



CONFIDENTIAL

AIR-TO-WATER HEAT PUMP SERVICE MANUAL (Exploded View)

CAUTION

Before Servicing the unit, read the safety precautions in General SVC manual.
Only for authorized service personnel.

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1. Specification

Indoor

| Indoor Unit | | Unit | HN1616HC NK0 | HN1639HC NK0 |
|--------------------------------|-------------------------------|-------------------------|--|--|
| Power Supply | | V, Ø, Hz | 50 Hz 220-240 V~ | 50 Hz 220-240 V~ |
| Electric backup heater | Power Supply | V, Ø, Hz | 50 Hz 220-240 V~ | 50 Hz 380-415 V3N~ |
| | Power Input | W | 6000 | 9000 |
| Current | Current(MAX) | A | 0.6 | 0.6 |
| Operation Ragne(Leaving Water) | Cooling(Min ~ Max) | °C(DB) | 5~27 | 5~27 |
| | Heating(Min ~ Max) | °C(DB) | 15~75 | 15~75 |
| | Domestic Hot water(Min ~ Max) | °C(DB) | 15~80 | 15~80 |
| Expansion Tank | Volume(Max) | ℓ | 8 | 8 |
| | Water Pressure(Max) | bar | 3 | 3 |
| | Water Pressure(Pre-charged) | bar | 1 | 1 |
| Water Connecting Pipes | Inlet | inch | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) |
| | Outlet | inch | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) |
| Sound Power Level | Heating(Rated) | dB(A) | 39 | 39 |
| Dimensions | Net(W x H x D) | mm | 490 x 850 x 315 | 490 x 850 x 315 |
| | Shipping(W x H x D) | mm | 563 x1082 x 375 | 563 x1082 x 375 |
| Weight | Net | kg | 30 | 31 |
| | Shipping | kg | 35 | 36 |
| Exterior | Color | - | Noble White | Noble White |
| | RAL Code | - | RAL 9016 | RAL 9016 |
| Connecting Cable | Power supply cable(H07RN-F) | mm ² x cores | 0.75 x 3C | 0.75 x 3C |
| | Communication Cable(H07RN-F) | mm ² x cores | 0.75 x 2C | 0.75 x 2C |

Note :

- Due to our policy of innovation some specifications may be changed without notification.
- Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- Sound Level Values are measured at Noise Measuring chamber accordance with standard. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- Performances are based on the following conditions :
 - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
 - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
 - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- This product contains Fluorinated greenhouse gases.
- Sound Performances are based on the following conditions.
 - Sound Power Level : Measured according to EN14825.
 - Sound Pressure Level : Calculated value according to distance of sound power.

Specification

Outdoor : 1Ø

| Outdoor Unit | | Unit | HM161HF UB60 | HM141HF UB60 | HM121HF UB60 |
|--------------------------------------|--|-------------------------|------------------|------------------|------------------|
| Power Supply | | V, Ø, Hz | 50 Hz 220-240 V~ | 50 Hz 220-240 V~ | 50 Hz 220-240 V~ |
| Recommended circuit breaker(ELCB) | | A | 25 | 25 | 25 |
| Connecting Cable | Power Supply Cable(H07RN-F) *Included Earth | mm ² × cores | 2.5 x 3C | 2.5 x 3C | 2.5 x 3C |
| Capacity(Heating) | A7 / W35 | kW | 16.0 | 14.0 | 12.0 |
| | A7 / W55 | kW | 12.0 | 11.0 | 10.0 |
| | A2 / W35 | kW | 14.5 | 14.0 | 12.0 |
| Capacity(Cooling) | A35 / W18 | kW | 12.5 | 12.0 | 11.5 |
| Power Input (Heating) | A7 / W35 | kW | 3.72 | 3.11 | 2.55 |
| | A7 / W55 | kW | 3.63 | 3.38 | 3.23 |
| | A2 / W35 | kW | 4.15 | 3.88 | 3.23 |
| Power Input (Cooling) | A35 / W18 | kW | 3.38 | 3.24 | 3.04 |
| COP(Heating) | A7 / W35 | W/W | 4.30 | 4.50 | 4.70 |
| | A7 / W55 | W/W | 3.30 | 3.25 | 3.10 |
| | A2 / W35 | W/W | 3.49 | 3.61 | 3.72 |
| EER(Cooling) | A35 / W18 | W/W | 3.70 | 3.70 | 3.78 |
| SCOP(Average climate) | Water outlet 35°C | W/W | 5.11 | 5.38 | 5.45 |
| | Water outlet 55°C | W/W | 3.92 | 3.96 | 3.97 |
| Water Flow Rate | Rated(at ΔT 5°C) | ℓ/min | 46.0 | 40.3 | 34.5 |
| Running Current | Heating(Rated) | A | 16.18 | 13.53 | 11.10 |
| | Cooling(Rated) | A | 14.30 | 13.38 | 12.66 |
| Peak Control Running Current | Heating | A | 20 | 20 | 20 |
| | Cooling | A | 20 | 20 | 20 |
| Current | Current(MAX) | A | 23 | 23 | 23 |
| Operation Range(Outdoor Temperature) | Cooling(Min ~ Max) | °C(DB) | 5 ~ 48 | 5 ~ 48 | 5 ~ 48 |
| | Heating(Min ~ Max) | °C(DB) | -28 ~ 35 | -28 ~ 35 | -28 ~ 35 |
| Operation Range(Leaving Water) | Cooling(Min ~ Max) | °C(DB) | 5 ~ 27 | 5 ~ 27 | 5 ~ 27 |
| | Heating(Min ~ Max) | °C(DB) | 15 ~ 75 | 15 ~ 75 | 15 ~ 75 |
| | Domestic Hot water(Min ~ Max) | °C(DB) | 15 ~ 80 | 15 ~ 80 | 15 ~ 80 |

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 - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
 - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- This product contains Fluorinated greenhouse gases.
- Sound Performances are based on the following conditions.
 - Sound Power Level : Measured according to EN14825.
 - Sound Pressure Level : Calculated value according to distance of sound power.

