**HVAC Guide Specifications**

**Ductless 4 Way Ceiling Cassette SLZ- Series**

# Single-split System

# Capacity Range: 0.75 to 3 Ton Nominal

**Mitsubishi Model Number: SLZ-KFXXNA with SUZ-KAxxNAH2 or SUZ-KAxxNAHZ**

# Part 1 – General

* 1. System Description:
1. The 4-way cassette and outdoor unit shall be factory assembled, wired and run tested. Within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and DC fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, an emergency operation function and test run function from system controller. Indoor unit refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be ETL certified.
2. Multi position Indoor Unit; SLZ-KF09NA, SLZ-KF12NA, SLZ-KF15NA and SLZ-KF18NA
3. Outdoor unit model numbers may be: SUZ-KA09NAH2, SUZ-KA12NAH2, SUZ-KA15NAH2 and SUZ-KA18NAH2. Models shall have minimum operating temperature of -20°C.

OR

1. Outdoor unit model numbers may be: SUZ-KA09NAHZ, SUZ-KA12NAHZ, SUZ-KA15NAHZ and SUZ-KA18NAHZ. Models ending in NAHZ are designated as “Hyper Heat” models and have lower minimum operating temperature to -25°C with 100% heat capacity at -15°C.

1.02 Quality Assurance

1. The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL) and shall bear the ETL label.
2. All wiring shall be in accordance with the Canadian Electrical Code (C.E.C.) and local codes as required.
3. The units shall be rated in accordance with Air-conditioning, Heating, and Refrigeration Institute’s (AHRI) Standard 240 and bear the AHRI Certification label.
4. The units shall be manufactured in a facility registered to ISO 9001 and ISO 14001, which is a set of standards applying to environmental protection set by the International Standard Organization (ISO).
5. A dry air holding charge shall be provided in the indoor section.
6. System efficiency shall meet or exceed 17.5 SEER when part of a 1:1 (indoor/outdoor) system.

Delivery, Storage and Handling

1. Unit shall be stored and handled according to the manufacturer’s recommendations.
2. The wireless or wired controller shall be shipped separately from the indoor unit and able to withstand 105°F storage temperatures and 95% relative humidity without adverse effect.

# Part 2 – Warranty

* 1. The units shall have a manufacturer’s parts and defects warranty for a period five (5) years from date of installation. The compressor shall have a warranty of seven (7) years from the same date of installation. If, during this period, any part should fail to function properly due to defects in manufacturing workmanship or material defects, it shall be replaced or repaired at the discretion of the manufacturer. This warranty does not include labor.
	2. Manufacturer shall have over 30 years of continuous experience in the Canadian market.

# Part 3 – Performance and Operating Range

* 1. Each system shall perform in accordance with the ratings shown in the table below.
	2. 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 at rated, minimum and maximum frequencies.
	3. Heating performance shall be based on 70ºF DB, 60 ºF WB (21.1ºC DB, 15.6ºC WB) for the indoor unit and 47 º F DB, 43º F WB (8.3 º C DB, 6.1º C WB) for the outdoor unit at rated, minimum and maximum frequencies.

