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User manual TOSHIBA RBC-AMT31E
User guide TOSHIBA RBC-AMT31E
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Instruction manual TOSHIBA RBC-AMT31E

TOSHIBA FILE NO. A04-007

APPLICATION CONTROL MANUAL

Super Modular Multi System
Heat Pump Type
Cooling Only Type

Super Heat Recovery Multi System
Heat Recovery Type

HFC
R410A



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1-1 Outline of application control LON Gateway LONWORKS BMS-LSV2E Intelligent server Outdoor Units (VRF system) TCS-Net Interface BMS-IFLSVIE
Super Digital Inverter Digital Inverter Touch screen controller · Monitoring · Remote control · Schedule operation · Error code indication · Alarm list
indication · Monthly report · Energy monitoring data etc.
Power peak-cut control board TCB-PCDM2E External master ON/OFF board TCB-PCMO2E Terminal Screw M3 6 71 61 TOSHIBA NCC-1212 TCB-
PCOM1 TCB-PCOM1E 1 8 ICI 4-4φ hole OFF MS MS OFF ON T82 COM ON COM 4 5 OFF ON 5 PJ17 85 75 T81 Terminal Screw M4 8 55.5 Terminal
Screw M3 6 45.5 TOSHIBA NCC-1214 TCB-PCMO1 TCB-PCMO1E 4-4φ hole "1:1 model" connection interface TCB-PCNT30TLE 10 OPERATION/ K100
10 HEAT COOL 8 1 4 60 50 PJ17 1 ICI 4 5 COM TB1 COM D2 Energy meter relay interface I/F Energy monitoring Remote location ON/OFF control box
TCB-IFCB-4E Operation status output Operation control command Power peak-cut control signal Master ON/OFF signal Batch drive, error output Master
ON/OFF signal Alarm status output ON/OFF command Central remote controller TCB-SC642TLE Network adapter TCB-PCNT20E Master remote
controller Side remote controller AI-NETWORK Air-conditioning Management on site Wired remote controller RBC-AMT21E Weekly timer RBC-EXW21E
Weekly timer RBC-EXW21E Sub-remote controller RBC-AS21E Wireless remote controller AI-NET central control devices *1 BACnetTM :
ANSI/ASHRAE135-1995, A Data Communication Protocol for Building Automation and Control Networks. *2 LoNWoRKS : Registered trademark Echelon
Corporation. R 5 1-2 List of application control models and setting Appliance name Model name Contents of application control Connecting device or setting
method Indoor unit Reference No.
Remote Controller Wired remote controller RBC-AMT21E · Individual control · Group control Simple remote controller RBC-AS21E · Two remote control
TCB-AX21U(W)-E · Individual control Wireless remote RBC-AX22CE · Two wireless control controller TCB-AX21E · Two remote control (wired & wireless)
RBC-EXW21E · Weekly schedule operation Weekly timer (main remote controller + weekly timer) TCB-SC642TLE · Central control of Max.64 or units
Central remote controller · Weekly schedule operation (central remote controller + weekly timer) · Central control without indoor remote controller · Central
control with "1:1 model" Application controls of indoor unit Function change of indoor unit Ventilation fan control from remote controller Leaving-ON
prevention control Demand control from indoor unit Remote sensor Outdoor fan high static pressure shift Control for cooling/ heating priority Specific
indoor unit priority control Setting functions necessary to perform applied control at the local site. Ventilation fan start/stop operation from wired remote
controller.



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Control to prevent Leaving-ON of indoor unit. Thermo-OFF operation by relay signal For 4-way sir discharge cassette type For under 21E (For others except concealed duct high static pressure type) 1-4 4-1-3 TCB-AX21E 7 Wireless remote controller kit (Kit of Hand set and receiver unit) Outlook and function Reference No. Wireless remote controller Wireless remote controller (Common for all indoor unit type) TCB-AX21U(W)-E (for 4-way Air Discharge Cassette type) 186W x 186D (Mounted to the corner of ceiling panel) 4-1-3 Sensor unit (receiver unit) · Check code display (sensor block display on the receiving unit) TCB-AX22CE (For under Ceiling type) 130W x 65H (Mounted to the display position of front cover) · Test operation (Switch setting on the receiver unit) · Emergency operation (Push "emergency operation"BC-EXW21E Remote controller Weekly timer 10 1-4-2 Two remote control This control is that one or more indoor units are controlled by two remote controllers. (Max. two remote controller can be connected.) One indoor unit operated by two remote controller To outdoor unit Group control operated by two remote controller To outdoor unit Indoor Unit UIU2 AB Remote controller Wiring (Local supply) UIU2 AB UIU2 AB UIU2 AB AB AB AB AB Remote controller (Master) Remote controller (Side) Remote controller (Master) Remote controller (Side) (Setting method for side remote controller) <In case of wired remote controller> Change the remote controller address connector of the side remote controller on the P.C.

board. (In case of simple remote controller [RBC-AS21E], refer to "4-1-2 Simple remote controller") (RBC-AMT21E) Remote controller Remote controller address connector Master remote controller Remote controller check Side remote controller Remote controller address <In case of wireless remote controller> Turn No.3 of DIP switch [S003] on sensor P.C. board from OFF to ON. In case of 4-way cassette type (For others, refer to installation manual of wireless remote controller kit or "4-1-3 Wireless remote controller kit") S 003 Bit 1 : OFF to ON ON 4 3 2 1 Sensor P.C. board Corner cap Cover (Operation) 1) Operation mode can be changed by "last push priority". 2) In case of using a timer, connect the timer to either remote controller. 11 1-4-3 Group control Max.

8 indoor units can be controlled by one remote controller on a group control. Twin, triple control of 1 by 1 model (Toshiba Digital inverter, Super digital inverter) is one of group control. Header indoor unit controls indoor air temperature based on setting temperature of the remote controller. <System sample> Outdoor unit Header Indoor unit 1-1 Indoor unit 1-2 Indoor unit 1-3 Indoor unit 1-8 Max. 8 units Remote controller [NOTE] Be sure to supply the power for all indoor units on the group control.

