**SAMSUNG**

# SYSTEM AIR CONDITIONER

| INDOOR UNIT | OUTDOOR UNIT |
|---|---|
| GH052EAM | UH052EAMT |
| GH070EAM | UH070EAMT |

# SERVICE *Manual*

## SYSTEM AIR CONDITIONER
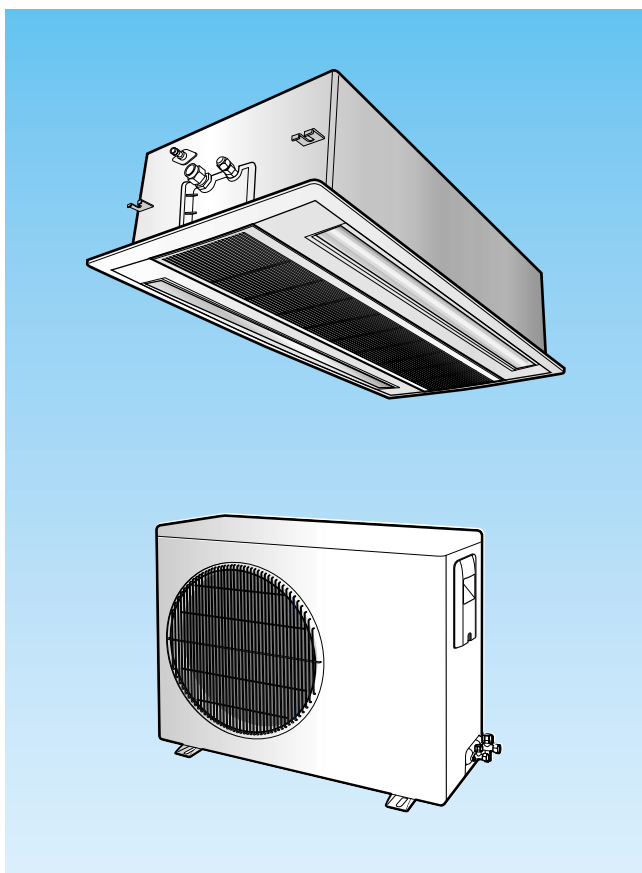
## CONTENTS

# 1. Product Specifications

## 1-1 Table

| MODEL | INDOOR UNIT | | GH052EAM | GH070EAM |
|---|---|---|---|---|
| | OUTDOOR UNIT | | UH052EAMT | UH070EAMT |
| Capacity | Cooling | BTU/hr | 18,700 | 23,900 |
| | | Watts | 5,500 | 7,000 |
| | Heating | BTU/hr | 20,400 | 26,300 |
| | | Watts | 6,000 | 7,700 |
| Power Supply | | | 1ø, 220~240V~, 50Hz | 1ø, 220~240V~, 50Hz |
| Indoor Unit | Power Input | Cooling | Watts | 1,750 | 2,350 |
| | | Heating | Watts | 1,800 | 2,500 |
| | Running Current | Cooling | A | 7.7 | 10.5 |
| | | Heating | A | 8.0 | 11.0 |
| | Fan Speed | U-High | r.p.m | - | - |
| | | High | r.p.m | 1,315 | 1,350 |
| | | Mid | r.p.m | 1,210 | 1,245 |
| | | Low | r.p.m | 1,105 | 1,140 |
| | Air Circulation | High | m³/ min | 14 | 14 |
| | | Mid | m³/ min | 12 | 12 |
| | | Low | m³/ min | 10 | 10.5 |
| | Noise Level (Sound Pressure) | High | dB(A) | 45 | 46 |
| | | Mid | dB(A) | 44 | 45 |
| | | Low | dB(A) | 43 | 44 |
| | Heat Exchanger | Type | | Slit-fin coil | Slit-fin coil |
| | | Row x Stages x Fin Pitch | | 2 x 10 x 1.3(580mm) | 3 x 10 x 1.5(580mm) |
| | Fan | Type | | Cross Flow Fan | Cross Flow Fan |
| | | Motor Output | W | 28 | 28 |
| | Dimension | H | mm | 230 | 230 |
| | | W | mm | 918 | 918 |
| | | D | mm | 575 | 575 |
| | Weight | Net / Gross | kg | 21 / 25 | 22 / 26 |
| Outdoor Unit | Fan Speed | High | r.p.m | 750 | 850 |
| | | Low | r.p.m | 400 | 340 |
| | Sound Pressure Level | | dB(A) | 61 | 61 |
| | Fan | Type | | Propeller Fan | Propeller Fan |
| | | Motor Output | W | 60 | 73 |
| | Compressor | Type | | Rotary | Rotary |
| | | Model | | NN21VBAMT | NN29VACMT |
| | | Motor Output | kW | 1.3 | 1.9 |
| | | Protection | | Internal | Internal |
| | Heat Exchanger | Type | | Slit-fin coil | Slit-fin coil |
| | | Row x Stages x Fin Pitch | | 2 x 28 x 1.5 | 2 x 28 x 1.5 |
| | Refrigerant | Control | | EEV | EEV |
| | | Type | | R410A | R410A |
| | | Charge | g | 1,550 | 1,650 |

# Table(cont.)

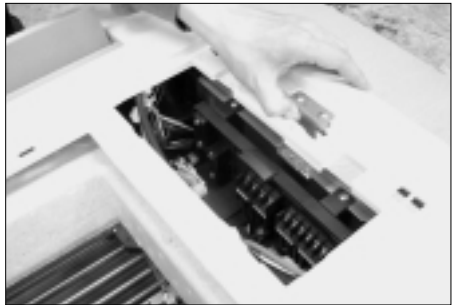| MODEL | | | | GH052EAM | GH070EAM |
|---|---|---|---|---|---|
| | | INDOOR UNIT | | | |
| | | OUTDOOR UNIT | | UH052EAMT | UH070EAMT |
| Outdoor Unit | Dimension | H | mm | 648 | 648 |
| | | W | mm | 880 | 880 |
| | | D | mm | 310 | 310 |
| | Weight | Net / Gross | kg | 67 / 72 | 69 / 74 |
| Condition | Indoor Unit | Cool(DB/WB) | ˚C | 27 / 19 | 27 / 19 |
| | | Heat(DB/WB) | ˚C | 20 / 15 | 20 / 15 |
| | Outdoor Unit | Cool(DB/WB) | ˚C | 35 / 24 | 35 / 24 |
| | | Heat(DB/WB) | ˚C | 7 / 6 | 7 / 6 |
| Piping | Pipe O.D. Size | Liquid | mm(inch) | 6.35(1/4") | 6.35(1/4") |
| | | Gas | mm(inch) | 12.7(1/2") | 15.88(5/8") |
| | Connection Method | | | Flare | Flare |
| | Between | Height | m | Max. 15 | Max. 15 |
| | | Pipe Length | m | Max. 30 | Max. 30 |
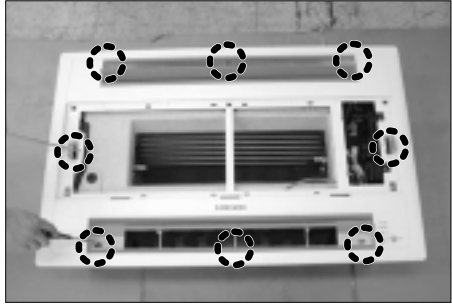
**Notice** : Air Flow rate : Fan Step Control : Low → Mid → High
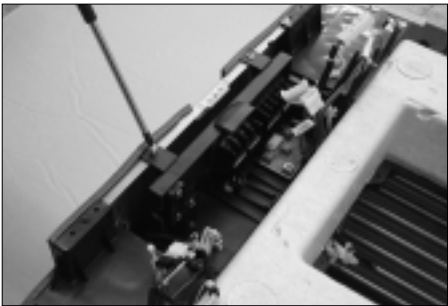
# 2. Disassembly and Reassembly
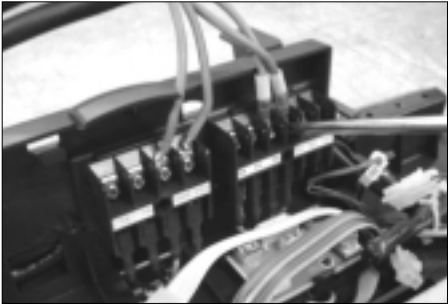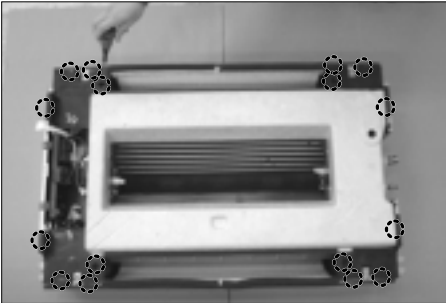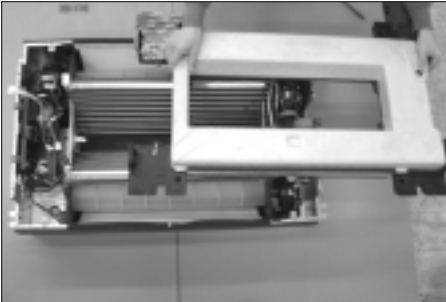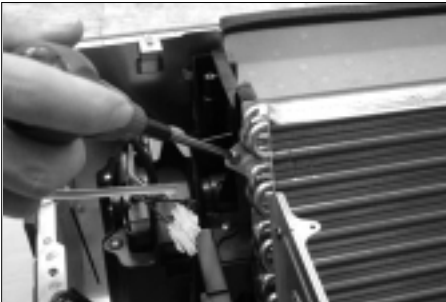
Stop operation of the air conditioner and remove the power cord before repairing the unit.
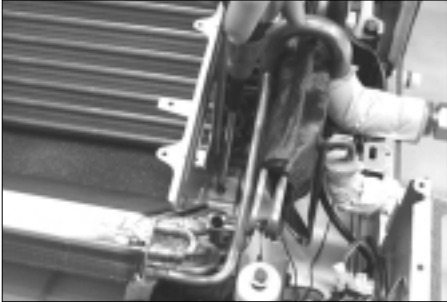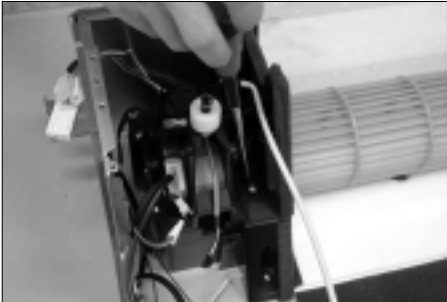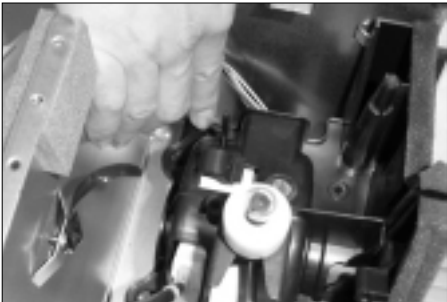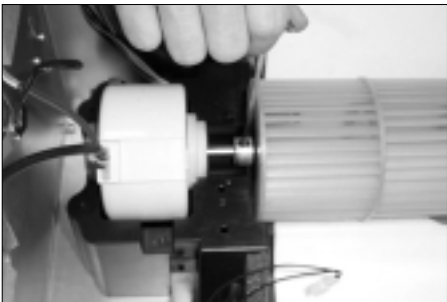
## 2-1 Indoor Unit
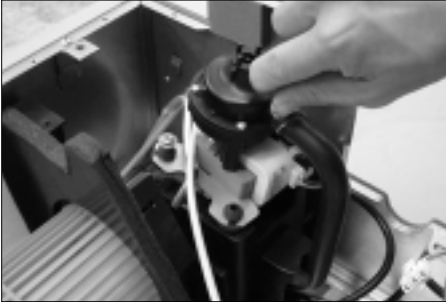
| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| 1 | Front Grille – Dust-Collecting Filter | 1) Press the "PUSH". |  |
| | | 2) Front Grille Disassembly<br>(1) Open the Front Grille and pull it up to the direction in the picture. |  |
| | | (2) Detach the Safe Ring. |  |
| | | 3) Filter Disassembly<br>(1) Detach the Filter by disassembling the Grille hook. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | 4) Detach 6 bolts and 2 fixing screws connected to the Main Body.(Mark point) |  |
| | | 5) Unscrew a mark point in the picture, and detach the Cover from the Panel with pushing the hook. |  |
| | | 6) Detach the connection wires of Step Motor and the receive part from the wire of a Main Body. |  |
| | | 7) Widen the both hooks of panel hooked with the Main Body to both sides, and detach the Panel from the Indoor Unit. |  |
| | | |  |

