HVAC Guide Specifications
Inverter Driven, Direct Expansion (DX), Air-Cooled Heat Pump Split System

Section 15700 – Mechanical HVAC

Size Range:

1.5 tons nominal

Daikin HP Model Number:

IDU: FTXR09WVJU(W/S)9, FTXR12WVJU(W/S)9, FVXS09WVJU9, FVXS12WVJU9, FVXS15WVJU9, CTXS07WVJU9, FTXS09WVJU9, FTXS12WVJU9, FTXS15WVJU9, CDMQ07WVJU9, FDMQ09WVJU9, FDMQ12WVJU9, FDMQ15WVJU9, FFQ09W2VJU9, FFQ12W2VJU9, FFQ15W2VJU9

ODU: 2MXL18WMVJU9

Part 1 – General

MULTI-SPLIT AIR CONDITIONING
SPECIFICATION – Heat Pump

1.01 SYSTEM DESCRIPTION

The variable capacity, heat pump air conditioning system shall be a Daikin Inverter Driven series (heat/cool model) multi-split system. The system shall consist of two (2) evaporator models exclusively matched to outdoor model 2MXL18WMVJU9 direct expansion (DX), air-cooled, Daikin swing, variable speed, inverter driven compressor using R-410A adequate for 98.4 feet of total length. The system shall have automatic restart capability after a power failure has occurred and a low voltage cut-off feature to prevent stalling during power supply issues. The system shall include a priority room setting for operation mode, powerful operation and quiet operation.

1.02 QUALITY ASSURANCE

A. The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL), in accordance with ANSI/UL C22.2 No. 60335-2-40– Heating and Cooling Equipment and bear the listed Mark.
B. All wiring shall be in accordance with the National Electric Code (NEC).
C. Each combination shall be rated in accordance with Air Conditioning Refrigeration Institute’s (ARI) Standard 210/240 and bear the ARI label.
D. The system will be produced in an ISO 9001 and ISO 14001 facility, which are standards set by the International Standard Organization (ISO). The system shall be factory tested for safety and function.
E. The outdoor unit will be factory charged for a line set length of 98.4 feet of refrigerant with R-410A refrigerant.

F. A holding charge of dry nitrogen shall be provided in the evaporator.
G. System Efficiency shall meet or exceed 14.3 SEER2, 9 EER2 and 7.7 HSPF.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Unit shall be stored and handled according to the manufacturer's recommendations.

Part 2 – WARRANTY

2.01 LIMITED WARRANTY

Complete warranty details are available from your local Daikin representative or at www.daikincomfort.com

This warranty is provided to you by Daikin Comfort Technologies Manufacturing, L.P. ("Daikin"), which warrants all parts of this heating or air conditioning unit, as described below.

A. Non-Owner Occupied Residential Installations: This warranty applies to heating and air conditioning units installed in residences not occupied by the owner and covers defects in material and workmanship that appear under normal use and maintenance. Warranty coverage begins on the "installation date". The installation date is one of two dates: (1) The installation date is the date that the unit is originally installed. (2) If the date the unit is originally installed cannot be verified, the installation date is three months after the manufacture date. Registration is not required to obtain warranty coverage, but registration entitles the owner to the Registered Additional Term Warranty described in the following paragraph, If the unit is not registered, the warranty lasts for a period up to 5 YEARS (the "Initial Term Warranty").
B. Commercial Installations: This warranty applies to heating and air conditioning units installed in buildings other than residences and covers defects in materials and workmanship that appear under normal use and maintenance. Warranty coverage begins on the "installation date". The installation date is one of two dates: (1) The installation date is the date that the unit is originally installed (2) If the date the unit is originally installed cannot be verified, the installation date is three months after the manufacture date. The warranty lasts for a period up to 5 YEARS.

2.02 EXTENDED WARRANTY –

A. Non-Owner Occupied Residential Installations: If the unit is properly registered online within 60 days after the installation date, an additional warranty (the "Registered Additional Term Warranty") is provided and lasts for as long as the original registered owner ("registered owner") owns the residence in which the unit was originally installed, for a period up to 12 YEARS after the installation date. The limitation of Registered Additional Term Warranty coverage to the original registered owner does not apply to any owner of a one, two, three, or four-family residence, or a residential unit in a multiunit structure in which title to an individual residential unit is transferred

to the owner of the residential unit under a condominium or cooperative system, located in Texas.

Neither the limited or extended warranties continue after the unit is removed from the location where it was originally installed. The replacement of a part under this warranty does not extend the warranty period. In other words, Daikin warrants a replacement part only for the period remaining in the applicable warranty that commenced on the installation date.

