

SAMSUNG Electronics HVAC

SAMSUNG SINGLE ZONE (CAC) SPLIT SYSTEMS
HVAC Guide Specifications
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Single zone heat pump systems.

SAMSUNG Electronics CAC Outdoor Unit Model Numbers:

AC009KXADCH/AA; AC012KXADCH/AA; AC018KXADCH/AA;
AC018JXADCH/AA; AC024JXADCH/AA; AC030JXADCH/AA;
AC036JXADCH/AA; AC042JXADCH/AA; AC048JXADCH/AA;
AC054KXADCH/AA

SAMSUNG Electronics CAC Outdoor Unit Max Heat Model Numbers:

AC030JXSCCH/AA; AC036JXSCCH/AA;

SAMSUNG Electronics CAC Indoor Unit Model Numbers:

AC009KNLDCH/AA; AC012KNLDCH/AA; AC012MNADCH/AA;
AC018KNLDCH/AA; AC018KN4DCH/AA; AC018MNADCH/AA;
AC018MNHDCH/AA; AC018KNZDCH/AA; AC018JN4DCH/AA;
AC024MNADCH/AA; AC024KNZDCH/AA; AC024KN4DCH/AA;
AC024MNHDCH/AA; AC024JN4DCH/AA; AC030KN4DCH/AA;
AC030MNTDCH/AA; AC030MNHDCH/AA; AC030KNZDCH/AA;
AC030JN4DCH/AA; AC030MNHDCH/AA; AC030KNZDCH/AA;
AC030JN4DCH/AA; AC036KN4DCH/AA; AC036MNTDCH/AA;
AC036MNHDCH/AA; AC036KNZDCH/AA; AC036JN4DCH/AA;
AC036MNHDCH/AA; AC036KNZDCH/AA; AC036JN4DCH/AA;
AC042KN4DCH/AA; AC042MNHDCH/AA; AC042KNZDCH/AA;
AC042JN4DCH/AA; AC048KN4DCH/AA; AC048MNHDCH/AA;
AC048KNZDCH/AA; AC048JN4DCH/AA; AC054KNZDCH/AA

Part 1 – General

1.1 SYSTEM DESCRIPTION

The variable capacity, heat pump air conditioning system shall be a Samsung Electronics System. The systems shall be (cool/heat) split system heat pump.

The heat pump system shall consist of a single outdoor condensing unit, single indoor unit, and optional wired or wireless controller.

The condensing unit shall be a horizontal discharge, 208/230V, 1Ph, 60Hz.

The evaporator shall be recessed, ceiling cassette type, wall-mounted (high-wall) type, or concealed duct type.

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1.2 QUALITY ASSURANCE

- A. The units shall be listed by Electrical Laboratories (ETL) and bear the ETL label.
- B. All wiring shall be in accordance with the National Electrical Code (N.E.C.).
- C. The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
- D. A full charge of R-410A that is good for up to 25 feet of line set shall be provided in the condensing unit.
- E. Additional refrigerant is needed for over 25 feet of line set.

Part 2 – Outdoor Unit Performance

2.1 The outdoor unit shall perform as indicated below (nominal capacity):

Outdoor Unit	Cooling Capacity* (Btu/h)	Heating Capacity* (Btu/h)
AC009KXADCH/AA	9,000	12,000
AC012KXADCH/AA	12,000	14,000
AC018KXADCH/AA	18,000	20,000
AC018JXADCH/AA	18,000	20,000
AC024JXADCH/AA	24,000	27,000
AC030JXADCH/AA	30,000	32,000
AC036JXADCH/AA	36,000	40,000
AC042JXADCH/AA	42,000	47,000
AC048JXADCH/AA	48,000	53,000
AC054KXADCH/AA	54,000	60,000

* Nominal cooling capacities are based on: Indoor temperature: 80°F DB, 67°F WB. Outdoor temperature: 95°F, 75°F WB.

* Nominal heating capacities are based on: Indoor temperature: 70°F DB, 60°F WB. Outdoor temperature: 43°F.

* Capacity data is based on refrigerant pipe length: 16.4 feet, 0 feet vertical separation.

2.2 The Max Heat outdoor unit shall perform as indicated below at -13°F (-25°C) OA:

Outdoor Unit	Heating Capacity* (Btu/h)
AC030JXSCCH/AA	28,600
AC036JXSCCH/AA	31,500

* Heating capacities are based on: Indoor temperature: 70°F DB, 60°F WB. Outdoor temperature: -13°F.

* Capacity data is based on refrigerant pipe length: 16.4 feet, 0 feet vertical separation.

2.3 AC0***X***H/AA Condensing Units:

A. General:

The outdoor unit shall be equipped with multiple circuit boards that shall perform all functions necessary for operation. The outdoor unit shall have a powder coated finish. The outdoor unit shall be completely factory assembled, piped and wired. Each unit shall be run tested at the factory.

1. Outdoor unit shall have a sound rating no higher than the following:

Model	Indoor Units	dB	
		Cooling	Heating
AC009KXADCH/AA	AC009KNLDCH/AA	46	47
AC012KXADCH/AA	AC012KNLDCH/AA	47	48
AC012KXADCH/AA	AC012MNADCH/AA	48	48
AC018KXADCH/AA	AC018KNLDCH/AA	49	50
AC018JXADCH/AA	AC018KN4DCH/AA	48	48
	AC018MNADCH/AA		
	AC018MNHDCH/AA		
	AC018KNZDCH/AA		
	AC018JN4DCH/AA		
AC024JXADCH/AA	AC024MNADCH/AA	50	50
	AC024KNZDCH/AA		
AC024JXADCH/AA	AC024KN4DCH/AA	48	48
	AC024MNHDCH/AA		
	AC024JN4DCH/AA		
AC030JXADCH/AA	AC030KN4DCH/AA	50	52
	AC030MNTDCH/AA		
	AC030MNHDCH/AA		
	AC030KNZDCH/AA		
	AC030JN4DCH/AA		
AC030JXSCCH/AA	AC030MNHDCH/AA	49	51
AC030JXSCCH/AA	AC030KNZDCH/AA	49	50
	AC030JN4DCH/AA		
AC036JXADCH/AA	AC036KN4DCH/AA	49	51
	AC036MNTDCH/AA		
	AC036MNHDCH/AA		
	AC036KNZDCH/AA		
	AC036JN4DCH/AA		
AC036JXSCCH/AA	AC036MNHDCH/AA	51	53
	AC036KNZDCH/AA		
	AC036JN4DCH/AA		
AC042JXADCH/AA	AC042KN4DCH/AA	51	53
	AC042MNHDCH/AA		
	AC042KNZDCH/AA		

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	AC042JN4DCH/AA		
AC048JXADCH/AA	AC048KN4DCH/AA	53	55
	AC048MNHDCH/AA		
	AC048KNZDCH/AA		
	AC048JN4DCH/AA		
AC054KXADCH/AA	AC054KNZDCH/AA	56	56

2. Both refrigerant lines from the outdoor unit to indoor unit shall be insulated.
3. The outdoor unit shall have an accumulator.
4. The outdoor unit shall auto-restart after power loss.
5. The outdoor unit shall have a high pressure safety switch, fuse, over-current protection, over-voltage protection, temperature limit protection logic, compressor overload sensing, and crank case heater.
6. The outdoor unit shall have the ability to operate with a maximum height difference and total length noted in table below.

Model	Maximum Vertical Separation (feet)	Maximum Line Set Length (feet)
AC009KXADCH/AA	49	66
AC012KXADCH/AA	49	66
AC018KXADCH/AA	66	98
AC018JXADCH/AA	66	98
AC024JXADCH/AA	98	164
AC030JXADCH/AA	98	164
AC030JXSCCH/AA	98	246
AC036JXADCH/AA	98	246
AC036JXSCCH/AA	98	246
AC042JXADCH/AA	98	246
AC048JXADCH/AA	98	246
AC054KXADCH/AA	98	246

7. The outdoor unit shall be capable of operating in outside ambient temperatures between 23°F to 115°F (-5°C to 46°C) in cooling mode without additional low ambient controls.
8. The outdoor unit shall be capable of operating in outside ambient temperatures between 0°F to 115°F (-18°C to 46°C) in cooling mode with optional wind baffle accessory (see “accessories” section).

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9. AC0***XADCH/AA outdoor units shall be capable of operating in outside ambient temperatures between -4°F (-20°C) and 75°F (24°C) in heating mode without additional low ambient controls.
 10. The control circuit between the indoor units, and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable.
 11. The outdoor unit shall supply power to indoor unit via 14 AWG X 3 power wire
 12. The outdoor unit shall have a removable EEPROM that stores system programming information, unit name, and other data.
 13. The outdoor unit shall have a snow accumulation prevention option setting to prevent snow drifting against an idle outdoor unit.
 14. The outdoor unit shall have a night time quiet mode option to reduce operating sound during the night (12,000 btu/h and 18,000 btu/h models: automatic activation, 24,000 btu/h and larger models: automatic or manual activation with dry contact signal).
- B. Unit Cabinet
1. The chassis shall be fabricated of galvanized steel, bonderized and finished with a powder coated baked enamel.
 2. Pipe connections at the outdoor unit shall be made inside the unit chassis. Refrigerant pipes can exit through the front, side, rear, or bottom sides of the outdoor unit.
- C. Fan
1. AC009KXADCH/AA, AC012KXADCH/AA, AC018KXADCH/AA, AC018JXADCH/AA, AC024JXADCH/AA, and AC030JXADCH/AA outdoor units shall be furnished with one (1) direct drive, variable speed propeller type fan.
 2. AC036JXADCH/AA, AC042JXADCH/AA, AC048JXADCH/AA, AC054KXADCH/AA, AC030JXSCCH/AA, and AC036JXSCCH/AA outdoor unit shall be furnished with two (2) direct drive, variable speed propeller type fans
 3. All fan motors shall be BLDC type.
 4. The fan motor shall have inherent protection, have permanently lubricated bearings, and be completely variable speed.
 5. The fan motor shall be mounted for quiet operation.
 6. The fan shall be provided with a raised guard to prevent contact with moving parts.

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7. The outdoor unit shall have horizontal discharge airflow.

D. Refrigerant

1. The condensing unit shall require R410A refrigerant.
2. The condensing unit come charged for system line set lengths up to 25 feet. Additional refrigerant is required if the system line set length is over 25 feet.
3. The condensing unit shall contain a single EEV (electronic expansion valve) to control refrigerant flow to the indoor unit.
4. Maximum refrigerant pipe length and vertical separation is noted in the table below.

Model	Maximum Length (feet)	Maximum Vertical Separation (feet)
AC009KXADCH/AA	66	49
AC012KXADCH/AA	66	49
AC018KXADCH/AA	98	66
AC018JXADCH/AA	98	66
AC024JXADCH/AA	164	98
AC030JXADCH/AA	164	98
AC030JXSCCH/AA	246	98
AC036JXADCH/AA	246	98
AC036JXSCCH/AA	246	98
AC042JXADCH/AA	246	98
AC048JXADCH/AA	246	98
AC054KXADCH/AA	246	98

E. Coil

1. The outdoor coil shall be hall be aluminum, flat fin, micro channel.
2. The coil shall be protected with an integral guard.
3. Refrigerant flow from the outdoor unit shall be controlled by means of a capacity modulation capable, inverter driven, twin BLDC rotary compressor.

F. Compressor

1. The compressor shall be an inverter driven, DC voltage, twin BLDC rotary compressor made by Samsung.
2. A crankcase heating device shall be factory mounted in/on the compressor.
3. The outdoor unit compressor shall have a variable modulation technology to modulate capacity. The capacity shall be completely variable as noted in the table below:

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Outdoor Unit	Indoor Units	Cooling Capacity Range (Btu/h)*	Heating Capacity Range (Btu/h)*
AC009KXADCH/AA	AC009KNLDCH/AA	3,200 - 12,000	2,900 – 14,000
AC012KXADCH/AA	AC012MNADCH/AA	3,400 – 14,500	3,000 – 16,200
	AC012KNLDCH/AA	3,400 -15,300	3,000 – 16,200
AC018KXADCH/AA	AC018MNADCH/AA	4,000 - 20,000	3,800 - 25,000
	AC018KNZDCH/AA	5,000 - 21,000	4,400 - 24,000
	AC018KN4DCH/AA	5,000 - 21,000	3,800 - 25,000
	AC018JN4DCH/AA		
	AC018MNHDCH/AA		
	AC018KNLDCH/AA	5,000 -21,000	3,800 – 22,000
AC024JXADCH/AA	AC024MNADCH/AA	7,000 - 27,000	5,200 - 31,000
	AC024KN4DCH/AA		
	AC024JN4DCH/AA		
	AC024MNHDCH/AA		
	AC024KNZDCH/AA	7,000 - 27,000	6,700 - 29,000
AC030JXADCH/AA	AC030MNTDCH/AA	9,300 - 35,000	9,000 - 38,000
	AC030KN4DCH/AA		
	AC030JN4DCH/AA		
	AC030MNHDCH/AA		
	AC030KNZDCH/AA	10,000 -33,000	9,000 - 36,000
AC030JXSCCH/AA	AC030KNZDCH/AA	14,000 – 36,000	11,500 – 39,000
	AC030JN4DCH/AA	13,000 - 36,000	11,000 - 39,000
	AC030MNHDCH/AA		

Outdoor Unit	Indoor Units	Cooling Capacity Range (Btu/h)*	Heating Capacity Range (Btu/h)*
AC036JXADCH/AA	AC036MNTDCH/AA	14,000 - 39,000	11,500 - 48,000

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	AC036KN4DCH/AA AC036MNHDCH/AA	14,000 - 40,000	11,500 - 48,000
	AC036KNZDCH/AA	14,000 – 39,000	12,000 – 43,000
AC036JXSCCH/AA	AC036KNZDCH/AA AC036JN4DCH/AA AC036MNHDCH/AA	14,000 – 42,000	12,000 – 48,000
AC042JXADCH/AA	AC042KN4DCH/AA AC042JN4DCH/AA AC042MNHDCH/AA	16,300 - 45,000	13,400 - 50,000
	AC042KNZDCH/AA	17,000 - 44,000	14,000 - 49,000
AC048JXADCH/AA	AC048KN4DCH/AA AC048JN4DCH/AA AC048MNHDCH/AA	18,600 - 51,000	15,300 - 55,000
	AC048KNZDCH/AA	19,000 - 50,000	16,000 - 55,000
AC054KXADCH/AA	AC054KNZDCH/AA	21,000 – 55,000	21,000 – 62,000

*Nominal cooling capacities are based on: Indoor temperature: 80°F DB, 67°F WB. Outdoor temperature: 95°F, 75°F WB.

