Crossover Training 38MURA/40MUAA



Technical Support 800-264-2512 opt 3 then 1



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2nd Gen AIR HANDLER

- New Construction & Major Remodel
- Single & Multi-Zone Compatibility
- Ductless system new line sets, insulate both lines



NEW HORIZONTAL DISCHARGE SYSTEM

- · Add-On-Replacement focus
- 18K-60K Standard & High Heat systems
- New inverter heat pump series conventional installation: re-use existing line sets; only insulate suction line

Is not compatible with zoning!



MODEL NUMBER NOMENCLATURE







Application and Sizing

Heat Pump (Standard Heat)

Outdoor Size		1.5T	2T	2.5T	3T	4T	5T
			M1 Ra	tings			
Cooling Rated Capacity	Btu/h	18,000	24,000	30,000	36,000	47,000	57,000
Cooling Cap. Range Min - Max	Btu/h	5400~18700	7500~26000	9500~33000	8900~38900	10500~48000	4400~60200
SEER2	•	16.0	17.0	17.3	16.9	15.8	14.7
EER2		10.8	10.5	10.6	10.1	8.8	8.7
Heating Rated Capacity (47°F)	Btu/h	18,000	26,000	31,000	36,000	55,000	60,000
Heating Rated Capacity (17°F)	Btu/h	11,500	20,700	20,000	20,500	36,500	36,000
Heating Rated Capacity (5°F)	Btu/h	10,000	17,000	17,000 17,800		36,500	34,800
Heating Cap. Range Min - Max	Btu/h	5600~18700	5600~30000	12200~32000	6000~36400	11700~57000	11400~63100
HSPF2		8.7	9.1	8.5	8.2	9.4	8.4
COP (47°F)	W/W	3.50	3.45	3.25	3.39	3.15	3.45
COP (17°F)	W/W 2.75 2		2.40	2.45	2.40	2.30	2.35
COP (5°F) W/W		1.90	2.00	1.75	1.88	1.98	1.89



See Product Data for full information

Best Practices

NOTES: Read the entire instruction manual before starting the installation.



Required Tools



Evacuation

- 1. Attach vacuum pump, (with new oil) and micron gauge to system.
- 2. Allow pump to run until 500 microns or below.
- 3. Turn off pump and close all valves, (micron gauge must still be attached to system).
- 4. Pressure must hold for 7 minutes below 1000 microns.



The deep vacuum method is the most positive way of assuring a system is free of air and moisture.



Troubleshooting challenges





TROUBLESHOOTING

For ease of service, the systems are equipped with diagnostic code display LEDs on both the indoor and outdoor units. The outdoor diagnostic display are two LEDs (Red and Green) on the outdoor unit board and is limited to very few errors. The indoor diagnostic display is a combination of flashing LEDs on the display panel or the front of the unit.

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Native Wired Controller

Horizontal discharge system



Non-polarity RS-485



Binary terminology: ON = 1, OFF = 0 (Example: 011 = off, on, on)

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	Availat switch	ole setting position.	vidual								
Mode	Priority	G	Y1	Y/Y2	в	W	W 1	W21	E/AUX	DH/DS/BK	Display
Shut Down	/	0	0	0	0	0	0	0	0	*	00
Fan	7	1	0	0	0	0	0	0	0	1	01
Fan	· /	1	0	0	0	0	0	0	0	0	01
Cooling		*	1	0	0	0	0	0	0	1	02
Cooling2	6	*	*	1	0	0	0	0	0	1	03
Dehumidification 1	8	*	1	0	0	0	0	0	0	0	04

KSACN1001







18K, 24K, 30K, 36K *AA3



36K *AB3, 48K, 60K

10-year warranty (original owner with registration) Standard or High Heat Options Operational Range: Cool 5°F - 130°F Heat -5°F - 86°F Capable of 24Vac thermostat operation Conventional line set sizes and insulation 15.0 SEER2 (5T) – 18.0 (3T) (not Energy Star rated)



18K, 24K, 30K, 36K, 48K, 60K

4-way installation (Upflow, Downflow, Left, or Right)
ESP up to .8 in.W.G.
Easier electric heat installation
24Vac interface built-in (operate using thermostat)
Can operate using wired control and/or wireless
EEV conventional location
New algorithms are less dependent upon T1 sensor

