

AHU KITS

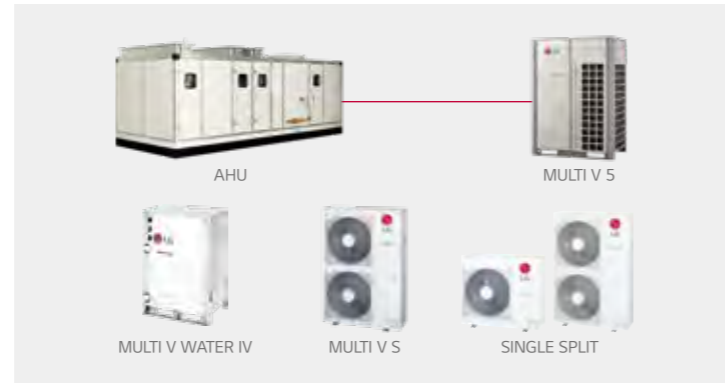
Communication Kit

HIGH ENERGY EFFICIENCY

LG's DX AHU solutions' superior performance provides a highly efficient heat source system.

- High energy efficiency inverter system
- Large range of expansion application Kit : Max 168 kW EEV Kit¹⁾
- Connected to various heat sources : MULTI V, MULTI V WATER, MULTI V S, SINGLE SPLIT

1) Maximum connectable EEV capacity for PAHCMR000, PAHCMC000 is 112 kW

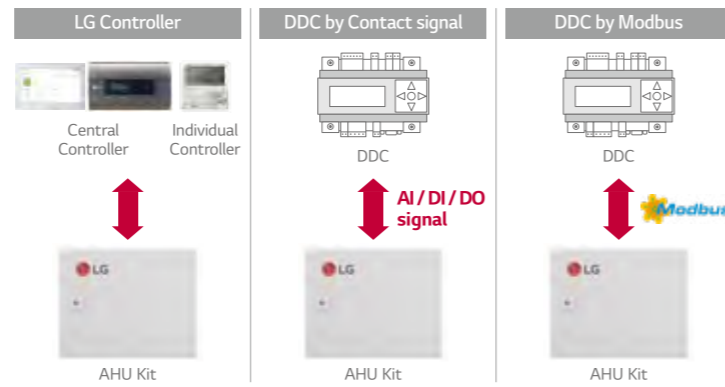


DIVERSE OPTIONS FOR CONTROL

AHU communication kit can be connected to various control systems such as LG individual/central controller and DDC¹⁾. It can be directly connected to DDC without separated controller, so DDC can receive product control and monitor information through contact signal or Modbus protocol.

- LG Individual/Central controller supported
 - LG controller stand alone or combination with DDC
- Direct wiring between DDC and AHU communication kit
 - Embedded Digital I/O and Analog Input
 - Modbus RTU protocol supported