| Outdoor Unit | | Unit | HM161HF UB60/HM141HF UB60/HM121HF UB60 |
|---------------------------|------------------------------|---------------------------|--|
| Water Pump | Type | - | Canned type for hot water circulation |
| | Model(Maker,Name) | - | GRUNDFOS, UPML GEO 20-105 CHBL |
| | Motor type | - | BLDC |
| | Steps of Pumping Performance | - | Variable speed 10% to 100% |
| | Power input(Min~Max) | W | 17 ~ 152 |
| | Power input(Rated) | W | 145 |
| | Water Flow Rate(Min) | ℓ / min | 0 |
| | Max. Head | m | 11 |
| Water Pump_2 | Type | - | Canned type for hot water circulation |
| | Model(Maker,Name) | - | OH SUNG, ODM-061P |
| | Motor type | - | BLDC |
| | Steps of Pumping Performance | - | Variable speed 10% to 100% |
| | Power input(Min~Max) | W | 17 ~ 152 |
| | Power input(Rated) | W | 145 |
| | Water Flow Rate(Min) | ℓ / min | 0 |
| | Max. Head | m | 11 |
| Safety Valve(Water cycle) | Pressure Limit(Upper Limit) | bar | 3.0 |
| Flow Sensor | Type | - | Vortex |
| | Model(Maker,Name) | - | SIKA VVXC9SNBUC00252P |
| | Measuring Range(Min~Max) | ℓ/min | 5 ~ 80 |
| Water Pressure Sensor | Model(Maker,Name) | - | Sensata OFM(2HMP) |
| Fan | Type | - | Propeller |
| | Air Flow Rate(Rated) | m ³ /min x No. | 110 x 1 |
| Fan Motor | Type | - | BLDC |
| | Output | W x No. | 250 x 1 |

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Specification

| Outdoor Unit | | Unit | HM161HF UB60 | HM141HF UB60 | HM121HF UB60 |
|---------------------------------------|--------------------------------|----------------------|--|--|--|
| Compressor | Type | - | Hermetic Motor Compressor | Hermetic Motor Compressor | Hermetic Motor Compressor |
| | Model x No. | - | PJQC062MAA x 1 | PJQC062MAA x 1 | PJQC062MAA x 1 |
| | Piston Displacement | cm ³ /rev | 61.5 | 61.5 | 61.5 |
| | Motor Type | - | BLDC | BLDC | BLDC |
| Refrigerant | Type | - | R290 | R290 | R290 |
| | Precharged Amount | kg | 1.2 | 1.2 | 1.2 |
| | GWP (Global Warming Potential) | - | 3 | 3 | 3 |
| | t-CO ₂ eq. | - | 0.0036 | 0.0036 | 0.0036 |
| | Control Type | - | Electronic Expansion Valve | Electronic Expansion Valve | Electronic Expansion Valve |
| Refrigerant Oil | Type | - | PZ68S | PZ68S | PZ68S |
| | Charged Volume | cc x No. | 1200 | 1200 | 1200 |
| Heat Exchanger | Rows x Columns x FPI | - | 46 x 3 x 18 | 46 x 3 x 18 | 46 x 3 x 18 |
| | No. | - | 1 | 1 | 1 |
| | Fin Type | - | Corrugate | Corrugate | Corrugate |
| Heat Exchanger (Refrigerant to Water) | Type | - | Brazed Plate HEX | Brazed Plate HEX | Brazed Plate HEX |
| | Quantity | EA | 1 | 1 | 1 |
| | Number of Plate | Sheet | 76 | 76 | 76 |
| | Water Volume | ℓ | 1 | 1 | 1 |
| Water Connecting Pipes | Inlet | inch | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) |
| | Outlet | inch | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) |
| Sound Pressure Level | Heating(Rated, @1m) | dB(A) | 44 | 43 | 41 |
| Sound Power Level | Heating(Low Noise) | dB(A) | 51 | 50 | 48 |
| | Heating(Rated) | dB(A) | 52 | 51 | 49 |
| | Heating(Daytime max) | dB(A) | 61 | 60 | 59 |
| Dimensions | Net(W x H x D) | mm | 1560 x 1019 x 520 | 1560 x 1019 x 520 | 1560 x 1019 x 520 |
| | Shipping(W x H x D) | mm | 1620 x 1180 x 625 | 1620 x 1180 x 625 | 1620 x 1180 x 625 |
| Weight | Net | kg | 181 | 181 | 181 |
| | Shipping | kg | 199 | 199 | 199 |
| Exterior | Color of chassis | - | Dawn Gray | Dawn Gray | Dawn Gray |
| | RAL code of chassis | - | RL 7037 | RL 7037 | RL 7037 |
| Max Allowable Pressure | High / Low | MPa | 3.2 / 1.4 | 3.2 / 1.4 | 3.2 / 1.4 |

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- Sound Performances are based on the following conditions.
 - Sound Power Level : Measured according to EN14825.
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Outdoor : 3Ø

| Outdoor Unit | | Unit | HM163HF UB60 | HM143HF UB60 |
|--------------------------------------|---|-------------------------|--------------------|--------------|
| Power Supply | | V, Ø, Hz | 50 Hz 380-415 V3N~ | |
| Recommended circuit breaker(ELCB) | | A | 16 | |
| Connecting Cable | Power Supply Cable (H07RN-F)*Included Earth | mm ² × cores | 2.5 x 5C | |
| Capacity(Heating) | A7 / W35 | kW | 16.0 | 14.0 |
| | A7 / W55 | kW | 12.0 | 11.0 |
| | A2 / W35 | kW | 14.5 | 14.0 |
| Capacity(Cooling) | A35 / W18 | kW | 12.5 | 12.0 |
| Power Input(Heating) | A7 / W35 | kW | 3.72 | 3.11 |
| | A7 / W55 | kW | 3.63 | 3.38 |
| | A2 / W35 | kW | 4.15 | 3.88 |
| Power Input(Cooling) | A35 / W18 | kW | 3.38 | 3.24 |
| COP(Heating) | A7 / W35 | W/W | 4.30 | 4.50 |
| | A7 / W55 | W/W | 3.30 | 3.25 |
| | A2 / W35 | W/W | 3.49 | 3.61 |
| EER(Cooling) | A35 / W18 | W/W | 3.70 | 3.70 |
| SCOP(Average climate) | Water outlet 35°C | W/W | 5.11 | 5.38 |
| | Water outlet 55°C | W/W | 3.92 | 3.96 |
| Water Flow Rate | Rated(at ΔT 5°C) | ℓ/min | 46.0 | 40.3 |
| Running Current | Heating(Rated) | A | 5.37 | 4.49 |
| | Cooling(Rated) | A | 4.75 | 4.44 |
| Peak Control Running Current | Heating | A | 10 | 9 |
| | Cooling | A | 10 | 9 |
| Current | Current(MAX) | A | 16.1 | |
| Operation Range(Outdoor Temperature) | Cooling(Min ~ Max) | °C(DB) | 5~48 | |
| | Heating(Min ~ Max) | °C(DB) | -28~35 | |
| Operation Range(Leaving Water) | Cooling(Min ~ Max) | °C(DB) | 5~27 | |
| | Heating(Min ~ Max) | °C(DB) | 15~75 | |
| | Domestic Hot water (Min ~ Max) | °C(DB) | 15~80 | |

