

# INVERTER UNITS

## MIDWALL SPLIT UNITS

14/15	MIDWALL INVERTER – INDOOR - ECI / EEI		C
Trouble Source	Fault Code	Protection Code	
The communication faults in the indoor and outdoor units	F1		
Evaporator temp protection		P1	
Indoor ambient temp. sensor fault (room temp sensor)	F2		
Indoor coil temperature sensor fault (Include: Inlet, middle of pipe, outlet.)	F3		
Indoor fan fault	F4		
OUTDOOR UNIT			
Outdoor module fault	F5		
Outdoor ambient temp. sensor fault	F6		
Outdoor coil temp. sensor fault	F7		
Compressor suction temp. sensor fault	F8		
Compressor suction temp. protection		P6	
Lower pressure of gas return protection		P8	
Compressor discharge temp. sensor fault	F9		
Inductor of current or voltage fault	FA		
Over current protection		P3	
Compressor drive abnormal fault	FC		
Power supply phase lacking or phase sequence fault	FD		
Return-air sensor abnormal	FE		
Shortage of Refrigerant	FF		
Other Protection		PF	
High temp of condenser protection		PA	
System lacking fluoride or reverse valve protection		PH	
Outdoor DC Fan Fault	FH		

11	Digital – INVERTER Midwall Split – CMI09/GMI09 CMI12/GMI12			G
DUAL 8 DISPLAY	LED	MALFUNCTION	REPAIR METHOD	
EE	Heating LED-pause 3s and blink 15 time	Indoor PCB malfunction	Replace indoor main board	
EE	Heating LED-pause 3s and blink 15 time	Storage slug	Replace indoor main board	
E2	Running LED-pause 3s and blink 2 times	Anti-Freezing protection	Outdoor ambient temperature too low	
H4	Heating LED-pause 3s and blink 4 times	Overload of system	System is abnormal, check if the evaporator and condenser are dirty or blocked.	
H6	Running LED-pause 3s and blink 11 times	No motor of indoor unit feedback	Is electromotor mounted normally?	
F2	Cooling LED-pause 3s and blink 2 times	Indoor pipe temperature sensor malfunction	Is it loose? Measure the resistance value with universal meter	
F1	Cooling LED-pause 3s and blink 1 time	Internal ambient temp sensor malfunction	Is it loose? Measure the resistance value with universal meter	
UF	Heating and cooling LED blinks 7 times at the same time	Zero passage abnormal	Replace indoor main board	

H3	Heating LED-pause 3s and blink 3 times	Overload of compressor	Inspect connection state of the overload wire.
Lc	Heating LED-pause 3s and blink 11 times	Startup Failure	Check if the resistance of compressor and resistance to ground is normal. If the compressor is normal, the outdoor main board may be wrong.
UH	Heating and cooling LED blink 8 times at the same time	No motor of outdoor unit feedback	This malfunction may happen when outdoor DC electromotor is used.
E5	Running LED-pause 3s and blink 5 times	Over current protection	Is electric network variable?
U7	Cooling LED-pause 3s and blink 20 times	4-way valve conversion abnormal	Replace 4-way valve
U1	Heating LED-pause 3s and blink 13 times	Phase current detection malfunction of compressor	Replace outdoor main board
H7	Heating LED-pause 3s and blink 7 times	Sync failure	Check if the resistance of compressor and resistance to ground is normal. If the compressor is normal, the outdoor main board may be wrong.
U5	Cooling LED-pause 3s and blink 13 times	Current diction malfunction of complete unit	Replace outdoor main board
F3	Cooling Led-pause 3s and blink 3 times	Outdoor ambient temp sensor malfunction	Is it loose? Measure the resistance value with universal meter.
E4	Running LED-pause 3s and blink 4 times	Discharge protection of compressor	Is it loose? Measure the resistance value with universal meter.
F5	Cooling LED-pause 3s and blink 5 times	Break-circuit and short-circuit of outdoor discharge temp sensor	Is it loose? Measure the resistance value with universal meter.
F4	Cooling LED-pause 3s and blink 18 times	Break-circuit and short-circuit of outdoor condenser temp sensor.	Is it loose? Measure the resistance value with universal meter.
P8	Heating LED-pause 3s and blink 19 times	Overheat of carbon fin	Is outdoor ambient temp too high? Is radiator mounted correctly?
UU	Heating and cooling LED blink 11 times at the same time	DC over current	
P7	Heating LED-pause 3s and blink 18 times	Temp sensor malfunction of carbon fin	Replace outdoor main board.
F0	Cooling LED-pause 3s and blink 10 times	Lack of Freon or block protection	
PH	Cooling LED-pause 3s and blink 11 times	DC input voltage is too high	Is voltage of AC power supply normal?
PL	Heating LED-pause 3s and blink 21 times	DC input voltage is too low	Is voltage of AC power supply normal?
E6	Running LED-pause 3s and blink 6 times	Communication malfunction	Is outdoor connecting wire reliably connected?
UA	Heating and cooling LED blink 12 times at the same time	Setting error, indoor and outdoor unit abnormal	Outdoor unit is not matched with indoor unit.

