38MURA/40MUAA Crossover Installation & Service

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Please scan

Carrier

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bryant
Heating & Cooling Systems

Training Will Begin at 8:00am

2024

38MURA/40MUAA Crossover Installation & Service

Instructor
Joe Sutterfield

Carrier Enterprise South Central Technical Support
Carrier, Bryant and Payne Technical Training and Support

Technical Support & Training Website

cesctechsupport.com

Tablet View

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cesctechsupport.com

- Dealer training calendar
- Training registration
- Self-Study Courses (4 Infinity qualifying)
- Manager role (Register your techs for training)
- See your scheduled training
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- See all your submitted forms
- 60+ troubleshooting, service & installation videos
- Troubleshooting guides
- Numerous service manuals available
- VFR checklist and manuals
- RTU replacement quote form (Inside sales)
- 8 Field reporting & troubleshooting forms
- TIC's and Bulletins (back to 2019)
- Serial number decoder
- Technician mentoring request form

and much more being added daily…

Let's look at the new website. If you have any questions, please ask.

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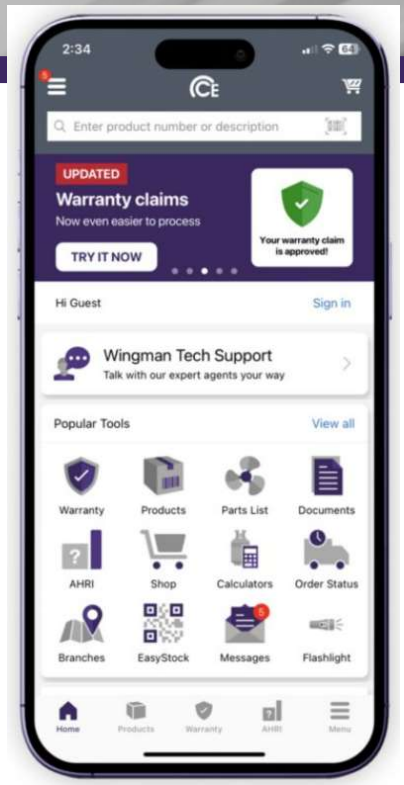

Carrier Service Tech App

Bryant Service Tech App

Available on the App Store | ANDROID APP ON Google play

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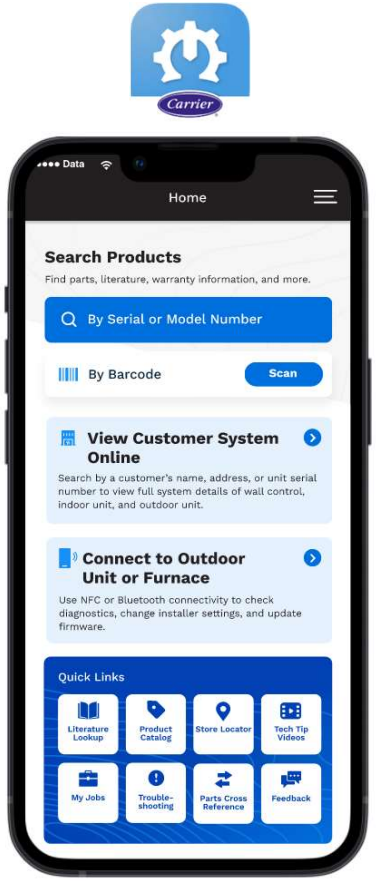
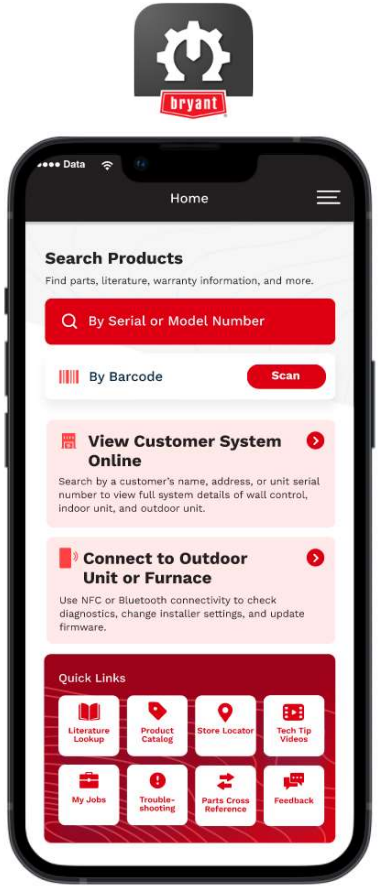
Carrier/Bryant Service Technician Apps – One Page Summary

- *NEW!* **User Interface & Quick Links**
- *NEW!* **Customer System Online** search customer's equipment profiles
- *NEW!* **Near Field Communication (NFC) with select furnaces**
- *NEW!* **InteliSense Mid-Tier Equipment**
- *NEW!* **Remote Diagnostics (Test Equipment) –** (Mid-Tier InteliSense)
- **Barcode scanning** of unit's serial or model number
- **Warranty** entitlement & service history
- **Literature** list for models and ability to search all available literature
- **Product Catalog** model lookup
- **Bill of Material** parts list including part supersession
- **Bluetooth Connectivity** to pair to select outdoor equipment
- **Aftermarket components** cross reference tool
- **Tech Tips videos** for installation guides, interactive troubleshooting help





Wingman Tech Support Assistance

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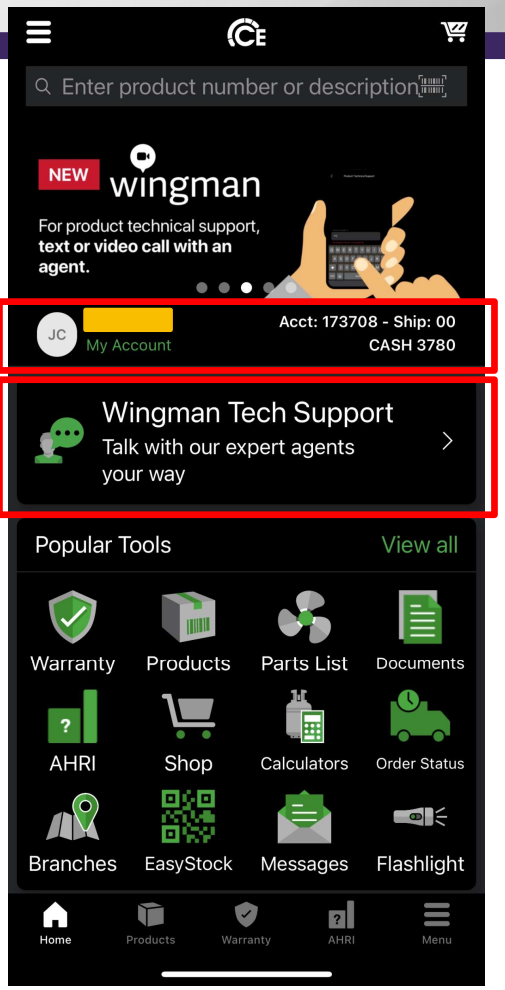
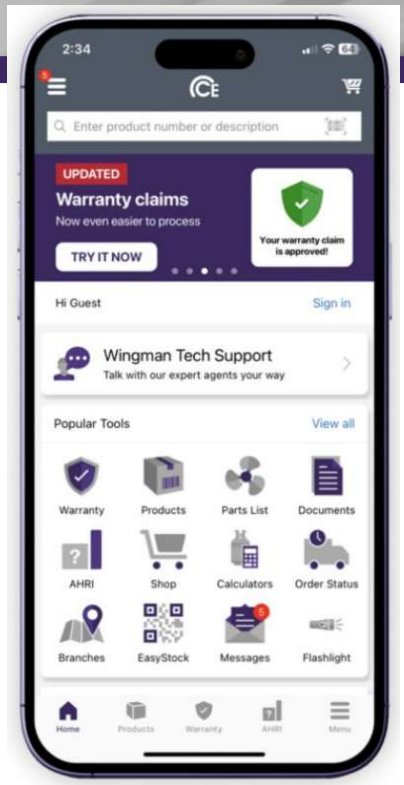
Watsco, Inc.
4.6, 212 Ratings
Free

You will need the CE app installed on your phone or tablet and you must be logged into your account. (If you have questions on how to get a login, please contact your salesman for assistance)





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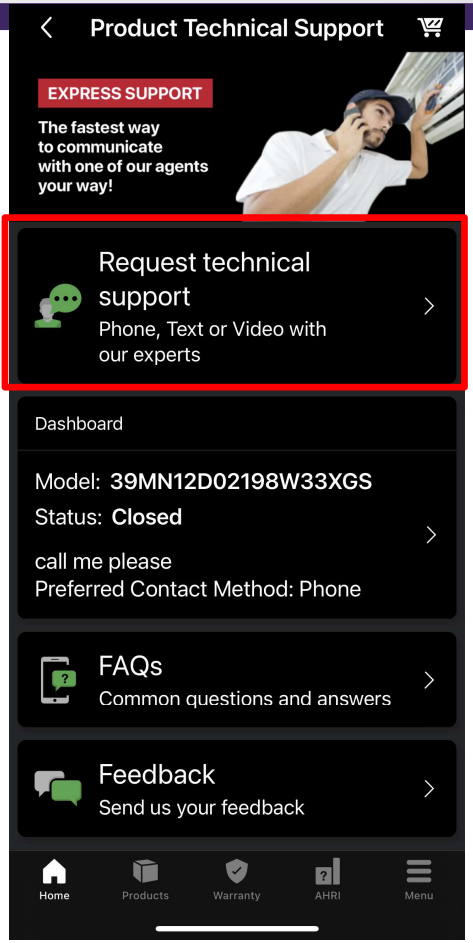
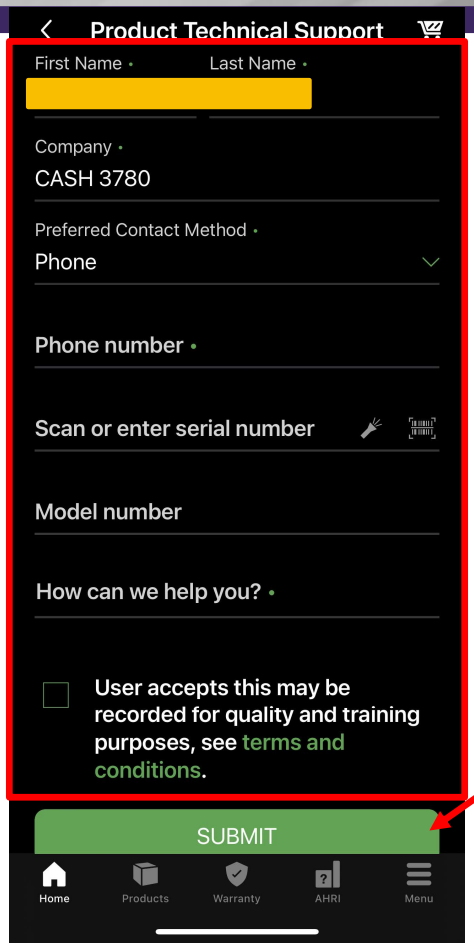
Wingman Tech Support Assistance





LIVE TRAINING TEST

A passing grade of 75 is required in order to receive credit for the class.

If you fail to pass the test the first time you may re-take the test again but if you do not pass the test the second time you will be required to retake the course.

ALL QUIZZES & TEST MUST BE COMPLETED BY MIDNIGHT OF THE SAME DAY AS THE CLASS/COURSE – NO EXCEPTIONS

WHAT WE WILL COVER

Section 1
PRODUCT OVERVIEW

Section 2
INSTALLATION & BEST PRACTICES

Section 3
CONTROL SCENARIOS

Section 4
DIPSWITCHES

Section 5
STARTUP & TROUBLESHOOTING

Section 6
QUIZ

Brief Product Overview

Comes with a RG10F2 for high level programming of system.
Can be used in conjunction with optional Wired Controller 1001 to operate system.

38MURA & 40MUAA

NEW Product!

18K / 18K HH
24K / 24K HH
30K / 30K HH / 36K

36K HH / 48 / 48K HH
60K / 60K HH

40MUAA Air Handler

38MURA Outdoor Units
HH = High Heat

NOTE: The 38MURA/40MUAA are not compatible with any other Ductless equipment.

Standard Indoor Unit Features

- 18, 24, 30, 36, 48, 60K sizes
- Modes: Cool, Heat, Dry, Fan, Auto
- 4 way installation (Up flow, Down flow, Right, Left)
- New All aluminum coil for corrosion-resistance
- Automatic Airflow Technology with Static Pressure up to 0.8 in. W.G.
- One piece cabinet with less than 2% air leakage
- Easy Maintenance with washable air filter
- New, easier to install electric heater options EHKMBXXKN (5kW - 25kW)
- Compatible with select DGAPAXXX Infinity® Air Purifiers
- Control Options:
  - 24V Interface for third party thermostat compatibility built-in
  - Optional KSACN1001AAA can be purchased separately

Standard Outdoor Unit Features

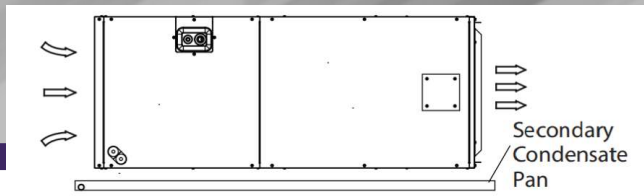
- Up to 18 SEER2 cooling efficiency
- Up to 9.8 HSPF2 heating efficiency
- Variable Speed (Inverter)
- Factory installed Base Pan Heater & Crankcase Heater
- 24V Interface Pre-Installed
- Conventional line set sizes with convenient piping adapters included
- Requires insulation of suction line only
- Standard Heat and High Heat options
- Auto-Restart function
- Quiet operation: 54 dB
- Anti-corrosive fin coating
- Piping length 98 - 213 ft. (30 - 65 m)
- Standard Units - Cooling operating range 5° – 130° F (-15° – 55° C)
- Standard Units - Heating operating range -5° – 86° F (-20° – 30° C)
- HH Units - Cooling operating range -22° – 130° F (-30° – 55° C)
- HH Units - Heating operating range -22° – 86° F (-30° – 30° C)
- 10-year parts limited and 10-year compressor limited warranties to the original purchasing owner upon timely registration |

Optional
KSACN1001AAA

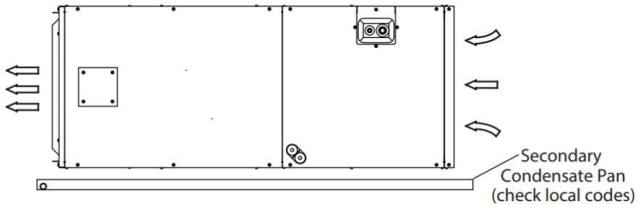
INSTALLATION

Indoor Unit Placement – Air Handler 40MBAB/40MUAA

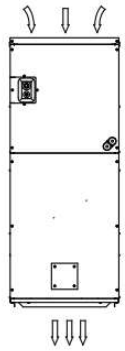
- Installation and Maintenance Clearances are very important for proper operation and future service.
- If installed in unconditioned spaces where temperatures can exceed 85°F & 80% RH, we recommend adding additional insulation around cabinet.
- Install configurations:
  - A. Upflow or Horizontal-Left Installation
    - Shipped from factory, no field conversion needed.
  - B. Downflow or Horizontal-Right Installation
    - Field conversion needed, coil and drain pan need to be rotated 180°, see Install Manual for details.

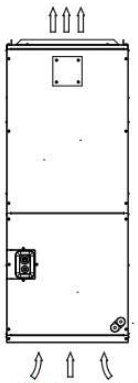


Horizontal Right Installations

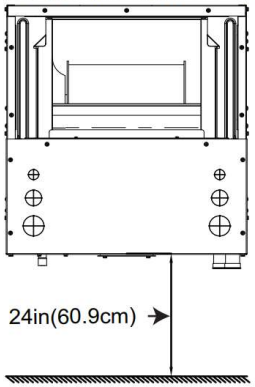


Horizontal Left Installations

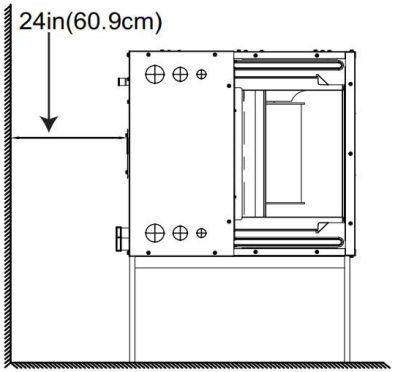

Vertical Downflow Installations


Vertical Upflow Installations

Allow a minimum of 24in (60.9 cm) clearance from access panels.



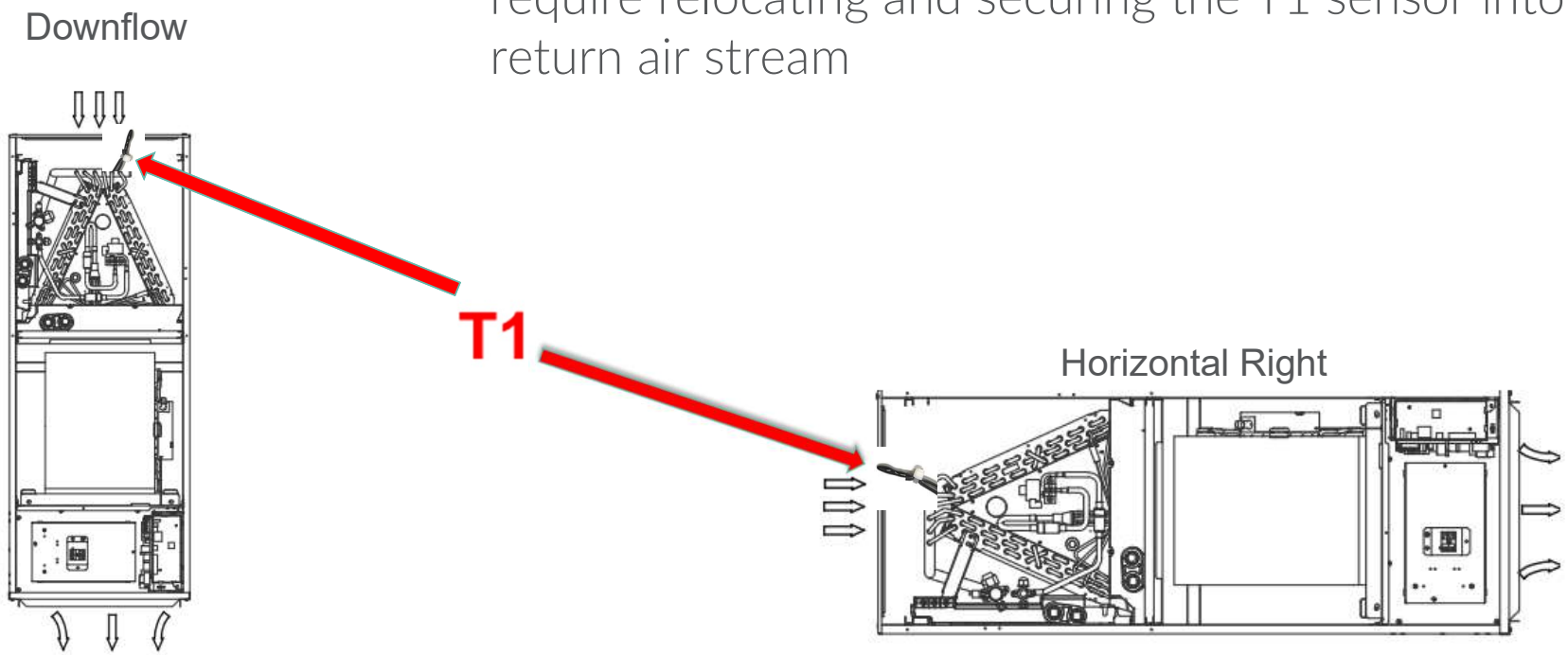
Vertical Upflow Installations



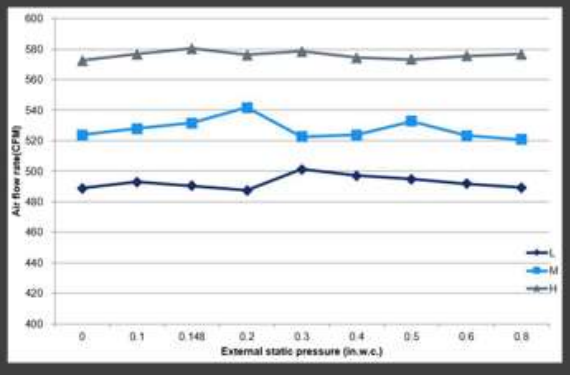
Horizontal Installations

Installation Best Practices

Horizontal Right and Downflow orientations will require relocating and securing the T1 sensor into the return air stream



FAN SETUP



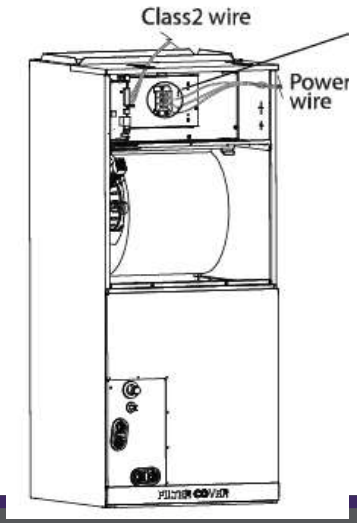
40MUAA/DLFUAA INFORMATION- CONSTANT AIR ECM

- Does not require addressing on startup
- Constant Air Technology maintains constant CFM up to .8" ESP
- Uses Auto Fan Logic based on T1-TS
- All heat demands involving electric heat will use Turbo Speed
- Any static pressure issue(dirty filter, dirty coil, etc)will affect fan speed and take priority over Auto Fan Logic

WIRING

Electrical 40MUAA Wiring

- The 40MUAA (indoor unit) does not get power from the 38MURA (outdoor unit).
- Each unit power supply home runs to the main electrical panel.
- Electric Heat Kist require their own power supply if installed.
- Control wiring is covered later in this training.



Power Wiring on Indoor Unit
1PH – 208/230VAC
MOPA – 15AMP

Heater Kit Size (KW)	Model Number	MCA Circuit 1 208V/ 230V	MCA Circuit 2 208V/ 230V	MCA Circuit 3 208V/ 230V	MOPD Circuit 1 208V/ 230V	MOPD Circuit 2 208V/ 230V
5	EHKMB0 5KN	23.0/ 27.0			25.0/ 30.0	
8	EHKMB0 8KN	37.0/ 42.0			40.0/ 45.0	
10	EHKMB1 0KN	46.0/ 53.0			50.0/ 60.0	
15	EHKMB1 5KN	23.0/ 27.0	46.0/ 53.0		25.0/ 30.0	50.0/ 60.0
20	EHKMB2 0KN	46.0/ 53.0	46.0/ 53.0		50.0/ 60.0	50.0/ 60.0
25	EHKMB2 5KN	23.0/ 27.0	46.0/ 53.0	46.0/ 53.0	25.0/ 30.0	50.0/ 60.0

Power Wiring on Electric Heat Kits
1 PH – 208/230VAC

WIRING

Electrical 38MURA Wiring

- The 38MURA (outdoor unit) requires a dedicated power supply.
- Control wiring is covered later in this training.