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Specification

Outdoor : 3Ø

| Outdoor Unit | | Unit | HM123HF UB60 | HM093HFX UB60 |
|--------------------------------------|---|-------------------------|--------------------|---------------|
| Power Supply | | V, Ø, Hz | 50 Hz 380-415 V3N~ | |
| Recommended circuit breaker(ELCB) | | A | 16 | |
| Connecting Cable | Power Supply Cable (H07RN-F)*Included Earth | mm ² × cores | 2.5 x 5C | |
| Capacity(Heating) | A7 / W35 | kW | 12.0 | 9.0 |
| | A7 / W55 | kW | 10.0 | 9.0 |
| | A2 / W35 | kW | 12.0 | 9.0 |
| Capacity(Cooling) | A35 / W18 | kW | 11.5 | 9.0 |
| Power Input(Heating) | A7 / W35 | kW | 2.55 | 1.84 |
| | A7 / W55 | kW | 3.23 | 2.81 |
| | A2 / W35 | kW | 3.23 | 2.32 |
| Power Input(Cooling) | A35 / W18 | kW | 3.04 | 2.31 |
| COP(Heating) | A7 / W35 | W/W | 4.70 | 4.90 |
| | A7 / W55 | W/W | 3.10 | 3.20 |
| | A2 / W35 | W/W | 3.72 | 3.88 |
| EER(Cooling) | A35 / W18 | W/W | 3.78 | 3.90 |
| SCOP(Average climate) | Water outlet 35°C | W/W | 5.45 | 5.23 |
| | Water outlet 55°C | W/W | 3.97 | 3.75 |
| Water Flow Rate | Rated(at ΔT 5°C) | ℓ/min | 34.5 | 25.9 |
| Running Current | Heating(Rated) | A | 3.69 | 2.65 |
| | Cooling(Rated) | A | 4.20 | 3.21 |
| Peak Control Running Current | Heating | A | 8 | 8 |
| | Cooling | A | 8 | 8 |
| Current | Current(MAX) | A | 16.1 | |
| Operation Range(Outdoor Temperature) | Cooling(Min ~ Max) | °C(DB) | 5~48 | |
| | Heating(Min ~ Max) | °C(DB) | -28~35 | |
| Operation Range(Leaving Water) | Cooling(Min ~ Max) | °C(DB) | 5~27 | |
| | Heating(Min ~ Max) | °C(DB) | 15~75 | |
| | Domestic Hot water (Min ~ Max) | °C(DB) | 15~80 | |

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 - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
 - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
5. This product contains Fluorinated greenhouse gases.
6. Sound Performances are based on the following conditions.
 - Sound Power Level : Measured according to EN14825.
 - Sound Pressure Level : Calculated value according to distance of sound power.

| Outdoor Unit | | Unit | HM163HF UB60/HM143HF UB60/HM123HF UB60/HM093HF UB60 |
|---------------------------|------------------------------|---------------------------|---|
| Water Pump | Type | - | Canned type for hot water circulation |
| | Model(Maker,Name) | - | GRUNDFOS, UPML GEO 20-105 CHBL |
| | Motor type | - | BLDC |
| | Steps of Pumping Performance | - | Variable speed 10% to 100% |
| | Power input(Min~Max) | W | 17 ~ 152 |
| | Power input(Rated) | W | 145 |
| | Water Flow Rate(Min) | ℓ / min | 0 |
| | Max. Head | m | 11 |
| Water Pump_2 | Type | - | Canned type for hot water circulation |
| | Model(Maker,Name) | - | OH SUNG, ODM-061P |
| | Motor type | - | BLDC |
| | Steps of Pumping Performance | - | Variable speed 10% to 100% |
| | Power input(Min~Max) | W | 17 ~ 152 |
| | Power input(Rated) | W | 145 |
| | Water Flow Rate(Min) | ℓ / min | 0 |
| | Max. Head | m | 11 |
| Safety Valve(Water cycle) | Pressure Limit(Upper Limit) | bar | 3.0 |
| Flow Sensor | Type | - | Vortex |
| | Model(Maker,Name) | - | SIKA VVXC9SNBUC00252P |
| | Measuring Range(Min~Max) | ℓ/min | 5 ~ 80 |
| Water Pressure Sensor | Model(Maker,Name) | - | Sensata OFM(2HMP) |
| Fan | Type | - | Propeller |
| | Air Flow Rate(Rated) | m ³ /min x No. | 110 x 1 |
| Fan Motor | Type | - | BLDC |
| | Output | W x No. | 250 x 1 |

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Specification

| Outdoor Unit | | Unit | HM163HF UB60 | HM143HF UB60 | HM123HF UB60 | HM093HFX UB60 |
|---------------------------------------|-------------------------------|----------------------|--|--|--|--|
| Compressor | Type | - | Hermetic Motor Compressor | Hermetic Motor Compressor | Hermetic Motor Compressor | Hermetic Motor Compressor |
| | Model x No. | - | PJQC062MAA x 1 | PJQC062MAA x 1 | PJQC062MAA x 1 | PJQC062MAA x 1 |
| | Piston Displacement | cm ³ /rev | 61.5 | 61.5 | 61.5 | 61.5 |
| | Motor Type | - | BLDC | BLDC | BLDC | BLDC |
| Refrigerant | Type | - | R290 | R290 | R290 | R290 |
| | Precharged Amount | kg | 1.2 | 1.2 | 1.2 | 1.2 |
| | GWP(Global Warming Potential) | - | 3 | 3 | 3 | 3 |
| | t-CO ₂ eq. | - | 0.0036 | 0.0036 | 0.0036 | 0.0036 |
| | Control Type | - | Electronic Expansion Valve | Electronic Expansion Valve | Electronic Expansion Valve | Electronic Expansion Valve |
| Refrigerant Oil | Type | - | PZ68S | PZ68S | PZ68S | PZ68S |
| | Charged Volume | cc x No. | 1200 | 1200 | 1200 | 1200 |
| Heat Exchanger | Rows x Columns x FPI | - | 46 x 3 x 18 | 46 x 3 x 18 | 46 x 3 x 18 | 46 x 3 x 18 |
| | No. | - | 1 | 1 | 1 | 1 |
| | Fin Type | - | Corrugate | Corrugate | Corrugate | Corrugate |
| Heat Exchanger (Refrigerant to Water) | Type | - | Brazed Plate HEX | Brazed Plate HEX | Brazed Plate HEX | Brazed Plate HEX |
| | Quantity | EA | 1 | 1 | 1 | 1 |
| | Number of Plate | Sheet | 76 | 76 | 76 | 76 |
| | Water Volume | ℓ | 1 | 1 | 1 | 1 |
| Water Connecting Pipes | Inlet | inch | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) |
| | Outlet | inch | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) | Male PT 1" according to ISO 7-1 (tapered pipe threads) |
| Sound Pressure Level | Heating(Rated, @1m) | dB(A) | 44 | 43 | 41 | 41 |
| Sound Power Level | Heating(Low Noise) | dB(A) | 51 | 50 | 48 | 48 |
| | Heating(Rated) | dB(A) | 52 | 51 | 49 | 49 |
| | Heating(Daytime max) | dB(A) | 61 | 60 | 59 | 59 |
| Dimensions | Net(W x H x D) | mm | 1560 x 1019 x 520 | 1560 x 1019 x 520 | 1560 x 1019 x 520 | 1560 x 1019 x 520 |
| | Shipping(W x H x D) | mm | 1620 x 1180 x 625 | 1620 x 1180 x 625 | 1620 x 1180 x 625 | 1620 x 1180 x 625 |
| Weight | Net | kg | 181 | 181 | 181 | 181 |
| | Shipping | kg | 199 | 199 | 199 | 199 |
| Exterior | Color of chassis | - | Dawn Gray | Dawn Gray | Dawn Gray | Dawn Gray |
| | RAL code of chassis | - | RL 7037 | RL 7037 | RL 7037 | RL 7037 |
| Max Allowable Pressure | High / Low | MPa | 3.2 / 1.4 | 3.2 / 1.4 | 3.2 / 1.4 | 3.2 / 1.4 |

