

DIGITAL MANIFOLD PRESSURE TESTER (Air conditioning diagnostic equipment)

USER MANUAL



1. Overview

This intelligent instrument is an auxiliary instrument for the installation, testing and maintenance of refrigeration equipment such as air conditioners and cold storage. The instrument has two-way pressure test, digital color screen display, multi-unit conversion, multi-mode function and built-in 92 kinds of refrigerants database.

Solid housing with high-strength engineering plastics ensures the instrument's durability. Built-in 32-bit digital processing unit and high-precision data acquisition unit enhance calculation ability and stability. Large size color screen and backlight make test result clear to read even if operated in dark environment. Also long-life valve switch and 1/4 inch standard inlet ensure its durability and versatility.

The instrument can measure double pressure (gauge pressure) simultaneously with automatic multi-unit pressure conversion, automatic temperature Celsius / Fahrenheit conversion, to facilitate different needs. Built-in 92 kinds of refrigerant pressure-evaporation temperature database makes test reading clear and accurate during operation. It also tests percentage of vacuum, pressure leak with data logging. It is deserved to have this multifunctional, accurate and simply operated digital manifold let you do the job right.

2. Safety Rules And Precautions

This manual includes the use of instrument instructions and warnings for safe operation and maintenance. Failure to use the meter in accordance with the manual may damage the instrument.

- 1) The pressure measured is gauge pressure.
- 2) Pressure testing ranges from -101Kpa to 6Mpa (-1.01bar to 60bar).
- 3) The limit pressure is 10 Mpa (100 bar).
- 4) The maximum operating pressure of standard hose is 600 PSI (approximate 4.13 Mpa, 41.3 bar). The limit explosion pressure is 3000 PSI approximate 20.68 Mpa, 206.8 bar).
- 5) Please confirm the rated pressure value of the tested equipment before testing. Do not use it if the range of the instrument exceeds.
- 6) Do not use and store the instrument in high temperature, high humidity, flammable, explosive and strong electromagnetic fields.
- 7) Please do not modify the instrument's internal circuit, to avoid any damage of it or danger occurring to user.
- 8) Please wear qualified protective equipment to protect user during testing.
- 9) Please use the instrument in a well-ventilated field to prevent inhalation of toxic gases.

3. International Electrical Symbols

	DC
	AC
	DC/AC
	warning
	dangerous voltage (electric shock)
	earth
	double insulation
	fuse
	battery

4. Product Specifications

Pressure test: gauge pressure
 Pressure test unit: Kpa; Mpa; bar; inHg; PSI.
 Pressure test range: 0 Kpa - 6000 Kpa
 Pressure test resolution: 1 Kpa
 Pressure test accuracy: +/- 0.5%(FS)+ 5dgt
 Pressure overload limit: 10000 Kpa (10 Mpa; 100 bar;)

Vacuum test: relative vacuum
 Vacuum test unit: Kpa; Mpa; bar; inHg; PSI.
 Vacuum test range: -101 Kpa - 0 Kpa
 Vacuum test resolution: 1 Kpa

Built-in 92 kinds of refrigerant NIST:

◆ According to American NIST standard

R11	R113	R114	R115	R116	R12	R123	R124	R125	R1270
R13	R134A	R14	R141B	R142B	R143A	R152A	R170	R21	R218
R22	R227EA	R23	R236FA	R245CA	R245FA	R290	R32	R401A	R401B
R101C	R402A	R402B	R403A	R403B	R404A	R405A	R406A	R407A	R407B
R407C	R410D	R407E	R408A	R409A	R409B	R11	R110A	R410B	R411A
R411B	R412A	R413A	R414A	R414B	R415A	R415B	R416A	R417A	R418A
R419A	R420A	R421A	R421B	R422A	R422B	R422C	R422D	R423A	R424A
R425A	R426A	R427A	R428A	R438A	R448A	R449A	R452A	R50	R500
R501	R502	R503	R504	R507A	R508A	R508B	R509A	R600	R600A
R744 (CO2)	R1234								

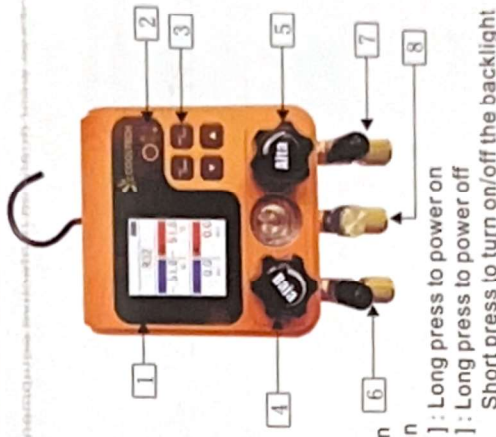
Remark 1 : R744 (CO2) maximum test range is 50 bar

Remark 2 : R717 and other Ammonia refrigerants are not allowed to be tested

Power Supply: 3 X 1.5V (SIZE AA / LR6)

Dimensions: 165*110*60mm weight: 800g

5. Product Icon And Description



- 1) Color Screen
- 2) Power Button
[OFF status] : Long press to power on
[ON status] : Long press to power off
Short press to turn on/off the backlight
- 3) Functional Buttons
FN/ZERO : Long press to zero pressure reading
UNIT/ °C °F : Long press to switch modes
Short press to convert °C °F
▲ ▼ : Select refrigerant under mode
[Refrigerant Filling And Pressure Inspection]
Run/Stop leak test under mode
[Pressure Leak Test]