Electrical Connections Sizes:
18 to 36AA

OUTDOOR UNIT	208/230-1-60		
	Minimum Circuit Ampacity (MCA)	Maximum Over-Current Protection Ampacity (MOCP)	MAX-MIN VOLTAGE RANGE
18K	16	20	253-187
18K HH	16	20	253-187
24K	19	30	253-187
24K HH	20.5	35	253-187
30K	20	35	253-187
30K HH	23	35	253-187
36K	24	40	253-187
36K HH	41	50	253-187
48K	34	50	253-187
48K HH	42	50	253-187
60K	34	60	253-187
60K HH	42	60	253-187

LEGEND
FLA - Full Load Amps
MCA - Minimum Circuit Amps
MOPA - Maximum Overcurrent Protection Ampacity

Electrical Connections Sizes:
36AB to 60

PIPING & CHARGING

Table 6 — Piping and Refrigerant

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)											
Standard Piping Length	ft.(m)	24.6 (7.5)											
Max. outdoor-indoor height difference (OU higher than IU)	ft.(m)	65.6 (20)	65.6 (20)	82 (25)	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)	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" (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	Type	R410A											
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 (3.7)	10.36 (4.7)	10.4 (4.7)	10.58 (4.8)	10.8 (4.9)	10.58 (4.8)

Additional Refrigerant Requirements

System Size	Max. Piping Length with no additional refrigerant charge per System	Additional refrigerant charge	Total Maximum Piping Length per system
	ft. (m)	Oz/ft (g/m)	ft. (m)
18K	24.6 (7.5)	0.69 (65)	98 (30)
24K - 30K			164 (50)
36K - 60K			213 (65)

PIPING & CHARGING

Vapor Line Size and Cooling Capacity Losses

Unit Nominal Size (Btu/hr)	Maximum Liquid Line Diameters (In. OD)	Vapor Line Diameters (In. OD)	COOLING CAPACITY LOSS (%) Total Equivalent Line Length ft. (m)								
			26-50 (7.9-15.2)	51-80 (15.5-24.4)	81-100 (24.7-30.5)	101-125 (30.8-38.1)	126-150 (38.4-45.7)	151-164 (46.0-50)	165-213 (50.2-65.0)	214-225 (65.3-68.6)	226-250 (68.9-76.2)
18000	3/8	1/2	1	2	3	NA	NA	NA	NA	NA	NA
		5/8	0	1	1	NA	NA	NA	NA	NA	NA
		3/4	0	0	0	NA	NA	NA	NA	NA	NA
24000	3/8	5/8	0	1	1	2	3	3	NA	NA	NA
		3/4	0	0	0	1	1	1	NA	NA	NA
		7/8	0	0	0	0	0	0	NA	NA	NA
30000	3/8	5/8	1	2	2	4	4	6	NA	NA	NA
		3/4	0	0	1	1	1	1	NA	NA	NA
		7/8	0	0	0	0	0	1	NA	NA	NA
36000	3/8	5/8	1	3	3	5	5	7	NA	NA	NA
		3/4	0	1	1	1	2	2	NA	NA	NA
		7/8	0	0	1	1	1	1	NA	NA	NA
48000	3/8	3/4	0	1	1	2	3	3	5	NA	NA
		7/8	0	0	0	1	1	1	2	NA	NA
		11/8	0	0	0	0	0	0	0	NA	NA
60000	3/8	3/4	1	1	3	4	5	5	7	NA	NA
		7/8	0	1	1	2	2	3	3	NA	NA
		11/8	0	0	0	0	1	1	1	NA	NA

PIPING & CHARGING

Piping – Flares (cont.)

Flare to Braze Connectors:

- The MUAA/MURA units each include a package of 2 or 3 connectors.

Product line	Capacity	Flare to Brazing Adapter	
MUAA Air Handler	18K	3/4" size 	3/8" size 
	24K		
	30K		
	36K		
	48K		
	60K	7/8“ size 	

Product line	Capacity	Flare to Brazing Adapter	
MURA Outdoor Unit	18K	5/8” flare to 3/4” flare  3/4“ size 	3/8" size 
	24K	3/4" size 	
	30K		
	36K		
	48K		
	60K	7/8” size 	

PIPING & CHARGING

Tool Considerations

Biflow driers are not shipped with the equipment and must be installed

Table 4 — Flare Nut Spacing

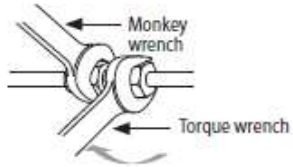
BRASS FLARE SIZES	RECOMMENDED SEATING TORQUE FOR BRASS FLARE NUTS		FLARE DIMENSIONS (A) (INCH/MM)	
In (mm)	Ft-Lbs	N-M	Min	Max
Ø3/8 (9.52)	23.6-28.8	32-39	0.52/13.2	0.53/13.5
Ø3/4 (19)	49.4-74.5	67-101	0.91/23.2	0.93/23.7
Ø7/8 (22)	62.7-81.1	85-110	1.04/26.4	1.06/26.9

Do these numbers matter?

PIPING & CHARGING

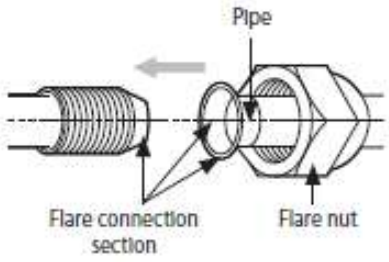
Piping – Flares

- Little bit of lubrication front and back of flare
- Refrigeration oil is best, lightly dampen rag with oil and wipe flare
- No dunking, no oil dripping from pipe.
- Hand tighten fittings together.
- Use Backup wrench and Torque wrench to complete.



Do these numbers matter?

YES!!

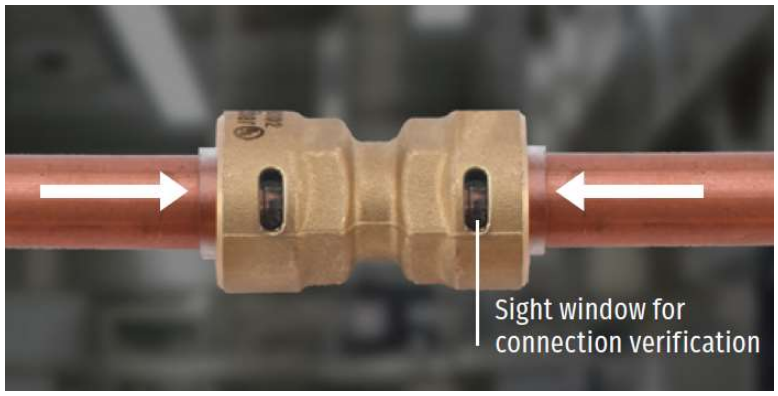


Brass Flare Size	Recommended Seating Torque For Brass Flare Nuts	
In (mm)	Ft-Lbs	N-M
1/4 (6.35)	13.3-14.7	18-20
3/8 (9.52)	23.6-28.8	32-39
1/2 (12.7)	36.1-42.8	49-59
5/8 (16)	42-52.4	57-71
3/4 (19)	49.4-74.5	67-101
7/8 (22)	62.7-81.1	85-110


NAVAC
Empowering you to work smarter

PIPING & CHARGING

Pro-Fit Quick Connect Fittings



Application • Flame-free fittings for connecting refrigerant lines • For HVAC/R up to 700 psi (45 bar) • Prevent refrigerant lineset leaks

PIPING & CHARGING

Piping – Alternative Connections Methods

- IMPORTANT NOTE – **Do Not Cut Off The Factory Flare!**
- Piping on the factory side of the flare is Metric. This means you will have a very difficult time connecting to it.
- Common U.S. Standard pipe size connections: ½", ⅜", ⅝", ¾", ⅞"
- If using an alternative piping system such as ZoomLock™, leave the factory flare on and use field supplied flare to pipe adapters.

ZoomLock Press Tool Kit

Flare Adapter

Fun Fact:

SAE means Society of Automotive Engineering. The SAE was founded in 1905 by Andrew Ricker and Henry Ford.

PIPING & CHARGING

✓600 PSI nitrogen regulator (min)

This is how much pressure is in the bottle

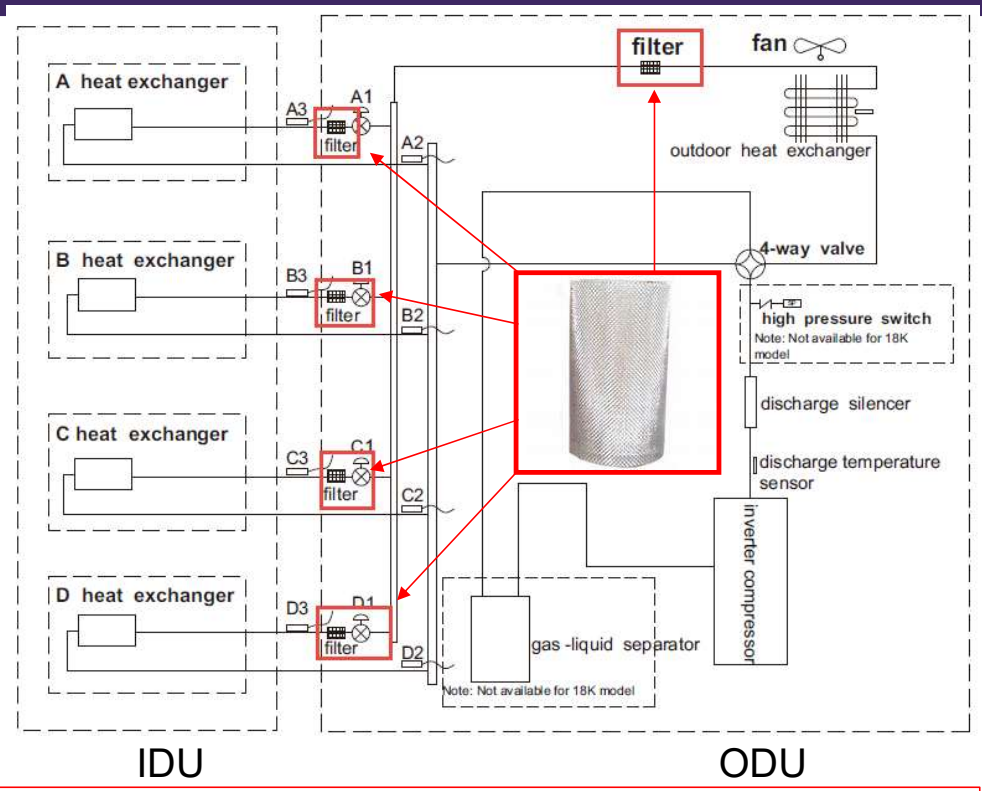
This is output pressure capabilities through the regulator

Carrier Enterprise requires at least a 500 psi dry nitrogen pressure test on ***all*** system refrigerant piping.

You may find some manuals stating a 150 psi pressure test, this is a cooling only system guideline and should technically still have a 500 psi pressure test.

PIPING & CHARGING

Installing a system without a nitrogen purge while brazing can be detrimental to system performance due to the oxidation / scaling of the copper plugging the strainers (Filter(s)).



Each outdoor unit will have at least two strainers(filter). This is to protect the metering device which is an electronic expansion valve (valve body with stepper motor).

40MUAA Control Overview (not same as MBAB)

- The 40MUAA can use a 24-Volt thermostat or a 1001 Wired Controller. (all controls purchased separately).
- The built-in 24-Volt interface can provide further flexibility, functionality and control by a 3rd party 24-Volt thermostat.
- The optional 24-Volt control can be wired to the fan coil using 18 gauge solid or stranded wire.
- Do not connect the 1001 Wired Controller and a 24-Volt Thermostat at the same time.

KSACN1001AAA

24-Volt

Or

depends on features needed

1001 Connections

CONTROLS

Optional Controls

- 7 Day Programmable Wired Wall Remote Controller

KSACN1001AAA – Fits: Ducted 40MBAB & 40MUAA

- Included with all 40MBAB ducted units
- Indoor Setting Temperature Range: 62°F~86°F
- Defaulted to Follow Me (Senses Temp at Controller, not indoor unit)
- Maximum field supplied wire length: 16 gauge 164', 18 gauge 66'.
- 1001's can control up to 16 indoor units.
- 2 1001's can connect to 1 to 16 indoor units, Main and Secondary Controllers (3-way switch)

Controls

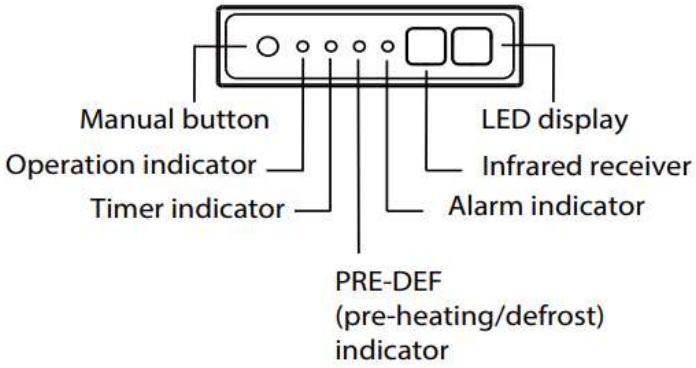
Controls – Manual Operation (cont.)

Manual Button Locations

40MBAB & 40MUAA
Manual Button

Attention:
This button is only active if using the 1001 controller.

40MBD Ducted



No matter what control is added to the indoor unit, DO NOT REMOVE THE RECEIVER.

Attention:
Even though the 40MBAA has the same receiver in it's control box, Manual Operation will not function due to the built-in 24-Volt Interface

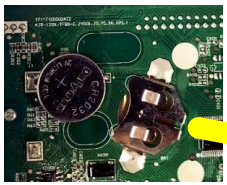
Controls

0.8” Deep

Controls – KSACN01001AAA

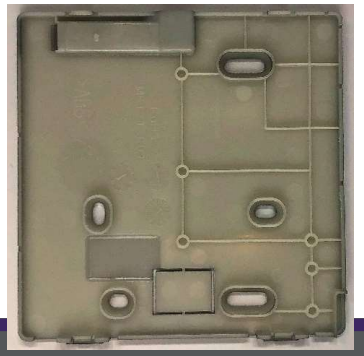
Install Instructions:

1. Disconnect power from system.
2. The remote control should be located at approximately 54” from the ground.
3. If the remote control will be the room’s primary temperature sensing location, pay special attention to its location and its surroundings within the room including direct sunlight from windows.
4. Consider wire routing, inside/outside wall, air flow around and future service access to name a few.
5. Max wire length for 1001
   - Max 18 gauge stranded wire length is 66’
   - Max 16 gauge stranded wire length is 164’
6. Be sure to seal up hole around wall/wire penetration.
7. No air movement should be permitted.



Install Battery

Sensor Location



Controls

Controls – KSACN01001AAA (cont.)

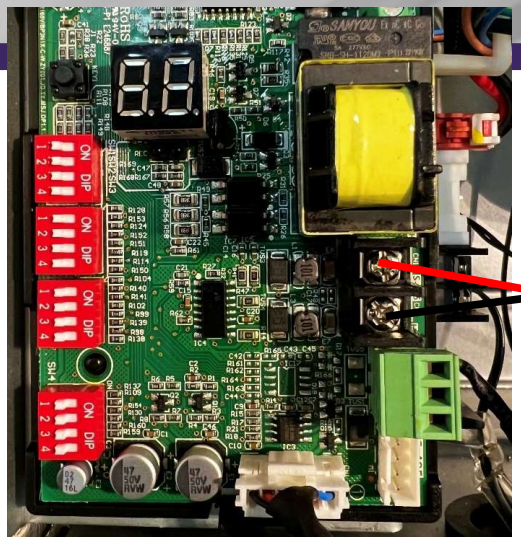
Install Instructions (cont.):

8. Connect the 1001 controller's HA & HB terminals to the Indoor Unit's HA, HB terminals.

9. Connections are not polarity sensitive.

10. Shielded wire is not necessary.

Indoor Unit – MBAB / MUAA



HA, HB Connections

HA, HB Connections

Back cover removed of 1001

Controls

Controls – KSACN01001AAA (cont.)

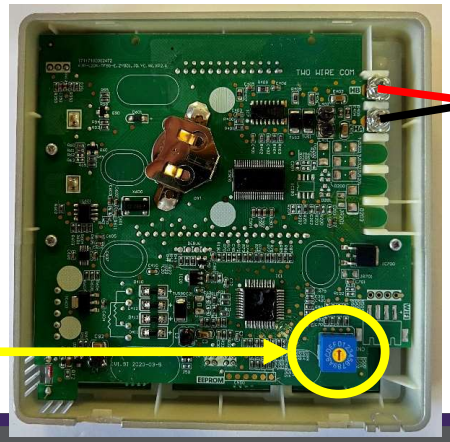
Install Instructions (cont.):

Optional Configurations

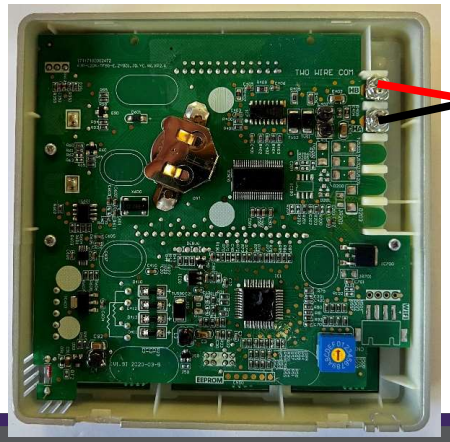
- Main and Secondary Installation Method
- System would run off from last command sent from either controller.
- Set one of the control's rotary switch to 1, keep the other at 0.

Indoor Unit – MBAB / MUAA

HA, HB Connections



HA, HB Connections



Wired Control #1

Wired Control #2

Controls

Controls – KSACN01001AAA (cont.)

Install Instructions (cont.):

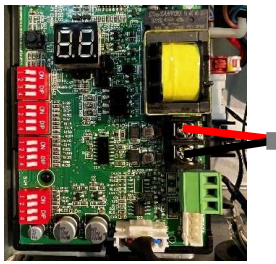
Optional Configurations

- Up to 16 Indoor Units can be daisy chained off from one controller Or main & secondary controllers.
- Each Indoor Unit must have a different Net Address for this control scenario. For MBAB/MUAA Air Handlers, set S1 so each Indoor unit has a different value.

Indoor Unit #1
Net Address
S1 = 0
S2 = OFF, OFF

Wired Control

Indoor Unit #2
Net Address
S1 = 1
S2 = OFF, OFF



Indoor Unit #3
Net Address
S1 = 2
S2 = OFF, OFF

Daisy chain on the
HA, HB Connections

FOR SETTING NETADDRESS		
S1+S2		
CODE	0~F	
NETADDRESS	0~15	
FACTORY SETTING	✓	

If one control per indoor unit, no change needed.

Controls

Controls – KSACN01001AAA (end)

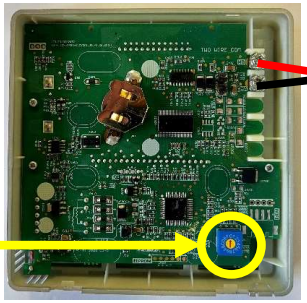
Install Instructions (end):

Optional Configurations

- Combine up to 16 indoor units and main & secondary wired controls.
- Each indoor unit require a different Net Address.
- Set one of the control's rotary switch to 1, keep the other at 0.

Indoor Unit #1
Net Address
S1 = 0
S2 = OFF, OFF

Indoor Unit #2
Net Address
S1 = 1
S2 = OFF, OFF



Wired Control #2

Indoor Unit #3
Net Address
S1 = 2
S2 = OFF, OFF

Wired Control #1

Daisy chain on the
HA, HB Connections

Controls

Scenario 1 & 3

Scenario 2

38MURA/40MUAA Control Scenario Overview

Control Type & Wiring Selection – SW1 DIP Switches

Each Scenario has it's own wiring type and gauge requirement.

Control Scenario 1: (Default) 24-Volt Thermostat (new install)

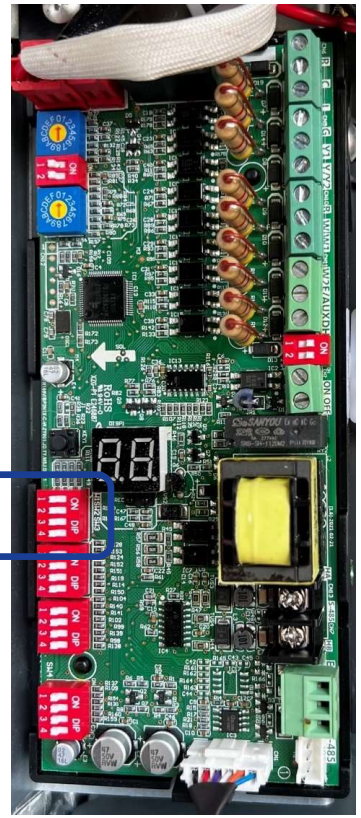
Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
No change to SW1 DIP switches required

Control Scenario 2: 1001 Wired Control (new install)

Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire
Control Wire IDU to Control: 16 gauge Stranded 2-wire
Set SW1-1, SW1-2, SW1-4 set to OFF, SW1-3 leave OFF for H/P, ON for Cooling Only.

