Johnson Controls

HITACHI
Air conditioning solutions

VRF Tier 2 Function setting

Compiled referring to training material in JCH

JCH-WX VRF-Com
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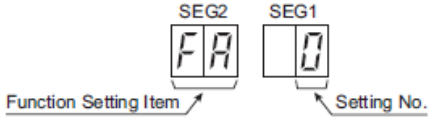
VRF Function setting

LEARNING OBJECTIVES

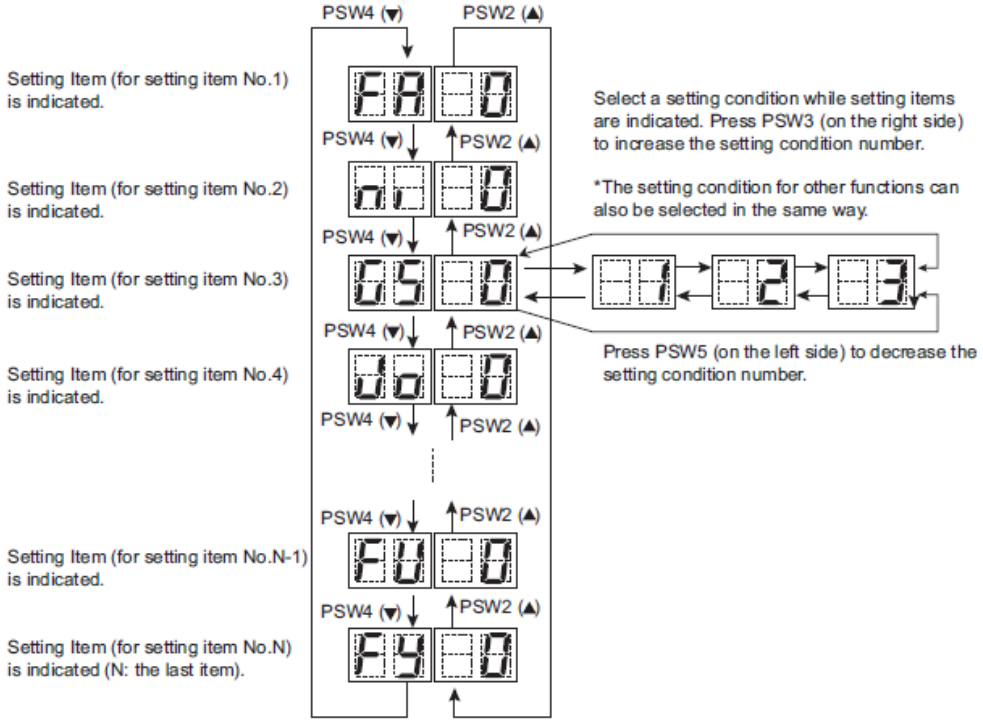
- Function setting

Function setting

(1) By selecting "Function Setting", the following appears on the 7-segment display.
(The setting should be performed during an outdoor unit stoppage. Also, set DSW4-No. 4 and No. 5 of the outdoor unit PCB3 to the "ON" side before performing the setting in order to prevent the compressor activation.)



(2) By pressing PSW2 or PSW4, the function setting item is changed.
After selecting the Function Setting Item, press PSW3 or PSW5, and then choose the Setting No. The following figure shows the display changes when PSW is pushed.



(3) After selecting the Function Setting, turn OFF DSW4-No.5. The display will be back to the normal operation. Then turn OFF DSW4-No.4. Confirm if DSW4 is set to factory settings.
The selected data is stored in the outdoor unit PCB3 and the "Function Setting" is completed. The stored data is maintained even when the power source is cut OFF.

No 6： Cancelation of Hot Start

- Usually, we have the hot start control to protect the compressor and system, only meet the following conditions , can system start up, but this always take long time.
- Under some conditions (like trial test), in order to shorter the waiting time to start up , we set options for cancelation or easy quit of hot start
- The is the temperature difference between Td and Ta, the minimum means easy to quit hot start.

