7. Caution for Pump Down
8. Self-Diagnosis Function Table and Contents of Alarm Display

7. Caution for Pump Down

Pump down means refrigerant gas in the system is returned to the outdoor unit.
Pump down is used when the unit is to be moved, or before servicing the refrigerant circuit.
See the section 2.

CAUTION

- **This outdoor unit cannot collect more than the rated refrigerant amount as shown by the nameplate on the back.**
- **If the amount of refrigerant is more than that recommended, do not conduct pump down. In this case use another refrigerant collecting system.**

8. Self-Diagnosis Function Table and Contents of Alarm Display

How to know LEDs 1 and 2 alarm display on outdoor unit control P.C. board

LED 1	LED 2	Contents of Alarm Display
☀	☀	**Alarm display**
Alternating		After LED1 blinks M times, LED2 blinks N times. This will be repeated.

	Times of blinks	Type of alarm
M	2	P Alarm
	3	H Alarm
	4	E Alarm
	5	F Alarm
	6	L Alarm

N = Times of alarm No.

For example: After LED1 blinks twice, LED2 blinks 17 times. This will be repeated.
The alarm shows "P17".

(☀ : Blink) Connect the outdoor unit maintenance remote controller to the RC plug (3P, BLU) on outdoor main unit control P.C. board and make confirmation.

■ Self-Diagnosis Function Table

- Cause and countermeasure against the symptom of auto address failure

Symptom	Cause and countermeasure
• When turning ON power to the outdoor main unit, LEDs 1 and 2 illuminate or blink excluding going out. Auto address setting is not available.	See "Contents of Alarm Display" and make corrections.
• When auto address setting by the remote controller begins, the alarm display appears immediately.	
• When auto address setting by the remote controller begins, no display appears.	Are remote control wiring and inter-unit control wiring connected properly? Is indoor unit turned ON power?

- Auto address setting begins but finishes improperly.

Symptom	Cause and countermeasure
• Soon after a few seconds or after a few minutes, the alarm content is displayed on the remote controller.	See "Contents of Alarm Display" and make a correction.
• After a few minutes when auto address setting begins, the compressor may occasionally start and stop several times. LEDs 1 and 2 on outdoor unit control P.C. board show the display of auto address setting with blinking alternately but LEDs 1 and 2 do not indicate the completion of auto address setting (go out).	Are remote control wiring and inter-unit control wiring connected properly? Is indoor unit turned ON power?

8. Self-Diagnosis Function Table and Contents of Alarm Display

- If the alarm display "E15", "E16" and "E20" appear after auto address setting began, check the following items.

Alarm display	Alarm contents
E15	Recognized number of indoor units at the time of auto address setting are fewer than that of indoor units set by SW3 and SW4 on outdoor main unit P.C. board.
E16	Recognized number of indoor units at the time of auto address setting are more than that of indoor units set by SW3 and SW4 on outdoor main unit P.C. board.
E20	Outdoor unit could not entirely receive serial communication signal from the indoor unit within 90 seconds after auto address setting began.

Check	E15	E16	E20
Have you forgotten to turn ON power to indoor unit?	○		○
Are indoor and outdoor control wiring connected properly? (Check for incorrect wiring to open & short-circuit, terminal pin and remote control terminal.)	○	○	○
Is remote control wiring connected properly? (Check for open & short-circuit, wrong connection to indoor/outdoor unit control wiring terminal, inter-unit control wiring.)	○		○
Are the number of the connecting indoor units set by SW3 and SW4 of outdoor main unit control P.C. board connected properly?	○	○	
Is additional appropriate amount of refrigerant charge? (Compressor ON at the time of auto address setting)	○		
Is the refrigerant tubing connected properly? (Compressor ON at the time of auto address setting)	○	○	
Are E1 and E3 sensors of indoor unit normal? (Compressor ON at the time of auto address setting)	○		
Are there any wrong system address installed in indoor units caused by manual or incorrect auto address control?		○	

1) When auto address setting from outdoor main unit control P.C. board or remote controller begins, "Under Setting" appears on the remote controller as for normal indoor units under the inter-unit control wirings and remote control wirings. LEDs 1 and 2 indicators on outdoor main unit control P.C. board blink alternately.