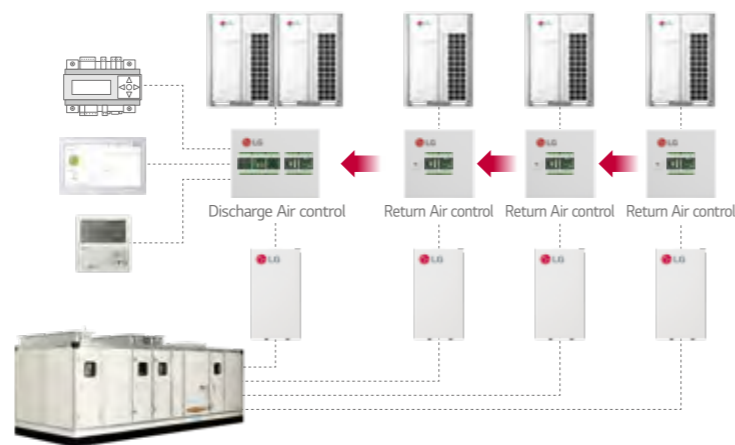
1) DDC : Direct Digital Controller



EXPANDABLE SYSTEM DESIGN

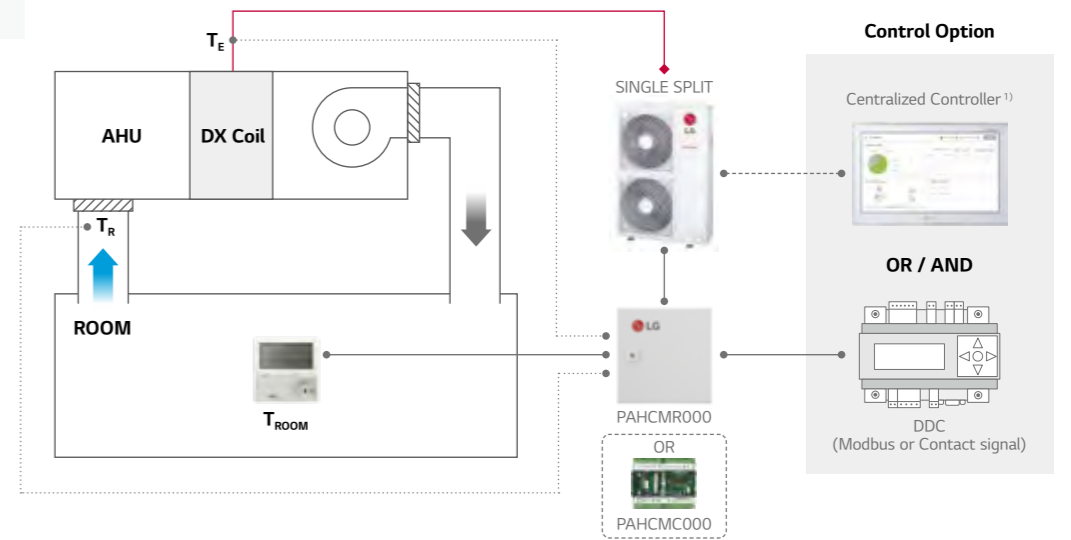
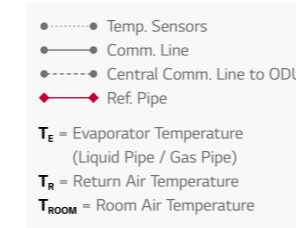
LG AHU system can be a suitable solution for various sites due to its application flexibility and wide range of line up with large capacity models. According to the required capacity, a single or multiple module combination is possible due to the AHU communication kit's modular design.

- Multiple module combination for large capacity AHU

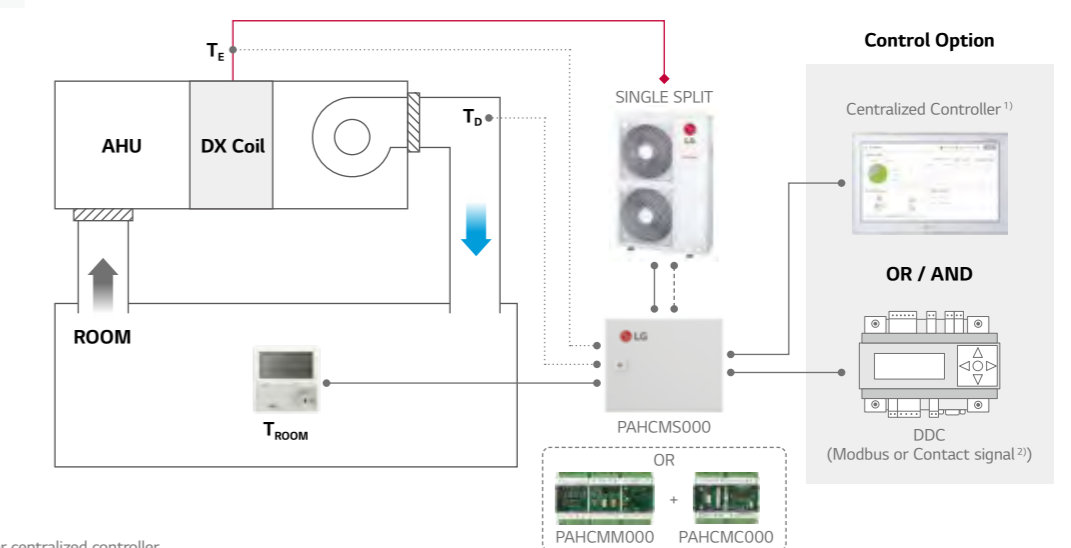
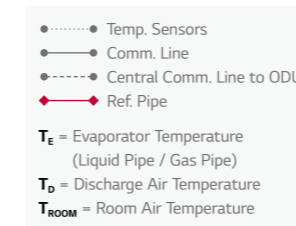


