Controls

45MUAA Control Overview (not same as 45MBAA)

- The 45MUAA is <u>NOT</u> powered from the outdoor unit.

- The 45MUAA can be powered with 115VAC or 208/230VAC, same terminals – must change wire harness for 115VAC.

- Electric Heat Kits are always wired to 208/230VAC.

- The 45MUAA must use a 24-Volt thermostat or a 1401 Wired Controller. (all controls purchased separately).

- The 24-Volt control can be wired to the fan coil using 18 gauge solid or stranded wire.

- Do not connect a 1401 Wired Controller and a 24-Volt Thermostat at the same time.

1401 Connections

KSACN1401AAA

or

24-Volt

or

Stat of choice

choice depends on features needed

Controls

45MUHA Control Overview

- The 45MUHA control and DIP switch configurations are same as 45MUAA

- The 45MUHA is <u>NOT</u> powered from the outdoor unit.

- The 45MUHA can be powered with 115VAC or 208/230VAC, same terminals, unit auto selects

- The 45MUHA must use a 24-Volt thermostat or a 1401 Wired Controller. (all controls purchased separately).

- The 24-Volt control can be wired to the fan coil using 18 gauge solid or stranded wire.

- Do not connect a 1401 Wired Controller and a 24-Volt Thermostat at the same time.

1401 Connections
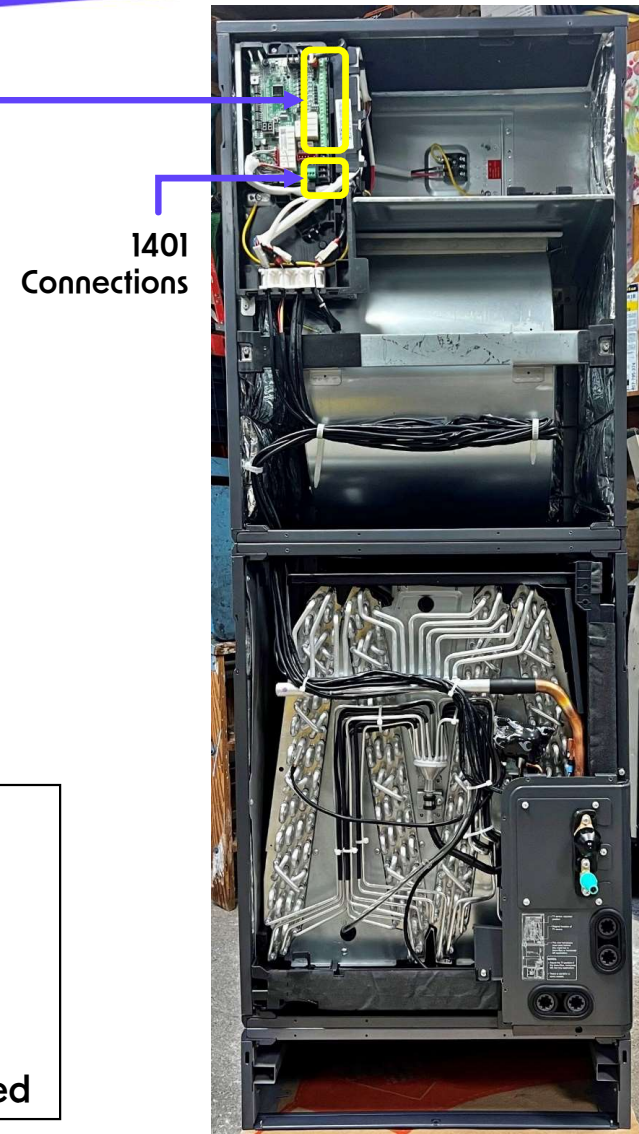
KSACN1401AAA

or

24-Volt

or

Stat of choice

choice depends on features needed

Controls

Scenario 1 & 3
24-Volt
Control

Scenario 2
1401 Wired
Control

45MU(A,H)A Thermostat Choices:

- Most 24-Volt thermostats will work for a 45MU(A,H)A with an Electric Heat package, refer to the Application/Installation instructions for specific details for the model installing.

- We strongly recommend that these systems are always wired to operate as a Heat Pump, not Conventional.

> Heat Pump Wiring –   Heat Pump Lock Out Available
> Conventional Wiring –   No Heat Pump Lock Out Available

- The 45MU(A,H)A with an Electric Heat package does not require the thermostat to sense outside temperature to operate.

ecobee	Cielo	Honeywell	Nest	VIVE

Controls

37MU(R,H)A/45MU(A,H)A Control Scenario Overview

Control Type & Wiring Selection – SW1 DIP Switches
Each Scenario has its own wiring type and gauge requirement.

Best

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, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 to ON

Control Scenario 2: 1401 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 SW1-4 to ON

Control Scenario 3: 24-Volt Thermostat (typically for retrofit application)
Control Wire ODU to IDU: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set DIP SW1-1 & SW1-4 to ON

NOTE: The 45MU(A,H)A will also "Auto Detect" the type of control if SW1 DIPs are left OFF (default setting)

Controls

Scenario 1 & 3

24-Volt
Control

Scenario 2

1401 Wired
Control

45MU(A,H)A Quick Setup Guide

Application: Heat Pump with or without Electric heat

SW1-1 – Leave OFF for 1401 Wired Control, Scenario 2
SW1-1 – Turn ON for 24-Volt Control, Scenario 1
SW1-1 & SW1-4 – Turn both ON for 24-Volt Control, Scenario 3

SW4-1~3 – If electric heat kit is installed set using charts provided, if no kit leave all OFF.

S4-4 – Leave ON if no electric heat kit.
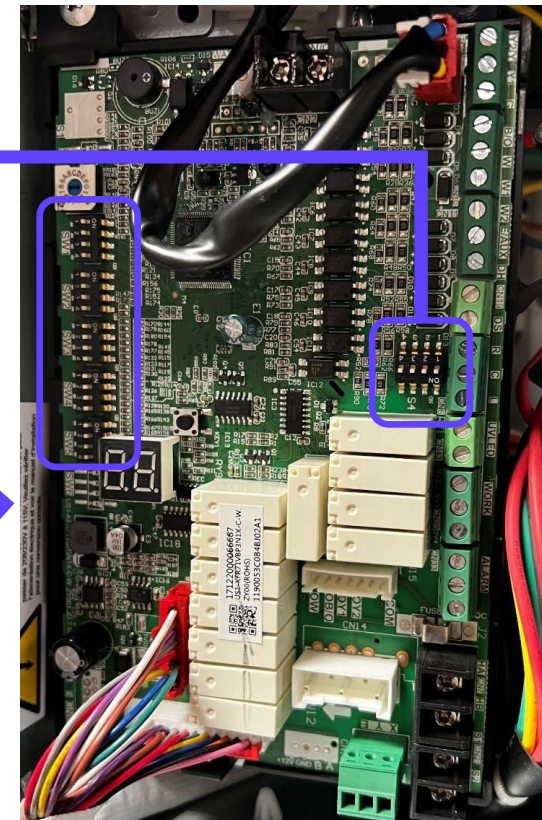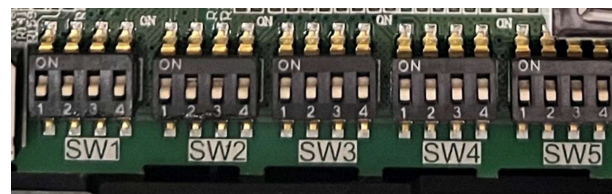S4-4 – Leave ON if using 24-Volt control with 5, 8 or 10kW electric heat kits
S4-4 – Turn OFF only if using 24-Volt control with 15, 20 or 25kW electric heat kits

For this application, all others can remain in their default position.
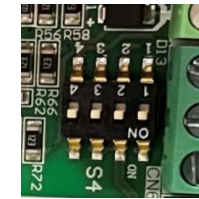
S4 All defaulted
to ON

45MU(H)A – SW1 ~ SW5 All defaulted to
OFF

SW1   SW2   SW3   SW4   SW5

45MU(H)A Communication
Board

Controls

37MU(R,H)A Control Scenario Overview (end)

37MU(R,H)A Set Up Options (needs to match indoor control scenario)

Control Scenario 1 & 2: S1, S2 Connections
Outdoor unit S1 DIP switch settings

S1
ON
1 2 3 4

All S1 OFF for S1, S2 Connections (default)

Control Scenario 3: 24-Volt Connections
Outdoor unit S1 DIP switch settings

S1
ON
1 2 3 4

Set S1-2 to ON for 24-Volt Connections

Attention:
R & C at the ODU do not provide 24-Volts. Scenario 3 supplies 24-Volts to the ODU from the MU(A,H)A.

37MU(R,H)A DIP Switches
Located above low voltage terminal block

45MU(A,H)A 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, up to 8-wire may be needed,
18 gauge solid or stranded.
Set SW1-1 to ON

or

Stat of choice

depends on features needed

24-Volt Connections

Communication PCB | Main PCB

S1 | S2

Indoor Unit – MU(A,H)A

S1
S2

Outdoor Unit MURA

SW1

Function DIP switch

45MU(A,H)A Communication Board

Controls

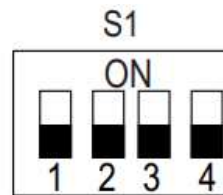## 45MU(A,H)A Control Scenario 1 (cont.)

37MU(R,H)A Set Up Options (needs to match indoor control scenario)

Control Scenario 1: S1, S2 Connections
Outdoor unit S1 DIP switch settings

All S1 OFF for S1, S2 Connections (default)

Attention:
R & C at the ODU do not provide 24-Volts.
Scenario 3 supplies 24-Volts to the ODU from the MU(A,H)A.

37MU(R,H)A DIP Switches
Located above low voltage terminal block
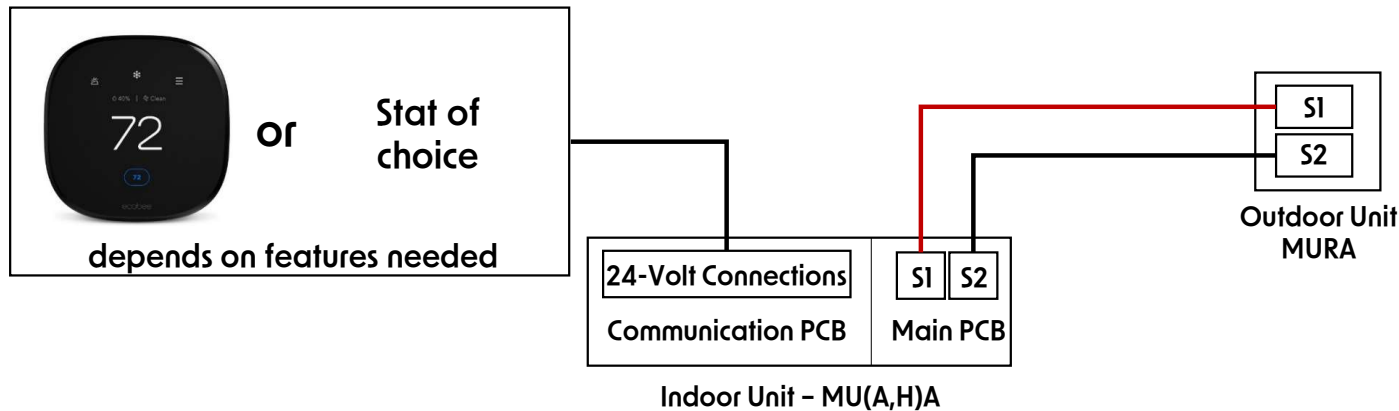
Controls

