

## Part 4 : Commissioning

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## 4.1 Indoor field settings

### What is in this chapter ?

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#### Overview

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## 4.1.1 Overview Indoor field settings

### Overview

Mode No.	First code No.	Description of the setting	Second code No.			
			01	02	03	04
10 or 20	0	Filter counter	Light contamination	heavy contamination	—	—
	1	Filter type	Long	Super long	External	Oil mist
	2	Remote thermistor of the remote controller	TH1 = rem. controller	TH1 = air return	—	—
	3	Filter display	Filter indic.	No filter indic.	—	—
11 or 21	0	Number indoor to 1 outdoor	Pair	Twin	Triple	Double twin
	1	Unified or indiv. set twin	Group setting	Indiv. setting	—	—
	2	Fan OFF at thermostat OFF	LL-speed	OFF	—	—
12 or 22	0	KRP1B51/52/53 X1/X2 output	Thermostat ON	Option	Operation	Malfunction
	1	EKRORO	Forced OFF	ON/OFF operation	—	—
	3	Fan speed heating thermostat OFF	LL-speed	Set speed	—	—
	5	Automatic restart	Disabled	Enabled	—	—
13 or 23	0	Ceiling height setting	Normal ≤ 2.7 m	High >2.7≤3.0 m	Extra high >3.0≤3.5 m	—
	1	Selection of air flow direction (setting for when a blocking pad kit has been installed).	4-way flow	3-way flow	2-way flow	—
	3	Horizontal discharge grill	Enabled	Disabled	—	—
	4	Air flow direction adjust range setting	Draft prevention	Standard	Ceiling soil prevention	—
	5	Field fan speed changeover air outlet	Standard	Option 1	Option 2	—
	6	External static pressure	Normal	High	Low	—
14 or 24	0	Additional timer to guard timer	0 s	5 s	10 s	15 s
1b (Only in case of BRC1D52)	0	Permission level setting	Level 2	Level 3	—	—
	1	Leave home function	Not permitted	Permitted	—	—
	2	Thermostat sensor in remote controller (for limit operation and leave home function only)	Use	Not use	—	—

## 4.2 Outdoor Field Settings RZQ71~140B7

### What is in this chapter ?

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#### Overview

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## 4.2.1 Overview of the Outdoor Field Settings

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### Overview

Description	Mode	First Code	Second Code				
			01	02	03	04	05
Night time low noise operation	16(26)	0	OFF (Factory)	Low noise activation	Capacity preceding (when using KRP58 only)	Low noise + capacity preceding	---
Low noise start & stop time		1	---	---	22h00~06h00	22h00~08h00 (Factory)	20h00~08h00
EDP room setting		2	OFF (Factory)	---	EDP room setting	EDP + no freeze-up	---
Defrost starting setting		3	Standard	Defrost slow starting	Defrost quick starting		

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## 4.2.2 Silent Operation

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**Purpose** Lower the operation sound of the outdoor unit.

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**Setting** Silent Operation can be activated by :

1. Automatic control (By field setting from remote controller)
2. External activation (from optional PCB KRP58M)

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**1. Silent Operation by Automatic control** Silent operation can be set by field setting from the wired remote controller :

Description	Mode	First Code	Second Code				
			01	02	03	04	05
Silent Operation	16(26)	0	OFF	Low noise activation	---	Low noise + capacity priority	---
Low noise start & stop time		1	---	---	22h00 ~ 06h00	22h00 ~ 08h00	20h00 ~ 08h00

---

**Method** When setting mode 16(26)-0-02, silent operation will be carried out by presuming the current time in accordance with the outside temperature. Every 5 minutes, the outdoor unit will check the actual outdoor temperature. The unit will keep in it's memory an average of the highest temperature of the last 10 days. Automatic mode will start when the outdoor temperature is = average max of last 10 days  $-5^{\circ}\text{C}$  and will be conducted for 10 hours. The maximum outdoor temperature is supposed to occur at 14:00h. The night time low noise operation is supposed to be activated between 22:00h and 08:00h in factory setting, but can be changed by field setting. As the time judgement is made in accordance with the outdoor temperature, the above mentioned timing is an estimation only.

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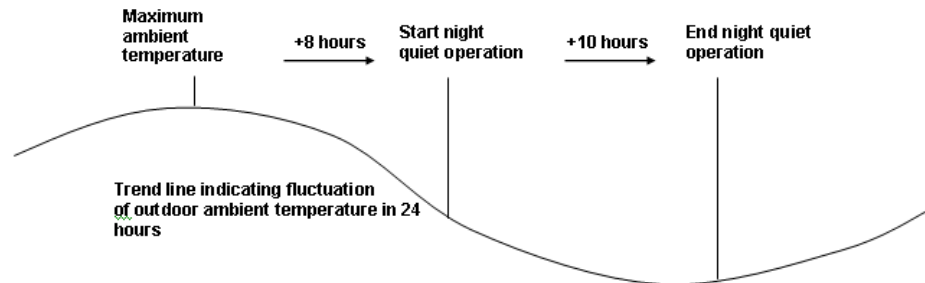
**Capacity precedence setting** When setting mode 16(26)-0-04, the low noise operation will be stopped when the heating or cooling load increases. In that case, the operation will return to normal operation. The unit will return to low-noise operation when the heating or cooling load decreases again.

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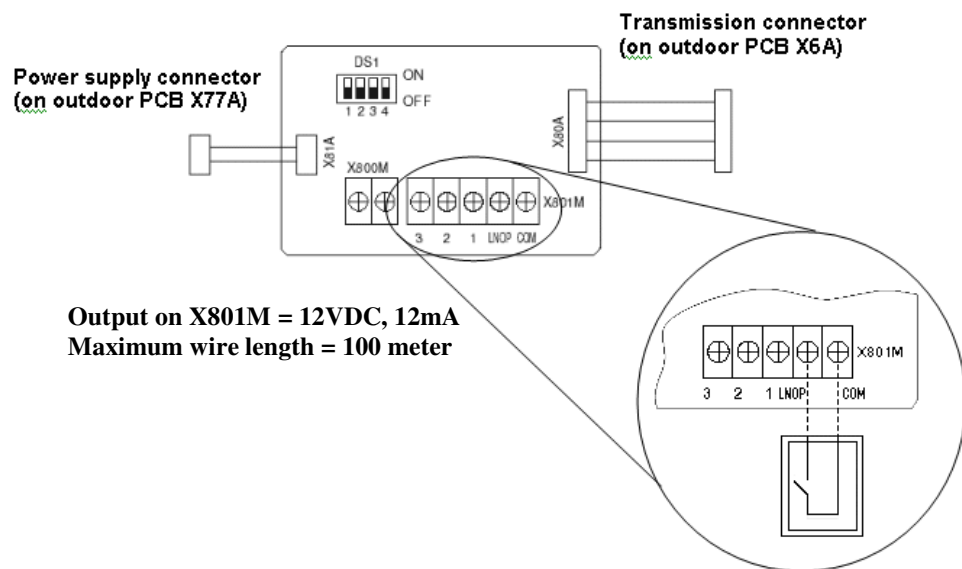
## 4.2.2 Silent Operation, Continued

### Graph



### 2. External activation from optional PCB

Silent operation can also be activated from the optional PCB.



Silent operation will start when the contact on LNOP-COM is closed and will remain active as long as the contact is closed. No field setting on the outdoor unit or by remote controller is required.