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| 2 | Electronic Part<br>−Indoor & Outdoor<br>Connecting Cable | 1) Unscrew 2 fixing screws of the Case control and screw of Thermistor wire and holder. |  |
| | | 2) Push the hook, and pull the knob of a case. |  |
| | | 3) Detach the indoor and outdoor connection wire cable connected to the Terminal. |  |
| | | 4) Detach the Fan Motor connection wire, Heat Exchanger Sensor connection wire, and the Drain Pump Float S/W connection wire from the connecter. |  |
| | | 5) Detach the Control Box from the main body. |  |

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| 3 | EVAP ASS'Y | 1) Unsrew 3 screws connected to the main body and Cover Side. |  |
| | | 2) Detach the Cover Side if from the main body. |  |
| | | 3) Unscrew 16 screws connected to the Drain Pan and the main body.(Mark point) |  |
| | | 4) Detach the Drain Pan from the main body. |  |
| | | 5) Unscrew 4 Heat Exchanger screws connected to the cabinet body and cover Evap Guide. |  |

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| | | |  |
| | | 6) Detach the Drain Pump Sensor from the holder, and detach the Heat Exchanger from the main body by pushing it to the direction of Drain. |  |
| 4 | Fan & Motor | 1) Unscrew 4 screws of Cover Motor and Evap Guide connected to the Case Motor. |  |
| | | 2) After detaching the Cover Motor by pushing the hook, detach the Cover Evap Guide. |  |
| | | 3) Detach the Motor and Fan from the case. (Use M3 wrench when detaching the Motor from the Fan.) |  |

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| 5 | Drain Pump | 1) Detach the Drain Hose connected to the Drain Pump by loosening the spring.<br><br>2) Unscrew 4 screws connected to the Holder Pump and Drain Pump.<br><br>3) After connector detaching, detach the Drain Pump from the holder. |  |
| 6 | Other Parts | 1) In case of the other parts, detach it like a picture when necessary. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | |  |
| 7 | Front Panel | 1) Unscrew 2 screws of the Holder Motor fixed on the Panel, and detach the Holder Motor. The Panel, and detach the Holder Motor. |  |
| | | 2) Unscrew 2 screws of the Step-Motor, and detach the Step-Motor from the Panel. |  |
| | | 3) Detach the cable clamp screw. |  |
| | | 4) Push the hook of case PCB to the both sides and detach the case from the Panel. |  |

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| | | 5) When detaching the PCB from the case, unscrew the 6 screws and push the hook at the mark. |  |
| | | 6) When detaching the blade, detach the opposite side first of Step Motor after turning over the guide on the Panel. |  |
| | | 7) When detaching the Blade V, after detaching the link by pushing, detach the blade with pushing to the direction of arrow. |  |
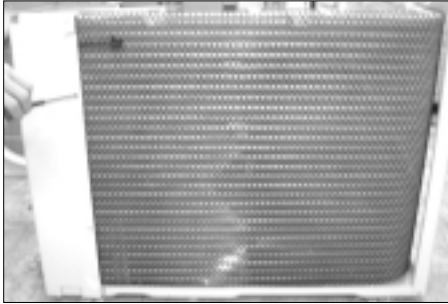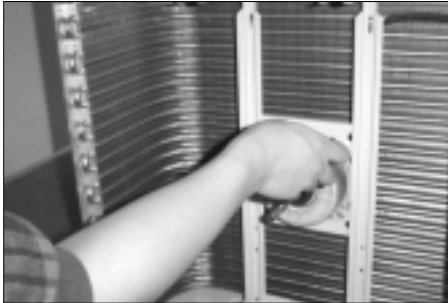
## 2-2 Outdoor Unit

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| 1 | Common Work | 1) Loosen the fixing screws and separate the Cover Control.<br>2) Separate the connection wire from the Terminal Block. |  |
| | | 3) Loosen the fixing screws and separate the Upper Cabinet. |  |
| | | 4) Loosen the fixing screws and separate the Front Cabinet. |  |
| | | 5) Loosen 2 screws and pull up the Control Box. |  |
| | | 6) Separate the terminal cover and separate the Comp lead wire. |  |

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
|  |  | 7) Loosen the fixing screws and separate the Cabinet Side. |  |
| 2 | Fan & Motor | 1) Loosen the fixing bolt and separate the Fan.<br><br><br><br><br>2) Loosen 4 fixing bolts to separate the Motor. | <br><br> |

| No | Parts | Procedure | Remark |
|----|-------|-----------|--------|
| 3 | Heat Exchanger & Compressor | 1) Release the refrigerant at first.<br>2) Disassemble the inlet and outlet pipe by welding.<br>3) Loosen the fixing screws of the Heat Exchanger.<br>4) Separate the Heat Exchanger.<br>5) Loosen four bolts of the Compressor.<br>6) Separate the Compressor. | <br> |

# 3. Set Up the Model Option

## 3-1 Setting Option Setup Method
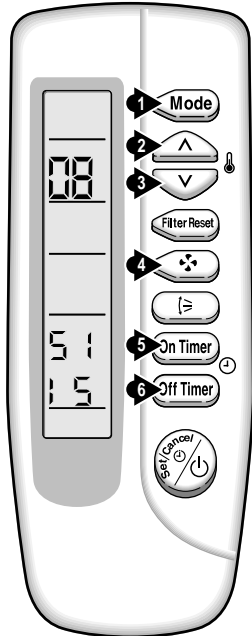
**ex) Option No. :** `085115-1d2340`
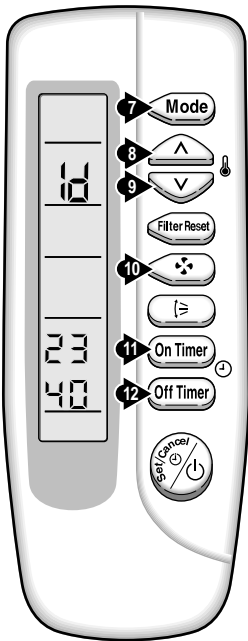
**Step 1** : **Enter the Option Setup mode.**

1<sup>st</sup>    Take out the batteries of remote control.

2<sup>nd</sup>    Press the temp. ⬘⬙ button simultaneously and insert the battery again.

3<sup>rd</sup>    Make sure the remote controller display shown as `00` .
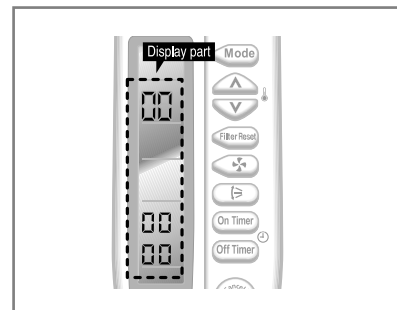
**Step 2** : **Enter the Option Setup mode and select your option according to the following procedure.**

**1**

The default value is `00` .
Otherwise, push the ⬭Mode button to `0` .
Every time you push the button, the display panel reads `1` or `0` repeatedly.

**2**

Push the ⬘ button to set the display panel to `8` .
Every time you push the button, the display panel reads `0` ➡ `1` ➡ `2` ➡ `3` ➡ ⋯ `9` ➡ `A` ➡ `b` ➡ `c` ➡ `d` ➡ `E` ➡ `F` repeatedly.

**3**

Push the ⬙ button to set the display panel to `5` .
Every time you push the button, the display panel reads `0` ➡ `1` ➡ `2` ➡ `3` ➡ ⋯ `9` ➡ `A` ➡ `b` ➡ `c` ➡ `d` ➡ `E` ➡ `F` repeatedly.

**4**

Push the ⬭ button to set the display panel to `1` .
Every time you push the button, the display panel reads `0` ➡ `1` ➡ `2` ➡ `3` ➡ ⋯ `9` ➡ `A` ➡ `b` ➡ `c` ➡ `d` ➡ `E` ➡ `F` repeatedly.

**5**

Push the ⬭On Timer button to set the display panel to `1` .
Every time you push the button, the display panel reads `0` ➡ `1` ➡ `2` ➡ `3` ➡ ⋯ `9` ➡ `A` ➡ `b` ➡ `c` ➡ `d` ➡ `E` ➡ `F` repeatedly.

