



INVERTER SPLIT TYPE AIR CONDITIONER (50Hz)

DUCT type

SERVICE MANUAL



Models

Indoor unit

ARH12LUAD

ARH14LUAD

Outdoor unit

AOH12LMAKL

AOH14LMAKL

CONTENTS

| | |
|-----------------------------------|----|
| SPECIFICATIONS | 1 |
| OUTLINE AND DIMENSIONS | 2 |
| REFRIGERANT SYSTEM DIAGRAM | 4 |
| CIRCUIT DIAGRAM | 5 |
| INDOOR PCB CIRCUIT DIAGRAM | 7 |
| OUTDOOR PCB CIRCUIT DIAGRAM | 8 |
| ERROR CONTENTS | 9 |
| DISASSEMBLY ILLUSTRATION | 11 |
| PARTS LIST | 16 |
| STANDARD ACCESSORIES | 18 |

SPECIFICATIONS

| TYPE | COOLING & HEATING | |
|------------------|-------------------|------------|
| INDOOR UNIT | ARH12LUAD | ARH14LUAD |
| OUTDOOR UNIT | AOH12LMAKL | AOH14LMAKL |
| COOLING CAPACITY | 3.50 kW | 4.30 kW |
| HEATING CAPACITY | 4.00 kW | 4.80 kW |

ELECTRICAL DATA

| | | | |
|------------------|---------|------------|------------|
| POWER SOURCE | | 230 V | |
| FREQUENCY | | 50 Hz | |
| RUNNING CURRENT | COOLING | 5.10 A | 6.00 A |
| | HEATING | 5.80 A | 6.50 A |
| INPUT WATTS | COOLING | 1.15 kW | 1.37 kW |
| | HEATING | 1.32 kW | 1.49 kW |
| E.E.R. | COOLING | 3.04 kW/kW | 3.14 kW/kW |
| | HEATING | 3.03 kW/kW | 3.21 kW/kW |
| MOISTURE REMOVAL | | 1.2 l/hr | 1.5 l/hr |

Note : The above list shows values at the external static pressure of 0Pa, setting the fan speed high notch.

COMPRESSOR

| | | | |
|---------------------|---|--|--|
| TYPE | Hermetic type, 4 poles, DC motor, Twin Rotary | | |
| DISCRIMINATION | TNB220FPCM | | |
| REFRIGERANT (R410A) | 1,250 g | | |

FAN MOTOR

| | | | | |
|----------------------|----------------|------------|-------------------------|-----------------------|
| FAN SPEED | DISCRIMINATION | | MFA-18NTT | MFA-18NTT |
| | INDOOR | HIGH-SPEED | 750 r.p.m. | 1,000 r.p.m. |
| | | MED-SPEED | 680 r.p.m. | 860 r.p.m. |
| | | LOW-SPEED | 610 r.p.m. | 720 r.p.m. |
| | DISCRIMINATION | | MFB-24JTAT | |
| | OUTDOOR | HIGH-SPEED | 780 r.p.m. | |
| LOW-SPEED | | 400 r.p.m. | | |
| AIR FLOW | | INDOOR | 580 m ³ /h | 780 m ³ /h |
| | | OUTDOOR | 2,800 m ³ /h | |
| DIMENSIONS H x W x D | | INDOOR | 217 x 953 x 595 mm | |
| | | OUTDOOR | 650 x 830 x 320 mm | |
| WEIGHT GROSS / NET | | INDOOR | 29 / 25 kg | |
| | | OUTDOOR | 58 / 54 kg | |

Note : The above list shows values at the external static pressure of 0Pa, setting the fan speed high notch.

NOISE LEVEL

| | | | |
|--------------|------------|-------|-------|
| INDOOR UNIT | HIGH-SPEED | 32 dB | 38 dB |
| | MED-SPEED | 29 dB | 34 dB |
| | LOW-SPEED | 27 dB | 30 dB |
| OUTDOOR UNIT | COOL | 50 dB | 50 dB |
| | HEAT | 52 dB | 52 dB |

Note : Static pressure : 0Pa / Duct length : Inlet 0.5m, Outlet 1m

REFRIGERANT

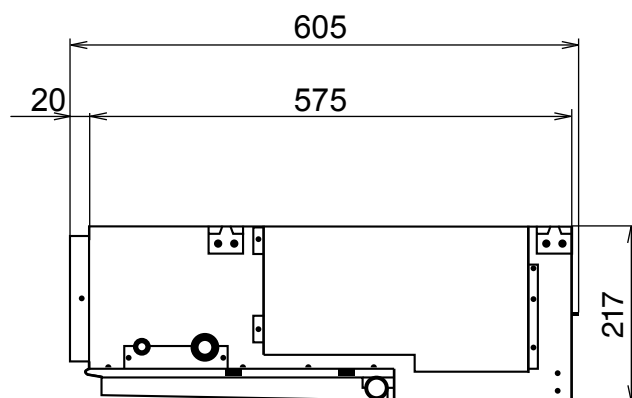
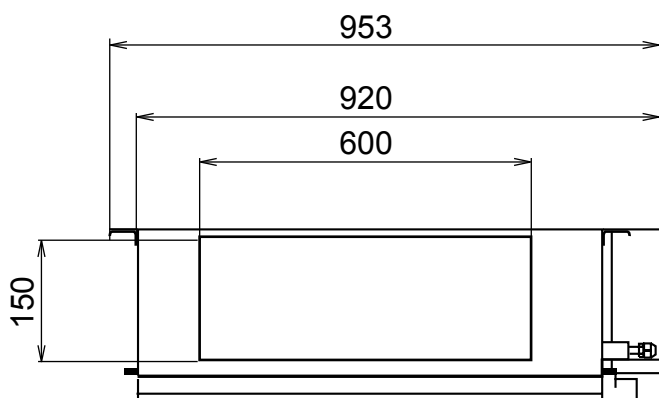
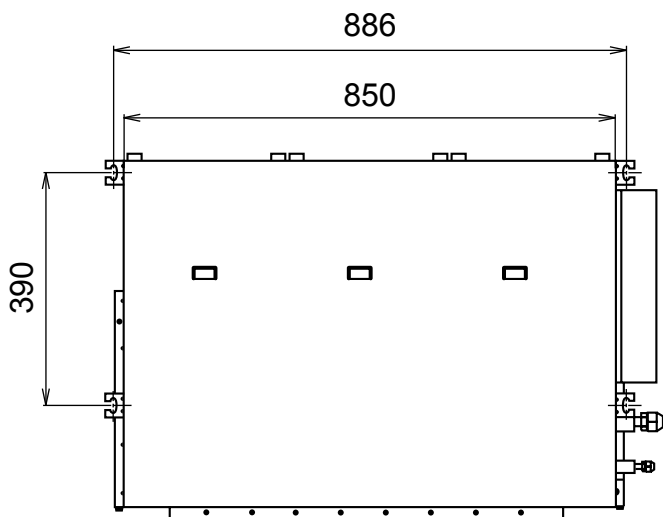
| | | | |
|------------------------|-------------|----------|---------|
| FULL CHARGE AMOUNT | PIPE LENGTH | 10 m | 1,250 g |
| | | 15 m | 1,350 g |
| | | 20 m | 1,450 g |
| | | 25 m | 1,550 g |
| ADDITIONAL REFRIGERANT | | 20 g / m | |
| MAXIMUM PIPE HEIGHT | | 15 m | |

When you dismantle indoor units which are installed, take care not to make parts fall down, especially motors.

