Sanyo C4272R Service Manual

Sanyo split system air conditioner service manual

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18

169
170
171
172
173
174
175
176
177
178
179
180
Table Of Contents
181

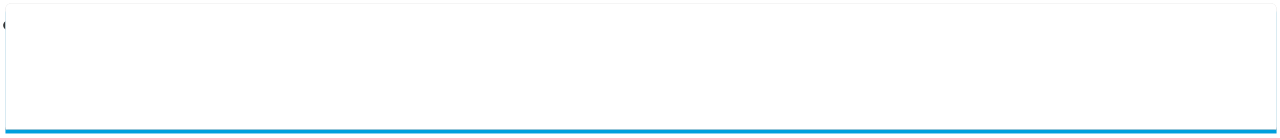


Table of Contents

-

Bookmarks

Quick Links

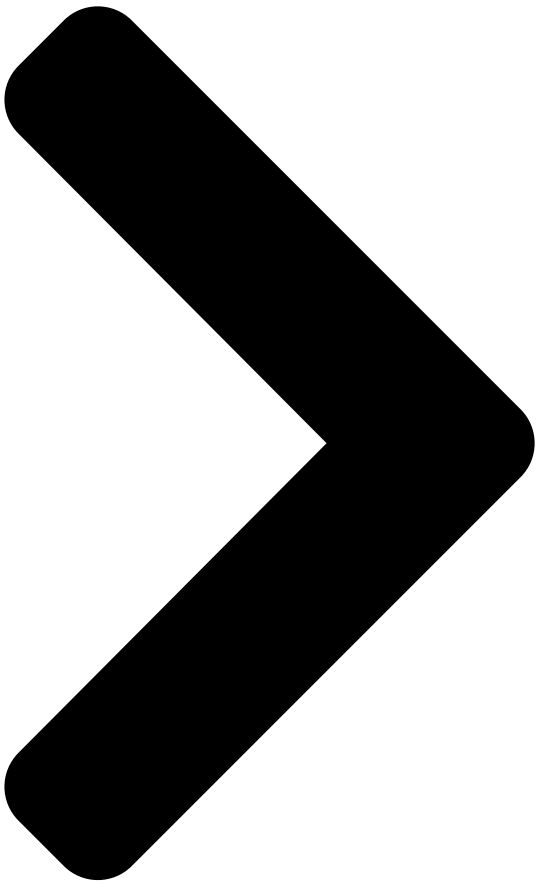
1 Outdoor Unit

2 Indoor Unit

3 Service Manual

4 Technical Data

Download this manual



TECHNICAL DATA

&

SERVICE MANUAL

XH2672R / CH2672R, C2672R
XH3672R / CH3672R, C3672R
XH4272R / CH4272R, C4272R
TH2672R / CH2672R, C2672R

TH3672R / CH3672R, C3672R
TH4272R / CH4272R, C4272R
THH2672R / CH2672R
THH3672R / CH3672R
SPLIT SYSTEM AIR CONDITIONER

INDOOR MODEL No.
XH2672R
XH3672R
XH4272R
TH2672R
TH3672R
TH4272R
THH2672R
THH3672R
KH2672R
KH3072R
KH3672R
KHH2672R
UH2672R
UH3672R
XH2672R
UH2672R
85464849248002
PRODUCT CODE No.
OUTDOOR MODEL No.
854 028 32
854 028 33
854 031 89
854 028 35
854 028 36
854 031 90
854 028 38
854 028 39
854 028 28
854 028 29
854 028 30
854 028 31
854 028 40
854 028 41

Indoor Unit

XH3672R
XH4272R
UH3672R
KHH2672R

FILE NO.

KH2672R / CH2672R, C2672R
KH3072R / CH3072R, C3072R
KH3672R / CH3672R, C3672R
KHH2672R / CH2672R
UH2672R / CH2672R, C2672R
UH3672R / CH3672R, C3672R

PRODUCT CODE No.
Ch2672R
854 028 20

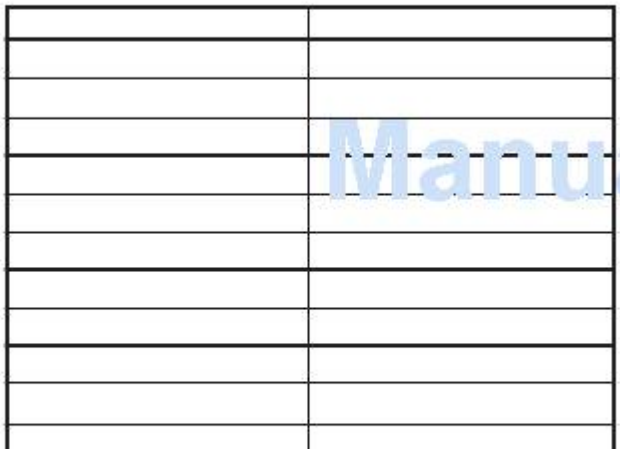
CH3072R
854 028 21
CH3672R
854 028 22
Ch4272R
854 031 87
C2672R
854 028 24
C3072R
854 028 25
C3672R
854 028 26
C4272R
854 031 88

TH2672R, THH2672R
TH3672R, THH3672R
TH4272R
KH3072R
KH3672R
REFERENCE NO.
KH2672R

Outdoor Unit

CH2672R, C2672R
CH3072R, C3072R
CH3672R, C3672R
CH4272R, C4272R

SM
831148-2



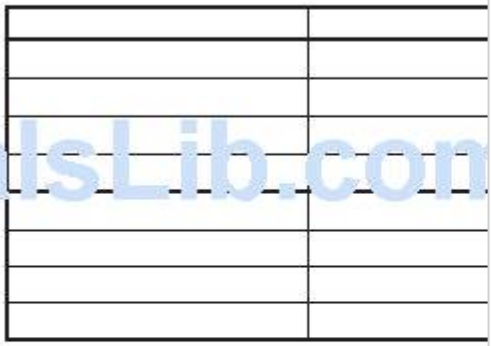


Table of Contents

Next Page

Related Manuals for Sanyo C4272R

Air Conditioner Sanyo THW4272R Specifications

Ceiling suspended air conditioner (2 pages)

Air Conditioner Sanyo XHW4272R Specifications

Ceiling recessed air conditioner (2 pages)

Air Conditioner Sanyo 42XH72R Dimensional Information

Sanyo air conditioner dimensional data sheet (1 page)

Air Conditioner Sanyo C4272R S/C Installation Instructions Manual

Sanyo split system heat pump air conditioner installation instructions (111 pages)

Air Conditioner Sanyo 26 series Installation Instructions Manual

Split system heat pump air conditioner (110 pages)

Air Conditioner Sanyo RCS-BH80UA.WL Instruction Manual

Split system air conditioner (48 pages)

Air Conditioner Sanyo C3072R Parts List

Outdoor unit (4 pages)

Air Conditioner Sanyo KH3672R Parts List

Sanyo air conditioner parts list (4 pages)

