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# New Testing Device for Inverter Units

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Technical Support Department

March 21



# POWERFUL

## INVERTER DETECTOR



- ◆ Portable size with multi-function display
- ◆ Convenient for carrying and operation
- ◆ Easy connection
- ◆ Powerful functions

# General Information



BOM Code: 17222000A55927

- *Portable size with multi-function display*
- *Convenient for carrying and operation*
- *Easy connection*
- *Powerful functions*

# General Information

- *Convenient for carrying and operation*



LCD matrix screen can display multi-line text and complex information.

Size: 180\*95\*37

Weight: 400g

# General Information

- *Convenient for carrying and operation*



There are 2 magnets on the back of the device, which means you can put it on any metal surface such as the outdoor unit housing.

# General Information

- *Powerful functions*



All these powerful functions make the maintenance of the inverter A/C units much easier.

# General Information

- *Packing List*



User Manual  
16111500000730

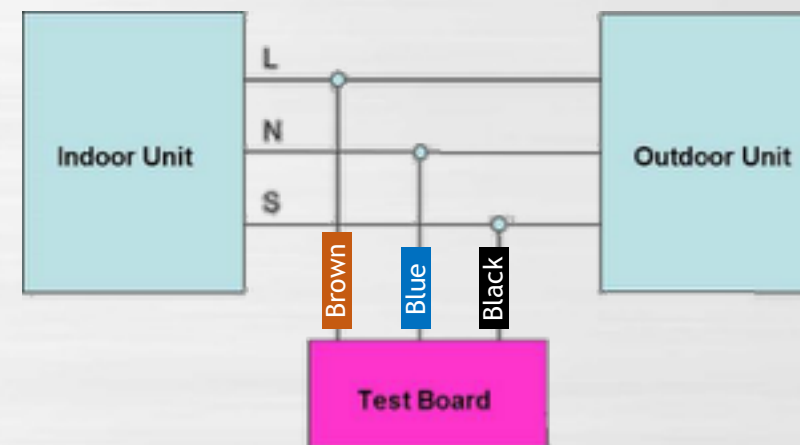
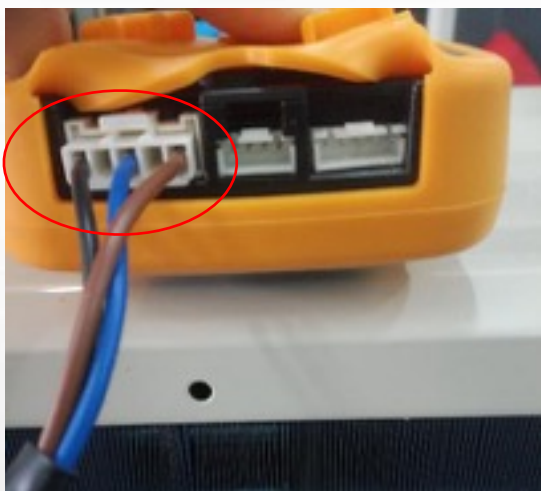
LNS connection  
wire  
17401203006177