OUTLINE AND DIMENSIONS

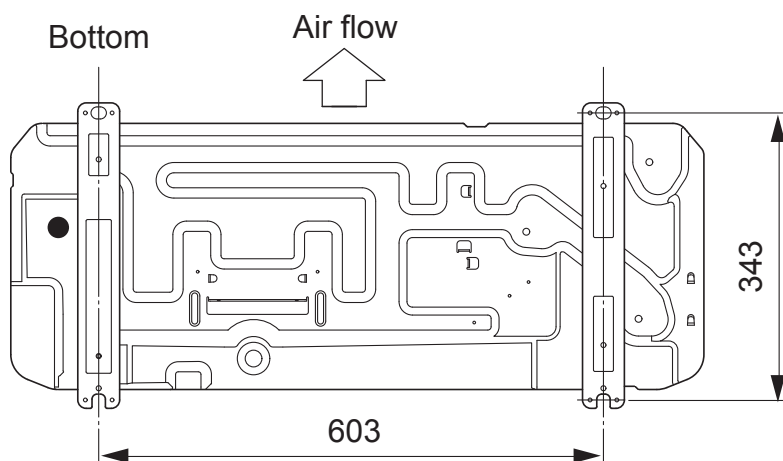
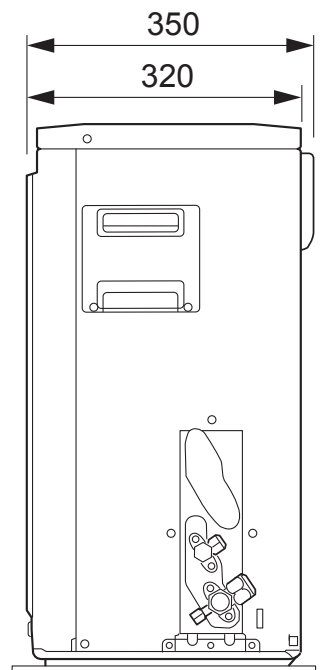
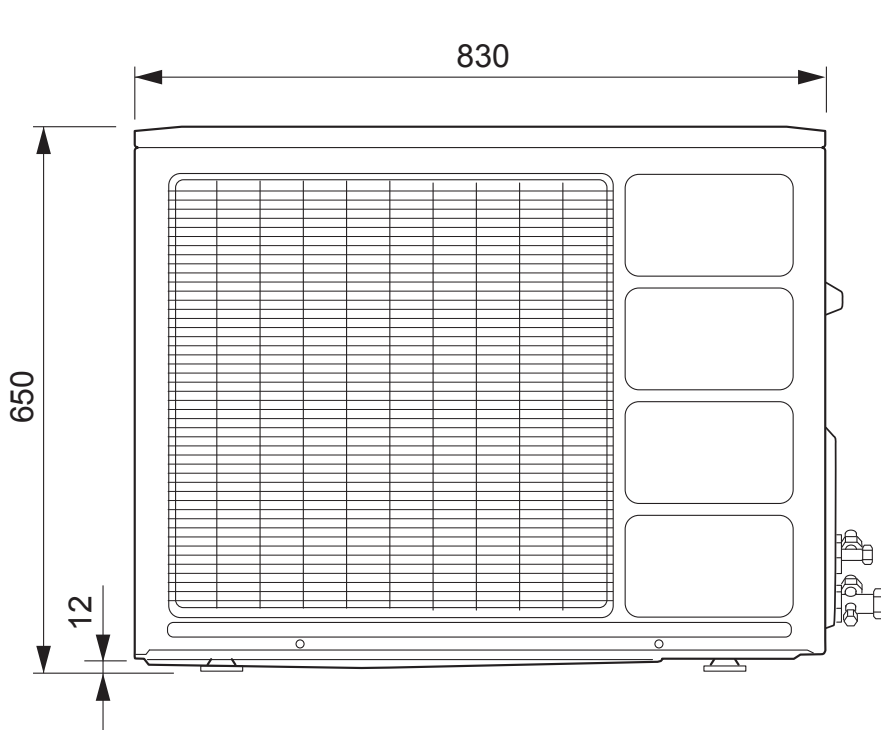
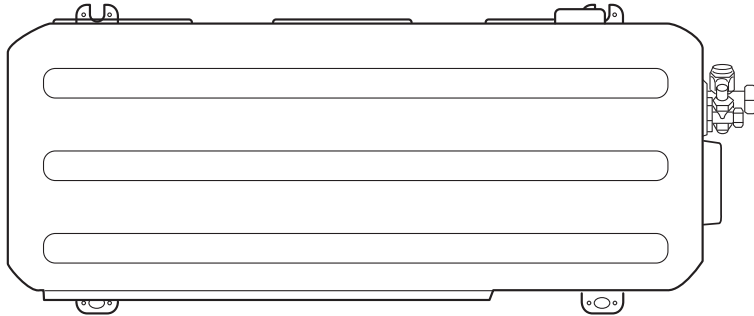
INDOOR UNIT
(unit : mm)

Models :
ARH12LUAD
ARH14LUAD

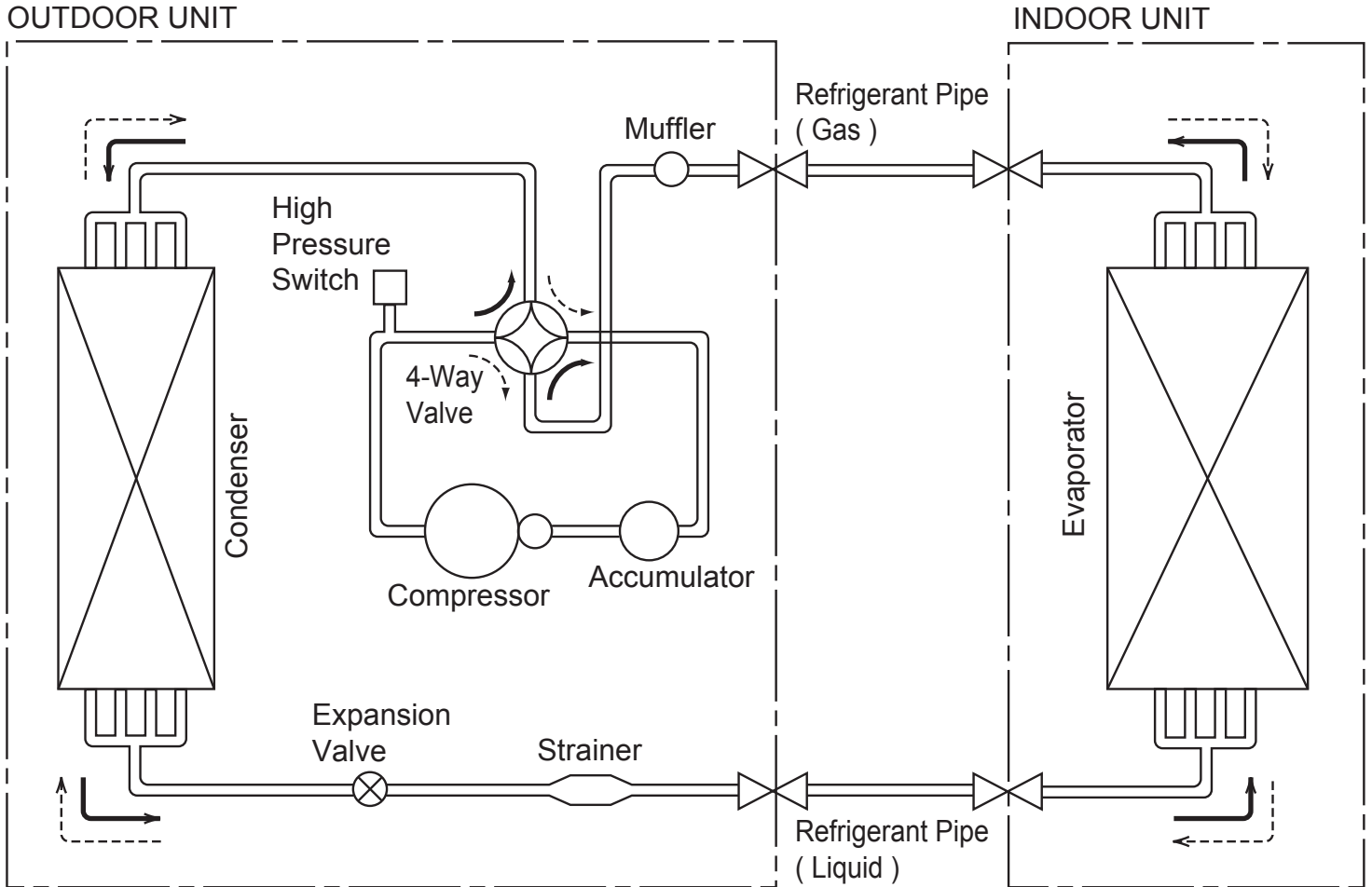


OUTDOOR UNIT
(unit : mm)

