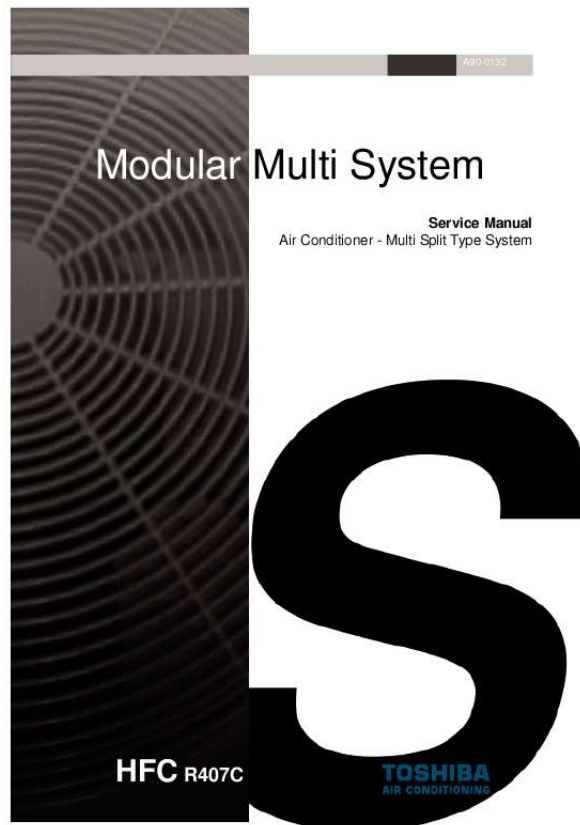




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You can read the recommendations in the user guide, the technical guide or the installation guide for TOSHIBA MM-SB028. You'll find the answers to all your questions on the TOSHIBA MM-SB028 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

User manual TOSHIBA MM-SB028
User guide TOSHIBA MM-SB028
Operating instructions TOSHIBA MM-SB028
Instructions for use TOSHIBA MM-SB028
Instruction manual TOSHIBA MM-SB028



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Manual abstract:

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21 Construction Views Indoor Units

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145 Exploded Views and Service Parts
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..... *1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20* 3 4 *Introduction* *Precautions* *Please read these instructions carefully before starting the installation. This equipment should only be installed by suitably trained operatives. In all cases ensure safe working practice: Observe precautions for persons in the vicinity of the works. Ensure that all local, national and international regulations are satisfied. Check that the electrical specifications of the unit meet the requirements of the site. Carefully unpack the equipment, check for damage or shortages. Please report any damage immediately. These units comply with EU Directives: 73/23/EEC (Low Voltage Directive), 89/336/EEC (Electromagnetic Compatibility) and 97/23/EC (Pressure Equipment Directive). Accordingly, they are designated for use in commercial and industrial environments*.*
Avoid installation in the following locations: Where there is danger of flammable gas leakages. Where there are high concentrations of oil. Where the atmosphere contains an excess of salt (as in coastal areas). The air conditioner is prone to failure when used under this condition unless special maintenance is provided. Where the airflow from the outdoor unit may cause annoyance.
Where the operating noise of the outdoor unit may cause annoyance. Where the foundation is not strong enough to fully withstand the weight of the outdoor unit. Where the water drainage may cause a nuisance or a hazard when frozen. Where strong winds may blow against the air outlet of the outdoor unit.
Precautions for R407C outdoor units R407C outdoor units use synthetic oils which are extremely hygroscopic. Therefore ensure that the refrigerant system is NEVER exposed to air or any form of moisture. Mineral oils are unsuitable for use in these units and may lead to premature system failure. Use only equipment which is suitable for use with R407C. Never use equipment which has been used with R22. R407C should only be charged from the service cylinder

in the liquid phase.

It is advisable to use a gauge manifold set equipped with a liquid sight glass fitted in the centre (entry) port. * 97/23/EC Pressure Equipment Directive information Conformity assessment procedure: Module D1 Pressure equipment: Compressor, category II, Module A1 Accumulator, category I Liquid receiver, category II High pressure switch, category II, Module A1 Notified body for inspection and quality assurance systems: BSI, Maylands Avenue, Hemel Hempstead, WP2 4SQ, UK. 1 5 Introduction Precautions 1 Precautions for R-407C outdoor units Liquid receiver fusible plug In the event of the system being subjected to abnormal conditions it is protected by a fusible plug, positioned on the liquid receiver, within the outdoor unit. It is rated to fail at 70C. Position of fusible plug System pressure measurement To measure the system's high and low pressures, connect a gauge manifold to the corresponding access port as indicated below. Low pressure access port High pressure access port Explanation of Toshiba serial number A serial label is attached to all Toshiba air conditioning units. Located on the label is an 8-digit number, which represents the month, year and batch number of the manufactured unit. A breakdown of the 8-digit number is defined below. 2 4 4 8 0 0 0 1 } Model batch serial number Year of manufacture 2001 = 1 2002 = 2 2003 = 3 Month of manufacture 41

= Jan. 42 = Feb.

43 = Mar. 44 = Apr. 45 = May 46 = Jun. 47 = Jul. 48 = Aug.

49 = Sep. 50 = Oct. 51 = Nov. 52 = Dec. Site of manufacture 8 = Plymouth 6 Introduction Components 1. Outdoor unit Corresponding HP Model name Cooling capacity (kW) Heating capacity (kW) Corresponding HP Model name Cooling capacity (kW) Inverter unit 8 HP MM-A0224HT 22.4 25.0 Inverter unit 8 HP MM-A0224CT 22.4 10 HP MM-A0280CT 28.0 10 HP MM-A0280HT 28.0 31.5 Fixed-speed unit 6 HP MM-A0160HX 16.0 18.0 Fixed-speed unit 6 HP MM-A0160CX 16.0 8 HP MM-A0224CX 22.

4 10 HP MM-A0280CX 28.0 8 HP MM-A0224HX 22.4 25.0 10 HP MM-A0280HX 28.0 31.5 1 2. Outdoor units (combination of outdoor units) Corresponding HP Combined model MM-A-HT/MM-A-CT Cooling capacity (kW) Inverter unit Combined outdoor units Fixed-speed unit 8HP 0224 22.4 8HP No. of connectable indoor units Min. HP connected Max.

HP connected 13 4 10.8 16 5 13.5 16 7 18.9 18 8 21.6 18 9 24.

3 20 10 27 22 11 29.7 24 12 32.4 26 13 35.1 28 14 37.8 30 15 40.

5 32 16 43.2 34 17 45.9 36 18 48.6 38 19 51.3 40 20 54 40 21 56.7 40 22 59.4 40 23 62.1 10HP 14HP 16HP 18HP 20HP 22HP 24HP 26HP 28HP 30HP 32HP 34HP 36HP 38HP 40HP 42HP 44HP 46HP 0280 28.0 0384 38.4 6HP 0440 44.

8 8HP 8HP 0504 50.4 8HP 0560 56.0 0608 60.8 0672 67.2 8HP 8HP 8HP 0728 72.8 8HP 8HP 0784 78.4 0840 84.0 0896 89.6 0952 95.2 8HP 8HP 8HP

1008 1064 1120 1176 1232 1288 100.

8 106.4 112.0 117.6 123.2 128.

8 10HP 10HP 10HP 8HP 8HP 10HP 10HP 8HP 8HP 10HP 8HP 8HP 10HP 8HP 8HP 10HP 8HP 8HP 10HP 8HP 10HP 10HP 8HP 10HP 8HP 10HP 8HP 6HP - 10HP 10HP 10HP 8HP 10HP 10HP 8HP 8HP 10HP 8HP 8HP - 10HP 10HP 10HP 10HP 10HP 10HP 10HP 3. Branching joints/headers Model name Y-shape branching joint RBM-Y018-SK RBM-Y037-SK RBM-Y071-SK RBM-Y129-SK Usage Indoor unit capacity code (*1): Total < 6.4 Indoor unit capacity code (*1): 6.4 = Total < 13.2 Indoor unit capacity code (*1): 13.

2 = Total < 25.2 Indoor unit capacity code (*1): 25.2 = Total (*2) (*2) (*2) Max. 4 branches Max. 8 branches Appearance 4-branching header (*3) RBM-H4037-SK Indoor unit capacity code (*1): Total < 6.4 RBM-H4071-SK Indoor unit capacity code (*1): 6.4 = Total < 13.2 8-branching header (*3) RBM-H8037-SK Indoor unit capacity code (*1): Total < 6.4 RBM-H8071-SK Indoor unit capacity code (*1): 6.4 = Total < 13.

2 T-shape branching joint (For connection of outdoor unit) 1 set of 3 types of T-shape joint pipes as described below. The required quantity is arranged and they are combined at the site. RBM-T129-SK Connecting pipe Balancing pipe Piping at liquid side Piping at gas side Corresponding dia. (mm) 9.52 12.7 to 22.2 22.2 to 54.1 Quantity 1 1 1 (*1) Code is determined according to the capacity code of the Indoor units connected. (*2) If the total capacity code value of Indoor units exceeds that of Outdoor units, apply the capacity code of Outdoor units.

(*3) When using a branch header, Indoor units with a maximum of 6.0 capacity code in total can be connected to each branch. NOTE: If the length of the gas pipe exceeds 30m from the 1st branching to an Indoor unit, increase the gas pipe size by 1 size, i.e. MM-U140 = Gas 22.

2, Liquid 9.5 7 Summary Operating conditions The units referred to within this manual conform with the protection requirements of Directives 89/336/EEC Electromagnetic Compatibility and 73/23/EEC Low voltage.



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Operating conditions of the unit are as follows: Outdoor temperature Room temperature Room humidity -5 ~ 43C -15 ~ 21C 18 ~ 32C 15 ~ 29C <80% Cooling Heating Cooling Heating Cooling 2 Note 1: Cooling capacity is rated at the following temperature conditions: Indoor air inlet temperature 27C DB, 19C WB. Outdoor air inlet temperature 35C DB. Note 2: Heating capacity is rated at the following temperature conditions: Indoor air inlet temperature 20C DB.

Outdoor air inlet temperature 7C DB, 6C WB. Note 3: For details about the Outdoor unit, Indoor units or Remote Controller installation refer to the relevant literature, i.e. Installation Instructions supplied with the units. Note 4: Operatives handling refrigerants must be suitably qualified in accordance with local and national codes of practice and statutory requirements. Note 5: Legislation may regulate the removal of waste refrigerant from the systems. We advise awareness of any regulations and duty of care. Waste refrigerant must NEVER be discharged to atmosphere. Note 6: Electrical work should be in accordance with all relevant codes of practice and should be carried out by suitably qualified personnel. Note 7: Metric/Imperial pipe conversion.

Diameter (mm) Nominal diameter (inch) 6.4 1/4 9.5 3/8 12.7 1/2 15.9 5/8 19.0 3/4 2.0 7/8 28.6 1-1/8 34.9 1-3/8 41.3 1-5/8 54.

1 2-1/8 Note 8: Within this manual: ODU = Outdoor Unit R/C = Remote Controller INV = Inverter ODU DB = Dry Bulb Mg-Sw = Magnetic Contactor OCR = Over Current Relay IDU D.O.L. FIX WB IOL IGBT = Indoor Unit = Direct On-Line compressor = Fixed-speed ODU = Wet Bulb = Inner Overload Relay = Inverter Gate Bi-Polar Transistor Note 9: MPaG kgf/cm²G conversion multiplier 1.0 MPaG = 10.

2 kgf/cm²G 8 Summary Operating conditions 1. Model name OUTDOOR MM-A0280HT Modular Multi 2 0280 28 kW (10 HP) 0224 22.4 kW (8 HP) 0160 16.0 kW (6 HP) C - Cooling H - Heating T Inverter X Fixed-speed A Outdoor INDOOR MM-TU056 Modular Multi B C (CR) K (KR) N S (SR) SB TU U - Built-In Duct Type Ceiling Type (IR Remote) High Wall Type (IR Remote) Chassis Type Low Wall Type (IR Remote) Built-In Slim Duct Type 2-way Cassette Type 4-way Cassette Type 028 2.8 kW (1 HP) 042 4.