11	Digital – INVERTER Midwall Split – CMI18/GMI18 CMI24/GMI24			G
DUAL 8 DISPLAY	LED	MALFUNCTION	A/C STATUS	REPAIR METHOD
E1	OFF 3s and blink once	High pressure protection of system	During cooling and drying operation, except indoor fan operates, all loads stop operation. During heating operation, the complete unit stops.	Possible reasons: 1. Refrigerant was superabundant; 2. Poor heat exchange (incl. filth blockage of heat exchanger and bad radiating environment); Ambient temperature is too high.
E2	OFF 3s and blink 2 times	Anti-Freezing protection	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates.	1. Poor air-return in indoor unit; 2. Fan speed is abnormal; 3. Evaporator is dirty.
E4	OFF 3s and blink 4 times	High discharge temp protection of compressor	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	Please refer to the malfunction analysis (discharge protection, overload)
E5	OFF 3s and blink 5 times	Over current protection	During cooling and drying operation, compressor and outdoor fan stop while indoor fan operates. During heating operation, all loads stop.	1. Supply voltage is unstable; 2. Supply voltage is too low and load is too high; 3. Evaporator is dirty.

E6	OFF 3s and blink 6 times	Communication Malfunction	During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the corresponding malfunction analysis.
E8	OFF 3s and blink 8 times	High temperature resistant protection	During cooling operation: compressor will stop while indoor fan will operate. During heating operation, the complete unit stops.	Refer to the malfunction analysis (overload, high temperature resistant)
U8	OFF 3s and blink for 17 times	Circuit PG motor (indoor fan) has circuit malfunction by zero cross detection	Operation of remote controller or control panel is available, but the unit won't act.	Control board is damaged.
H6	OFF 3s and blink 11 times	PG motor (indoor fan motor) does not operate	The complete unit will stop operation.	Poor connection for PGF in circuit diagram; Malfunction of indoor units control panel AP 1; Malfunction of indoor units motor M1.
C5	OFF 3s and blink 15 times	Malfunction protection of jumper cap	The complete unit will stop operation	Poor connection for the jumper cap on indoor units control panel AP1; please reinsert or replace the jumper cap;
F1	OFF 3s and blink 1 time	Indoor ambient temp sensor malfunction	During cooling and drying operation, indoor unit operates while other loads will stop; during heating operation, the complete unit will stop operation.	1. Room temp sensor hasn't been connected well with indoor units control panel AP1 (refer to the wiring diagram for indoor unit); 2. Room temp sensor is damaged (please refer to the resistance table of temperature sensor)
F2	OFF 3s and blink 2 times	Indoor evaporator temperature sensor is open/short circuited	During cooling and drying operation, indoor unit will operate while other loads will stop: During heating operation, the complete unit will stop operation.	1. Room temperature sensor hasn't been connected well with indoor units control panel AP1 (refer to the wiring diagram for indoor unit) 2. Room temperature sensor is damaged (please refer to the resistance table of temperature sensor)
F3	OFF 3s and blinks 3 times.	Outdoor ambient temperature sensor is open/short circuited	During cooling and drying operation, compressor stops while indoor fan operates: During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasn't been connected well or is damaged. (Please check it by referring to the resistance table for temperature sensor)
F4	OFF 3s and blink 4 times	Outdoor condenser temperature sensor is open/short circuited.	During cooling and drying operation, compressor stops while indoor fan will operate; During heating operation, the complete unit will stop operation.	Outdoor temperature sensor hasn't been connected well or is damaged. (Please check it by referring to the resistance table for temperature sensor)

