

Date: 03/10/2017

Subject: Updated CAC MPAH Unit Firmware (Auxiliary Heat Control) Applied

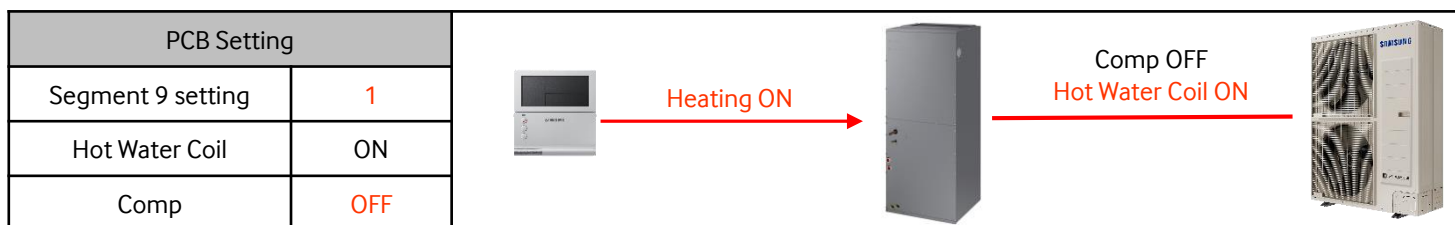
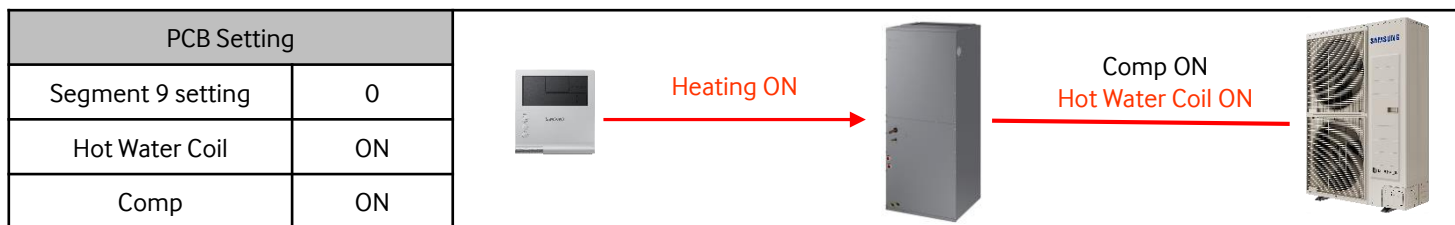
Models: AC0**KNZDCH/AA (CAC MPAH)

CAC MPAH (Multi-Positional Air Handler Unit) Firmware Update: New Auxiliary Heat Control

- Updated Firmware is applied to units manufactured after 10/01/2016
- Updated firmware can be applied to units manufactured prior to 10/01/2016 using the Firmware update feature in SNET Pro 2 Service Software (MIM-C02N Service Tool is required). Please contact Samsung HVAC Technical support for the firmware file.

Explanation of Auxiliary Heat Control for units manufactured *prior* to 10/01/2016:

"Auxiliary Heat" Application for CAC (MPAH) manufactured prior to 10/01/2016		
Mode	Option setting segment 9 (020000-100000-200000-300000)	
	Segment 9 setting = 0 (with compressor)	Segment 9 setting = 1 (without compressor)
Cooling	<ul style="list-style-type: none"> • Hot water coil has no output. 	<ul style="list-style-type: none"> • Hot water coil has no output
Heating	<ul style="list-style-type: none"> • Compressor will operate 	<ul style="list-style-type: none"> • Compressor will not operate
	<ul style="list-style-type: none"> • Hot water coil: Auxiliary (supplemental) heating source 	<ul style="list-style-type: none"> • Hot water coil: main heating source
	<ul style="list-style-type: none"> • Hot water coil has 230V output according to Thermo ON/OFF 	<ul style="list-style-type: none"> • Thermo On: After Hot Water Coil has 230V output for three minutes, Fan will operate at appropriate step (cold air protection control) • Thermo Off: Fan = low step (default, other fan options are available once set temp has been reached)
		<ul style="list-style-type: none"> • Hot water coil would operate according to Thermo ON/OFF.



Added features with newest indoor unit firmware:

- External, Auxiliary Heat output is now fully configurable for time delay and temperature offset (room temperature and set temperature).
- 15 different configurations are available to fit a variety of applications.
- Reduce fan operation during thermal-off

Applicable indoor unit firmware versions:

Indoor Unit Type	Indoor Unit Model Number	Firmware Version
CAC MPAH	AC0**KNZDCH/AA	DB91-01737A_170126 (DB91-01737A_161007 supports new external heat functions but not reduced fan operation options)

Use SNET Pro 2 Service Software to view the installed firmware version of on indoor unit. To upgrade an indoor unit purchased with a previous firmware version, use SNET Pro 2 Service software. Firmware files are available through Samsung HVAC technical support.

