SAMSUNG

# ECO HEATING SYSTEM

| | OUTDOOR UNIT | HYDRO UNIT |
|---|---|---|
| Model : | AE040JXEDEH | AE090JNYDEH |
| | AE060JXEDEH | AE090JNYDGH |
| | AE090JXEDEH | AE160JNYDEH |
| | AE120JXEDEH | AE160JNYDGH |
| | AE140JXEDEH | |
| | AE160JXEDEH | |
| | AE090JXEDGH | |
| | AE120JXEDGH | |
| | AE140JXEDGH | |
| | AE160JXEDGH | |

# SERVICE *Manual*

## ECO HEATING SYSTEM

## CONTENTS

# 1. Precautions

## 1-1 Precautions for the Service

- **Use the standard parts when replacing the electric parts.**
  – Confirm the model name, rated voltage, rated current of the electric parts.

- **When repairing the equipment, connection of the harness parts must be firm and solid.**
  – A loose connection may cause noise or other malfunction.

- **When assembling and disassembling the equipment while it is laid down, lay it on soft cloth.**
  – Otherwise it may scratch the back of the exterior of the product.

- **Remove dust or dirt completely from the housing block, wiring block and service parts during repair.**
  – This helps prevent the danger of fire caused by tracking or short circuit.

- **Fasten the valve caps of service valves and charging valves of outdoor unit as much as possible using adjustable wrenches.**

- **Check the status of the components' assembly after repair service.**
  – The status must be the same as before the repair service.

## 1-2 Precautions related to static electricity and PL

- **The PCB power supply block is susceptible to static electricity. Therefore, care must be taken during repair or measuring while the power is on.**
  – Wear insulation gloves for PCB repair or measuring.

- **Check whether the installation location is at least two meters away from other electronic products such as TV, video, or audio.**
  – Otherwise, the video quality might be degraded or noise might be generated.

- **Do not let end users repair the products themselves.**
  – Unauthorized disassembly might cause electric shock or fire.

## 1-3 Precautions for the Safety

- **Do not pull any electric wires and do not touch an auxiliary power switch with a wet hand.**
  – There is a danger of electric shock or fire.
- **In case any wire or power plug has been damaged, replace it to eliminate any possible danger.**
- **Do not bend the power cord by force and do not put any heavy object on the power cord.**
  – There is a danger of electric shock or fire.
- **Do not use multi socket.**
  – There is a danger of electric shock or fire.
- **Ground the product if necessary.**
  – Be sure to ground the product if there is any danger of electric leakage due to water or moisture.
- **Be sure to turn off the auxiliary power switch or pull out the power plug during replacement or repair of electric parts.**
  – There is a danger of electric shock.
- **The installation must be done by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard.**
  – Installation by an unqualified person may cause a water leakage, electric shock or fire and so on.
- **The electric work must be done by service agent or similarly qualified persons according to national wiring regulations and use only rated cable.**
  – If the capacity of the power cable is insufficient or electric work is not properly completed, electric shock or fire may occur.
- **Use only rated parts and tools.**
  – If you don't use the rated parts and tools, it can cause trouble with the air conditioner and bring about injury.
- **If any gas or impurities except R410A refrigerant come into the refrigerant pipe, serious problem may occur and it may cause injury.**
- **Leak test must be done using only Nitrogen($NO_2$)gas.**

- R410A refrigerant is used for EHS.
  – When using R410A, moisture or foreign substances may affect to the capacity and reliability of the product. Safety precautions must be taken when installing the refrigerant pipe.
  – The design pressure of the unit is 4.1MPa. Select appropriate material and thickness according to the regulations.
  – R410A is a quasi-azeotrope of two refrigerants.
  Make sure to charge liquid one when adding refrigerant.
  If you charge gaseous refrigerant, it may affect the capacity and reliability of the product as a result of change formation of the refrigerant.

## 1-4 Precautions for handling a system containing refrigerants

**All system containing refrigerants shall be removed under regional regulations prior to the disposal to prevent the potential health and environmental consequences.**

- **Harmful for human body**
  – When emitted liquid refrigerant contacts human body, contacted area may get frostbite, blister or become numb.
  If refrigerant leaks in airtight area, lack of oxygen may cause suffocation. When refrigerant is heated, it may generate harmful gas.
- **Precautions for handling container**
  – Do not apply shock or heat to the refrigerant container.

## 1-5 Precautions for the brazing

- **Clear any dangerous or inflammable materials in surrounding environment.**
- **Make sure to empty the remaining refrigerant in the product or pipe before brazing.**
  – Brazing with the refrigerant still remaining in the product or pipe may cause poor result and generate harmful gas. Furthermore, pressure of the refrigerant may increase and cause damage to the leaking part. This may lead harmful refrigerant and oil to spurt out which can be dangerous for service personnel.
- **Use nitrogen gas to get rid of the oxide forming during brazing.**
  – Using other type of gas may cause damage to the product or the exterior.

## 1-6 Precautions for charging refrigerants

- **Add quantity of the refrigerant using a scale and perform a test operation with S-net.**
  – Product performance may decrease if you add excessive amount of refrigerant.
- **Do not charge refrigerants while heating the container up.**
  – The container may get damaged by the heat and result in explosions.
- **Do not operate the product without pressure switch(for product protection) and sensor.**
  – If there are any internal blockage, high refrigerant pressure increase may damage the product or exterior.

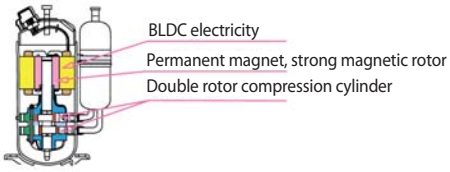
# 2. General Overview

## 2-1 Features of the System

**POWER SAVING** **EHS(Eco Heating System)** considers the trend in air conditioner use. It optimizes the energy efficiency of loads ranging from partial to full. It achieves an excellent energy effect for the users of the air conditioner.

### Samsung patented compressor

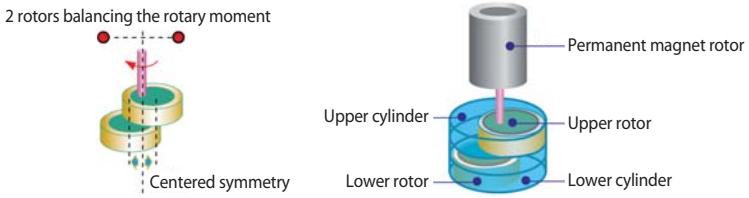
Samsung has been researching and developing compressors since the 70's.
It has developed power saving compressors for more than thirty years.
The **EHS(Eco Heating System)** compressor adopts a double-rotor BLDC compressor with permanent magnets made by Samsung.
Electricity for the compressor rotor is obtained from a neodium-iron-boron permanent magnetic material (boron magnet can attract iron material weighing 1000 times its own weight.) It strengthens the rotary moment of the compressor to maximize the entire efficiency of the compressor.





Nd-Fe-B Neodium-Iron-Boron magnet

**SAMSUNG**'s double-rotor compressor has the upper and lower rotors designed symmetrically.
The double rotor in symmetry can remove vibrations caused by the eccentric design of the cylinder.



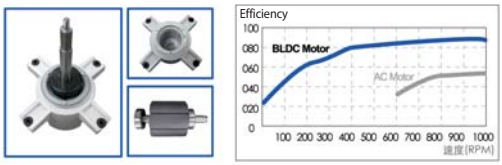

### High efficiency heat exchanger

**EHS(Eco Heating System)** uses new multiple-teeth screw pipes with a diameter of 8 mm to improve the heat exchangeability of the pipe by **30.8%**.

The water-friendly aluminum foil in the heat exchanger uses the G-fin patent design to improve the efficiency of heat exchange by **13%**.


### DC fan electricity

The **EHS(Eco Heating System)** outdoor machine uses DC fan electricity. The rotational speed of electricity is 100 RPM to 1050 RPM with step-free control. The electrical efficiency is improved by about **33%** compared to AC electricity.



## 2-1-1 Key features of the EHS(SPLIT)

### ■ Integrated Heating & Cooling system

**Plate Heat exchanger is a integral part in heating & cooling system. For user's convenience, PHE is integrated into the system. This concept will help space saving and lower costs for pipe line reduction.**

### ■ Running Costs-Reduction of Up to 33.5%

**Samsung EHS, known for its world class efficiency (12kW floor heating system with 4.63), can reduce 33.5% of your running costs as compared to a gas boiler.**

### ■ High Performance at Low Temperature

**Samsung EHS is made up of an inverter compressor optimally operated according to the outdoor temperature, offering heating performance of 90% at -10°C and reliable frost protection at -25°C.**

### ■ Heat pump operating range of DHW : -25 ~ 35 °C

At the temperature below -25 °C, operation is available but correct performance cannot be guaranteed.

# 2-2 Product Specifications

## 2-2-1 Outdoor Unit

| Model Code | | | AE040JXEDEH/EU | AE060JXEDEH/EU | AE090JXEDEH/EU | AE090JXEDGH/EU | AE120JXEDEH/EU | AE140JXEDEH/EU | AE160JXEDEH/EU | AE120JXEDGH/EU | AE140JXEDGH/EU | AE160JXEDGH/EU |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Outdoor Unit | | |  | |  | |  | | |  | | |
| A2W Condition #1. (A7/W35) *1 | Nominal Capacity | W | 4,400 | 6,000 | 9,000 | 9,000 | 12,000 | 14,000 | 16,000 | 12,000 | 14,000 | 16,000 |
| | | Btu/h | 15,000 | 20,500 | 30,700 | 30,700 | 40,900 | 47,800 | 54,600 | 40,900 | 47,800 | 54,600 |
| | | W | 5,000 | 6,500 | 8,000 | 7,500 | 12,000 | 14,000 | 15,000 | 12,000 | 14,000 | 15,000 |
| | | Btu/h | 17,100 | 22,200 | 27,300 | 25,600 | 40,900 | 47,800 | 51,200 | 40,900 | 47,800 | 51,200 |
| | Power Input (Nominal) | W | 860 | 1,250 | 2,010 | 2,010 | 2,590 | 3,150 | 3,760 | 2,590 | 3,150 | 3,760 |
| | | | 1260 | 1750 | 2200 | 2060 | 3100 | 3800 | 4140 | 3100 | 3800 | 4140 |
| | Current Input (Nominal) | A | 4.1 | 5.7 | 9.2 | 3.3 | 11.7 | 14.3 | 16.9 | 4.1 | 4.7 | 5.7 |
| | | | 5.7 | 8.0 | 10.1 | 3.4 | 14.0 | 17.0 | 18.6 | 4.7 | 5.7 | 6.2 |
| | COP (Nominal Heating) | W/W | 5.10 | 4.80 | 4.48 | 4.48 | 4.63 | 4.44 | 4.26 | 4.63 | 4.44 | 4.26 |
| | EER (Nominal Cooling) | W/W | 3.97 | 3.71 | 3.64 | 3.64 | 3.87 | 3.68 | 3.62 | 3.87 | 3.68 | 3.62 |
| A2/W35 | Capacity | W | 3400 | 4600 | 7700 | 7700 | 9800 | 11200 | 12500 | 9800 | 11200 | 12500 |
| | COP | W/W | 3.52 | 3.31 | 3.38 | 3.38 | 3.28 | 3.25 | 3.14 | 3.28 | 3.25 | 3.14 |
| A-7/W35 | Capacity | W | 3750 | 5100 | 7600 | 7600 | 10,300 | 11,800 | 13,400 | 10,300 | 11,800 | 13,400 |
| | COP | W/W | 2.62 | 2.49 | 2.45 | 2.45 | 2.57 | 2.55 | 2.50 | 2.57 | 2.55 | 2.50 |
| Field Wiring | MCA | A | 20 | 20 | 22 | 10 | 28 | 30 | 32 | 10 | 11 | 12 |
| | MFA | A | 25 | 25 | 27.5 | 12.5 | 35 | 37.5 | 40 | 12.5 | 13.8 | 15 |
| | Power Source Wire | ㎟ | | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| | Transmission Cable | ㎟ | | ← | ← | ← | ← | ← | ← | ← | ← | ← |
| Refrigerant Connections | Liquid Pipe | Φ, mm | 6.35 | 6.35 | 6.35 | 6.35 | 9.52 | 9.52 | 9.52 | 9.52 | 9.52 | 9.52 |
| | | Φ, inch | 1/4 | 1/4 | 1/4 | 1/4 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 | 3/8 |
| | Gas Pipe | Φ, mm | 15.88 | 15.88 | 15.88 | 15.88 | 15.88 | 15.88 | 15.88 | 15.88 | 15.88 | 15.88 |
| | | Φ, inch | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 | 5/8 |
| | Installation Limitation | Max. Length (Outdoor to, m) | 30 | 30 | 50 | 50 | 50 | 50 | 50 | 50 | 50 | 50 |
| | | Max Height (Between ID/OD, m) | 20 | 20 | 30 | 30 | 30 | 30 | 30 | 30 | 30 | 30 |
| | Chargeless Length | m | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 |
| Refrigerant | Type | - | R410A | R410A | R410A | R410A | R410A | R410A | R410A | R410A | R410A | R410A |
| | Control Method | - | EEV | EEV | EEV | EEV | EEV | EEV | EEV | EEV | EEV | EEV |
| | Factory Charging | g | 1,400 | 1,400 | 1,700 | 1,900 | 2,980 | 2,980 | 2,980 | 2,980 | 2,980 | 2,980 |
| Power Supply | | Φ, #, V, Hz | E(220~240V, 50Hz, 1Φ) | E(220~240V, 50Hz, 1Φ) | E(220~240V, 50Hz, 1Φ) | G(380~4150V, 50Hz, 3Φ) | E(220~240V, 50Hz, 1Φ) | E(220~240V, 50Hz, 1Φ) | E(220~240V, 50Hz, 1Φ) | G(380~4150V, 50Hz, 3Φ) | G(380~4150V, 50Hz, 3Φ) | G(380~4150V, 50Hz, 3Φ) |
| Sound *3 | Sound Pressure | Heating Std | dB(A) | 46 | 47 | 49 | 49 | 50 | 50 | 52 | 50 | 50 | 52 |
| | | Cooling Std | dB(A) | 46 | 47 | 50 | 50 | 50 | 52 | 54 | 50 | 52 | 54 |
| | Sound Power | Heating Std | dB(A) | 61 | 61 | 64 | 64 | 64 | 64 | 66 | 64 | 64 | 66 |
| | | Cooling Std | dB(A) | 63 | 63 | 63 | 63 | 64 | 66 | 69 | 64 | 66 | 69 |
| External Dimension | Net Weight | | kg | 48.5 | 48.5 | 68.0 | 76.0 | 100.0 | 100.0 | 100.0 | 101.5 | 101.5 | 101.5 |
| | Shipping Weight | | kg | 51.5 | 51.5 | 78.0 | 84.5 | 109.5 | 109.5 | 109.5 | 111.0 | 111.0 | 111.0 |
| | Net Dimensions (WxHxD) | | mm | 880 x 638 x 310 | 880 x 638 x 310 | 940 x 998 x 330 | 940 x 998 x 330 | 940 x 1,420 x 330 | 940 x 1,420 x 330 | 940 x 1,420 x 330 | 940 x 1,420 x 330 | 940 x 1,420 x 330 | 940 x 1,420 x 330 |
| | Shipping Dimensions (WxHxD) | | mm | 1,023 x 725 x 413 | 1,023 x 725 x 413 | 995 x 1,178 x 426 | 995 x 1,178 x 426 | 995 x 1,598 x 426 | 995 x 1,598 x 426 | 995 x 1,598 x 426 | 995 x 1,598 x 426 | 995 x 1,598 x 426 | 995 x 1,598 x 426 |
| Operating Temp. Range | A2W | | ℃ | -25~35 | -25~35 | -25~35 | -25~35 | -25~35 | -25~35 | -25~35 | -25~35 | -25~35 | -25~35 |
| | | | ℃ | 10~46 | 10~46 | 10~46 | 10~46 | 10~46 | 10~46 | 10~46 | 10~46 | 10~46 | 10~46 |
| | | | ℃ | -25~43 | -25~43 | -25~43 | -25~43 | -25~43 | -25~43 | -25~43 | -25~43 | -25~43 | -25~43 |

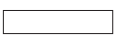
*1) A2W Condition #1 : (Heating) Water In/Out 30℃/35℃, Outdoor Air 7℃DB/6℃WB; (Cooling) Water In/Out 23℃/18℃, Outdoor Air 35℃DB.
*2) A2W Condition for ESEER(Cooling) at Water Out 18℃.
*3) Sound pressure was acquired in an anechoic room. Thus actual noise level may be different depending on the installation conditions.

# Product Specifications (cont.)

| Model Code | | | | AE090JNYDEH/EU | AE160JNYDEH/EU | AE090JNYDGH/EU | AE160JNYDGH/EU |
|---|---|---|---|---|---|---|---|
| Hydro Unit | | | |  | | | |
| Water Connections | Water Flow Rate (Std)[H/C] | | LPM | 13/15 | 35/35 | 26/22 | 46/44 |
| | Water Pressure (Max) | | bar | 3 | 3 | 3 | 3 |
| | Water Pipe | Inlet | Φ, inch | BSPP male 1 1/4 | BSPP male 1 1/4 | BSPP male 1 1/4 | BSPP male 1 1/4 |
| | | Outlet | Φ, inch | BSPP male 1 1/4 | BSPP male 1 1/4 | BSPP male 1 1/4 | BSPP male 1 1/4 |
| | Leaving Water Temperature | Heating | °C | 25~55 | 25~55 | 25~55 | 25~55 |
| | | Cooling | °C | 5~25 | 5~25 | 5~25 | 5~25 |
| Refrigerant Connections | Liquid Pipe | | Φ, mm | 6.35 | 9.52 | 6.35 | 9.52 |
| | | | Φ, inch | 1/4 | 3/8 | 1/4 | 3/8 |
| | Gas Pipe | | Φ, mm | 15.88 | 15.88 | 15.88 | 15.88 |
| | | | Φ, inch | 5/8 | 5/8 | 5/8 | 5/8 |
| | Installation Limitation | Max. Length (Outdoor to indoor) | m | 30 | 50 | 50 | 50 |
| | | Max. Height (Between ID/OD) | m | 20 | 30 | 30 | 30 |
| | Chargeless Length | | m | 15 | 15 | 15 | 15 |
| Power Supply | | | Φ, #, V, Hz | E(220~240V, 50Hz, 1Φ) | E(220~240V, 50Hz, 1Φ) | G(380~4150V, 50Hz, 3Φ) | G(380~4150V, 50Hz, 3Φ) |
| Water Pump | Type | | - | Centrifurugal (UPM3 25-7.5) | Centrifurugal (Stratos 25 1-9) | Centrifurugal (UPM3 25-7.5) | Centrifurugal (Stratos 25 1-9) |
| | Motor Input | | W | 60 | 90 | 60 | 90 |
| | Number of Unit | | EA | 1 | 1 | 1 | 1 |
| Flow Switch | Type | | - | Magnetic, Decreasing | Magnetic, Decreasing | Magnetic, Decreasing | Magnetic, Decreasing |
| | Min. flow rates | | LPM | 7 ± 1.5 | 12 ± 1.5 | 7 ± 1.5 | 12 ± 1.5 |
| Electric Heater | | | W | 4,000 | 6,000 | 6,000 | 6,000 |
| Expansion Vessel | | | Liter | 8 | 8 | 8 | 8 |
| Pressure Relief Valve | | | bar | 2.9 | 2.9 | 2.9 | 2.9 |
| Air Purge Valve | | | Φ, inch | BSPP male 3/8 | BSPP male 3/8 | BSPP male 3/8 | BSPP male 3/8 |
| Service Valve | | | Φ, inch | BSPP male 1 1/4 | BSPP male 1 1/4 | BSPP male 1 1/4 | BSPP male 1 1/4 |
| Sound *3 | Sound Pressure | Heating Std | dB(A) | 26 | 33 | 26 | 33 |
| | | Cooling Std | dB(A) | 26 | 33 | 26 | 33 |
| | Sound Power | Heating Std | dB(A) | 40 | 47 | 40 | 47 |
| External Dimension | Net Weight | | kg | 45.0 | 45.0 | 46.5 | 46.5 |
| | Shipping Weight | | kg | 55.0 | 55.0 | 56.0 | 56.0 |
| | Net Dimensions (WxHxD) | | mm | 510 x 850 x 315 | 510 x 850 x 315 | 510 x 850 x 315 | 510 x 850 x 315 |
| | Shipping Dimensions (WxHxD) | | mm | 564 x 1,024 x 412 | 564 x 1,024 x 412 | 564 x 1,024 x 412 | 564 x 1,024 x 412 |

## 2-3 Specifications of optional items

### 2-3-1 Accessories

| Item | Description | Code No. | Q'ty | Remark |
|---|---|---|---|---|
|  | Cap Drain | DB63-10355C | 5 | Essential Offer (Outdoor Unit) |
|  | Drain Plug | DB67-00806A | 2 | Provided for AE090/120/140/160 Models |
|  | Drain Plug | DB67-00477A | 1 | Provided for AE040/060 Models |
|  | Rubber Leg | DB73-20134A | 4 | Essential Offer (Outdoor Unit) |
|  | ASSY-INSTALLATION MANUAL (Outdoor Unit) | DB68-05328A | 1 | Provided for AE090/120/140/160 Models |
|  | ASSY-INSTALLATION MANUAL (Outdoor Unit) | DB68-05132A | 1 | Provided for AE040/060 Models |
|  | ASSY-USER MANUAL | DB68-05130A | 1 | Essential Offer (Hydro unit) |
|  | ASSY-INSTALLATION MANUAL | DB68-05131A | 1 | |
|  | Pattern sheet | DB98-32365A | 1 | |
|  | service valve | DB96-13833A/B | 1 | |
|  | wall mounting bracket | DB61-04402A | 1 | |
|  | ASSY THERMISTOR-WATER TANK | DB95-05023A | 1 | |
|  | SENSOR TEMP-MIXING VALVE | DB32-00213A | 1 | |
|  | Ring band | DB81-01572B | 1 | |
|  | Sensor holder | DB61-40055A | 1 | |
|  | Sensor clip | DB81-00635A | 1 | |
|  | Cable-tie | DB65-10088C | 4 | |
|  | Aluminum Tape | DB72-30040A | 1 | |
|  | Rubber Tape | DB62-11304A | 1 | |
|  | Insulatior | DB62-04785A | 1 | |
|  | Assy Connector Wire | DB93-13255A | 1 | |

# 3. Disassembly and Reassembly

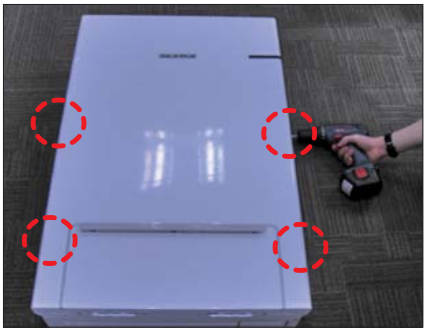
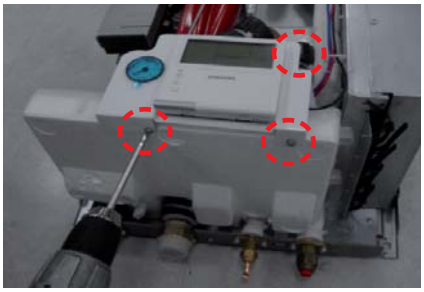
## ■ Hand Tool sets

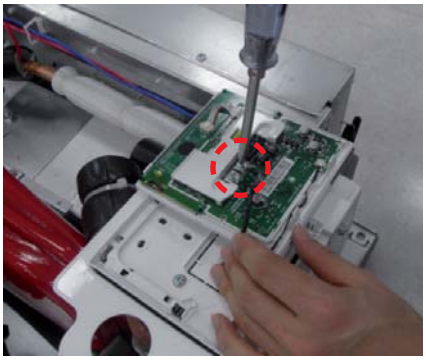
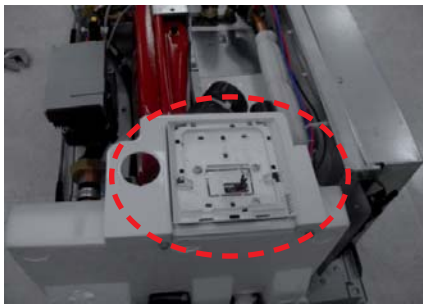
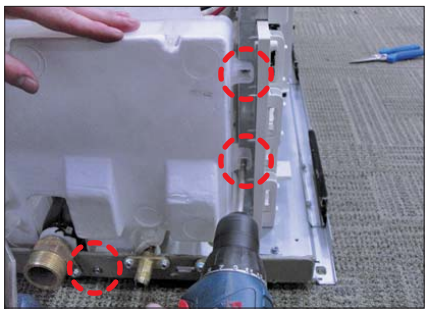
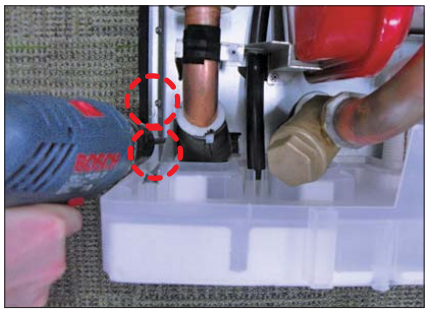
| Item | Remark |
|---|---|
| +Screw Driver |  |
| Adjustable wrench |  |
| –Screw Driver |  |
| Nipper |  |
| Electric Motion Driver |  |
| L-Wrench |  |
| Torque Lench |  |
| Latchet Lench |  |

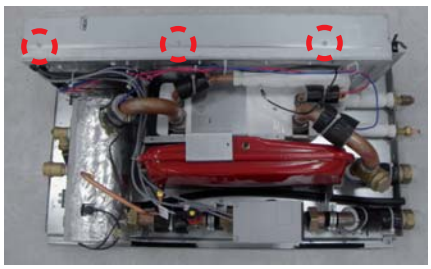
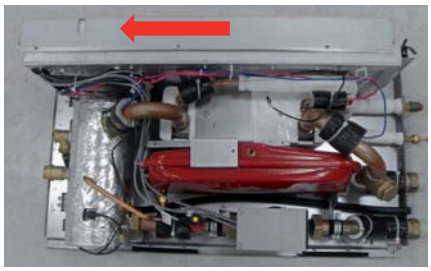
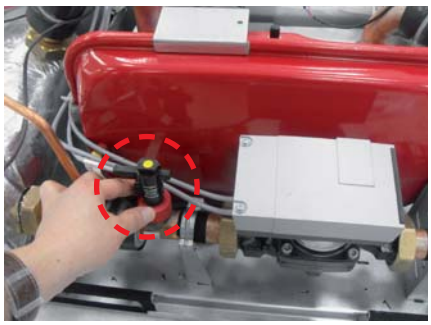
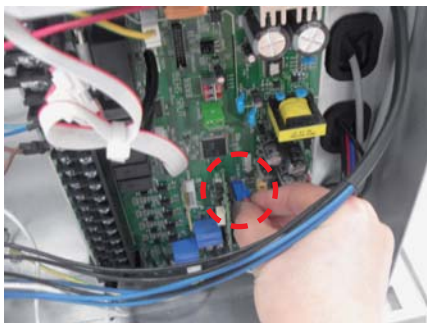
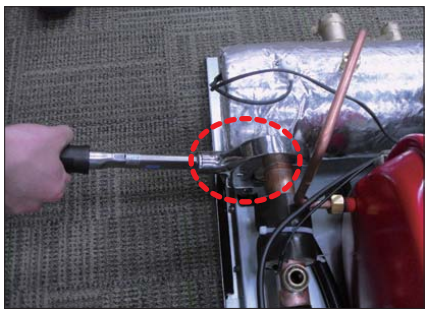
## 3-1 Hydro Unit

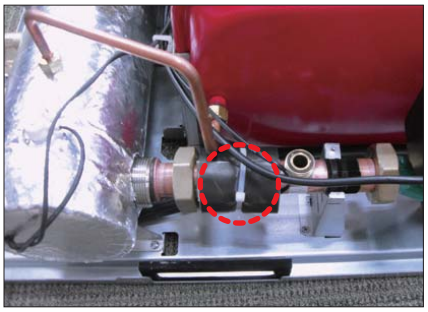
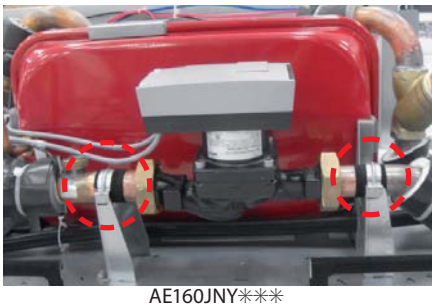
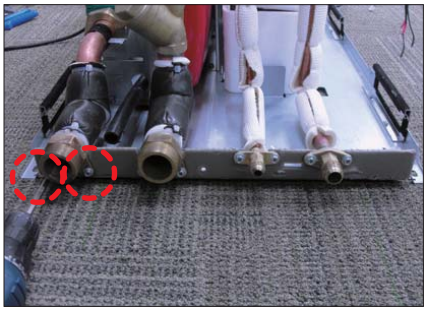
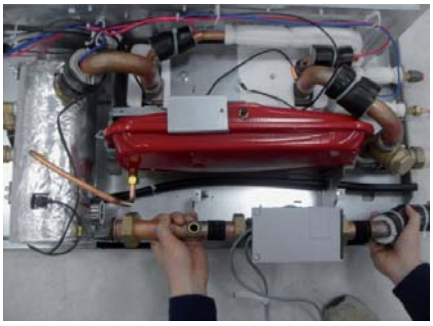
### ■ AEN160YD∗/AEN080YD∗

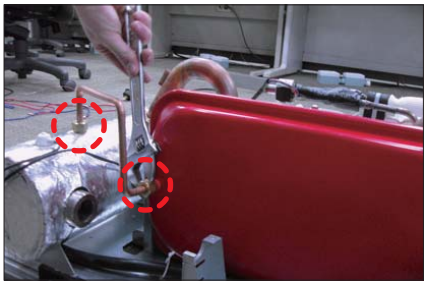
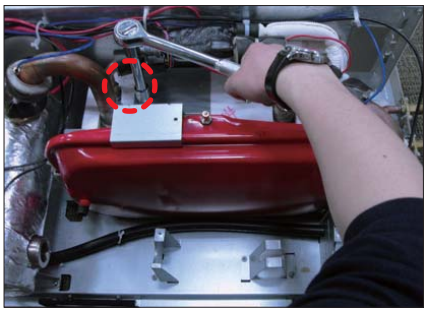
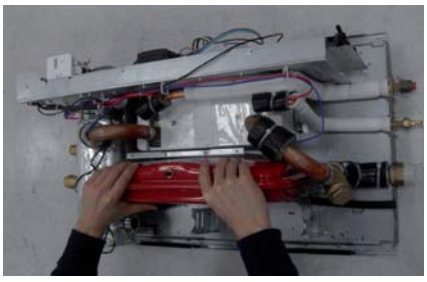
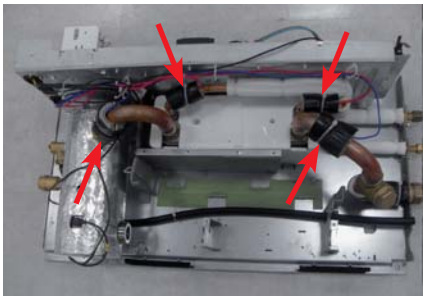
Be sure that the power switch is in the OFF and the power source cord shall be unplugged prior to disassembly and reassembly works.