*Nominal heating capacities are based on: Indoor temperature: 70°F DB, 60°F WB. Outdoor temperature: 43°F.

4. The compressor shall be equipped with an internal thermal overload.
5. The compressor shall be mounted to avoid the transmission of vibration.

G. Electrical

1. The outdoor unit electrical power shall be 208/230 volts, 1 phase, and 60 hertz.
2. The unit shall be capable of satisfactory operation within voltage limitations of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
3. The outdoor unit shall be controlled by integral microprocessors.
4. The control circuit between the indoor units and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, 16 AWG, shielded, two-core cable to provide total integration of the system.

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5. The outdoor unit shall provide power to the indoor unit with 14 AWG X 3 power wire (2 X high voltage wires, 1 X ground). The power wire shall be run from the condensing unit to indoor unit.

Part 3 – Indoor Units

3.1 AC0**KN4DCH/AA (360 CASSETTE) INDOOR UNIT

A. General:

The 360 cassette style indoor unit shall recess into the ceiling with a ceiling grille (ordered separately, part number: PC4NUDMUN (“ceiling type”, square, white), PC4NBDMUN (“ceiling type”, square, black), PC4NUNMUN (“open type”, circle, white), and PC4NBNMUN (“open type”, circle, black)). The 360 cassette shall support individual control using SAMSUNG NASA Control Network Solution (Control systems). Indoor model numbers shall be: AC018KN4DCH/AA, AC024KN4DCH/AA, AC030KN4DCH/AA, AC036KN4DCH/AA, AC042KN4DCH/AA, and AC048KN4DCH/AA.

1. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board, condensate pump, and fan motor.
2. The indoor unit shall include an internal condensate pump with check-valve as standard with a maximum vertical lift of 29 inches.
3. The indoor unit shall have an integral condensate float switch to disable the unit in the event of condensate overflow.
4. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function.
5. The indoor unit refrigerant pipes shall be charged with dehydrated air (Nitrogen gas) before shipment from the factory.
6. The indoor unit shall be a round ceiling cassette with 360°, even air distribution
7. The indoor units shall have a removable EEPROM that stores system programming information, unit name, and other data.
8. All indoor unit addressing and option settings shall be done digitally; the indoor unit does not contain rotary dials or setting switches.
9. The indoor unit shall not have air louvers or blades allowing full airflow without restriction. Air direction control shall be achieved by creating a low pressure area near air outlet causing discharge air to change direction angle.

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B. Unit Cabinet

1. The cabinet shall be space-saving ceiling-recessed cassette.
2. Construction shall be HIPS chassis with a galvanized steel frame and fascia panel certified to UL94 V0.
3. Each corner portion of the panel cabinet is detachable, which gives easy access to adjust the height.
4. The cabinet shall have provisions for a field installed, filtered, outside air intake. A booster fan is necessary. A 12V DC relay terminal is available to control a booster fan (with separate PCB connector).
5. The “ceiling type” fascia panel model PC4NUDMUN shall be square in shape, white, with a circular air outlet opening. This panel is designed for use in applications where the indoor unit chassis is recessed in the ceiling with a finished ceiling textile.
6. The “ceiling type” fascia panel model PC4NBDMUN shall be square in shape, black, with a circular air outlet opening. This panel is designed for use in applications where the indoor unit chassis is recessed in the ceiling with a finished ceiling textile.
7. The “open type” fascia panel model PC4NUNMUN shall be, white, circular in shape with a circular air outlet opening. This panel is designed for use in applications where the indoor unit chassis is exposed.
8. The “open type” fascia panel model PC4NBNMUN shall be, black, circular in shape with a circular air outlet opening. This panel is designed for use in applications where the indoor unit chassis is exposed.
9. The fascia panel shall have LED indicator lights and an infrared receiver.

C. Fan

1. The indoor fan assembly shall be a turbo fan, direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.

Model Number	Fan Speed Setting
AC018KN4DCH/AA AC024KN4DCH/AA AC030KN4DCH/AA AC036KN4DCH/AA AC042KN4DCH/AA AC048KN4DCH/AA	(UL) - Low – Mid – High - Turbo

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4. Fixed or auto-swing air direction shall be possible with wireless, touch, or premium wired controller (10° ~ 60° angle)
5. Independent air distribution control is possible with wireless or premium wired controller (three directions, 10° ~ 60° angle).
6. Airflow direction shall be accomplished without any air blades/louvers to remove air flow restriction in the air outlet path. Instead, the cassette indoor unit shall use three (3) internal booster fans to create an area of low pressure outside of the air outlet opening causing the air to change direction. Changing air direction in this manner (Coanda effect) is superior to traditional air louvers/blades on standard 4-way cassette indoor units.

D. Filter

1. Return air shall be filtered by means of a long-life washable permanent, electro-static filter included with fascia panel.

E. Coil

1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan with drain pump shall be provided under the coil.
6. The coil fins are coated with hydrophilic paints.
7. The condensate lift mechanism shall be able to raise drain water 29 inches above the condensate pan with built in check valve and float switch.
8. Both refrigerant lines to the 360 cassette indoor units shall be insulated.

F. Electrical

1. The unit electrical power shall be 208/230 volts, 1-phase, and 60 hertz supplied from the condensing unit.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
3. The indoor unit PCB contains a time-lag fuse.
4. The control circuit between the indoor units, and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable to provide total integration of the system. The outdoor unit shall supply power to indoor unit via 14 AWG X 3 power wire

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5. The indoor unit shall have a thermal fuse under high-voltage terminal block to disable unit in the event of overheating due to electrical malfunction/poor connection.

3.2 AC0**KNLDCH/AA (SLIM DUCT) INDOOR UNIT

A. General

The indoor unit shall be a high-performance, low static pressure, concealed ducted indoor fan coil that mounts above the ceiling with a fixed horizontal discharge supply. An electronic expansion valve is located inside the condensing unit for refrigerant control. The low static pressure, concealed ducted indoor unit shall support individual control using SAMSUNG DVM S NASA Control Network Solution (Control systems). Indoor model numbers shall be: AC009KNLDCH/AA, AC012KNLDCH/AA, and AC018KNLDCH/AA.

1. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board, condensate pump, and fan motor.
2. The indoor unit shall include an internal condensate pump with check-valve as standard with a maximum vertical lift of 29 inches.
3. The indoor unit shall have an integral condensate float switch to disable the unit in the event of condensate overflow.
4. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function.
5. The indoor unit refrigerant pipes shall be charged with dehydrated air (Nitrogen gas) before shipment from the factory.

B. Unit Cabinet

1. The unit shall be space saving, ceiling-concealed, ducted.
2. The cabinet shall be constructed of insulated galvanized steel.

C. Fan

1. AC009KNLDCH/AA and AC012KNLDCH/AA fan assemblies shall have two Sirocco fans direct driven by one (1) fan motor.
2. AC018KNLDCH/AA fan assemblies shall have two Sirocco fans direct driven by two (2) fan motors.
3. External static pressure data is provided in the table below.

External Static Pressure ("WC)		
Model Number	Standard	Acceptable Range
AC009KNLDCH/AA	0.1	0 - 0.24
AC012KNLDCH/AA	0.1	0 - 0.24
AC018KNLDCH/AA	0.1	0 - 0.24

4. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.

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5. The fan speed shall be adjustable by optional remote controller or manufacturer provided service software according to external static pressure.
6. The indoor unit shall have a ducted air outlet system and ducted return air system.

D. Filter

1. Return air shall be filtered by means of a standard factory installed return air filter.
2. Optional return filter box (rear placement) is available (see accessories section).
3. Electrostatic, washable filters are included as standard.

E. Coil

1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. All tube joints shall be brazed with phos-copper or silver alloy.
4. The coils shall be pressure tested at the factory.
5. A condensate pan with drain pump shall be provided under the coil.
6. The coil fins are coated with hydrophilic paints.
7. The condensate lift mechanism shall be able to raise drain water 29 inches above the condensate pan with built in check valve and float switch.
8. Both refrigerant lines to the duct indoor unit shall be insulated.

F. Electrical

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz supplied from the condensing unit.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
3. The indoor unit PCB contains a time-lag fuse.
4. The control circuit between the indoor units, and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable to provide total integration of the system.
5. The indoor unit shall have a thermal fuse under high-voltage terminal block to disable unit in the event of overheating due to electrical malfunction/poor connection.

3.3 AC0**KNZDCH/AA (MULTI-POSITION AHU) INDOOR UNIT

A. General

The indoor unit shall be a high-performance, high static pressure capable, concealed ducted indoor fan coil that mounts above the ceiling with a fixed horizontal discharge supply. The high static pressure capable, concealed ducted indoor unit shall support individual control using SAMSUNG DVM S NASA Control Network Solution (Control systems). Indoor model numbers shall be: AC018KNZDCH/AA, AC024KNZDCH/AA, AC030KNZDCH/AA,

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AC036KNZDCH/AA, AC042KNZDCH/AA, AC048KNZDCH/AA, and
AC054KNZDCH/AA.

1. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board, and fan motor.
2. The ducted indoor unit shall allow installation in the following positions: vertical, horizontal left (right to left), and horizontal right (left to right).
3. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function.
4. The indoor unit shall have a ducted air outlet system and ducted return air system (field provided).
5. The indoor unit refrigerant pipes shall be charged with dehydrated air (Nitrogen gas) before shipment from the factory.
6. The indoor unit shall have an optional supplemental electric heat kit option.
7. The indoor unit shall have a return air temperature sensor as standard.
8. The indoor unit shall be made in the United States.

B. Unit Cabinet

1. The unit shall be space saving, ceiling-concealed, ducted.
2. The cabinet shall be constructed of insulated galvanized steel.

C. Fan

1. The indoor fan is a double-inlet, forward curve, centrifugal type with a single constant-torque (ECM) fan motor
2. External static pressure data is provided in the table below.

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External Static Pressure ("WC)		
Model Number	Standard (rated)	Acceptable Range
AC018KNZDCH/AA	0.2	0 - 0.8
AC024KNZDCH/AA	0.2	0 - 0.8
AC030KNZDCH/AA	0.24	0 – 1.0
AC036KNZDCH/AA	0.24	0 – 1.0
AC042KNZDCH/AA	0.28	0.1 – 1.0
AC048KNZDCH/AA	0.28	0.1 – 1.0
AC054KNZDCH/AA	0.28	0.1 – 1.0

3. Fan airflow data is provided in the table below.

Airflow (CFM)		
Model Number	L/M/H	Total CFM Range*
AC018KNZDCH/AA	494 / 530 / 600	130 - 682
AC024KNZDCH/AA	547 / 636 / 760	262 - 888
AC030KNZDCH/AA	848 / 918 / 1,007	419 – 1,314
AC036KNZDCH/AA	883 / 1,042 / 1,165	419 – 1,314
AC042KNZDCH/AA	1,060 / 1,165 / 1,271	620 – 1,315
AC048KNZDCH/AA	1,130 / 1,271 / 1,413	415 – 1,739
AC054KNZDCH/AA	1,342 / 1,501 / 1,889	370 – 2,000

*Output will vary based on installation conditions and/or installation settings. Refer to installation manual for full fan curve details.

4. The indoor fan shall consist of three (3) selectable speeds, Low, Mid, and High. Auto fan speed setting is also available for heating, cooling, and dry modes.
5. The indoor fan shall have five (5) speed taps available for adjustment
6. The indoor unit shall have a ducted air outlet system and ducted return air system. Indoor fan is backward curved centrifugal type with a single constant torque fan motor.
7. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
8. As standard when the optional supplemental electric heat kit is activated, the indoor unit shall enable the highest fan speed.

D. Filter

1. Return air shall be filtered by means of a standard factory installed return air filter.

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- Optional return filter box (rear placement) is available (see accessories section).

E. Coil

- The indoor coil shall be mechanically bonded fin to copper tubing.
- Aluminum coil fins shall be coated with a hydrophilic/protective coating to promote moisture shedding.
- The tubing shall have inner grooves for high efficiency heat exchange.
- All tube joints shall be brazed with phos-copper or silver alloy.
- The coils shall be pressure tested at the factory.
- A condensate pan shall be provided under the coil for vertical or horizontal applications.
- Both refrigerant lines to the indoor unit shall be insulated.

F. Optional Filter Base:

- Optional filter base: VFB-1 for indoor unit model numbers: AC018KNZDCH/AA and AC024KNZDCH/AA.
- Optional filter base: VFB-2 for indoor unit model numbers: AM030KNZDCH/AA, AM036KNZDCH/AA.
- Optional filter base: VFB-3 for indoor unit model numbers: AM042KNZDCH/AA, AM048KNZDCH/AA and AM054KNZDCH/AA.
- Field provided filtration must be used within bounds of external pressure drop.
- The optional filter base shall be used for vertical installation.
- The optional filter base shall include a 1", pleated filter as standard.
- The optional filter base shall accommodate a 1" or 2" filter.

