DMG-4B Digital Manifold Gauge
User Manual
1 Product Description

1.1 Introduction

You are welcome to purchase **Elitech DMG** series digital manifold gauges. Please read this manual carefully before use to avoid harm to you and your products caused by illegal operations.

DMG-4B series digital manifold gauge integrates pressure temperature mode, pressure holding mode, vacuum mode and data recording mode into one. It is suitable for daily inspection and maintenance of refrigeration and heating ventilation systems to help users provide more real and accurate data, greatly improve the user's on-site work efficiency, and can completely replace the existing mechanical meter valves. At the same time, it supports APP to view reports and data analysis, real-time update of commonly used refrigerants, and remote firmware upgrades to continuously improve product user experience.

Note: The pressure holding mode, vacuum mode, and data recording mode need to be used after purchasing a package through the APP. For the purchase method, see 4.4 of this article.

1.2 Overview
1.3 Safety Instructions

1. This product is not suitable for the maintenance of ammonia (ammonia-containing) refrigerant system.
2. This product contains a battery inside. Do not place the product in a high-temperature environment or put it in a fire, otherwise there is a danger of explosion.
3. Do not use this product in thunderstorm weather, so as not to be struck by lightning, endanger life and damage the product.
4. Strictly abide by the safety precautions of the refrigeration system.
5. When using this product, please wear goggles and protective gloves. Before connecting to the system, carefully read the maintenance manual of the system unit for maintenance operations.
6. If you find that the product is damaged, please contact us in time. It is strictly forbidden to disassemble the product without permission, otherwise the product may be further damaged, and the battery may catch fire or even explode in serious cases.

14 Environmental protection

1. Comply with the local environmental protection policy. Refrigerants cannot be directly discharged into the atmosphere, and professional equipment must be used for recycling.
2. At the end of the service life of the product, please recycle it according to local regulations, and do not discard it at will to avoid environmental pollution.
3. Send the scrapped old battery to the specified waste battery collection point.

### 15 Key Functions

<p>| | |</p>
<table>
<thead>
<tr>
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</tr>
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</table>
| ![Long press: power on/off](image1) | **1** Long press: power on/off  
**2** Short press: turn on/off Bluetooth |
| ![Long press: enter the setting interface](image2) | **1** Long press: enter the setting interface  
**2** Short press: switch the setting options in the setting interface |
| ![Short press: switch refrigerant type](image3) | **1** Short press: switch refrigerant type  
**2** Long press: data zero calibration, (air pressure zero calibration range: 1-100psi) |
| ![Short press: switch the type of refrigerant](image4) | **1** Short press:  
① Switch the type of refrigerant  
② The holding pressure interface opens the holding pressure state  
**2** Long press:  
① The pressure holding interface ends the pressure holding state  
② Exit the display interface of the holding pressure data result |
| ![Switch measurement mode](image5) and simultaneously press | Switch measurement mode |
| ![Press and hold for 3 seconds to unlock and select the refrigerant state](image6) and simultaneously press | Press and hold for 3 seconds to unlock and select the refrigerant state  
Note: After unlocking, the refrigerant starts to flash, at this time, the refrigerant can be switched, and the refrigerant is automatically locked after 10 seconds |
## 1.6 Specifications