2.03 INSTALLATION REQUIREMENTS
Installation must comply with installation manual. It is recommended the system be installed by a contractor/dealer who has been through Daikin training programs.

Part 3 – PERFORMANCE

3.01 The system performance shall be in accordance with AHRI 210/240 test conditions as shown in the performance table below.

System	Configuration	Mode	Max Connected	Max Cooling Capacity	Max Heating Capacity	SEER2	EER2	HSPF2
2MXL18WMVJU9	Non-Ducted	Heatpump	24,000	24,000	36,000	16	12	8.7
	Ducted	Heatpump	24,000	21,000	31,000	14.3	9	7.7
	Mixed	Heatpump	24,000	22,500	33,500	15.15	10.5	8.2

The cooling performance is based on 80°F DB / 67°F WB for the indoor unit and 95°F DB / 75°F WB for the outdoor unit and 25 feet of piping. The heating performance is based on 70°F DB / 60°F WB for the indoor unit and 47°F DB / 43°F WB for the outdoor unit and 25 feet of piping.

3.02 The operating range in cooling will be 14°F DB ~ 115°F DB.

3.03 The operating range in heating will be -13°F WB ~ 60°F WB.

3.04 The system shall be capable of maximum refrigerant piping of 164 feet (maximum 82 feet per indoor unit), with 49 feet maximum vertical difference between indoor unit and outdoor unit (maximum 24 feet between indoor units), without any oil traps, BP boxes, or additional components.

Part 4 – PRODUCTS

4.01 INDOOR UNIT – CTXS/FTXS

General:

The indoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. Both liquid and suction lines must be individually insulated between the outdoor and indoor units.

A. Unit Cabinet:
   1. The indoor unit shall have a white, “wipe-clean” finish.
   2. The drain and refrigerant piping shall be accessible from six (6) positions for flexible installation (right side, right back, and right bottom; and left side, left back, and left bottom.
   3. The cabinet shall be supplied with a mounting plate to be installed onto a wall for securely mounting the cabinet.
   4. The cabinet includes:
      i. Indoor unit ON/OFF switch, capable of being used when the remote controller is missing. When switch is used, the default setting is AUTO mode, 77°F temperature setting, and AUTO airflow rate.
      ii. “Intelligent Eye” motion sensor capable of setting back the set point temperature for energy savings. This feature may be disengaged on the I/R remote controller.
      iii. OPERATION lamp that turns green when activated
      iv. TIMER lamp that turns orange when activated
      v. A Signal Receiver that receives signals from the remote controller at a maximum distance of 23 ft. When the unit receives a signal, you will hear the following: 2 beeps – operation start, 1 beep – Setting changed, 1 long beep – Operation stop.

B. Fan:
   1. The evaporator fan shall be an assembly consisting of a direct-driven fan by a single motor.
   2. The fan shall be statically and dynamically balanced and operate on a motor with permanent lubricated bearings.
   3. An auto-swing louver for adjustable air flow (both vertically and horizontally) is standard via the wireless remote control furnished with each system.
   4. The indoor fan shall offer a choice of five speeds, plus quiet and auto settings.
   5. The fan shall have a delayed start when initially put into HEAT operation, giving time for the evaporator coil to heat up and preventing a cold draft from entering the room.

C. Filter:
   1. The return air filter provided will be a mildew resistant, removable and washable filter. Two titanium apatite photocatalytic air purifying filters are included for additional air filtration.

D. Coil:
   1. The evaporator coil shall be a nonferrous, aluminum fin on copper tube heat exchanger.
   2. All tube joints shall be brazed with silver alloy or phoscopper.
   3. All coils will be factory pressure tested.
   4. A condensate pan shall be provided under the coil with a drain connection.

E. Electrical:
   1. The outdoor unit shall be powered with 208-230 volts, 1 phase, and 60 hertz power. The indoor unit shall receive 208-230 volt, 1 phase, 60 hertz power from the outdoor unit.
   2. The allowable voltage range shall be 187 volts to 253 volts.