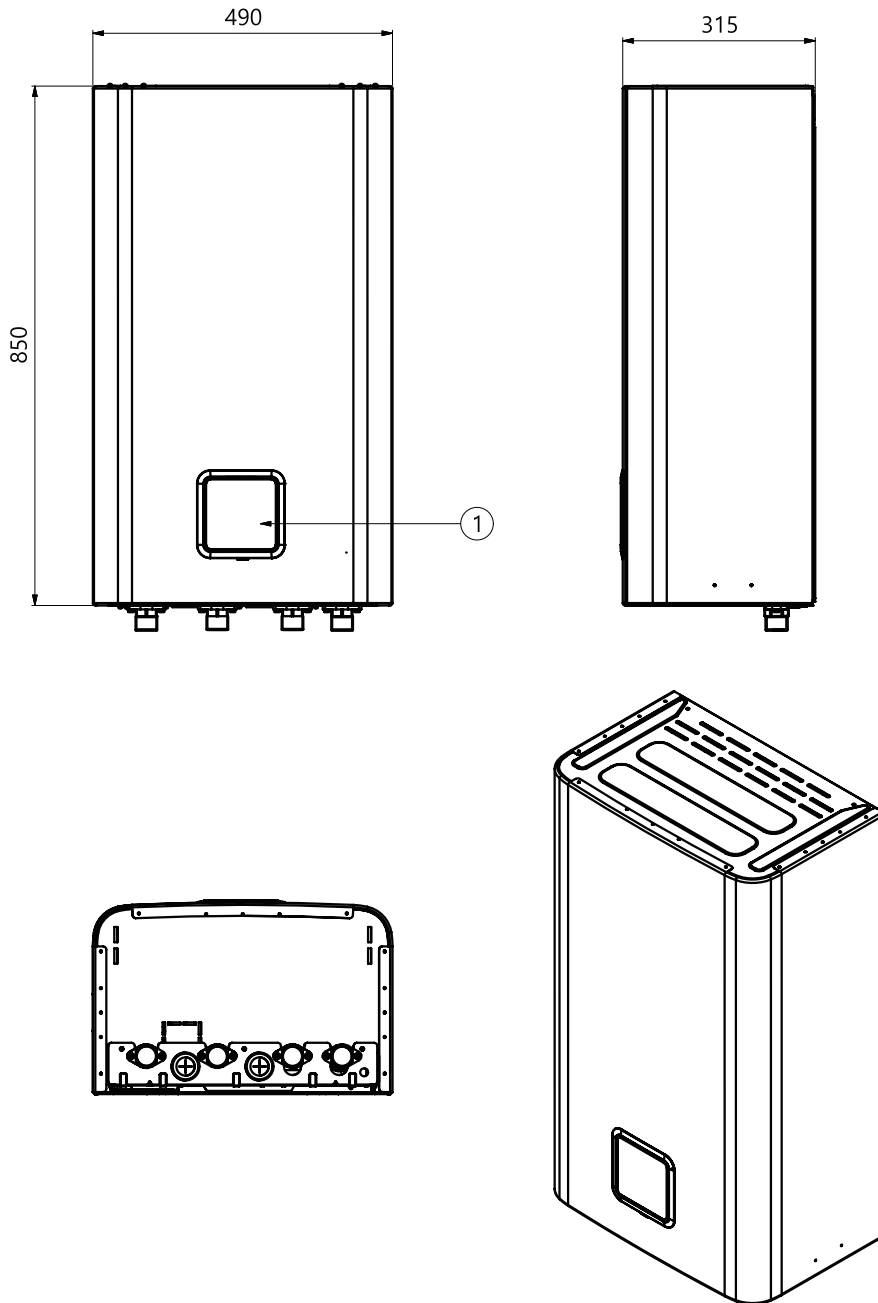
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- Wiring cable size must comply with the applicable local and national codes. And "Electric characteristics" chapter should be considered for electrical work and design. Especially the power cable and circuit breaker should be selected in accordance with that.
- Sound Level Values are measured at Noise Measuring chamber accordance with standard. Therefore, these values depend on the ambient conditions and values are normally higher in actual operation.
- Performances are based on the following conditions :
 - Cooling : Inlet/Outlet Water Temp. 23°C/18°C, Outdoor Air Temp. 35°CDB / 24°CWB
 - Heating : Inlet/Outlet Water Temp. 30°C/35°C, Outdoor Air Temp. 7°CDB / 6°CWB
 - Interconnected Pipe Length is standard length and difference of Elevation (Outdoor ~ Indoor Unit) is Zero.
- This product contains Fluorinated greenhouse gases.
- Sound Performances are based on the following conditions.
 - Sound Power Level : Measured according to EN14825.
 - Sound Pressure Level : Calculated value according to distance of sound power.

2. Components

Indoor unit : External

(unit : mm)