2 kW (1.5 HP) 056 5.6 kW (2 HP) 080 8.0 kW (3 HP) 112 12.2 kW (4 HP) 140 14.0 kW (5 HP) 2. Range of combined units No. of combined units : 1 to 5 units Capacity range : Equivalent to 38.4 kW type (14HP) to 128.8 kW (46HP) Restriction for combination units (1) The Inverter Unit should have the maximum capacity among all units in that combination.

(2) The 16.0 kW (6HP) fixed-speed unit is available only with the combination of 38.4 kW (14HP) and 60.8 kW (22HP). (It cannot be used for any other combination.) Mode priority This Outdoor Unit is set to operate with the Heating mode taking precedence. This precedence can be switched between Heat and Cool mode using the DIP switch 07 on the Outdoor Unit Interface PCB (MCC-1343-01) as follows: ON OFF 3. 4. Heat priority (factory set) ON OFF Cool priority 9 Outline of MMS (Modular Multi System) Branching 3 Combination of line and header branching is highly flexible. This allows for the shortest design route possible, thereby saving on installation time and cost.

Line/header branching after header branching is only available with Toshiba's Multi Modular System. Line branching Outdoor unit Branching joint Indoor unit 8F Header branching Outdoor unit Branching header 4 4-WAY VALVE Model name Coil specification MODEL MM-A0280HT CHV-0712 AC240V MM-A0224HT CHV-0712 AC240V MM-A0280HX CHV-0712 AC240V MM-A0224HX CHV-0712 AC240V MM-A0160HX CHV-0401 AC240V MM-A0280HT, MM-A0224HT, MM-A0280HX, MM-A0224HX, MM-A0160HX MM-A0280CT, MM-A0224CT, MM-A0280CX, MM-A0224CX, MM-A0160CX PARTS NAME Fan motor Model name Motor type Power supply Output (W) Current (A) Pole (P) High pressure switch High pressure sensor Low pressure sensor Model name Operating pressure (mPa) Model name Operating conditions (mPa) Model name Operating conditions (mPa) Compressor case heater (fixed-speed only) Accumulator cas-CR042 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-34-4H EEP2H105HQA105 SPECIFICATIONS Output (rated) 34 W, 4 pole, 230 V, 1 phase, 50 Hz AC 500 V, 1.5 F EDM-B25YPTF-7B-A Capacity: 25 Ceiling: MM-C140, MM-C112, MM-C080, MM-C056, MM-C042 MM-CR140, MM-CR112, MM-CR080, MM-CR056, MM-CR042 No. 4 5 6 7 8 9 10 11 PARTS NAME Transformer Pulse motor Pressure sensor Sensor for room temperature Sensor for heat exchanger Sensor for heat exchanger Control PCB Power PCB TYPE TT-03-1 EDM-MD12TF-3 150/100NH6-D TA Tc1 Tc2 CM**C03 P**RC01 SPECIFICATIONS DC 16.3 V 0.

5 A / AC 11.6 V 0.15 A DC 12 V Power voltage DC 12 V Maximum input: 38 mA at 25 C Maximum input: 34 mA at 25 C Maximum input: 26 mA at 25 C AC 220 240 V AC 220 240 V C k C k C k 25 10 -12 62.3 0 34.6 0 32.

8 25 10 50 3.45 25 10 50 3.4 50 3.6 15 Parts specifications Indoor units High wall: MM-K080, MM-KR080 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-27-4R EEP2W205HQA107 SPECIFICATIONS Output (rated) 27 W, 4 pole, 230 V, 1 phase, 50 Hz AC 400 V, 2 F EDM-B40YPTR-7B-A Capacity: 40 High wall: MM-K056, MM-KR056 No. 1 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-27-4P EEP2H155HQA107 EDM-B40YTR-7B-A SPECIFICATIONS Output (rated) 27, 4 pole, 230 V, 1 phase, 50 Hz AC 400 V, 1.5 F Capacity: 40 4 2 3 High wall: MM-K042, MM-KR0042 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-27-4P EEP2H105HQA105 SPECIFICATIONS Output (rated) 27 W, 4 pole, 230 V, 1 phase, 50 Hz AC 400 V, 1 F EDM-B25YPTF-7B-A Capacity: 25 High wall: MM-K080, MM-KR080 MM-K056, MM-KR056 MM-K042, MM-KR042 No. 4 5 6 7 8 9 10 11 PARTS NAME Transformer Pulse motor Pressure sensor Sensor for room temperature Sensor for heat exchanger Sensor for heat exchanger Control PCB Power PCB TYPE TT - 03 - 1 EDM-MD12TF-3 150/100NH6-D TA Tc1 Tc2 CM**C03 P**RC01 SPECIFICATIONS DC 16.3 V 0.5 A / AC 11.

6 V 0.15 A DC 12 V Power voltage DC 12 V Maximum input: 38 mA at 25 C Maximum input: 34 mA at 25 C Maximum input: 26 mA at 25 C AC 220 240 V AC 220 240 V C k C k C k 25 10 -12 62.3 0 34.6 0 32.8 25 10 50 3.45 25 10 50 3.4 50 3.6 16 Parts specifications Indoor units Chassis: MM-N080 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE SMF-230-34-4O EEP2H155HQA107 SPECIFICATIONS Output (rated) 34 W, 4 pole, 230 V, 1 phase, 50 Hz AC 500 V, 1.5 F EDM-B40YPTR-7B-A Capacity: 40 Chassis: MM-N056 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE SMF-230-34-4D EEP2W205HQA107 SPECIFICATIONS Output (rated) 34 W, 4 pole, 230 V, 1 phase, 50 Hz AC 450 V, 2.0 F EDM-B40YPTR-7B-A Capacity: 40 4 Chassis: MM-N042 No.

1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE SMF-230-34-4H EEP2W205HQA107 SPECIFICATIONS Output (rated) 34 W, 4 pole, 230 V, 1 phase, 50 Hz AC 450 V, 2 F EDM-B40YPTR-7B-A Capacity: 25 Chassis: MM-N028 No.



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1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE SMF-230-34-4H EEP2H155HQA107 SPECIFICATIONS Output (rated) 34 W, 4 pole, 230 V, 1 phase, 50 Hz AC 500 V, 1,5 F EDM-B25YPTF-7B-A Capacity: 25 Chassis: MM-N080, NN-N056, MM-N042, MM-N028 No. 4 5 6 7 8 9 10 11 PARTS NAME Transformer Pulse motor Pressure sensor Sensor for room temperature Sensor for heat exchanger Sensor for heat exchanger Control PCB Power PCB TYPE TT-03-1 EDM-MD12TF-3 150/100NH6-D TA Tc1 Tc2 CM**C02 P**RC01 SPECIFICATIONS DC 16.3 V 0.5 A / AC 11.6 V 0.15 A DC 12 V Power voltage DC 12 V Maximum input: 38 mA at 25 C Maximum input: 34 mA at 25 C Maximum input: 26 mA at 25 C AC 220 240 V AC 220 240 V C k C k C k 25 10 -12 62.3 0 34.6 0 32.8 25 10 50 3.

45 25 10 50 3.4 50 3.6 17 Parts specifications Indoor units Low wall: MM-S080, MM-SR080 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE SMF-230-34-4D EEP2W255HQA113 SPECIFICATIONS Output (rated) 34 W, 4 pole, 230 V, 1 phase, 50 Hz AC 450 V, 2,5 F EDM-B40YPTR-7B-A Capacity: 40 Low wall: MM-S056, MM-SR056 No. 1 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE SMF-230-34-4D EEP2W255HQA113 SPECIFICATIONS Output (rated) 34 W, 4 pole, 230 V, 1 phase, 50 Hz AC 450 V, 2,5 F 4 2 3 EDM-B40YPTR-7B-A Capacity: 40 Low wall: MM-S080, MM-SR080, MM-S056, MM-SR056 No. 4 5 6 7 8 9 10 11 PARTS NAME Transformer Pulse motor Pressure sensor Sensor for room temperature Sensor for heat exchanger Sensor for heat exchanger Control PCB Power PCB TYPE TT-03-1 EDM-MD12TF-3 150/100NH6-D TA Tc1 Tc2 CM**C02 P**RC01 SPECIFICATIONS DC 16.3 V 0.5 A / AC 11.6 V 0.15 A DC 12 V Power voltage DC 12 V Maximum input: 38 mA at 25 C Maximum input: 34 mA at 25 C Maximum input: 26 mA at 25 C AC 220 240 V AC 220 240 V C k C k C k 25 10 -12 62.

3 0 34.6 0 32.8 25 10 50 3.45 25 10 50 3.4 50 3.6 18 Parts specifications Indoor units 2-way cassette: MM-TU056 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE PAF-230-7-4 EEP2H105HQA105 SPECIFICATIONS Output (rated) 7 W, 4 pole, 230 V, 1 phase, 50 Hz AC 500 V, 1 F EDM-B40YPTR-7B-A Capacity: 40 2-way cassette: MM-TU042 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE PAF-230-7-4 EVM45M504UF SPECIFICATIONS Output (rated) 7 W, 4 pole, 230 V, 1 phase, 50 Hz AC 500 V, 1 F 4 EDM-B25YPTF-7B-A Capacity: 25 2-way cassette: MM-TU028 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE PAF-230-7-4 EEP2H105HQA105 SPECIFICATIONS Output (rated) 7 W, 4 pole, 230 V, 1 phase, 50 Hz AC 500 V, 1 F EDM-B25YPTF-7B-A Capacity: 25 2-way cassette: MM-TU056, MM-TU042, MM-TU028 No. 4 5 6 7 8 9 10 11 PARTS NAME Transformer Pulse motor Pressure sensor Sensor for room temperature Sensor for heat exchanger Sensor for heat exchanger Control PCB Power PCB TYPE TT - 03 - 1 EDM-MD12TF-3 150/100NH6-D TA Tc1 Tc2 CM**C01 P**RC01 SPECIFICATIONS DC 16.

3 V 0.5 A / AC 11.6 V 0.15 A DC 12 V Power voltage DC 12 V Maximum input: 38 mA at 25 C Maximum input: 34 mA at 25 C Maximum input: 26 mA at 25 C AC 220 240 V AC 220 240 V C k C k C k 25 10 -12 62.3 0 34.

6 0 32.8 25 10 50 3.45 25 10 50 3.4 50 3.6 19 Parts specifications Indoor units 4-way cassette: MM-U140 No.

1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-36A EVM45M305UF SPECIFICATIONS Output (rated) 36 W, 6 pole, 230 V, 1 phase, 50 Hz AC 450 V, 3 F EDM-B60YPTR-7B-A Capacity: 60 4-way cassette: MM-U112 No. PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-36A EEP2W255HQA113 SPECIFICATIONS Output (rated) 36 W, 4 pole, 230 V, 1 phase, 50 Hz AC 450 V, 2,5 F 4 1 2 3 EDM-B40YPTR-7B-A Capacity: 40 4-way cassette: MM-U080 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-28A EEP2W205HQA107 SPECIFICATIONS Output (rated) 28 W, 6 pole, 230 V, 1 phase, 50 Hz AC 450 V, 2 F EDM-B40YPTR-7B-A Capacity: 40 4-way cassette: MM-U056 No. 1 2 3 PARTS NAME Fan motor Running capacitor Fan motor Pulse motor valve TYPE MMF-230-28A EEP2H105HQA105 SPECIFICATIONS Output (rated) 28 W, 6 pole, 230 V, 1 phase, 50 Hz AC 450 V, 1 F EDM-B40YPTR-7B-A Capacity: 40 4-way cassette: MM-U140, MM-U112, MM-U080, MM-U056 No. 4 5 6 7 8 9 10 11 PARTS NAME Transformer Pulse motor Pressure sensor Sensor for room temperature Sensor for heat exchanger Sensor for heat exchanger Control PCB Power PCB TYPE TT-03-1 EDM-MD12TF-3 150/100NH6-D TA Tc1 Tc2 CM**C02 P**RC01 SPECIFICATIONS DC 16.3 V 0.5 A / AC 11.6 V 0.15 A DC 12 V Power voltage DC 12 V Maximum input: 38 mA at 25 C Maximum input: 34 mA at 25 C Maximum input: 26 mA at 25 C AC 220 240 V AC 220 240 V C k C k C k 25 10 -12 62.3 0 34.

