Chiller Quick Reference Guide



Important Notice

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System Communication Wiring Guide

Hydro Box Terminal Block



- TB "A" External Output Contact
- TB "B" & "C" External Input Contact
- Communication Terminal Block:
 - F1 F2 Factory connection
 - V1 V2 Not used
 - F3 F4 Module Controller

Hydro Control Box

VRF Control Box



VRF Terminal Block



- VRF PCB communication
 - F1 F2 Not used
 - OF1 OF2 Not used
 - R1 R2 Centralized control

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Pre-Start Up Visual / Component Check List

No.	Equipment
1	Air Vent
2	Gate Valve (Shut-off valve)
3	Flexible Joints
4	Pressure Gauges
5	Temperature Gauges
6	Strainer (#50)
7	Drain Valves
8	Cut Groove Couplings
9	Water Pump (Optional)
10	Pressure Sensor
11	Temp Sensor
12	Flow Control Valve or Check Valve (if required)
13	Temp Sensor (if required)
14	Buffer Tank (if required)
15	Expansion Vessel
16	Check Valve

- A flexible connection must be used on both the inlet and outlet before piping to the chiller.
- A (field supplied) 50 mesh stainless strainer must be installed on the inlet water side. (#3)
- (Closed loop) Expansion tank must be installed on the inlet side of the circulating water pump and must be sized properly with accordance to ASHARE.



- Ensure the system has the proper water fill/Glycol % and is completely air purged.
- Check connection at T/B "B" (7)(8) interlock contactor for pump proof to avoid E-918 error.

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Hydro Option Setting Mode

With system off including pump. (Follow steps below at each outdoor unit Hydro PCB)

- 1. Hold K2 Over 3sec to enter option setting mode.
- 2. Press K1 to adjust the value in SEG1&2. This value represents the menu option.
- 3. Press K2 to adjust the value in SEG5&6. This value represents the desired setting.
- 4. Change the desired settings back to factory default : K4 over 3sec.
- 5. To save changes: Hold K2 Over 3sec. This must be performed in order to save the changed settings.
- 6. Cancel and exit : Hold K1 Over 3sec.

Example below: Press K1 until Option setting 11 displays on (SEG1&2) / Unit addressed 00 (SEG5&6).

Option	Input unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6
Unit Address	Each Hydro PCB						

Example bellow: Option setting 11 (SEG1&2) Press K2 4 time to change the Unit address to 04 (SEG5&6).

Option	Input unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6
Unit Address	Each Hydro PCB						

Note: unit addressing 00-15

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Hydro Unit Option Setting Tables

Option item	Input unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	Function	Remarks		
Operation ON/OFF	Main unit	unit 0	1	-	-	0	0	Module control <mark>(Default)</mark>			
Input Method	of group			-	-	0	1	External contact			
Temp Setting	Main unit	0	2	-	-	0	0	Module control <mark>(Default)</mark>			
Input	of group	Ũ		-	-	0	1	External contact	Set into Main unit of module		
Operation Mode Input Cool/Heat	Main unit	0	0	0	3	-	-	0	0	Module control <mark>(Default)</mark>	when group is not available
Normal/Hot Water	or group			-	-	0	1	External contact			
Demand Control	Main unit	0	4	-	-	0	0	Module control <mark>(Default)</mark>			
Input	oi gioup			-	-	0	1	External contact			

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Hydro Unit	Ontion	Input								
Option	setting	unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	Function	Remarks
Setting Tables					-	-	0	0	100% <mark>(Default)</mark>	
Continued					-	-	0	1	95%	
					-	-	0	2	90%	
	Demand M		0	5	-	-	0	3	85%	
		Main unit of			-	-	0	4	80%	
					-	-	0	5	75%	N/A
	Levei	module			-	-	0	6	70%	
					-	-	0	7	65%	
					-	-	0	8	60%	
				-	-	0	9	55%		
					-	-	1	0	50%	
					-	-	1	1	(No limit)	

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Hydro Unit Option Setting Tables, Continued