2) If there is an error at the inter-unit control wiring of the remote controller when in the indoor unit group control, address setting may not occasionally be made although "under setting" is displayed.

3) Although the alarm "E15" and "E16" are displayed, addresses will be installed in the recognized indoor units. The installed addresses can be checked by the remote controller. See the section "Checking the indoor unit address".

- When operating the remote controller after auto address setting completed (LEDs 1 and 2 indicators on outdoor main unit control P.C. board go out), correct the symptom if the following alarms appear on the remote controller.

Remote control display	Cause
No display	Remote controller is not connected properly. (Power failure) When auto address setting was completed, the power of indoor unit was turned off.
E01	Indoor unit does not respond to remote controller. Indoor unit address was mistakenly controlled by undesired indoor unit remote controller. (Impossible to communicate with outdoor unit)
E02	The remote controller is having error in sending serial communication signal. (Impossible to communicate with indoor unit by remote controller)
P09	Connection to the panel of indoor unit is not good.

If any other alarm appear on the display, see the section 5.

- Alarm display can be checked by the outdoor maintenance remote controller. When operating, see the section 5. Alarm display can also be checked by number of blinking of LEDs 1 and 2 on outdoor unit control P.C. board. See the section "How to know LEDs 1 and 2 alarm display on outdoor unit control P.C. board" under the section "8. Self-Diagnosis Function Table and Contents of Alarm Display".

Remote control display	Alarm contents
E01	Indoor unit does not respond to remote controller.
E02	The remote controller is having error in sending serial communication signal.
E03	Controller does not respond to indoor unit.
E04	Oudoor unit does not respond to indoor unit.
E06	Some indoor units does not respond to outdoor unit.
E08	Indoor unit address is dupulicating.

8. Self-Diagnosis Function Table and Contents of Alarm Display

Remote control display	Alarm contents
E09	Two or more remote controllers are set as main on R1-R2 link.
E12	Auto Address failed to start.
E14	Two or more indoor units are set as main, in the group controlled indoor units.
E15	Fewer indoor units are found in Auto Addressing than the setting on outdoor PCB.
E16	More indoor units are found in Auto Addressing than the setting on outdoor PCB.
E18	No response from sub indoor to the main indoor unit in group control wiring.
E20	No indoor unit responded in Auto Addressing.
E24	No response from sub outdoor unit.
E25	The outdoor unit address is duplicating.
E26	The number of responding outdoor units does not match with the setting on the main outdoor unit.
E27	Improper wiring between main and sub outdoor units.
E29	No response from main outdoor unit.
E30	The outdoor unit is having error in sending serial communication signal on main-sub communication line.
E31	Error in communication inside outdoor unit control box.
F01	E1 thermistor on liquid side of indoor heat exchanger has failure. (E1)
F02	Indoor unit set as single split. (E2)
F03	E3 thermistor on gas side of indoor heat exchanger has failure. (E3)
F04	DISCH1 thermistor at the discharge of 1st compressor reading is abnormal.
F05	DISCH2 thermistor at the discharge of 2nd compressor reading is abnormal.
F06	EXG1 thermistor at the gas side of 1st heat exchanger of the outdoor unit has failure. (EXG1)
F07	EXL1 thermistor at the liquid side of 1st heat exchanger of the outdoor unit has failure. (EXL1)
F08	TO thermistor for outdoor ambient air temperature has failure. (TO)
F10	TA thermistor for intake air temperature (room temperature) of the indoor unit has failure. (TA)
F11	BL thermistor for supply air temperature of the indoor unit has failure. (BL)
F12	SCT thermistor at the suction refrigerant of compressors has failure. (SCT)
F14	SCG thermistor at the outlet of subcooling heat exchanger in outdoor unit has failure. (SCG)
F16	High pressure sensor of the outdoor unit has failure. (HPS)
F17	Low pressure sensor of the outdoor unit has failure. (LPS)
F23	EXG2 thermistor at the gas side of 2nd heat exchanger of the outdoor unit has failure. (EXG2)
F24	EXL2 thermistor at the liquid side of 2nd heat exchanger of the outdoor unit has failure. (EXL2)
F29	EEPROM on indoor unit PCB has failure.
F31	EEPROM on outdoor unit PCB has failure.
H01	Overcurrent in 1st compressor.
H03	Current sensor for the 1st compressor is disconnected or shorted.
H05	DISCH1 thermistor at the discharge of 1st compressor is disconnected, shorted or misplaced. (DISCH1)
H06	Low pressure is too low.
H07	Low on oil or the oil recovery circuit has restriction.
H08	OIL1 thermistor for the oil of 1st compressor has failure. (OIL1)
H11	Overcurrent in 2nd compressor.
H13	Current sensor for the 2nd compressor is disconnected or shorted.
H15	DISCH2 thermistor at the discharge of 2nd compressor is disconnected, shorted or misplaced. (DISCH2)
H21	HIC for 2nd compressor has failure. Overcurrent or overheat of HIC.
H27	OIL2 thermistor for the oil of 2nd compressor has failure. (OIL2)
H31	HIC for 1st compressor has failure. Overcurrent or overheat of HIC.
L01	Indoor unit address setting has error. (No main indoor unit in group control.)
L02	Indoor unit model does not match with the outdoor unit model. (Multi-split/mini-split)
L03	Two or more indoor units are set as main in group control.
L04	Duplicate system address setting on outdoor units.
L05	Two or more indoor units are set as priority indoor unit.
L06	Two or more indoor units are set as priority indoor unit.
L07	Group control wiring is detected for indoor unit set as individual control.
L08	Indoor unit address is not set.
L09	Capacity setting of indoor unit is not correct.
L10	Capacity setting of outdoor unit is not correct.
L11	Incorrect wiring of remote group control wiring (in case of shared solenoid valve kit)
L13	Indoor unit model does not match with outdoor unit.
L17	Model mismatch between outdoor units in one refrigerant circuit.
P01	Indoor fan motor activated thermal protector.
P03	1st compressor discharge temperature too high.

