



Turn to the Experts

38VYX/PQV

#### 11-4-1. How to Use Remote Controller in Service Mode

**1** Press [ ] button with a tip of pencil to set the remote controller to the service mode.

- "00" is indicated on the display of the remote controller.

**2** Press [ON ] or [OFF ] button

If there is no fault with a code, the indoor unit will beep once (Beep) and the display of the remote controller will change as follows :

→ 00 → 01 → 02 ... 1d → 1E → 33 →

- The TIMER indicator of the indoor unit flashes continuously. (5 times per 1 sec.)
- Check the unit with all 52 check codes ( 00 to 33 ) as shown in Table-11-4-1.
- Press [ON ] or [OFF ] button to change the check code backward.

If there is a fault, the indoor unit will beep for 10 seconds (Beep, Beep, Beep...).

Note the check code on the display of the remote controller.

- 2-digits alphanumeric will be indicated on the display.
- All indicators on the indoor unit will flash. (5 times per 1 sec.)

**3** Press [CLR] button. After service finish for clear service code in memory.

- "7F" is indicated on the display of the remote control.

**4** Press [ ] button to release the service mode.

- The display of the remote controller returns to as it was before service mode was engaged.

Alphanumeric characters are used for the check codes.

S is 5.	b is 6.
R is A.	b is B.
L is C.	d is D.



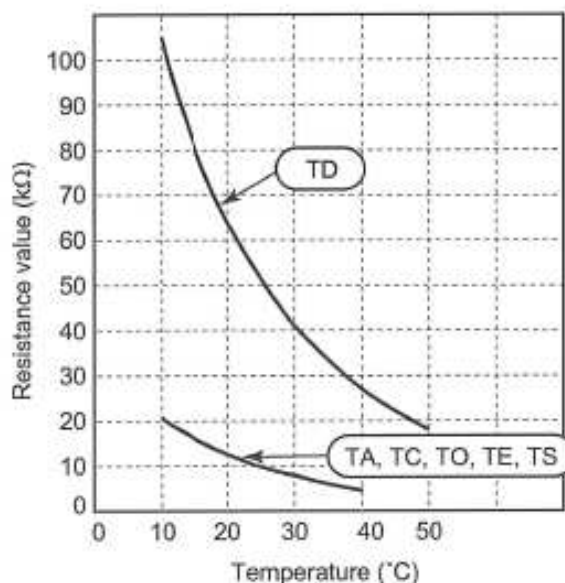
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**38NYV\*\*\*M-A SERIES**

**42NQV\*\*\*M-A SERIES**

#### Sensor characteristic table



TD : Discharge temp. sensor  
 TA : Room temp. sensor  
 TC : Heat exchanger temp. sensor  
 TO : Outdoor temp. sensor  
 TE : Outdoor heat exchanger temp. sensor  
 TS : Suction temp. sensor

#### ◆ Precautions when inspecting the control section of the outdoor unit

##### NOTE :

A large-capacity electrolytic capacitor is used in the outdoor unit controller (inverter). Therefore, if the power supply is turned off, charge (charging voltage DC280 to 380V) remains and discharging takes a lot of time. After turning off the power source, if touching the charging section before discharging, an electrical shock may be caused. Discharge the electrolytic capacitor completely by using soldering iron, etc.

##### < Discharging method >

1. Remove the inverter cover (plating) by opening four mounting claws.
2. As shown below, connect the discharge resistance (approx. 100Ω40W) or plug of the soldering iron to voltage between + - terminals of the C14 ("CAUTION HIGH VOLTAGE" is indicated.) electrolytic capacitor (500μF/400V or 760μF/400V) on P.C. board, and then perform discharging.