6	Cancellation of Hot Start	HT	00	Hot start control is available
			01	Cancellation of hot start
			02	α = 15°C
			03	α = 10°C

- Power on
- Compressor heater n= off Order cancellation

Met one of the following conditions

1.Td1＞Ta＋α℃

3. After power on 240mins

4. When the Compressor stop ,press PSW5 more than 3s

5. Test running mode(Met one of the following conditions)

- Td1＞Ta＋α℃
- After power on 120mins

Setting「HT」	α[℃]
0	20
1	Cancellation
2	15
3	10

- No 13： Indoor Expansion Valve Opening Change for Thermo-OFF Indoor Unit in Heating Mode

13	Indoor Expansion Valve Opening Change for Thermo-OFF Indoor Unit in Heating Mode	5o	00	Thermo-OFF unit expansion valve opening (150~325 pulse)
			01	Expansion valve opening 0.8~2.0HP: 175 pulse, 2.5HP or over: 300 pulse
			02	Expansion valve opening 0.8~2.0HP: 100 pulse, 2.5HP or over: 150 pulse
			03	Expansion valve opening 0.8~2.0HP: 40 pulse, 2.5HP or over: 40 pulse

- This function is to adjust the initial opening degree and initial minimum opening degree of thermo off IDUs in heating mode.
- Adjust system efficency by reduce the refrigerant flow of therm off IDUs

No 17 ： Low Noise Setting

17	Low Noise Setting (In the case of low noise setting, cooling/heating operation range will be restricted.)	db	00	Initial setting
			01	Fan rotation maximum limit 1
			02	Fan rotation maximum limit 2
			03	Fan rotation maximum limit 3
			04	Frequency limit 1
			05	Frequency limit 2
			06	Frequency limit 3
			07	Operation sound value Setting, Target 55dB
			08	Operation sound value Setting, Target 50dB
			09	Operation sound value Setting, Target 45dB

- By setting this function, the compressor frequency and the outdoor fan motor rotation frequency are forcibly reduced and so the outdoor unit capacity decreases and the unit operation range is limited.
- Low noise mode is manual setting, night shift mode is automatically control.

No 17 ： Low Noise Setting

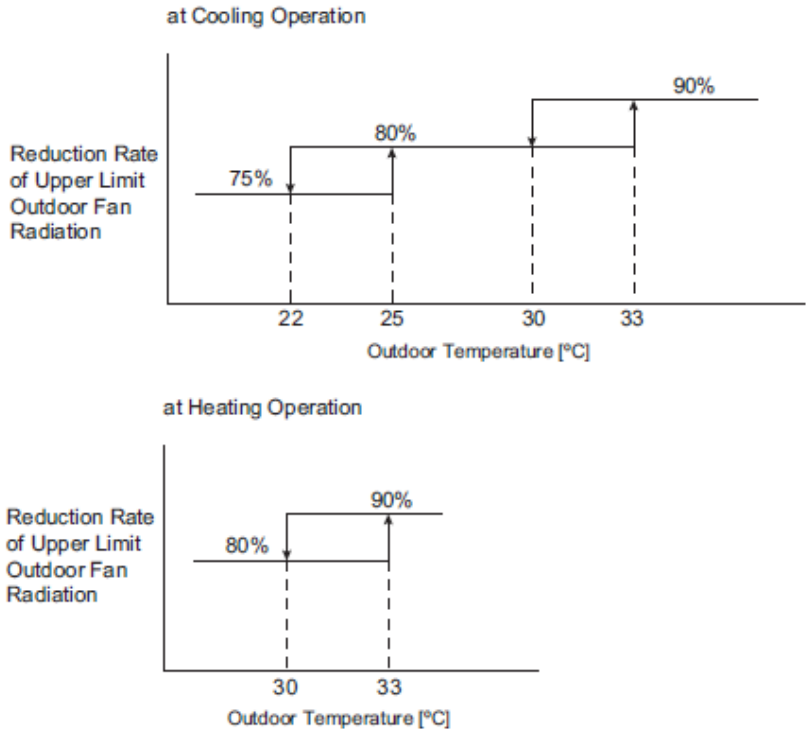
Setting Condition	Compressor Frequency Limit	Outdoor Fan Motor Step Limit		Operating Noise (Target Value)	Outdoor Unit Capacity (to Specification)
		≤18HP	≥20HP		
0	Not Changed	Not Changed		Target Value	100%
1	Not Changed	20 Steps	20 Steps	-	-
2	Not Changed	18 Steps	17Steps	-	-
3	Not Changed	16 Steps	15 Steps	-	-
4	80%	Not Changed		-	-
5	60%	Not Changed		-	-
6	40%	Not Changed		-	-
7	80%	20 Steps	20 Steps	-	80%
8	60%	18 Steps	17 Steps	-	60%
9	40%	16 Steps	15 Steps	-	40%