Air Conditioner Sanyo CH3672R Parts List

Outdoor unit (4 pages)

Air Conditioner Sanyo 26KS72R Specifications

Wall mounted air conditioner (2 pages)

Heat Pump Sanyo 26THW72R Specifications

Ceiling suspended heat pump (2 pages)

Air Conditioner Sanyo KHS3072R Specifications

Wall mounted air conditioner (2 pages)

Air Conditioner Sanyo KHS3672R Datasheet

Wall mounted air conditioner (2 pages)

Air Conditioner Sanyo THW3672R Specifications

Ceiling suspended air conditioner (2 pages)

Air Conditioner Sanyo XHW2672R Specifications

Ceiling recessed air conditioner (2 pages)

Air Conditioner Sanyo XHW3672R Specifications

Ceiling recessed air conditioner (2 pages)

Summary of Contents for Sanyo C4272R

Page 1: Technical Data

TECHNICAL DATA & SERVICE MANUAL XH2672R / CH2672R, C2672R XH3672R / CH3672R, C3672R XH4272R / CH4272R, C4272R TH2672R / CH2672R, C2672R TH3672R / CH3672R, C3672R TH4272R / CH4272R, C4272R THH2672R / CH2672R THH3672R / CH3672R SPLIT SYSTEM AIR CONDITIONER INDOOR MODEL No.

Page 3: Please Read Before Starting

Be careful when picking up and moving the indoor and outdoor units. Get a partner to help, and bend your knees when lifting to reduce strain on your back. Sharp edges or thin aluminum fins on the air conditioner can cut your fingers. When Installing ...In a Room Properly insulate any

tubing run inside a room to prevent “sweating”...

Page 4: Table Of Contents

Section 1: SPECIFICATIONS ... I-1 1-1 Unit Specifications ... I-2 1-2 Major Component Specifications ... I-27 1-3 Other Component Specifications ... I-47 1-4 Dimensional data ... I-63 1-5 Refrigerant Flow Diagram ... I-74 1-6 Operating Range ... I-75 1-7 Heating Capacity ... I-76 1-8 Noise Criterion Curves...

Page 5: Table Of Contents

1. SPECIFICATIONS 1-1 Unit Specifications ... I-2 1-2 Major Component Specifications ... I-27 1-3 Other Component Specifications ... I-47 1-4 Dimensional data ... I-63 1-5 Refrigerant Flow Diagram... I-74 1-6 Operating Range ... I-75 1-7 Heating Capacity ... I-76 1-8 Noise Criterion Curves ... I-77 1-9 Increasing the Fan Speed ...

Page 6: Unit Specifications

3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG RCS-SH1UA / RCS-BH80UA. WL / Automatic (Vertical) Washable (20A , OD26mm) Rotary(SANYO) 45 / 42 / 40 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A...

Page 7: Specifications

2,030 2,030 15 / 30 Microprocessor Built-in 0˚F / Automatic (Vertical) Washable (20A , OD26mm) Rotary(SANYO) 48 / 42 / 38 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A Outdoor unit...

Page 8 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG RCS-SH1UA / RCS-BH80UA. WL / Automatic (Vertical) Washable (20A , OD26mm) Rotary(SANYO) 46 / 42 / 38 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 5.73 (2.6) - R410A...

Page 9 2,450 2,450 15 / 35 Microprocessor Built-in 0˚F / Automatic (Vertical) Washable (20A , OD26mm) Rotary(SANYO) 48 / 44 / 40 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A Outdoor unit...

Page 10 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG RCS-SH1UA / RCS-BH80UA. WL / Automatic (Vertical) Washable (20A , OD26mm) Rotary(SANYO) 48 / 42 / 38 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A...

Page 11 19.6 3,690 15 / 35 Microprocessor Built-in 0˚F / Automatic (Vertical) Washable (20A , OD26mm) Rotary(SANYO) 46 / 42 / 38 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 5.73 (2.6) - R410A Outdoor unit...

Page 12 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG RCS-SH1UA / RCS-BH80UA. WL / Automatic (Vertical) Washable (20A , OD26mm) Rotary(SANYO) 48 / 44 / 40 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A...

Page 13 2,790 2,790 2,200 2,200 15 / 30 Microprocessor Built-in 0˚F / Automatic (Vertical) Rotary(SANYO) 38 / 35 / 31 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A Outdoor unit 30- 23/32 (780)

Page 14 Microprocessor Built-in 0˚F 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG / Automatic (Vertical) Washable, long life (2,500 hr) Rotary(SANYO) 44 / 37 / 33 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A...

Page 15 4,360 4,360 3,540 3,540 15 / 40 Microprocessor Built-in 0˚F / Automatic (Vertical) Rotary(SANYO) 45 / 38 / 34 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 7.94 (3.6) - R410A Outdoor unit 48-7/16 (1,230)

Page 16 Microprocessor Built-in 0˚F 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG / Automatic (Vertical) Washable, long life (2,500 hr) Rotary(SANYO) 38 / 35 / 31

Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A...

Page 17 VAC 187 - 253 20.7 3,950 15 / 35 Microprocessor Built-in 0˚F / Automatic (Vertical) Rotary(SANYO) 44 / 37 / 33 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A Outdoor unit...

Page 18 71 (32) cu.ft. (m 3) 10.6 (0.299) DATA SUBJECT TO CHANGE WITHOUT NOTICE. I-14 1. Specifications XH4272R C4272R 230 - 208 V / 1 Phase / 60 Hz Cooling 39,500 [9,500~39,500] 12.6 1050 / 840 / 720 14.6 VAC 187 - 253 23.0...

Page 19 2,600 2,400 2,400 1,980 1,980 15 / 30 Microprocessor Built-in 0˚F RCS-BH80UA. WL Rotary(SANYO) 34 / 30 / 27 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A Outdoor unit 30- 23/32 (780)

Page 20 2,570 15 / 35 Microprocessor Built-in 0˚F 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG RCS-BH80UA. WL Rotary(SANYO) 38 / 33 / 31 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A...

Page 21 2,600 — — 15 / 30 Microprocessor Built-in 0˚F RCS-BH80UA. WL — — Rotary(SANYO) 34 / 30 / 27 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A Outdoor unit 30- 23/32 (780)

Page 22 Microprocessor Built-in 0˚F 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG RCS-SH1UA / RCS-BH80UA. WL — — Rotary(SANYO) 38 / 33 / 31 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A...

Page 23 15 / 30 Microprocessor Built-in 0˚F / Automatic (Vertical) Washable, long life (2,500 hr) (20A , OD26mm) Rotary(SANYO) 39 / 37 / 33 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 4.19 (1.9) - R410A...

Page 24 Built-in 0˚F 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG / Automatic (Vertical) Washable, long life (2,500 hr) (20A , OD26mm) Rotary(SANYO) 39 / 37 / 33 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88)

Page 25 15 / 35 Microprocessor Built-in 0˚F / Automatic (Vertical) Washable, long life (2,500 hr) (20A , OD26mm) Rotary(SANYO) 42 / 40 / 35 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A...