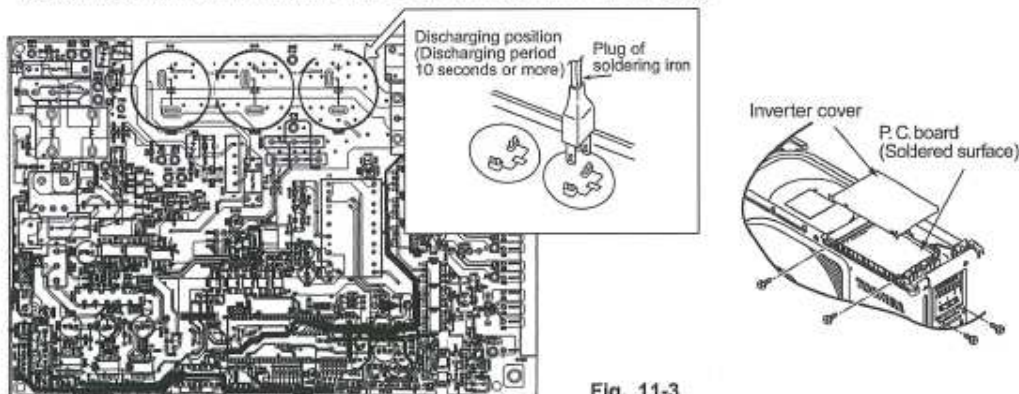


Fig. 11-3



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### 11-2. Primary Judgment

To diagnose the troubles, use the following methods.

- 1) Judgment by flashing LED of indoor unit
- 2) Self-diagnosis by service check remote controller
- 3) Judgment of trouble by every symptom

Firstly use the method 1) for diagnosis. Then, use the method 2) or 3) to diagnose the details of troubles.

### 11-3. Judgment by Flashing LED of Indoor Unit

While the indoor unit monitors the operation status of the air conditioner, if the protective circuit operates, the contents of self-diagnosis are displayed with block on the indoor unit indication section.

Table 11-3-1

	Item	Check code	Block display	Description for self-diagnosis
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Indoor indication lamp flashes.</div> <div style="margin-left: 40px;">↓</div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;">Which lamp does flash?</div> <div style="margin-left: 40px;">→</div>	A	—	OPERATION (Green) Flashing display (1 Hz)	Power failure (when power is ON)
	B	00	OPERATION (Green) Flashing display (5 Hz)	Protective circuit operation for indoor P.C. board
	C	01	OPERATION (Green) TIMER (Yellow) Flashing display (5 Hz)	Protective circuit operation for connecting cable and serial signal system
	D	02	OPERATION (Green) FILTER (Orange) Flashing display (5 Hz)	Protective circuit operation for outdoor P.C. board
	E	03	OPERATION (Green) TIMER (Yellow) FILTER (Orange) Flashing display (5 Hz)	Protective circuit operation for others (including compressor)

#### NOTES :

1. The contents of items B and C and a part of item E are displayed when air conditioner operates.
2. When item B and C, and item B and a part of item E occur concurrently, priority is given to the block of item B.
3. The check codes can be confirmed on the remote controller for servicing.



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1. After servicing, press the START/STOP button to return to the normal mode.
2. After servicing by the check code, turn off breaker of the power supply, and turn on breaker of the power supply again so that memory in the microcomputer returns the initial status.  
However, the check codes are not deleted even if the power supply is turned off because they are stored in the fixed memory.
3. After servicing, press [CLR] button under check mode status and then send the check code "7F" to the indoor unit. The error code stored in memory is cleared.