Option item	Input unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	Function	Remarks				
Input Method Of	Main unit of Group	0	6	-	-	0	0	Module control/DMS <mark>(Default)</mark>					
Function				-	-	0	1	External contact					
Input Method Of	Main unit of Group	0	7	-	-	0	0	Module control/DMS <mark>(Default)</mark>					
Forced Fan				-	-	0	1	External contact	N/A				
Pump Operation	Main unit	0	0	0	0	0	8	-	-	0	0	Module control/DMS <mark>(Default)</mark>	
Thermo-off								-	-	0	1	External contact	
Pump	Main unit	_		-	-	0	0	Pump OFF					
Operation Thermo-off	eration of 0 rmo-off Module	0	9	-	-	0	1	Pump ON <mark>(Default)</mark>					
Remote	e Main unit	1		-	-	0	0	Not used	Factory default				
Error Reset	or Module		U	-	-	0	1	Used	<mark>03</mark>				

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Hydro Unit	Ac	ddress each	<mark>i unit at th</mark>	<mark>e hydro</mark>	PCB						
Option Setting		Option item	Input unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	Function	Remarks
Tables, Continued	Ļ	Unit Address	Each Hydro PCB	1	1	-	-	-	-	Setting unit address 00-15	
						-	-	0	0	100% <mark>(Default)</mark>	
		Quiet	Main unit	4	0	-	-	0	1	Level 1	N/A
	level	Module		2	-	-	0	2	Level 2		
						-	-	0	3	Level 3	
		Pump time delay	Main unit of Module	1	3	-	-	-	-	Available (10-240) Delay	Time delay in seconds <mark>(Default)</mark> 30 sec
	Externa	External water outlet	Main unit	1	4	-	-	0	0	Not used <mark>(Default)</mark>	Requires temp
temp sensor	of Group		-	-	-	0	1	Used	sensor		
		Water law	Main unit	1	5	-	-	0	0	Ambient <mark>(Default)</mark>	Requires temp
		control	or Group			-	-	0	1	Room temp	sensor

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Hydro Unit
Option
Setting
Tables,
Continued

Option item	Input unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	Function	Remarks
AirCool1		1	6	-	-	-	-	Available (0-20°C) <mark>Default 10°C</mark>	Setting Outdoor temp 1 for cooling
AirCool2		1	7	-	-	-	-	Available (30-40°C) <mark>Default 35°C</mark>	Setting Outdoor temp 2 for cooling
RoomCool1		1	8	-	-	-	-	Available (15-24°C) <mark>Default 20°C</mark>	Setting Room temp 1 for cooling
RoomCool2		1	9	-	-	-	-	Available (25-35°C) <mark>Default 30°C</mark>	Setting Room temp 2 for cooling
TCool1	Main unit of Group	2	0	-	-	-	-	Available (-10-25°C) <mark>Default 15°C</mark>	Set temp 1 for cooling
TCool2	Water Law Only	2	1	-	-	-	-	Available (-10-25°C) <mark>Default 7°C</mark>	Set temp 2 for cooling
AirHeat1		2	2	-	-	-	-	Available (-20-5°C) <mark>Default -10°C</mark>	Setting Outdoor temp 1 for heating
AirHeat2		2	3	-	-	-	-	Available (10-20°C) <mark>Default 15°C</mark>	Setting Outdoor temp 2 for heating
RoomHeat1		2	4	-	-	-	-	Available (15-24°C) <mark>Default 20°C</mark>	Set temp 1 for heating
RoomHeat2		2	5	-	-	-	-	Available (25-35°C) <mark>Default 30°C</mark>	Set temp 2 for heating

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Option Setting	Option item	Input unit	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	Function	Remarks
Tables, Continued	THeat1	Main unit of Group	2	6	-	-	-	-	Available (35-55°C) <mark>Default 45°C</mark>	Set temp 1 for heating
	THeat2	Water Law Only	2	7	-	-	-	-	Available (35-55°C) <mark>Default 35°C</mark>	Set temp 2 for heating
	Signal pattern ON/OFF	Main unit	2	8	-	-	0	0	Recognize usual signal <mark>(Default)</mark>	N/A
	external contact	of Group	Group		-	-	0	1	Recognize instant signal	
	N/A		20	33	-	-	-	-	N/A	Reserved
	NA		25-	-55	-	-	-	-	N/A	Reserved
*See next page	Low temp	Each	2	4	-	-	0	0	Not used <mark>(Default)</mark>	Expands water temp range for
	function	PCB	3	4	-	-	0	1	Used	Cool/Cool storage modes
	N/A		35-	-37	-	-	-	-	N/A	Reserved
						-	-	-		

Hydro Unit

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Low Temp Function - Cool/Cool Storage Mode

When changing outdoor unit Option setting (34) to "USED":

Installation Option 2 must be changed.