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Range</td>
<td>-14 ~ 800 psi</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±1% FS</td>
</tr>
<tr>
<td>Resolution</td>
<td>1 psi</td>
</tr>
<tr>
<td>Unit</td>
<td>Pressure: psi, kg/cm², kPa, MPa, bar, inHg Temperature: °C, °F</td>
</tr>
<tr>
<td>Refrigerant Type</td>
<td>The device defaults to 18 types, which can be updated through the APP</td>
</tr>
</tbody>
</table>
| Alternative Refrigerants | Device default type:  
R11 R12 R13 R22 R290 R32 R134a R404A R410A R407C  
R408A R409A R458A R448A R449A R500 R502 R600  
App support types:  
R11 R13 R14 R15 R16 R12 R123 R1233zd R1234yf  
R1234ze R124 R125 R13 R134a R14 R141b R142b R143a  
R152a R161 R170 R21 R21B R22 R227EA R23 R236EA  
R236fa R245fa R290 R32 R40 R401A R401B R40 IC  
R402A R402B R403A R403B R404A R405A R406A  
R409B R41 R410A R410B R411A R411B R412A R413A R414A  
R414B R415A R415B R416A R417A R417B R417C R419A  
R419B R420A R421A R421B R422A R422B R422C R422D  
R422E R423A R424A R425A R426A R427A R428A R429A  
R430A R431A R432A R433A R433B R433C R434A R435A  
R436A R436B R437A R438A R439A R440A R441A R442A  
R443A R444A R444B R445A R446A R447A R448A  
R449A R449B R450A R451A R451B R452A R452B R452C  
R453A R454A R454B R454C R455A R456A R457A R458A  
R50 R500 R502 R503 R504 R507A R508A R508B R509A  
R510A R512A R514A R600 R600a R601a R717 R71B  
R720 R728 R732 R740 R744  
Note: The actual supported refrigerant types are subject to APP  |
| Interface             | 1/4 SAE*3                                                                 |
| Power Supply          | 2 x 15V, AAA batteries  
Battery life: 200H (display with screen backlight off)  |
<table>
<thead>
<tr>
<th>Display</th>
<th>LCD screen</th>
</tr>
</thead>
</table>
| Product Parameters      | Size: **110 x 75 x 135mm**  
                          | Weight: about 700g          |
| Environmental Requirements | Working temperature: 14~122°C/-10~50°C  
                              | Storage temperature: -4~140°F/-20~60°C          |
| Supported Languages     | English, Chinese |

### 2 Quick Operation Guide

1. Long press the power button to turn on the device.
2. Enter the pressure and temperature measurement interface, press and at the same time for 3 seconds to unlock the refrigerant.
3. The refrigerant flashes, short press or select the desired refrigerant.
4. Connect the high and low voltage sides of the product to the system under test.
5. Turn on the system under test, and at this time, the system pressure and saturation temperature parameters can be monitored in real time.
3 Operation steps

3.1 Measurement Preparation

1. Press the power button to turn on the device and enter the main interface.
2. Calibrate the pressure sensor to zero (long press to zero).
3. Perform zero calibration of the pressure sensor before each measurement (zero calibration range: 1-100psi).
4. Before zeroing, be sure to cut off the connection of the instrument with any pressure source, and keep it balanced with the external pressure.
5. Connect the refrigerant hose.
6. The low-pressure end refrigerant pipe (blue) and the high-pressure end refrigerant pipe (red) are respectively connected to the instrument and connected to the system under test.
7. Set the refrigerant, (long press + unlock, then short press or switch the refrigerant type).

3.2 Pressure Temperature Measurement Mode (PT)

After the refrigerant setting is completed, read the system data, and the interface (Figure 1) displays the measured pressure value, evaporation temperature value and condensation temperature value of the high and low pressure sides.

![Figure 1 Pressure temperature mode](figure1.png)
3.3 Pressure Holding Measurement Mode (HOLD)

Note: This function needs to be purchased before it can be used, and the purchase method is detailed in 4.4 of this article.

1. Connect the high-pressure side refrigerant hose to the system under test, and close the high-pressure valve.

⚠️ The high-voltage side channel is the system pressure-holding test terminal.

2. Enter the holding pressure test: press the and button at the same time, the upper left corner of the window displays HOLD (Figure 2).

![Figure 2: Enter the holding pressure test interface](image)

3. Set the pressure holding parameters:
   - Pressure alarm value: When the current pressure value reaches the target pressure holding value, the device will alarm, and the pressure holding can be started at this time.
   - Decay ratio: adjust the decay ratio, and set the pre-warning value for pressure keeping.
   - Temperature Compensation: Turn on/off the temperature compensation switch.
   - Pressure hold time: set the hold time.

⚠️ The parameters of this step need to be connected to the APP for setting.
4. System charging: Fill the system with nitrogen. When the pressure reaches the charging warning value, Target area of the device will start to flash and a prompt will sound at the same time.

