

Making Your Job More Enjoyable

VRM1-XN
Digital Manifold Gauge



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1. Safety Information

Use this instrument only as specified in this manual. Failure to do so may impair the protection provided by the instrument.

Follow these safety guidelines to avoid personal injury or death:

- Most governments and legal authorities require HVAC technicians to be trained and certified in the safe and proper operation of HVAC tools, such as this instrument. Since this tool may be connected to various types of equipment through an unlimited combination of hoses and fittings, proper training is crucial for the safe operation of this tool.
- Read the entire user manual before using the instrument.
- Use the instrument only as described in the user manual. Failure to do so may impair the protection provided by the equipment.
- Do not use the instrument if it is damaged. Before using the instrument, inspect the case for any cracks or loose components.
- The instrument contains no internal, user-serviceable parts. Do not open the instrument.
- Do not use the instrument if it operates abnormally, as this may impair its protection. If in doubt, have the instrument serviced.
- Do not operate the instrument near explosive gases, vapor, or dust.
- The refrigerant database in this unit may include refrigerants classified as flammable. If such refrigerants are selected, the operator may require additional certifications and/or training. Consult your government and legal authority and fully comply with all requirements.
- Always wear eye and skin protection when working with refrigerants. Escaping refrigerant vapors can present a freezing danger. Never direct refrigerant vapors venting from hoses toward the skin.

Warning

This product operates under high pressure. Follow all safety guidelines regarding refrigerant handling including wearing Personal Protective Equipment such as safety glasses, and gloves.

Warning

This product contains a built-in lithium-ion battery.

- Do not disassemble, puncture, crush, or expose the battery to fire, high temperatures, or water.
- Use only the provided or compatible charger specified in the manual.
- Improper handling of the battery may cause fire, explosion, or serious injury.
- Dispose of the product following local regulations. Do not dispose of it with household waste.