**SUZ-KA\*\*NAH2 Models:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Indoor / Outdoor unit model | SLZ-KF09NASUZ-KA09NAH2 | SLZ-KF12NASUZ-KA12NAH2 | SLZ-KF15NASUZ-KA15NAH2 | SLZ-KF18NASUZ-KA18NAH2 |
| CapacityRated (Minimum Maximum)  | Cooling1 | Btu/h | 9000(3600 – 9000) | 12000(3900 – 12000) | 14100(5100 – 14100) | 17700(6100 – 17700) |
| Heating 471 | Btu/h | 11000(4010 – 12000) | 13000(4800 – 13000) | 18000(5100 – 19100) | 19700(8400 – 20900) |
| Capacity Rated  | Heating 172 | Btu/h | 6900 | 8900 | 11900 | 12900 |
| Power consumption Rated  | Cooling 1 | W | 670 | 900 | 1150 | 1410 |
| Heating 471 | W | 810 | 1310 | 1730 | 1850 |
| Power consumption Rated | Heating 172 | W | 810 | 1310 | 1290 | 1410 |
| EER [SEER]  | Cooling | 13.4 [22.4] | 13.3 [22] | 12.2 [19.8] | 12.5 [20.7] |
| HSPF IV (V)  | Heating | 12.2 | 11.4 | 11.2 | 11.6 |
| **NOTE**: Test conditions are based on ARI 210/240. 1: Rating conditions (Cooling) — Indoor: 80˚FDB, 67˚FWB, Outdoor: 95˚FDB, (75˚FWB) (Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 47˚FDB, 43˚FWB  2: (Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 17˚FDB, 15˚FWB  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor / Outdoor Model Numbers | CoolingBTU/h  | Heating (47°F)BTU/h | SHFCooling | SHFHeating | Input Cooling(W) | InputHeating (W) |
| SLZ-KF09NA / SUZ-KA09NAH2 | 9000 | 11000 | 0.87 | - | 670 | 810 |
| SLZ-KF12NA4 / SUZ-KA12NAH2 | 12000 | 13000 | 0.74 | - | 900 | 1310 |
| SLZ-KF15NA / SUZ-KA15NAH2 | 14100 | 18000 | 0.75 | - | 1150 | 1730 |
| SLZ-KF18NA / SUZ-KA18NAH2 | 17700 | 19700 | 0.71 | - | 1410 | 1850 |

Operating Range shall be in accord with the Table below:

|  |  |  |
| --- | --- | --- |
|  | Indoor Intake Air Temp | Outdoor Intake Air Temp |
| Cooling | Maximum | 35°C (95°F) DB, 21°C (71°F) WB | 46°C (115°F) DB |
| Minimum | 19.4°C (67°F) DB, 13.9°C (57°F) WB | -10°C (14°F) DB |
| Heating | Maximum | 27°C (80°F) DB, 19.4°C (67F) WB | 24°C (75°F) DB, 18°C (65°F) WB |
| Minimum | 21°C (70°F) DB, 15.6°C (60F) WB | -20°C (-4°F) DB, -21°C (-5°F) WB\* |

**SUZ-KA\*\*NAHZ Hyper Heat Models:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Indoor / Outdoor unit model | SLZ-KF09NASUZ-KA09NAHZ | SLZ-KF12NASUZ-KA12NAHZ | SLZ-KF15NASUZ-KA15NAHZ | SLZ-KF18NASUZ-KA18NAHZ |
| CapacityRated (Minimum Maximum) | Cooling1 | Btu/h | 9000(4800 – 9000) | 12000(5070 – 12000) | 13700(8500 – 13700) | 16800(9010 – 16800) |
| Heating 471 | Btu/h | 11000(7400 – 13200) | 13800(7800 – 14500) | 16400(8300 – 19000) | 18800(8300 – 20000) |
| Capacity Rated | Heating 172 | Btu/h | 6300 | 8300 | 9700 | 12100 |
| Power consumptionRated | Cooling 1 | W | 600 | 940 | 1095 | 1340 |
| Heating 471 | W | 820 | 1170 | 1830 | 2020 |
| Power consumption Rated (Max) | Heating 172 | W | 720 (1260) | 1020 (1700) | 1490 (2520) | 1610 (2510) |
| EER [SEER]  | Cooling  | 15 [20.2] | 12.7 [20.3] | 12.5 [17.7] | 12.5 [19] |
| HSPF IV (V)  | Heating  | 10 | 10 | 9 | 9.4 |
| **NOTE**: Test conditions are based on ARI 210/240. 1: Rating conditions (Cooling) — Indoor: 80˚FDB, 67˚FWB, Outdoor: 95˚FDB, (75˚FWB) (Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 47˚FDB, 43˚FWB  2: (Heating) — Indoor: 70˚FDB, 60˚FWB, Outdoor: 17˚FDB, 15˚FWB  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Indoor / Outdoor Model Numbers | CoolingBTU/h | Heating @ 47°FBTU/h | SHFCooling | SHFHeating | Input Cooling(W) | InputHeating (W) |
| SLZ-KF09NA / SUZ-KA09NAHZ | 9000 | 11000 | 0.77 | - | 600 | 820 |
| SLZ-KF12NA4 / SUZ-KA12NAHZ | 12000 | 13800 | 0.71 | - | 940 | 1170 |
| SLZ-KF15NA / SUZ-KA15NAHZ | 13700 | 16400 | 0.72 | - | 1095 | 1830 |
| SLZ-KF18NA / SUZ-KA18NAHZ | 16800 | 18800 | 0.72 | - | 1340 | 2020 |