G. Optional Supplemental Electric Heat Kit:

- Optional supplemental electric heat kits are available as noted in table below.

<u>Indoor Unit Model Number</u>	<u>Compatible Heat Kit</u>	<u>kW</u>
AM018KNZDCH/AA, AM024KNZDCH/AA	VHK-103A	3
	VHK-105A	5
	VHK-205A	5

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<u>Indoor Unit Model Number</u>	<u>Compatible Heat Kit</u>	<u>kW</u>
AM030KNZDCH/AA, AM036KNZDCH/AA	VHK-210A	10
AM048KNZDCH/AA	VHK-305A	5
	VHK-310A	10
AM054KNZDCH/AA	VHK-305A	5
	VHK-310A	10
	VHK-315A	15

H. Electrical

1. The unit electrical power shall be 208/230 volts, 1-phase, and 60 hertz supplied from the condensing unit.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
3. The indoor unit PCB contains a time-lag fuse.
4. The control circuit between the indoor units, and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable to provide total integration of the system.
5. The indoor unit shall have a thermal fuse under high-voltage terminal block to disable unit in the event of overheating due to electrical malfunction/poor connection.

3.4 AC0**MN*DCH (WALL-MOUNTED) INDOOR UNIT

A. General:

The indoor unit shall be wall-mounted type with a slim silhouette. The indoor unit shall ship with a wireless controller and holder as standard. Indoor model numbers shall be: AC012MNADCH, AC018MNADCH, AC024MNADCH, AC030MNTDCH, and AC036MNTDCH.

1. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board and fan motor.
2. An electronic modulating linear expansion valves is located inside the condensing unit for refrigerant control.
3. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function.
4. Indoor unit and refrigerant pipes shall be charged with dehydrated nitrogen gas

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before shipment from the factory.

5. The indoor unit shall have a Turbo Mode to operate the system at a fixed, high capacity for thirty (30) minutes enabled with the wireless controller.
6. The indoor unit shall have a night time sleep mode to reduce system noise and provide optimal sleep conditions enabled with the wireless controller.
7. The indoor unit shall have a single event, ON/OFF timer setting enabled at the wireless controller.
8. The indoor unit high voltage terminals shall have a thermal fuse to prevent overheating due to loose connections of damaged components.

B. Unit Cabinet:

1. The casing shall be UL94 V0 with a gloss white finish with subtle accents.
2. Multi directional drain and refrigerant piping offering four (4) directions for refrigerant piping and four (4) directions for draining shall be standard.
3. Drain hose shall be on the right-hand side of the drain pan (when facing the front) as standard with optional left-hand side connection.
4. There shall be a separate galvanized steel mounting plate which secures the unit firmly to the wall.
5. The indoor unit shall have easy-access pipe and drain connections via access panel on front of unit for easier installation and service allowing maintenance without pulling the unit out from the wall thus preventing property damage.
6. Three LED indicator lights shall provide unit operation and error status.

C. Fan:

1. The indoor fan assembly shall be a cross-flow fan direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. Motorized guide vanes shall provide automatic change of side to side air flow (left to right) that can be fixed in any direction.
4. A motorized air sweep louver shall provide an automatic change in airflow by directing the air up and down to provide uniform air distribution.

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5. AC012MNADCH/AA, AC018MNADCH/AA, and AC024MNADCH/AA shall have a motorized supply air louver shall be hinged from the top reducing restriction and air noise.
6. AC012MNADCH/AA, AC018MNADCH/AA, and AC024MNADCH/AA cabinet shall have a triangular shape allowing for a larger fan and supply air outlet providing superior air throw at lower sound levels.
7. The indoor fan shall consist of various speeds, as indicated in below table.

Model Number	Fan Speed Setting
AC012MNADCH/AA AC018MNADCH/AA AC024MNADCH/AA AC030MNTDCH/AA AC036MNTDCH/AA	(UL) - Low – Mid – High - Turbo

D. Filter:

1. Return air shall be filtered by means of an easily removable, electro-static, washable filter.
2. AC012MNADCH/AA, AC018MNADCH/AA, and AC024MNADCH/AA air filter shall be on top of the unit and accessible without opening a panel or door providing simple access for the end-user.

E. Coil:

1. The indoor coil shall be of nonferrous construction with Slit fins on copper tubing.
2. The tubing shall have inner grooves for high efficiency heat exchange.
3. Aluminum coil fins shall be coated with a hydrophilic/protective coating to promote moisture shedding.
4. All tube joints shall be brazed with phos-copper or silver alloy.
5. The coils shall be pressure tested at the factory.
6. A condensate pan and drain shall be provided under the coil.
7. Both refrigerant lines to the indoor unit shall be insulated.

F. Electrical:

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1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz supplied from the condensing unit.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz)
3. The indoor unit PCB contains a time-lag fuse.
4. The control circuit between the indoor units, and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable to provide total integration of the system.

G. Standard Controls:

1. Wireless Controller

- a) The indoor unit shall include a wireless controller as standard.
- b) Function: The wireless controller shall control the following operations: On/Off, Operation Mode (auto, cool, heat, dry, and fan), temperature set point, "Turbo" mode, "Single User" mode, fan speed setting, ON/OFF timer, and other settings noted in the table below.

Simple Wireless Remote Controller	
Item	Description
ON/OFF	Run and stop operation
ON/OFF Timer	• Single event ON/OFF timer • Setting range: 0 ~ 24 hours
Operation Mode	• Switches between Auto/Cool/Dry/Fan/Heat • "Single User" mode • "Turbo" mode
Temperature Setting	• Sets the temperature for a single unit. • Range of temperature setting in 1°F increments: • Auto/Cool/Dry: 65°F-86°F • Heat: 61°F-86°F
Fan Speed Setting	• Models with 3 air flow speed settings: • High/Mid/Low/Auto
Option Code Editing	Allows user/installer to modify operation option codes and system settings

3.5 AC0**NN4DCH/AA (WIND-FREE™ 4-WAY CASSETTE) INDOOR UNIT

A. General

The Wind-Free™ 4-way cassette shall be style indoor unit shall recess into the ceiling with a ceiling grille (ordered separately, Wind-Free™ facia panel part number: PC4NUFMUN, standard facia panel: PC4NUSKUN). The Wind-Free™ 4-way cassette shall support individual control using SAMSUNG NASA Control

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Network Solution (Control systems). Indoor model numbers shall be: AC018NN4DCH/AA, AC024NN4DCH/AA, AC030NN4DCH/AA, AC036NN4DCH/AA, AC042NN4DCH/AA, and AC048NN4DCH/AA.

1. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board, condensate pump, and fan motor.
2. The indoor unit shall include an internal condensate pump with check-valve as standard with a maximum vertical lift of 29 inches.
3. The indoor unit shall have an integral condensate float switch to disable the unit in the event of condensate overflow.
4. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function.
5. The indoor unit refrigerant pipes shall be charged with dehydrated air (Nitrogen gas) before shipment from the factory.
6. The Wind-Free™ function is optional and can be enabled using central or local control options (MWR-SH11UN, MWR-WE13UN, MWR-WG00UN, AR-EH03U only).
7. The Wind-Free™ 4-way cassette can be configured for 2-stage operation, cooling the space with the louver open (fixed or swing) until the room temperature nears set temperature. Once room temperature is near set temperature, Wind-Free™ operation will start automatically, closing the louver and using the face of the fascia panel to gently cool the space with still air* through thousands of micro-holes.
8. The indoor unit Wind-Free™ fascia panel (PC4NUFMUN) shall include a humidity sensor to prevent condensation formation by restricting Wind-Free™ operation in high humidity conditions.

** The Wind-Free™ unit delivers an air current that is under 0.15 m/s while in Wind-Free™ mode. Air velocity that is below 0.15 m/s is considered "still air" as defined by ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers).*

B. Unit Cabinet

1. The cabinet shall be space-saving ceiling-recessed cassette.
2. Construction shall be HIPS chassis with a galvanized steel frame and fascia panel certified to UL94 V0.
3. Each corner portion of the panel cabinet is detachable, which gives easy access to adjust the height.

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4. The cabinet shall have provisions for a field installed, filtered, outside air intake. A booster fan is necessary. A 12V DC relay terminal is available to control a booster fan (with separate PCB connector).
5. Branch ducting shall be allowed from cabinet, available on 2 sides to condition an adjacent area within a single room.

C. Fan

1. The indoor fan assembly shall be a turbo fan, direct driven by a single motor.
2. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
3. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.

Model Number	Fan Speed Setting
AC018NN4DCH/AA AC024NN4DCH/AA AC030NN4DCH/AA AC036NN4DCH/AA AC042NN4DCH/AA AC048NN4DCH/AA	(UL) - Low – Mid – High - Turbo

4. The auto swing air outlet vanes (4) shall be capable of automatically swinging up and down for uniform air distribution.
5. The supply air vanes shall have independent control capability (32° – 65° control range) adjustable with optional wireless or wired controllers.

D. Filter

1. Return air shall be filtered by means of a long-life washable permanent filter included with fascia panel.

E. Coil

1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. Aluminum coil fins shall be coated with a hydrophilic/protective coating to promote moisture shedding.
3. The tubing shall have inner grooves for high efficiency heat exchange.
4. All tube joints shall be brazed with phos-copper or silver alloy.
5. The coils shall be pressure tested at the factory.
6. A condensate pan with drain pump shall be provided under the coil.
7. The coil fins are coated with hydrophilic paints.

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8. The condensate lift mechanism shall be able to raise drain water 29 inches above the condensate pan with built in check valve and float switch.
9. Both refrigerant lines to the 4-way cassette indoor units shall be insulated.

F. Electrical

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz supplied from the condensing unit.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
3. The indoor unit PCB contains a time-lag fuse.
4. The control circuit between the indoor units, and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable to provide total integration of the system.
5. The indoor unit shall have a thermal fuse under high-voltage terminal block to disable unit in the event of overheating due to electrical malfunction/poor connection.

3.6 AC0**MNHDCH/AA (DUCT S, HSP) INDOOR UNIT

A. General

The indoor unit shall be a high-performance, high static pressure capable, concealed ducted indoor fan coil that mounts above the ceiling with a fixed horizontal discharge supply. The high static pressure capable, concealed ducted indoor unit shall support individual control using SAMSUNG DVM S NASA Control Network Solution (Control systems). Indoor model numbers shall be: AC018MNHDCH/AA, AC024MNHDCH/AA, AC030MNHDCH/AA, AC036MNHDCH/AA, AC042MNHDCH/AA, and AC048MNHDCH/AA.

1. The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, control circuit board, condensate pump, and fan motor.
2. The indoor unit shall include an internal condensate pump with check-valve as standard with a maximum vertical lift of 29 inches.
3. The indoor unit shall have an integral condensate float switch to disable the unit in the event of condensate overflow.
4. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function.
5. The indoor unit refrigerant pipes shall be charged with dehydrated air (Nitrogen gas) before shipment from the factory.

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B. Unit Cabinet

1. The unit shall be space saving, ceiling-concealed, ducted.
2. The cabinet shall be constructed of insulated galvanized steel.
3. The indoor unit shall allow service access from third sides.

C. Fan

1. The indoor unit shall have smart-tuning function that can provide optimized comfort by allowing the occupant to offset the fan CFM curve with a wired controller (MWR-SH11UN, MWR-WE13UN, MWR-WG00UN) to increase or decrease airflow.
2. AC018MNHDCH/AA fan assembly shall have two Sirocco fans direct driven by one (1) fan motor.
3. AC024MNHDCH/AA, AC030MNHDCH/AA, AC036MNHDCH/AA, AC042MNHDCH/AA, and AC048MNHDCH/AA fan assemblies shall have two Sirocco fans direct driven by two (2) fan motors.
4. Fan airflow data is provided in the table below.

Airflow (CFM)		
Model Number	L/M/H	Total CFM Range*
AC018MNHDCH/AA	353 / 477 / 600	350 - 790
AC024MNHDCH/AA	530 / 618 / 706	530 – 1,035
AC030MNHDCH/AA	671 / 777 / 883	670 – 1,220
AC036MNHDCH/AA	848 / 989 / 1,165	848 – 1,510
AC042MNHDCH/AA	1,024 / 1,130 / 1,236	1,024 – 1,620
AC048MNHDCH/AA	1,059 / 1,165 / 1,271	1,059 – 1,675

*Output will vary based on installation conditions and/or installation settings. Refer to installation manual for full fan curve details.

5. External static pressure data is provided in the table below.

External Static Pressure ("WC)		
Model Number	Standard	Acceptable Range
AC018MNHDCH/AA	0.10	0.10 - 0.6
AC024MNHDCH/AA	0.10	0.10 - 0.8
AC030MNHDCH/AA	0.16	0.12 – 0.8
AC036MNHDCH/AA	0.16	0.12 – 0.8
AC042MNHDCH/AA	0.16	0.12 – 0.8
AC048MNHDCH/AA	0.20	0.16 – 0.8

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6. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.
7. The fan speed shall be adjustable by optional remote controller or manufacturer provided service software according to external static pressure.
8. The indoor unit shall have a ducted air outlet system and ducted return air system.
9. The indoor unit shall have static pressure scanning for simple setup and optimized comfort settings for the occupant.

D. Filter

1. Return air shall be filtered by means of a standard factory installed return air filter.
2. Optional return filter box (rear placement) is available (see accessories section).