45MU(A,H)A 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
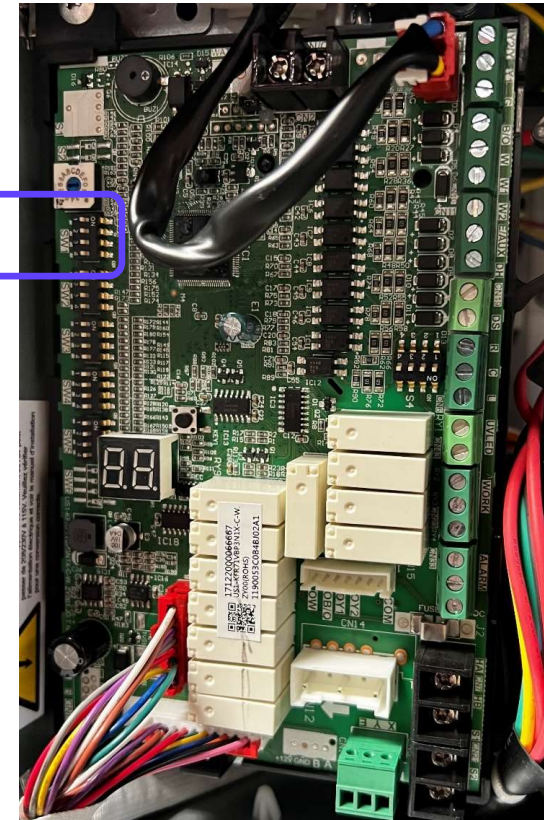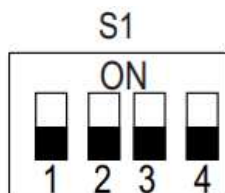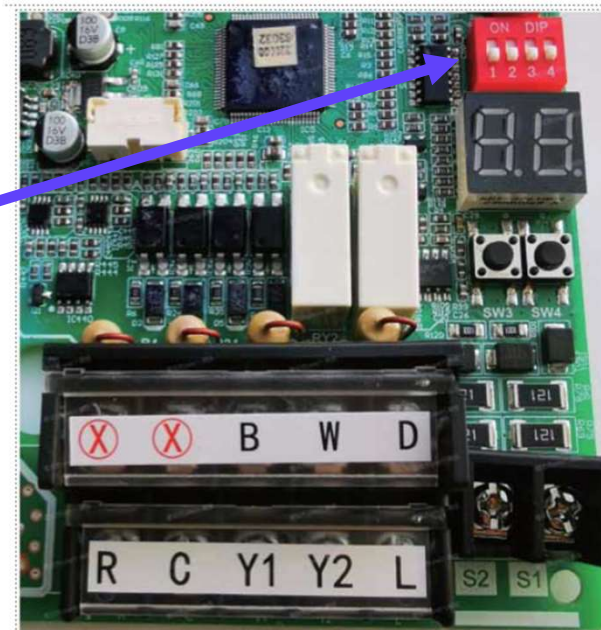Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 to ON

Heat Pump Wiring Diagram

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Advanced Wiring

Simplest Wiring

5-wire

Thermostat: O/B, Y, G, C, Rc

Indoor Unit: R | C | L | G | Y1 | Y/Y2 | B | W | W1 | W2

1 Stage Heat Pump & 1 Stage Cool

Preferred connection without an Electric Heat Kit

6-wire

Thermostat: O/B, Y2, Y1, G, C, Rc

Indoor Unit: R | C | L | G | Y1 | Y/Y2 | B | W | W1 | W2

2 Stage Heat & 2 Stage Cool
2 Stage Heat Pump

Controls

45MU(A,H)A Control Scenario 1 (cont.)

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

Control Scenario 1: 24-Volt Thermostat (new install)
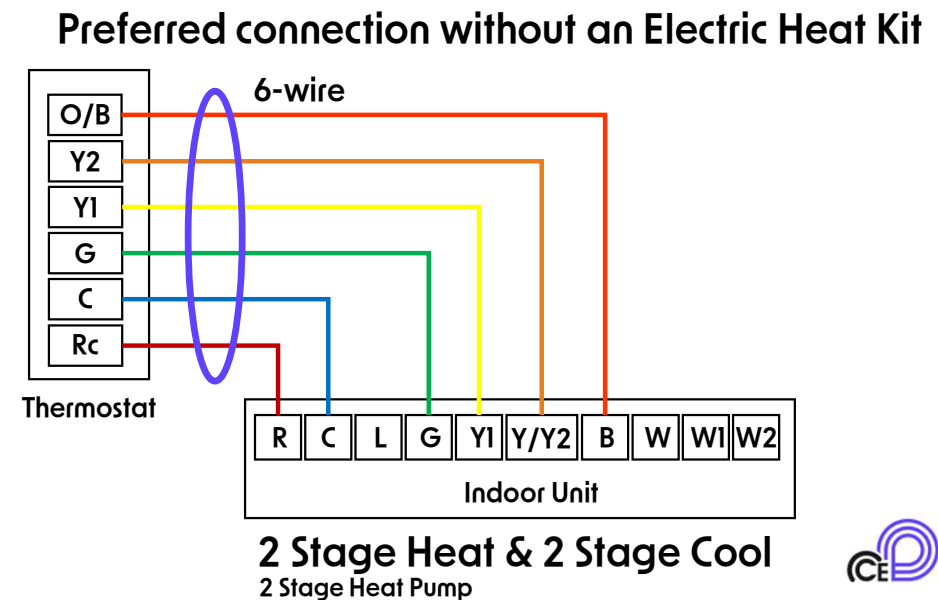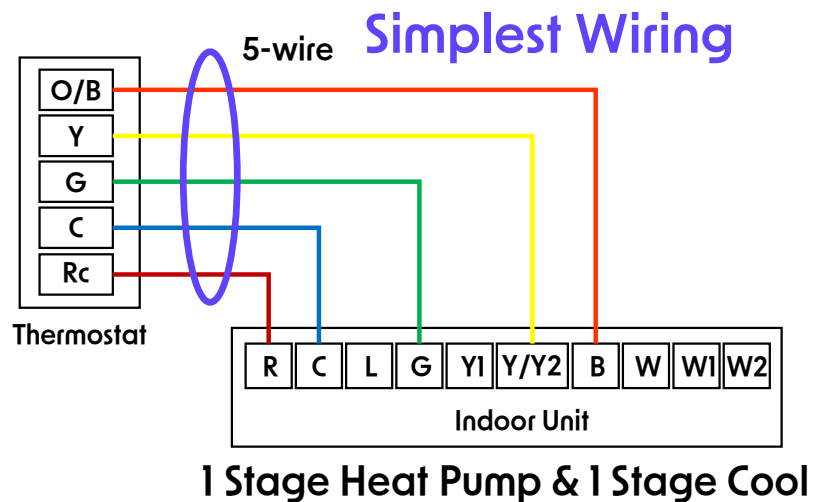Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

6-wire · Simplest Wiring

Thermostat: W2, W1, O/B, Y2, Y1, G, C, Rc

Indoor Unit: R C L G Y1 Y/Y2 B W W1 W2

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

7-wire · Simplest Wiring

Thermostat: W2, W1, O/B, Y2, Y1, G, C, Rc

Indoor Unit: R C L G Y1 Y/Y2 B W W1 W2

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

TURN OFF DIP Switch S4-4

Controls

Heat Pump Wiring Diagram

45MU(A,H)A Control Scenario 1 (end)

Control Scenario 1 24-Volt Staging Options (end)

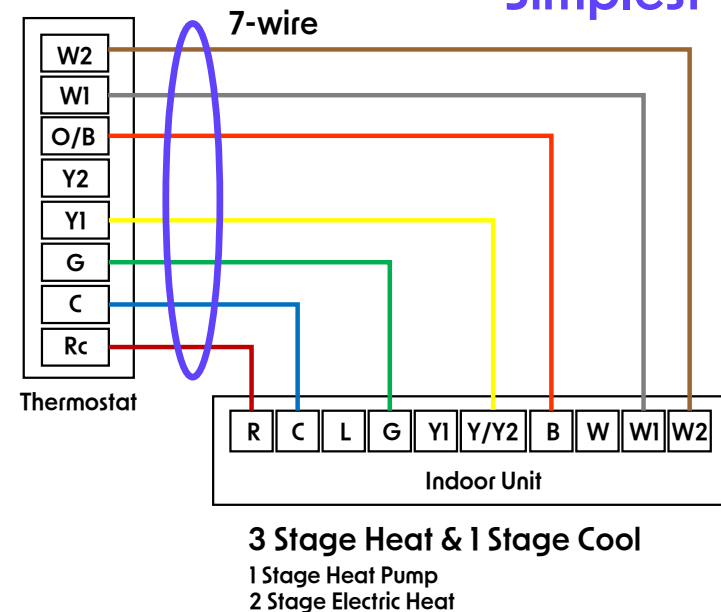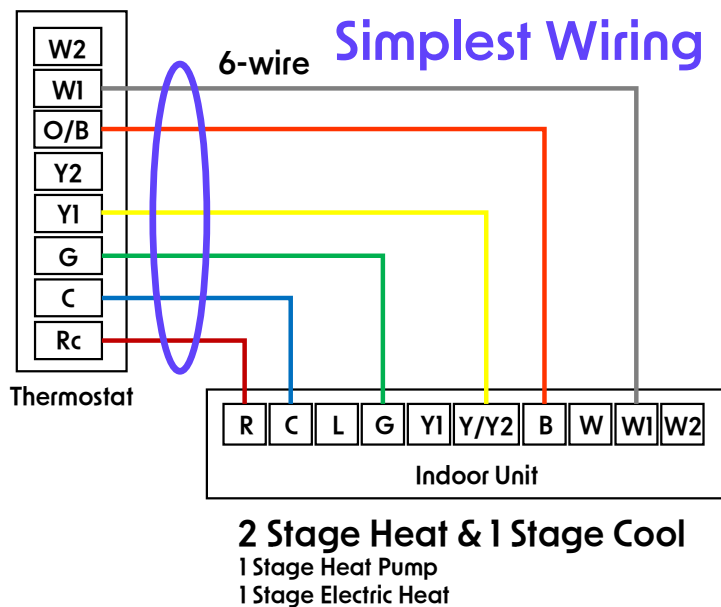**Control Scenario 1: 24-Volt Thermostat (new install)**
Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire
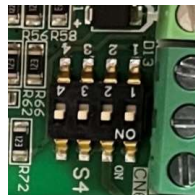Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Advanced Wiring