2. Product Overview

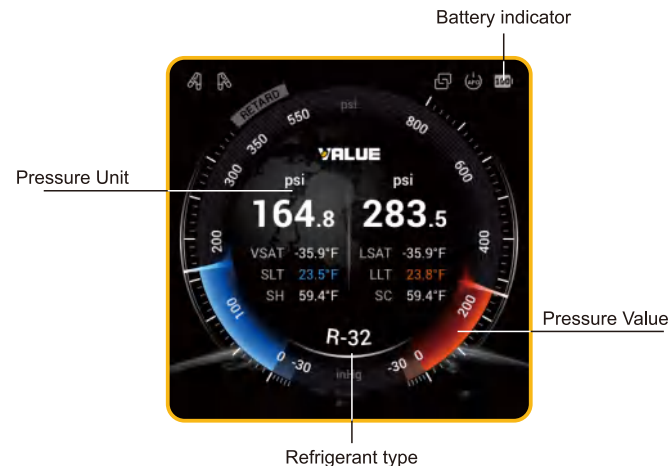


3. Technical Specification

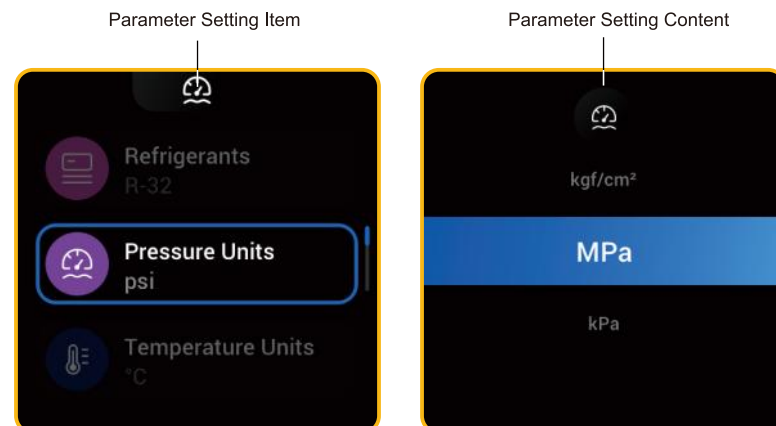
Model	VRM1-XN			VRM1-Xi	
Accessory	/			VMT-1S (Low Side) VMT-2S (High Side)	
Pressure units	MPa, KPa, bar, psi, kgf/cm ²				
Temperature units	°F, °C				
Pressure measurement range	0~50 bar, 0~720 psi, 0~5 MPa, 0~51 kgf/cm ² , 0~5000 Kpa (Relative pressure)				
Vacuum range	-29.9 ~ 0 inHg				
Resolution	0.01 bar	0.001 MPa	1 KPa	0.1 bar	0.01kgf/ cm ²
Discharge temperature	-10 ~ 55°C, ≤75% RH				
Charging temperature	0 ~ 40°C, ≤75% RH				
Battery	3.7V, 3000mAh				
Connection port	7/16"-20 UNF				
Bluetooth connection range	50 m				
100 Refrigerant Types	R-11, R-12, R-13, R-22, R-23, R-32, R-113, R-114, R-115, R-116, R-123, R-124, R-125, R134a, R-236fa, R-245fa, R-290, R-401A, R-401B, R-402A, R-402B, R-403B, R-404A, R-406A, R-407A, R-407B, R-407C, R-408A, R-409A, R-410A, R-413A, R-414A, R-414B, R-416A, R-417A, R-417C, R-420A, R-421A, R-421B, R-422A, R-422B, R-422C, R-422D, R-424A, R-427A, R-428A, R-434A, R-437A, R-438A, R-448A, R-449A, R-450A, R-452A, R-452B, R-453A, R-454B, R454C, R-458A, R-500, R-501, R-502, R-503, R-507A, R-508B, R-513A, R-600, R-600a, R-601, R-601a R-1233zd, R-1234yf, R-1234ze				

4. Screen Display

Main interface:



Parameter setting interface:



High-side and low-side pressure values are displayed as relative pressure (relative pressure = measured pressure – atmospheric pressure).

VSAT: Saturation temperature corresponding to the low-side pressure value for the current refrigerant.

LSAT: Saturation temperature corresponding to the high-side pressure value for the current refrigerant.

T1 SLT: Low-side real-time temperature.

T2 LLT: High-side real-time temperature.

SH: Superheat = T1 SLT – VSAT.

SC: Subcooling = LSAT – T2 LLT.

T1–T2: Temperature difference = T1 SLT – T2 LLT.

Parameter setting items	Parameter setting content
Connect low-side temperature clamp	Pair / Connect / Disconnect / Unpair
Connect high-side temperature clamp	Pair / Connect / Disconnect / Unpair
Refrigerant type	100 types (OTA updatable)
Pressure unit	psi, Mpa, bar, kgf/cm ² , kpa
Temperature unit	°C, °F
Screen timeout	OFF, 2min, 10min, 1H
Auto power-off time	OFF, 10min, 1H
Brightness	0~100%
Firmware information	Version number, Device name, Restore factory settings / Reset to factory defaults
Language	Chinese, English
E-manual	Scan QR code for E-Manual
Theme	Classic theme, Light theme

Daylight Mode Interface:



5. Indicator Icons

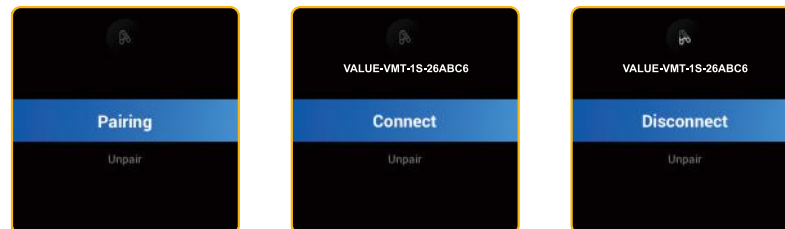
: Auto screen off	: Firmware information
: Auto shutdown	: Language
: Brightness	: E-manual
: High-side temperature clamp	: Mode
: Low-side temperature clamp	

6. Bluetooth connection

Tap **"Pairing"** to start searching for connectable devices in the vicinity. Once Bluetooth pairing is successful, the current name of the device will be recorded.