See Product Data for full feature information

Piping

i iping				Т	'able 6 — I	Piping a	nd Refri	geran	nt				
System Size		18K	18K High Heat	24K	24K High Heat	30K	30K High Heat	36K	36K High Heat	48K	48K High Heat	60K	60K High Heat
				•		·	(208/	230 V)					
Min. Piping Length	ft.(m)						9.8	3 (3)					
Standard Piping Length	ft.(m)		-			_	24.6	(7.5)	Ove	er 24.6 fe	et, add .	69 oz/ft	
Max. outdoor-indoor height difference (OU higher than IU)	ft.(m)	65.6 (20)	65.6 (20)	82 (25	5) 82 (25)	82 (25)	82 (25)	98.4 (\$	30) 98.4 (30)	98.4 (30)	98.4 (30)	98.4 (30)	98.4 (30)
Max. outdoor-indoor height difference (IU higher than OU)	ft.(m)	65.6 (20)	65.6 (20)	82 (25	5) 82 (25)	82 (25)	82 (25)	98.4 (30) 98.4 (30)	98.4 (30)	98.4 (30)	98.4 (30)	98.4 (30)
Suction Pipe (size - connection type)	in (mm)	ø3/4" (19)	ø3/4" (19)) ø3/4" (1	19) ø3/4" (19)	ø3/4" (19)	ø3/4" (19)	ø3/4" (19) ø3/4" (19)	ø3/4" (19)	ø3/4" (19)	ø7/8" (22)	ø7/8" (22)
Liquid Pipe (size- connection)	in (mm)						ø3/8"	(9.52)					
Refrigerant Type	Туре				1		R4	10A					
Charge Amount	lb. (kg)	3.53 (1.6)	5.07 (2.3)	4.63 (2	.1) 6.39 (2.9)	6.72 (3.05)	8.38 (3.8)	8.16 (3	3.7) 10.36 (4.7)	10.4 (4.7)	10.58 (4.8)	10.8 (4.9)	10.58 (4.8)
5/16" SAE Female to 1/	'4'' SAE Mal	e		System Size	Max. Piping Length wi additional refrigera charge per Syster	ith no Addition ant refrigera m charge	nal Total Ma ant Piping Ler e syste	ximum ngth per em		al al			
					ft. (m)	Oz/ft (g/	m) ft. (r	n)					
		Carrier	P	18K			98 (3	30)					
				24K - 30K	24.6 (7.5)	0.69 (6	5) 164 (50)	Liquid line	drier			
				36K - 60K			213 (65)	3/8"				
Liquid service valve					Only the va	por line	must be	insula	ted				
	vapor se	rvice valve				3/4"	' or 7/8"			_			12

3/4" or 7/8"

Accessories



Fig. 11 — Drain Joint

Braze to flair adapters







Must be ordered separate

Model	Rubber Plug P/N	Quantity
38MURAQ18AA3	12600801A00077	26
38MURAQ24AA3	12600801A00077	34
38MURAQ30AA3	12600801A00117	5
38MURAQ36AA3	12600801A00117	5
38MURAQ48AA3	12600801A00118	5
38MURAQ60AA3	12600801A00118	5
38MURAQ18AB3	12600801A00077	34
38MURAQ24AB3	12600801A00117	5
38MURAQ30AB3	12600801A00117	5
38MURAQ36AB3	12600801A00118	5
38MURAQ48AB3	12600801A00118	5
38MURAQ60AB3	12600801A00118	5



Braze to flair adapters



Control Wiring Outdoor



Option 1: Non-polarity RS485 Communication **Default**



Option 2: 24V Communication

OPTIONS	COMMUNICATION TYPE	RECOMMENDED CABLE SIZE
1	Non-Polarity RS485 Communication (S1 - S2)	16 AWG (stranded shielded)



Scenario 1 - RS485 Communication with 24V Thermostat



Fig. 49 — Scenario 1

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Scenario 2 - RS485 Communication with Wired remote



Fig. 50 — Scenario 2



Scenario 3 – 24V Thermostat Only (indoor and outdoor)



Fig. 51 — Scenario 3





Control Wiring Indoor (wired/wireless)



Control Wiring Indoor (24 Vac Thermostat)





Wired Remote (optional-accessory)



KSACN1001AAA

- 7 Day Programmable Wired Wall Remote Controller
- Indoor Setting Temperature Range: 62°F~86°F
- Defaulted to Follow Me (Senses Temp at Controller, not indoor unit)
- Maximum wire length: 18 gauge 66', 16 gauge 164'
- Control up to 16 indoor units.

The 1001 looks and works the same as the 601, 701 or 801, but connects differently. Use field supplied 16 gauge stranded 2-wire (no shield).



Wired Remote

Wired Remote / Wireless Remote

The RG10F wireless remote can be used with the Infrared Receiver built in to the wired remote.

Wireless Remote must be pointed at the IR and be within range, (25 feet).

The RG10F "Inquiry Mode" is only available in the setup, (Scenario 2 Full RS-485).





INFORMATION INQUIRY

To enter the engineer mode, in power-on or standby mode, and in non-locked state using hand held remote,

- 1. Press the key combination On/Off + Fan for 7 seconds:
- 2. After entering the engineer mode, the remote control displays the following icons "Auto, Cool, Dry, Heat", plus the battery icon; at the same time, it also displays the numeric code of the current engineer mode (for the initial engineer mode, the numeric code displayed is 0), and all other icons are inactive. In engineer mode, the value of the current numeric code can be adjusted circularly through the Up/Down key, with the setting range of 0 to 30. Each time the current numeric code is adjusted, the special code of the engineer mode is transmitted with a delay of 0.6s. The code can also be transmitted by pressing "OK", and the special code of the engineer mode sent contains information of the currently displayed numeric code (if the numeric code is 0, the code to enter the engineer mode is transmitted). In engineer mode, other keys or operations are invalid except for the On/Off key, the Up/Down key, the OK key or executing the operation to exit the engineer mode.