6 0 32.8 25 10 50 3.45 25 10 50 3.4 50 3.6 20 Construction views Outdoor units MM-A0280HT, MM-A0280HX, MM-A0224HT, MM-A0224HX, MM-A0160HX MM-A0280CT, MM-A0280CX, MM-A0224CT, MM-A0224CX, MM-A0160CX Grounding part of bottom plate 4 - 15 x 20 (slot) Base (including fixed leg) 100 80 Fixing bolt pitch 100 Fixing bolt pitch 790 610 630 755 755 Fixing bolt pitch 700 990 5 Base 80 700 Fixing bolt pitch Base bolt position 750 1700 1560 90 Refrigerant pipe connecting port (Gas side) braze connection (A) 700 245 88 Refrigerant pipe connecting port (Liquid side) flare connection (B) 2 - 60 x 150 slot (for transport) 500 (Slot pitch) Balance pipe connecting port flare connection (C) (knock out) Refrigerant pipe connecting port (gas side) 190 235 Note: All dimensions in mm Refrigerant pipe connecting port (liquid side) Balance pipe connecting port 173 60 115 (knock out) 140 145 MM-A0280HT, MM-A0280HX MM-A0280CT, MM-A0280CX MM-A0224HT, MM-A0224HX MM-A0224CT, MM-A0224CX MM-A0160HX MM-A0160CX 28.6 22.2 22.2 12.7 12.7 9.

52 9.52 20 9.52 9.52 Details of piping connections 65 35 21 64 130 170 Model A mm B mm C mm 125 Construction views Indoor units Built-In Duct MM-B056, MM-B080, MM-B112, MM-B140 N x 200 air outlet A (Unit dimension) B (Hanging bolt pitch) J=MxK Hanging bolt 4 - M10 provided at site Refrigerant pipe connection (Gas F) Unit dimension: 800 Hanging bolt pitch: 565 6 x 4 holes (160) 6 Refrigerant pipe connection (liquid G) Drain pipe connection (Inner diameter: 32) (Diameter 32 minimal for PVC pipes) Fresh air inlet 125 cut-out (other side) Filter kit Ensure that there is sufficient space around the indoor unit for installation and servicing 300-400 Indoor unit 200 Inspection hole 450 Provide an inspection hole in this position Model MM-B056 MM-B080 MM-B112, B140 (All dimensions in mm) A 700 1000 1350 B 750 1050 1400 E 780 1080 1430 F 12.7 15.

9 19.0 G 6.4 9.5 9.5 H 252 252 252 J 280 580 930 K 280 290 310 M 1 2 3 N 2 3 4 22 450 480 Electrical box (PCB, transformer and MF capacitor) 700 125 450 35 57 Built-In Slim Duct MM-SB028 Refrigerant pipe connection (Liquid G).



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4) 200 125 45 150 200 81 333 Air outlet 12 Filter Refrigerant pipe connection (Gas 12.7) 35 150 265 276 331 364 391 480 Shelter board Optional air flow (lower air inlet) 480 500 Drain pipe connection (1" BSP threaded connection) Hanging bolt pitch 397 Indoor units Shelter board 700 Air flow Unit dimensions 800 Filter 750 Hanging bolt pitch Construction views Air inlet 700 75 75 37.5 150 150 150 220 Unit dimension Washable filter 342.5 342.5 220 Air flow 158 23 6 Construction views Indoor units Low wall HR-PE MM-S056, MM-SR056 MM-S080, MM-SR080 Alternative knock-out Foro incompleto hole for drain piping alternativo 62 per tubo drenaggio Drain piping Raccordo tubo drenaggio joint 12 85 30 30 Foro bullone di Hanging bolt hole sospensione 4 - (12 x 25) Scanalatura 12x25 (4) slot Knock-out holes for Fori incompleti piping and wiring per tubi e fili 140 50 100 10 Right-side panel knockForo incompleto pannello destro out for e fili per tubipiping and wiring 130 50 85 12 78 150 180 200 120 6 170 34 Tubo duro cloruro di vinile Hard vinyl esterno mm. 20 diametro chloride pipe outer dia. 20 mm Collegamento tubo Refrigerant pipe refrigerante (Liquido F) connection (Liquid E) 145 80 80 Collegamento tubo Refrigerant (Gas refrigerante pipe G) connection (Gas F) 640 250 Hanging bolt Hanging bolt pitch pitch Ingresso aria Air inlet Filtro aria Air filter Hanging bolt pitch B Passo bullone di sospensione sospensione Hanging plate (Left) A Piastra di sospensione Hanging plate (Right) (destra) D 130 Hanging bolt Bullone di sospensione Less than 40 inferiore 40 B Passo bullone di pitch Hanging bolt sospensione interno 150 150 VISTA PIANO PLAN VIEW Minimum Minimo Minimo Minimum Space required for service and installation Spazio necessario per installazione e manutenzione Pi di 400 Greater than Pi di 500 Model MM-S056 MM-SR056 MM-S080 MM-SR080 A 1030 580 B 920 581 C 540 582 D 188 583 E 6.4 584 F 12.7 585 All dimensions in mm 24 C Construction views Indoor units Chassis MM-N028, MM-N042, MM-N056, MM-N080 Space required for service and installation A 20 Piastra superiore/Piastra Upper plate/duct plate condotto 60 65 95 B 160 140 150 Minimo 25 145 100 150 Posizione di fissaggio Fixing location pavimento/allla base al to floor/base C D Uscita ariat Minimo Minimum Air outlet 10 Foro Hx4.7 10 20 2 x 4.

7 hole Foro 24.7 Flare joint Raccordo a cartella Liquid F Liquido F 133 10 6 70 Foro 15 (4) 4 x 15 hole Posizione di fissaggio alla parete Fixing location to wall Raccordo Flare jointa cartella Gas G Gas G 175 145 600 Drain catch 345 315 Drain hose connector (OD 20) 274 224 436 397 Air filter Filtro aria Ingresso aria Air intake E Centralina elettrica Electrical box Collegamento terra interno Earth connection inside 65 95 104 70 Fixing location to floor/base 110 155 230 160 Model MM-N028 MM-N042 MM-N056 MM-N080 A 580 880 880 B 550 850 850 C 610 910 910 D 4 x 100 7 x 100 7 x 100 E 580 880 880 F 6.4 6.4 9.5 G 12.7 12.7 15.9 H 5 8 8 All dimensions in mm 25 140 Construction views Indoor units Ceiling MM-C042, MM-CR042, MM-C056, MM-CR056 MM-C080, MM-CR080, MM-C112, MM-CR112, MM-C140, MM-CR140 /CHR-PE Raccordo tubo Drain piping joint drenaggio /CHR-PE Tubo duro cloruro di vinile diametro Hard vinyl chloride pipe /CHR-PE knock-out Alternative esterno mm. 20 outer Collegamento /CHR-PE piping incompleto dia. 20 mm tubo hole for drain Foro 145 12 62 85 30 30 Knock-out holes for Fori incompleti Foro bullone di piping and wiring per tubi e fili Hanging bolt hole sospensione Scanalatura 12x25 (4) 4 - (12 x 25) slot 140 640 250 170 Hanging Passo bullone bolt di sospensione pitch 150 180 200 6 100 10 50 Right-side panel knockForo incompleto out for pannello destro piping and wiring per tubi e fili 130 50 85 12 120 78 34 Refrigerant pipe refrigerante alternativo (Liquido F) connection (Liquid F) per tubo drenaggio 80 80 Collegamento tubo Refrigerant(Gas G) pipe refrigerante connection (Gas G) Ingresso Air inlet aria C Filtro aria Air filter B Hanging bolt pitch (Passo bullone di sospensione) Hanging plate Hanging plate (Left) (Left) D A Piastra di plate (Right) Hanging sospensione (destra) Hanging bolt Bullone di sospensione Less than 40 inferiore a 40 130 40 E Hanging bolt Bullone di sospensione inferiore 40 less than40 B Passo bullone di sospensione interno Inner hanging bolt pitch Passo bullone di sospensione interno Outer hanging bolt pitch 150 150 Spazio necessario per installazione e manutenzione Space required for service and installation Greater than Pi di 400 Model A B 920 920 1120 1320 1520 C 540 540 540 550 550 D 188 188 188 240 240 E 1020 1020 1220 1420 1620 F 6. 4 6.4 9.5 9.5 9.5 G 12.

7 12.7 15.9 19.0 19.0 MM-C042/CR042 1030 MM-C056/CR056 1030 MM-C080/CR080 1230 MM-C112/CR112 1430 MM-C140/CR140 1630 All dimensions in mm 26 500 Minimo Minimum Minimo Minimum Greater than Pi di Construction views Indoor units High wall MM-K042, MM-K056, MM-K080, MM-KR042, MM-KR056, MM-KR080 158 143 226 A Refrigerant pipe 216 Refrigerant pip connection connection (Liquid C) (Liquid C) 595 495 6 Air outlet (Both sides) Air outlet (Both sides) 4-way adjustable Piping hole 40 4-way adjustable Piping hole (Knockout hole) (Knock-out hole) 900 Drain pipe Drain pipe Piping hole Piping hole (Knockout (Knock-out hole) hole) 70 118 30 than 30 Moremin. Model MM-K042, MM-KR-042 MM-K056, MM-KR056 MM-K080, MM-KR080 A 1149 1149 1478 B 12.6 12.7 15.9 C 6.4 6.4 9.5 MM-K042, MM-KR042 MM-K056, MM-KR056 20 40 110 150 150 110 40 20 26 50 50 43 40 More than 300 300 min. 300 min. More than 300 Space required for service Space required for service Slots 18-6x30 Slots 6-6 30 18 - 6 x Holes 6 - 6 holes 40 169 (All dimensions in mm) 600 (unit : mm) Anchor bolt holes Anchor bolt holes 4 --10 x 20 slots 10x20 slots 4 MM-K080, MM-KR080 20 40 110 150 150 150 110 40 20 50 43 Slots 940 Anchor bolt holes Anchor bolt holes 4 --10 x 20 slots 10x20 slots 4 Installation board mounting bolt hole location Installation board mounting bolt hole location 27 26 50 Slots 21-6x30 218-6 30 - 6 x Holes 8 - 6 holes 169 20 (OD.) Refrigerant pipe Refrigerant pip connection connection (Gas B) (Gas B) 372 Construction views Indoor units 2-way cassette MM-TU028, MM-TU042, MM-TU056 Hanger bolt (4 x M10) Drain pipe joint (outer 25).

5) Refrigerant piping joint (Liquid 6.4) Refrigerant piping joint (Gas 12.7) Channel for routing TC sensors and pressure sensor leads 6 Panel outer dimension 550 Ceiling opening 510 Hanging bolt pitch 410 Panel outer dimension 1050 Ceiling opening 1010 Hanging bolt pitch 930 View A (All dimensions in mm) Minimum 600 Minimum 600 Space required for service and installation Minimum 600 28 Construction views Indoor units 4-way cassette MM-U056, MM-U080 185 80 170 100 106 160 259 Refrigerant pipe connection (Gas A) Refrigerant pipe connection (Liquid B) 298 106 138 138 39 20 Ceiling Knock-out for side ducts 150 (both sides) 30 40 Wiring connection Drain pipe connection (Gland plate 3 x 20 holes) (1" BSP threaded connection) 405 400 536 73 140 200 30 195 240 6 Hanging bolt pitch 800 External cassette dimension 820 Ceiling opening 880 Panel dimension 940 195 Fresh air inlet 130 30 536 Hanging bolt pitch 620 External cassette dimension 820 Ceiling opening 880 Panel dimension 940 268 Condensate pipe (1" BSP threaded connection) 940 940 Model (MM-) A B Side outlet duct size U056 12.