Night Shift

< Night Shift >

"ni" Setting Condition	Operation	Reduction Rate of Maximum			
		Outdoor Fan Rotation		Compressor Frequency	
		Cooling (Including Dry Operation)	Heating	Cooling (Including Dry Operation)	Heating
0	No Effect (Default Setting)	Not Changed (=100%)	Not Changed (=100%)	Not Changed (=100%)	Not Changed (=100%)
1	Night Shift1	Shown as below	Shown as below	60%	60%
2	Night Shift2 (only for Cooling)	Shown as below	Not Changed	60%	Not Changed

No 17 ： Low Noise Setting vs Night Shift



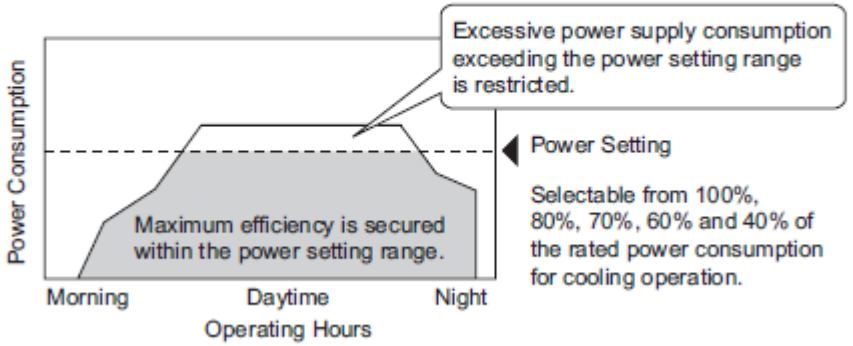
- Reduction rates are approximate, these may vary slightly depending on the outdoor unit model.
- This function setting is not possible to set the Priority Capacity Mode “nU” and the Low Noise Setting “db” at the same time.
- When outdoor temperature is higher than 44° C, Night shift and low noise mode setting is invalid.

No 18、19： Demand & Wave Function Setting

18	Demand Function Setting	dE	00	No demand control
			01	Demand control 40%
			02	Demand control 60%
			03	Demand control 70%
			04	Demand control 80%
			05	Demand control 100%
19	Wave Function Setting	UE	00	No Wave function
			01	Minimum limit 40%
			02	Minimum limit 60%
			03	Minimum limit 70%
			04	Minimum limit 80%

- No18 function is to meet the low power condition operation, demand control 40%-100% is meaning 40%-100% of rated current

- Demand Control
  Adopting self-demand function, which drastically decreases power consumption, has largely improved energy saving.

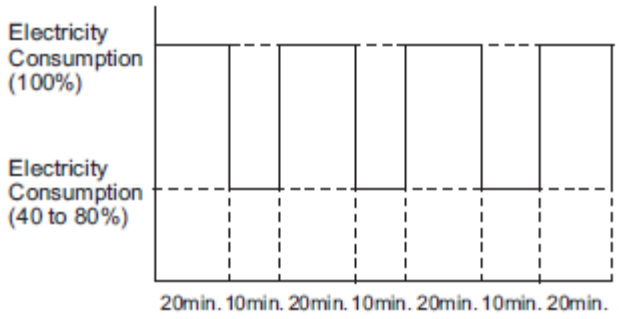


No 18、19： Demand & Wave Function Setting

18	Demand Function Setting	dE	00	No demand control
			01	Demand control 40%
			02	Demand control 60%
			03	Demand control 70%
			04	Demand control 80%
			05	Demand control 100%
19	Wave Function Setting	UE	00	No Wave function
			01	Minimum limit 40%
			02	Minimum limit 60%
			03	Minimum limit 70%
			04	Minimum limit 80%

- No19 function is activated, the maximum limit of running current is changed from 40% to 80% as shown in the figure

Setting Condition	Running Current Lower Limit Setting
0	Not Available (Default Setting)
1	40%
2	60%
3	70%
4	80%



No 20： Cold Draft Protection

20	Cold Draft Protection (Protection in Decrease in IndoorTemperature for Cooling)	Fb	00	Initial setting
			01	Indoor unit outlet temperature ≥ 10°C
			02	Indoor unit outlet temperature ≥ 12°C
			03	Indoor unit outlet temperature ≥ 14°C

- Fb is for IDU cold draft protection through reduce the compressor HZ

- No 22 ： Adjustment of Fan Rotation (To avoid a whining sound for the multiple installation.)

