

HVAC Guide Specifications
Ductless Mini-splits MS

**Section 15700 – Mechanical HVAC
Capacity Range: 0.75 to 1 Ton Nominal**

Mitsubishi Electric Model Number: MS (wall-mount) Cooling only system with wireless remote controller

Part 1 - General

1.01 System Description

The air conditioning system shall be a Mitsubishi Electric MS split system series. The system shall consist of a slim silhouette, compact, wall mounted indoor fan coil section with wireless remote controller and a slim silhouette horizontal discharge outdoor unit with constant speed compressor, charged with R410A refrigerant.

System Model Numbers	
Indoor Unit	Outdoor Units
MS-A09WA	MU-A09WA
MS-A12WA	MU-A12WA

1.02 Quality Assurance

- a) The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL) 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 rated in accordance with Air-conditioning Refrigeration Institute's (ARI) Standard 210 and bear the ARI Certification label.
- d) The units shall be manufactured in a facility registered to ISO 9001 and ISO14001 which are a set of standards applying to environmental protection set by the International Standard Organization (ISO).
- e) A pressure charge of R410A refrigerant sufficient for 25 feet of refrigerant tubing shall be provided in the condensing unit.
- f) A dry air holding charge shall be provided in the indoor section.
- g) System efficiency shall meet or exceed 13.0 SEER.

1.03 Delivery, Storage and Handling

- a) Unit shall be stored and handled according to the manufacturer's recommendation.
- b) The wireless controller shall be shipped inside the carton with the indoor unit and able to withstand 105°F storage temperatures and 95% relative humidity without adverse effect.

Part 2 - Warranty

- 2.01 The units shall have a manufacturer's parts and defects warranty for a period one (1) year from the date of the original installation. The compressor shall have a warranty of 6 years from date of installation. If, during this period, any part should fail to function properly due to defects in workmanship or material, it shall be replaced or repaired at the discretion of the manufacturer. This warranty does not include labor.

2.02 Manufacturer shall have over 25 years of continuous experience in the U.S. market.

Part 3 - Performance

3.01 Each system shall perform in accordance with the ratings shown in the table below.

3.02 Cooling performance shall be based on 80°F DB, 67°F WB (26.7°C DB, 19.4°C WB) for the indoor unit and 95°F DB, 75°F WB (35°C DB, 23.9°C WB) for the outdoor unit:

System Model Number	Cooling Capacity Btu/h	TPW	SEER	CFM (Hi)
MS-A09WA	9500	870	13	335
MS-A12WA	12000	1070	13	406

TPW = Total Power Watts.

Part 4 – Product

4.0 Indoor Unit General

- a) The indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, internal piping, control circuit board and fan motor.
- b) The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, an emergency operation function and a test run switch.
- c) Indoor unit and refrigerant pipes shall be charged with dry air before shipment from the factory.

4.01 Unit Cabinet

- a) The casing shall have a white finish.
- b) Multi directional drain and refrigerant piping offering four (4) directions for refrigerant piping and two (2) directions for draining shall be standard.
- c) There shall be a separate installation plate which secures the unit firmly to the wall.

4.02 Fan

- a) The indoor unit fan shall be an assembly with a line-flow fan direct driven by a single motor.
- b) The fan shall be statically and dynamically balanced and run on a motor with permanently lubricated bearings.
- c) A manual adjustable vertical guide vane shall be provided with the ability to change the airflow from side to side (left to right).
- d) An integral, motorized air sweep flow louver shall provide an automatic change in airflow by directing the air up and down to provide for uniform air distribution.
- e) The indoor unit fan motor shall operate in three (3) selectable speeds, High, Medium and Low.

4.03 Filter

Return air shall be filtered by means of easily removed Catechin air filter and an anti-allergy enzyme filter – blue bellows type.

4.04 Coil

- a) The indoor unit (evaporator) coil shall be of nonferrous construction with smooth, pre-coated aluminum fins on copper tubing.