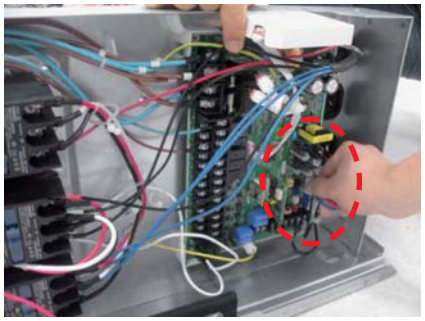
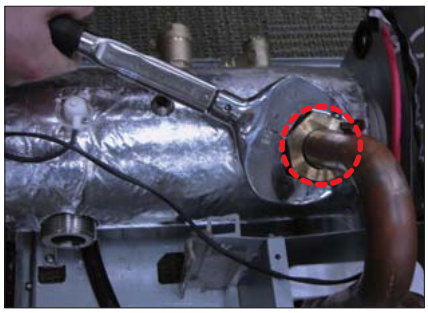
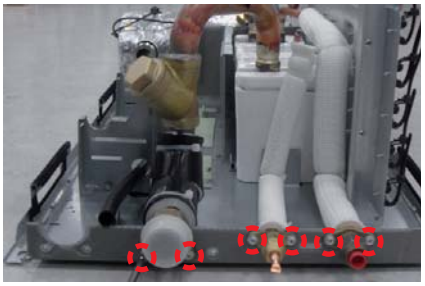
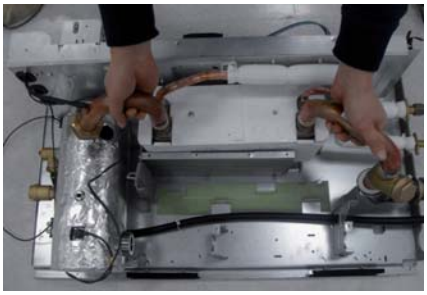
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 1 | Panel | 1) Remove 4 cover screws from the Hydro Unit.<br>(Use + Screw Driver) |  |
| 2 | Controller<br>&<br>Manometer | 1) Remove 3 screws from it.<br>(Use + Screw Driver) |  |
| | | 2) Remove pressure sensor by adjustable wrench.<br>(Use adjustable wrench-230kgf·cm) |  |
| | | 3) Pull the manometer out. |  |
| | | 4) Push the 2 hooks of cover. |  |
| | | 5) Pull the bottom of remocon body up. |  |

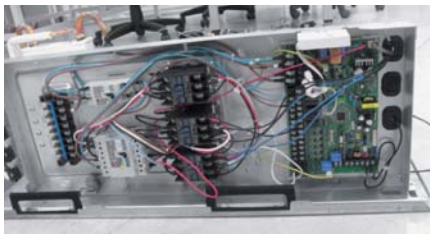
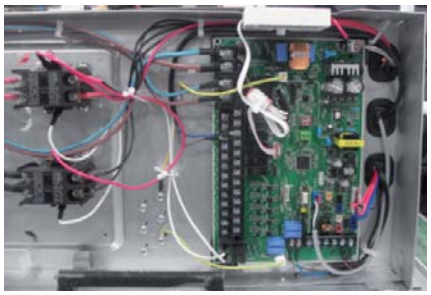
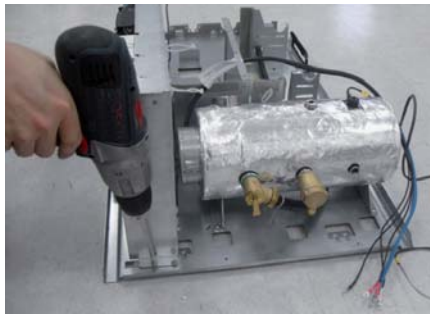
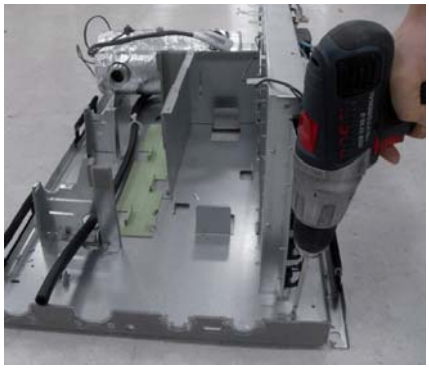
| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | 5) Remove the connector from the PCB board. |  |
| | | 6) Remove the upper case of the controller. |  |
| | | |  |
| | | 7) Remove 5 screws. Set a side the drain pan and hydro unit. |  |

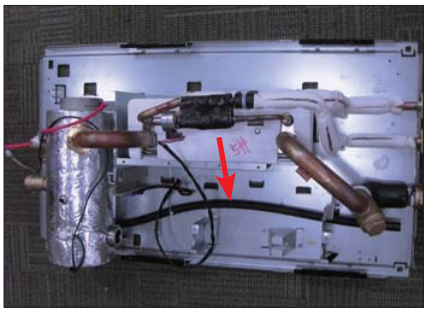
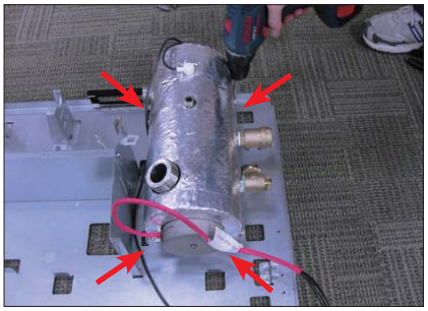
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 3 | Water Pump | 1) Remove 4 screws. (Use + Screw Driver) |  |
| | | 2) Remove the cabi-control top. |  |
| | | 3) Remove the flow switch and connector. |   |
| | | 4) Remove a pipe from the backup Heater. (Use adjustable wrench-380kgf·cm)<br>⚠ Use the Torque Wrench when you assemble it. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | 5) After removing insulation material, remove the Thermostat. |  |
| | | 6) Remove 2 screws. (Use + Screw Driver) |  AE160JNY✳✳✳  AE090JNY✳✳✳ |
| | | 7) Remove 2 screws. (Use + Screw Driver) |  |
| | | 8) Pull the water pump & pipes up, out. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 4 | Expansion Vessle | 1) Remove the tube of the expansion vessel and the backup heater by adjustable wrench. (Use adjustable wrench-150kgf·cm)<br>⚠ Use the Torque Wrench when you assemble it. |  |
| | | 2) Remove 2 screws. (Use + Screw Driver) |  |
| | | 3) After removing the nut. Pull the bracket out. |  |
| | | 4) Pull the expansion vessel up, out. |  |
| 5 | Plate Heat Exchanger | 1) Remove 4 insulations. |  |

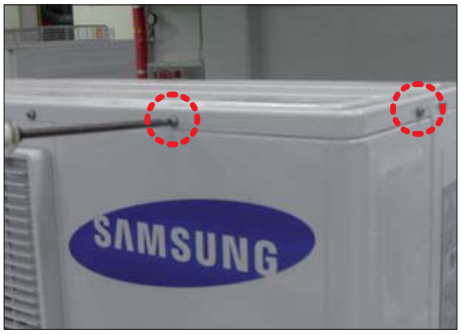
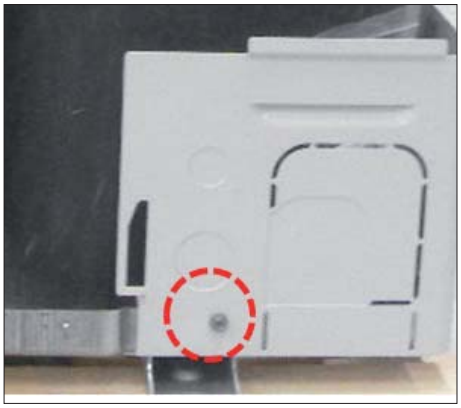
| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | 2) Remove 4 Thermostats. |  |
| | | 3) Remove the Thermostat connector on the PCB of the Control box. |  |
| | | 4) Remove the pipe from the Backup Heater. (Use adjustable wrench-380kgf·cm)<br>⚠ Use the Torque Wrench when you assemble it. |  |
| | | 5) Remove 6 screws. (Use + Screw Driver) |  |
| | | 6) Pull the PHE out of the unit. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 6 | Control Box | 1) Remoce Thermostats and connectors |  <br>3 Phase (AE✳✳✳JNYDGH)<br>  <br>1 Phase (AE✳✳✳JNYDEH) |
| | | 2) Remove 3 screws. (Use + Screw Driver) |  <br>  |
| | | 3) Pull the cabi-control bottom out by pushing as indicated diretion. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 7 | Backup Heater | 1) Remove the Drain Hose. |  |
| | | 2) After removing 4 screws, set a side the backup heater and the unit. (Use + Screw Driver) |  |

## 3-2 Outdoor Unit

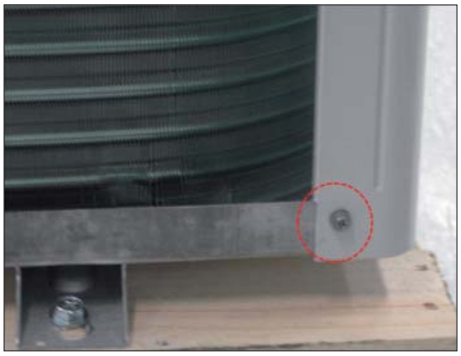
### ■ AEX100ED✳/AEX125ED✳/AEX140ED✳/AEX160ED✳

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 1 | CABI FRONT RH | ⚠ You must turn off the power before disassembling.<br><br>1) Unscrew and remove the three screws on the CABI FRONT RH.<br>(Use '+' type screw driver) |  <br>  |
| 2 | CABI TOP | 1) Unscrew and remove the nine screws on each side of the CABI TOP.<br>(Use '+' type screw driver) |  |
| 3 | CABI INSTALL FRONT | 1) Unscrew and remove the screw on the CABI INSTALL FRONT.<br>(Use '+' type screw driver) |  |

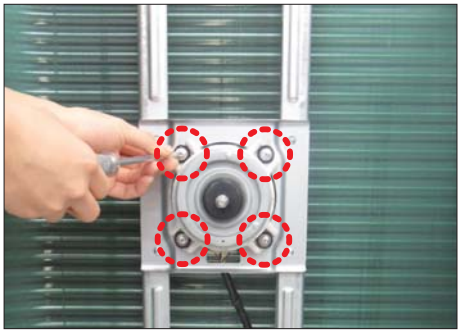
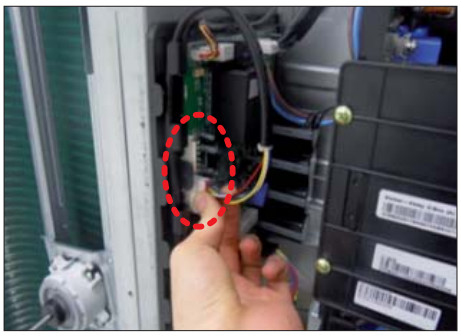
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 4 | GUARD COND | 1) Pull the sensor from Guard Cond. |  |
| | | 2) Unscrew and remove the four screws on the GUARD COND. (Use '+' type screw driver) |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 5 | CABI BACK RH | 1) Pull the sensor from the CABI BACK RH. |  |
| | | 2) Unscrew and remove the nine screws on each side the CABI BACK RH.<br>(Use '+' type screw driver) |  <br>  |

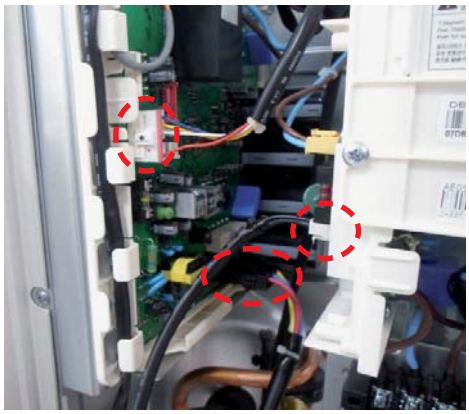
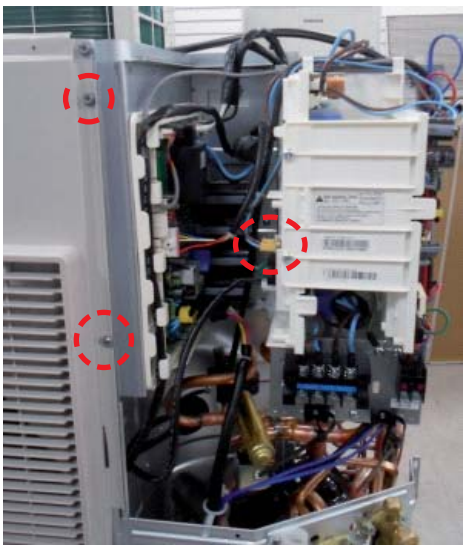
| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | |  |
| 6 | CABI INSTALL BACK | 1) Unscrew and remove the 8 screws on the CABI FRONT LF.<br>(Use '+' type screw driver) |  |

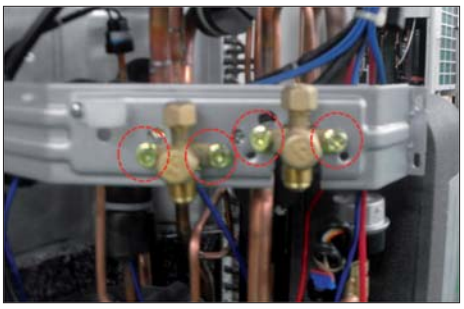
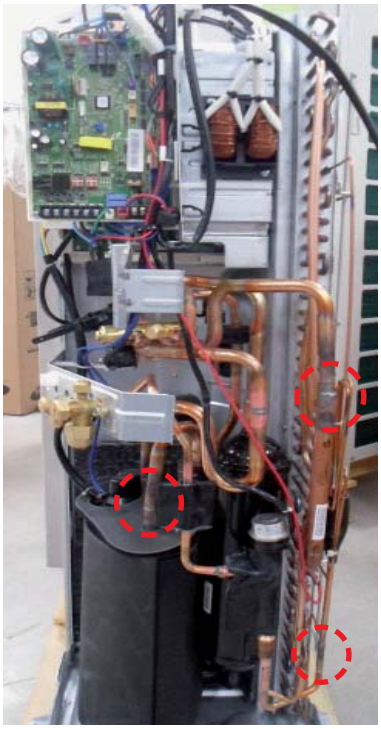
| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | |   |

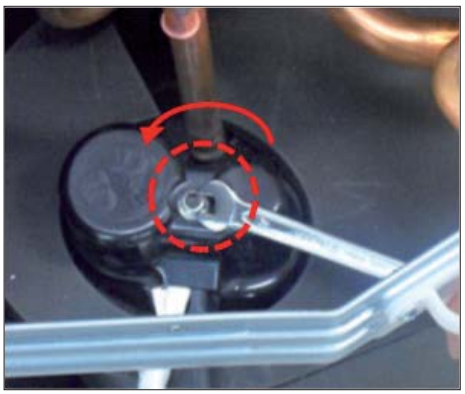
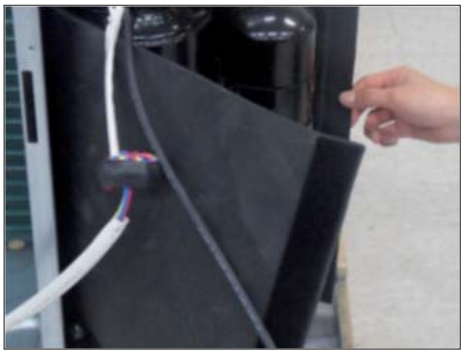
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 7 | FAN | 1) Turn the two nuts as shown in the picture and remove them. (Use adjustable wrench) |  |

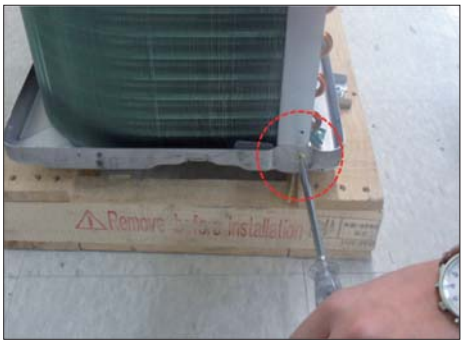
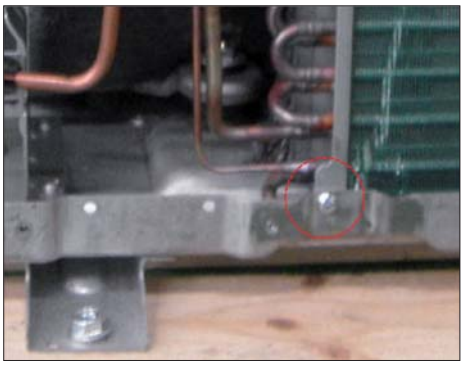
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 8 | MOTOR | 1) Remove the fan.<br>2) Unscrew and remove the eight motor screws.<br>(Use '+' type screw driver) |  |
| | | 3) Disconnect the motor wire from the Ass'y Control Out. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 9 | BRACKET MOTOR | 1) Unscrew and remove the two screws on the BRACKET MOTOR. (Use '+'type screw driver) |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 10 | CONTROL OUT | 1) Disconnect the six connectors form the ASSY Control OUT |   |
| | | 2) Unscrew and remove the three screws on the CONTROL OUT. (Use '+' type screw driver)<br><br>3) Separate the ASSY CONTROL OUT. |  |

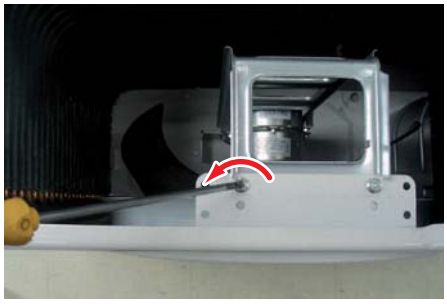
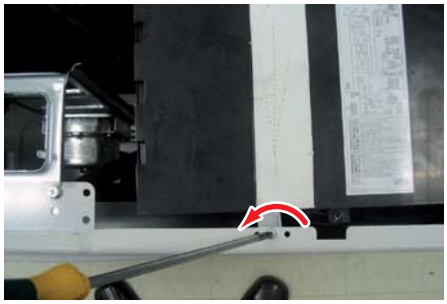
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 11 | ASSY 4WAY VALVE | 1) Purge the coolant first.<br>2) Unscrew and remove the four screws on the SERVICE VALVE. (Use '+' type screw driver) |  |
| | | 3) Separate the pipe from the Entrance/Exit using a welder. |  |
| | | ⚠ When removing the compressor, heat exchanger and pipe, purge the completely and remove the pipe with a welding flame. |  |

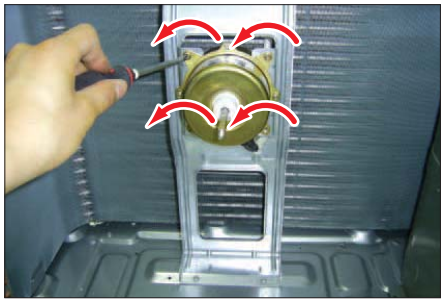
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 12 | COMPRESSOR | 1) Unscrew and remove the nut on the COVER TERMINAL. (Use adjustable wrench) |  |
| | | 2) Separate the compressor wire. |  |
| | | 3) Separate the COMPRESSOR FELT SOUND. |  |
| | | 4) As shown in the picture, unscrew and bottom. (Use Adjustable Wrench) |   |

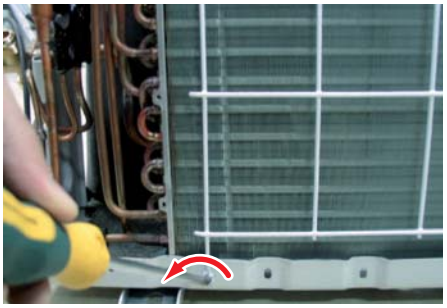
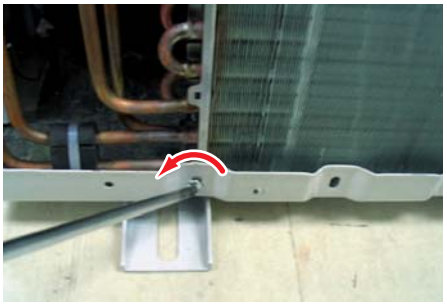
| No | Parts | Procedure | Remark |
|---|---|---|---|
| 13 | ASSY COND OUT | 1) Unscrew remove the two screws on each side of the ASSY COND OUT. (Use '+' type screw driver) |   |

## ■ AEX060EDEHA

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 1 | Common Work | 1) Loosen 1 fixing screw of the Cover-Control and detach the Cover Control. |  |
| | | 2) Loosen fixing screws and detach the Cabinet-Upper. |  |
| | | 3) Loosen 1 screw fixed to assemble Control Box with Cabinet-Side RH. |  |
| | | 4) Loosen 6 fixing screws and detach the Cabinet-Side RH. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| | | 5) Loosen 2 screws fixed on the Guide Condenser. |  |
| | | 6) Loosen fixing screws of the Cabinet Front. |  |
| | | |  |
| | | |  |
| | | |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 2 | Fan<br>&<br>Motor | 1) Detach the Nut Flange like the picture on the right side. (Turn clockwise because the screw is left-handed.) |  |
| | | 2) Detach the Fan Propeller.<br>3) Loosen 4 fixing screws to detach the Motor. |  |
| | | 4) Disconnect the wire between Ass'y Control Out and Motor. |  |
| | | 5) Loosen 2 fixing screws and detach the Bracket Motor. |  |
| 3 | Ass'y Control Out | 1) Detach several connectors from the Ass'y Control Out.<br>2) Detach several connectors from the PCB of Ass'y Control Out.<br>3) Pull up the Ass'y Control Out. |  |

| No | Parts | Procedure | Remark |
|---|---|---|---|
| 4 | Heat Exchanger | 1) Release the refrigerant at first.<br>2) Loosen fixing screw.<br>3) Disassemble the pipes in both inlet and outlet with welding torch.<br>4) Detach the Heat Exchanger.<br><br>❊Before you disassemble the pipes and Condenser, be sure that there should be no refrigerant remained in the unit. |  |
| | | 1) Loosen fixing screw(CCW) and detach the Heat Exchanger |  |
| 5 | Compressor | 1) Loosen the fixing nut and detach the Compressor Lead Wire.<br>2) Disassemble the Felt Comp Sound. |  |
| | | |  |
| | | 3) Loosen the 3 bolts at the bottom of Compressor like the picture on the right side. |  |

# 4. Troubleshooting

## 4-1 Wired remote controller

- Press the Test button to see the error code.

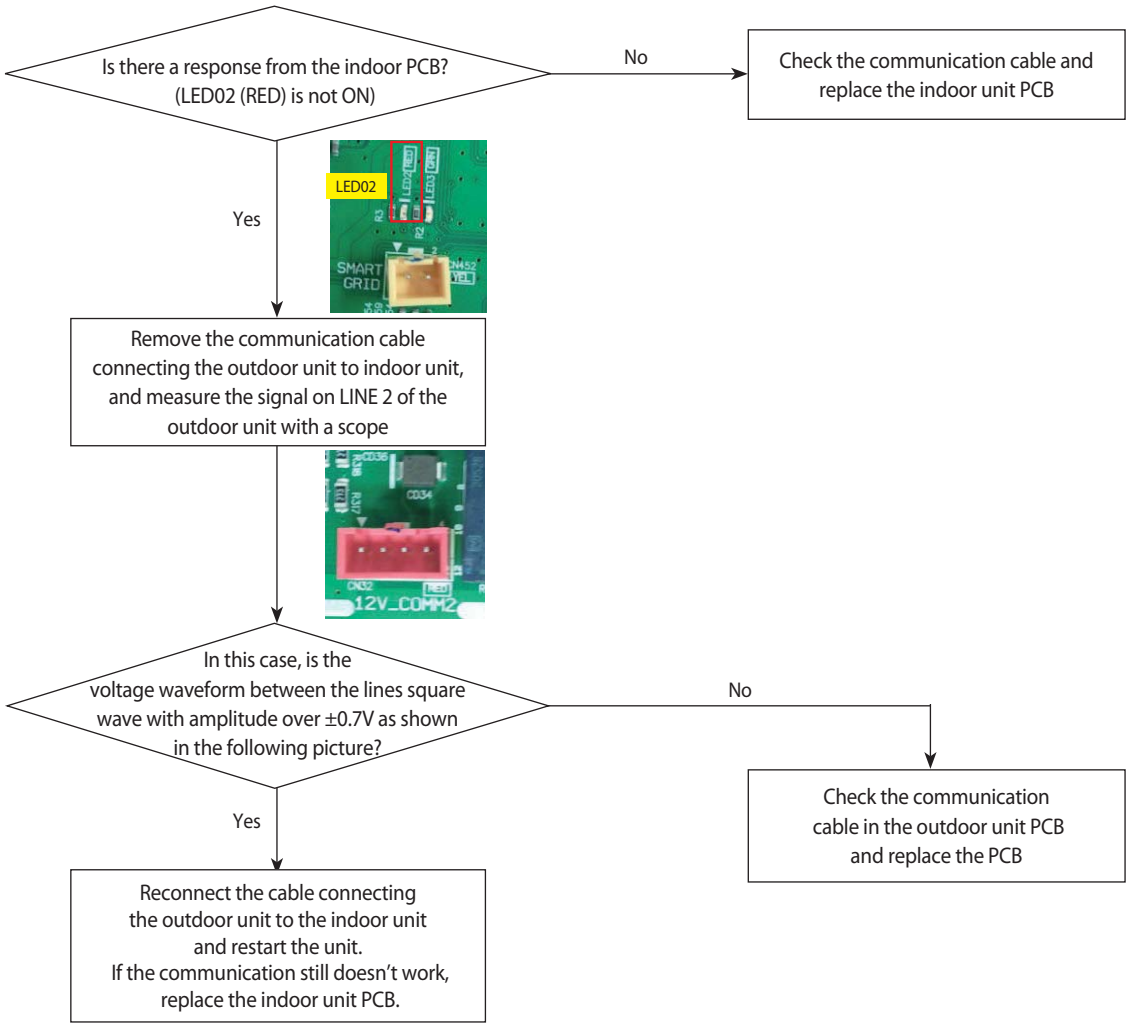
| Error mode | Contents | Measure | Product operation in error condition | Error type |
|---|---|---|---|---|
| | | | Outdoor unit/ Compressor/Indoor unit | |
| 101 | Indoor unit communication error | Check the communication cable of indoor unit. Check the DC output voltage at the communication terminal | Operation Off | Communication error |
| 121 | Indoor temperature sensor (open/short error) | Check indoor unit room temperature sensor. Check indoor unit PCB connector CNS043(White) | Operation Off | Indoor sensor error |
| 122 | Indoor unit Eva In sensor (Open/Short) | Check indoor unit pipe sensor. Check indoor PCB connector CN41(White) | Operation Off | Indoor sensor error |
| 123 | Indoor unit Eva Out sensor disconnection | Check indoor unit pipe sensor.<br>Check indoor PCB connector CNS043(White) | Operation Off | Indoor sensor error |
| 128 | Indoor unit Eva In sensor detached from Eva In pipe. | Check indoor unit Eva In sensor location. | Operation Off | Indoor sensor error |
| 129 | Indoor unit Eva Out sensor detached from Eva Out pipe. | Check indoor unit Eva In sensor location. | Operation Off | Indoor sensor error |
| 153 | Indoor floating switch secondary detection | Check indoor unit float sensor.<br>Check indoor PCB connector CNS041(Blue) | Operation Off | Self diagnostic error |
| 202 | Indoor/outdoor communication error (1 min) | Check the communication connection between indoor and outdoor units. Check the power line and communication cable connection status | Operation Off | Communication error |
| 203 | Communication error between indoor/outdoor INV↔MAIN MICOM (1 min) | Check MAIN MICOM<br>Check INVERTER MICOM | - | Communication error |
| 221 | Outdoor temperature sensor error | Check sensor connection status<br>Check sensor location<br>Check sensor resistance | Operation Off | Outdoor sensor error |
| 237 | COND temperature sensor error | Check sensor connection status<br>Check sensor location<br>Check sensor resistance | Operation Off | Outdoor sensor error |
| 251 | [Inverter] Emission temperature sensor error | Check sensor connection status<br>Check sensor location<br>Check sensor resistance | Operation Off | Outdoor sensor error |
| 416 | Emission temperature excessively high | No error (DISCHARGE temperature control) | - | Outdoor unit protection control error |
| 440 | Heating operation blocked | Check the operation setting state<br>Check temperature sensor | Operation Off | Self diagnostic error |
| 441 | Cooling operation blocked | Check the operation setting state<br>Check temperature sensor | Operation Off | Self diagnostic error |
| 458 | Outdoor fan 1 error | Check input power connection status<br>Check the connection status between the motor and outdoor unit PCB<br>Check indoor/outdoor fuse | Operation Off | Self diagnostic error |
| 461 | [Inverter] Compressor startup error | Check the compressor connection status<br>Check the resistance between difference phases of the compressor | Operation Off | Outdoor unit protection control error |

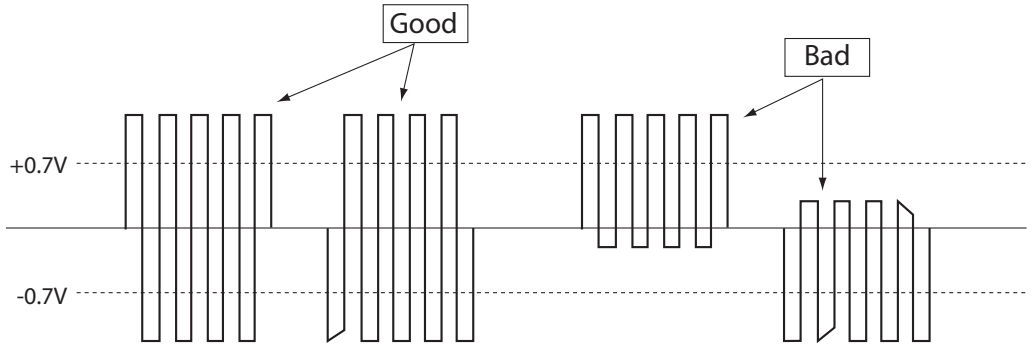
## Wired remote controller (cont.)

| Error mode | Contents | Measure | Product operation in error condition | Error type |
|---|---|---|---|---|
| | | | Outdoor unit/ Compressor/Indoor unit | |
| 462 | [Inverter] Total current error/ PFC over current error | Check the input power<br>Check the coolant charging status<br>Check the normal operation of outdoor fan | Operation Off | Outdoor unit protection control error |
| 464 | [Inverter] IPM over current error | Check coolant charging<br>Check the compressor connection status and normal operation<br>Check the obstacles around the indoor and outdoor units<br>Check whether the outdoor unit service valve is open<br>Check whether the indoor/outdoor installation pipe/ wiring are correct | Operation Off | Outdoor unit protection control error |
| 465 | Compressor V limit error | Check the compressor connection status<br>Check the resistance between difference phases of the compressor | Operation Off | Outdoor unit protection control error |
| 466 | DC LINK over/low voltage error | Check input power<br>Check AC power connection | Restart in 3 minutes | Outdoor unit protection control error |
| 467 | [Inverter] Compressor rotation error | Check the compressor connection status<br>Check the resistance between difference phases of the compressor | Operation Off | Outdoor unit protection control error |
| 468 | [Inverter] Current sensor error | Check EEPROM DATA<br>Check the normal operation of PCB | Operation Off | Outdoor unit protection control error |
| 469 | [Inverter] DC LINK voltage sensor error | Check the input power connection<br>Check the status of RY21 and R200 in the INVERTER PCB | Operation Off | Outdoor unit protection control error |
| 471 | [Inverter] OTP error | Check EEPROM DATA<br>Check the normal operation of PCB | Operation Off | Outdoor unit protection control error |
| 472 | AC ZERO CROSSING SIGNAL OUT error | Check the input power status | Operation Off | Outdoor unit protection control error |
| 473 | Compressor LOCK error | Check the compressor connection status<br>Check the resistance between difference phases of the compressor | Operation Off | Outdoor unit protection control error |
| 475 | Outdoor fan 2 error | Check the input power connection status<br>Check the connection status of the motor and the outdoor unit PCB<br>Check the indoor/outdoor unit fuse | Operation Off | Self diagnostic error |
| 554 | Gas leak error | Check the coolant charging status<br>Check the indoor EVA sensor<br>Check if the outdoor unit service value is open<br>Check that the indoor/outdoor installation pipe/wiring are correct | Operation Off | Self diagnostic error |
| 556 | Capacities not matched | Check the option code of the indoor unit | Operation Off | Outdoor unit protection control error |
| 601 | Communication error between the indoor unit and wired remote controller | Check the connection wire between the indoor unit and the wired remote controller | Normal operation | Wired remote controller error |
| 602 | Communication error between the Master and Slave wired remote controllers | Check the option switch for defining the Master and Slave (only one Master and one Slave can exist) | Normal operation | Wired remote controller error |