Page 26 Built-in 0˚F 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG / Automatic (Vertical) Washable, long life (2,500 hr) (20A , OD26mm) Rotary(SANYO) 42 / 40 / 35 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88)

Page 27 15 / 40 Microprocessor Built-in 0˚F / Automatic (Vertical) Washable, long life (2,500 hr) (20A , OD26mm) Rotary(SANYO) 44 / 41 / 37 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 7.94 (3.6) - R410A...

Page 28 Built-in 0˚F 3 and Automatic control / Variable RCS-SH80UG / RCS-TM80BG / Automatic (Vertical) Washable, long life (2,500 hr) (20A , OD26mm) Rotary(SANYO) 39 / 37 / 33 Electronic Expansion Valve (MOV) 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88)

Page 29 15 / 35 Microprocessor Built-in 0˚F / Automatic (Vertical) Washable, long life (2,500 hr) (20A , OD26mm) Rotary(SANYO) 42 / 40 / 35 165 (50) 10~100 (3~30) 3 / 8 (6.35) 5 / 8 (15.88) 6.17 (2.8) - R410A...

Page 30 (kg) lbs. (kg) cu.ft. (m 3) DATA SUBJECT TO CHANGE WITHOUT NOTICE. I-26 1. Specifications TH4272R C4272R 230 - 208 V / 1 Phase / 60 Hz Cooling 39,000 [9,500~39,000] 12.6 1100 / 930 / 750 15.6 VAC 187 - 253 21.1...

Page 31: Major Component Specifications

1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature

68 °F) Safety device Operating temperature...

Page 32 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 33 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 34 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 35 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 36 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 37 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 38 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 39 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 40 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Fan (Number ... diameter) Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device Operating temperature...

Page 41 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Number ... Dia. and length Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device...

Page 42 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Number ... Dia. and length Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device...

Page 43 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Number ... Dia. and length Fan motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device...

Page 44 1-2 Major Component Specifications (A) Indoor Unit MODEL No. Source Remote controller (Option) Controller P. C. B Ass'y Control circuit fuse Number ... Dia. and length Fan

motor Model Source No. of pole ... r.p.m. (230 V, High) Nominal output Coil resistance (Ambient temperature 68 °F) Safety device...

Page 45 1-2 Major Component Specifications (B) Outdoor Unit MODEL No. Source Controller P.C.B. Ass'y Control circuit fuse (on the P.C.B."FIL-CH4872R") Compressor Model...number Nominal output Compressor oil Coil resistance (Ambient temperature 25 ° C) Safety control Microprocessor safety devices Overload protector (Operating temperature) Crank case heater Refrigerant amount at shipment High pressure switch...

Page 46 1-2 Major Component Specifications (B) Outdoor Unit MODEL No. Source Controller P.C.B. Ass'y Control circuit fuse (on the P.C.B."FIL-CH4872R") Compressor Model...number Nominal output Compressor oil Coil resistance (Ambient temperature 25 ° C) Safety control Microprocessor safety devices Overload protector (Operating temperature) Crank case heater Refrigerant amount at shipment High pressure switch...

Page 47 1-2 Major Component Specifications (B) Outdoor Unit MODEL No. Source Controller P.C.B. Ass'y Control circuit fuse (on the P.C.B."FIL-CH4872R") Compressor Model...number Nominal output Compressor oil Coil resistance (Ambient temperature 25 ° C) Safety control Microprocessor safety devices Overload protector (Operating temperature) Crank case heater Refrigerant amount at shipment High pressure switch...

Page 48 1-2 Major Component Specifications (B) Outdoor Unit MODEL No. Source Controller P.C.B. Ass'y Control circuit fuse (on the P.C.B."FIL-CH4872R") Compressor Model...number Nominal output Compressor oil Coil resistance (Ambient temperature 25 ° C) Safety control Microprocessor safety devices Overload protector (Operating temperature) Crank case heater Refrigerant amount at shipment High pressure switch...

Page 49 1-2 Major Component Specifications (B) Outdoor Unit MODEL No. Source Controller P.C.B. Ass'y Control circuit fuse (on the P.C.B."FIL-CH4872R") Compressor Model...number Nominal output Compressor oil Coil resistance (Ambient temperature 25 ° C) Safety control Microprocessor safety devices Overload protector (Operating temperature) Crank case heater Refrigerant amount at shipment High pressure switch...

Page 50 ° F (° C) Open ° F (° C) Close VAC, µF Aluminium plate fin / Copper tube I-46 1. Specifications C4272R 280 V, 25 A 2,700 1,900 R – S :0.169 230 (110) 203 (95) – –...

Page 51: Other Component Specifications

1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance Ω (Ambient temprature 77 °F) °F Thermistor cut off temperature Thermistor (Coil sensor) : TH2, 3 Coil resistance kΩ Thermistor (Room sensor) : TH1 Coil resistance kΩ...

Page 52 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance (Ambient temprature 77 °F) Thermistor cut off temperature Thermistor (Coil sensor) : TH2, 3 Coil resistance Thermistor (Room sensor) : TH1 Coil resistance Drain pump Rated Float switch...

Page 53 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance Ω (Ambient temprature 77 °F) °F Thermistor cut off temperature Thermistor (Coil sensor) : TH2, 3 Coil resistance kΩ Thermistor (Room sensor) : TH1 Coil resistance kΩ...

Page 54 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance (Ambient temprature 77 °F) Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance Thermistor (Room or coil sensor) Coil resistance Synchronized Motor ATR – IIK244B AC 220 V, 60 Hz BRN - BRN : 14 V / 0.55 A, RED - RED : 14 V / 0.3 A WHT - WHT...

Page 55 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance Ω (Ambient temprature 77 °F) °F Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance kΩ Thermistor (Room or coil sensor) Coil resistance kΩ...

Page 56 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer

Rated Primary Secondary Capacity Coil resistance (Ambient temprature 77 °F) Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance Thermistor (Room or coil sensor) Coil resistance Synchronized Motor ATR – IIK244B AC 220 V, 60 Hz BRN - BRN : 14 V / 0.55 A, RED - RED : 14 V / 0.3 A WHT - WHT...

Page 57 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance Ω (Ambient temprature 77 °F) °F Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance kΩ Thermistor (Room or coil sensor) Coil resistance kΩ...

Page 58 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance (Ambient temprature 77 °F) Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance Thermistor (Room or coil sensor) Coil resistance Synchronized Motor ATR – IIK244B AC 220 V, 60 Hz BRN - BRN : 14 V / 0.55 A, RED - RED : 14 V / 0.55 A WHT - WHT...

Page 59 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance Ω (Ambient temprature 77 °F) °F Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance kΩ Thermistor (Room or coil sensor) Coil resistance kΩ...

Page 60 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance (Ambient temprature 77 °F) Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance Thermistor (Room or coil sensor) Coil resistance ATR – IIK244B AC 220 V, 60 Hz BRN - BRN : 14 V / 0.55 A, RED - RED : 14 V / 0.3 A WHT - WHT...