Operating Range shall be in accord with the Table below:

|  |  |  |
| --- | --- | --- |
|  | Indoor Intake Air Temp | Outdoor Intake Air Temp |
| Cooling | Maximum | 35°C (90°F) DB, 21.7°C (73°F) WB | 46°C (115°F) DB |
| Minimum | 19.4°C (67°F) DB, 13.9°C (57°F) WB | -10°C (14°F) DB |
| Heating | Maximum | 26.7°C (80°F) DB, 19.4°C (67) WB |  24°C (75°F) DB, 18°C (65°F) WB |
| Minimum | 10°C (50°F) DB, 15.6°C (60) WB | -25°C (-13°F) DB, -26°C (-14°F) WB\* |

# Part 4 – Products

# 4.1 Outdoor Unit

1. General:

The SUZ-KA Series horizontal discharge outdoor units shall be specifically designed to perform and communicate with the SLZ-KF\*\*NA indoor unit. The outdoor unit shall be completely factory assembled. Each unit shall be run tested at the factory.

A. Unit Cabinet:

1. The casing shall be fabricated of galvanized steel, bonderized, finished with an electrostatically applied, thermally fused acrylic or polyester powder coating for corrosion protection. Assembly hardware shall be cadmium plated for weather resistance.

2. Cabinet color shall be Munsell 3Y 7.8/1.1.

3. Two (2) mild steel mounting feet, traverse mounted across the cabinet base pan, welded mount, providing four (4) slotted mounting holes shall be furnished.

B. Fan:

1. The unit shall be furnished with a direct drive, high performance propeller type fan.

2. The condenser fan motor shall be a variable speed, direct current (DC) motor and shall have permanently lubricated bearings.

3. Fan speed shall be switch automatically according to outdoor ambient temperature and indoor temperature demand.

4. The fan motor shall be mounted with vibration isolation 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.

7. Outdoor unit sound level shall not exceed:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Model |  | Cooling (\*NAH**2**) | Heating (\*NAH**2**) | Cooling (\*NAH**Z**) | Heating (\*NAH**Z**) |
| SUZ-KA09\* | dB(A) | 48 | 50 | 54 | 55 |
| SUZ-KA12\* | 49 | 51 | 54 | 55 |
| SUZ-KA15\* | 49 | 51 | 55 |
| SUZ-KA18\* | 54 | 55 | 55 |

C. Coil:

* + - 1. The outdoor unit coil shall be of nonferrous construction with lanced or corrugated plate fins on copper tubing.
			2. The coil shall be protected with an integral guard.
			3. Refrigerant flow from the outdoor unit to the indoor units shall be independently controlled by means of individual electronic linear expansion valves for each indoor unit.
			4. Outdoor unit shall be pre-charged with sufficient R-410a refrigerant for up to twenty-five (25) feet of refrigerant piping.
			5. All refrigerant lines between outdoor and indoor units shall be of annealed, refrigeration grade copper tubing, ARC Type, meeting ASTM B280 requirements, individually insulated in twin-tube, flexible, closed-cell, CFC-free (ozone depletion potential of zero), elastomeric material for the insulation of refrigerant pipes and tubes with thermal conductivity equal to or better than 0.27 BTU-inch/hour per Sq Ft / °F, a water vapor transmission equal to or better than 0.08 Perm-inch and superior fire ratings such that insulation will not contribute significantly to fire and up to 1” thick insulation shall have a Flame-Spread Index of less than 25 and a Smoke-development Index of less than 50 as tested by ASTM E 84 and CAN / ULC S-102.
			6. All refrigerant connections between outdoor and indoor units shall be flare type.