If the power isn't supplied to the header indoor unit, communication between indoor units and remote controller can't be performed. [1] Display range of remote controller Remote controller reflects the setting range of header indoor unit. Setting range : Operation mode, Air Volume setting, Setting temperature [NOTE] Don't set the concealed duct high pressure type (AID-P***H, MMD-P***IH) to the header indoor unit. Set the other type indoor unit to the header indoor unit. · In case concealed duct high static pressure type is the header indoor unit, display of remote controller is as follows.

Operation mode : [AUTO] [HEAT] [COOL] [FAN], no [DRY] mode Air volume selection : [HIGH] · In case of [DRY] mode, duct type keeps [FAN] mode. [NOTE] Don't set cooling only model as header indoor unit. Set heat pump model as header indoor unit. · [AUTO] [HEAT] mode can't be operated. [2]

Remote location control (HA) Both header and follower indoor unit can response by remote location control (HA) signals. Master ON/OFF control can be conducted for all indoor units on the same group. [NOTE] Don't input two or more HA signals to one group. [3] Address setting All indoor units on the same group must be turned on when automatic address setting is conducted. If power supply is turned on three minutes later than automatic address setting, reboot will occur and automatic address setting starts again. [NOTE.

1] Be sure to do electrical work and control wiring certainly. [NOTE.2] Reconfirm the line / indoor / group address one by one. Especially confirm the identical line address both outdoor and indoor side. 12 1-4-4 Application controls for central remote controller Basic function Header unit System diagram U3, U4 Super MMS Outdoor unit Line-3 Indoor unit U5, U6 Model Reference No. Zone 4 U1, U2 Header unit Indoor remote controller Outdoor unit U5, U6 Line-2 Super MMS Indoor unit U3, U4 Zone 3 U1, U2 Zone 2 Header unit Indoor remote controller Outdoor unit Line-1 Super HRM Indoor unit U3, U4 Zone 1 U1, U2 FS unit · Central remote controller TCB-SC642TLE <Indoor remote controller> · Wired remote controller RBC-AMT21E · Simple remote controller RBC-AS21E 1 Central management controller for 64 units Indoor remote controller Power Central supply remote controller Single phase 220/230/240V 4-2 Function of central remote controller · Individual control up to 64 indoor units. · Individual control for max. 64 indoor units divided 1 to 4 zone. (Up to 16 indoor units for each zone.) · Up to 16 outdoor header units are connectable.

· 4 type central control setting to inhibit individual operation by remote controller can be selected. · Setting for one of 1 to 4 zone is available. · Usable with other central control devices (Up to 10 central control devices in one control circuit) · Two control mode selectivity Central controller mode/Remote controller mode · Setting of simultaneous ON/OFF 3 times for each day of the week combined with weekly timer. 2 Central remote controller + Weekly timer Weekly operation schedule can be set by connecting a weekly timer to the central remote controller U3, U4 Outdoor unit Indoor unit Super MMS U1, U2 · Central remote controller TCB-SC642TLE + · Weekly timer RBC-EXW21E <Indoor remote controller> · Wired remote controller RBC-AMT21E or · Simple remote controller RBC-AS21E 4-2 Indoor remote controller Single phase 220/230/240V Power supply Weekly timer Central remote controller 13 Basic function System diagram Model Reference No. U3, U4 Outdoor unit U1, U2 Power supply Single phase 220/230/240V Indoor unit Central remote controller Even when grouping operation is performed by connecting multiple indoor units to 1 line, the indoor remote controller is required.



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Example of grouping operation 3 Remote central control without indoor remote controller Power supply Single phase 220/230/240V U3, U4 · Central remote controller TCB-SC642TLE <Indoor remote controller> · Wired remote controller RBC-AMT21E Outdoor unit U1, U2 4-2 (Group) Indoor remote controller is required Central remote controller Available U3, U4 Outdoor unit U1, U2 (Group) Power supply Single phase 220/230/240V Central remote controller Available Power supply U3, U4 Central remote controller 4 Central management control with "1 : 1 model" Header unit U1, U2 Super MMS *1 "1:1 model" connection interface Indoor unit · Central remote controller TCB-SC642TLE · "1 : 1 model" connection interface TCB-PCNT30TLE RAV-SM560KRT-E, SM800KRT-E are not available <Indoor remote controller> · Wired remote controller RBC-AMT21E · Simple remote controller RBC-AS21E 4-2 Indoor remote controller * TOSHIBA Digital Inverter System and Super Digital Inverter System 14 1-5 Application controls of indoor unit No 1 Ventilation fan control from remote controller Control name Function change Function Items necessary to perform the applied control at the local site can be selected. (Ex. Setup of TA sensor, body TA sensor / remote controller sensor) ON/OFF control can be operated from wired remote controller when the entire heat exchanger or ventilation fan is installed in the system. Relay (DC12V, procured locally) CN32 11 FAN DRIVE 22 (2P WHI) Indoor control P.C. board Outside control input of fan To terminal Reference No. Item code (DN) setting from wired remote controller Setting from wired remote controller + Relay wiring (local supply) 4-3-1 2 4-3-2 Leaving-ON prevention control Using a card switch box, card lock etc, the leaving ON of the indoor unit can be prevented by setting of remote controller and relay wiring. Relay (procured locally) CN61 11 T10 22 (YEL) 3 3 44 55 66 Indoor control P.C. board Power supply Outside contact Setting from wired remote controller + Relay wiring (local supply) 3 4-3-3 Demand control Thermostat-OFF operation by relay signal. · Wiring example CN73 Relay (procured locally) 11 22 Relay coil signal Relay wiring (local supply) 4 4-3-4 EXCT (2P plug: RED) Indoor control P.C. board Remote sensor (TCB-TC21LE) Air temperature sensing at a distance. Remote sensor Remote controller (Master) (Sold separately) Remote controller cable (Procured locally) Remote sensor (TCB-TC21LE) Indoor Unit 5 Terminal block for remote controller cable AB 4-3-5 Indoor unit Earth Remote Controller Remote Sensor [NOTE] Don't change TA sensor to remote controller sensor by item code (DN) setting. 1-6 Application controls of outdoor unit No 1 2 Control name Outdoor fan high static pressure shift Cooling priority, heating priority control Specific indoor unit priority control Function Increase outdoor fan speed so that a duct with the maximum outside static pressure 35Pa can be installed.

