SAMSUNG “MAX” SERIES SINGLE ZONE SPLIT SYSTEMS
HVAC Guide Specifications
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Single zone heat pump systems.

Samsung Electronics “Max” Series Model Numbers:

Model	Indoor Unit	Outdoor Unit
AQN36VFUAGM	AQN36VFUAGM	AQX36VFUAGM

Part 1 – General

1.01 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 wireless controller.

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

The evaporator shall be wall-mounted (high-wall) type.

1.02 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 for the condensing unit only shall be provided in the condensing unit. Additional refrigerant is required based on lengths of system liquid refrigerant lines.

Part 2 – Outdoor Unit Performance

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

Outdoor Unit	Cooling Capacity* (Btu/h)	Heating Capacity* (Btu/h)
AQX36VFUAGM	32,000	34,800

*Nominal cooling capacities are based on: Indoor temperature: 80ºF DB, 67ºF WB. Outdoor temperature: 95ºF, 75ºF WB.
*Nominal heating capacities are based on: Indoor temperature: 70ºF DB, 60ºF WB. Outdoor temperature: 43ºF.

Part 3 – Products

3.01 AQX36VFUAGM Condensing Unit

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	dB
AQX36VFUAGM	58

2. Both refrigerant lines from the outdoor unit to indoor units shall be insulated.
3. The outdoor unit shall have an accumulator.
4. The outdoor unit shall have a high pressure safety switch, fuse, over-current protection and crank case heater.
5. 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)
AQX36VFUAGM	164	98

6. The outdoor unit shall be capable of operating in outside ambient temperatures between 14^0F to 115^0F in cooling mode without additional low ambient controls.
7. The outdoor unit shall be capable of operating in outside ambient temperatures between 0^0F to 115^0F in cooling mode with optional wind baffle accessory (see “accessories” section).
8. The outdoor unit shall be capable of operating in outside ambient temperatures between 5^0F and 75^0F in heating mode without additional low ambient controls.

9. 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.

B. Unit Cabinet:
1. The chassis shall be fabricated of galvanized steel, bonderized and finished with a powder coated baked enamel.

C. Fan:
1. The outdoor unit shall be furnished with one direct drive, variable speed propeller type fan.
2. All fan motors shall be BLDC type.
3. The fan motor shall have inherent protection, have permanently lubricated bearings, and be completely variable speed.
4. The fan motor shall be mounted for quiet operation.
5. The fan shall be provided with a raised guard to prevent contact with moving parts.
6. 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 valves) with 480 positions each to control refrigerant flow to the indoor unit.

E. Coil:
1. The outdoor coil shall be of nonferrous construction with lanced or corrugated plate fins on copper tubing.
2. Aluminum coil fins shall be coated with a hydrophilic/protective coating to reduce corrosion and promote moisture shedding.
3. The coil shall be protected with an integral guard.
4. 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 heater 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:

Model	**Cooling Capacity Range (Btu/h)***	**Heating Capacity Range (Btu/h)***
AQX36VFUAGM	9,000 – 38,000	9,000 – 45,000

*Nominal cooling capacities are based on: Indoor temperature: 80ºF DB, 67ºF WB. Outdoor temperature: 95ºF, 75ºF WB.
*Nominal heating capacities are based on: Indoor temperature: 70ºF DB, 60ºF WB. Outdoor temperature: 43ºF.

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, 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) with a maximum 25A overcurrent protection.
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.
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.

3.02 AQN36VFUAGM (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 as standard.

B. Indoor Unit
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. An electronic modulating linear expansion valves is located inside the condensing unit for refrigerant control. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated nitrogen gas before shipment from the factory. The indoor unit shall have a “turbo” option to operate the system at a fixed, high capacity enabled with the wireless controller. The indoor unit shall have a night time sleep mode to reduce system noise and provide optimal sleep conditions enabled with the wireless controller. The indoor unit shall have a single event, ON/OFF timer setting enabled at the wireless controller. The indoor unit high voltage terminals shall have a thermal fuse to prevent overheating due to loose connections of damaged components.

C. Unit Cabinet:
1. The casing shall be UL94 V0 with a white finish.
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. LED's on front of unit shall provide unit operation and error status.

D. 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. A manual adjustable guide vane shall provide the ability to change the airflow from side to side (left to right).
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.
5. The indoor fan shall consist of various speeds, as indicated in below table.