8. Self-Diagnosis Function Table and Contents of Alarm Display

Remote control display	Alarm contents
P04	Protection device activated. High pressure switch (63PH, 63PH1 or 63PH2) or compressor thermal protector (49C1 / 49C2).
P05	Open phase in power input is detected at HIC for 1st compressor.
P09	Connection to the panel of indoor unit is not good.
P10	Float switch of drain pan safety is activated.
P11	Drain pump failure or locked rotor.
P12	Indoor fan inverter protection control is activated.
P14	Input detected at EXCT terminal on indoor PCB for refrigerant detector.
P15	Open phase in power input is detected at HIC for 2nd compressor.
P16	Overcurrent of 1st compressor on the secondary side of inverter circuit, or inverter failed to syncronize with rotation.
P17	2nd compressor discharge temperature too high.
P19	Inverter for 2nd compressor failed to start or failed to syncronize with rotation.
P22	Fan motor or inverter drive of outdoor unit has failure.
P26	Overcurrent of 2nd compressor on the secondary side of inverter circuit, or inverter failed to syncronize with rotation.
P29	Inverter for 1st compressor failed to start or failed to syncronize with rotation.
P31	Other indoor unit in group control has an alarm.

- Contents of alarm display on remote controller
  For the remote controller, there are other alarm contents listed on the following table besides the alarm display on outdoor main unit control P.C. board.