**6**

Push the ⬭Off Timer button to set the display panel to `5` .
Every time you push the button, the display panel reads `0` ➡ `1` ➡ `2` ➡ `3` ➡ ⋯ `9` ➡ `A` ➡ `b` ➡ `c` ➡ `d` ➡ `E` ➡ `F` repeatedly.

✳ Setting is not required if you must `0` a value which has a `0` default.

| | |
|---|---|
| **7** | Press ⬯Mode button, then the default value is ⌇⌇ . |
| **8** | Push the ⬯⌃ button to set the display panel to d .<br>Every time you push the button, the display panel reads ☐ ➡ ┆ ➡ ⥱<br>➡ ∃ ➡ ··· ⑨ ➡ �A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly. |
| **9** | Push the ⬯⌄ button to set the display panel to ⥱ .<br>Every time you push the button, the display panel reads ☐ ➡ ┆ ➡ ⥱<br>➡ ∃ ➡ ··· ⑨ ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly. |
| **10** | Push the ⬯❄ button to set the display panel to ∃ .<br>Every time you push the button, the display panel reads ☐ ➡ ┆ ➡ ⥱<br>➡ ∃ ➡ ··· ⑨ ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly. |
| **11** | Push the ⬯On Timer button to set the display panel to �५ .<br>Every time you push the button, the display panel reads ☐ ➡ ┆ ➡ ⥱<br>➡ ∃ ➡ ··· ⑨ ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly. |
| **12** | Push the ⬯Off Timer button to set the display panel to ☐ .<br>Every time you push the button, the display panel reads ☐ ➡ ┆ ➡ ⥱<br>➡ ∃ ➡ ··· ⑨ ➡ A ➡ b ➡ c ➡ d ➡ E ➡ F repeatedly. |

✳ Setting is not required if you must ☐
a value which has a ☐ default.

**Step 3 : Upon completion of the selection, check you made right selections.**

Press the Mode Selection key, ⬯Mode to set the display part to ☐ and check the display part.

➡ The display part shows ☐∃ .
                         ५┆
                         ┆५

Press the Mode Selection key, ⬯Mode to set the display part to ┆ and check the display part.

➡ The display part shows ┆ d .
                         ⥱∃
                         ५☐

**Step 4 : Pressing the ON/OFF button ( ⬯ )**

When pressing the operation ON/OFF key with the direction of remote controller for unit, the sound "Ding" or "Diriring" is heard and the OPERATION ICON( ⏻ ) lamp of the display is flickering at the same time, then the input of option is completed. (If the diriring sound isn't heard, try again pressing the ON/OFF button.)

**Step 5 : Unit operation test-run**

**First,** Remove the battery from the remote controller.
**Second,** Re-insert the battery into the remote controller.
**Third,** Press ON/OFF button( ⬯ ) with the direction of remote controller for set.

---

**• Error Mode**

1st If all lamps of indoor unit are flickering, Plug out, plug in battery again and press ON/OFF key to retry.

2nd If the unit is not working properly or all lamps are continuously flickering after setting the option code, see if the correct option code is set up for its model.

---

## ■ OPTION ITEMS

| REMOTE CONTROLLER<br><br>MODEL | SEG1 | SEG2 | SEG3 | SEG4 | SEG5 | SEG6 | SEG7 | SEG8 | SEG9 | SEG10 | SEG11 | SEG12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GH052EAM | 0 | 2 | 5 | 4 | 4 | 2 | 1 | A | 0 | 3 | 7 | 1 |
| GH070EAM | 0 | 2 | 5 | 4 | 4 | 2 | 1 | c | 0 | 3 | 8 | 2 |

# 4. Troubleshooting

■ **Detection of errors**
- If an error occurs during the operation, one or more LED flickers and the operation is stopped except the LED.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

## 4-1 LED Display on the indoor unit

| Abnormal conditions | Indicators ⏻ Green | Indicators ⏻ Red | Indicators ⏲ | Indicators ❄ | Indicators ▦ | Operating |
|---|---|---|---|---|---|---|
| Power reset | ◐ | × | × | × | × | |
| Error of temp. sensor in indoor unit (OPEN/SHORT) | × | × | ◐ | × | × | Displayed on appropriate indoor unit which is operating |
| Error of heat exchanger sensor in indoor unit | ◐ | × | ◐ | × | × | Displayed on appropriate indoor unit which is operating |
| Error of outdoor temp. sensor<br>Error of COND sensor<br>Error of DISCHARGE sensor | ◐ | × | × | ◐ | × | Displayed on appropriate indoor unit which is operating<br>Displayed on outdoor unit |
| 1. No communication for 2 minutes between indoor unit and outdoor unit (communication error for more than 2 minutes)<br>2. Indoor unit receiving the communication error from outdoor unit<br>3. Outdoor unit tracking 3 minute error<br>4. When sending the communication error from outdoor unit the mismatching of the communication numbers and installed numbers after completion of tracking.(communication error for more than 2 minutes) | × | × | ◐ | ◐ | × | 1. Error of indoor unit: Displayed on the indoor unit regardless of operation<br>2. Error of outdoor unit: Displayed on the indoor unit which is operating |
| Communication error between indoor units | ◐ | × | × | × | ◐ | |
| Self-diagnostic error (including the indoor unit not detected)<br>1. Error of electronic expansion valve close<br>2. Error of electronic expansion valve open<br>3. 2nd detection of high temp. COND<br>4. 2nd detection of high temp. DISCHARGE<br>5. Error of reverse phase<br>6. Compressor down due to 6th detection of freezing | × | × | ◐ | ◐ | ◐ | Displayed on appropriate indoor unit which is operating<br>Displayed on outdoor unit |
| Error of float switch | × | × | × | ◐ | ◐ | |
| Error of setting option switches for optional accessories | × | × | ◐ | × | ◐ | |
| EEPROM error | ◐ | × | ◐ | ◐ | × | |
| EEPROM option error | ◐ | ◐ | ◐ | ◐ | ◐ | |

- If you turn off the air conditioner when the LED is flickering, the LED is also turned off.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

● : On   ◐ : Flickering   × : Off

## 4-2 Outdoor Unit

If an error occurs during the operation, it is displayed on the outdoor unit PCB.

| Display | Explanation | Remark |
|---------|-------------|--------|
| $Er \leftrightarrow P0$ | High temp. of Discharge (Protection control) | Error about protection control of outdoor unit |
| $Er \leftrightarrow P1$ | High temp. of outdoor heat exchanger (Protection control) | |
| $Er \leftrightarrow P5$ | COMP DOWN to protect being frozen | |
| $Er \leftrightarrow P6$ | Error of momentary power failure (disappears when the unit is Off/On) | |
| $Er \leftrightarrow t1$ | Error of OUT TEMP. sensor (OPEN/SHORT) | Errors about outdoor unit sensor (OPEN/SHORT) Detection during the operation of indoor unit (Sensing and sending errors into the communication data) |
| $Er \leftrightarrow t2$ | Error of temp. sensor in outdoor heat exchanger (OPEN/SHORT) | |
| $Er \leftrightarrow t3$ | Error of Discharge TEMP. sensor (OPEN/SHORT) | |
| $Er \leftrightarrow E1$ | System Down caused by communication error after completion of tracking | Communication and indoor unit errors |
| $Er \leftrightarrow E2$ | Mismatching of the indoor unit numbers set with those communicated after completion of tracking | |
| $Er \leftrightarrow E3$ | Error of float switch in indoor unit | Self-diagnosis of indoor and outdoor unit (x:indoor unit address) |
| $Er \leftrightarrow E5$ | Error of setting option switches for optional accessories | |
| $Er \leftrightarrow qx$ | OPEN/SHORT error of room sensor in indoor unit | |
| $Er \leftrightarrow rx$ | OPEN/SHORT error of evap in sensor in indoor unit | |
| $Er \leftrightarrow ux$ | Error of fan starting | Displays of operating status |
| $Er \leftrightarrow G4$ | Open error of electronic expansion valve in outdoor unit (Detected once or more times) | |
| $Er \leftrightarrow G5$ | Close error of electronic expansion valve in outdoor unit (Detected once or more times) | |
| $tu$ Flicker | Below -5°C when cooling (Outdoor temp.) | |
| $to$ Flicker | Over 30°C when heating (Outdoor temp.) | |
| K1, K2, K3, K4, K5 Flicker | Refer to page 15 | |

The order of priority : E1 → E2 → E4 → P0 → P1 → P5 → P6 → t1 → t2 → t3 → tu → to → G4 → G5 → E3 → qx → rx → vx → K1, K2, K3, K4, K5

- In case that the same error displays from multi-indoor units, the one having the faster address has the priority.

# 4-3 Wired remote controller

● If an error occurs, ◪ is displayed on the wired remote controller.

  If you would like to see an error code, press the Test button.

| Display | Description | Remarks |
|---|---|---|
| $Er \leftrightarrow EA$ | Error of communication between the outdoor unit and the wired remote controller | Communication errors |
| $Er \leftrightarrow Eb$ | Error of communication between the indoor unit and the wired remote controller | |
| $Er \leftrightarrow Cx$ | Open error of electronic expansion valve | Displays related to indoor unit (x : 0~F) |
| $Er \leftrightarrow dx$ | Close error of electronic expansion valve | |
| $Er \leftrightarrow ox$ | Error of float switch | |
| $Er \leftrightarrow qx$ | OPEN/SHORT error of room sensor in indoor unit | |
| $Er \leftrightarrow rx$ | OPEN/SHORT error of eva in sensor in indoor unit | |
| $Er \leftrightarrow tx$ | EEPROM error | |
| $Er \leftrightarrow Ux$ | EEPROM option error | |
| $Er \leftrightarrow Eo$ | Error of outdoor unit | For the details, refer to the installation manual of the outdoor unit. |

The order of priority : EA → Eb → Cx → dx → ox → qx → rx → tx → Ux → Eo
- In case that the same error displays from multi-indoor units, the one having the faster address has the priority.

## 4-4-1 Outdoor temp. sensor(OPEN/SHORT)

| Outdoor unit display | Er → t1 (Outdoor temp. sensor OPEN/SHORT error) |
|---|---|
| Indoor unit display | ◑ (Operation)   ✕ (Timer)   ◑ (Airflow)   ✕ (Filter) |
| How to determine | Disconnection and short of outdoor temp. sensor |
| Reason of error | Disconnection or leak of applied sensor |

Is not separated the out temp. sensor connector from PCB? (CN41)

No

Yes

Reoperation after connect to connector PCB

To measure the resistance value between two terminals after separating the out temp. sensor connector from PCB

| Temp. (˚C) | Resistance (kΩ) |
|---|---|
| 70 | 2.2 |
| 60 | 3.0 |
| 50 | 4.2 |
| 40 | 5.8 |
| 30 | 8.3 |
| 20 | 12.1 |
| 10 | 18.0 |
| 0 | 27.3 |
| -10 | 43.0 |

At this time, Is largely deviate the resistance value from side table value?