Cooling priority or heating priority can be selected. (Setup at shipment : heating priority) Only one indoor unit can be set to priority for changeover operation mode. Setting method Switch setting on outdoor interface P.C. board Switch setting on outdoor interface P.C. board + Item code (DN) setting from wired remote controller Reference No. 4-4-1 4-4-2 3 4-4-3 15 1-7 Application controls by optional P.C. board of outdoor unit Model name Appearance Function Reference No.

[1] Power peak-cut Control Feature The upper limit capacity of the outdoor unit is restricted based on the power peak cut request signal from outside. Function Two type control can be selected by setting SW07 on the interface P.C. board of the header outdoor unit. TCB-PCDM2E Local Supply Size : 71 x 85 (mm) ON SW1 COM OFF SW2 COM Application TCB-PCDM2E [Standard function] SW07-2 OFF Input SW01 ON OFF SW02 OFF ON OFF 0% (stop) 100% (Normal) SW07-1 ON Up to 60% 100% (Normal) 4-5-1 [Expansion function] SW07-2 ON Input SW01 * Place this optional P. C. board to inverter assembly of the header outdoor unit. OFF ON OFF ON SW02 OFF OFF ON ON OFF 100% (Normal) Up to 80% Up to 60% 0% (stop) SW07-1 ON 100% (Normal) Up to 85% Up to 75% Up to 60% · Be sure to prepare the point of contact for each terminal. · Don't turn on both SW1 and SW2 terminal simultaneously. 16 Model name Appearance Function Reference No.

[2] Snowfall fan control Feature Outdoor fan is operated with the snowfall signal from outside. Function TCB-PCMO2E COM SMC Local Supply Size : 55.5 x 60 (mm) Cooling Application SMC : Cooling mode select input (switch) Terminal Input signal ON Operation 4-5-2 Snowfall fan control (Operates outdoor fan.) OFF SMC ON Usual operation (Releases control) OFF TCB-PCMO2E * Place this optional P.C. board to inverter assembly of the header outdoor unit. This control is conducted when input signal stand up and fall down. (Standing and falling status should be held for 100 mm.sec. or more.)

[3] External master ON/OFF control Feature The outdoor unit starts or stops the system. Function TCB-PCMO2E COM SMC Cooling Heating SMH Local Supply SMC : Input signal for start SMH : Input signal for stop Terminal Input signal ON Operation 4-5-3 SMC OFF Starts all indoor units. ON SMH OFF Stops all indoor units. · Be sure to prepare non voltage continuous point of contact for each terminal. This control is conducted when input signal stand up or fall down. (Standing and falling status should be held for 100 mm.sec. or more.) 17 Model name Appearance Function Reference No. [4] Night operation (Sound reduction) control Feature Sound level can be reduced with connecting outdoor E-parts by restricting compressor and fan speed.

Function TCB-PCMO2E COM Local Supply Size : 55.5 x 60 (mm) Cooling SMC Application SMC : Cooling mode designated input switch Terminal Input signal ON Operation 4-5-4 Night operation (sound reduction) control OFF SMC ON Usual Operation OFF TCB-PCMO2E * Place this optional P.C. board to inverter assembly of the header outdoor unit. This control is conducted when input signal stand up or fall down.

(Standing and falling status should be held for 100 mm.sec or more.) [5] Operation mode selection control Feature This control can be operated with the operation mode which is permitted by SMC or SMH. Function TCB-PCMO1E COM SMC Cooling Heating SMH Local Supply 4-5-5 SMC : Cooling mode designated input switch SMH : Heating mode designated input switch SMC ON OFF SMH OFF ON Selected operation mode Only cooling mode permitted Only heating mode permitted Be sure to prepare non-voltage continuous point of contact for each terminal.



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18 1-8 Application controls by optional devices connected to indoor unit [1] Remote location ON/OFF control box Model name Appearance Features Start and stop of air conditioner is possible by the external signal, and also indication of operation/ alarm to outside is possible.

Reference No. TCB-IFCB-4E Application Function · Monitoring ON/OFF status (for indoor unit) Alarm status (system & indoor unit stop) · ON/OFF command Air conditioner can be turned ON/OFF by the external signals. The external ON/OFF signals are output for the signals below. 4-6-1 Operation Display Interface Remote Controller ON/OFF COM Non-voltage ON /OFF continuous signal [2] Network adapter Model name Appearance Features Indoor units of VRF system is controlled by AINETWORK central remote controller. Connectable indoor units per group. Reference No. Connection of cables Central remote controller Non polarity cable XY CN03 12 1 2 CN01 1 3 Indoor unit control P.C.board 1 CN041 3 13 AB Indoor unit Indoor unit Indoor unit Indoor control P.C.

board Indoor control P.C.board Indoor control P.C.board TCB-PCNT20E Place optional P.C. board in E-parts of indoor unit. 13 CN02 CN309 Indoor unit AB AB AB Application Non polarity cable 4-6-2 Remote controller Power Supply Wiring diagram of indoor P.C. board AI Network CN040(Blue) Indoor control P.

C.board CN300(Yellow) Central Remote Controller TCB-SC641E Network Adapter Terminal block for connecting remote controller 123 123 Black Black Network Black 3 3 adapter CN01(White) 2 2 P.C. board 2 2 CN02(Blue) 11 White 1 1 CN03(Red) 1 1 3 3 AB Indoor unit Remote Controller Power Supply transformer 12 12 Gray Gray XY Network connection terminal block 19 [3] "1:1 model" connection interface Model name Appearance Features Link adapter for "1:1 model" into VRF system network 1:1 model : Super digital inverter Digital inverter Reference No. Place optional P.

C. board in E-parts of indoor unit. Central control devices Connection of cables Indoor unit Indoor unit Indoor unit U3 U4 Adaptor Indoor control P.C.board Indoor control P.