- b) Tubing shall have inner grooves for high efficiency heat exchange
- c) All tube joints shall be brazed with PhosCopper or silver alloy.
- d) The coil shall be pressure tested at the factory.
- e) A sloped condensate pan and drain with extension hose shall be provided under the coil.

4.05 Electrical

- a) The electrical power of the unit, supplied from the outdoor unit shall be 115 volts, 1 phase, 60 hertz. The system shall be capable of satisfactory operation within voltage limits of 103 volts to 127 volts.
- b) The unit shall be equipped with Mitsubishi Electric's micro-processor control system directing indoor and outdoor unit coordinated operation by two polarity sensitive control wires.
- c) The indoor unit shall not have any supplemental electrical heat elements.

4.06 Control

- a) This system shall have a wireless remote controller to perform input functions necessary to operate the system. The controller shall consist of a Power On/Off switch, Mode Selector, Temperature Setting, Timer Control, Fan Speed Select and Auto Vane Selector.
- b) Temperature changes shall be by 1°F increments with a range of 65°F to 87°F.
- c) There shall be a 24 hour On/Off timer.
- d) The unit shall have an emergency operation mode to allow operation without the remote controller.
- e) The microprocessor located in the indoor unit shall have the capability of sensing return air temperature and indoor coil temperature, receiving and processing commands from the wireless remote controller, providing emergency operation and controlling the outdoor unit.
- f) The control voltage between the indoor unit and the outdoor unit shall be 115 volts, AC.
- g) The system shall be capable of automatic restart when power is restored after power interruption.
- h) The control system shall control the operation of the air sweep louvers, as well as provide on/off and system/mode function switching.

4.07 Outdoor Unit General

The outdoor unit is designed specifically for use with MS series indoor units. These units are equipped with a circuit board that interfaces to the MS indoor unit circuit board. The outdoor unit shall be completely factory assembled, internally piped and wired. Each unit shall be run tested at the factory.

4.08 Unit Cabinet

- a) The casing shall be fabricated from zinc coated steel, bonderized with an electrostatically applied, thermally bonded, acrylic or polyester powder coating for corrosion protection.
- b) Case and mounting feet shall be as follows:

The MS-A09WA base shall be of Aluminum-Zinc-Magnesium alloy coated steel, with welded mounting feet.

The base for the MS-A12WA shall have a galvanized steel base with welded mounting feet.

4.09 Fan

- a) The unit shall be furnished with a direct drive propeller type fan, statically and dynamically balanced for smooth and quiet operation.
- b) The fan motor shall have inherent protection, be equipped with permanently lubricated bearings. The fan motor shall be mounted and isolated for quiet operation.
- c) The fan shall be provided with a raised guard to prevent contact with moving parts.
- d) The outdoor unit shall have horizontal discharge airflow.

4.10 Coil

- a) The condenser coil shall be of nonferrous construction with pre-coated aluminum strake fins on copper tubing.
- b) The coil shall be protected with an integral metal guard.
- c) Refrigerant flow from the condenser shall be controlled by means of a metering orifice.

4.11 Compressor

- a) The compressor shall be a Mitsubishi Electric high performance, hermetic, rolling piston, rotary type.
- b) Compressor shall be mounted using rubber isolating bushings to avoid the transmission of vibration.
- c) Compressor shall be protected by an automatic over current relay and a thermal overload switch

4.12 Operation

- a) The outdoor unit shall have an accumulator.
- b) The outdoor unit must have the ability to operate with a maximum height difference of 35 feet between indoor and outdoor units.
- c) The unit shall have a maximum refrigerant tubing length of 65 feet between indoor and outdoor units without the need for line size changes, traps or additional oil.
- d) The unit shall be pre-charged for a maximum of 25 feet of refrigerant tubing.

4.13 Electrical

- a) The electrical power of the system shall be 115 volts, 1 phase, 60 hertz. The unit shall be capable of satisfactory operation within voltage limits of 103 volts to 127 volts.
- b) The outdoor unit shall be controlled by the microprocessor located in the indoor unit. The control voltage between the indoor unit and the outdoor unit shall be 115 volts, AC.