

Added features with newest indoor unit firmware:

- External, supplemental heat source control
- Added fan control programming for satisfied zones

Applicable indoor unit firmware versions:

Use SNET Pro 2 Service Software to view the installed firmware version of on indoor unit, must be newer than 14/06/13. To upgrade an indoor unit purchased with a previous firmware version, use SNET Pro 2 Service software. Firmware files are available through DVM technical support.

Indoor Unit Installation Data									
Address	Model	RMC	Location	Product Option	Installation Option	Installation Option2	Main Micom	MTFC	
0	Duct	04	Slim Duct	[0]10054-[1]255D1-[2]01616-[3]31110	[0]20310-[1]21000-[2]10000-[3]00000	[0]50000-[1]00000-[2]00009-[3]00000	DB91-01507A	14/06/13	<input type="radio"/>
1	Global 4Way	03	4 Way	[0]1404F-[1]95097-[2]01A1A-[3]30000	[0]20310-[1]21000-[2]10000-[3]00000	[0]50000-[1]00000-[2]00009-[3]00000	DB91-01507A	14/06/13	<input type="radio"/>
2	Duct	06	MSP Duct	[0]10054-[1]25E44-[2]06E6E-[3]31110	[0]20310-[1]21000-[2]10000-[3]00000	[0]50000-[1]00000-[2]00009-[3]00000	DB91-01507A	14/06/13	<input type="radio"/>
3	Slim 1Way	02	1 Way	[0]17064-[1]180C8-[2]01616-[3]30010	[0]20310-[1]21000-[2]10000-[3]00000	[0]50000-[1]00000-[2]00009-[3]00000	DB91-01507A	14/06/13	<input type="radio"/>

Advanced fan control concept

Firmware with date code 14/06/13 and newer will provide the following new fan programming option.

- Reduce fan operation when indoor unit has satisfied (THERMO-OFF). If the indoor unit temperature sensor is used (no external sensing) or if room temperature is being sensed with an external sensor or wired controller, the indoor unit can be programmed to turn off the fan once the space has satisfied. More operational details are available in the programming section of this document.

Auxiliary heat control concept

When a system is operating in heat mode and an indoor unit cannot reach or maintain desired set temperature, the indoor unit can activate supplemental auxiliary heat (EX: -7° F outside temperature). Although Samsung DVM S systems are designed to heat effectively at low ambient temperatures, some projects may require an additional heat source. This is not designed to be used as “emergency heat”. If the outdoor unit stops due to low ambient conditions but not an error code, the indoor unit will still operate its fan and auxiliary heat output connection (outdoor temperature must be -22° F or greater). If outside conditions are low enough to cause an error code, external heater control is not guaranteed (EX: low suction error code caused by low outside temperatures). When indoor units are configured to use the auxiliary heat control output, the outdoor unit compressor will still operate as this control option is simply supplemental heat control.

All multi-position air handlers models AM0**JNZDCH will have this firmware or newer and will have an electric heat accessory option. When using accessory VHK-*** electric heat kits, the indoor unit is configured using the HOT COIL output from the PCB. The heat kits will plug into the multi-position air handler electric heat plug and will not require additional relays, etc. See details in the electric heat kit installation instructions.

ATTENTION

Samsung cannot guarantee indoor unit fan operation in the event of an error or fan issue. Samsung cannot guarantee sufficient airflow for heaters in the supply duct outlet as duct design, filter selection, and filter status will directly effect this. When controlling an auxiliary heat source with a Samsung indoor unit, make sure that all required thermal protection devices are present per national, local, and ASHRAE standards. External heat control output is not designed to control electric heat options that were not provided by Samsung HVAC. Do not use Samsung indoor unit auxiliary heat control output to enable/disable electric heat in the supply duct.

Auxiliary heat control connection

Depending on the model of unit that is installed, the indoor unit can connect to and control an auxiliary heat source one of two ways:

1. MIM-B14 external contact control (recommended method)
2. “HOT WATER” coil connection (duct models only)

When using MIM-B14, its operation output terminals will be used to control an external heat source. This connection provides a 0 volt switch to control the auxiliary heat source (maximum 250V, 3A at this terminal). Using MIM-B14 is the preferred method of external heat control. See wire diagrams on page 4.

The HOT WATER terminal in a duct unit supplies a high voltage control signal. One terminal supplies 120 VAC constantly and the other terminal supplies an additional 120 VAC (same as supply voltage) to activate the auxiliary heat source. A field-provided, 230 VAC relay must be used. Never power a device from the HOT WATER output, only use to control external devices. See example wire diagrams on page 4.

Supplemental auxiliary heat programming

If controlling auxiliary heat with the HOT COIL output, you must enable this function for that ducted unit. This is done by changing segment 9 of the basic indoor unit option settings (02 series). Indoor unit options can be modified with wired controllers, wireless controllers, or SNET Pro 2 Service Software. Refer to indoor unit installation manuals and training materials for indoor unit programming instructions. Basic indoor unit option setting segment details are available on page 5.