F. Control:
   1. The unit shall have a backlit, wireless remote infra-red controller capable to operate the system. It shall have Cooling Operation, Heating Operation, Automatic Operation, Dry Operation and Fan Only Operation.
   2. The controller shall consist of an On/Off Power switch, Mode Selector, Quiet Button (for outdoor unit), Fan Setting, Swing Louver, On/Off Timer Setting, Temperature Adjustment, °C or °F Temperature Display, Intelligent Eye Sensor, Weekly Timer, Night Set Mode, Comfort Mode, Econo Mode, and Powerful Operation.
      i. On/Off switch powers the system on or off.
      ii. Mode selector shall operate the system in auto, cool, heat, fan, or dry operation.
      iii. Quiet button for outdoor unit lowers the noise level by changing frequency and fan speed of the outdoor unit.
      iv. Fan setting shall provide five fan speeds, plus quiet and auto settings.
      v. Swing louver shall adjust the airflow (horizontal and vertical) blades.
         1. Vertical & horizontal positions can be manually adjusted, or placed into auto swing or 3-D airflow settings.
      vi. On/Off timer is used for automatically switching the unit on or off.
         1. Night Set mode automatically engaged with Off Timer is set. This setting automatically adjusts the temperature setting 0.9°F (0.5°C) up in COOL, 3.6°F (2.0°C) down in HEAT to prevent excessive cooling or heating during sleeping hours.
      vii. Temperature adjustment allows for the increase or decrease of the desired temperature.
      viii. The Intelligent Eye sensor detects human movement. If no movement is detected in the room for more than 20 minutes, the operation automatically changes up or down 3.6°F to an energy saving operation.
      ix. Weekly timer allows for programming the temperature setting and on/off times of up to four settings per day for each day of the week.

x. Comfort Mode directs the airflow upwards while in COOL operation and downward while in HEAT operation. This function prevents air from blowing directly on the occupants in the room.
xi. Econo operation is a function which enables efficient operation by limiting the maximum power consumption value. This function will also prevent the circuit breaker from tripping when the unit operates alongside other appliances on the same circuit.
xii. Powerful operation allows quick cool down or heating up in the desired space to achieve maximum desired temperature in the shortest allowable time period.

3. The controller shall be able to display two-digit fault codes extracted from the indoor unit to aid in troubleshooting.
4. Temperature range on the remote control shall be 64°F to 90°F in COOL mode, 50°F to 86°F in HEAT mode, and 64°F to 86°F in AUTO mode. The temperature shall be controlled in 1° increments.
5. The indoor unit microprocessor has the capability to receive and process commands via return air temperature and indoor coil temperature sensors enabled by commands from the remote control.
6. The unit shall also have the capability to connect to a smart-device app via wireless adapter.

G. Sound:
1. Indoor unit sound levels shall not exceed:

Indoor Daikin Model	Cooling Mode Sound Level (H/M/L/SL) dB(A)	Heating Mode Sound Level (H/M/L/SL) dB(A)
CTXS07WVJU9	38 / 32 / 25 / 22	38 / 33 / 28 / 25
FTXS09WVJU9	41 / 33 / 25 / 22	42 / 35 / 28 / 25
FTXS12WVJU9	45 / 37 / 29 / 23	45 / 39 / 29 / 26
FTXS15WVJU9	45 / 40 / 35 / 32	43 / 38 / 33 / 30

*values are measured approximately 3 feet away with JIS standard operating conditions.

4.02 INDOOR UNIT – FTXR

General:

The indoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. Both liquid and suction lines must be individually insulated between the outdoor and indoor units.

A. Unit Cabinet:
1. The indoor unit shall have a white or silver, “wipe-clean” finish.
2. The drain and refrigerant piping shall be accessible from six (6) positions for flexible installation (right side, right back, and right bottom; and left side, left back, and left bottom).
3. The cabinet shall be supplied with a mounting plate to be installed onto a wall for securely mounting the cabinet.
4. The cabinet includes:

i. “Intelligent-eye” motion sensor capable of setting back the set point temperature for energy savings. This feature may be disengaged on the I/R remote controller.
ii. Multi-monitor lamp changes color according to the mode of operation allowing the user to visually determine the mode of operation; Red/Blue for Auto, Green for Dry, Blue for Cool, Red for Heat, White for Fan, Orange for Timer.
iii. Indoor unit ON/OFF switch, capable of being used when the remote controller is missing. When switch is used, the default setting is AUTO mode, 77°F temperature setting, and AUTO airflow rate.
iv. A Signal Receiver that receives signals from the remote controller at a maximum distance of 19-11/16 ft. When the unit receives a signal, you will hear the following: 2 beeps – operation start, 1 beep- setting changed, 1 long beep – operation stop.

B. Fan:
1. The evaporator fan shall be an assembly consisting of a direct-driven fan by a single motor.
2. The fan shall be statically and dynamically balanced and operate on a motor with permanent lubricated bearings.
3. An auto-swing louver for adjustable airflow (both vertically and horizontally) is standard via the I/R remote control furnished with each system.
4. The indoor fan shall offer a choice of five speeds, plus quiet and auto settings.
5. The fan shall have a delayed start when initially put into HEAT operation, giving time for the evaporator coil to heat up and preventing a cold draft from entering the room.