Yes

No

Outdoor unit thermistor is defective(replace)

Check the out temp. sensor is normal or not by use of out data display part → Check the temp. data is normal or not after pressing K4 3 times. At this time, is occurred the difference between the out temp. and data?

No

Yes

PCB and sensor are normal. To perform the test operation by use of K2

Reoperation after PCB replacement

## 4-4-2 Outdoor heat exchanger temp. sensor error(OPEN/SHORT)

| | |
|---|---|
| **Outdoor unit display** | **Er → t2 (Outdoor heat exchanger temp. sensor error(OPEN/SHORT)** |
| **Indoor unit display** | ◐ (Operation)  ✕ (Timer)  ◐ (Airflow)  ✕ (Filter) |
| **How to determine** | Disconnection and short of outdoor heat exchanger temp. sensor |
| **Reason of error** | Disconnection or leak of Applied sensor |

Is not separated the out heat exchanger temp. sensor connector from PCB?(CN41)

No → Reoperation after connect to connector PCB

Yes ↓

To measure the resistance value between two terminals after separating the out heat exchanger temp. sensor connector from PCB

| Temp. (˚C) | Resistance (kΩ) |
|---|---|
| 70 | 2.2 |
| 60 | 3.0 |
| 50 | 4.2 |
| 40 | 5.8 |
| 30 | 8.3 |
| 20 | 12.1 |
| 10 | 18.0 |
| 0 | 27.3 |
| -10 | 43.0 |

Yes ↓

At this time, Is largely deviate the resistance value from side table value?

Yes → Outdoor heat exchanger temp. is defective(replace)

No ↓

Check the out temp. sensor is normal or not by use of out data display part
→ Check the temp. data is normal or not after pressing K4 2 times. At this time, is occurred the difference between the out temp. and data?

No → PCB and sensor are normal. To perform the test operation by one of K2

Yes ↓

Reoperation after PCB replacement

## 4-4-3 Outdoor discharge temp. sensor error(OPEN/SHORT)

| Outdoor unit display | Er → t3 (Outdoor discharge temp. sensor OPEN/SHORT error) |
|---|---|
| Indoor unit display | ◑ (Operation)   ✕ (Timer)   ◑ (Airflow)   ✕ (Filter) |
| How to determine | Disconnection and short of outdoor discharger temp. sensor |
| Reason of error | Disconnection or leak of Applied sensor |

Is not separated the outdoor discharge temp. sensor connector from PCB?(CN42)

No → Reoperation after connect to connector PCB

Yes

To measure the resistance value between two terminals after separating the outdoor discharge temp. sensor connector from PCB

| Temp. (˚C) | Resistance (kΩ) |
|---|---|
| 130 | 8.9 |
| 120 | 11.2 |
| 100 | 18.5 |
| 80 | 32 |
| 60 | 59 |
| 25 | 200 |
| 20 | 242 |
| 10 | 362 |
| 0 | 553 |

Yes

At this time, Is largely deviate the resistance value from side table value?

Yes → Outdoor heat exchanger temp. is defective(replace)

No

Check the out temp. sensor is normal or not by use of out data display part
➞ Check the temp. data is normal or not after pressing K4 1 times. At this time, is occurred the difference between the out temp. and data?

No → PCB and sensor are normal. To perform the test operation by use of K2

Yes

Reoperation after PCB replacement

## 4-4-4 Communication error during the operation

| Outdoor unit display | Er → E1 (Communication error during the operation) |
|---|---|
| Indoor unit display | ✕ (Operation)    ◑ (Timer)    ◑ (Airflow)    ✕ (Filter) |
| How to determine | Disconnection and short of communication lines |
| Reason of error | Communication error between the indoor unit and outdoor unit. |

To check the display after pressing the reset key on outdoor PCB

When tracking, is there any indoor answer from display part?

No →

**Multi type**

After 2 minutes, to check if PCB address setting of indoor unit displayed the communication error among indoor units are overlapped or not.
(If the indoor unit address is overlapped, the communication error is occurred.)
- In this case, the communication error is occurred to over two indoor units set wrong.

Yes

To measure the 2 lines of outdoor side by scope after removing the communication line connecting from outdoor unit to indoor unit.

If address is no fault, to exchange the indoor unit PCB after communication line check.

At this time, is the voltage between lines spherical wave over DC ±0.7V like below figure?

No →

Yes

After connecting again the communication line connecting from outdoor unit to indoor unit, to remove the communication connector on indoor unit PCB, and find the indoor unit preventing communication through connecting the communication connectors each by each, and then replace the indoor unit PCB after line check.

Replace PCB after checking the outdoor unit communication line and connector

Good

Bad

+0.7V

-0.7V

## 4-4-5 Communication error between indoor and outdoor after initial power input.

| Outdoor unit display | Er → E2 (Tracking error) |
|---|---|
| Indoor unit display | × (Operation)　◑ (Timer)　◑ (Airflow)　× (Filter) |
| How to determine | Mismatching the communicating indoor unit and setting switch indoor numbers When outdoor tracking |
| Reason of error | Communication error between the indoor unit and outdoor unit, and installation number switch setting miss |

Check the setting value of indoor unit installation number setting switch of outdoor PCB and actual indoor unit installation numbers

If the indoor unit number installed is one, set the outdoor unit switch forward to "0", "1"
→ "0" and "1" spell the connection of an indoor unit.

Is equal indoor unit actual installation number and installation number setting switch?

No

Yes

Press the reset key K3 of outdoor unit PCB and check the display to check the number of indoor units answering to the tracking

After setting the indoor unit installation setting number switch correctly, re-perform the tracking by pressing the reset key K3 of outdoor unit PCB

When tracking, is there any indoor answer from display part?

No

Yes

To measure the 2 lines of outdoor unit side by use of scope after removing the communication line connecting from outdoor unit to indoor unit

**Multi type**

After 2 minutes, to check if PCB address setting of indoor unit displayed the communication error among indoor units is overlapped or not .
(If the indoor unit address is overlapped, the communication error is occurred.)
- In this case, the communication error is occurred to over two indoor units set wrong

At this time, is the voltage between lines spherical wave over DC ±0.7V?

Yes

If address is no fault, to exchange the indoor unit PCB after communication line check.

After connecting again the communication line connecting from outdoor unit to indoor unit, to check this communication is reverse or not, and if there is no fault, to find the indoor unit preventing communication through connecting indoor units each by each, and then exchange the indoor unit PCB after line check

## 4-4-6 Indoor float switching error

| Outdoor unit display | Er → E3 (Indoor float switching error ) |
|---|---|
| Indoor unit display | ✕ (Operation)    ✕ (Timer)    ◗ (Airflow)    ◗ (Filter) |
| How to determine | The status continues over 1 minute that indoor unit float switch is opened. |
| Reason of error | The rising of water level of drain pan due to the disorder of indoor unit drain pump, the badness of detection sensor |

Is the resistance value ∞ when measuring the resistance value of two terminal after taking out the floating switch connector connected to indoor unit PCB? (Open status)

No

Re-assembly the floating switch connector and perform the reset of outdoor power(Required the reset of indoor unit power)

Yes

Is the same error occurred?

No

Is much the water of drain pan ?

Yes

Replace the indoor unit PCB

Normal operation

Yes

No

Reset the indoor unit power and check the drain pump operation

Check the floating switch bad. Reset the indoor unit power after replce

Does the drain pump operat?

No

Yes

Is the terminal voltage of drain pump PCB about AC 220V?

No

Does the water level decrease?

No

Yes

Yes

Replace the drain pump

Replace the indoor unit PCB

Yes

Normal operation

Replace the drain pump

✻ **Note : E3 error should be released when indoor unit power is reset.**

# 5. Exploded Views and Parts List

## 5-1 Indoor Unit
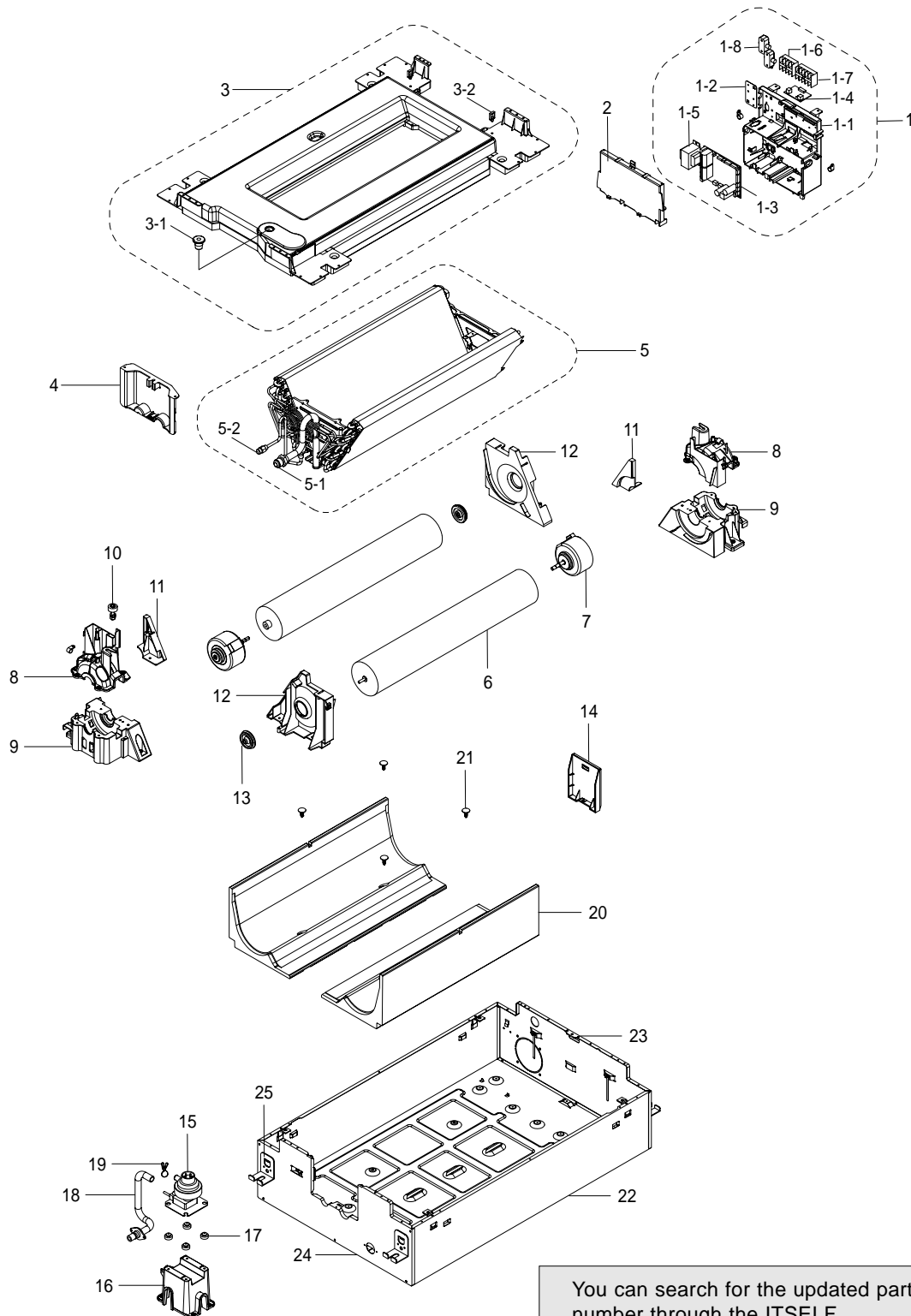
You can search for the updated part code number through the ITSELF.
URL : http://itself.sec.samsung.co.kr

