DR.Smart
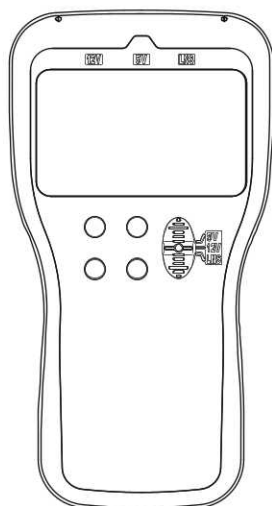
Inverter Air-Conditioner Detector

OPERATION MANUAL

Thanks for using DR.Smart Inverter Air-Conditioner Detector. This manual will provide you with information on how to connect and operate this unit to check, test and troubleshoot the inverter air conditioner. Please read it and save it carefully.
Note: Products shall be subject to any changes without additional notices.

Contents

Features

- **Portable size with multi-function display**

The size is only 180*95*30 mm. The multi-function matrix LCD display can show you complicated information.

- **Convenient for carrying and operation**

The weight is only 400g so that you can carry it easily to the site. Magnet on the back so that you can put it on any metal surface. Menu-style operations make all the detecting, checking and troubleshooting much easier.

- **Easy connection**

You can connect it to inverter air conditioner directly at the terminals without disassembling the indoor or outdoor unit.

- **Powerful functions**

With it you can check the communication, running parameters, error codes and set the running parameters of inverter air conditioners.

Packing List

Please check if all items are inside the packing box when you get the detector.

Item	Appearance	Quantity	Specifications
Detector		1	
High Voltage Connection Cable		1	3×20AWG
Low Voltage Connection Cable		2	4×24AWG
Operation Manual		1	

Part Name
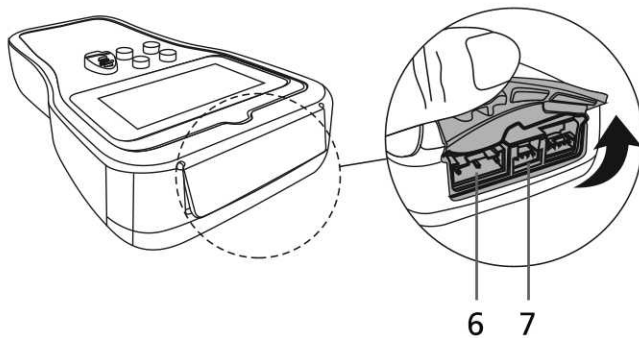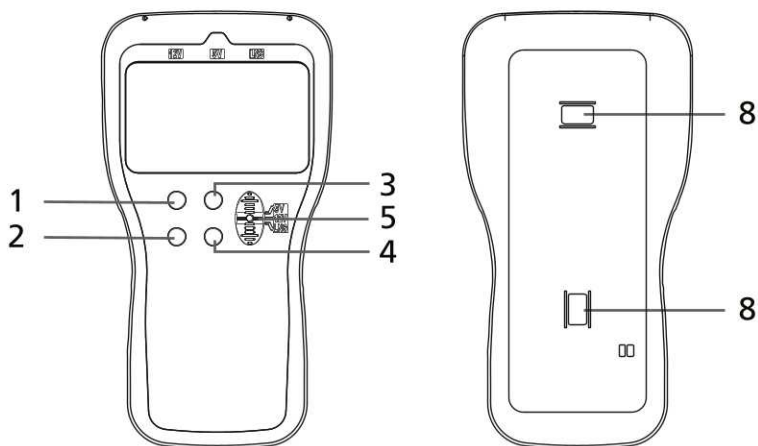
1. UP button
2. DOWN button
3. OK button
4. BACK button
5. Connection selector
6. Port for high voltage connection
7. Port for low voltage connection
8. Magnet

Operations

UP and **DOWN** button : For item selection, or page up and down in parameter inquiry mode, or increase and decrease the values in parameter setting mode. Press and hold them more than 5s if you want to adjust the values fast.

OK button : Confirm selection. Press and hold it for 3s, the device will directly go to "Information Inquiry – Parameter Inquiry" function.