Models :
AOH12LMAKL
AOH14LMAKL



REFRIGERANT SYSTEM DIAGRAM



Refrigerant direction

—▶ Cooling

- - -▶ Heating

Refrigerant pipe diameter

ARH12LUAD

Gas pipe : 9.52 mm (3/8 inch)

Liquid pipe : 6.35 mm (1/4 inch)

ARH14LUAD

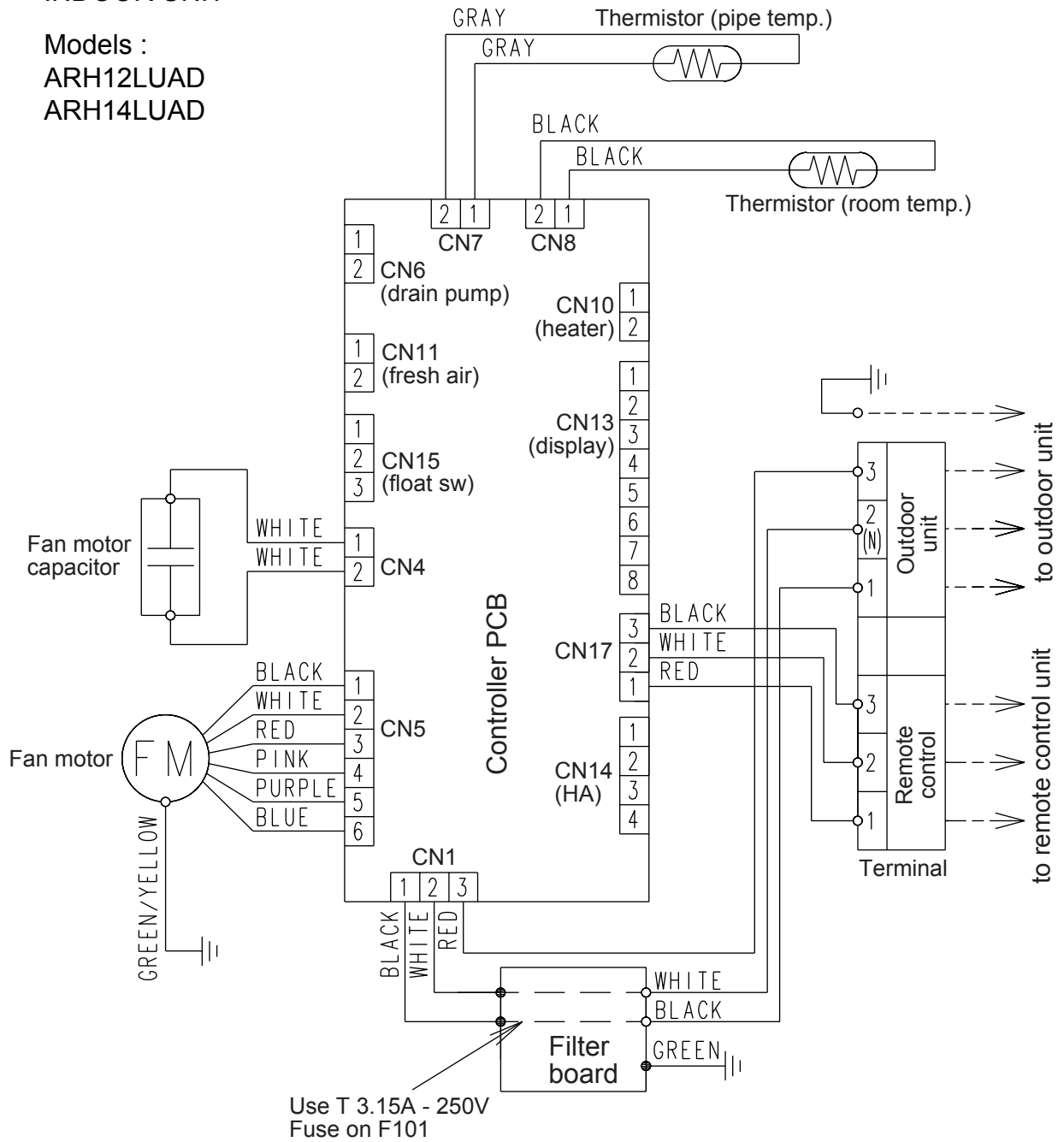
Gas pipe : 12.70 mm (1/2 inch)

Liquid pipe : 6.35 mm (1/4 inch)