After that, the device will automatically connect to the paired Bluetooth device. This process will continue. To stop it, tap **"Disconnect"**.

To connect to another Bluetooth device, tap **"Unpair"** to clear the paired Bluetooth device.



7. Pressure Calibration

Pressure dial display:

When the pressure value is greater than 0, the pressure pointer and pressure bar move upward; When the pressure value is less than 0, the pressure pointer and pressure bar move downward.

Pressure calibration:

When open to atmosphere, if the pressure value is not zero, press and hold the knob to perform pressure zeroing.

8. Device Standby/Off

Auto shutdown: The device will automatically shut down when the pressure value reads 0, and the button is not operated. This will occur after reaching the set auto-shutdown time (factory default: 1 hour). In addition, the device will automatically shut down if the battery level is too low.

Auto screen off: If no buttons are pressed, and the pressure value stays at 0. When the set time is reached (factory default: 10 minutes), the device will automatically turn off the screen.

9. Button Function

The power button is on the left side of the device, while the knob button is on the right side.

Power on/off: Press and hold the power button for more than 2 seconds to turn on the device. When the device is on, press and hold the power button for more than 2 seconds to turn it off.

Parameter setting: Click the knob on the main interface to enter the parameter setting interface. You can select the parameter setting items and their contents by scrolling the knob. Click the knob to confirm the selected parameter setting items and contents.

Parameter setting interface:

- (1) The left side of the parameter setting interface displays the current parameter setting. The right side displays the content of the currently set parameter.
- (2) The initial selection cursor is located on the left side. By scrolling the knob up/down, the left parameter setting item will scroll up/down in a circular motion. The right parameter setting content will correspond to the selected option on the left. Click the power button to return to the main interface.
- (3) In the (2) interface, click the knob to select and enter the parameter content interface. Scroll the knob up/down to scroll the parameter content upward or downward in a circular motion.
- (4) In the (3) interface, click the knob to confirm the selected parameter content and return to the (2) interface.
- (5) Click the power button in the (3) interface. The selected parameter content will not be confirmed and will return to the (2) interface.

Reset to factory setting:

- (1) In the Parameter Settings interface, rotate the knob to select "Version Information," then press the knob to enter.
- (2) Within the parameter menu, rotate the knob to select "Resetting to factory settings."
- (3) Press the knob to initiate parameter reset.
- (4) Caution: During the reset process, pressing the power button will cancel the reset operation.



Warning

Restoring factory settings will restart the device and restore all parameter settings and calibration values to factory default configuration.

10. Trouble Shooting

Possible Cause	Remedy
Atmospheric pressure reading not zero when open to atmosphere	Perform a pressure zero calibration operation

11. Maintenance

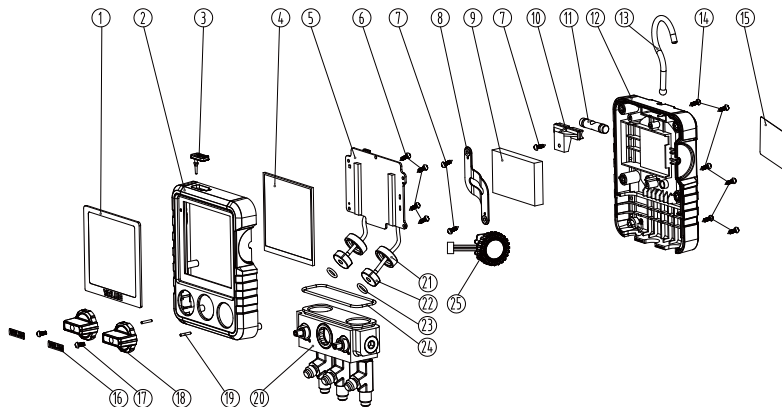
- 1) Avoid charging at high temperatures ($>40^{\circ}\text{C}$) or low temperatures ($<0^{\circ}\text{C}$). High temperatures may cause thermal runaway, while low temperatures may lead to lithium-ion deposition, damaging the battery;
- 2) If you cannot troubleshoot the device yourself, promptly contact the after-sales service center and provide detailed descriptions of the malfunction to professional technicians so they can provide accurate technical support and repair services quickly.