Inquiry Information

Inquiry Information (Sheet 1 of 2)

CODE	QUERY CONTENT	ADVANCED FUNCTION SETTING
0	Error Code	
1	T1 Temperature	Press "On/Off" for 2s to enter the Power Down Memory Selector, the code displayed is "Ch", press "OK" to send the Query Power Down Memory Selector code; press the Up/Down key to select 1 or 0 and press "OK" to confirm, 1 indicates that the power down memory exists, and 0 indicates that no power down memory exists; and press "On/Off" for 2s to exit. (Set within 1 minute after power on)
2	T2 Temperature	Press "On/Off" for 2s to enter the Internal Fan Control Selector after the preset temperature is reached, the code displayed is "Ch", press "OK" to send the Query Internal Fan Control Selector code; press the Up/Down key to select 1 to 11: 1 - Stop the fan, 2 - Min. air speed, 3 - Set the air speed, 4 - Terminal running for 5min, press "OK" to confirm, and press "On/Off" for 2s to exit. (Set within 1 minute after power on)
3	T3 Temperature	Press "On/Off" for 2s to enter the Mode Selector, press the Up/Down key to select CH (cool and heat, Auto+Cool+Dry+Heat+Fan), CC (Cool only without Auto, Cool+Dry+Fan), press "OK" to confirm, and the mode selected can be memorized when the remote control is powered down and powered on; and press "On/Off" for 2s to exit. When the remote control does not burn any parameters, the mode setting will not be memorized. (Set within 1 minute after power on)



KSACN1001

- Connect the 1001 controller's HA & HB terminals to the Indoor Unit's HA & HB terminals.
- Connections are not polarity sensitive.
- Shielded wire is not necessary.





No change needed on a one-to-one matchup.





KSACN01001AAA

KSACN1001

- Up to 16 indoor units can be daisy chained using one controller.
- Each indoor unit must be set with a different net address.



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KSACN01001AAA





FOR SETTING NETADDRESS							
S1+S2	4F073346 00846819	ON 1 2					
CODE	0~F						
NETADDRESS	0~1	5					
FACTORY SETTIN	G /	-					

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KSACN1001

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- Main and Secondary Control.
- System uses last input from either control.
- Main rotary switch is set to 0, Secondary is set to 1.



KSACN01001AAA

KSACN01001AAA

Fan Coil

Configurations: Upflow, downflow, horizontal left and right.

Horizontal applications require secondary drain pan.

If installed in unconditioned space insulate fan coil. Seal all corners and add insulation material (13/32 to 13/16 in (10-20 mm)) to the entire surface. Modifications:

- A. Upflow or Horizontal-Left: no field conversion needed.
- B. Downflow or Horizontal-Right: field conversion required.











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- All sizes come with a reusable air filter located on the bottom of the unit.
- The Filter Door is held in place with magnets.
- The air filter is a durable metal mesh and frame.
- Washable and reusable.





Model	Wie	dth	De	pth	Thickness		
(Btu/h)	Inch	mm	Inch	mm	Inch	mm	
18-24K	16	406.4	20	508	1	25.4	
30-48K	19-1/2	495.3	20	508	1	25.4	
60K	23	584.2	20	508	1	25.4	



Fig. 9 — Recommended Filter Size



Automatic Airflow Adjustment

- Constant Air ECM (will maintain CFM from .1 .8 ESP)
- No addressing necessary during start up, for different ESP levels
- ECM will automatically adjust airflow to changes in ESP

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Fan Coil



Fan Coil (indoor display)

DISPLAY	ERROR INFORMATION								
EHOD	Indoor EEPROM Malfunction								
ELOl	Communication malfunction between the indoor and outdoor units								
EHO3	Indoor fan speed malfunction								
EC51	Outdoor EEPROM malfunction								
EC52	Condenser coil temperature sensor (T3) malfunction								
EC53	Outdoor ambient temperature sensor (T4) malfunction	Two digits pause two digits							
EC 54	Outdoor unit exhaust temperature sensor error								
EHLO	Indoor Room Temperature Sensor T1 Error								
ЕНЬІ	Indoor Evaporator Coil Temperature Sensor T2 Error								
EHP5	Air inlet temperature sensor error								
ECO7	Outdoor DC fan speed malfunction								
EHOb	Indoor PCB and display board communication error								
ELOC	Refrigerant leakage detection								
EHOE	Indoor water level warning error								
FL09	New and old platform match malfunction								
PCOO	Inverter module (IPM) protection	Only valid when using RS485							
PCOl	Over high voltage or over low voltage protection								
PC02	High temperature protection of compressor top/IPM temperature protection								
PC04	Inverter compressor drive error								
PCO3	Low pressure protection								
PCOL	Low temperature protection of outdoor unit								
	Indoor units mode conflict								

NOTE: If the LED display shows DF (Defrost) or FC (Forced Cooling), these are operational codes and, not fault or protection.

Table 12 — Functional Display

Mode	Priority	G	Y1	Y/Y2	в	W	W1	W21	E/AUX	DH/DS/BK	Display
Shut Down	/	0	0	0	0	0	0	0	0	*	00
Fan	-	1	0	0	0	0	0	0	0	1	04
Fan		1	0	0	0	0	0	0	0	0	01
Cooling		*	1	0	0	0	0	0	0	1	02
Cooling2	e	*	*	1	0	0	0	0	0	1	03
Dehumidification 1	0	*	1	0	0	0	0	0	0	0	04
Dehumidification 2		*	*	1	0	0	0	0	0	0	05
Heating 1		*	1	0	1	0	0	0	0	1	06
Heating 2	5	*	*	1	1	0	0	0	0	1	07
Heating 2		*	*	*	*	1	0	0	0	1	07
Electric Heating 1		*	0	0	0	0	1	0	0	*	•
Electric Heating 1	3	*	0	0	0	0	0	1	0	*	0
Electric Heating 2		*	0	0	0	0	1	1	0	*	9
Heating 1 + Electric Heating 1		*	1	0	1	0	1	0	0	1	
Heating 1 + Electric Heating 1		*	1	0	1	0	0	1	0	1	
Heating 2 + Electric Heating 1		*	*	1	1	0	1	0	0	1	10
Heating 2 + Electric Heating 1		*	*	*	*	1	1	0	0	1	10
Heating 2 + Electric Heating 1	4	*	*	1	1	0	0	1	0	1	
Heating 2 + Electric Heating 1		*	*	*	*	1	0	1	0	1	
Heating 1 + Electric Heating 2		*	1	0	1	0	1	1	0	1	
Heating 2 + Electric Heating 2		*	*	1	1	0	1	1	0	1	11
Heating 2 + Electric Heating 2		*	*	*	*	1	1	1	0	1	
Emergency Heating	1	*	*	*	*	*	*	*	1	*	12
Heating Zone Control		*	1	0	1	0	*	*	0	0	13
Heating Zone Control	2	*	*	1	1	0	*	*	0	0	
Heating Zone Control		*	*	*	*	1	*	*	0	0	