5V connection wire  
17401204003964 +  
17401204003965

Detector

# Detailed Functions

- **Connection 1 (High-voltage LNS connection)**

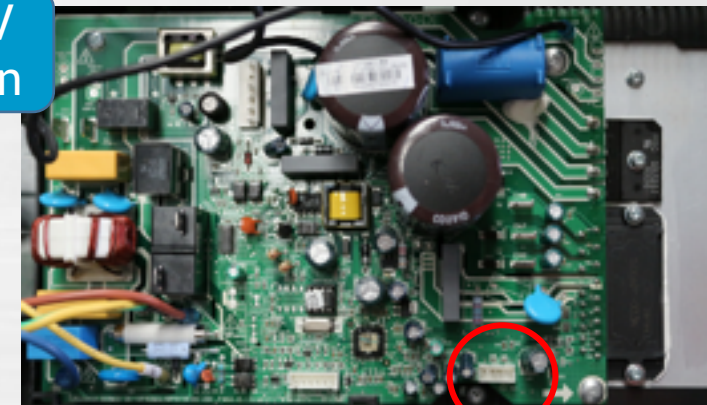


Choose LNS connection

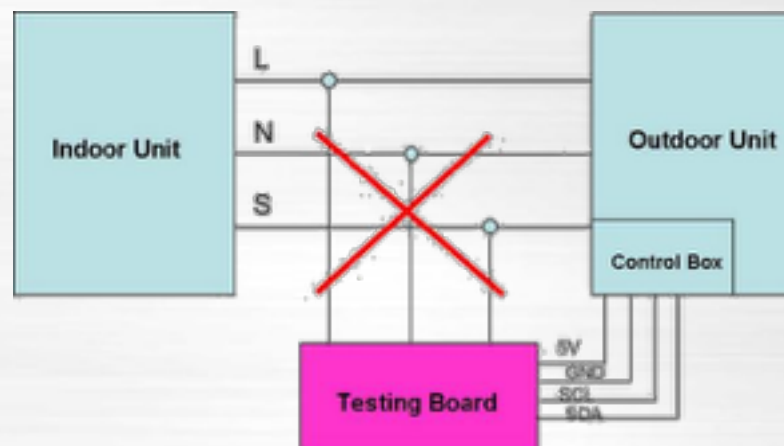
The device can be connected either the outdoor wiring terminal or the indoor wiring terminal. No need to disassemble the outdoor or indoor unit.

# Detailed Functions

- *Connection 2 (5V low voltage connection)*

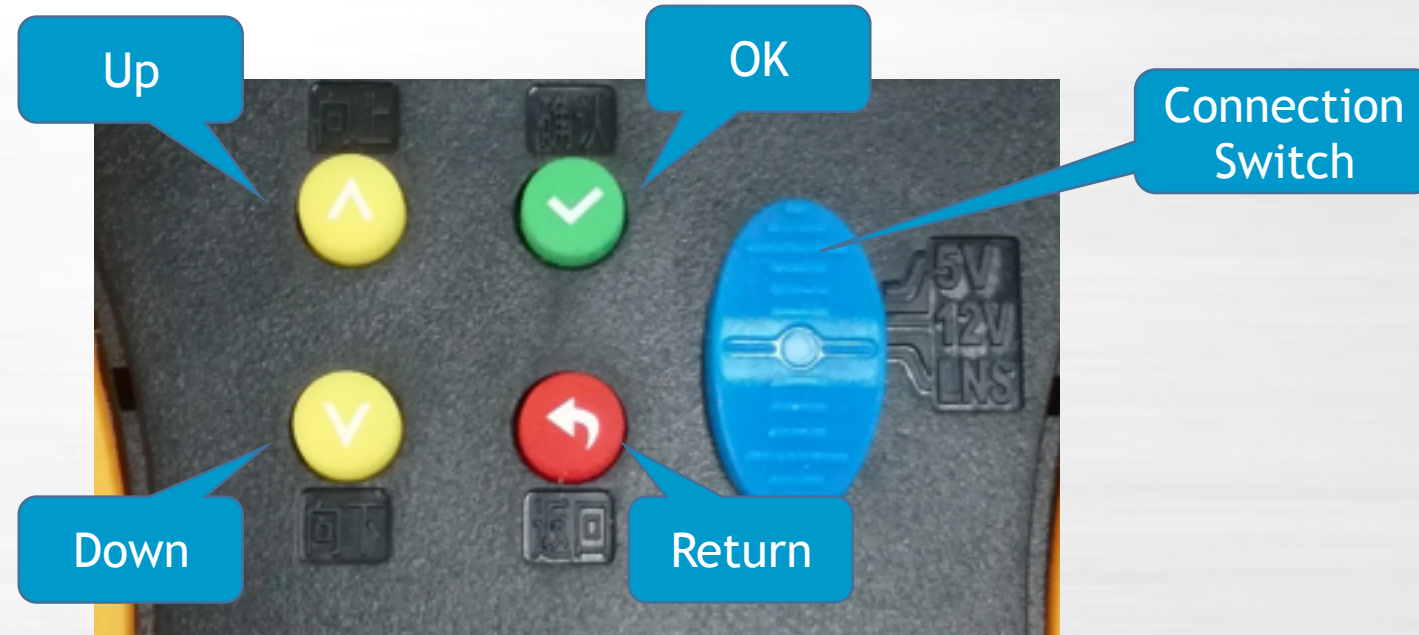


This board can also be connected to the “Test Port” which is a 4-pin socket on the control PCB of outdoor unit with the gray cable.