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

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

Advanced Wiring

7-wire

Thermostat

Indoor Unit

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

TURN OFF DIP Switch S4-4

8-wire

Thermostat

Indoor Unit

4 Stage Heat & 2 Stage Cool
2 Stage Heat Pump
2 Stage Electric Heat

Controls

45MU(A,H)A 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
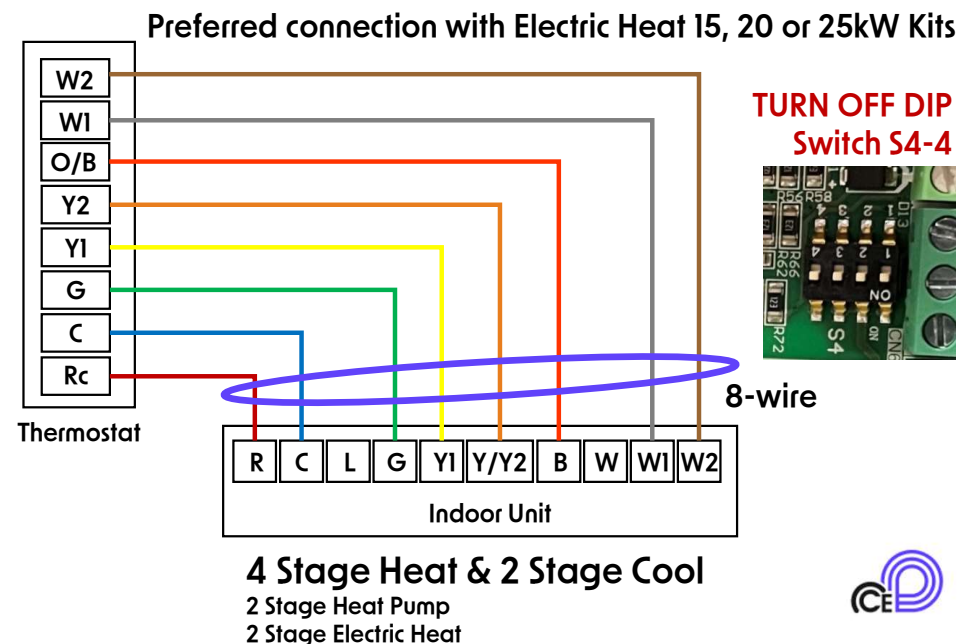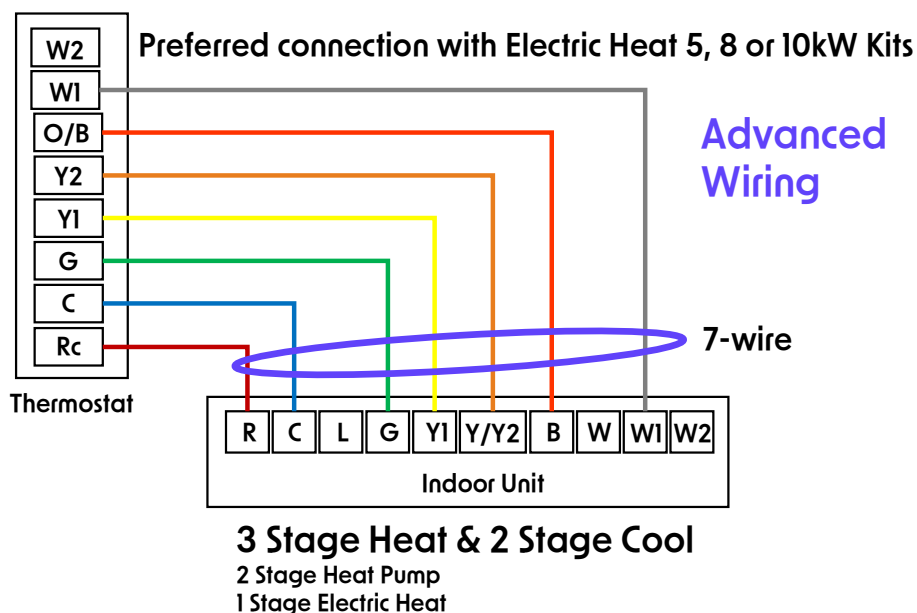Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Advanced Wiring

Simplest Wiring

5-wire

Thermostat terminals: W, Y, G, C, Rc

Indoor Unit: R C L G Y1 Y/Y2 B W W1 W2

1 Stage Heat Pump & 1 Stage Cool

Preferred connection without an Electric Heat Kit

6-wire

Thermostat terminals: W, Y2, Y1, G, C, Rc

Indoor Unit: R C L G Y1 Y/Y2 B W W1 W2

1 Stage Heat Pump & 2 Stage Cool

Controls

45MU(A,H)A Control Scenario 1 (end)

Conventional Wiring Diagram

Control Scenario 1 24-Volt Staging Options (end)

Control Scenario 1: 24-Volt Thermostat (new install)
Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire
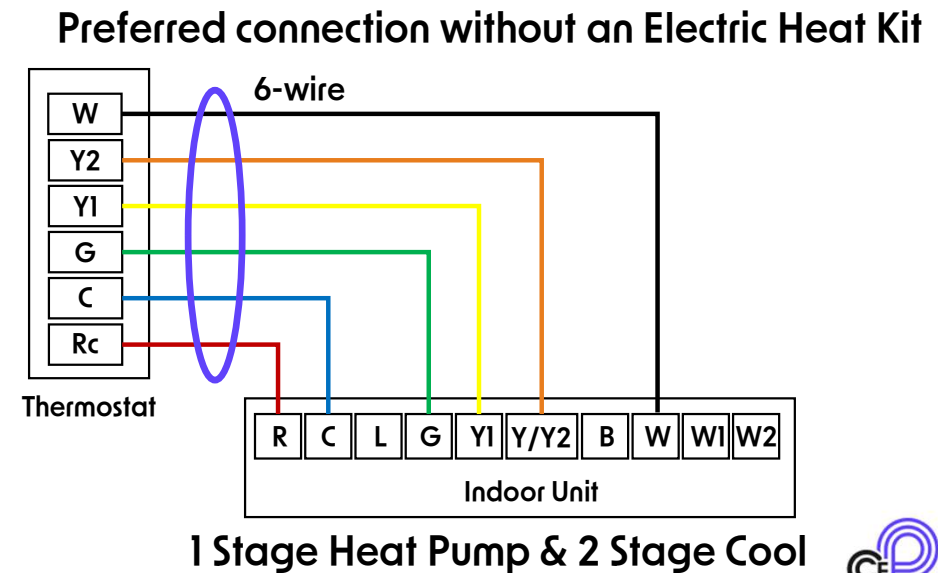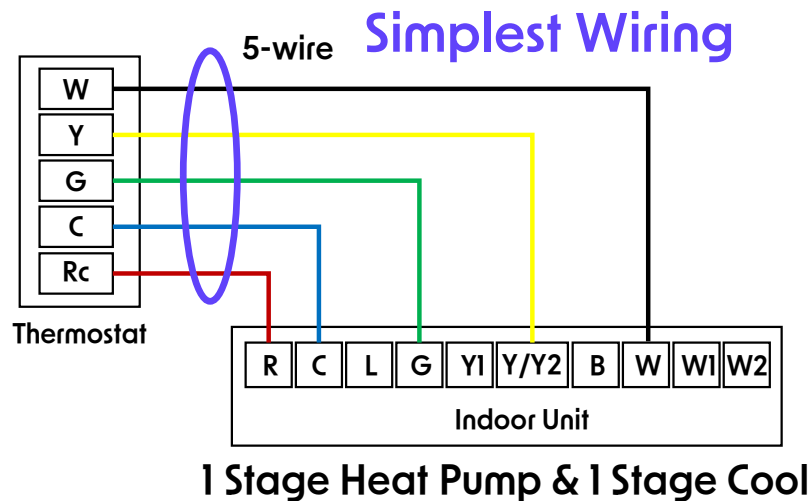Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Advanced Wiring

Thermostat

7-wire

Indoor Unit

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

Controls

45MU(A,H)A Control Scenario 2

Control Selection – SW1 DIP Switches

Control Scenario 2: Wired Control 1401 (new install)
Control Wire ODU to IDU: 16 gauge Stranded (Shielded) 2-wire
Control Wire IDU to Control: 16 gauge Stranded 2-wire
Set SW1-4 to ON

SW1
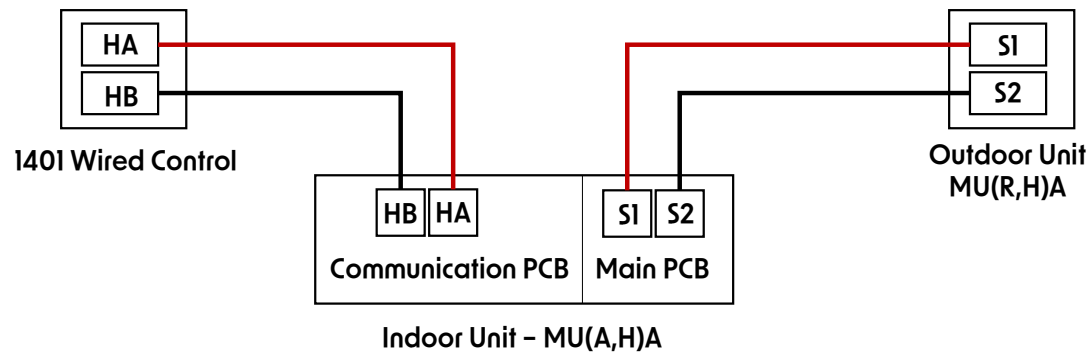
HA, HB Connections

45MU(R,H)A Communication Board

HA
HB

1401 Wired Control

HB HA

Communication PCB

S1 S2

Main PCB

Indoor Unit – MU(A,H)A

S1
S2

Outdoor Unit MU(R,H)A

Controls

45MU(A,H)A Control Scenario 2 (end)

37MU(R,H)A Set Up Options (<u>needs to match indoor control scenario</u>)

Control Scenario 2: S1, S2 Connections
Outdoor unit S1 DIP switch settings

All S1 OFF for S1, S2 Connections (default)

Attention:
R & C at the ODU do not provide 24-Volts.
Scenario 3 supplies 24-Volts to the ODU from the MU(A,H)A.
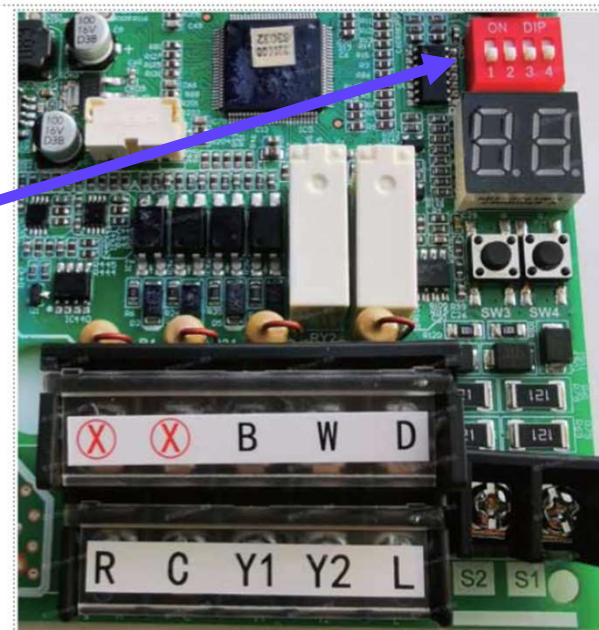
37MU(R,H)A DIP Switches
Located above low voltage terminal block

Controls

45MU(A,H)A 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, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

SW1

Function DIP switch
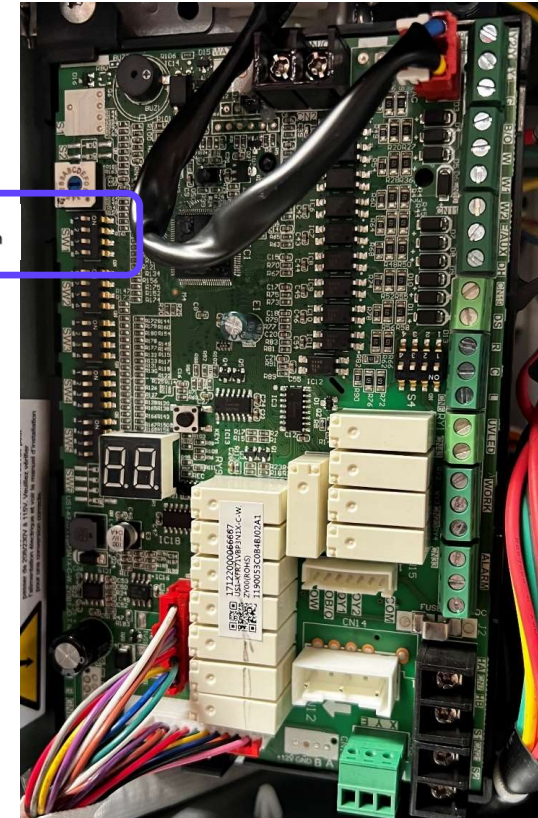
45MU(A,H)A Communication Board

or Stat of your choice

depends on features needed

Minimum 5-wire, up to 8-wire may be needed

24-Volt Connections

Communication PCB

Indoor Unit – MU(A,H)A

24-Volt Connections

Outdoor Unit MU(R,H)A
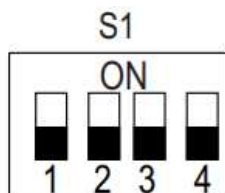
Controls

45MU(A,H)A Control Scenario 3 (cont.)

