Elitech®

Innovation Preceding All

LMG-10 User Manual
Intelligent Digital Manifold

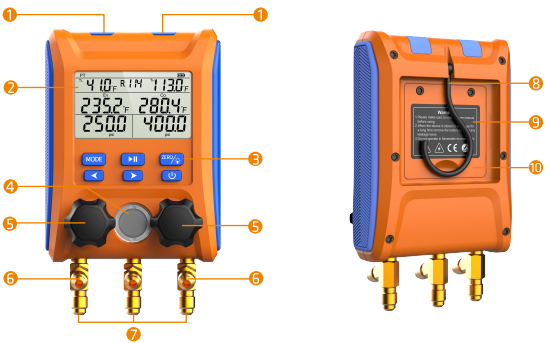
1. Product Description

1.1 Brief Introduction

Thank you for your purchase of Elitech LMG series digital manifold device,Please read this manual carefully prior to using the product to avoid any misuse of the product that might be harmful to the user and the product.

LMG series manifold device integrate the functions of pressure and temperature measurement, vacuum measurement and pressure holding test, providing more abundant data for users to analyze and diagnose, and improving on-site work efficiency. Adopting solid plastic shell, combined with durable elastomer buttons and large backlight LCD screen, the product can be better protected, and the data can be displayed more clearly.

1.2 Overview



1. Temperature probe interface	2. LCD screen
3. Control button (see 1.3 for button functions)	4. Sight window
5. Valve control valve	6. Refrigerant hose bracket
7. Refrigerant hoses connection interface (1/4SAE)	8. Hook
9. Warning label (built in magnet,do not remove the label)	
10. Battery compartment (3 AA replaceable batteries)	

1.3 Button Function

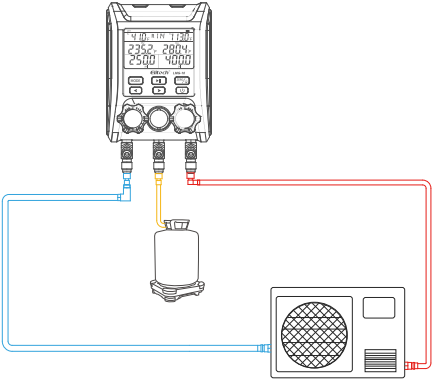
Power Button	Power on/off
MODE Mode	1. Short press: Switch sub mode of pressure and temperature measurement interface 2. Long press: Enter the setting interface
ZERO Backlight/Zero	1. Short press: Turn backlight on/off 2. Long press: The data is cleared, and the air pressure is zeroed to standard air pressure
Start/Pause	In the pressure holding mode,open/close the pressure holding state
Back/Forward	1. Pressure and temerature interface-Circularly switch refrigerant types (short press slow forward, long press fast forward) 2. Unit setting interface-Switch unit
MODE + Combined Buttons MODE + Combined Buttons	Switch the three main modes of pressure and temperature measurement, vacuum measurement and pressure holding test
ZERO + Combined Buttons ZERO + Combined Buttons	Adjust the backlight (backlight is divided into one、two、three levels)

1.4 Specification

Characteristic	Parameters
Measuring Range	Pressure: -14.5~800 psi Temperature: -40~302°F/-40~150°C
Accuracy	Pressure: ±0.5% FS Temperature: ±0.9°F/±0.5°C
Resolution	Pressure: 0.5psi Temperature: 0.2°F/0.1°C

Units	Pressure: psi、kg/cm²、kPa、MPa、bar Temperature: °F/°C
Types of Refrigerants	88 Types
Power Supply	3 AA batteries
Display	Full view LCD
Battery life	200H
Working Temperature Range	14~122°F/-10~50°C

2. Quick Start Guide



1. Press the ⏻ button to turn on the device.
2. Enter the PT interface for pressure and temperature measurement and press ◀ or ▶ to select refrigerant.
3. Connect the high and low pressure sides of the product to the system.
4. Connect the temperature clamp to the product and the system hose at the same time.
5. The system pressure, temperature, saturation temperature, superheat and subcooling degree and other parameters are monitored in real time.