E. Coil

1. The indoor coil shall be of nonferrous construction with slit fins on copper tubing.
2. Aluminum coil fins shall be coated with a hydrophilic/protective coating to promote moisture shedding.
3. The tubing shall have inner grooves for high efficiency heat exchange.
4. All tube joints shall be brazed with phos-copper or silver alloy.
5. The coils shall be pressure tested at the factory.
6. A condensate pan with drain pump shall be provided under the coil.
7. The coil fins are coated with hydrophilic paints.
8. The condensate lift mechanism shall be able to raise drain water 29 inches above the condensate pan with built in check valve and float switch.
9. Both refrigerant lines to the Duct S indoor unit shall be insulated.

F. Electrical

1. The unit electrical power shall be 208/230 volts, 1-phase, 60 hertz supplied from the condensing unit.
2. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
3. The indoor unit PCB contains a time-lag fuse.

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4. The control circuit between the indoor units, and the outdoor unit shall be 0.5VDC - 7VDC completed using stranded, annealed copper conductor, two-core, 16 AWG, shielded cable to provide total integration of the system.
5. The indoor unit shall have a thermal fuse under high-voltage terminal block to disable unit in the event of overheating due to electrical malfunction/poor connection.

Part 4 – Controls (optional)

4.1 OVERVIEW

A. General:

The DVM Controls Network Solution shall be capable of supporting remote controllers, schedule timers, system controllers, centralized controllers, an integrated web based interface, graphical user workstation, and system integration to Building Management Systems via BACnet® and LonWorks®.

B. Electrical Characteristics:

1. General:

The DVM S Controls Solution shall operate at 12V DC (excluding MCM-A202DUN ON/OFF Controller). Controller power and communications shall be via a common communications bus.

C. Wiring:

1. Main system control wiring (COM1, F1/F2) shall be installed from outdoor unit to indoor unit. This cable shall be 16 AWG X 2, shielded cable.
2. Zone control wiring (COM2, F3/F4) to wired remote controllers (MWR-****N) shall be run from the indoor unit terminal block to the controller associated with that unit. This cable shall be 16 AWG X 2, shielded cable.
3. Control wiring for system controllers and centralized controllers (upper level) shall be installed in a daisy chain configuration from outdoor unit to outdoor unit (R1/R2), to system controllers.
4. MST-P3P (S-Net3 software) shall be capable of being networked with up to 16: MIM-D00AN (DMS2), MIM-D01AUN (DMS2.5), MIM-B17N (BACnet gateway 2.0), MIM-B17BUN (BACnet gateway 2.5), MIM-B18 (LonWorks gateway2.0), and/or MIM-B18BUN (Lon Works gateway 2.5) system controllers for web/LAN based control for consolidated control.

D. Wiring type:

1. COM1 and COM2 control wiring shall be 2-conductor, 16 AWG X 2, shielded

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cable.

2. Network wiring shall be CAT-5e with RJ-45 connection.

4.2 DVM CONTROL NETWORK SOLUTION

A. General:

The SAMSUNG DVM S NASA Control Network Solution consists of remote controllers, system controllers, centralized controllers, and/or integrated web based interface communicating over a high-speed communication bus. The SAMSUNG DVM S NASA Control Network Solution shall support operation monitoring, scheduling, error monitor, power distribution, personal browsers, tenant billing, online maintenance support, and integration with Building Management Systems (BMS) using either LonWorks® or BACnet® interfaces.

4.3 MULTI-FUNCTION CONTROLLER – ADVANCED WIRED CONTROLLER (MWR-WG00UN)

A. Compatibility

1. DVM S systems (AM*****AA, MCM-D211UN), DVM Chiller FCU kits (MCM-F00N), 2020 RAC single zone high-wall units (AR**TSF*BWKNCV), CAC indoor units (AC0***N****/AA).

B. Connection:

1. The wired controller shall control up to 16 SAMSUNG indoor units (defined and controlled as one group).

C. Dimensions:

1. The wired controller shall be approximately 4 3/4" x 4 3/4" in size and white in color

D. The wired controller shall control SAMSUNG indoor units as follows:

1. Air handler operation ON/OFF
2. Air handler operation mode, set temperature, air flow direction, fan speed, individual louver control (with supported indoor units)
3. Discharge air temperature (with supported indoor units)
4. Setback function
5. Quiet and sleep modes

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6. Error display (up to 10 error codes with descriptions)
7. Filter replacement alarm display and reset
8. Single indoor unit control or multiple unit control (maximum 16 units)
9. Energy saving operation:
 - (a) Upper/lower temperature setting
 - (b) Automatic operation stop function
 - (c) Energy saving operation mode
 - (d) Energy consumption monitoring
10. Weekly operating schedule setting:
 - (a) Weekly and yearly operating schedule
 - (b) Options to set: desired A/C operation mode, setting temperature, power mode (ON/OFF), and fan speed to operate based on weekly or daily schedules
 - (c) Optional schedule exception day setting
11. Advanced HP auto changeover control and configuration
12. Supports multiple languages
13. Error code display with description (ten most recent error codes)

E. Other wired controller features:

1. Different button permission levels
2. Partial button lock option (on/off, temperature setting, fan speed, all modes, auto mode, cool mode, heat mode, dry mode, fan mode, and schedule setting buttons can be locked individually)
3. Backlight with option to dim the display after a specified time
4. Daylight savings clock advance option
5. Upper and lower temperature setting restriction
6. Heat mode skip (cooling only)

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7. Restrict wireless controller signal (optional)
8. Real-time clock function - current time/day display function
9. Built in IR receiver for indoor unit control using a wireless controller and integral room temperature sensor.
10. Indoor unit operation state display
11. Indoor unit service mode support
12. Micro SD card slot for simple firmware updating
13. Individual louver/blade control for 4-way and mini 4-way cassettes.
14. Individual air direction control for 360 Cassette indoor units.
15. Quiet Mode setting (for supported units)
16. Service mode for connected indoor unit operation monitoring, addressing, and setup
17. Built-in room temperature sensor
18. Indoor unit operation state display
19. Service mode support (Indoor unit addressing, indoor unit cycle data monitoring, option code monitoring and setting, and option setting/monitoring).
20. Time synchronization with central DMS2.5 central control gateways (MIM-D01AUN, MIM-B17BUN, MIM-B18BUN).
21. Wind-Free™ display and control for supported indoor unit models.
22. Motion Detection Sensor Control (On/Off, Indirect/Direct) for supported indoor unit models. Indirect/Direct control only applies to supported units that have MCR-SMC and MCR-SMD installed.
23. Clean and Long reach function for supported indoor unit models.
24. Automatic air volume enable and status viewing (for Duct S models AM0**MNMDCH/AA, AM0**MNHDC/AA, and AM0**RNMDCH/AA).
25. Maximum current control for DVM S 3Ø outdoor systems

F. Specifications:

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1. Two (2) conductor connection, PLC, (F3/F4).
2. DC 12V (power supplied by indoor unit via F3/F4 connection).
3. RS485 communication (F3/F4).
4. Can sense temperature via internal sensor, temperature sensor inside the air handler, or use the average temperature between controller and air handler temperature sensors.
5. The wired controller shall have two screw terminals for wiring connections. Wire is not included with controller.
6. 16AWG X 2 shielded cable is necessary for proper operation.
7. The wired controller shall allow up to 328 feet of wire from the farthest connected indoor unit to the controller.

<i>Multi-Function Controller</i>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ Fan/Heat	Each Group	Each Group
Temperature Setting	1. Sets temperature for a single group. 2. Range of temperature setting (may vary depending on connected indoor unit) a. Auto/Cool/Dry: 65°F-86°F b. Heat: 61°F-86°F 3. Setting discharge outlet air temperature for supported indoor units.	Each Group	Each Group
Discharge Air Temperature Setting	Sets temperature for supported ducted units	Each Group	Each Group
Fan Speed Setting	1. Models with 3 air flow speed settings: High /Mid/Low/Auto 2. Wind-Free™ mode enable/disable 3. Motion Detection Sensor Control 4. Clean and Long reach function for supported indoor unit models.	Each Group	Each Group
Air Flow Direction Setting	1. Air flow 2-step direction (Swing/Stop) 2. Direct setting at a specific angle. 3. Air flow operation varies depending on the model.	Each Group	Each Group

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<u>Multi-Function Controller</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
Scheduling	1. Weekly and yearly schedule settings (maximum 8 yearly schedule groups) 2. Power ON/OFF, mode, temperature, and fan speed settings can be set. 3. Configurable "Temporary Hold"/override duration for changes made when a schedule has been programmed. 4. Maximum 49 total weekly and yearly schedule settings can be set. 5. Real-time clock function: current time, day display function	Each Group	Each Group
Setback	1. Four (4) configuration patterns can be set (Wake, Leave, Return, Sleep). 2. Specify time, heating and cooling set temperatures and mode.	Each Group	Each Group
Button lock	1. Button permission level setting (On/Off / Temperature setting / Mode button / Fan speed) 2. Temperature limit setting 3. After power reset, the setting value is restored 4. Various restriction capabilities	Each Group	Each Group
Specified Function	1. Automatic stop setting (setting time range: 0-12 hours)	Each Group	Each Group

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<u>Multi-Function Controller</u>			
Item	Description	Operation	Display
Service Mode	1. Viewing/setting indoor unit option code 2. Viewing/setting indoor unit MAIN address 3. Viewing/setting indoor unit RMC address 4. Viewing indoor unit cycle data 5. Setting/Viewing temperature sensor compensation of the wired remote controller (-9°F~ +9°F) 6. Viewing RPM compensation 7. Viewing/setting EEV stop step when indoor unit is thermal-off during heating mode 8. Viewing/setting filter reminder time interval (1000 hours, 2000 hours) 9. Viewing/setting indoor unit temperature sensor compensation during Heating (+2°F or +5°F) 10. Viewing the H/W option setting 11. Viewing wired remote controller software version 12. Viewing/setting individual louver lock 13. Viewing indoor unit status 14. Power Master Reset 15. Resetting ODU (K3) 16. Automatic air volume enable and status viewing (for supported indoor units)	Each Unit	Each Unit
Blade	Setting individual blade positions on 4-Way Cassette (AM0**FN4DCH/AA, AM0**RN4DCH/AA, AM0**RN4DCH/AA)	Each Unit	Each Unit
Error	When an error is currently occurring in the system, the afflicted unit and the error code are displayed	Each Group	Each Group
Permit / Prohibit Local Operation	Setting/releasing of simplified locking of remote control buttons	Each Group	N/A
Quiet Mode	Select the quiet mode to lower the fan noise level (for supported units)	Each Group	N/A
Room Temperature	Actual room temperature or set temperature can be displayed	Each Group	Each Group

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<u>Multi-Function Controller</u>			
Item	Description	Operation	Display
Energy and Usage	- Display instantaneous power (current power use), weekly usage, monthly usage, and yearly usage, in graph format with year-over-year display option. - The weekly display follows ISO 8601 standards. - Display weekly operating time, monthly operating time, yearly operating time, in graph format with year-over-year display option. - Target energy consumption and target operating times can be specified. When energy consumption or operating time has exceeded the target(s), an alarm popup will appear for notification.	Each group	Each group

**Some features may not be available depending on the model of connected air handler(s).*

***The Wind-Free™ unit delivers an air current that is under 0.15 m/s while in Wind-Free™ mode. Air velocity that is below 0.15 m/s is considered “still air” as defined by ASHRAE 55-2013 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers).*

4.4 MULTI-FUNCTION CONTROLLER – PREMIUM INDIVIDUAL WIRED CONTROLLER (MWR-WE13UN)

A. Connection:

- The wired controller shall control up to 16 SAMSUNG indoor units or SAMSUNG ERV's (defined and controlled as one group).

B. Dimensions:

- The wired controller shall be approximately 4 5/8" x 4 7/8" in size and white in color

C. The wired controller shall control indoor units and SAMSUNG ERV as follows:

- Air handler and ERV unified controller (can only control SAMSUNG ERV's)
- Air handler operation ON/OFF
- Air handler operation mode, set temperature, air flow direction, fan speed, individual louver control (with supported indoor units), discharge air temperature (with supported indoor units)
- Quiet and sleep modes
- Error display
- Filter replacement alarm display and reset

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7. Single indoor unit control or multiple unit control (maximum 16 units)
 8. Energy saving operation:
 - (a) Upper/lower temperature setting
 - (b) Automatic operation stop function
 - (c) Energy saving operation mode
 - (d) Weekly operating schedule setting:
 - (e) Weekly operating schedule (A/C only, ERV only, A/C + ERV)
 9. Options to set: desired A/C operation mode, setting temperature, power mode (ON/OFF), and fan speed to operate based on weekly or daily schedules
 10. Optional schedule exception day setting
- D. Other wired controller features:
1. Different button permission levels
 2. Partial button lock option (on/off, selection, temperature setting, fan speed, and schedule setting buttons can be locked individually)
 3. Backlight
 4. Daylight savings clock advance option
 5. Upper and lower temperature setting restriction
 6. Auto mode skip
 7. Heat mode skip (cooling only)
 8. Restrict wireless controller signal (optional)
 9. Louver position setting (cassette and wall units)
 10. Individual louver/blade control for 4-way and mini 4-way cassettes.
 11. Individual air direction control for 360 Cassette indoor units (MWR-WE13N, MWR-WE13UN).
 12. Auto-off option to automatically turn the associated indoor unit(s) off after the specified time without any interaction with the wired controller.
 13. System/indoor unit function and operation indication (defrost, error, restricted controller, SPi status)

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14. Quiet Mode setting (for supported units)
15. Service mode for connected indoor unit operation monitoring, addressing, and setup
16. Can be used to specify "Mode Master" while connected to a single indoor unit when used with heat pump systems.
17. Real-time clock function - current time/day display function
18. Built-in room temperature sensor
19. Indoor unit operation state display
20. Service mode support (Indoor unit addressing, indoor unit cycle data monitoring, option code monitoring and setting, and option setting/monitoring).
21. Time synchronization with central DMS2.5 central control gateways (MIM-D01AUN, MIM-B17BUN, MIM-B18BUN).