0: No Signal



Table 16 — Indoor Unit Connector

Connector	Purpose
R	24V
С	COM
G	FAN
Y	First stage cooling
Y Y2	Second stage cooling
В	Heating (Four-way valve)
W	Heating operation
W1	Electric Heating Operation 1
W2	Electric Heating Operation 2
E/AUX	Emergency Heat / Auxiliary Heat
DH	Dehumidification
L	Error Signal
















Number	Dial Code	Function	ON	OFF	S3 53 (°F)
1	SW1-1	Control Function	[Default] 24 V Communication	RS485 S1-S2 Communication	
2	SW1-2	Anti-cold blow protection option	NO	[Default] YES	
3	SW1-3	Single cooling / heating and cooling options	Cooling	[Default] Cooling & Heating	1 -4
4	SW1-4	Future Use	N/A	[Default] Leave OFF	2 0
5*	SW2-1	Temperature differential to activate first stage auxiliary heat	2°F	[Default] 4°F	3 3
6*	SW2-2	Electric heat on delay	30 minutes	[Default] 15 minutes	
7*	SW2-3	Electric auxiliary heating delay to start time	YES	[Default] NO	4 7
8*	SW2-4	Compressor/Auxiliary heat outdoor ambient lockout	The heater will not operate if the outdoor temperature is greater than the temperature represented by S3	[Default] The compressor will not operate if the outdoor temperature is lower than the temperature represented by S3	5 10 6 14
9*	Rotary Switch S3	Set outdoor temperature Limitation (for auxiliary heating or compressor)	0 means that the temperature protect through F, 1 equals 4°F and it increas	ion is not turned on, the dial range is 1 ed up to 46°F based on Fig.	
10*	SW3-1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user set point	30 minutes	[Default] 90 minutes	SW1 SW2 SW3 B 32 ON ON ON B 32
11	SW3-2	Cooling and heating Y2 temperature differential adjustment.	2°F	4°F [Default]	
12	SW3-3	Temperature differential to activate second stage auxiliary heating	4°F	6°F [Default]	D 39
13	SW4	Electric heat nominal CFM adjustment	Available settings are 000/001/010/07 switch position. For example [SW4-1 OFF, SW4-2 ON See table 11 for the corresponding C	1. Each digit corresponds an individual J, SW4 -3 OFF] = 010 FM adjustment	
14**	S4-1	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.	
15**	S4-2	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	345_{0}



*Only available with native wired controller KSACN1001

Number	Dial Code	Function	ON OFF	
1	SW1-1	Control Function	[Default] 24 V Communication	RS485 S1-S2 Communication
2	SW1-2	Anti-cold blow protection option	NO	[Default] YES
3	SW1-3	Single cooling / heating and cooling options	Cooling	[Default] Cooling & Heating
4	SW1-4	Future Use	N/A	[Default] Leave OFF
5*	SW2-1	Temperature differential to activate first stage auxiliary heat	2°F	[Default] 4°F
6*	SW2-2	Electric heat on delay	30 minutes	[Default] 15 minutes
7*	SW2-3	Electric auxiliary heating delay to start time	YES	[Default] NO
8*	SW2-4	Compressor/Auxiliary heat outdoor ambient lockout	The heater will not operate if the outdoor temperature is greater than the temperature represented by S3 [Default] The compressor will no operate if the outdoor temperature lower than the temperature represented by S3	
9*	Rotary Switch S3	Set outdoor temperature Limitation (for auxiliary heating or compressor)	0 means that the temperature protecti through F, 1 equals 4°F and it increas	on is not turned on, the dial range is 1 ed up to 46°F based on Fig.
10*	SW3-1	Maximum continuous runtime allowed before system automatically stages up capacity to satisfy set point. This adds 1 to 5°F to the user set point in the calculated control point to increase capacity and satisfy user set point	30 minutes	[Default] 90 minutes
11	SW3-2	Cooling and heating Y2 temperature differential adjustment.	2°F 4°F [Default]	
12	SW3-3	Temperature differential to activate second stage auxiliary heating	4°F 6°F [Default]	
13	SW4	Electric heat nominal CFM adjustment	Available settings are 000/001/010/01 switch position. For example [SW4-1 OFF, SW4-2 ON See table 11 for the corresponding CF	1. Each digit corresponds an individual I, SW4 -3 OFF] = 010 FM adjustment
14**	S4-1	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.
15**	S4-2	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat