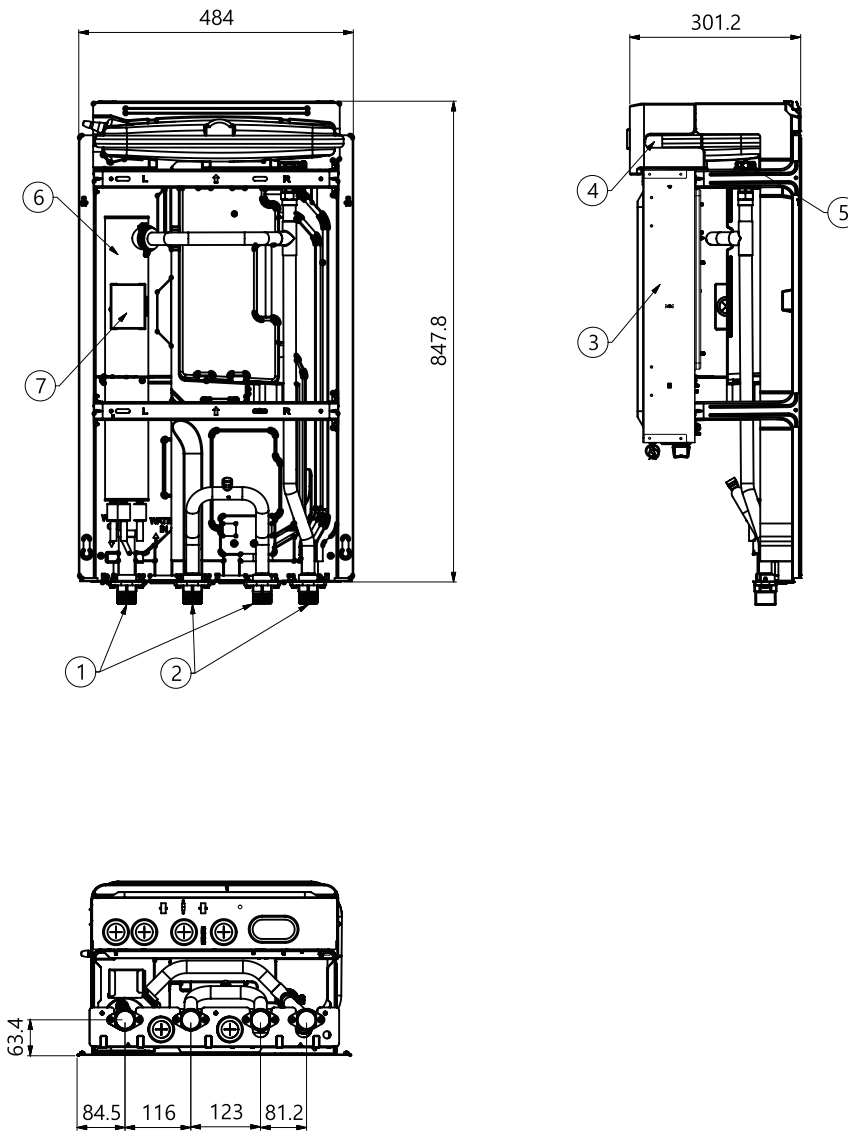


Description

| No | Name | Remark |
|----|---------------|----------------------------|
| 1 | Control Panel | Built-in Remote Controller |

Indoor unit : Internal

(unit : mm)

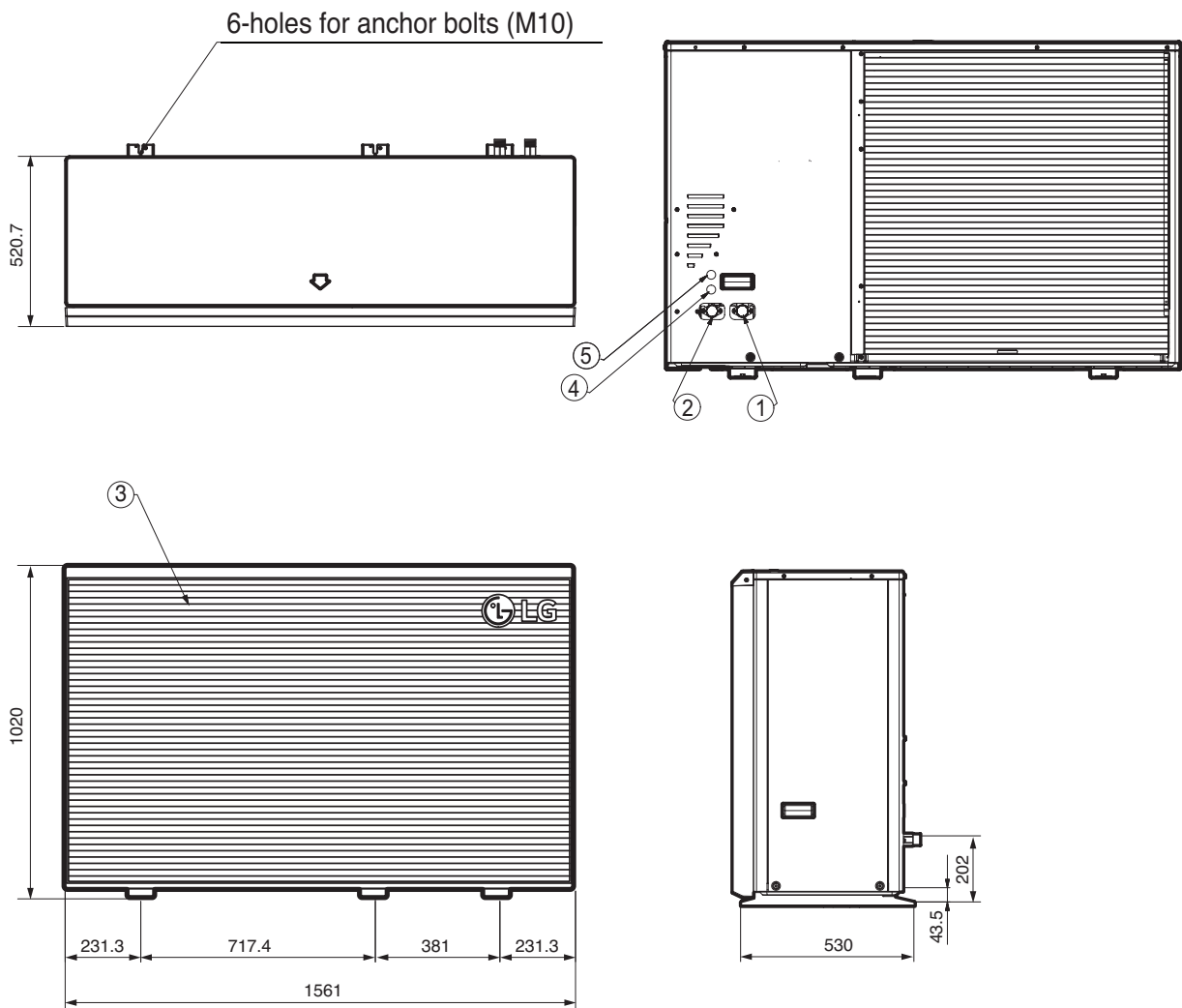


Description

| No | Name | Remark |
|----|---------------------|--|
| 1 | Leaving Water Pipe | Male PT 1 inch |
| 2 | Entering Water Pipe | Male PT 1 inch |
| 3 | Control Box | PCB and terminal blocks |
| 4 | Expansion Tank | Absorbing Volume change of heated water |
| 5 | Air Vent | Air Pumping when Charging water |
| 6 | Backup heater | Cut-off power input to backup heater at 184 °C |
| 7 | Thermal switch | Cut-off power input to backup heater at 90 °C (manual return at 55 °C) |

Outdoor unit : External

(unit : mm)