Model Number	Fan Speed Setting
AQN36VFUAGM	(UL) - Low – Mid – High - Turbo

E. Filter:
1. Return air shall be filtered by means of an easily removable, electro-static, washable filter.

F. 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 reduce corrosion and 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.

G. 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.

H. Standard Controls:
1. The indoor unit shall include a wireless controller as standard.

2. Function: The wireless controller shall control the following operations: On/Off, Operation Mode (auto, cool, heat, dry, and fan), temperature set point, “Turbo” mode, fan speed setting, 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 ~ 12 hours
Operation Mode	• Switches between Auto/Cool/Dry/Fan/Heat • “Turbo” mode
Temperature Setting	• Sets the temperature for a single unit. • Range of temperature setting in 1^0F increments: o Auto/Cool/Dry: 65°F-86°F o Heat: 61°F-86°F
Fan Speed Setting	• Models with 3 air flow speed settings: o High/Mid/Low/Auto
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed
Option Code Editing	Allows user/installer to modify operation option codes and system settings

3.03 OPTIONAL ACCESSORIES

1. AQN-WRP Premium wired controller kit
    1. AQN-WRP kit shall consist of MWR-WE10 wired controller and MIM-A00A sub-PCB.
    2. Connection: Can control up to 16 Samsung indoor units (defined and controlled as one group). Sub-PCB shall install inside the indoor unit.
    3. Dimensions: 4 5/8” x 4 7/8” in size and white in color
    4. Easy indoor unit control
        a. Indoor unit operation ON/OFF
        b. Indoor unit operation mode, set temperature, air flow direction, fan speed
        c. Quiet and sleep modes
        d. Error display
        e. Filter replacement alarm display and reset
        f. Single indoor unit control or multiple unit control (maximum 16 units)
        g. Upper/lower temperature setting
        h. Automatic operation stop function
        i. Daily/weekly operating schedule setting

Premium Wired Controller			
Item	**Description**	**Operation**	**Display**
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	• Set the temperature for a single group. • Range of temperature setting o Auto/Cool/Dry: 65°F-86°F	Each Group	Each Group

Premium Wired Controller			
Item	**Description**	**Operation**	**Display**
	○ Heat: 61°F-86°F		
Fan Speed Setting	• Models with 3 air flow speed settings: ○ High /Mid/Low/Auto	Each Group	Each Group
Air Flow Direction Setting	• Air flow 2-step direction (Swing/Stop) • Direct setting at a specific angle. • Air flow operation varies depending on the model.	Each Group	Each Group
Weekly Schedule	• ON/OFF, temperature, fan speed, and mode settings can be specified • Maximum 6 schedules may be set for each day. • Real-time clock function: current time, day display function	Each Group	Each Group
Button lock	• Button permission level setting (On/Off / Temperature setting / Mode button / Fan speed) • Temperature limit setting • After power reset, setting value is restored • Various restriction capabilities	Each Group	Each Group
Specified Function	• Automatic stop setting ○ Setting time range : 0-12 hours	Each Group	Each Group
Service Mode	• Setting/Viewing indoor unit option code • Viewing indoor unit RMC address • Viewing indoor unit cycle data • Setting/Viewing temperature sensor compensation of the wired remote controller (-9°~ +9°) • Viewing the RPM compensation • Viewing the filter time (1,000 hours or 2,000 hours) • Viewing indoor unit temperature sensor compensation under Heating (+2 or +5°) • Viewing the H/W option setting • Viewing the wired remote controller software version	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Permit / Prohibit Local Operation	Setting/releasing of simplified locking for remote control buttons can be performed	Each Group	N/A
Quiet Mode	Select the Quiet mode to run the indoor unit to the set mode to lower the fan noise level.	Each Group	N/A
Room Temperature	Actual room temperature display (or set temperature display)	Each Group	Each Group

5. Other Premium Controller features
    a. Different button permission levels
    b. Partial button lock option (on/off, selection, temperature setting, fan speed, and schedule setting buttons can be locked individually)
    c. Backlight

d. Daylight savings clock advance option
e. Temperature limit setting option
f. Real-time clock function; current time/day display function
g. Built-in room temperature sensor
h. Indoor unit operation state display
i. Service mode support (indoor unit cycle data monitoring, option code monitoring and setting, and dip switch state monitoring)

