M.O.L.E.® EV6

Thermal Profiler

QUICK REFERENCE GUIDE

ECD
SINCE 1964

CONTENTS

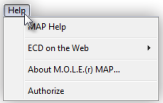
This Quick Reference Guide is designed to help the user to familiarize themselves with the equipment, perform basic hardware setup/communications and operation. For detailed information on both Hardware & Software components, please refer to the Help system accessible in the M.O.L.E.™ MAP Software.

To access the help system start the software and use any of the methods listed:

- Select the ***Help Button*** on the ***Toolbar***.

- Pressing the shortcut key ***[F1]***

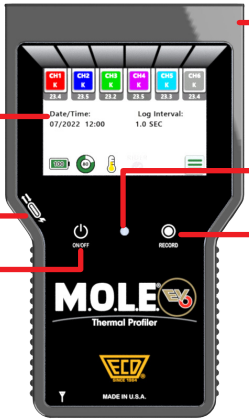
- On the ***Help menu***, click ***MAP Help***.



Display:
The touch screen interface of the thermal profiler.

Data/Charging Port:
Transfers data to/from a computer & charges the internal battery.

ON/OFF Button:
Turns Profiler "ON/OFF".



Thermocouple/Inputs:
This is where type "K" thermocouple sensors are connected.

LED:
Indicates various statuses of the thermal profiler.

Record Button:
Starts/Stops thermal profiler recording data.

LED Color	Solid	Flashing
Green	Indicates thermal profiler is "ON" and idle	Indicates thermal profiler is recording data. (Log Interval: 1 sec., flash each log, < 0.5 sec., flash 4 times per sec., > 1 sec., flash every 2 seconds)
Red	-	Flashes 5 times to indicate when the internal battery voltage is low ***or*** internal temp is at or above a threshold ***or*** all channels are OFF ***or*** when the memory is full
Yellow	Power ON. LED illuminated for 3 seconds during system check Indicates thermal profiler is "ON" and in RIDER mode	- Indicates Profiler is recording RIDER data. (flash 4 times per second)
Blue	Wireless communication connection established	Indicates when unit and transceiver is transferring data

❶ Channel status indicators:
- Shows current sensor Temp.
- Grayed when disabled
- "N/C" if T/C not connected/open
- Touch opens Channel enable type selection screen

❷ Date/Time:
- Displays the current date/time from the internal clock

❸ Battery charge:
- Displays charge (0-100%)
- 20% resolution (5 steps)

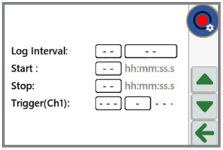
❹ File storage:
- Displays how full (0-100%)
- 10% resolution (10 steps)

❺ MOLE Temp:
- Red if >70C
- Yellow if >40C, <=70C
- Green if <=40C

❻ Rider Mode:
- Dimmed if not connected to a Rider pallet

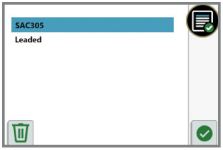
❼ Log interval:
- Displays the configured log interval