**Digital – INVERTER Midwall Split – CMI18/GMI18 CMI24/GMI24**

**G**

DUAL 8 DISPLAY	LED	MALFUNCTION	A/C STATUS	REPAIR METHOD
F5	OFF 3s and blink 5 times	Outdoor discharge temperature sensor is open/short circuited	During cooling and drying operation, compressor will stop after operating for about 3 min, while indoor fan will operate; During heating operation, the complete unit will stop after operating for about 3 min.	1. Outdoor temperature sensor hasn't been connected well or is damaged. (Please check it by referring to the resistance table for temperature sensor) 2. The head of temperature sensor hasn't been inserted into the copper tube.
F6	OFF 3s and blink for 6 times	Limit/decrease frequency due to overload	All loads operate normally, while operation frequency for compressor is decreased	Refer to the malfunction analysis (overload, high temperature resistant)
F8	OFF 3s and blink 8 times	Decrease frequency due to over current	All loads operate normally, while operation frequency for compressor is decreased	The input supply voltage is too low; System pressure is too high and overload.
F9	OFF 3s and blink 9 times	Decrease frequency due to high air discharge	All loads operate normally, while operation frequency for compressor is decreased	Overload or temperature is too high; Refrigerant is insufficient; Malfunction of electric expansion valve (EKV)

PH	OFF 3s and blink 11 times	Voltage for DC bus-bar is too high	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 265VAC, turn on the unit after the supply voltage is increased to the normal range. 2. If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, there is a malfunction for the circuit, please replace the control panel (AP1)
U5	OFF 3s and blink 13 times	Malfunction of complete units current detection	During cooling and drying operation, the compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	There's a circuit malfunction on outdoor units control panel AP1, please replace the outdoor units control panel AP1.
P5	OFF 3s and blink 15 times	Over current protection of phase current for compressor	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and over current protection of phase current for compressor)
H1	OFF 3s and blink once	Defrosting	Defrosting will occur in heating mode. Compressor will operate while indoor fan will stop operation.	It's the normal state.
H2	OFF 3s and blink twice	Static dedusting protection		
H3	OFF 3s and blink 3 times	Overload protection for compressor	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation	1. Wiring terminal OVC-COMP is loosened. In normal state, the resistance for this terminal should be less than 1ohm. 2. Refer to the malfunction analysis (discharge protection, overload)
H4	OFF 3s and blink 4 times	System is abnormal	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (overload, high temperature resistant)
H5	OFF 3s and blink 5 times	IPM protection	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and over current protection of phase current for compressor).

**Digital – INVERTER Midwall Split – CMI18/GMI18 CMI24/GMI24**

**G**

<b>DUAL 8 DISPLAY</b>	<b>LED</b>	<b>MALFUNCTION</b>	<b>A/C STATUS</b>	<b>REPAIR METHOD</b>
HC	OFF 3s and blink 6 times	PFC protection	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
H7	OFF 3s and blink 7 times	Desynchronizing of compressor	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis (IPM protection, loss of synchronism protection and over current protection of phase current for compressor).
H0	OFF 3s and blink 10 times	Decrease frequency due to high temperature resistant during heating operation	All loads operate normally, while operation frequency for compressor is decreased.	Refer to the malfunction analysis (overload, high temperature resistant)
LC	OFF 3s and blink 11 times	Failure start-up	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to the malfunction analysis
U1	OFF 3s and blink 13 times	Malfunction of phase current detection	During cooling and drying operation, compressor will stop while indoor fan	Replace outdoor control panel AP1.

		circuit for compressor	will operate; During heating operation, the complete unit will stop operation.	
EE	OFF 3s and blink 15 times	EEPROM malfunction	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Replace outdoor control panel AP1.
PU	OFF 3s and blink 17 times	Charging malfunction of capacitor	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Refer to part 3 – charging malfunction analysis of capacitor.
P7	OFF 3s and blink 18 times	Malfunction of module temperature sensor circuit	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Replace outdoor control panel AP1.
P8	OFF 3s and blink 19 times	Module high temperature protection	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	After the complete unit is de-energized for 20 min, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
U3	OFF 3s and blink 20 times	Malfunction of voltage dropping for DC bus-bar	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Supply voltage is unstable
PL	OFF 3s and blink 21 times	Voltage of DC bus-bar is too low	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	<ol style="list-style-type: none"> <li>1. Measure the voltage of position L and N on wiring board (XT), if the voltage is higher than 150VAC, turn on the unit after the supply voltage is increased to the normal range.</li> <li>2. If the AC input is normal, measure the voltage of electrolytic capacitor C on control panel (AP1), if its normal, there is a malfunction for the circuit, please replace the control panel (AP1)</li> </ol>

