

Fresh Access™ Split DOAS - Sequence of Operation -

**AM120NNDDCV/AA
AM200NNDDCV/AA
AM300NNDDCV/AA**



FRESH ACCESS™

Samsung HVAC maintains a policy of ongoing development, specifications are subject to change without notice.

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Split DOAS Indoor Unit Sequence of Operation

1. Operation Overview
2. Enthalpy Sensor Control (Main Coil)
3. Discharge Air Temperature Control (Reheat Coil)
4. Fan Operation

For outdoor unit sequence of operation, please refer to the "DVM S Sequence of Operation" manual at www.samsunghvac.com

Split DOAS Indoor unit control

1. Operation Overview

○ Purpose

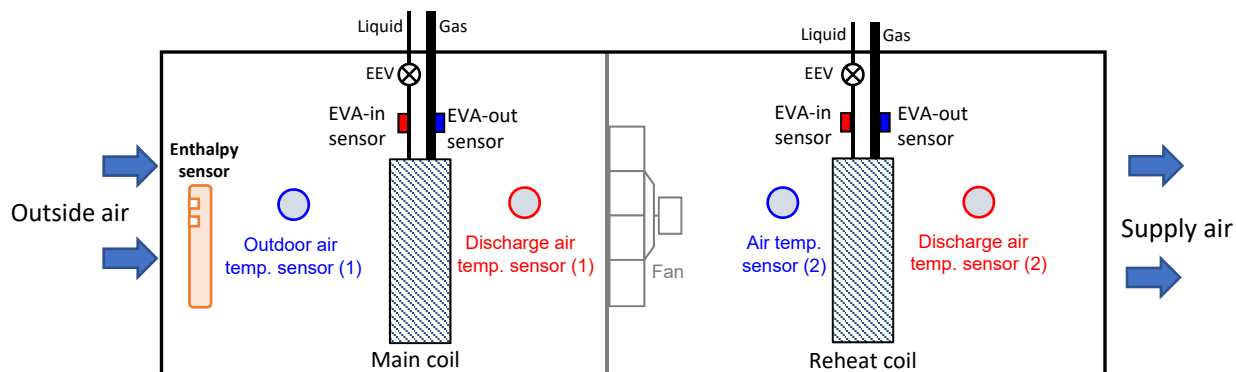
- Explanation of Split DOAS System operation

○ Concept

- Main coil provides cooling and dehumidification of 100% outside air
- Reheat coil raises outlet air temperature from main coil to neutral temperature before it enters the occupied space

○ System Control details

- User can control whole system ON/OFF and set discharge air temperature of reheat coil (64 ~ 109°F)
- Main cooling coil Thermo ON/OFF is determined by inlet air temperature (outside air) and enthalpy value
- Inlet temperature range (outside air):
 - Cooling:
 - DB: 50 ~ 125°F (10 ~ 51.6°C)
 - WB: 48 ~ 109°F (8.9 ~ 42.7°C)
 - Heating:
 - DB: 23 ~ 125°F (-5 ~ 51.6°C). The unit will continue to provide reheat capacity in this range
 - If incoming OA is below 23°F (-5°C), the air must be preheated before entering the unit
 - The main cooling coil is deactivated when in heat mode.
- Enthalpy value is set by the installer via the installation option codes
- Outlet air temperature of the main Coil is controlled by the target evaporator temperature of the outdoor unit. Default target evaporator temperature is 41 ~ 44.6°F (5 ~ 7°C).
- Supply air temperature of the reheat coil is controlled by the discharge air temperature sensor. This value will vary based on inlet air temperature.
- Discharge air target temperature can be set via wired controller or DMS 2.5 / BMS / Simple BMS input