37MU(R,H)A Set Up Options (<u>needs to match indoor control scenario</u>)

Control Scenario 3: 24-Volt Connections
Outdoor unit S1 DIP switch settings

Set S1-2 to ON for 24-Volt Connections
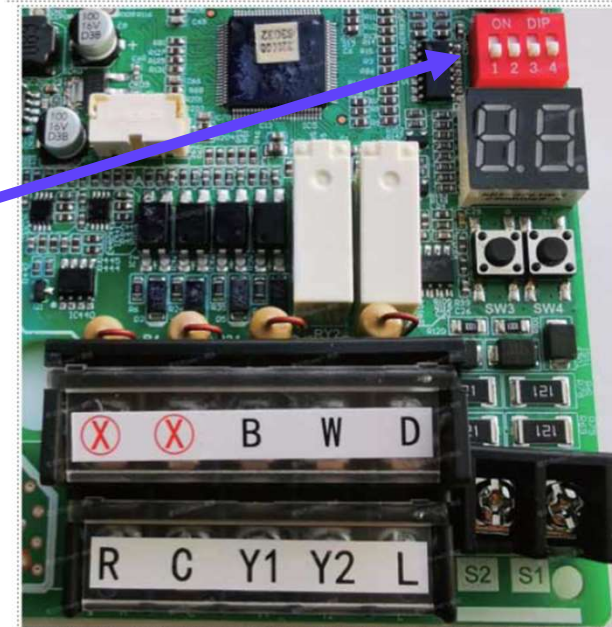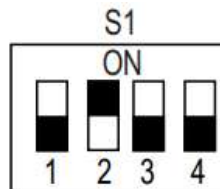
Attention:
R & C at the ODU do not provide 24-Volts.
Scenario 3 supplies 24-Volts to the ODU from the MU(A,H)A.

37MU(R,H)A DIP Switches
Located above low voltage terminal block
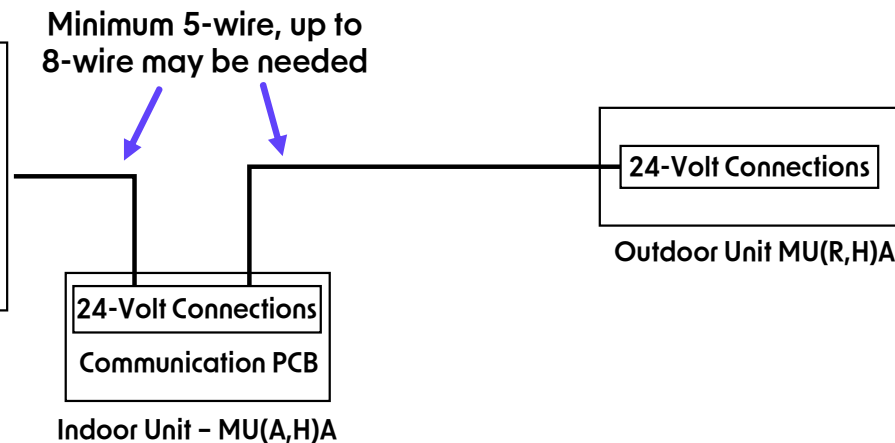
Controls

45MU(A,H)A Control Scenario 3 (cont.)

37MU(R,H)A Set Up Options (needs to match indoor control scenario)

Only in applications where a Defrost (D-terminal) or Error (L-terminal) signal is needed, an R wire from the Indoor Unit to the Outdoor would be required.

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

CONNECTOR	PURPOSE
R	24V Power Connection
C	Common
Y1	Low Demand
Y2	High Demand
B	Heating Reverse Valve
W	Heating Control
D	Defrost Control
L	System Fault Signal

Outdoor Unit
MU(R,H)A

Applications would include:

• Thermostats that accept a 24-Volt Error signal from outdoor unit (L-terminal).

• Applications that use a Defrost signal (D-terminal) to activate a relay to shut down the indoor fan during defrost.

• Applications that use a Defrost signal (D-terminal) to bring on the electric heat kit, field supplied relay required.

Controls

45MU(A,H)A Control Scenario 3 (cont.)

This cable must be used for scenario 3.
Located in accessory box packed with indoor unit

Wire	Color
Com	Black
OW	Green
OB/O	Yellow
OY1	Red
OY2	Blue

Heat Pump Wiring Diagram

45MU(A,H)A 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, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Simplest Wiring

5-wire

3-wire

Thermostat
W2, W1, O/B, Y2, Y1, G, C, Rc

1 Stage Heat Pump & 1 Stage Cool

Indoor Unit – MU(A,H)A
R, C, G, Y1, Y/Y2, B, W, W1, W2, Com, OY2, OY1, OB/O, OW

Outdoor Unit
MU(R,H)A
B, Y2, Y1, W, C, R

Controls

45MU(A,H)A 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, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Advanced Wiring

6-wire

4-wire

Preferred connection without an Electric Heat Kit

Thermostat

Outdoor Unit MU(R,H)A

2 Stage Heat & 2 Stage Cool
2 Stage Heat Pump

Indoor Unit – MU(A,H)A

Controls

Heat Pump Wiring Diagram

45MU(A,H)A Control Scenario 3 (cont.)

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

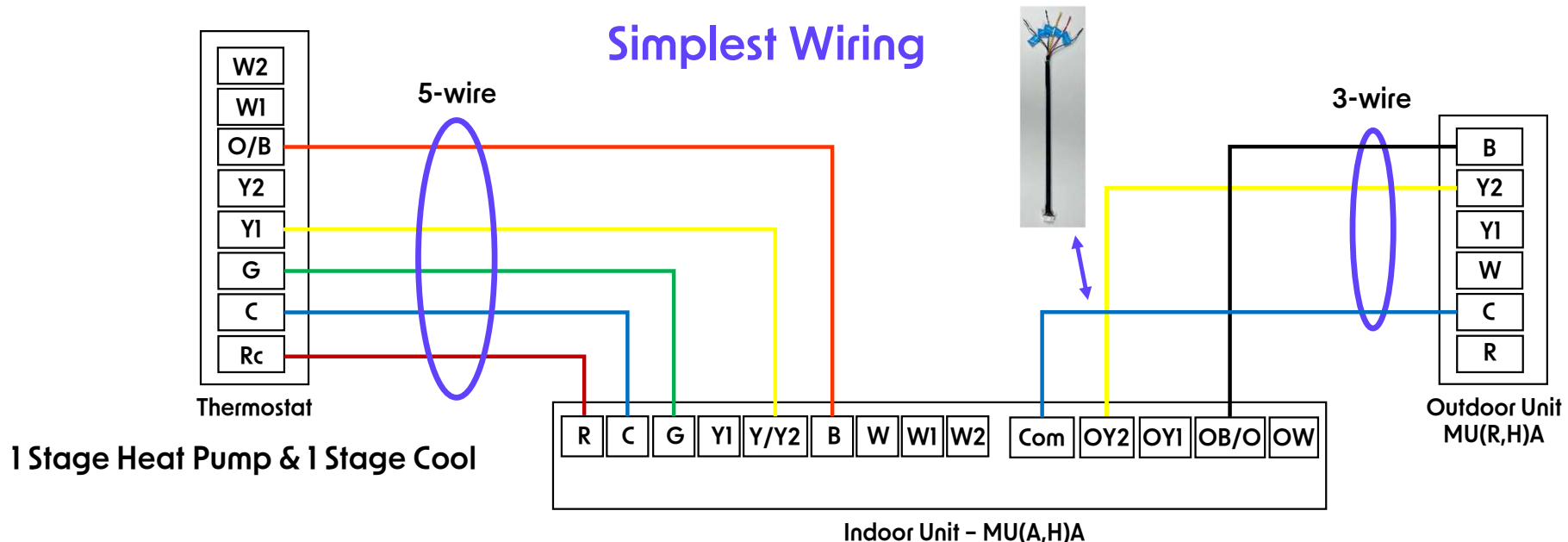**Control Scenario 3: 24-Volt Stat (typically for retrofit application)**
Control Wire ODU to IDU: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

6-wire **Simplest Wiring**

3-wire

Thermostat
W2 / W1 / O/B / Y2 / Y1 / G / C / Rc

Electric Heat Kits 15, 20 or 25kW
W1 & W2 call at same time

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

Indoor Unit – MU(A,H)A
R | C | G | Y1 | Y/Y2 | B | W | W1 | W2 | Com | OY2 | OY1 | OB/O | OW

Outdoor Unit MU(R,H)A
B / Y2 / Y1 / W / C / R

Controls

Heat Pump Wiring Diagram

45MU(A,H)A Control Scenario 3 (cont.)

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

Control Scenario 3: 24-Volt Stat (typically for retrofit application)
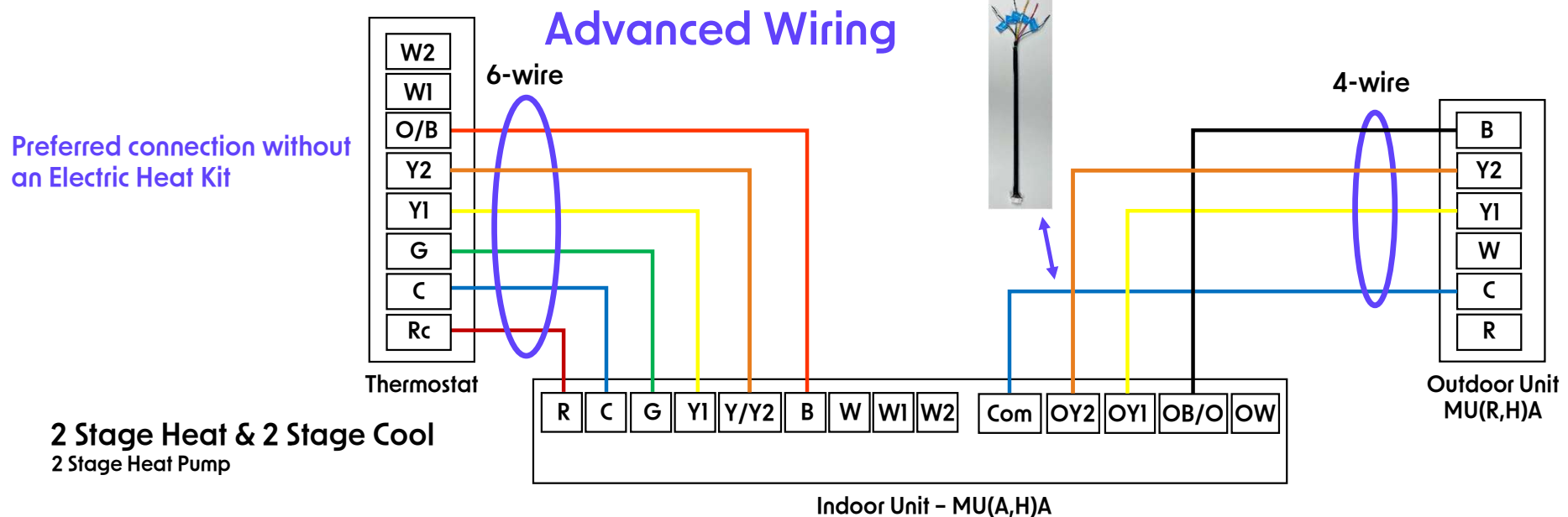Control Wire ODU to IDU: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

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

TURN OFF DIP switch S4-4 to separate W1 & W2 in IDU

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

7-wire

Advanced Wiring

3-wire

Thermostat

Outdoor Unit
MU(R,H)A

Indoor Unit – MU(A,H)A

Controls

45MU(A,H)A Control Scenario 3 (cont.)