**Digital – INVERTER Midwall Split – CMI18/GMI18 CMI24/GMI24**

**G**

<b>DUAL 8 DISPLAY</b>	<b>LED</b>	<b>MALFUNCTION</b>	<b>A/C STATUS</b>	<b>REPAIR METHOD</b>
EU		Limit/ decrease frequency due to high temperature of module	All loads operate normally, while operation frequency for compressor is decreased	After the complete unit is de-energized for 20 min, check whether the thermal grease on IPM Module of outdoor control panel AP1 is sufficient and whether the radiator is inserted tightly. If its no use, please replace control panel AP1.
U7		The four-way valve is abnormal	If this malfunction occurs during heating operation, the complete unit will stop operation.	<ol style="list-style-type: none"> <li>1. Supply voltage is lower than AC175V;</li> <li>2. Wiring terminal 4V is loosened or broken;</li> <li>3. 4V is damaged, please replace 4V</li> </ol>
U9		Zero-crossing malfunction of outdoor unit	During cooling and drying operation, compressor will stop while indoor fan will operate; During heating operation, the complete unit will stop operation.	Replace outdoor control panel AP1.
FH		Limit/decrease frequency due to anti freezing	All loads operate normally, while operation frequency for compressor is decreased	Poor air-return in indoor unit or fan speed is too low.

Trouble Source	Error Code	Possible Causes
Indoor Room Temperature Sensor Fault	E1	<ol style="list-style-type: none"> <li>1. Check whether there is short circuit or open circuit .</li> <li>2. If the sensor is right, then check whether the sensor is in the right position and connected to PCB board properly.</li> <li>3. Check whether there is any water or damp on sensor.</li> <li>4. If there is no standard sensor on hand, change the sensor with the neighboring sensor to see whether the fault is disappears or not, if it disappears, the sensor needs to be replaced, if it remains, then change the PCB board.</li> </ol>
Outdoor Coil Temperature Sensor Fault	E2	<ol style="list-style-type: none"> <li>1. Check whether there is short circuit or open circuit .</li> <li>2. If the sensor is right, then check whether the sensor is in the right position and connected to PCB board properly.</li> <li>3. Check whether there is any water or damp on sensor.</li> <li>4. If there is no standard sensor on hand, change the sensor with the neighboring sensor to see whether the fault is disappears or not, if it disappears, the sensor needs to be replaced, if it remains, then change the PCB board.</li> </ol>
Indoor Coil Temperature Sensor Fault	E3	<ol style="list-style-type: none"> <li>1. Check whether there is short circuit or open circuit .</li> <li>2. If the sensor is right, then check whether the sensor is in the right position and connected to PCB board properly.</li> <li>3. Check whether there is any water or damp on sensor.</li> <li>4. If there is no standard sensor on hand, change the sensor with the neighboring sensor to see whether the fault is disappears or not, if it disappears, the sensor needs to be replaced, if it remains, then change the PCB board.</li> </ol>
Indoor Fan Motor Feedback Fault	E4	<ol style="list-style-type: none"> <li>1. Observe whether the fan motor can run for a while before the error code, if so, mechanical jamming can be excluded ;</li> <li>2. Check whether the plug of the motor is well connected or not.</li> <li>3. Changed a new PG motor, if the error code E4 remains ,then change the PCB board .</li> </ol>
Indoor and Outdoor Unit Communication Fault	E5 / 5E	<ol style="list-style-type: none"> <li>1. Firstly, the IDU and the ODU should be connected properly.</li> <li>2. Observe the ODU main PCB board, turn on the air conditioner, three lights are all lighted up then off and the relay pulls in. If not, it is power supply problem.</li> <li>3. Connect the black signal line S to terminal N of ODU. Turn on the air conditioner, if "5E" is still be reported, the main PCB board of ODU need to be replaced.</li> <li>4. Check the IDU main PCB board, replace it.</li> </ol>
Outdoor Fan Motor Fault	F0	<ol style="list-style-type: none"> <li>1. DC motor usually runs softly. Observe whether the speed of fan is accelerated to the highest speed when started, if so, the speed feedback signal has not been received by main controller board ;</li> <li>2. Check the connection between the DC motor and terminal board.</li> <li>3. Change a new motor, if fault is still reported, then replace the main PCB board.</li> </ol>
IPM Module Fault	F1	<ol style="list-style-type: none"> <li>1. The three compressor wires should be red to U, blue to V, black to W, or it will lead to reversal of compressor. Reverse any two phases to see whether the problem can be solved.</li> <li>2. The voltage between L and N on the terminal board of the ODU must be within 10% tolerance of the rated voltage. Check the pressure of the system.</li> <li>3. Check whether the module board is well fixed on the radiator, whether the condenser and the evaporator are clean enough.</li> <li>4. If the error code F1 is reported immediately after turn on the air conditioner, you should observe whether there is any damage around the module board. Make sure the resistance between each two wires of compressor, it should be same and very small. Then check the insulation of three compressor wire to the ground wire. Check the reactor.</li> <li>5. Change a new module board instead, if the fault code disappears, it's the problem of the module board.</li> </ol>
PFC Module Fault	F2	<ol style="list-style-type: none"> <li>1. test whether the power supply voltage is fluctuate wildly or the voltage is too low (less than alternating current 135 v) ;</li> <li>2. reactor is one of the core parts in PFC, please check whether there is any damage to the reactor itself, whether the connecting wire of reactor well</li> </ol>