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7 6.4 U080 15.9 9.5 Fresh air inlet duct size 32 100 6-6 4-6 1 44 30 1 80 10 80 10 45 180 150 200 30 6 80 1 130 144 97 30 45 45 45 130 30 2 29 Construction views Indoor units 4-way cassette MM-U112, MM-U140 Knock-out for side ducts 150 (both sides) 941 106 106 185 80 170 100 348 309 210 Refrigerant pipe connection (Gas side 19.0) Refrigerant pipe connection (Liquid side 9.5) 73 140 200 138 39 20 Ceiling 610 605 Ceiling panel Wiring connection Drain pipe connection (Gland plate 3 x 20 holes) (1" BSP threaded connection) 40 30 6 Hanging bolt pitch 800 External cassette dimension 820 Ceiling opening 880 Panel dimension 940 138 940 30 30 Fresh air inlet 30 130 940 202 240 Hanging bolt pitch 1030 External cassette dimension 1230 Ceiling opening 1290 Panel dimension 1350 1350 Condensate pipe (1" BSP threaded connection) Fresh air inlet duct size 32 100 4-6 130 Side outlet duct size 6-6 80 10 80 10 45 144 30 180 150 200 30 6 97 1 44 130 45 45 45 130 30 2 30 Inverter unit (10 HP, 8 HP) MM-A0280HT, MM-A0224HT Posistor Symbol CM 1, 2 FM 52C 1, 2 49C 1, 2 51C PMV 1, 2, 3 63H 1, 2 RC SV 42, 2 3A, 3B, 3C 20SF Tr AH TD 1, 2 TE TK 1, 2, 3 TS Part name Compressor Fan motor Electromagnetic contactor for compressor Inner overload relay (WHI) Filter board RED WHI BLK GRY MCC - 1366 - 01 CN01 CN17 CN02 CN18 CN03 CN19 CN04 CN20 CN22 CN23 3 3 1 1 3 3 1 (BLU) 1 RED WHI BLK GRY GRY FL1 FL2 RE D RED R S RED U V BLU RED WHI BLK CN01 CN02 CN03 IPDU board MCC - 1342 - 01 CN14 52C2 RED FL3 RED GRY CN15 T02 11 33 33 11 11 33 CN16 GRY RED WHI BLK Overload relay Electronic flow control valve High pressure switch Running capacitor (BLK) CN04 (BLK) TE PMV 1 BLU ORG YEL WHI RED RED TS1 TD2 TD1 TK3 BLK BLK BLK ORG RED PMV 2 BLU ORG YEL WHI PMV 3 BLK BLK BLK BLK BLK BLK BLK BLK GRY RED BLU ORG YEL WHI CN501 (BLU) BLU CN06 2-way valve 4-way valve Transformer Accumulator heater Temperature sensor BLU 6 6 4321 4321 6 6 4321 4321 654321 654321 21 21 21 21 654321 654321 21 21 21 3 3 1 1 3 3 1 1 3 3 1 1 CN10 (RED) 44 33 11 T03 (WHI) (WHI) (RED) (WHI) (BLU) (WHI) (BLU) (WHI) (RED) (WHI) RED BLK D406 (GRN) BLK WHI CN11 CN08 CN09 PO5 BLU (WHI) CN07 12345 12345 CN311 BLU D802 11 33 11 BLU BLK BLK PINK RED BLU WHI BLK Ferrite core FL 1, 2, 3 Fuse 20 A SV2 SV3A 77 CN100 (BLK) Reactor TK1 BLK BLU 33 WHI (WHI) WHI SV42 55 (BLU) D801 CN604 BLU (WHI) 63H1 WHI WHI (WHI) WHI (WHI) BLU CN500 BLK YEL BLK 12 12 WHI WHI (BLU) 44 33 22 RED Pressure sensor PS BL U (BLK) 1 2 12 ORG CN300 CN301 CN302 CN602 CN601 CN600 CN505 CN504 CN503 CN502 CN507 CN501 Pressure sensor PD BLK BLK PO4 Wiring diagrams WHI BLK BLU BLU CN516 (BLK) 33 55 ORG 11 RED Reactor Outdoor units BLU 7 7 CN312 BLU 11 33 CM1 SW04 1234 ON ON 1234 ON 12 49C1 SW06 SW07 SW01 SW08 SV3B BLU BLU (BLU) SW05 SW03 SW02 CN313 SV3C 11 BLU (BLK) 33 12 ON CN314 ORG D716 D717 D714 D715 11 SW09 AH ORG (RED) 33 CN316 BLU 20SF 33 11 BLU BLK RED (BLU) CN317 33 33 11 11 Interface control PC Board Interface Control PC board MCC - 1343 - 03 Parts layout (BLU) (WHI) CN515 (WHI) CN308 5 5 5 5 3 3 3 3 1 1 CN304 (BLK) CN307 5 5 5 5 3 3 3 3 1 1 5 5 5 5 3 3 3 3 1 1 (BLU) (WHI) 33 BLK BLK CN401 CN400 1 1 3 3 1 1 3 3 CN402 CN403 11 TK2 BLU BLU FL1 Posistor Posistor PUR BLK RED WHI BRN ORG BRN GRY GRY RED BLK WHI RC MCC-1342-01 FL2 FL3 52C2 52C1 51C2 GRY GRY GRY GRY GRY RC GRY YEL (RED) 1 2 3 4 BLK GRY 52C1 63H2 BLK RED WHI BLK GRY P Q P Q X Y RED WHI PNK WHI 51C 4 4 21 (WHI) 21 FM L2 L3 U V W BLK RED P Q X Y L1 L2 L3 MCC-1366-01 L1 N Power supply Power Supply Electrolytic Electolytic Capacitor capacitor PQXY RED BLK ORG N WHI 12 12 (RED) N L1 L2 L3 E 21 21 21 21 21 Isolator CM2 (D.O.

L.) ORG N T1 T2 T3 E 1. The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers. 3. indicates a printed circuit board. Power supply 3N, 380/415 V, 50 Hz 49C2 MCC-1343-03 ORG 31 7 7 TE TS BLK BLK BLK BLK BLK BLK 321 3 3 1 1 Symbol PMV 1 PMV 2 BLK BLK GRY RED BLU ORG YEL WHI Part name PMV 3 BLK BLK TD2 TD1 TK3 CM 1, 2 RED BLU ORG YEL WHI RED BLU ORG YEL WHI Compressor FM 654321 654321 21 3 1 21 21 21 21 3 3 1 1 21 21 6 6 4321 4321 6 6 4321 4321 Fan motor 52C 1, 2 RED BLK 11 Electromagnetic contactor for compressor 49C 1, 2 (WHI) CN300 (BLU) (BLU) (GRN) (RED) (RED) (WHI) (WHI) Inner overload relay (WHI) CN301 CN601 WHI RED BLK 51C 1, 2 (RED) CN302 CN505 CN504 CN503 CN502 CN501 CN507 Pressure sensor PD Overload relay 44 33 PMV 1, 2, 3 GRY GRY Electronic flow control valve 63H 1, 2 BLU 11 12 High pressure switch (BLU) (WHI) D801 RC Running capacitor 2-way valve P Q SV41 BLU 33 55 77 CN500 WHI BLU BLU BLK BLK 44 33 22 CN604 (WHI) 33 11 33 11 Pressure sensor PS SV 41, 42, 2 3A, 3B, 3C BLU (BLU) D802 20SF CN311 BLU 11 33 4-way valve CN100 (BLK) SV42 BLU CH Q P Q Crankcase heater Tr BLU BLU 55 1234 ON ON ON Transformer CN516 (BLK) SW04 SW06 SW05 SW03 SW02 SW01 1234 12 Fixed-speed unit (10 HP, 8 HP) MM-A0280HX, MM-A0224HX P SV2 SV3A BLU 77 TK1 AH CN312 BLU 11 Accumulator heater Temperature sensor TD1, 2 TE TK1, 2, 3 TS Ferrite core Interface Control PC Board Interface control PC board (BLU) SW07 SW08 SV3B BLU 33 MCC - 1343 - 03 12 ON CN313 BLU 11 33 SV3C BLU CN314 SW09 D716 D717 D714 D715 (BLK) ORG 11 CH ORG 33 (WHI) CN315 ORG 11 33 AH ORG CN316 BLU (RED) Surge absorber (WHI) 3 1 3 3 1 (BLU) 1 CN03 BLK Outdoor units MCC-1343-03 5 5 5 5 3 3 3 3 1 1 5 5 5 5 3 3 3 3 11 11 3 3 RED RC BLK RED WHI Wiring diagrams BRN BLK BRN BLK PUR BRN ORG GRY GRY GRY BLK 52C1 Tr RC RED WHI BLK RED WHI GRY ORG (RED) 1234 4 1 1234 1234 PUR GRY RED BRN ORG RED WHI BLK (BLK) L1 L2 L3 4 4 21 21 1234 1234 52C2 RED (WHI) 63H1 YEL GRY 51C2 N FM BLK (RED) 63H2 12 12 51C1 RED WHI U V W 49C1 ORG RST 52C2 UVW 51C2 L2 N L3 RST 52C1 UVW 51C1 RED WHI BLK P Q L1 CM1 (BLK) 12 12 (D.



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O.L.

) Isolator L1 L2 L3 E N T1 T2 T3 E CM2 (D.O.L.) 49C2 N 321 321 321 321 321 1. The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers. 3. indicates a printed circuit board. Power supply 3N, 380/415 V, 50 Hz BLK YEL 32 20SF BLU 11 33 MCC - 1357 - 01 CN317 CN01 CN02 33 33 11 11 (BLU) Parts layout (WHI) (BLU) 1 10, 8 HP (Fixed) CN304 CN306 1 1 1 1 (BLU) CN515 (RED) (BLU) (WHI) 33 3 BLK (WHI) CN308 (BLK) CN307 CN305 5 5 3 3 1 1 CN401 CN400 1 1 BL K CN402 CN403 3 3 1 1 3 3 11 BLK TK2 RED WHI GRY GRY BLU BLU GRY WHI RED MCC-1357-01 GRY Symbol Part name CM 1 Compressor FM Fan motor TE TS BLK BLK BLK BLK BLK 321 3 3 1 1 TD1 BLK TK3 52C 1 BLK BLK 21 3 1 21 21 21 21 3 3 1 1 21 21 Electromagnetic contactor for compressor PMV 1 PMV 3 GRY RED BLU ORG YEL WHI 6 4321 654321 654321 49C 1 RED 6 6 4321 4321 Inner overload relay BLU ORG YEL WHI 51C 1 Overload relay PMV 1, 3 RED BLK 11 Electronic flow control valve (BLU) (BLU) (GRN) (RED) (WHI) (WHI) 44 33 63H 1 (WHI) CN300 CN601 WHI RED BLK High pressure switch (RED) CN302 CN505 CN504 CN502 CN501 CN507 Pressure sensor PD RC Running capacitor Fixed-speed unit (6 HP) MM-A0160HX MM-A0160CX GRY GRY SV 41, 2 3A, 3B, 3C BLU 11 12 2-way valve (BLU) 44 33 22 20SF 4-way valve CH P 55 77 Crankcase heater Q SV41 BLU 33 (WHI) D801 CN500 WHI BLU BLU BLK BLK CN604 (WHI) 33 11 33 11 Pressure sensor PS Tr D802 Transformer CN311 BLU 11 33 (BLU) CN100 (BLK) AH Accumulator heater TD1 TE TK1, 2, 3 TS P Q P Q Temperature sensor SV2 BLU BLU 55 1234 ON ON ON CN516 (BLK) SW04 SW06 SW05 SW03 SW02 SW01 SW07 SW08 1234 12 TK1 Ferrite core SV3A BLU 77 CN312 BLU 11 SV3B BLU 33 (BLU) Interface Control PC Board Interface control PC board MCC - 1343 - 03 12 ON CN313 BLU 11 33 SV3C BLU CN314 ORG 11 (BLK) D716 D717 D714 D715 SW09 CH ORG 33 (WHI) Parts layout ORG 11 33 6 HP (Fixed) AH ORG CN316 BLU (RED) CN315 Outdoor units Wiring diagrams (WHI) 3 1 3 3 1 (BLU) 1 CN03 BLK RED BLK RED WHI BRN BLK GRY BLK 52C1 RC RED WHI (RED) N 1234 4 1 1234 1234 PUR GRY RED WHI BLK BLK 4 4 21 21 (WHI) 63H1 GRY (RED) FM 12 12 51C1 RST 52C2 UVW 51C2 RST 52C1 UVW 51C1 PQ RED BRN ORG RED WHI 49C1 L1 N L2 L3 321 32 321 2 321 321 321 1 31 1.