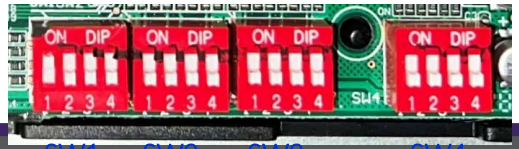
Control Scenario 3: 24-Volt Thermostat (typically for retrofit application)

Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON and SW1-2 & SW1-3 set to OFF



40MUAA Display Board

MUAA – SW1-1 Defaulted to ON for 24-Volt Control

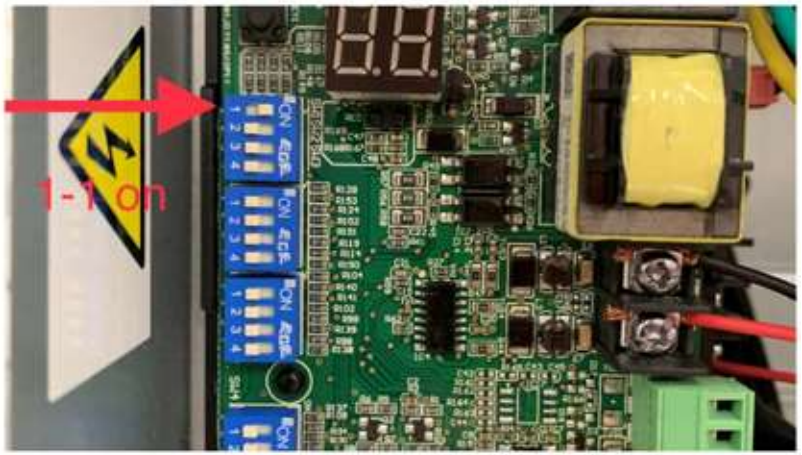


Controls

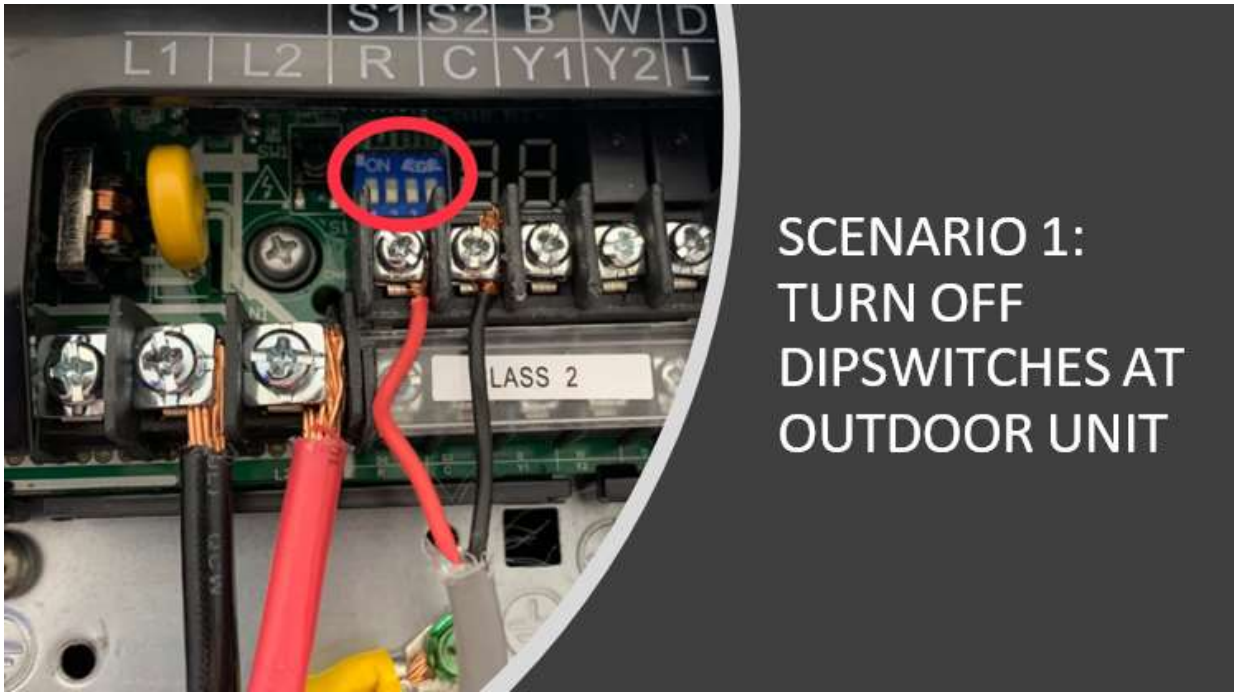

SCENARIO 1:
SYSTEM OPERATION WITH RS 485 AND THIRD PARTY HEAT PUMP THERMOSTAT
ecobee
ecobee

Controls

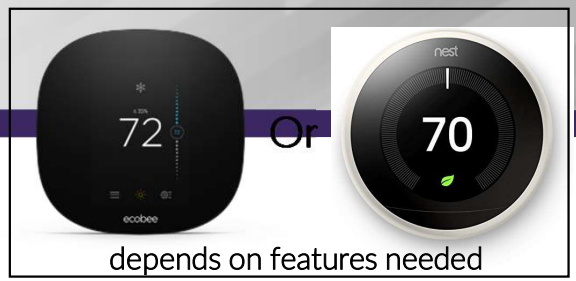
SCENARIO 1:
TURN ON
DIPSWITCH SW1-
1 AT AIR HANDLER



Controls


S1 S2 B W D
L1 L2 R C Y1 Y2 L
LASS 2
SCENARIO 1:
TURN OFF
DIPSWITCHES AT
OUTDOOR UNIT

Controls



40MUAA Control Scenario 1

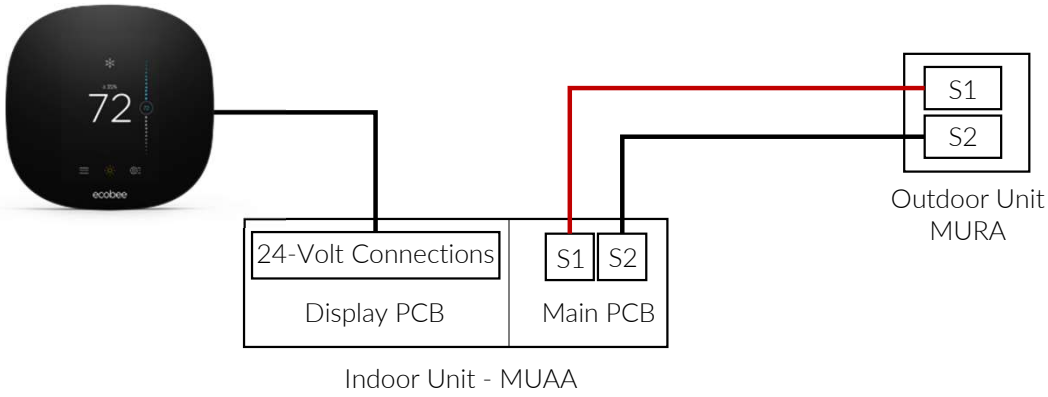
Control Selection – SW1 DIP Switches

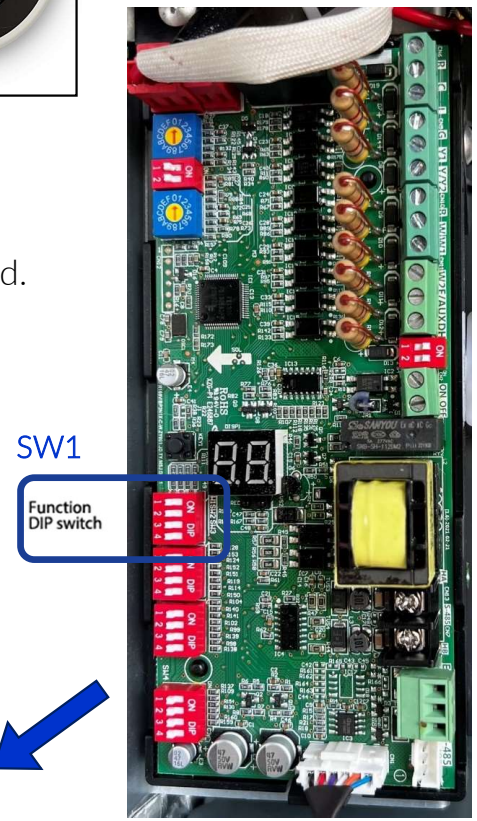
Control Scenario 1: 24-Volt Thermostat (new install)

Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire

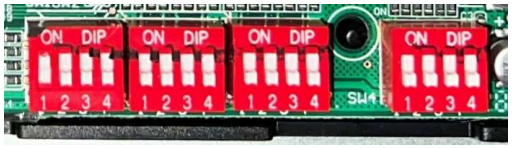
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.

No change to SW1 DIP switches required





40MUAA Display Board



SW1 SW2 SW3 SW4

Controls

SCENARIO 1: THIRD PARTY THERMOSTAT AND RS 485 COMMUNICATION

- Only Connect S1 and S2 Between the Indoor and Outdoor Units for Communication
- Locate S1 and S2 Terminals on Air Handler PCB and Outdoor Unit
- None of the 24 Volt Connections Should be Used at the Outdoor Unit
- Improper Wire Connections Can Result in Board Failure

Controls

40MUAA Control Scenario 1 (cont.)

Control Scenario 1 24-Volt Staging Options

Control Scenario 1: 24-Volt Thermostat (new install)

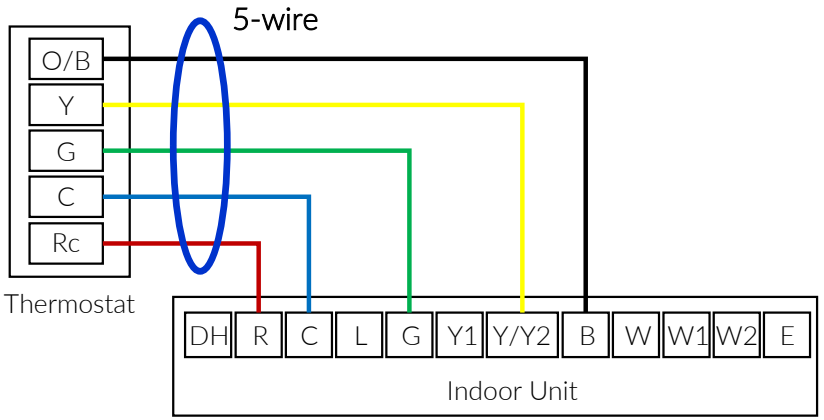
Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire

Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.

No change to SW1 DIP switches required

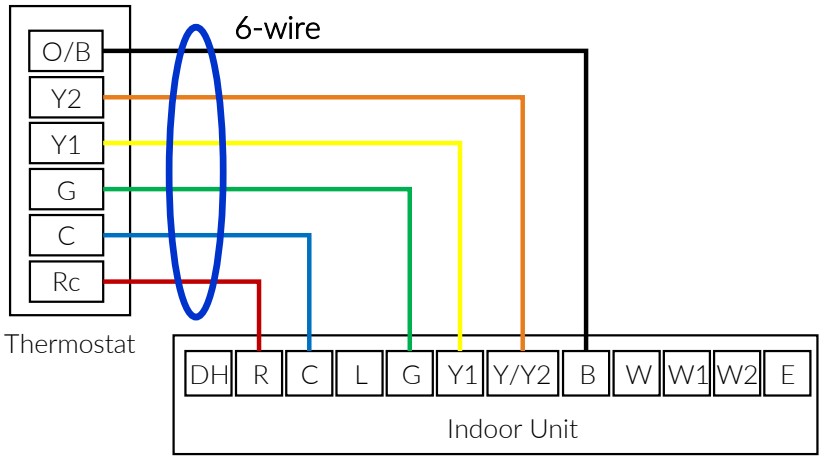
Indoor Unit Terminal Info

R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)



1 Stage Heat & 1 Stage Cool

Preferred connection without an Electric Heat Kit



2 Stage Heat & 2 Stage Cool

2 Stage Heat Pump

Controls

40MUAA Control Scenario 1 (cont.)

Indoor Unit Terminal Info

R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)

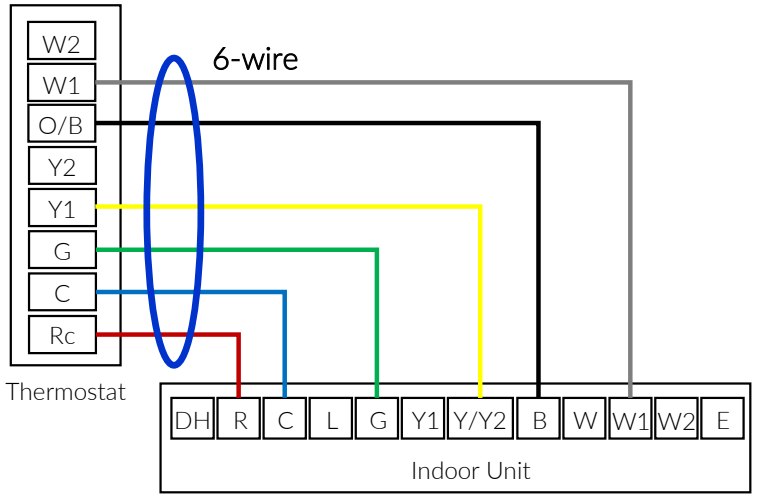
Control Scenario 1 24-Volt Staging Options (cont.)

Control Scenario 1: 24-Volt Thermostat (new install)

Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire

Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.

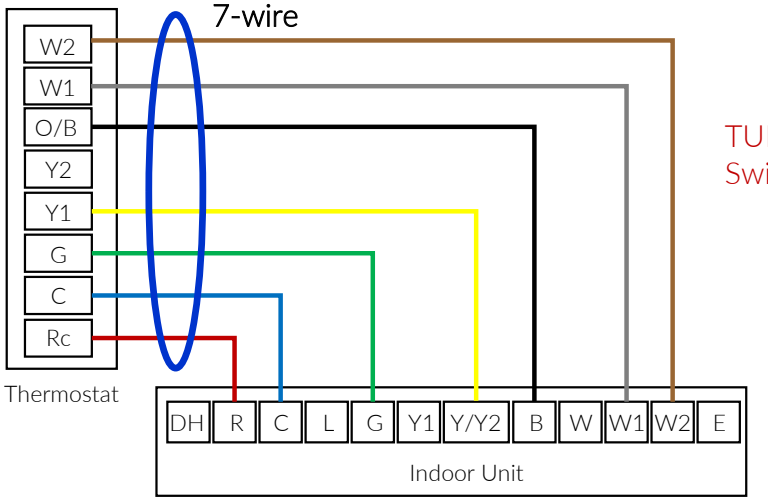
No change to SW1 DIP switches required



2 Stage Heat & 1 Stage Cool

1 Stage Heat Pump

1 Stage Electric Heat



3 Stage Heat & 1 Stage Cool

1 Stage Heat Pump

2 Stage Electric Heat

TURN OFF DIP Switch S4-1

Controls

40MUAA/DLFUAA DIPSWITCH INFORMATION-SW 3-2- AVAILABLE ONLY FOR SCENARIO 1

SW 3-2 adjusts the temperature differential between Y1 and Y2

The differential will affect heating and cooling

OFF=4F

ON=2F

ONLY AVAILABLE FOR SCENARIO 1!(third party thermostat/RS 485 communication between indoor and outdoor units)

Controls

40MUAA/DLFUAA DIPSWITCH INFORMATION-SW 3-3-
AVAILABLE ONLY FOR SCENARIO 1 AND 2

Scenario 1(third party thermostat/RS 485 communication between indoor and outdoor units):

OFF=increases compressor speed with W2 AUX Heat

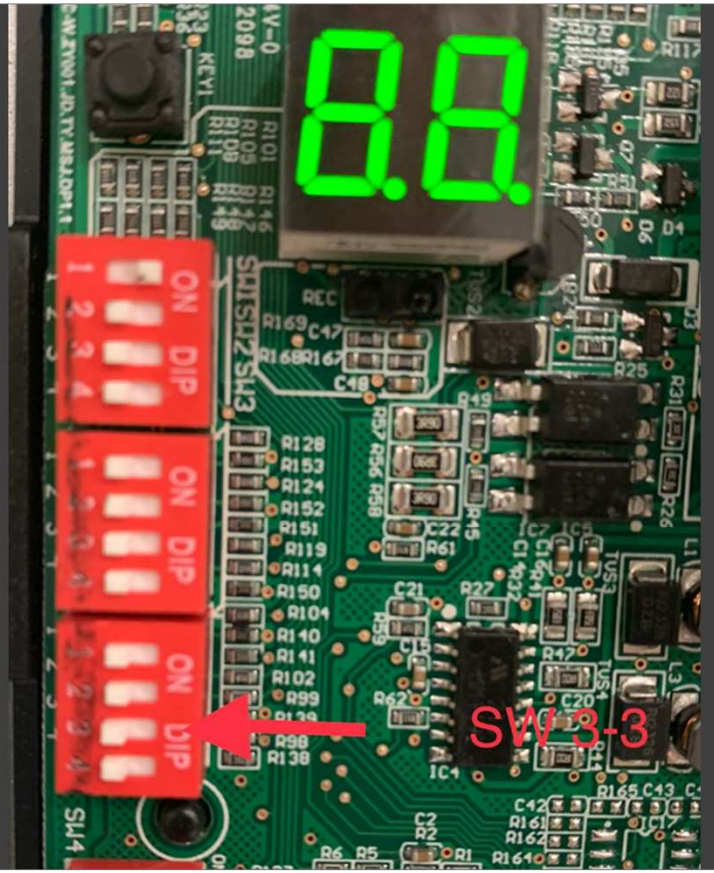
ON=delays compressor speed with W2 AUX Heat

Scenario 2(1001 wired controller): OFF=6F t1-ts gap for

2nd stage AUX Heat ON= 4F t1-ts gap for 2nd stage AUX

Heat

Please Note: if SW 2-2 is on SW 3-3 is not active



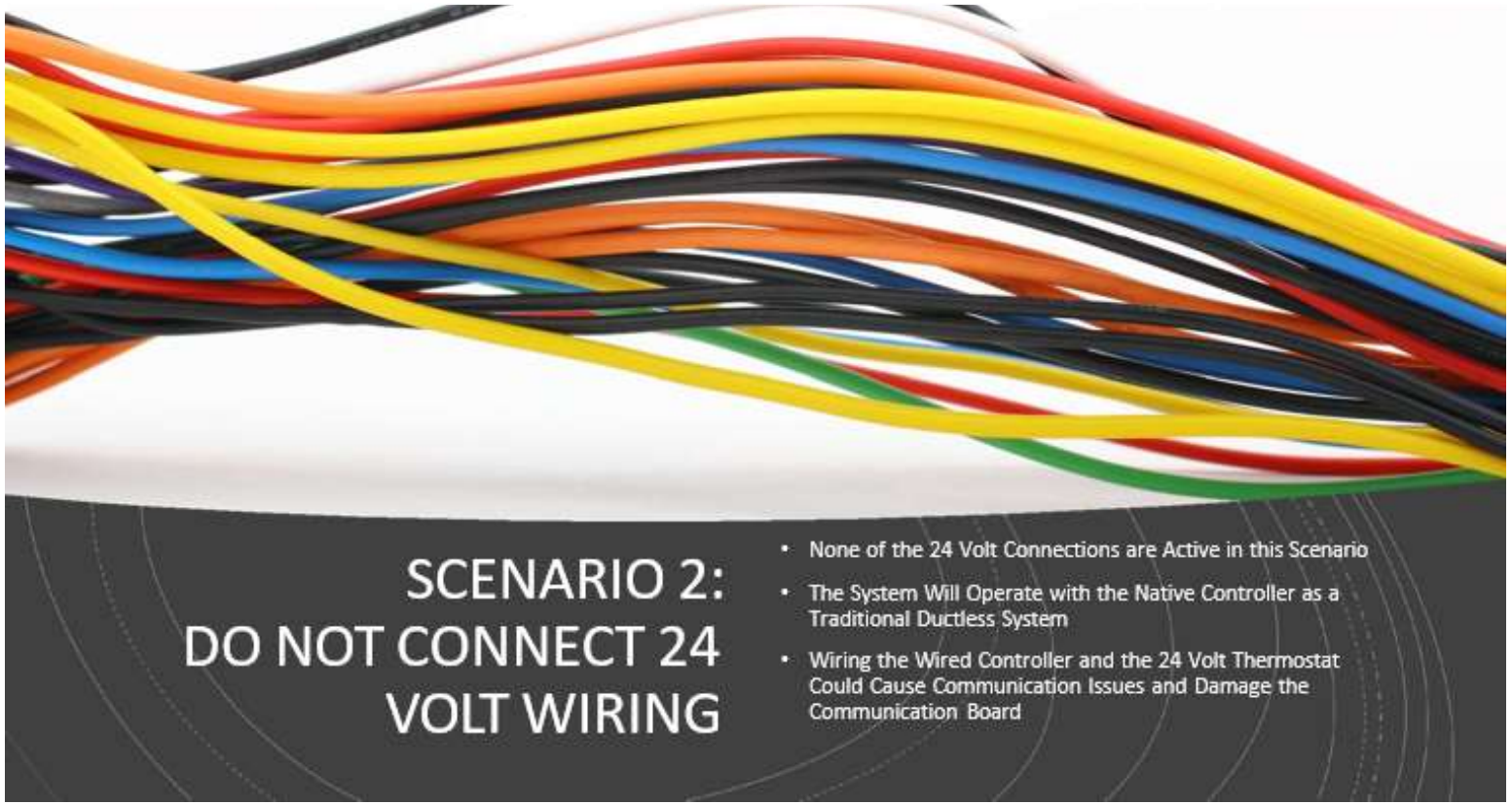
Controls

40MUAA/DLFUAA DIPSWITCH INFORMATION-SW 3-4 AND SW 4-4

Both are currently reserved for future use

SW 3-4 will be used in the future for accessing Turbo Speed in Cooling Mode with Scenario 1

Controls


SCENARIO 2:
DO NOT CONNECT 24 VOLT WIRING
• None of the 24 Volt Connections are Active in this Scenario
• The System Will Operate with the Native Controller as a Traditional Ductless System
• Wiring the Wired Controller and the 24 Volt Thermostat Could Cause Communication Issues and Damage the Communication Board

Controls

SCENARIO 2: SYSTEM OPERATION WITH 1001 CONTROLLER

- Operates as a Ductless:Ductless System
- Fully Communicates with RS 485
- Turbo/Dry Modes/Follow Me/Low-Medium-High Fan Operation
- Emergency Heat Mode Available
- No 24 Volt Wiring Required