❽ Menu button:
- Touch to open main menu screen

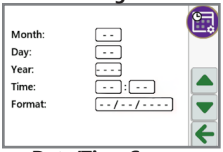


Record Configure Screen

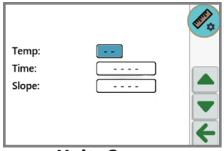
Select Profile Screen



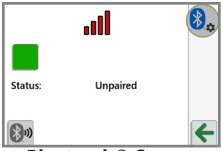
Select KPI Screen



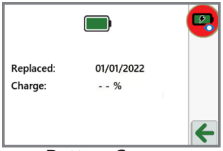
Date/Time Screen



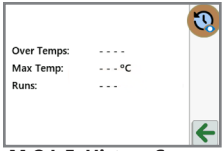
Units Screen



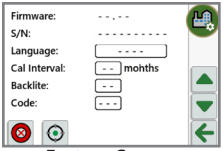
Bluetooth® Screen



Battery Screen



M.O.L.E. History Screen



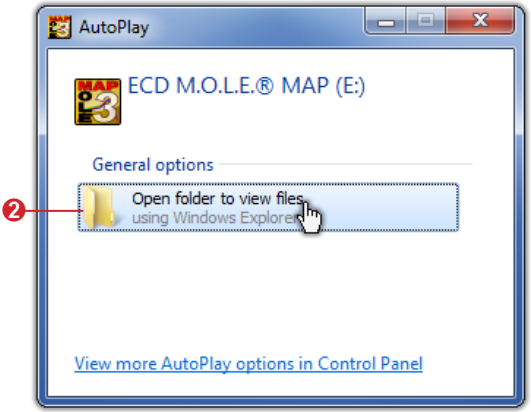
Factory Screen

CHARGING THE POWER PACK

1. Insert the USB computer interface cable into a computer USB port
2. Insert the USB-C end into the data/ charging port.

A completely discharged battery takes about 4 hours to be fully charged.

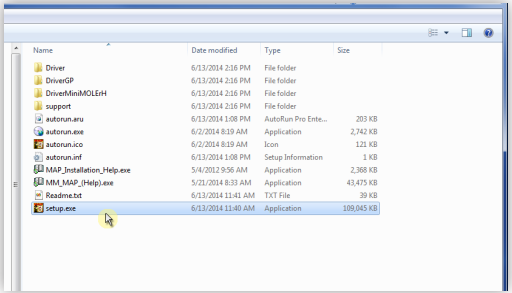
1. Insert the flash drive in a USB port and the AutoPlay menu appears.
2. Select ***Open folder to view files*** button on the AutoPlay menu to launch Windows® Explorer. Closely follow the instructions for your operating system. For detailed information view the ***Installation Help*** file on the flash drive.



3. Locate the ***setup.exe*** on the installation drive. Double-click the file to proceed.

Once the install process has started, it may take a few minutes for the installer to prepare. To continue installation, **DO NOT** select the ***Cancel*** command button as it will stop the process.

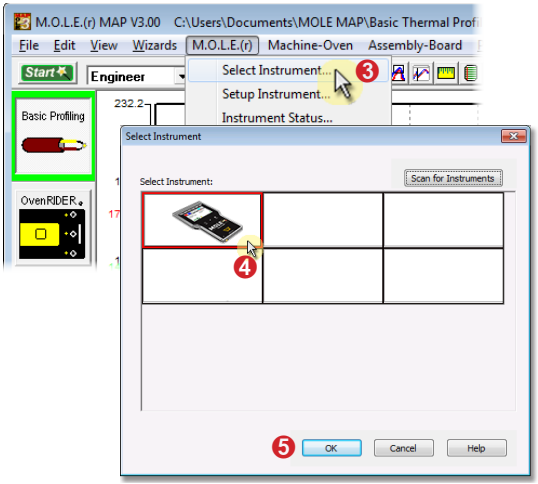
4. Select the ***Next*** command button to follow the installation wizard process.



1. Plug the USB cable into a computer COM Port and the USB-C end into the M.O.L.E. thermal profiler data port.
2. Select ***Start M.O.L.E. MAP***

3. On the M.O.L.E. menu, click the ***Select Instrument*** command.

4. Select the desired instrument from the dialog box. If there are none displayed, click the ***Scan for Instruments*** command button to detect all available instruments.



Once a M.O.L.E. thermal profiler has been selected, the software automatically selects it if used again on the same COM port.

5. Click the ***OK*** command button to accept.

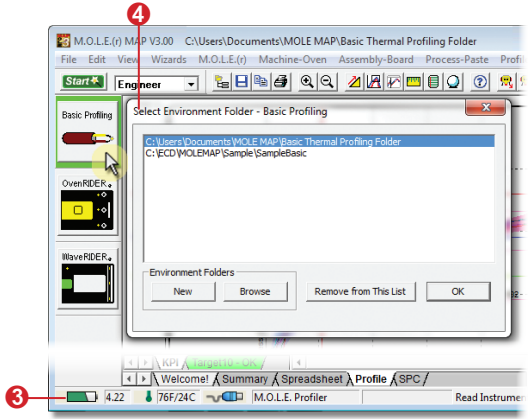
This operation procedure guides you through a typical process on how to set a M.O.L.E. thermal profiler up for performing a data run. For additional detail, consult the Help System in the software.