Wired remote control display	Detected contents	
<E01>	Remote controller is detecting error signal from indoor unit.	Indoor unit does not respond to remote controller.
<E02>		The remote controller is having error in sending serial communication signal.
<<E03>>	Controller does not respond to indoor unit.	
E04	Indoor unit is detecting error signal from main outdoor unit.	Outdoor unit does not respond to indoor unit.
E06	Outdoor unit is detecting error signal from indoor unit.	Some indoor units does not respond to outdoor unit.
E08	Improper setting of indoor unit or remote controller.	Indoor unit address is dupulicating.
<<E09>>		Two or more remote controllers are set as main on R1-R2 link.
E12	During auto address setting, number of connected units does not correspond to number set. wer supply, number When turning on the po of connected units does not correspond to number set. address is "0." (Except R.C.	Auto Address failed to start.
E15		Fewer indoor units are found in Auto Addressing than the setting on outdoor PCB.
E16		More indoor units are found in Auto Addressing than the setting on outdoor PCB.
E20		No indoor unit responded in Auto Addressing.
E24		No response from sub outdoor unit.
E25		The outdoor unit address is duplicating.
E26		The number of responding outdoor units does not match with the setting on the main outdoor unit.
E29		No response from main outdoor unit.
E31		Error in communication inside outdoor unit control box.
<<L02>>	Improper setting.	Indoor unit model does not match with the outdoor unit model. (Multi-split/mini-split)
<L03>		Two or more indoor units are set as main in group control.
L05		Two or more indoor units are set as priority indoor unit.
L06		Two or more indoor units are set as priority indoor unit.
L07		Group control wiring is detected for indoor unit set as individual control.
L08		Indoor unit address is not set.
<<L09>>		Capacity setting of indoor unit is not correct.
L04		Duplicate system address setting on outdoor units.
L10		Capacity setting of outdoor unit is not correct.
L11		Incorrect wiring of remote group control wiring (in case of shared solenoid valve kit)
L17		Model mismatch between outdoor units in one refrigerant circuit.

Wired remote control display	Detected contents	
<<F01>>	Indoor thermistor is either open or damaged.	E1 thermistor on liquid side of indoor heat exchanger has failure. (E1)
<<F02>>		Indoor unit set as single split. (E2)
<<F03>>		E3 thermistor on gas side of indoor heat exchanger has failure. (E3)
<<F10>>		TA thermistor for intake air temperature (room temperature) of the indoor unit has failure. (TA)
<<F11>>		BL thermistor for supply air temperature of the indoor unit has failure. (BL)
F04	Outdoor thermistor is either open or damaged.	DISCH1 thermistor at the discharge of 1st compressor reading is abnormal.
F05		DISCH2 thermistor at the discharge of 2nd compressor reading is abnormal.
F06		EXG1 thermistor at the gas side of 1st heat exchanger of the outdoor unit has failure. (EXG1)
F07		EXL1 thermistor at the liquid side of 1st heat exchanger of the outdoor unit has failure. (EXL1)
F08		TO thermistor for outdoor ambient air temperature has failure. (TO)
F12		SCT thermistor at the suction refrigerant of compressors has failure. (SCT)
F14		SCG thermistor at the outlet of subcooling heat exchanger in outdoor unit has failure. (SCG)
F16		High pressure sensor of the outdoor unit has failure. (HPS)
F17		Low pressure sensor of the outdoor unit has failure. (LPS)
F23		EXG2 thermistor at the gas side of 2nd heat exchanger of the outdoor unit has failure. (EXG2)
F24		EXL2 thermistor at the liquid side of 2nd heat exchanger of the outdoor unit has failure. (EXL2)
<<P01>>	Protective device in indoor unit is activated.	Indoor fan motor activated thermal protector.
<<P09>>		Connection to the panel of indoor unit is not good.
<<P10>>		Float switch of drain pan safety is activated.
<<P12>>		Indoor fan inverter protection control is activated.
P14		Input detected at EXCT terminal on indoor PCB for refrigerant detector.
P03	Protective device in outdoor unit is activated.	1st compressor discharge temperature too high.
P04		Protection device activated. High pressure switch (63PH, 63PH1 or 63PH2) or compressor thermal protector (49C1 / 49C2).
P05		Open phase in power input is detected at HIC for 1st compressor.
P15		Open phase in power input is detected at HIC for 2nd compressor.
P16		Overcurrent of 1st compressor on the secondary side of inverter circuit, or inverter failed to syncronize with rotation.
P17		2nd compressor discharge temperature too high.
P19		Inverter for 2nd compressor failed to start or failed to syncronize with rotation.
P22		Fan motor or inverter drive of outdoor unit has failure.
P26		Overcurrent of 2nd compressor on the secondary side of inverter circuit, or inverter failed to syncronize with rotation.
P29		Inverter for 1st compressor failed to start or failed to syncronize with rotation.
<P31>	Indoor unit communication error of group control wiring.	Other indoor unit in group control has an alarm.
F29	EEPROM on indoor unit PCB failure	
F31	EEPROM on outdoor unit PCB failure	
H01	Protective device for compressor No. 1 is activated.	Overcurrent in 1st compressor.
H03		Current sensor for the 1st compressor is disconnected or shorted.
H05		DISCH1 thermistor at the discharge of 1st compressor is disconnected, shorted or misplaced. (DISCH1)
H11	Protective device for compressor No. 2 is activated.	Overcurrent in 2nd compressor.
H13		Current sensor for the 2nd compressor is disconnected or shorted.
H15		DISCH2 thermistor at the discharge of 2nd compressor is disconnected, shorted or misplaced. (DISCH2)
H06		Low pressure is too low.
H08	Oil sensor fault. (Disconnection, etc.)	OIL1 thermistor for the oil of 1st compressor has failure. (OIL1)
H27		OIL2 thermistor for the oil of 2nd compressor has failure. (OIL2)