Single Split Application (Communication Kit & Controller Module)

Single Split + Return / Room Air Temperature Control



Single Split + Discharge Air Temperature Control



1) PI485 (PMNFP14A1) is required for centralized controller

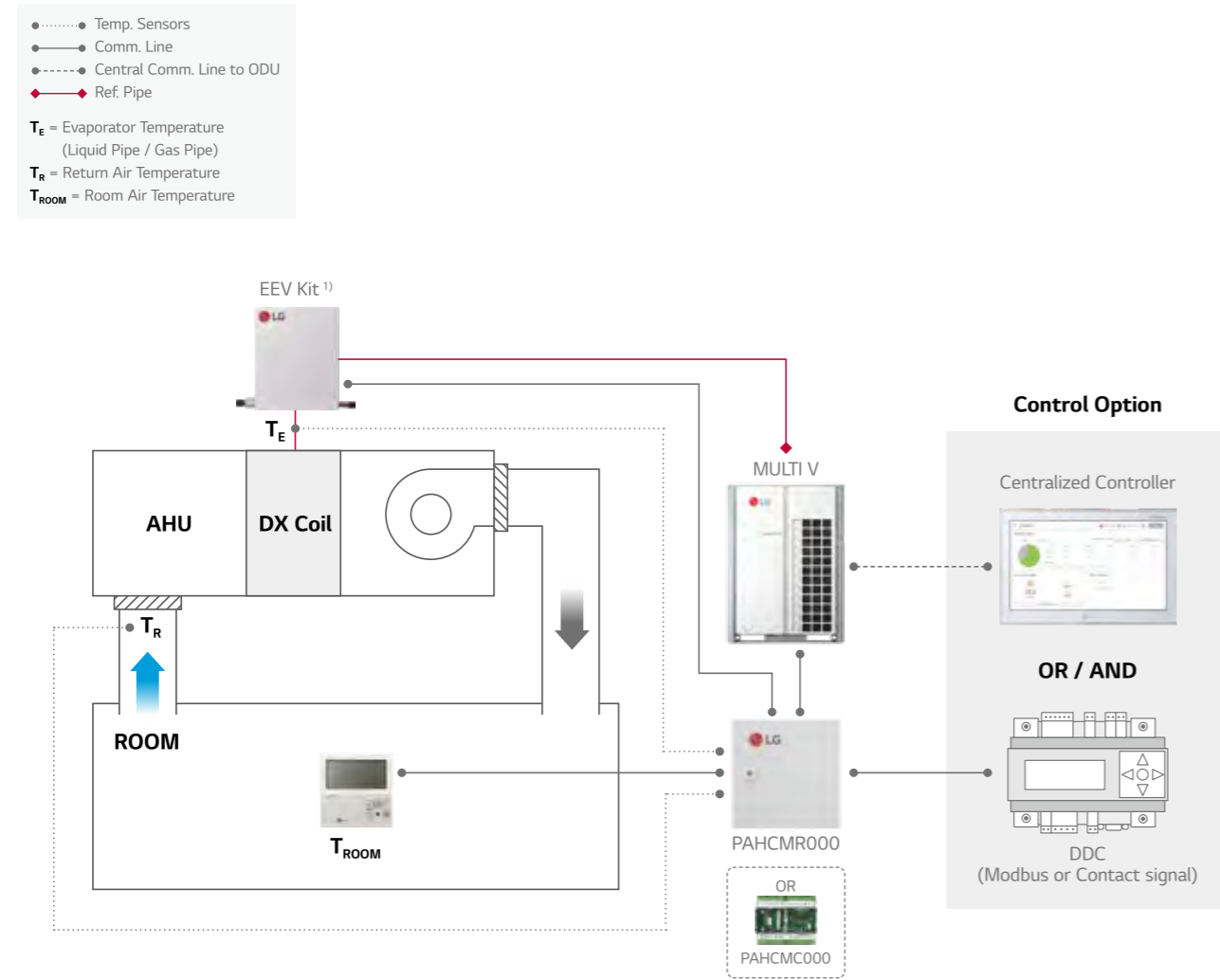
2) In case of applying DDC with contact signal, discharge air temperature should be measured and controlled by DDC