The M.O.L.E. thermal profiler depends on the MAP (Machine-Assembly-Process) software to control how it collects and interprets data. Several kinds of data runs may need to be performed to achieve desired information, or the same data run may be performed repeatedly over time to monitor one process. Either way, each data run must be set up at least once.

The MAP software includes wizards that help you get started quickly, even if you are a beginner or infrequent user.

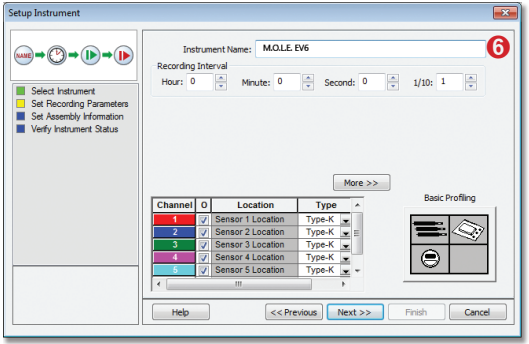
STEP 1: SETUP INSTRUMENT

1. Open the M.O.L.E. MAP software.
2. Connect the M.O.L.E. thermal profiler to the computer.
3. Make sure the M.O.L.E. battery is fully charged. When a M.O.L.E. thermal profiler is selected, the software status bar displays the current battery voltage.
4. Set an Environment. Either open an existing Environment Folder or create a new one.



When navigating through the wizard, the step list on the left of the dialog box uses a color key to inform the user of the progression through the wizard.

- Current
- Completed
- Remaining



5. On the ***M.O.L.E. menu***, select ***Setup Instrument*** and the workflow wizard appears.

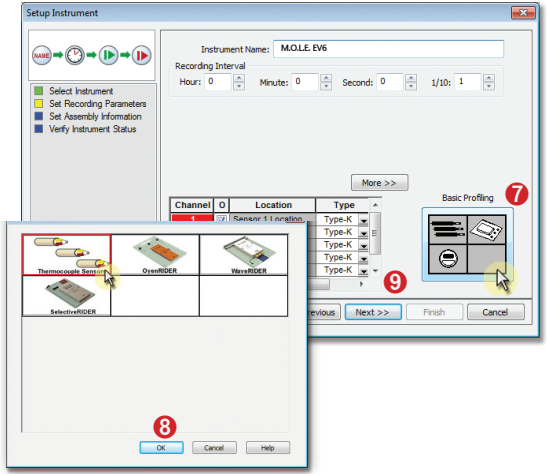
6. Set the ***Instrument Name***.

For settings such as ***Start Parameters*** and ***Stop Parameters***, select the ***More>>*** command button.

7. Select the ***Sensor Platform*** button.

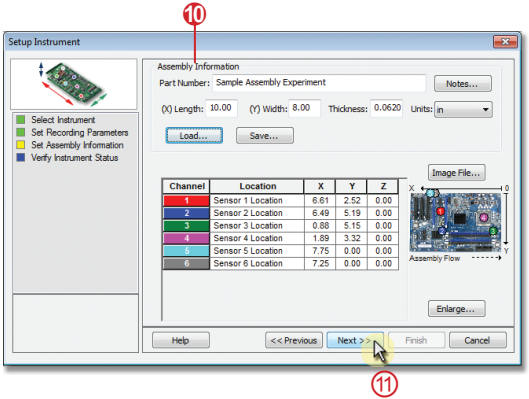
8. Select the desired sensors then the ***OK*** command button to proceed.

9. Confirm the settings and then, select the ***Next*** command button to send the data listed in the dialog box to the instrument.



10. Confirm the assembly information such as the test ***Product Description, size, sensor locations*** and a ***image***.

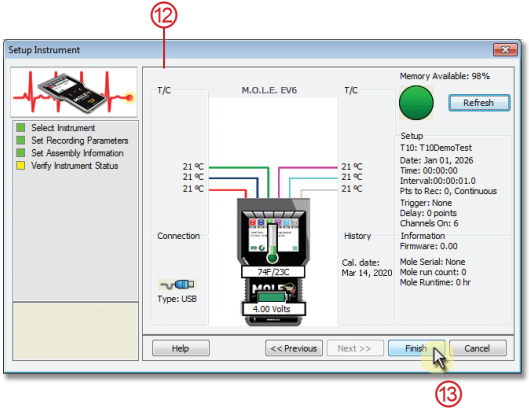
11. Click the ***Next*** command button.