Page 61 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance Ω (Ambient temprature 77 °F) °F Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance kΩ Thermistor (Room or coil sensor) Coil resistance kΩ...

Page 62 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance (Ambient temprature 77 °F) Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance Thermistor (Room or coil sensor) Coil resistance Switch Assy's Synchronized Motor ATR –...

Page 63 1-3 Other Component Specifications (A) Indoor Unit MODEL No. Power Transformer Rated Primary Secondary Capacity Coil resistance Ω (Ambient temprature 77 °F) °F Thermistor cut off temperature Thermistor (Coil sensor) Coil resistance kΩ Thermistor (Room or coil sensor) Coil resistance kΩ...

Page 64 1-3 Other Component Specifications (B) Outdoor Unit MODEL No. Thermistor (Coil sensor) : TH2 to 5 Coil resistance Thermistor (Comp. discharge gas sensor) : TH6 Coil resistance Solenoid coil or 4 way valve 4 way valve Solenoid coil Electric expansion valve (MOV) Valve Coil CH2672R, C2672R...

Page 65 1-3 Other Component Specifications (B) Outdoor Unit MODEL No. Thermistor (Coil sensor) : TH2 to 5 Coil resistance kΩ Thermistor (Comp. discharge gas sensor) : TH6 Coil resistance kΩ Solenoid coil or 4 way valve 4 way valve Solenoid coil Electric expansion valve (MOV) Valve Coil...

Page 66 Solenoid coil or 4 way valve 4 way valve Solenoid coil Electric expansion valve (MOV) Valve Coil CH4272R, C4272R 14 °F : 23.7 kΩ 23 °F : 18.8 32 °F : 15.0 41 °F : 12.1 140 °F : 13.8 kΩ...

Page 67: Dimensional Data

1-4 Dimensional data Indoor unit : 4-Way Air Discharge Semi-concealed Type 26 Type 4-7/8 4-7/8 32-9/32 (Ceiling opening) 29-13/16 (Suspention bolt pitch) Dimension : inch Air intake grille Air outlet Refrigerant liquid line (3/8") Flare connection Refrigerant gas line (5/8") Flare connection Drain connection Power supply entry (conduit size : 1/2") For discharge duct...

Page 68 1-4 Dimensional data Indoor unit : 4-Way Air Discharge Semi-concealed Type 36, 42Type 4-7/8 4-7/8 32-9/32 (Ceiling opening) 29-13/16 (Suspention bolt pitch) Dimension : inch

Air intake grille Air outlet Refrigerant liquid line (3/8") Flare connection Refrigerant gas line (5/8") Flare connection Drain connection Power supply entry (conduit size : 1/2") For discharge duct...

Page 69 1-4 Dimensional data Indoor unit : Ceiling Mounted Type 26 Type 6-3/32 3-3/8 11-1/32 Air outlet or more 9-7/8 (Service space) Air intake 3-1/2 3-15/16 12-7/32 11-1/32 5-3/4 4-9/16 3-9/32 Holes in the rear side (View from front) 5-3/16 2-25/32 48-7/16 (Suspension bolt hole pitch) 1-3/8 50-13/32...

Page 70 1-4 Dimensional data Indoor unit : Ceiling Mounted Type 36, 42 Type Air outlet or more 9-7/8 (Service space) Air intake 6-3/32 7-31/32 12-7/32 11-1/32 3-3/8 11-1/32 4-3/4 Holes in the rear side (View from front) 5-3/16 59-1/4 (Suspension bolt hole pitch) 61-7/32 Front 3-1/2...

Page 71 1-4 Dimensional data Indoor unit : Concealed Duct Type 26 Type 13/32 31/32 10-1/4 15/16 (Air outlet duct flange) (Suspension bolt pitch) 7-9/32 7-15/32 31/32 6-5/16 1-3/16 2-3/4 24-13/16 3-11/32 4-17/32 22-27/32 31/32 Dimension : inch Refrigerant liquid line (3/8") Flare connection Refrigerant gas line (5/8") Flare connection Upper drain port (O.D.

Page 72 1-4 Dimensional data Indoor unit : Concealed Duct Type 36 Type 13/32 31/32 10-1/4 15/16 (Air outlet duct flange) 7-15/32 31/32 6-5/16 1-3/16 2-3/4 24-13/16 3-11/32 4-17/32 22-27/32 31/32 Dimension : inch (Suspension bolt pitch) Refrigerant liquid line (3/8") Flare connection Refrigerant gas line (5/8") Flare connection Upper drain port (O.D.

Page 73 1-4 Dimensional data Indoor unit : Concealed Duct Type Flange for the air intake duct (Field supply) : For Concealed Duct Type Thickness more than T1/16 inch 31/32 13/32 26 type 39-9/32 37-7/8 36 type 58-3/16 56-25/32 ø 1/8 Number of holes 8-9/32 12-1/32 10-1/4 (O.D.)

Page 74 1-4 Dimensional data Indoor unit : Wall Mounted Type KHH2672R 4-5/32 Indoor unit : Wall Mounted Type KH2672R 49-7/32 Refrigerant liquid line (3/8") Flare connection Refrigerant gas line (5/8") Flare connection Drain hose OD 1-1/4 Dimension : inch Drain and wiring port (3-5/32) Refrigerant liquid line (3/8") Flare connection Refrigerant gas line (5/8") Flare connection Drain hose OD 45/64...

Page 75 1-4 Dimensional data Indoor unit : Wall Mounted Type 30, 36 Type 2-9/16 59-1/16 Refrigerant liquid line (3/8") Flare connection Refrigerant gas line (5/8") Flare connection Drain hose OD 1-1/4 Dimension : inch I-71 1. Specifications 9-7/16 2-3/4 1912_X_S SM831148...

Page 76 1-4 Dimensional Data (B) Outdoor Unit: CH2672R, C2672R CH3072R, C3072R CH3672R, C3672R I-72 1. Specifications SM831148...

Page 77 1. Specifications 1-4 Dimensional Data (B) Outdoor Unit: CH4272R, C4272R SM831148 I-73...

Page 78: Refrigerant Flow Diagram

1-5 Refrigerant Flow Diagram Outdoor Unit: CH2672R, C2672R CH3072R, C3072R CH3672R, C3672R Indoor Unit: 26, 30, 36 Type I-74 1. Specifications SM831148...

Page 79: Operating Range

1-5 Refrigerant Flow Diagram Outdoor Unit: CH4272R, C4272R 1-6 Operating Range Temperature Maximum Cooling Minimum Maximum Heating Minimum Indoor Unit: 42 Type Indoor Air Intake Outdoor Air Intake 95 °F DB / 71 °F WB 109 °F DB 67 °F DB / 57 °F WB 0 °F DB...

Page 80: Heating Capacity

1-7 Heating Capacity CH2672R, C2672R CH3072R, C3072R CH3672R, C3672R CH4272R, C4272R I-76 1. Specifications SM831148...

