Carry/Storage Case

Order ECD P/N: E50-0765-00

- \* Only 18mm (0.7") Thick Thermal Barrier!!
- \* 185+ Customizable Data Extractions
- \* Customizable 1-Page Reports
- \* Stores +90 Thermal Profiles



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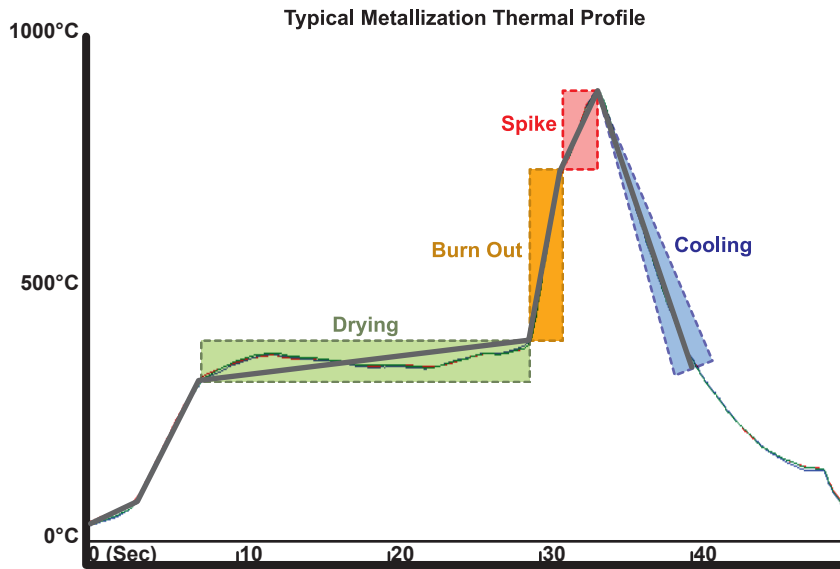
• Top rated customer support • No-cost ECD Training Tools • Award winning software •



# Thermal Profile Verification made easy with the Patented “OK Button” from ECD

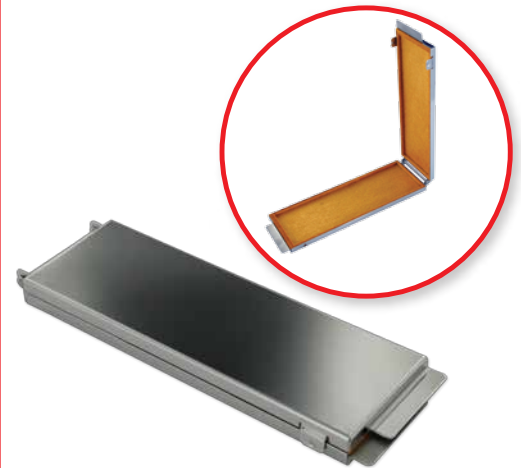


## Solar Cell Metallization Process



The typical process is short in time (40-60 seconds); ramping quickly to Peak.

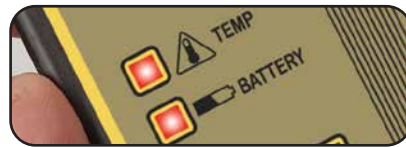
## Solar Process Thermal Barrier



Only **18mm (0.7")** thick; highly polished Stainless Steel and insulated with spun polyamide to protect the thermal profiler in normal IR process conditions. Two-side detent tabs make for a secure closure.

## V-M.O.L.E.® Designed for Ease-Of-Use

This Thermal Profiler is the heart of the Solar Profiling System, with many unique features to save time, clarify instrument status and greatly simplify thermal profile evaluation. You can verify your thermal profile against a set of specifications with the push of the patented “OK Button”:



Instrument Status

Green = Go

Red = No-Go

Easy to interpret by production process operators.



Patented “OK Button”

## M.O.L.E.® MAP Software

The unique “Target-10” feature of the M.O.L.E. MAP Software allows for several levels of diagnostic discovery, with multiple visual cues to isolate the source of a failed thermal profile.



Target-IO



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# SPECIFICATIONS



## THERMOCOUPLE SENSORS

3 Channels; 0.5mm (0.020") dia. X305mm (12"); Type K;  
1150 °C (2102 °F) Stainless Steel Sheath; Mini-Connectors

## COMMUNICATIONS: V-M.O.L.E.®

Interface: USB Compliant (charge;upload;download)  
Cable: USB Type A, Male-to-Mini B, 5 pin Male, 1 meter

## DATA ACQUISITION: V-M.O.L.E.®

Sampling Rate: 10 per second (Programmable)  
Data points: 1,500,000  
Data runs stored: 90+ (Standard Thermal Profiles)  
Accuracy: +/- 0.5 °C (0.9 °F)  
Resolution: 0.056 °C (0.1 °F)  
Measurement range: -200 °C to 1271 °C (-328 °F to 2320 °F)

## POWER: V-M.O.L.E.®

Battery: Lithium Polymer - Rechargeable, 340mAh  
Charge Protection: optimized for lithium polymer  
Charge time:  
• Partial: 15 minutes (1 Run Minimum)  
• Full: 9 hours  
Charge Capacity:  
• 10 Runs (Minimum)  
Battery Life: 3 Years Minimum  
Charger input current: 175 ma via USB Interface

## WARRANTY

2 year parts and labor

## WEBSITE

[www.ecd.com](http://www.ecd.com)

## PHYSICAL: V-M.O.L.E.®

Case Material: Temperature Resistant High Impact Resin  
Dimensions: 145mm (5.7") x 64mm (2.5") x 7.5mm (0.3")  
Weight: 68 grams (2.4 oz)  
Operational range: -40 °C to +85 °C (-40 °F to 185 °F)

## PHYSICAL: THERMAL BARRIER

Material, External: 20 Gauge Stainless Steel  
Material, Internal: Spun polyimide insulation  
Finish: IR Reflective (Grade #8 Polished)  
Dimensions: 236mm (9.3") x 78mm (3.1") x 18mm(0.7")  
Weight: 340 Grams (12 oz)

### Features:

- Dual detents for locking closure
- Finger tabs for gloved open/close
- Hinged for one-piece convenience

The Thermal Barrier is specifically designed to protect the M.O.L.E.® Thermal Profiler through typical solar metallization processes.

## COMPLIANCE: V-M.O.L.E.®

- EN 301 489-1 V1.6.1 (2005-09)
- EN 300 328 V1.7.1 (2006-10)
- EN 489-17 V1.2.1 (2002-08)
- EN60950
- WEEE 2002/96/EC
- Low-voltage Directive 2006/95/EC
- RoHS 2002/95/EC
- CE



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