Back button : Back to upper menu. Press and hold it for 3s, the device will go to the Primary Menu.

Connection Selector and **Connection Ports** : For selecting the right connection and power supply to the detector.

(1) **LNS** : For high voltage connection with the 3-core cable with white connector, the other side is to be connected to the terminal of inverter outdoor unit.

(2) **5V** : For low voltage connection with the 4-core cable with white connector, the other side is to be connected to the TestPort on main PCB of inverter outdoor unit.

System Menu

Abbreviations

IDU	Indoor unit
ODU	Outdoor unit
Temp.	Temperature
Freq.	Frequency
Ctrl.	Control
PMV	Electrical expansion valve
Err.	Error
4WV	4 way valve
Para.	Parameter
Volt.	Voltage
Curr.	Current
Comp.	Compressor
Commu.	Communication
T1	Room temperature
T2	Indoor coil temperature
T3	Outdoor coil temperature
T4	Ambient temperature
T5/Td	Compressor discharge temperature

Menu Structure

| Primary Menu	Secondary Menu	3rd level Menu	Remark
Information Inquiry	Parameter Inquiry		For 5V TestPort connection only
	AD Value Inquiry		
	Error Code Inquiry		
Parameter Setting	Target Frequency		
	Outdoor Fan Speed		
	Open Steps of PMV		
	4-way Valve		
Commu. Error Analysis	Self-check		For LNS connection only
	Online Check		
	Check Indoor PCB		
	Check Outdoor PCB		
Commu. Simulation	Information inquiry	IDU Query	
		ODU Query	
	IDU Simulator	Mode	
		Target Frequency	
		Fan speed	
		Indoor Temp. T1	
		Evaporator Temp. T2	
	ODU Simulator	Mode	
		Running Frequency	
		Condenser Temp. T3	
		Ambient Temp. T4	
		Discharge Temp. T5	

Operation Instructions

ATTENTION!
Before commencing any tests, SWITCH-OFF ALL POWER SOURCES and WAIT for a MINIMUM OF 3 MINUTES to allow all capacitor voltages to decay. Before disconnecting of connecting any terminals, check that all voltages are zero.

### For LNS connection (Suitable for AC units with S communication)

Connect this device to the void pins of outdoor wiring terminal with LNS connection cable. Make the Connection selector to "LNS".
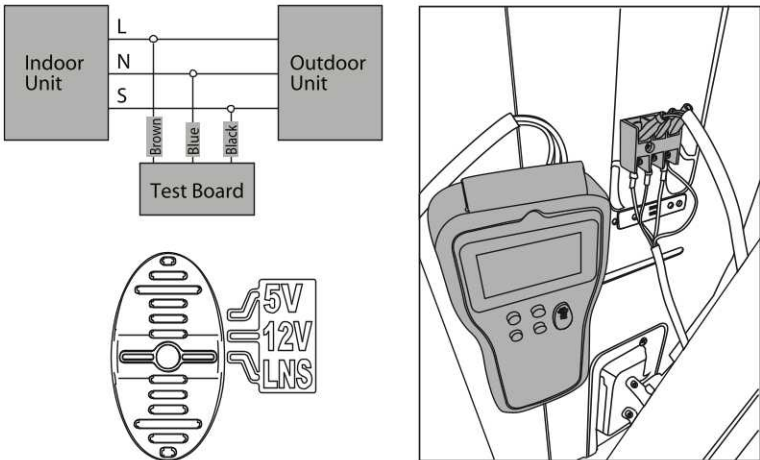
Note:
1. For convenience, you can move some wires from front pins to back pins so that you can connect the device on the front pins.

2. There is a clip inside the terminal of connection wire. Always make the front side face you when you insert the terminal into the pins. Or you cannot press the clip when you want to put the terminals out of the pins.

Clip
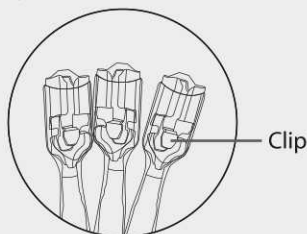
3. Watch the sequence of L, N and S when you connect the device to the terminal.