■ **Parts List**

| No. | Code No. | Description | Specification | Q'TY | |
|---|---|---|---|---|---|
| | | | | GH052EAM | GH070EAM |
| 1 | DB93-01811A | ASS'Y CONTROL BOX IN | ASS'Y | 1 | 1 |
| 1-1 | DB61-01482A | CASE CONTROL | PS(V0), BLK | 1 | 1 |
| 1-2 | DB61-01236A | BASE TERMINAL | SGCC-M | 1 | 1 |
| 1-3 | DB93-01480A | ASS'Y MAIN PCB | ASS'Y PCB | 1 | 1 |
| 1-4 | DB93-01481A | SUB PCB | PCB | 1 | 1 |
| 1-5 | DB26-10065B | TRANS POWER | | 1 | 1 |
| 1-6 | DB93-01783A | ASS'Y TERMINAL BLOCK 4P | DAF 4P | 1 | 1 |
| 1-7 | DB93-01784A | ASS'Y TERMINAL BLOCK 6P | DAF S6P | 1 | 1 |
| 1-8 | DB61-00250A | CLAMP WIRE | NY | 2 | 2 |
| 2 | DB63-00779A | COVER CONTROL | HIPS | 1 | 1 |
| 3 | DB91-00232A | ASS'Y DRAIN PAN | ASS'Y DRAIN | 1 | 1 |
| 3-1 | DB63-00062A | RUBBER DRAIN CAP | NBR | 1 | 1 |
| 3-2 | DB71-50025A | WIRE HOLDER | NY | 1 | 1 |
| 4 | DB63-00672A | COVER SIDE LF | PP(INCOMBUSTIBLE), BLK | 1 | 1 |
| 5 | DB96-02754A | ASS'Y EVAP | FP 1.5 SLIT 3x10 | - | 1 |
| | DB96-03496A | ASS'Y EVAP | FP 1.3 SLIT 2x10 | 1 | - |
| 5-1 | DB96-02753A | ASS'Y TUBE COLLECTOR | 12.7ø | - | 1 |
| | DB96-03325A | ASS'Y TUBE COLLECTOR | 9.52ø | 1 | - |
| 5-2 | DB96-02752A | ASS'Y INLETPART | 6.35ø CAPI 2.0ø | - | 1 |
| | DB96-03324A | ASS'Y INLETPART | 6.35ø CAPI 2.0ø | 1 | - |
| 6 | DB94-00040S | ASS'Y C-F-FAN | ø95 8 ranks, AS+G/F 20% | 2 | 2 |
| 7 | DB31-00241A | MOTOR ASSY | PFS040AVEB | 2 | 2 |
| 8 | DB90-01182A | ASS'Y COVER MOTOR | HIPS, INSU | 2 | 2 |
| 9 | DB90-01184A | ASS'Y CASE MOTOR | HIPS, INSU | 2 | 2 |
| 10 | DB95-00131F | ASS'Y SENSOR FLOAT | | 2 | 2 |
| 11 | DB90-01183A | ASS'Y COVER EVAP GUIDE | HIPS, INSU | 2 | 2 |
| 12 | DB90-01185A | ASS'Y CASE FAN SIDE SUB | HIPS, INSU | 2 | 2 |
| 13 | DB94-00066A | ASS'Y BEARING | BEARING | 2 | 2 |
| 14 | DB61-01475A | GUIDE CONTROL | HIPS | 1 | 1 |
| 15 | DB31-00207A | DRAIN PUMP | KS1003SAC | 1 | 1 |
| 16 | DB61-01293A | HOLDER DRAIN PUMP | HIPS | 1 | 1 |
| 17 | DB73-00022B | RUBBER DRAIN PUMP | HIPS(HB), BLK | 4 | 4 |
| 18 | DB94-00371A | ASS'Y DRAIN SOCKET | ASS'Y | 1 | 1 |
| 19 | DB69-00137A | BAND RING | STS304 | 1 | 1 |
| 20 | DB69-00695A | CUSHION BODY | EPS(GRY) | 2 | 2 |
| 21 | DB61-01468A | CLIP BRUSH | EPS(GRY) | 4 | 4 |
| 22 | DB64-00778A | CABINET BASE | SGCC-M 0.7T | 1 | 1 |
| 23 | DB64-00781A | CABI SIDE RH | SGCC-M 0.7T | 1 | 1 |
| 24 | DB64-00780A | CABI SIDE LF | SGCC-M 0.7T | 1 | 1 |
| 25 | DB61-00712A | HOLDER CABI SIDE | SGCC-M 1.0T | 4 | 4 |
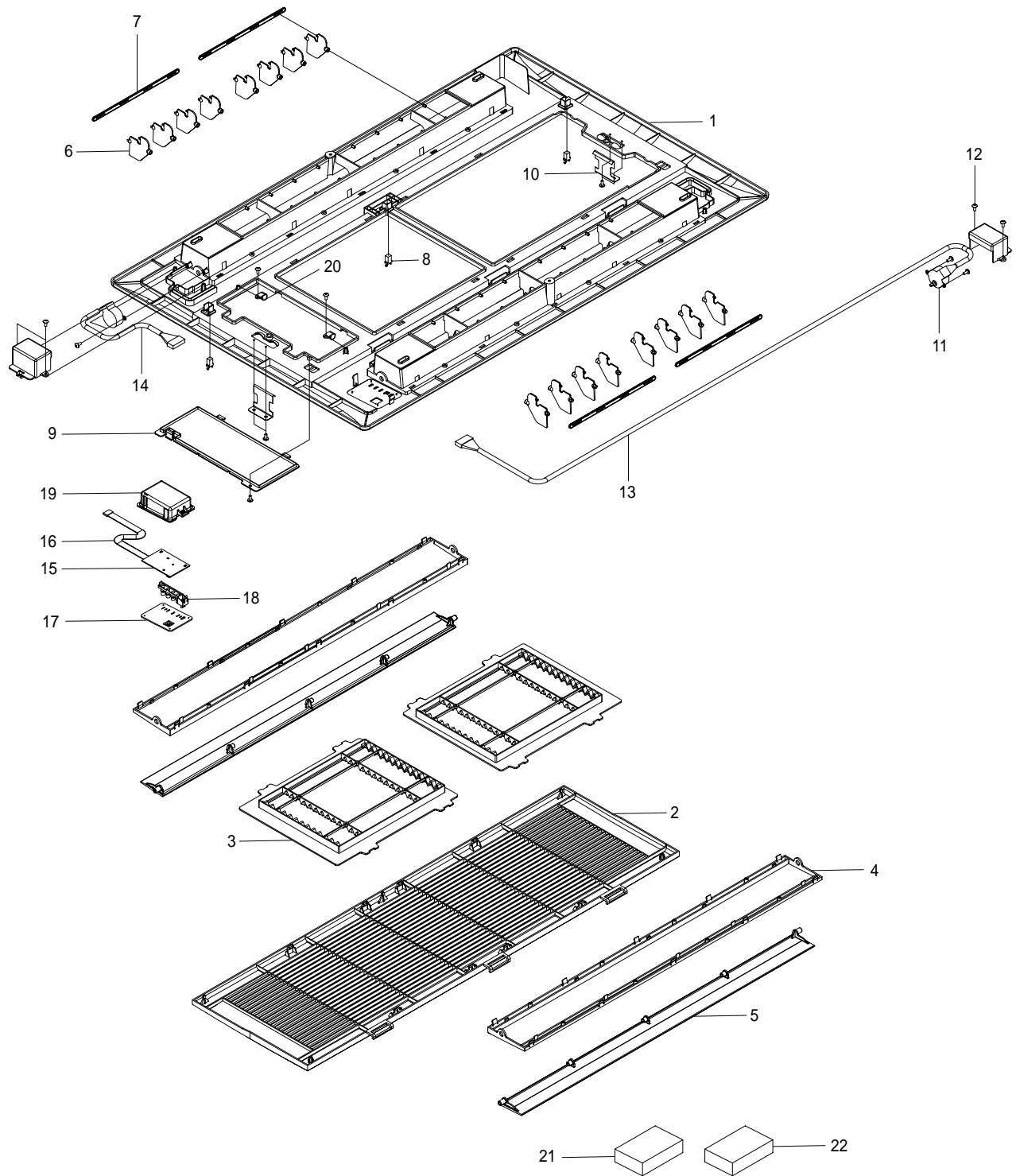
■ **Parts List**