Page 81: Noise Criterion Curves

1-8 Noise Criterion Curves 4-Way Air Discharge Semi-concealed Type MODEL : XH2672R SOUND LEVEL : HIGH 38 dB(A), NC 31 31 dB(A), NC 23 CONDITION : Center, Under the unit 4.9 ft.

SOURCE : 208 - 230 V, 1 Phase, 60 Hz APPROXIMATE THRESHOLD OF HEARING FOR...

Page 82: Ceiling Mounted Type

1-8 Noise Criterion Curves Ceiling Mounted Type MODEL : TH2672R, THH2672R SOUND LEVEL : HIGH 40 dB(A), NC 34 36 dB(A), NC 26 CONDITION : Distance 3.3 ft., Under the unit 3.3 ft. SOURCE : 208 - 230 V, 1 Phase, 60 Hz APPROXIMATE THRESHOLD OF HEARING FOR...

Page 83: Concealed Duct Type

1-8 Noise Criterion Curves Concealed Duct Type MODEL : UH2672R SOUND LEVEL : HIGH 34 dB(A), NC 22 / LOW 27 dB(A), NC 18 CONDITION : Under the unit 4.9 ft. SOURCE : 208 - 230 V, 1 Phase, 60 Hz APPROXIMATE THRESHOLD OF HEARING FOR...

Page 84: Wall Mounted Type

1-8 Noise Criterion Curves Wall Mounted Type CONDITION : Distance 3.3 ft., Under the unit 3.3 ft. SOURCE : 208 - 230 V, 1 Phase, 60 Hz MODEL : KHH2672R SOUND LEVEL : HIGH 45 dB(A), NC 38 40 dB(A), NC 33 CONDITION : Distance 3.3 ft., Under the unit 3.3 ft.

Page 85: Outdoor Units

1-8 Noise Criterion Curves Outdoor Units REMARKS: 1. Value obtained in the actual place where the unit is installed may be slightly higher than the values shown in this graph because of the conditions of operation, the structure of the building, the background noise and other factors.

Page 86: Increasing The Fan Speed

1-9 Increasing the Fan Speed If external static pressure is too great (due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet. This problem may be solved by increasing the fan speed using the following procedure: (1) Remove 4 screws on the electrical component box and remove the cover plate.

Page 87: Air Throw Distance Chart

1-10 Air throw distance chart 4-Way Air Discharge Semi-concealed Type Model: 26 Type Model: 36, 42 Type HORIZONTAL DISTANCE (ft.) AXIS AIR VELOCITY 2111_X_I HORIZONTAL DISTANCE (ft.) AXIS AIR VELOCITY 2112_X_I : LOUVER ANGLE 20˚ in Cooling mode : LOUVER ANGLE 60˚ in Heating mode Condition Fan Speed : Hi Room air temp.

Page 88

1-10 Air throw distance chart Ceiling Mounted Type Model: 26 Type Model: 36 Type Model: 42 Type FAN SPEED ROOM AIR TEMP. LOUVER ANGLE HORIZONTAL DISTANCE (ft.) AXIS AIR VELOCITY HORIZONTAL DISTANCE (ft.) AXIS AIR VELOCITY HORIZONTAL DISTANCE (ft.) AXIS AIR VELOCITY COOLING HEATING HIGH...

Page 89

1-10 Air throw distance chart Wall Mounted Type Model: KHH2672R ˚ ˚ 67.5 Model: KH2672R Model: KH3072R KH3672R ˚ ˚ 67.5 ˚ FAN SPEED ROOM AIR TEMP. FLAP ANGLE Horizontal distance (ft.) ˚ ˚ 22.5 ˚ Horizontal distance (ft.) Horizontal distance (ft.) ˚...

Page 90: Installation Instructions

1-11 Installation Instructions Tubing Length Single type Refrigerant tubing between the indoor and outdoor units should be kept as short as possible. The length of the refrigerant tubes between the indoor and outdoor units are limited by the elevation difference between the 2 units. During tubing work, try to make both the tubing length (L) and the difference in elevation (H1) as short as possible.

Page 91: Indoor Units

Table 1-2 Tubing Data for Models Tubing Data Tubing size Liquid tube outer diameter Gas tube Limit of tubing length Outdoor unit is placed Limit of elevation higher difference between Outdoor unit is placed the 2 units lower Max. allowable tubing length at shipment (ft.) Required additional refrigerant * Refrigerant charged at shipment No additional charge of compressor oil is necessary.

Page 92: Selecting The Installation Site

SELECTING THE INSTALLATION SITE Indoor Unit AVOID: areas where leakage of flammable gas may be expected. places where large amounts of oil mist exist. direct sunlight. locations near inverter lamps which may affect performance of the unit. locations near heat sources which

may affect performance of the unit.

Page 93 Outdoor Unit AVOID: heat sources, exhaust fans, etc. (Fig. 1-1) damp, humid or uneven locations choose a place as cool as possible. choose a place that is well ventilated and outside air temperature does not exceed maximum 115°F constantly. allow enough room around the unit for air intake/ exhaust and possible maintenance.

Page 94 Air-Discharge Chamber for Top Discharge Be sure to install an air discharge chamber in the field when: it is difficult to keep a space of min. 20" between the air discharge outlet and an obstacle. the air discharge outlet is facing a sidewalk and discharged hot air may bother passers-by.

Page 95 Dimensions of Wind Ducting Reference diagram for air-discharge chamber (field supply) For outdoor unit 2672R / 3072R / 3672R Air discharge chamber Air discharge chamber (base) Note: In snowy regions, if there is concern that snow may enter the air discharge chamber, For outdoor unit 4272R Unit front, air discharge chamber Unit left side, air discharge chamber...

Page 96 Dimensions of Outdoor Unit with air-discharge chamber (field supply) For outdoor unit 2672R / 3072R / 3672R 6-11/16 2-17/32 21-13/16 Wind direction For outdoor unit 4272R 6-11/16 Wind direction 2-11/36 21-13/32 Wind direction Wind direction 4-5/16 25-31/32 Wind direction 4-5/16 25-31/32 11-13/16 Wind direction...

Page 97 Reference diagram for air-discharge chamber (field supply) For outdoor unit C(H)2672R / 3072R / 3672R / 4272R Required space around outdoor unit If the air discharge chamber is used, the space shown below must be secured around the outdoor unit. If the unit is used without the required space, a protective device may activate, preventing the unit from operating.

Page 98 Dimensions of Snow Ducting Reference diagram for snow-proof vents (field supply) For outdoor unit 2672R / 3072R / 3672R Unit top, snow-proof vent Unit left side Unit right side Unit reverse side Unit reverse side Unit sides, reinforcement brackets for snow-proof vent Fastened by screws at 13 locations 25-13/32 17-15/32...