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

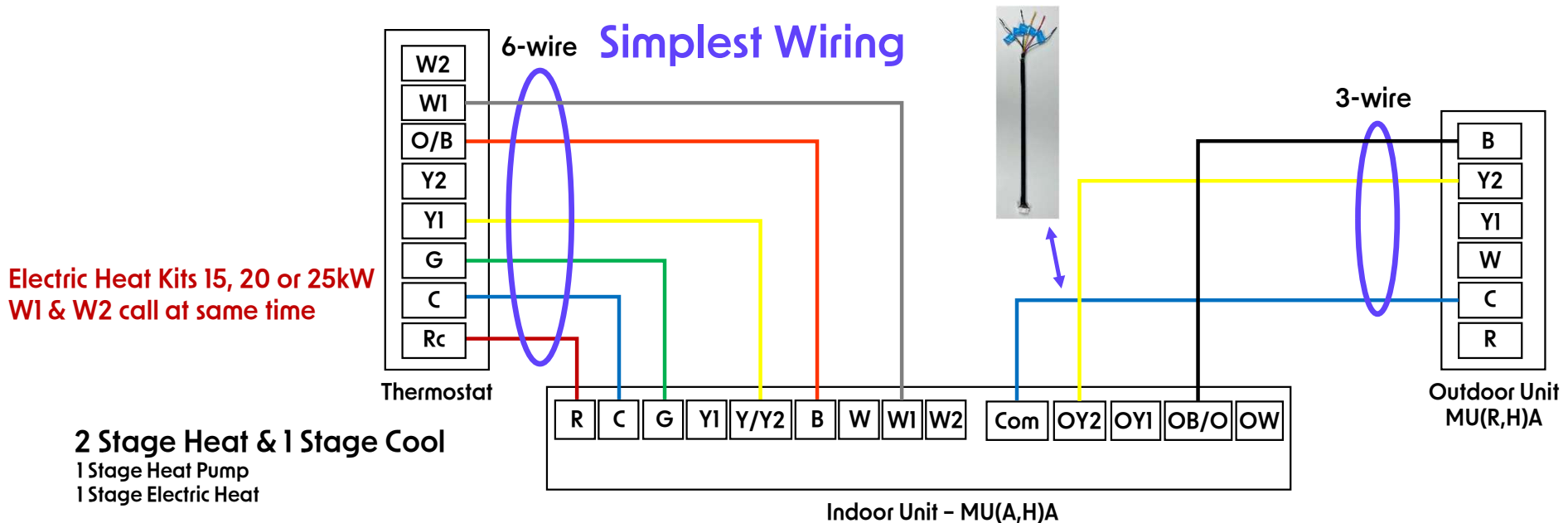**Control Scenario 3: 24-Volt Stat (typically for retrofit application)**
Control Wire ODU to IDU: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Advanced Wiring

7-wire

4-wire

Electric Heat Kits 15, 20 or 25kW
W1 & W2 call at same time

Thermostat

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

Outdoor Unit
MU(R,H)A

Indoor Unit – MU(A,H)A

Thermostat terminals: W2, W1, O/B, Y2, Y1, G, C, Rc

Indoor Unit terminals: R, C, G, Y1, Y/Y2, B, W, W1, W2, Com, OY2, OY1, OB/O, OW

Outdoor Unit terminals: B, Y2, Y1, W, C, R

Controls

Heat Pump Wiring Diagram

45MU(A,H)A Control Scenario 3 (cont.)

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

Control Scenario 3: 24-Volt Stat (typically for retrofit application)
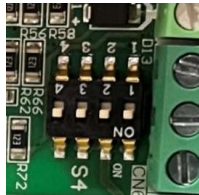Control Wire ODU to IDU: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
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B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

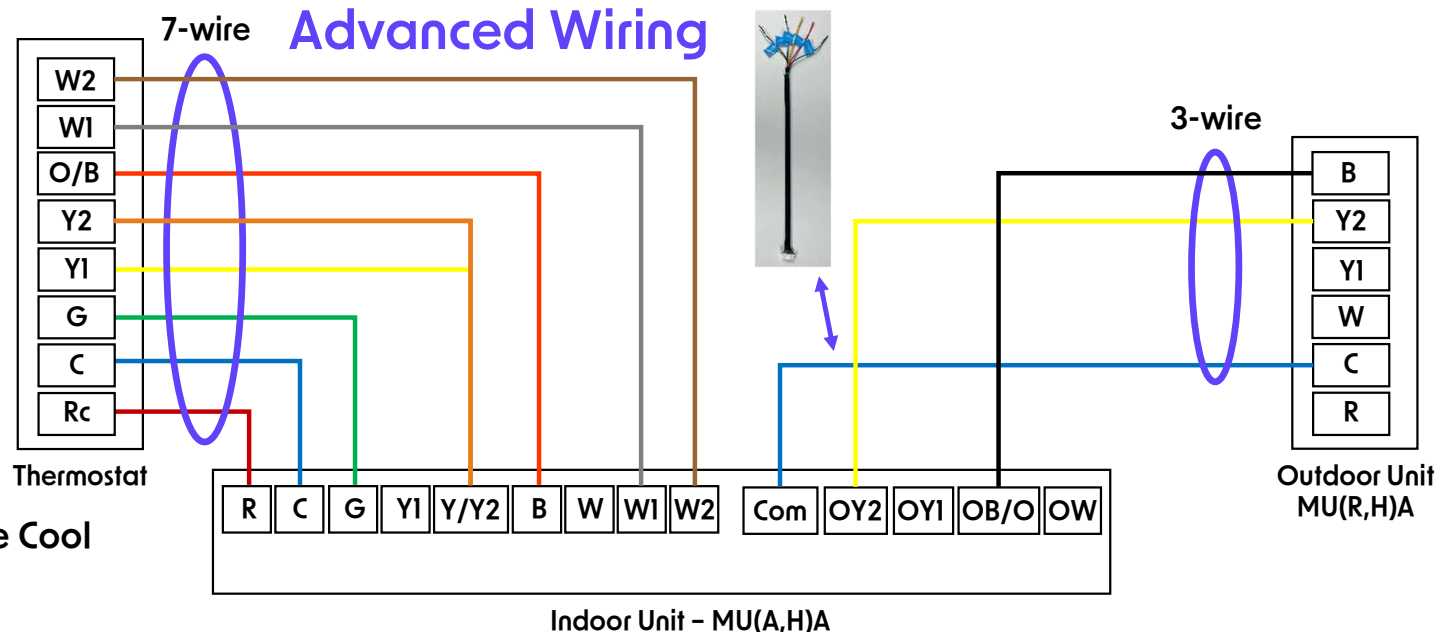Preferred connection with
Electric Heat 15, 20 or 25kW Kits

TURN OFF DIP
switch S4-4
to separate
W1 & W2 in IDU

8-wire

Advanced Wiring

4-wire

Thermostat

4 Stage Heat & 2 Stage Cool
2 Stage Heat Pump
2 Stage Electric Heat

Indoor Unit – MU(A,H)A

Outdoor Unit
MU(R,H)A

Controls

Conventional Wiring Diagram

45MU(A,H)A 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, up to 8-wire may be needed, 18 gauge solid or stranded.
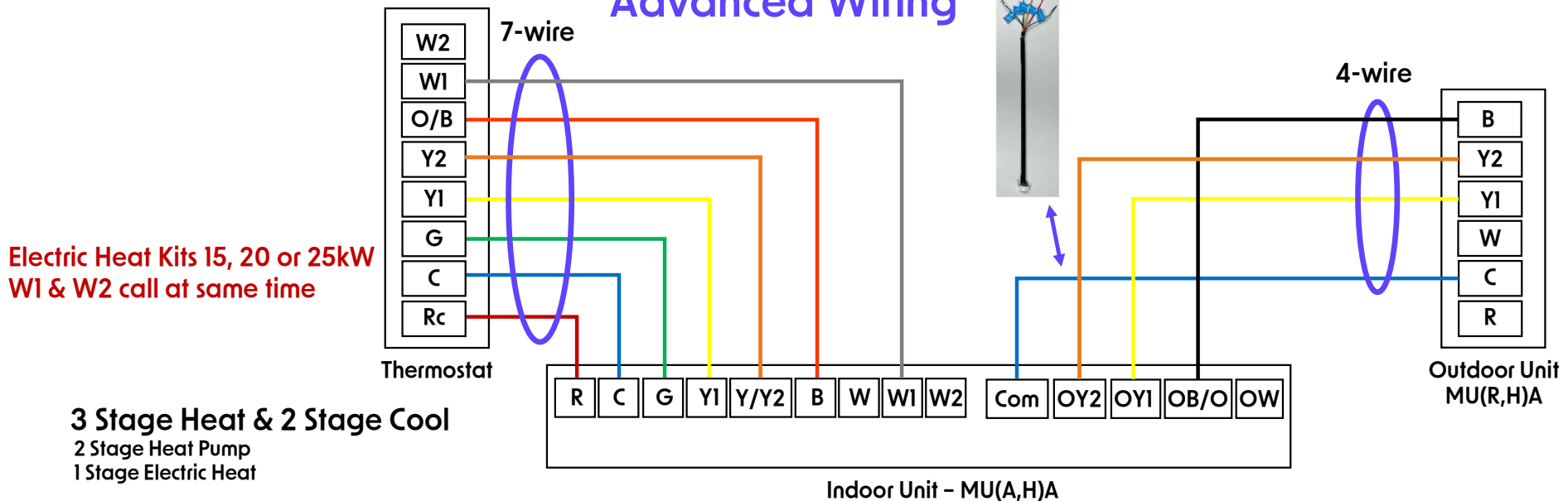Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

Indoor Unit Terminal Info

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
Y/Y2	High Demand
B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Simplest Wiring

5-wire

3-wire

Thermostat

W2, W1, O/B, Y2, Y1, G, C, Rc

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

Indoor Unit – MU(A,H)A

R | C | G | Y1 | Y/Y2 | B | W | W1 | W2 | Com | OY2 | OY1 | OB/O | OW

Outdoor Unit
MU(R,H)A

B, Y2, Y1, W, C, R

Controls

Conventional Wiring Diagram

45MU(A,H)A Control Scenario 3 (cont.)