E. Specifications:

1. 2 conductor connection, PLC, (F3/F4).
2. DC 12V (power supplied by indoor unit via F3/F4 connection).
3. RS485 communication (F3/F4).
4. Can sense temperature via internal sensor, temperature sensor inside the air handler, or use the average temperature between controller and air handler temperature sensors.
5. The wired controller shall have two screw terminals for wiring connections. Wire is not included with controller.
6. 16AWG X 2 shielded cable is necessary for proper operation.
7. The wired controller shall allow up to 328 feet of wire from the farthest connected indoor unit to the controller.

<u>Multi-Function Controller</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for a single group Including Samsung ERV operation	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ Fan/Heat	Each Group	Each Group

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<u>Multi-Function Controller</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
Temperature Setting	4. Sets temperature for a single group. 5. Range of temperature setting a. Auto/Cool/Dry: 65°F-86°F b. Heat: 61°F-86°F 6. Setting discharge outlet air temperature for supported indoor units.	Each Group	Each Group
Discharge Air Temperature Setting	Sets temperature for supported ducted units	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low/Auto	Each Group	Each Group
Air Flow Direction Setting	4. Air flow 2-step direction (Swing/Stop) 5. Direct setting at a specific angle. 6. Air flow operation varies depending on the model.	Each Group	Each Group
Weekly Schedule	6. ON/OFF/Temperature setting can be done at most 10 schedules may be set for each day. 7. Real-time clock function: current time, day display function	Each Group	Each Group
Button lock	5. Button permission level setting (On/Off / Temperature setting / Mode button / Fan speed) 6. Temperature limit setting 7. After power reset, the setting value is restored 8. Various restriction capabilities	Each Group	Each Group
Specified Function	2. Automatic stop setting (setting time range: 0-12 hours) 3. Energy saving operation mode (IDU+ERV or ERV operation only depending on outdoor temperature)	Each Group	Each Group

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<u>Multi-Function Controller</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
Service Mode	17. Viewing/Setting indoor unit option code 18. Viewing/setting indoor unit MAIN address 19. Viewing/setting indoor unit RMC address 20. Viewing indoor unit cycle data 21. Setting/Viewing temperature sensor compensation of the wired remote controller (-9°F~ +9°F) 22. Viewing RPM compensation 23. Viewing/setting EEV stop step when indoor unit is thermal-off during heating mode 24. Viewing/setting filter reminder time interval (1000 hours, 2000 hours) 25. Viewing/setting indoor unit temperature sensor compensation during Heating (+2°F or +5°F) 26. Viewing the H/W option setting 27. Viewing wired remote controller software version 28. Viewing/setting individual louver lock	Each Unit	Each Unit
Blade	Setting individual blade positions on 4-Way Cassette	Each Unit	Each Unit
Error	When an error is currently occurring in the system, the afflicted unit and the error code are displayed	Each Group	Each Group
Permit / Prohibit Local Operation	Setting/releasing of simplified locking of remote control buttons	Each Group	N/A
Quiet Mode	Select the quiet mode to lower the fan noise level.	Each Group	N/A
Room Temperature	Actual room temperature or set temperature can be displayed	Each Group	Each Group

**Some features may not be available depending on the model of connected air handler(s).*

4.4 SIMPLE TOUCH WIRED CONTROLLER (MWR-SH11UN)

A. Connection:

1. The wired controller shall control up to 16 SAMSUNG indoor units (defined and controlled as one group).

B. Dimensions:

1. The wired controller shall be approximately 4 13/16" x 3 11/16" x 3/4" in size and white in color.

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C. The wired controller shall have the following features and control capability:

1. The wired controller shall have an internal infrared receiver to allow control of connected indoor units wirelessly via MWR-SH11UN (requires separately purchased wireless controller).
2. The wired controller shall have a backlight
3. The wired controller shall have an internal temperature sensor.
4. The wired controller shall have the following temperature display options:
 - (a) Set temperature
 - (b) Room temperature
 - (c) Relative temperature. Relative temperature means that the wired remote controller only displays the temperature increase or decrease (± 3) compared to the reference temperature. Reference temperature is determined set temperature defined by the central controller.
5. Indoor unit operation ON/OFF
6. Indoor unit operation modes, set temperature, louver position (cassette, ceiling, wall units), and fan speed settings.
7. Single indoor unit control or multiple unit control (maximum 16 units)
8. Full controller lock
9. Partial controller button lock (ON/OFF, operation mode button, temperature setting buttons, fan speed button, timer function, louver swing, sleep function, quiet function, outing gin and lock mode button)
10. Upper and lower temperature setting restriction
11. Heat, cool, dry, fan, and auto mode skip options (skips specified mode on wired controller)
12. Restrict wireless controller signal (optional)
13. Single event timer function (ON/OFF control, 30 minutes ~ 24 hours timer setting options)
14. System/indoor unit function and operation indication (defrost, error, restricted controller, SPi status, filter reminder)
15. Quiet Mode setting (for supported units)
16. Service mode for connected indoor unit operation monitoring, addressing, and

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setup

17. Can be used to specify "Mode Master" while connected to a single indoor unit when used with heat pump systems to control system mode.
18. The wired controller shall support duct unit discharge air control heating and cooling temperature setting (done via service menu during initial setup) for supported ducted unit models.
19. Outing Mode for keeping a minimum heating (61~72°F) and cooling (77~86°F) temperature while you are away. The unit will also operate at the specified outing temperature, turning on when there is a 9°F difference from the set temperature. The unit will turn off when the indoor temperature reaches back to the desired temperature. This process is repeated for 12 hours, in which the outing mode is then shut off.

A. Specifications:

1. 2 conductor connection, PLC, (F3/F4).
2. DC 12V (power supplied by indoor unit via F3/F4 connection).
3. The wired controller shall have two screw terminals for wiring connections. Wire is not included with controller.
4. 16AWG X 2 shielded cable is necessary for proper operation.
5. The wired controller shall allow up to 328 feet of wire from the farthest connected indoor unit to the controller.

<u>Simple Touch Wired Controller</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ Fan/Heat	Each Group	Each Group

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<u>Simple Touch Wired Controller</u>			
Item	Description	Operation	Display
Temperature Setting	1. Sets temperature for a single group. 2. Range of temperature setting 3. Auto/Cool/Dry: 65°F-86°F 4. Heat: a. 61°F-86°F b. Nordic CAC Models (AC0**JXSCCH/AA): 46°F-86°F 5. Setting discharge outlet air temperature for supported indoor units.	Each Group	Each Group
Temperature Display	1. Room temperature 2. Set temperature 3. Relative temperature. Relative temperature means that the wired remote controller only displays the temperature increase or decrease (± 3) compared to the reference temperature. Reference temperature is determined set temperature defined by the central controller.	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low/Auto	Each Group	Each Group
Air Flow Direction Setting	1. Air flow 2-step direction (Swing/Stop) 2. Air flow operation varies depending on the model.	Each Group	Each Group
ON/OFF Timer	1. ON/OFF single event timer 2. Can set to turn unit ON and/or OFF between 30 minutes ~24 hours.	Each Group	Each Group
Button lock	1. Button permission level setting (On/Off / Temperature setting / Mode button / Fan speed) 2. Temperature limit setting 3. After power reset, the setting value is restored 4. Various restriction capabilities	Each Group	Each Group
Service Mode	1. Viewing/Setting indoor unit option code 2. Viewing/setting indoor unit MAIN address 3. Viewing/setting indoor unit RMC address 4. Viewing indoor unit cycle data 5. Viewing/setting indoor unit option settings 6. Viewing/setting indoor unit temperature sensor compensation during Heating (+2°F or +5°F)	Each Unit	Each Unit

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<u>Simple Touch Wired Controller</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
Error	When an error is currently occurring in the system, the afflicted unit and the error code are displayed	Each Group	Each Group
Permit / Prohibit Local Operation	Setting/releasing of simplified locking of remote control buttons	Each Group	N/A
Quiet Mode	Select the quiet mode to lower the fan noise level.	Each Group	N/A
Outing Mode	When the temperature drops below or goes above 9°F, of the desired temperature, while away, the system will automatically heat or cool accordingly.	Each Group	N/A

4.5 WIRELESS CONTROLLER (AR-EH03U)

A. Function:

1. The wireless controller shall support the following control options via soft-touch buttons: ON/OFF, set temperature, mode, fan speed, filter reminder reset, independent louver control, airflow direction, and single event timer setting.
2. The wireless controller shall have a wide, easy to read display.
3. The wireless controller shall support indoor unit option code setting, indoor unit addressing, and indoor unit option setting.
4. The wireless controller shall include a holder to secure remote to wall.

B. Dimensions:

1. Width Height X Depth: 1 13/16" X 5 3/8" X 13/16"

4.6 WIRELESS CONTROLLER FOR 360 CASSETTE INDOOR UNITS (AR-KH03U)

B. Function:

1. The wireless controller shall support the following control options via soft-touch buttons: ON/OFF, set temperature, mode, fan speed, filter reminder reset, independent air direction control, and single event timer setting.
2. The wireless controller shall have a wide, easy to read display.
3. The wireless controller shall support indoor unit option code setting, indoor unit

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addressing, and indoor unit option setting.

4. The wireless controller shall include a holder to secure remote to wall.

C. Dimensions:

1. Width Height X Depth: 1 13/16" X 5 3/8" X 13/16"

4.7 WIRELESS SIGNAL RECEIVER FOR DUCT-TYPE INDOOR UNITS (MRK-A10N)

A. Connection:

1. The wireless signal receiver shall be capable of connection to 1 duct unit.

B. Function:

1. The wireless signal receiver shall control: power, fan speed, set temperature, and timer via wireless controller (AR-EH03U).
2. The wireless signal receiver shall display operation indication and blinking LED indication in the event of system operation and abnormality/error.
3. The wireless signal receiver shall connect using included receiver wire (32.8').

C. Dimensions:

1. The wireless signal receiver shall be approximately 2.7" x 4.7" in size and white in color with a LED display.
2. The wireless signal receiver shall be recessed mount.

4.8 EXTERNAL ROOM TEMPERATURE SENSOR (MRW-TA)

A. Connection:

1. The external remote room sensor shall connect to 1 indoor unit.
2. The external remote room sensor shall plug directly into PCB of indoor unit with supplied adapter.

B. Function:

1. The external remote room sensor shall be used to measure the exact room temperature.
2. The external remote room sensor shall support wire length of maximum 39 feet.

4.9 EXTERNAL CONTACT CONTROL – INDIVIDUAL UNIT, ON/OFF CONTROL AND MONITORING, SUPPLEMENTAL EXTERNAL HEAT CONTROL,

UNOCCUPIED MODE INPUT (MIM-B14)

A. Function:

1. Control option to enable/disable and monitor individual indoor units
2. Direct indoor unit control by external contact, 0 volts OPEN/CLOSE signal
3. Emergency control with simple contact input
4. Unoccupied room control with applicable indoor units.
5. Supplemental, external heat control output with applicable indoor units.
6. Indoor unit operation (thermal or operation)/error state output through relay contacts (5VDC)
7. Installation location: inside a single indoor unit
8. Connection to indoor unit with included wire harnesses

4.10 ON/OFF CONTROLLER (MCM-A202DUN)

A. Connection:

1. The On/Off Controller shall be capable of controlling up to 128 indoor units (defined as 16 groups).

B. Dimensions:

1. The On/Off Controller shall be approximately 2.3" x 4.7" in size and white in color with 17 LED displays.
2. The On/Off Controller shall install recessed in wall. An NEC approved box shall be required for installation.

C. Function:

1. The On/Off Controller shall be capable of turning ON/OFF up to sixteen groups of indoor units (1 – 16 units per group), for a maximum of 128 indoor units.
2. Each of the 16 individual groups shall have ON/OFF control separate from other groups.
3. All of the indoor units shall be turned ON/OFF using the main ALL ON/ALL OFF power button.
4. An LED for each group of indoor units, up to 16 groups, shall be indicated if there is a failure within each group by flashing.

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5. An All LED shall be ON if all the indoor units controlled by MCM-A202DUN are turned ON.
6. An LED for each group of indoor units shall indicate the ON/OFF status of the group.
7. 208/230 VAC 50/60 Hz. power. Must install in an NEC approved box (field provided).

<u>ON/OFF Controller</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for the air conditioner units	Group or Collective	Group or Collective
Operation Mode Setting	Auto/Cooling/Heating mode control using mode switch + ALLO ON/ALL OFF button	N/A	All Unit Groups LED
Error	LED flashes during failure.	N/A	Each Group
Schedule Operation	Not Available	N/A	N/A
Connection Position	Water-source unit Communication Line (R1/R2)	N/A	N/A
Permit / Prohibit Local Operation	Wireless/wired remote control restriction	Each Group	N/A

4.11 INTEGRATED MANAGEMENT SYSTEM – DATA MANAGEMENT SERVER 2.5 (MIM-D01AUN)

A. Function:

1. Easy control and monitoring through web browser (optimized for Internet Explorer). Individual/Group control of up to 256 indoor units including SAMSUNG ERV, air handlers, DVM Chiller, and DVM Chiller FCU Kits.
2. The Data Management Server shall have basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 256 indoor units), or all indoor units (collective batch operation). This basic controls for the MIM-D01AUN shall include on/off, operation mode selection (auto, cool, heat, dry, and fan), temperature setting, fan speed setting, airflow direction setting, error email notification, temperature limitations, operation mode limitation, and online maintenance.
3. The Data Management Server shall support system error notification via email. The Data Management Server emailed errors shall include: error occurrence time, error code with description of error, effected equipment address, and current error status.
4. The Data Management Server shall support: system configuration, 1-day/daily/weekly scheduling, monitoring of operation status, online

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maintenance tool, operation superseding of the remote controllers, editable user defined control logic, and malfunction monitoring.