C. Filter:
1. The return air filter provided will be a mildew resistant, removable and washable filter. Two titanium apatite photocatalytic air purifying filters are included for additional air filtration.

D. Coil:
1. The evaporator coil shall be a nonferrous, aluminum fin on copper tube heat exchanger.
2. All tube joints shall be brazed with silver alloy or phoscopper.
3. All coils will be factory pressure tested.
4. A condensate pan shall be provided under the coil with a drain connection.

E. Electrical
1. The outdoor unit shall be powered with 208-230 volts, 1 phase, and 60 hertz power. The indoor unit shall receive 208-230 volt, 1 phase, 60 hertz power from the outdoor unit.
2. The allowable voltage range shall be 187 volts to 253 volts.

F. Control:
1. The unit shall have a backlit, wireless remote infra-red controller capable to operate the system. It shall have Cooling Operation, Heating Operation, Automatic Operation, Dry Operation and Fan Only Operation.

2. The controller shall consist of an On/Off power switch, Mode selector, Quiet Button (for outdoor unit), Fan Setting, Swing Louver, On/Off Timer Setting, Temperature Adjustment, °C or °F Temperature Display, “Intelligent Eye” sensor, Econo Mode, Weekly Timer, Night Set Mode, Comfort Airflow and Powerful Operation.
    i. On/Off switch powers the system on or off.
    ii. Mode selector shall operate the system in auto, cool, heat, fan or dry operation.
    iii. Quiet button for outdoor unit lowers the noise level of the outdoor unit by changing frequency and fan speed of the outdoor unit.
    iv. Fan setting shall provide five fan speeds, plus quiet and auto settings.
    v. Swing louver shall adjust the airflow (horizontal and vertical) blades.
        1. Vertical & horizontal positions can be manually adjusted, or placed into auto swing or 3-D airflow settings.
    vi. On/Off timer is used for automatically switching the unit on or off.
        1. Night Set mode automatically engaged when Off Timer is set. This setting automatically adjusts the temperature setting 0.9°F (0.5°C) up in COOL, 3.6°F (2.0°C) down in HEAT to prevent excessive cooling or heating during sleeping hours.
    vii. Temperature adjustment allows for the increase or decrease of the desired temperature.
    viii. The Intelligent Eye sensor detects human movement. If no movement is detected in the room for more than 20 minutes, the operation automatically changes up or down 3.6°F to an energy saving operation.
    ix. Weekly timer allows for programming the temperature setting and on/off times of up to four settings per day for each day of the week.
    x. Comfort Mode directs the airflow upwards while in COOL operation and downward while in HEAT operation. This function prevents air from blowing directly on the occupants in the room.
    xi. Econo operation is a function which enables efficient operation by limiting the maximum power consumption value. This function will also prevent the circuit breaker from tripping when the unit operates alongside other appliances on the same circuit.
    xii. Powerful operation allows quick cool down or heating up in the desired space to achieve maximum desired temperature in the shortest allowable time period.
3. The controller shall be able to display two-digit fault codes extracted from the indoor unit to aid in troubleshooting.
4. Temperature range on the remote control shall be 64°F to 90°F in COOL mode, 50° to 86°F in HEAT mode, and 64°F to 86°F in AUTO mode. The temperature shall be controlled in 1° increments.
5. The indoor unit microprocessor has the capability to receive and process commands via return air temperature and indoor foil temperature sensors enabled by commands from the remote control.

6. The unit shall also have the capability to connect to a smart-device app via wireless adapter.

G. Sound:
1. Indoor unit sound levels shall not exceed:

Indoor Daikin Model	Cooling Mode Sound Level (H/M/L/SL) dB(A)	Heating Mode Sound Level (H/M/L/SL) dB(A)
FTXR09WVJU(W/S)9	38 / 32 / 25 / 19	41 / 34 / 28 / 19
FTXR12WVJU(W/S)9	45 / 34 / 26 / 20	45 / 37 / 29 / 20

*values are measured approximately 3 feet away with JIS standard operating conditions

4.02 INDOOR UNIT – FFQ

General:

The indoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. Both liquid and suction lines must be individually insulated between the outdoor and indoor units.

A. Décor Panel
1. The indoor unit panel shall have a white finish or a white finish with a Silver trim.
2. Panel shall be a four-way air distribution type and be impact resistant.
3. The four air discharge outlet louvers shall be independently motorized and controllable. Each louver shall have a visual indicator to easily identify the louver and simplify the airflow configuration.
4. The air flow shall be capable of field modification to 3-way and 2-way airflow to accommodate various installation configurations including corner installations.
5. The panel shall be a low profile design, extending 5/16” below the ceiling
6. The panel dimensions shall measure 24-7/16” x 24-7/16” and shall fit into a standard 2x2 ceiling grid with no overlap of adjacent tiles.