## 4-2-1 Communication error after finishing Tracking

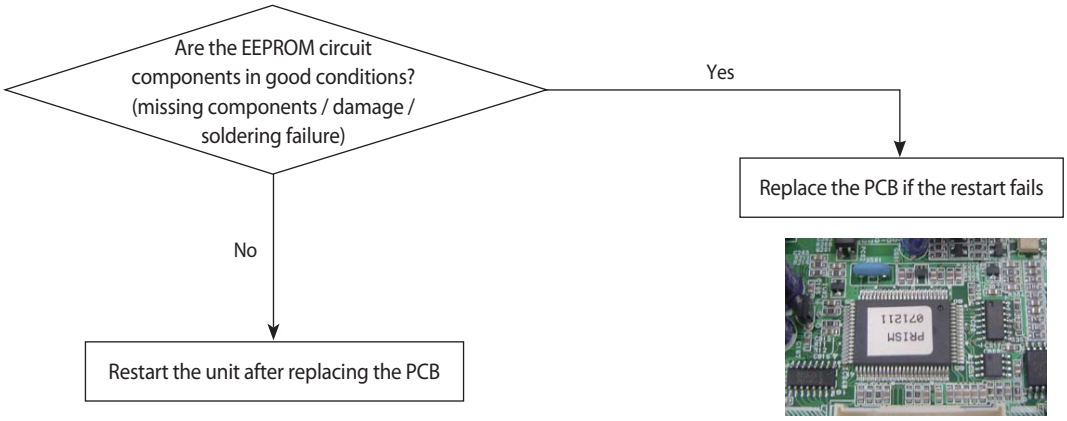
| | |
|---|---|
| **Indoor unit display** | E604 |
| **Symptom** | Communication error between the indoor and outdoor unit for two minutes |
| **Failure** | Communication error between the indoor unit and outdoor unit |



## 4-2-2 EEPROM circuit failure

| | |
|---|---|
| **Indoor unit display** | E 162 |
| **Symptom** | EEPROM circuit failure |
| **Failure** | EEPROM component failure, EEPROM circuit parts missing/damaged/soldering failure |

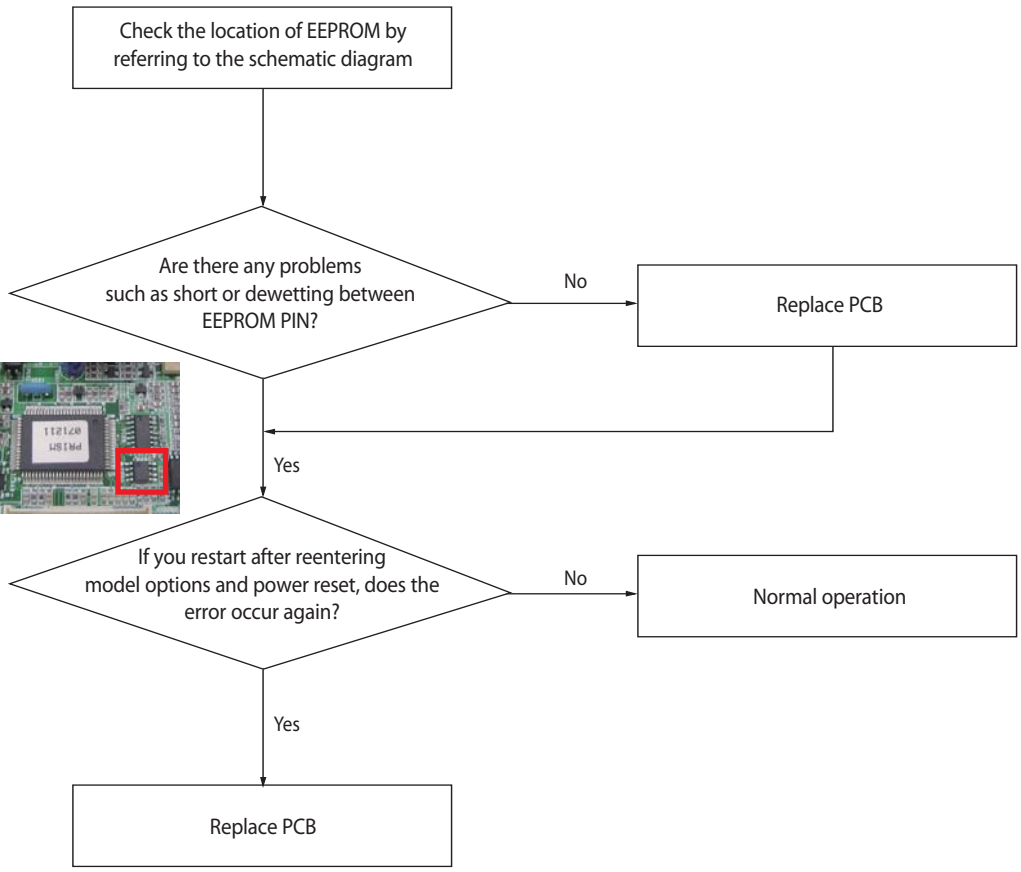


# 4-3 Hydro Unit

## 4-3-1 EEPROM error

| | |
|---|---|
| **Outdoor unit display** | E 162 |
| **Indoor unit display** | ×(Operation) ◑(Timer) ◑(Fan) ◑(Filter) ×(Defrost) |
| **Criteria** | • Communication failure between EEPROM and MICOM |
| **Cause of problem** | • PCB replacement due to defective EEPROM |

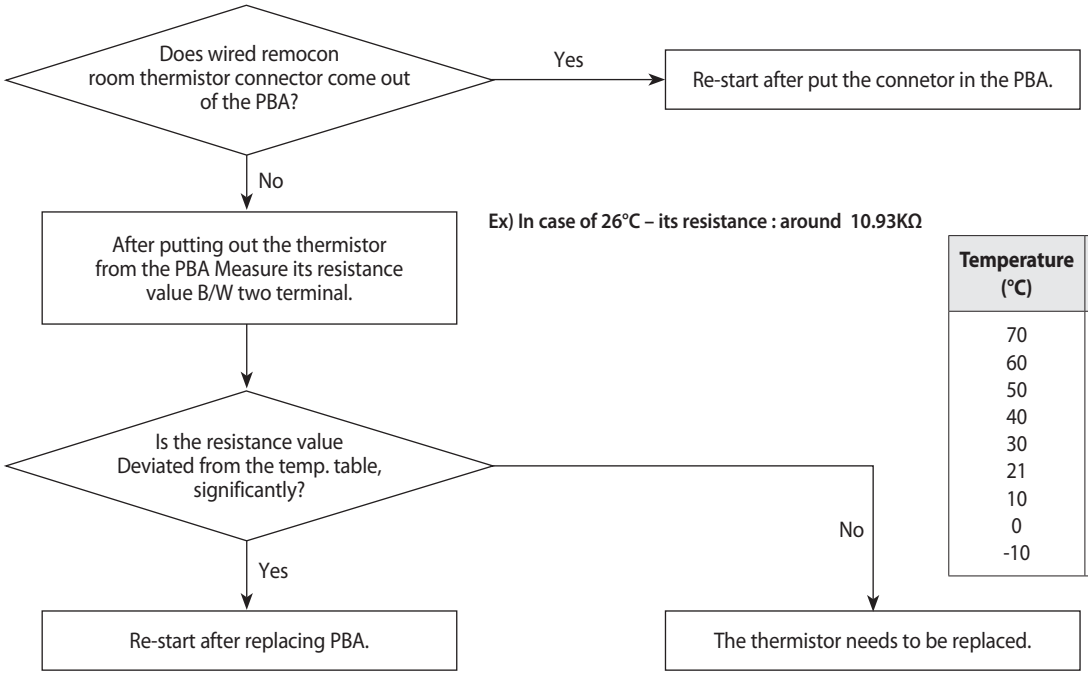
1. How to check



## 4-3-2 E653 : Error due to abnormal data of Wired remote controller thermistor value

| | |
|---|---|
| **Outdoor unit display** | E653 ↔ A x x x(x x x : The address of the error occurred indoor unit) |
| **Wired remocon display** | E653 |
| **Criteria** | • Refer to how to determine below |
| **Cause of problem** | • Wired remocon room thermistor has a defective OPEN/SHORT |

1. How to check



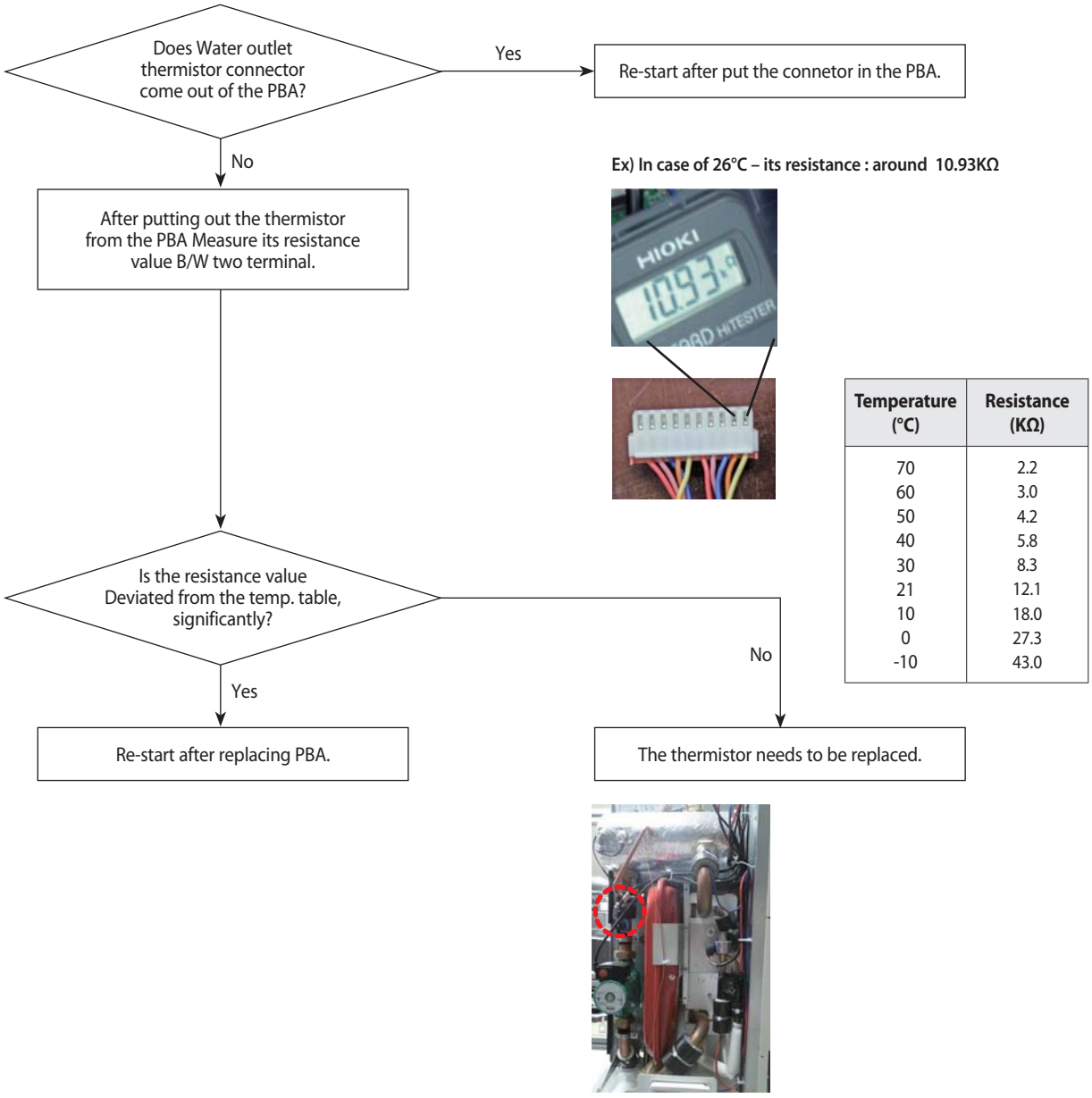

**Ex) In case of 26°C – its resistance : around 10.93KΩ**

| Temperature (°C) | Resistance (KΩ) |
|---|---|
| 70 | 2.2 |
| 60 | 3.0 |
| 50 | 4.2 |
| 40 | 5.8 |
| 30 | 8.3 |
| 21 | 12.1 |
| 10 | 18.0 |
| 0 | 27.3 |
| -10 | 43.0 |

## 4-3-3 E903 : Error due to abnormal data of Water outlet thermistor value

| | |
|---|---|
| **Outdoor unit display** | E903 ↔ A xxx(x x x : The address of the error occurred indoor unit) |
| **Wired remocon display** | E903 |
| **Criteria** | • Refer to how to determine below |
| **Cause of problem** | • Water outlet thermistor has a defective OPEN/SHORT |

1. How to check




**Ex) In case of 26°C – its resistance : around 10.93KΩ**



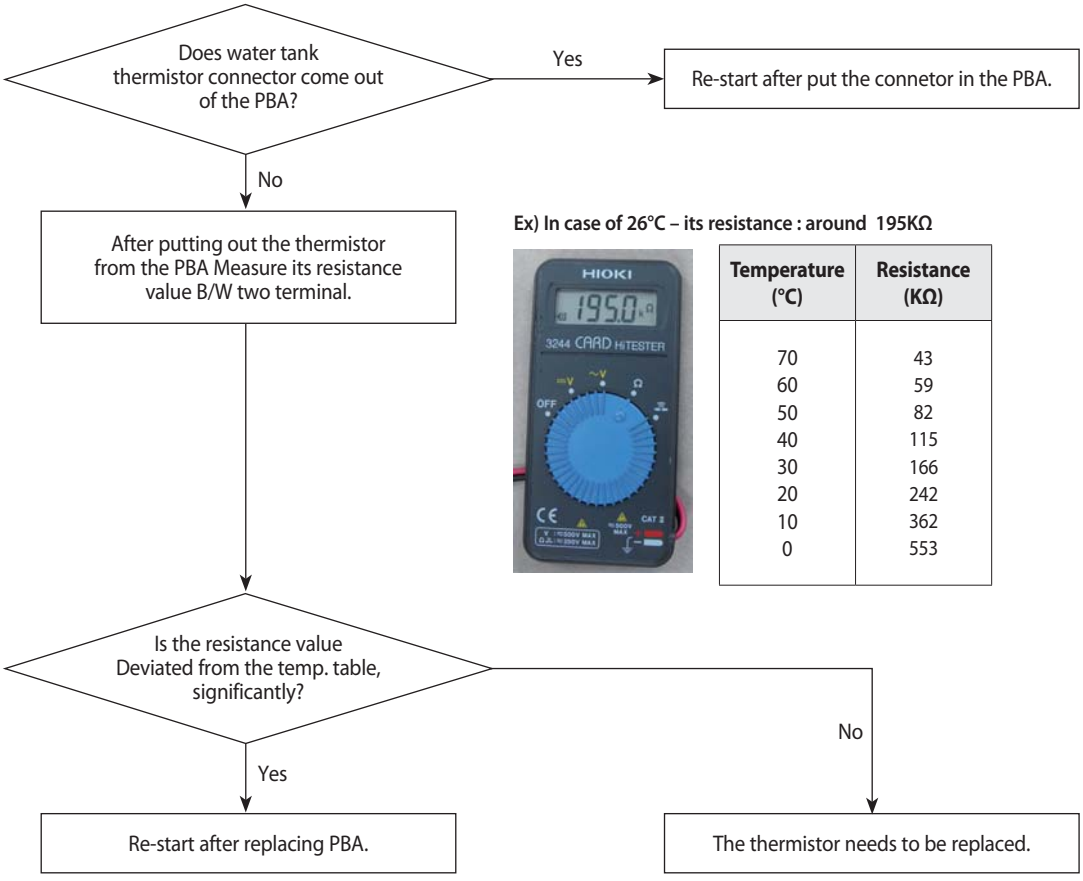



| Temperature (°C) | Resistance (KΩ) |
|---|---|
| 70 | 2.2 |
| 60 | 3.0 |
| 50 | 4.2 |
| 40 | 5.8 |
| 30 | 8.3 |
| 21 | 12.1 |
| 10 | 18.0 |
| 0 | 27.3 |
| -10 | 43.0 |

## 4-3-4 E904 : Error due to abnormal data of DHW tank thermistor value

| | |
|---|---|
| **Outdoor unit display** | E904 ↔ A x x x (x x x : The address of the error occurred indoor unit) |
| **Wired remocon display** | E904 |
| **Criteria** | • Refer to how to determine below |
| **Cause of problem** | • DHW tank thermistor has a defective OPEN/SHORT |

1. How to check




**Ex) In case of 26°C – its resistance : around 195KΩ**

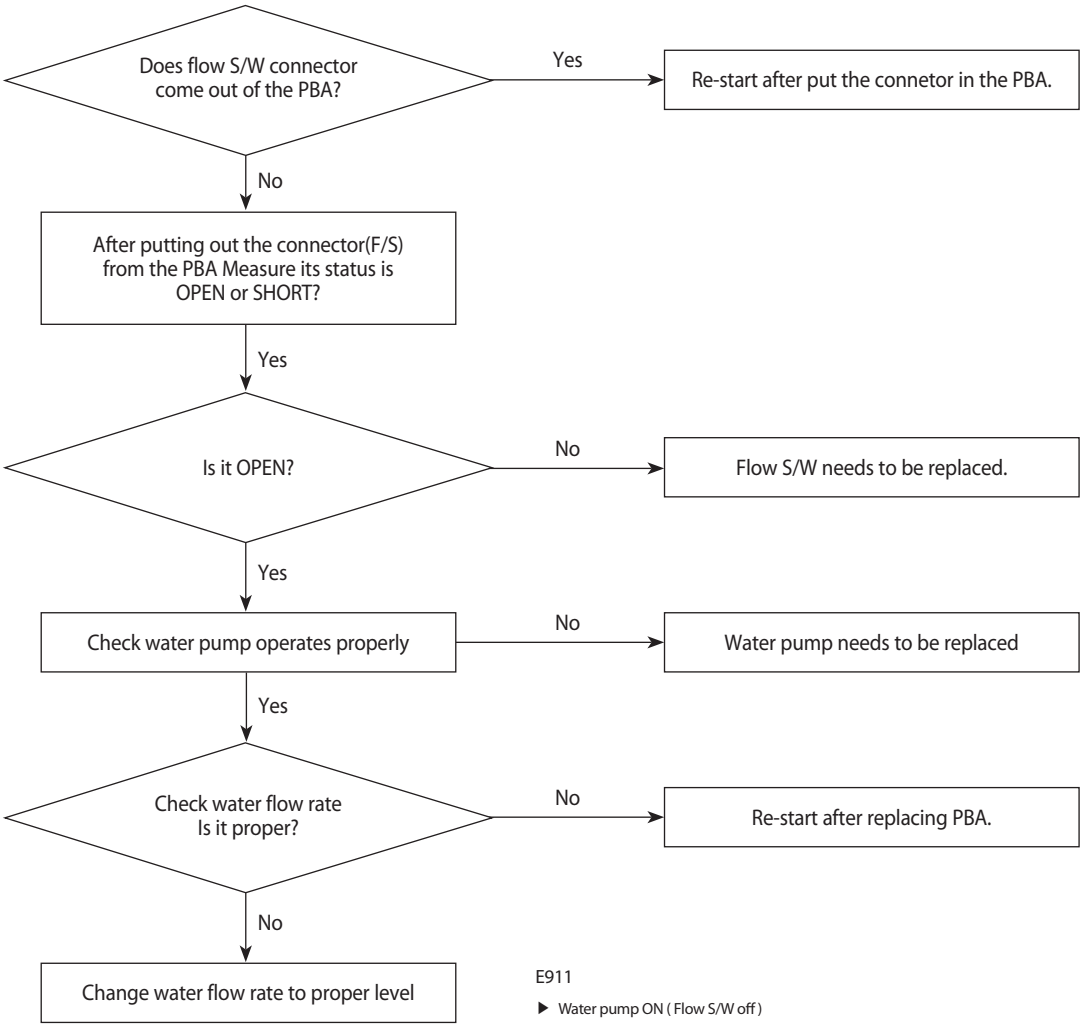


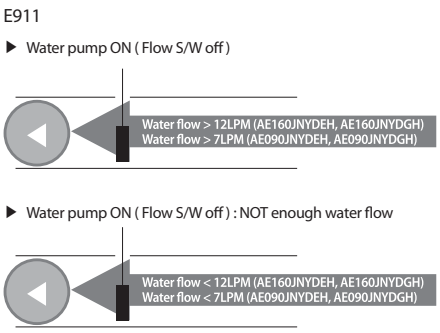

| Temperature (°C) | Resistance (KΩ) |
|---|---|
| 70 | 43 |
| 60 | 59 |
| 50 | 82 |
| 40 | 115 |
| 30 | 166 |
| 20 | 242 |
| 10 | 362 |
| 0 | 553 |

## 4-3-5 Water pump & flow switch OFF

| | |
|---|---|
| **Wired remocon display** | E911 |
| **Criteria** | • Refer to how to determine below |
| **Cause of problem** | • Flow S/W OFF in 30 sec during water pump signal is ON(Starting)<br>• Flow S/W OFF in 15 sec during water pump signal is ON (After starting) |

1. How to check

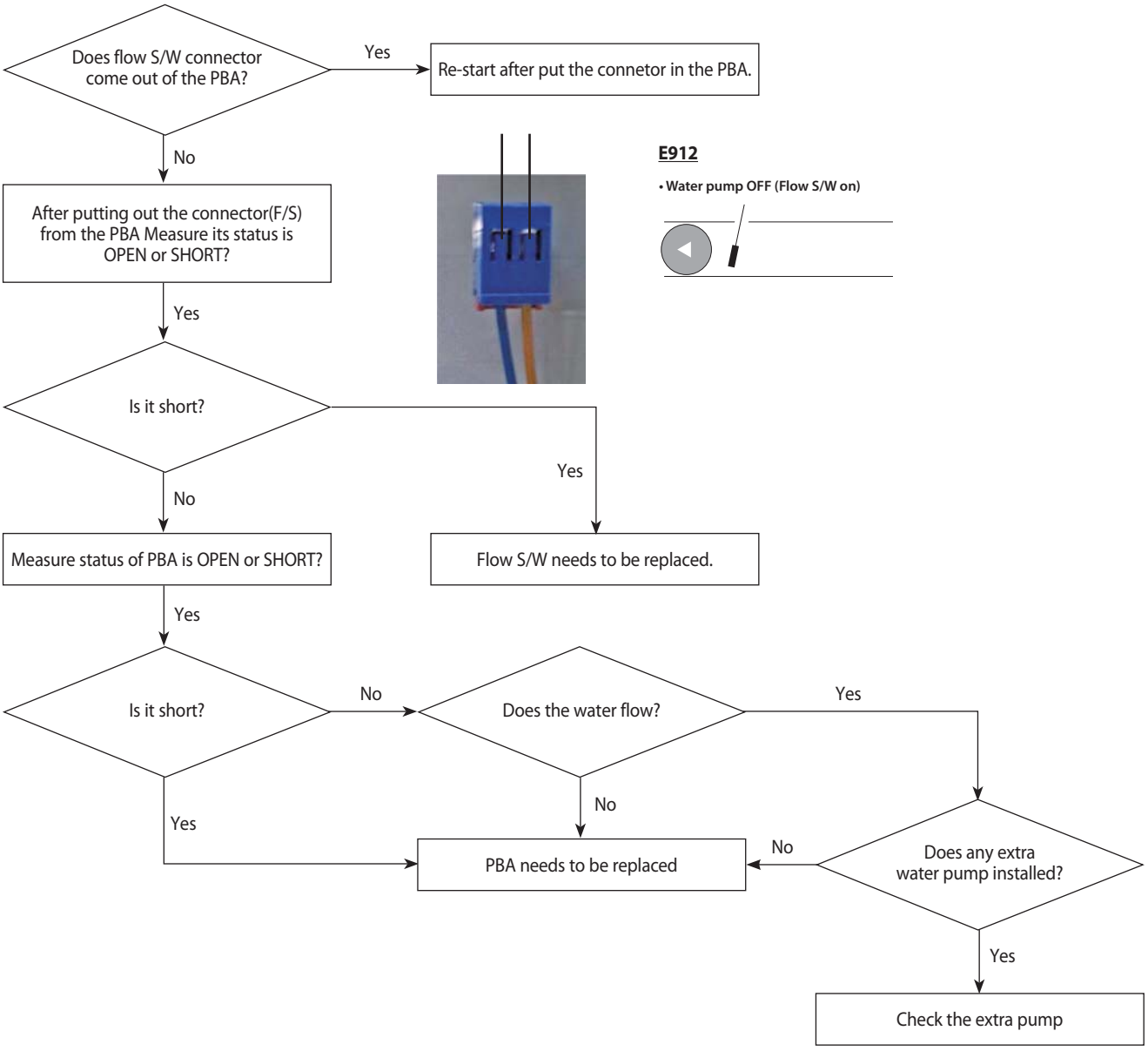


## 4-3-6 Water pump & flow switch ON

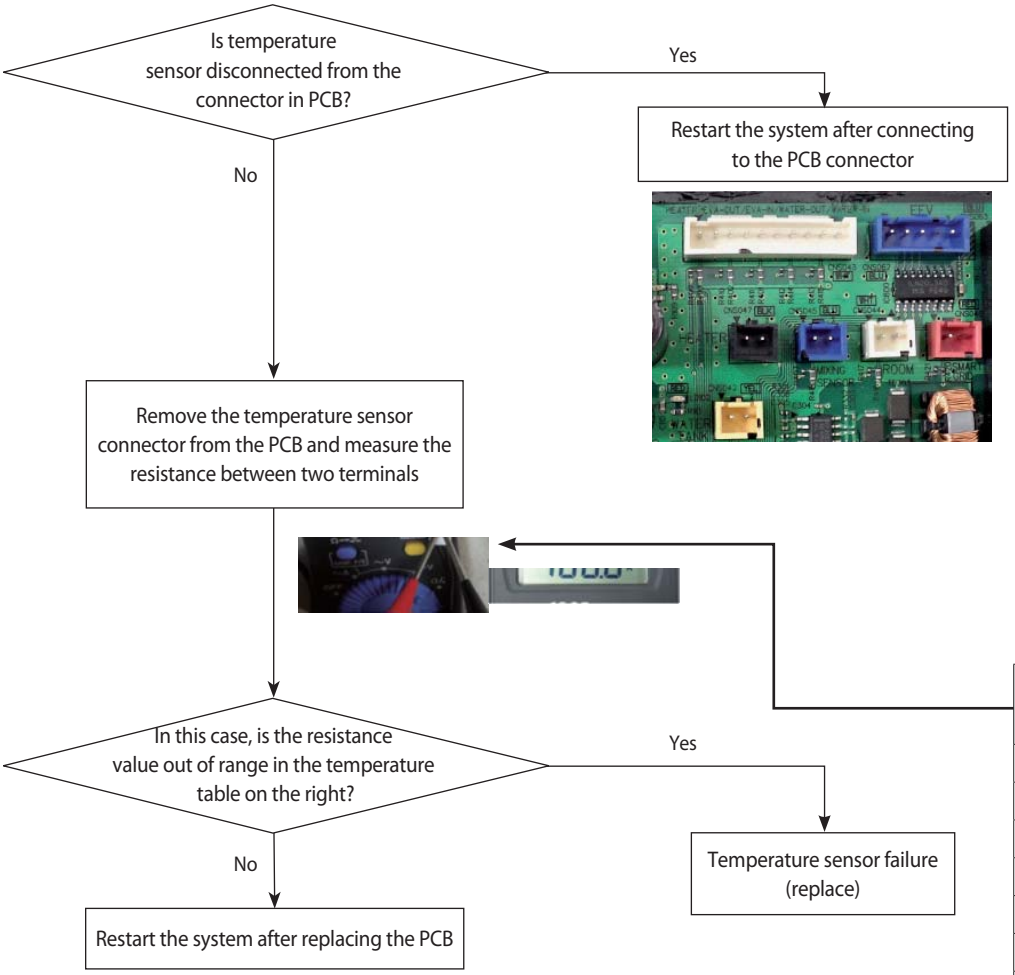
| | |
|---|---|
| **Wired remocon display** | E912 |
| **Criteria** | • Refer to how to determine below |
| **Cause of problem** | • Flow S/W ON in 10minutes during water pump signal is OFF. |

1. How to check



## 4-3-7 Hydro unit temperature sensor(open/short)

| | |
|---|---|
| **Error Mode** | E901, E902, E903, E904, E906, E916 |
| **Symptom** | In case of open or short circuit of indoor temperature sensor |
| **Failure** | Short or leakage of the corresponding sensor |

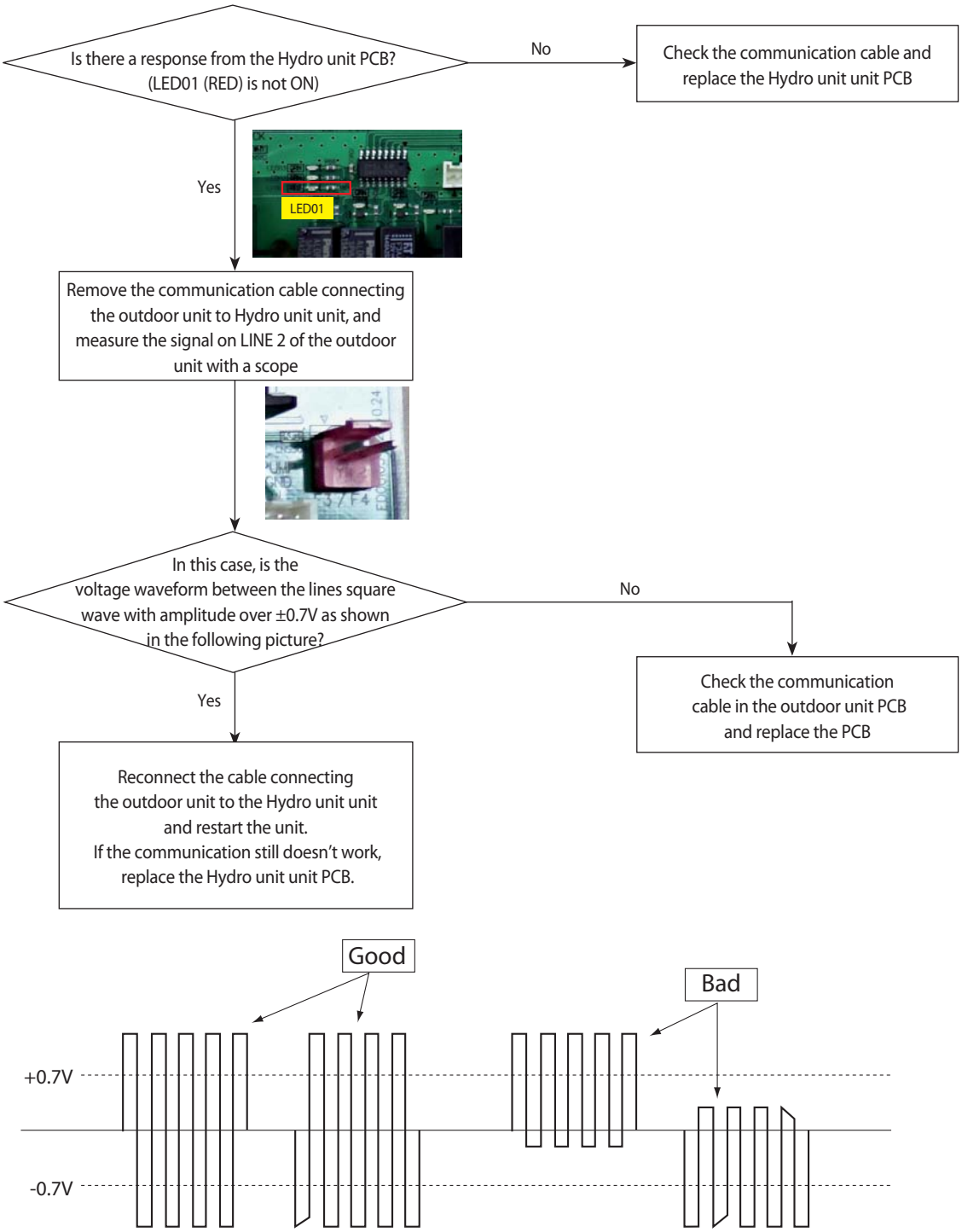



**<Water tank temperature sensor resistance value>**

| Current temperature (°C) | Resistance (kΩ) |
|---|---|
| 60 | 59.16 |
| 55 | 69.44 |
| 50 | 81.92 |
| 45 | 96.95 |
| 40 | 115.4 |
| 35 | 137.8 |
| 30 | 165.7 |
| 25 | 200 |
| 20 | 242.5 |
| 15 | 295.4 |
| 10 | 362.4 |

## 4-3-8 Communication error after finishing Tracking(Hydro unit)

| | |
|---|---|
| **Error Mode** | E201, E202 |
| **Symptom** | Communication error between the Hydro unit and outdoor unit for two minutes |
| **Failure** | Communication error between the Hydro unit unit and outdoor unit |