⚠️ Short press any button to turn off the prompt sound.

5. Start leak test: Click after the device reaches the pressure warning value to start the leak test, and the timer starts counting down (Figure 3).

6. To end the leak test:
   - The test is successful: After the test is successful, the device emits a beep and jumps to the successful result display interface (Figure 4).
   - Test failure: After the test fails, the device emits a beep and jumps to the failure result display interface (Figure 5).
   - Forced to end the test: Press and hold the button to forcibly exit the leak test and jump to the result display interface (Figure 6).

![Figure 3 Pressure hold start interface](image)

![Figure 4 Test success interface](image)

![Figure 5 Test failure interface](image)
3.4 Vacuum measurement mode (VAC)

Note: This function needs to be purchased before it can be used, and the purchase method is detailed in 4.4 of this article.

1. Connect the system to the high pressure side and open the high pressure side valve.

2. Enter the vacuum mode: press the \[\text{mode}\] and \[\text{vac}\] button at the same time, the upper left corner of the window will display VAC.

3. The product is connected to the vacuum pump and the system under test.

4. Turn on the vacuum pump to extract the pressure in the system.

When the pressure in the system is lower than the atmospheric pressure (that is, the pressure display is less than 0), it will display the vacuum degree of the system, otherwise it will display - - - -.

Tip: The instrument has a built-in temperature compensation function, which can perform the air tightness test of the compression system. Leak analysis is performed by measuring system pressure and ambient temperature over a period of time. If the temperature compensation function is not required, it can be turned off in the settings.

Exit the test result interface: long press the button.
5. The interface (Fig. 7) displays the current pressure value of the system, the vacuum degree of the system and the timing of entering this interface.

![Vacuum test interface](image)

Figure 7 Vacuum test interface

Tips: This vacuuming function uses a non-professional vacuum sensor, which can only be used to roughly observe the vacuum state of the system. If you want to accurately measure the vacuum value of the system, please contact our after-sales service to purchase a professional vacuum gauge.

3.5 Offline Recording Mode

The offline recording mode can store data in the device without Bluetooth connection, and then export it for viewing through the APP.

Note: This function needs to be purchased before it can be used, and the purchase method is detailed in 4.4 of this article.

1. Connect the device to the APP and enter Dashboard interface.
2. Click Settings, click Record Function.
3. Recording Interval: Click Record Interval to select the interval time.
4. Start recording: Click to Recording, the recording icon on the device lights up and starts to flash (Figure 8).

⚠️ The device can record up to 3000 pieces of data.
5. End recording: Click to Log off, and the recording icon on the device goes out.
6. Data reading: Click Read historical data and export the data.
7. Data deletion: Click Clear historical data.
3.6 Setup mode

Enter the settings: press and hold, the upper left corner of the window will display SET (Figure 9)

Switch settings: short press

Select setting items: short press or

Exit settings: long press

3.6.1 Unit setting

Pressure unit
1. Go to Settings and select PRESS.
2. Short press 📈 or ⬇ to select the pressure unit.

**Vacuum Unit**
1. Go to Settings and select VAC.
2. Short press 📈 or ⬇ to select the vacuum unit.

**Temperature Unit**
1. Go to Settings and select TEMP.
2. Short press 📈 or ⬇ to switch temperature units.

3.6.2 Automatic Shutdown Setting
1. Go to Settings and select AUTOOFF.
   - The default automatic shutdown time is 15 minutes.
2. Short press 📈 or ⬇ select the automatic shutdown time (OFF, 5, 15, 30, 60min)
   - OFF means turn off the auto power off function.

3.6.3 Language Settings
Go to settings, select LANG.

3.6.4 Temperature Compensation Setting
1. Go to Settings and select TC.
2. Turn on/off the temperature compensation function.
   - The temperature compensation function is enabled by default.

3.6.5 About
1. Go to Settings and select ABOUT.
2. Check the software version number, SN serial number and MAC code.
3. Short press the 📧 or 📧 key to view the SN serial number and APP download QR code.