B. Unit Cabinet:
1. The indoor unit shall be located in the ceiling.
2. Fresh air intake shall be possible by way of direct duct installation to the side of the indoor unit cabinet.
3. The cabinet shall be constructed with sound absorbing foamed polystyrene and polyethylene insulation.

C. Fan:
1. The evaporator fan shall be an assembly consisting of a direct-driven fan by a single motor.
2. The fan shall be statically and dynamically balanced and operate on a motor with permanent lubricated bearings.
3. The indoor fan shall offer a choice of three speeds.
4. The fan shall have a delayed start when initially put into HEAT operation, giving time for the evaporator coil to heat up and preventing a cold draft from entering the room.

D. Coil:
   1. The evaporator coil shall be a nonferrous, aluminum fin on copper tube heat exchanger.
   2. All tube joints shall be brazed with silver alloy or phoscopper.
   3. All coils will be factory pressure tested.
   4. A condensate pan shall be provided under the coil with a drain connection and lift mechanism. The lift mechanism provides up to 24-13/16" of lift, measured from the drain outlet.

E. Electrical:
   1. The outdoor unit shall be powered with 208-230 volts, 1 phase, and 60 hertz power. The indoor unit shall receive 208-230 volt, 1 phase, 60 hertz power from the outdoor unit.
   2. The allowable voltage range shall be 187 volts to 253 volts.

F. Control:
   1. The unit shall have either a Wired type remote controller or a backlit, wireless remote infra-red controller capable to operate the system.
   2. The unit shall be compatible with interfacing with a BMS system via optional LonWorks or BACnet gateways.
   3. The unit shall be compatible with a Daikin Intelligent Touch Manager advanced multi-zone controller.
   4. The controller shall be able to display two-digit fault codes extracted from the indoor unit to aid in troubleshooting.
   5. The indoor unit microprocessor has the capability to receive and process commands via return air temperature and indoor coil temperature sensors enabled by commands from the remote control.

G. Sound:
   1. Indoor unit sound levels are as follows:

Indoor Daikin Model	Cooling Mode Sound Level (H/M/L) dB(A)	Heating Mode Sound Level (H/M/L) dB(A)
FFQ09W2VJU9	38 / 35 / 29	38 / 35 / 29
FFQ12W2VJU9	39 / 36 / 30	39 / 36 / 30
FFQ15W2VJU9	40 / 37 / 31	40 / 37 / 31

*values are measured approximately 5 feet away with JIS standard operating conditions.

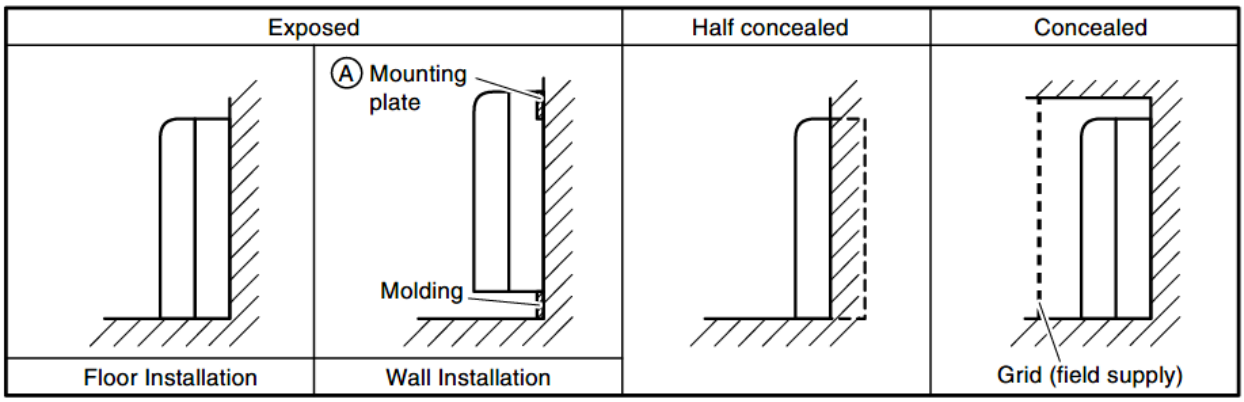
4.04 INDOOR UNIT – FVXS

General:

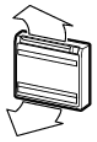
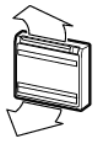
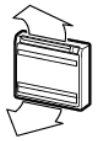
The indoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. Both liquid and suction lines must be individually insulated between the outdoor and indoor units.