Page 99 Dimensions of outdoor unit with snow-proof vents (field supply) 2672R / 3072R / 3672R unit with STK-BDRE80A 30-3/32 Wind direction Wind direction Wind direction Wind direction 4272R unit with STK-BDR140U 30-3/32 7-1/16 Wind direction Wind direction Wind direction Wind direction 24-7/8 7-1/16 Wind direction...

Page 100 Reference diagram for snow-proof vents - 1 Space requirements for setting - (1) C(H)2672R / 3072R / 3672R / 4272R with STK-BDRE80A & STK-BDR140U [Obstacle to the rear of unit] Top is open: (1) Single-unit installation (3) Multiple-unit installation (2 or more units) Min.

Page 101 Reference diagram for snow-proof vents - 2 Space requirements for setting - (2) C(H)2672R / 3072R / 3672R / 4272R with STK-BDRE80A & STK-BDR140U [Obstacles to the front and rear of unit] The top and both sides must remain open. Either the obstacle to the front or the obstacle to the rear must be no taller than the height of the outdoor unit.

Page 102: Electrical Wiring

Max. length 81 ft. 7) To prevent possible hazards from insulation failure, the unit must be grounded. 8) To prevent malfunction of the air conditioner caused by electrical noise, care must be taken when wiring as follows: The remote control wiring and the inter-unit control wiring should be wired apart from the inter- unit power wiring.

Page 103 Indoor Unit (B) Power Supply Trade Size Type AWG #14 of Conduit X, K, T, U Max. length 67 ft. Control Wiring (C) Inter-Unit Control Wiring AWG #18 Use high voltage wire (300 V) Max. 3,300 ft. Wiring System Diagrams Basic wiring diagram for standard control Remote controller...

Page 104 Loose wiring may cause the terminal to overheat or result in unit malfunction. A fire WARNING hazard may also exist. Therefore, ensure that all wiring is tightly connected. When connecting each power wire to the corresponding terminal, follow the instructions on “How to connect wiring to the terminal”...

Page 105: Outdoor Units

CAUTION (1) When linking outdoor units in a network (S-net link system), disconnect the terminal extended from the short plug (CN003, 2P Black, location: right bottom on the outdoor main control PCB) from all outdoor units except any one of the outdoor units. (When shipping: In shorted condition.) Otherwise the communication of S-net link system is not performed.

Page 106: Using Wireless Remote Controller With Wall-Mounted Indoor Unit

1-13 Using Wireless Remote Controller with Wall-mounted Indoor Unit When the wireless remote controller is to be used, slide the switch on the indoor unit control PCB. If this setting is not made, an alarm will occur.(The operation lamp on the display blinks.) This setting is not necessary if both the wired remote controller and wireless remote controller are used.

Page 107: Section 2: Processes And Functions

2. PROCESSES AND FUNCTIONS 2-1 Room Temperature Control ... II-2 2-2 Cold Draft Prevention (Heating Cycle) ... II-4 2-3 Automatic Fan Speed (Indoor Unit) ... II-5 2-4 Control Functions ... II-6 2-5 Outdoor Unit Control PCB ... II-9 2-6 Outdoor Unit Control PCB (CR-CH4272R) ... II-10 2.

Page 108: Room Temperature Control

2-1 Room Temperature Control The unit adjusts room temperature by turning the outdoor unit’s compressor ON and OFF. This process is controlled by the thermostat located in the remote control unit. The figures on this and the next pages show how each part of the system performs when the room temperature changes and the thermostat activates the compressor to start (thermo ON) or stop (thermo OFF).

Page 109: Processes And Functions

(B) Heating THERMO. ON REMOTE CONTROL SENSOR (Only for wireless remote controller) SET. +2 °F SETTING TEMP. SET. –2 °F BODY SENSOR THERMO. ON +2°F SET TEMP.+7 °F SHIFT –2°F SET TEMP. 5 MINUTES COMPRESSOR OUTDOOR FAN (H OR M) 3 SECONDS INDOOR FAN STANDBY...

Page 110: Cold Draft Prevention (Heating Cycle)

2-2 Cold Draft Prevention (Heating Cycle) The cold draft prevention function controls indoor fan speed so a strong draft of cold air will not blow out before the indoor heat exchange coils have warmed up. ❑ STANDBY shows on the remote controller when the indoor fan speed is LL (very low) or OFF.

Page 111: Automatic Fan Speed (Indoor Unit)

2-3 Automatic Fan Speed (Indoor Unit) By pressing the FAN SPEED button on the remote controller, the fan speed can be set at one of four steps: AUTO., HI., MED., or LO. When set at AUTO. the indoor unit fan speed will be automatically adjusted to the room temperature as the two charts shown below.

Page 112: Control Functions

2-4 Control Functions Electronic control valve control Opening of the electronic control valve is controlled so that the appropriate operating conditions are maintained, based on the signal from each sensor (discharge temperature [TD], intake temperature [TS], outdoor heat exchanger temperature [C1], and indoor heat exchanger temperature [E1, E2]).

Page 113

Overcurrent protection control (1) If the overcurrent protection circuit detects abnormal current, the compressor is stopped. (Error count = 1.) The compressor then restarts after 3 minutes. (2) If compressor start/stop is repeated 4 times (error count = 4), alarm "P26", "P29" or "H01" (count = 2 in this case only) occurs.

Page 114

Defrost control Defrost control Defrost sequence Heating operation (25-minute mask) Frost detection Defrost start (reverse cycle defrost) Defrost in progress Defrost cancel Start-up operation (1) Frost detection 1. Outdoor heat exchanger temperature (C1) method (15-minute mask after operation start) 2. Outdoor air temperature is 7°F or above and outdoor heat exchanger temperature (C1) of 0°F or below is detected continuously for 20 seconds.

Page 115: Outdoor Unit Control Pcb

2-5 Outdoor Unit Control PCB (1) Layout Diagram (CR-CH4872R) Heat exchanger temperature (C1) sensor Heat exchanger temperature (C2) sensor EEPROM IC Power LED (D115) 2. Processes and functions Suction temperature (TS) sensor Outdoor air temperature (TO) sensor Compressor discharge temperature (TD) sensor Fan motor plug (CN004) II-9 Refrigerant recovery switch...

Page 116: Outdoor Unit Control Pcb (Cr-Ch4272R)

2-6 Outdoor Unit Control PCB (CR-CH4272R) (1) Explanation of Functions S001 Push-button switch (black): Automatic address setting switch • If the system address switch (S002: set to 0 at time of shipment) setting is other than "0" (central control), press this switch once to automatically set the addresses at all indoor units which are in the same system, and are connected to that outdoor unit.

Page 117 Terminal plug 3P plug (black): Terminal plug for the communications line (CN015) • At the time of shipment from the factory, the short-circuiting socket (2P, black) is installed between pins 1 and 2 on the terminal plug (terminal = yes). •...