Silent operation will be ended when the contact is re-opened.

Use of the KRP58M enables the use of an external time clock.

*Continued on next page*

## 4.2.2 Silent Operation, Continued

### Capacity priority Setting

Same as with the automatic control, priority for capacity can be set. Priority for capacity will be activated by changing field setting 26-0-03 in combination with the closed contact on KRP58M

Description	Mode	First Code	Second Code			
			01	02	03	04
Silent Operation	16(26)	0	Factory	---	Capacity priority	---

### Exceptions

The silent operation will be overruled in the following conditions :

- Pump down residual operation
- Startup control
- Defrost operation
- Oil recovery

### Fan speed and compressor frequency limitations

When the Silent Operation function is activated, the following limits will be set to the fan speed and the compressor frequency :

		71-class		100-class		125-class	
		Cool	Heat	Cool	Heat	Cool	Heat
Normal Operation	Comp – max freq	169	177	164	164	164	174
	Fan-max rpm	790	720	820	825	850	835
Silent Operation	Comp – max freq	85	85	107	102	107	102
	Fan-max rpm	620	620	820	825	850	835
				785	790	815	800

### Sound reduction

	71	100	125
Sound reduction	4 dBA	4 dBA	5 dBA

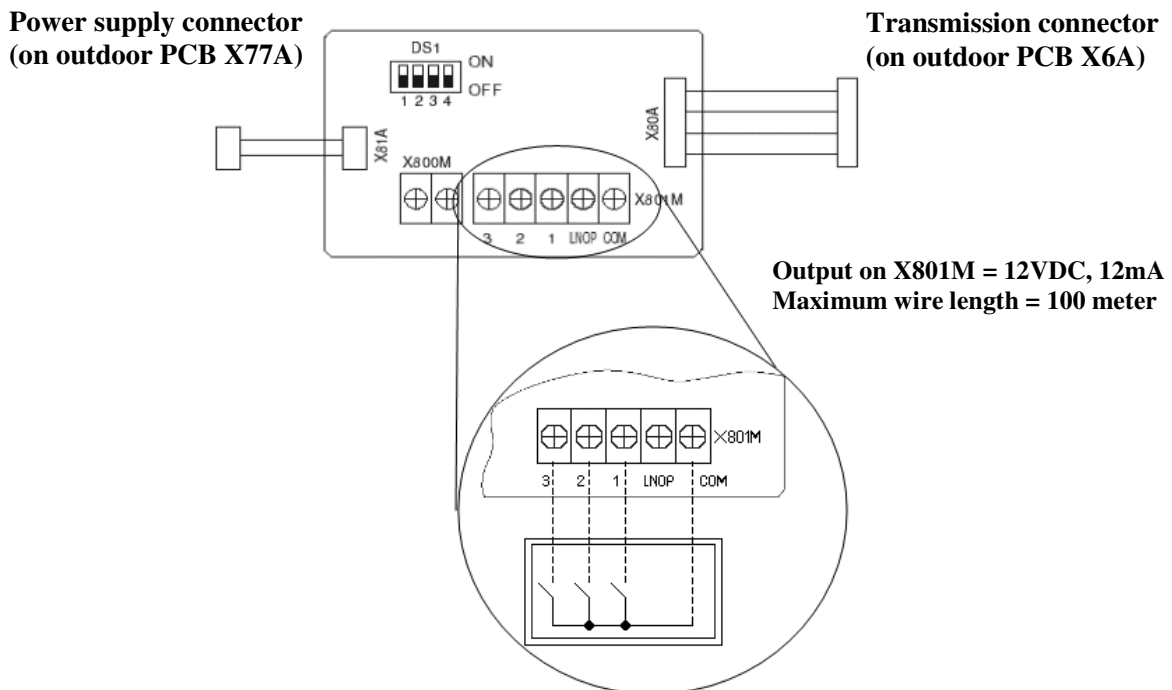


### 4.2.3 i-demand Function

**Purpose** Set a limitation towards the power consumption from the system.  
(e.g. budget control, limit power consumption during peak moments,..)

**Setting** 3 different demand setting can be selected by using terminal X801M :





- Demand 1 → Close contact between COM and contact 1
- Demand 2 → Close contact between COM and contact 2
- Demand 3 → Close contact between COM and contact 3



*Continued on next page*

### 4.2.3 i-demand Function, Continued

**Demand 1** Power consumption limitation in function of setting on DS1

DS1 SETTING			Maximum Power consumption
1	2		
OFF	OFF		60%
ON	OFF		70%
OFF	ON		80%
ON	ON		100%

**Demand 2** Power consumption limitation set to 40%

**Demand 3** Forced thermostat OFF

**Method** The power consumption will be limited by setting a maximum compressor frequency.

The maximum compressor frequency will be calculated according to following formula :

**Maximum frequency = max frequency in normal operation X selected limitation (eg 60%) X rated current / real current.**

Actually, the compressor step closest to the calculation result will be used as compressor limitation.

“Rated current” is a fixed current value in the systems memory for each possible frequency step.

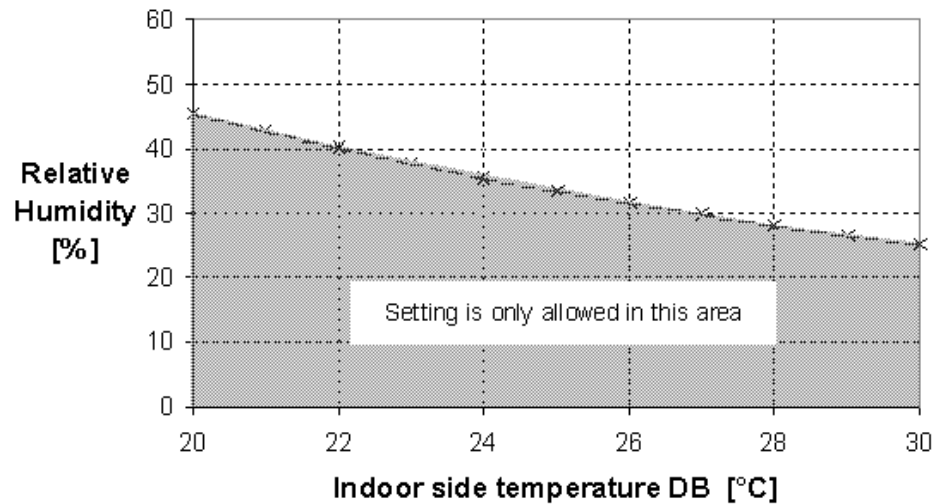
“Real current” is the actual compressor current, measured by the system.

## 4.2.4 Low Humidity Application Setting

### Purpose

Can be set when using the RZQ units for year round cooling in low humidity applications such as computerrooms (EDP rooms), technical rooms, etc...to increase the capacity of the unit.

### Definition of Low Humidity Area



### Caution

When using the “LH settings” outside the “Low Humidity Area” there is an increased risk of ice accumulation on the indoor coil or water blowing out from the indoor unit.