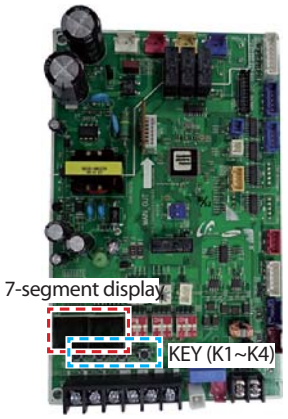


# 4-4 Items to check before diagnostics

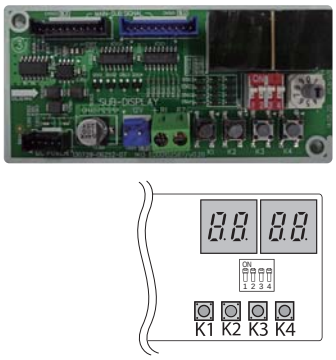
## 4-4-1 Test run mode and view mode

### ■ Display Option Key

| KEY | KEY operation | 7-segment display |
|---|---|---|
| K1 | Press once : Heating test run | "H" "1" "BLANK" "BLANK" |
| | Press twice : Defrost test run | "H" "3" "BLANK" "BLANK" |
| | Press 3times : Finishing test mode | - |
| K2 | Press once : Cooling test run (Heating Only : skip) | "H" "2" "BLANK" "BLANK" |
| | Press twice : Output signal test run | "H" "4" "BLANK" "BLANK" |
| | Press 3 times : Finishing test mode | - |
| K3 | Reset | - |
| K4 | View mode | Refer to View mode display |



AE090~160JXED✳H



AE040~060JXED✳H

### ■ VIEW mode display

| Number of press | Display contents | Display | | | | Units |
|---|---|---|---|---|---|---|
| | | Segment 1 | Segment 2 | Segment 3 | Segment 4 | |
| 0 | Communication State | 10s digit of Tx | 1s digit of Tx | 10s digit of Rx | 1s digit of Rx | - |
| 1 | Order frequency | 1 | 100s digit | 10s digit | 1s digit | Hz |
| 2 | Current frequency | 2 | 100s digit | 10s digit | 1s digit | Hz |
| 3 | Pump output | 3 | 100s digit | 10s digit | 1s digit | % |
| 4 | Outdoor air sensor | 4 | +/- | 10s digit | 1s digit | ℃ |
| 5 | Discharge sensor | 5 | 100s digit | 10s digit | 1s digit | ℃ |
| 6 | Eva in sensor (MONO) | 6 | +/- | 10s digit | 1s digit | ℃ |
| 7 | Inlet water sensor (MONO) | 7 | +/- | 10s digit | 1s digit | ℃ |
| 8 | Outlet water sensor (MONO) | 8 | +/- | 10s digit | 1s digit | ℃ |
| 9 | Cond sensor | 9 | +/- | 10s digit | 1s digit | ℃ |
| 10 | Current | A | 10s digit | 1s digit | First decimal | A |
| 11 | Fan RPM | B | 1000s digit | 100s digit | 10s digit | rpm |
| 12 | Target discharge temperature | C | 100s digit | 10s digit | 1s digit | ℃ |
| 13 | EEV | D | 1000s digit | 100s digit | 10s digit | step |
| 14 | Protective control | E | 0 : Cooling<br>1 : Heating | Protective control<br>0 : No protective control<br>1 : Freezing<br>2 : Defrosting<br>3 : Over-load<br>4 : Discharge<br>5 : Total current | Frequency status<br>0 : Normal<br>1 : Hold<br>2 : Down<br>3 : Up_limit<br>4 : Down_limit | - |
| 15 | IPM temp. | F | +/- | 10s digit | 1s digit | ℃ |
| long-1 | Main Micom version | Year(Hex) | Month(Hex) | Day(two digit) | Day(One digit) | - |
| long-1 and 1 | Inverter Micom version | Year(Hex) | Month(Hex) | Day(two digit) | Day(One digit) | - |
| long-1 and 2 | EEPROM version | Year(Hex) | Month(Hex) | Day(two digit) | Day(One digit) | - |

## 4-4-2 Troubleshooting for outdoor unit

If an error occurs during the operation, it is displayed on the outdoor unit PCB LED, both MAIN PCB and INVERTER PCB.

| No. | LED Display | | | Displayed PCB Assy | Meaning | Remarks | Error Code |
|---|---|---|---|---|---|---|---|
| | Red | Green | Yellow | | | | |
| - | ● | ◉ | ○ | MAIN/INVERTER | Normal operation<br>(MAIN : Indoor↔Outdoor : Green ON)<br>(INVERTER : MAIN PCB↔INVERTER PCB : Green ON) | | - |
| 1 | ● | ◉ | ○ | MAIN | Hydro unit quantity is mismatched. | Check Hydro unit quantity setting in outdoor | E201 |
| 2 | ● | ● | ○ | MAIN/INVERTER | Abnormal state, no communication between Indoor and Outdoor Main PCB | Check electrical connection and setting | E202 |
| | ▯ | ○ | ○ | | | | |
| 4 | ● | ● | ◉ | MAIN/INVERTER | 1min. Time out of communcation error(Main↔Inverter) | Check electrical connection and setting | E203 |
| 5 | ● | ◉ | ○ | MAIN | Outdoor temp sensor error | Check Outdoor sensor Open/Short | E221 |
| 6 | ● | ◉ | ○ | MAIN | Cond. temp sensor error | Check Cond. sensor Open/Short | E231 |
| 7 | ● | ◉ | ○ | MAIN | Discharge temp sensor error | Check Discharge sensor Open/Short | E251 |
| 8 | ● | ◉ | ○ | MAIN | OLP Sensor Error | Check OLP sensor Open/Short | E320 |
| 9 | ● | ◉ | ○ | MAIN | Detection of Outdoor Freezing when Comp. Stop | Check Outdoor Cond. | E403 |
| 10 | ● | ◉ | ○ | MAIN | Protection of Outdoor Overload when Comp. Stop | Check Comp. when it start | E404 |
| 11 | ● | ◉ | ○ | MAIN | Discharge temperature of a compressor in an outdoor unit is overheated. | | E416 |
| 12 | ● | ◉ | ○ | MAIN | Outdoor EEV<br>Open error | Check EEV | E419 |
| 13 | ● | ◉ | ○ | MAIN | Miss wiring error at<br>3Phase power source line<br>(Only 3Phase Model) | Check Power<br>Line-R,S,T,N | E425 |
| 14 | ● | ◉ | ○ | MAIN | Gas leakage error<br>(Stop state) | Check Gas leak | E439 |
| 15 | ● | ◉ | ○ | MAIN | Heating operation is not available since the outdoor air temperature is over 35°C. | Heating | E440 |
| | | | | | 16 | Cooling | E441 |
| 16 | ● | ◉ | ○ | MAIN | Gas leakage error<br>(Before operating) | Check Gas leak | E443 |
| 17 | ○ | ○ | ● | MAIN/INVERTER | Outdoor unit BLDC Fan 1 or Fan 2 error | FAN1 error | E458 |
| | | | | | | 19 | E475 |
| 18 | ○ | ◉ | ○ | MAIN/INVERTER | Comp. Starting error | | E461 |
| 19 | ● | ◉ | ○ | MAIN | Primary Current Trip error | | E462 |
| 20 | ● | ◉ | ○ | MAIN | Over current trip / PFC over current error | Check OLP sensor | E463 |
| 21 | ◉ | ○ | ○ | MAIN/INVERTER | IPM(IGBT Module) Over Current(O.C) | | E464 |
| 22 | ○ | ● | ◉ | MAIN/INVERTER | Comp. Over load error | | E465 |
| 23 | ◉ | ● | ○ | MAIN/INVERTER | DC-Link voltage under/over error | Check AC Power or DC_Link voltage | E466 |

○ Off ◉ Blink ● On

## Troubleshooting for outdoor unit(con.)

If an error occurs during the operation, it is displayed on the outdoor unit PCB LED, both MAIN PCB and INVERTER PCB.

| No. | LED Display | | | Displayed PCB Assy | Meaning | Remarks | Error Code |
|---|---|---|---|---|---|---|---|
| | Red | Green | Yellow | | | | |
| 24 | ● | ○ | ● | MAIN/INVERTER | Comp. wire missing error | Check Comp. wire | E467 |
| 25 | ● | ◉ | ◉ | MAIN/INVERTER | Current sensor error | Check Outdoor Inverter PBA | E468 |
| 26 | ● | ◉ | ○ | MAIN | DC-Ling voltage Sensor error | Check Input voltage | E469 |
| 27 | ● | ◉ | ○ | MAIN | EEPROM read/write error | Check EEPROM | E470 |
| 28 | ● | ◉ | ○ | MAIN | Outdoor EEPROM error | Check Outdoor EEPROM date | E471 |
| 29 | ◉ | ◉ | ○ | MAIN/INVERTER | IPM(IGBT Module) or PFCM Temperature sensor Error | Check Outdoor Inverter PBA | E474 |
| 30 | ● | ◉ | ● | MAIN/INVERTER | PFC Overload Error | Check Outdoor Inverter PBA | E484 |
| 31 | ● | ◉ | ○ | MAIN | Input current sensor error | | E485 |
| 32 | ◉ | ◉ | ○ | MAIN/INVERTER | IPM is over heated. | Check Outdoor Inverter PBA | E500 |
| 33 | ● | ◉ | ○ | MAIN | GAS Leak error | Check indoor and outdoor unit model | E554 |
| 34 | ● | ◉ | ○ | MAIN | Water inlet temperature sensor error | Check Water inlet sensor | E901 |
| 35 | ● | ◉ | ○ | MAIN | Water outlet temperature sensor error | Check Water outlet sensor | E903 |
| 36 | ● | ◉ | ○ | MAIN | Refriqerant gas inlet temperature sensor error | Check Gas inlet sensor | E906 |
| 37 | ● | ◉ | ○ | MAIN | Mixing Valve Outlet temperature sensor error | Check Mixing Valve Outlet sensor | E916 |

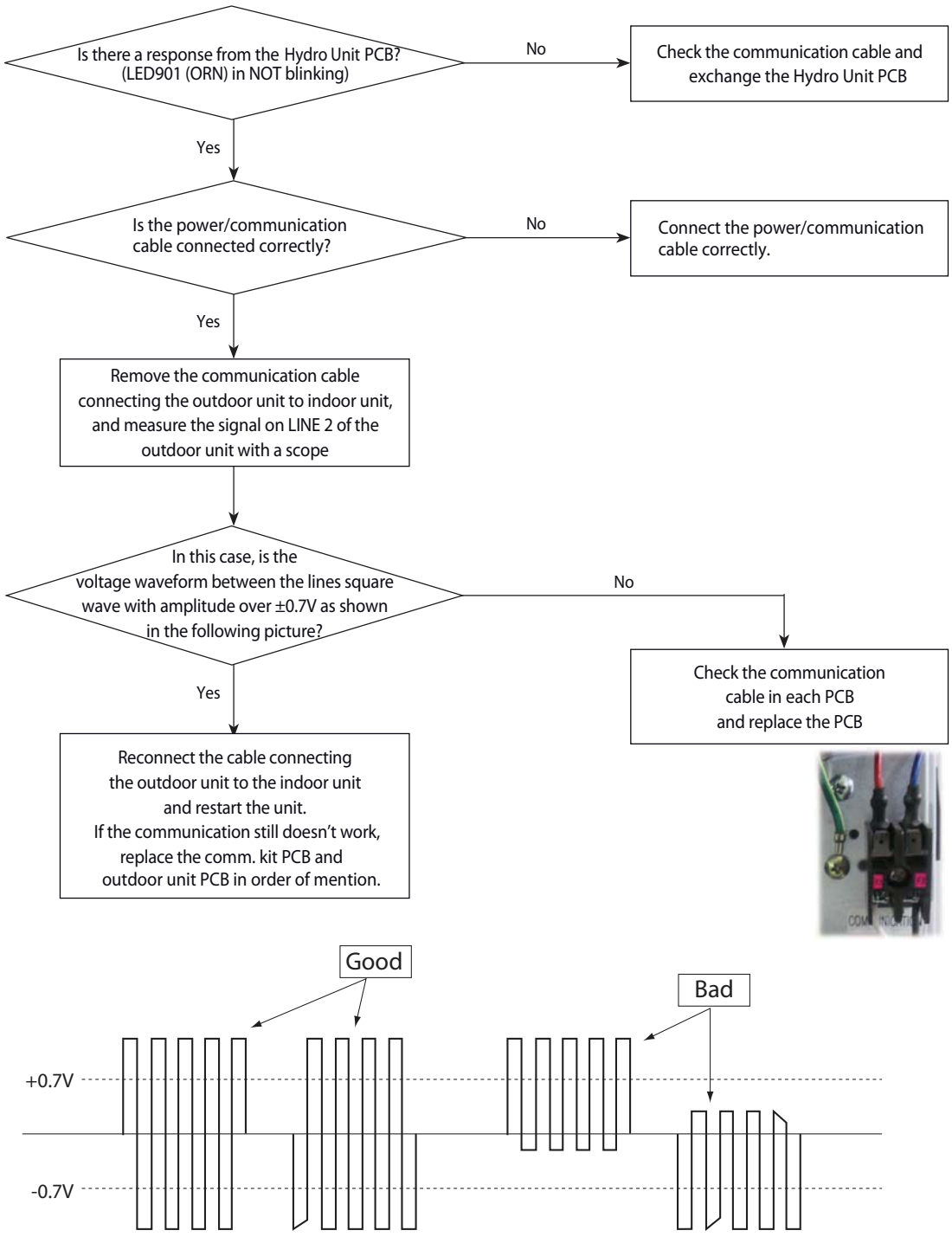
○ Off ◉ Blink ● On

# 4-5 Troubleshooting by symptoms

## 4-5-1 Communication error after finishing tracking (E202)

1. Check items
   1) Is the communication cable short/open?
   2) Is there a response from the Hydro unit PCB?

2. Check procedure

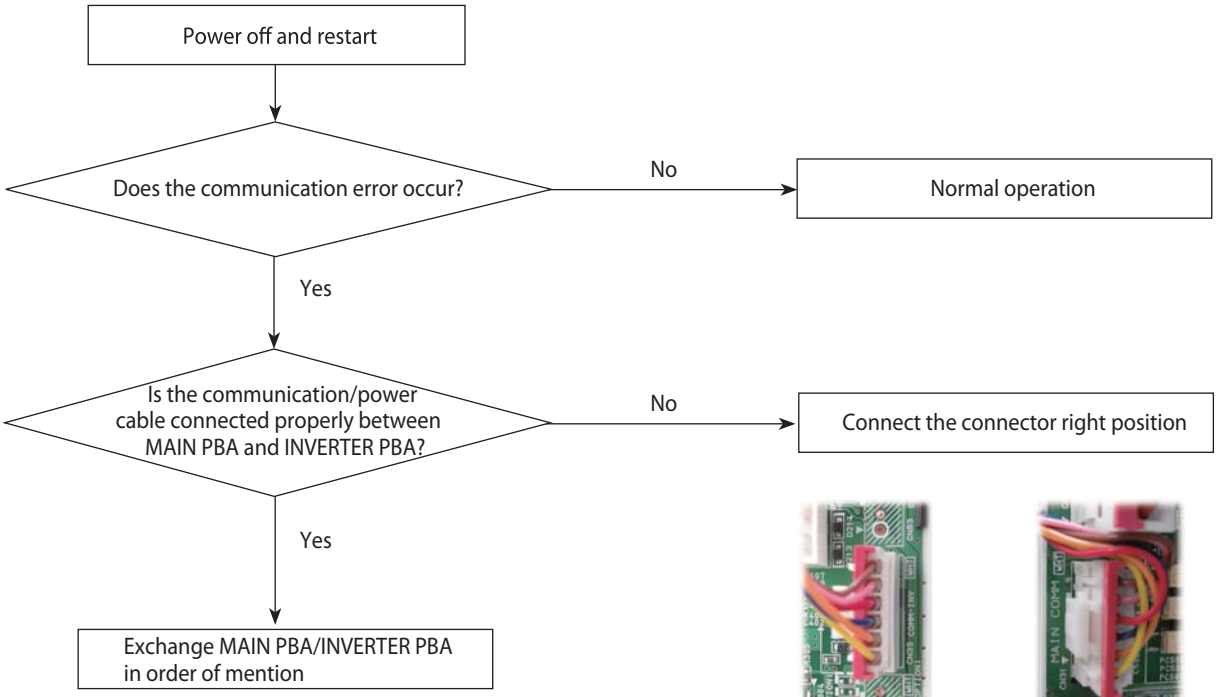



cf.) If there is no oscillo scope, it can be replaced multimeter instead of osillo scope.
If measured voltage is floating value from 0.1V to 4.5V, then it means that the PCB is normal.

## 4-5-2 Time out (1min.) of communication error between MAIN PBA and INV. PBA (E203)

1. Check items
   1) Is the communication cable connected properly between MAIN PBA and INVERTER PBA?
   2) Is the power cable connected correctly?

2. Check procedure





<CN39 in MAIN PBA>

<CN31 in INVERTER PBA>

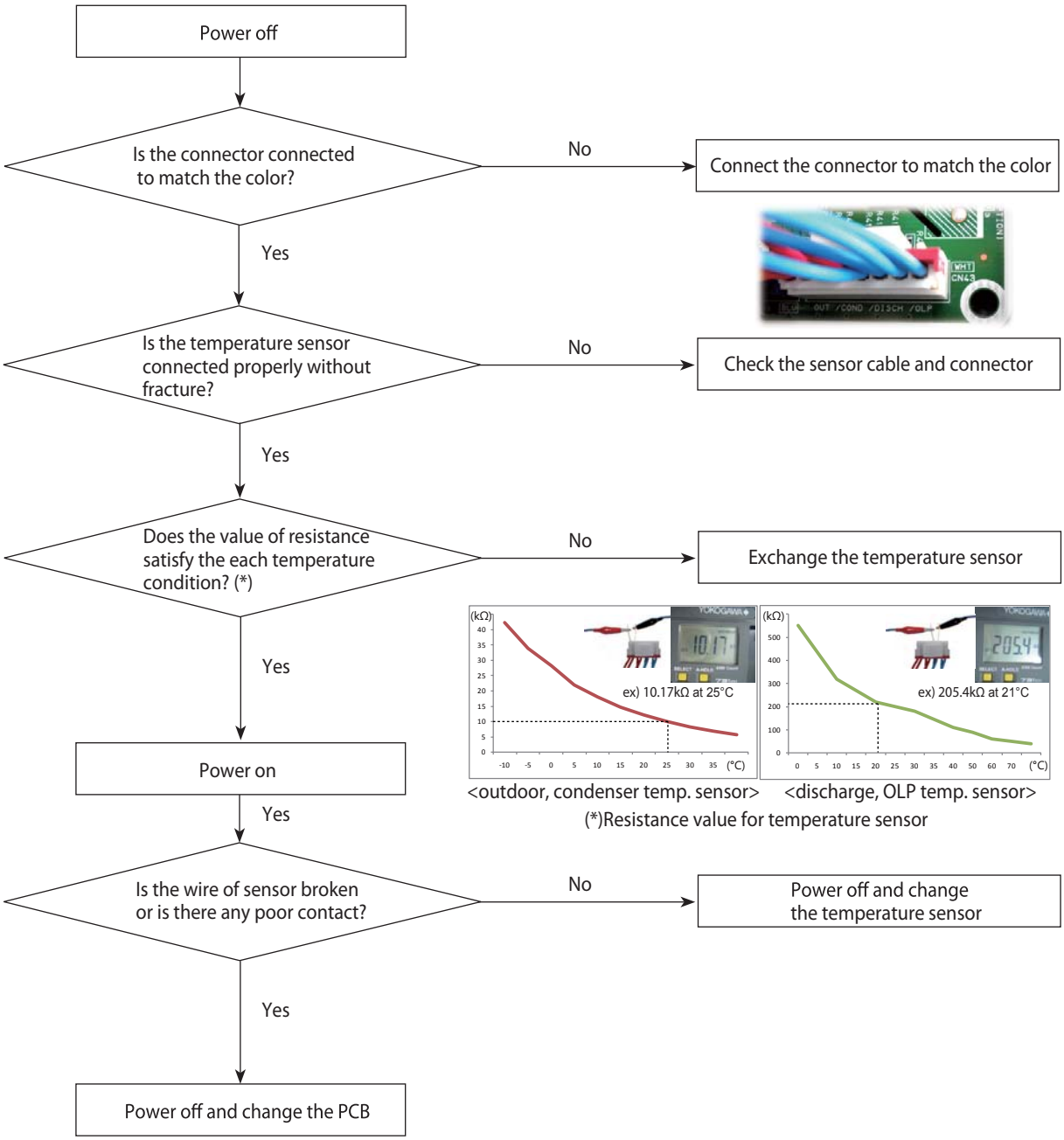
## 4-5-3 Temperature sensor error (E221, E231, E251, E320)

<Error code for each temperature sensor>

| | Pin no. | Temp. sensor | Error code |
|---|---|---|---|
| CN43 in MAIN PBA | 1,2 | Outdoor | E221 |
| | 3,4 | Condenser | E231 |
| | 5,6 | Discharge | E251 |
| | 7,8 | OLP | E320 |

1. Check items
   1) Is the sensor connected correctly (CN43 in MAIN PBA)?
   2) Is the postion of sensor correct?
   3) Does the value of resistance satisfy the each temperature condition?

2. Check procedure




<outdoor, condenser temp. sensor> <discharge, OLP temp. sensor>

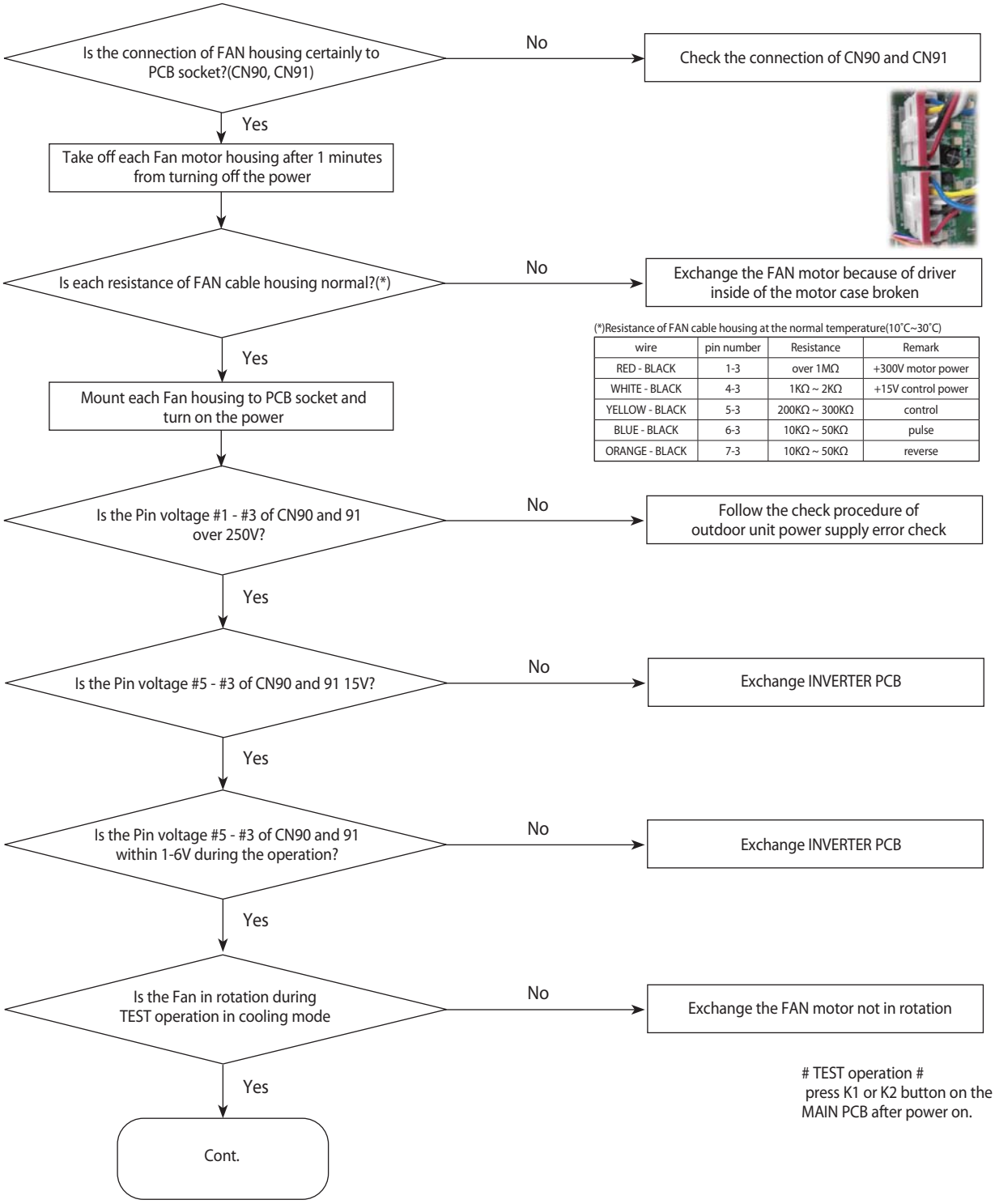
(*)Resistance value for temperature sensor

## 4-5-4 Fan error (E458, E475)

FAN 1 error(E458), FAN 2 error(E475)

1. Check items
   1) Are the input power voltage and power connection correct?
   2) Is the motor wire connected to the outdoor PCB correctly?
   3) Is there no obstacle at the surrounding of motor and propeller?
   4) Does the driver in the motor case broken?

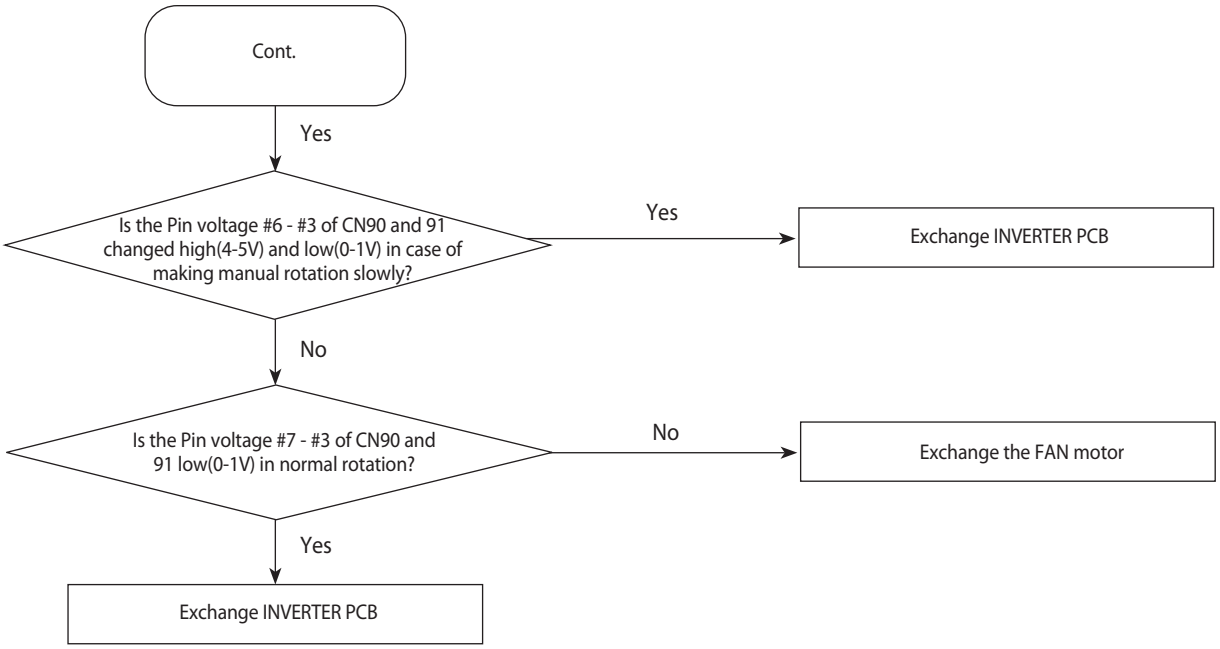
2. Check procedure




(*)Resistance of FAN cable housing at the normal temperature(10˚C~30˚C)

| wire | pin number | Resistance | Remark |
|---|---|---|---|
| RED - BLACK | 1-3 | over 1MΩ | +300V motor power |
| WHITE - BLACK | 4-3 | 1KΩ ~ 2KΩ | +15V control power |
| YELLOW - BLACK | 5-3 | 200KΩ ~ 300KΩ | control |
| BLUE - BLACK | 6-3 | 10KΩ ~ 50KΩ | pulse |
| ORANGE - BLACK | 7-3 | 10KΩ ~ 50KΩ | reverse |

## Fan error (E458, E475) (cont.)

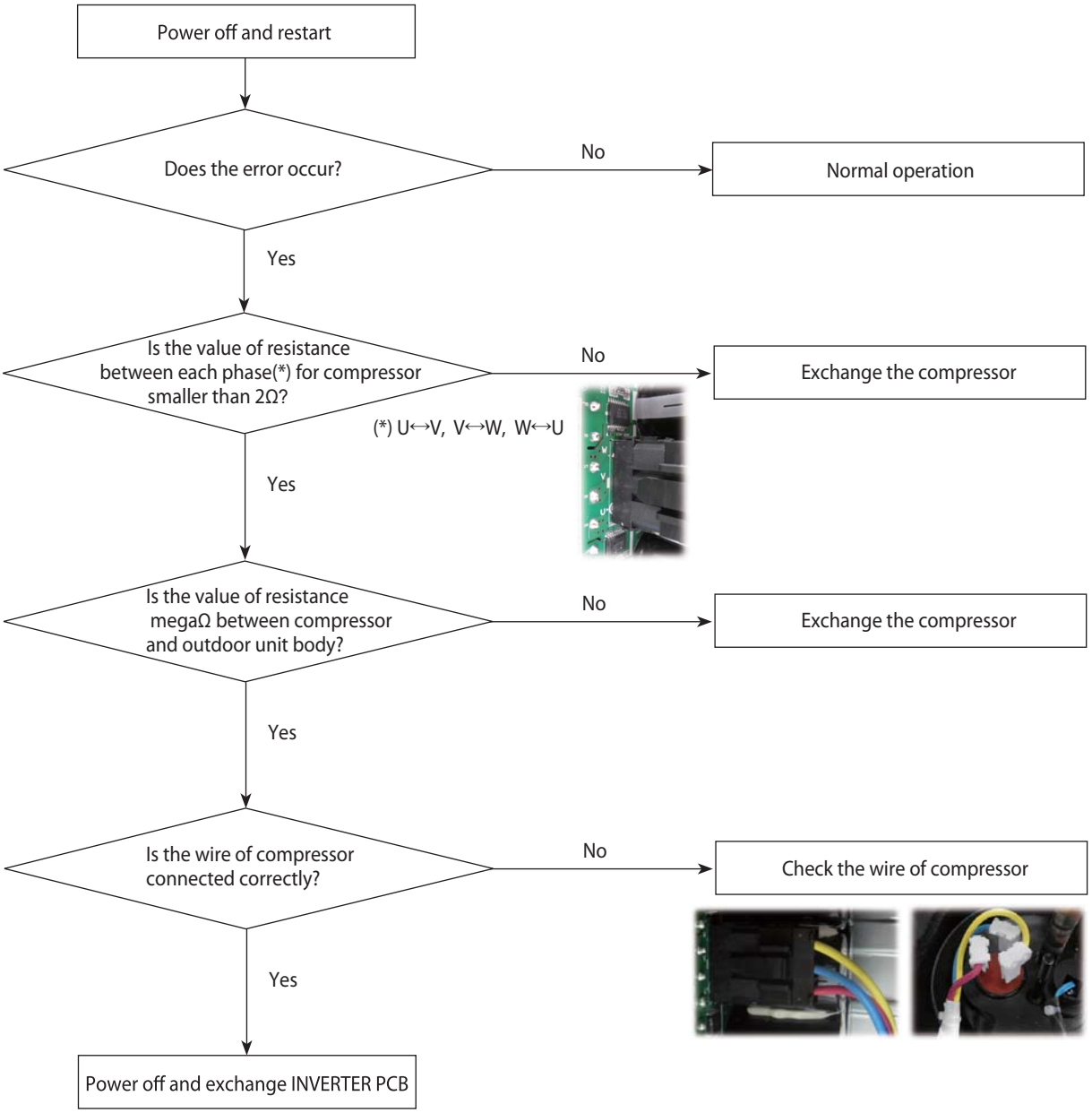


## 4-5-5 Compressor error (E461, E467)

Compressor starting error(E461), Compressor wire missing error(E467)

1. Check items
   1) Is the power connected properly?
   2) Is the connector of compressor connected correctly?
   3) Is the resistance normal between each phase for compressor ?