Note : For more detail, please refer to the PDB

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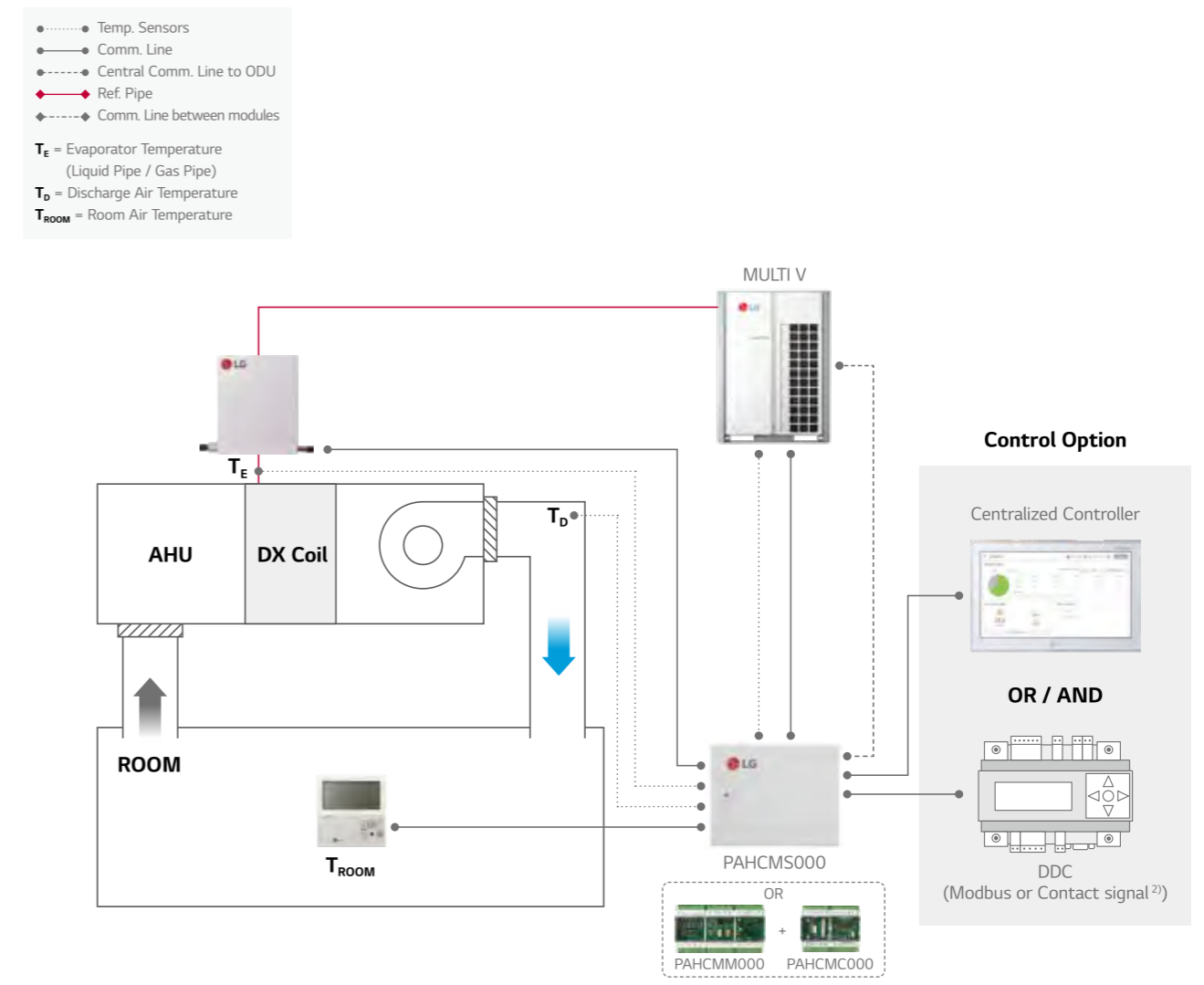
Multi V Application (Communication Kit & Controller Module)