12. Verify the instrument status. This dialog box displays the health of the M.O.L.E. thermal profiler such as battery charge, internal temperature, thermocouple temperatures.

If everything is OK, the dialog box displays a **GREEN** sign. If there are any items that may prevent the user from collecting good data, they are highlighted and a **RED** sign is displayed.

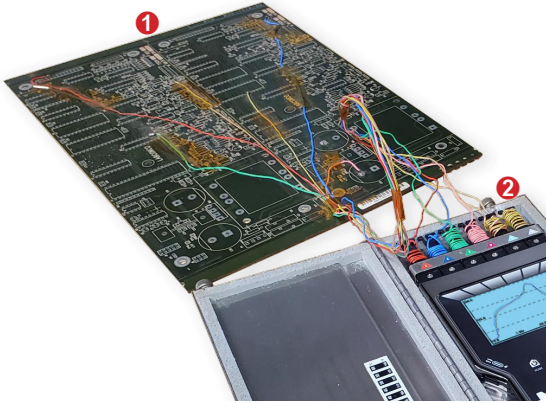
13. Select the ***Finish*** command button to complete the Setup Instrument wizard.



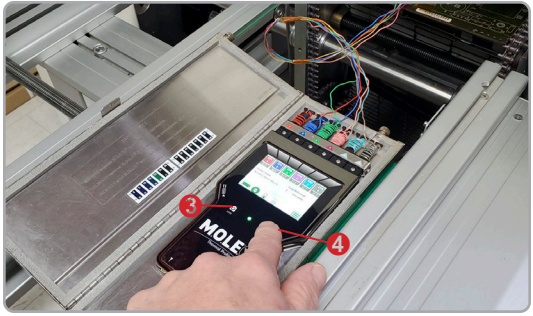
STEP 2: DATA COLLECTION

Never permit the M.O.L.E. thermal profiler to exceed the absolute maximum warranteed internal temperature, as permanent damage may result. The warranty will not cover damage caused by exceeding the maximum specified internal temperature.

1. Attach the thermocouple sensors into the test product. Soldering is the most common method. This process will vary depending on the type of data you are trying to collect.



2. Connect the M.O.L.E. thermal profiler to the sensors.
3. Place the M.O.L.E. thermal profiler in the appropriate thermal barrier and press the “ON” button.
4. Press the “Record” button.
5. Close the thermal barrier making sure the sensor wires do not get pinched and the latch is secure.
6. Pass the thermally protected M.O.L.E. thermal profiler, and test product through the process.



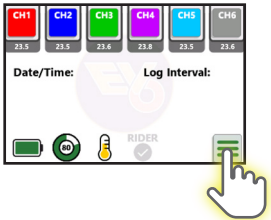
When retrieving the M.O.L.E. thermal profiler and test product use caution as it may be warm.

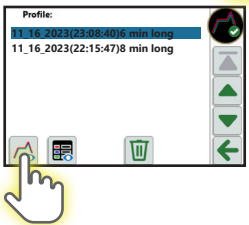
7. As the M.O.L.E. thermal profiler and test product emerge from the process, retrieve the sensors from the test product and lay the thermal barrier on a table or flat surface.
8. Open the thermal barrier and if the Record button is still flashing this means the M.O.L.E. thermal profiler is still logging and it should be stopped.
9. Remove the M.O.L.E. thermal profiler from the thermal barrier and wait a few minutes for it to cool. Handle it carefully, as the case may still be warm.
10. Disconnect M.O.L.E. thermal profiler from the sensors and place it near the PC that has MAP installed.

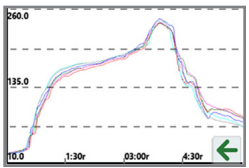
If sensors are removed before the M.O.L.E. thermal profiler has stopped collecting data, it may cause the data to become distorted.