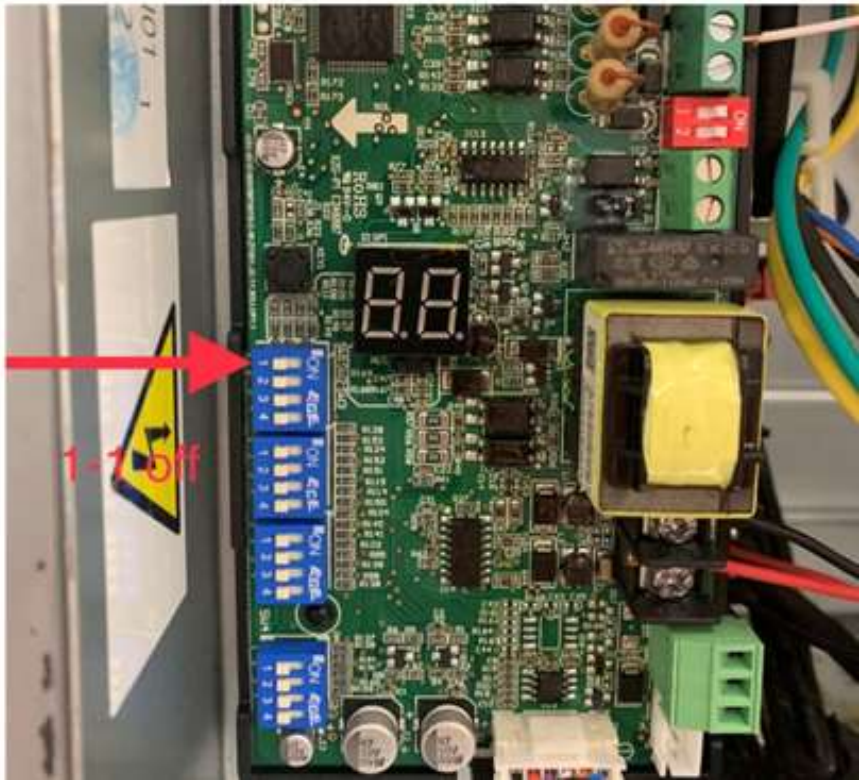
Controls

SCENARIO 2:
THE RG10F WIRELESS REMOTE CAN BE USED WITH THE WIRED CONTROLLER IR

- Basic Functionality of Mode Operation/Follow Me/Turbo/Fan Speed Operation Available with the Remote
- Remote Has to be Pointed at the IR on the Wired Controller
- Distance from the Remote to the Wired Controller Cannot Exceed 25 Feet

Controls

SCENARIO 2:
SET DIPSWITCH
SW1-1 AT AIR
HANDLER OFF



Controls

SCENARIO 2:
TURN OFF
DIPSWITCHES AT
OUTDOOR UNIT

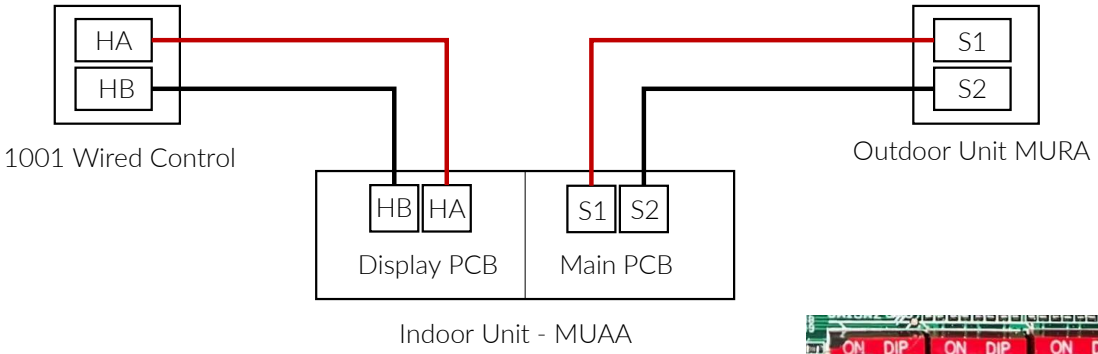
Controls

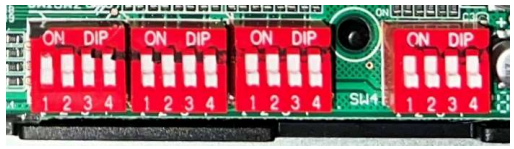
40MUAA Control Scenario 2

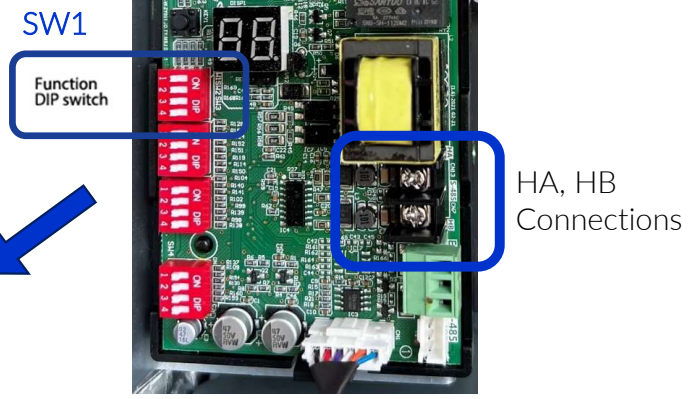
Control Selection – SW1 DIP Switches

Control Scenario 2: Wired Control 1001 (new install)
Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire
Control Wire IDU to Control: 16 gauge Stranded 2-wire
Set SW1-1, SW1-2, SW1-4 set to OFF
SW1-3 leave OFF for Heating & Cooling, ON for Cooling Only.

KSACN01001AAA
(purchased separately)







40MUAA Display Board

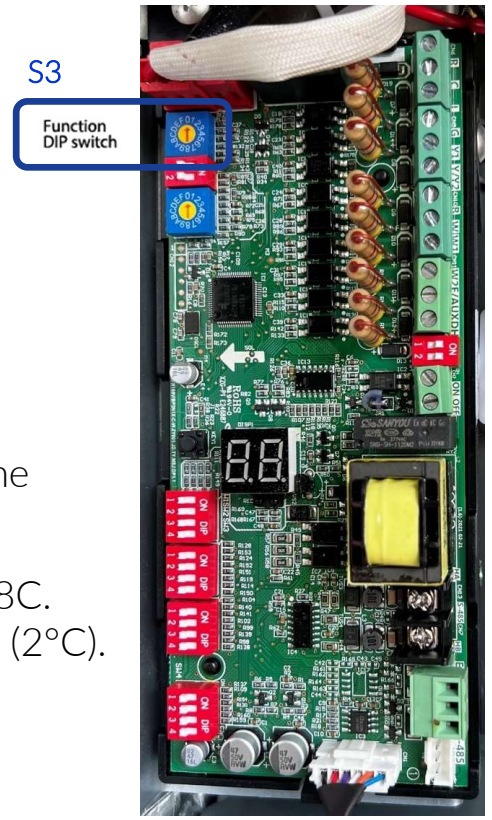
Controls

40MUAA Set Up Options (cont.)

S3 Rotary Switch – Ambient temperature controlled by electric heating or compressor.
(only used with 1001, works with SW2-4)

- 0 (default) means no temperature protection is turned ON
- Rotary Dial position 1 through F = -4°F (-20°C) through 46°F (8°C).
- Each rotary dial point is a 4°F (2°C) change from the previous point.
- Example: Set dial point 1 = -20C. Dial point 2 = -18C. ….Dial point F = 8C, and each scale represents 4°F (2°C).

To start we recommend to leave S3 set at 0.



40MUAA Display Board

S3	S3 (°F)
0	OFF
1	-4
2	0
3	3
4	7
5	10
6	14
7	18
8	21
9	25
A	28
B	32
C	36
D	39
E	43
F	46

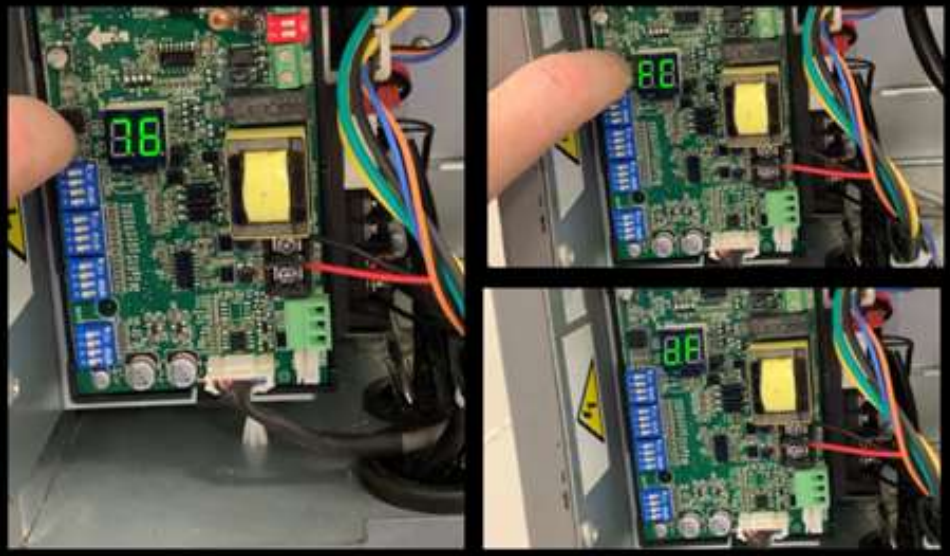
Controls

SCENARIO 2: EMERGENCY HEAT WITH 1001 WIRED CONTROLLER

- Will Allow for Emergency Heat Operation in the event of an Outdoor Failure or Communication Failure(Unless Related to Indoor Failure)
- The Mode of Operation should be Changed to Aux on the Wired Controller to Activate Emergency Heat
- The Error Code will be Displayed on the Controller but Emergency Heat will still be Allowed to Operate
- The Indoor Fan and Electric Heater will Operate Automatically
- No Relay Required

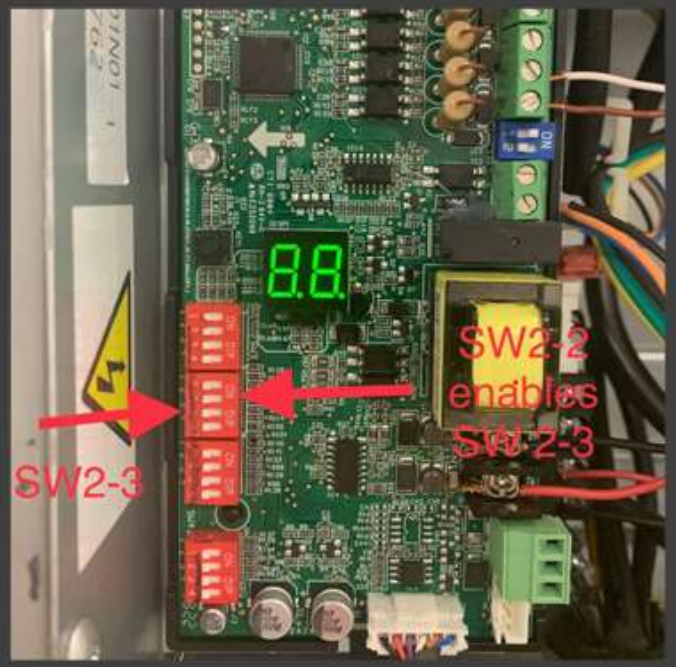
Controls

SCENARIO 2:
FORCED AUTO/COOLING/DEFROST



- Only Available When 1001 Wired Controller is Used
- Use Black Button on Communication Board for Operation
- Press Once for Forced Auto
- Press Twice for Forced Cooling
- After 2 Presses Hold Down Button for Forced Defrost

Controls



40MUAA/DLFUAA DIPSWITCH INFORMATION-SW 2-2 and SW 2-3-AVAILABLE ONLY FOR SCENARIO 2

SW 2-2 enables AUX Heat Delay for 2-3

OFF=SW 2-3 is not active

ON=SW 2-3 is active

SW 2-3 sets AUX Heat Delay start time

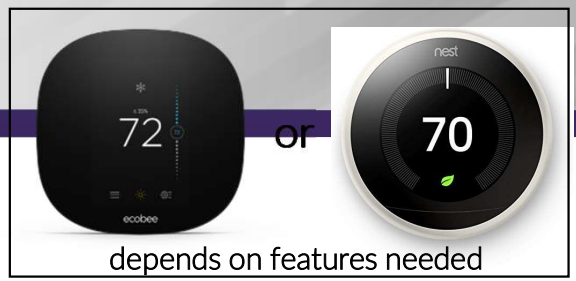
OFF=15 minutes

ON=30 minutes

Please Note: when SW 2-2 is on, SW 3-3 is not active

WIRED CONTROLLER ONLY!

Controls

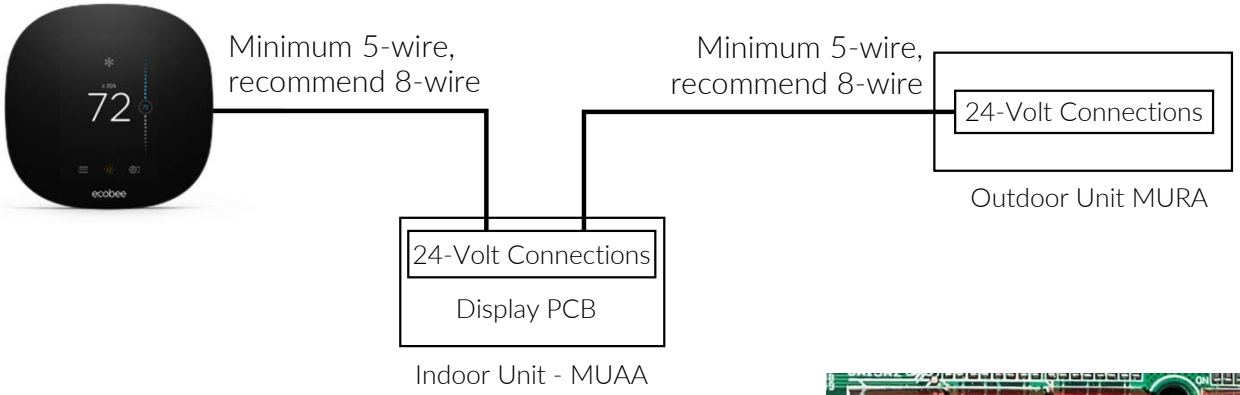


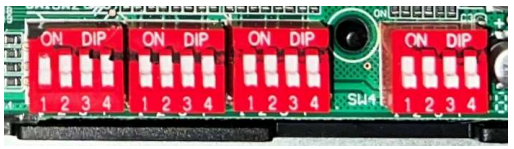
40MUAA Control Scenario 3

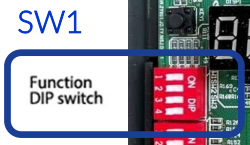
Control Selection – SW1 DIP Switches

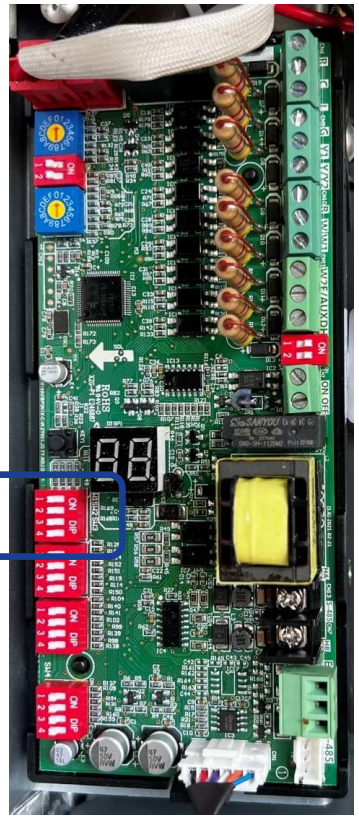
Control Scenario 3: 24-Volt Stat (typically for retrofit application)

Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON & SW1-2, SW1-3 set to OFF





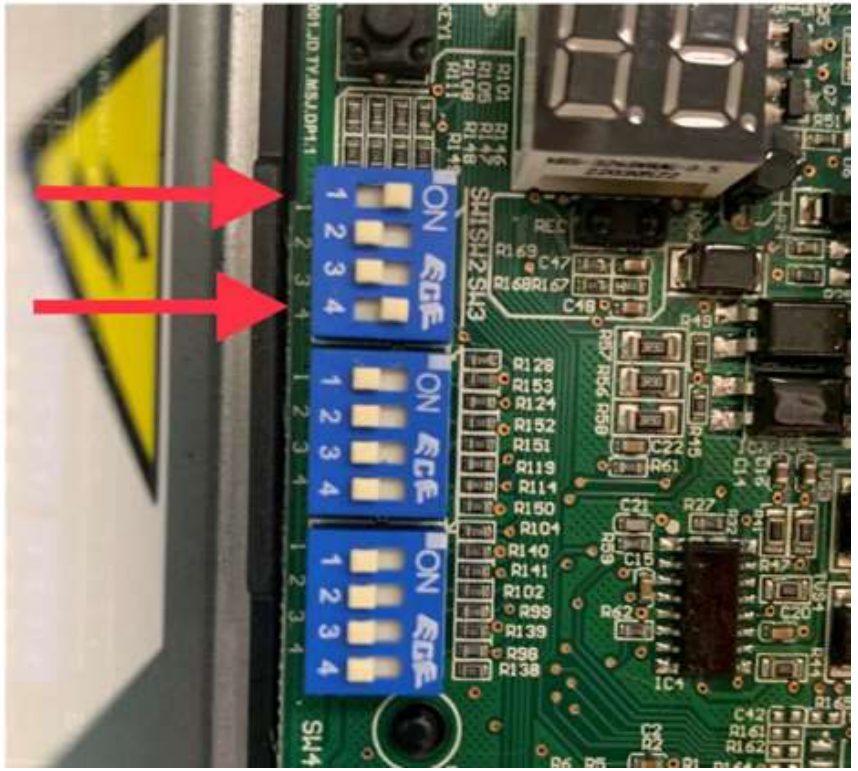




40MUAA Display Board

Controls

SCENARIO 3:
SET DIPSWITCH SW 1-1 AND SW 1-4 TO ON AT AIR HANDLER



Controls

SCENARIO 3:
SET DIPSWITCH 2 TO ON IN OUTDOOR UNIT

Controls

SCENARIO 3: SYSTEM OPERATION WITH 24 VOLT COMMUNICATION

- Ideal for Retrofits with Existing Thermostat Wire
- Need a Minimum 5 Conductor 18 Gauge Thermostat Wire at the Outdoor unit
- Capable of Handling up to 4 Heat/2 Cool Heat Pump Thermostat Configuration(B Terminal for Heat)
- Available Option of "D" Output at Outdoor Unit to be Wired to Air Handler for Electric Heat During defrost

Controls

Indoor Unit Terminal Info

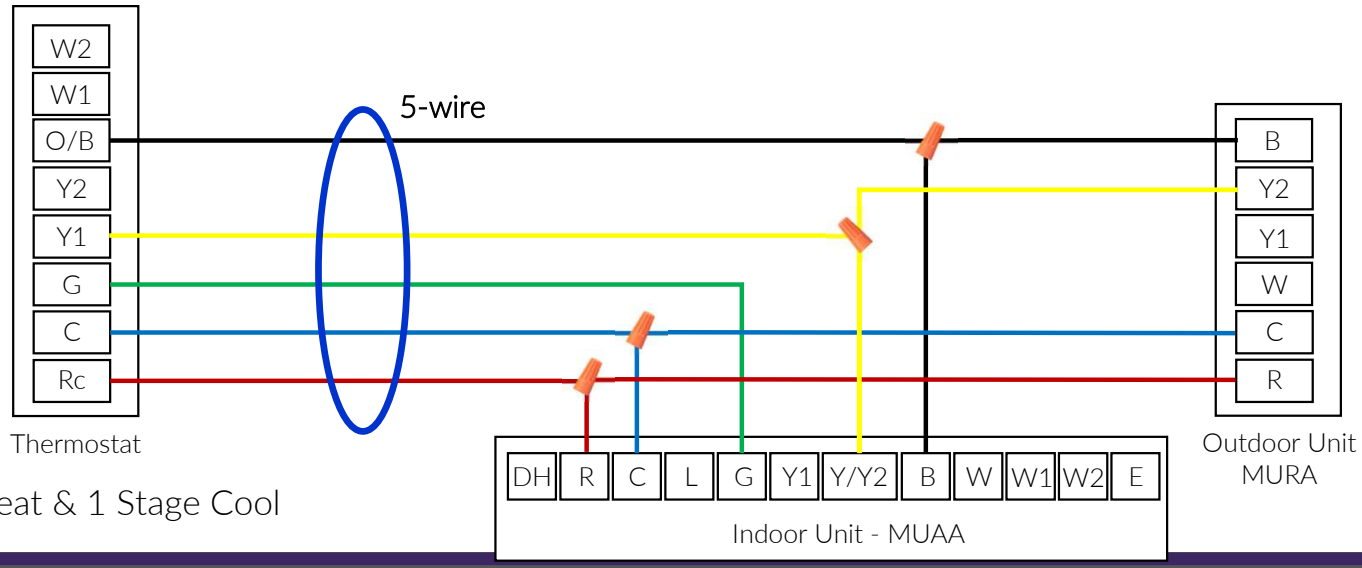
R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)

40MUAA Control Scenario 3 (cont.)

Control Scenario 3 24-Volt Staging Options

Control Scenario 3: 24-Volt Stat (typically for retrofit application)

Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON & SW1-2, SW1-3 set to OFF



1 Stage Heat & 1 Stage Cool

Controls

Indoor Unit Terminal Info

R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)

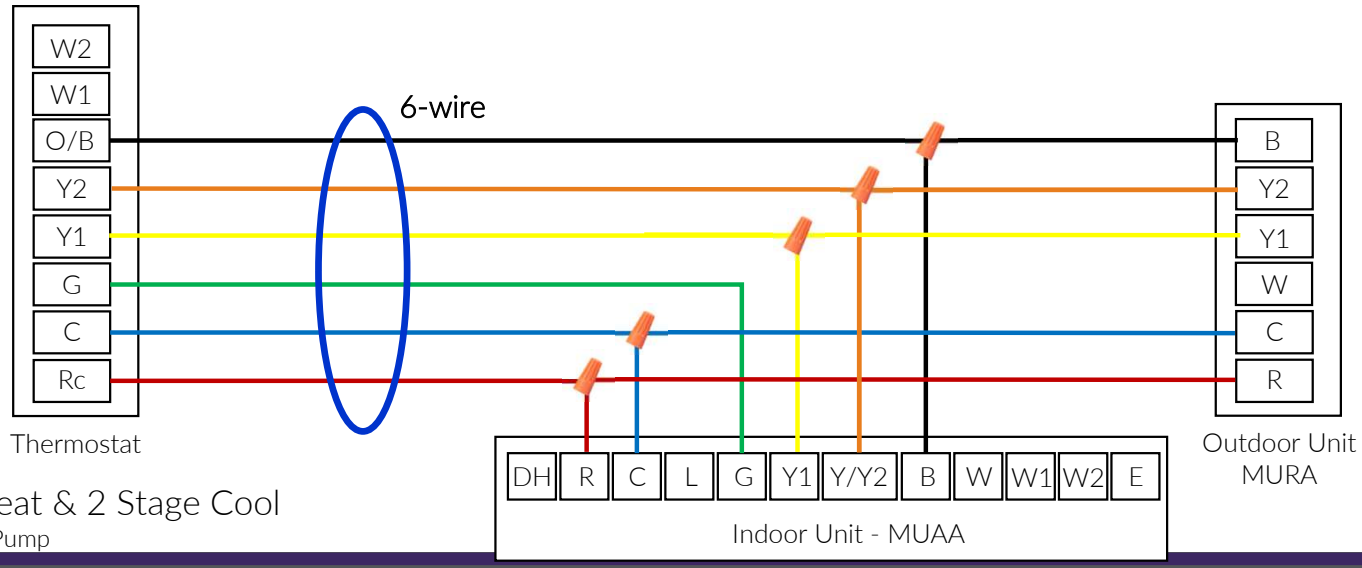
40MUAA Control Scenario 3 (cont.)