A. Unit Cabinet:
   1. The indoor unit shall have a white, "wipe-clean" finish.
   2. The drain and refrigerant piping shall be accessible from six (6) positions for flexible installation (right side, right back, and right bottom; and left side, left back, and left bottom.

3. The cabinet shall be supplied with a mounting plate to be installed onto a wall for securely mounting the cabinet.
4. The cabinet shall be able to be mounted in four (4) positions as shown in the image below; Floor, wall, half concealed & concealed.



5. The cabinet includes:
    i. Indoor unit ON/OFF switch, capable of being used when the remote controller is missing. When switch is used, the default setting is AUTO mode, 77°F temperature setting, and AUTO airflow rate.
    ii. OPERATION lamp that turns green when activated
    iii. TIMER lamp that turns orange when activated
    iv. A Signal Receiver that receives signals from the remote controller at a maximum distance of 23 ft. When the unit receives a signal, you will hear the following: 2 beeps – operation start, 1 beep – Setting changed, 1 long beep – Operation stop.
    v. Air outlet selection switch to select airflow from upper outlet only, or automatic airflow pattern depending on mode and conditions.
        1. When switch is set to upper outlet only, air will blow from top vent regardless of operating mode or situation.
        2. When switch is set to automatic airflow pattern, the blowing patterns are as follows:

Mode	Situation	Blowing pattern	
COOL	When the operation is activated or when the room is not fully cooled.		Air is emitted from the upper and lower air outlets in order to reach the set temperature quickly.
	When the room has become fully cool, or when 1 hour has passed since turning on the air conditioner.		Air is emitted only from the upper air outlet so that air does not come into direct contact with people and indoor temperature is equalized.
HEAT	When the operation is activated or when air emitted is of low temperature.		Air is emitted only from the upper air outlet so that air does not come into direct contact with people.
	At times other than the above situations.		Air is emitted from the upper and lower air outlets so that warm air is spread throughout the whole room.
DRY	Whenever in DRY mode.		Air is emitted only from the upper air outlet so that air does not come into direct contact with people.
FAN	Whenever in FAN mode.		
AUTO	Operates in the actual operation mode of the air conditioner according to the descriptions in this table. (COOL or HEAT)		

B. Fan:
   1. The evaporator fan shall be an assembly consisting of a direct-driven fan by a single motor.
   2. The fan shall be statically and dynamically balanced and operate on a motor with permanent lubricated bearings.
   3. An auto-swing louver for adjustable air flow (vertically) is standard via the wireless remote control furnished with each system.
   4. The indoor fan shall offer a choice of five speeds, plus quiet and auto settings.
   5. The fan shall have a delayed start when initially put into HEAT operation, giving time for the evaporator coil to heat up and preventing a cold draft from entering the room.

C. Filter:
   1. The return air filters provided will be a mildew resistant, removable and washable filter. Two titanium apatite photocatalytic air purifying filters are included for additional air filtration.

D. Coil:
   1. The evaporator coil shall be a nonferrous, aluminum fin on copper tube heat exchanger.

2. All tube joints shall be brazed with silver alloy or phoscopper.
3. All coils will be factory pressure tested.
4. A condensate pan shall be provided under the coil with a drain connection.

E. Electrical:
1. The outdoor unit shall be powered with 208-230 volts, 1 phase, and 60 hertz power. The indoor unit shall receive 208-230 volt, 1 phase, 60 hertz power from the outdoor unit.
2. The allowable voltage range shall be 187 volts to 253 volts.

F. Control:
1. The unit shall have a backlit, wireless remote infra-red controller capable to operate the system. It shall have Cooling Operation, Heating Operation, Automatic Operation, Dry Operation and Fan Only Operation.
2. The controller shall consist of an On/Off Power switch, Mode Selector, Fan Setting, Swing Louver, On/Off Timer Setting, Temperature Adjustment, °C or °F Temperature Display, Econo Mode, Weekly Timer, Outdoor Unit Quiet Operation, and Powerful Operation.
    i. On/Off switch powers the system on or off.
    ii. Mode selector shall operate the system in auto, cool, heat, fan, or dry operation.
    iii. Fan setting shall provide five fan speeds, plus quiet and auto settings.
    iv. Swing louver shall adjust the airflow (horizontal and vertical) blades.
        1. Vertical movement controlled via remote, horizontal movement controlled manually.
    v. On/Off timer is used for automatically switching the unit on or off.
        1. Night Set mode automatically engaged with Off Timer is set. This setting automatically adjusts the temperature setting 0.9°F (0.5°C) up in COOL, 3.6°F (2.0°C) down in HEAT to prevent excessive cooling or heating during sleeping hours.
    vi. Temperature adjustment allows for the increase or decrease of the desired temperature.
    vii. Econo operation is a function which enables efficient operation by limiting the maximum power consumption value. This function will also prevent the circuit breaker from tripping when the unit operates alongside other appliances on the same circuit.
    viii. Weekly timer allows for up to four timer settings to be saved for each day of the week.
    ix. Outdoor Unit Quiet Operation lowers the noise level of the outdoor unit by changing frequency and fan speed of the outdoor unit.
    x. Powerful operation allows quick cool down or heating up in the desired space to achieve maximum desired temperature in the shortest allowable time period.
3. The controller shall be able to display two-digit fault codes extracted from the indoor unit to aid in troubleshooting.
4. Temperature range on the remote control shall be 64°F to 90°F in COOL mode, 50°F to 86°F in HEAT mode, and 64°F to 86°F in AUTO mode. The temperature shall be controlled in 1° increments.