CIRCUIT DIAGRAM

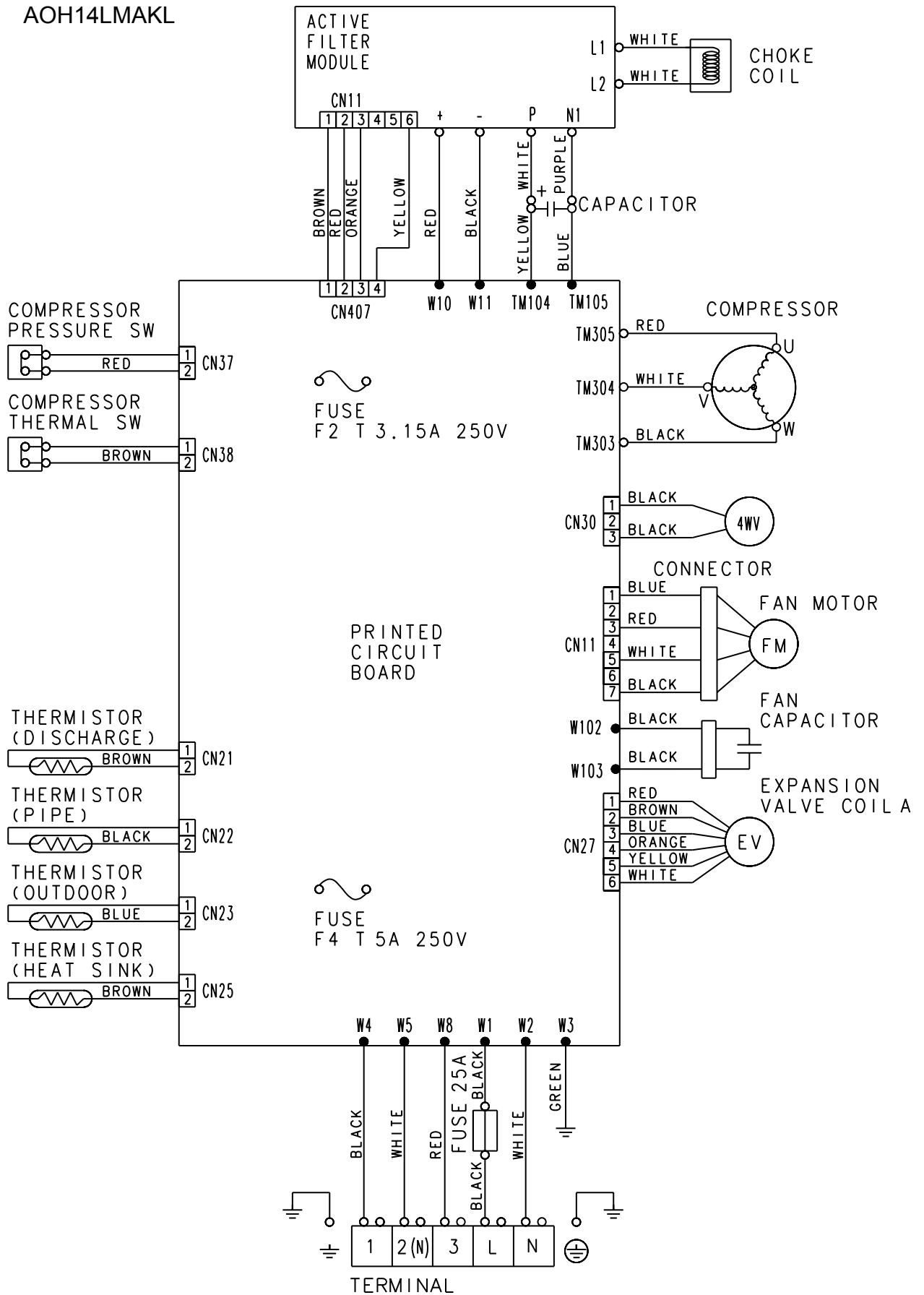
INDOOR UNIT

Models :
ARH12LUAD
ARH14LUAD



OUTDOOR UNIT

Models :
AOH12LMAKL
AOH14LMAKL

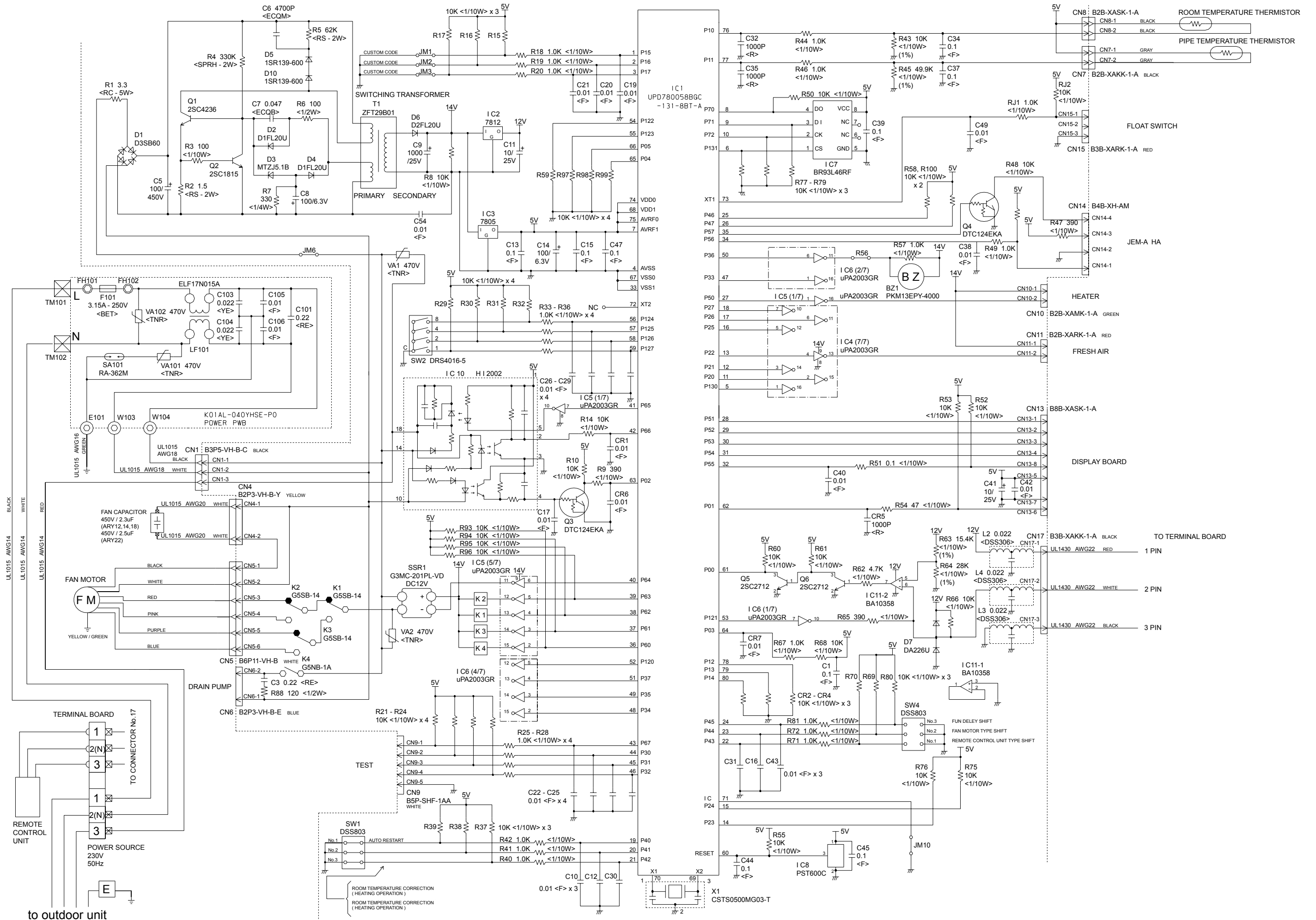


INDOOR PCB CIRCUIT DIAGRAM

CONTROLLER PCB ASSY (main PCB)

ARH12LUAD : K01AL-0412HSE-C1

ARH14LUAD : K01AL-0411HSE-C1

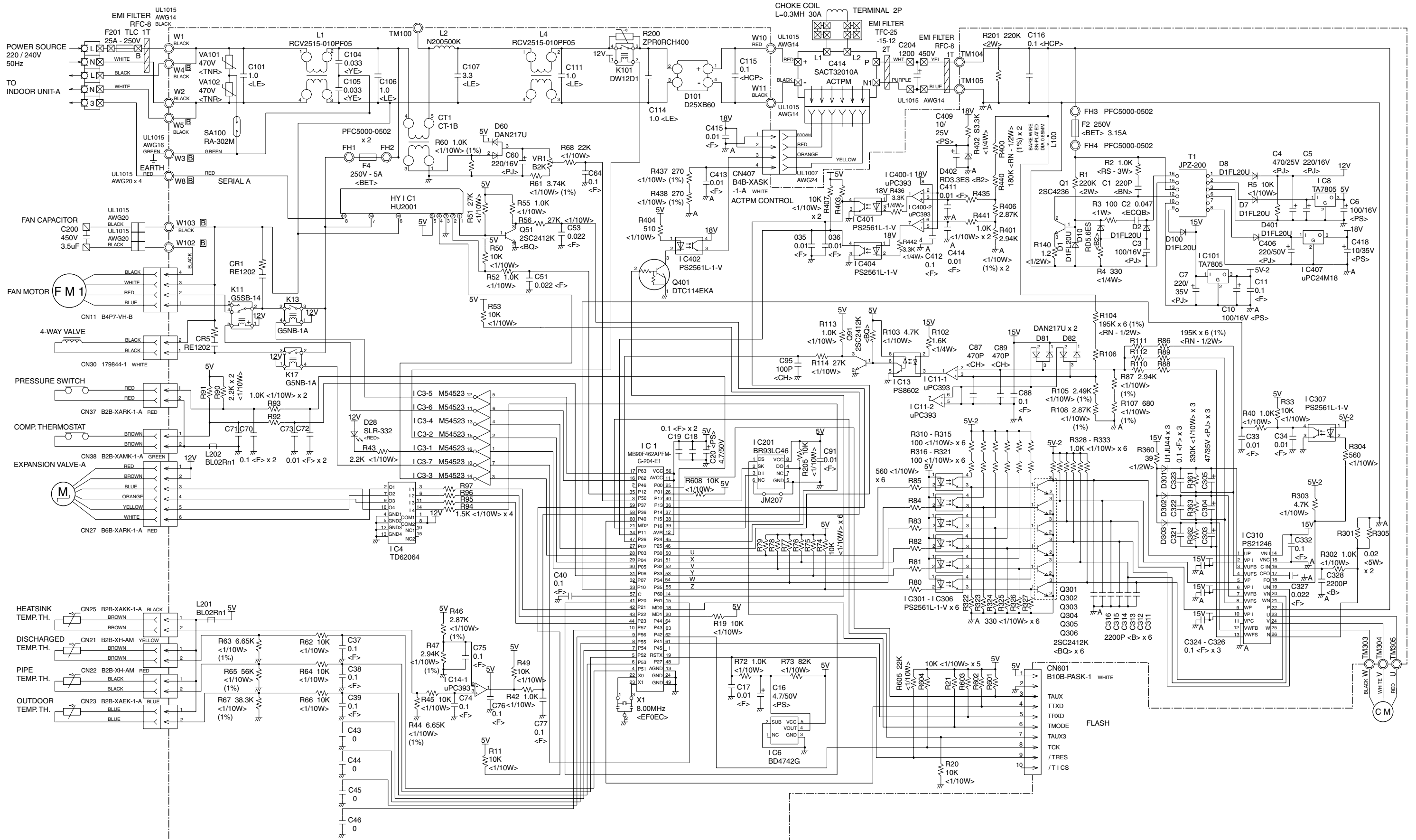


OUTDOOR PCB CIRCUIT DIAGRAM

CONTROLLER PCB ASSEMBLY

AOH12LMAKL : K03AV-0501HUE-C1

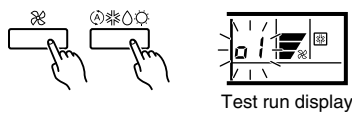
AOH14LMAKL : K03AV-0502HUE-C1



ERROR CONTENTS

INDOOR UNIT

- (1) Stop the air conditioner operation.
- (2) Press the master control button and the fan control button simultaneously for 2 seconds or more to start the test run.