5. The Data Management Server shall allow maximum current setting control of each VRF unit (DVM S Series AM****X*A**/AA only).
6. Schedule control function through web browser. Up to 256 schedule settings, weekly and daily schedule setting, wireless/wired remote controller restriction setting. Digital Outputs can be incorporated into scheduling.
7. The Server shall allow configuration of unoccupied room settings for indoor units configured for unoccupied room control.
8. Convenient digital display allows for easy set up.
9. SD memory card slot for data storage and software updating.
10. Available programmable logic to control the system based on preset monitor points. Specify various system control point inputs (indoor units, outdoor units, DI, DO) and operators (=, >, <, ≤, ≥, ≠) to manipulate system operation (indoor units, outdoor units, DI, DO) based on the status of the specified variables.
11. Optional "weighted averaging" or "representative" setting for heat pump systems to provide optimal auto changeover while in Auto mode.
12. Web server function with remote control (with a public IP address) via internet connection. No management software required – PC-independent management through web browser.
13. 10 DI (Digital Input) ports available. Two digital input ports shall be for emergency shutdown with external contact control interface and 8 for other monitoring options (OPEN/CLOSE status). Full indoor unit control with simple contact input (Emergency/Lock). Digital inputs can be incorporated into control logics.
14. 8 DO (Digital output) terminals for monitoring and control options. 2 state output (Operation/Error) for synchronous control and monitoring. 6 general purpose outputs to control other components (on: 12VDC out; off: no voltage). Digital Outputs can be incorporated into control logics and scheduling.

B. Connection:

1. DC 12V, 3A power provided by AC/DC adapter (input 110-240VAC 50/60Hz, provided with MIM-D01AUN).
2. LAN connection for web browser or SNET3 software connection.
3. 16 AWG X 2 shielded cable between SAMSUNG equipment and controls is necessary for proper operation.

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4. Maximum number of RS485 connections to 1 MIM- D01AUN:
 - (a) 75 ON/OFF Controllers (MCM-A202DUN)
 - (b) 80 DVM S Series Systems (AM****X****/AA) connected direct (5 ports, 16 systems per port)
 - (c) Maximum 256 indoor units (air handler and/or SAMSUNG ERV)
5. Upper level device connections: S-NET 3, web client.
6. The Data Management Server shall provide functions to monitor and control status of SAMSUNG DVM S Series systems (AM****X****/AA) as standard.
7. The Data Management Server shall support provide functions to monitor and control status of SAMSUNG DVM Plus II, Samsung DVM Plus III, Mini DVM, Free Joint Multi (MH***FXCA*A), and CAC (CH070/105/140CAV, DH105/140CAV, single zone systems) with installation of communication converter interface module per system (MIM-N01).
8. The Data Management Server shall support provide functions to monitor and control status of SAMSUNG CAC AC0***N**CH/AA (single zone systems) without installation of additional interface modules.

C. Dimensions:

1. The Data Management Server shall be approximately 9.4" x 10" x 2.6" in size with stainless steel front and LCD displays.

D. Control details:

<u>VRF Data Management Server (DMS2.5)</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ /Fan/Heat	Each Group	Each Group
Temperature Setting	1. Sets the desired temperature for a single group. Range of temperature setting: a. Auto/Cool/Dry: 65°F - 86°F b. Heat: 61°F - 86°F 2. Set discharge air temperature for Applicable Samsung duct units that have been configured for discharge air temperature control. Range of temperature setting: a. Cool/Dry mode: 46°F - 64°F b. Heat mode: 64°F - 86°F	Each Group	Each Group

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<u>VRF Data Management Server (DMS2.5)</u>			
Item	Description	Operation	Display
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low	Each Group	Each Group
Air Flow Direction Setting	1. Air flow 2-step direction (Swing/Stop) 2. Direct setting at a specific angle. 3. Air flow operation varies depending on the model.	Each Group	Each Group
Web Server Function	1. Remote control with the public IP address 2. No management software required – PC-independent management	Each Group	Each Group
Accessible level / Dynamic user security Management	1. Wireless/wired remote controller restriction setting 2. Specify the scope of control and monitoring of individual unit on a per-user basis. 3. 3 accessible levels: Admin/Manager/User	Each Group	Each Group
Error	1. When an error is currently occurring in the system(s), the afflicted unit and the error code are displayed 2. Error notification via email	Each Group	Each Group
Schedule Operation	1. Up to 256 schedule settings 2. Weekly and daily schedule setting	Each Group	Each Group
Power Distribution System	1. Power distribution to 256 indoor units. 2. Remote data query in 1-day units 3. File saving in Microsoft Excel format. 4. Power distribution data storage for one year 5. MIM-B16N or MIM-B16UN required for power use measurements	Each Group	Each Group
External Contact Interface	1. Full indoor unit control with simple contact input (Emergency/Lock) 2. State output (Operation/Error) for synchronous control 3. 10 digital outputs (2 reserved) / 8 digital inputs (2 reserved)	Each Channel	Each Channel
Smart Central Management	1. Control & monitoring zone edition 2. Wireless/wired remote control restriction 3. Temperature limit setting 4. Operation mode restriction	Each Group	Each Group
User editable control logic	1. User can edit control logic with arithmetic/conditional operators and parameters. 2. Efficient energy saving realization for various operation conditions. 3. EHP/ERV/AHU parameters + AND/OR +	Each Group	Each Group

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<u>VRF Data Management Server (DMS2.5)</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
	Arithmetic equation Function		
Data backup/useful history management	1. Important data is stored in SD memory card (settings, schedules, errors, operation data, energy data, user settings, etc.) 2. Record the operation history and error history	Each Group	Each Group
Unoccupied Room Control Configuration	1. Specify unoccupied room settings for applicable indoor units a. Mode b. Fan speed c. Set temperature	Each Group	-
DVM Chiller Control	1. Operation ON/OFF 2. Mode: Heat, cool, cool storage, hot water 3. Operation pattern: standard, rotation, efficiency 4. Enable/disable Water Law 5. Enable/disable quiet mode 6. Forced fan mode 7. Demand/maximum current control (50~100% of design current)	Each Group	Each Group

4.13 INTEGRATED MANAGEMENT SYSTEM – S-NET3 SYSTEM MANAGEMENT SOFTWARE (MST-P3P)

A. Connection:

1. The integrated management software shall be capable of controlling up to 4,096 indoor units.

B. Dimensions:

1. S-Net3 shall be system software installed by a CD USB security key.

C. Function:

1. The Integrated System Software shall enable the user to control multiple indoor units and shall provide additional functions.
2. The integrated management software shall be capable of being networked with up to 16: MIM-D00AN (DMS2), MIM-D01AUN (DMS2.5), MIM-B17N (BACnet gateway 2.0), MIM-B17BUN (BACnet gateway 2.5), MIM-B18N (LonWorks gateway2.0), and/or MIM-B18BUN (Lon Works gateway 2.5) system controllers for web/LAN based control for consolidated control.

3. The integrated management software shall be required if the user wants to

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simultaneously control 16 X MIM-D00AN (DMS2), MIM-D01AUN (DMS2.5), MIM-B17N (BACnet gateway 2.0), MIM-B17BUN (BACnet gateway 2.5), MIM-B18N (LonWorks gateway2.0), and/or MIM-B18BUN (Lon Works gateway 2.5) from a single PC using a single software session.

4. The integrated management software shall support operation superseding that of the remote controllers, system configuration, daily/weekly/annual scheduling, monitoring of operation status, error email notification, online maintenance tool and malfunction monitoring.
5. The integrated management software shall have basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 4,096 indoor units), or all indoor units (collective batch operation). This basic control set of operation controls for the integrated management software shall include on/off, operation mode selection (cool, heat, auto, dry and fan), temperature setting, fan speed setting, airflow direction setting, energy distribution reporting with PDF export, and online maintenance.
6. The integrated management software provides centralized control, it shall be able to enable or disable operation of local remote controllers via PC.
7. The integrated management software shall also include a high-level security USB key.
8. In terms of scheduling, the integrated management software shall allow the user to define daily, weekly, and annual schedules with operations consisting of ON/OFF, mode selection, temperature setting, and permit/prohibit of remote controllers.

<u>VRF Integrated Management Software (S-Net3)</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for a single group/unit	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/Fan/Heat	Each Group	Each Group
Temperature Setting	1. Sets the desired temperature for a single group. Range of temperature setting: a. Auto/Cool/Dry: 65°F - 86°F b. Heat: 61°F - 86°F 2. Set discharge air temperature for Applicable Samsung duct units that have been configured for discharge air temperature control. Range of temperature setting: a. Cool/Dry mode: 46°F - 64°F b. Heat mode: 64°F - 86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low	Each Group	Each Group

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<u>VRF Integrated Management Software (S-Net3)</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
Air Flow Direction Setting	1. Air flow 2-step direction (Swing/Stop) 2. Direct setting at a specific angle. 3. Air flow operation varies depending on the model	Each Group	Each Group
Accessible level / Dynamic user security Management	1. Wireless/wired remote controller restriction setting 2. Specify the scope of control and monitoring of individual unit on a per-user basis. 3. 3 accessible levels: Admin/Manager/User	Each Group	Each Group
Error	When an error is currently occurring on the system(s), the afflicted unit and the error code are displayed	Each Group	Each Group
Schedule Operation	1. Graphical schedule settings 2. Weekly, Daily schedule control 3. Exception date setting	Each Group	Each Group
Power Distribution System	1. Power distribution to 4,096 indoor units. 2. Remote data query in 1-day increments 3. File saving in Microsoft Excel format. 4. Power distribution data storage for one year in 1-day units. 5. MIM-B16 or MIM-B16N required for power distribution. 6. PDF report generation with electrical operational costs.	Each Group	Each Group
Smart Central Management	1. Control & monitoring zone edition 2. Wireless/wired remote control restriction 3. Temperature limit setting 4. Operation mode restriction	Each Group	Each Group

4.14 Thermostat Adaptor (MIM-A60UN)

A. Function:

1. Controls adapter that will allow control of Samsung HVAC systems sold in North America with a standard 24VAC thermostat

B. Connection:

1. One adapter per indoor unit connected to the F3-F4 communication line
2. 24VAC (requires field provided external 24VAC transformer).

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3. One MIM-A60UN per 24VAC transformer
4. The thermostat adapter shall support provide functions to control status of SAMSUNG DVM S (AM****N****/AA), CAC (AC****N****/AA), FJM (AJ0**TN****/AA, JNH****T), RAC (AR**TSF*BWKNCV, RNS***BT)

C. Dimension:

1. The thermostat adapter shall be approximately (W X H X D): 5" X 5 1/8" X 1 1/2" in size.

4.15 LonWorks® Gateway 2.5 (MIM-B18BUN)

A. Function:

1. Easy control and monitoring through web browser (optimized for Internet Explorer) and LonWorks® TP/FT-10A (free topology 78kbs). Easy control and monitoring through web browser (optimized for Internet Explorer). Individual/Group control of up to 128 indoor units including SAMSUNG ERV, air handlers, DVM Chiller, and DVM Chiller FCU Kits. (indoor quantity will vary based on number of control points necessary, see table below).

<u>Control and Monitoring Items*</u>	<u>Maximum Number of Connectable Indoor Units</u>
27 Items (all)	22
20 Items	30
15 Items	40
12 Items	50
9 Items	64
6 Items	100
4 Items	128

*20 items can be processed per second; data inquiry interval is 30 seconds.

2. The LonWorks® shall have basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 128 indoor units), or all indoor units (collective batch operation). This basic control set of operation controls for the LonWorks® gateway shall include on/off, operation mode selection (auto, cool, heat, dry, and fan), temperature setting, fan speed setting, airflow direction setting, error email notification, temperature limitations, operation mode limitation, and online maintenance.
3. The LonWorks® gateway shall support system error notification via email. The Data Management Server emailed errors shall include: error occurrence time, error code with description of error, effected equipment address, and current error status.

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4. The LonWorks® gateway shall support: system configuration, 1-day/daily/weekly scheduling, monitoring of operation status, online maintenance tool, operation superseding of the remote controllers, editable user defined control logic, and malfunction monitoring.
5. The LonWorks® gateway shall allow maximum current setting control of each VRF unit (DVM S Series AM****X*A**/AA only).
6. Schedule Control Function through web browser. Up to 256 schedule settings, weekly and daily schedule setting, wireless/wired remote controller restriction setting. Digital Outputs can be incorporated into scheduling.
7. The Server shall allow configuration of unoccupied room settings for indoor units configured for unoccupied room control.
8. Convenient digital display allows for easy set up.
9. SD memory card slot for data storage and software updating.
10. Available programmable logic to control the system based on preset monitor points. Specify various system control point inputs (indoor units, outdoor units, DI, DO) and operators (=, >, <, ≤, ≥, ≠) to manipulate system operation (indoor units, outdoor units, DI, DO) based on the status of the specified variables.
11. Optional "weighted averaging" or "representative" setting for heat pump systems to provide optimal auto changeover while in Auto mode.
12. Web Server Function with remote control (with a public IP address) via internet connection. No management software required – PC-independent management through web browser.
13. 10 DI (Digital Input) ports available. Two digital input ports shall be for emergency shutdown with external contact control interface and 8 for other monitoring options (OPEN/CLOSE status). Full indoor unit control with simple contact input (Emergency/Lock). Digital inputs can be incorporated into control logics.
14. 8 DO (Digital Output) terminals for monitoring and control options. 2 state output (Operation/Error) for synchronous control and monitoring. 6 general purpose outputs to control other components (on: 12VDC out; off: no voltage). Digital Outputs can be incorporated into control logics and scheduling.