3. Operation Instructions

3.1 Measurement Preparation

1. Connect the temperature probe.

⚠ *The temperature probe should be connected to the product before measurement, and the probe will be automatically recognized after the product is turned on.*

2. Press the power button to turn on, and enter the main interface [FIG.1] .

3. Zero calibration of pressure sensor (long press ZERO button to zero calibration).

⚠ *The pressure sensor shall be zeroed before each measurement.*

⚠ *Before resetting, be sure to cut off the connection between the device and any pressure source and keep it in balance with the external pressure.*

4. Connect the refrigerant hose.

⚠ *The low-pressure side refrigerant hose (blue) and the high-pressure side refrigerant hose (red) are respectively connected with the device, and the refrigerant hoses are connected to the tested system.*

5. Set the refrigerant (press ◄ or ► to select the required refrigerant).

⚠ *Refrigerant can only be switched in saturation temperature sub mode.*

3.2 Pressure and Temperature Measurement Mode

1. Read the data after refrigerant setting is done, the interface [FIG.1] displays the measured pressure, temperature, saturation temperature and evaporation temperature at high and low pressure sides.

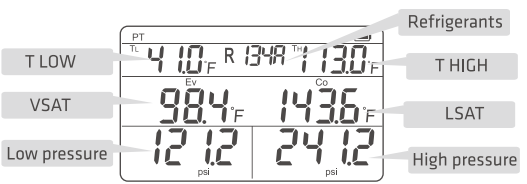


FIG.1 Diagram of Saturation Temperature Sub Mode

2. Short press the MODE key to enter the sub mode of superheat and subcooling, the interface [FIG.2] displays the measured pressure, temperature, superheat and subcooling values at the high and low pressure sides.

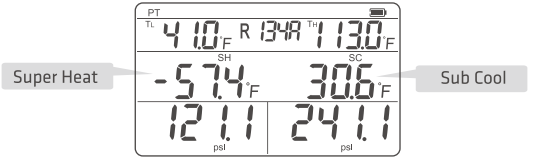


FIG.2 Diagram of Superheat and Subcooling Sub Mode

3. Short press the MODE button to enter the temperature difference sub mode, The interface[FIG.3]displays the measured pressure, temperature and temperature difference values at the high and low pressure sides.

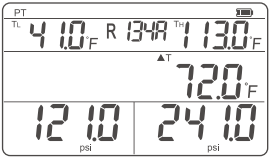


FIG.3 Diagram of Temperature Difference Sub Mode

3.3 Vacuum Measurement Mode

1.Connect the refrigerant hose on the high-pressure side to the tested system and open the high-pressure valve.

⚠ *The high-pressure side channel is the vacuum test of the system.*

2.Press the MODE + ➤ combination buttons briefly in PT mode to enter the vacuum test VAC interface.

3.The product connects the vacuum pump and the tested system.

4.Start the vacuum pump to extract the pressure in the system.

⚠ *When the pressure in the system is lower than atmospheric pressure (i.e. the pressure display is less than 0), the system vacuum degree is displayed; otherwise, - - - - is displayed.*

5. The interface [FIG.4] displays the current pressure value of the system, the vacuum degree of the system and the timing of entering the interface .

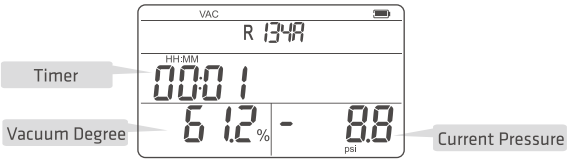


FIG. 4 Vacuum Test Interface

3.4 Pressure Holding Test Mode

1. Connect the refrigerant hose on the high-pressure side to the tested system and close the high-pressure valve.

⚠ *The high-pressure side channel is the pressure holding test of the system.*

2. Press the MODE + ➤ combination buttons briefly in VAC mode to enter the HOLD interface of pressure holding test.
3. Press the ▶II button briefly to start the pressure holding test (the ■ icon is displayed), and the timer starts at the same time [FIG.5].

⚠ *The timer counts every minute.*

⚠ *After the start of pressure holding, the initial value is displayed in the low pressure area and the current value is displayed in the high pressure area.*

4. After the pressure holding test is carried out for a period of time, press the ▶II button briefly to terminate the test (the ▶ icon is displayed)[FIG.6].
5. Check the test data and analyze the system leakage.

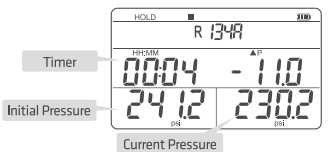


FIG.5 Start the Pressure Holding Test Interface

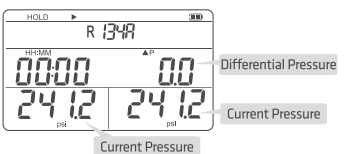


FIG.6 Stop the Pressure Holding Test Interface

3.5 Unit Setting

1. Press the MODE button for a long time in any mode interface to enter the unit SET interface [FIG.7].
2. Press the ◄ button or ► button briefly to switch the temperature unit.