AM120NNDDCV/AA shown, other models vary

Split DOAS Indoor unit control

2. Enthalpy Sensor (main coil - cooling)

Function

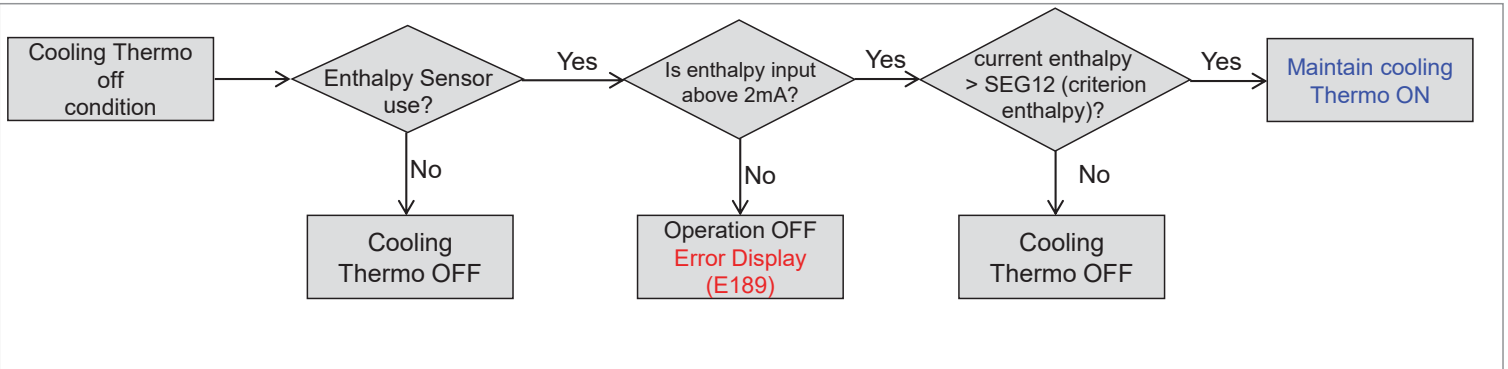
Purpose

- Cooling operation for dehumidification using enthalpy sensor (DOAS system) to supply 100% outside air

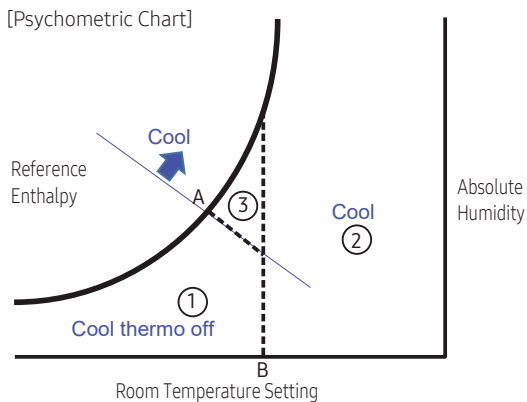
How to configure

- Enthalpy sensor (pre-installed)
 - Enthalpy sensor (manufacturer / model name): Honeywell / C7400C (4~20mA)
 - Other enthalpy sensors are not compatible. (enthalpy range may be different)
 - *Installation option setting may be required
 - 02 series installation option SEG24: Setting enthalpy sensor use or disuse (factory default: "use")
 - 05 series installation option SEG12: Criterion enthalpy setting. Factory default setting is 15.0 btu/lb (35 kJ/kg). Most applications can use the factory setting.

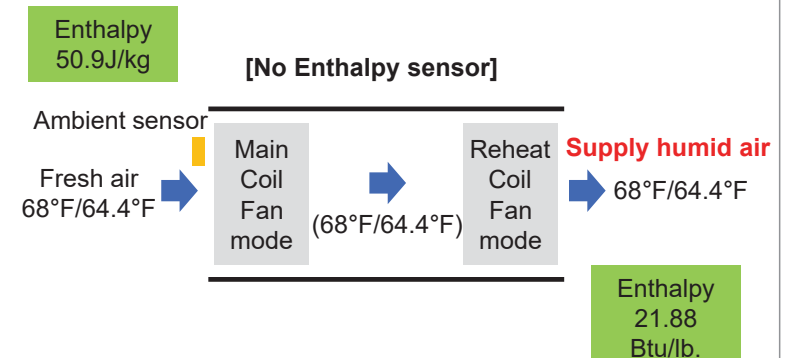
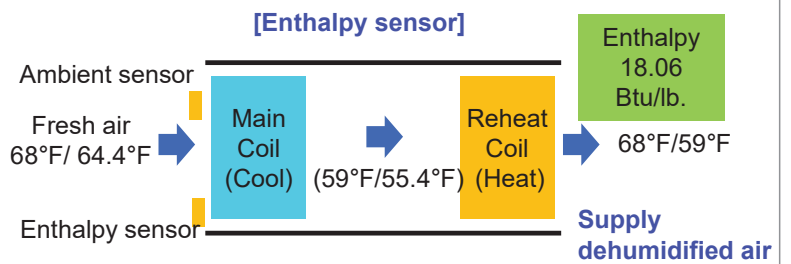
Control Logic



Cooling thermo on occurs if current enthalpy value is above criterion enthalpy ('A')