The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers. 3. indicates a printed circuit board. CM1 (D.O.L.) Isolator N L1 L2 L3 E N T1 T2 T3 E Power supply 3N, 380/415 V, 50 Hz BLK YEL 33 20SF BLU 11 33 MCC-1343-03 (BLU) Surge absorber RC CN317 CN01 CN02 33 33 11 11 MCC - 1357 - 01 MCC-1357-01 (WHI) (BLU) (BLU) CN515 (RED) (BLU) (WHI) 33 3 1 BLK CN304 5 5 3 3 1 1 CN306 5 5 3 3 1 1 CN305 5 5 3 3 1 1 CN401 CN400 1 1 BL K CN402 CN403 3 3 1 1 3 3 11 BLK TK2 RED WHI GRY GRY BLU BLU Tr GRY WHI RED L1 L2 L3 GRY 7 7 Posistor Symbol RED RED Part name RE R WHI CM 1, 2 D RED U CN01 CN02 CN03 CN14 CN15 T02 11 Compressor RED Filter board WHI BLK GRY BLU GRY FM S V BLK Fan motor MCC - 1342 - 01 RED MCC - 1366 - 01 FL1 FL2 CN01 CN17 IPDU board WHI CN02 CN18 52C 1, 2 52C2 RED CN16 RED GRY 33 33 BLK CN03 CN19 Electromagnetic contactor for compressor FL3 (BLK) 1 1 3 3 1 (BLU) 1 GRY CN04 CN20 49C 1, 2 GRY BLK CN04 (BLK) Inner overload relay CN22 CN23 (WHI) 3 3 WHI RED 51C TE TS1 TD2 ORG 11 11 Overload relay TD1 CN501 (BLU) RED BLK PMV 3 TK3 BLU 33 Electronic flow control valve BLK 63H 1, 2 BLK BLK BLK BLK BLK High pressure switch BLK BLK RED BLU ORG YEL WHI RED BLU ORG YEL WHI GRY RED BLU ORG YEL WHI BLK PMV 1 PMV 2 BLK PMV 3 CN06 RC 6 6 21 21 21 21 654321 654321 3 3 3 1 1 1 3 3 1 1 21 21 21 21 4321 4321 6 6 654321 654321 4321 4321 Running capacitor CN10 T03 D406 RED BLK SV 42, 2 3A, 3B, 3C (WHI) (WHI) (WHI) (RED) (BLU) (WHI) (GRN) (BLU) (WHI) (WHI) (RED) 2-way valve (RED) 44 33 Tr CN300 CN301 CN501 BLK 11 Transformer CN302 CN602 CN601 BLK CN11 CN08 CN09 PO5 PO4 CN600 WHI CN505 CN504 CN503 CN502 BLU CN507 BLK AH BLU 12 12 Accumulator heater CN500 WHI WHI WHI 44 33 22 (WHI) Inverter unit (10 HP, 8 HP) Cooling only MM-A0280CT, MM-A0224CT CN07 12345 12345 Temperature sensor Pressure sensor PS YEL (WHI) WHI TD 1, 2 TE TK 1, 2, 3 TS (BLU) BLK RED WHI (BLK) 1 2 12 (WHI) CN311 11 33 11 BLU 11 (BLK) BLK BLK 33 SV3A BLU 7 7 CN312 1234 ON ON ON CM1 SW04 SW06 SW07 SW01 SW08 1234 12 49C1 BLU SV3B BLU 33 11 (BLU) SW05 SW03 SW02 CN313 BLU 11 Outdoor units Wiring diagrams BLK PUR BRN GRY BRN ORG BLK GRY GRY GRY GRY YEL RC (RED) 1 2 3 4 GRY RED WHI BLK BLK RED WHI 52C1 RED GRY BLK WHI P Q P Q X Y GRY PNK WHI 51C 4 4 21 (WHI) 21 RED FM U V W 63H2 BLK RED WHI BLK ORG 321 321 321 321 N L1 L2 L3 E CM2 (D.O.

L.) 49C2 ORG 34 SV3C BLU 33 12 ON (BLK) CN314 ORG 11 D716 D717 D714 D715 SW09 AH ORG 33 (RED) CN316 BLU 20SF BLU 11 33 (BLU) CN317 BLK 33 33 Interface control PC Board Interface Control PC board MCC - 1343 - 03 Parts layout (BLU) RED 11 11 (WHI) CN515 (WHI) CN308 (BLK) CN307 (BLU) (WHI) 33 CN304 BLK 11 CN401 CN400 5 5 5 5 1 1 3 3 1 1 3 3 3 3 3 1 1 5 5 5 5 3 3 3 1 1 CN402 CN403 BLK TK2 RED WHI BLU BLU FL1 Posistor Posistor 5 5 5 5 3 3 3 3 1 1 5 5 5 5 3 3 3 3 1 1 RC MCC-1342-01 FL2 FL3 52C2 52C1 51C2 P Q X Y L1 L2 L3 MCC-1366-01 L1 L2 L3 N Power supply Power Supply Electolytic Electrolytic Capacitor capacitor PQXY N 12 12 (RED) Isolator N T1 T2 T3 E 1. The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers.

3. indicates a printed circuit board. MCC-1343-03 Power supply 3N, 380/415 V, 50 Hz ORG BLU 55 (BLK) ORG BLU RED WHI SV2 BLK CN516 TK1 Reactor PINK RED BLU WHI BLK FL 1, 2, 3 D802 BLU Fuse 20 A Reactor BLK 77 CN100 WHI WHI SV42 BLU 33 (WHI) BLU 63H1 (WHI) Ferrite core 55 BLU BL U (BLU) D801 CN604 BLK ORG Pressure sensor PD Symbol PMV 1 PMV 2 BLK BLK BLK BLK BLK BLK BLK BLK 321 3 3 1 1 Part name PMV 3 GRY RED BLU ORG YEL WHI TE TS BLK BLK TD2 TD1 TK3 CM 1, 2 RED BLU ORG YEL WHI RED BLU ORG YEL WHI Compressor FM 654321 654321 21 3 1 21 21 21 21 3 3 1 1 21 21 6 6 4321 4321 6 6 4321 4321 Fan motor 52C 1, 2 RED BLK 11 Electromagnetic contactor for compressor 49C 1, 2 (WHI) CN300 (BLU) (BLU) (GRN) (RED) (RED) (WHI) (WHI) Inner overload relay (WHI) CN301 CN601 WHI RED BLK 51C 1, 2 (RED) CN302 CN505 CN504 CN503 CN502 CN501 CN507 Pressure sensor PD Overload relay 44 33 PMV 3 GRY GRY Electronic flow control valve 63H 1, 2 BLU 11 12 High pressure switch (BLU) (WHI) D801 RC Running capacitor 2-way valve P Q SV41 BLU 33 55 77 CN500 WHI BLU BLU BLK BLK 44 33 22 CN604 (WHI) 33 11 33 11 Pressure sensor PS SV 41, 42, 2 3A, 3B, 3C BLU (BLU) D802 CH CN311 BLU 11 33 Crankcase heater CN100 (BLK) SV42 BLU Tr Q P Q Transformer AH BLU BLU 55 1234 ON ON ON Accumulator heater CN516 (BLK) SW04 SW06 SW05 SW03 SW02 SW01 SW07 SW08 1234 12 P SV2 SV3A BLU 77 TK1 TD1, 2 TE TK1, 2, 3 TS CN312 BLU 11 Temperature sensor Ferrite core SV3B BLU 33 (BLU) Interface Control PC Board Interface control PC board MCC - 1343 - 03 12 ON CN313 BLU 11 33 Fixed-speed unit (10 HP, 8 HP) Cooling only MM-A0280CX, MM-A0224CX SV3C BLU CN314 SW09 D716 D717 D714 D715 (BLK) ORG 11 CH ORG 33 (WHI) CN315 ORG 11 33 AH ORG CN316 BLU (RED) Surge absorber (WHI) 3 1 3 3 1 (BLU) 1 CN03 BLK Outdoor units MCC-1343-03 5 5 5 5 3 3 3 3 1 1 5 5 5 5 3 3 3 1 1 1 3 3 3 3 11 11 RED RC BLK RED WHI Wiring diagrams BRN BLK BRN BLK PUR BRN ORG GRY GRY GRY BLK 52C1 Tr RC RED WHI BLK RED WHI GRY ORG (RED) 1234 4 1 1234 1234 PUR GRY RED BRN ORG RED WHI BLK (BLK) L1 L2 L3 1234 1234 4 4 21 21 52C2 RED (WHI) 63H1 GRY 51C2 N FM YEL BLK (RED) 63H2 12 12 51C1 RED WHI U V W 49C1 ORG RST 52C2 UVW 51C2 L2 N L3 RST 52C1 UVW 51C1 RED WHI BLK PQ L1 CM1 (BLK) 12 12 (D.



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O.L.

) Isolator L1 L2 L3 E N T1 T2 T3 E CM2 (D.O.L.) 49C2 N 21 21 21 21 21 1. The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers. 3. indicates a printed circuit board. Power supply 30N, 380/415 V, 50 Hz BLK YEL 35 20SF BLU 11 33 MCC - 1357 - 01 CN317 CN01 CN02 33 33 11 11 (BLU) Parts layout (WHI) (BLU) (RED) 1 10, 8 HP (Fixed) CN304 CN306 5 5 (BLU) CN515 (BLU) (WHI) 33 3 BLK (WHI) CN308 (BLK) CN307 CN305 3 3 1 1 CN401 CN400 1 1 BL K CN402 CN403 3 3 1 1 3 3 11 BLK TK2 RED WHI GRY GRY BLU BLU GRY WHI RED MCC-1357-01 GRY 7 7 Increase fan speed option WHI RC GRN/YEL GRY FM BLK ORN BLU YEL RED RC 987654321 987654321 WHI GRY FM FC GRN/YEL BRN 987654321 987654321 BLK ORN BLU YEL RED BRN BRN BLK ORN YEL RED RED YEL BLU ORN BLK Built-In Duct MM-B140, MM-B112, MM-B080, M-B056 98 7654321 98 7654321 L RED CN03 9 9 1 1 CN07 CN26 CN01 CN51 CN10 CN25 YEL BLK RED WHI BLK WHI BLK ORN BLU YEL RED 7 7 5 5 3 3 1 1 3 3 5 5 1 1 3 3 5 5 12 12 12 CN12 Power supply 220/240 V 50 Hz RED WHI BLU RY02 CN27 CN28 11 33 RY03 RY04 UL F 55 L 1 2 3 4 1 2 3 4 MH Connector assembly (accessory) N WHI BLU 1 1 BLU 2 2 33 CN04 22 11 WHI CN05 TA TC2 22 11 BLU CN20 RY01 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 23 1 23 WHI CN16 1 2 3 4 5 6 WHI BLU BLU BLU BLU BLU TC1 22 11 YEL BLU ORN Indoor units Wiring diagrams P Q Q GRY P GRY I.