Control Scenario 3 24-Volt Staging Options (cont.)

Control Scenario 3: 24-Volt Stat (typically for retrofit application)

Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON & SW1-2, SW1-3 set to OFF

Preferred connection without an Electric Heat Kit



2 Stage Heat & 2 Stage Cool
2 Stage Heat Pump

Controls

40MUAA Control Scenario 3 (cont.)

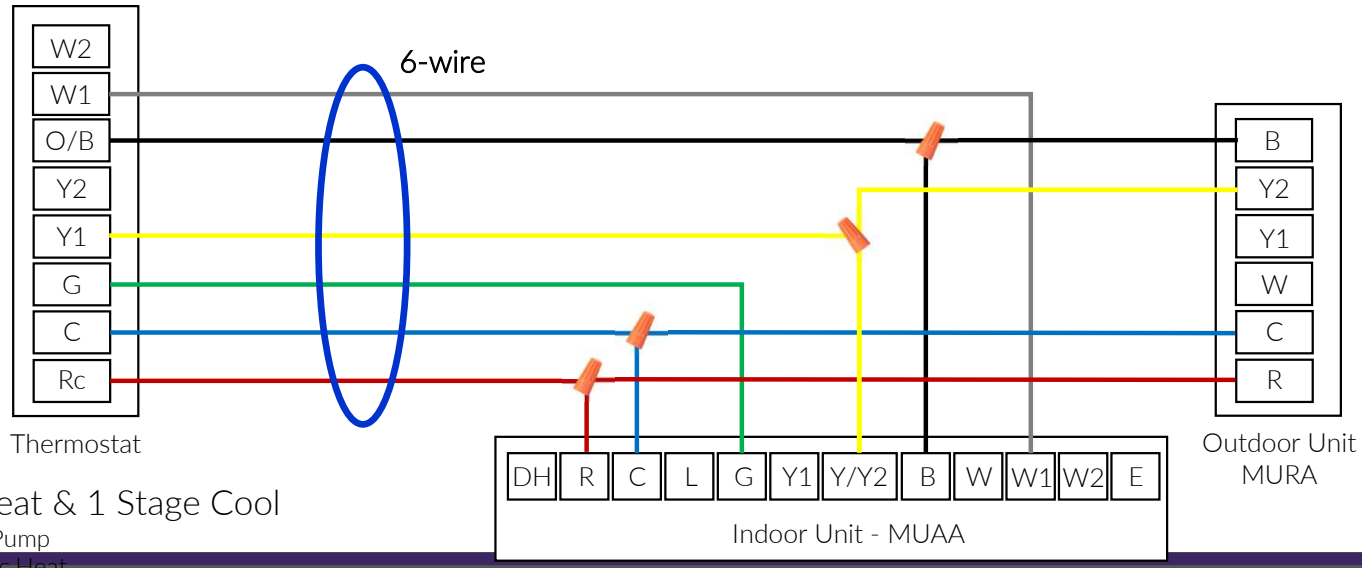
Control Scenario 3 24-Volt Staging Options (cont.)

Control Scenario 3: 24-Volt Stat (typically for retrofit application)

Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON & SW1-2, SW1-3 set to OFF

Indoor Unit Terminal Info

R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)



2 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
1 Stage Electric Heat

Controls

Indoor Unit Terminal Info

R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)

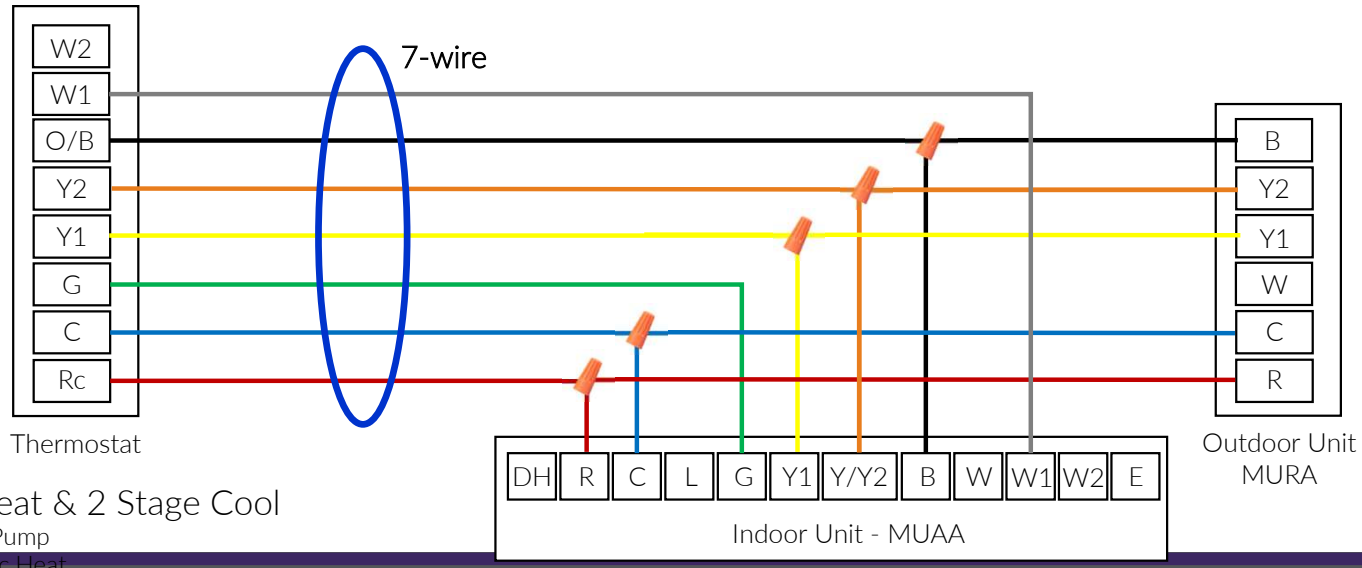
40MUAA Control Scenario 3 (cont.)

Control Scenario 3 24-Volt Staging Options (cont.)

Control Scenario 3: 24-Volt Stat (typically for retrofit application)

Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON & SW1-2, SW1-3 set to OFF

Preferred connection with
Electric Heat 5, 8 or 10kW Kits



3 Stage Heat & 2 Stage Cool
2 Stage Heat Pump
1 Stage Electric Heat

Controls

Indoor Unit Terminal Info

R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)

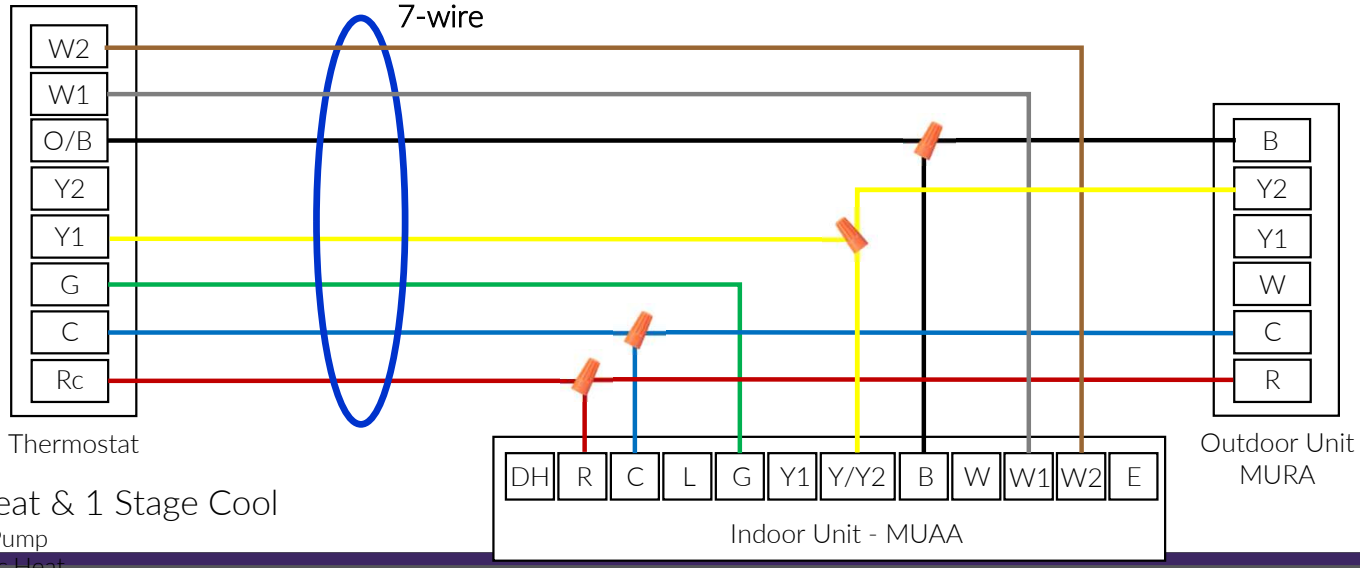
40MUAA Control Scenario 3 (cont.)

Control Scenario 3 24-Volt Staging Options (cont.)

Control Scenario 3: 24-Volt Stat (typically for retrofit application)

Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON & SW1-2, SW1-3 set to OFF

TURN OFF
DIP Switch
S4-1



3 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
2 Stage Electric Heat

Controls

Indoor Unit Terminal Info

R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reversing Valve
W	Heating Control
D	Defrost - (24V output signal)
L	System Fault - (24V output signal)

40MUAA Control Scenario 3 (end)

Control Scenario 3 24-Volt Staging Options (end)

Control Scenario 3: 24-Volt Stat (typically for retrofit application)

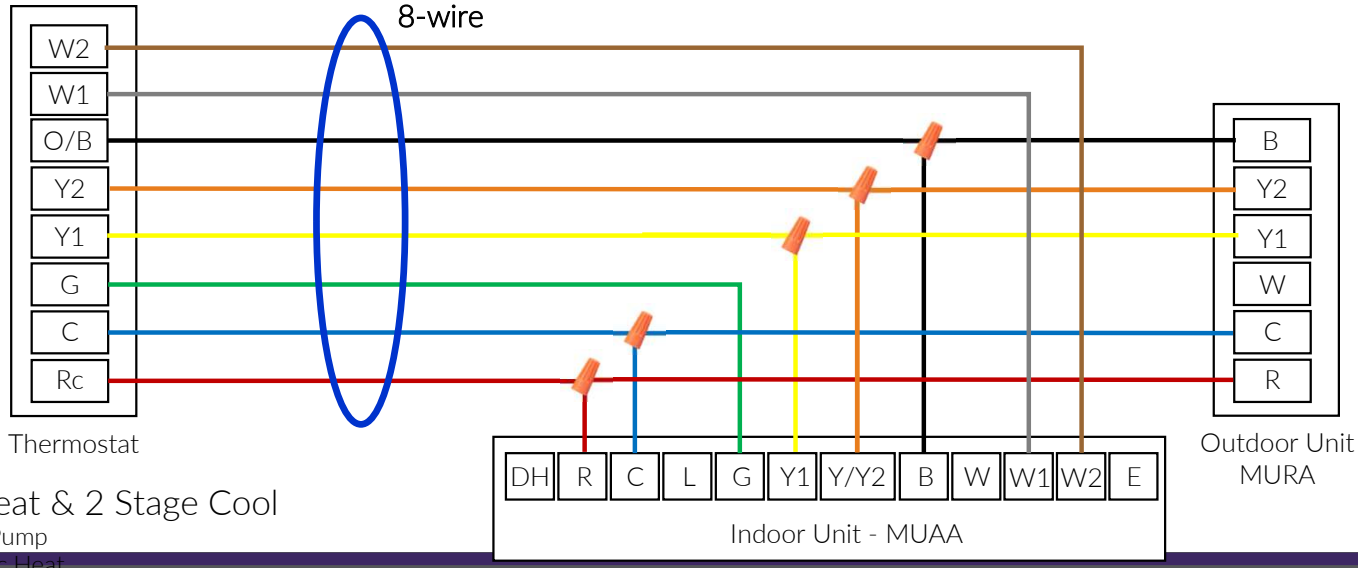
Control Wire ODU to IDU: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.

Control Wire IDU to stat: Minimum 5-wire, recommend 8-wire, 18 gauge solid or stranded.

Set DIP SW1-1 & SW1-4 to ON & SW1-2, SW1-3 set to OFF

Preferred connection with Electric Heat 15, 20 or 25kW Kits

TURN OFF DIP Switch S4-1



4 Stage Heat & 2 Stage Cool

2 Stage Heat Pump

2 Stage Electric Heat

Controls

38MURA & Crossover Applications

General Installation Notes:

- Indoor unit is NOT powered from outdoor unit.
- TXV does NOT need to be removed from indoor coil.
- O/B Energized on Heating.
- Y1 Terminal at outdoor unit can be utilized instead of Y2 for slower ramp up rate, diagrams to follow.
- For FV4CN(B,F) applications – Recommend "HP-EFF" setting on Easy Select Board.
- Must use dual fuel thermostat for all furnace combinations. Simultaneous Heat Pump and Furnace operation not permitted.
- No wiring diagrams shown will operate a Furnace during Defrost.
- For Furnace applications – Fan will NOT shut off during Defrost unless a relay is added.

Fan Coils	Furnaces
FV4CN(B,F)	58S(B,C) / 81(0,1)SA
FZ4ANP	58SP(0,1) / 82(0,1)SA
FJ4DN	58SU0 / 830SA
FB4CN	58TP(0,1) / 82(0,1)TA
FX4DN	59SC2 / 912SD
PF4MN	59SC5 / 915SB
FMA4(P,X)	59SP6/ 926SA
FM(C,U)	59TP6 / 926TB
	59SU5 / 935SA
	OVLAAB
	OVMAAB

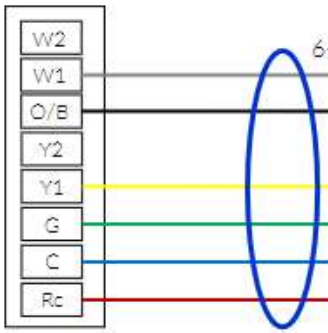
Attention:
CE recommends ecobee for Dual Fuel Applications.

Controls

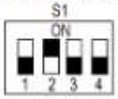
38MURA & FV4CN(B,F) Fan Coil

ecobee

2 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
1 Stage Electric Heat



Set S1-2 to ON at ODU
for 24-Volt Connections



Recommend "HP-EFF" setting on
Easy Select Board during initial set up.

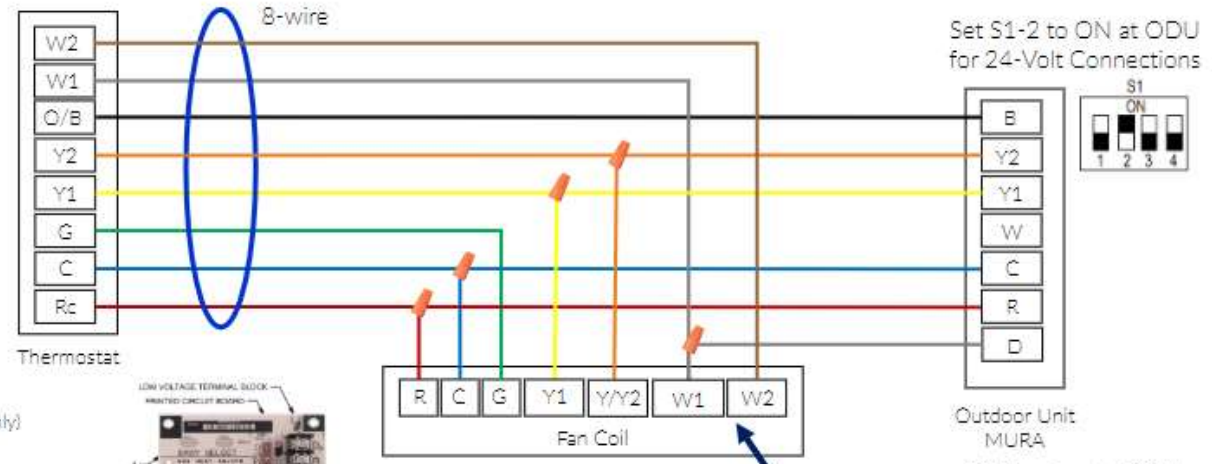
Y1 Terminal at ODU can
be utilized instead of Y2
for slower ramp up rate.

Notes:
High Voltage wiring to equipment not shown.
Fan does NOT shut off during Defrost.
Electric Heat will operate during Defrost.

Controls

38MURA & FV4CN(B,F) Fan Coil

ecobee



Set S1-2 to ON at ODU for 24-Volt Connections

4 Stage Heat & 2 Stage Cool
2 Stage Heat Pump
2 Stage Electric Heat (for 2 circuit heaters only)

Remove factory jumper from W1, W2

Y1 Terminal at ODU can be utilized instead of Y2 for slower ramp up rate.

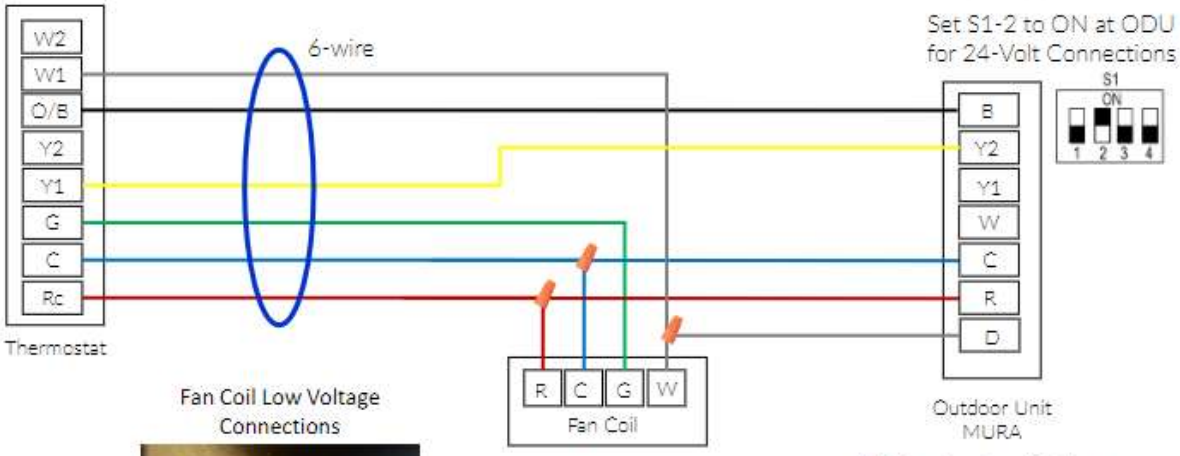
Recommend "HP-EFF" setting on Easy Select Board during initial set up.

Notes:
High Voltage wiring to equipment not shown.
Fan does NOT shut off during Defrost.
Electric Heat will operate during Defrost.

Controls

38MURA & FJ4DN / FB4CN / FX4DN / PF4MN / FZANP Fan Coils

ecobee

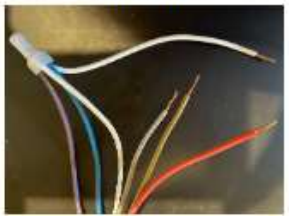


Set S1-2 to ON at ODU for 24-Volt Connections

Outdoor Unit MURA

2 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
1 Stage Electric Heat

Fan Coil Low Voltage Connections



Y1 Terminal at ODU can be utilized instead of Y2 for slower ramp up rate.

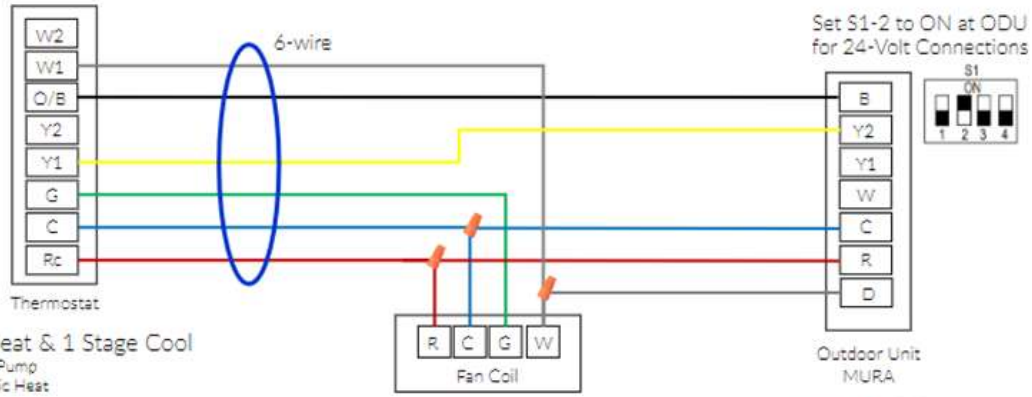
Wire to Terminal designations:
Red is R
Gray is G
Brown is C
White is wire crimped to white, blue and violet for the 3 stages of heat

Notes:
High Voltage wiring to equipment not shown.
Fan does NOT shut off during Defrost.
Electric Heat will operate during Defrost.

Controls

38MURA & FMA4(P,X) Fan Coil

ecobee



2 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
1 Stage Electric Heat

Y1 Terminal at ODU can be utilized instead of Y2 for slower ramp up rate.

Notes:
High Voltage wiring to equipment not shown.
Fan does NOT shut off during Defrost.
Electric Heat will operate during Defrost.

Controls

Attention:
CE recommends ecobee
for Dual Fuel Applications.