*Continued on next page*

## 4.2.4 Low Humidity Application Setting, Continued

### Function details

	Factory setting	Low humidity application setting	Low humidity application + freeze up operation prevention
Field Setting	16(26)-2-01	16(26)-2-03	16(26)-2-04
Compressor control	<ul style="list-style-type: none"> <li>The compressor frequency is controlled in function of the target evaporating temperature.</li> <li>The target evaporating temperature is controlled in function of the cooling load.</li> </ul>		
	Minimum target $T_e = 2^\circ\text{C}$  <b>See graph 1</b>	Minimum target $T_e = 0^\circ\text{C}$  <b>See graph 2</b>	Initial minimum target $T_e = 2^\circ\text{C}$ , but can be changed in function of actual $T_e$ , to avoid freeze up activation : <ul style="list-style-type: none"> <li><math>T_e \leq -1^\circ\text{C}</math> for 20 minutes accumulated <math>\Rightarrow</math> Change target <math>T_e \geq 5^\circ\text{C}</math></li> <li><math>T_e \leq -1^\circ\text{C}</math> for 30 minutes accumulated <math>\Rightarrow</math> Change target <math>T_e \geq 8^\circ\text{C}</math></li> </ul> <b>See graph 3</b>
Freeze protection function	Start	$T_e \leq -1^\circ\text{C}$ for 40 minutes accumulated OR $T_e \leq A^\circ\text{C}$ for 1 minute continuous (Indoor decision)	$T_e \leq -1^\circ\text{C}$ for 40 minutes accumulated OR $T_e \leq -3^\circ\text{C}$ for 1 minute continuous (Outdoor decision)
	End	$T_e > 7^\circ\text{C}$ for 10 minutes continuously. (Indoor decision)	$T_e > 7^\circ\text{C}$ for 3 minutes continuously OR $T_e > 4^\circ\text{C}$ for 20 minutes continuously (Outdoor decision)

### Parameters

	FAQ	FHQ	All except FAQ & FHQ
A	$-1^\circ\text{C}$	$-3^\circ\text{C}$	$-5^\circ\text{C}$

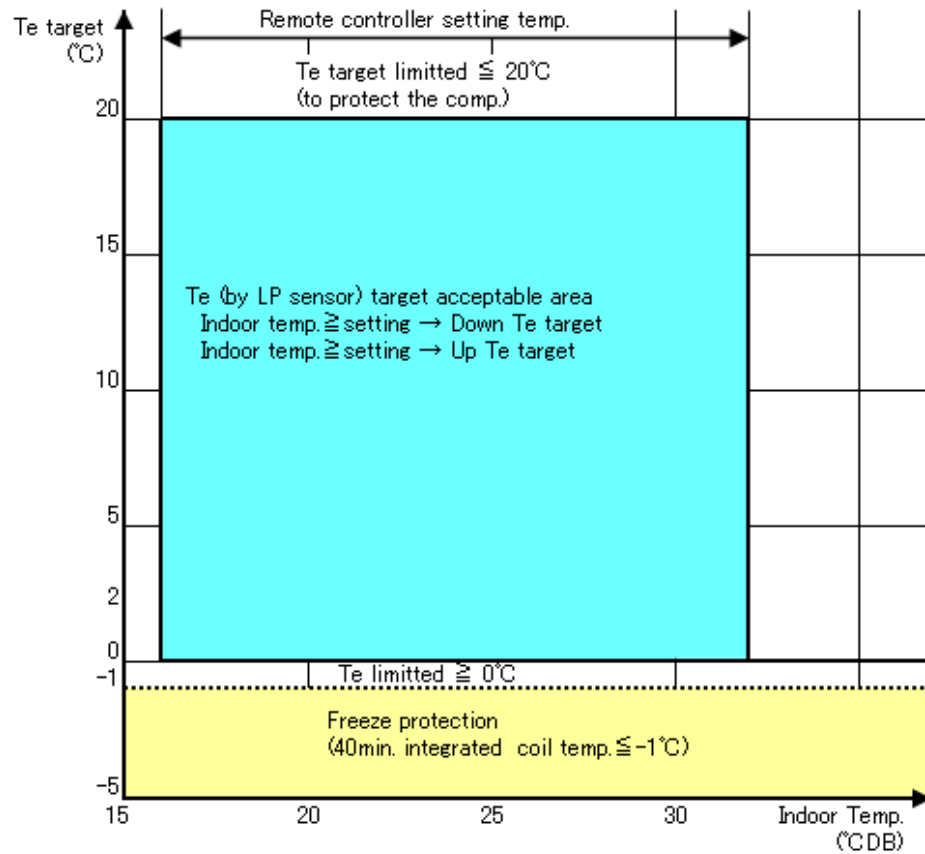
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## 4.2.4 Low Humidity Application Setting, Continued

**Graph 2** Target evaporating temperature control when “low humidity application” is selected.  
Field setting 16(26)-2-03

**Te target acceptable area**

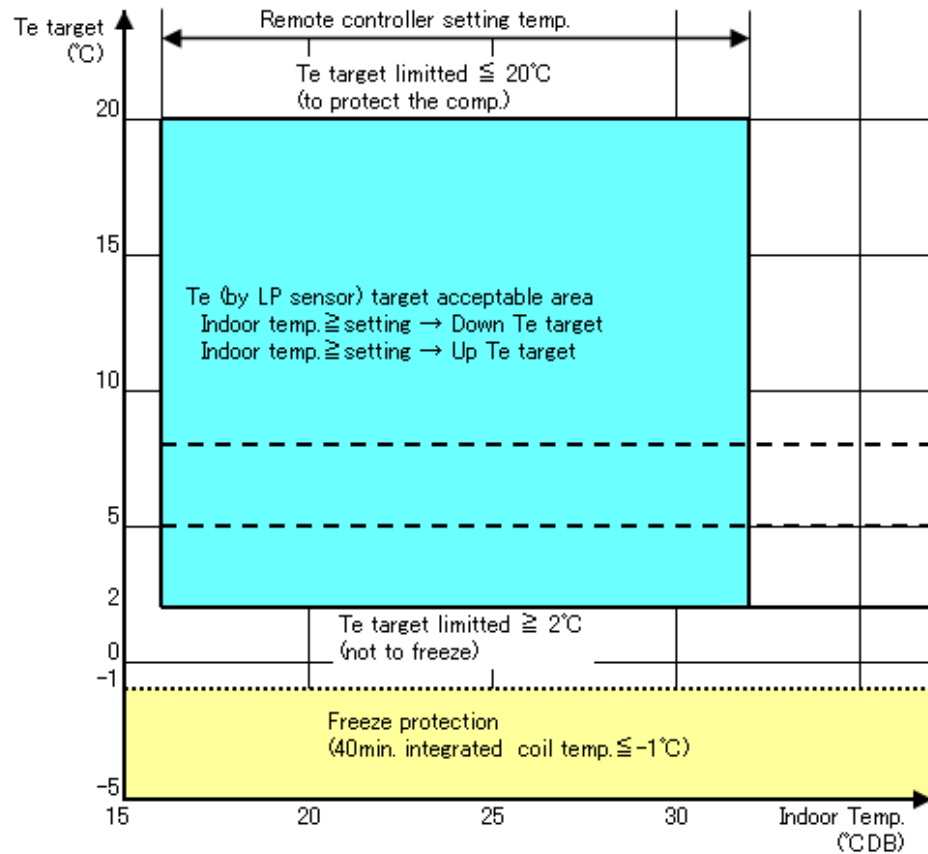


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### 4.2.4 Low Humidity Application Setting, Continued

**Graph 3** Target evaporating temperature control when “low humidity application + freeze up operation prevention” is selected.  
Field setting 16(26)-2-04

**Te target acceptable area**



*Continued on next page*

## 4.2.4 Low Humidity Application Setting, Continued

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**Change thermostat control**

In order to increase continuous operation of the unit in low latent heat applications and avoid the rise of temperature after thermostat OFF, the thermostat control will be changed when using field settings 16(26)-2-03 & 16(26)-2-04.