Table 11-4-1

Block distinction		Operation of diagnosis function				Judgment and action
Check code	Block	Check code	Cause of operation	Air conditioner status	Remarks	
00	Indoor P.C. board etc.	01	Short-circuit or disconnection of the room temperature sensor (TA sensor).	Operation continues.	Displayed when error is detected.	1. Check the room temp. sensor. 2. When the room temp. sensor is normal, check P.C. board.
		02	Being out of place, disconnection, short-circuit, or migration of heat exchanger sensor (TC sensor)	Operation continues.	Displayed when error is detected.	1. Check heat exchanger sensor. 2. When heat exchanger sensor is normal, check P.C. board.
		11	Lock of indoor fan or trouble on the indoor fan circuit	All off	Displayed when error is detected.	1. Check the motor. 2. When the motor is normal, check P.C. board.
	Not displayed	12	Trouble on other indoor P.C. boards	Operation continues.	Displayed when error is detected.	Replace P.C. board.
01	Connecting cable and serial signal	04	Return serial signal is not sent to indoor side from operation started. 1) Defective wiring of connecting cable 2) Operation of compressor thermo Gas shortage Gas leak	Operation continues.	Flashes when trouble is detected on Return serial signal, and normal status when signal is reset.	1. When the outdoor unit never operate: 1) Check connecting cable, and correct if defective wiring. 2) Check 25A fuse of inverter P.C. board. 3) Check 3.15A of inverter P.C. board. 2. To display [Other] block during operation, check compressor thermo. operation and supply gas (check gas leak also). 3. Unit operates normally during check. If return serial signal does not stop between indoor terminal board 2 and 3, replace inverter P.C. board. If signal stops between indoor terminal board 2 and 3, replace indoor P.C. board.





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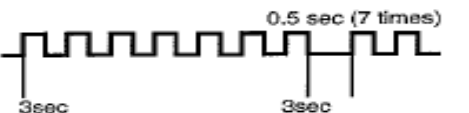
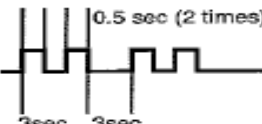

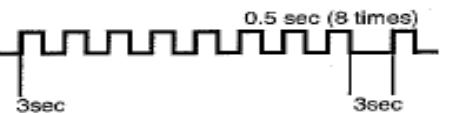

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### Self diagnostic function.

The control will contain diagnostic test to verify the integrity of the system. Once a malfunction is detected, the diagnostic control section will force the system mode to OFF for 3 minutes. After the OFF delay, system mode is released and allowed to return to its normal state. The system will be allowed to restart on its own. The diagnostic control section will allow the system to fail 5 consecutive times before shutting down the system. The lamp on insert grille is scanned every half second and the error codes are displayed by the flashing frequency of lamp.

The error codes are displayed during SHUT-OFF (3 minutes off and after the 5<sup>th</sup> retry failure) as follows.

### GREEN LED FLASING TIMES

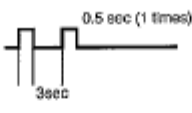
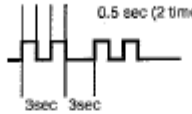
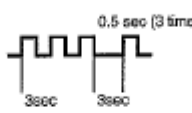
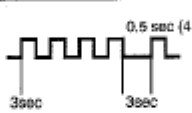

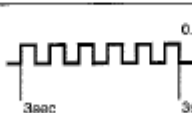
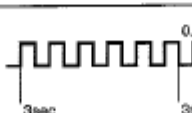
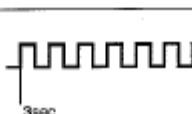
NO (RANK)	ERROR CONTENTS	DISPLAY PATTERN	ALLOWED MODES
1	Power Line Feedback (ZERO CROSSING)		
2	Indoor-outdoor units communication fault		FAN ONLY MODE
3	Room air sensor fault		FAN ONLY MODE
4	Indoor unit coil sensor fault		FAN ONLY MODE
5	Indoor fan motor fault		
6	Indoor sensor wiring reversed		FAN ONLY MODE



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Orange LED Flashing Times

NO (RANK)	ERROR CONTENTS	DISPLAY PATTERN	ALLOWED MODES
1	Outdoor sensor fault 1) Outdoor air 2) Outdoor coil 3) Discharge gas 4) OLP (if used)		FAN ONLY MODE
2	Indoor-outdoor units mis-matching		FAN ONLY MODE
3	4Way Valve Fault		FAN ONLY MODE
4	Outdoor fan motor fault		FAN ONLY MODE
5	Inverter control drive fault		FAN ONLY MODE
6	Power module (IGBT) fault		FAN ONLY MODE
7	Indoor-outdoor units communication fault		FAN ONLY MODE
8	Outdoor high temperature protection		FAN ONLY MODE