Correct disposal of this product:

This symbol indicates that this product should not be disposed of together with other household waste. To prevent uncontrolled waste disposal that may cause harm to the environment or human health, please use return and collection systems or contact the retailer from whom the product was purchased. They can ensure this product is recycled in an environmentally safe manner.



12. Exploded View

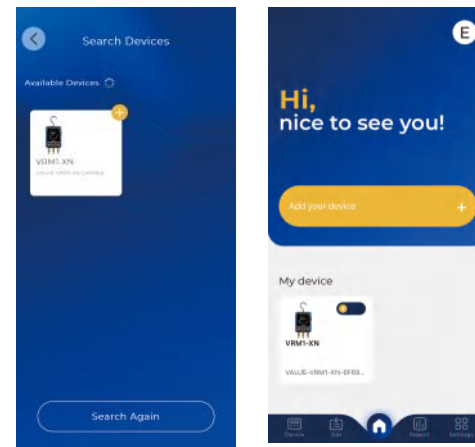


Spare Parts List

No.	Item	No.	Item
1	Lens	14	Screw
2	Rubber plug	15	Rating plate
3	Front housing	16	Knob logo sticker
4	LCD screen	17	Screw
5	PCBA	18	Knob
6	Screw	19	Cylindrical pin
7	Screw	20	Valve body assembly
8	Battery cover	21	Compression nut
9	Lithium-ion polymer battery	22	Pressure sensor
10	Fixing block assembly	23	O-ring
11	Rotating column assembly	24	O-ring
12	Rear housing	25	Knob switch assembly
13	Hook		

13. Page Introduction

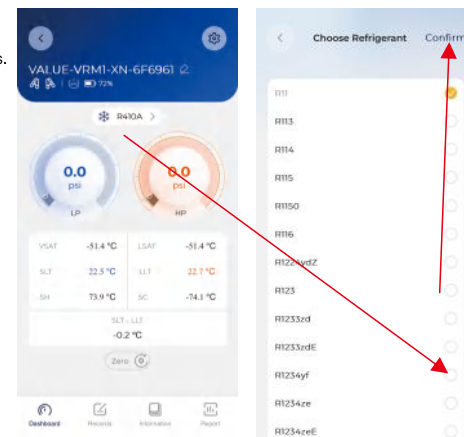
13.1 Add Device and Connect

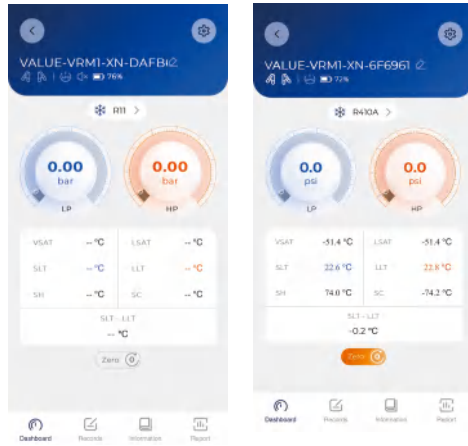


13.2 Device Functions

(1) Manifold Gauge Mode Set Refrigerant Type

The page displays low-pressure and high-pressure side pressure values. Based on the current refrigerant type and pressure values, it calculates and displays refrigerant temperatures VSAT and LSAT. When the digital manifold gauge connects to large/small temperature clamps, the page simultaneously displays temperature values measured by the clamps. It also calculates subcooling and superheat values, eliminating the inconvenience of manual calculations.





Temperature clamp not connected Temperature clamp connected

The digital manifold gauge supports pressure zero calibration. On the app, click the Zero key and confirm by clicking Zero again within 5 seconds to perform zero calibration (if not confirmed within 5 seconds, zero calibration will not occur).