(Seg23 of installation option code (0)5 set to 'E')

Low temperature function:

- Expands the range of water outlet temperature Cool/Cool storage mode.
- [5°C (41°F) ~ 25°C (77°F) → -10°C (14°F) ~ 25°C (77°F)]
- Anti-Freeze Protection Control Value is changed.
- When using low temperature function, use brine and maintain the concentration under freezing points.

······, ·······, ·····················										
Product Option	Installation Option	Installation Option 2	Main Micom							
(0)10044-(1)2790B-(2)32323-(3)30000	(0)20010-(1)00000-(2)00000-(3)00000	(0)50000-(1)00000-(2)00000-(3)000 <mark>0</mark> 0	DB91-01743A 160425							

Note: 15 Ton factory default segments below:

Note: 10 Ton factory default segments below:

Product Option	Installation Option	Installation Option 2	Main Micom
(0)10044-(1)2790B-(2)33232-(3)30000	(0)20010-(1)00000-(2)00000-(3)0000	(0)50000-(1)00000-(2)00000-(3)000 <mark>0</mark> 0	DB91-01743A 160425

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Pressure Sensor Calibration Test

Prior to pump calibration

- 1. System must be completely flushed out and air purge.
- 2. Water flow rate and expansion tank pressures set.

With system off including pump. (Follow steps below at each outdoor unit)

- Hold K4 & K6 for 3 seconds to start calibration
- Calibration will finish automatically within 30 seconds
- This must be initiated on all units

Segments will display as below during test

SEG1	SEG2	SEG3	SEG4	SEG5	SEG6
К		С	А	L	I

Water restrictions/requirements

Chilled water/Hot water loop (Minimum) capacity

- 10 Ton: 72 gallons
- 15 Ton: 103 gallons
- Additional storage tank may be required
 Water loop (Minimum/Maximum) flow rate
 - 10 Ton: 16 48 gpm
 - 15 Ton: 17 68 gpm

Maximum water pressure: 145 psi

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Entering Service Mode

Before turning "ON" the controller and tracking the system.

You will need to apply Group(s), Module(s) and Main unit(s) through the controllers service mode.

To enter service mode:

- 1. Hold ESC&OK for 3 seconds
- Use the "←,→" keys to move through the menu.
- 3. Use the " \uparrow , \downarrow " keys to change the set value.
- 4. Use "Ok" key to Save each setting change.
- 5. Use "ESC" key to exit service mode after saving.

The controller will remain restricted until this process has been completed.



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Main menu	Sub menu	Description		Default	Page	Function
	1	Option setting/	Chiller cooling and heating / cooling only	0	1	0 - Cooling/heating 1 – Cooling only
		setting/ checking	Temp unit display (°C/°F)	0	2	0 – Celsius 1 – Fahrenheit
	2	Option setting/ checking 2	Temp display	1	1	0 – Set temp 1 – Water outlet temp
1	6	Number of connected units	Number of DVM chillers	0	1	00 - 16
·	7	Setting the unit temperature (Av only when the te display is °C.)	of the desired /ailable emperature	0	1	0 - 1 1 - 0.5 2 - 0.1
	8	CI	ock setting	0	1	0 – 12 hours 1 – 24 hours
	9	Check	< timer IC error	0	1	0 – Normal 1 – Error
	0	Initializing s	service mode setting	0	1	0 – Not used 1 – Reset

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Main menu	Sub menu	Description		Default	Page	Function
2	1	Checking micom code of module control		-	1 – 3	Micom code
2	2	Checking the version info of module control program		-	1 - 3	Modified date
	1		Targeted chiller	View Master	1 – 20	
4	4	Chiller	Checking basic operation	Basic option of target	1 – 20	In 4-1 menu, the units connected to the module control will be displayed. Select the
	5	number/option	Checking installation option	Installation option target	1 – 20	unit that you want to set and then move to 4-4, 5,
	6		Checking installation option2	Installation option 2 target	1 – 20	