# Detailed Functions

- *Easy Operation*



**UP** and **DOWN**: 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**: Confirm selection. Press and hold it for 3s, the device will directly go to “Information Inquiry - Parameter Inquiry” function.

**Return**: back to upper menu. Press and hold it for 3s, the device will go to the Primary Menu.

# Detailed Functions

- *System Menu*

Primary Menu	Secondary Menu	3 <sup>rd</sup> level Menu	Remark
Information Inquiry	Parameter Inquiry		For 5V Test port connection only (Connection 2)
	AD Value Inquiry		
	Error Code Inquiry		
Parameter Setting	Target Frequency		
	Outdoor Fan Speed		
	Open Steps of EEV		
	4-way Valve		
Communication Error Analysis	Self-check		For LNS connection only (Connection 1)
	Online Check		
	Check Indoor PCB		
	Check Outdoor PCB		
Communication Simulation	Information inquiry	IDU Query	
		ODU Query	

# Detailed Functions

- *System Menu (Continue)*

Primary Menu	Secondary Menu	3 <sup>rd</sup> level Menu	Remark
Communication Simulation (Continue)	IDU Simulator	Mode	For LNS connection only (Connection 1)
		Target Frequency	
		Fan speed	
		Indoor Temp. T1	
		Evaporator Temp. T2	
	ODU Simulator	Mode	
		Running Frequency	
		Ambient Temp. T4	
		Condenser Temp. T3	
		Discharge Temp. T5	

# Detailed Functions



Error codes directly on the display

# Detailed Functions



Basic informations about sensors reading and operations parameters

# Detailed Functions



Set parameters manually to test components

# Detailed Functions



# Detailed Functions

- Error Codes*

Error Code	Explanation	Remark
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	
E52	Outdoor coil temperature T3 sensor error	
E53	Outdoor ambient temperature T4 sensor error	
E54	Compressor discharge temperature TP sensor error	
E55	IPM temperature sensor error	
E60	Error of room temperature T1 sensor of indoor unit	
E61	Error of evaporator temperature T2 sensor of indoor unit	
E7	Outdoor DC fan speed is out of control	
E71	Outdoor DC fan speed is out of control	
E72	Zero speed protection of outdoor DC fan	
E73	Lack of phase of outdoor DC fan	5V connection
E74	Over-current protection of outdoor DC fan	
E83 E56	High temperature protection of compressor top / High pressure protection / Low pressure protection/ Refrigerant leakage protection (EC)	
Eb	Error of communication between display PCB and indoor PCB	
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	

# Detailed Functions

- *Error Codes*

Error Code	Explanation	Remark
L3	Frequency limit caused by current	
L5	Frequency limit caused by voltage	
L6	Frequency limit caused by High IPM temperature	
P0	IPM Module protection	
P1	DC voltage protection	
P10	Low DC voltage low protection	
P11	High DC voltage protection	
P12	Error of 311 MCE (Compressor Driven Chip)	Reserved
P32	High temperature protection of compressor top / High IPM temperature	
P4	Feedback signal error protection of compressor	
P40	Communication error between main control trip and drive chip	
P41	Error of current sampling circuit of compressor	
P42	Error of compressor start up	
P43	Phase lose protection	
P44	Zero speed protection	
P45	Voltage drop protection	
P46	Compressor speed out of control	
P48	Software safety protection	
P49	Error of over current of compressor	
P8 P81	Over-current protection of outdoor unit	
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	

# Detailed Functions

- *Error Codes for P4, P6 problems*

Error Code	Explanation	Damaged Part
P40	Communication error between main control chip and drive chip	Outdoor PCB or IPM board
P41	Error of current sampling circuit of compressor	Outdoor PCB or IPM board
P42	Error of compressor start up	Compressor
P43	Lack phase protection	Connection cable of compressor
P44	Zero speed protection	Compressor
P45	Synchronization error between 341 chip and PWM	Outdoor PCB or IPM board
P46	Compressor speed out of control	Outdoor PCB or IPM board, or compressor
P48	Software safety protection	Outdoor PCB or IPM board, or compressor
P49	Error of over current of compressor	Outdoor PCB or IPM board, compressor, or refrigeration system