The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers. WHI YEL ORN BLU BRN RED Communication WHI YEL ORN BLU BRN RED 36 12 12 RED CN50 Symbol Part name F Fuse (PCB) MCC-1355-01 BLK FM Fan motor PMV Pulse modulating valve PS Pressure sensor TR CN23 66 44 RED GRN RC Running capacitor RY01-RY04 Relay TA Temperature sensor A B 33 12 12 A B C CN02 CN101 TC1 Temperature sensor TC2 Temperature sensor Remote controller (Optional) ORN 11 YEL 2 2 BLU WHI 22 BLK 11 PS MCC-1361-01 C TR Transformer 123456 123456 CN25 3 1 CN08 3 1 CN09 12 12 CN11 BLK 6 43125 6 43125 PMV Ceiling MM-C042, MM-CR042, MM-C056, MM-CR056 MM-C080, MM-CR080, MM-C112, MM-CR112 MM-C140, MM-CR140 Power supply 220/240 V 50 Hz Symbol Part name F Fuse (PCB) Indoor units Wiring diagrams 37 Remote controller (Optional) Infrared receiver (IR model) Communication FM Fan motor PMV Pulse modulating valve PS Pressure sensor RC Running capacitor RY01-RY04 Relay TA Temperature sensor TC1 Temperature sensor TC2 Temperature sensor TR Transformer 1. The dashed line indicates wiring on the site. 2. indicates terminal blocks and the numbers within them are terminal numbers. 7 7 FM GRN/YEL BLK ORN BLU YEL RED RED WHI 76543 76543 1 1 Wall unit MM-K042, MM-K056, MM-K080, MM-KR042, MM-KR056, MM-KR080 RC RED YEL BLU ORN BLK YEL BLK GRN/YEL WHI CN01 CN12 CN07 CN51 CN25 CN26 WHI RED WHI BLK L CN03 RED 9 9 1 1 11 33 BLU RY02 CN27 CN28 7 7 5 5 3 3 1 1 CN10 3 3 5 5 1 1 3 3 5 5 12 12 12 Powersupply Power Supply 220/240V 220/240 V 50 Hz 50Hz GRY UL F 55 L 1 2 3 4 1 2 3 4 MH N RY03 RY04 WHI WHI BLU 1 1 BLU 2 2 33 CN04 22 11 WHI CN05 TA Symbol RY01 Part name TC2 22 11 BLU CN20 F Fuse (PCB) FM Fan motor BLU ORN Indoor units Wiring diagrams C P Q Q GRY Infra-red Infrared Receiver receiver (IRModel) (IR model) WHI YEL ORN BLU BRN RED Communication Communication P GRY WHI YEL ORN BLU BRN RED 38 MCC-1355- GM CN50 CN16 Geared motor 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 WHI BLU BLU BLU BLU BLU BLU TC1 22 11 YEL RY07 CN23 PMV Pulse modulating valve PS RC 12 12 BLK RED WHI 1 1 3 3 RY01-RY07 TA TR 66 44 RED GRN WHI 22 BLK 11 TC1 TC2 TR Remote A B 33 A B C CN02 CN101 Remote controller Controller (Optional) (Optional) ORN 11 YEL 2 2 BLU C A B 12 12 MCC-1361-01 Symbol sensor Name Pressure Fuse (PCB) F Running capacitor Ferrite Core FC Relay Fan motor FM Temperature sensor Geared Motor GM Temperature sensor PMV Pulse Modulating Valve Temperature sensor Pressure Sensor PS Transformer Running Capacitor RC RY01 RY07 Relay Temperature Sensor TA Temperature Sensor TC1 Temperature Sensor TC2 Transformer TR 123456 123456 CN25 3 1 CN08 3 3 1 1 CN09 12 12 CN11 BLK 6 43125 6 43125 BLK BLK 21 21 BLK BLK 1. The dashed line indicates wiring on the site. 2.

and indicates terminal blocks and the numbers within them are terminal numbers. PMV G Chassis MM-N028, MM-N042, MM-N056, MM-N080 Power supply 220/240 V 50 Hz BLU Symbol Part name F Fuse (PCB) 11 FM Fan motor PMV Pulse modulating valve Indoor units Wiring diagrams 39 Remote controller (Optional) Communication PS Pressure sensor RC Running capacitor RY01-RY04 Relay TA Temperature sensor TC1 Temperature sensor TC2 Temperature sensor TR Transformer 1. The dashed line indicates wiring on the site. 2. indicates terminal blocks and the numbers within them are terminal numbers. 7 7 Built-In Slim Duct MM-SB028 FM GRN/YEL BLK ORN BLU RED WHI YEL 654321 654321 CN07 RC RED YEL RED BLU ORN BLK WHI FC L CN03 RED 9 9 1 1 CN07 CN51 CN10 CN25 CN26 YEL BLK GRN/YEL RED WHI BLK WHI CN01 7 7 5 5 3 3 1 1 3 3 5 5 1 1 3 3 5 5 12 12 12 12 CN12 Power supply 220/240 V 50 Hz WHI 11 33 BLU RY02 CN27 CN28 UL F 55 L 1 2 3 4 1 2 3 4 MH N RY03 RY04 WHI WHI BLU 1 1 BLU 2 2 33 CN04 22 11 WHI CN05 TA Indoor units Wiring diagrams BLU ORN P Q Q P GRY GRY I. The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers. WHI YEL ORN BLU BRN RED Communication WHI YEL ORN BLU BRN RED 40 RY01 TC2 22 11 BLU CN20 Symbol Part name F Fuse (PCB) FM CN50 CN16 Fan motor 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 1 WHI 1 2 3 4 5 6 WHI BLU BLU BLU BLU BLU TC1 22 11 YEL PMV Pulse modulating valve PS Pressure sensor RC Running capacitor 12 12 RED 3 3 MCC-1355-01 BLK RY01-RY04 Relay TA Temperature sensor TR CN23 66 44 RED GRN TC1 Temperature sensor TC2 Temperature sensor TR Remote controller (Optional) Transformer A B C B ORN 11 YEL 2 2 BLU A 33 WHI 22 BLK 11 CN02 PS MCC-1361-01 12 12 CN101 123456 123456 CN25 3 1 CN08 3 1 CN09 12 12 CN11 BLK 6 43125 6 43125 PMV Low wall MM-S056, MM-SR056, MM-S080, MM-SR080 Power supply 220/240 V 50 Hz Symbol Part name F Fuse (PCB) FM Fan motor PMV Pulse modulating valve Indoor units Wiring diagrams 41 A Infrared receiver (IR model) PS Pressure sensor RC Running capacitor RY01-RY04 Relay TA Temperature sensor TC1 Temperature sensor TC2 Temperature sensor TR Transformer Remote controller (Optional) C Communication 1.



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The dashed line indicates wiring on the site. 2. indicates terminal blocks and the numbers within them are terminal numbers. 7 7 GRN/YEL FM GRY WHI RED YEL BLU ORN BLK RC GRY WHI 8 765 8 765 321 321 FC YEL RED BLU ORN BLK YEL BLK 4-way cassette MM-U140, MM-U112, MM-U080, MM-U056 GRN/YEL WHI CN01 CN12 CN07 CN51 CN10 CN25 RED WHI BLK L CN03 Power supply 220/240 V 50 Hz RED 9 9 1 1 7 7 5 5 3 3 1 1 3 3 5 5 1 1 3 3 5 5 CN26 1 2 12 12 RED 11 33 BLU RY02 CN27 CN28 UL F 55 L 1 2 3 4 1 2 3 4 MH N RY03 RY04 WHI WHI BLU 1 1 BLU 2 2 33 CN04 22 11 WHI CN05 TA TC2 22 11 BLU CN20 RY01 Indoor units Wiring diagrams PMV Pulse modulating valve BLU ORN Infrared receiver (IR model) C P Q Q GRY P GRY WHI YEL ORN BLU BRN RED WHI YEL ORN BLU BRN RED 42 MCC-1355-01 CN50 CN16 Symbol Part name D Drain pump F Fuse (PCB) 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 BLK RY06 1 2 3 4 5 6 WHI BLU BLU BLU BLU BLU TC1 22 11 YEL RY07 CN23 FM Fan motor FS Float switch 12 12 RED WHI 1 1 3 3 GM Geared motor PS Pressure sensor TR 66 44 RED GRN RC Running capacitor RY01-RY07 Relay TA Temperature sensor A B 33 A B C CN02 TC1 Temperature sensor TC2 Temperature sensor Remote controller (Optional) ORN 11 YEL 2 2 BLU CN101 CN25 CN08 CN09 CN11 WHI 22 BLK 11 PS MCC-1361-01 C A B TR Transformer 12 12 123456 123456 3 3 1 1 3 3 1 1 12 12 6 43125 6 43125 Communication GRY PUR 3 1 3 1 BLU BLU BLK RED RED RED 12 12 1 2 RED 12 BLK BLK BLK BLK PMV DP GM FS 1. The dashed line indicates wiring on the site. 2. and indicates terminal blocks and the numbers within them are terminal numbers. BLU ORN 2-way cassette MM-TU028, MM-TU042, MM-TU056 RED CN50 CN51 CN10 WHI CN16 L CN03 RED 12 12 CN25 CN26 CN01 CN12 1 1 3 3 1 1 3 3 5 5 1 1 3 3 5 5 YEL BLK GRN/YEL WHI TR 12 12 12 RED WHI BLK Power Supply Power supply 220/240 V 50 Hz 220/240V 50Hz 11 33 RY01 N BLU WHI F 55 CN28 1 2 3 4 CN27 1 2 3 4 WHI BLU 1 1 BLU 2 2 33 CN04 22 11 WHI CN05 TA RY04 RY03 RY02 TC2 22 11 BLU CN20 GRY WHI Symbol CN07 Part name RC02 RC01 HM MCC-1355-01 L PMV WHI YEL ORN BLU BRN RED UL 7 7 BLK YEL RED 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 1 2 3 4 5 6 WHI BLU BLU BLU BLU BLU TC1 22 11 YEL ORN F3 Fuse (Interface PCB) BLK BLU Indoor units WHI YEL ORN BLU BRN RED Wiring diagrams BLK ORG BLU Geared motor Symbol Name Pulse modulating valve DP Drain Pump Pressure sensor F Fuse (PCB) Running capacitor (Interface PCB) F3 Fuse Relay FM Fan Moter Stepper motor FS Float Switch Temperature sensor GM Geared Motor Temperature sensor Modulating Valve PMV Pulse Temperature sensor PS Pressure Sensor RC Transformer Running Capacitor RY01~RY07 Relay SM01, SM02 Stepper Motor Temperature Sensor TA TC1 Temperature Sensor TC2 Temperature Sensor Transformer TR Remote RED 654321 654321 YEL RED WHI WHI RED YEL YEL 43 WHI 643125 643125 1 1 3 3 5 5 9 RY06 DP Drain pump GRY F Fuse (PCB) GRY CN23 FM Fan motor RY07 66 44 RED GRN FS Float switch GM PMV 1 23456 1 2 3 4 5 6 CN25 PS WHI 22 BLK 11 PS A B BLU CN02 CN101 A B C GRY GRY YEL ORN RC RY01-RY07 Remote controller Controller (Optional) (Optional) 11 22 33 CN08 CN09 SM01, SM02 C MCC-1361-01 CN11 TA 12 12 3 3 1 1 PUR GRY 3 3 1 1 12 12 BLK BLK BLK TC1 TC2 Communication Communication P Q Q P RED TR 1 1 2 3 4 5 6 7 8 9 10 1 12 13 14 15 1 1 2 3 4 5 6 7 8 9 10 1 12 13 14 15 BLK BLK WHI RED 12 12 BLK RED PUR GRY BLU YEL ORG BLK WHI 654321 654321 TR F3 SM 01 BLU ORG BLK 11 33 BLK 12 2 12 2 BLK BLK 12 12 BLK WHI 1 1 3 3 WHI 1. The dashed line indicates wiring on the site. 2.