02 Series Installation Options Settings (basic options), segment 09		
Use of HOT WATER output	Details	Segment 9 option setting
Do not use	DEFAULT - Do not use	0
Use	Use, fan operation is interlocked with auxiliary heat signal	1
Use	Use, fan is OFF when auxiliary signal ON for cooling only indoor units (install MCM-C200 mode selector switch in the outdoor unit and set to cool mode or set as cool only at central controller for this option).	3

If the external heat source is controlled by MIM-B14, indoor unit option 15 of the basic indoor unit option settings (02 series) must be enabled. Indoor unit options can be modified with wired controllers, wireless controllers, or SNET Pro 2 Service Software. Refer to indoor unit installation manuals and training materials for indoor unit programming instructions.

02 Series Installation Options Settings (basic options), segment 15		
External control output	Details	Segment 15 option setting
THERMO-ON/OFF	DEFAULT - Output terminals open/close based on standard THERMO-ON/OFF settings (1° C)	0
Operation ON/OFF	Output terminals open/close based on indoor unit power ON/OFF	1
Use*	Use, fan operation is interlocked with auxiliary heat signal	2
Use*	Use, fan is OFF when auxiliary signal ON for cooling only indoor units (install MCM-C200 mode selector switch in the outdoor unit and set to cool mode or set as cool only at central controller for this option).	3

* When this option is enabled, this output cannot be used for normal THERMO-ON/OFF, only supplemental heat control.

Fan control programming

To modify this option setting, change segment 4 of the basic indoor unit option settings (02 series). Below are details regarding available external sensor and fan operation programming options. Indoor unit options can be modified with wired controllers, wireless controllers, or SNET Pro 2 Service Software. Refer to indoor unit installation manuals and training materials for indoor unit programming instructions. Basic indoor unit option setting segments are available on page 5.

02 Series Installation Option Setting (basic options), segment 4				
Use of external room temperature sensor / minimize fan operation		Details	Related Operation Mode	Segment 4 Option Setting
Use of external room sensor	Minimize fan operation			
Not installed	Do not use	DEFAULT - Use the internal temperature sensor, normal fan operation during THERMO-OFF ¹	Heat and cool	0
Use	Do not use	Use an external temperature sensor, normal fan operation during THERMO-OFF ¹	Heat and cool	1
Not installed	Use	Use the internal temperature sensor, minimize fan operation ²	Heat only	2
Use	Use	Use an external temperature sensor, minimize fan operation ²	Heat only	3
Not installed	Use	Use the internal temperature sensor, minimize fan operation ²	Cool only	4
Use	Use	Use an external temperature sensor, minimize fan operation ²	Cool only	5
Not installed	Use	Use the internal temperature sensor, minimize fan operation ²	Heat and cool	6
Use	Use	Use an external temperature sensor, minimize fan operation ²	Heat and cool	7

¹ When the zone has satisfied, the fan will remain on to reduce stratification and to move air over the room temperature sensor in the return air cavity.

² Fan operation when the zone satisfies:

- When the zone satisfies, the fan will stop.
- If an external sensor is installed, the fan will remain off until room temperature drops below set temperature.
- If no external sensor is installed, the indoor fan will turn on every 5 minutes for 20 seconds to sense room temperature.

After programming the indoor unit for the desired auxiliary heat control output, you can specify how and when you would like to enable the external heat control signal. Below is a table that details the temperature difference between set temperature and room temperature and an optional 10 or 20 minute time delay.

05 Series Installation Options Settings (advanced options), segment 18			
Heater signal on (H)	Time delay (T)		
	No delay	10 minute delay	20 minute delay
THERMO-ON (1.8° F, 1° C, can vary depending on other settings)	0	1	2
2.7° F (1.5° C)	3	4	5
5.4° F (3° C)	6	7	8
8.1° F (4.5° C)	9	A	B
10.8° F (6° C)	C	D	E

The external heat signal is activated IF:
Room temperature \leq (set temp. + f - H) for T minutes