5. The indoor unit microprocessor has the capability to receive and process commands via return air temperature and indoor coil temperature sensors enabled by commands from the remote control.
6. The unit shall also have the capability to connect to a smart-device app via wireless adapter

G. Sound:
1. Indoor unit sound levels shall not exceed:

Indoor Daikin Model	Cooling Mode Sound Level (H/M/L/SL) dB(A)	Heating Mode Sound Level (H/M/L/SL) dB(A)
FVXS09WVJU9	38 / 32 / 26 / 23	38 / 32 / 26 / 23
FVXS12WVJU9	39 / 33 / 27 / 24	39 / 33 / 27 / 24
FVXS15WVJU9	44 / 40 / 36 /32	45 / 40 / 36 / 32

*values are measured approximately 3 feet away with JIS standard operating conditions.

4.05 INDOOR UNIT – FDMQ

General:

The indoor unit shall be factory assembled and pre-wired with all necessary electronic and refrigerant controls. Both liquid and suction lines must be individually insulated between the outdoor and indoor units.

A. Unit Cabinet:
1. The indoor unit shall be constructed of heavy gauge galvanized steel.
2. The unit shall be internally insulated and shall be capable of installation in indoor environments up to 80% relative humidity without requiring additional field installed insulation.
3. The drain and refrigerant piping shall be accessible from the right side.
4. The cabinet shall have a factory rear return air position with the ability to convert to bottom return.
5. The cabinet shall include a drain pan inspection port on the right side to observe drain pan conditions.

B. Fan:
1. The evaporator fan shall be an assembly consisting of a direct-driven fan by a single motor.
2. The fan shall be statically and dynamically balanced and operate on a motor with permanent lubricated bearings.
3. The indoor fan shall offer a choice of three speeds, plus quiet setting.
4. The fan shall have a delayed start when initially put into HEAT operation, giving time for the evaporator coil to heat up and preventing a cold draft from entering the room.
5. The fan motor shall be capable of delivering the following:

Model Number	Fan ESP (in. w.g)	CFM Range
CDMQ07RVJU9	0.12 – 0.60	230 - 268
FDMQ09WVJU9	0.12 – 0.60	233 - 293
FDMQ12WVJU9	0.12 – 0.60	261 - 371
FDMQ15WVJU9	0.20 – 0.60	350 - 448

6. The unit shall be equipped with internal controls to allow the fan motor to be manually adjusted, via field setting, to deliver airflow at a variety of external static pressures. Models CDMQ07WVJU9 through FDMQ12WVJU9 shall have 13 available fan curves. Model FDMQ15WVJU9 shall have 11 available fan curves.

C. Coil:
   1. The evaporator coil shall be a nonferrous, aluminum fin on copper tube heat exchanger.
   2. All tube joints shall be brazed with silver alloy or phoscopper.
   3. All coils will be factory pressure tested.
   4. A condensate pan shall be provided under the coil with a drain connection.
      i. The unit shall be equipped with a factory-integral condensate lift mechanism capable of 26-9/16 inches of lift.

D. Electrical:
   1. The outdoor unit shall be powered with 208-230 volts, 1 phase, and 60 hertz power. The indoor unit shall receive 208-230 volt, 1 phase, 60 hertz power from the outdoor unit.
   2. The allowable voltage range shall be 187 volts to 253 volts.

E. Control:
   1. The unit shall have either a Wired type remote controller or a backlit, wireless remote infra-red controller capable to operate the system.
   2. The unit shall be compatible with interfacing with a BMS system via optional LonWorks or BACnet gateways.
   3. The unit shall be compatible with a Daikin Intelligent Touch Manager advanced multi-zone controller.
   4. The controller shall be able to display two-digit fault codes extracted from the indoor unit to aid in troubleshooting.
   5. The indoor unit microprocessor has the capability to receive and process commands via return air temperature and indoor coil temperature sensors enabled by commands from the remote control.