and indicates terminal blocks and the numbers within them are terminal numbers. BLU ORG BLK FM 01 FM 02 SM 02 Interface PCB FS DP 7 Refrigerant piping systematic drawings Inverter unit (10 HP, 8 HP) Heat pump Model MM-A0280HT, MM-A0224HT Propeller fan M Fan motor Pulse motor valve A (PMV 1 + PMV 2) Sensor (TE1) Condenser Condenser Sensor (TS) 4-way valve 8 Pulse motor valve B (Cooling bypass) (PMV 3) Solenoid valve (SV2) High pressure sensor Solenoid valve (SV3C) Strainer Oil separator Check joint (Pd) Strainer Capillary Sensor (TK1) Liquid tank Capillary Check valve High pressure HP switch Sensor (TD1) Strainer Sensor (TK2) Check valve Oil tank Check valve Solenoid valve (SV3A) Check valve Compressor case oil removal valve Check valve Fixed-speed Solenoid valve (SV42) Accumulator Capillary Strainer HP High pressure switch Sensor (TD2) Compressor Check joint (Ps) Inverter Capillary Low pressure sensor Check valve Solenoid valve (SV3B) Drier (x2) Sensor (TK3) Capillary Strainer Packed valve Packed valve (oil balancing (liquid side) pipe) Service valve (gas side) 44 Refrigerant piping systematic drawings Fixed-speed unit (10 HP, 8 HP) Heat pump Model MM-A0280HX, MM-A0224HX Propeller fan Fan motor M Pulse motor valve A (PMV 1 + PMV 2) Sensor (TE1) Condenser Condenser Capillary Sensor (TS) 4-way valve Pulse motor valve B (Cooling bypass) (PMV 3) Solenoid valve (SV2) 8 Sensor (TK1) Solenoid valve (SV3C) Strainer Oil separator High pressure sensor Check joint (Pd) Strainer Capillary Check valve Liquid tank Capillary Check valve Solenoid valve (SV41) Solenoid valve (SV42) Accumulator Capillary Strainer High pressure HP switch Sensor (TD1) Compressor HP High pressure switch Sensor (TD2) Strainer Check joint (Ps) Fixed-speed Fixed-speed Sensor (TK2) Check valve Drier (x2) Capillary Low pressure sensor Check valve Capillary Check valve Solenoid valve (SV3B) Oil tank Check valve Solenoid valve (SV3A) Check valve Sensor (TK3) Compressor case oil removal valve Strainer Packed valve Packed valve (oil balancing (liquid side) pipe) Service valve (gas side) 45 Refrigerant piping systematic drawings Fixed-speed unit (6 HP) Heat pump Model MM-A0160HX, MM-A0160CX Propeller fan Fan motor M Condenser Pulse motor valve A (PMV 1) Sensor (TE1) Capillary Sensor (TS) 4-way valve Solenoid valve (SV2) Condenser 8 Pulse motor valve (Cooling bypass) (PMVB) High pressure sensor Solenoid valve (SV3C) Strainer Oil separator Check joint (Pd) Strainer Capillary Sensor (TK1) Liquid tank Capillary Check valve Solenoid valve (SV41) Accumulator Capillary Strainer HP High pressure switch Sensor (TD1) Strainer Sensor (TK2) Compressor Check joint (Ps) Fixed-speed Capillary Low pressure sensor Check valve Capillary Check valve Solenoid valve (SV3B) Drier (x2) Check valve Oil tank Check valve Sensor (TK3) Compressor case oil removal valve Solenoid valve (SV3A) Check valve Strainer Packed valve Packed valve (oil balancing (liquid side) pipe) Service valve (gas side) 46 Refrigerant piping systematic drawings Inverter unit (10 HP, 8 HP) Cooling only Model MM-A0280CT, MM-A0224CT Propeller fan M Fan motor Check valve Sensor (TE1) Condenser Condenser Sensor (TS) Solenoid valve (SV2) Pulse motor valve (Cooling bypass) (PMVB) 8 High pressure sensor Solenoid valve (SV3C) Strainer Oil separator High pressure sensor Check joint (Pd) Strainer Capillary Check valve Liquid tank Capillary Check valve Solenoid valve (SV41) Solenoid valve (SV42) Accumulator Capillary Strainer HP Sensor (TD1) High pressure switch Compressor HP High pressure switch Sensor (TD2) Check joint (Ps) Strainer Sensor (TK2) Check valve Sensor (TK3) Compressor case oil removal valve Fixed-speed Fixed-speed Capillary Low pressure sensor Check valve Capillary Check valve Solenoid valve (SV3B) Drier (x2) Oil tank Check valve Solenoid valve (SV3A) Check valve Strainer Packed valve Packed valve (oil balancing (liquid side) pipe) Service valve (gas side) 48 MM-A0280HT master unit 1 (Inverter) Propeller fan Propeller fan MM-A0280HX Slave unit 2 (Fixed-speed) (Indoor unit 1) M (Right side) Condenser Fan motor M Fan motor (Cooling mode) Evaporator TC1 Check joint Sensor Air heat exchanger at outdoor side (Left side) (TE1) PMV (A) Sensor (TE1) Air heat exchanger at indoor side TC2 PMV Pressure sensor Air heat exchanger at outdoor side Sensor (TS) Capillary 4-way valve Solenoid valve (SV2) Pulse motor valve B (Cooling bypass) (PMVB) Solenoid valve (SV2) Sensor (TS) 4-way valve Condenser PMV (A) TA (Ambient sensor) Strainer (Indoor unit 2) Evaporator Pulse motor valve B (Cooling bypass) (PMVB) TC1 Sensor (TK1) Strainer Solenoid valve (SV3C) TC2 High pressure sensor Sensor (TK1) Liquid tank Solenoid valve (SV3C) Strainer Check joint (Pd) Check joint High pressure sensor Check joint (Pd) PMV Pressure sensor Capillary Liquid tank TA (Ambient sensor) Capillary Accumulator Strainer Capillary Sensor (TD1) Strainer Strainer Capillary Oil separator Check Solenoid valve valve (SV41) Solenoid valve (SV42)

High HP pressure switch Compressor Strainer Inverter Fixed-speed Drier (x2) PMV Oil tank Compressor case oil removal valve Capillary Strainer Check valve Check valve Drier (x2) Sensor (TK3) Low pressure sensor Solenoid valve (SV3B) Oil tank Fixed-speed Check joint Check valve Check valve Sensor (TK3) Fixed-speed Normal operation - Heat pump system Accumulator Combined refrigerant piping systematic drawings 49 Capillary Sensor (TD1) Check joint (Ps) Strainer Sensor (TK2) Strainer Sensor (TK2) Capillary Check Solenoid valve (SV3A) Check valve Check Solenoid valve (SV3A) Check valve Packed valve (oil balancing pipe) Packed valve (liquid side) Service valve (gas side) (Indoor unit 3) Evaporator Strainer Capillary Oil separator Solenoid valve (SV42) Check valve High HP HP pressure switch High pressure Compressor switch Sensor (TD2) HP High pressure switch Sensor (TD2) Check joint (Ps) Capillary Low pressure sensor Compressor case oil removal valve Check valve Capillary Solenoid valve (SV3B) Check valve TC1 TC2 Pressure sensor TA (Ambient sensor) Strainer Strainer Packed Packed valve (oil valve balancing (liquid pipe) side) Service valve (gas side) MM-A0280HX Slave unit 3 (Fixed-speed) Packed Packed Service valve (oil valve valve balancing (liquid (gas side) pipe) side) MM-A0280HX Slave unit 4 (Fixed-speed) Packed Packed Service valve (oil valve valve balancing (liquid (gas side) pipe) side) (Solid line) High pressure gas or compressed liquid refrigerant (Dotted line) Evaporating gas refrigerant (Low pressure gas) 9 9 MM-A0280HT Master unit 1 (Inverter) MM-A0280HX Slave unit 2 (Fixed-speed) Propeller fan Propeller fan (Indoor unit 1) Failure M Fan motor M Fan motor Temporal set-up master unit in emergency Evaporator TC1 Check joint Condenser PMV (A) Condenser Sensor (TE1) Condenser Condenser Capillary 4-way valve 4-way valve Pulse motor valve B (Cooling bypass) (PMVB) Solenoid valve (SV2) Solenoid valve (SV2) Sensor (TS) Sensor (TS) Sensor (TE1) Air heat exchanger at indoor side TC2 PMV Pressure sensor PMV (A) TA (Ambient sensor) Strainer (Indoor unit 2) Evaporator High pressure sensor Solenoid valve (SV3C) Check joint (Pd) Oil separator Liquid tank Solenoid valve (SV42) Capillary Accumulator HP Strainer Capillary Sensor (TD1) High HP pressure switch Compressor Strainer Capillary Strainer Solenoid valve Sensor (SV3C) (TK1) Strainer Pulse motor valve B (Cooling bypass) (PMVB) TC1 TC2 Heat pump system (Master unit back-up operation: cooling mode) Check joint Sensor (TK1) High pressure sensor Check joint (Pd) PMV Pressure sensor Capillary Check valve Capillary Sensor (TD1) Compressor High pressure switch Sensor (TD2) Check joint (Ps) Strainer Sensor (TK2) Check valve Oil tank Check valve Solenoid valve (SV3A) Check valve Sensor (TK3) HP High pressure switch Liquid tank TA (Ambient sensor) Strainer Strainer Capillary Oil separator Check Solenoid valve (SV41) Solenoid valve (SV42) Accumulator Strainer Drier (x2) Oil tank Check valve Capillary Strainer Check valve Drier (x2) Fixed-speed PMV Fixed-speed Fixed-speed Check joint Low pressure sensor Solenoid valve (SV3B) Check Sensor valve (TK3) Inverter Emergency operation when inverter unit has failed Combined refrigerant piping systematic drawings 50 Strainer Sensor (TK2) Capillary Check Compressor case Solenoid valve oil removal valve valve (SV3A) Check valve Service valve (gas side) (Indoor unit 3) Evaporator HP High pressure switch Sensor (TD2) Check joint (Ps) TC1 TC2 Capillary Low pressure sensor Compressor case oil removal valve Check valve Capillary Solenoid valve (SV3B) Check valve Pressure sensor TA (Ambient sensor) Strainer Strainer Packed Packed valve (oil valve balancing (liquid side) pipe) Service valves closed fully at liquid and gas side Packed valve (oil balancing pipe) Packed valve (liquid side) Service valve (gas side) MM-A0280HX Slave unit 3 (Fixed-speed) Packed Packed Service valve (oil valve valve balancing (liquid (gas side) side) pipe) MM-A0280HX Slave unit 4 (Fixed-speed) Packed Packed Service valve (oil valve valve balancing (liquid (gas side) side) pipe) (Solid line) High pressure gas or compressed liquid refrigerant (Dotted line) Evaporating gas refrigerant (Low pressure gas) MM-A0280HT Master unit 1 (Inverter) MM-A0280HX Slave unit 2 (Fixed-speed) Propeller fan Propeller fan Failure M Fan motor Fan motor M (Indoor unit 1) Evaporator Heat pump system (Cooling mode) TC1 Check joint Sensor (TE1) Condenser Condenser Capillary 4-way valve 4-way valve Pulse motor valve B (Cooling bypass) (PMVB) Solenoid valve (SV2) Solenoid valve (SV2) Sensor (TS) Sensor (TS) Condenser Sensor (TE1) Condenser PMV (A) Air heat exchanger at indoor side TC2 PMV PMV (A) Pressure sensor TA (Ambient sensor) Strainer (Indoor unit 2) Evaporator High pressure sensor Solenoid valve Sensor (SV3C) (TK1) Strainer Oil separator Sensor Solenoid valve (SV3C) (TK1) Strainer Strainer Capillary Oil separator Liquid tank Solenoid valve (SV42) Capillary Accumulator Strainer Capillary Strainer Sensor (TD1) Check joint (Pd) High pressure sensor Check joint (Pd) Strainer Capillary Check Solenoid valve valve (SV41) Solenoid valve (SV42) High HP pressure switch Compressor HP Pulse motor valve B (Cooling bypass) (PMVB) TC1 TC2 Check joint PMV Pressure sensor Capillary Liquid tank TA (Ambient sensor) Strainer Accumulator Strainer Fixed-speed Drier (x2) Drier (x2) PMV Oil tank Check valve Capillary Strainer Check valve Pressure sensor Check valve Compressor case Solenoid oil removal valve valve (SV3A) Check valve Low pressure sensor Solenoid valve (SV3B) Oil tank Fixed-speed Check joint Sensor (TK3) Check valve Sensor (TK3) Fixed-speed Check valve Inverter Combined refrigerant piping systematic drawings Emergency operation when fixed-speed unit has failed 51 Capillary Strainer Compressor Check joint (Ps) Sensor (TK2) Sensor (TD1) HP High pressure switch Sensor (TD2) Sensor (TK2) Capillary Check valve Service valve (gas side) Check valve High HP pressure switch (Indoor unit 3) Evaporator TC1 TC2 High pressure switch Sensor (TD2) Check joint (Ps) Capillary Low pressure sensor Check valve Capillary Check valve Solenoid valve (SV3B) TA (Ambient sensor) Strainer Check Compressor case Solenoid valve oil removal valve valve (SV3A) Strainer Packed Packed valve (oil valve balancing (liquid pipe) side) Service valve opened fully at balancing pipe Packed valve (oil balancing pipe) Packed valve (liquid side) Service valve (gas side) MM-A0280HX Slave unit 3 (Fixed-speed) Packed Packed Service valve (oil valve valve balancing (liquid (gas side) side) pipe) Service valves closed fully at liquid and gas sides MM-A0280HX Slave unit 4 (Fixed-speed) Packed Packed Service valve (oil valve valve balancing (liquid (gas side) side) pipe) (Solid line) High pressure gas or compressed liquid refrigerant (Dotted line) Evaporating gas refrigerant (Low pressure gas) 9 9 MM-A0280HT Master unit 1 (Inverter) MM-A0280HX Slave unit 2 (Fixed-speed) Propeller fan Propeller fan (Indoor unit 1) Evaporator M Fan motor Fan motor M Failure TC1 Check joint Condenser PMV (A) Sensor (TE1) Sensor (TE1) Condenser Air heat exchanger at indoor side TC2 PMV PMV (A) Pressure sensor Condenser Condenser Capillary 4-way valve 4-way valve Pulse motor valve B (Cooling bypass) (PMVB) Solenoid valve (SV2) Solenoid valve (SV2) Sensor (TS) Sensor (TS) TA (Ambient sensor) Strainer (Indoor unit 2) Evaporator High pressure sensor Sensor (TK1) Strainer Solenoid valve (SV3C) Check joint (Pd) Pulse motor valve B (Cooling bypass) (PMVB) High pressure sensor Check joint (Pd) Heat pump system (Normal outdoor unit refrigerant recovery) TC1 TC2 Check joint Solenoid valve (SV3C) Sensor Strainer (TK1) PMV Pressure sensor Liquid tank Liquid tank TA (Ambient sensor) Capillary Accumulator Capillary Strainer Strainer Capillary Oil separator Solenoid valve (SV42) Check valve Strainer Capillary Oil separator Check Solenoid valve valve (SV41) Solenoid valve (SV42) High HP pressure switch Accumulator Strainer Strainer Fixed-speed Fixed-speed Drier (x2) Drier (x2) PMV Oil tank Check valve Capillary Strainer Pressure sensor Low Check pressure valve sensor Solenoid valve (SV3B) Oil tank Fixed-speed Check joint Sensor (TK3) Check valve Inverter Recovery of refrigerant in failed outdoor unit Combined refrigerant piping systematic drawings 52 Capillary Sensor (TD1) Capillary Strainer Compressor Check joint (Ps) High HP pressure switch HP High pressure switch Sensor (TD2) Sensor (TK2) Check valve Strainer Sensor (TK2) Capillary Check Compressor case Solenoid valve oil removal valve valve (SV3A) Check valve Check valve Packed valve (gas side) Sensor (TD1) (Indoor unit 3) Evaporator Compressor HP High pressure switch Sensor (TD2) Check joint (Ps) Capillary Sensor (TK3) Low pressure sensor Check Compressor case Solenoid valve oil removal valve valve (SV3A) Check valve Capillary Solenoid valve (SV3B) Check valve TC1 TC2 TA (Ambient sensor) Strainer Strainer Service valve fully opened at balancing pipe Service valve fully closed at liquid side Packed Packed valve (oil valve balancing (liquid pipe) side) MM-A0280HX Slave unit 3 (Fixed-speed) Packed valve (oil balancing pipe) Packed Packed valve valve (liquid (gas side) side) Service valve fully closed at gas side - fully closed approx.