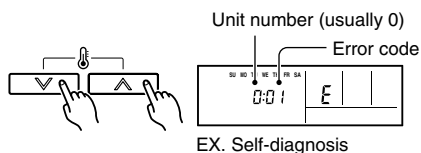
- (3) Press the start/stop button to stop the test run.

SELF-DIAGNOSIS

When the error indication "E:EE" is displayed, follow the following items to perform the self-diagnosis. "E:EE" indicates an error has occurred.

REMOTE CONTROLLER DISPLAY

- (1) Stop the air conditioner operation.
- (2) Press the set temperature buttons \wedge / \vee simultaneously for 5 seconds or more to start the self-diagnosis. Refer to the following tables for the description of each error code.



- (3) Press the set temperature buttons \wedge / \vee simultaneously for 5 seconds or more to stop the self-diagnosis.

| Error code | Error contents |
|------------|--|
| 00 | Communication error (indoor unit ↔ remote controller) |
| 01 | Communication error (outdoor unit → indoor unit) |
| 02 | Room temperature sensor open |
| 03 | Room temperature sensor short-circuited |
| 04 | Indoor heat exchanger temperature sensor open |
| 05 | Indoor heat exchanger temperature sensor short-circuited |
| 06 | Outdoor heat exchanger temperature sensor |
| 08 | Power source connection error |
| 09 | Float switch operated |
| 0A | Outdoor temperature sensor |
| 0c | Discharge pipe temperature sensor |
| 11 | Model abnormal |
| 12 | Indoor fan abnormal |
| 13 | Outdoor signal abnormal |
| 14 | Outdoor EEPROM abnormal |
| 15 | Compressor temperature sensor |
| 16 | Pressure switch abnormal |
| 17 | IPM error |
| 1A | Compressor cannot operate |
| 1b | Outdoor fan abnormal |

OUTDOOR UNIT

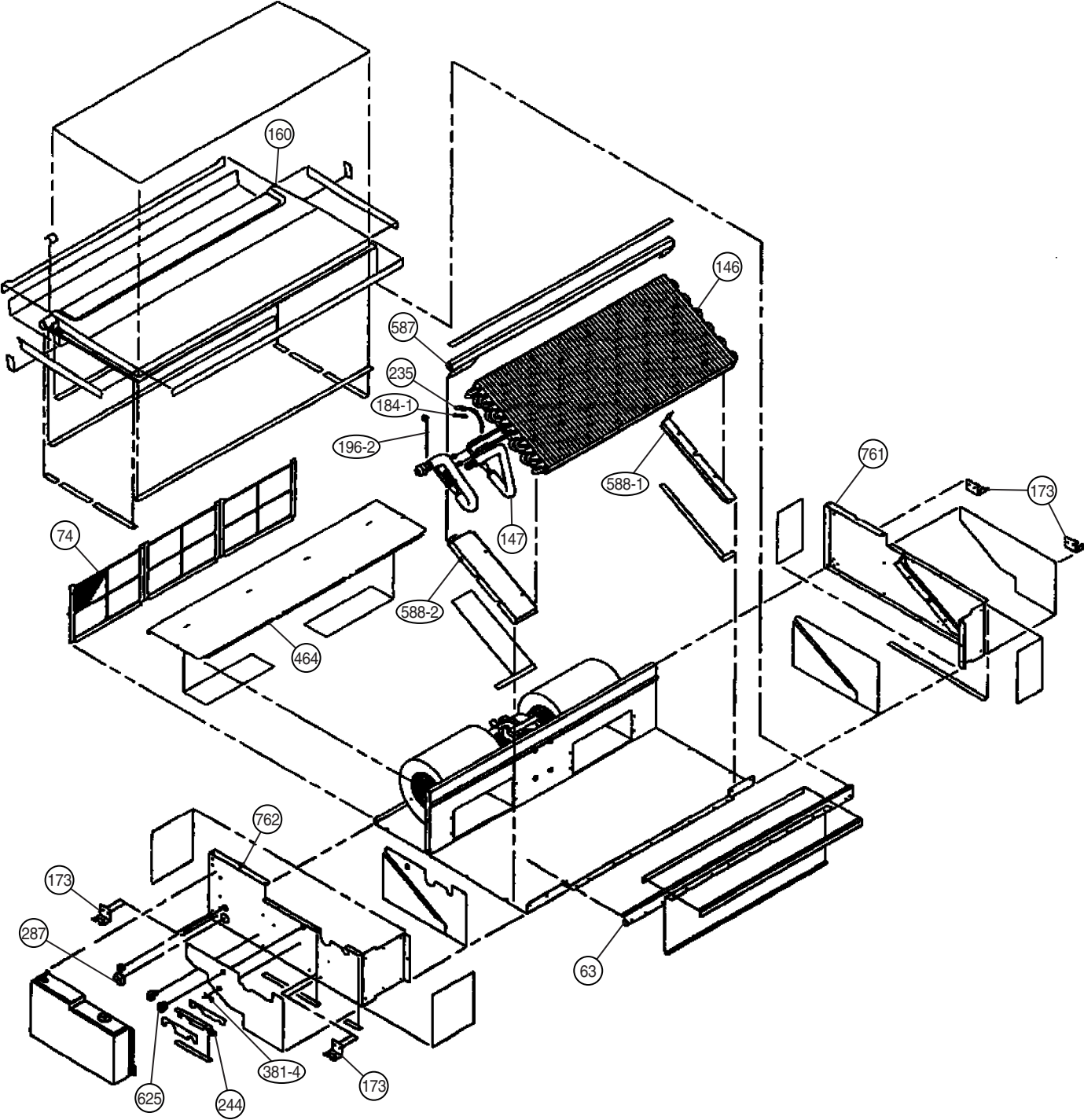
- (1) Is there any abnormal noise and vibration during operation ?
- (2) Will noise, wind or drain water from the unit disturb the neighbors?
- (3) Is there any gas leakage?

- Do not operate the air conditioner in the test running state for a long time.
- For the operation method, refer to the operating manual and perform operation check.