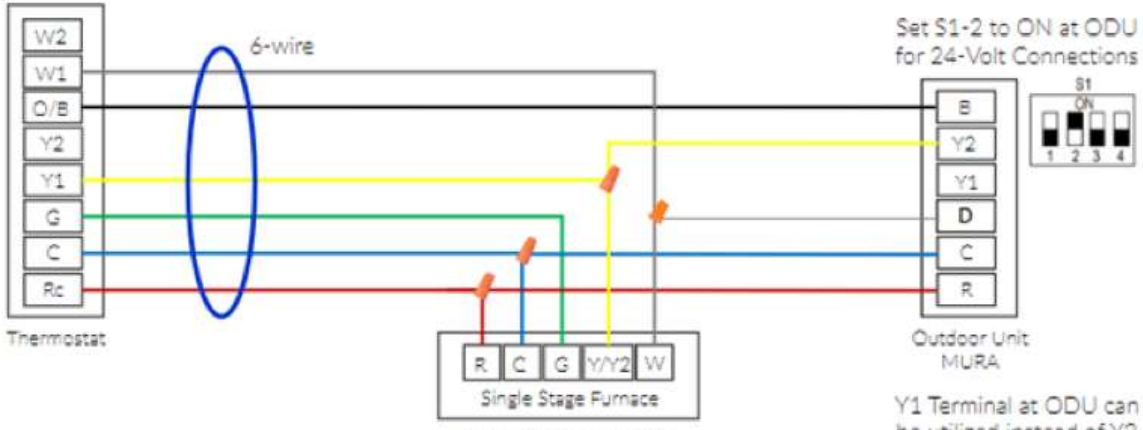
38MURA & 1-Stage Gas Furnace – Dual Fuel Applications

Includes 2-Stage Gas Furnaces utilizing Comfort Heat Technology® or Adaptive Mode.

Make sure when setting up ecobee to disable furnace and heat pump running at same time.
See steps 11 & 12 during initial setup.

ecobee

2 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
1 Stage Gas Furnace



Notes:
High Voltage wiring to equipment not shown.

Controls

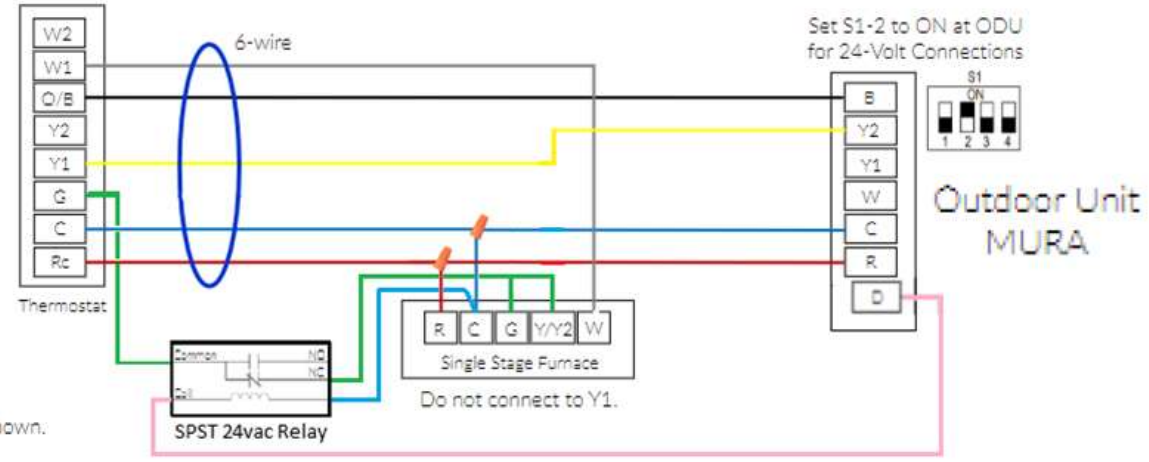
Attention:
CE recommends ecobee
for Dual Fuel Applications.

38MURA & 1-Stage Furnace – Dual Fuel Applications

Make sure when setting up ecobee to disable furnace and heat pump running at same time.
See steps 11 & 12 during initial setup.

ecobee

2 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
1 Stage Oil Furnace



Notes:
High Voltage wiring to equipment not shown.
Fan shuts down in Defrost
Furnace will NOT operate during Defrost.

Controls

Same as previous slide, except fan shuts off during defrost

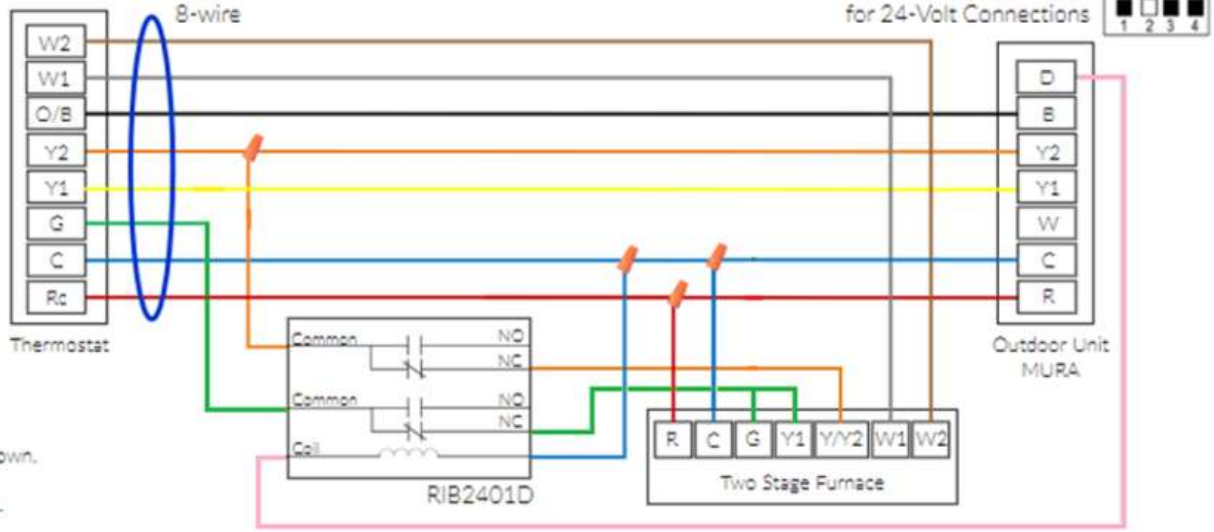
Field Supplied
RIB2401D

38MURA & 2-Stage Gas Furnace – Fan Shuts OFF during Defrost

Make sure when setting up ecobee to disable furnace and heat pump running at same time.
See steps 11 & 12 during initial setup.

ecobee

4 Stage Heat & 2 Stage Cool
2 Stage Heat Pump
2 Stage Gas Furnace
Fan shuts OFF during Defrost



Notes:
High Voltage wiring to equipment not shown.
Fan shuts off during Defrost.
Furnace will NOT operate during Defrost.
Color of RIB relay's wires are not shown.
For two stage thermostat control of the furnace staging, turn SW1-2 ON at the furnace control board (58TP/59TP/82(0,1)TA/926TB)

Controls

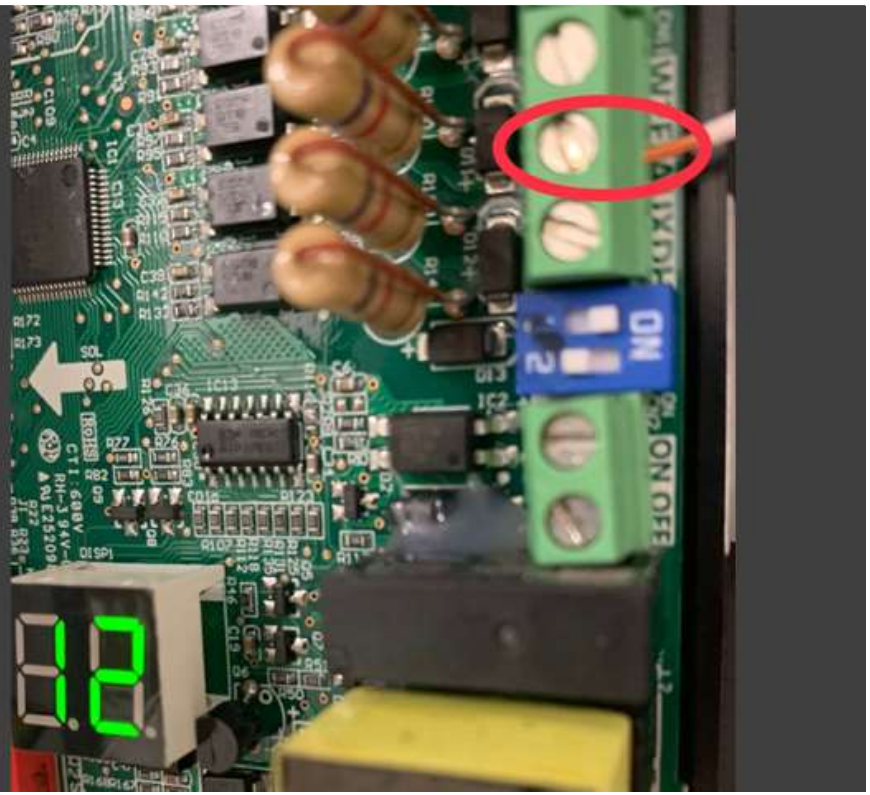
SCENARIO 3:
L TERMINAL ACTIVE
DURING ERROR CODE

- 24 Volt Output from L Terminal in Outdoor to L at Air Handler and Thermostat(If Available)
- Error Code Will Display on Outdoor LED

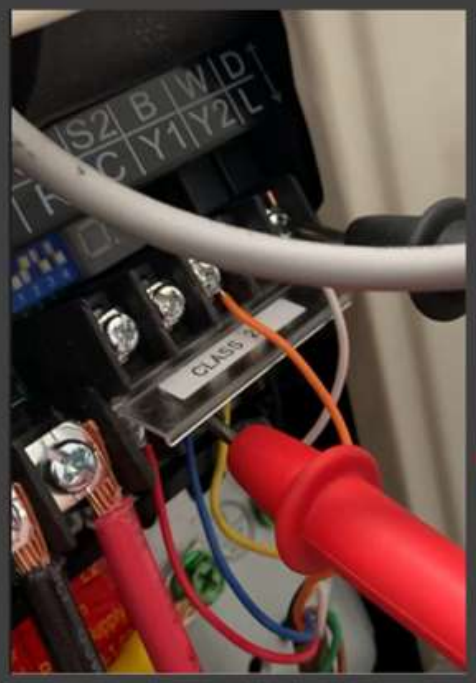
Controls

SCENARIO 3: EMERGENCY HEAT OPERATION

- As in the Other 2 Scenarios Emergency Heat will Operate in the Event of an Outdoor Failure or Communication Failure(Unless Related to Indoor Failure)
- Heat Pump Thermostat Needs to Have Emergency Heat Enabled
- Emergency Output from Thermostat Should be Wired to E Terminal in Air Handler
- Electric Heater and Indoor Fan will Engage Automatically
- Mode 12 will Display on the Display
- No Relay Required



Controls



SCENARIO 3: D TERMINAL ACTIVE DURING DEFROST

- 24 Volts Applied to E Terminal at Air Handler from D Output
- Air Handler Will Switch to Mode 12=Emergency Heat
- The Indoor Fan and Electric Heat will Automatically Engage
- This will Allow for Emergency Heat to Operate for the Duration of Defrost Cycles

DIPSWITCHES

40MUAA Set Up Options (end)

Full DIP/Rotary Switch Explanations

1001 Only

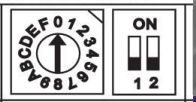
24-Volt Control Only

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 not operate if the outdoor temperature is 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 protection is not turned on, the dial range is 1 through F, 1 equals 4°F and it increased 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 000/001/010/011. Each digit corresponds an individual switch position. For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010 See table 11 for the corresponding CFM 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 (Low Frequency and Low Fan)	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat

*Only available with native wired controller KSACN1001
** Only available with 24V thermostat communication

DIPSWITCHES

If one control per indoor unit, no change needed.

FOR SETTING NETADDRESS	
S1+S2	
CODE	0~F
NETADDRESS	0~15
FACTORY SETTING	✓

40MUAA Set Up Options (cont.)

S1 & S2 – Net Address Setting

- If one control per indoor unit (IDU), no change needed
- If two or more IDU per control, each S1 must have different value

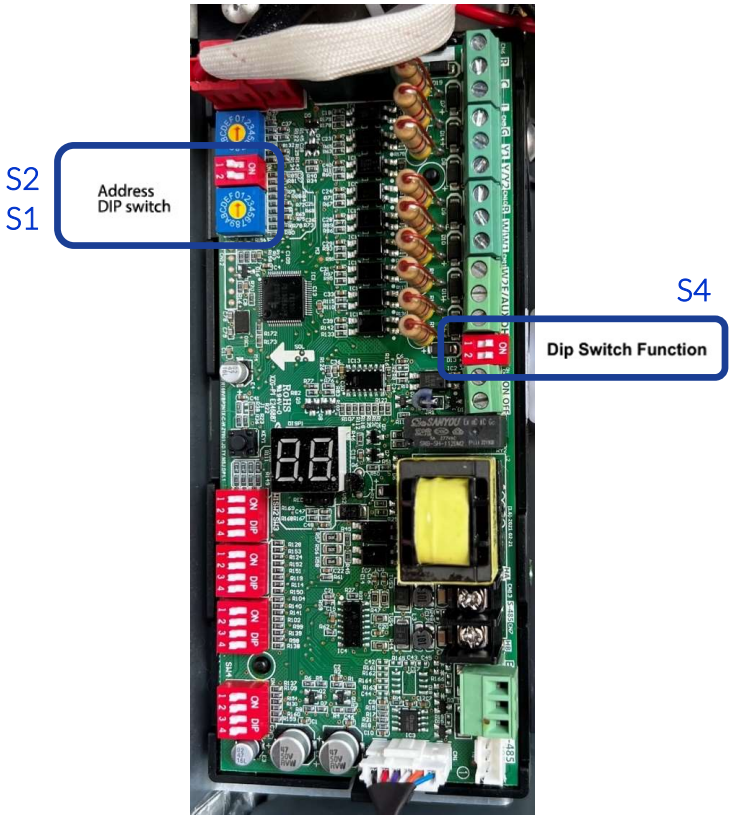
S4 DIP Switch Function, both defaulted to ON
(only used with 24-Volt Control Option)

- S4-1 – ON = W1 & W2 close on W1 call
- S4-1 – OFF = Independent W1, W2 operation

- S4-2 – ON Dehumidification Not Available
- S4-2 – OFF Dehumidification Available
- See Install Manual for more details

We recommend Cooling mode over Dehumidification mode for most applications. If you have specific humidity needs, please consult with your sales representative.

To start we recommend: S4-1 left ON IF there is a 15, 20 or 25kW electric heat kit installed and a wire is on W1 & W2. Leave S4-2 ON.



40MUAA Display Board

DIPSWITCHES

40MUAA Set Up Options (cont.)

Runtime, Temp Differential Settings – SW3 DIP Switches

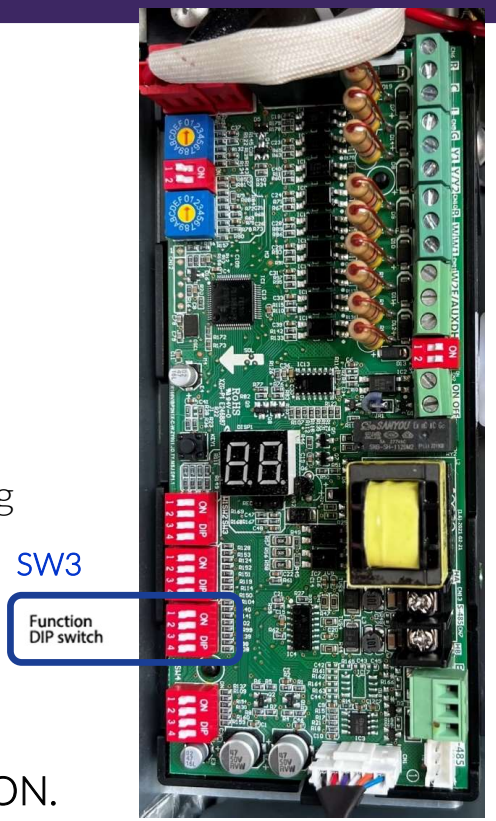
SW3-1: Continuous runtime
Default is 90 min (OFF), 30 min (ON)

SW3-2: Cooling and heating Y2 temperature differential adjustment
Default is 4°F (OFF), 2°F (ON)

SW3-3: Temperature differential to activate second stage auxiliary heating
Default is 6°F (OFF), 4°F (ON)

SW3-4: No function at this time.

To start we recommend:
SW3-2 to ON
If there is a 15, 20 or 25kW Electric Heat Kit installed SW3-3 to ON.
Leave SW3-1, SW3-4 OFF



40MUAA Display Board

DIPSWITCHES

40MUAA Set Up Options (cont.)

Air flow Settings – SW4 DIP Switches

We recommend to set these based on air flow requirements of the system

Default airflow setup

SW4	ALL DIP's OFF (default)	SW4-1 & 2 OFF SW4-3 ON	SW4-1 & 3 OFF SW4-2 ON	SW4-1 OFF SW4-2 & 3 ON
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
	10KW	10KW, 8KW	8KW	5KW, 3KW
24K	880	850	830	800
	15KW	15KW, 8KW	10KW, 8KW	5KW, 3KW
30K	1100	1040	990	930
	15KW	15KW, 10KW	10KW, 8KW	8KW, 5KW
36K	1320	1255	1190	1125
	20KW	15KW	10KW, 8KW	8KW, 5KW
48K	1760	1675	1580	1490
	20KW	15KW, 10KW	10KW, 8KW	8KW
60K	2195	2055	1920	1775
	25KW	20KW, 15KW	15KW, 10KW	10KW

40MUAA Display Board

DIPSWITCHES

40MUAA/DLFUAA DH TERMINAL

- Set Dipswitch 4-2 to OFF
- With Ecobee Thermostat Wire One Accessory Output to Air Handler DH Terminal

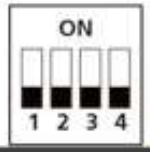
DIPSWITCHES

40MUAA/DLFUAA INFORMATION-DH TERMINAL

- Reverse Logic Operation for Dehumidification
- S4-2 is Default On-Set to Off for Dehumidification
- If Using Ecobee Thermostat Set the Relay State to Open
- A Demand for Cooling is Required(Y1 or Y2)
- With DH Demand from Thermostat Indoor Fan Will Drop to Low Speed
- Y1 DH(04 Mode) Will Drop Compressor to Low Turndown
- Y2 DH(05 Mode) Will Drop Compressor to Medium Turndown

DIPSWITCHES

Dip Switch	Function	ON	OFF
SW-1	Metering Device Adjustment	Does not impact this system	
SW-2	Communication Mode IDU-ODU	24V communication	[Default] RS485 communication, S1+S2
SW-3	Recovery Time Enhancement	Increased compressor frequency for quicker recovery to setpoint	[Default] Normal compressor Operation
SW-4	Function not defined/Future use		



38MURA DIPSWITCH INFORMATION

- All dipswitches are defaulted off
- SW2 changes the method of communication(Only for Scenario 3)
- SW3 increases compressor speed to reduce runtime(Only Available with Scenario 3)
- SW1 and SW4 are not active

DIPSWITCHES

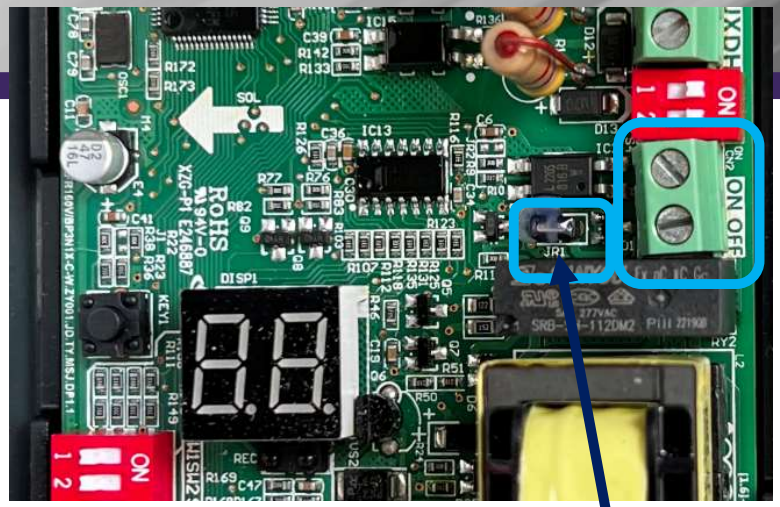
Air Handler: 40MUAA

Remote ON/OFF (CN23) (must remove JR1 Jumper)
N.C. contacts – When contacts open a "CP" Code will appear and system will shut down.

> Codes will only appear on the 1001 Wired Controller and/or the display PCB only.

UV LED (CN43)
When Fan is ON, 24-Volts are available from contacts to power a pilot relay or other small device.

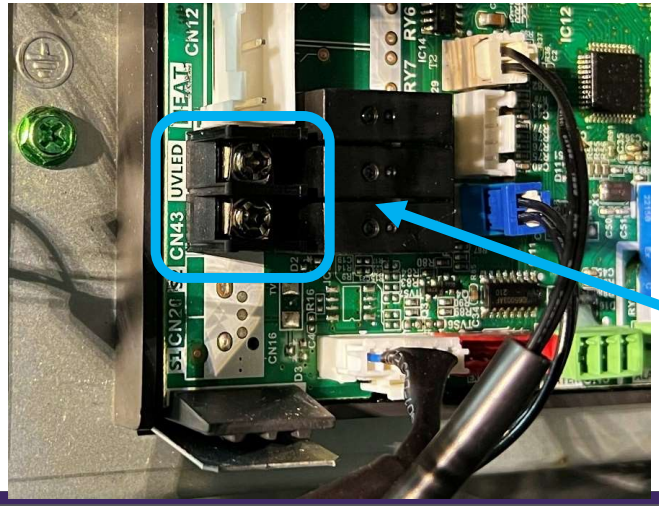
Section of Display PCB



JR1 Jumper

Location

Section of Main PCB



DIPSWITCHES

Air Handler: 40MUAA

Water (CN5) (must remove J1 Jumper)
N.C. contacts – When contacts open an “EE” Code will appear and system will shut down.

Alarm Output (CN33)
N.O. contacts – Contacts closes on Error.
Contacts rated: 250VAC, 10 Amps max.

Work (CN23)
N.O. contacts – Contacts closes when fan is ON,
Contacts rated: 250VAC, 10 Amps max.

We do not recommend connecting a humidifier to these contacts.

Codes will only appear on the 1001 Wired Controller and/or the display PCB only.

40MBAB Main PCB Accessory Connections

These Green Terminal Blocks can be removed for easier wire connections. Always use the outside connections, the middle terminal is not active.

Start Up Scenario 1 & 3

MBAB/MUAA Operational Codes

The below codes will appear based on the operational mode the system is calling for.