| No. | Code No. | Description | Specification | Q'TY | | |
|-----|----------|-------------|---------------|------|------|------|
| | | | | PG103M | PG103M1 | PG103M2 |
| 1 | DB64-00777A | PANEL FRONT | ABS | 1 | 1 | 1 |
| 2 | DB64-00775A | GRILLE FRONT | ABS | 1 | 1 | 1 |
| 3 | DB64-00774A | FILTER INLET AIR | ASS'Y | 2 | 2 | 2 |
| 4 | DB61-01297A | CASE OUTLET AIR | HIPS | 2 | 2 | 2 |
| 5 | DB66-00415A | BLADE H | HIPS | 2 | 2 | 2 |
| 6 | DB66-00402A | BLADE V | PP | 16 | 16 | 16 |
| 7 | DB66-00416A | LINK BLADE V | PP | 4 | 4 | 4 |
| 8 | DB66-00755A | LATCH DC | ASS'Y | 3 | 3 | 3 |
| 9 | DB63-00676A | COVER PANEL | HIPS | 1 | 1 | 1 |
| 10 | DB70-00031A | PLATE HANGER | STS304 | 2 | 2 | 2 |
| 11 | DB31-10153D | MOTOR STEP | ASS'Y | 2 | 2 | 2 |
| 12 | DB61-00535A | HOLDER MOTOR | HIPS V0 BLK | 2 | 2 | 2 |
| 13 | DB39-00874C | C/W MOTOR STEP LONG | UL1007 | 1 | 1 | 1 |
| 14 | DB39-00874B | C/W MOTOR STEP SHORT | UL1007 | 1 | 1 | 1 |
| 15 | DB93-01666A | PCB DISPLAY | | 1 | 1 | 1 |
| 16 | DB39-00875A | C/W DISPLAY | UL1007 | 1 | 1 | 1 |
| 17 | DB64-00745A | INLAY WINDOW | PC | 1 | 1 | 1 |
| 18 | DB64-00746A | INLAY BUTTON | ABS | 1 | 1 | 1 |
| 19 | DB61-01238A | CASE LED PCB | ABS | 1 | 1 | 1 |
| 20 | - | CABLE CLAMP | 4N | 2 | 2 | 2 |
| 21 | DB97-00871D | ASS'Y WIRED REMOCON | WIRED | - | 1 | - |
| 22 | DB97-00387F | ASS'Y WIRELESS REMOCON | WIRELESS | - | - | 1 |
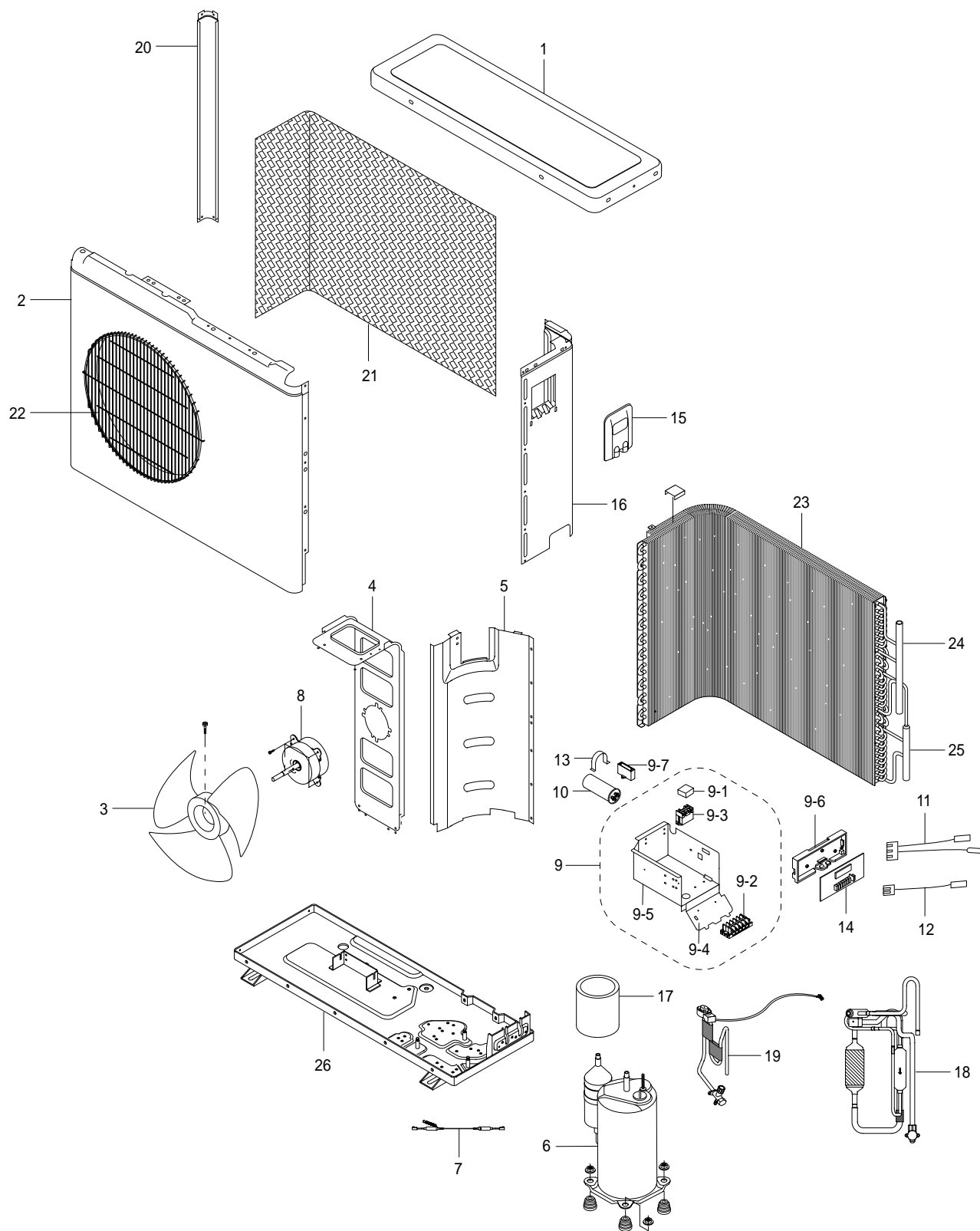
■ **Parts List**

| No. | Code No. | Description | Specification | Q'TY | |
|-----|----------|-------------|---------------|------|------|
| | | | | UH052EAMT | UH070EAMT |
| 1 | DB90-01363A | ASS'Y-COVER TOP | ASS'Y | 1 | 1 |
| 2 | DB90-01388A | ASS'Y CABINET-FRONT | ASS'Y | 1 | 1 |
| 3 | DB67-00140A | FAN-PROPELLER | AS+GF20%,OD460,3BLADE | 1 | 1 |
| 4 | DB61-01167A | BRACKET-MOTOR | SGCC-M,T1.6 | 1 | 1 |
| 5 | DB90-00940B | ASS'Y-PARTITION | ASS'Y | 1 | 1 |
| 6 | DB95-00455A | ASS'Y COMP | SIAM,NN29VACMT | - | 1 |
| | DB95-00454A | ASS'Y COMP | SIAM,NN21VBAMT | 1 | - |
| 7 | DB95-30013T | ASS'Y HEATER COMP | 40W | 1 | 1 |
| 8 | DB31-00216A | MOTOR-FAN | OSEM-886SRC(S509) | - | 1 |
| | DB31-00027G | MOTOR-FAN | OSEM-906SRC(S507) | 1 | - |
| 9 | DB93-02410A | ASS'Y CONTROL OUT | ASS'Y | - | 1 |
| | DB93-02410B | ASS'Y CONTROL OUT | ASS'Y | 1 | - |
| 9-1 | DB26-10070A | TRANS-POWER | AC230V,DC17V | 1 | 1 |
| 9-2 | DB65-00112A | TERMINAL BLOCK-6P | 35A 4P,25A 2P | 1 | 1 |
| 9-3 | 3501-001204 | RELAY POWER | MUF20CF,2A | 1 | 1 |
| 9-4 | DB61-30625A | BRACKET-TERMINAL | SGCC-M | 1 | 1 |
| 9-5 | DB93-40264E | ASS'Y CONTROL BOX OUT | ASS'Y | 1 | 1 |
| 9-6 | DB61-00152A | CASE-PCB-OUT | T2.5,ABS,BLK | 1 | 1 |
| 9-7 | 2301-001369 | C-FILM | 3uF/450VAC | 1 | 1 |
| 10 | 2501-001236 | C-OIL | 30uF/450VAC | - | 1 |
| | 2501-001235 | C-OIL | 25uF/450VAC | - | 1 |
| | 2501-001240 | C-OIL | 50uF/450VAC | 1 | - |
| 11 | DB32-00021F | THERMISTOR | AWG22,L470,L550 | 1 | 1 |
| 12 | DB32-00071C | THERMISTOR | AWG22,L600 | 1 | 1 |
| 13 | DB61-01685A | BRACKET-CAPACITOR | SGCC-M | - | 1 |
| | DB69-60008A | BAND-CAPACITOR | SGCC-M | 1 | - |
| 14 | DB93-01855K | ASS'Y PCB MAIN | CEILING OUTDOOR PCB | 1 | - |
| | DB93-01855J | ASS'Y PCB MAIN | CEILING OUTDOOR PCB | - | 1 |
| 15 | DB90-40176D | ASS'Y COVER CONTROL | ASS'Y | 1 | 1 |
| 16 | DB90-01189B | ASS'Y-ASS'Y CABI SIDE RH | ASS'Y | 1 | 1 |
| 17 | DB62-01471A | INSULATION-CLOTH COMP | UH070EAMT | - | 1 |
| | DB62-02295A | INSULATION-CLOTH COMP | UH052EAMT | 1 | - |
| 18 | DB96-02876A | ASS'Y 4WAY VALVE | ASS'Y | - | 1 |
| | DB96-02877A | ASS'Y 4WAY VALVE | ASS'Y | 1 | - |
| 19 | DB96-02896A | ASS'Y EEV VALVE | ASS'Y | - | 1 |
| | DB96-02896B | ASS'Y EEV VALVE | ASS'Y | 1 | - |
| 20 | DB63-00613A | GUARD-COND | SECC-P,T1.6 | 1 | 1 |
| 21 | DB61-01221A | GUIDE-SCREEN | P.E.H 100%,T2.5,1015x615,BLK | 1 | 1 |
| 22 | DB63-00320A | GUARD-FAN | HSWR,460 | 1 | 1 |
| 23 | DB96-02849A | ASS'Y COND UNIT | UH070EAMT,UH052EAMT | 1 | 1 |
| 24 | DB96-02936A | ASS'Y COLLECTOR IN | ASS'Y | 1 | 1 |
| 25 | DB96-02937A | ASS'Y COLLECTOR OUT | ASS'Y | 1 | 1 |
| 26 | DB90-01291A | ASS'Y CABINET BASE OUT | ASS'Y | 1 | 1 |