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

Control Scenario 3: 24-Volt Stat (typically for retrofit application)
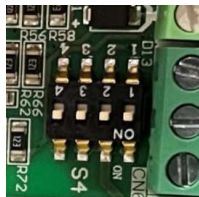Control Wire ODU to IDU: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Control Wire IDU to stat: Minimum 5-wire, up to 8-wire may be needed, 18 gauge solid or stranded.
Set SW1-1 & SW1-4 to ON

CONNECTOR	PURPOSE
R	24V Power Connector
C	Common
G	Fan Control
Y1	Low Demand
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B	Heating Reverse Valve
W	Conventional Heat Control
W1	Stage 1 Electric Housing
W2	Stage 2 Electric Housing
E/AUX	Emergency Heating
DH	Dehumidification
DS	Reserved Signal
L	System Fault

Advanced Wiring

7-wire

Thermostat: W2, W1, O/B, Y2, Y1, G, C, Rc

4-wire

Outdoor Unit MU(R,H)A: B, Y2, Y1, W, C, R

Indoor Unit – MU(A,H)A: R, C, G, Y1, Y/Y2, B, W, W1, W2, Com, OY2, OY1, OB/O, OW

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

Controls

45MU(A,H)A Set Up Options

Anti-blow, Cooling Only Settings – SW1 DIP Switches
Scenarios – 1, 2, 3

SW1-2: Anti-cold Blow Protection Option
Default value is OFF – Anti-Cold is active.

SW1-3: Single cooling / heating and cooling options
Default is OFF for Heating and Cooling, ON for Cooling Only System.

SW1

Function DIP switch
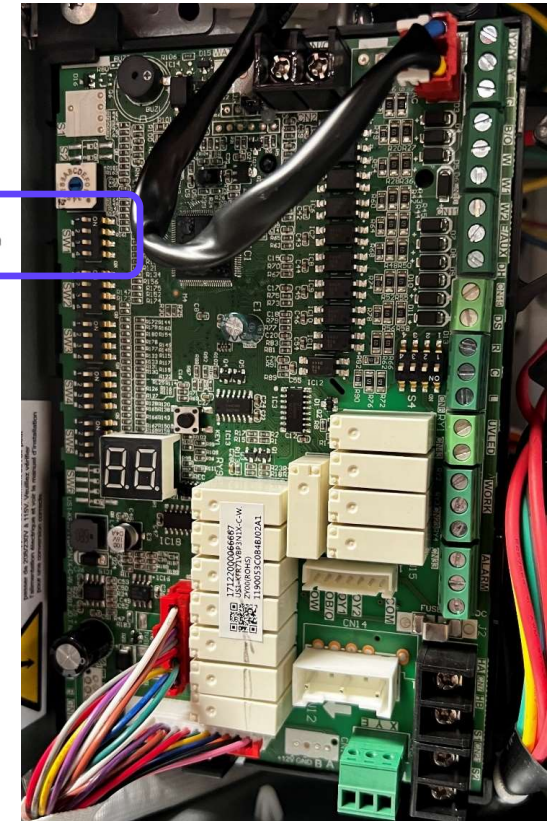
45MU(A,H)A Communication Board

Controls

45MU(A,H)A Set Up Options (cont.)

Electric Heat & Staging Settings – SW2 DIP Switches
Scenario – 2

SW2-1: Control Scenario 1
Compressor Running Compensation (Demand working with heat pump+ Electric heat) Default is OFF for Faster Compressor, ON for Slower Compressor

SW2-1: Control Scenario 2
Temperature differential to activate first stage auxiliary heat.
Default is OFF 4°F, ON for 2°F

SW2-2: Electric heat on delay.
Default is OFF for NO delay, ON for YES

SW2-3: Electric auxiliary heating delay to start time (works with SW2-2)
Default is OFF for 15 min, ON for 30 min

Scenario – 1 & 2

SW2-4: Compressor/Auxiliary heat outdoor ambient lockout.
Default OFF – Compressor allowed to operate to low limit set by S3
ON – Electric heating allowed to operate to high limit set by S3
See S3 switch info for more details.

SW2

45MU(A,H)A Communication Board

S3	S3 (°F)	S3	S3 (°F)	S3	S3 (°F)
0	OFF	5	-8	A	25
1	-22	6	-4	B	32
2	-18	7	3	C	36
3	-15	8	10	D	39
4	-11	9	18	E	43
				F	46

45MU(A,H)A Set Up Options (cont.)

S3 Rotary Switch & DIP SW2-4 – Ambient temperature controlled by electric heating or compressor. Scenarios – 1, 2

Scenario – 1

SW2-4 OFF – Compressor

The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.

The system makes judgments based on the following rules:

1) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch.
2) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C.

Scenario 2

SW2-4 ON – Compressor/Auxiliary heat outdoor ambient lockout

The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.

The system makes judgments according to the following rules:

1) The compressor can be operated when the outdoor temperature is ≥ S3 DIP switch temperature +2 °C.
2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.

Scenario 1 & 3
24-Volt Control

Scenario 2
1401 Wired Control

S3 — Rotary Switch

SW2-4 — Function DIP switch
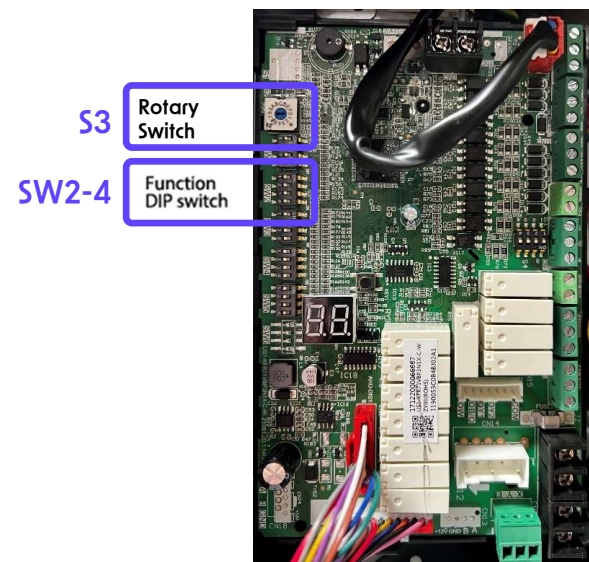
45MU(A,H)A Communication Board

Controls

45MU(A,H)A Set Up Options (cont.)

Runtime, Temp Differential Settings – SW3 DIP Switches

Scenario – 1
SW3-1: Continuous runtime
Default is OFF for 90 min, ON for 30 min

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

SW3-3: Compressor Running (demand working with heat pump+ Electric heat)
Default is OFF for Faster Compressor, ON for Compressor slower speed

Scenario – 2
SW3-3: Temperature differential to activate second stage auxiliary heating
Default is OFF for 6°F, ON for 4°F

Scenarios – 1, 3
SW3-4: 3 Fan speed of cooling mode when 24V Thermostat is applied for.
Default is OFF for High, ON for Turbo
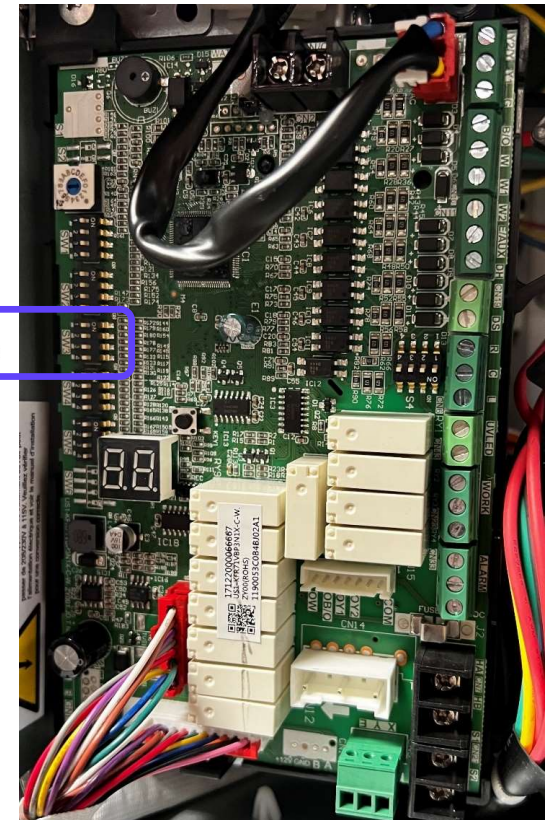

Scenario 1 & 3
24-Volt Control

Scenario 2
1401 Wired Control

SW3
Function DIP switch

45MU(A,H)A Communication Board

Controls

45MU(A,H)A Set Up Options – External Static Pressure Settings

CAPACITY	EXTERNAL STATIC PRESSURE RANGE	FAN SPEED	ELECTRIC AUXILIARY HEAT MODULE	24V THERMOSTAT		WIRED CONTROLLER		AIRFLOW VOLUME (CFM)
				DIP SWITCH	24V TERMINAL ENGAGED	DIP SWITCH	MODE	
18K (1.5 Ton)	0 - 0.80 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	618
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	576
		Cooling Medium	—	—	Y1	—	Cool	529
		Cooling Low	—	—	—	—	Cool	488
		Heat Pump Turbo	—	—	—	—	Heat	565
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	541
		Heat Pump Medium	—	—	B+Y1	—	Heat	435
		Heat Pump Low	—	—	—	—	Heat	400
		Electric auxiliary heat module 0(Default)	10kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	653
		Electric auxiliary heat module 1	10kW, 8kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	624
		Electric auxiliary heat module 2	8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	594
		Electric auxiliary heat module 3	5kW, 3kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	565
24K (2 Ton)	0 - 0.80 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	824
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	759
		Cooling Medium	—	—	Y1	—	Cool	694
		Cooling Low	—	—	—	—	Cool	629
		Heat Pump Turbo	—	—	—	—	Heat	788
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	753
		Heat Pump Medium	—	—	B+Y1	—	Heat	641
		Heat Pump Low	—	—	—	—	Heat	524
		Electric auxiliary heat module 0(Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	871
		Electric auxiliary heat module 1	15kW, 10kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	841
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	818
		Electric auxiliary heat module 3	5kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	788

SW4

Air Flow Adjustment

45MU(A,H)A Communication Board

45MU(A,H)A Set Up Options – External Static Pressure Settings (cont.)

CAPACITY	EXTERNAL STATIC PRESSURE RANGE	FAN SPEED	ELECTRIC AUXILIARY HEAT MODULE	24V THERMOSTAT		WIRED CONTROLLER		AIRFLOW VOLUME (CFM)
				DIP SWITCH	24V TERMINAL ENGAGED	DIP SWITCH	MODE	
30K(2.5 Ton)	0 - 0.80 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	988
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	894
		Cooling Medium	—	—	Y1	—	Cool	806
		Cooling Low	—	—	—	—	Cool	712
		Heat Pump Turbo	—	—	—	—	Heat	918
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	876
		Heat Pump Medium	—	—	B+Y1	—	Heat	665
		Heat Pump Low	—	—	—	—	Heat	453
		Electric auxiliary heat module 0(Default)	15kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1088
		Electric auxiliary heat module 1	15kW, 10kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1029
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	976
		Electric auxiliary heat module 3	5kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	918

SW4
Air Flow Adjustment

45MU(A,H)A Communication Board

45MU(A,H)A Set Up Options – External Static Pressure Settings (cont.)