D. Compressor:

1. The compressor shall be a high performance, hermetic, inverter driven, variable speed, dual rotary type manufactured by Mitsubishi Electric Corporation.

2. The compressor motor shall be direct current (DC) type equipped with a factory supplied and installed inverter drive package.

3. The outdoor unit shall be equipped with a suction side refrigerant accumulator.

4. The compressor will be equipped with an internal thermal overload.

5. The outdoor unit must have the ability to operate over the full capacity range with a maximum height difference of 40 feet (12 meters) for 12,000 BTU/h and 50 feet (15 meters) for 18,000 BTU/h models and have maximum refrigerant tubing length of up to 65 feet (20 meters) for12,000 and 100 feet (30 meters) for 18,000 BTU/h units between the indoor and outdoor units.

6. There shall be no need for line size changes, filters, sight glasses, and traps shall not be used, and no additional refrigerant oil shall be required.

7. The compressor shall be mounted to avoid the transmission of vibration.

F. 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 limits of 198 to 253 volts AC.
3. The outdoor unit shall be controlled by the microprocessors located in the indoor unit and communicating digitally with microprocessors in the outdoor using 3-wires called A-Control providing all necessary information for full function control.
4. A-Control provides fluctuating 12 to 24 volt DC data stream communications and AC power to indoor unit from the outdoor unit using a 3-wire 14 gauge AWG connection plus ground.
5. The outdoor unit shall be equipped with Pulse Amplitude Modulation (PAM) compressor inverter drive control for maximum efficiency with minimum power consumption.

**4.2 Indoor Units**

4.2.1 4 Way Cassette SLZ-KF\*\*NA Indoor Unit:

General:

1. The 4 Way cassette indoor unit shall be factory assembled, wired and run tested. All factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor shall be contained within the unit. 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. Indoor unit refrigerant pipes shall be charged with dehydrated air before shipment from the factory.
2. Unit Cabinet:
	1. The pre-insulated, 22-gauge galvanized steel cabinet shall be used with grill which includes 4-way air discharge vanes that distribute air horizontally across ceiling to prevent air drafts.
	2. Required Grille SLP-18FAEU with 3D i-see sensor (sold separately)
3. Fan:
4. The indoor fan shall be an assembly with a turbo fan direct driven by a single motor.
5. The indoor fan shall be statically and dynamically balanced to run on a motor with permanently lubricated bearings.
6. The indoor fan shall consist of three (3) speeds, Low, Mid, and High.
7. Filter: Return air shall be filtered by means of a long-life washable filter.
8. Coil:
9. The indoor coil shall be of nonferrous construction with smooth plate fins on copper tubing.
10. The tubing shall have inner grooves for high efficiency heat exchange.
11. All tube joints shall be brazed with phos-copper or silver alloy.
12. The coils shall be pressure tested at the factory.
13. A condensate pan and drain shall be provided under the coil.
14. The unit shall include a condensate lift mechanism that will be able to raise drain water 33” inches above the condensate pan.
15. Both refrigerant lines to the SLZ indoor units shall be insulated.
16. Electrical:
17. The unit electrical power shall be 208/230 volts AC, 1-phase, 60 hertz.
18. The system shall be capable of satisfactory operation within voltage limits of 187-228 volts (208V/60Hz) or 207-253 volts (230V/60Hz).
19. Controls:

1. The control system shall consist of a minimum of one microprocessor on each indoor unit and one in the outdoor unit, communicating via A-Control data over power transmission. The microprocessor located in the indoor unit shall have the capability of monitoring return air temperature and indoor coil temperature, receiving and processing commands from the wired or wireless controller, providing emergency operation and controlling the outdoor unit. The control signal between the indoor and outdoor unit shall be pulse signal 24 volts DC. Indoor units shall have the ability to control supplemental heat via connector CN24 and a 12 VDC relay output. Indoor units shall have the ability to ERV (energy recovery ventilation) via connector CN2C and a 12 VDC relay output. Indoor units shall have the ability to control humidifier via connector CN25 and a 12 VDC relay output.