22	Adjustment of Fan Rotation (To avoid a whining sound for the multiple installation.)	Fo	00	Initial Setting
			01	Change of fan rotation -15rpm
			02	Change of fan rotation -30rpm

  - This is for avoiding whining sound through change the fan speed of one unit especially when there are several ODUs in one system

- No 24 ： Thermo-OFF Setting for Outdoor Unit After Defrosting Operation

24	Thermo-OFF Setting for Outdoor Unit After Defrosting Operation	d5	00	No setting
			01	Thermo-OFF stoppage setting for outdoor unit after defrosting operation

  - This function is to avoid refrigerant flow voice when four way valve switch after defrost mode.

No 26： Crankcase Heater Control during Turning OFF Operation Switch

26	Crankcase Heater Control during Turning OFF Operation Switch	F2	00	No setting
			01	Optional Switch OFF for 20 Days
			02	Optional Switch OFF for 15 Days
			03	Optional Switch OFF for 10 Days
			04	Optional Switch OFF for 5 Days
			05	Optional Switch OFF for 3 Days
			06	Optional Switch OFF for 2 Days

- This function is to save crankcase heater power when system is switch off.
- Basically, the heater always follow normal control as the following right page when system is switch off.
- If F2 setting is active, for example 01, when system, the first 20 days the heater will switch off , and then follow normal control

- No 27： Changing of OFF Time for Indoor Unit Fan during Turning ON Heating Operation Switch

27	Changing of OFF Time for Indoor Unit Fan during Turning ON Heating Operation Switch	F3	00	Initial Setting (Max. 12minutes)
			01	Max. 3 minutes
			02	Max. 6 minutes
			03	Max. 9 minutes
			04	Max. 15 minutes
			05	Max. 30 minutes
			06	Max. 60 minutes

- This function is to set max off time for IDU fan motor during start up stage in heating mode.
- Basically, the max High pressure >2.2Mpa , then the IDU fan will open, in case low temperature air condition, the may can not get 2.2 Mpa, so set the max off time for IDU fan.
- And this function provide the selecions for the max off time.

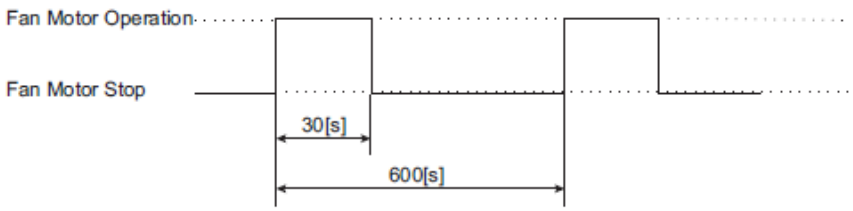
No 28 ： Intermittent Operation of Outdoor Fan Motor

28	Intermittent Operation of Outdoor Fan Motor	F4	00	No intermittent operation
			01	Set outdoor temperature ≤ 3ºC
			02	Set outdoor temperature ≤ 0ºC
			03	Set outdoor temperature ≤ 1ºC
			04	Set outdoor temperature ≤ 2ºC
			05	Set outdoor temperature ≤ 4ºC
			06	Set outdoor temperature ≤ 5ºC

- This function is only available in thermo off and switch off mode, not availabe in thermo on condition.
- During switch off and therm off mode, and without snow sensor, the ODU fan will operate interval according to the min(outdoor ambient temperature

When the outdoor temperature (selectable from 3°C, 0°C, 1°C, 2°C, 4°C and 5°C) reaches the setting temperature, all the outdoor fan motors start intermittent operation. When the outdoor temperature is at least 5°C higher than the setting temperature, the outdoor fan motors stop operating.

If the compressor restarts operating, the outdoor fan motors will be restored to normal operation.



	Cabinet A	CabinetB1/B2	CabinetC1/C2
B	18	17	18

No 43&44： Cooling mode Start control 2 Hz change speed

43	Cooling mode Start control 2 Hz change speed	Fn	00	3.0Hz/s
			01	2.0Hz/s
			02	1.0Hz/s
			03	0.5Hz/s
			04	0.25Hz/s
			05	0.125Hz/s
44	Cooling mode Heating Start control 2 Hz change speed	FP	00	3.0Hz/s
			01	2.0Hz/s
			02	1.0Hz/s
			03	0.5Hz/s
			04	0.25Hz/s
			05	0.125Hz/s

- Fn and FP function provide the seletions of frequency change speed during start up 2 stage for cooling and heating mode seperately.
- Usually, the frequency change speed is 3Hz/s, this is for shortening start up progress and improve the comfort.

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Questions?

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THANK YOU