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**Thermostat ON**

- $\Delta T_{rs} \geq 0,5^{\circ}\text{C}$  (No change from standard setting)
- 

**Thermostat OFF**

- $\Delta T_{rs} \leq -2.0^{\circ}\text{C}$  for 5 minutes continuously.
  - $\Delta T_{rs} \leq -4.5^{\circ}\text{C}$ .
- 

*Continued on next page*



## 4.2.4 Low Humidity Application Setting, Continued

### Capacity

When “low humidity application” is selected. Field setting 16(26)-2-03

Outdoor Temp. (°C-DB)	Indoor Temp. (°C-WB)							
	11	14	16	18	19	20	22	24
	<b>Capacity (% of standard point)</b>							
-15	0.62	0.76	0.86	0.95	1.00	1.02	1.07	1.11
-10	0.62	0.76	0.86	0.95	1.00	1.02	1.07	1.11
-5	0.62	0.81	0.91	1.01	1.06	1.16	1.21	1.26
0	0.62	0.81	0.91	1.01	1.06	1.16	1.21	1.26
5	0.62	0.81	0.91	1.01	1.06	1.16	1.21	1.26
10	0.62	0.81	0.91	1.01	1.06	1.16	1.21	1.26
15	0.62	0.81	0.91	1.01	1.12	1.14	1.19	1.24
20	0.62	0.81	0.91	1.07	1.10	1.12	1.16	1.21
25	0.62	0.81	0.91	1.05	1.07	1.09	1.13	1.18
30	0.61	0.81	0.91	1.01	1.04	1.06	1.10	1.14
35	0.61	0.81	0.94	0.98	1.00	1.02	1.06	1.11
40	0.61	0.81	0.90	0.94	0.96	0.98	1.02	1.06

### Capacity

When “low humidity application + freeze up operation prevention” is selected.  
Field setting 16(26)-2-04

Outdoor Temp. (°C-DB)	Indoor Temp. (°C-WB)							
	11	14	16	18	19	20	22	24
	<b>Capacity (% of standard point)</b>							
-15	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.26
-10	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.26
-5	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.26
0	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.26
5	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.26
10	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.26
15	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.24
20	0.51	0.68	0.78	0.95	1.01	1.06	1.16	1.21
25	0.51	0.68	0.78	0.95	1.00	1.06	1.13	1.18
30	0.51	0.68	0.78	0.95	1.00	1.05	1.10	1.14
35	0.51	0.68	0.78	0.95	1.00	1.02	1.06	1.11
40	0.51	0.67	0.78	0.94	0.96	0.98	1.02	1.06

### Note

- Operation range on indoor side expanded from minimum 12°CWB to 11°CWB when using LH setting.
- Do not use a setpoint below 20°C to avoid operation out of the indoor operation range (11°CWB)
- Be sure to set the indoor fan to high speed

## 4.3 Outdoor Field Settings RZQ200~250B7 : Setting Method

### What is in this chapter ?

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#### Overview

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4.3.2 Overview of the outdoor Field settings from outdoor PCB : DS1_1 ~ DS1_8	20
4.3.3 Overview Monitor Mode from Outdoor PCB	21
4.3.4 Overview field settings from outdoor PCB : Mode 2	22

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## 4.3.1 Outdoor Field Settings from Indoor Remote Controller

### Overview

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Mode No.	First code No.	Description of the setting	Details
16(26)	0	Night time low noise setting	Chapter 4, Page xx
	1	Low noise level + start/stop setting	Chapter 4, Page xx
	3	Defrost settings	Chapter 3, Page xx

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### Possible settings

Mode No.	First code No.	Second code No.						
		01	02	03	04	05	06	07
16(26)	0	Factory	Night time low noise	Night time low noise + capacity preceding	---	---	---	---
	1	Level 1 : 22pm~6am	Level 1 : 22pm~8am	Level 2 : 22pm~6am	Level 2 : 22pm~8am	Level 2 : 20pm~8am	Level 3 : 22pm~8am	Level 3 : 20pm~8am
	3	Normal (factory)	Slow setting	Fast setting	---	---	---	---

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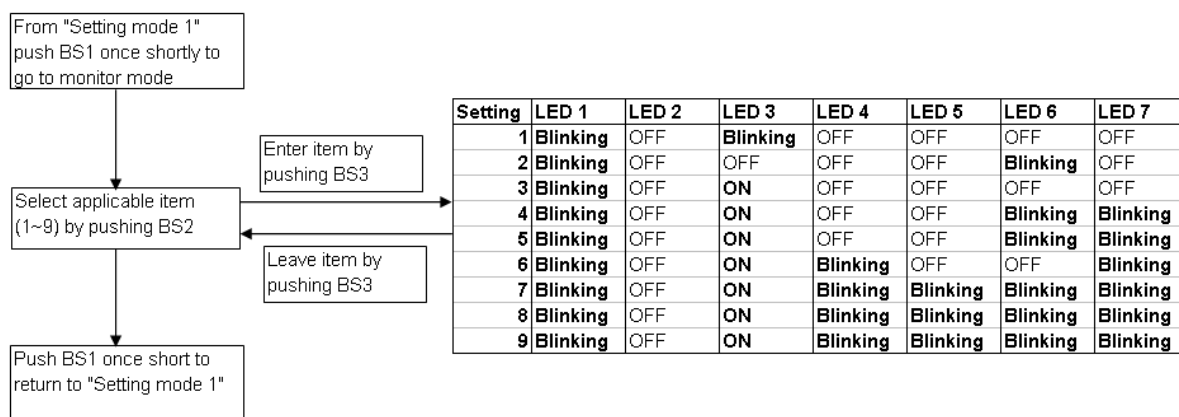
## 4.3.2 Field Settings from Outdoor PCB : DS1-1 ~ DS1-8

### Overview

Setting	Description	Details									
DS1-1	Cool / Heat setting for Emergency Operation	ON = Cooling, OFF = Heating Details : see functional description : "Forced Operating Mode"									
DS1-2	ON/OFF setting for Emergency Operation	Details : see functional description : "Forced Operating Mode"									
DS1-3	External low noise activation	Details : see page XX									
DS1-4	High Static Pressure Setting	<table border="1"> <thead> <tr> <th></th> <th>DS1-4 = OFF (Factory setting)</th> <th>DS1-4 = ON</th> </tr> </thead> <tbody> <tr> <td>ESP</td> <td>400 Pa</td> <td>800 Pa</td> </tr> <tr> <td>Max fan speed</td> <td>825 rpm</td> <td>915rpm</td> </tr> </tbody> </table>		DS1-4 = OFF (Factory setting)	DS1-4 = ON	ESP	400 Pa	800 Pa	Max fan speed	825 rpm	915rpm
	DS1-4 = OFF (Factory setting)	DS1-4 = ON									
ESP	400 Pa	800 Pa									
Max fan speed	825 rpm	915rpm									
DS1-5	Automatic low noise operation at night time	Details : see page XX									
DS1-6	Power consumption limitation setting	Details : see page XX									
DS1-7	For development testing purpose only !	Do not change factory setting (= OFF)									
DS1-8	Capacity class setting	In case of spare part PCB only ! RZQ200 = OFF RZQ250 = ON									