2. For A-Control, a three (3) conductor 14 AWG gauge wire with ground shall provide power feed and bi-directional control transmission between the outdoor and indoor units. If national and local codes require a disconnect mounted near the indoor unit, a 3-Pole Disconnect shall be used – all three conductors must be interrupted.

3. The system shall be capable of automatic restart when power is restored after power interruption. The system shall have self-diagnostics ability, including total hours of compressor run time. Diagnostics codes for indoor and outdoor units shall be displayed on the wired controller panel.

Remote Controllers

Remote controller needs to be selected and ordered separately from the unit.

* 1. An optional North American thermostat adapter is available, Model number RMF-CA100. This interface allows standard thermostats to be compatible with the Mitsubishi Electric heat pump system.
	2. Wireless, wall mounted remote controller kit (MHK1)

The Wireless, wall mounted remote controller kit (MHK1) shall consist of a wireless, wall mounted controller (MRCH1), a wireless receiver (MIFH1) and a cable (MRC1) to connect the receiver to the indoor unit. The controller shall be white in color with a light-green LCD display and a backlight feature. The MRCH1 shall consist of four Function buttons below the display, and Increase/Decrease Set Temperature buttons and a Hold button to the right of the display. The controller shall have a built-in temperature sensor and a battery holder, using two AA alkaline batteries. Temperature shall be displayed in either Fahrenheit (°F) or Celsius (°C), and temperature changes shall be by increments of 1°F (0.5°C).

The MHK1 uses Honeywell RedLINKTM technology, and the wireless receiver is specially designed for Mitsubishi units. Linking to the wireless network shall be done from the receiver and from the remote controller. There shall not be any interference with other wireless devices or neighboring RedLINKTM products. Communication shall be automatically restored after power resumes and after batteries are replaced.

The basic functions are as follows:

| **Wireless, Wall Mounted Remote Controller Kit (MHK1)** |
| --- |
| **Item** | **Description** |
| Number of Units Controllable | 1 unit |
| ON/OFF | Run and stop operation |
| Operation Mode | Switches between Cool/Drying/Auto/Fan/Heat. |
| Temperature Setting(Range and modes depend on connected indoor unit model) | Controller general setpoint temperature range:Cool/Dry: 50°F-99°FHeat: 40°F-90°FAuto: 50°F-90°FController temperature range when connected to the SLZ/SUZ system:Cool/Dry: 67°F-87°FHeat: 63°F-83°FAuto: 67°F-83°F |
| Fan Speed Setting(Range and modes depend on connected unit model) | Hi/Mid-2/Mid-1/Low/Auto |
| Dual Setpoint Control | Separate heating and cooling setpoints. Adjustable deadband from 2ºF to 8ºF. Automatically adjusts setpoints to ensure deadband.System changeover with dual setpoints. |
| Scheduling | 5-2 and 5-1-1 schedulesSeparate Heat/Cool schedulesAllows operation in AUTO with Scheduling setbacks and dual setpointSimple temperature setting can be done up to 4 times one day in the week. The time can be set by the 15-minute interval.Remote controller shall be programmable as either a residential controller, which will offer residential scheduling options only; or as a commercial controller, which will offer commercial scheduling options only. |
| Optimal Start | Set occupied time and desired set temperatureRemote controller learns when to start warm up or cool down so that space is at set temperature at start of occupied time |
| Operating Conditions Display | Setpoint and room temperature. Default sensing is at the remote controller. Installer setting to select at return air sensor. Automatically switches to return air sensor if communication to remote controller is lostOutdoor temperature and humidity (Require optional air sensor MOS1) |
| Additional Functions | Hold FunctionTemporary Schedule OverrideReset to factory default |
| Error | When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed |
| Auto Lock Out Function | Setting/releasing of simplified locking for remote control settings can be performed.* Locking of all settings
* Locking of ON/OFF setting
* Locking of system setting (Heat, Cool, Off, Auto, etc.)
* Locking of fan setting
* Locking of temperature setting
* Locking of Clock/Day/Schedule
 |