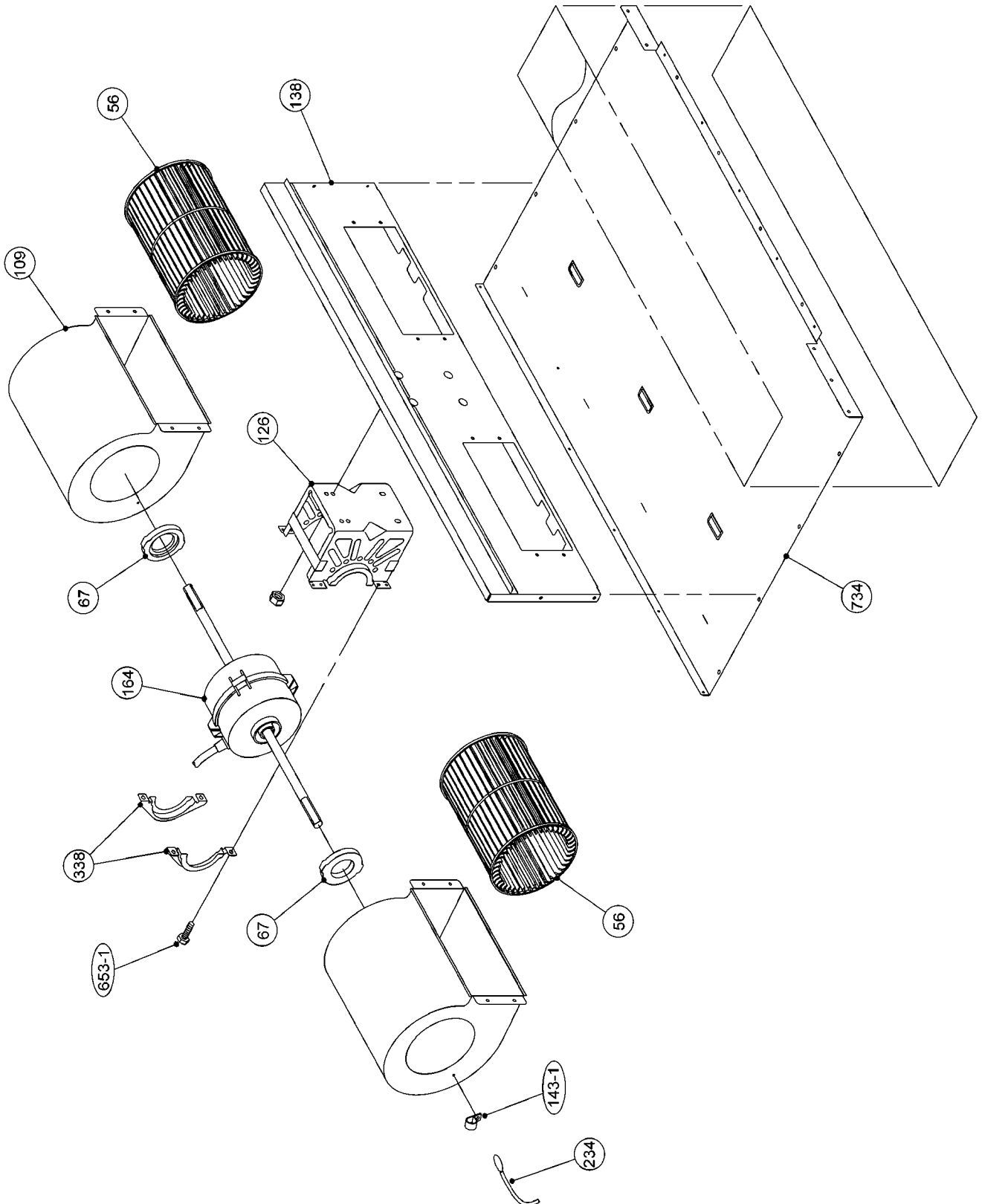
| Error contents | LED (Red) |
|--------------------------------------|------------------|
| Serial signal error | 1 time blink |
| Discharge pipe thermistor error | 2 times blink |
| Heat exchanger thermistor error | 3 times blink |
| Outdoor temperature thermistor error | 4 times blink |
| Compressor thermistor error | 7 times blink |
| Pressure switch error | 8 times blink |
| Current trip error | 10 times blink |
| CT error | 11 times blink |
| Compressor position detection error | 12 times blink |
| Compressor starting error | 13 times blink |
| Timer error | 14 times blink |