B. Connection:

1. DC 12V, 3A power provided by AC/DC adapter (input 110-240VAC 50/60Hz, provided with the LonWorks® gateway)
2. LAN connection for BMS, web browser, SNET3 software connection

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3. Communication connection: ON/OFF Controller(s) (MCM-A202DUN)
4. 16 AWG X 2 shielded cable between SAMSUNG equipment and controls is necessary for proper operation
5. Maximum number of RS485 connections to 1 LonWorks® gateway:
 - (a) 75 ON/OFF Controllers (MCM-A202DUN)
 - (b) 80 DVM S Series Systems (AM****X****/AA) connected direct (5 ports, 16 systems per port)
 - (c) Maximum 128 indoor units (air handler and/or SAMSUNG ERV)
6. Upper level device connections: S-NET 3, BMS system (LonWorks®), web client
7. The LonWorks® gateway shall support LonWork@s TP/FT-10A (free topology 78kbs) and provide functions to monitor and control status of SAMSUNG DVM S Series systems (AM****X****/AA).
8. The Data Management Server shall support provide functions to monitor and control status of SAMSUNG DVM Plus II, Samsung DVM Plus III, Mini DVM, Free Joint Multi (MH***FXCA*A), and CAC (CH070/105/140CAV, DH105/140CAV, single zone systems) with installation of communication converter interface module per system (MIM-N01).
9. The Data Management Server shall support provide functions to monitor and control status of SAMSUNG CAC AC0***N**CH/AA (single zone systems) without installation of additional interface modules.

C. Dimensions:

1. The LonWorks® gateway shall be approximately 9.4" x 10" x 2.6" in size with stainless steel front and LCD displays.

D. Control details:

<u>VRF LonWorks® Gateway 2.5</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ /Fan/Heat	Each Group	Each Group
Temperature Setting	1. Sets the desired temperature for a single group. Range of temperature setting: a. Auto/Cool/Dry: 65°F - 86°F b. Heat: 61°F - 86°F 2. Set discharge air temperature for Applicable Samsung duct units that have	Each Group	Each Group

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<u>VRF LonWorks® Gateway 2.5</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
	been configured for discharge air temperature control. Range of temperature setting: a. Cool/Dry mode: 46°F - 64°F b. Heat mode: 64°F - 86°F		
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low	Each Group	Each Group
Air Flow Direction Setting	1. Air flow 2-step direction (Swing/Stop) 2. Direct setting at a specific angle. 3. Air flow operation varies depending on the model.	Each Group	Each Group
Web Server Function	1. Remote control with the public IP address 2. No management software required – PC-independent management	Each Group	Each Group
Accessible level / Dynamic user security Management	1. Wireless/wired remote controller restriction setting 2. Specify the scope of control and monitoring of individual unit on a per-user basis. 3. 3 accessible levels: Admin/Manager/User	Each Group	Each Group
Error	1. When an error is currently occurring on the System(s), the afflicted unit and the error code are displayed 2. Error notification via email	Each Group	Each Group
Schedule Operation	1. Up to 256 schedule settings 2. Weekly and daily schedule setting	Each Group	Each Group
Power Distribution System	1. Power distribution to 128 indoor units. 2. Remote data query in 1-day units 3. File saving in Microsoft Excel format. 4. Power distribution data storage for one year 5. MIM-B16N or MIM-B16UN required for power use measurements	Each Group	Each Group

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<u>VRF LonWorks® Gateway 2.5</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
External Contact Interface	1. Full indoor unit control with simple contact input (Emergency/Lock) 2. State output (Operation/Error) for synchronous control 3. 10 digital outputs (2 reserved) / 8 digital inputs (2 reserved)	Each Channel	Each Channel
Smart Central Management	1. Control & monitoring zone edition 2. Wireless/wired remote control restriction 3. Temperature limit setting 4. Operation mode restriction	Each Group	Each Group
User editable control logic	1. User can edit control logic with arithmetic/conditional operators and parameters. 2. Efficient energy saving realization for various operation conditions. 3. EHP/ERV/AHU parameters + AND/OR + Arithmetic equation Function	Each Group	Each Group
Data backup/ useful history management	1. Important data is stored in SD memory card 2. Record the operation history and error history	Each Group	Each Group
Unoccupied Room Control Configuration	1. Specify unoccupied room settings for applicable indoor units a. Mode b. Fan speed c. Set temperature	Each Group	-
DVM Chiller Control	1. Operation ON/OFF 2. Mode: Heat, cool, cool storage, hot water 3. Operation pattern: standard, rotation, efficiency 4. Enable/disable Water Law 5. Enable/disable quiet mode 6. Forced fan mode 7. Demand/maximum current control (50~100% of design current)	Each Group	Each Group

<u>VRF LonWorks® Gateway 2.5</u>		
<i>Input Variables (Control)</i>	<i>Output Variables (Monitor)</i>	
On/Off control	On/Off state	In/out contact state
Operation mode	Operation mode	Emergency Stop
Temperature setting	Set/Room temperature	Error code
Fan speed/direction	Fan speed/direction	Indoor time duration

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<u>VRF LonWorks® Gateway 2.5</u>		
<i>Input Variables (Control)</i>	<i>Output Variables (Monitor)</i>	
ERV operation mode	ERV operation mode	
ERV fan speed	ERV fan speed	
Filter alarm reset	Filter alarm	
User control restriction	User control restriction	
Operation mode lock	Thermal Off/On	
Set temperature limit	Power distribution	
Emergency stop	Operation mode lock	
Output contact control	Set temperature limit	

4.15 BACnet® GATEWAY 2.5 (MIM-B17BUN)

A. Function:

1. Easy control and monitoring through web browser (optimized for Internet Explorer). Individual/Group control of up to 256 indoor units including SAMSUNG ERV, air handlers, DVM Chiller, and DVM Chiller FCU Kits.
2. The BACnet® gateway shall have basic operation controls which can be applied to an individual indoor unit, a group of indoor units (up to 256 indoor units), or all indoor units (collective batch operation). This basic control set of operation controls for the BACnet® gateway shall include on/off, operation mode selection (auto, cool, heat, dry, and fan), temperature setting, fan speed setting, airflow direction setting, error email notification, temperature limitations, operation mode limitation, and online maintenance.
3. The BACnet® gateway shall support system error notification via email. The Data Management Server emailed errors shall include: error occurrence time, error code with description of error, effected equipment address, and current error status.
4. The BACnet® gateway shall support: system configuration, 1-day/daily/weekly scheduling, monitoring of operation status, online maintenance tool, operation superseding of the remote controllers, editable user defined control logic, and malfunction monitoring.
5. The BACnet® gateway shall allow maximum current setting control of each VRF unit (DVM S Series AM****X****/AA only).
6. Schedule Control Function through web browser. Up to 256 schedule settings, weekly and daily schedule setting, wireless/wired remote controller restriction setting. Digital Outputs can be incorporated into scheduling.
7. The Server shall allow configuration of unoccupied room settings for indoor units configured for unoccupied room control.

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8. Convenient digital display allows for easy set up.
9. SD memory card slot for data storage and software updating.
10. Available programmable logic to control the system based on preset monitor points. Specify various system control point inputs (indoor units, outdoor units, DI, DO) and operators ($=$, $>$, $<$, $\leq$, $\geq$, $\neq$) to manipulate system operation (indoor units, outdoor units, DI, DO) based on the status of the specified variables.
11. Optional "weighted averaging" or "representative" setting for heat pump systems to provide optimal auto changeover while in Auto mode.
12. Web Server Function with remote control (with a public IP address) via internet connection. No management software required – PC-independent management through web browser.
13. 10 DI (Digital Input) ports available. Two digital input ports shall be for emergency shutdown with external contact control interface and 8 for other monitoring options (OPEN/CLOSE status). Full indoor unit control with simple contact input (Emergency/Lock). Digital inputs can be incorporated into control logics.
14. 8 DO (Digital Output) terminals for monitoring and control options. 2 state output (Operation/Error) for synchronous control and monitoring. 6 general purpose outputs to control other components (on: 12VDC out; off: no voltage). Digital Outputs can be incorporated into control logics and scheduling.

B. Connection:

1. DC 12V, 3A power provided by AC/DC adapter (input 110-240VAC 50/60Hz, provided with the BACnet® gateway)
2. LAN connection for BMS, web browser, SNET3 software connection
3. Communication connection: ON/OFF Controller(s) (MCM-A202DUN)
4. 16 AWG X 2 shielded cable between SAMSUNG equipment and controls is necessary for proper operation
5. Maximum number of RS485 connections to 1 BACnet® gateway:
 - (a) 75 ON/OFF Controllers (MCM-A202DUN)
 - (b) 80 DVM S Series Systems (AM****X****/AA) connected direct (5 ports, 16 systems per port)
 - (c) Maximum 128 indoor units (air handler and/or SAMSUNG ERV)
6. Upper level device connections: S-NET 3, BMS system (BACnet® IP), web

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client

7. MIM-B17BUN shall provide functions to monitor and control status of SAMSUNG DVM S Series systems (AM****X****/AA).
8. The Data Management Server shall support provide functions to monitor and control status of SAMSUNG DVM Plus II, Samsung DVM Plus III, Mini DVM, Free Joint Multi (MH***FXCA*A), and CAC (CH070/105/140CAV, DH105/140CAV, single zone systems) with installation of communication converter interface module per system (MIM-N01).
9. The Data Management Server shall support provide functions to monitor and control status of SAMSUNG CAC AC0***N**CH/AA (single zone systems) without installation of additional interface modules.

C. Dimensions:

1. The BACnet® gateway shall be approximately 9.4" x 10" x 2.6" in size with stainless steel front and LCD displays.

D. Control details:

<u>VRF BACnet® Gateway 2.5</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
ON/OFF	Run and stop operation for a single group	Each Group	Each Group
Operation Mode	Switches between Auto/Cool/Dry/ /Fan/Heat	Each Group	Each Group
Temperature Setting	1. Sets the temperature for a single group. Range of temperature setting a. Auto/Cool/Dry: 65°F-86°F b. Heat: 61°F-86°F 2. Set discharge air temperature for Applicable Samsung duct units that have been configured for discharge air temperature control. Range of temperature setting: a. Cool/Dry mode: 46°F - 64°F b. Heat mode: 64°F - 86°F	Each Group	Each Group
Fan Speed Setting	Models with 3 air flow speed settings: High /Mid/Low	Each Group	Each Group
Air Flow Direction Setting	1. Air flow 2-step direction (Swing/Stop) 2. Direct setting at a specific angle. 3. Air flow operation varies depending on the model.	Each Group	Each Group

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<u>VRF BACnet® Gateway 2.5</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
Web Server Function	1. Remote control with the public IP address 2. No management software required – PC-independent management	Each Group	Each Group
Accessible level / Dynamic user security Management	1. Wireless/wired remote controller restriction setting 2. Specify the scope of control and monitoring unit on a per-user 3. 3 accessible levels: Admin/Manager/User	Each Group	Each Group
Error	1. When an error is currently occurring in the system(s), the afflicted unit and the error code are displayed 2. Error notification via email	Each Group	Each Group
Schedule Operation	1. Up to 256 schedule settings 2. Weekly and daily schedule setting	Each Group	Each Group
Power Distribution System	1. Power distribution to 256 indoor units. 2. Remote data query in 1-day units 3. File saving in Microsoft Excel format. 4. Power distribution data storage for one year 5. MIM-B16 or MIM-B16N required for power use measurements	Each Group	Each Group
External Contact Interface	1. Full indoor unit control with simple contact input (Emergency/Lock) 2. State output (Operation/Error) for synchronous control 3. 10 digital outputs (2 reserved) / 8 digital inputs (2 reserved)	Each Channel	Each Channel
Smart Central Management	1. Control & monitoring zone edition 2. Wireless/wired remote control restriction 3. Temperature limit setting 4. Operation mode restriction	Each Group	Each Group
User editable control logic	1. User can edit control logic with arithmetic/conditional operators and parameters. 2. Efficient energy saving realization for various operation conditions. 3. EHP/ERV/AHU parameters + AND/OR + Arithmetic equation Function	Each Group	Each Group
Data backup/useful history management	1. Important data is stored in SD memory card (settings, schedules, errors, operation data, energy data, user settings, etc.) 2. Record the operation history and error history	Each Group	Each Group

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<u>VRF BACnet® Gateway 2.5</u>			
<i>Item</i>	<i>Description</i>	<i>Operation</i>	<i>Display</i>
Unoccupied Room Control Configuration	1. Specify unoccupied room settings for applicable indoor units a. Mode b. Fan speed c. Set temperature	Each Group	-
DVM Chiller Control	1. Operation ON/OFF 2. Mode: Heat, cool, cool storage, hot water 3. Operation pattern: standard, rotation, efficiency 4. Enable/disable Water Law 5. Enable/disable quiet mode 6. Forced fan mode 7. Demand/maximum current control (50~100% of design current)	Each Group	Each Group