6. Specifications
   a. 4 wire connection
   b. DC 12V (V1/V2) power supplied by indoor unit
   c. RS485 communication (F3/F4)
   d. Can sense temperature via internal sensor, temperature sensor inside the air handler, or use the average temperature between controller and air indoor unit sensors
   e. The Premium Controller shall require no addressing.
   f. The Premium Controller shall connect using four-wire (2 wires for power supply and the other two for communication), untwisted, shielded. The Premium Controller shall require cross-over wiring for grouping across indoor units.
   g. 16AWG shielded cable is necessary for proper operation

B. AQN-WRS Standard wired controller kit
   1. AQN-WRP kit shall consist of MWR-WH00 wired controller and MIM-A00A sub-PCB.
   2. Connection: The Standard Controller shall be capable of controlling up to 16 indoor units (defined as 1 group). The sub-PCB shall install inside the indoor unit.
   3. Dimensions: 4.8” x 4.7” in size and white in color with a light-white LCD display.
   4. Easy indoor unit control
      a. Indoor unit operation ON/OFF
      b. Indoor unit operation mode, set temperature, air flow direction, fan speed
      c. Error display
      d. Filter replacement alarm display and reset
      e. Single indoor unit control or multiple unit control (maximum 16 units)
      f. Upper/lower temperature setting
      g. Automatic operation stop function

Standard Wired Controller			
Item	**Description**	**Operation**	**Display**
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	• Sets the temperature for a single group.
	• Range of temperature setting
	  ○ Auto/Cool/Dry: 65°F-86°F
	  ○ Heat: 61°F-86°F
		Each Group	Each Group

Fan Speed Setting	High /Mid/Low/Auto	Each Group	Each Group

Standard Wired Controller			
Item	**Description**	**Operation**	**Display**
Air Flow Direction Setting	• Air flow 2-step direction (Swing/Stop) • Direct setting at a specific angle. • Air flow operation varies depending on the model.	Each Group	Each Group
Button lock	• Button permission level setting (On/Off / Temperature setting / Mode button / Fan speed) • Temperature limit setting • After power reset, the setting value is restored	Each Group	Each Group
Specified Function	• Automatic stop setting ○ Setting time range : 0-12 hours	Each Group	Each Group
Service Mode	• Setting/Viewing indoor unit option code • Viewing indoor unit RMC address • Viewing indoor unit cycle data • Setting/Viewing temperature sensor compensation of the wired remote controller (-9°~ +9°) • Viewing the RPM compensation • Viewing the filter time (1,000 hours or 2,000 hours) • Viewing indoor unit temperature sensor compensation under Heating (+2 or +5°) • Viewing the H/W option setting	Each Group	Each Group
Error	When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed	Each Group	Each Group
Permit / Prohibit Local Operation	Setting/releasing of simplified locking for remote control buttons can be performed	Each Group	N/A
Quiet Mode	Select the Quiet mode to run the indoor unit to the set mode to lower the fan noise level.	Each Group	N/A
Room Temperature	• Displays set temperature. • Room temperature is viewable when room temperature button is pressed	Each Group	Each Group

5. Other Standard Controller features
    a. Different button permission levels
    b. Temperature limit setting option
    c. Built-in room temperature sensor
    d. Indoor unit operation state display
    e. Service mode support (indoor unit cycle data monitoring, option code monitoring and setting, and dip switch state monitoring)
6. Specifications
    a. 4 wire connection
    b. DC 12V (V1/V2) power supplied by indoor unit

c. RS485 communication (F3/F4)
d. Can sense temperature via internal sensor, temperature sensor inside the air handler, or use the average temperature between controller and air indoor unit sensors
e. The Standard Controller shall require no addressing. The Standard Controller shall connect using four-wire (2 wires for power supply and the other two for communication), untwisted, shielded control wire to the connection terminal on the indoor unit. The Standard Controller shall require cross-over wiring for grouping across indoor units.
f. The Standard Controller wired controller shall include interconnect cable as standard (32').

C. Wind baffles
1. Front wind baffle (WBMF)
    a. WBMF-24/36 wind shield/baffle is compatible with: AQX36VFUAGM outdoor units.
    b. Designed to be placed on fan discharge side (front).
    c. Only a front shield is required for applications where the mini split 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).
    d. The wind baffle material shall be clear plastic.

2. Back wind baffle (WBMB)
    a. WBMB-9/12/18/36 wind shield/baffle compatible with AQX36VFUAGM outdoor units.
    b. Designed to be placed on the coil intake side of the unit (back).
    c. Note: This back shield is only required for applications where the mini split is not adjacent to a structure that would protect the intake side from prevailing wind (ex: roof top).
    d. The wind baffle material shall be clear plastic.