DISASSMBLY ILLUSTRATION

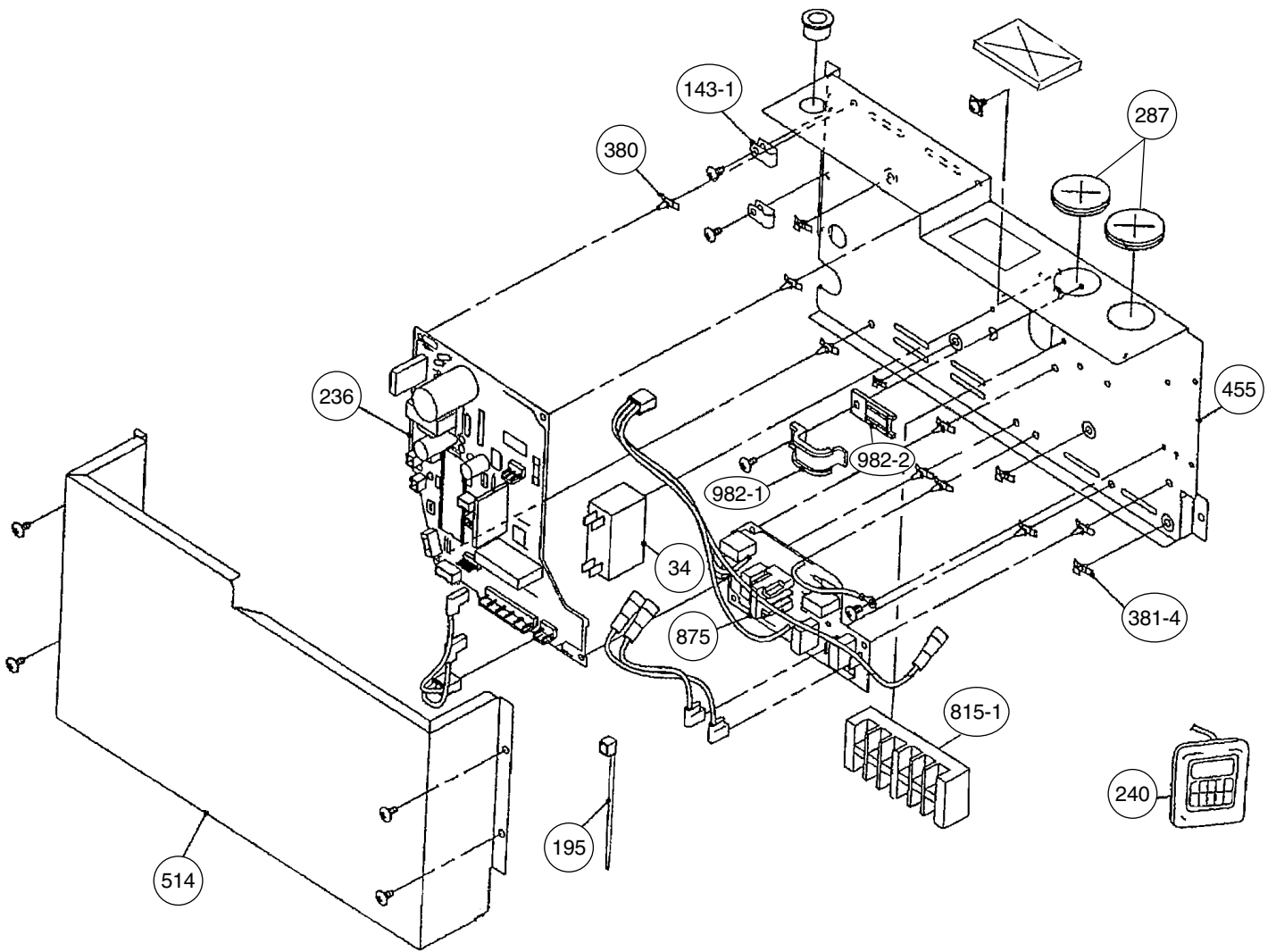
Models :
ARH12LUAD
ARH14LUAD



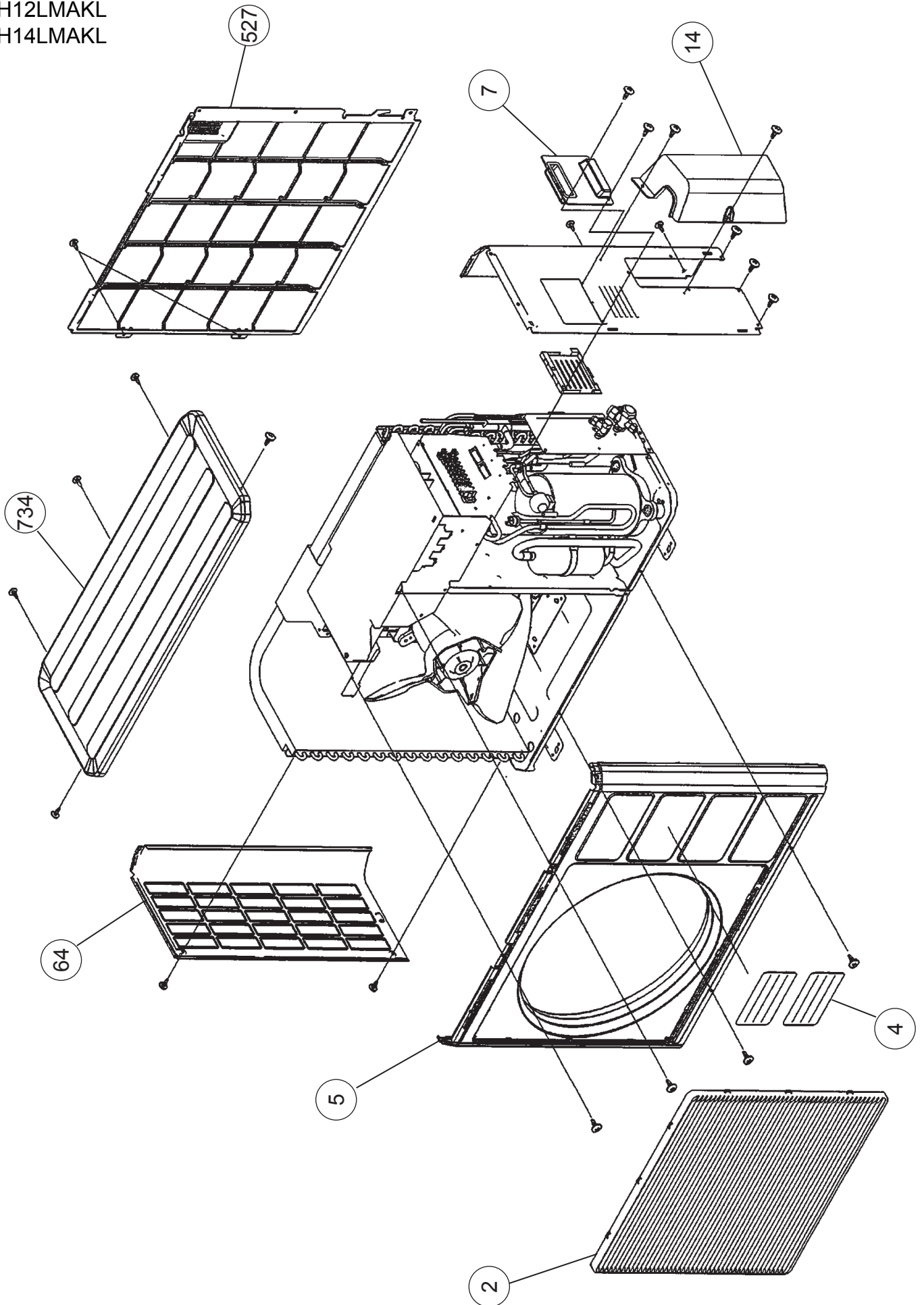
Models:
ARH12LUAD
ARH14LUAD



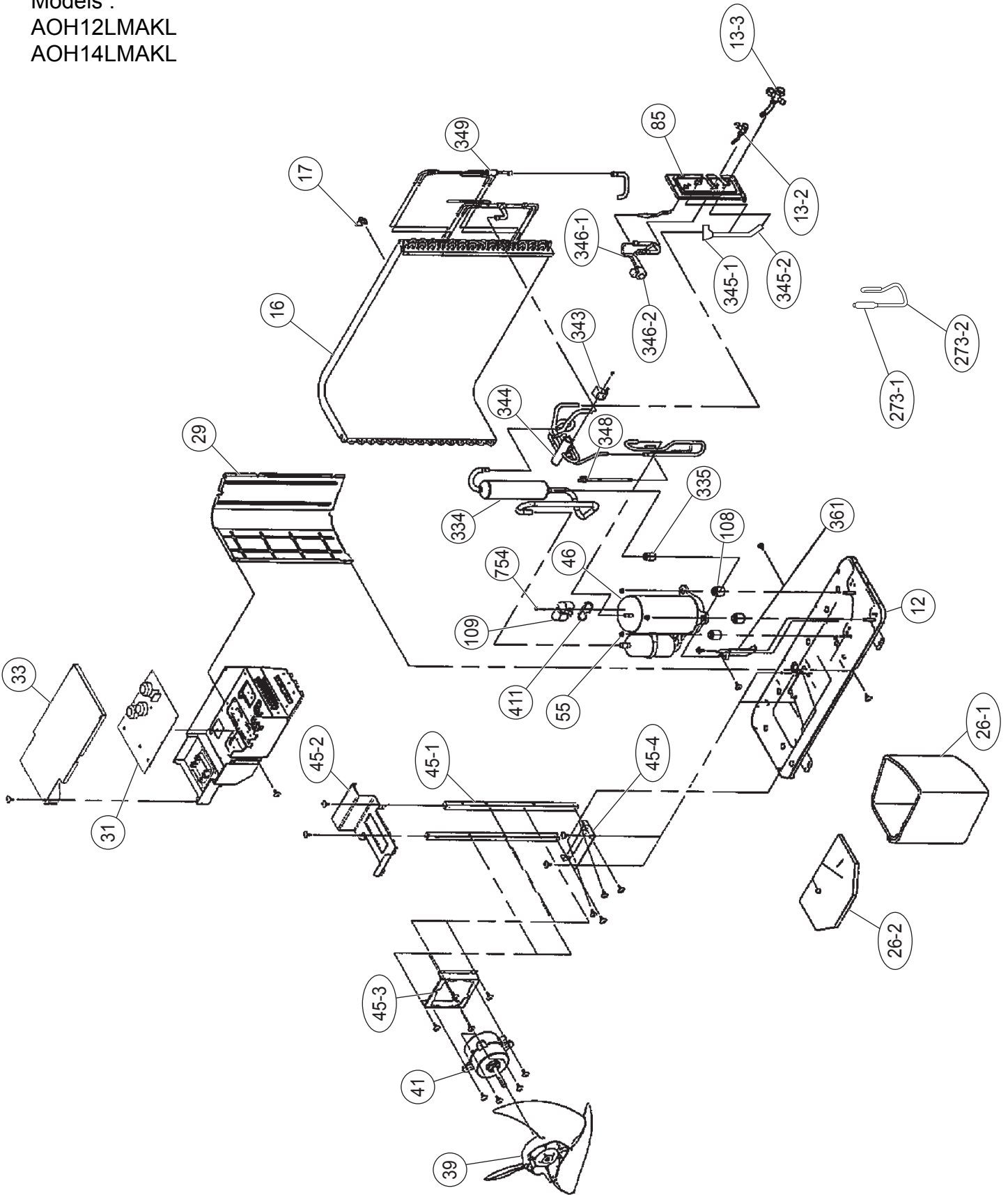
Models :
ARH12LUAD
ARH14LUAD



Models :
AOH12LMAKL
AOH14LMAKL



Models :
AOH12LMAKL
AOH14LMAKL



PARTS LIST

INDOOR UNIT

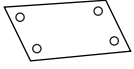






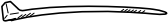

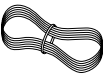



| Ref. No. | Description | Part No. | | Ord. Q'ty |
|----------|----------------------------|----------------------------------|----------------------------------|-----------|
| | | ARH12LUAD | ARH14LUAD | |
| 34 | Capacitor (Fan Motor) | 9900270179 | 9900270179 | |
| 56 | Sirocco Fan Assy | 9358621004 | 9358621004 | |
| 63 | Front Panel Assy | 9363723007 | 9363723007 | |
| 67 | Rubber (Vibration - proof) | 313659068604 | 313659068604 | |
| 74 | Air Filter | 9366833017 | 9366833017 | |
| 109 | Casing Assy | 9363322002 | 9363322002 | |
| 126 | Motor Fixing Table Assy | 9358591000 | 9358591000 | |
| 138 | Panel Assy (Motor) | 9363401004 | 9363401004 | |
| 143-1 | Clamp NK-3N | 313361274700 | 313361274700 | |
| 146 | Evaporator Assy | 9373255024 | 9373255024 | |
| 147 | Inlet Pipe (Eva.) Assy | 9373034063 | 9373034063 | |
| 160 | Drain Pan Assy | 9364502045 | 9364502045 | |
| 164 | Fan Motor Assy (MFA-18NTT) | 9600778210 | 9600778210 | |
| 173 | Hook Metal | 9363195002 | 9363195002 | |
| 184-1 | Thermo. Spring-A | 313728262708 | 313728262708 | |
| 195 | Binder C SKB-100 | 313361275805 | 313361275805 | |
| 196-2 | Binder M SKB-150 | 313035356905 | 313035356905 | |
| 234 | Thermistor Assy-Room | 9703299018 | 9703299018 | |
| 235 | Thermistor Assy-Pipe | 9703297090 | 9703297090 | |
| 236 | Controller PCB Assy | 9704557988 (K01AL-0412HSE-C1) | 9704557971 (K01AL-0411HSE-C1) | |
| 240 | Remote Control Unit | 9372266014 | 9372266014 | |
| 244 | Cover (Piping) | 9363327007 | 9363327007 | |
| 287 | Cap (Power) | 9352173011 | 9352173011 | |
| 338 | Motor Fixture | 9358594001 | 9358594001 | |
| 380 | Locking Spacer | 313209391403 | 313209391403 | |
| 381-4 | Spacer | 0600118075 | 0600118075 | |
| 455 | Control Box | 9366299004 | 9366299004 | |
| 464 | Cover (Cabinet) | 9363400007 | 9363400007 | |
| 514 | Control Box Cover | 9363201000 | 9363201000 | |
| 587 | Support Plate (Eva.) | 9363404005 | 9363404005 | |
| 588-1 | Bracket Eva. R | 9363199000 | 9363199000 | |
| 588-2 | Bracket Eva. L | 9363198003 | 9363198003 | |
| 625 | Cord Bushing | 9359240006 | 9359240006 | |
| 653-1 | CUP SCREW | 9385089020 | 9385089020 | |
| 734 | Panel Top | 9363504002 | 9363504002 | |
| 761 | Side Panel-R Assy | 9363507003 | 9363507003 | |
| 762 | Side Panel-L Assy | 9363505009 | 9363505009 | |
| 815-1 | Terminal 7P | 9703403019 | 9703403019 | |
| 875 | Filter PCB Assy | 9704561251 | 9704561251 | |
| 982-1 | Cord Clamp | 9356857009 | 9356857009 | |
| 982-2 | Cord Clamp-B | 9356858006 | 9356858006 | |