	Model	SW4-1, 2, 3 Setting (Default) Air Volume (CFM)	001 - Air Volume (CFM)	010 - Air Volume (CFM)	011 - Air Volume (CFM)	
	18K	660	630	600	570	
\vdash		10KW 880	10KW, 8KW	8KW 830	5KW, 3KW	
	24K	15KW	15KW, 8KW	10KW, 8KW	5KW, 3KW	
	2014	1100	1040	990	930	
	JUK	15KW	15KW, 10KW	10KW, 8KW	8KW, 5KW	
	36K	1320	1255	1190	1125	
	oon	20KW	15KW	10KW, 8KW	8KW, 5KW	
	48K	1760	1675	1580	1490	
\vdash		20KW	15KVV, 10KVV	10KVV, 8KVV	8KW	
	60K 2195		2000 20KW 15KW	1920 15KW 10KW	1775 10KW	
5		20101	201007, 15100	15100, 10100		
(С		W2 5W3 ON ON 2 3 4 1 2 3			





*Only available with native wired controller KSACN1001

Number	Dial Code	Function	ON	OFF
1	SW1-1	Control Function	[Default] 24 V Communication	RS485 S1-S2 Communication
2	SW1-2	Anti-cold blow protection option	NO	[Default] YES
3	SW1-3	Single cooling / heating and cooling options	Cooling	[Default] Cooling & Heating
4	SW1-4	Future Use	N/A	[Default] Leave OFF
5*	SW2-1	Temperature differential to activate first stage auxilian heat	2°F	[Default] 4°F
6*	SW2-2	Electric heat on delay	00	market de activitation
7*	SW2-3	Electric auxiliary heating delay to start time		
8*	SW2-4	Compressor/Auxiliary heat outdoor ambient	V1 W2	
9*	Rotary Switch S3	Set outdoor temperature Limitation (for auxil or compressor)	$\overline{}$	
10*	SW3-1	Maximum continuous runtime allowed before automatically stages up capacity to satisfy s This adds 1 to 5°F to the user set point in the control point to increase capacity and satisfy point	1:	ro supplomental beat 10/1
11	SW3-2	Cooling and heating Y2 temperature differential adjustment.	W2 are connected.	je supplemental neat, wi
12	SW3-3	Temperature differential to activate second stage auxiliary heating OF	F: For dual stage supple	emental heat, W1 and W2
13	SW4	Electric heat nominal CFM adjustment	controlled independent ough thermostat.	Iy. feature is enabled
14**	S4-1	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.
15**	S4-2	DH function selection	[Default] Dehumidification	Dehumidification feature is enabled





S4-2:

Default ON: Dehumidification control not available.

OFF: Dehumidification feature is enabled through thermostat.



*Only available with native wired controller KSACN1001

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Float Switch Connections (24 Vac controls)



Float Switch Connections (24 Vac controls)



Float Switch Connections (Wired Remote – Scenario 2)



Alarm CN33 (Main Board)



Work CN23 (Main Board)



UV LED CN43 (Main Board)



On-Off CN2 (Interface Board)

- Remote Shutdown.
- Circuit in parallel with JR1
- 12 Vdc output, max. current is 5mA.
- Open circuit displays CP error code.





Crossover Unit

Energy Efficiency

• 14.7 - 18 SEER2 / 8.2 - 12.4 EER2 / 8.2 - 9.8 HSPF2

Sound

• Levels as low as 54 dBA

Design Features

- Small Footprint
- Integrated 24V and RS-485 communications

OPERATING RANGE MIN/MAX °F / °C High Heat Units: Regular

- Cooling: -22/130 (-30/55)
- Heating: -22/86 (-30/30)

Regular Heat Units:

- Cooling: 5/130 (-15/55)
- Heating: -5/86 (-20/30)







Service Manual

38MURA Residential Single Zone Heat Pump System Sizes 18 to 60

Service Manual

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ELECTRICAL SHOCK HAZARD Failure to follow this warning could result in personal injury



Control Teminals



Terminal Function

	R	24V Power Connection			
	С	Common			
	Y1	Low Demand			
	Y2	High Demand			
	В	Heating Reversing Valve			
	W	Heating Control			
>	D	Defrost NEVER attach to a gas furnace!			
	L	System Fault - (24∨ output signal)			

Terminal D will be energized when the outdoor unit goes into defrost mode and can be used to enable electric heat. Only available with scenario 3, (full 24 Vac operation).

Point Check Function

(CE

Number of Presses	Display	Remark
00	Normal display	Displays running frequency, running state, or malfunction code
01	Indoor unit capacity demand code	Actual data*HP*10 If capacity demand code is higher than 99, the digital display tube will show single digit and tens digit. (For example, the digital display tube show "5.0", it means the capacity demand is 15. the digital display tube show "60", it means the capacity

Indoor information not available with scenario 3 (24 Vac) -- on display.

	capacity requirement adapter		
03	Room temperature (T1)	If the temp. is lower than 0 degree, the digital display tube will show "0". If the temp. is higher than 70 degree, the digital display tube will show "70".	
04	Indoor unit evaporator temperature (T2)	If the temp. is lower than -9 degree, the digital display tube will show "-9". If the temp. is higher than 70 degree, the	
05	Condenser pipe temp.(T3)	digital display tube will show "70". If the indoor unit is not	t
06	Outdoor ambient temp.(T4)	connected, the digital display tube will show: ""	
07	Compressor discharge temp. (TP)	The display value is between 0~199 degree. If the temp. is lower than 0 degree, the digital display tube will show "0". If the temp. is higher than 99 degree, the digital display tube will show single digit and tens digit. (For example, the digital display tube show "0.5", it means the compressor discharge temp. is 105 degree. the digital display tube show "1.6", it means the compressor discharge temp. is 116 degree)	
08	AD value of current	The display value is a hex number.	
09	AD value of voltage	For example, the digital display tube shows "Cd", it means AD value is 205.	-
10	Indoor unit running mode code	Standby: 0 Cooling: 1 Heating: 2 Fan only 3 Drying: 4 Forced	
11	Outdoor unit running mode code	cooling:6, Defrost:7	
12	EXV open angle	Actual data/4. If the value is higher than 99, the digital display tube will show single digit and tens digit. For example, the digital display tube show "2.0" it means the EXV open angle is 120x4–480p.)	