# 6. Block Diagram

| | |
|---|---|
| Up and down STEP MOTOR | |
| Room temp. SENSOR pipe sensor pipe outlet sensor | **MAIN PCB** |
| Indoor left and right FAN RPM feedback control | |
| Function display part remocon receiving part | |
| Option saving control | **MICOM** |
| Communication(485comm) | |
| Indoor unit ADDRESS setting part | |
| RMC ADDRESS setting part | **485 comm control** |
| Blackout restoring function | |
| Room temp. compensation function | |
| Power source comm wrong connection prevention function | |
| Vent fan control | |

**Central control**
- Wire remocon
- Relay
- Central controller

- 485 comm applied, room temp. compensation
- EEPROM option saving and blackout restoring function
- Left and right FAN MOTOR phase control
- Power-comm line misconnection prevention function
- Cost saving related sub-option separation between indoor unit communication part
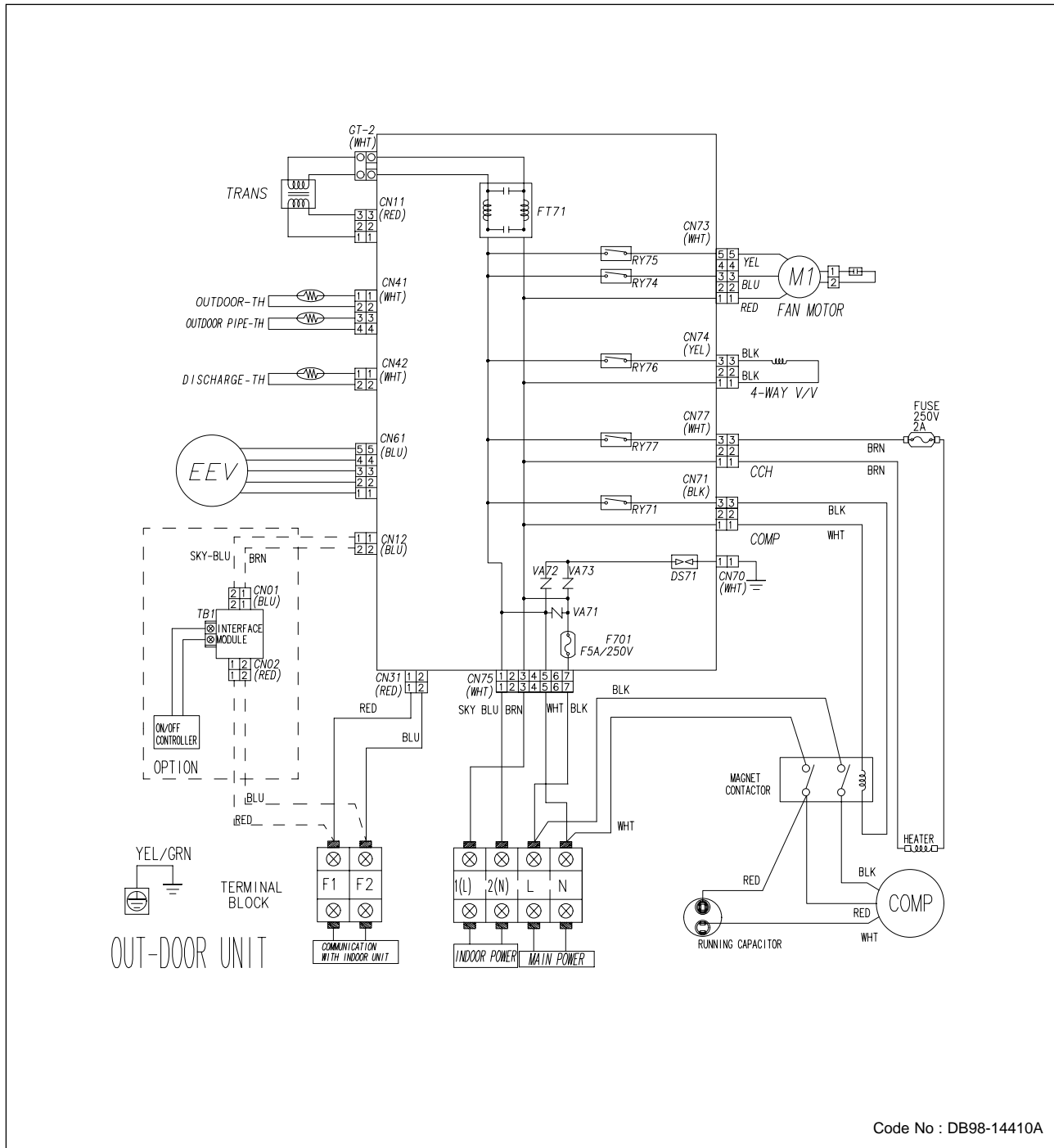- Option part sub-development according to the SVC structure

# 7. Wiring Diagram

## 7-1 Indoor Unit
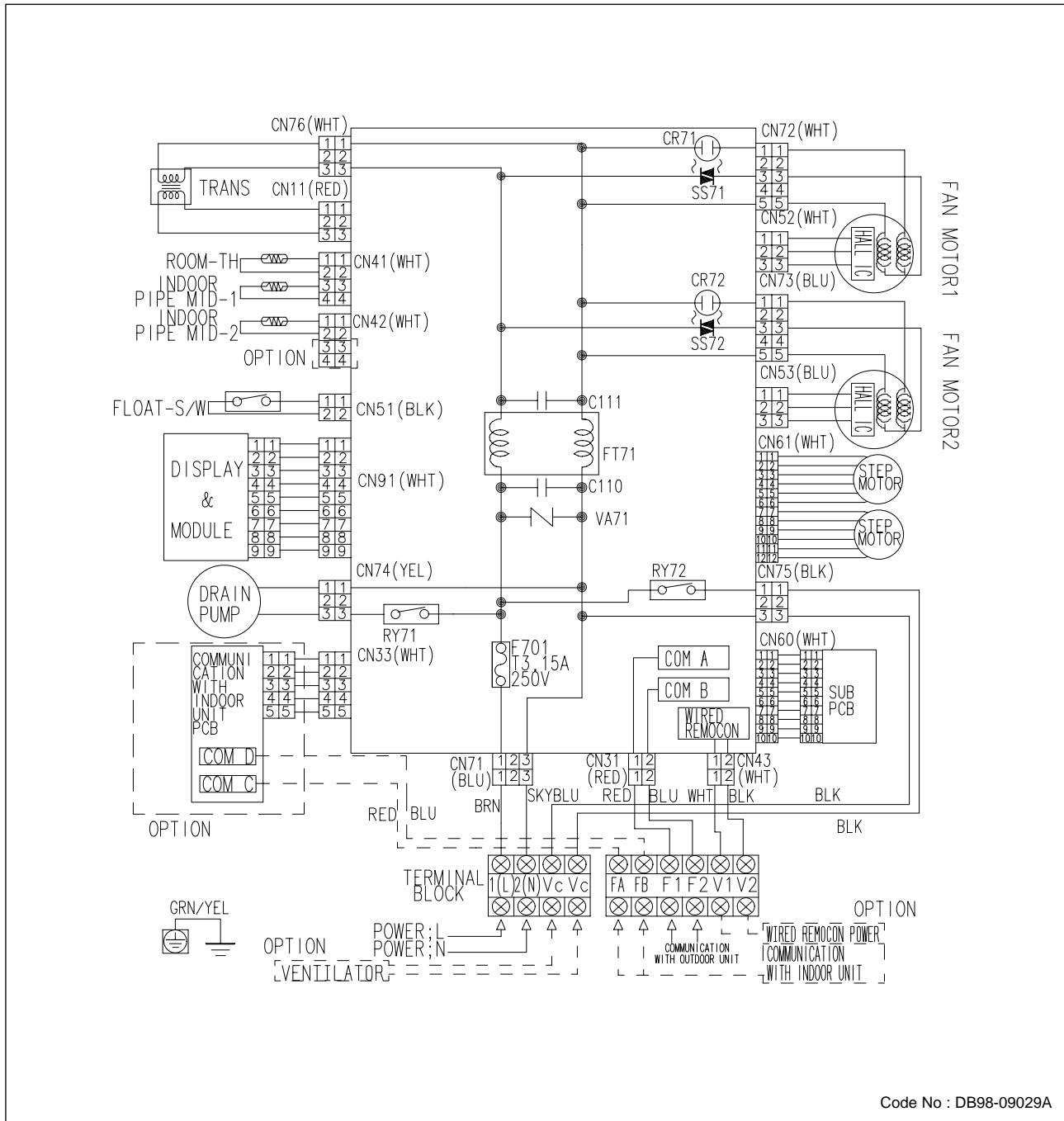


Code No : DB98-09029A

This Document can not be used without Samsung's authorization.