C.board Indoor control P.C.board AB AB AB TCB-PCNT30TLE Application Remote controller Central Remote Controller TCB-SC642TLE 4-6-3 Super MMS control wiring 1:1 model connection interface Indoor units Digital Inverter Super Digital Inverter U3 U4 Connecting terminal block BLU BLU Wiring diagram of indoor P.C. board 12 Outdoor unit 12 CN40 (BIU) CN51 (RED) adapter 1 2 3 4 5 1 2 3 4 5 WHI RED RED RED RED 1 2 3 4 5 1 2 3 4 5 CN50 (WHI) Indoor control P.C.board 20 1-9 Application control for network (Tentative) 1-9-1 Touch screen controller system System Diagram Intelligent Server Software Ethernet connection Reference No. RS-485 Control wiring Intelligent Server Touch Screen Controller Control Maximum 512 FCU TCS-Net Relay Interface Control wiring Control wiring Maximum 4 Intelligent server Maximum 8 Relay Interface Maximum 4 Energy Monitoring Relay Interface I/F RS-485 Local supply 1 pulse/ kWh 200-400 ms Maximum 8 Power Meter Energy Meter Relay Interface More I/O Maximum 3 Input & 1 Output 4-6-3 I/F Maximum 4 Digital I/O Relay Interface Fire alarm Door Key Entry ON/OFF Error code output Digital I/O Relay Interface Model Name Touch Screen controller (English version) Devices Intelligent Server Intelligent Server Software TCS-Net Relay Interface Energy Monitoring Relay Interface Digital I/O Relay Interface (1) Monitoring air-conditioners (2) Operating of air-conditioners (3) Schedule operation Function (4) Alarm list display (5) Alarm record display (6) Monthly report data extraction Model Name Specification BMS-TP0640ACE Max 64 FCU , without electrical bill calculation BMS-TP5120ACE Max 512 FCU , without electrical bill calculation BMS-TP0640PWE Max 64 FCU , with electrical bill calculation BMS-TP5120PWE Max 512 FCU , with electrical bill calculation BMS-LSV2E Server in between Screen controller & control wiring BMS-STCC01E Installed to Intelligent Server BMS-IFLSV1E I/F in between Intelligent server & control wiring BMS-IFWH3E I/F for Power Meter BMS-IFDD01E I/F for I/O signal Operation status can be seen according to a unit. Unit All building, All tenants, Each tenant, Each area, Each air-conditioning system Monitoring contents Operation and alarm status, Setting status for each air-conditioning system Master / individual control can be performed according to a unit.

Operating contents ON/OFF, Operation setting operation mode, air volume, frap position, setting temp., inhibited setting from remote location Air-conditioners are operated according to set-up schedule / operation pattern. Schedule operation can be performed according to a unit. Operation pattern Weekly pattern, special day pattern (4 pattern), No-work days pattern The present alarm contents are list-displayed. Display contents Alarm contents, Unit number, Generated time The past alarm records are list-displayed. Display contents Alarm contents, Unit number, Generated time Monthly report data is written in "Compact Flash". Monthly report can be created according to a unit using monthly report software. Monthly report contents The number of ON/OFF, Operating time, Results of energy monitoring Power consumption data is written in "Compact Flash". Energy monitoring can be performed according to a unit using energy monitoring software. Energy monitoring data Power consumption according to the power meter (7) Energy monitoring data extraction 21 1-9-2 LONWORKS System diagram Model Reference No.

LON Center LON Talk LON Interfaces TCB- TCB- · · TCBIFLN060 · LON Gateway TCB-IFLN**** · "1 : 1 model" connection interface TCB-PCNT30TLE RAV-SM560KRT-E, SM800KRT-E are not available Super MMS *1 <Indoor remote controller> · Wired remote controller RBC-AMT21E or · Simple remote controller RBC-AS21E Remote controller "1:1 model" connection interface 4-7-2 *1 TOSHIBA Digital Inverter System and Super Digital Inverter System The LONWORKS interface shall be connected between a building management computer and the Super HRM and Super MMS system. [LONWORKS Gateway]

Command · Operation : ON/OFF · Mode : Cool/Heat/Fan · Temperature setting · Center/Local Monitor · Operation : ON/OFF · Mode : Cool/Heat/Fan/failure · Temperature setting · Room temperature · Center/Local 22 1-9-3 Windows based central controller System diagram Model · WINDOWS based central controller BMS-LSV** · TCS-Net Relay Interface BMS-IFLSV1E · Intelligent server BMS-LSV2E BMS-STC01E · Energy Monitoring Relay Interface BMS-IFWH3E · Digital I/O Relay Interface BMS-IFDD01E · "1 : 1 model" connection interface TCB-PCNT30TLE RAV-SM560KRT-E, SM800KRT-E are not available <Indoor remote controller> · Wired remote controller RBC-AMT21E · Simple remote controller RBC-AS21E Reference No.



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Personal computer on site Local server Relay Interface Super MMS *1 4-7-3 Remote controller "1:1 model" connection interface Energy monitoring relay interface Digital I/O relay interface *1 TOSHIBA Digital Inverter System and Super Digital Inverter System The local server shall be "Plug-in" into a customer's personal computer. 1-9-4 BACnet System diagram Model Reference No. BAC net center · BACnet local server BMS-LSV***** · TCS-Net Relay Interface BMS-IFLSV1E · "1 : 1 model" connection interface TCB-PCNT30TLE RAV-SM560KRT-E, SM800KRT-E are not available <Indoor remote controller> · Wired remote controller RBC-AMT21E · Simple remote controller RBC-AS21E Local server TCBTCS-Net Relay Interface Super MMS *1 4-7-4 Remote controller "1:1 model" connection interface *1 TOSHIBA Digital Inverter System and Super Digital Inverter System The local server shall be connected under the BACnet network, and shall be connected the Super HRM and Super MMS system through the interface.
(Note) For "1-9-1" to "1-9-4", details of specification were not available at the time of publication. For further information (set up, adjustment), consult the sales subsidiary. 23 2 SYSTEM WIRING DIAGRAM AND CONTROL WIRING METHOD 2-1 Applicable model and connectable units 2-2 System wiring diagram 2-2-1 For VRF system only 2-2-2 For combined system with "1:1model" 2-3 Design of control wiring 2-4 Earth method of shield wiring 2-4-1 For VRF system only 2-4-2 For combined system with "1:1model" 2-5 General requirement for control wiring 24 2-1 Applicable model and connectable units 1) Applicable model · VRF system ...