		<p>connected which causes the malfunction of PFC. Reactor cannot be removed and replaced by short circuit directly ;</p> <p>3. if "PFC protection fault" is reported immediately after the start up of the air conditioner, it can be basically defined as a substantive fault which has nothing to do with the power supply voltage and the system pressure .Please observed whether there is obvious lighting damaged device around PFC board ;</p> <p>4. Test whether the power supply of 15 V, 5 V (3.3 V) on PFC board is stable to eliminate the problem of supply of external main control board which causes the malfunction of PFC fault ;</p> <p>5. Normal PFC board can be used to replace the original one for testing. If the test is normal after replacing the PFC board, it indicated that the original PFC board is damaged ;</p> <p>6. There exists probability that there are problems in power supply of 15V or 5V of module board that leads to the malfunction of the control power of PFC board</p> <p>7. Some module board integrates PFC function and compressor driving function together, then the integrated module board can be changed directly</p>
Compressor Operation Fault	F3	Refer to F1 Fault
Exhaust Temperature Sensor Fault	F4	<p>1. lack or excess refrigerant may lead this problem.</p> <p>2. Check whether the exhaust tem sensor is short circuit or open circuit.</p>
Compressor Top Cover Protection	F5	The test points are the same as that of common sensors.
Outdoor Ambient Temperature Sensor Fault	F6	The test points are the same as that of common sensors.
Over / Under Voltage Protection	F7	<p>1. check the power voltage, it must be within 10% tolerance of the rated voltage.</p> <p>2. The voltage between P-N on module board is above 280VDC. If the voltage is lower, the PFC circuit is damaged ;</p> <p>3. If "F7" is reported once the air conditioning is powered on and the power voltage is not lower than 150 V measured by multi-meter, it may be the problem of main PCB of ODU.</p>
Outdoor Module Communication Fault	F8	<p>1. Check whether the communication connecting wire ( mostly 4 core) between module board and main control board is loose or the cable is loose.</p> <p>2. Use a multi-meter to measure whether the power supply introduced from main control board is normal, especially whether the power of 5V has been led to module board. Find "5V" and "GND" on the module board and test whether the voltage of 5V on the module is normal ;</p> <p>3. Use normal module board to replace the module board on the malfunctioned air conditioning board. When the external machine is powered on, if communication failure disappears, it indicates that the problem is on the original module board, if there still exists communication failure, the external main control board should be replaced</p>
Outdoor E <sup>2</sup> PROM fault	F9	EEPROM chips are usually welded with the external main control board together. If "external machine EEPROM fault" is reported, replace the main control board directly can fix it
Suction Temperature Sensor Fault (four-way valve switch failure)	FA	<p>1. if the fault occurs only on heating model, On heating model, please check whether the 4-way valve can be charged with 220V AC. If so , it must be the problem of 4-way valve, if not, replace the main PCB board.</p> <p>2. Check the sensors.</p>

09/10	MIDWALL INVERTER - OUTDOOR PC BOARD DIAGNOSTICS – ACI / AEI	A
Ambient sensor faulty	1 Flash - off for 5 sec	
Outdoor pipe sensor faulty	2 Flashes - off for 5 sec	
Compressor sensor faulty	3 Flashes – off for 5 sec	
Over current	5 Flashes – off for 5 sec	
Compressor over heating	7 Flashes – off for 5 se	
Faulty E2PROM	8 Flashes – off for 5 sec	