Error Codes

Two digits – pause – two digits

DISPLAY	ERROR INFORMATION	DISPLAY	
EC5C	High pressure sensor failure	PCDF	PFC module protection
EC57	Refrigerant pipe temperature sensor error	PCOL	Low temperature protection of outdoor unit
ELOl	Communication malfunction between indoor and outdoor units	PClD	Outdoor unit low AC voltage protection
EC50	Outdoor temperature sensor error	PCll	Outdoor unit main control board DC bus high voltage pro tection
EC51	Outdoor EEPROM error	PC15	Outdoor unit main control board DC bus high voltage pro tection /341 MCE error
EC52	Condenser coil temperature sensor (T3) malfunction	PC30	System high pressure protection
EC53	Outdoor ambient temperature sensor (T4) malfunction	PC31	System low pressure protection
EC54	Compressor discharge temperature sensor TP has an open or short circuit	PC4D	Communication error between outdoor main chip and co pressor driven chip
ECO7	Outdoor DC fan motor malfunction/fan speed out of con- trol	PC42	Compressor start failure of outdoor unit
EC71	Over current failure of outdoor DC fan motor	PC43	Outdoor compressor lack phase protection
EC72	Lack phase failure of outdoor DC fan motor	PC44	Outdoor unit zero speed protection
ELle	Communication malfunction between outdoor unit main board and outdoor transit board	PC45	Outdoor unit IR chip drive failure
PCOD	Inverter module (IPM) protection	PC46	Compressor speed has been out of control
PC02	Top temperature protection of compressor	PC49	Compressor overcurrent failure
PCOL	Discharge temperature protection of compressor	PH90	High temperature protection of Evaporator
PCDA	Outdoor overcurrent protection	рнат	Low temperature protection of Evaporator
PCDA	High temperature protection of condenser	LCOL	High temperature protection of Inverter module (IPM)

Error Codes

DISF	PLAY	MALFUNCTION OR PROTECTION	PAGE #
EC	51	Outdoor EEPROM malfunction	25
51	02	Indoor / outdoor units communication error	20
EL	16	Communication malfunction between adapter board and outdoor main board	49
PC	00	IPM module protection	32
PC	02	Top temperature protection of compressor or High temperature protection of IPM mod	34
PC	06	Temperature protection of compressor discharge	37
PC	08	Outdoor overcurrent protection	38
PC	DA	High temperature protection of condenser	44
PC	OF	PFC module protection	45
PC	10	Outdoor unit low AC voltage protection	33
PC	11	Outdoor unit main control board DC bus high voltage protection	
PC	15	Outdoor unit main control board DC bus high voltage protection /341 MCE error	33
PC	30	High pressure protection	39
PC	31	Low pressure protection	35
PC	40	Communication malfunction between IPM board and outdoor main board	40
PC	43	Outdoor compressor current sampling circuit failure	41
PC	43	Outdoor compressor lack phase protection	42
PC	44	Outdoor unit zero speed protection	38
PC	45	Outdoor unit IR chip drive failure	43
PC	46	Compressor speed has been out of control	38
PC	49	Compressor overcurrent failure	38
EC	52	Condenser coil temperature sensor T3 is in open circuit or has short circuited	29
EC	53	Outdoor room temperature sensor T4 is in open circuit or has short circuited	29
EC	54	Compressor discharge temperature sensor TP is in open circuit or has short circuited	29
EC	57	Refrigerant pipe temperature sensor error	29
EC	5C	High pressure sensor is in open circuit or has short circuited	29
EC	71	Over current failure of outdoor DC fan motor	27
EC	72	Lack phase failure of outdoor DC fan motor	47
EC	73	Zero-speed failure of outdoor DC fan motor	
EC	07	Outdoor fan speed has been out of control	27
PC	OL	Low ambient temperature protection	43
LC	06	High temperature protection of IPM module	34

DIAGNOSIS AND SOLUTION

EH 00 / EC 51 (EEPROM Parameter Error Diagnosis and Solution)

Description: Indoor or outdoor PCB main chip does not receive feedback from EEPROM chip.

Recommended parts to repair:

Indoor PCB

Outdoor PCB

Troubleshooting



Superheat





Resistance and Vdc

Black to White = 0-5 Vdc

Black to Red = 5.8 Mohms



24V Board





Superheat



Used to calculate demand, (compressor/fan speed and EEV position).

No longer so dependent on T1 to set target frequencies.

Y1 = lower demand = slower ramp up Y2 = higher demand = faster ramp up



Suction Temp Sensor

Understanding Y1 / Y2



Call for Y1:

- **1.** Compressor will start at lower frequency.
- 2. Compressor will ramp up slower.
- 3. Takes longer to reach maximum capacity.
- 4. Controlled by superheat from SPT and OST (HQ)

Understanding Y1 / Y2



Call for Y1:

- **1.** Compressor will start at lower frequency.
- 2. Compressor will ramp up slower.
- 3. Takes longer to reach maximum capacity.
- 4. Controlled by superheat from SPT and OST (HQ).