Two optional devices can be used with the MHK1 controller kit. These are, an outdoor air sensor (MOS1), which allows the display of the outdoor temperature and humidity, and a portable central controller (MCCH1), which can control up to 16 zones/units with On/Off, set temperature, heat/cool mode selection and auto-off timer.

1. Wired Remote Controller (PAR-40MAA)

The Wired Remote Controller (PAR-40MAA) shall be approximately 5” x 5” in size and white in color with a light-blue LCD display. The PAR-40MAA shall support a selection from multiple languages (Spanish, German, Japanese, Chinese, English, Russian, Italian, or French) for display information. There shall be a built-in weekly timer with up to 8 pattern settings per day. The controller shall consist of an On/Off button, four function buttons, menu button, select button and return button and operation indicator led. Other operation shall be selected by use of function buttons. The controller shall have a built-in temperature sensor. Temperature shall be displayed in either Fahrenheit (°F) or Celsius (°C), and Temperature changes shall be by increments of 1°F (0.5°C).

Field wiring shall run directly from the indoor unit to the wired controller with no splices. The voltage to the wired controller from the indoor unit shall be 12 VDC. Up to two wired controllers shall be able to be used to control one unit.

The basic functions are:

| **Wired Remote Controller (PAR-40MAA)** |
| --- |
| **Item** | **Description** |
| Number of Units Controllable | 16 units as 1 group |
| ON/OFF | Run and stop operation |
| Operation Mode | Switches between Cool/Dry/Auto/Fan/Heat. |
| Temperature Setting(Range and modes depend on connected unit model) | Sets the setpoint temperature in the following rangeCool/Dry: 67°F-87°FHeat: 63°F-83°FAuto: 67°F-83°F |
| Fan Speed Setting(Range and modes depend on connected unit model) | Hi/Mid-2/Mid-1/Low/Auto |
| Weekly Scheduler | ON/OFF/Temperature setting can be done up to 8 times one day in the week. The time can be set by the 1-minute interval. |
| Operating Conditions Display | Setpoint and room temperature. Sensing can be done at the remote controller or the indoor unit depending on the indoor unit dipswitch settingLiquid, discharge, indoor and outdoor pipe temperaturesLEV opening pulses, sub cooling and discharge super heatCompressor Operating Conditions: Running current, frequency, input voltage, On/Off status and operating time |
| Error | When an error is currently occurring on an air conditioner unit, the afflicted unit and the error code are displayed |
| Ventilation Equipment | Up to 16 indoor units can be connected to an interlocked system that has one LOSSNAY unit. LOSSNAY items that can be set are “Hi”, “Low”, and “Stop”. Ventilation mode switching is not available. |
| Auto Lock Out Function | Setting/releasing of simplified locking for remote control buttons can be performed.* Locking of all buttons
* Locking of all buttons except ON/OFF button
 |

1. Optional Wireless, handheld remote controller (PAR-SL100A-E)

The wireless had held remote controller (PAR-SL100A-E) shall be used with a wireless receiver

(PAR-SF9FA-E). The controller shall perform input functions necessary to operate the system. The wireless receiver shall be plug and fit compatible with the indoor unit.

The controller shall have a Power On/Off switch, Mode Selector – Cool, Dry, Heat, Auto, and Powerful Modes - Temperature Setting, Timer Control and Fan Speed Selector. The indoor unit shall perform Self-diagnostic Function and Check Mode switching. Temperature changes shall be in 1ºF (0.5ºC) increments with a setting range of 61 to 88ºF (16 to 31ºC).

1. Simple MA Remote Controller (PAC-YT53CRAU-J)