CAPACITY	EXTERNAL STATIC PRESSURE RANGE	FAN SPEED	ELECTRIC AUXILIARY HEAT MODULE	24V THERMOSTAT		WIRED CONTROLLER		AIRFLOW VOLUME (CFM)
				DIP SWITCH	24V TERMINAL ENGAGED	DIP SWITCH	MODE	
36K (3 Ton)	0 - 0.80 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1188
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1082
		Cooling Medium	—	—	Y1	—	Cool	971
		Cooling Low	—	—	—	—	Cool	865
		Heat Pump Turbo	—	—	—	—	Heat	1112
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1059
		Heat Pump Medium	—	—	B+Y1	—	Heat	794
		Heat Pump Low	—	—	—	—	Heat	582
		Electric auxiliary heat module 0(Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1306
		Electric auxiliary heat module 1	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1241
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1176
		Electric auxiliary heat module 3	5kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1112
		Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1600
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1471
		Cooling Medium	—	—	Y1	—	Cool	1282
		Cooling Low	—	—	—	—	Cool	1094
		Heat Pump Turbo	—	—	—	—	Heat	1471
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1324
		Heat Pump Medium	—	—	B+Y1	—	Heat	1141
		Heat Pump Low	—	—	—	—	Heat	976

SW4 — Air Flow Adjustment

45MU(A,H)A Communication Board

45MU(A,H)A Set Up Options – External Static Pressure Settings (end)

CAPACITY	EXTERNAL STATIC PRESSURE RANGE	FAN SPEED	ELECTRIC AUXILIARY HEAT MODULE	24V THERMOSTAT		WIRED CONTROLLER		AIRFLOW VOLUME (CFM)
				DIP SWITCH	24V TERMINAL ENGAGED	DIP SWITCH	MODE	
48K (4 Ton)	0 - 0.80 in.wc.	Electric auxiliary heat module 0(Default)	20kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	1741
		Electric auxiliary heat module 1	15kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	1653
		Electric auxiliary heat module 2	10kW, 8kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1559
		Electric auxiliary heat module 3	8kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1471
		Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1806
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1582
		Cooling Medium	—	—	Y1	—	Cool	1359
		Cooling Low	—	—	—	—	Cool	1135
		Heat Pump Turbo	—	—	—	—	Heat	1659
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1582
		Heat Pump Medium	—	—	B+Y1	—	Heat	1247
		Heat Pump Low	—	—	—	—	Heat	976
60K (5 Ton)	0 - 0.80 in.wc.	Cooling Turbo	—	SW3-4=ON	Y2/Y	—	Cool	1806
		Cooling High	—	SW3-4=OFF	Y2/Y	—	Cool	1582
		Cooling Medium	—	—	Y1	—	Cool	1359
		Cooling Low	—	—	—	—	Cool	1135
		Heat Pump Turbo	—	—	—	—	Heat	1659
		Heat Pump High	—	—	B+Y2/Y, W	—	Heat	1582
		Heat Pump Medium	—	—	Y1	—	Heat	1247
		Heat Pump Low	—	—	—	—	Heat	976
		Electric auxiliary heat module 0(Default)	25kW	SW4-1=OFF SW4-2=OFF SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=OFF	Heat + AUX, AUX	2171
		Electric auxiliary heat module 1	15kW, 20kW	SW4-1=OFF SW4-2=OFF SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=OFF SW4-3=ON	Heat + AUX, AUX	2029
		Electric auxiliary heat module 2	10kW, 15kW	SW4-1=OFF SW4-2=ON SW4-3=OFF	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=OFF	Heat + AUX, AUX	1894
		Electric auxiliary heat module 3	10kW	SW4-1=OFF SW4-2=ON SW4-3=ON	W1, W2, AUX	SW4-1=OFF SW4-2=ON SW4-3=ON	Heat + AUX, AUX	1753

NOTE: The constant airflow volume motor is applied. So the airflow volume is constant at all ESP within stated range.

SW4
Air Flow Adjustment

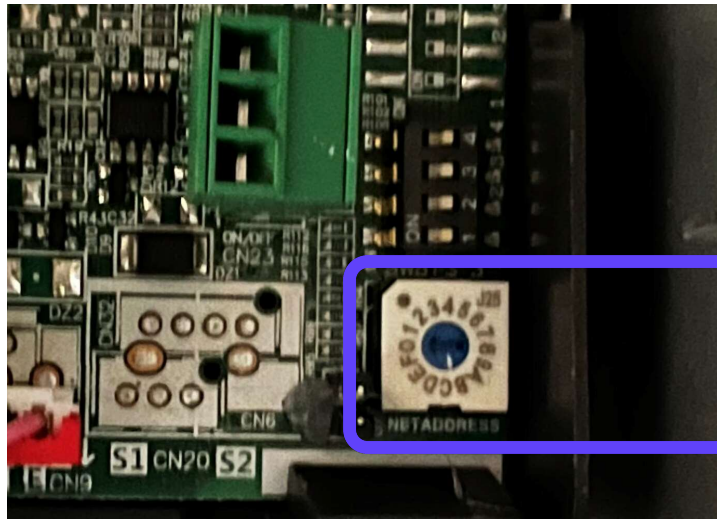**45MU(A,H)A Communication Board**

45MU(A,H)A Set Up Options (cont.)

Scenario – 2

S1 – 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, up to 16 max

Rotary Switch

S1

Controls

Scenario 1 & 3

24-Volt
Control

Scenario 2

1401 Wired
Control

45MU(A,H)A Set Up Options (cont.)

S4 DIP Switch Function, both defaulted to ON
Scenarios – 1, 3

(only used with 24-Volt Control Option)

- S4-1 – No function currently, Do Not Use

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

- S4-3 – No function currently, Do Not Use

- S4-4 – ON = W1 & W2 close on W1 call
- S4-4 – OFF = Independent W1, W2 operation

We recommend Cooling mode over Dehumidification mode for most applications. If you have specific humidity needs, please consult with your sales representative.
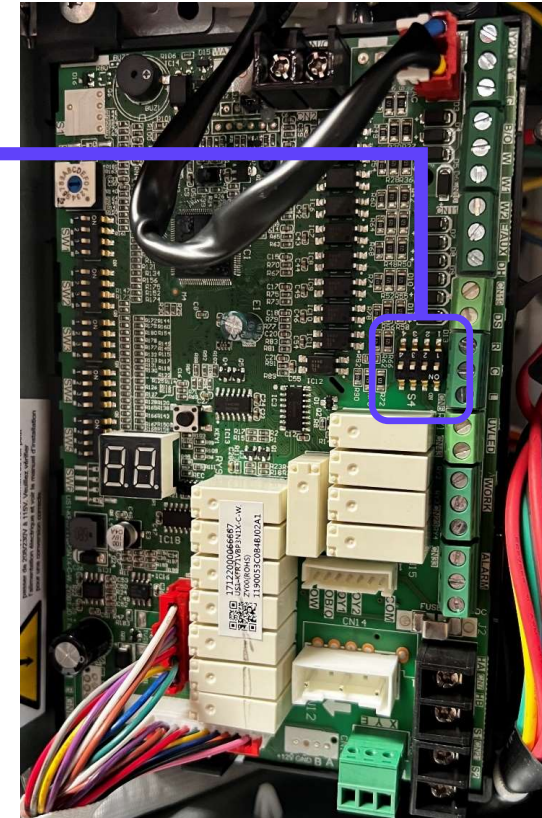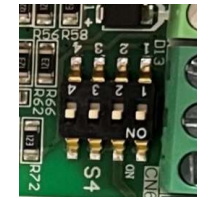
45MU(A,H)A Communication Board

Controls

45MU(A,H)A Set Up Options (cont.)

Full DIP/Rotary Switch Explanations

Scenario 1
24-Volt Control – S1, S2 to ODU

Scenario 2
1401 Wired Control – S1, S2 to ODU

Scenario 3
24-Volt Control – 24-Volt to ODU

SW1	Control type	IDU and ODU Connection	Note
ON [■■■■] 1 2 3 4	Wired controller / 24V thermostat	S1+S2	Auto Discovery
ON 1 2 3 4	Wired controller	S1+S2	Scenario 2
ON 1 2 3 4	24V Thermostat	S1+S2	Scenario 1
ON 1 2 3 4	24V Thermostat	24V connection	This setting is not applicable to the units

No.	Dial Code	Control Scenario	Function	ON	OFF	Note
1	SW1-2	1,2,3	Anti-cold blow protection option	NO	[Default] YES	
2	SW1-3	1,2,3	Single cooling / heating and and cooling options	Cooling	[Default] Cooling & Heating	
3	SW2-1	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	
4	SW2-1	2	Temperature differential to activate first stage auxiliary heat(the GAP of T1 and Ts),Wire controller demand with heat pump+Electric heat working together	2°F(1°C)	[Default] 4°F(2°C)	Only affects compressor and W1
5	SW2-2	2	Electric heat on delay	YES	[Default]NO	
6	SW2-3	2	Electric auxiliary heating delay to start time	30 minutes	[Default] 15 minutes	Based on SW2-2 is ON
7	SW2-4	1	Compressor	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default]The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited. The system makes judgments based on the following rules: 1) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch. 2) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C.	SW2-4 and S3 need to working together
8	SW2-4	2	Compressor/Auxiliary heat outdoor ambient lockout	The operation of heat pump is limited by the outdoor temperature, and the operation of auxiliary heat is not limited.The system makes judgments according to the following rules: 1) The compressor can be operated when the outdoor temperature is ≥S3 DIP switch temperature +2 °C. 2) The compressor cannot be operated when the outdoor temperature is lower than the S3 DIP switch temperature.	[Default]Only one heat pump or auxiliary heat can be operated .The system makes judgments according to the following rules: 1) When the outdoor temperature is lower than the S3 DIP switch temperature,the compressor is not allowed to operated, but auxiliary heat is allowed to operated ; 2) When the outdoor temperature is ≥S3 DIP switch temperature +2(°C), the compressor can be operated, but auxiliary heat cannot be operated.	
9	Rotary Switch S3	1,2	Set outdoor temperature Limitation (for auxiliary heating or compressor)	Table A		
10	SW3-1	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	1	Cooling and heating Y/Y2 temperature differential adjustment.	Compressor slower speed	[Default] Faster Compressor	Only affects compressor
12	SW3-3	1	Compressor Running (demand working with heat pump+ Electric heat)	Compressor slower speed	[Default] Faster Compressor	Only affects compressor and W2
13	SW3-3	2	Temperature differential to activate second stage auxiliary heating(the GAP of T1 and Ts)Wire controller demand with heat pump+Electric heat working together	4°F(2°C)	[Default] 6 °F(3°C)	

Controls

45MU(A,H)A Set Up Options (end)