<u>VRF BACnet® Gateway 2.5</u>		
<i>Input Variables (Control)</i>	<i>Output Variables(Monitor)</i>	
On/Off control	On/Off state	In/out contact state
Operation mode	Operation mode	Emergency Stop
Temperature setting	Set/Room temperature	Error code
Fan speed/direction	Fan speed/direction	Indoor unit run time
ERV operation mode	ERV operation mode	DO/DI Status
ERV fan speed	ERV fan speed	SPI setting
Filter alarm reset	Filter alarm	DVM Chiller Chilled water temperature
User control restriction	User control restriction	Error status
Operation mode lock	Thermal Off/On	
Set temperature limit	Power distribution	
Emergency stop	Operation mode lock	
Output contact control	Set temperature limit	
DO ON/OFF	Human Sensor (select units)	
Duct unit discharge air temperature set temperature (select units)	Duct unit discharge air temperature (select units)	
DVM Chiller Chilled water temperature	DVM Chiller demand limit setting	
DVM Chiller set temperature	Operation hours	
DVM Chiller demand limit setting	DVM Chiller Water Law	

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<u>VRF BACnet® Gateway 2.5</u>		
<i>Input Variables (Control)</i>	<i>Output Variables(Monitor)</i>	
DVM Chiller Water Law	DVM Chiller set temperature	
DVM Chiller quiet mode	DVM Chiller quiet mode	

4.16 CENTRAL TOUCHSCREEN SYSTEM CONRTOLLER (MCM-A300UN)

A. Function:

1. The central touchscreen controller is only compatible with Samsung DVM S, CAC single zone, and Free Joint Multi (with MIM-N01 adapter) systems.
2. The central touchscreen controller shall provide control and monitoring via 7" touchscreen interface.
3. The central touchscreen controller shall provide Individual/Group control of up to 128 indoor units (16 systems maximum).
4. The central touchscreen controller shall allow control and monitoring of indoor unit: operation mode, set temperature, room temperature, fan speed, louver position, remote control restriction, and power.
5. The central touchscreen controller shall 2 X DI (digital input) terminals to allow quick disable of equipment with a 0 volt contact
6. The central touchscreen controller shall have 1 X DO (digital output) that will provide 12V DC output interlocked with indoor unit operation (ON/OFF).
7. The central touchscreen controller shall have an SD card slot for data backup and future firmware updates.
8. The central touchscreen controller shall provide scheduling capability. Scheduling shall control of indoor unit: operation mode, set temperature, fan speed, louver position, remote control restriction, and power.
9. The central touchscreen controller shall have an all ON/OFF button
10. The central touchscreen controller shall allow creation of zones and grouping of indoor units regardless of connected refrigerant system.
11. The central touchscreen controller shall allow grouping of multiple indoor units to display as a single unit on user interface.
12. The central touchscreen controller shall have customizable group and zone icons on main interface to allow easy operation for user.
13. The central touchscreen controller shall allow restriction of ON/OFF, mode, set

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temperature, fan speed, and remote control use for daily (non-management) touchscreen controller users.

14. The central touchscreen controller shall have menu lock capability allowing restriction of indoor unit control, schedule setting/changing, and touchscreen controller settings by daily (non-management) touchscreen controller users.
15. The central touchscreen controller shall allow screen lock to prevent unwanted changes by unauthorized users.
16. The central touchscreen controller shall have an LED indicator light on front of device to display operation and error status.

B. Connection:

1. The central touchscreen controller shall be powered by 100~240 VAC, 50/60 Hz.
2. The central touchscreen controller can connect to a single DVM S system via 2 X 16 AWG shielded cable on main system communication terminals (F1/F2). Connection on F1/F2 will allow control and monitoring of a single system.
3. The central touchscreen controller can connect to multiple systems via 2 X 16 AWG shielded cable on central control connections (R1/R2). Maximum 16 systems can be daisy chained on this communication line.
4. Multiple touchscreen controllers can be connected to a single central control connection (R1/R2, maximum 16) when used with MIM-D00AN, MIM-D01AUN, MIM-B17N, MIM-B17BUN, MIM-B18N, and MIM-B18BUN.

C. Dimensions:

1. The central touchscreen controller shall be 8" x 6 5/16" x 1 1/2" (WxHxD).

4.17 ELECTRICITY METER INTERFACE MODULE (MIM-B16UN)

A. Function:

1. Pulse Input Module (PIM) for SAMSUNG DVM Plus and SAMSUNG DVM S Series heat pump and heat recovery systems
2. The electricity meter interface module shall support up to 8-channel, real-time watt-hour consumption display
3. The electricity meter interface module shall support automatic watt-hour meter tracking and current communication state indication
4. The electricity meter interface module shall Communicates to the following Samsung controllers/gateways: MIM-D00A, MIM-D00AN, MIM-D01AUN, MIM-

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B17, MIM-B17N, MIM-B17BN (firmware version 2.6.X and later), MIM-B18, MIM-B18N (firmware version 2.6.X and later), MIM-B18BN (firmware version 2.6.X and later) to monitor/record energy consumption

B. Connection:

1. Energy consumptions data shall be viewed via the following SAMSUNG controllers/gateways: MIM-D00AN (DMS2), MIM-D01AUN (DMS2.5), MIM-B17N (BACnet gateway 2.0), MIM-B17BUN (BACnet gateway 2.5), MIM-B18 (LonWorks gateway2.0), and/or MIM-B18BUN (Lon Works gateway 2.5), SNET 3 Software (MST-P3P).
2. The electricity meter interface module shall support up to 8 watt-hour meters with pulse output.
3. DC 12V, 3A power provided by AC/DC adapter (input 110-240VAC 50/60Hz, provided with electricity meter interface module)

4.18 COMMUNICATION INTERFACE MODULE (MIM-N01)

A. Function:

1. Communication device that interfaces DVM Plus III indoor and water-source units with DVM S central control systems (MCM-A202DUN, MIM-D00AN, MIM-D01AUN, MIM-B17N, MIM-B17BUN, MIM-B18N, MIM-B18BUN, MCM-A300UN).
2. Communication device that interfaces Samsung single zone and multi-split systems: CH***CAV, DH***CAV, AJ0**JCJ*CH/AA and MH0**FXCA*A, systems with DVM S central control systems (MCM-A202DUN, MIM-D00AN, MIM-D01AUN, MIM-B17N, MIM-B17BUN, MIM-B18N, MIM-B18BUN, MCM-A300UN).
3. Communication device that interfaces Samsung single zone and multi-split systems: CH***CAV, DH***CAV, AJ0**JCJ*CH/AA and MH0**FXCA*A, systems with DVM S central control systems (MCM-A202DUN, MIM-D00AN, MIM-D01AUN, MIM-B17N, MIM-B17BUN, MIM-B18N, MIM-B18BUN, MCM-A300UN).

B. Connection:

1. DC 12V
2. RS485 communication (F1/F2) to VRF unit with supplied connection wire.
3. RS485 communication (R1/R2) to DVM Plus III / DVM S central control system(s).
4. Mounts in condenser unit (single zone, wall mounted units may require

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installation at indoor unit with included enclosure).

5. 1 X MIM-N01 for each system (1-3 outdoor modules).

4.19 MODE SELECTOR SWITCH FOR HEAT PUMP SYSTEMS (MCM-C200U)

A. Function:

1. The mode selector switch shall connect to SAMSUNG DVM S VRF unit models AM****X***H/AA to easily switch operation mode of the connected system
2. The mode selector switch shall allow for mode change options: Cool, Heat, and Auto.

B. Connection:

1. The mode selector switch shall include a connection harness that connects to MAIN outdoor unit PCB.
2. The mode selector switch shall install in MAIN outdoor unit as standard. The connection harness can be extended up to 328'
3. The mode selector switch shall only connect to and control one system.

4.20 MOTION DETECTOR (MCR-SMA)

A. Function:

1. The motion detector shall connect to SAMSUNG DVM S Mini 4-Way cassette models AM0***NNDCH/AA.
2. The motion detector shall monitor occupancy and turn off indoor unit after motion is not sensed for the specified duration (30, 60, 120, and 180 minutes).
3. The motion detector shall monitor occupancy and adjust target evaporator temperature after motion is not sensed for the specified duration (30, 60, 120, and 180 minutes) thus lowering capacity of unit to reduce energy use.

B. Connection:

1. The motion detector shall install in the corner of the mini 4-way cassette fascia panel.
2. The motion detector shall connect to the indoor unit PCB with provided cable.

4.21 WI-FI ADAPTER (MIM-H04UN)

A. Function:

1. The Wi-Fi adapter shall allow remote control of Samsung DVM S indoor units

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(AM****N***/AA) and single zone CAC systems (AC0***N*DCH/AA) from a mobile device (Android or iOS) with manufacturer provided mobile app.

2. The Wi-Fi adapter can be installed on systems that also have other central control devices like Central Touch Controllers and Data Management Servers.
3. The Wi-Fi adapter shall control/monitor indoor unit: power status, mode, set temperature, room temperature, fan speed, and supply air louver position.
4. The Wi-Fi adapter shall provide 7 Day scheduling for a single unit or multiple indoor units.
5. The Wi-Fi adapter shall provide basic daily, weekly, and monthly energy consumption checking (energy consumption data is for general reference only and should not be used for billing purposes. Data provided will not necessarily match your utility bill).
6. The Wi-Fi adapter shall allow group configuration option for simple control of multiple units at the same time
7. Requires a local Wi-Fi router with DHCP enabled and an internet connection.
8. The Wi-Fi adapter shall be capable of Geo-fencing.
9. The Wi-Fi adapter will allow automation through control logic.
10. The Wi-Fi adapter has firmware update capability through Micro SD card.

B. Connection:

1. The Wi-Fi adapter power supply shall be 12VDC provided by an indoor unit.
2. Wi-Fi communication: 802.11b, g, n (2.4 GHz and 5 GHz supported).
3. The Wi-Fi adapter will have a 4 wire connection to an indoor unit (F1/F2, V1/V2). If controlling indoor units on multiple systems, the adapter will connect to the central control communication bus (R1/R2) from the outdoor unit and can be powered from an indoor unit (V1/V2) or from a field provided 12VDC power supply.
4. One Wi-Fi adapter shall provide monitoring and control of up to 16 indoor units on up to 16 systems.
5. A maximum of 4 Wi-Fi adapters can be registered per user account, as well as a maximum of 5 mobile app users per Wi-Fi adapter.
6. Single Wi-Fi adapter allows 1 main account and up to 20 sub accounts.

7. Maximum of 200 accounts, Wi-Fi adapter quantity per account: 200 units.

Part 5 – Accessories (optional)

5.1 Duct unit filter boxes

A. General

1. The filter box shall accommodate 1" or 2" filters (field provided).
2. The filter box shall attach to the inlet side of the indoor unit.
3. Filter box compatibility is noted in the table below.

Indoor Unit Model Number	Filter Box Model
AC009KNLDCHAA	FB-SLIM1
AC012KNLDCHAA	FB-SLIM1
AC018KNLDCHAA	FB-SLIM2
AC018JNHDCH/AA	FB-M3036
AC018MNHDCH/AA	FB-DS1
AC024JNHDCH/AA	FB-M3036
AC024MNHDCH/AA	FB-DS2
AC030JNHDCH/AA	FB-M48/H3648
AC030MNHDCH/AA	FB-DS2
AC036JNHDCH/AA	FB-M48/H3648
AC036MNHDCH	FB-DS3
AC042JNHDCH/AA	FB-M48/H3648
AC042MNHDCH/AA	FB-DS3
AC048JNHDCH/AA	FB-M48/H3648
AC048MNHDCH/AA	FB-DS3

5.2 Wind baffles for extended range cooling

A. Front wind baffle

1. Designed to be placed on fan discharge side (front).
2. Only a front shield is required for applications where the outdoor unit is adjacent to a structure that would protect the intake side from prevailing wind. Applications without this protection would require a back shield (ex: roof top).
3. The wind baffle material shall be powder coated, galvanized steel.
4. Front wind baffle compatibility is noted in the table below.

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Model	Compatible Outdoor Unit Model	Required Wind Baffle Quantity
WBF-1M2	AC036JXADCH/AA	2
	AC042JXADCH/AA	2
	AC048JXADCH/AA	2
WBF-2M-B	AC024MXSCCC/AA	1
	AC030MXSCCC/AA	1
	AC036MXSCCC/AA	1
	AC024JXADCH/AA	1
	AC030JXADCH/AA	1
WBF-3M	AC009KXACCC/AA	1
	AC012KXACCC/AA	1
WBF-4M	AC018JXADCH/AA	1
	AC018KXACCC/AA	1
WBF-5M	AC018MXSCCC/AA	1
WBF-6M	AC030JXSCCH/AA	2
	AC036JXSCCH/AA	2
	AC054KXADCH/AA	2

B. Back wind baffles

1. Designed to be placed on the coil intake side of the unit (back).
2. Note: This back shield is only required for applications where the outdoor unit is not adjacent to a structure that would protect the intake side from prevailing wind (ex: roof top).
3. The wind baffle material shall be powder coated, galvanized steel.
4. Back wind baffle compatibility is noted in the table below.

Model	Compatible Outdoor Unit Model
WBB-2M-B	AC036JXADCH/AA
	AC042JXADCH/AA
	AC048JXADCH/AA
WBB-3M	AC024JXADCH/AA
	AC030JXADCH/AA
	AC030MXSCCC/AA

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	AC036MXSCCC/AA
WBB-4M	AC030JXSCCH/AA
	AC036JXSCCH/AA
	AC054KXADCH/AA
WBB-5M	AC009KXADCH/AA
	AC012KXADCH/AA
WBB-6M-B	AC018KXADCH/AA
	AC018JXADCH/AA
	AC018MXSCCC/AA
WBB-7M-B	AC024MXSCCC/AA