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• Description of the CDU LED status

NO (Priority)	LED Display			Description
	Yellow	Green	Red	
1	Off	Off	On	IPM Peak Current Protection
2	Off	Blink	On	IPM Under Voltage Protection
3	Off	On	Off	IPM Over Voltage Protection
4	Off	On	Blink	IPM Over Temperature Protection
5	Blink	On	Blink	PFC Over current / Over voltage Protection#1
6	Blink	Off	On	Toshiba-NEC option error
7	On	Blink	Blink	Toshiba-NEC communication error
8	On	On	Blink	Current sensor error
9	Blink	On	On	DC-LINK Voltage sensor error
10	Off	On	On	IPM thermistor error
11	Blink	Blink	On	Toshiba zero crossing error
12	On	Off	On	Outdoor air sensor error
13	On	Blink	On	Outdoor coil sensor error
14	On	On	Off	Discharge gas sensor error
15	On	Off	Blink	OLP bi-metal error, Outdoor coil high temperature protect or compressor off by the discharge protection
16	On	On	On	Indoor-Outdoor communication error
17	On	Blink	Off	Nec Max current over Protection, Compressor off by the current limit control protection.
18	Blink	On	Off	Outdoor fan motor error
19	On	Off	Off	NEC zero crossing error
20	Off	Off	Off	NEC micom option select error
Normal	Off	Off	Blink	Comp off, RVS off : Off mode or Cooling mode
21	Off	Blink	Off	IPM peak current protection under 30Hz
Normal	Off	Blink	Blink	Comp off, RVS on : Heating mode
22	Blink	Off	Off	IPM Over current trip protection
Normal	Blink	Off	Blink	Comp on, RVS off : Cooling operation or Defrost operation
23	Blink	Blink	Off	PFC Over current / Over voltage Protection
Normal	Blink	Blink	Blink	Comp on, RVS on : Heating operation

For more detailed explanation, please refer to DSTI(Dealer's Service Tool for P 1:1AC Inverter System) manual.



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### Fault code detected by Indoor units