### 4.3.3 Monitor Mode from outdoor PCB

#### Overview

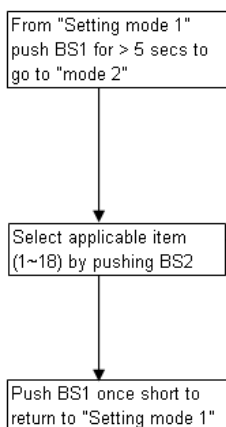


#### Contents

Setting	Contents
1	Software number
2	Horse power setting (200 class = H7P flash, 250 class = H6P flash)
3	Software version
4	Latest error code
5	2 <sup>nd</sup> last error code
6	3 <sup>rd</sup> last error code
7	Latest information of retry
8	2 <sup>nd</sup> last information of retry
9	3 <sup>rd</sup> last information of retry

### 4.3.4 Field settings from outdoor PCB : Mode 2

#### Overview factory settings

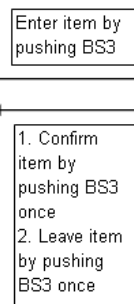


#### Binary Code

	LED 1	LED 2	LED 3	LED 4	LED 5	LED 6	LED 7
0	ON	OFF	OFF	OFF	OFF	OFF	OFF
1	ON	OFF	OFF	OFF	OFF	OFF	ON
2	ON	OFF	OFF	OFF	OFF	ON	OFF
3	ON	OFF	OFF	OFF	OFF	ON	ON
4	ON	OFF	OFF	OFF	ON	OFF	OFF
5	ON	OFF	OFF	OFF	ON	OFF	ON
6	ON	OFF	OFF	OFF	ON	ON	OFF
7	ON	OFF	OFF	OFF	ON	ON	ON
8	ON	OFF	OFF	ON	OFF	OFF	OFF
9	ON	OFF	OFF	ON	OFF	OFF	ON
10	ON	OFF	OFF	ON	OFF	ON	OFF
11	ON	OFF	OFF	ON	OFF	ON	ON
12	ON	OFF	OFF	ON	ON	OFF	OFF
13	ON	OFF	OFF	ON	ON	OFF	ON
14	ON	OFF	OFF	ON	ON	ON	OFF
15	ON	OFF	OFF	ON	ON	ON	ON
16	ON	OFF	ON	OFF	OFF	OFF	OFF
17	ON	OFF	ON	OFF	OFF	OFF	ON
18	ON	OFF	ON	OFF	OFF	ON	OFF

#### Factory Setting

LED 1	LED 2	LED 3	LED 4	LED 5	LED 6	LED 7
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	Flash	OFF
ON	OFF	OFF	OFF	OFF	Flash	OFF
ON	OFF	OFF	OFF	OFF	Flash	OFF
ON	OFF	OFF	OFF	OFF	Flash	OFF
ON	OFF	OFF	OFF	OFF	Flash	OFF
ON	OFF	OFF	OFF	OFF	Flash	OFF
ON	OFF	OFF	OFF	Flash	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	OFF	Flash
ON	OFF	OFF	OFF	OFF	Flash	OFF



#### Contents

Setting	Contents	Refer to
0	Additional refrigerant charging operation	
1	Refrigerant recovery operation / vacuuming operation	
2	Low noise operation level setting (external)	
3	Automatic low noise operation at night time	
4	Night time start setting	
5	Night time stop setting	
6	Capacity priority during low noise & I-demand operation	
7	I-demand operation	
8	N.A. Do not change factory setting !	---
9	N.A. Do not change factory setting !	---
10	Defrost setting	
11	N.A. Do not change factory setting !	---
12	N.A. Do not change factory setting !	---
13	Emergency Operation (Only use standard compressor)	
14	Backup Operation (Only use inverter compressor)	
15	N.A. Do not change factory setting !	---
16	N.A. Do not change factory setting !	---
17	Power transistor check mode (check inverter signal)	
18	N.A. Do not change factory setting !	---

## 4.4 Outdoor Field Settings RZQ200~250B7 : Setting Contents

### What is in this chapter ?

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#### Overview

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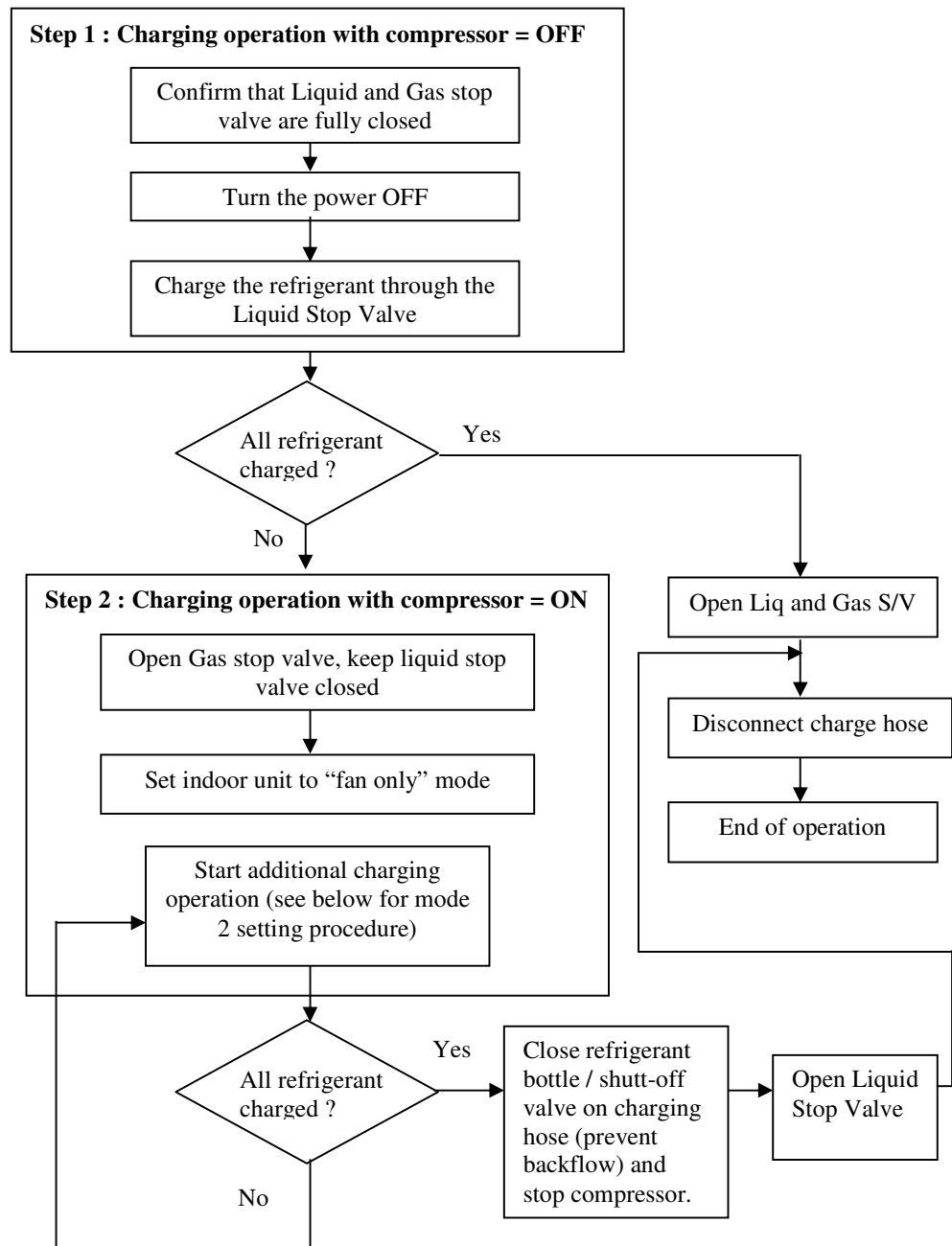
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### 4.4.1 Additional Refrigerant Charging Operation

**Purpose**

When additional refrigerant needs to be charged (e.g. field piping > 30meter), or when a complete refrigerant re-charge needs to be performed (e.g. after a leak has occurred), it will be required to use this function in order to fully charge the system.