## ■ UH052EAMT



Code No : DB98-14410A
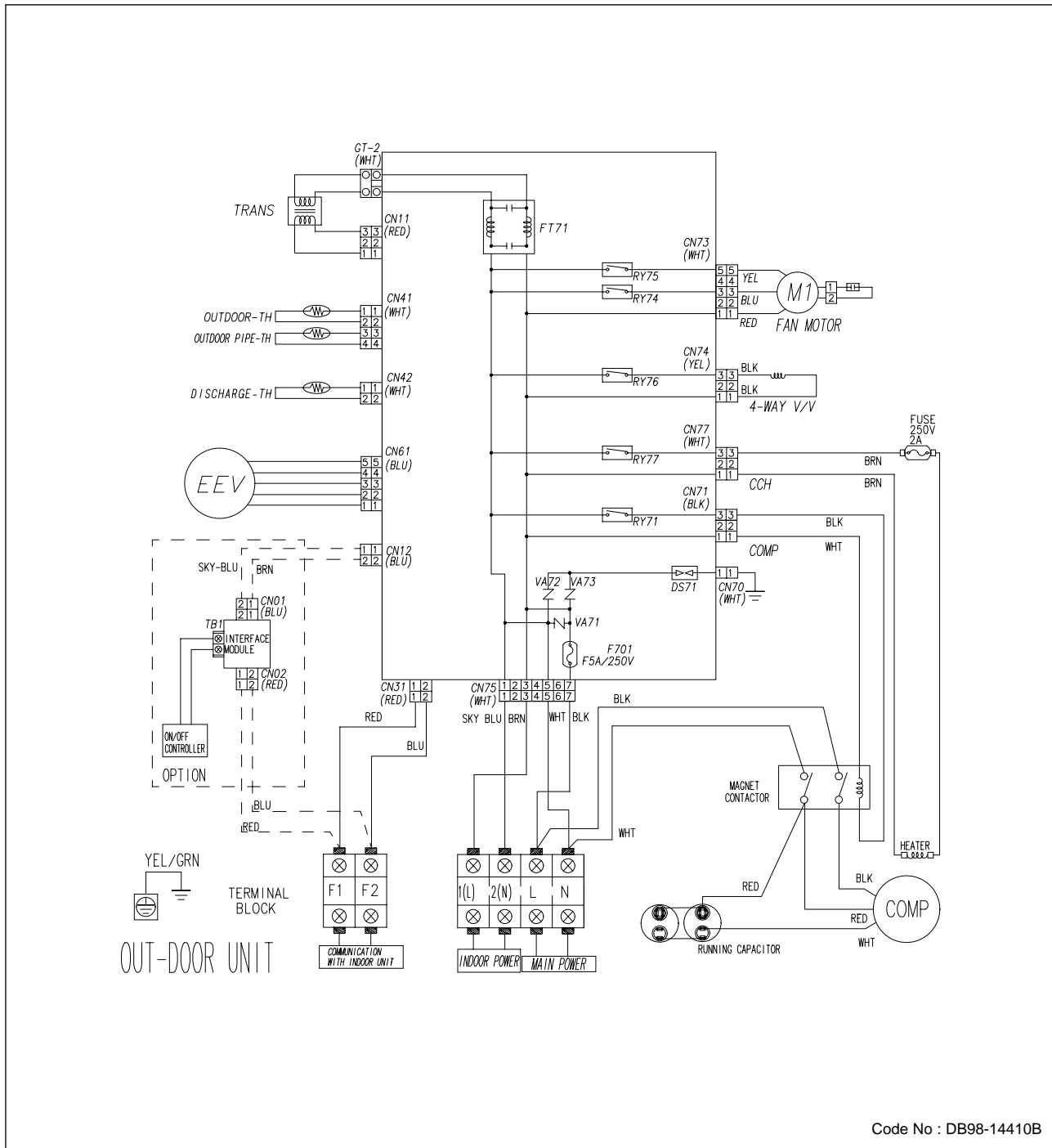
This Document can not be used without Samsung's authorization.
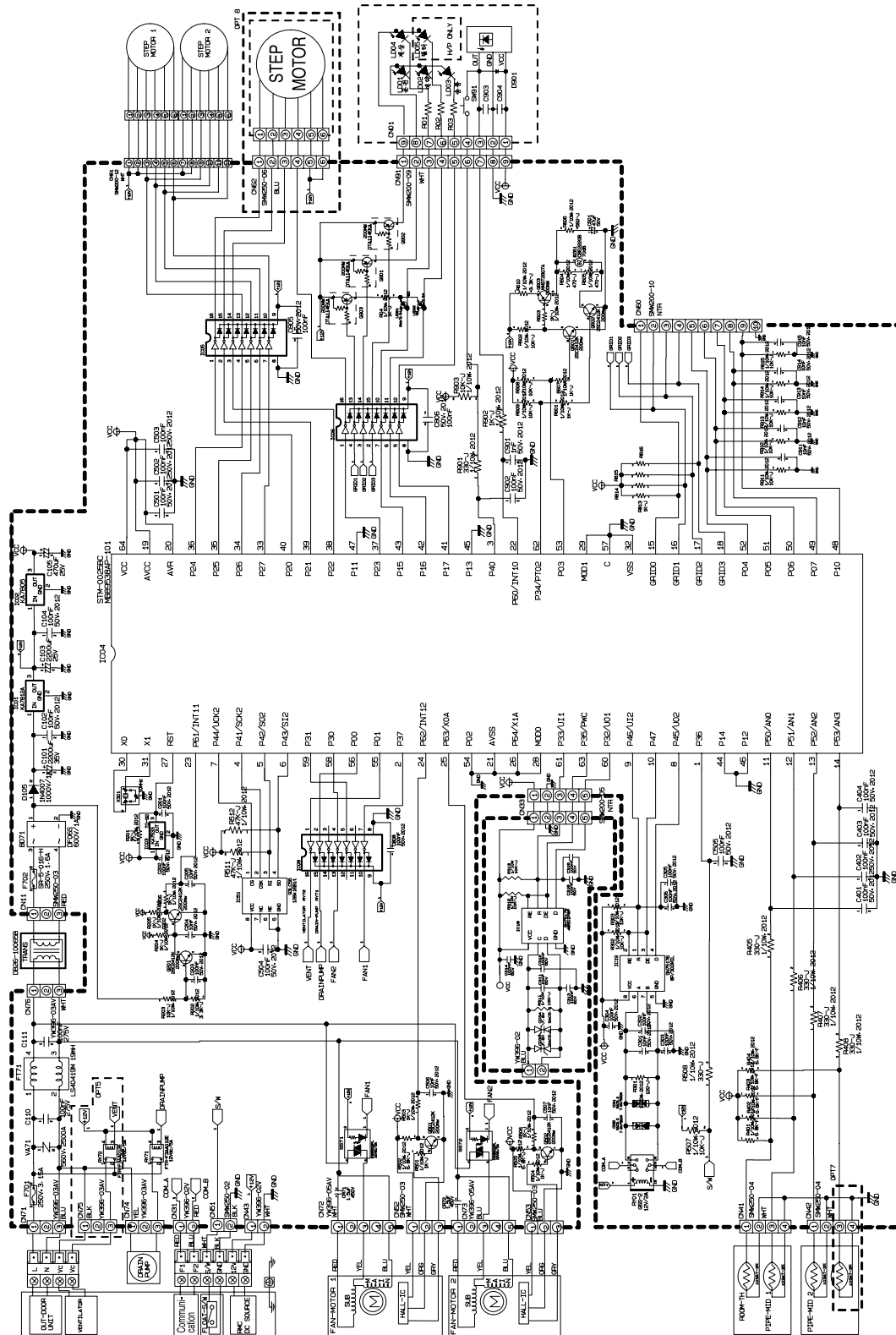
## ■ UH070EAMT



Code No : DB98-14410B

This Document can not be used without Samsung's authorization.
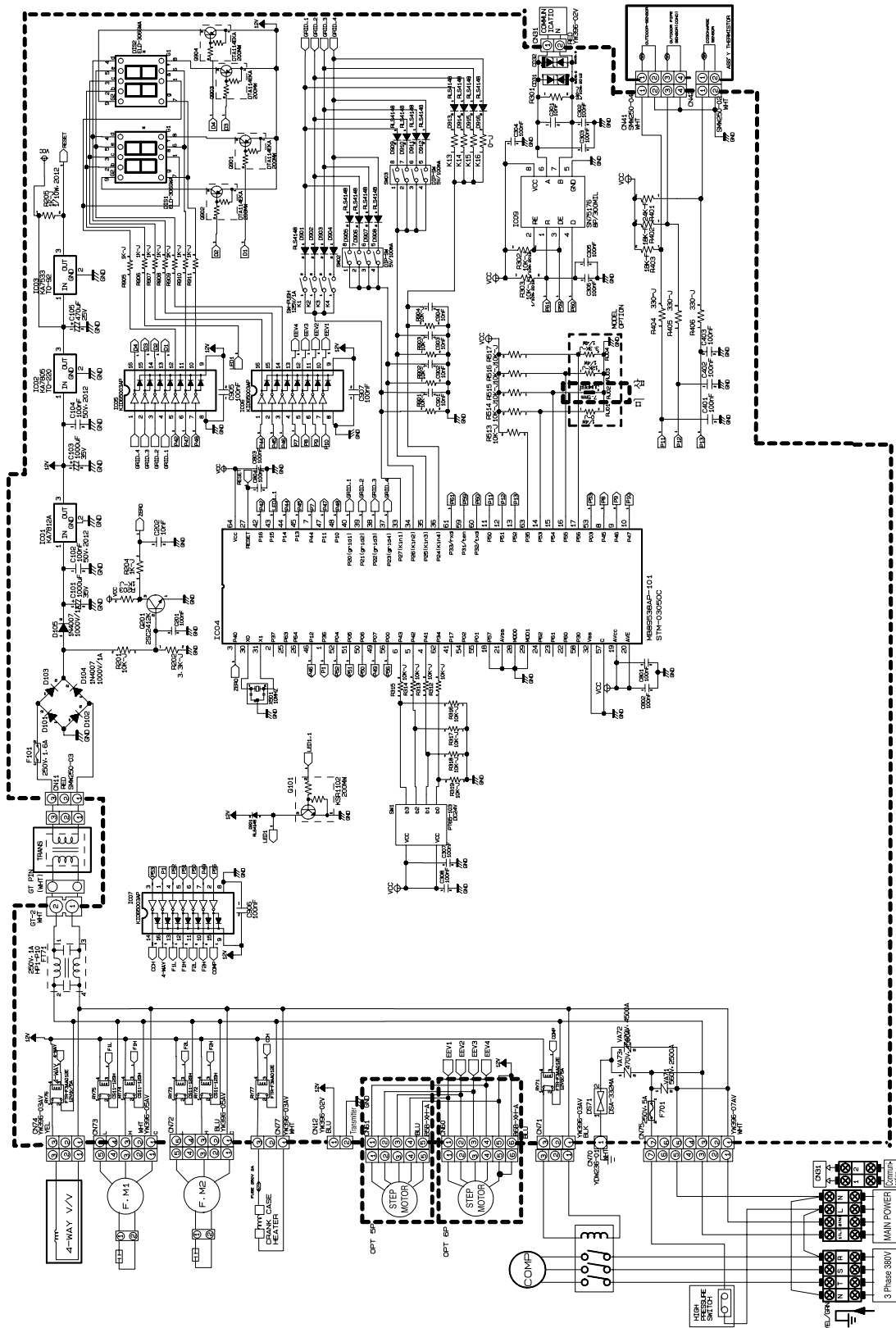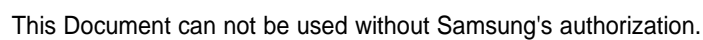
# 8. Schematic Diagram

## 8-1 Indoor Unit



This Document can not be used without Samsung's authorization.

## ■ UH052EAMT



This Document can not be used without Samsung's authorization.

## ■ UH070EAMT



This Document can not be used without Samsung's authorization.

**SAMSUNG**

ELECTRONICS