8. Self-Diagnosis Function Table and Contents of Alarm Display

Wired remote control display	Detected contents	
H21	Abnormal device function	HIC for 2nd compressor has failure. Overcurrent or overheat of HIC.
H31		HIC for 1st compressor has failure. Overcurrent or overheat of HIC.

- The parentheses of << >> used in the table of alarm display does not affect anything the operation of other indoor units.
- The parentheses of < > used in the table of alarm display implies that there are two cases: according to the content of the symptom, some affect the operation of other indoor units and others do not affect anything.

Alarm messages displayed on system controller			
Serial communication errors Mis-setting	Error in transmitting serial communication signal	Indoor or main outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, main outdoor unit and system controller.	C05
	Error in receiving serial communication signal	Indoor or main outdoor unit is not operating correctly. Mis-wiring of control wiring between indoor unit, main outdoor unit and system controller. CN1 is not connected properly.	C06
Activation of protective device	Protective device of sub indoor unit in group control is activated.	When using wireless remote controller or system controller, in order to check the alarm message in detail, connect wired remote controller to indoor unit temporarily.	P30

NOTE

1. Alarm messages in << >> do not affect other indoor unit operations.
2. Alarm messages in < > sometimes affect other indoor unit operations depending on the fault.

ATTENTION!

Adjustment of terminating resistance (pin) is necessary.

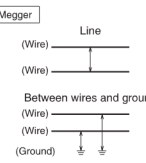
Communication failure will occur unless adjustment is made correctly.

- Terminating resistance (pin) is mounted on outdoor unit control P.C. board.
- When connecting central controller, interface or peripheral equipment, adjustment of terminating resistance (pin) is necessary. Although the connection is not made, confirmation is necessary for VRF systems.
- In the case of a refrigerant system, the terminating resistance (pin) for this inter-unit control wiring (S-LINK wiring) is one location (See the section “5. Auto Address Setting”).
  For 2 or more refrigerant systems, 2 locations should be valid (“SHORT” for VRF systems at shipment). See the section “5. Auto Address Setting”.
  In order to make 2 locations valid, let the terminating resistance (pin) of the nearest outdoor unit and the farthest outdoor unit be valid (SHORT side) from the location of central controller.
  In other refrigerant systems excepting 2 locations described above, make them invalid (OPEN side).
  It is prohibited making more than 3 locations of terminating resistance valid.
- Since the use of linking the sub outdoor units of VRF systems is not connected to the inter-unit control wiring, it is not necessary to make the terminating resistance invalid “OPEN side”.

Make final confirmation regarding the central controller or interface & inter-unit control wiring (S-LINK wiring) connected to the peripheral equipment.
Measure the line resistance with a tester and check whether the values are in the range of 30Ω - 120Ω.

If the resistance values are out of range, check again the terminating resistance. Nevertheless, if the values are out of range, the problem comes from wiring.

- Is the connection properly made?
- Are there any scratches or damages on the coated surface?
- Measure the line, between wires and ground with the 500V megger (insulation resistance meter) and check the values are over 100MΩ.
- When measuring, be sure to remove both edges of the wire from the terminal board. If not removed, it will be damaged.
- If the line resistance is within 100MΩ, newly carry out the wiring work.



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