**Charging Method flow chart**





## 4.4.1 Additional Refrigerant Charging Operation, continued

### Setting Procedure

Procedure		LED Indication						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter "mode 2"		○	●	●	●	●	●	●
Leave binary code 0, do not press BS2 (Set)		○	●	●	●	●	●	●
Press BS3 (Return) once to enter item		○	●	●	●	●	●	☼
Change setting from OFF to ON by pressing BS2 once		○	●	●	●	●	☼	●
Confirm setting by pressing BS3		○	●	●	●	●	○	●
Leave item by pressing BS3		☼	☼	●	●	●	●	●
Actual low pressure value is indicated by LED display	LP ≥ 7.4 bar	○	☼	○	○	○	○	○
	5.9 ≤ LP < 7.4 bar	○	☼	●	○	○	○	○
	4.4 ≤ LP < 5.9 bar	○	☼	●	●	○	○	○
	2.9 ≤ LP < 4.4 bar	○	☼	●	●	●	○	○
	LP < 2.9 bar	○	☼	●	●	●	●	○
Charging function is automatically ended after 30 minutes		○	●	●	●	●	☼	☼
Return to Setting Mode 1 by pressing BS1 once		○	●	●	●	●	○	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

### Notes

- Press BS3 (Return) to stop the charging procedure when the refrigerant is charged up to the specified amount.
- When the charging is not completed within 30 minutes, start the procedure again.
- When the unit stops immediately after the procedure has started, the unit is excessively charged. No more refrigerant can be added.
- Immediately fully open the liquid stop valve after the charging procedure is ended.

## 4.4.2 Refrigerant Recovery Operation / Vacuuming Operation

**Purpose** When the total refrigerant charge needs to be reclaimed from the system or a vacuuming operation is required on the system, it will be necessary to force the expansion valve in the outdoor unit to full open position.

**Method**

1. Power = ON
2. Set indoor unit to “fan only” mode
3. Connect the reclaim unit
4. Start the “Refrigerant Recovery Operation”, using below mode 2 setting procedure.

### Setting Procedure

Procedure	LED Indication						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter “mode 2”	○	●	●	●	●	●	●
Go to binary code 1, by pressing BS2 (Set)	○	●	●	●	●	●	○
Press BS3 (Return) once to enter item	○	●	●	●	●	●	☼
Change setting from OFF to ON by pressing BS2 once	○	●	●	●	●	☼	●
Confirm setting by pressing BS3	○	●	●	●	●	○	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

**Notes**

- Press BS3 (Return) to stop the recovery procedure or turn the power OFF.
- Recovery mode setting needs to be reset manually from mode 2.

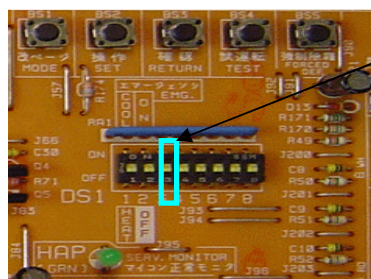
### 4.4.3 Low Noise Operation Setting (External Activation)

**Purpose**

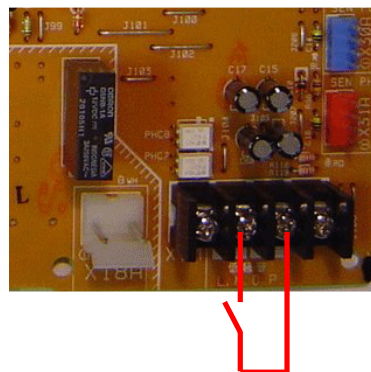
Outdoor unit low noise operation can be activated and de-activated automatically or by using an external contact (e.g. contact from time clock). This part will explain how to set low noise operation using external activation.

**Low Noise Activation Method**

1. Set Dip Switch DS1-3 on the outdoor PCB from factory setting “OFF” to “ON” (= upward position) while the power is OFF



2. Low noise operation will be activated when contacts between T1 & T2 on X1M are closed



**Low Noise Level Setting**

3 different low noise levels can be set by using mode 2 settings :

Procedure		LED Indication						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter “mode 2”		○	●	●	●	●	●	●
Go to binary code 2, by pressing BS2 (Set)		○	●	●	●	●	○	●
Press BS3 (Return) once to enter item		○	●	●	●	●	☼	●
Select preferred low noise level by pressing BS2	Low Noise Level 1	○	●	●	●	●	●	☼
	Low Noise Level 2 (factory)	○	●	●	●	●	☼	●
	Low Noise Level 3	○	●	●	●	☼	●	●
Confirm selected low noise level by pressing BS3 once	Low Noise Level 1	○	●	●	●	●	●	○
	Low Noise Level 2 (factory)	○	●	●	●	●	○	●
	Low Noise Level 3	○	●	●	●	○	●	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

---

### 4.4.3 Low Noise Operation Setting (External Activation), continued

---

**Noise Reduction**

	RZQ200		RZQ250	
	Cooling	Heating	Cooling	Heating
Low Noise level 1	53 dBA	55 dBA	53 dBA	55 dBA
Low Noise level 2	50 dBA	52 dBA	50 dBA	52 dBA
Low Noise level 3	47 dBA	40 dBA	47 dBA	40 dBA

---

**Exceptions**

The silent operation will be overruled in the following conditions :

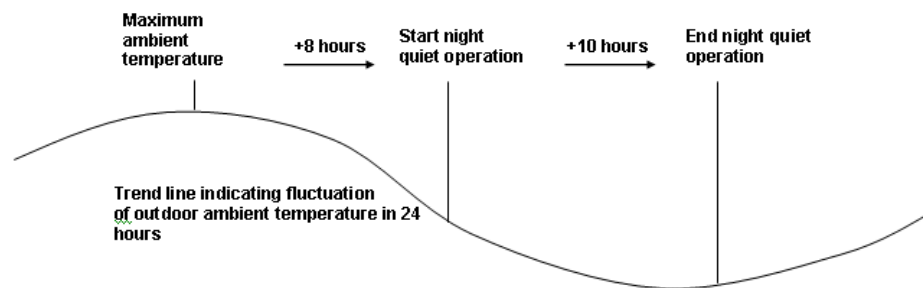
- Pump down residual operation
  - Startup control
  - Defrost operation
  - Oil recovery
-

## 4.4.4 Automatic Low Noise Operation at Night Time

**Purpose** Outdoor unit low noise operation can be activated and de-activated automatically or by using an external contact (e.g. contact from time clock). This part will explain how to set automatic low noise operation.