Call for Y2:

- 1. Compressor will start at higher frequency.
- 2. Compressor will ramp up faster.
- 3. Will reach maximum capacity quicker.
- 4. Controlled by superheat from SPT and OST (HQ).

Both calls, (Y1/Y2) will reach maximum operation!

















Top Cove

Disassembly Instructions

Panel Plate Size 18K Standard Heat

Turn off the air conditioner and the power breaker.
Remove the handle screw (1) and then remove the handle.

3. Remove the top cover screws (4) and then remove the top cover. One of the screws is located under the handle.





Disassembly Instructions

4. Remove the water collecting cover screws (2) and then remove the cover.



5. Remove the front panel screws (7 screws (on all models) or 9 screws (some models) and then remove the front panel. 6. Remove the right panel screws (5) and then remove the right panel.





Follow the instructions Step-by-Step!

Disassembly Instructions

<u>Remove the Electrical Parts 18K Standard Heat</u> (Main PCB)

1. Disconnect the compressor connector and release the ground wire (1 screw).

36K Standard Heat and below.



18K, 24K, 30K, 36K *AA3

2. Remove the electronic control box subassembly.

Note: The electric control box cover cannot be removed, so the voltage between P and N cannot be measured.




Disassembly Instructions

Remove the Electrical Parts 18K HH, 24K Standard Heat (Main PCB)

1. Remove the screws, loosen the hooks, then open the electronic control box cover (5 screws and 2 hooks).





Screws can be covered

by wiring diagram.

Note: The electric control box cover cannot be removed, so the voltage between P and N cannot be measured.

Disassembly Instructions

<u>Remove the Electrical Parts 18K HH, 24K Standard Heat</u> (Main PCB)

2. Raise board, disconnect wiring and remove PCB





Disassembly Instructions

<u>Remove the Electrical Parts 24K HH – 36K Standard Heat</u> (Main PCB)

1. Loosen the hooks (4) then open the plastic control box cover.





Disassembly Instructions

<u>Remove the Electrical Parts 24K HH – 36K Standard Heat</u> (Main PCB)

2. Remove screws on the electronic control board to remove the control box subassembly.





Disassembly Instructions

<u>Remove the Electrical Parts 24K HH – 36K Standard Heat</u> (Main PCB)





Disassembly Instructions

<u>Remove the Electrical Parts 24K HH – 36K Standard Heat</u> (Main PCB)





Disassembly Instructions

<u>Remove the Electrical Parts 24K HH – 36K Standard Heat</u> (Main PCB)

5. Raise board, disconnect wiring, and remove old PCB.







Factory Authorized Parts[™] - 38AQ680001 Grease

Conductive

Item: 38AQ680001 MFR: 38AQ680001

Availability

Sign in for real-time inventory at branches near you.



Comes in kit with replacement board.

80

Disassembly Instructions

Remove the Electrical Parts 36K HH – 60K HH

(Main PCB)



36K *AB3, 48K, 60K

PCB Board 8



Matchups

38MURA



Furnaces
58S(B,C) / 81(0,1)SA
58SP(0,1) / 82(0,1)SA
58SU0 / 830SA
58TP(0,1) / 82(0,1)TA
59SC2 / 912SD
59SC5 / 915SB
59SP6/ 926SA
59TP6 / 926TB
59SU5 / 935SA
OVLAAB
OVMAAB





MyCarrierRatings.com or MyBryantRatings.com to access compatible combinations and performance information.

Heating & Cooling Systems AHRI Ratings AHRI Ratings AC P Ductless AC Ductless HP Fumace Res_Pkg AC Res_Pkg HP Geo Water to Air Geo Water to Water Click on SEER to see units with 2022 SEER ratings. ARI Reference # Image Image Image Phase Image Imagee Imagee Imagee Imagee Imagee Imagee Imagee Imagee <td< th=""><th>bryant</th><th></th><th></th></td<>	bryant		
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AHRI Reference # Tonnage All ~ Tonnage Phase 1 ~ Outdoor Model Family 38MURA ~ Outdoor Model 38MURAQ36AB3* ~ Indoor Coil Family CNPV* ~ *//* may return a large number of results. Indoor Coil Model All ~ Minimum SEER2 0 Minimum HSPF2 0 Display Ratings Exitt Export Data to Excel For obtain an AHRI Certified Product Performance To obtain an AHRI Certificate 1. Copy Reference Number 2. Press button below to go to the AHRI website 3. Paste Reference Number in "Enter AHRI Certified Reference Number" box and press "Search" button *//* may return a large number of results. Indoor Coil Model CNPV*3617AL* ~ AHRI Website Search *//* may return a large number of results. Indoor Coil Model All ~ Indoor Coil Model All ~ 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 </th <th>OAC ●HP ODuctless At ORes_Pkg AC ORes_Pkg HP OGeo Water to Click on SEER to see units with ● SEER2 O</th> <th>C ODuctless HP OFurnace Air OGeo Water to Water h 2022 SEER ratings. SEER</th> <th></th>	OAC ●HP ODuctless At ORes_Pkg AC ORes_Pkg HP OGeo Water to Click on SEER to see units with ● SEER2 O	C ODuctless HP OFurnace Air OGeo Water to Water h 2022 SEER ratings. SEER	
Indoor Coil Model CNPV*3617AL* Furnace Family All Furnace Family All Furnace Model All Minimum SEER2 0 Minimum EER2 0 Minimum HSPF2 0 Display Ratings Exit Export Data to Excel Fyrnort all "Active" and "Production Stopped" Bryant HP to Excel	AHRI Reference # Tonnage Phase Outdoor Model Family Outdoor Model Indoor Coil Family "All" may return a large number of results.	All 1 38MURA 38MURAQ36AB3* CNPV*	AHRI Directory of Certified Product Performance To obtain an AHRI Certificate 1. Copy Reference Number 2. Press button below to go to the AHRI website 3. Paste Reference Number in "Enter AHRI Certified Reference Number" box and press "Search" button 4. Click "Select" on rating line. 5. Click on the Reference Number to print Certificate . AHRI Website Search
	Indoor Coil Model Furnace Family Furnace Model Minimum SEER2 Minimum HSPF2 Display Ratings Exit Export Data to Excel Export all "Active" and "Production Stopped" Bryan	CNPV*3617AL* ✓ All ✓ All ✓ 0 0 0	