Full DIP/Rotary Switch Explanations

Scenario 1
24-Volt Control – S1, S2 to ODU

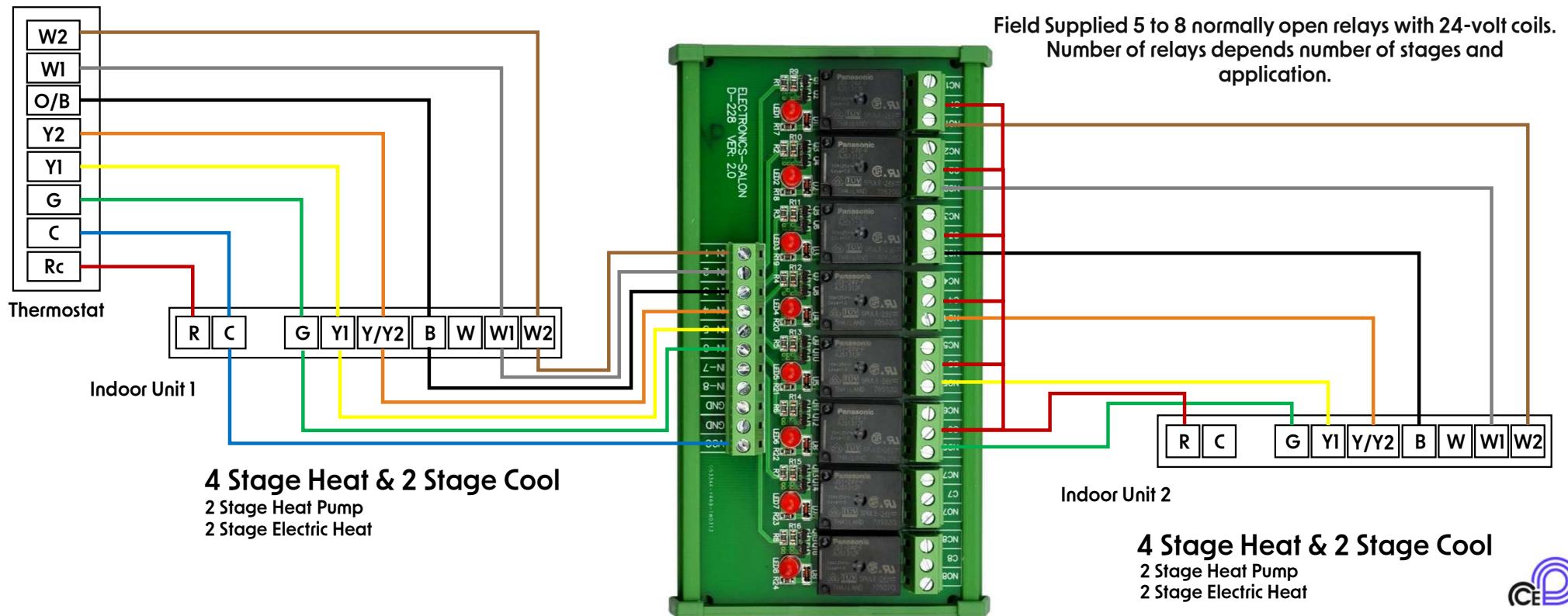**Scenario 2**
1401 Wired Control – S1, S2 to ODU

Scenario 3
24-Volt Control – 24-Volt to ODU

No.	Dial Code	Control Scenario	Function	ON	OFF	Note
14	SW3-4	1,3	Fan speed of cooling mode when 24V Thermostat is applied for.	Turbo	High	
15	SW4-1 SW4-2 SW4-3	1,2,3	Electric heat nominal CFM adjustment	Available settings are 000/001/010/011. Each digit corresponds an indiviual swith position. For example [SW4-1 OFF, SW4-2 ON, SW4 -3 OFF] = 010		
16	SW4-4	2	Temperature differential to activate third stage auxiliary heating(the GAP of T1 and Ts)Wire controller demand with heat pump+ Electric heat working together	6°F(3°C)	[Default]8°F(4°C)	Only valid for product which has three stage auxiliary heating.
17	S4-4	1,3	Default ON	[Default] For single stage supplemental heat, W1 and W2 are connected	For dual stage supplemental heat, W1 and W2 are controlled independently.	
18	S4-2	1,3	DH function selection	[Default] Dehumidification control not available	Dehumidification feature is enabled through thermostat	
19	SW5-3	1,2,3	L or Alarm relay selection	L output 24V or alarm relay close only when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] L output 24V or alarm relay close when any fault be detected	
20	SW5-4	1,2,3	R output selection	R stop ouput 24V when refrigerant sensor fault or R454B refrigerant leakage be detected	[default] R keep ouput 24V even when refrigerant sensor fault or R454B refrigerant leakage be detected	

Controls

Advanced Wiring

One thermostat with multiple systems. Use a relay bank to parallel each mode.
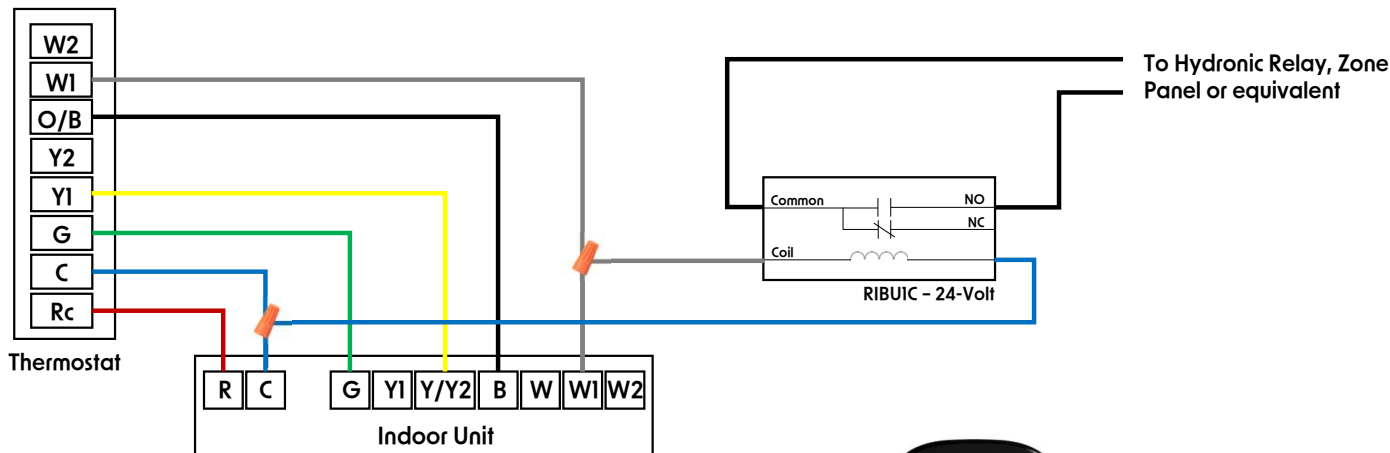Wiring from indoor units to stat shown only. Wiring to outdoor units not shown.

Field Supplied 5 to 8 normally open relays with 24-volt coils.
Number of relays depends number of stages and application.

Thermostat

| W2 |
| W1 |
| O/B |
| Y2 |
| Y1 |
| G |
| C |
| Rc |

Indoor Unit 1

| R | C | | G | Y1 | Y/Y2 | B | W | W1 | W2 |

4 Stage Heat & 2 Stage Cool
2 Stage Heat Pump
2 Stage Electric Heat

Indoor Unit 2

| R | C | | G | Y1 | Y/Y2 | B | W | W1 | W2 |

4 Stage Heat & 2 Stage Cool
2 Stage Heat Pump
2 Stage Electric Heat

ELECTRONICS-SALON
D-228 VER. 2.0

45MBAA / 45MU(A,H)A Hydronic Coil Option 1 – 24-Volt Control

Wire to W1 as if an electric heat packed is installed. This will operate the fan for the hydronic coil.

The SW4 DIP switches must be set to deliver the required CFM for the hydronic coil being installed. Use SW4 DIP switch charts previously shown.

Thermostat

W2
W1
O/B
Y2
Y1
G
C
Rc

Indoor Unit

R | C | G | Y1 | Y/Y2 | B | W | W1 | W2

To Hydronic Relay, Zone Panel or equivalent

Common — NO
— NC
Coil

RIBU1C – 24-Volt

2 Stage Heat & 1 Stage Cool
1 Stage Heat Pump
1 Stage Hydronic Coil

NOTES:
- Not all wiring is shown.
- RIB Relay or equivalent field supplied.

Thermostat notes:
- Thermostat requires outdoor sensor for changeover to boiler at balance point
- We recommend to set changeover around 5°F above balance point
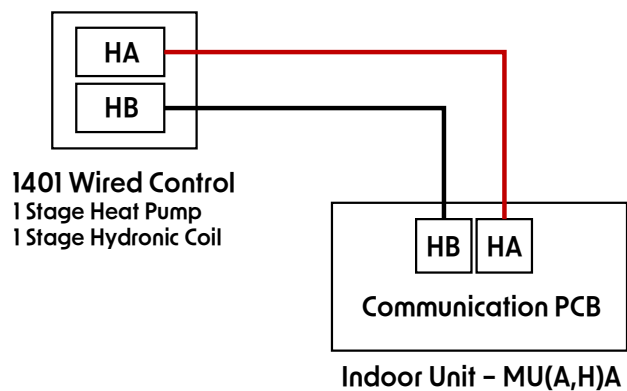- Set up thermostat so boiler and Heat Pump will not operate simultaneously

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Controls

45MBAA / 45MU(A,H)A Hydronic Coil Option 2 – 1401 Control

A wire harness is required to use this control type and there are two ways to get it.
- Order by part number, please check availability.
- Buy and rob the wire harness from an electric heater kit made for MBAA/MUAA/MUHA.

Any setting a 1401 used for electric heat kits will now be used to control the water coil relay.

HA

HB

1401 Wired Control
1 Stage Heat Pump
1 Stage Hydronic Coil

HB | HA

Communication PCB

Indoor Unit – MU(A,H)A

KSACN01401AAA
(purchased separately)

Thermostat Notes:
- Program the 1401 settings same as you would program for electric heat kit.
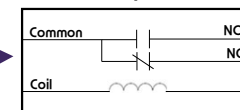
Controls

45MBAA / 45MU(A,H)A Hydronic Coil Option 2 – 1401 Control (cont.)

This cannot be done without the harness shown.

Use RIB or equivalent isolation relay to bring on circulator pump & boiler

Cut off ends and use colors as shown wiring to coil of isolation relay.

To Hydronic Relay, Zone Panel or equivalent

Common — NO
— NC
Coil

RIBU1C – 24-Volt (1 set contacts)
RIB2401D – 24-Volt (2 sets contacts)

Communication PCB

CN12
(3 Pin socket)

Black Common
Red 1st Stage
Blue 2nd Stage

Not all wiring is shown

Harness Part Numbers:
1-Stage Harness
17401203022872 – 2-wire harness
Comes with Electric Heat Kits – 5 through 10kW

2-Stage Harness
17401203022869 – 3-wire harness
Comes with Electric Heat Kits - 15 through 25kW

45MBAA / 45MU(A,H)A Hydronic Coil Option 2 – 1401 Control (end)

VERY IMPORTANT – You must change the S3 Rotary switch off from its default setting. If you do not, the Boiler and Heat Pump will operate at the same time.

In addition, the SW4 DIP switches must be set to deliver the required CFM for the hydronic coil being installed. Use SW4 DIP switch charts previously shown.

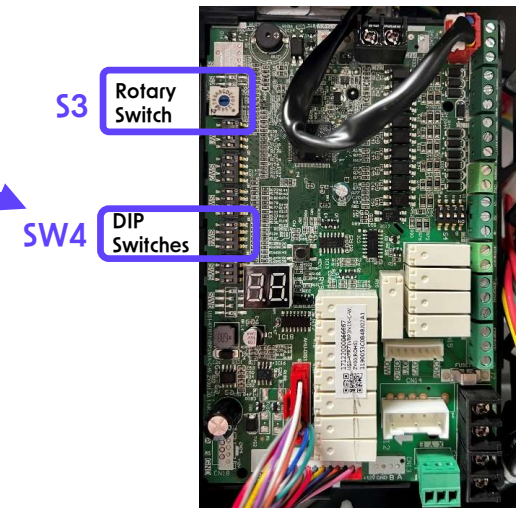| S3	S3 ($^{\circ}$F)
0	OFF
1	-22
2	-18
3	-15
4	-11
5	-8
6	-4
7	3
8	10
9	18
A	25
B	32
C	36
D	39
E	43
F	46

OFF (default) = Simultaneous Operation

S3 Rotary Switch (in air handler)

Balance Point – Where it switches from H/P to Hot Water Coil

Example: Set dial point 1 = -22°F, Dial point 6 = -4°F.
....Dial point F = 46°F

We recommend to set changeover around 5°F above calculated balance point.

S3 — Rotary Switch

SW4 — DIP Switches

45MU(A,H)A Communication Board