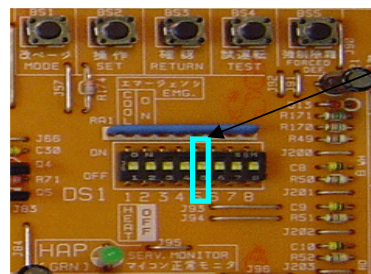
**Judgement** When setting DS1-5 to ON, silent operation will be carried out by presuming the current time in accordance with the outside temperature. Every 5 minutes, the outdoor unit will check the actual outdoor temperature. The unit will keep in its memory an average of the highest temperature of the last 10 days. Automatic mode will start when the outdoor temperature is = average max of last 10 days  $-5^{\circ}\text{C}$  and will be conducted for 10 hours. The maximum outdoor temperature is supposed to occur at 14:00h. The night time low noise operation is supposed to be activated between 22:00h and 08:00h in factory setting, but can be changed by field setting. As the time judgement is made in accordance with the outdoor temperature, the above mentioned timing is an estimation only.

### Graph



### Low Noise Activation Method

1. Set Dip Switch DS1-5 on the outdoor PCB from factory setting "OFF" to "ON" (= upward position) while the power is OFF



Location DS1-5

### 4.4.4 Automatic Low Noise Operation at Night Time, continued

**Setting Method** 3 different low noise levels, low noise operation starting times and low noise operation ending times can be set by using mode 2 settings :

Procedure		LED Indication						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter "mode 2"		○	●	●	●	●	●	●
Go to binary code 3, by pressing BS2 (Set)		○	●	●	●	●	○	○
Press BS3 (Return) once to enter item		○	●	●	●	●	✧	●
Select preferred low noise level by pressing BS2	Low Noise Level 1	○	●	●	●	●	●	✧
	Low Noise Level 2 (factory)	○	●	●	●	●	✧	●
	Low Noise Level 3	○	●	●	●	✧	●	●
Confirm selected low noise level by pressing BS3 once	Low Noise Level 1	○	●	●	●	●	●	○
	Low Noise Level 2 (factory)	○	●	●	●	●	○	●
	Low Noise Level 3	○	●	●	●	○	●	●
Go to binary code 4, by pressing BS2 (Set)		○	●	●	●	○	●	●
Press BS3 (Return) once to enter item		○	●	●	●	●	✧	●
Select preferred low noise starting time by pressing BS2	Low Noise Start at 20h	○	●	●	●	●	●	✧
	Low Noise Start at 22h (factory)	○	●	●	●	●	✧	●
	Low Noise Start at 24h	○	●	●	●	✧	●	●
Confirm selected low noise starting time by pressing BS3 once	Low Noise Start at 20h	○	●	●	●	●	●	○
	Low Noise Start at 22h (factory)	○	●	●	●	●	○	●
	Low Noise Start at 24h	○	●	●	●	○	●	●
Go to binary code 5, by pressing BS2 (Set)		○	●	●	●	○	●	○
Press BS3 (Return) once to enter item		○	●	●	●	✧	●	●
Select preferred low noise ending time by pressing BS2	Low Noise End at 6h	○	●	●	●	●	●	✧
	Low Noise End at 7h	○	●	●	●	●	✧	●
	Low Noise End at 8h (factory)	○	●	●	●	✧	●	●
Confirm selected low noise ending time by pressing BS3 once	Low Noise End at 6h	○	●	●	●	●	●	○
	Low Noise End at 7h	○	●	●	●	●	○	●
	Low Noise End at 8h (factory)	○	●	●	●	○	●	●

○	= LED ON
●	= LED OFF
✧	= LED blinking

### Noise Reduction

	RZQ200		RZQ250	
	Cooling	Heating	Cooling	Heating
Low Noise level 1	53 dBA	55 dBA	53 dBA	55 dBA
Low Noise level 2	50 dBA	52 dBA	50 dBA	52 dBA
Low Noise level 3	47 dBA	40 dBA	47 dBA	40 dBA

### Exceptions

The silent operation will be overruled in the following conditions :

- Pump down residual operation
- Startup control
- Defrost operation
- Oil recovery

## 4.4.5 Capacity Priority during Low Noise & I-demand

### Purpose

When “Capacity Priority” has been set and Low Noise Operation or Power Consumption Limitation (I-demand) is activated, the limitation operation will be stopped when the heating or cooling capacity becomes insufficient. In such a case, the operation will return to normal operation. The unit will return to low-noise operation or I-demand when the heating or cooling load decreases again.

### Setting Method

Procedure	LED Indication						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter “mode 2”	○	●	●	●	●	●	●
Go to binary code 6, by pressing BS2 (Set)	○	●	●	●	○	○	●
Press BS3 (Return) once to enter item	○	●	●	●	●	●	☼
Change setting from OFF to ON by pressing BS2 once	○	●	●	●	●	☼	●
Confirm setting by pressing BS3	○	●	●	●	●	○	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

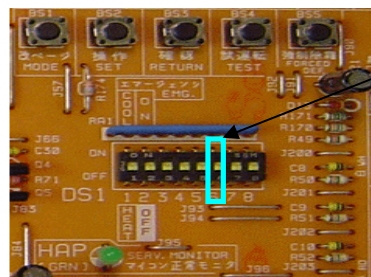
## 4.4.6 I-demand (Power Consumption limitation)

**Purpose**

Set a limitation towards the power consumption from the system.  
(e.g. budget control, limit power consumption during peak moments,..)

**A. Setting Method using Mode 2 (=continuous)**

Set Dip Switch DS1-6 on the outdoor PCB from factory setting “OFF” to “ON” (= upward position) while the power is OFF



Location DS1-6

Limitation will be set continuously to 60%, 70% or 80% when dip switch DS1-6 is set to ON, depending on following mode 2 setting :

Procedure		LED Indication						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter “mode 2”		○	●	●	●	●	●	●
Go to binary code 7, by pressing BS2 (Set)		○	●	●	●	○	○	○
Press BS3 (Return) once to enter item		○	●	●	●	●	☼	●
Select preferred low noise level by pressing BS2	P.I limitation 60%	○	●	●	●	●	●	☼
	P.I limitation 70% (factory)	○	●	●	●	●	☼	●
	P.I limitation 80%	○	●	●	●	☼	●	●
Confirm selected low noise level by pressing BS3 once	P.I limitation 60%	○	●	●	●	●	●	○
	P.I limitation 70% (factory)	○	●	●	●	●	○	●
	P.I limitation 80%	○	●	●	●	○	●	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

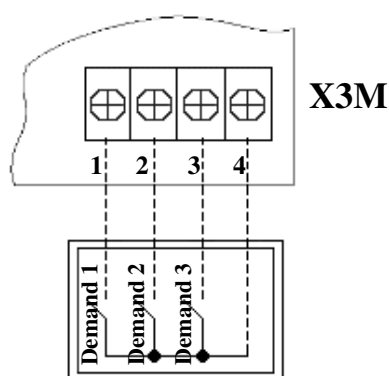


#### 4.4.6 I-demand (Power Consumption limitation), continued

##### B. Activation method using external contact

Next to the activation method using Mode 2 setting, a power consumption limitation of 70% or 40% can also be set by using terminal X3M in the outdoor unit switch box.