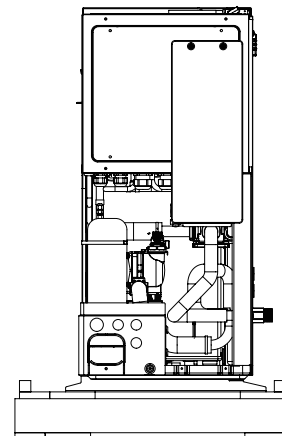
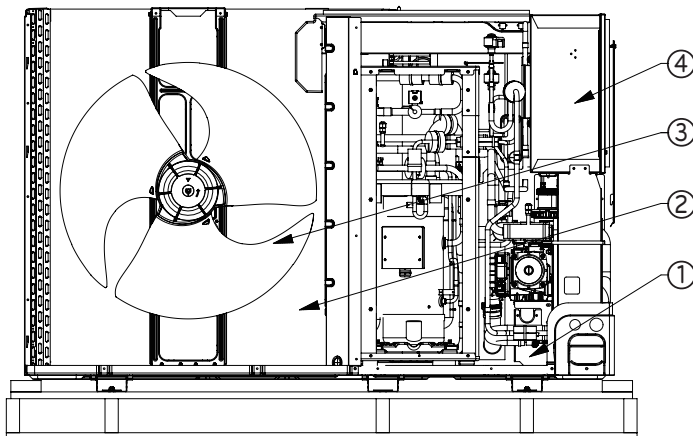
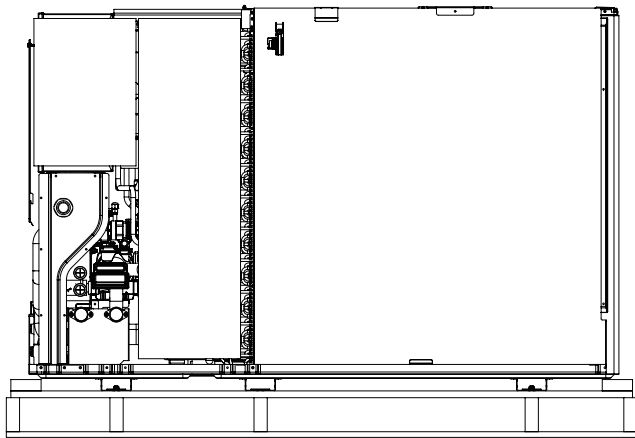


Description

| No | Name |
|----|-------------------------------|
| 1 | Entering Water Pipe |
| 2 | Leaving Water Pipe |
| 3 | Air discharge Grille |
| 4 | Cable Conduit (Power) |
| 5 | Cable conduit (Communication) |

Outdoor unit : Internal

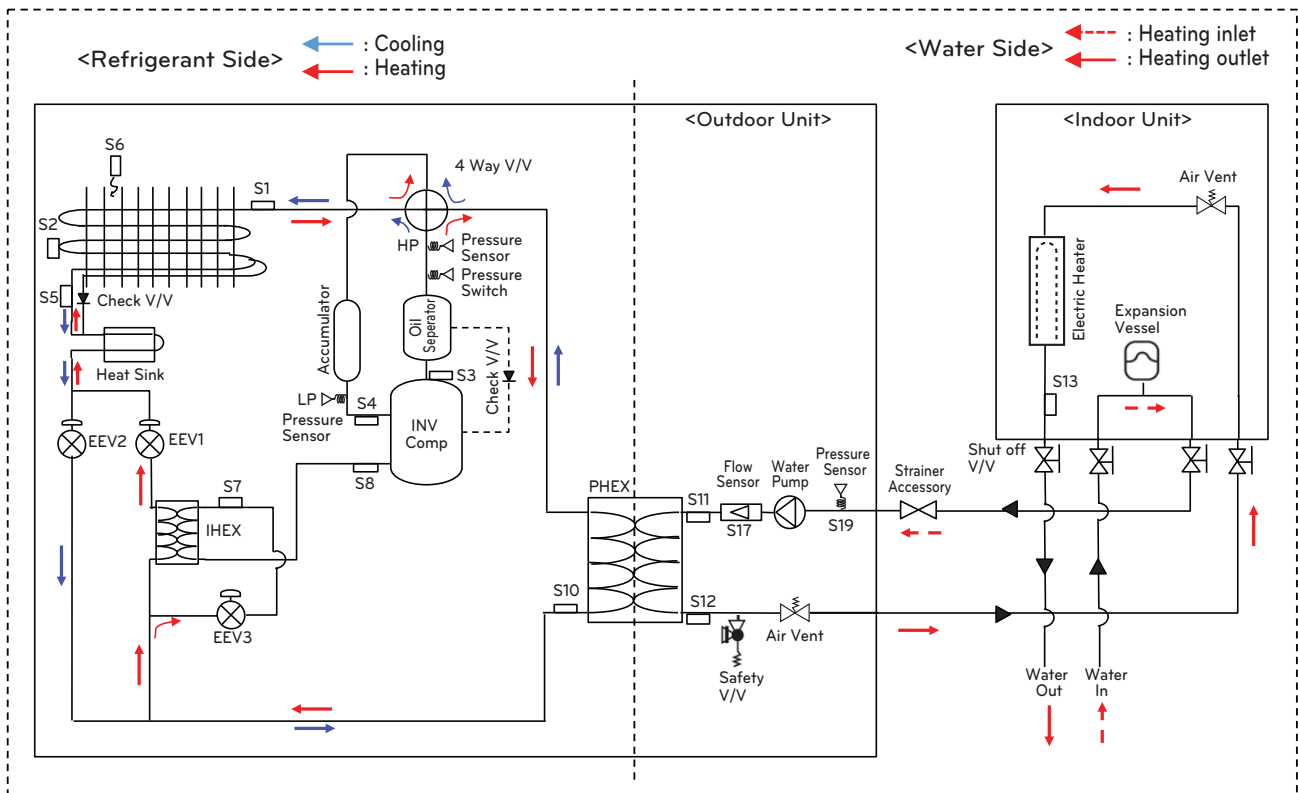
(unit : mm)



Description

| No | Name | Remark |
|----|-------------------------|--|
| 1 | Compressor | Increase pressure of the refrigerant. |
| 2 | Fin tube Heat Exchanger | Heat exchange between refrigerant and air. |
| 3 | Fan | Circulating the air. |
| 4 | Control Box | PCB and terminal blocks. |