- **Commu. Error Analysis**

1. When the device is connected and powered on, it will carry out the communication check automatically.
2. You may get any of below 3 feedbacks in about 40 seconds:
   a). IDU commu. fault, please check the IDU and communication wire;
   b). ODU commu. fault, please check ODU and communication wire;
   c). Communication normal, Please press OK for information. (When OK pressed, it will go to "Commu. Similation—Information inquiry" directly)
   Note: If you get c) result but E1 still shows, the indoor PCB is faulty and need to be replaced.
3. If you want to check the communication again, go to "Commu. Error Analysis—Online check".
4. Self-check
   This function is to ensure the communication check function of the device is normal.
   Disconnect S (only L, N connected) and turn on the A/C unit, select "Commu. Error Analysis ----self-check", you will get the feedback in about 10 seconds.
   Note: Self-check is unnecessary for each analysis.

- **Information Inquiry**

Select "Commu. Similation—Information inquiry—IDU inquiry" to check indoor unit running parameter.
Select "Commu. Similation—Information inquiry—ODU inquiry" to check outdoor unit running parameter.

IDU information	Data Range	ODU information	Data Range
Mode	OFF COOL HEAT ONLY FAN DRY FORCE COOL DEFROST	Mode	OFF COOL HEAT ONLY FAN DRY FORCE COOL DEFROST COOLDRY (Self-clean) ECO
Target Frequency	0～255	Frequency	0～255
Room Temp.	-66.0～255	AC Input	0～65535
Coil Temp.	-66.0～255		
Indoor Fan Speed	OFF High Middle Low Sneeze Turbo Supper Sneeze Auto	Ambient Temp.	-66.0～255
Set Temp.	17-30	Coil Temp.	-66.0～255
		Discharge Temp.	-66.0～255
		ODU Fan speed	0～65535
		PMW steps	0～65535

- **Indoor Unit Simulator**

In this mode, the device can work as an indoor unit. You can set necessary parameters like values of room temperature senor T1, coil temperature sensor T2, target running frequency of compressor, mode, fan speed, even fault information and send them to outdoor unit to change the working state of it.

Note: The communication cable S should be disconnected to the indoor unit.
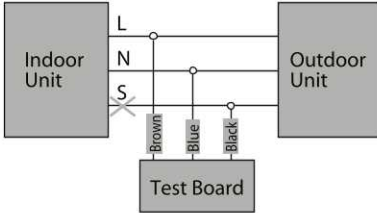
- **Outdoor Unit Simulator (Reserved)**

For 5V Test Port Connection (Suitable for all inverter AC units)

Remove the top cover of inverter outdoor unit and find the main PCB. Connect this device to the TestPort on the main PCB of outdoor unit. Make the Connection selector to "5V".

Note: Never connect LNS and TestPort at the same time.

TestPort
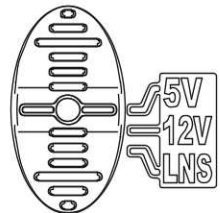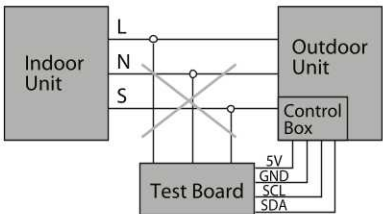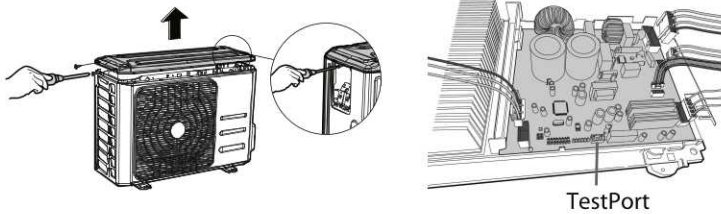
- **Information Inquiry**

Select "Information Inquiry—Parameter Inquiry" to check the running parameters of inverter unit.