Multi V + EEV Kit + IDU + Return / Room Air Temperature Control



1) Multiple EEV kits can be applicable with multiple DX Coils and PAHCMR000s
 2) In case of applying DDC with contact signal, discharge air temperature should be measured and controlled by DDC
 Note : For more detail, please refer to the PDB

Multi V + EEV Kit + Discharge Air Temperature Control



1) Multiple EEV kits can be applicable with multiple DX Coils and PAHCMR000s
 2) In case of applying DDC with contact signal, discharge air temperature should be measured and controlled by DDC
 Note : For more detail, please refer to the PDB

CONTROL SOLUTION

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Communication Kit Function

Communication with DDC via Contact Signal

Function List	PAHCMR000 (PAHCMC000)	PAHCS000 (PAHCM000 + PAHCMC000)	Type	Note
Operation On/Off	On/Off	On/Off	Digital Input (Non Voltage)	-
Operation Mode	Cooling/Heating	Cooling/Heating	Digital Input (Non Voltage)	Available operation mode can vary depending on the settings of Communication Kit
Return (Room) Air Temperature ²⁾	16 ~ 30 °C	-	Analog Input (DC 0~10 V/ 20mA)	-
Control ¹⁾ Discharge Air Temperature ²⁾	-	-	-	Discharge air temperature should be controller directly by DDC using 'ODU Capacity Control'
Fan Speed ³⁾	-	High / Middle / Low	Digital Input (Non Voltage)	-
Forced Thermal	On / Off	-	Digital Input (Non Voltage)	-
ODU Capacity	-	40 ~ 100%	Analog Input (DC 0~10 V/ 20mA)	-
Emergency Stop	-	Stop / Normal	Digital Input (Non Voltage)	-
Operation	On / Off	On / Off	Digital Output (Max : DC 30 V / 1 A, AC 250V / 1 A)	For PACHMR000, dip sw1-3 DO Type should be set 'Off' (Status). In this case, 'fan speed' cannot monitored by DO ports
Operation Mode	-	-	-	It needs to be checked through control signal
Fan Speed	High / Middle / Low	High / Middle / Low	Digital Output (Max : DC 30 V / 1 A, AC 250V / 1 A)	For PACHMR000, dip sw1-3 DO Type should be set 'On' (Fan Mode). In this case, 'On/Off, defrost, error Status' cannot monitored by DO ports
Defrost Operation	Defrost / Normal	Defrost / Normal	Digital Output (Max : DC 30 V / 1 A, AC 250V / 1 A)	For PACHMR000, dip sw1-3 DO Type should be set 'Off' (Status). In this case, 'fan speed' cannot monitored by DO ports
Error Alarm	Error/Normal	Error/Normal	Digital Output, Relay C. contact (Max : DC 30 V / 1 A, AC 250V / 1 A)	For PACHMR000, dip sw1-3 DO Type should be set 'Off' (Status). In this case, 'fan speed' cannot monitored by DO ports
Compressor On/Off	-	On / Off	Digital Output, (Max : DC 30 V / 1 A, AC 250V / 1 A)	-

1) Control functions for LG individual and central controller are not available in case of using together with DDC via contact signal
 2) The range of temp. is differ depending on the type of the controller.
 3) To control fan speeds, DO port of the fan speed status should be connected to the fan control panel
 Note : For more detail information, please refer to the product data book