FCU Fault code No	Diagnostic function	Status of air conditioner	Judgement and measures	Equivalent CDU fault code
2	Pump broken, float switch broken.	STOP after 3 continuous minutes of float switch open	1. Check Pump winding resistance. 2. Check float switch status/functionality.	N/A
3	Coming-off, disconnection or short of indoor temperature sensor (TA).	STOP after 20sec. of fault	1. Check indoor sensor TA (connection, resistance value). 2. Check indoor PCB.	N/A
4	Coming-off, disconnection or short of indoor temperature sensor (TC).	STOP after 20sec. of fault	1. Check indoor sensor TC (connection, resistance value). 2. Check indoor PCB.	N/A
10	If any of the configuration data that is saved in the EEPROM except address, zone, and GFD are corrupt.	STOP	1. Change board	N/A
12	The unit is a communicating device and the communications address or zone number is not read in correctly from the EEPROM.	STOP	1. Change board	N/A
14	Communications are lost to the CDU for 60 seconds and cannot be re-established within 60 seconds.	STOP after 60sec. of fault	1. Check HV communication wire "3" on CDU/FCU terminal block. 2. Check connection J4 indoor PCB. 3. Check connection from terminal block to PCB on CDU. 4. Compressor case thermo Open.	4, 8
15	Coming-off, disconnection or short of indoor temperature sensor (TCJ).	STOP after 20sec. of fault	1. Check indoor sensor TCJ (connection, resistance value). 2. Check indoor PCB.	N/A
18	• Inverter over-current protective circuit operates (For a short time). • Short voltage of main circuit operates.	STOP	1. Inverter immediately stops even if restarted. Compressor motor runs short 2. Check IPDU: Cabling error.	12
20	IPDU position detection circuit error	STOP	1. Position detection circuit operates even the compressor is operating by removing 3P connector. Replace IPDU.	13
21	Current detection circuit error • Current value at AC side is high even during compressor-OFF. • Phase of power supply is missed.	STOP	1. Compressor immediately stops even if restarted. Check IPDU. 2. Phase-missing operation of power supply Check 3-phase power voltage and cables.	14
22	Coming-off, disconnection or short of outdoor temperature sensor (TE/TS).	STOP	1. Check outdoor temperature sensor (TE). 2. Check outdoor CDB P.C. board.	1, 2
23	Coming-off, disconnection or short of outdoor temperature sensor (TD).	STOP	1. Check outdoor temperature sensor (TD). 2. Check outdoor CDB P.C. board.	3
24	Outdoor DC fan error	STOP	1. Defective detection of position. 2. Over-current protective circuit of outdoor fan driving unit operates. 3. Lock of outdoor fan. 4. Check outdoor CDB P.C. board.	6
26	Outdoor unit and other errors • Communication error between CDB and IPDU (Coming-off of connector). • Heat sink temperature error (Detection of temperature over specified value).	STOP	1. Check cables of CDB and IPDU. 2. Abnormal overload operation of refrigerating cycle.	7
27	Compressor does not rotate. • Over-current protective circuit operates after specified time passed when compressor had been activated.	STOP	1. Trouble of compressor (Compressor lock, etc.): Replace compressor. 2. Defective cabling of compressor (Phase missing) 3. Phase-missing operation of power supply (3-phase model).	15
28	Discharge temperature error • Discharge temperature over specified value was detected.	STOP	1. Check refrigerating cycle (Gas leak). 2. Trouble of PMV 3. Check TD sensor.	8
29	Breakdown of compressor • Displayed when error is detected	STOP	1. Check power voltage: AC220-240V±10V 2. Overload operation of refrigerating cycle. 3. Check current detection circuit at AC side.	16
31	High-pressure protection error by TE sensor (Temperature over specified value was detected.)	STOP	1. Overload operation of refrigerating cycle. 2. Check outdoor temperature sensor (TE). 3. Check outdoor CDB P.C. board. 4. Compressor case thermo Open.	4, 8





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### Indoor unit (40KQV, 42PQV, 42VQV)

The indoor unit can detect any system fault and stop it immediately. The failure is recoverable based on the table below.

When a diagnostic is active, the green LED (P) and the yellow LED (R) [orange on 42PQV] blink 0.1 seconds on, 0.1 seconds off and indicate a fault code.

The yellow LED (R) indicates the tens digits.

The green LED (P) indicates the unit digits.

Two seconds elapse between the yellow LED and the green LED lighting.

The sequence ends with both LEDs off for 4 seconds.

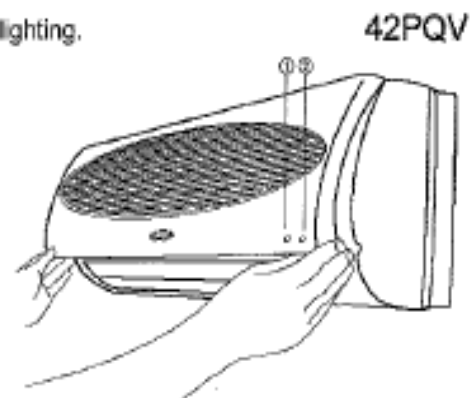
#### Example:

Fault code 12

- The yellow LED blinks (it indicates the tens digits).
- Both LEDs are off for 2 seconds.
- The green LED blinks twice with a 0.5 seconds frequency.
- Both LEDs are off for 4 seconds.

If the fault code is lower than 10, the yellow LED (R) is not blinking.