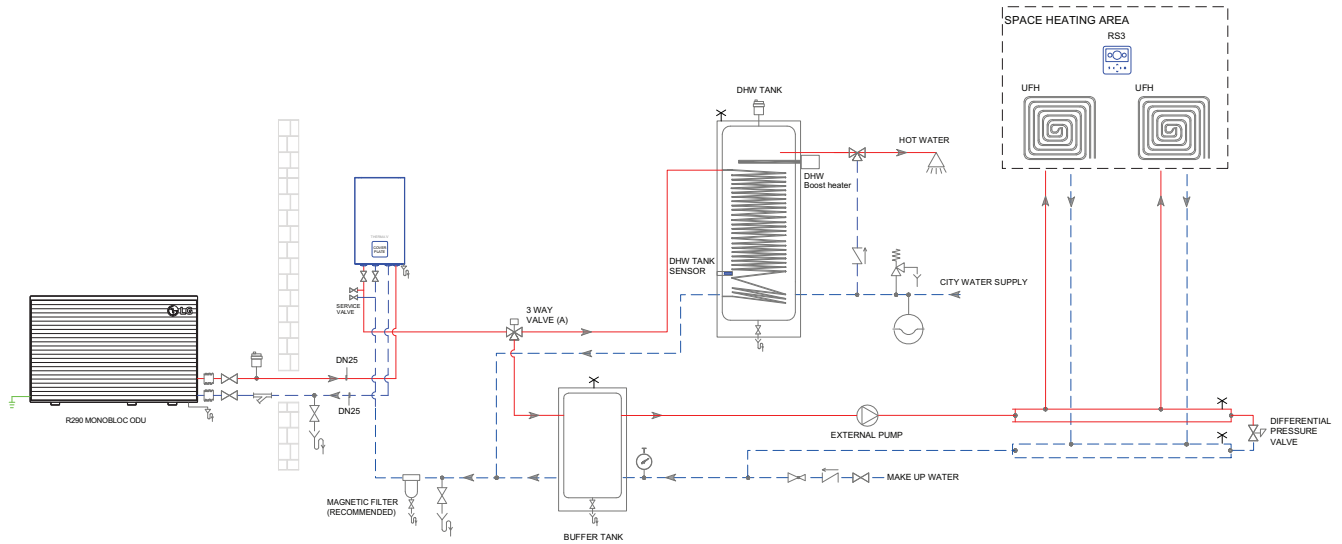
3. Cycle Diagram



Description

| Category | Symbol | Meaning |
|------------------|----------------------|--|
| Refrigerant side | S1 | Outdoor-HEX gas temp. sensor |
| | S2 | Outdoor-HEX middle temp. sensor |
| | S3 | Compressor discharge temp. sensor |
| | S4 | Compressor suction pipe temp. sensor |
| | S5 | Outdoor-HEX temp. sensor |
| | S6 | Outdoor air temp. sensor |
| | S7 | Compressor-injection pipe IN temp. sensor |
| | S8 | Compressor-injection pipe OUT temp. sensor |
| Water Side | S10 | PHEX liquid temp. sensor |
| | S11 | Inlet water temp. sensor |
| | S12 | Outlet water temp. sensor |
| | S13 | Electric backup heater outlet temp. sensor |
| | S17 | Flow sensor |
| | S19 | Water pressure sensor |
| | LP | Low pressure sensor |
| HP | High pressure sensor | |

4. Piping Diagram



Note

The exemplary diagram does not include all necessary safety and installation devices. This is not an 'as-built drawing'.

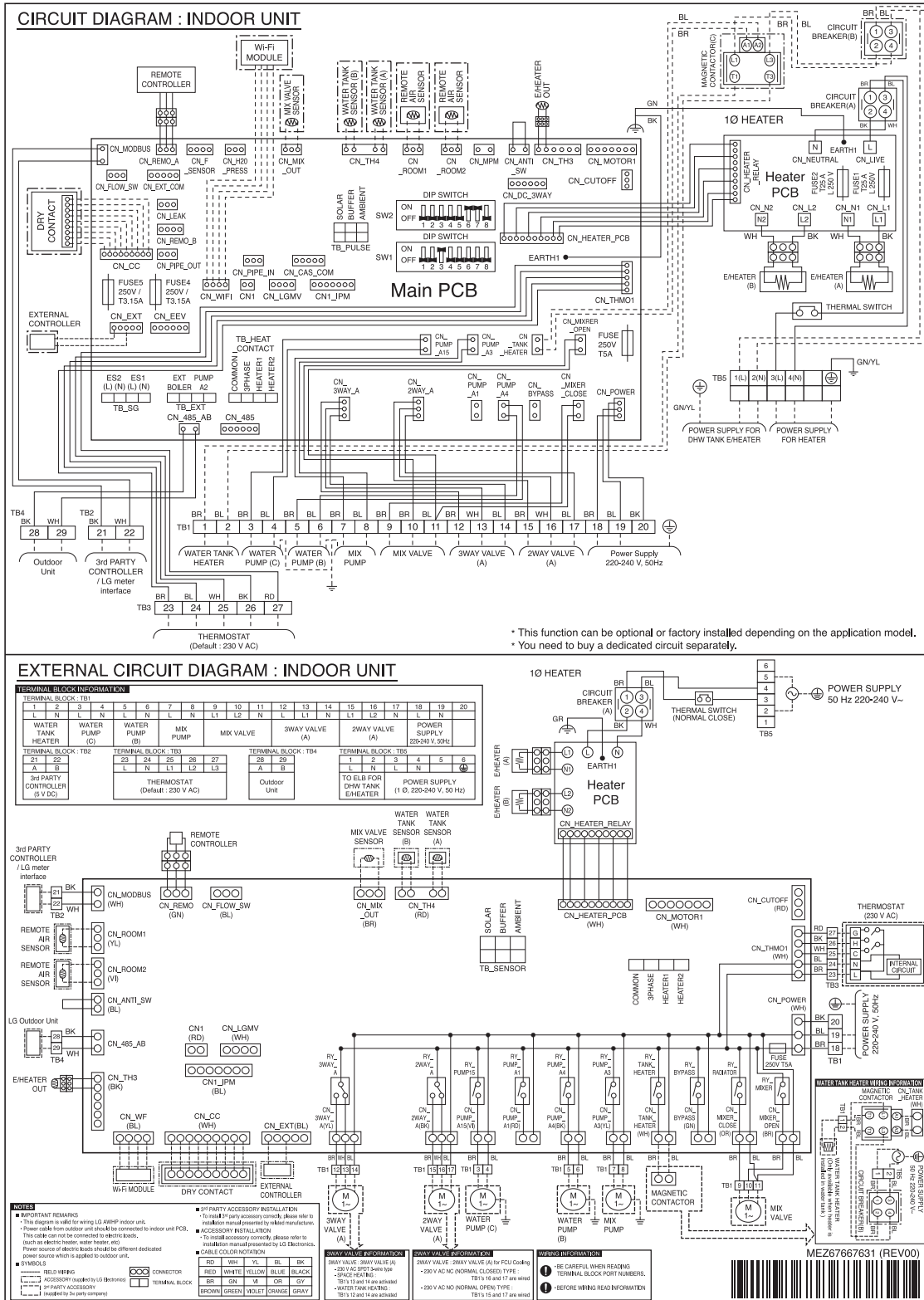
Symbol & Legends

| | | | | | | | |
|--|---------------------|--|-----------------------------|--|---|--|------------------------|
| | Circulation Pump | | Motorized 3 Way Valve | | Check Valve | | RS3 Remote Controller |
| | Expansion Tank | | Motorized 2 Way Valve | | Safety Relief Expansion Tank Valve with drain | | Remote Room Air Sensor |
| | Air Vent | | Differential Pressure Valve | | Y-type strainer | | Dry Contact |
| | Pressure Gauge | | Thermostatic Mixing Valve | | Flow Sensor | | Wi-Fi Modem |
| | Flexible Connection | | Shut Off Valve | | Magnetic Contactor | | Thermostat |
| | Drain | | Pressure Reducing Valve | | Drain Pan | | Cover Plate |