Communication with DDC via Modbus protocol

Function List	PAHCMR000 (PAHCMC000)	PAHCS000 (PAHCM000 + PAHCMC000)	Note
Operation On/Off	On / Off	On / Off	
Operation Mode	Cooling / Heating / Fan	Cooling / Heating / Fan	
Return (Room) Air Temperature	16 ~ 30 °C	-	
Control ¹⁾ Discharge Air Temperature ²⁾	-	12 ~ 50 °C	Dip SW1-2 Discharge Temp. Control Type should be set 'On'
Fan Speed ³⁾	High / Middle / Low	-	
Forced Thermal On/Off	-	-	
ODU Capacity Control ²⁾	-	40 ~ 100%	Dip SW1-2 Discharge Temp. Control Type should be set 'On'
Emergency Stop	-	-	
Operation	On / Off	On / Off	
Operation Mode	Cooling / Heating / Fan	Cooling / Heating / Fan	
Return(Room) Air Temperature	○	-	Corresponding air temperature sensor connected to AHU Comm. Kit is required
Discharge Air Temperature	-	○	
Fan Speed	High / Middle / Low	High / Middle / Low	
Defrost Operation	Defrost/Normal	Defrost/Normal	
Error Alarm	Error / Normal, Error code	Error / Normal, Error code	
Compressor On/Off	On / Off	On / Off	

※ ○ : Applied, - : Not Applied
 1) Control functions for LG individual and central controller are not available in case of using together with DDC via contact signal
 2) In case of PAHCS000, control type between "Discharge Air Temperature" and "ODU Capacity Control" is selectable
 3) To control fan speeds, DO port of the fan speed status should be connected to the fan control panel
 Note : For the Modbus memory map and more detail information, please refer to the product data book











Communication Kit Function

With LG Control system (Individual & Centralized Controller)

Function List	PAHCMR000 (PAHCMC000)	PAHCS000 (PAHCM000 + PAHCMC000)	Note
Operation On/Off	On/Off	On/Off	-
Operation Mode	Cooling/Heating/Fan	Cooling/Heating/Fan	Available operation mode can vary depending on the settings of Communication Kit
Control ¹⁾ Return (Room) Air Temperature ²⁾	16 ~ 30 °C	-	-
Discharge Air Temperature ²⁾	-	12 ~ 50 °C	Standard II : 16 ~ 30 °C Standard III : 12 ~ 50 °C (Available in April, 2020) Central Controllers : 12~50°C
Fan Speed ³⁾	High/Mid/Low	High/Mid/Low	To control the AHU fan, dip switch 1-3 'DO type' should be set 'On(Fan Speed)' (PAHCMR000)
Operation	On/Off	On/Off	-
Operation Mode	Cooling/Heating/Fan	Cooling/Heating/Fan	-
Return (Room) Air Temperature	○	○	-
Discharge Air Temperature	-	○	-
Monitor Fan Speed	High/Middle/Low	High/Middle/Low	-
Defrost Operation	On/Off	On/Off	Only with Individual Controller
Error Alarm	Error Code	Error Code	Error code will be displayed on the screen
Compressor On/Off	On/Off	On/Off	Only with Individual Controller

※ ○ : Applied, - : Not Applied
 1) Control functions for LG individual and central controller are not available in case of using together with DDC via contact signal
 2) The range of setting temperature is different depending on the type of the controllers. And operation may different from setting range.
 3) To control fan speeds, DO port of the fan speed status should be connected to the fan control panel
 Note : For more detail information, please refer to the product data book

Compatibility with LG HVAC Controllers

Controller	Individual Controller			Centralized Controller				BMS Gateway	PDI	
	Premium	Standard III	Standard II	AC Ez	AC Ez Touch	AC Smart 5	ACP 5	AC Manager 5 ¹⁾	ACP Lonworks	Premium Standard
										
Model no.	PREMTA000 PREMTA000A PREMTA000B	PREMTB100 PREMTBB10	PREMTB001	PQCSZ250S0	PACEZA000	PACS5A000	PACP5A000	PACM5A000	PLNWkB000	PQNUD1S40 PPWRDB000
PAHCMR000	○	○	○	○	○	○	○	○	○	○
PAHCS000	-	○ ²⁾	○	-	-	○	○	○	-	-

※ ○ : Applied, - : Not Applied
 1) AC Manager 5 is an integrator, so the installation with AC Smart 5 or ACP 5 is required
 2) Set temperature range of this model shall be extended April, 2020
 Note : 1. Dry contact for indoor unit (PDRYCB000 / 400 / 300 / 500) is not applied
 2. For more details, please refer to the product data book