.....
.. Super modular multi system (Super MMS) Super heat recovery multi system (Super HRM) · 1:1 model

.....
Super digital inverter, Digital inverter 2) The number of connectable units [1] For only VRF system Connected unit 1 2 3 4 5 Outdoor unit (Header unit) Outdoor unit (Follower unit) Indoor unit Group control for indoor units Central control device No. of units Up to 16 units Up to 3 units Up to 64 units Up to 8 units Up to 10 units · Central remote controller Note In the same refrigerant system · Max 64 units in case of group control* · Max. 48 units for one refrigerant system * Follower indoor unit in a group control must be counted as one indoor unit. [2] For combined system with Digital Inverter / Super Digital Inverter Connected unit 1 Outdoor unit (Header unit for VRF system) Outdoor unit (Follower unit for VRF system) Indoor unit No. of units Up to 16 units Note 2 Up to 3 units In the same refrigerant system 3 Up to 64 units · Max. 64 units for total number of indoor units for both system. * For 1:1 model, follower indoor units of twin control and group control must not be counted. * For VRF system, Max. 48 indoor units in one refrigerant system. 4 5 Group control for indoor units Central control device Up to 8 units Up to 10 units · Central remote controller * Max.

64 refrigerant system can be controlled for total number of VRF system and 1:1 model. (However, for VRF system, up to 16 refrigerant system can be connectable.) * "1:1 model" connection interface is connected to the indoor unit of 1:1 model. 25 2-2 System wiring diagram Refrigerant System 2 Central control wiring (Max.16 units can be connectable) Header Unit Follower Unit Follower Unit Follower Unit 2-2-1 For VRF system only Refrigerant System 3 Refrigerant System 4 Central Control Device U1 U2 U3 U4 Note [3] Central Control Device U1 U2 U3 U4 Refrigerant System 1 Note [4] Max. 10 central control devices U3U4 U3U4 U1U2 U5U6 U1U2 U5U6 U1U2 U5U6 U1U2 U5U6 U1U2 U5U6 U3U4 U3U4 U3U4 U3U4 Outdoor Unit Header Unit U3U4 U1U2 U5U6 Header Unit U1U2 U5U6 Header Unit Central Control Device Control wiring between outdoor units (Max. 4 units can be connected.) Note [1] Note [2] Control wiring Between indoor and outdoor units Note [2] U1 U2 U3 U4 26 U1U2 AB AB AB AB U1U2 U1U2 U1U2 Remote controller Note [5] Indoor Unit U1U2 U1U2 AB U1U2 AB U1U2 AB U1U2 AB AB Remote controller Wiring Remote controller Remote Controller Max. 48 indoor units can be connected in one refrigerant system Max. 64 indoor units for all refrigerant circuits Group control operation (Max. 8 units) Remote Controller Note) [1] Don't connect control wiring between indoor and outdoor units to several outdoor units. (Outdoor unit to which control wiring between indoor and outdoor unit is connected becomes the header outdoor unit automatically.) [2] Don't connect control wiring between indoor and outdoor units to other refrigerant system. [3] Connect central control wiring to the header outdoor unit. [4] Connect central control devices to central control wiring.

[5] Central control devices can be also connected to control wiring between indoor and outdoor units. 2-2-2 For combined system with "1:1 model" VRF system Refrigerant System 2 Note [3] Central control wiring : Max 64 refrigerant system for both VRF system and 1:1 model. Max 16 refrigerant system for VRF system. Follower unit Follower unit "1:1 model" (Super digital Inverter, Digital Inverter) Refrigerant System 3 Refrigerant System 4 Refrigerant System 5 Refrigerant System 1 Central Control Device U1 U2 U3 U4 Central Control Device U1 U2 U3 U4 Note [6] Max. 10 Central control devices Header Unit U3 U4 U1 U2 U5 U6 "1:1 model" connection interface (TCB-PCNT30TLE) Control wiring between outdoor units (Max. 4 units can be connected.) U3 U4 U1 U2 U5 U6 U1 U2 U5 U6 U3 U4 U3 U4 U3 U4 Header unit Outdoor Unit U1 U2 U5 U6 Central Control Device Note [1] Note [2] Control wiring between indoor and outdoor units 123 123 U1 U2 U3 U4 Note [2] 27 U1U2 AB AB AB AB AB U1U2 U1U2 U1U2 U1U2 Remote controller Note [7] Header unit Follower unit Indoor Unit U1U2 U1U2 AB U1U2 AB U3 U4 123 AB 123 AB Remote controller AB Remote controller Wiring Remote controller Remote Controller Note [4] [5] Max 48 indoor units can be connected. Group control operation (Max. 8 units) , Max. 64 indoor units for all refrigerant systems (Don t count follower indoor units of group control and twin control of 1:1 model.) Note) [1] Don't connect control wiring between indoor and outdoor units to several outdoor units. (Outdoor unit to which control wiring between indoor and outdoor units is connected becomes the header outdoor unit automatically.) [2] Don't connect control wiring between indoor and outdoor units to other refrigerant system. [3] Connect central control wiring to the header outdoor unit.



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[4] When "1:1 model" is controlled by central control devices, "1:1 model" connection interface is necessary.

[5] In case of twin control on 1:1 model, connect "1:1 model" connection interface to the header indoor unit. [6] Connect central control devices to central control wiring. [7] Central control devices can be also connected to control wiring between indoor and outdoor units. * In case of 1:1 model, address re-setup is needed from wired remote controller. (For details, refer to "3-2-10"). 2-3 Design of control wiring 1. All control wiring is 2-core and non-polarity wire. 2. Be sure to use shield wire for the following wiring to prevent noise trouble. · Outdoor-outdoor / indoor-indoor / outdoor-indoor control wiring, Central control wiring.