2. Check procedure

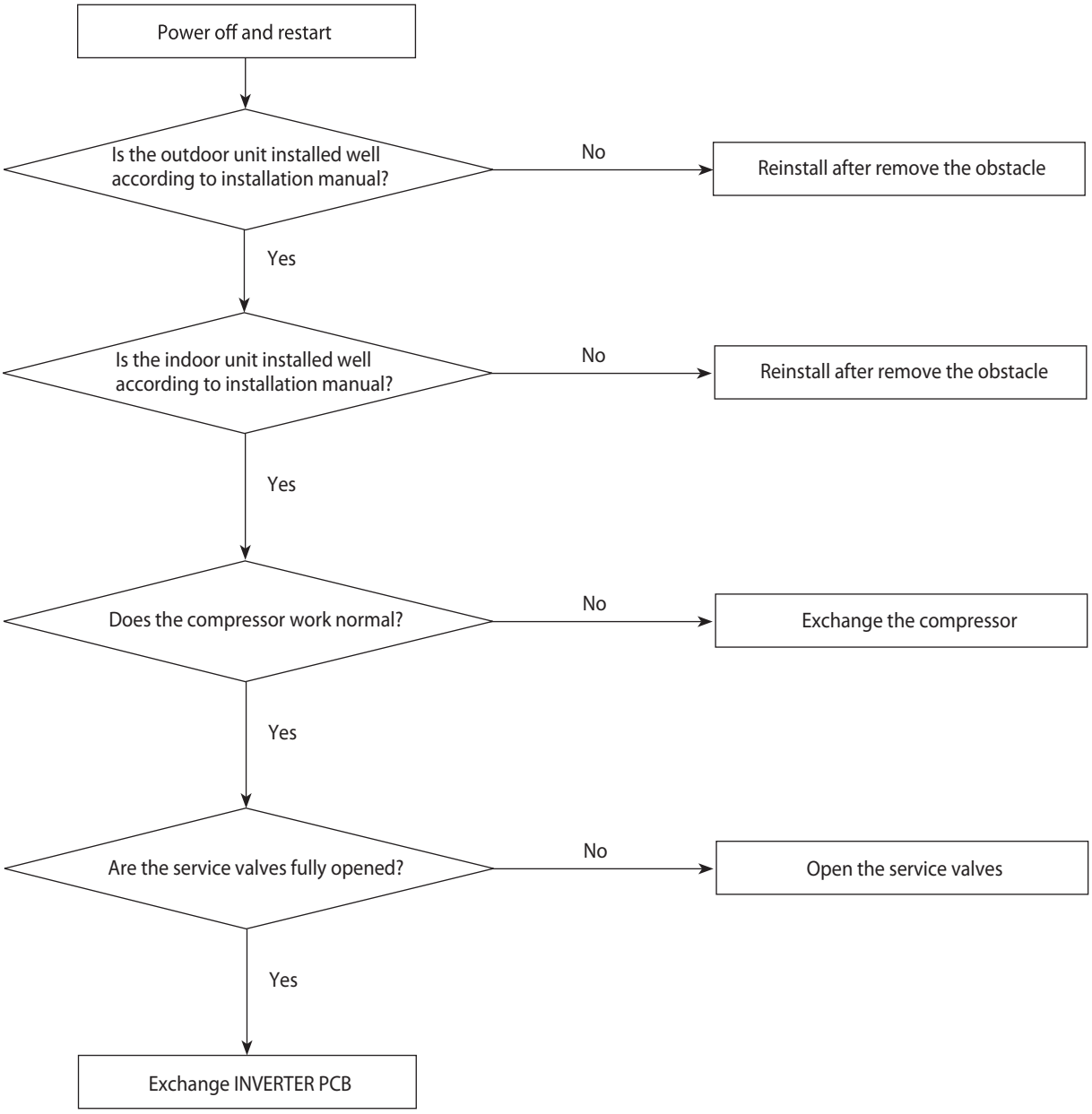


## 4-5-6 Current trip error (E462, E463)

Primary current trip error(E462), Over current trip / PFC over current error(E463)

1. Check items
   1) Is the voltage of power suitable?
   2) Is refrigerant charged?
   3) Does the fan of outdoor unit work normally?
   4) Is there any obstacle around indoor and outdoor unit?

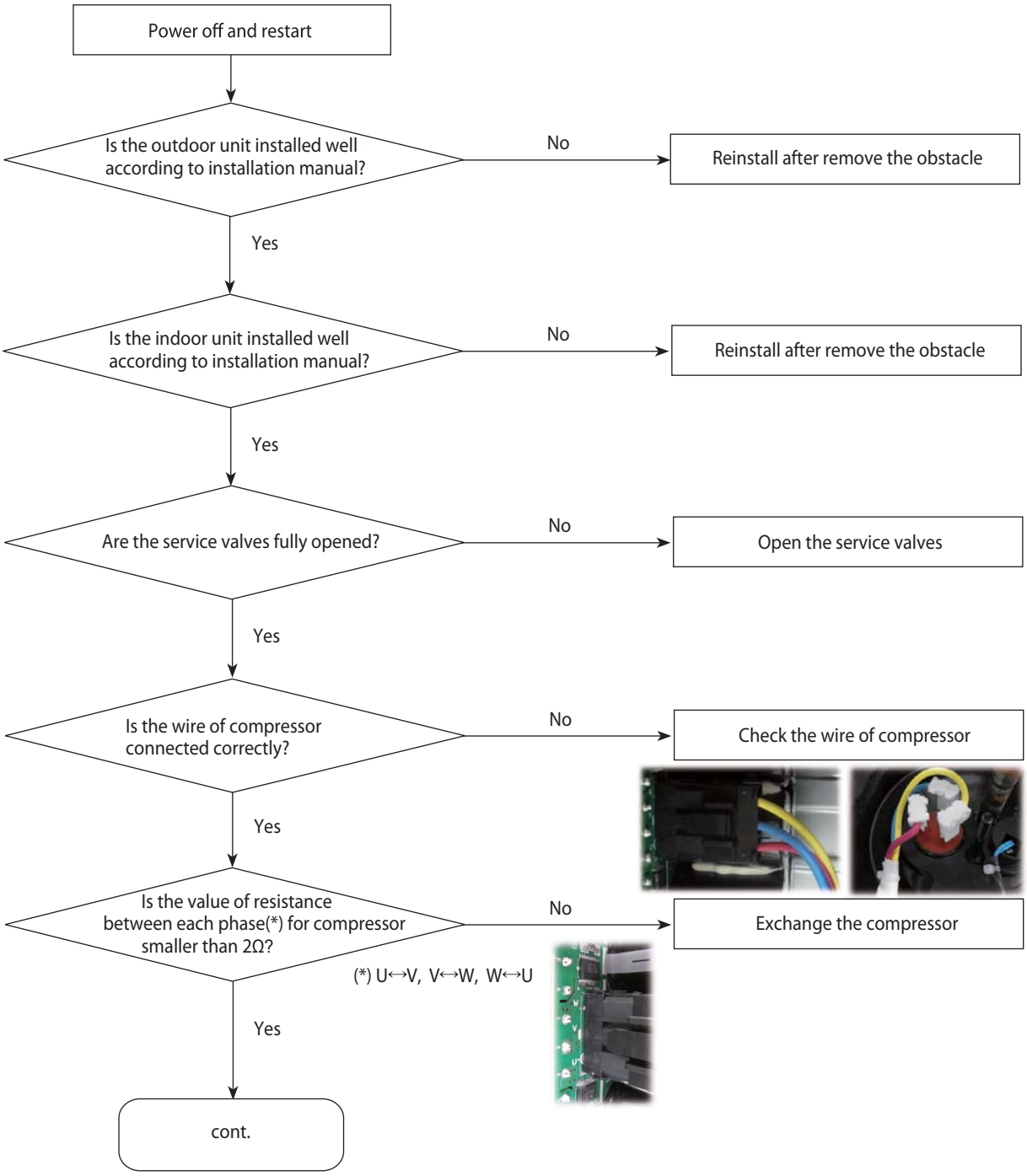
2. Check procedure

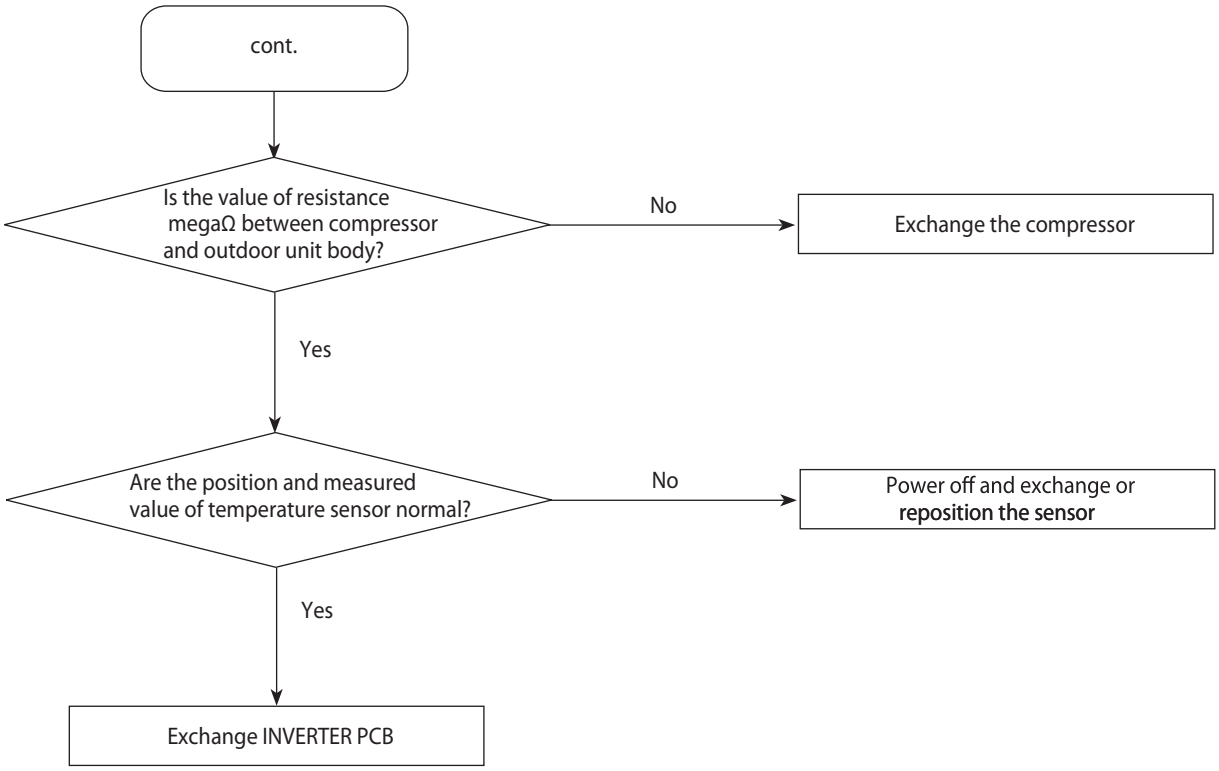


## 4-5-7 IPM(IGBT module) over current error (E464)

1. Check items
   1) Is refrigerant charged?
   2) Does the compressor work normally?
   3) Is the connection of compressor correctly?
   4) Is there any obstacle around indoor and outdoor unit?

2. Check procedure

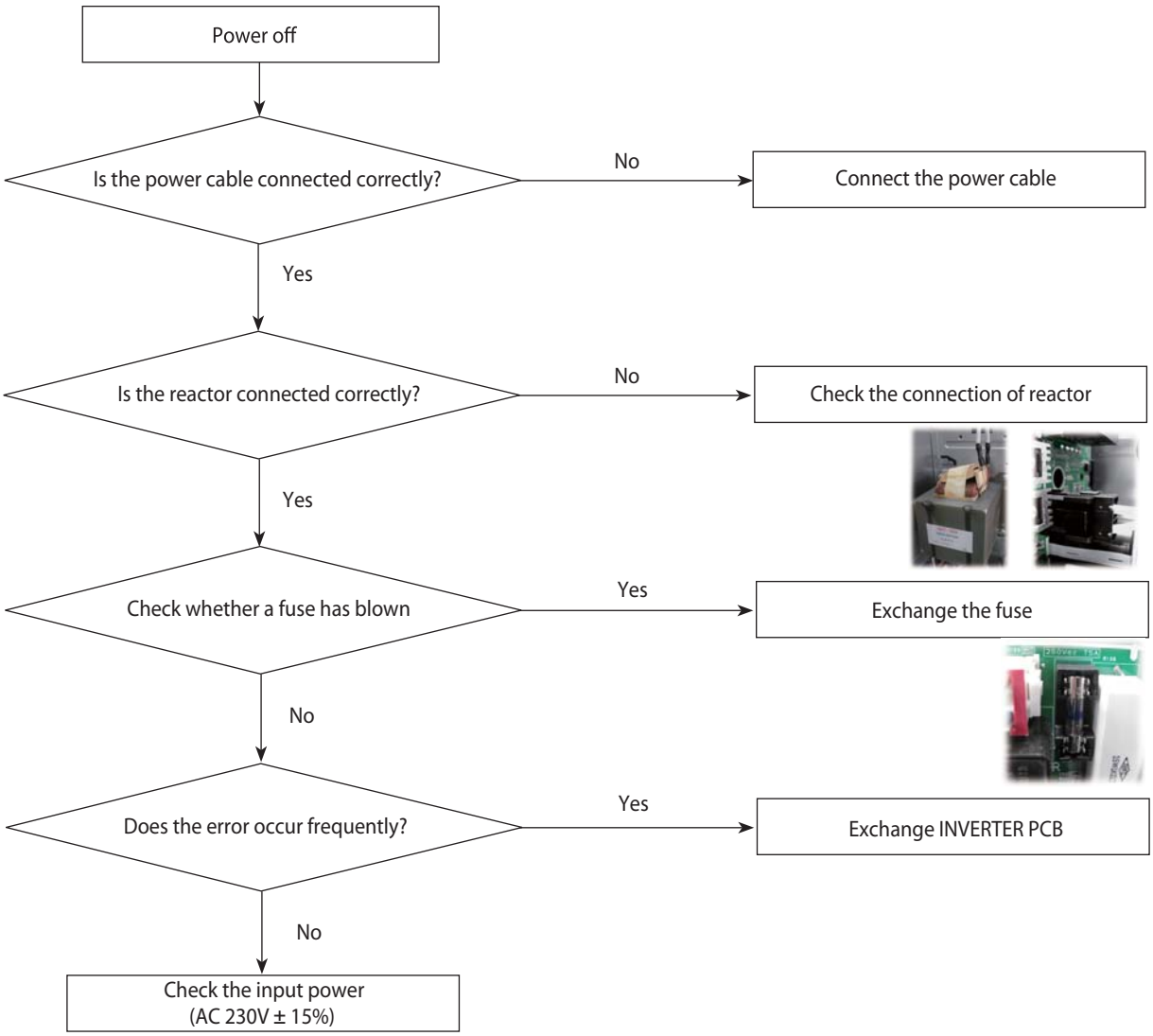



cont.
Is the value of resistance megaΩ between compressor and outdoor unit body?
No
Exchange the compressor
Yes
Are the position and measured value of temperature sensor normal?
No
Power off and exchange or reposition the sensor
Yes
Exchange INVERTER PCB

## 4-5-8 DC-link voltage under/over error (E466)

1. Check items
   1) Is the input power normal?
   2) Is the AC power connected correctly?

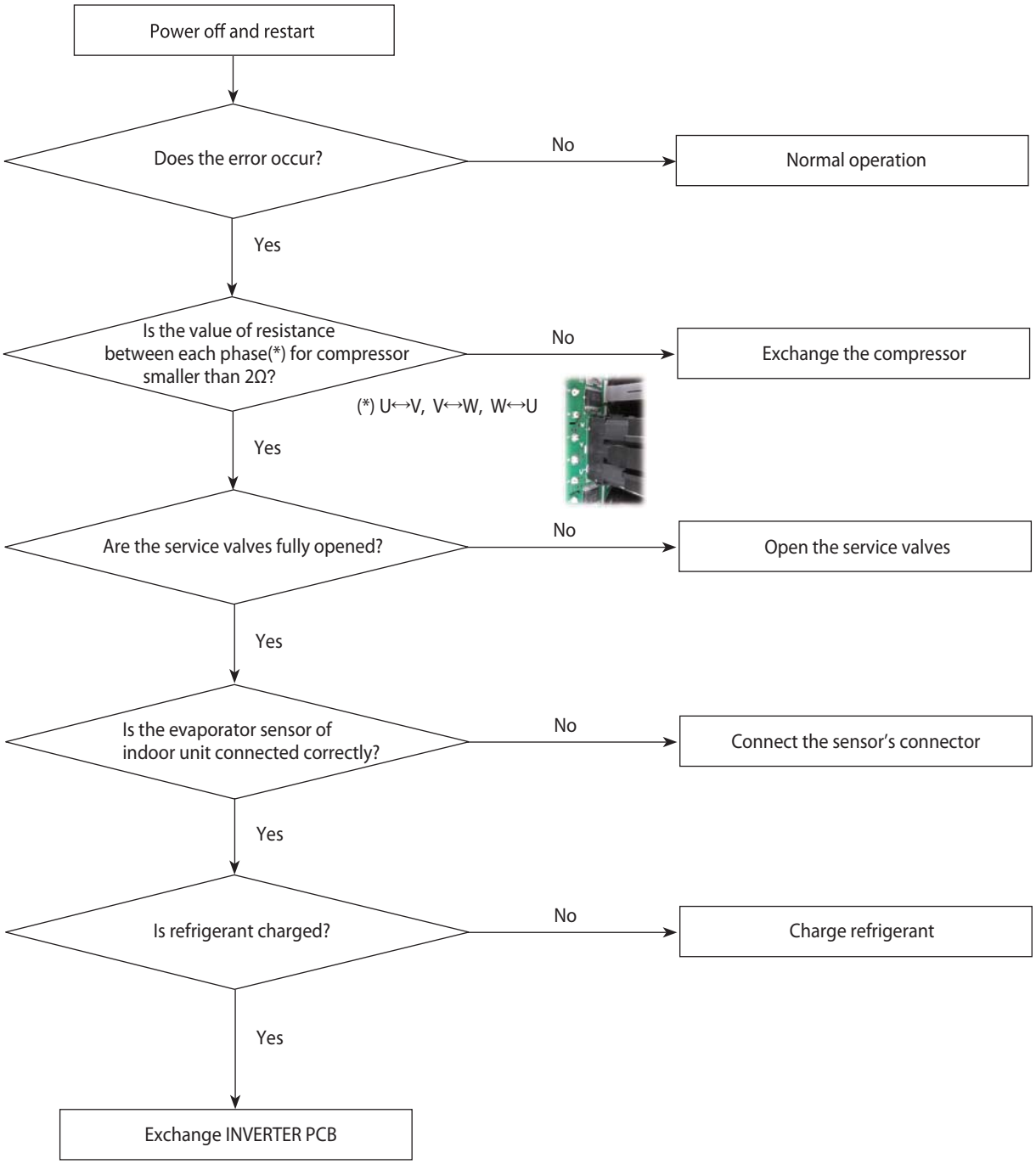
2. Check procedure



## 4-5-9 GAS leak error(E554)

1. Check items
   1) Is refrigerant charged?
   2) Is the evaporator sensor of indoor unit connected correctly?

2. Check procedure

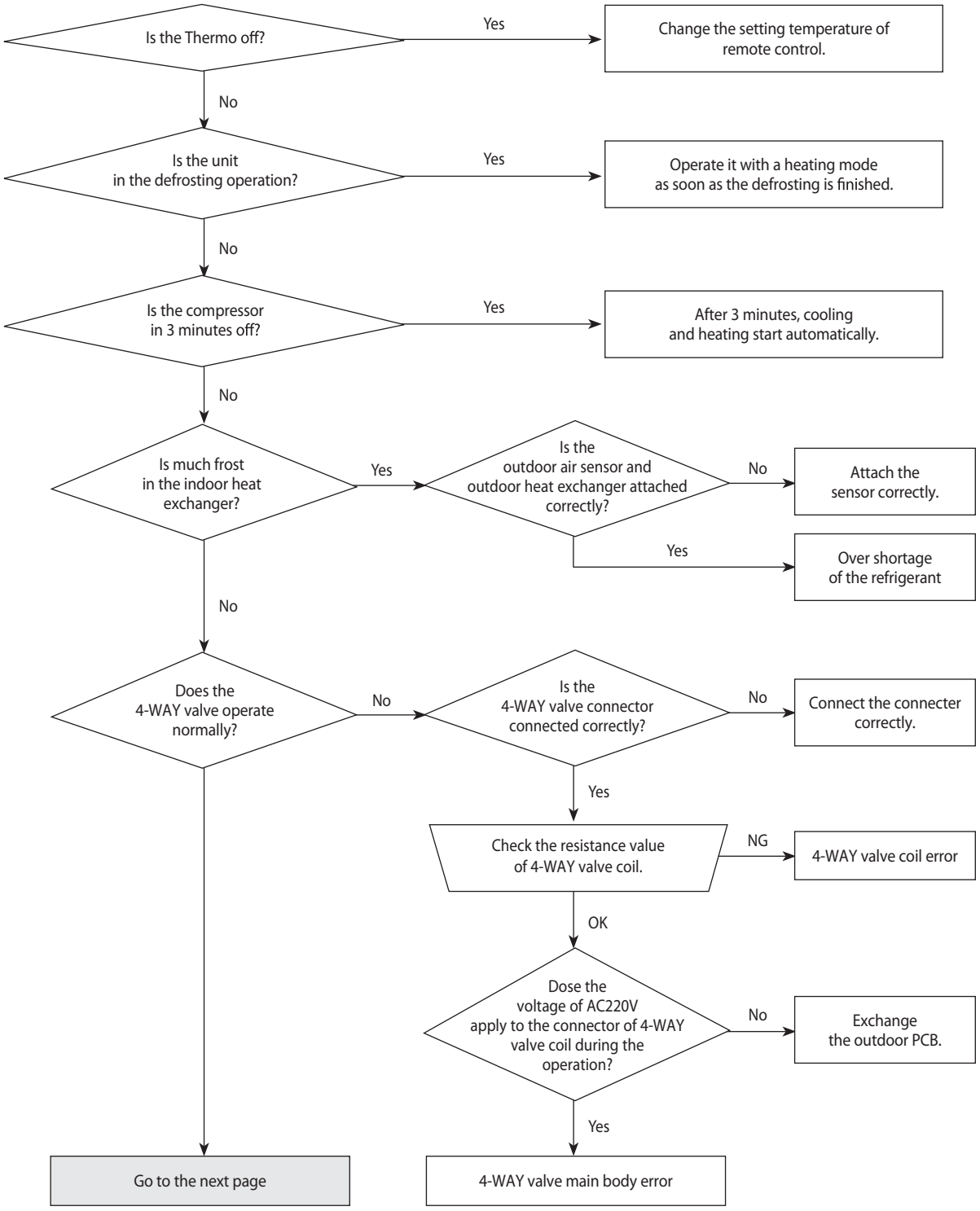


## 4-5-10 The other errors

| Error code | Meaning | Troubleshooting |
|---|---|---|
| E177 | Emergency stop | Indoor unit (Hydro Unit ) orders emergency stop.<br>Check the indoor unit (Hydro Unit). |
| E201 | Hydro Unit quantity is mismatched. | Hydro Unit quantity must be matched with outdoor unit 1 by 1. Check the Hydro Unit quantity. It must be 1EA. |
| E403 | Detection of outdoor freezing when compressor stops. | Outdoor unit (Condenser) froze.<br>Check condenser. |
| E404 | Protection of outdoor overload when compressor stops. | Compressor is overloaded. Please check same as E461 and check compressor when it starts. |
| E416 | Discharge temperature of a compressor in an outdoor unit is overheated. | Discharge temperature is overheated. |
| E440 | Heating operation is not available since the | Check the outdoor temperature. |
| E441 | Cooling operation is not available since the outdoor air temperature is lower than -15°C. | |
| E465 | Compressor over load error | Compressor is overloaded. Please check same as E461 and check compressor when it starts. |
| E468 | Current sensor error | Exchange INVERTER PBA. |
| E471 | Outdoor EEPROM error | EEPROM date is wrong. Exchange EEPROM or MAIN PBA.<br>This error don't occur in EMF 150-AM) |
| E474 | IPM(IGBT Module) or PFCM temperature sensor error | Exchange INVERTER PBA. |
| E484 | PFC overload error | Check reactor located in control plate.<br>If reactor is normal, exchange INVERTER PBA. |
| E500 | IPM is over heated. | Check INVERTER PBA's temperature. Power off and cool down INVERTER PBA, and then restart the outdoor unit. |
| E556 | Capacity mismatching between indoor and outdoor. | EEPROM data is wrong.<br>Exchange EEPROM or MAIN PBA |
| E557 | Option code miss matching among the indoors(only for DPM) | Option setting data is wrong.<br>(This error don't occur in EMF 150-AM) |

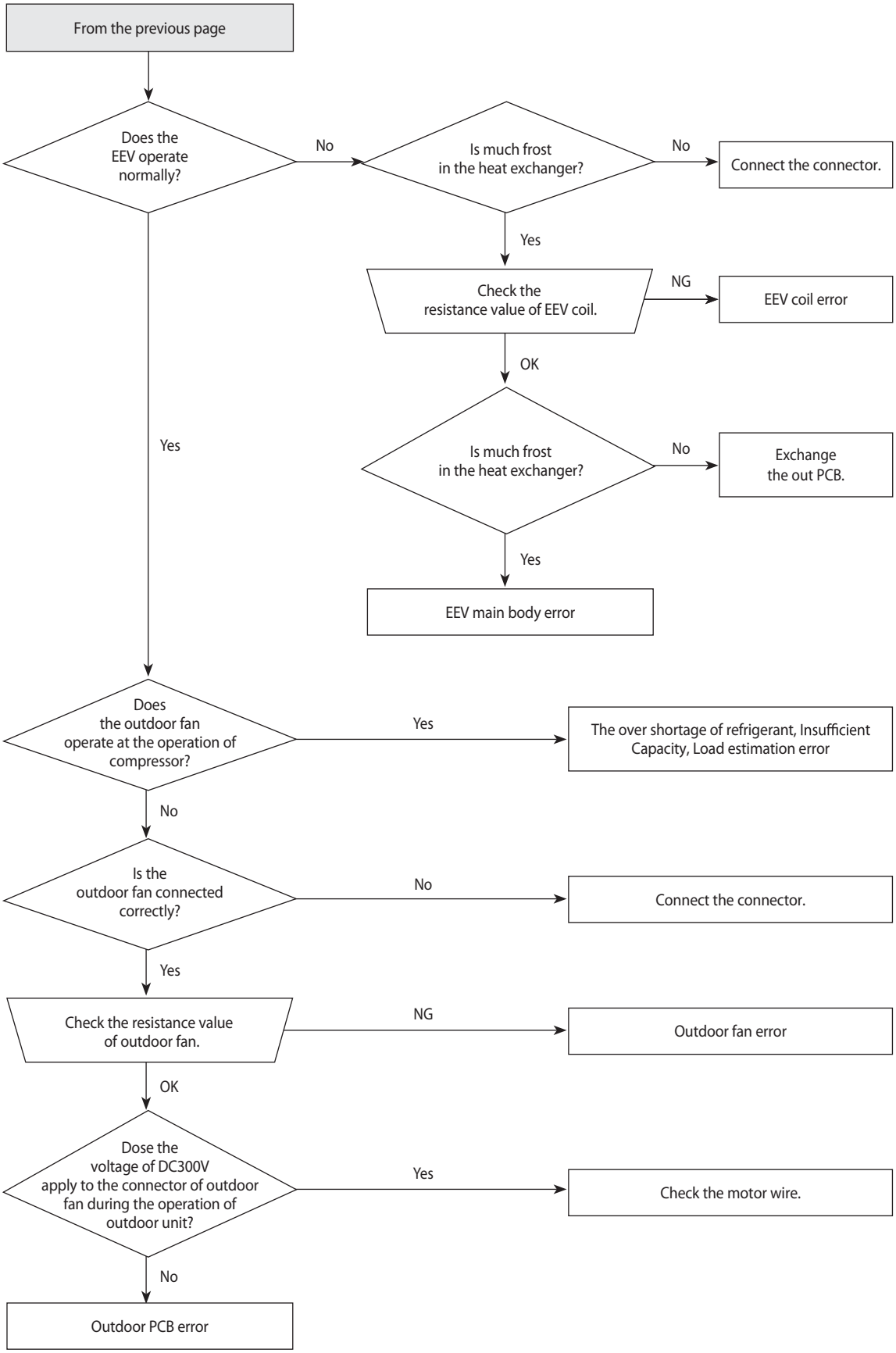
## 4-5-11 In case of heating at the cooling mode or cooling at the heating mode

1. Troubleshooting procedure




* Normal resistance value of 4 way valve coil : 1.5±0.15kΩ (at 20℃)

## In case of heating at the cooling mode or cooling at the heating mode (cont.)

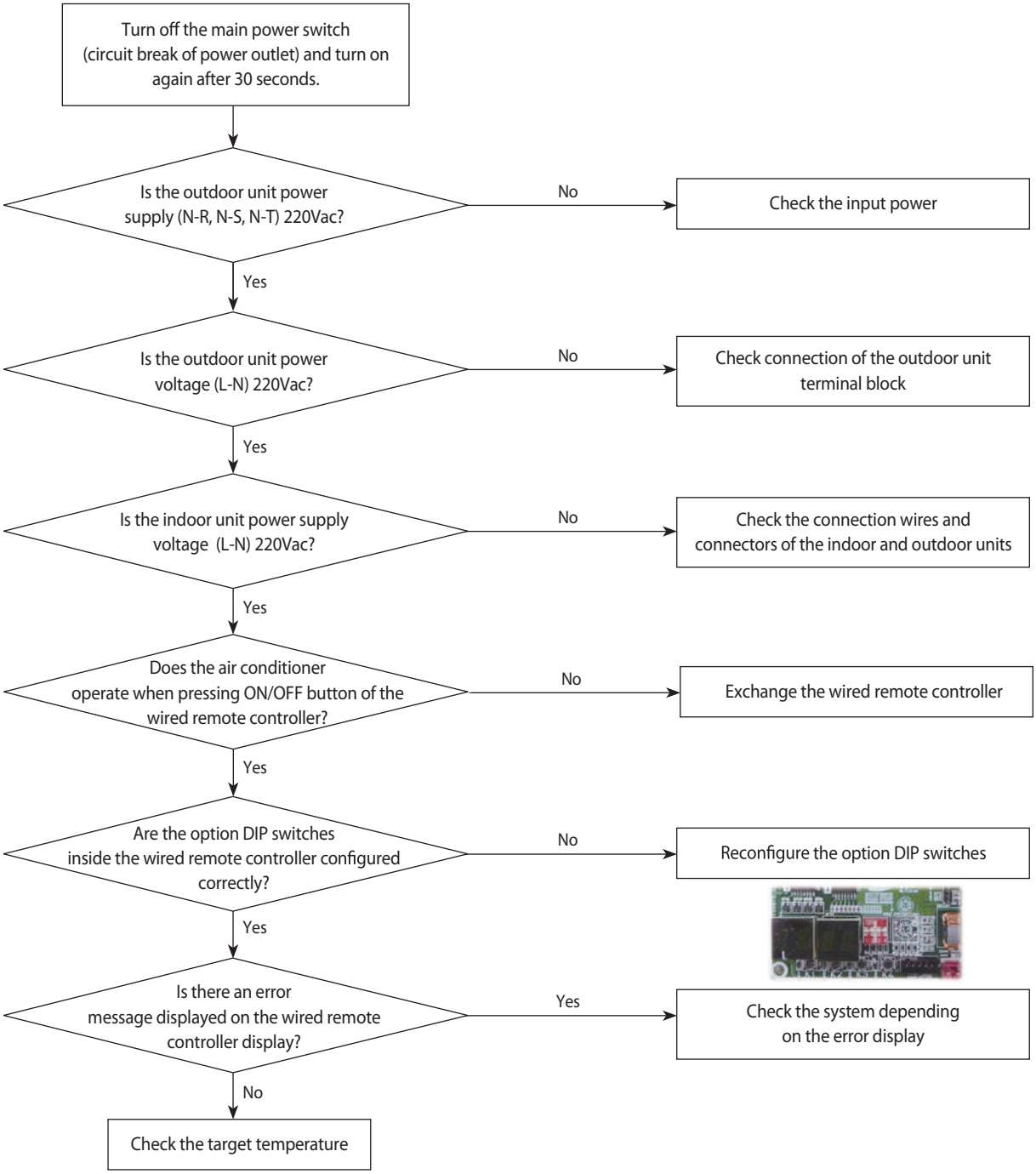



* Normal resistance value of EEV valve coil(Red-Black or Yellow-Orange) : 92±8Ω (at 20℃)

## 4-5-12 Outdoor unit is not powered on – Initial diagnosis

1. Check items
   1) Is the power supply voltage 380V?
   2) Is the AC power connected correctly?
   3) Are the LEDs in the main PCB and inverter PCB of the outdoor unit ON?
   4) Is the input power voltage of the indoor unit 220V?
   5) Is the wired remote controller connected correctly?