4 Smart Apps
The DMG series supports Bluetooth wireless connection, and can experience remote viewing of measurement data, recording and exporting data reports, remote firmware upgrades, pressure maintenance alarm reminders and other intelligent functions through the mobile APP.

4.1 APP download
1. "Elitech Tools" in the "APP Store".
3. Scan the QR code to get the APP.
Compatibility: Apple system supports version 11.0 and above, and Android system supports version 5.0 and above.

4.2 APP connection
1. Turn on the product, press a short key, and the Bluetooth icon will flash. [Image]
2. Open "Elitech Tools", click "Search nearby device", connect the product, and enter the interface to view the data.

4.3 User registration
1. Open the "Elitech Tools" APP, and click the icon in the upper left corner of the Home.
2. Enter the Menu and click Login.
3. Select Register to register user information.
4. After the registration is complete, click Add Device on the My Device.
5. Manually enter the SN serial code on the information label on the back of the product or scan the QR code to add the device.
Note: If the information label is lost or damaged, please go to Device SET→ABOUT to check the serial number.
4.4 Value-added services

How to purchase value-added services:
Method 1: Log in the user information, enter My Device page, click the to add devices, and click the device list to purchase items.

Method 2: Connect the device via Bluetooth, enter the Dashboard interface, click Settings, and purchase items in the settings list.

4.5 Personalization of Refrigerant Data
The device defaults to 18 commonly used refrigerants, and customized refrigerant data can be added to the device through the APP. The specific operation steps are as follows:

Delete equipment refrigerant:
1. Connect the device to the APP, enter the Dashboard interface, and click the refrigerant icon in the upper right corner to enter the Refrigerant interface.
2. Select the refrigerant to be deleted, click the delete icon, and click the update icon in the upper right corner after deleting.
3. The device update is complete.

Add refrigerant:
1. Connect the device to the APP, enter the Dashboard interface, and click the refrigerant icon in the upper right corner to enter the Refrigerant interface.
2. Click All, select the refrigerant to be added, and click the favorite icon.
3. After selecting, click Favorite, and then click the update icon.
4. The device update is complete.

4.6 Firmware update
The device can perform remote firmware upgrade through the APP, the operation steps are as follows:
1. Connect the device to the APP and enter the Dashboard interface.
2. Click Settings and select Update Firmware.
3. If the latest firmware needs to be upgraded, the device will enter the upgrade process, and the interface will show that Update... (Figure 10).

Figure 10 Device firmware upgrade
5 Instrument Maintenance

5.1 Replacing the battery

1. Turn off the instrument and remove the battery cover.
2. Remove the low battery and install a new battery in the battery compartment.
   • The battery type is 2 AAA batteries, pay attention to the polarity of the batteries.
3. Install the battery cover.
   • Please take out the battery when storing or not using the product for a long time to avoid battery leakage and corrosion of the product.

5.2 Cleaning Products

1. If the case of the instrument is dirty, please clean it with a damp cloth.
   • Do not use strong corrosive detergents or solvents to clean the product.
2. Keep the threaded interface of the refrigerant hose clean and free from grease and other deposits.

5.3 Problems and Solutions

<table>
<thead>
<tr>
<th>question</th>
<th>possible reason</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>✂ battery indicator flashing</td>
<td>low battery</td>
<td>replace with new battery</td>
</tr>
<tr>
<td>Device automatically shuts down</td>
<td>1. The device has auto-shutdown enabled</td>
<td>1. Turn off the auto power off function</td>
</tr>
<tr>
<td></td>
<td>2. Battery is dead</td>
<td>2. Replace with new battery</td>
</tr>
<tr>
<td>Saturation temperature display area shows - - - -</td>
<td>Saturation temperature exceeds the allowable range</td>
<td>Keep within the allowable range</td>
</tr>
<tr>
<td>Pressure display area shows - OL -</td>
<td>The pressure exceeds the allowable range</td>
<td>Keep within the allowable range</td>
</tr>
</tbody>
</table>