⚠ *If only the temperature unit needs to be set , long press MODE button after performing step 2 to exit the setting.*

3. Press MODE button in the setting interface to set the pressure unit [FIG.8].
4. Select the pressure unit by pressing ◄ button or ► button.
5. After selecting the unit, long press the MODE button to exit the setting.

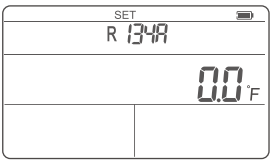


FIG. 7 Temperature Unit Setting Interface

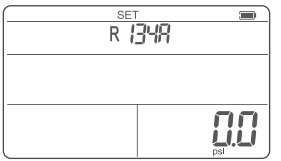


FIG. 8 Pressure Unit Setting Interface

3.6 Automatic Shutdown Settings

1. In any mode, long press the MODE button to enter the unit SET interface.
2. Short press the MODE button twice to switch to the automatic shutdown setting [FIG.9].
3. Press ◄ button or ► button briefly to set the automatic shutdown time (5, 10, 15, 30, or 60 min)[FIG.10].

⚠ *oFF means to turn off the automatic shutdown function, and on means to turn on the automatic shutdown function.*

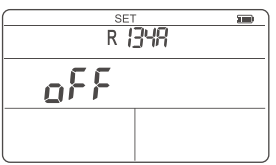


FIG. 9 Automatic Shutdown Interface

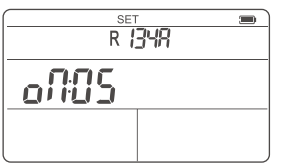


FIG. 10 Automatic Shutdown and Opening Interface

3.7 Temperature Compensation Setting

1. In any mode, long press the MODE button to enter the SET interface.
2. Short press the MODE button three times to switch to the temperature compensation setting [FIG.11].
3. press ◄ button or ► button to open or close temperature compensation function.

⚠ oFF : *Close temperature compensation* oN : *Open temperature compensation*

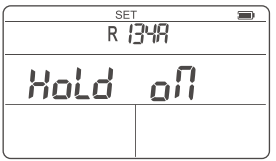
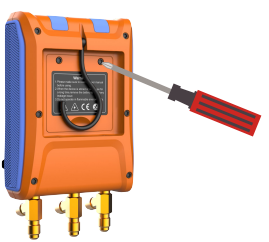


FIG. 11 Temperature Compensation Setting Interface

4. Maintenance

4.1 Battery Replacement

1. Turn off the device.
2. Loosen the battery cover screws and remove the battery cover.



3. Take out the empty battery and put a new battery in the battery compartment.

⚠ *The battery model is 3 AA batteries. Pay attention to the battery polarity.*

4. Install the battery cover and tighten the screws.

⚠ *Please take out the battery when storing or not using the product for a long time, so as to avoid the battery leakage corroding the product.*

4.2 Cleaning Products

1. If the instrument housing is dirty, please clean it with a damp cloth.

⚠ *Do not use highly corrosive detergents or solvents to clean products.*

2. Keep the threaded joint of refrigerant hose clean and free of grease and other deposits.

4.3 Replace the refrigeration hose regularly

If the device falls or is subjected to other mechanical loads, the hose may be partially damaged. It is recommended to replace the refrigeration hose with a new one.

5. Tips and Help

5.1 Problems and Solutions

Problems	● Possible causes ● Solutions
Power display is flashing	● Battery is running out ● Replace battery
Automatic shutdown	● The battery is out of power ● Replace battery
The temperature display - - - -	● The temperature clamp is not connected, or the temperature exceeds the minimum range limit ● Connect the temperature clamp or keep the temperature within the allowable range
The temperature display area displays - OL -	● The temperature is higher than the allowable range ● Remains within the allowable range
The pressure display area displays - OL -	● The pressure exceeds the allowable range ● Remains within the allowable range

5.2 Symbol Description

Symbol	Meaning
PT	Pressure and temperature measurement
TL	Measured temperature on low-pressure side
TH	Measured temperature of high-pressure side
ΔT	|THIGH-TLOW|
EV	Evaporation temperature
CO	Condensation temperature
SH	Superheat degree
SC	Supercooling degree

Symbol	Meaning
VAC	Vacuum measurement
HH: MM	Timer
HOLD	Pressure holding measurement
ΔP	|Pc-Pi|
SET	Unit setting
oFF	Automatic shutdown function is off
oN	Automatic shutdown function is on
■	Turn off the pressure holding function
▶	Turn on the pressure holding function