OUTDOOR UNIT

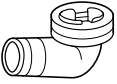


| Ref. No. | Description | Part No. | | Ord. Q'ty |
|----------|----------------------------------|--------------|--------------|-----------|
| | | AOH12LMAKL | AOH14LMAKL | |
| 2 | Fan Guard | 9371187013 | 9371187013 | |
| 4 | Emblem-Rear | 9372171011 | 9372171011 | |
| 5 | Front Panel, Painted | 9371924014 | 9371924014 | |
| 7 | Connector Cover (Cabinet) | 9366398004 | 9366398004 | |
| 12 | Base Assy, Painted | 9371920078 | 9371920078 | |
| 13-2 | 2-Way Valve | 9372204054 | 9372204054 | |
| 13-3 | 3-Way Valve | 9372205051 | 9372205051 | |
| 14 | Valve Cover | 9372796016 | 9372796016 | |
| 16 | Condenser Assy | 9372181096 | 9372181096 | |
| 17 | Thermistor Holder Pipe | 313714262805 | 313714262805 | |
| 26-1 | Compressor Cover-A | 9373730019 | 9373730019 | |
| 26-2 | Compressor Cover-B | 9373730026 | 9373730026 | |
| 29 | Separate Wall | 9372795019 | 9372795019 | |
| 31 | Controller PCB Assy | 9705285064 | 9705285071 | |
| 33 | Control Cover | 9372792018 | 9372792018 | |
| 39 | Propeller Fan Assy | 9366378013 | 9366378013 | |
| 41 | Fan Motor Assy-IN | 9601671046 | 9601671046 | |
| 45-1 | Motor Bracket | 9371929019 | 9371929019 | |
| 45-2 | Motor Bracket-Top | 9371931012 | 9371931012 | |
| 45-3 | Motor Bracket-Center | 9371930015 | 9371930015 | |
| 45-4 | Motor Bracket-Bottom | 9371932019 | 9371932019 | |
| 46 | Compressor Assy | 9373262015 | 9373262015 | |
| 55 | Special Nut M8 | 9355091008 | 9355091008 | |
| 64 | Side Panel-L, Painted | 9371926018 | 9371926018 | |
| 85 | Valve Plate, Painted | 9371928012 | 9371928012 | |
| 108 | Rubber Seat (For Comp.) | 9358080009 | 9358080009 | |
| 109 | Terminal Cover (For Comp.) | 9373264019 | 9373264019 | |
| 273-1 | Strainer Assy | 9372524015 | 9372524015 | |
| 273-2 | Joint Pipe (2-Way)-A | 9373729549 | 9373729549 | |
| 334 | Accumulator | 9368391003 | 9368391003 | |
| 335 | Accumulator Holder Rubber | 9354022010 | 9354022010 | |
| 343 | Solenoid | 9900165079 | 9900165079 | |
| 344 | 4-Way Valve | 9900163013 | 9900163013 | |
| 345-1 | Muffler | 9372369029 | 9372369029 | |
| 345-2 | Joint Pipe (3-Way) | 9373729556 | 9373729556 | |
| 346-1 | Expansion Valve Assy | 9373729518 | 9373729518 | |
| 346-2 | Coil (Expansion Valve) | 9900057022 | 9900057022 | |
| 348 | Pressure Switch Assy | 9373729044 | 9373729044 | |
| 349 | Capillary Assy | 9373729433 | 9373729433 | |
| 361 | Accumulator Support Assy | 9372252017 | 9372252017 | |
| 411 | Gasket | 9373266013 | 9373266013 | |
| 527 | Protective Net | 9371934013 | 9371934013 | |
| 734 | Top Plate | 9371925011 | 9371925011 | |
| 754 | Rubber Washer | 9358078006 | 9358078006 | |
| ---- | ACTPM | 9703457012 | 9703457012 | |
| ---- | Capacitor, Elec. | 9705387010 | 9705387010 | |
| ---- | Fuse | 0600086039 | 0600086039 | |
| ---- | Fuse Holder | 0501454012 | 0501454012 | |
| ---- | Capacitor, Plastic | 9900270049 | 9900270049 | |
| ---- | Terminal-5P | 9900203023 | 9900203023 | |
| ---- | Terminal-2P | 9701971015 | 9701971015 | |
| ---- | Hex. Bolt Socket | 0700145148 | 0700145148 | |
| ---- | Clip (Cable) | 9352715006 | 9352715006 | |
| ---- | BR Sheet | 9363708042 | 9363708042 | |
| ---- | Relay | 9900117016 | 9900117016 | |
| ---- | Compressor Presure Switch | 9900186012 | 9900186012 | |
| ---- | Compressor Thermal Switch | 9373263012 | 9373263012 | |
| ---- | Discharge Temperature Thermistor | 9704219039 | 9704219039 | |
| ---- | Heat Exchanger Thermistor | 9900374020 | 9900374020 | |
| ---- | Outdoor Temperature Thermistor | 9900378011 | 9900378011 | |
| ---- | Heat Sink Thermistor | 9900195014 | 9900195014 | |

STANDARD ACCESSORIES

INDOOR UNIT ACCESSORIES

| Name and Shape | Q'ty | Application | Part No. |
|---|--------------|--|--------------|
| Installation template  | 1 | For positioning the indoor unit | 9364225005 |
| Hanger  | 4 | For suspending the indoor unit from ceiling | 9363195002 |
| Tapping screw (φ 4 x 10)  | 8 | For installing the hanger | 0700009037 |
| Special nut A (large flange)  | 4 | For suspending the indoor unit from ceiling | 313005446653 |
| Special nut B (small flange)  | 4 | | 313005446759 |
| Coupler heat insulation (large)  | 1 | For indoor side pipe joint (large pipe) | 9350716029 |
| Coupler heat insulation (small)  | 1 | For indoor side pipe joint (small pipe) | 9352766015 |
| Binder  | (Small) 1 | For remote controller and remote controller cord binding | 313361275805 |
| | (Large) 4 | For fixing the coupler heat insulation | 312300787605 |
| Remote controller  | 1 | Heat & Cooling model | 9372266014 |
| Remote controller cord  | 1 | For connecting the remote controller | 9372714010 |
| Tapping screw (φ 4 x 16)  | 2 | For installing the remote controller | 0700181108 |
| Filter  | 3 | For installing to indoor unit | 9366833017 |
| Drain hose insulation  | 1 | Insulates the drain hose and vinyl hose connection | 313806217708 |

OUTDOOR UNIT ACCESSORIES

| Name and Shape | Q'ty | Application | Part No. |
|--|------|---|--------------|
| Drain pipe  | 1 | For outdoor unit drain piping work [Heat & Cool model (Reverse cycle) only] | 9303029015 |
| Drain cap  | 1 | | 313166024302 |
| Adapter D (1/2" → 3/8") 12.70mm → 9.52mm  | 1 | For use when connecting model 12,000 BTU/h | 9370244007 |

0603G3058