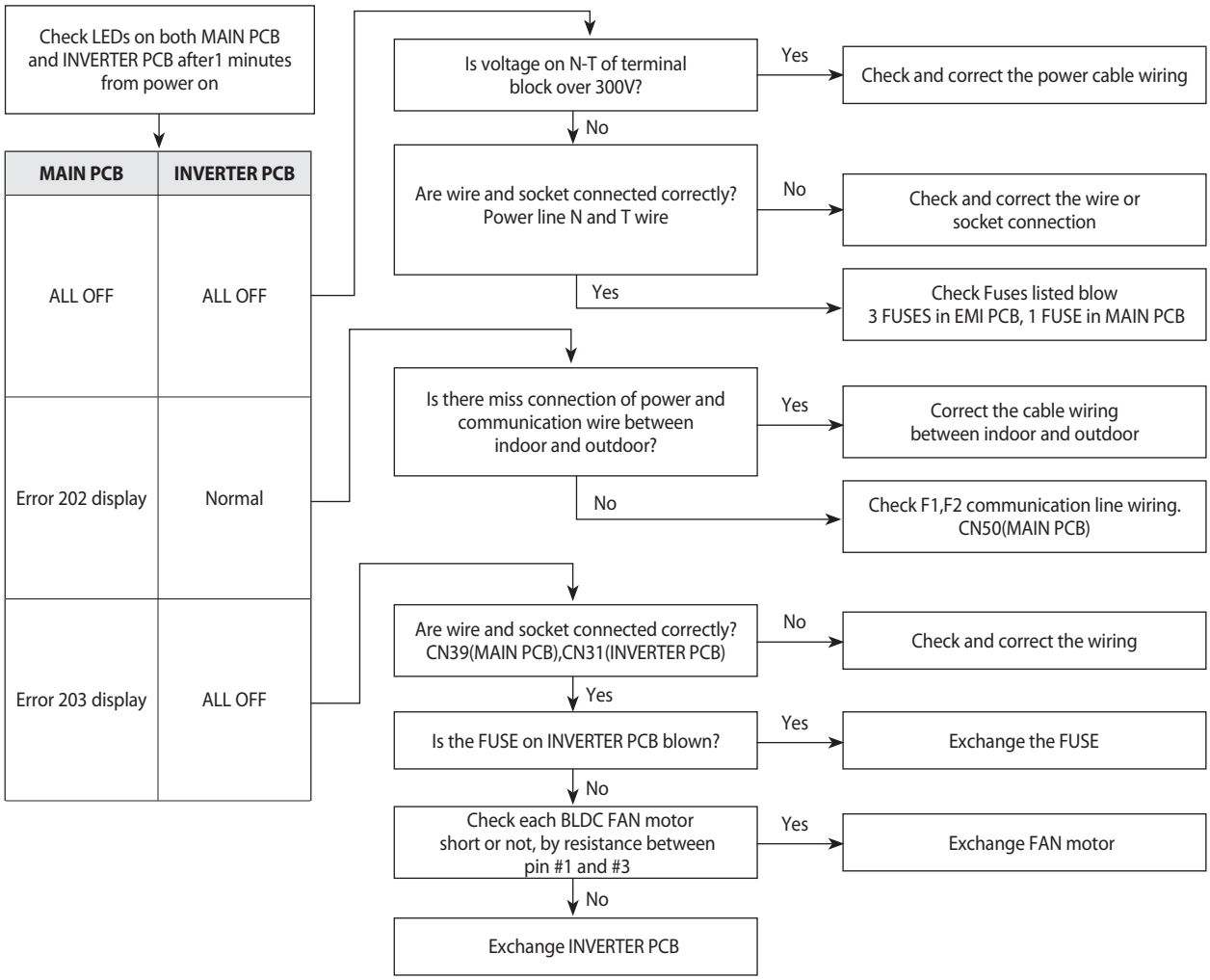
2. Check procedure



## 4-5-13 Outdoor unit power supply error

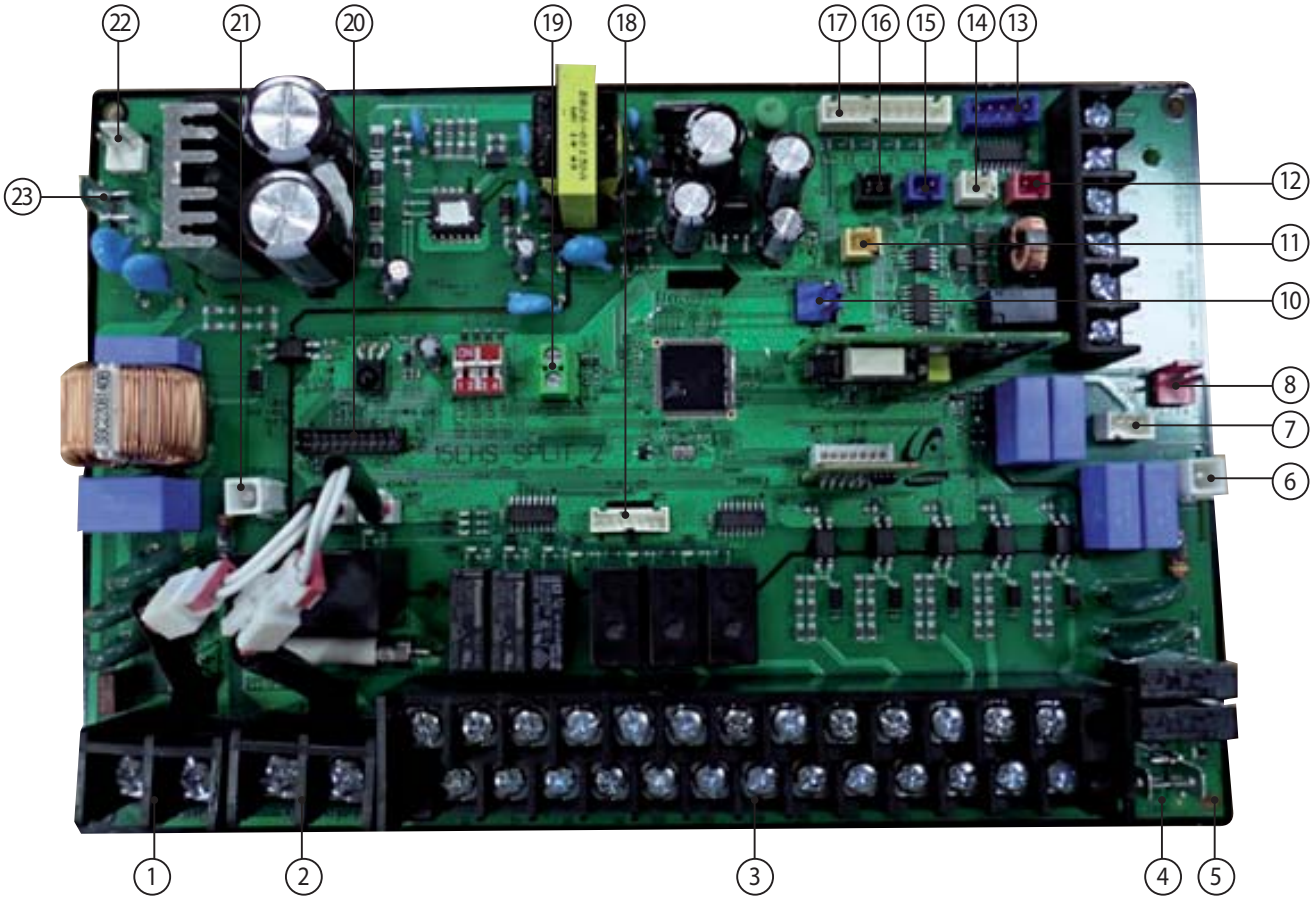
1. Checklist:
   1) Are the input power voltage and power connection correct?
   2) Is there any Fuse Short of the indoor or outdoor unit?
   3) Is any LED lit on both MAIN PCB and INVERTER PCB?
   4) Are Reactor wires of the outdoor unit connected correctly?

2. Troubleshooting procedure



# 5. PCB Diagram

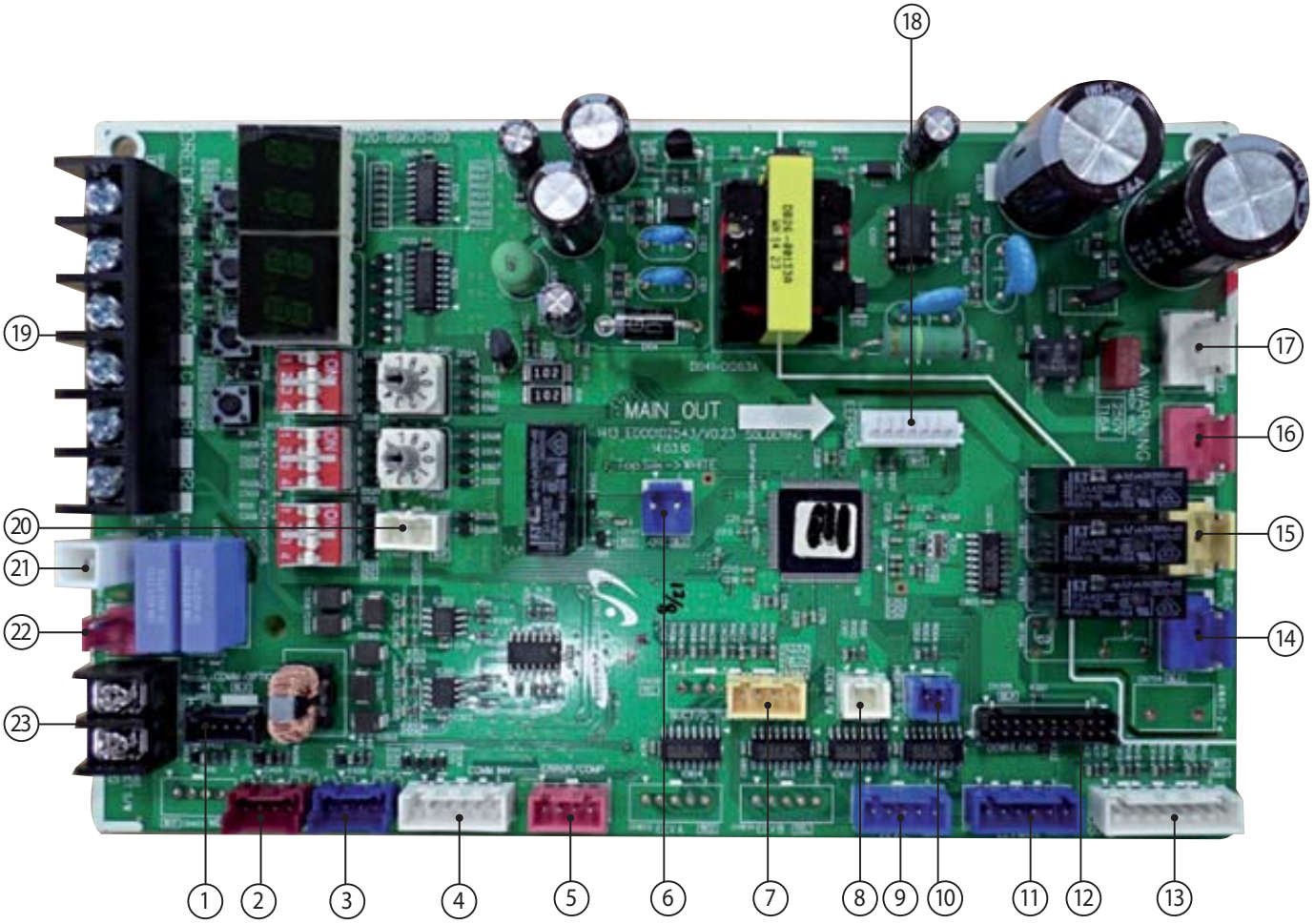
## 5-1 Hydro unit



| No. | Local | Function | Description |
|---|---|---|---|
| 1 | TB-A | MAIN POWER | DAPC 3013-2P BLK |
| 2 | TB-A1 | BOOST HEATER | DAPC 3013-2P BLK |
| 3 | TB-B | EXTERNAL CONTROL | BR-1000C2-26P BLK |
| 4 | CNP001 | MC2-A | YTR250 |
| 5 | CNP002 | MC1-A | YTR250 |
| 6 | CN303 | EARTH | YDW236-01 WHT |
| 7 | CNS1 | WATER PUMP SIG/GND | SMW250-03 WHT |
| 8 | CNS304 | WIRED REMOCON F3/F4 | YW396-02V RED |
| 9 | TB-C | F1-F2/DC12V-GND/F3-F4 | DAPC 2009-6P BLK |
| 10 | CNS041 | FLOW SWITCH | YW396-02V BLU |
| 11 | CNS042 | WATER TANK | SMW250-02 YEL |
| 12 | CNS046 | SMART GRID | SMW250-02 RED |
| 13 | CNS062 | EEV | SMW250-05 BLU |
| 14 | CNS044 | ROOM | SMW250-02 WHT |
| 15 | CNS045 | MIXING SENSOR | SMW250-02 BLU |
| 16 | CNS047 | HEATER | SMW250-02 BLK |
| 17 | CNS043 | HEATER/EVA-OUT/EVA-IN/WATER-OUT/WATER-IN | SMW250-10 WHT |
| 18 | CNS201 | SUB_LED | SMW200-07 WHT |
| 19 | CNS2 | FR_CONTROL | AKZ350 GRN |
| 20 | CNS301 | DOWNLOAD | YDW200-20 BLK |
| 21 | CN101 | EARTH | YDW236-01 WHT |
| 22 | CNP401 | B/UP HEATER_N | YW396-02V WHT |
| 23 | CNP003 | MC2-B | YTR250 |

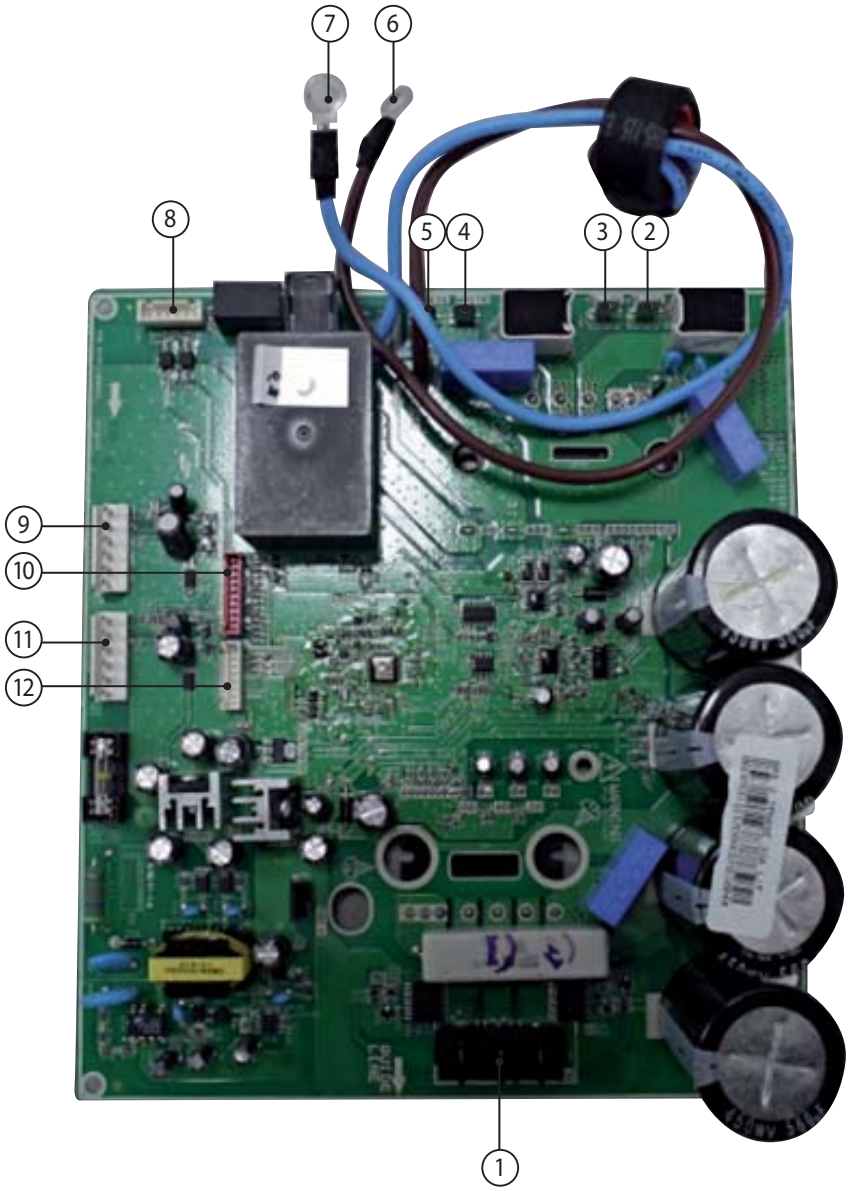
## MAIN PCB

(AE090/120/140/160JXEDEH/EU, AE090/120/140/160JXEDGH/EU)



| No. | Local | Function | Description |
|---|---|---|---|
| 1 | CN302 | COMM-OPTION | SMW200-05 BLK |
| 2 | CN402 | HIGH PRESSURE S/W | B04B-XARK-1 RED |
| 3 | CN401 | LOW PRESSURE S/W | B04B-XARK-1 BLU |
| 4 | CN305 | COMM INV | SMW250-06 WHT |
| 5 | CN801 | ERROR/COMP CHECK | SMW250-04 RED |
| 6 | CN12 | DC12V | YW396-02V BLU |
| 7 | CN407 | WATER-IN/OUT | SMW250-04 YEL |
| 8 | CN001 | EVA-IN | SMW250-02 WHT |
| 9 | CN803 | EEV1 | SMW250-05 BLU |
| 10 | CN407 | HIGH_P S/W | SMW250-02 BLU |
| 11 | CN802 | EEV4 | SMW250-06 BLU |
| 12 | CN306 | DOWNLOAD | YDW200-20P BLK |
| 13 | CN403 | OUT TEMP/COND/DISQ/OLP | SMW250-08 WHT |
| 14 | CN703 | BASE-HEATER | YW396-03AV BLU |
| 15 | CN702 | 4WAY-1 | YW396-03AV YEL |
| 16 | CN701 | HOTGAS | YW396-03AV RED |
| 17 | CN101 | POWER | YW396-03AV WHT |
| 18 | CN806 | EEPROM | B7P-MQ WHT |
| 19 | CN304 | DRED | DAPC-2009-6P BLK |
| 20 | CN501 | MODE SELECTOR | SMW250-03 WHT |
| 21 | CN103 | EARTH | YDW236-01 WHT |
| 22 | CN303 | COMM-INDOOR | YW396-02V RED |
| 23 | CN003 | QUIET S/W | BR-7623-2P BLK |

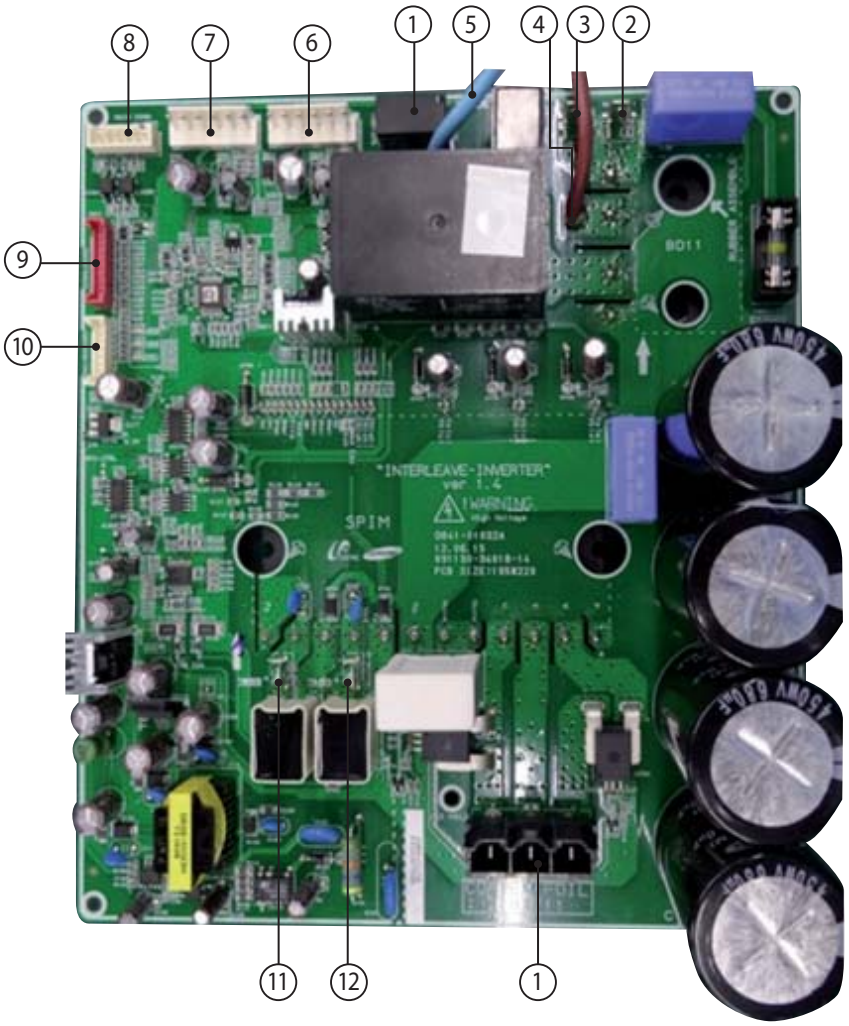
## INVERTER PCB
(AE090JXEDEH/EU)






| No. | Local | Function | Description |
|---|---|---|---|
| 1 | CN71 | COMP | 42819-3213 BLK |
| 2 | REACTOR-A2 | REACTOR_A | YTR250 |
| 3 | REACTOR-B2 | REACTOR_B | YTR250 |
| 4 | REACTOR-A1 | REACTOR_A | YTR250 |
| 5 | REACTOR-B1 | REACTOR_B | YTR250 |
| 6 | L | AC POWER | BRN WIRE |
| 7 | N | AC POWER | SKY/BLU WIRE |
| 8 | CN31 | MAIN COMM | SMW250-06 WHT |
| 9 | CN91 | BLDC FAN2 | YW396-06V WHT |
| 10 | C22 | DOWNLOADER | SMW200-10 RED |
| 11 | CN90 | BLDC FAN1 | YW396-06V WHT |
| 12 | CN21 | DAC/ENCODER | SMW200-08 WHT |

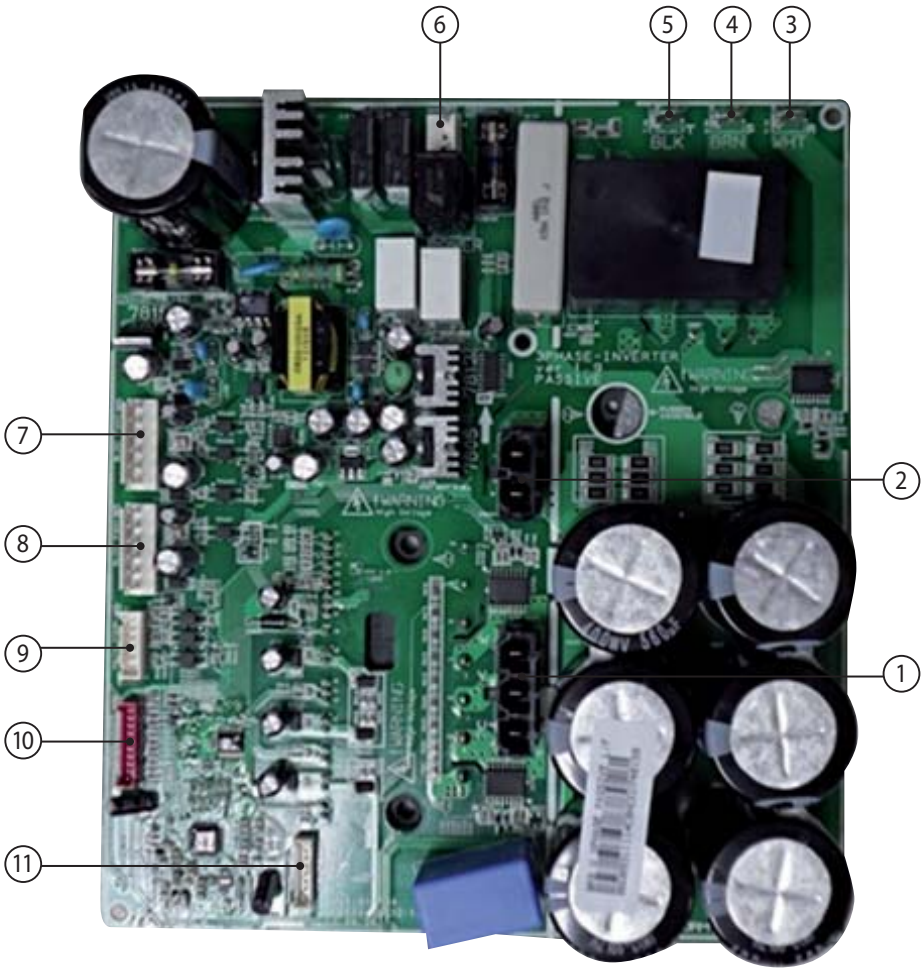
## INVERTER PCB
(AE120/140/160JXEDEH/EU)






| No. | Local | Function | Description |
|---|---|---|---|
| 1 | CN32 | COMP | 42819-3213 BLK |
| 2 | REACTOR-A1 | REACTOR_A | YTR250 |
| 3 | REACTOR-B1 | REACTOR_B | YTR250 |
| 4 | L | AC POWER | BRN WIRE |
| 5 | N | AC POWER | SKY/BLU WIRE |
| 6 | CN91 | BLDC FAN2 | YW396-06V WHT |
| 7 | CN90 | BLDC FAN1 | YW396-06V WHT |
| 8 | CN31 | MAIN COMM | SMW250-06 WHT |
| 9 | C22 | DOWNLOADER | SMW200-10 RED |
| 10 | CN21 | DAC/ENCODER | SMW200-08 WHT |
| 11 | REACTOR-B2 | REACTOR_B | YTR250 |
| 12 | REACTOR-A2 | REACTOR_A | YTR250 |

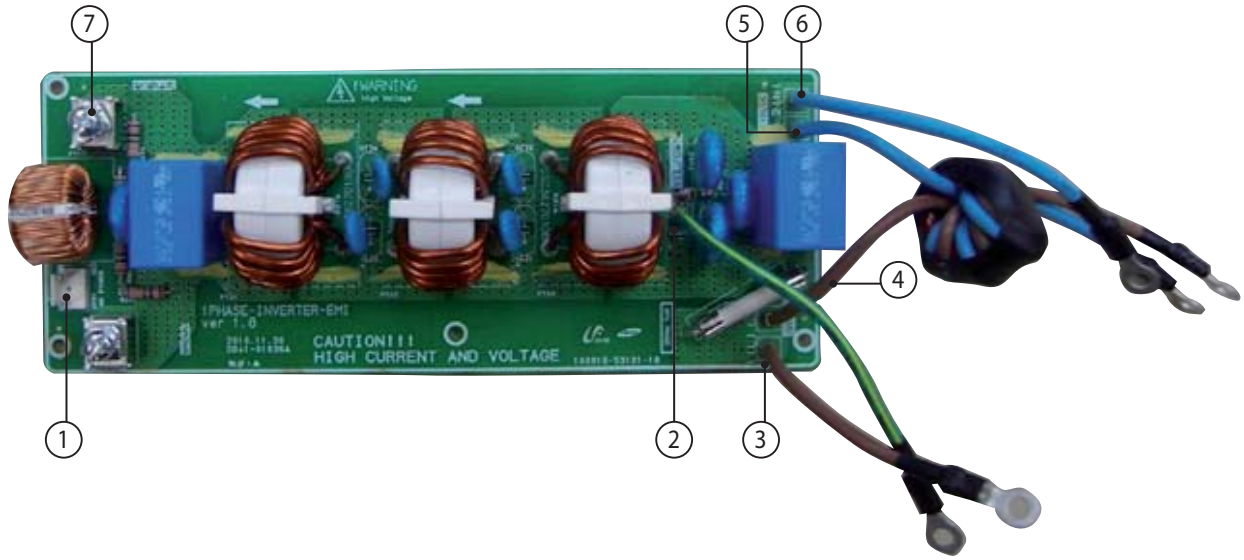
## INVERTER PCB
(AE090/120/140/160JXEDGH/EU)






| No. | Local | Function | Description |
|---|---|---|---|
| 1 | CN800 | COMP | 42819-3213 BLK |
| 2 | CN600 | REACTOR | HLW1005-02 BLK |
| 3 | R | R-IN | YTR250 |
| 4 | S | S-IN | YTR250 |
| 5 | T | T-IN | YTR250 |
| 6 | CN100 | POWER | YW396-03AV WHT |
| 7 | CN91 | BLDC FAN2 | YW396-06V WHT |
| 8 | CN90 | BLDC FAN1 | YW396-06V WHT |
| 9 | CN31 | MAIN COMM | SMW250-06 WHT |
| 10 | CN22 | DOWNLOADER | SMW200-10 RED |
| 11 | CN21 | DAC/ENCODER | SMW200-08 WHT |

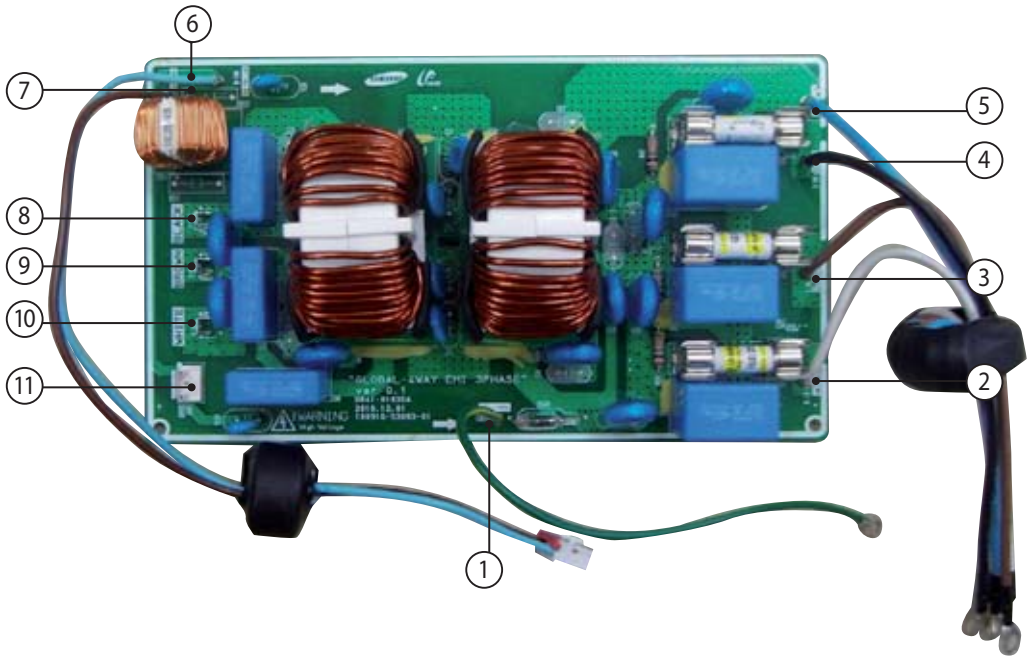
## EMI PCB
(AE120/140/160JXEDEH/EU)






| No. | Local | Function | Description |
|---|---|---|---|
| 1 | L1 | POWER | OT-048 |
| 2 | EARTH | EARTH | YEL/GRN WIRE |
| 3 | 1(L) | POWER | BRN WIRE |
| 4 | L | POWER | BRN WIRE |
| 5 | N | POWER | SKY/BLU WIRE |
| 6 | 2(N) | POWER | SKY/BLU WIRE |
| 7 | N1 | POWER | OT-048 |
| 8 | CN01 | AC POWER | YW396-03AV WHT |