# Detailed Functions



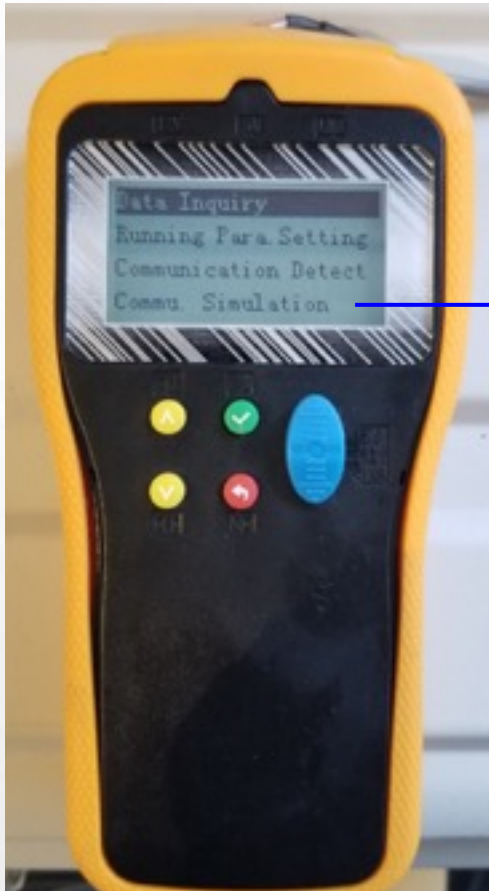
- Parameter Settings (5V Connection)



Contents	Valid Range	Remark		
Target Frequency	0.1~200	Please refer to the recommended frequency		
Outdoor Fan Speed	0~1599	DC Motor		
		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	

# Detailed Functions

- *Communication Analysis (LNS Connection)*



# Detailed Functions

## • *Communication Error Analysis (Connection 1)*

1. When E1 error code shows, you can use this function. Do the self-check firstly before analysis this error to ensure the test board is good. Connect L and N only (not S) and turn on the A/C unit, select “self-check” menu, you will get the feedback in about 10 seconds.

*Note: Self-check is unnecessary for each analysis.*

2. Shut-down the power and connect S to the circuit, then electrify the A/C unit again and turn on the A/C unit. Select “Online Check” menu to carry out the analysis.

3. You may get any of below 3 feedbacks in about 40 seconds:

- a). Indoor communication error;
- b). Outdoor communication error;
- c). Communication is normal.

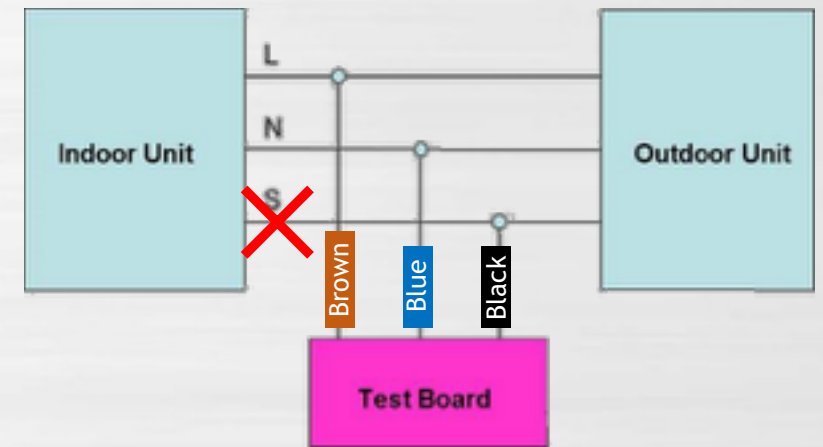
*Note: If you get c) result but E1 still shows, the indoor PCB is faulty and need to be replaced.*

# Detailed Functions

- **Indoor Unit Simulation (LNS Connection)**

**Note: The communication cable S should be disconnected to the indoor unit**

In this mode, the device can work as an indoor unit. The user can set necessary parameters like values of room temperature sensor 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.



*Simulate as indoor unit to determine if the outdoor unit will respond and determine that the outdoor board is OK*

# Detailed Functions

- *Indoor Unit Simulation (LNS Connection)*



# Detailed Functions

- *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.

# Detailed Functions

- *Video Instructions*



English version:

<https://youtu.be/fgXrWLi4Pwk>

Spanish version:

<https://youtu.be/L-zW2yAA8so>

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