Control wiring between indoor and outdoor units (L1,L2,L3), Central control wiring (L4) Control wiring between outdoor units (L5) Wiring Type 2 2 Wiring Shield wire 2 2-core, non-polarity Shield wire 1.25mm ~ 2.0mm Up to 100m (L5) 2-core, non-polarity Type 1.25mm : Up to 1000m 2 2.0mm : Up to 2000m (*1) Note (1) : Total of control wiring length for all refrigerant systems (L1 + L2 + L3 + L4) Size Length Size Length Central Control Device U1 U2 U3 U4 VRF system L4 Header unit Follower unit Follower unit "1:1 model" (Super digital Inverter, Digital Inverter) Header unit U3 U4 U1 U2 U5 U6 U1 U2 U5 U6 U1 U2 U5 U6 U3 U4 U3 U4 U3 U4 U3 U4 Header unit Follower unit Outdoor unit U3 U4 U1 U2 U5 U6 U3 U4 U1 U2 U5 U6 U3 U4 U1 U2 U5 U6 U3 U4 U1 U2 U5 U6 L1 L3 U3U4 123 Indoor unit U1U2 U1U2 AB U1U2 AB U1U2 AB U1U2 AB AB AB L7 Remote controller Remote controller L6 Remote controller 1:1 model connection interface (TCB-PCNT30TLE) Remote controller Remote controller wiring (L6,L7) Wire Size Length 2-core, non-polarity 0.

5mm2~ 2.0mm2 Up to 500m (L6 + L7) Up 400m when wireless remote controller exists in a group control. Up to 200m total length of control wiring between indoor units (L6) 2-4 Earth method of shield wiring 2-4-1 For VRF system only Central control device U1 U2 U2 U4 Central control wiring Note [1] Note [2] Note [2] (Open) Follower unit U3U4 U3U4 U3U4 U3U4 U3U4 Follower unit Follower unit U3U4 U3U4 Outdoor unit U1U2 U5U6 Control wiring between outdoor units U1U2 U5U6 Header unit U1U2 U5U6 U1U2 U5U6 U1U2 U5U6 U1U2 U5U6 U1U2 U5U6 Header unit Central control device Note [1] Note [1] 29 Note [2] U1U2 U1U2 U1U2 U1U2 U1 U2 U3 U4 Note [1] Control wiring between indoor and outdoor units Note [1] Note [1] Indoor unit AB AB U1U2 U1U2 U1U2 U1U2 U1U2 AB AB AB AB AB AB AB AB Remote controller Remote controller Remote controller Remote controller Note [1] Be sure to close (connect) the end of shield wires, and perform the functional grounding for the end of wires which are connected to both indoor and outdoor units. [2] For the shield wires which are connected between the central remote controller and the outdoor units, perform the functional grounding at only one end of central control wiring. (Leave the other end of the wire at its final termination as an open wire.)

) 2-4-2 For combined system with "1:1 model" Central Control Device U1 U2 U3 U4 Note [1] Central control wiring Note [2] Note [2] (Open) Follower unit U3U4 U3U4 U3U4 U3U4 Follower unit Follower unit Outdoor unit U1U2 U5U6 U1U2 U5U6 U1U2 U5U6 U3U4 U1U2 U5U6 Header unit U1U2 U5U6 Header unit U3U4 U1U2 U5U6 Header unit Control wiring between outdoor units 123 Central Control Device Note [1] Note [1] U1 U2 U3 U4 Note [1] Note [1] Note [1] 30 U1U2 U1U2 U1U2 Control wiring between indoor and outdoor units U1U2 U1U2 U3U4 1 2 3 U1U2 Indoor unit AB AB AB AB 1:1 model connection interface (TCB-PCNT30TLE) AB AB Remote controller VRF system Remote controller 1:1 model (Super digital inverter, Digital inverter) VRF system Note [1] Be sure to close (connect) the end of shield wires, and perform the functional grounding for the end of wires which are connected to both indoor and outdoor units. [2] For the shield wires which are connected between the central remote controller and the outdoor units, perform the functional grounding at only one end of central control wiring. (Leave the other end of the wire at its final termination as an open wire.) 2-5 General requirement for control wiring 1) 2) 3) 4) Separate control wiring from power source line to prevent malfunction. 50mm or more must be needed from the power source line of air conditioner. 300mm or more must be needed from other power source. Be sure to perform the functional grounding for the end of the shield wires which are connected to both indoor and outdoor units. 5) Control wiring and power source line should not be wired on the same multiple core cable. NG Multiple core cable Power source Control Wiring 6) Don't wire two or more control wires on the same multiple core cable. NG Multiple core cable Control wiring between indoor and outdoor units.

Central control Wiring 7) When the high harmonic devices exist near the air conditioner, place the air conditioner 3m or more far from these devices. 31 NOTE 4 or more control wires connected to one terminal is prohibited. U3U4 Outdoor Unit (Header unit) U1U2U5U6 Indoor unit 12 AB 12 AB 12 AB NOT GOOD Remote controller 12 AB 12 AB 12 AB 12 AB 12 AB 12 AB 12 AB NOTE Loop wiring of control wires is prohibited. U3U4 Outdoor Unit (Header unit) U1U2U5U6 Indoor unit 12 AB 12 AB 12 AB Wiring which the transmission line is formed in loop is unavailable. Dotted line is forbidden. Remote controller NOT GOOD 12 AB 12 AB 12 AB 12 AB 12 AB 12 AB 12 AB 32 3 ADDRESS SETUP 3-1 Definition of address 3-2 Address setup procedure 3-2-1 Check at main power-ON 3-2-2 Automatic address setup 3-2-3 Manual address setup from remote controller 3-2-4 Confirmation of indoor unit address and position by using the remote controller 3-2-5 Change of indoor address from remote controller 3-2-6 Address setup example (VRF system) 3-2-7 Clearance of address (Return to status (Address undecided) at shipment from factory) 3-2-8 In case of increase the address-undefined indoor units (Extension, etc.) 3-2-9 How to set central control address 3-2-10 Address re-setup for central control of the super-digital inverter and the digital inverter 3-2-11 Indoor address change example (Super-digital inverter and digital inverter) 33 3-1 Definition of address Indoor unit address · "Indoor unit address" is to make outdoor unit recognize an individual indoor unit. This indoor unit address is allocated to every indoor unit one by one for every refrigerant system.