	Closed contact between terminals	Limitation Setting
Demand 1	1-4	70%
Demand 2	2-4	40%
Demand 3	3-4	Forced OFF



##### Exceptions

The Power Consumption Limitation Operation will be overruled in the following conditions :

- Pump down residual operation
- Startup control
- Defrost operation
- Oil recovery

## 4.4.7 Defrost setting

**Purpose** Defrost parameters can be altered. See Chapter 3 for details on defrost operation.

### Setting Method

Procedure		LED Indication						
		H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter "mode 2"		○	●	●	●	●	●	●
Go to binary code 10, by pressing BS2 (Set)		○	●	●	○	●	○	●
Press BS3 (Return) once to enter item		○	●	●	●	●	●	☼
Select preferred defrost setting by pressing BS2	Mode 1	○	●	●	●	●	●	☼
	Mode 2	○	●	●	●	●	☼	●
	Mode 3	○	●	●	●	☼	●	●
	Mode 4	○	●	●	☼	●	●	●
	Mode 5	○	●	☼	●	●	●	●
	Mode 6	○	☼	●	●	●	●	●
Confirm selected defrost setting by pressing BS3 once	Mode 1	○	●	●	●	●	●	○
	Mode 2	○	●	●	●	●	○	●
	Mode 3	○	●	●	●	○	●	●
	Mode 4	○	●	●	○	●	●	●
	Mode 5	○	●	○	●	●	●	●
	Mode 6	○	○	●	●	●	●	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

## 4.4.8 Emergency Operation

**Purpose** Allow unit operation when the inverter compressor is malfunctioning.  
When setting this function, only the Standard compressor will be used until operation of the Inverter compressor has been restored.

### Setting Method

Procedure	LED Indication						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter "mode 2"	○	●	●	●	●	●	●
Go to binary code 13, by pressing BS2 (Set)	○	●	●	○	○	●	○
Press BS3 (Return) once to enter item	○	●	●	●	●	●	⊙
Change setting from OFF to ON by pressing BS2 once	○	●	●	●	●	⊙	●
Confirm setting by pressing BS3	○	●	●	●	●	○	●

○	= LED ON
●	= LED OFF
⊙	= LED blinking

## 4.4.9 Backup Operation

---

**Purpose** Allow unit operation when the standard compressor is malfunctioning.  
When setting this function, only the inverter compressor will be used until operation of the standard compressor has been restored.

---

### Setting Method

Procedure	LED Indication						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter "mode 2"	○	●	●	●	●	●	●
Go to binary code 14, by pressing BS2 (Set)	○	●	●	○	○	○	●
Press BS3 (Return) once to enter item	○	●	●	●	●	●	☼
Change setting from OFF to ON by pressing BS2 once	○	●	●	●	●	☼	●
Confirm setting by pressing BS3	○	●	●	●	●	○	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

---

## 4.4.10 Transistor Check Mode

### Purpose

The “Transistor Check Mode” will be used in case there is a failure in the inverter system. This function will be helpful to determine if the failure is related to a breakdown in the inverter circuit (electronics) or inverter compressor (mechanical).

### Checking

#### Method :

U-V-W wires  
connected to  
Inverter  
Analyzer



1. Turn OFF the power supply to the unit
2. Disconnect the U-V-W compressor wires from the compressor terminal and connect them to the Inverter Analyzer.
3. Turn ON the power supply to the unit (make sure there is no possibility of accidental touching of “naked” terminals)
4. Activate the “Transistor Check Mode “(see below for setting procedure)
5. Switch ON the unit from the RC (Test operation from RC)
6. The inverter PCB is normal when all LED’s on the Inverter Analyzer are sequentially flashing.
7. Turn OFF Transistor check Mode by Pressing BS1 once.
8. Turn the unit OFF from the Remote control.
9. Turn OFF the power supply to the unit before restoring the U-V-W wiring to the compressor (refer to “Compressor wire connection method” further in this section for correct wire connection method).

### Checking

#### Method :

U-V-W wires  
connected to  
terminal block

1. Turn OFF the power supply to the unit
2. Disconnect the U-V-W compressor wires from the compressor terminal and connect them to the terminal block.
3. Turn ON the power supply to the unit (make sure there is no possibility of accidental touching of “naked” terminals)
4. Activate the “Transistor Check Mode “(see below for setting procedure)
5. Switch ON the unit from the RC (Test operation from RC)
6. Measure the output on the U-V-W wires. When the output voltage is approx 50V / 10Hz (**actual measured values may be different, see “Measurement results” on next page**) and the voltage balance between phases U-V-W towards the compressor is within  $\pm 5V$ , the inverter PCB is normal.
7. Turn OFF Transistor check Mode by Pressing BS1 once.
8. Turn the unit OFF from the Remote control.
9. Turn OFF the power supply to the unit before restoring the U-V-W wiring to the compressor

## 4.4.10 Transistor Check Mode, continued

### Setting Method

Procedure	LED Indication						
	H1P	H2P	H3P	H4P	H5P	H6P	H7P
Press BS1 (Mode) for 5 seconds to enter "mode 2"	○	●	●	●	●	●	●
Go to binary code 17, by pressing BS2 (Set)	○	●	○	●	●	●	○
Press BS3 (Return) once to enter item	○	●	●	●	●	●	☼
Change setting from OFF to ON by pressing BS2 once	○	●	●	●	●	☼	●
Confirm setting by pressing BS3	○	●	●	●	●	○	●
Start Transistor Check by pressing BS3 once more	○	●	●	●	●	●	●

○	= LED ON
●	= LED OFF
☼	= LED blinking

### Notes

- When no Inverter Analyzer is available, disconnect the wires from the compressor and connect them to a terminal block for safety during voltage measurement.
- Transistor check will be started approx 1 minute after the check mode has been activated (consider also 3 minute guard timer is active if unit has been in operation before).
- Make sure the "Emergency Operation" has been de-activated. (See page 35)
- Checking transistors by resistance measurement through transistors of PWM module is also possible. Please refer to chapter "Measurement and Troubleshooting Techniques".

### Measurement results

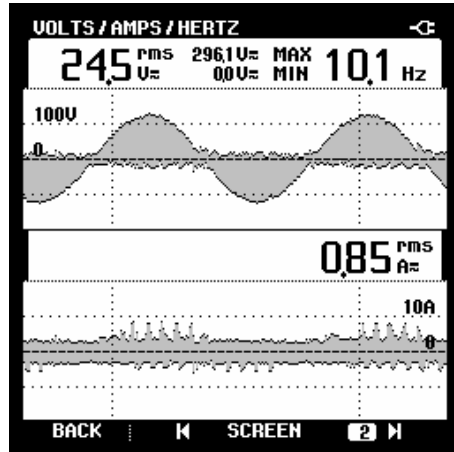
Actual measurement values are influenced by the measuring method and measuring device used :

UVW connected to	Measurement location	Fluke 87 (True RMS Multimeter)	Fluke 43 (Power Quality Analyser)	Fluke 337 (True RMS Clamp meter)	Fluke 189 (True RMS Multimeter)
Inverter Analyser	U-V	± 109V	See image on next page.	± 19V	± 38,5V or 52V (display changes)
	V-W				
	W-U				
Terminal block	U-V	± 118V		± 19V	± 52V
	V-W				
	W-U				

Measurement results are influenced by impedance and filtering from measurement device used.

### 4.4.10 Transistor Check Mode, continued

Image from  
Fluke 43



Compressor  
wire  
connection  
method