00 – Shut Down
01 – Fan
02 – Cooling
03 – Cooling 2
04 – Dehumidification 1
05 – Dehumidification 2
06 – Heating 1 (H/P)
07 – Heating 2 (H/P)
08 – Electric Heating 1
09 – Electric Heating 2
10 – Heating 1 or 2 & Electric Heating 1
11 – Heating 1 or 2 & Electric Heating 2
12 – Emergency Heating
13 – Heating Zone Control

Start Up Scenario 1 & 3

03 – Cooling 2 ☑ Check the TD in “COOL”. If the TD is between 20-30 degrees, your charge is correct
(TD= Temp in – Temp out) Temperature Differential

40MUA board should be displaying a Y2 call (03 or 07) for cooling or heating and run for 20 minutes before taking temps

07 – Heating 2 (H/P) ☑ Check the TD in “HEAT” mode.
If the TD is between 30-40 degrees, your charge is correct. You will see this when temperature is above 20° F.

Start Up Scenario 2

Set indoor temp so set temp is at least 4'F lower than inside temperature

☑ Check the TD in "COOL". If the TD is between 20-30 degrees, your charge is correct
(TD= Temp in – Temp out) Temperature Differential

Each mode will require 20 minutes of run time before measuring temps

Set indoor temp so set temp is at least 4'F higher than inside temperature

☑ Check the TD in "HEAT" mode.
If the TD is between 30-40 degrees, your charge is correct. You will see this when temperature is above 20° F.

TROUBLESHOOTING

38MURA POINT CHECK INQUIRY

- Inquiry button is located next to dipswitches in outdoor unit
- Each press represents a point of inquiry
- Exercise caution when pressing due to nearby live voltage

Table 6 — Outdoor Unit Point Check Function

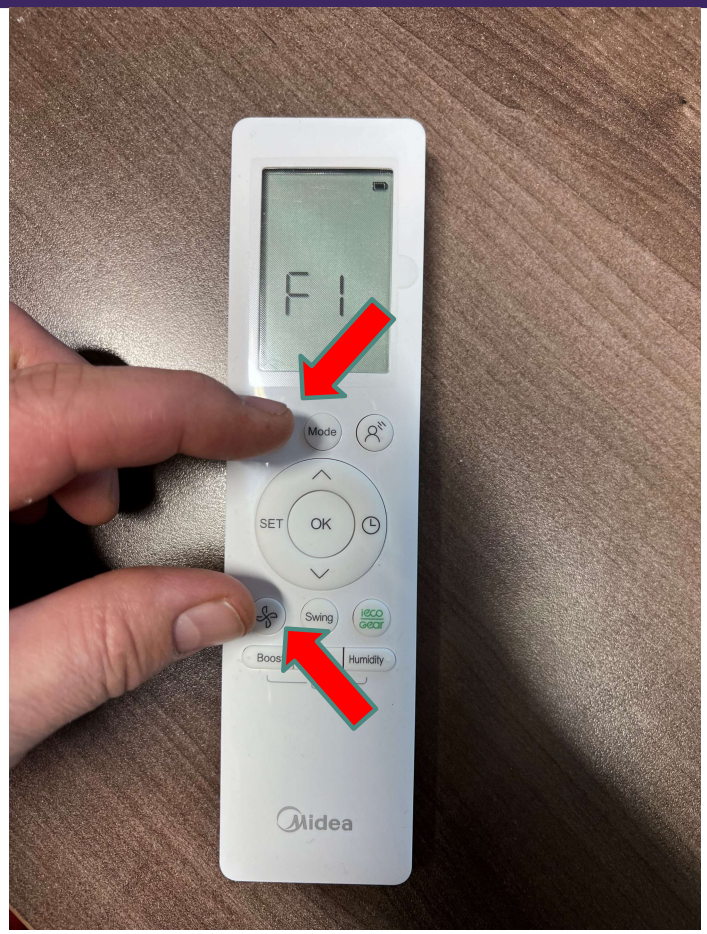
PRESS #	DISPLAY	REMARK
00	Normal display	Displays running frequency, running state, or malfunction code
01	Indoor unit capacity demand code	**Actual data*HP*10 -** If capacity demand code is higher than 99, the digital display tube displays a single digit and a tens digit. (For example, the digital display tube displays **"5.0"**, which means the capacity demand is 15. The digital display tube displays **"60"**, it means the capacity demand is 6.0) GA algorithm models display "--"
02	The frequency after the capacity requirement adapter	
03	Room temperature (T1)	If the temperature is lower than 0 degrees, the digital display tube displays **"0"**. If the temperature is higher than 70 degrees, the digital display tube displays **"70"**.
04	Indoor unit evaporator temperature (T2)	If the temperature is lower than -9 degrees, the digital display tube displays **"-9"**. If the temperature is higher than 70 degrees, the digital display tube displays **"70"**. If the indoor unit is not connected, the digital display tube displays: **"--"**
05	Condenser pipe temperature(T3)	
06	Outdoor ambient temperature(T4)	
07	Compressor discharge temperature (TP)	The display value is between 0~199 degrees. If the temperature is lower than 0 degrees, the digital display tube displays **"0"**. If the temperature is higher than 99 degrees, the digital display tube displays a single digit and a tens digit. For example, the digital display tube displays **"0.5"**, which means the compressor discharge temperature is 105 degrees. the digital display tube displays **"1.6"**, which means the compressor discharge temperature is 116 degrees.
08	AD value of current	The display value is a hex number. For example, the digital display tube shows "Cd", it means AD value is 205.
09	AD value of voltage	
10	Indoor unit running mode code	Standby:0,Cooling:1, Heating:2, Fan only 3, Drying:4, Forced 11 cooling:6, Defrost:7
11	Outdoor unit running mode code	
12	EXV open angle	**Actual data/4** If the value is higher than 99, the digital display tube displays a single digit and a tens digit. For example, the digital display tube displays **"2.0"**, which means the EXV open angle is 120×4=480p.
13	Frequency limit symbol	Bit7: Frequency limit caused by IGBT radiator Bit6: Reserved Bit5: Reserved Bit4: Frequency limit caused by low temperature of T2.(LH00) Bit3: Frequency limit caused by T3.(LC01) Bit2: Frequency limit caused by TP.(LC02) Bit1: Frequency limit caused by current(LC03) Bit0: Frequency limit caused by voltage (LC05) The display value is a hexadecimal number. For example, the digital display displays 2A, then Bit5=1, Bit3=1, and Bit1=1. This means that a frequency limit may be caused by T4, T3, or the current.
14	Outdoor unit fan speed	If it is higher than 99, the digital display tube displays a single digit and a tens digit. For example, the digital display tube displays **"2.0"**, which means the fan speed is 120. This value is multiplied by 8, and it is the current fan speed: 120*8=960
15	The average value of the temperature values detected by the high and low pressure sensors in the last 10 seconds of the compressor frequency calculation period	The displayed value is the actual value plus 60 (that is, when the displayed value is 10, the actual value is -50). When the displayed value is higher than 99, the digital display tube displays a single digit and a tens digit. If it displays **2.0**, it means 120. When there is no pressure sensor, it is displayed as --
16	The temperature value detected by the high and low pressure sensor	
17	AD value detected by the high and low pressure sensor	If it is higher than 199, the digital display tube displays a single digit and tens digit. For example, the digital display tube displays **"2.0"**, which means 220. Otherwise, if the temperature is higher than 99 degree, the digital display tube displays a tens digit. For example, the digital display tube displays **"2.0"**, which means 120. When there is no pressure sensor, it is displayed as --
18	The currently running communication protocol version	00-99

40MUAA INQUIRY MODE

Information Inquiry

To enter inquiry mode, with power-on or standby mode, in unlocked state, using handheld remote.

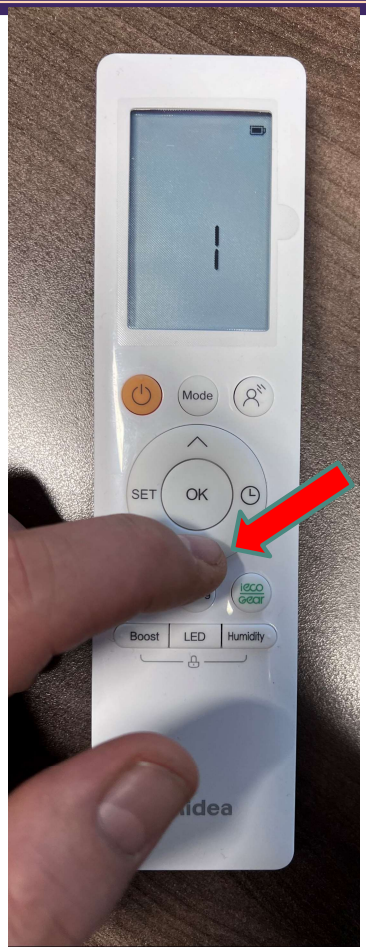
1. Press the key combination On/Off + Fan for 7 seconds:



40MUAA INQUIRY MODE

Information Inquiry

- Auto, Cool, Dry, Heat and the battery icon
- Numeric code query content displayed
- Use up/down key to navigate through query content
- Every change of the numeric code will display next query content
- Transmit code by pressing “OK”



40MUAA INQUIRY MODE

- Scroll with the UP and Down arrows to view the values.

Code	Query Content
0	Error code
1	T1 temperature
2	T2 temperature
3	T3 temperature
4	T4 temperature
5	TP temperature

Code	Query Content
6	Compressor Target Frequency FT
7	Compressor Running Frequency Fr
8	Current dL
9	Current AC Voltage Uo
10	Current indoor capacity test state Sn
11	/
12	Set Speed Pr of the outdoor fan

Code	Query Content
13	Opening Lr of EEV
14	Actual Running Speed ir of the indoor fan
15	Indoor Humidity Hu
16	Set Temperature TT after compensation
17	/
18	/
19	DC bus voltage
20	Indoor Target Frequency oT

40MUAA ENGINEER MODE

- In the channel 1-30 settings of the engineer mode, press the On/Off key to return to the previous engineer mode.

Table 7 — 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)
4	T4 Temperature	Press the **"On/Off"** for 2s to enter the Min. Set Temperature Selector, press the **Up/Down** key to select "16°C~24°C", press "**OK**" to confirm, and the Minimum Set Temperature can be memorized when the remote control is powered on and power lost; and press **"On/Off"** for 2 seconds to exit. When the remote control does not burn any parameters, the minimum set temperature will not be memorized. Set within 1 minute after power on.
5	TP Temperature	Press **"On/Off"** for 2 seconds to enter the Maximum Set Temperature Selector, press the **Up/Down** key to select "25°C~30°C", press **"OK"** to confirm, and the Maximum Set Temperature can be memorized when the remote control is powered on and power lost; and press **"On/Off"** for 2s to exit. When the remote control does not burn any parameters, the maximum set temperature will not be memorized. Set within 1 minute after power on.
6	Compressor Target Frequency FT	/
7	Compressor Running Frequency Fr	Press **"On/Off"** for 2 seconds to enter the Twins Selector, the code displayed is **"Ch"**, press **"OK"** to send the Query Twins Selector code; press the **Up/Down** key to select, 0 indicates that there is no Twins, 1 indicates the host, and 2 indicates the slave. Press **"OK"** to confirm, and press **"On/Off"** for 2s to exit.
8	Current dL	/
9	Current AC Voltage Uo	/
10	Current indoor capacity test state Sn	/
11	/	Press **"On/Off"** for 2 seconds to enter the Minimum Desired Cooling Frequency Selector, the code displayed is "**Ch**", press "**OK**" to send the Query Minimum Desired Cooling Frequency Selector code; press the **Up/Down** key to select the minimum cooling frequency desired and press "**OK**" to confirm; press **"On/Off"** for 2s to exit (for some models).
12	Set Speed Pr of the outdoor fan	Press **"On/Off"** for 2 seconds to enter the Minimum Desired Heating Frequency Selector, the code displayed is "**Ch**", press "**OK**" to send the Query Minimum Desired Heating Frequency Selector code; press the **Up/Down** key to select the minimum desired heating frequency value, press "**OK**" to confirm; and press the **"On/Off"** for 2s to exit (for some models).
13	Opening Lr of EEV	Press **"On/Off"** for 2 seconds to enter the Maximum Running Frequency Selector of the restricted area 6 in the **COOLING** mode T4, the code displayed is **"Ch"**, press **"OK"** to send the Query Maximum Running Frequency Selector code of the restricted area 6 in the cooling mode T4; press the **Up/Down** key to select the limit, then press **"OK"** to confirm; and press **"On/Off"** for 2 seconds to exit (for some models).
14	Actual Running Speed "**ir**" of the indoor fan	/
15	Indoor Humidity Hu	Press **"On/Off"** for 2 seconds to enter the Outdoor Forced Running Frequency Selector, the code displayed is **"Ch"**, press **"OK"** to send the Query Outdoor Forced Running Frequency Selector code; press the **Up/Down** key to select the outdoor forced running frequency, then press **"OK"** to confirm; and press **"On/Off"** for 2 seconds to exit (for some models).

40MUAA ENGINEER MODE

End Engineer mode:

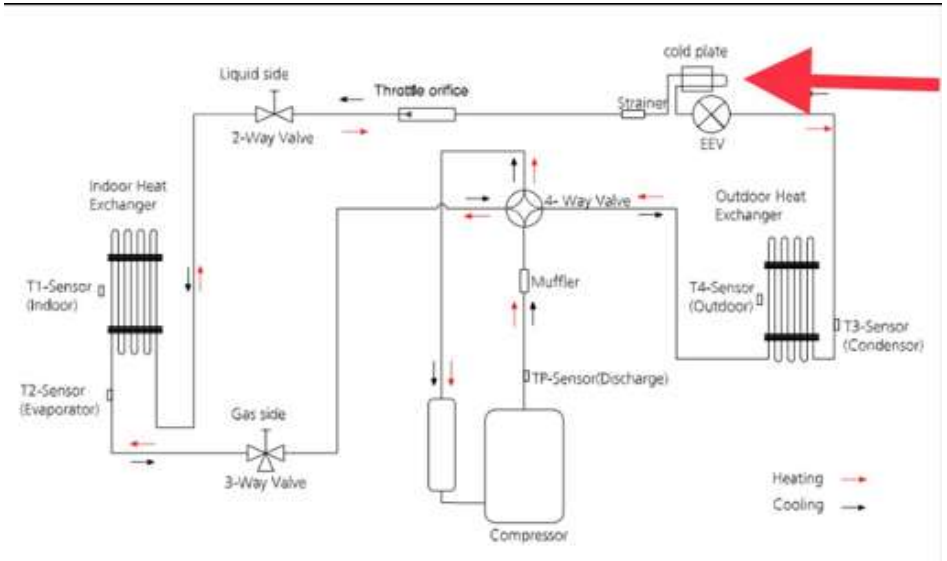
1. In the engineer mode, press the key combination of “On/Off + Fan speed” for 2 seconds;
2. The engineer mode ends if there are no valid key operations for continuous 60 seconds.

Inquiry Information (Sheet 2 of 2)

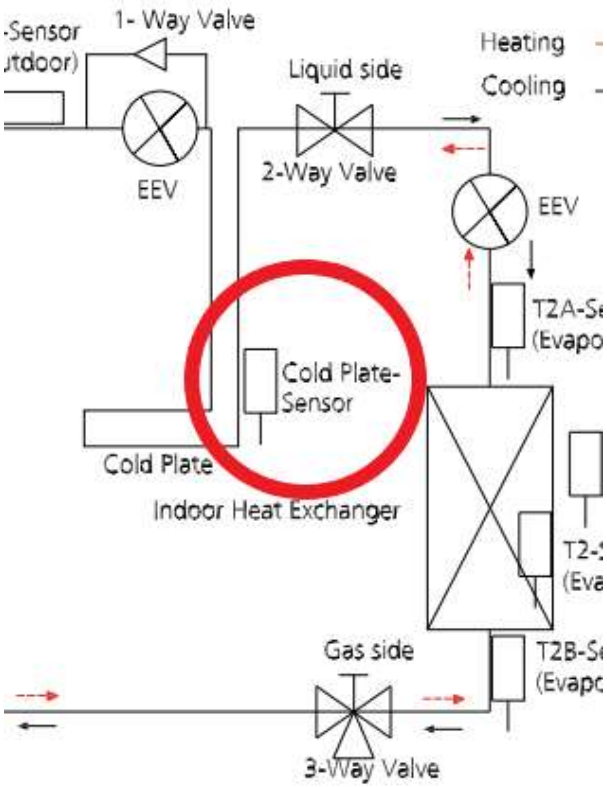
CODE	QUERY CONTENT	ADVANCED FUNCTION SETTING
16	Set Temperature TT after compensation	Press **“On/Off”** for 2 seconds to enter One-Key Recovery, the code displayed is “rS”, then press **“OK”** to send the One-Key Recovery code, the mode selector of the remote control **recovers** to “**COOLING** and **HEATING**”, the minimum temperature recovers to 16°C, and the maximum temperature recovers to 30°C; and press **“On/Off”** for 2 seconds to exit (for some models).
17	/	nA
18	/	/
19	DC bus voltage	Press **“On/Off”** for 2 seconds to enter the Cooling Frequency Threshold Settings; press the **Up/Down** key to select the cooling frequency threshold, press **“OK”** to confirm; and press the “**On/Off**” for 2 seconds to exit (set within 1 minute after power on).
20	Indoor Target Frequency oT	Press **“ON/OFF”** for 2 seconds to enter the Heating Frequency Threshold Settings; press the Up/Down key to select the heating frequency threshold, press **“OK”** to confirm; and press “**On/Off**” for 2 seconds to exit (set within 1 minute after power on).
21		Press **“ON/OFF”** for 2 seconds to enter the Cooling Temperature Compensation Value Settings, the code displayed is **“Ch”**, then press **“OK”** to send the Query Cooling Temperature Compensation Value code; press the **Up/Down** key to select the cooling temperature compensation value, then press **“OK”**; and press **“ON/OFF”** for 2 seconds to exit.
22		Press **“ON/OFF”** for 2 seconds to enter the Heating Temperature Compensation Value Settings, the code displayed is **“Ch”**, press **“OK”** to send the Query Heating Temperature Compensation Value code; press the **Up/Down** key to select the heating temperature compensation value, then press **“OK”**; and press **“ON/OFF”** for 2 s to exit.
23	Reserved	/
24		
25		
26		
27		
28		
29		
30		

GAS COOLED LOOP FUNCTION

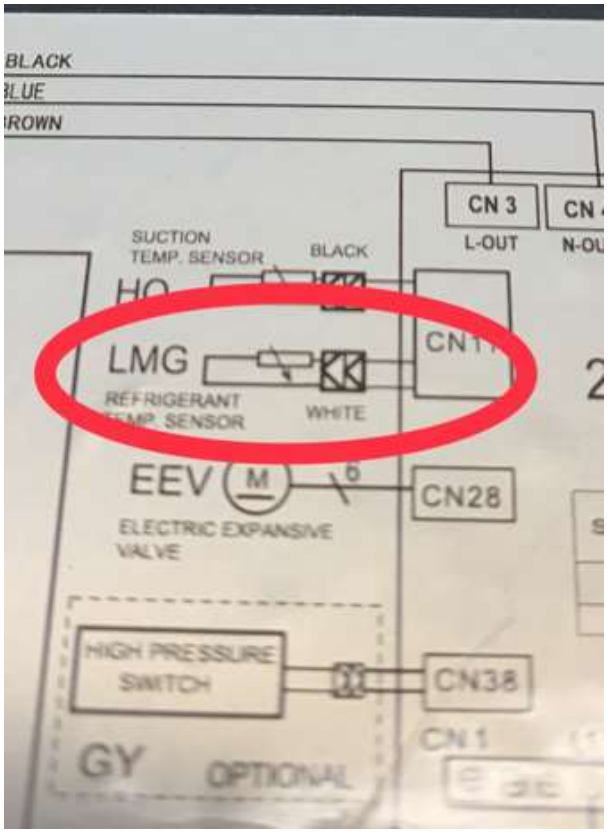
- Replaces the air-cooled board on certain size ODU's
- Uses refrigerant through a loop to maintain a safe IPM temperature
- On all ODU's that are Not MURA-the loop temperature changes as the outdoor/indoor conditions change



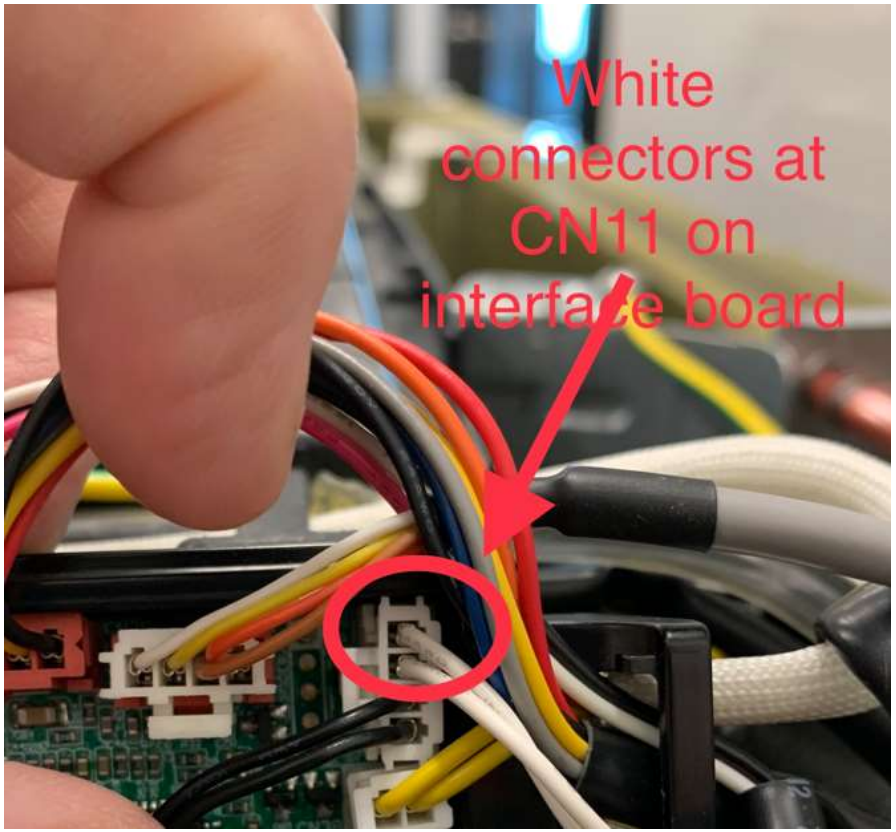
GAS COOLED LOOP FUNCTION



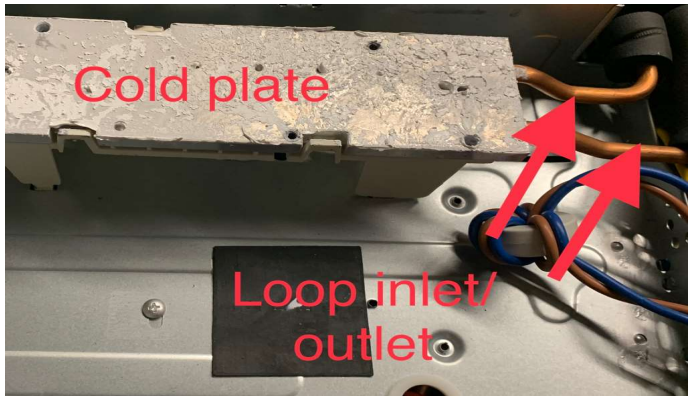
- On MURA Units there is a cold plate 10k thermistor that monitors the loop temperature in heating mode
- As the loop temperature changes the thermistor sends the information to the outdoor interface to change the EEV position
- This is designed to reduce condensation coming off of the loop
- This referred to as a cold plate sensor or refrigerant temperature sensor
- If this sensor fails an EC 57 code will be displayed on the ODU interface