Not clicked

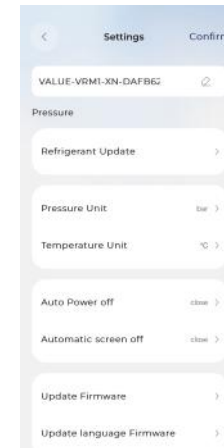


Button illuminated
after clicking

13.3 Unit Settings

The app can set the digital manifold gauge's pressure unit, temperature unit, vacuum unit, vacuum target value, pressure holding target value, and pressure holding time. It can also configure auto-shutdown time, sound, and auto screen-off time according to your preferences.

The history parameters display the most recent three pressure, temperature, and vacuum unit setting records. You can select and reuse historical parameters.



13.4 Chart Recording

Manifold Gauge Mode

Manifold Gauge Mode displays low-pressure side and high-pressure side pressures, refrigerant temperature, temperature clamp measured temperature, superheat or subcooling in real-time. Pull down below the chart to view high or low-pressure side data.

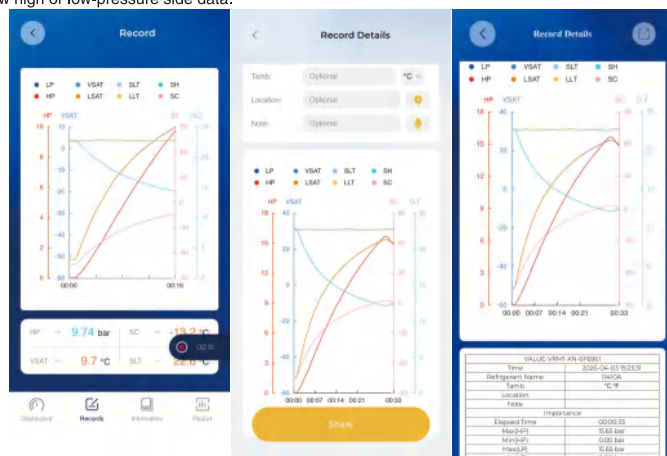


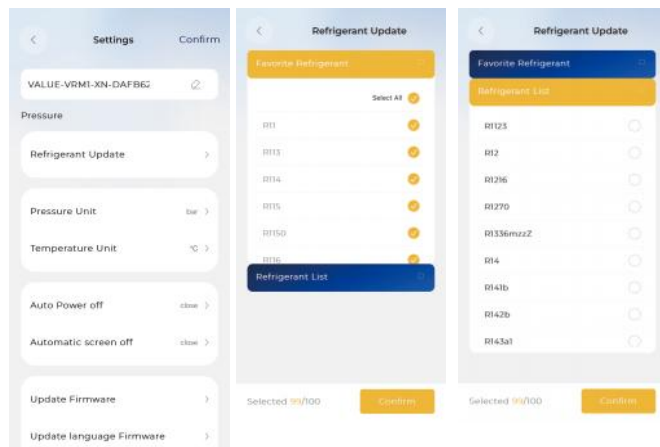
Chart recording in progress

Share record

Saved record data

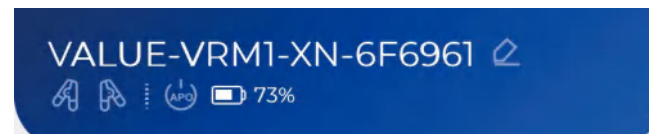
13.5 Refrigerant Update

Features refrigerant update function. Enter the refrigerant update page from the settings page. Frequently used refrigerants display refrigerant types currently in the device, and the refrigerant library shows refrigerants not currently selected in the device. To change the device's refrigerant type, check the desired refrigerants. Do not check refrigerants you do not want displayed in the device.

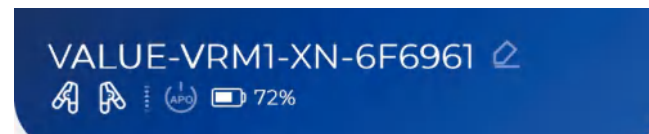


13.6 Status Bar Display

Below the device name, connection status of temperature clamps and vacuum gauge, as well as whether APO/sound is enabled and battery level of the digital manifold gauge can be displayed. Refer to UI for details; battery simulation is difficult on device side.



Temperature clamps not connected, VRM1-XN's APO off/battery 73%.



Temperature clamps connected.