Page 119: Section 3: Electrical Data

3. ELECTRICAL DATA 3-1 Indoor Units ... III-2 3-2 Outdoor Units ... III-16 III-1 3. Electrical data SM831148...

Page 120: Indoor Units

3. Electrical data 3-1 Indoor Units 4-Way Air Discharge Semi-concealed Type : XH2672R/XH3672R/XH4272R SM831148 III-2...

Page 121 3. Electrical data 4-Way Air Discharge Semi-concealed Type : XH2672R/XH3672R/XH4272R • Schematic Diagram SM831148 III-3...

Page 122 3. Electrical data Ceiling Mounted Type : TH2672R/TH3672R/TH4272R SM831148 III-4...

Page 123 3. Electrical data Ceiling Mounted Type : TH2672R/TH3672R/TH4272R • Schematic Diagram SM831148 III-5...

Page 124 3. Electrical data Ceiling Mounted Type : THH2672R/THH3672R SM831148 III-6...

Page 125 3. Electrical data Ceiling Mounted Type : THH2672R/THH3672R • Schematic Diagram SM831148 III-7...

Page 126 3. Electrical data Concealed Duct Type : UH2672R/UH3672R SM831148 III-8...

Page 127 3. Electrical data Concealed Duct Type : UH2672R/UH3672R • Schematic Diagram SM831148 III-9...

Page 128 3. Electrical data Wall Mounted Type : KH2672R SM831148 III-10...

Page 129 3. Electrical data Wall Mounted Type : KH2672R • Schematic Diagram SM831148 III-11...

Page 130 3. Electrical data Wall Mounted Type : KH3072R/KH3672R SM831148 III-12...

Page 131 3. Electrical data Wall Mounted Type : KH3072R/KH3672R • Schematic Diagram SM831148 III-13...

Page 132 3. Electrical data Wall Mounted Type : KHH2672R SM831148 III-14...

Page 133 3. Electrical data Wall Mounted Type : KHH2672R • Schematic Diagram SM831148 III-15...

Page 134 3. Electrical data 3-2 Outdoor Units CH2672R SM831148 III-16...

Page 135 3. Electrical data 3-2 Outdoor Units CH2672R • Schematic Diagram SM831148 III-17...

Page 136 3. Electrical data 3-2 Outdoor Units C2672R SM831148 III-18...

Page 137 3. Electrical data 3-2 Outdoor Units C2672R • Schematic Diagram SM831148 III-19...

Page 138 3. Electrical data 3-2 Outdoor Units CH3072R/CH3672R SM831148 III-20...

Page 139 3. Electrical data 3-2 Outdoor Units CH3072R/CH3672R • Schematic Diagram SM831148 III-21...

Page 140 3. Electrical data 3-2 Outdoor Units C3072R/C3672R SM831148 III-22...

Page 141 3. Electrical data 3-2 Outdoor Units C3072R/C3672R • Schematic Diagram SM831148 III-23...

Page 142 3. Electrical data 3-2 Outdoor Units CH4272R SM831148 III-24...

Page 143 3. Electrical data 3-2 Outdoor Units CH4272R • Schematic Diagram SM831148 III-25...

Page 144 3. Electrical data 3-2 Outdoor Units C4272R SM831148 III-26...

Page 145 3. Electrical data 3-2 Outdoor Units C4272R • Schematic Diagram SM831148 III-27...

Page 147: Section 4: Service Procedures

4. SERVICE PROCEDURES 4-1. Meaning of Alarm Messages... IV-2 4-2. Symptoms and Parts to Inspect ... IV-5 4-3. Details of Alarm Messages ...IV-8 4-4. Table of Thermistor Characteristics ...IV-14 4. Service procedures IV-1 SM831148...

Page 148: Meaning Of Alarm Messages

4-1. Meaning of Alarm Messages (1) Contents of remote controller switch alarm display Serial commu- Remote controller is detecting error signal from nication errors Mis-setting indoor unit Indoor unit is detecting error signal from remote controller (and system controller) Improper setting of indoor unit or remote controller Indoor unit is detecting error signaled from signal option...

Page 149: Service Procedures

Possible cause of malfunction Ceiling panel connection failure Indoor protection Activation of Fan protective thermostat protective Float switch device Discharge temperature trouble High pressure switch or compressor motor thermal protector is activated. Outdoor protection Open phase detected, AC power trouble No gas 4-way valve locked High cooling load...

Page 150 (2) LED Indicator Messages on Outdoor Control PCB Power ON sequence 1. No communication from indoor units in system 2. Communication received from 1 or more indoor units in system 3. Regular communication OK (Capacity and unit quantity match) Normal operation EEPROM error (F31) Pre-trip (insufficient gas) Pre-trip (P20)

Page 151: Symptoms And Parts To Inspect

4-2. Symptoms and Parts to Inspect Remote Alarm controller contents alarm display Abnormal discharge temperature • Discharge temp. detected at or above the specified value. High pressure switch is activated. Compressor motor thermal protector is activated. Missing phase detected. (CT disconnected or AC power trouble) Insufficient gas level...

Page 152 Remote Alarm controller contents alarm display Current detection circuit trouble •

AC current value is high even when compressor is stopped. Compressor motor output trouble, Inverter compressor trouble, MDC trouble Compressor does not run. (Overcurrent protection circuit activates after a certain period of time following compressor start.) Compressor...

Page 153 Remote Alarm controller contents alarm display EEPROM trouble Reading/writing failure Mismatch of indoor Indoor unit judges that type and outdoor unit types does not match outdoor unit (Espacio, Multi) type. Settings failure Duplicated outdoor unit address (system address) Settings failure Group control wiring is connected to an independent-control indoor...

Page 154: Details Of Alarm Messages

4-3. Details of Alarm Messages [Alarm “P29”] (MDC trouble) abnormal refrigerant Is there overload? Replace outdoor unit control PCB. Input power detection circuit trouble Compressor does not run. Breakdown Motor current detection circuit trouble Is power OK? Correct power line. current Check and correct detection...

Page 155 (2) [Alarm “P26”] IGBT short-circuit protection on inverter control (IPDU) PCB HIC PCB trouble) Is power OK? circuit wiring, connector connections, and reactor connections Has filter PCB RY001 or RY002 relay activated? Disconnect U.V.W. output terminal on HIC PCB and start operation.

Page 156 HIC-CH4872R (42 Type) (3) [Alarm “E31”] (communications trouble within unit) Resistance Between terminals HIC + HIC – HIC + HIC + HIC + HIC – HIC – HIC – IGBT short-circuit protection Is “E31” displayed even after the power voltage is reset? Replace outdoor unit control PCB.

Page 157 (4) [Alarm "P22"] Outdoor unit fan motor drive circuit trouble Are connectors CN003 and CN004 connected correctly to the outdoor unit control PCB? Disconnect connectors CN003 and CN004 from outdoor unit control PCB, and rotate fan by hand. Does it rotate easily? Outdoor unit fan motor coil resistance is OK if it is as shown below.

Page 158 (5) [Alarms “F04,” “F06,” “F07,” “F08,” “F12”] Are connectors CN020, 021, 022, 023, and 024 (TD, TO, C1, C2, and TS sensors) connected correctly to the outdoor unit control PCB? Are the TD, TO, C1, C2, and TS sensor resistance* characteristics OK? Check the outdoor unit control PCB.