AHU KITS

Outdoor Unit Compatibility

For Small Size Application (~ 15kW) - Single Split

Type	Model	UUA1 (2.5 - 5.0 kW) ¹⁾	UUB1 (5.0 - 8.0 kW) ¹⁾	UUC1 (7.1 - 10.0 kW) ¹⁾	UUD1 / UUD3 (10.0 - 15.0 kW) ¹⁾
Communication Kit (Controller Module)	PAHCMR000 (PAHCMC000)	-	○	○	○
	PAHCMS000 (PAHCMM000 + PAHCMC000)	-	○	○	○
Control Kit	PAHCNM000	-	-	-	-

For Medium-Large Size Application (~ 672 kW) - MULTI V

Type	Model	MULTI V				MULTI V WATER	
		5	IV	III	S	IV	II
Communication Kit (Controller Module)	PAHCMR000 (PAHCMC000)	○	○	○	○	○	○
	PAHCMS000 (PAHCMM000 + PAHCMC000)	○	○	○	○	○	○
Control Kit	PAHCNM000	○	○	○	○	○	○

Expansion Application Kit Compatibility

EEV Kit Model	Capacity index (kW)		Control Application Kit (Maximum connectable EEV Kits)			Connection by ODU system		
	Min.	Max.	PAHCMR000 (PAHCMC000)	PAHCMS000 (PAHCMM000 + PAHCMC000)	PAHCNM000	MULTI V		Single Split
						Heat Pump	Heat Recovery	
PRLK048A0	3.6	28	○ (1)	○ (1)	○ (6)	○	○	-
PRLK096A0	28.1	56	○ (1)	○ (1)	○ (6)	○	○ (Max 33.7 kW)	-
PRLK396A0	56.1	112	○ (1)	○ (1)	○ (6)	○	-	-
PRLK594A0	112.1	168	-	○ (1)	○ (3)	○	-	-

※ ○ : Applied, - : Not applied
 Note 1. Table of the outdoor unit compatibility is based on European regional model.
 2. When connecting outdoor units in other areas, please check whether they are compatible or not.
 3. Expansion application kit compatibility is based on capacity index of the system, it may changed according to system design condition.

Control Kit

List	Required Item
Heating / Cooling	SA / RA temperature sensor (or SA / RA temperature & humidity sensor)
Automatic Ventilation	SA / RA temperature, CO ₂ sensor, Damper actuator (OA, EA, MA)
Energy Saving (Cooling Mode Only)	SA temperature, OA / RA temp&humidity sensor, Damper actuator (OA, EA, MA)
Humidification	SA temperature, RA temperature & humidity sensor, Humidifier
Inverter Fan Control	SA / RA temperature, Static pressure sensor, Inverter driver for fan control
Filter Alarm	Difference pressure sensor
Smoke Detecting	Smoke detection sensor

RA : Return Air, EA : Exhaust Air, OA : Outdoor Air, SA : Supply Air, MA : Mix air (RA + OA)

Field Supplied Item

List	Required Specification	Apply Location
Temperature Sensor	- Power : AC 24V, Output signal : DC 0 ~ 10V - Temperature boundary : -50 ~ 50°C	- Apply to MA, SA, RA
Temperature & Humidity Sensor	- Power : AC 24V, Output signal : DC 0 ~ 10V - Temperature boundary : -40 ~ 70°C - Humidity boundary : 0 ~ 95% RH	- Apply to SA, RA, OA - Can not be applied to MA
Damper Actuator	- Power : AC 24V, In/Output signal : DC 0 ~ 10V - Rotation angle : 90°	- Apply to OA, EA, MA damper
Difference Pressure Sensor (for Filter)	- Power : AC 24V, Output signal : DC 0 ~ 10V * Boundary : 0 ~ 1000Pa - Switch type : Relay Open / Close	- Apply to filter
Static Pressure Sensor	- Power : AC 24V, Output signal : DC 0 ~ 10V - Boundary : 0 ~ 1000pa	- Apply to SA (for inverter control)
CO ₂ Sensor	- Power : AC 24V, Output signal : DC 0 ~ 10V - Boundary : 0 ~ 2000ppm	- Apply to RA duct
Smoke Detection Sensor	- Power : AC 24V, From : Contact point type	- Apply to RA duct

CONTROL SOLUTION

Various Control with Control kit – Multiple MULTI V + EEV Kits