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Main menu	Sub menu	Description		Default	Page	Function
E	1	Chiller detail	Demand Level	0	Module number	$\begin{array}{c} 0-100\%\\ 1-95\%\\ 2-90\%\\ 3-85\%\\ 4-80\%\\ 5-75\%\\ 6-70\%\\ 7-65\%\\ 8-60\%\\ 9-55\%\\ 10-50\%\\ 11-\text{unrestricted} \end{array}$
5	2	settings	Quiet operation level	0	Module number	0 – 100% 1 – Level 1 2 – Level 2 3 – Level 3
	3		Standard for water law	0	Module number	0 – Based on outdoor temp 1 – Based on room temp

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Main menu	Sub menu	De	escription	Default	Page	Function
	4		AirCool1	-	Main unit number	Outdoor temp1 (0 – 20°C) cooling mode
	5		AirCool2	-	Main unit number	Outdoor temp2 (30-40°C) cooling mode
5	6 Chiller	RoomCool1	-	Main unit number	Room temp1 (12 – 24°C) cooling mode	
	7	setting 1	RoomCool2	-	Main unit number	Room temp2 (25 - 35°C) cooling mode
	8		TCool1	-	Main unit number	Cooling set temp1 (-10 - 25°C) cooling mode
	9		Tcool2	-	Main unit number	Cooling set temp2 (-10 - 25°C) cooling mode

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Main menu	Sub menu	De	escription	Default	Page	Function
	1		AirHeat1	-	Main unit number	Outdoor temp1 (-20 – 5°C) Heat mode
	2		AirHeat2	-	Main unit number	Outdoor temp1 (10 - 20°C) Heat mode
	3		RoomHeat1	-	Main unit number	Outdoor temp1 (15 - 24°C) Heat mode
6	4	Chiller detailed setting 2	RoomHeat2	-	Main unit number	Outdoor temp1 (25 - 35°C) Heat mode
	5		THeat1	-	Main unit number	Outdoor temp1 (35 - 55°C) Heat mode
	6		THeat2	-	Main unit number	Outdoor temp1 (°C) Heat mode
	9		Operation patterns for modules when in group only	_	Module number	0 – Standard 1 – Rotation 2 – Efficiency

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Main menu	Sub menu	Description	Default	Page	Function
	1	Assign modules / Groups to Units	- / - / Unit	Unit #	Group 1-4 Module 1-8
	2	Set Main unit for Modules	-	Module number	Unit number of the selected Module
9	3	Set Main unit for Groups	-	Group number	Unit number of the selected Group
	4	Use Cool storage mode	-	1	0 – Disable 1 – Enable
	5	Use Hot water mode	-	1	0 – Disable 1 – Enable
	6	Set a backup Module	-	Group number	0 – Disable 1 – 8 The unit number of the selected Module

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Setting Group(s) & Module(s)

Setting up the Group(s)/Module(s):

- Using the arrow keys set the Main menu to "9" then set the Sub menu to "1". (Marked in red) (A Module main must be set with multiple chillers connected)
- Using the arrow keys set the Group #(s) &/or Module #(s) for all units. (Marked in yellow)
- 3. Use the OK key to save each setting change.
- 4. Repeat step two for multiple Groups/Modules or when using multiple units in one Module.

https://www.youtube.com/watch?v=7GoXWdkjupA

Main menu	Sub Menu	Description	Default	Page	Function	Save
	1	Assign modules/groups to each unit	- / - / unit	Unit #	Group 1-4 Module 1-8	Save
9	2	Assign main unit for module(s)	-	Module number	Unit number of selected module	d at DVM o
	3	Assign main unit for Group(s)	-	Group Number	Unit number of selected group	chiller



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Note: One controller can support max Groups:4, max Modules:8, max Units:16

Setting Main Unit(s)

Assigning a Main unit for Module(s) & Group(s):

- 1. Using the arrow keys set the Main menu to "9" then set the Sub menu to "2" or "3". (Marked in red)
- 2. Using the arrow keys set the value to the units number desired as "Main". (Marked in yellow)
- 3. Use the OK key to save each setting change.
- 4. Repeat step two for multiple Groups/Modules. <u>https://www.youtube.com/watch?v=7GoXWdkjupA</u>

Once you have saved a Main unit check menu "9" "1" to ensure the setting saved. There will be an "M" noted with the unit selected as main. (Marked in green)

Main menu	Sub menu	Description	Default	Page	Function	Save
	1	Assign modules/groups to each unit	- / - / unit	Unit #	Group 1-4 Module 1- 8	Sav
9	2	Assign main unit for module(s)	-	Module number	Unit number of selected module	/ed at DVM o
	3	Assign main unit for Group(s)	-	Group Number	Unit number of selected group	chiller

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Reset Tracking

Once you have set the Group(S), Module(S) and Main Unit(S) you will need to initiate tracking.