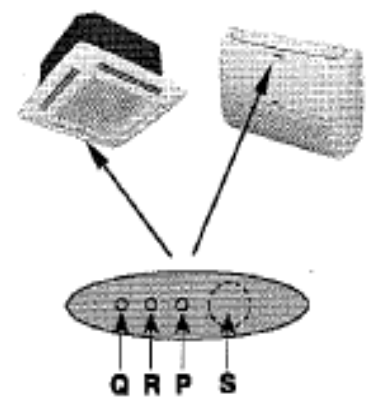
*The fault sequence described above is repeated until the fault has been repaired.*



- ① Green indicator light  
② Orange indicator light

Code	Description
2	Condensate Pump Failure or water drain Failure
3	Indoor unit Room Air sensor fault
4	Indoor unit Tc Coil sensor fault
10	Indoor unit software fault (EEPROM Corrupt)
12	Indoor unit software fault (Address / Zone Corrupt)
14	Loss of Signal From CDU
15	Indoor unit Tc Coil sensor fault
18	Outdoor unit control box fault (G-Tr short circuit protection)
20	Position Detection Circuit Error
21	Outdoor unit Current Sensor fault
22	Outdoor unit Heat Exchange Sensor fault
23	Outdoor unit Discharge Temperature Sensor fault
24	Outdoor unit Fan fault
26	Other Outdoor unit fault
27	Outdoor unit Compressor Lock
28	Outdoor unit Discharge Temperature fault
29	Outdoor unit Compressor Breakdown
31	Outdoor unit High Temperature/Pressure Release

### 40KQV - 42VQV



- P : Green LED  
Q : Red LED  
R : Yellow LED  
S : Remote control signal receiver



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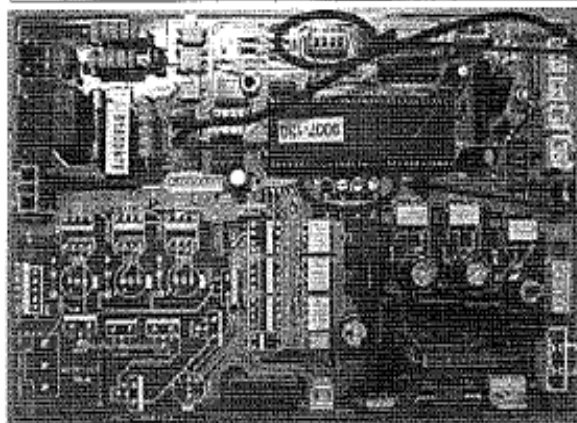
### Outdoor unit (VYX080 only) <SW800: LED display in bit 1, bit 2, bit 3, bit 4 OFF>

Troubles of the outdoor unit can be diagnosed by LED indications on the cycle control P.C. board of the outdoor unit. When multiple errors are detected, the latest error is displayed.

- When LED display is "O" (Go on), there is the main cause of trouble on the objective part of control at CDB side and the unit stops.
- When LED display is (Flash), there is the main cause of trouble on the objective part of control at IPDU side and the unit stops.
- When compressor case thermostat operates, the communication is interrupted on the serial circuit. If the case thermostat operation happens continuously, a serial communication error occurs because of a serial message has been sent to the indoor unit.

#### LED indication and code checking

LED indication	Cycle control P.C. board				Cause	Code No
	LED indication					
	D800	D801	D802	D803		
D800 O: Red D801 O: Yellow D802 O: Yellow D803 O: Yellow  ◊: Flashing ●: Off ○: On	○	●	●	●	Heat exchanger sensor (TE) error	1
	●	●	○	●	Suction sensor (TS) error	2
	○	○	●	●	Hot gas discharge sensor (TD) error	3
	●	○	●	○	High-pressure protection error	4
	●	○	●	●	Outdoor air temperature sensor error (TO)	5
	○	○	○	●	Outdoor DC fan motor error	6
	○	●	●	○	Communication error between IPDU (Abnormal stop)	7
	●	○	●	○	High-pressure release operation	8
	●	○	○	●	Discharge temp. error: hot gas is too high	9
	○	○	●	○	EEPROM error	10
	●	●	○	○	Communication error between IPDU (No abnormal stop)	11
	◊	●	●	●	G-Tr short-circuit protection	12
	●	◊	●	●	Detect circuit error	13
	◊	◊	●	●	Current sensor error	14
	●	●	◊	●	Comp. lock error	15
	◊	●	◊	●	Comp. break down	16