IndoorUnitInstallation									
Address	Model	RMC	MCU ADDRESS	MCU PORT	Location	Product Option	Installation Option	Installation Option2	Main Micom
0	Duct	00	-	-	Living Room	[0]1E06C-[1]05020-[2]74750-[3]70085	[0]20710-[1]102A0-[2]20000-[3]00000	[0]FFFFFF-[1]FFFFFF-[2]FFFFFF-[3]FFFFFF	DB91-01737A 170126

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 CAC 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.

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 performance. 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 design 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

All vertical air handlers models AC0**KNZDCH with 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 vertical air handler electric heat plug and will not require additional relays, etc. See details in the electric heat kit installation instructions.

Supplemental auxiliary heat programming

To use auxiliary heat, you must enable and configure this function. This is done by changing segment 10 & 11 of the basic indoor unit option settings (O2 series). Segment 10 is used to enable this option, segment 11 is used to configuration. 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 4.

O2 Installation Option Setting, Segment 10	
Use of Heater	
Option Setting	Detail
0	Do Not Use (Default)
1	Use
2	Use (Heater Time Delay)

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.

O2 Installation Options Settings, segment 11			
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

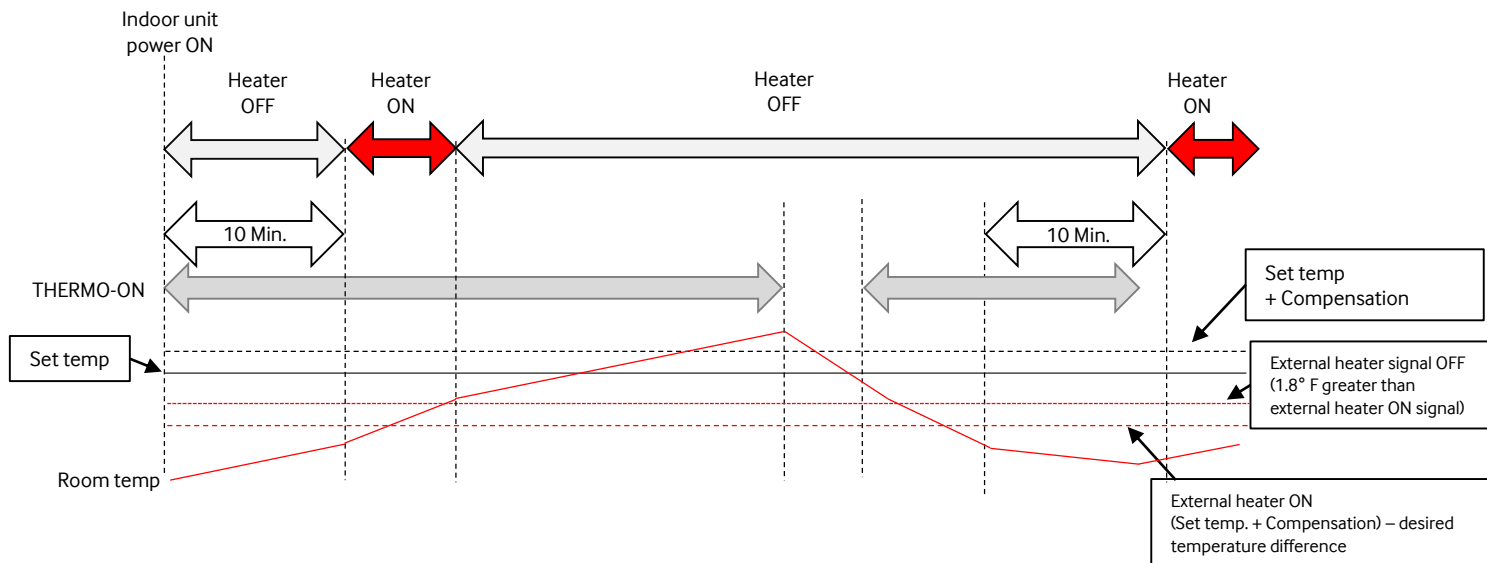
The external heat signal is removed **IF:**
Room temperature $>$ (set temperature + f - H + 1.8° F)

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.

$$68 \leq (75 + 1.8 - 8.1) \text{ for } 10 \text{ min.} =$$

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

$$\text{Room temperature} > 75 + 1.8 - 8.1 + 1.8$$

Advanced fan control concept

Firmware with date code DB91-01737A_170126 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 not used and 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 temperature has satisfied.
- Enable this option by changing segment 4 of the option setting code (02) to 7. Also, change segment 23 of the factory option setting code (01) to 8.

Indoor Unit Installation Data									
IndoorUnitInstallation									
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0	Duct	00	-	-	-	[0]1E06C-[1]05020-[2]74750-[3]70085	[0]20710-[1]10240-[2]20000-[3]00000	[0]FFFFFF-[1]FFFFFF-[2]FFFFFF-[3]FFFFFF	DB91-01737A 170126

02 Series, Basic Indoor Unit Options Settings – Segment Details for CAC MPAH