- 1. Be sure to address all units and set any option settings needed prior to tracking.
- To initial reset/tracking press and hold "ESC" & "DELETE" for more than 5 seconds.
- 3. Once completed the controller will no longer be restricted and you can now operate the system.

Always reset/tracking:

- 1. After hardware setting changes.
- 2. Communication wiring changes.

If the hydro PCB DIP s/w #1 is not turned off the controller will display "PANEL" and not allow operation.



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Trial Operation

- 1. DIP Switch #1 set to ON position
 - DIP Switch #2 ON = Cool OFF = Heat
- 2. Operation control
 - Press K1 once for ON, press K2 once for off

Trial operation will run continuously until K2 is pressed.

- 1. Once K2 is pressed and released the system will stop running.
- 2. Set DIP Switch #1 to OFF
- 3. Press & hold K5 and K6 for 3 seconds to reset hydro controller.

If the hydro PCB in not reset after DIP s/w #1 is turned off. The controller will display "PANEL".

Note: If DIP s/w 1 is left on the remote control will be restricted.



Hydro Board Not VRF Board

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Trial Operation

- Tact S/W (Direct control)

Use this function for **trial operation and trouble shooting operation**

- K1 : Operation On
- K2 : Operation Off
- K3 : Temperature Up
- K4 : Temperature Down
- K5 : Pump Forced Operation
- K6 : Fan Forced Operation
- ※ To use these function, Dip S/W No 1. should be "ON" (Direct control by Tact S/W)
- S/W No 1 : Direct control by Tact S/W

Remote control (Including External contact control) is impossible **After trial operation, Dip S/W No. 1 should be set to off.**

S/W No 2 : Cooling / Heating mode selection by Dip S/W On : Cooling, Off : Heating

Note: If DIP s/w 1 is left on the remote control will be restricted.

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View Mode & Option Tables

View Mode Display – System operating data

Chiller off including pump

- 1. Hold K3&K4 for 3 sec.
- Press K3 until the value # desired from the table is displayed
- 3. Press K4 to reverse the value #
- 4. Use the option tales to confirm displayed information
- 5. Press & hold K3 to leave view mode

Refer to the chiller Installation Manual for complete view mode listing.

Example below: Selected mode display 01 "water in temp"

Selected	SEG1	SEG2	SEG3	SEG4	SEG5	SEG6	Value
Water in	0	1	-	0	5	0	5°C



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Troubleshooting VRF PCB ONLY

°C	°F	
-30	-22	
-25	-13	
-20	-4	
-15	5	
-10	14	
-5	23	
0	32	
5	41	
10	50	
15	59	
20	68	
25	77	
30	86	
35	95	
40	10 4	

K2 No. of presses	Operation	Displayed on segments
1 time	Refrigerant charging "Cooling"	"K" "S" "BLANK" "BLANK"
2 times	Trial operation "Cooling"	"K" "6" "BLANK" "BLANK"
3 times	Pump down all units "Cooling"	"K" "7" "BLANK" "BLANK"
4 times	H/R: pipe check H/P: Automatic mode set "trail operation"	"K" "8" "BLANK" "BLANK"
5 times	Checking amount of refrigerant	"K" "9" "X" "X" (Display of last 2 digits may very)
6 times	Discharge mode DC link volts	"K" "A" "BLANK" "BLANK"
7 times	Forced defrost	"K" "B" "BLANK" "BLANK"
8 times	Forced oil return	"K" "C" "BLANK" "BLANK"
9 times	Inverter comp 1 check	"K" "D" "BLANK" "BLANK"
10 times	Inverter comp 2 check	"K" "E" "BLANK" "BLANK"
11 times	Fan 1 check	"K" "F" "BLANK" "BLANK"
12 times	Fan 2 check	"K" "G" "BLANK" "BLANK"
13 times	End operation	-

°C	°F
45	113
50	122
55	131
60	140
65	149
70	158
100	212
120	248
140	284
160	320
180	356
200	392
220	428
240	464
260	500

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