SW800

LED indication

#### Outdoor unit (VYX050)

##### WARNING

Troubles of the outdoor unit can be diagnosed by LED indications on the indoor unit only.



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**Fault code detected by outdoor unit (38VYX080, 110, 130).**

CDU Fault code No	Diagnostic function	Status of air conditioner	Judgement and measures
1	Coming-off, disconnection or short of outdoor temperature sensor (TE).	STOP	1. Check outdoor temperature sensor (TE). 2. Check outdoor CDB P.C. board.
2	Coming-off, disconnection or short of outdoor temperature sensor (TS).	STOP	1. Check outdoor temperature sensor (TS). 2. Check outdoor CDB P.C. board.
3	Coming-off, disconnection or short of outdoor temperature sensor (TD).	STOP	1. Check outdoor temperature sensor (TD). 2. Check outdoor CDB P.C. board.
4	High-pressure protection error by TE sensor (Temperature over specified value was detected.)	STOP	1. Overload operation of refrigerating cycle. 2. Check outdoor temperature sensor (TE). 3. Check outdoor CDB P.C. board. 4. Compressor case thermo Open.
5	Coming-off, disconnection or short of outdoor temperature sensor (TO).	Continuous Operation	1. Check outdoor temperature sensor (TO). 2. Check outdoor CDB P.C. board.
6	Outdoor DC fan error	STOP	1. Defective detection of position. 2. Over-current protective circuit of outdoor fan driving unit operates. 3. Lock of outdoor fan. 4. Check outdoor CDB P.C. board.
7	Outdoor unit and other errors • Communication error between CDB and IPDU (Coming-off of connector). • Heat sink temperature error (Detection of temperature over specified value).	STOP	1. Check cables of CDB and IPDU. 2. Abnormal overload operation of refrigerating cycle.
8	High-pressure protection error by TE sensor (Temperature over specified value was detected.)	STOP	1. Overload operation of refrigerating cycle. 2. Check outdoor temperature sensor (TE). 3. Check outdoor CDB P.C. board. 4. Compressor case thermo Open.
9	Discharge temperature error • Discharge temperature over specified value was detected.	STOP	1. Check refrigerating cycle (Gas leak). 2. Trouble of PMV. 3. Check TD sensor.
12	• Inverter over-current protective circuit operates (For a short time). • Short voltage of main circuit operates.	STOP	1. Inverter immediately stops even if restarted: Compressor motor rare short 2. Check IPDU: Cabling error.
13	IPDU position detection circuit error	STOP	1. Position detection circuit operates even the compressor is operating by removing 3P connector. Replace IPDU.
14	Current detection circuit error • Current value at AC side is high even during compressor-OFF. • Phase of power supply is missed.	STOP	1. Compressor immediately stops even if restarted: Check IPDU. 2. Phase-missing operation of power supply Check 3-phase power voltage and cables.
15	Compressor does not rotate. • Over-current protective circuit operates after specified time passed when compressor had been activated.	STOP	1. Trouble of compressor (Compressor lock, etc.): Replace compressor. 2. Defective cabling of compressor (Phase missing) 3. Phase-missing operation of power supply (3-phase model).
16	Breakdown of compressor • Displayed when error is detected	STOP	1. Check power voltage: AC220-240V±10V 2. Overload operation of refrigerating cycle. 3. Check current detection circuit at AC side.