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Header Outdoor unit Follower Header Follower Indoor unit Remote controller Indoor unit address 1 2 3 4 1 2 3 4 Group address · "Group address" is the address to recognize group control and decide the header indoor unit and the follower indoor unit. Group address and header indoor unit is decided automatically when automatic address setting is performed.

(Which indoor unit becomes the header unit is indefinite when automatic address setting is performed.) Indoor unit on individual control : Group address = 0 (at shipment) Header indoor unit of group control : Group address = 1 Follower indoor unit of group control : Group address = 2 Header Outdoor unit Follower Header Follower Header Follower Indoor unit Follower Header Follower Remote controller Indoor unit address Group address 1 0 2 0 3 1 Group control 4 2 1 0 Individual control 2 2 3 1 Group control 4 2 Individual control 34 Line address (System address) · "Line address" is the address with which line (refrigerant system) indoor units are connected. This line address is set by switch setting on interface P.C. board of the header outdoor unit.

Line 1 (Refrigerant system 1) Line 2 (Refrigerant system 2) Line address (Outdoor) 1 2 Central control device Outdoor unit Header Follower Header Follower Indoor unit Remote controller Line address 1 1 1 1 2 2 2 2 35 Central control address · "Central control address" is to make central control devices recognize each indoor unit. This address can be set from central control devices automatically or manually. In case of group control on VRF system, one central control address is allocated to each indoor unit in a group control. Line 1 (Refrigerant system 1) Line 2 (Refrigerant system 2) Line address (Outdoor) 1 2 Central control device Outdoor unit Header Follower Header Follower Indoor unit Remote controller Central control address 1 2 3 4 5 6 7 Individual control Group control 36 Zone address (Zone No.) · "Zone address" is to be set when the central remote controller is used for each zone.

Zone address is set by switch setting on central remote controller. Central remote controller can divide all indoor units into max. 4 zone. The zone to which the indoor unit belongs is decided by its central control address. Central control address 1 to 16 17 to 32 33 to 48 49 to 64 Zone No. Zone 1 Zone 2 Zone 3 Zone 4 Central remote controller ("All" mode) Outdoor unit Header Follower Header Follower Header Zone 1 Zone address Zone 2 1 Central Zone 1 RC* Central Zone 2 RC* 2 Indoor unit Remote controller Central control address 1 2 3 4 17 18 19 20 21 *RC: Remote controller 37 3-2 Address setup procedure In this air conditioner, it is required to set up address to the indoor unit before starting operation. Set up the address according to the following setup procedure. CAUTIONS 1. Set up address after wiring work. 2.

Be sure to turn on the power in order of indoor unit outdoor unit. If turning on the power in the reverse order, a check code [E19] (Error of No. of header units) is output. When a check code is output, turn on the power again. 3. It requires maximum 10 minutes (Usually, approx. 5 minutes) to set up automatically an address to 1 line. 4. To set up an address automatically, the setup at outdoor side is necessary. (Address setup cannot be performed by power-ON only.

) 5. To set up an address, it is unnecessary to operate the air conditioner. 6. Manual address setup is also available besides automatic setup. Automatic address : Setup from SW15 on the interface P.

C. board of the header unit Manual address : Setup from the wired remote controller It is temporarily necessary to set the indoor unit and wired to 1 by 1. (In group operation and in time without remote controller) Address setting flow Line address setting (Dip switch) On the interface P.C. board of outdoor unit Power - ON Automatic address setting Manual address setting Indoor / Group / Line address setting Trial operation For each refrigerant system Setup of relay connector and SW30-2 On the interface P.

C. board of outdoor unit Central control address setting 38 3-2-1 Check at main power-ON After turning on the main power of the indoor units and outdoor unit in the refrigerant system to be executed with a test operation, check the following items in each outdoor and indoor unit. (After turning on the main power, be sure to check in order of indoor unit outdoor unit.) <Check on outdoor unit> 1. Check that all the rotary switches, SW01, SW02, and SW03 on the interface P.C. board of the header outdoor unit are set up to "1". 2. If other error code is displayed on 7-segment [B], remove the cause of trouble. 3.

Check that [L08] is displayed on 7-segment display [B] on the interface P.C. board of the header outdoor unit. (L08: Indoor address unset up) (If the address setup operation has already finished in service time, etc, the above check code is not displayed, and only [U1] is displayed on 7-segment display [A].)

7-segment display [A] Interface P.C. board 7-segment display [B] SW01 SW02 SW03 <Check on indoor unit> 1. Display check on remote controller (In case of wired remote controller) Check that a frame as shown in the following left figure is displayed on LC display section of the remote controller. UNIT SET CL UNIT SET CL Normal status (Power and operation stop) Abnormal status (Power is not normally turned on.) If a frame is not displayed as shown in the above right figure, the power of the remote controller is not normally turned on.

Therefore check the following items. · Check power supply of indoor unit. · Check wiring between indoor unit and remote controller. · Check whether there is cutoff of cable around the indoor control P.C. board or not, and check connection failure of connectors. · Check failure of transformer for the indoor microcomputer. · Check indoor control P.C. board failure.

39 3-2-2 Automatic address setup Without central control : To the address setup procedure 1 With central control : To the address setup procedure 2 (However, go to the procedure 1 when the central control is performed in a single refrigerant system.) (Example) Address setup procedure Cable systematic diagram Outdoor In case of central control in a single refrigerant system To procedure 1 In case of central control over refrigerant systems To procedure 2

Central control remote controller Outdoor Central control remote controller Outdoor Outdoor Central control remote controller Indoor Indoor Indoor Indoor Indoor Indoor Remote controller Remote controller Remote controller Remote controller Remote controller Remote controller Address setup procedure 1 1.