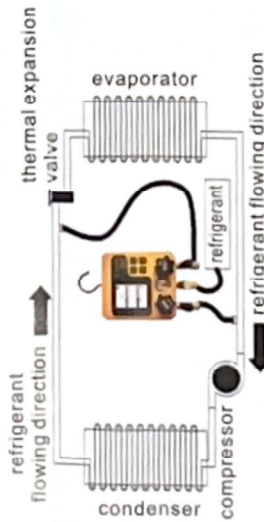
- 4) Low Pressure Valve
- 5) High Pressure Valve
- 6) 1/4 inch Low Pressure Inlet
- 7) 1/4 inch High Pressure Inlet
- 8) Refrigerant Inlet/Vacuum Pump Inlet

6. Function Instructions

6-1. Refrigerant Filling And Pressure Inspection

- A. Turn off the blue valve and red valve.
- B. Power on the instrument. Then make sure if the LCD displays pressure test status. If not, press the [FN/ZERO] button to switch it.
- C. Press [UNIT/°F] button to select unit. Press [▲▼] button to select tested refrigerant.

- D. When the instrument is turned on, there may be 10 digits in the high and low pressure display area. At this time, long press [FN/ZERO] button until it returns to zero.
- E. Connect the instrument to the refrigeration system according to the chart below. (pay attention to the direction of the refrigerant flowing!!!!)



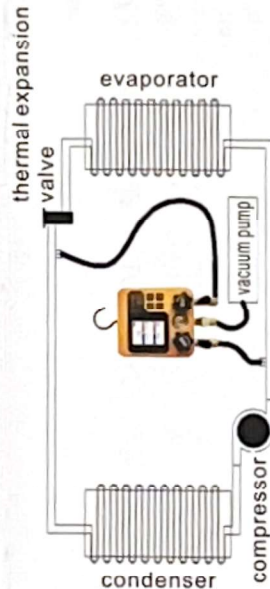
- F. Turn on the refrigerant valve.
- G. When the refrigeration system stops, turn on the high pressure valve (red valve) and fill with a certain amount of refrigerant and then shut the valve quickly.
- H. Run the refrigeration system, turn on the low pressure valve (blue valve) to fill up the refrigerant. Vacuum operation is required if it is filled initially or in full with refrigerant. Refer to the section on Vacuum Operation.
- I. After the filling is completed, shut the low pressure valve (blue valve) and refrigerant valve. Let the refrigeration system running.
- J. Shut down the refrigeration system, make sure all valves are turned off, then disconnect the instrument between refrigeration system and source. Do not remove the high pressure valve connection until the pressure drops to the safe point. Then turn off the instrument.

Note: The filling operation of different equipment or refrigerants may vary. Please read carefully the relevant specific operation requirements for filling operation, so as to avoid damage to user or equipment caused by improper operation!!

- ◆ The instrument can display the corresponding Evaporation Temperature (EV) and Condensation Temperature (CO) during the refrigerant pressure test.

6-2. Vacuum Operation

- A. Turn off the blue valve and red valve.
- B. Power on the instrument. Then make sure if the LCD displays vacuum test status as below picture. If not, short press the [FN/ZERO] button to switch it.
- C. Press [UNIT/°F] button to adjust the reading unit.
- D. When the instrument is turned on, there may be 10 digits in the high and low pressure display area. At this time, long press [FN/ZERO] button until it returns to zero.
- E. Connect the instrument to the refrigeration system according to the chart below. (pay attention to the direction of the refrigerant flowing!!!!) (Connected clamp-on temperature probes will not affect the operation...)



- F. Turn on the blue valve and red valve, and start the vacuum pump.
- G. After the vacuum operation is completed, turn off the blue valve and red valve, then shut the vacuum pump. At this time, pressure leak test mode can be used to check leakage in the system (Please refer to 6-3. Pressure Leak Test).

6-3. Pressure Leak Test

- A. The instrument is powered on with the blue and red valves turned off.
- B. Short press the [FN/ZERO] button to select pressure leak test mode. The current pressure value is displayed at pressure reading area of screen.

- C. Press the [▲▼] button to start or stop leak test recording.

At this time, the lower left corner records the initial pressure value; the lower right corner shows the instantaneous pressure value; the "ΔP" display area shows the difference between initial pressure value and instantaneous pressure value.

The time display area shows how long the leak test lasts in the format of Hour : Minute (HH:MM). Different test units can be converted by short pressing the [UNIT/°F] button.

- D. Press [▲▼] to stop pressure leak test.

7. Common Problems

7-1. Low battery power supply

The instruments has low power sign. When it is displayed, it means the battery power is insufficient. At this time, the battery should be replaced as required in order to avoid affecting normal use.

7-2. Damaged refrigerant hose or valve stem

Please check the pipe fittings, and the hoses before testing. Once any damage is found, please replace it immediately to avoid improper use or any accident occurring.

7-3. Failure of refrigerant filling

There is a valve core in the refrigerant inlet of the refrigeration system. When connecting the instrument, pay attention to the two terminals of the hoses. Connect one terminal with a core to the refrigeration system, while another terminal without a core to the instrument.

7-4. Potential leak points

- ◆ Every hose terminal comes with a nylon pad that is limited a certain life of using. Over use or other situation will make it defective, which result in leakage.
- ◆ The instrument refrigerant inlet (the middle port of the instrument) has a port with valve core, which is used to vent the air in the hoses after connecting the refrigerant to the instrument. The port is equipped with a copper plug screw. It is required to tighten it every time before or after operation.
- ◆ Check the refrigeration system's pipes and connectors.