F. Sound:
   1. Indoor unit sound levels are as follows:

Indoor Daikin Model	Cooling Mode Sound Level dB(A)	Heating Mode Sound Level dB(A)
CDMQ07WVJU9	30	30
FDMQ09WVJU9	32	32
FDMQ12WVJU9	33	33
FDMQ15WVJU9	34	34

*values are measured approximately 5 feet away with fan speed on high, approximately 6.6 ft of supply duct, and 3.3 ft of return duct.

4.07 OUTDOOR UNIT

General:

The outdoor unit shall be specifically matched to corresponding indoor units while not exceeding maximum connected capacity. The outdoor unit shall be completely factory assembled and pre-wired with all necessary electronic and refrigerant controls. The outdoor unit shall be controlled by a microprocessor and dedicated EEV's shall be provided for capacity control during part load of the indoor unit.

A. Unit Cabinet:
   1. The outdoor unit shall be completely weatherproof and corrosion resistant. The unit shall be constructed from rust-proof mild steel panels coated with a baked enamel finish.
   2. The outdoor unit will come furnished with four (4) mounting feet, mounted across the base pan, to allow bolting to a cement pad or optionally supplied mounting bracket.
   3. The assembly will be able to withstand a maximum rated wind pressure of 193psf Lateral, 93psf Uplift. See document TER-20-34269.

B. Fan:
   1. The fan shall be a direct drive, propeller type fan.
   2. The motor shall be inverter driven, permanently lubricated type bearings, inherent.
   3. The fan shall be capable of operating in "Quiet Operation" which lowers the outdoor fan speed in either COOL, HEAT, or AUTO modes.
   4. A fan guard is provided on the outdoor unit to prevent contact with fan operation.
   5. Airflow shall be horizontal discharge.

C. Coil:
   1. The outdoor coil shall be nonferrous construction with corrugated fin tube.
   2. The fins are to be covered with an anti-corrosion acrylic resin and hydrophilic film type E1, rated for up to 1000 hours salt spray.
   3. Refrigerant flow from the condenser will be controlled via a metering device.
   4. Automatic defrost will remove any frost from the outdoor unit allowing the system to maintain heating capacity.

D. Compressor:
   1. The outdoor compressor shall be a patented, variable speed Daikin swing inverter-driven compressor. The one piece action reduces noise, extends life, boasts higher efficiency and reduces energy consumption.
   2. The outdoor unit shall have an accumulator and four-way reversing valve.
   3. PVE Refrigerant Oil shall be used to provide improved lubrication & better chemical stability, and no hydrolysis, leading to higher product reliability.
   4. The compressor shall have an internal thermal overload.
   5. The outdoor unit can operate with a maximum refrigerant piping of 164 feet (maximum 82 feet per indoor unit), with 49 feet maximum vertical difference between indoor unit and outdoor unit (maximum 24 feet between indoor units), without any oil traps, BP boxes, or additional components.

6. The compressor shall have a quick-warming function to prevent pumping liquid refrigerant in low-ambient conditions.

E. Electrical:
   1. The electrical power requirement is 208-230 volt, 1-phase, and 60 Hz power.
   2. The voltage range limitations shall be a minimum of 187 volts and a maximum of 253 volts.

F. Sound:
   1. Outdoor unit sound levels shall not exceed:

Outdoor Daikin Model	**Cooling Mode Sound Level dB(A)**	**Heating Mode Sound Level dB(A)**
2MXL18WMVJU9	50	51

*values are measured approximately 3 feet away with JIS standard operating conditions.

   2. Outdoor unit shall be equipped with optional Night Quiet Mode for COOL operation. Night Quiet reduces the operation noise during night-time hours and is engaged via dipswitch setting during installation.
      i. Night Quiet mode shall be activated when temperature drops 10.8°F or more below the highest temperature recorded that day. Function will be cancelled when the temperature difference between the current outdoor temperature and the maximum outdoor temperature becomes less than 7.2°F.

4.08 SYSTEM DIAGNOSTICS

General:

The system shall be capable of producing 2-digit fault codes:

A. Controls – compatibility varies by indoor unit model.
   1. I/R controller
   2. Wired Controller
   3. Wi-fi module

B. D-Checker software: The D-Checker software has the ability to display error codes and values for every sensor on the system through the outdoor unit. The sensor data points shall be graphed or recorded for export to a spreadsheet. The spreadsheet can then be analyzed to troubleshoot operational issues or acknowledge proper operation.