STEP 3: VIEW DATA

1. Turn ON the M.O.L.E. thermal profiler by pressing the ON/OFF button.
2. From the ***Home Screen***, press the ***Main Menu*** button.
3. Press the ***Select Profile*** button.
4. Select the desired thermal profile from the list.
5. Press the ***View Profile*** or ***View KPI*** button.

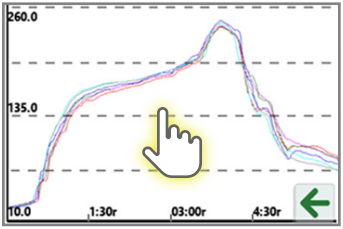


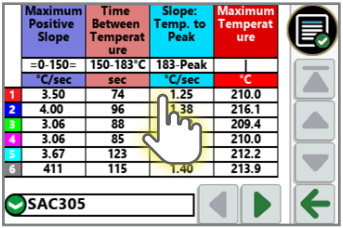




When viewing a thermal profile or KPI table, you can touch the screen to toggle between views.

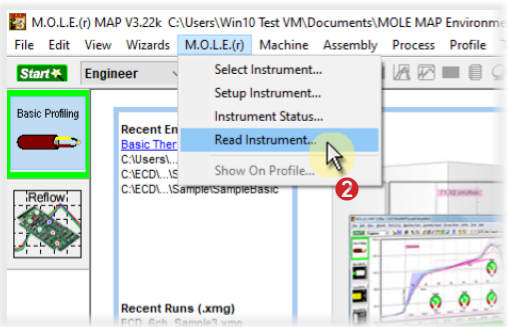
To view the thermal profile KPI data, a table must be uploaded using MAP software. Refer to the Help System in MAP. When viewing a KPI table, you can select the desired KPI table that has been uploaded from the selector at the bottom of the screen.





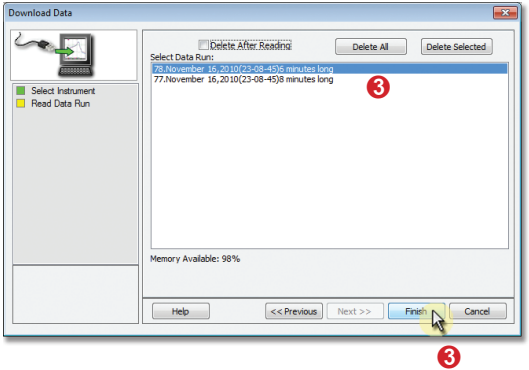
STEP 4: DOWNLOAD DATA

1. Connect the M.O.L.E. thermal profiler to the computer and open MAP software.
2. Select the ***Read Instrument*** command from the ***M.O.L.E.*** menu and the workflow wizard appears.



3. Select the desired data run from the memory list and then click the ***Finish*** command button to complete the wizard and read the data run from the M.O.L.E. thermal profiler.

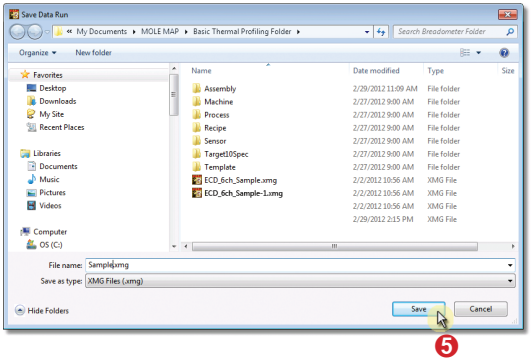
If a data run (*.XMG) is saved in a different Environment folder other than the currently selected, the software automatically activates the new Environment folder. This process does not delete any data run files in the previously set Environment folder and can be quickly accessed using the recent Environment folders on the File menu or Welcome Worksheet.



4. When the data run has been downloaded, the software will prompt the user to name and save the data run file (***.XMG**).

To prevent data loss, it is recommended that data run files (*.XMG) are not saved in the M.O.L.E. MAP Sample Environments. Your Environment Folders should be in locations such as ***Libraries>Documents***.

5. The information is automatically saved in the data run file (***.XMG**) and the experiment data can now be analyzed with the software tools.



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