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LCD changes to flashing. (Line address) Using the setup temp. / buttons, set to the item code.

Using the timer time / buttons, set up the line address. (Match it with the line address on the interface P.C. board of the header unit in the identical refrigerant system.) (Wiring example in 2 systems) System #1 system System #2 system 2 3 Indoor Indoor Indoor Indoor Indoor Line address 1 Indoor address 1 Group address 1 Remote controller 1 2 2 1 3 2 Follower indoor unit 2 1 2 2 2 4 5 6 7 8 9 Push SET button. (OK when display goes on.) (Indoor address) Using the setup temp. / buttons, set to the item code. Using the timer time / set up the indoor address. buttons, Header indoor unit In the above example, under condition of no inter-unit wire of the remote controller, set the address after individual connecting of the wired remote controller.

Group address Push SET button. (OK when display goes on.) (Group address) Using the setup temp. / buttons, set to the item code. Using the timer time / buttons, set Individual = , Header unit = , .

Follower unit = Push SET button. (OK when display goes on.) Push button. Setup operation finished. (Status returns to normal stop status.

) Individual : 0000 Header unit : 0001 Follower unit : 0002 In case of group control Operation procedure 1 7 2 8 3 9 4 5 6 10 11 End CODE No. SET DATA 10 11 UNIT No. R.C. No. Data Item code 11 1 4, 7, 10 UNIT SET CL 3, 6, 9 2, 5, 8 43 Note 1) When setting the line address from the remote controller, do not use address 29 and 30. The address 29 and 30 cannot be set up in the outdoor unit. Therefore if they are incorrectly set up, a check code [E04] (Indoor/outdoor communication circuit error) is output. 3-2-4 Confirmation of indoor unit address and position by using the remote controller [Confirmation of indoor unit address and the position] 1. When you want to know the indoor address though position of the indoor unit itself can be recognized; <Procedure> (Operation while the air conditioner operates) 1 2 If it stops, push Push UNIT button.

CODE No. UNIT No. button. The unit NO is displayed on the LCD. (Disappears after several seconds) The displayed unit No indicates the line address and indoor address. (If there is other indoor unit connected to the same remote controller (Group control unit), other unit No is displayed every pushing UNIT button.) Operate 1 UNIT SET CL 2 Operation procedure 12 2. When you want to know position of the indoor unit using the address · To confirm the unit numbers in a group control; <Procedure> (Operation while the air conditioner stops) The indoor unit numbers in a group control are successively displayed, and the corresponding indoor fan is turned on. (Operation while the air conditioner stops) 1 Push + buttons simultaneously for 4 seconds or more. · Unit No is displayed.

· The fans of all the indoor units in a group control are turned on. CODE No. SET DATA UNIT No. R.C.

No. 2 Every pushing UNIT button, the indoor unit numbers in the group control are successively displayed. · The firstly displayed unit No indicates the address of the header unit. · Only fan of the selected indoor unit is turned on. Push button to finish the procedure.

All the indoor units in group control stop. End 3 3 1 2 UNIT SET CL Operation procedure 123 End 44 · To confirm all the unit numbers from an arbitrary wired remote controller; <Procedure> (Operation while the air conditioner stops) The indoor unit No and position in the same refrigerant piping can be confirmed. An outdoor unit is selected, the indoor unit numbers in the same refrigerant piping are successively displayed, and then its indoor unit fan is turned on. 1 2 3 Push the timer time + buttons simultaneously for 4 seconds or more. Firstly, the line 1, item code (Address Change) is displayed. (Select outdoor unit.) Using UNIT address. + buttons, select the line CODE No. SET DATA Using SET button, determine the selected line address. · The indoor unit address, which is connected to the refrigerant pipe of the selected outdoor unit is displayed and the fan is turned on.

Every pushing UNIT button, the indoor unit numbers in the identical pipe are successively displayed. · Only fan of the selected indoor unit operates. UNIT No. R.C. No. 4 [To select another line address] 6 1 3 4 2 UNIT SET CL 5 Operation procedure 5 6 Push CL button to return to procedure · The indoor address of another line can be successively confirmed. Push button to finish the procedure. 2. 123 4 5 6 End 3-2-5 Change of indoor address from remote controller Change of indoor address from wired remote controller · To change the indoor address in individual operation (Wired remote controller : Indoor unit = 1 : 1) or group control (When the setup operation with automatic address has finished, this change is available.

) <Procedure> (Operation while air conditioner stops) 1 2 3 4 5 6 7 8 Push simultaneously SET + CL + buttons for 4 seconds or more. (The firstly displayed unit No indicates the header unit in group control.) In group control, select an indoor unit No to be changed by (The fan of the selected indoor unit is turned on.) Using the setup temp. set to the item code.

/ buttons, SET DATA UNIT button. CODE No. UNIT No. R.C.

No. Using the timer time / buttons, change the displayed setup data to a data which you want to change. Push SET button. Using the UNIT button, select the unit No. to be changed at the next time. Repeat the proceto and change the indoor address so dure that it is not duplicated. 46 4 8 1 5 UNIT SET CL 2, 6, 7 3 After the above change, push confirm the changed contents. If it is acceptable, push confirmation. UNIT button to Operation procedure button to finish 1234 5 6 7 8 End 45 · To change all the indoor addresses from an arbitrary wired remote controller; (When the setup operation with automatic address has finished, this change is available.) Contents : Using an arbitrary wired remote controller, the indoor unit address can be changed for each same refrigerant system Change the address in the address check/change mode.

<Procedure> (Operation while air conditioner stops) 1 2 3 Push the timer time + buttons simultaneously for 4 seconds or more. Firstly, the line 1, item code (Address Change) is displayed. Using UNIT + buttons, select the line address. Push SET button. · The indoor unit address, which is connected to the refrigerant system of the selected outdoor unit is displayed and the fan is turned on. First the current indoor address is displayed on the setup data. (Line address is not displayed.) The indoor address of the setup data moves up/down by the timer time Change the setup data to a new address.



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