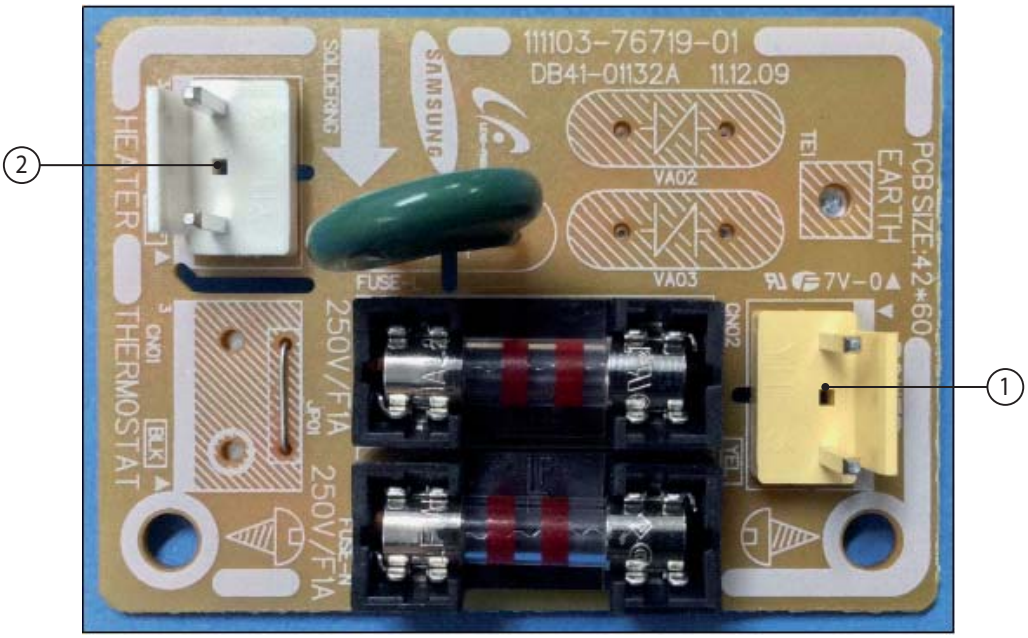
## EMI PCB
(AE120/140/160JXEDGH/EU)






| No. | Local | Function | Description |
|---|---|---|---|
| 1 | EARTH | EARTH | YEL/GRN WIRE |
| 2 | R-IN | POWER | WHT WIRE |
| 3 | S-IN | POWER | BRN WIRE |
| 4 | T-IN | POWER | BLK WIRE |
| 5 | N-IN | POWER | SKY/BLU WIRE |
| 6 | N-INV | POWER | SKY/BLU WIRE |
| 7 | T-INV | POWER | BRN WIRE |
| 8 | T-OUT | POWER | BLK WIRE |
| 9 | S-OUT | POWER | BRN WIRE |
| 10 | R-OUT | POWER | WHT WIRE |
| 11 | CN01 | POWER | YW396-03AV WHT |

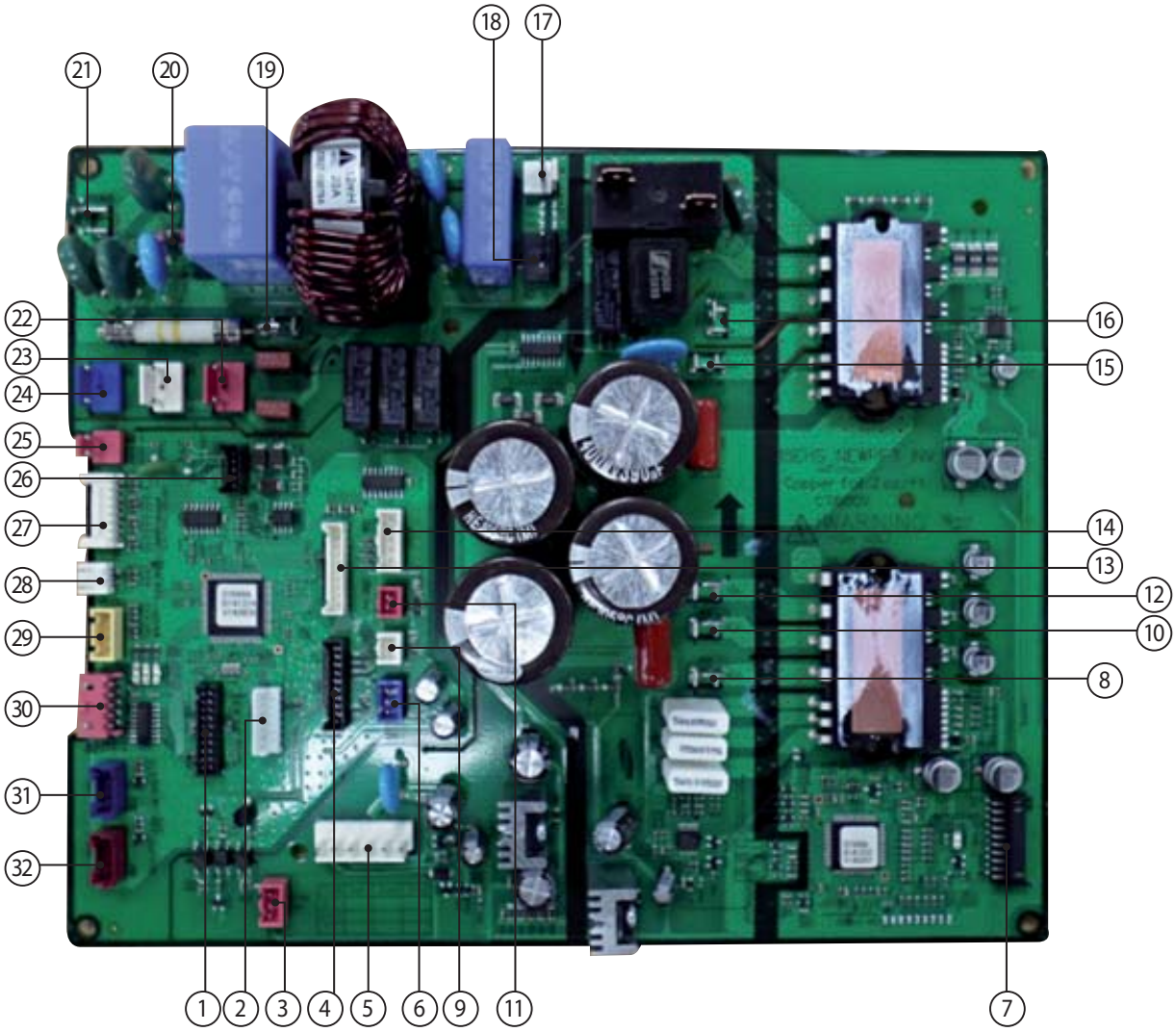
## SUB-HEATER PCB
(AE090/120/140/160JXEDEH/EU, AE090/120/140/160JXEDGH/EU)





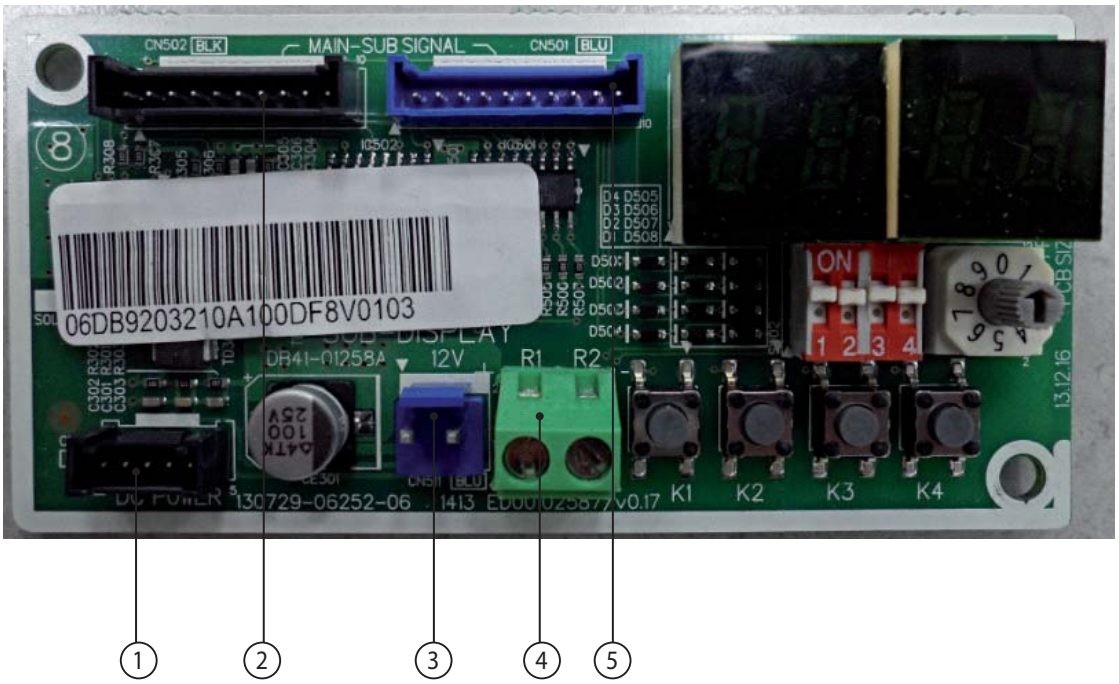

| No. | Local | Function | Description |
|---|---|---|---|
| 1 | CN02 | POWER | YW396-03AV YEL |
| 2 | CN03 | HEATER | YW396-03AV WHT |

## INVERTER PCB
(AE040/060JXEDEH/EU)



| No. | Local | Function | Description |
|---|---|---|---|
| 1 | CN201 | DOWNLOAD-MAIN | YDW200-20 BLK |
| 2 | CN202 | EEPROM | B7P-MQ WHT |
| 3 | CN153 | SMPS DC15V | SMW250-03 RED |
| 4 | CN207 | SUB PBA | SMW200-10 BLK |
| 5 | CN901 | BLDC MOTOR | YW396-06V WHT |
| 6 | CN152 | SMPS DC12V | SMW250-03 BLU |
| 7 | CN551 | DOWNLOAD-MAIN | YDAW200-20 BLK |
| 8 | CN401 | COMP_U | YTR250 |
| 9 | CN203 | TB-FUSE | SMW250-02 WHT |
| 10 | CN402 | COMP_V | YTR250 |
| 11 | CN246 | QUIET_SW | SMW250-02 RED |
| 12 | CN403 | COMP_W | YTR250 |
| 13 | CN206 | SUB PBA | SMW200-10 WHT |
| 14 | CN204 | DRED | SMW250-05 WHT |
| 15 | CN051 | REACTOR | YTR250 |
| 16 | CN052 | REACTOR | YTR250 |
| 17 | CN150 | SMPS POWER | YW396-03 BLK |
| 18 | CN151 | HIGH-PRESS S/W | YW396-02V WHT |
| 19 | CN002 | POWER | YTR250 |
| 20 | CN003 | EARTH | GP881205 |
| 21 | CN001 | POWER | YTR250 |
| 22 | CN241 | HOT GAS | YW396-03AV RED |
| 23 | CN030 | 4WAY | YW396-03AV WHT |
| 24 | CN242 | BASE-HEATER | YW396-03AV BLU |
| 25 | CN301 | COMM | YW396-02V RED |
| 26 | CN205 | SUB PBA | SMW200-05 BLK |
| 27 | CN251 | SENSOR OLP/COND/DIS/OUT | SMAW200-08 WHT |
| 28 | CN245 | EVA_IN | SMAW250-02 WHT |
| 29 | CN252 | WATER | SMW250-04 YEL |
| 30 | CN701 | EEV | SMAW250A-05 RED |
| 31 | CN801 | LOW-PRESS SENSOR | B04B-XAEK-1 |
| 32 | CN809 | HIGH-PRESS SENSOR | B04B-XARK-1 |

## SUB-DISPLAY PCB
(AE040/060JXEDEH/EU)



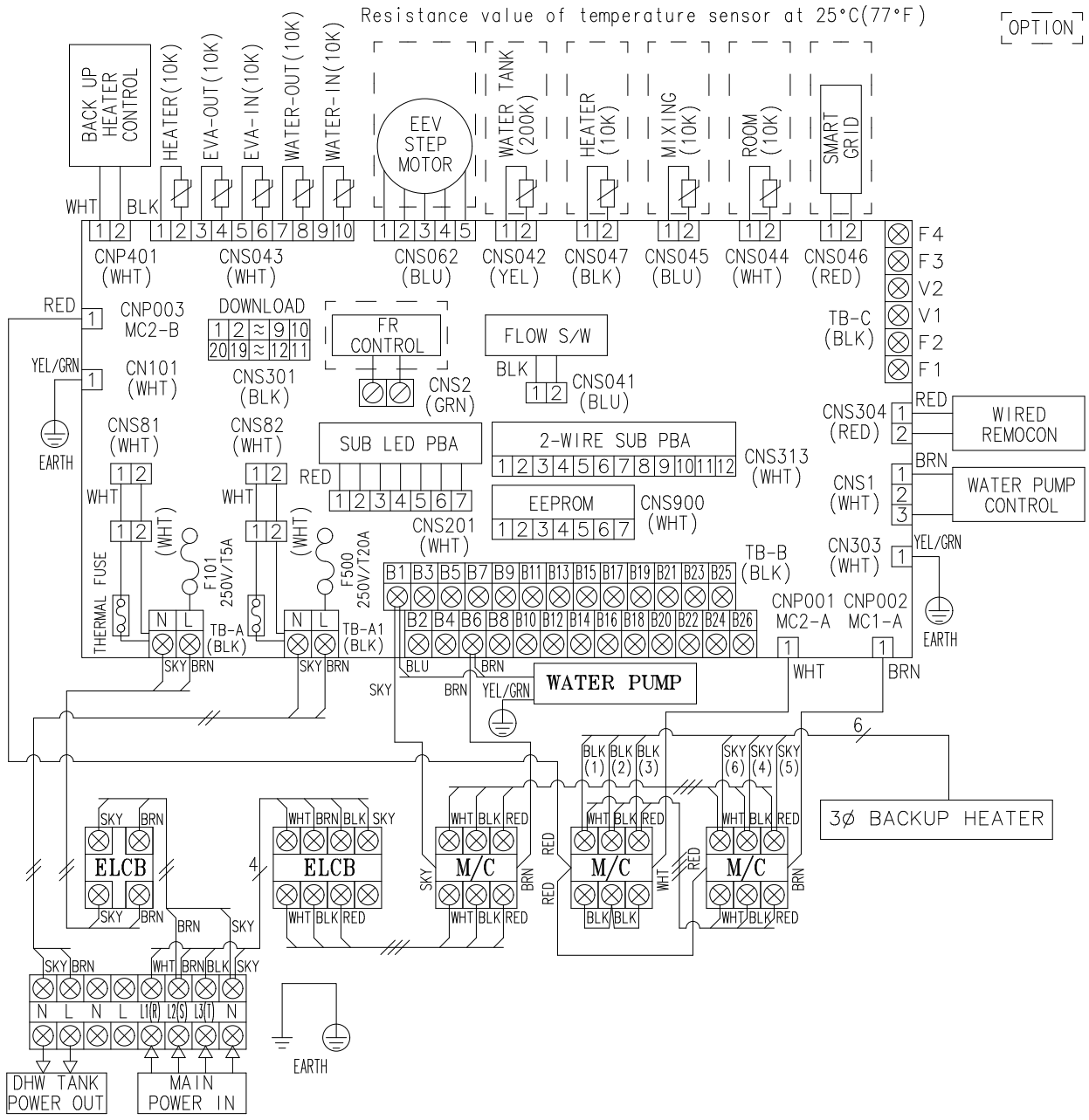



| No. | Local | Function | Description |
|---|---|---|---|
| 1 | CN518 | DC POWER | SMW200-05 BLK |
| 2 | CN502 | MAIN-SUB SIGNAL | SMW200-10 BLK |
| 3 | CN511 | DC 12V | YW396-02V BLU |
| 4 | CN01 | SOLUTION_COMM | AKZ350 GRN |
| 5 | CN501 | MAIN-SUB SIGNAL | SMW200-10 BLU |

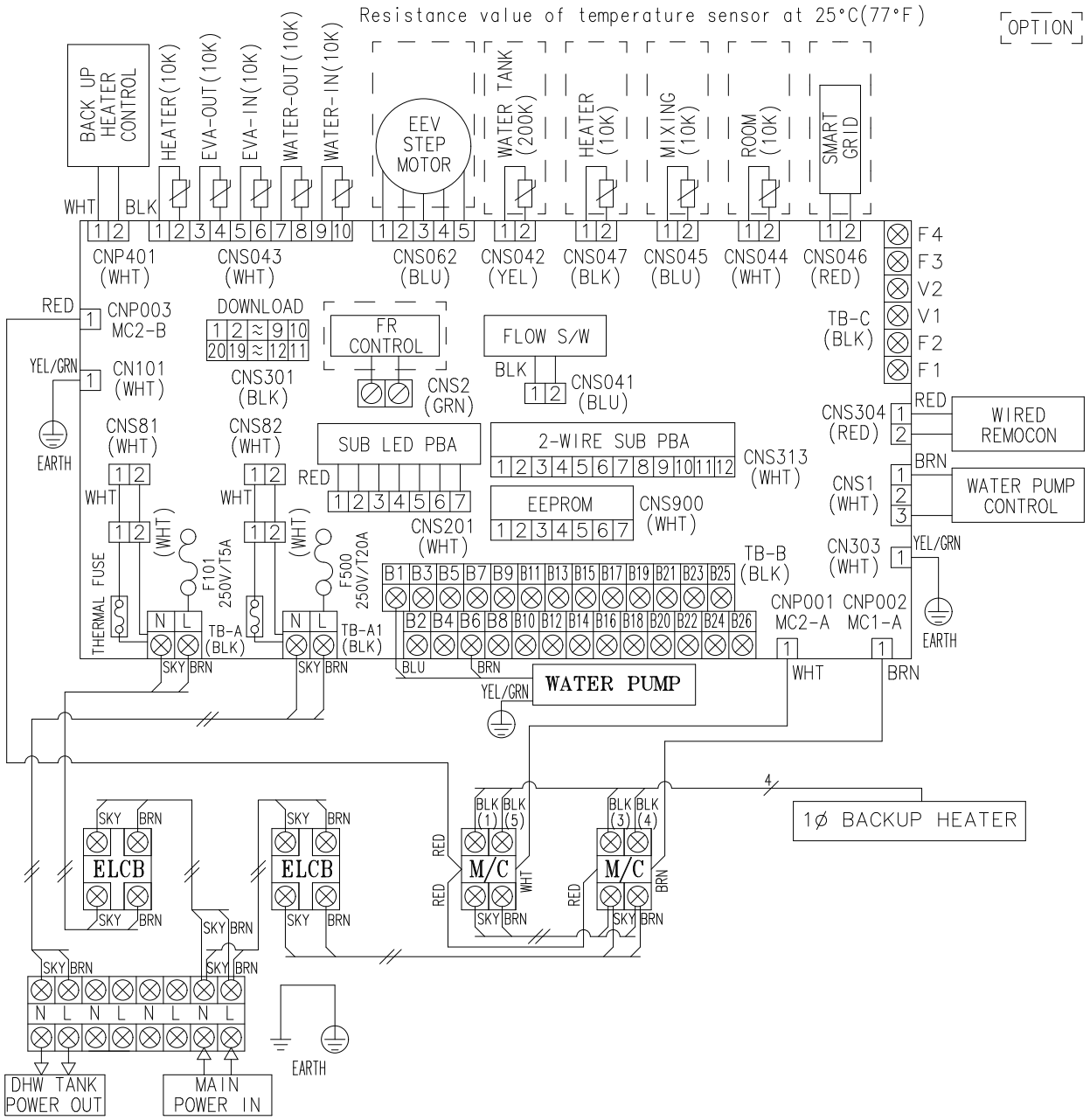
# 6. Wiring Diagram

## 6-1 Hydro unit

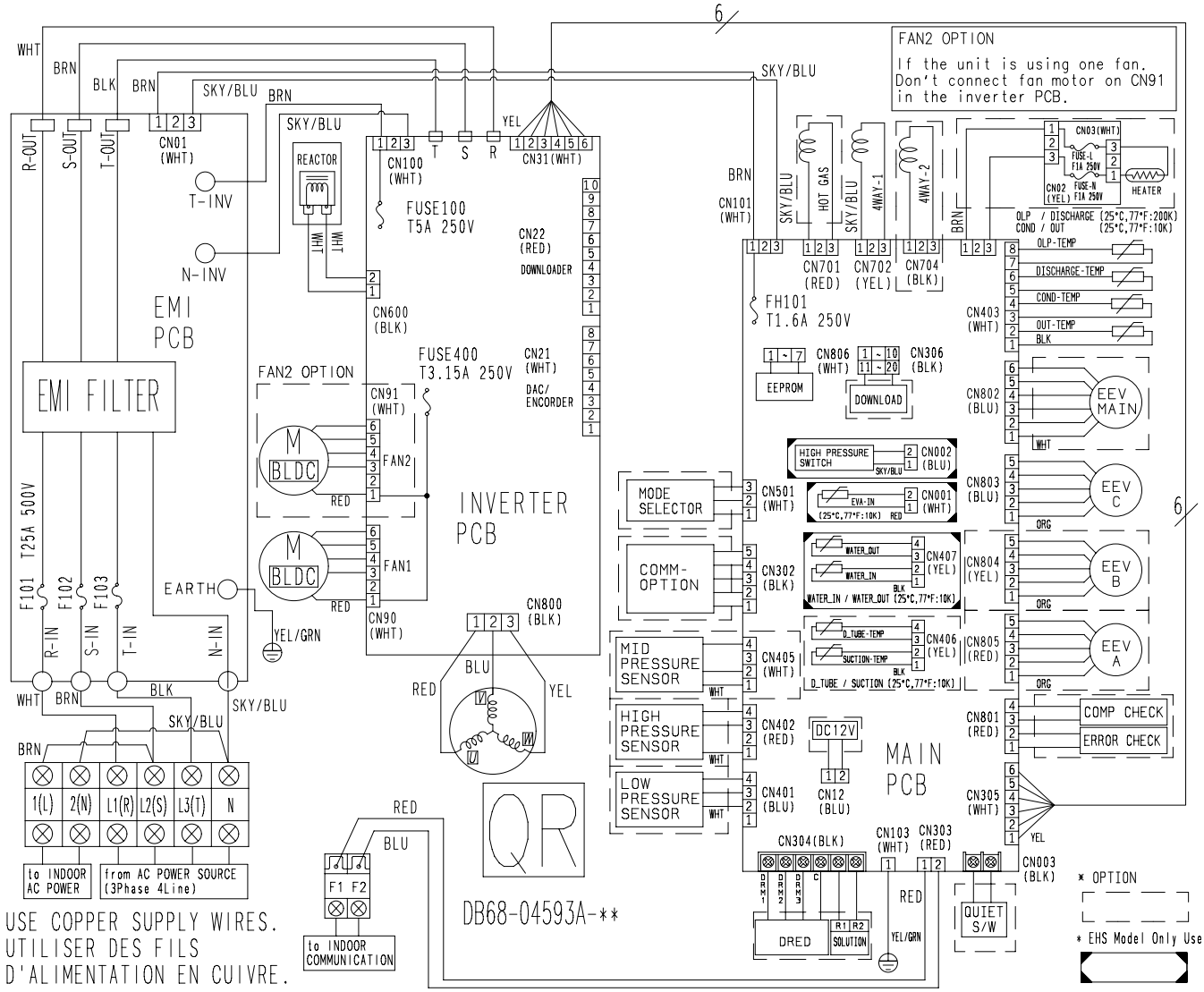
### 6-1-1 3Phase Model



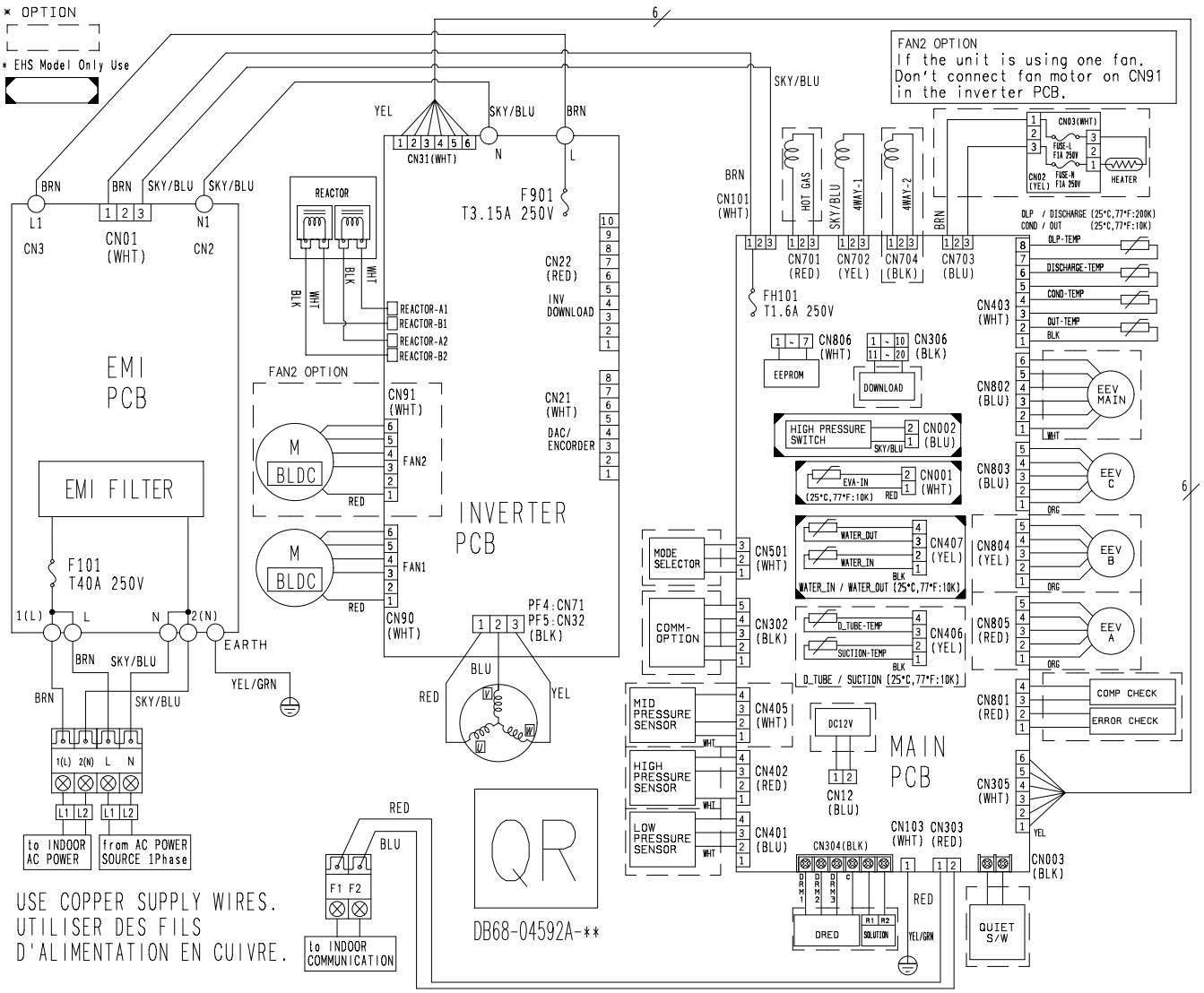
## 6-1-2 1Phase Model



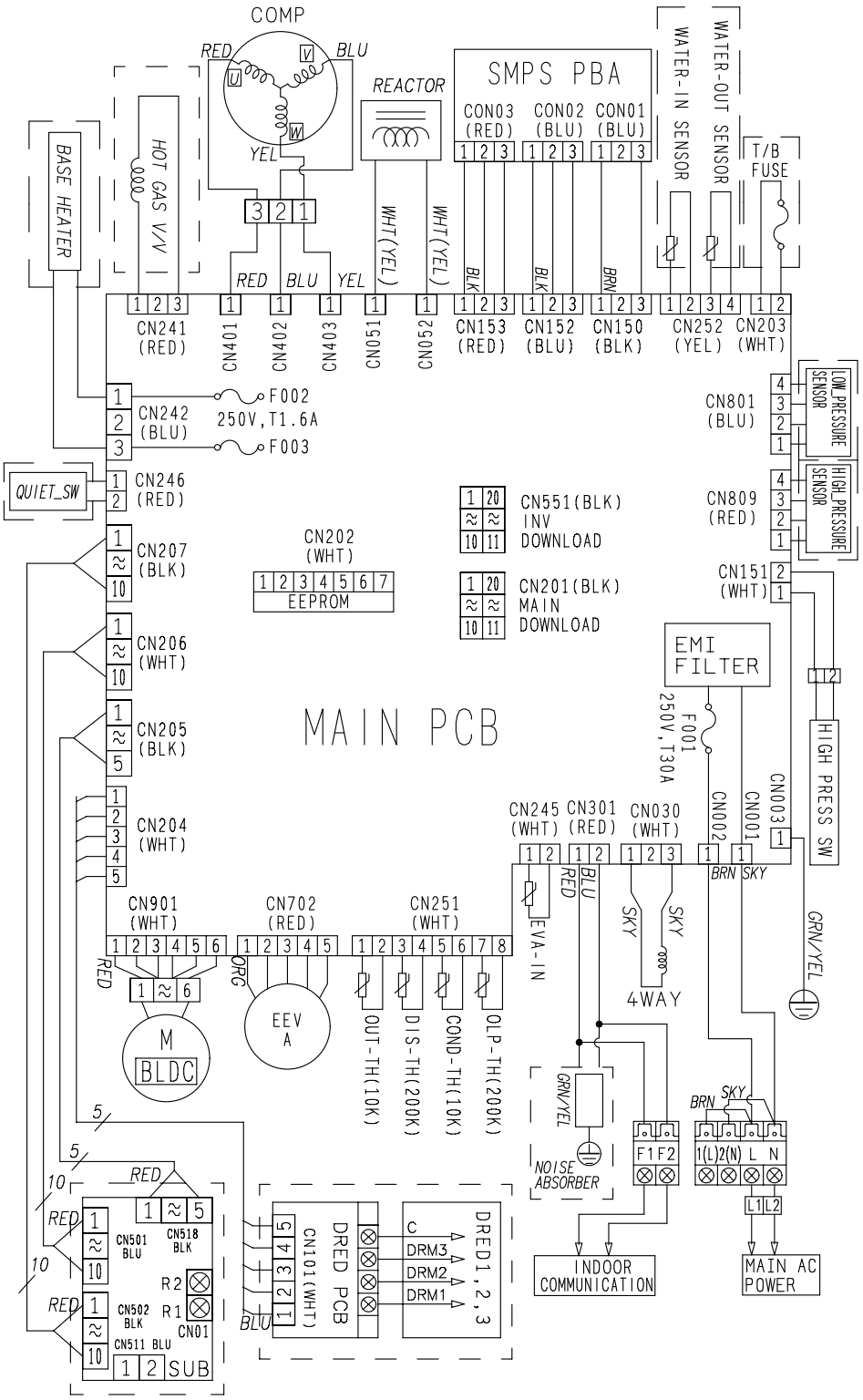
## 3Phase (AE090/100/120/140JXEDGH)