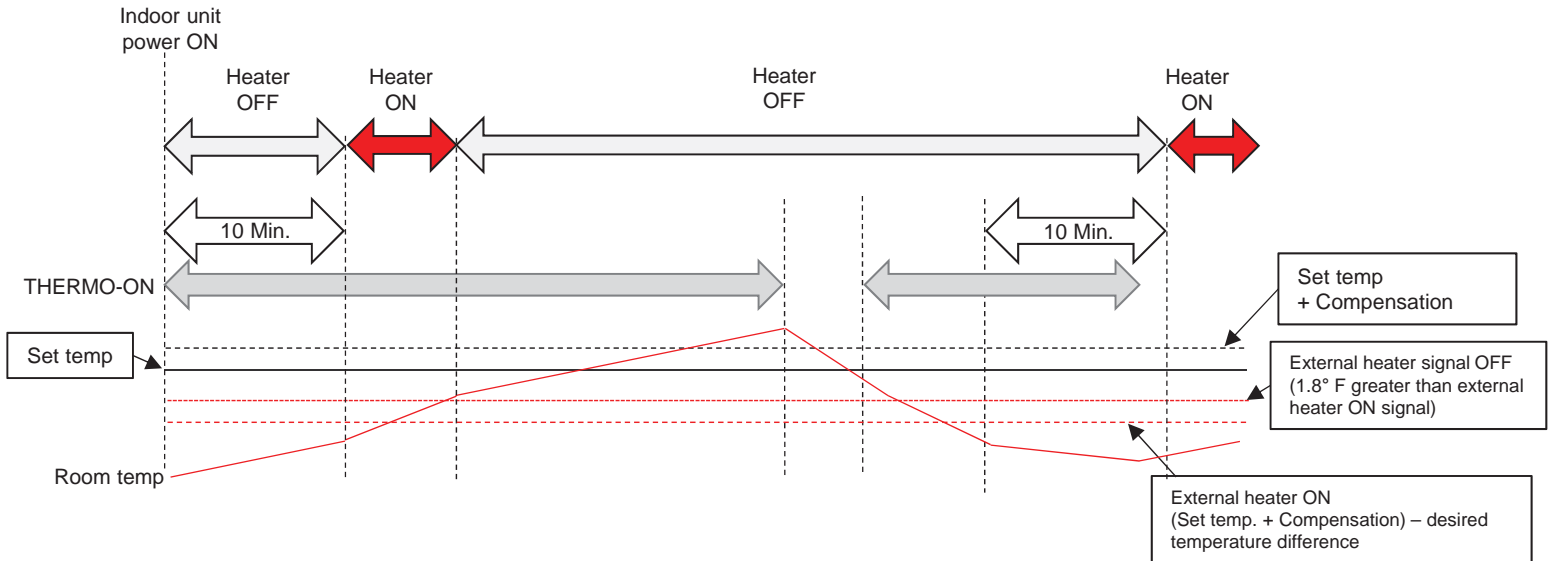
The external heat signal is removed IF:
Room temperature $>$ (set temperature + f - H + 1.8° F)

f = heating compensation temperature

H = selected "Heater ON" temperature difference selected from the table above

T = Time delay selected from table above

(1.8 °F is the standard hysteresis for THERMO-ON/OFF selection. The unit can be configured to have a heating compensation temperature greater than 1.8°F or 0°.)

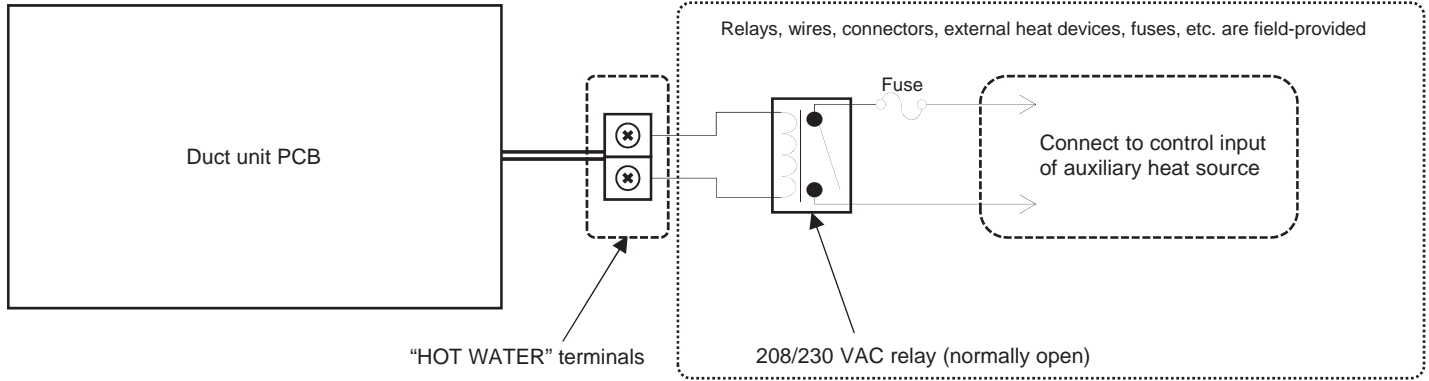


Example:

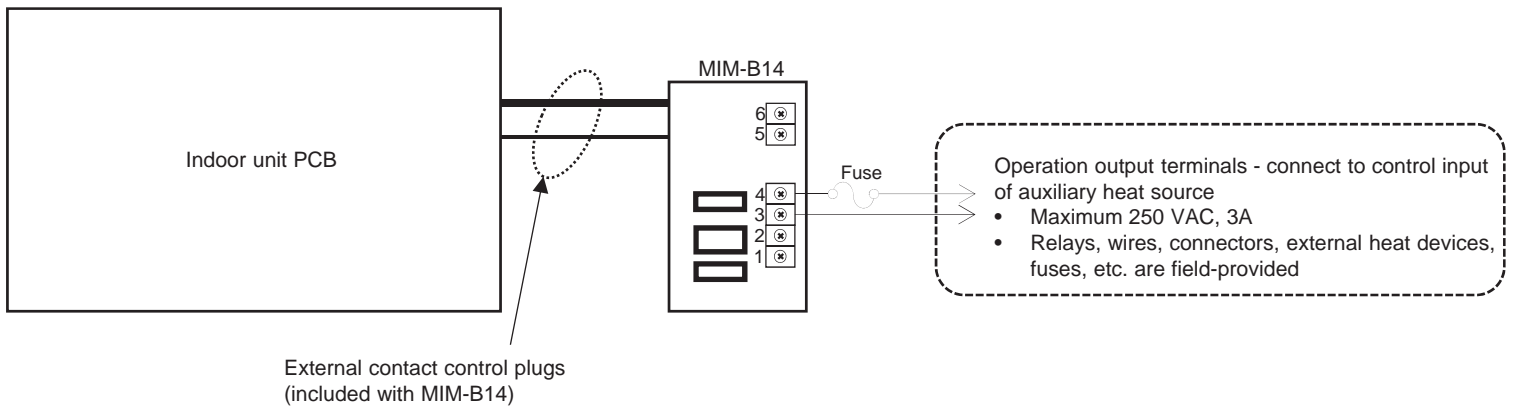
If segment 18 of the indoor unit is set to "A" (8.1° F temperature difference, 10 minute time delay), room temp = 68° F, and set temperature = 75° F.
 $68 \leq (75 + 1.8 - 8.1)$ for 10 min. =
 $68 \leq 68.7$, therefore after this condition is held for 10 minutes, the heater will be activated.

The auxiliary heat signal will be removed as soon as the room temperature $>$ 70.5
 Room temperature $>$ $75 + 1.8 - 8.1 + 1.8$

Connection example using "HOT WATER" terminals (duct models only)



Connection example using MIM-B14 (cassette, duct, under-ceiling, and high-wall models)



02 Series, Basic indoor unit options settings – segment details

Options "Page" number	Option setting type/series	Segment
02	Robot Cleaning	Segment 1
X	Remote Temperature Sensor	Segment 2
X	Central Control	Segment 3
X	RPM Adjustment	Segment 4
X		Segment 5
X		Segment 6
1	Samsung Condensate Pump Use	Segment 7
X	Hot Water	Segment 8
X	Electric Heat	Segment 9
X	EEV Stop Step In Heating Mode	Segment 10
X	Indoor Unit Display on Wired Controller	Segment 11
X		Segment 12
2	External Contact Control	Segment 13
X	Indoor Unit Operation Output	Segment 14
X	SPI Use	Segment 15
X	Buzzer / Chime Use	Segment 16
X	Filter Reminder Setting	Segment 17
X		Segment 18
3	Wireless Remote Address	Segment 19
X	Heating Temperature Compensation	Segment 20
X	EEV Use During Oil Return and Defrost Operation	Segment 21
X	Motion Sensor	Segment 22
X	Not Used	Segment 23
X		Segment 24

05 Series, Advanced indoor unit options settings – segment details

Options "Page" number	Option setting type/series	Segment
05	HR systems – use of special AUTO mode programming	Segment 1
X	HR systems – auto changeover standard heat temp. offset	Segment 2
X	HR systems – auto changeover standard cooling temp. offset	Segment 3
X	HR systems – auto changeover ΔT , heating to cooling	Segment 4
X		Segment 5
X		Segment 6
1	HR systems – auto changeover ΔT , cooling to heating	Segment 7
X	HR systems – auto changeover, time delay	Segment 8
X	Compensation for long pipe distance or vertical separation	Segment 9
X	MTFC enable (Multi Tenant Function Controller)	Segment 10
X	Reserved	Segment 11
X		Segment 12
2	Reserved	Segment 13
X	Reserved	Segment 14
X	Reserved	Segment 15
X	Reserved	Segment 16
X	External heat control temperature offset and time delay	Segment 17
X		Segment 18
3	AHU kit capacity setting	Segment 19
X	AHU kit fan feedback setting	Segment 20
X	AHU kit defrost signal setting	Segment 21
X	AHU kit – prevent cold air blowing in heat mode	Segment 22
X	Reserved	Segment 23
X		Segment 24