Data was current with AHRI as of Friday, April 14, 2023. Values are subject to change without notice.

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		AHRI Ref #	Status	Outdoor Model	Indoor Model	Furnace	M1 CAP	М1 Сар 47º	SEER2	EER2	HSPF2	М1 Сар 17º	Cap 5º	COP 5º	M1 17º/47ºCap Ratio	M1 5º/47ºCap Ratioº	CEE 1 North	CEE 1 South	Energy Star 6.1
Print	Сору	210450254	Active	38MURAQ36AB3*	CNPV*3617AL*	926TB36060V14***	33600	41000	14.3	9	7.5	31000	0	0	75.6%	0.0%	No	No	No
Print	Сору	210450253	Active	38MURAQ36AB3*	CNPV*3617AL*	926TB48080V17***	33400	40500	15	9	7.5	30800	0	0	76.0%	0.0%	No	No	No







ecobee | SmartThermostat Pro

One easy install can make all the difference.

Gas Furnace MUST use Dual Fuel Thermostat!



installation, Alexa built-in, and state-of-the-art SmartSensor included.

*Requires professional installation. Product must be returned to installing contractor. See warranty certificate for complete details and restrictions.

COMPATIBLE

Works with gas, oil, electric, and dual fuel systems. Supports conventional (2H/2C) and heat pump (4H/2C) systems; humidifier and dehumidifier accessories.



Powered by

Carrier

ecobee

EB-STATE5CR-01

KSAIC03: Installation Instructions

TXV REPLACEMENT PROCESS FOR Ph/ING ADAPTER FOR CAP**/CNPV* SEPHES EVAPORATOR COILS

- 1. Gain access to the built-in TXV inside the fan coil cabinet.
- 2. Double-wrench the TXV mechanical connector and disassemble.
- Cut the bleed line from the TXV to the suction line and braze closed the equalizer.

NOTE: If the factory txv has a mechanical equalizer fitting, cap off

- Assemble the ine set to the piping adapter kit (40MD000003). Obtain through RCD.
 - Refer to "APPEND X 1 PIPING ADAPTER BUSHINGS/ REDUCERS" on page 16 for Bushing/Reducer sizing.
 - b. Adapt (where preded) and braze the liquid line to the piping adapter.
- Place the Teffon gasket on the brass ip of the Piping Adapter and insert into the abaninum distributor head.
- Thread the piping adapter brass nut onto the distributor line and tighten finger tight + 1/2 turn.

DO NOT REMOVE INDOOR METERING DEVICE!



Fig. 14 — Piping Adapter Replacement

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FV4 (Variable Speed Blower)

N.E.C. class 2, 24 volts.





Overview Features Docu	Iments			
DOCUMENTS				
Search	Q	English Français	She	ow Prior Versions of Documer
Bulletin Marketir	ng Technical Lit	terature 🗸		
Installation	38MUR	RA Crossover Wiring Instructions		
Product Data Service	Installat	tion 03/16/2023 38MURA_Crossover_Wiring_Inst	ictions_car_REV00	<u>•</u> ~
Submittal	38MUR	A Crossover Wiring Instructions		
Warranty Card		tion 03/16/2023 38MURA Crossover Wiring Instruct	tions	

38MURA CROSSOVER WIRING INSTRUCTIONS

IMPORTANT

• Please reference 38MURA Installation Instructions for complete instruction. This document provides additional wiring scenarios based on the indoor unit.

REV 00

• Please read the entire instructions manual before starting the installation.



Single Stage Gas Furnace Wiring











Two-Stage Gas Furnace Wiring





SW1-2 Low Heat Only(effects the call for W/W1).When 'ON' W/W1 will allow "Low Heat Only".When 'Off' (Adaptive Heating Mode)

Adaptive Mode: Two-Stage Heating with Single-Stage Thermostat

A call for W/W1, the furnace will stage between low and high stage heating as needed. 95





Single Speed Fan Coil Wiring (FMA4)



Single Speed Fan Coil Wiring (FMA4)



98

Single Speed Fan Coil Wiring (FJ4, FB4C, FX4D, PF4M)



Single Speed Fan Coil Wiring (FJ4, FB4C, FX4D, PF4M)





100

Two Speed Fan Coil Wiring (FZ4A)



Two Speed Fan Coil Wiring (FZ4A)





Two Speed Fan Coil Wiring (FZ4A)





Variable Speed Fan Coil Wiring (FV4C)











1. J1 and J2 Must be in place.