## 1Phase (AE090/100/120/140JXEDEH)



## 1Phase (AE040/060JXEDEH)




※ NOTE

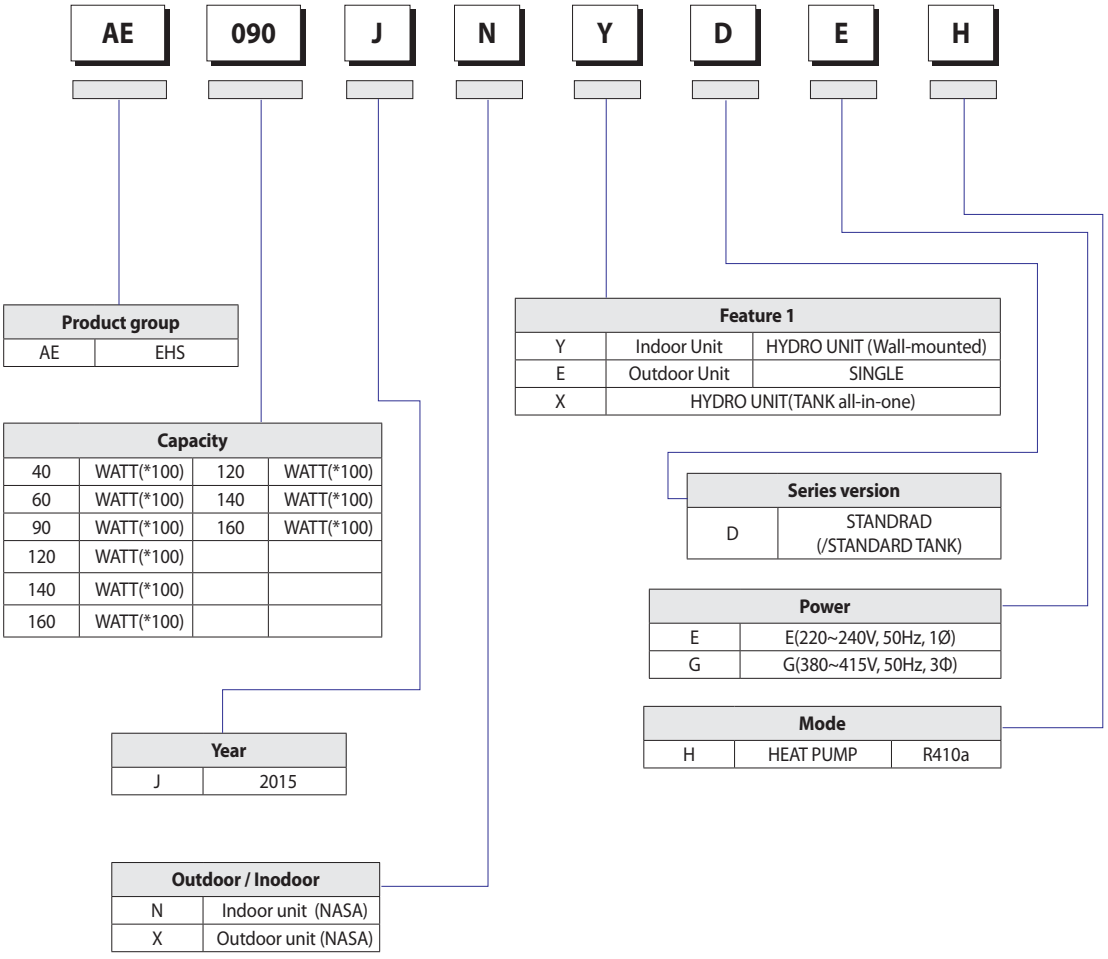
THERMISTOR MARK BASED ON THE TEMP at 25°C, 77°F

# 7. Reference Sheet

## 7-1 Index for Model Name

### 7-1-1 Outdoor Unit

Model Code




| Product group | |
|---|---|
| AE | EHS |

| Capacity | | | |
|---|---|---|---|
| 40 | WATT(*100) | 120 | WATT(*100) |
| 60 | WATT(*100) | 140 | WATT(*100) |
| 90 | WATT(*100) | 160 | WATT(*100) |
| 120 | WATT(*100) | | |
| 140 | WATT(*100) | | |
| 160 | WATT(*100) | | |

| Year | |
|---|---|
| J | 2015 |

| Outdoor / Inodoor | |
|---|---|
| N | Indoor unit (NASA) |
| X | Outdoor unit (NASA) |

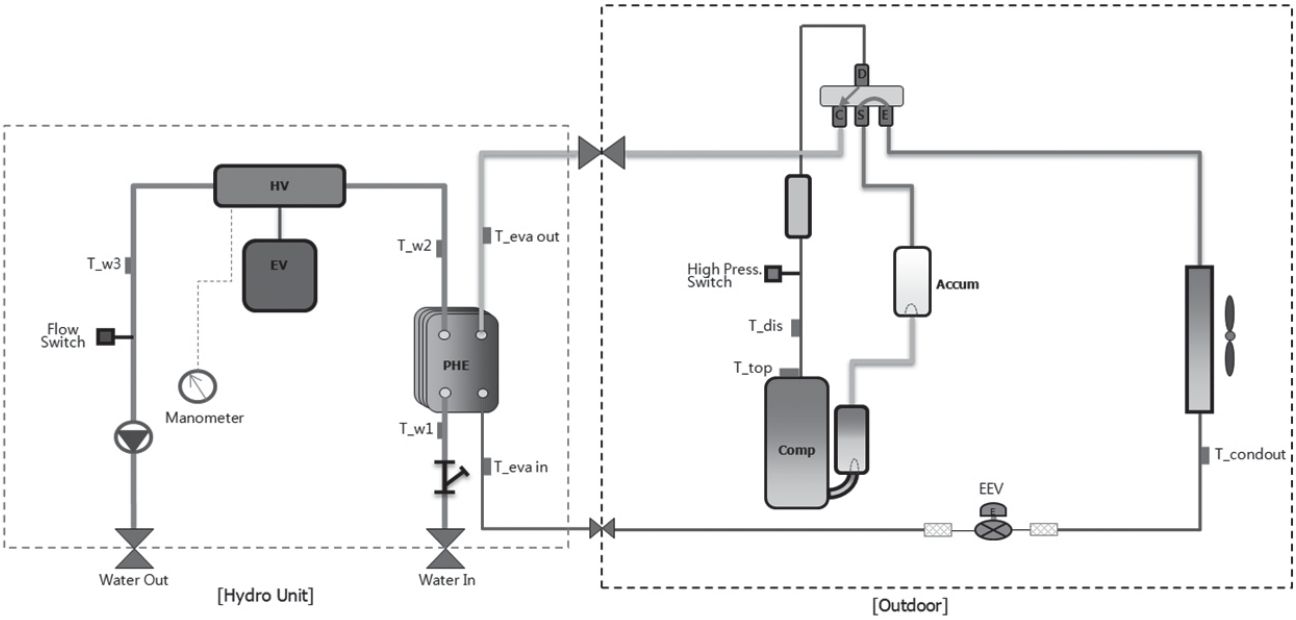
| Feature 1 | | |
|---|---|---|
| Y | Indoor Unit | HYDRO UNIT (Wall-mounted) |
| E | Outdoor Unit | SINGLE |
| X | HYDRO UNIT(TANK all-in-one) | |

| Series version | |
|---|---|
| D | STANDRAD (/STANDARD TANK) |

| Power | |
|---|---|
| E | E(220~240V, 50Hz, 1Ø) |
| G | G(380~415V, 50Hz, 3Φ) |

| Mode | | |
|---|---|---|
| H | HEAT PUMP | R410a |

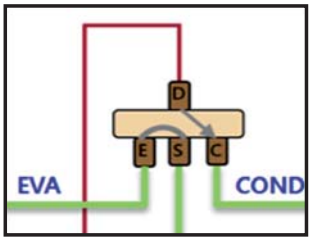
## 7-2 Refrigerant Circuit Diagram



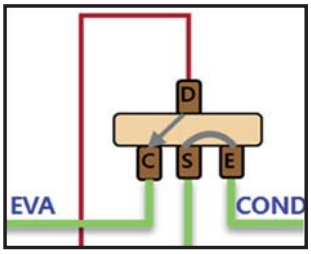



| Part | Description |
|---|---|
| T_w1 | Water Inlet temp sensor |
| T_w2 | Water PHX Outlet temp sensor |
| T_w3 | Water Outlet temp sensor |
| T_top | Compressor Top temp sensor |
| T_dis | Discharge temp sensor |
| T_eva in | Eva In temp sensor |
| T_eva out | Eva Out temp sensor |
| T_condout | Condout temp sensor |
| PHE | Plate heat exchanger |
| HV | Heater vessel |
| EV | Expansion vessel |

* The Direction of this product 4WAY V/V connection is heating default.
(Heating : 4Way valve Off, Cooling : 4Way valve ON)



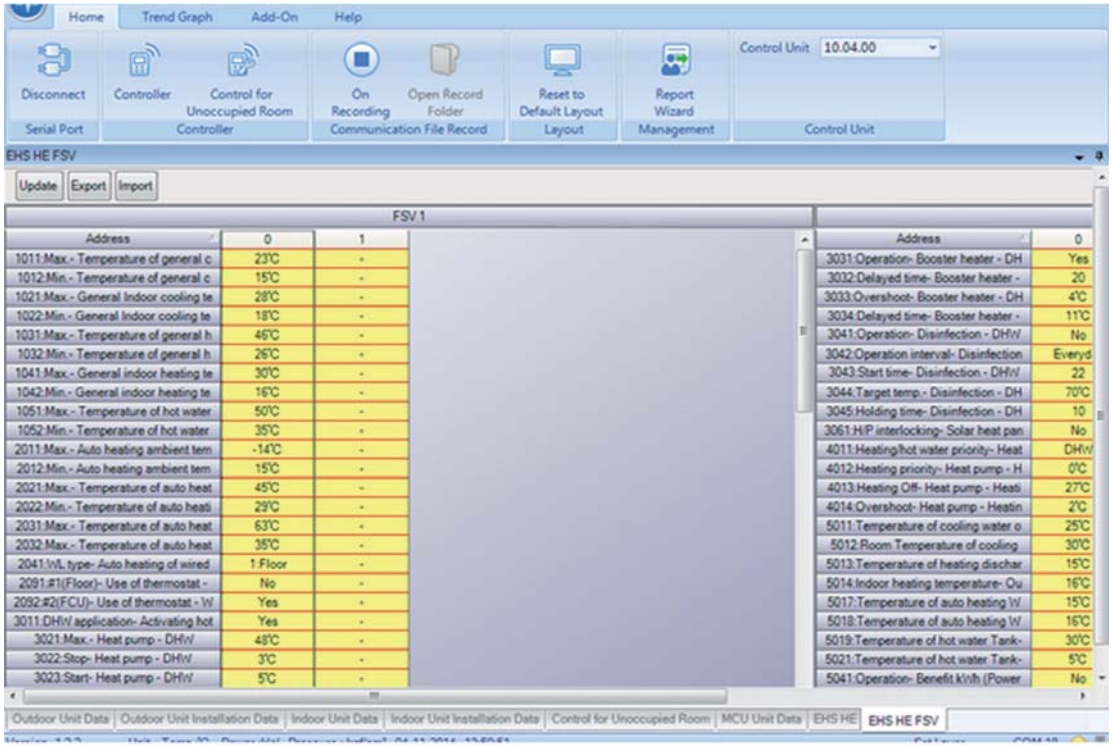

Normal A/C



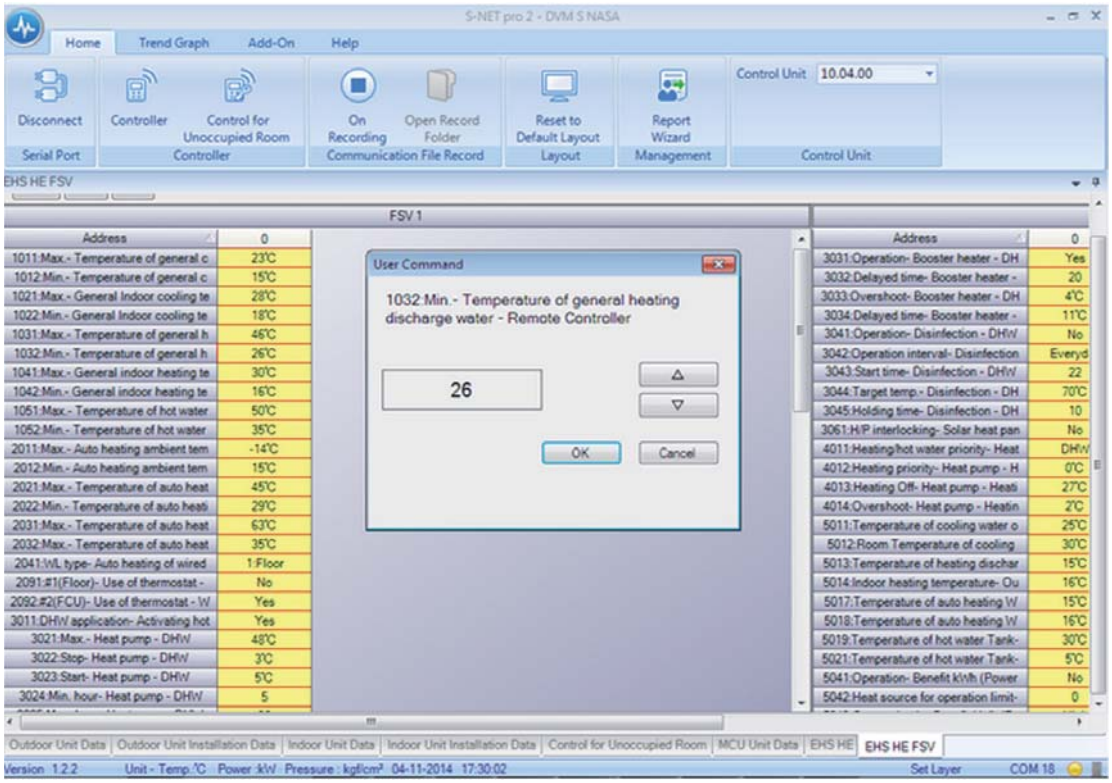

EHS SPLIT
(AE✳✳✳JXED✳H)

## 7-2 FSV data check and update  using S-Net Pro2

To check the EHS HE / HT FSV data the [Update] button must be selected.

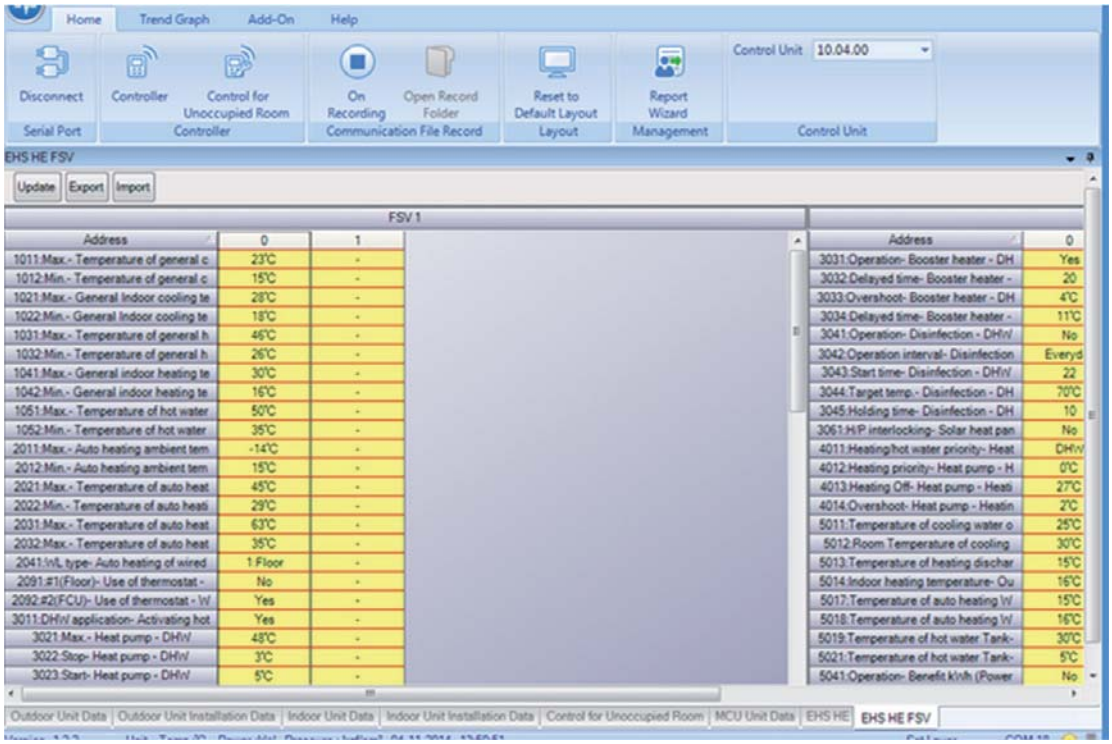



FSV value has been updated, double-click each cell can set the value of the FSV.



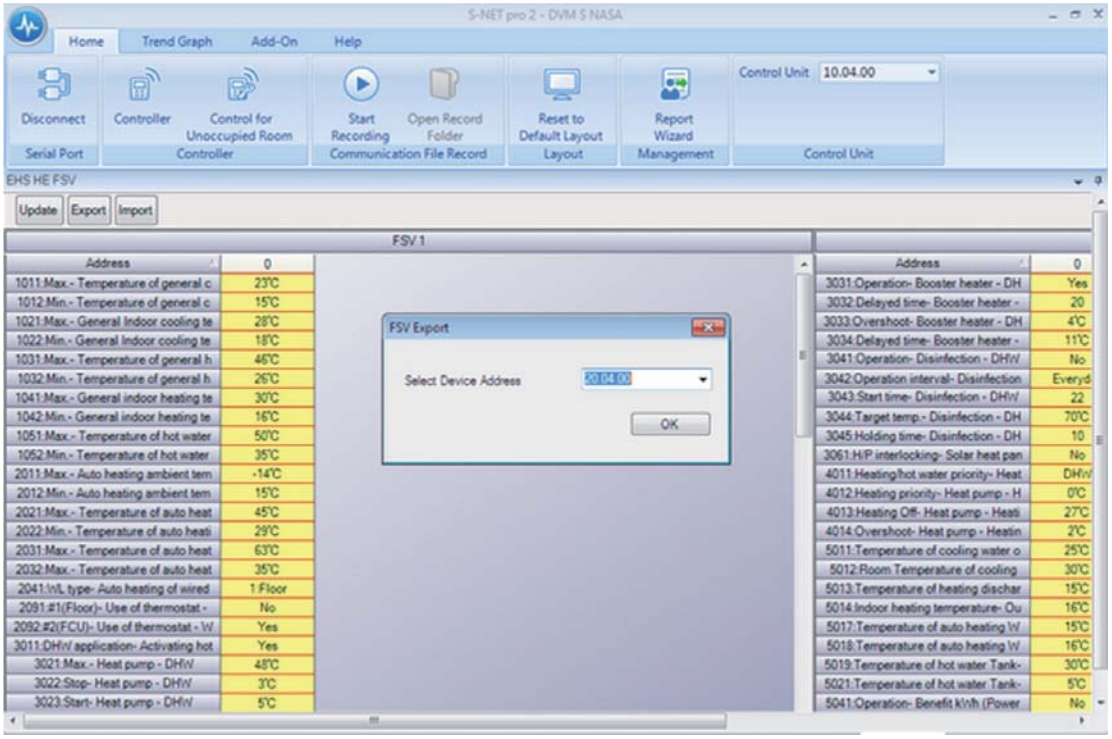
# 7-3 EHS FSV Values Import and Export

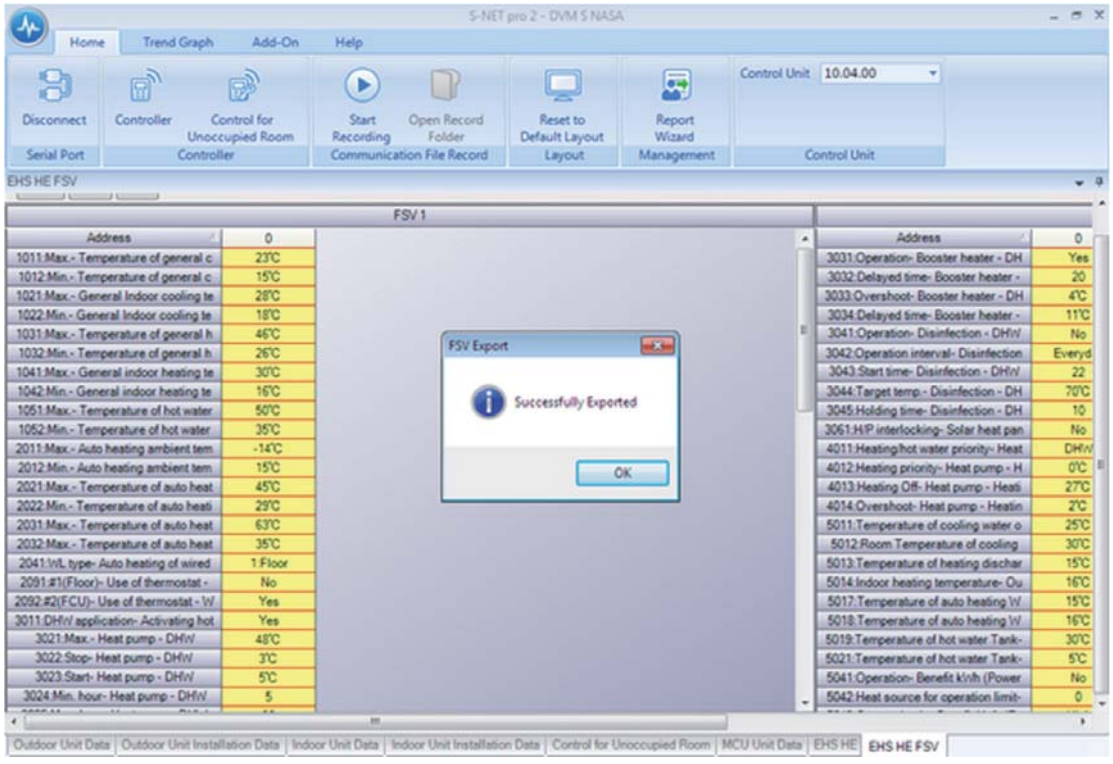
The User can now export the existing FSV values into an XML file and update later onto a new unit the saved values.



**Export Values:**

The existing FSV values can be exported by click on the "Export" button.

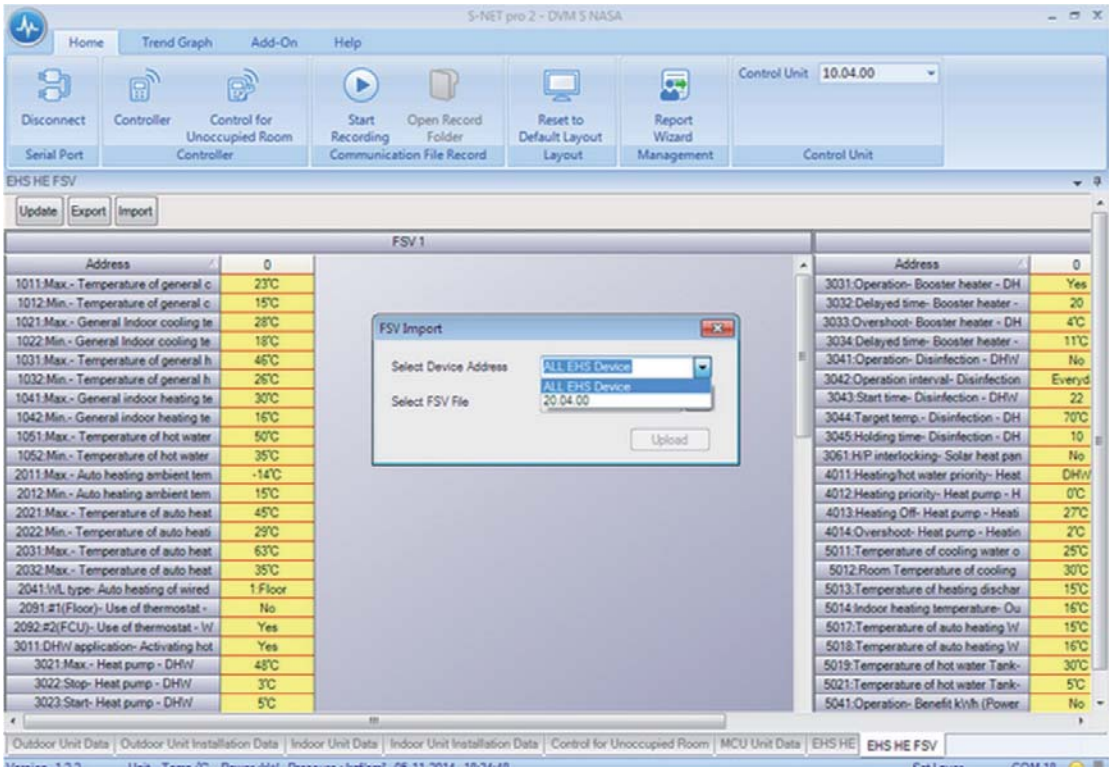


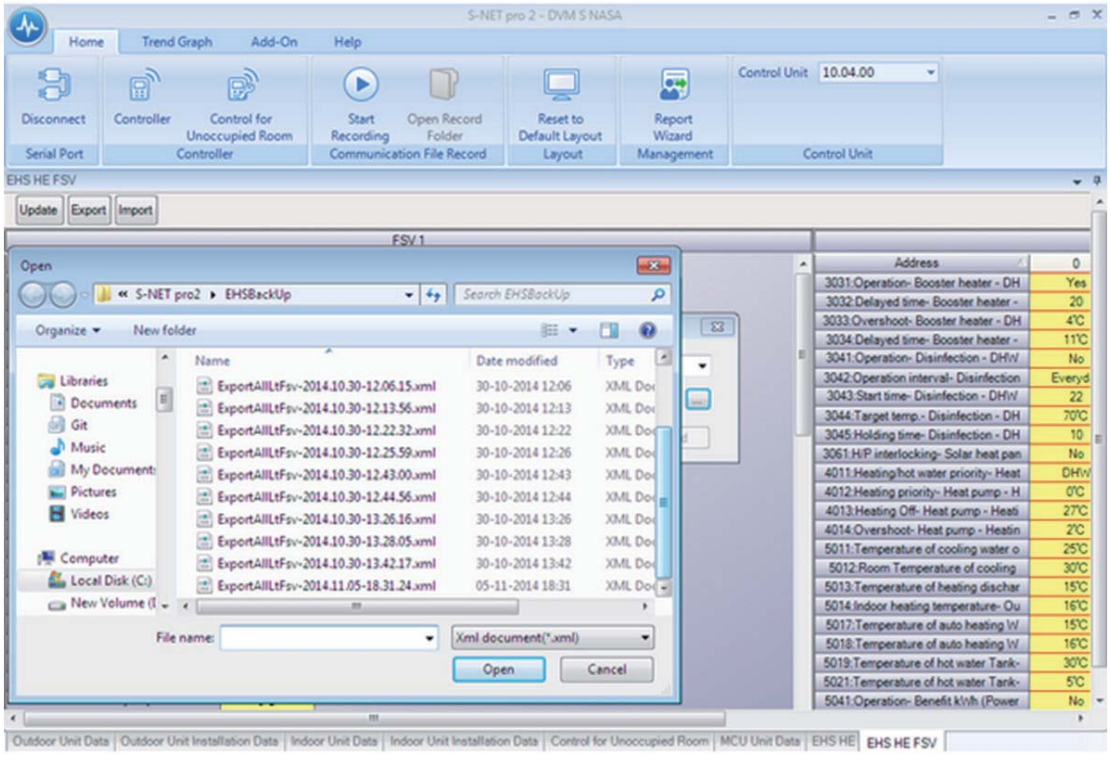



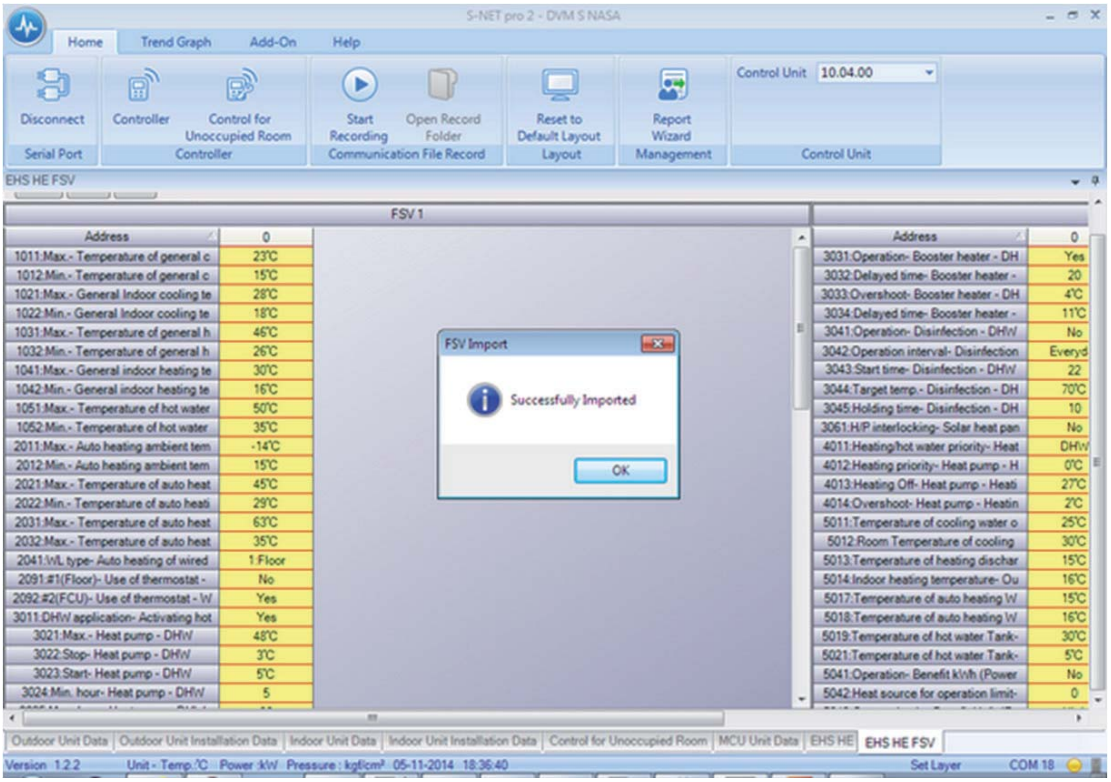
**FSV Import:**

The FSV values can be imported by the click on the import button.

The user is prompted to browse and select the XML file for update on the EHS unit selected in the dropdown menu.




S-NET pro 2 - DVM S NASA
Home
Trend Graph
Add-On
Help
Disconnect
Serial Port
Controller
Control for Unoccupied Room
Controller
Start Recording
Open Record Folder
Communication File Record
Reset to Default Layout
Layout
Report Wizard
Management
Control Unit
10.04.00
Control Unit
EHS HE FSV
FSV 1
Address
0
1011:Max.- Temperature of general c
23℃
1012:Min.- Temperature of general c
15℃
1021:Max.- General Indoor cooling te
28℃
1022:Min.- General Indoor cooling te
18℃
1031:Max.- Temperature of general h
46℃
1032:Min.- Temperature of general h
26℃
1041:Max.- General indoor heating te
30℃
1042:Min.- General indoor heating te
16℃
1051:Max.- Temperature of hot water
50℃
1052:Min.- Temperature of hot water
35℃
2011:Max.- Auto heating ambient tem
-14℃
2012:Min.- Auto heating ambient tem
15℃
2021:Max.- Temperature of auto heat
45℃
2022:Min.- Temperature of auto heati
29℃
2031:Max.- Temperature of auto heat
63℃
2032:Max.- Temperature of auto heat
35℃
2041:WL type- Auto heating of wired
1 Floor
2091:#1(Floor)- Use of thermostat -
No
2092:#2(FCU)- Use of thermostat - W
Yes
3011:DHW application- Activating hot
Yes
3021:Max.- Heat pump - DHW
48℃
3022:Stop- Heat pump - DHW
3℃
3023:Start- Heat pump - DHW
5℃
3024:Min. hour- Heat pump - DHW
5
FSV Import
Successfully Imported
OK
Address
0
3031:Operation- Booster heater - DH
Yes
3032:Delayed time- Booster heater -
20
3033:Overshoot- Booster heater - DH
4℃
3034:Delayed time- Booster heater -
11℃
3041:Operation- Disinfection - DHW
No
3042:Operation interval- Disinfection
Everyd
3043:Start time- Disinfection - DHW
22
3044:Target temp.- Disinfection - DH
70℃
3045:Holding time- Disinfection - DH
10
3061:H/P interlocking- Solar heat pan
No
4011:Heating/hot water priority- Heat
DHW
4012:Heating priority- Heat pump - H
0℃
4013:Heating Off- Heat pump - Heati
27℃
4014:Overshoot- Heat pump - Heatin
2℃
5011:Temperature of cooling water o
25℃
5012:Room Temperature of cooling
30℃
5013:Temperature of heating dischar
15℃
5014:Indoor heating temperature- Ou
16℃
5017:Temperature of auto heating W
15℃
5018:Temperature of auto heating W
16℃
5019:Temperature of hot water Tank-
30℃
5021:Temperature of hot water Tank-
5℃
5041:Operation- Benefit kW/h (Power
No
5042:Heat source for operation limit-
0
Outdoor Unit Data
Outdoor Unit Installation Data
Indoor Unit Data
Indoor Unit Installation Data
Control for Unoccupied Room
MCU Unit Data
EHS HE
EHS HE FSV
Version 1.2.2
Unit - Temp.:℃ Power :kW Pressure : kgf/cm² 05-11-2014 18:36:40
Set Layer
COM 18

SAMSUNG ELECTRONICS

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