Page 159 Sensor Temperature Display Function (Displayed both when operating and stopped) The below check procedure can be used to display all remote controller, indoor unit, and outdoor unit sensor temperatures. <Check procedure> (1) Press and hold the button and button simultaneously for 4 seconds or longer.

Page 160: Table Of Thermistor Characteristics

Check Pin Short-circuit the cooling check pin (or heating check pin) on the outdoor unit control PCB to perform the control described below. 1. Thermistor checks The checks listed below are performed for 1 second each, in order from the top down. The results are displayed by LED 1 and 2.

Page 161: Section 5: Outdoor Unit Maintenance Remote Control

5. OUTDOOR UNIT MAINTENANCE REMOTE CONTROL 5-1. Overview ... V-2 5-2. Functions ... V-2 5-3. Normal Display Operations and Functions ... V-3 5-4. Monitoring Operations: Display of Indoor Unit and Outdoor Unit Sensor Temperatures ... V-6 5-5. Monitoring the Outdoor Unit Alarm History: Display of Outdoor Unit Alarm History ...

Page 162: Overview

5-1. Overview What is the outdoor unit maintenance remote controller? Beginning with the DC-INV series of outdoor units, nonvolatile memory (EEPROM) is used in the outdoor unit PCB. In this way, the setting switches that were located on earlier PCBs have been converted to EEPROM data. This remote controller is an outdoor unit maintenance tool that is used to make and change the EEPROM set- tings.

Page 163: Normal Display Operations And Functions

5-3. Normal Display Operations and Functions Normal display functions • Connect the special service checker wiring to the outdoor unit PCB. The connection is shown in the figure below. Special service checker wiring It is not necessary to disconnect the communications line in the

inter-unit control wiring if it has already been connected at this time.

Page 164: Outdoor Unit Maintenance Remote Control

Display (functions) • Use the temperature setting 00 (1) Blinking 8-alarm code display at pre-trip, LED (2) No. of indoor units connected in that refrigerant system Unit. Nos. of connected indoor units in that refrigerant system *2 Operating status of indoor units in that refrigerant system (blinks when alarms occur) *2 Unit Nos.

Page 165

*2: 7-segment, 4-digit display for remote controller timer display The connected unit Nos. are displayed as shown below, using the 7-segment 4-digit (colon. Display for unit Nos. 1 – 20 Not lit Not lit Display for unit Nos. 21 – 40 Not lit Not lit The meaning of the colon display changes in the same way, allowing unit Nos.

Page 166: Monitoring Operations: Display Of Indoor Unit And Outdoor Unit Sensor Temperatures

5-4. Monitoring Operations: Display of Indoor Unit and Outdoor Unit Sensor Temperatures <Operating procedure> (1) Press and hold the button and longer to switch to temperature monitor mode. During temperature monitoring, “Service Monitor” is lit. (The display and operations are the same as when monitor mode is started from the unit remote controller.) (2) Press the button and select the indoor unit to monitor.

Page 167: Monitoring The Outdoor Unit Alarm History: Display Of Outdoor Unit Alarm History

5-5. Monitoring the Outdoor Unit Alarm History: Display of Outdoor Unit Alarm History * Displays outdoor unit alarms only. Does not display indoor unit alarms. * Check the indoor unit alarm histories separately using the indoor unit remote controllers or other control device. <Operating procedure>...

Page 168

List of Item Codes Control system schedule Control system schedule Control system schedule Snowfall sensor operation Outdoor fan quiet mode Defrost fan speed selection Ignore capacity Control system schedule Control system schedule Control system schedule Control system schedule Forced operation of indoor unit drain pump Odor countermeasure when indoor cooling thermostat is OFF...

Page 169

Setting mode 2 <Operating procedure> (1) Press and hold the button, button, and seconds or longer. (2) Use the temperature setting item codes and setting data are shown in the table below. (3) Use the timer time buttons to change the setting data. To confirm the changed setting data, press the (At this time, “Setting”...

Page 170

List of Item Codes Refrigerant type Outdoor unit capacity* Control system schedule Control system schedule 3-phase or single-phase Power frequency Control system schedule Control system schedule Control system schedule Crank case heater control Control system schedule Control system schedule Control system schedule 5.

Page 171: Section 6: Test Run

6-1. Preparing for Test Run ... VI-2 6-2. Caution... VI-3 6-3. Test Run Procedure ... VI-3 6-4. Items to Check Before the Test Run ... VI-4 6-5. Test Run Using the Remote Controller ... VI-4 6-6. Precautions ... VI-4 6-7. Table of Self-Diagnostic Functions and Corrections (X, T, U, K Type) ... VI-5 6-8.

Page 172: Preparing For Test Run

6. TEST RUN 6-1. Preparing for Test Run Before attempting to start the air conditioner, check the following: (1) All loose matter is removed from the cabinet espe- cially steel filings, bits of wire, and clips. (2) The control wiring is correctly connected and all electrical connections are tight.

Page 173: Caution

X, T, U, K Type 6-2. Caution This unit may be used in a single-type refrigerant system where 1 outdoor unit is connected to 1 indoor unit. The indoor and outdoor unit control PCBs utilize a semiconductor memory element (EEPROM). The settings required for operation were made at the time of shipment.

Page 174: Items To Check Before The Test Run

6-4. Items to Check Before the Test Run (1) Turn the breaker ON at least 12 hours in advance in order to energize the crank case heater. (2) Fully open the closed valves on the liquid tube and gas tube sides. 6-5.

Page 175 6. Test run SM831148 VI-5...

Page 176: Examples Of Wiring Diagrams

6-8. Examples of Wiring Diagrams Basic wiring diagram 1 Single-type system Be careful to avoid miswiring when connecting the wires. (Miswiring will damage the units.) Power supply Single-phase 230 / 208 V System address rotary switch (Set to “0” at the time of shipment.) Outdoor unit Ground Indoor...

Page 177: Test Run

Basic wiring diagram 2 Group control (when a central control device is not used) Simultaneous-operation multi system A maximum of 8 indoor units can be connected to 1 remote controller. Set the system address (refrigerant tubing system address) before turning on the remote power switch. (Refer to “Setting the system addresses”...

Page 178 Setting the outdoor unit system addresses For basic wiring diagram 2 (Set the system addresses: 1, 2, 3...) Outdoor unit control PCB System address rotary switch (Set to “0” at time of shipment) System address rotary switch System address DIP switch System address No.

Page 179 Indicating (marking) the indoor and outdoor unit combination number Indicate (mark) the number after automatic address setting is completed. (1) So that the combination of each indoor unit can be easily checked when multiple units are installed, ensure that the indoor and outdoor unit numbers correspond to the system address number on the outdoor unit control PCB, and use a magic marker or similar means which cannot be easily erased to indicate the numbers in an easily visible location on the indoor units (near the indoor unit nameplates).

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This manual is also suitable for:

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