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10 min after operation start. MM-A0280HX Slave unit 4 (Fixed-speed) Packed valve (oil balancing pipe) Packed Packed valve valve (liquid (gas side) side) (Solid line) High pressure gas or compressed liquid refrigerant (Dotted line) Evaporating gas refrigerant (Low pressure gas) Refrigeration cycle schematic Indoor units PMV (D) TC2 Liquid sensor Distributor strainer Heat exchanger Check joint TC1 Gas sensor Capillary tube (B) Pressure sensor Strainer Strainer Refrigerant pipe (liquid) (A) Refrigerant pipe (gas) (C) Model BUILT-IN DUCT MM-B 056 080 112 140 CEILING MM-C MM-CR 042 056 080 112 140 HIGH WALL MM-K MM-KR CHASSIS MM-N 042 056 080 028 042 056 080 LOW WALL BUILT-IN SLIM DUCT 2-WAY CASSETTE MM-S MM-SR MM-SB MM-TU 056 080 028 028 042 056 4-WAY CASSETTE MM-U 056 080 112 140 (A) mm 6.4 9.5 9.5 9.5 6.4 6.4 9.

5 9.5 9.5 6.4 6.4 9.

5 6.4 6.4 6.4 9.5 6.

4 9.5 6.4 6.4 6.4 6.4 6.4 9.5 9.5 9.5 Capillary (B) Inner mm 1.

7 x 150L x 3 2.6 x 200L x 4, 2.6 x 400L x 2 2.0 x 400L x 6 2.2 x 200L x 6 3.0 x 100L x 3 3.0 x 100L x 3 3.0 x 100L x 5 3.0 x 200L x 7 3.0 x 200L x 7 3.

0 x 100L x 3 3.0 x 100L x 3 3.0 x 100L x 5, 3.0 x 200L x 1 1.7 x 250L x 2 3.

0 x 200L x 2 3.0 x 100L x 4 3.0 x 200L x 6 3.0 x 100L x 3 3.0 x 100L x 6 1.

7 x 250L x 2 3.0 x 100L x 2 2.4 x 300L x 2 3.0 x 100L x 2 2.0 x 200L x 3 (C) mm 12.7 15.9 19.0 19.0 12.7 12.

7 15.9 19.0 19.0 12.7 12.7 15.9 12.7 12.7 12.7 15.

9 12.7 15.9 12.7 12.7 12.

7 12.7 12.7 PMV code (D) 40 40 40 60 25 40 40 40 60 25 40 40 25 25 40 40 40 25 25 25 40 40 40 60 10 2.6 x (150L x 2), (200L x 3), (400L x 1) 15.9 2.6 x (200L x 6), (300L x 2), (500L x 2) 19.0 2.6 x (200L x 6), (300L x 2), (500L x 2) 19.0 53 Outline of control Outdoor unit Operation start/Operation end The compressor, solenoid valve, pulse motor valve (PMV), outdoor fan, etc. are controlled by a command from the indoor controller. The slave outdoor unit starts/stops by a command from the master outdoor unit. Operation start Operation stop Operation signal from indoor Inverter drive Outdoor fan output Fixed-speed Mg-SW output Each solenoid valve output 4-way valve output (OFF in cooling time) PMV A output OFF OFF OFF OFF OFF Full close ON ON ON or OFF (By command from indoor) ON or OFF ON Specified opening 2 minutes 30 seconds Full close Thermostat ON/Thermostat OFF Thermostat ON Thermostat OFF Operation signal from indoor 11 Inverter drive Outdoor fan output Fixed-speed Mg-SW output Each solenoid valve output 4-way valve output (OFF in cooling time) PMV A output OFF OFF OFF OFF ON Full close ON ON ON or OFF (By command from indoor) ON or OFF 2 minutes 30 seconds Specified opening Full close 54 Outline of control Outdoor unit Item 1a. Electronic expansion valve (PMV) control Operation explanation and applied data, etc. (1) PMV A control (PMV x 2) 1) The PMV (pulse motor valve) is controlled between 100 ~ 1000 pulses during the operation. 2) The PMV is fully open during the cooling operation (PMV A1 = 500 pulses, PMV A2 = 500 pulses).

3) During the heating operation, the opening rate is determined by the temperature which the TS/TD sensor detects and the pressure rate which PS detects (Super heat control). 4) The PMV is fully open when the thermostat is off, when the operation is switched off or when the operation is ceased under abnormal circumstances. Remarks 1000 PMV A2 PMV opening rate 550 500 100 50 Min. PMV A1 Med. Max. 1b. Pulse motor valve (PMV) control (1) PMV B control The purpose of PMV B control is to control the liquid refrigerant bypass by limiting discharge temperature or compressor internal temperature increase. 1) Opening is controlled with pulses from 0 ~ 500. 2) PMV opening is controlled with temp. detected by TS/TD sensors.

3) PMV openings are fully closed during thermostat-OFF, operation stop, and emergency stop. (1) Cooling fan control 1) In a specified time when cooling operation is activated, the master outdoor unit controls the outdoor fan speed (no. of fan driving waves) by Pd pressure. The slave outdoor unit controls the outdoor fan speed with temperature detected by TE sensor. Pd pressure (kgf/cm2G) 22 21 19 18 17 16 15 14 13 12 11 Max. 16 waves [+1 wave/20 sec.] From 2 waves to Max. no. of waves 2a. Outdoor fan control 11 [Hold] [+1 wave/20 sec.] From 1 wave to (Up to 5 waves) Max. no. of waves [-1 wave/20 sec.] In up time: From 0 wave to 1 wave In down time: From 15 waves to 1 wave Interval control [0 wave]:180 sec. [1 wave]:30 sec. * PD pressure is maintained between 14.5 ~ 18 kgf/cm2G by the cooling fan control. The no. of waves can be controlled between 0 wave (STOP) to 16 waves (all waves). 55 Outline of control Outdoor unit Item 2b.

Outdoor fan control Operation explanation and applied data, etc. (1) Heating fan control 1) The number of waves is controlled according to the TE sensor temperature. 2) If TE >20C is constantly detected for 5 minutes, the operation will automatically shut down. This is the same condition as when the thermostat automatically becomes switched off, thus the operation will automatically start again. 3) When the above condition (2) persists and the high pressure SW operates, check the suction area of the indoor unit for blockages. Ensure that the filter is clean and start the operation. 4) After the fan is switched on, this control does not operate during defrost mode. TE temperature (C) 20 6 4 2 1 A zone: minimum, compulsory stop timer count B zone: 2/20 seconds (down to the minimum) C zone: 1/20 seconds (down to the minimum) D zone: hold (maintain the current rate) E zone: +1/20 seconds (up to the maximum) F zone: Maximum revolutions number (16) Remarks Fixed-speed/slave units not operating will maintain the ODU fan at 1 wave to prevent refrigerant from remaining in the ODU Heat Exchanger. 3. Capacity calculation By the capacity request command from the indoor controller, the inverter operation command of the master outdoor unit, ON/OFF control of the fixed-speed compressor and the slave outdoor unit are determined.

The master outdoor unit sets up activation priority order of the slave outdoor units connected to the system, and starts the operation. <Example of 30HP system> (HP) 30 Inverter Requested HP 11 25 20 15 10 5 1 5 Fixed 10 15 20 25 Operation capacity 30 (HP) 4. Oil level valve 1) detection control 2) The volume of oil in the oil tank is judged by the detection temperature of TK1 and TK2 sensors. The present temperature detected by TK1, TK2 and TK3 sensors are stored in memory as the initial value, and then the solenoid valve SV3C is activated. Sampling of TK1, TK2 and TK3 sensor temperature occurs and the temperature change between TK1 and TK2 is judged.

If the judgement is such that a reduction in oil is present the oil equalizing control function starts. 56 Outline of control Outdoor unit Item Operation explanation and applied data, etc. Remarks 5. Oil equalizing This control is to prevent oil reduction in the compressor between the outdoor units.



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