Information	Data Range
Indoor target frequency	0～255
Outdoor target frequency	0～255
Outdoor control frequency	0～255
Outdoor actual frequency	0～255
Room temp. T1	-66.0～255
Indoor coil temp. T2	-66.0～255
Outdoor coil temp. T3	-66.0～255
Ambient temp. T4	-66.0～255
Discharge temp. Td	-66.0～255
IPM temp.	-66.0～100
Outdoor Fan Speed	0～65535
PMV opening steps	0～65535
Set temp. Ts	-66.0～255
Indoor mode	OFF COOL HEAT ONLY FAN DRY FORCE COOL DEFROST
DC bus volt.	0～65535
AC volt.	0～65535
Current	0～65535

- **AD Value Inquiry (Reserved)**

- **Error Code Inquiry**

You can check the error code if there is any.
When error occurs, the display will show error code and the information you're checking alternatively every two seconds.

Error Code	Explanation
E0	Indoor EEPROM error
E1	Communication error of indoor and outdoor unit
E2	Error of zero cross detection of indoor unit
E3	Indoor fan out of control
E5	EERROM or temperature sensor error of outdoor unit
E50	Temperature sensor error of outdoor unit
E51	Outdoor EEPROM error
E6	Temperature sensor error of indoor unit
E60	Error of room temperature sensor of indoor unit
E61	Error of evaporator temperature sensor of indoor unit
E7	DC fan of outdoor unit out of control
Eb	Error of communication between indoor PCB and display PCB
P0	IPM Module protection of outdoor unit
P1	Voltage protection
P10	Low voltage low protection
P11	Over voltage protection
P12	Error of 341MCE
P2	Top temperature protection of compressor
P4	Feedback protection of compressor in outdoor unit
P40	Communication error between main control trip and drive chip
P41	Error of current sampling circuit of compressor
P42	Error of compressor start up

Error Code	Explanation
P43	Phase lose protection
P44	Zero speed protection
P45	Synchronization error between 341 chip and PWM
P46	Compressor speed out of control
P49	Error of over current of compressor
P6	High discharge temperature protection of compressor
P8	Current protection
P80	Current protection of indoor unit
P81	Current protection of outdoor unit
P82	Error of sampling of input AC
P9	High and low temperature protection of evaporator
P90	High temperature protection of evaporator
P91	Low temperature protection of evaporator
PA	High temperature protection of condenser
L0	Frequency limit caused by High or low evaporator temperature
L1	Frequency limit caused by high condenser temperature
L2	Frequency limit caused by high discharge temperature of compressor
L3	Frequency limit caused by current
L5	Frequency limit caused by voltage
PF	PFC circuit error

- **Parameter Setting**

Select "Parameter Setting", you can set the frequency of compressor, outdoor fan speed, opening steps of electrical expansion valve and 4 way valve.

Contents	Valid Range	Remark		
Target Frequency	0.1～200	Please refer to recommended range		
Outdoor Fan Speed	0～1599	DC Motor		
	0～1599	AC Motor	0～Min. Speed rpm	Auto (by unit)
			Min. Speed ～800 rpm	Low
			800～1200 rpm	Med
			1200～1500 rpm	Hi
Open Steps of EEV	0～1599			
4-way Valve	0～2	0	Auto (by unit)	
		1	On	
		2	Off	

Warning: DO NOT let compressor run at very high frequency or some certain frequency leading to resonance for a long time to avoid damage to compressor or the inverter control system.

- **Recommended set frequency range**

Unit size	Cooling Mode			Heating Mode		
	Min	Suitable	Max	Min	Suitable	Max
12K and lower	14	25-65	85	26	35-75	90
18-24K	18	25-65	75	26	35-75	85
36-60K	20	30-60	70	26	35-70	80

Attention: Any damage of inverter A/C units caused by the set frequency out of above range is the responsibility of the operators themselves.

10-6-2023

The design and specifications are subject to change without prior notice for product improvement. Consult with the sales agency or manufacturer for details.

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此面无需印刷

技术要求：
1. 双胶纸(说明书)80g非E项目大度
2. 尺寸：210*120mm
3. 颜色：黑白
4. 注意：排版时注意页码数字都是靠外面的，以便翻阅
5. 装订。