Entering temperature	Enthalpy Sensor not applicable	Enthalpy Sensor applicable
Above 'B'	② : Thermo ON	② : Thermo ON
Below 'B'	① : Thermo OFF ③ : Thermo OFF	① : Thermo OFF ③ : Thermo ON



Split DOAS Indoor unit control

2. Enthalpy Sensor (Main coil - cooling)

Option code setting

Installation option [02 series SEG24](#)

Indication	Options		
	Model type	Enthalpy S/S	Fan Motor
0	Common	Disuse	Fixed
1	DOAS	Disuse	Fixed
2	Common	Use	Fixed
3 (Default)	DOAS	Use	Fixed
4	Common	Disuse	Variable
5	DOAS	Disuse	Variable
6	Common	Use	Variable
7	DOAS	Use	Variable

Installation option [05 series SEG12](#)

- Set a criterion of enthalpy to Thermo on
- Current enthalpy > Setting value: Thermo on

Indication	Option
0 (Default)	15.0 Btu/lb.
1	17.2 Btu/lb.
2	19.3 Btu/lb.
3	21.5 Btu/lb.
4	23.6 Btu/lb.
5	25.8 Btu/lb.

Split DOAS Indoor unit control

3. Discharge air temperature control (reheat coil)

Purpose

- To control the discharge air temperature of the reheat coil
- Setting range: 64 ~ 109°F (18 ~ 43°C)
- * Thermo ON/OFF will be controlled according to the inlet temperature & set temperature

➤ **Caution : Discharge air temperature control may not work properly depending on operating conditions**

How to set discharge air temperature

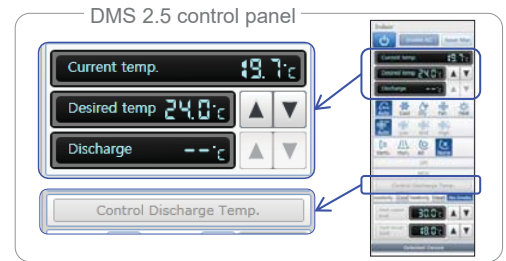
1. DMS2.5

- Open remote controller panel
- Set discharge temperature control : activation, target temperature

2. Wired remote controller

- Set the option in service mode (Press Set & ESC for 3 secs)

* Set temperature in normal mode is for target room temperature regardless of discharge option setting condition.



will be displayed on remote controller when discharge air temperature control is activated

Main menu	Sub menu	Function	Data bit	Factory setting	Description	Unit
5	2	Setting/Checking the discharge temperature of the indoor unit				
		Use of discharge temperature control	1	-	0 - No use, 1 - Use	-
		Cooling discharge temperature	3,4	-	8~25 °C (46~77 °F)	1 °C
		Heating discharge temperature	5,6	-	18~43 °C (64~109 °F)	1 °C

Installation Option Code: DOAS setting

* DOAS: Dedicated outdoor air system

No.	Control logic	Installation option 02 series SEG 24	
		"Common" setting	"DOAS" setting
1	Preventing cold wind	Fan off when average evaporator temperature is below 82°F in heating.	Fan off when average evaporator temperature is below 41°F
2	Discharge air temperature control in HR mode	Impossible	Possible (Only heating discharge temperature control is possible in main cooling operation) Heating unit controls EEV step depending on target discharge temperature
3	Thermo OFF decision	Depending on room temperature only	Depending on room temperature or discharge temperature
4	Operation restriction depending on outdoor temperature	Use	Disuse

Split DOAS Indoor unit control

4. Fan Operation

Overview

- The split DOAS uses a VFD (Variable Frequency Drive) to control fan speed
- As standard, the split DOAS unit is programmed and wired for Low (L), Medium (M), and High (H) fan speeds
- Multiple fan speeds will allow control based on space conditions (ex: changing fan speed based on CO2 levels) via field provided, third party controls
- The unit can also be programmed /configured for a fixed fan speed
- The reheat coil PCB (lower PCB in the control box) controls the fan. Modifications to the fan settings are done to the reheat coil PCB only (wiring and installation option code setting).
- Modification to VFD settings will require an accessory VFD advanced control pad (part number: DOAS-ACP)
- Please refer to the AM***NNDDCV/AA installation manual for complete instructions

Option code setting

Installation option [02 series SEG24](#)

Indication	Options		
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0	Common	Disuse	Fixed
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2	Common	Use	Fixed
3(Default)	DOAS	Use	Fixed
4	Common	Disuse	Variable
5	DOAS	Disuse	Variable
6	Common	Use	Variable
7	DOAS	Use	Variable