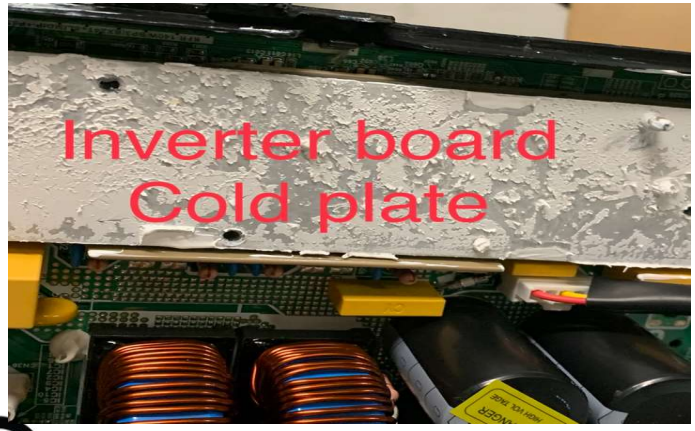


MURA GAS LOOP SENSOR LOCATION

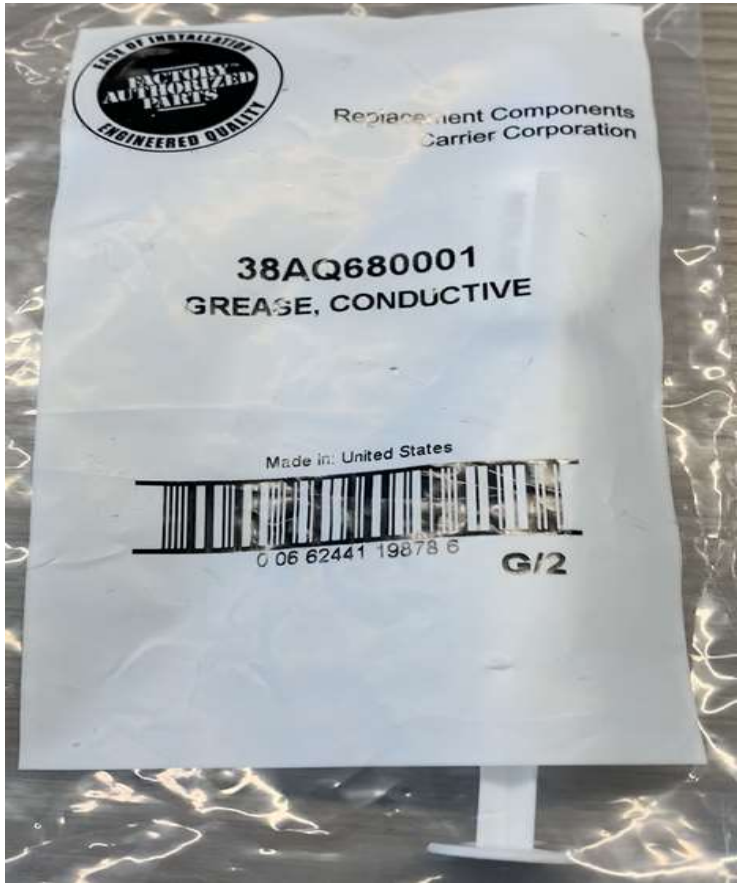


GAS COOLED LOOP LOCATION





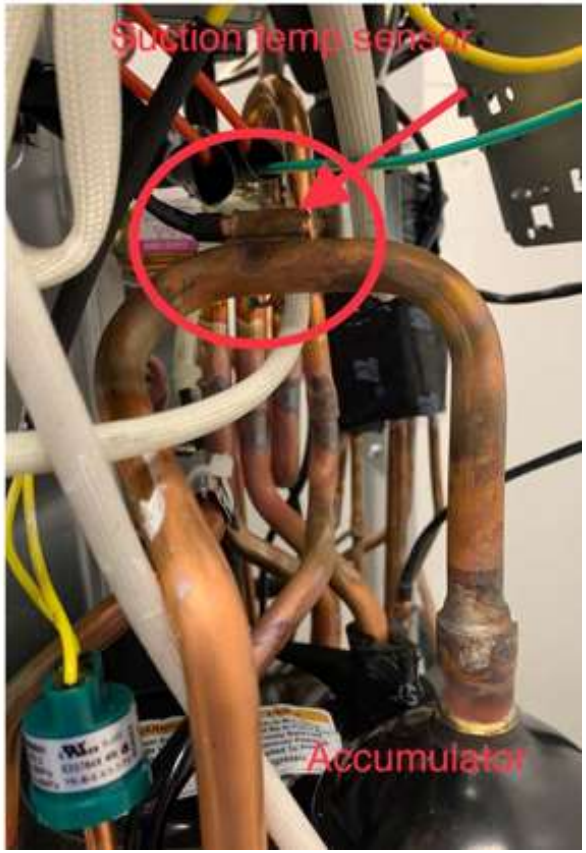
- Remove all inverter mounting screws to reveal gas loop/cold plate/inverter plate location in ODU
- Anytime the inverter is replaced the cold plate has to have conductive grease reapplied to it
- Conductive grease part# 38AQ68001



TROUBLESHOOTING

SCENARIO 3: OUTDOOR SUCTION SENSOR USED FOR DEMAND CALCULATION

Used to Calculate Demand in Conjunction with Pressure Transducer



TROUBLESHOOTING

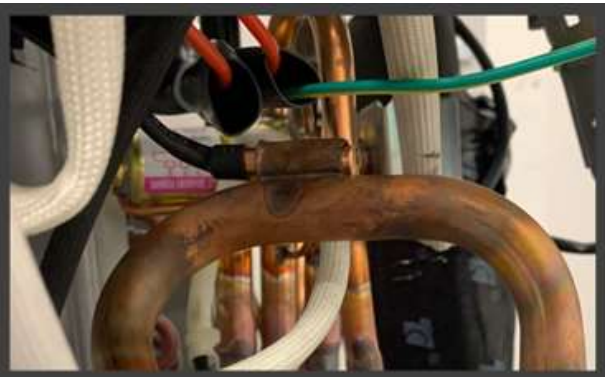
SCENARIO 3:
OUTDOOR TRANSDUCER USED FOR DEMAND CALCULATION

- Combined with Suction Sensor Used to Calculate Demand
- No Longer Solely Depending on T1 Indoor Ambient Thermistor to Set Target Compared to the Gen 1 Air Handler
- When the Demand is Removed the Values are Used for the Next Demand
- Y1=Low Demand=Lower Compressor Speed
- Y2=Hi Demand=Higher Compressor Speed

TROUBLESHOOTING

SCENARIO 3: OUTDOOR PRESSURE TRANSDUCER AND SUCTION SENSOR WILL CALCULATE DEMAND

- In This Scenario There is a Default Demand Coil Temperature Used as a Baseline for Maintaining a Target Delta T for Y1 and Y2(CTT)
- The Transducer and Suction Sensor Values Calculate a Coil Temperature for Y1 and Y2(CT)
- The Difference Between CTT and CT Will Dictate the Delta T to Maintain for Y1 and Y2



TROUBLESHOOTING

SCENARIO 3:
THE SYSTEM MAINTAINS 2 DEMAND VALUES

- The Larger the Difference Between CTT and CT the More the Compressor Will Speed Up
- In Cooling-When CT is a Warmer Value-the Gap Between CT and CTT will Increase Which Will Speed Up The Compressor
- In Heating-When CT is a Cooler Value-the Same as Above Applies-the Compressor Will Speed Up
- FREQUENCY LIMIT PROTECTIONS WILL ALWAYS HAVE PRIORITY OVER DEMAND

TROUBLESHOOTING

SCENARIO 3:
PRESSURE TRANSDUCER BOARD CONNECTION

- Black~White= VCC voltage up to 5VDC
- Black~Red= 5 VDC(5.8 Mohms)

TROUBLESHOOTING

SCENARIO 3: PRESSURE TRANSDUCER CHART

As the Pressure Increases the VDC Output will Increase

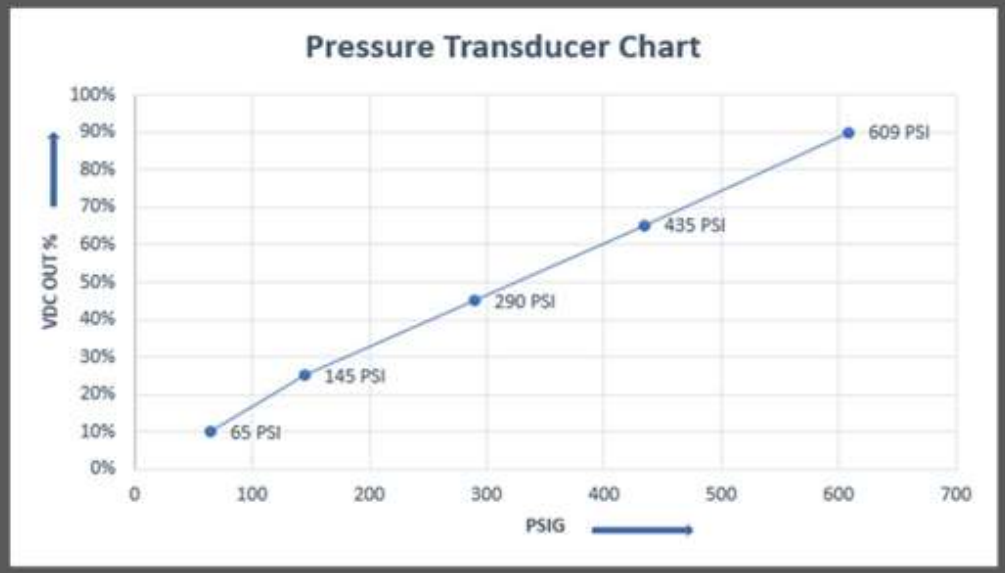
609 PSIG=4.5 VDC

435 PSIG=3.25 VDC

290 PSIG=2.25 VDC

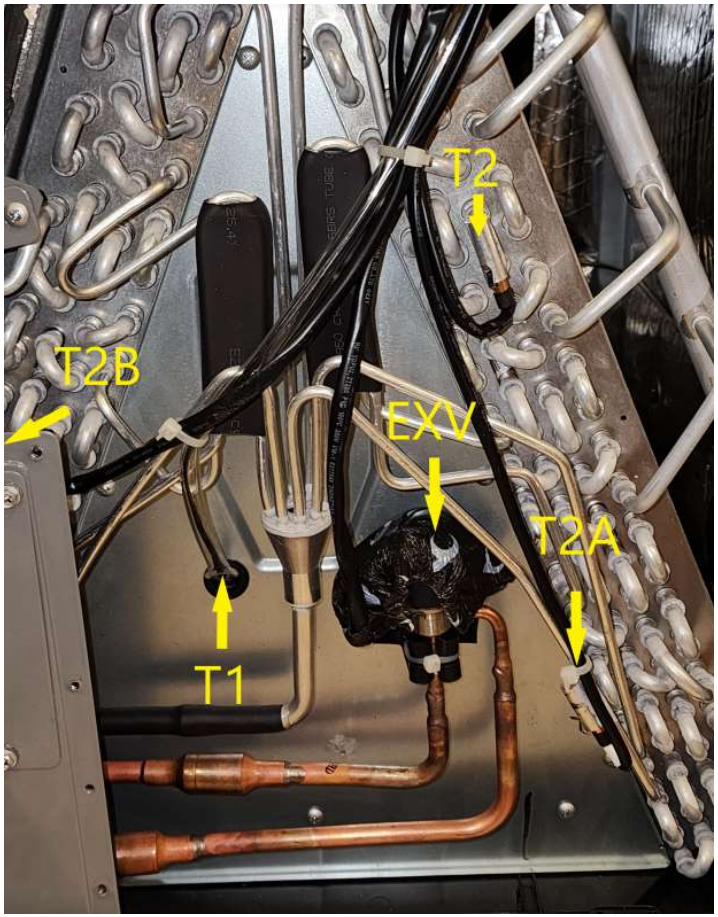
145 PSIG=1.25 VDC

65 PSIG=.5 VDC



Measure Black~White VDC at Transducer and Use Graph to Calculate 100%=5VDC

TROUBLESHOOTING



Always verify indoor and outdoor sensors are in proper placement and exv is securely attached

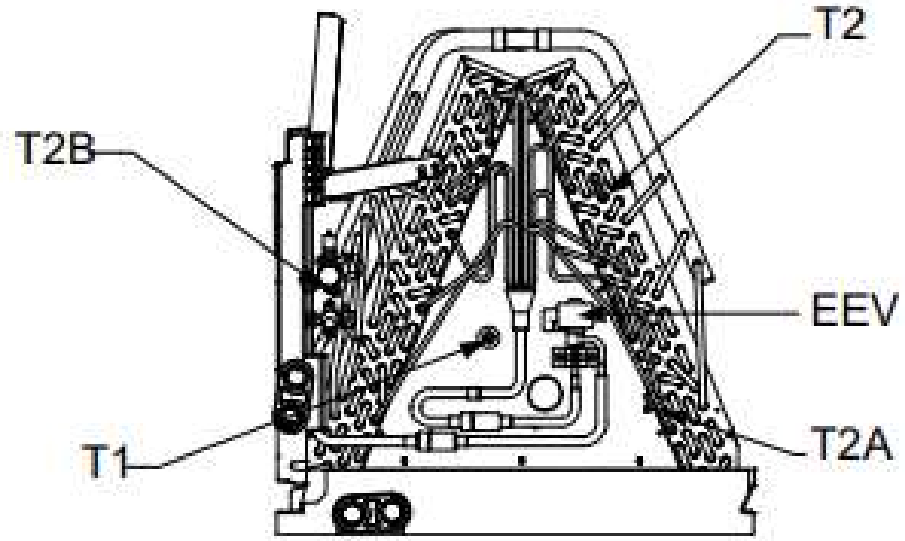
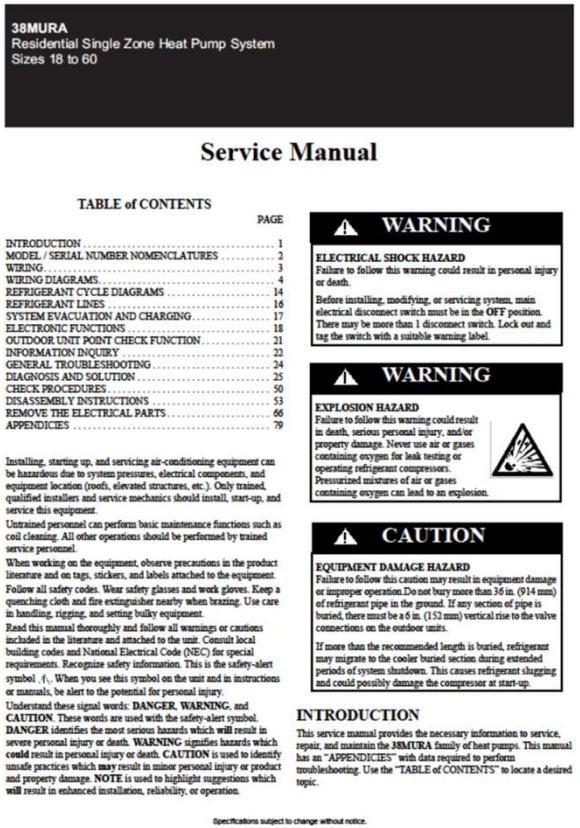


Fig. 13 —30K-48K Units

TROUBLESHOOTING

Always make sure you are looking in the correct manual for the error code that is being displayed



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

Service Manual

TABLE of CONTENTS

Installing, starting up, and servicing air-conditioning equipment can be hazardous due to system pressures, electrical components, and equipment location (roofs, elevated structures, etc.). Only trained, qualified installers and service mechanics should install, start-up, and service this equipment.

Untrained personnel can perform basic maintenance functions such as coil cleaning. All other operations should be performed by trained service personnel.

When working on the equipment, observe precautions in the product literature and on tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Keep a quenching cloth and fire extinguisher nearby when brazing. Use care in handling, rigging, and setting bulky equipment.

Read this manual thoroughly and follow all warnings or cautions included in the literature and attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements. Recognize safety information. This is the safety-alert symbol ⚠. When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand these signal words: **DANGER**, **WARNING**, and **CAUTION**. These words are used with the safety-alert symbol. **DANGER** identifies the most serious hazards which **will** result in severe personal injury or death. **WARNING** signifies hazards which **could** result in personal injury or death. **CAUTION** is used to identify unsafe practices which **may** result in minor personal injury or product and property damage. **NOTE** is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

⚠ WARNING

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

Before installing, modifying, or servicing system, main electrical disconnect switch must be in the OFF position. There may be more than 1 disconnect switch. Lock out and tag the switch with a suitable warning label.

⚠ WARNING

EXPLOSION HAZARD
Failure to follow this warning could result in death, serious personal injury, and/or property damage. Never use air or gases containing oxygen for leak testing or operating refrigerant compressors. Pressurized mixtures of air or gases containing oxygen can lead to an explosion.

⚠ CAUTION

EQUIPMENT DAMAGE HAZARD
Failure to follow this caution may result in equipment damage or improper operation.Do not bury more than 36 in. (914 mm) of refrigerant pipe in the ground. If any section of pipe is buried, there must be a 6 in. (152 mm) vertical rise to the valve connections on the outdoor units.

If more than the recommended length is buried, refrigerant may migrate to the cooler buried section during extended periods of system shutdown. This causes refrigerant slugging and could possibly damage the compressor at start-up.

INTRODUCTION

This service manual provides the necessary information to service, repair, and maintain the 38MURA family of heat pumps. This manual has an "APPENDICIES" with data required to perform troubleshooting. Use the "TABLE of CONTENTS" to locate a desired topic.

Specifications subject to change without notice.

38MURA ERROR CODES

DISPLAY	MALFUNCTION OR PROTECTION
EC 51	Outdoor EEPROM malfunction
EL 01	Indoor / outdoor units communication error
EL 16	Communication malfunction between adapter board and outdoor main board
PC 00	IPM module protection
PC 02	Top temperature protection of compressor or High temperature protection of IPM module
PC 06	Temperature protection of compressor discharge
PC 08	Outdoor overcurrent protection
PC 0A	High temperature protection of condenser
PC 0F	PFC module protection
PC 10	Outdoor unit low AC voltage protection
PC 11	Outdoor unit main control board DC bus high voltage protection
PC 12	Outdoor unit main control board DC bus high voltage protection /341 MCE error
PC 30	High pressure protection
PC 31	Low pressure protection
PC 40	Communication malfunction between IPM board and outdoor main board
PC 41	Outdoor compressor current sampling circuit failure
PC 43	Outdoor compressor lack phase protection
PC 44	Outdoor unit zero speed protection
PC 45	Outdoor unit IR chip drive failure
PC 46	Compressor speed has been out of control
PC 49	Compressor overcurrent failure
EC 52	Condenser coil temperature sensor T3 is in open circuit or has short circuited
EC 53	Outdoor room temperature sensor T4 is in open circuit or has short circuited
EC 54	Compressor discharge temperature sensor TP is in open circuit or has short circuited
EC 57	Refrigerant pipe temperature sensor error
EC 5C	High pressure sensor is in open circuit or has short circuited
EC 71	Over current failure of outdoor DC fan motor
EC 72	Lack phase failure of outdoor DC fan motor
EC 73	Zero-speed failure of outdoor DC fan motor
EC 07	Outdoor fan speed has been out of control
PC 0L	Low ambient temperature protection
LC 06	High temperature protection of IPM module

40MUAA ERROR CODES

DISPLAY	ERROR INFORMATION
EH00	Indoor EEPROM Malfunction
EL01	Communication malfunction between the indoor and outdoor units
EH03	Indoor fan speed malfunction
EC51	Outdoor EEPROM malfunction
EC52	Condenser coil temperature sensor (T3) malfunction
EC53	Outdoor ambient temperature sensor (T4) malfunction
EC54	Outdoor unit exhaust temperature sensor error
EH60	Indoor Room Temperature Sensor T1 Error
EH61	Indoor Evaporator Coil Temperature Sensor T2 Error
EH62	Air inlet temperature sensor error
EC07	Outdoor DC fan speed malfunction
EH0b	Indoor PCB and display board communication error
EL0C	Refrigerant leakage detection
EH0E	Indoor water level warning error
FL09	New and old platform match malfunction
PC00	Inverter module (IPM) protection
PC01	Over high voltage or over low voltage protection
PC02	High temperature protection of compressor top/IPM temperature protection
PC04	Inverter compressor drive error
PC03	Low pressure protection
PC0L	Low temperature protection of outdoor unit
----	Indoor units mode conflict

KSACN1001AAA ERROR CODES

DISPLAY ON IDU	INDOOR UNIT ERROR CODE DEFINITION
EH00	Indoor EEPROM malfunction
EL01	Communication malfunction between the indoor and outdoor units
EH03	Indoor fan speed malfunction
EC51	Outdoor EEPROM malfunction
EC52	Condenser coil temperature sensor (T3) malfunction
EC53	Outdoor ambient temperature sensor (T4) malfunction
EC54	Outdoor unit exhaust temperature sensor error
EH60	Indoor Room Temperature Sensor T1 Error
EH61	Indoor Evaporator coil Temperature Sensor T2 Error
EH62	Air inlet temperature sensor Error
EC07	Outdoor DC fan speed malfunction
EH0b	Indoor PCB and display board communication error
EL0C	Refrigerant leakage detection
EH0E	Indoor water level warning Error
FL09	New and old platform match malfunction
PC00	Inverter module (IPM) protection
PC01	Over high voltage or over low voltage protection
PC02	High temperature protection of compressor top/ IPM Temperature protection
PC04	Inverter compressor drive Error
PC03	Low pressure protection
PC0L	Low temperature protection of outdoor unit
EH63	Communication error between the wire controller and the indoor unit
----	Indoor units mode conflict
NOTE: The digital tube shows that DF / FC is in a normal operation state, not fault or protection.	