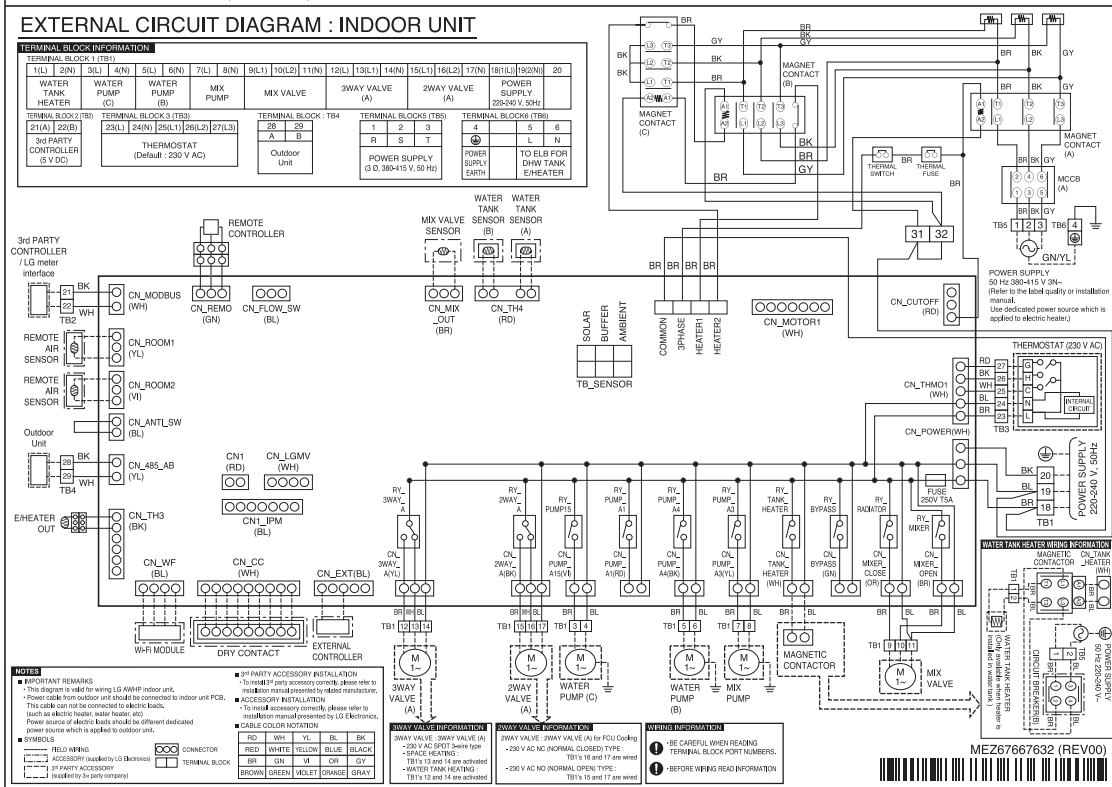
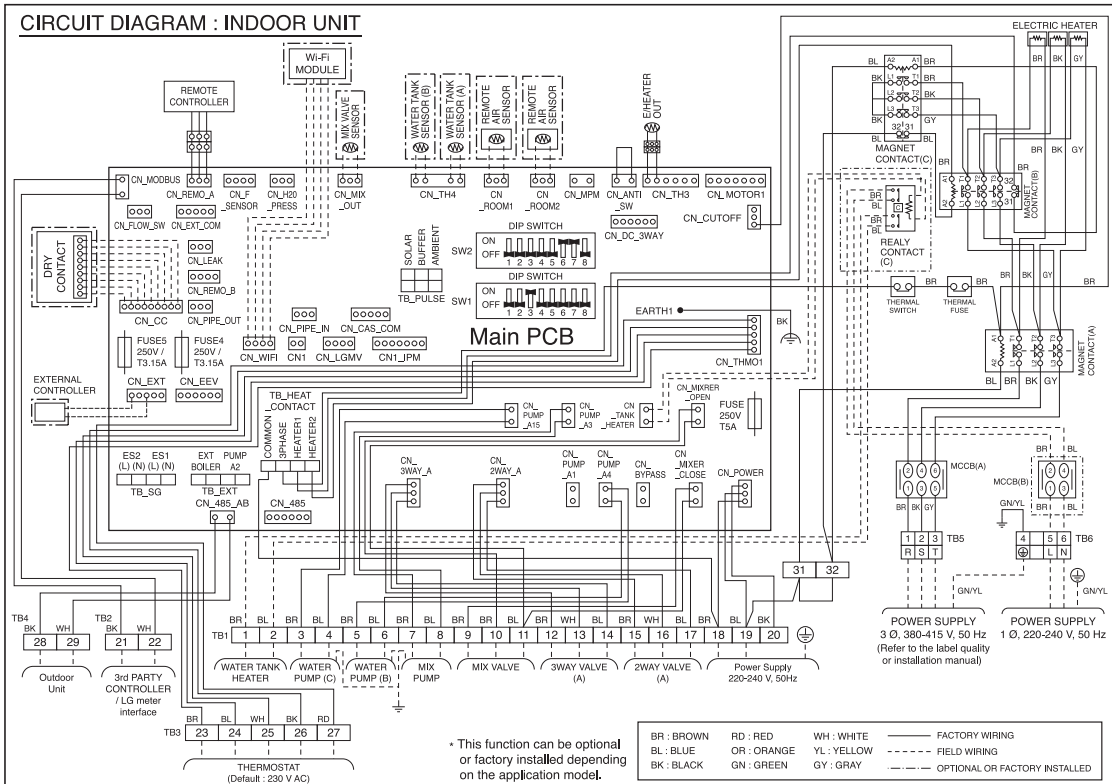
* For more installation scenes, visit <http://partner.lge.com/> or contact your local LG office.
 Select Region → Doc. Library → (Product) Heating → Application Guide → Referenced Drawing for Application

5. Wiring Diagrams

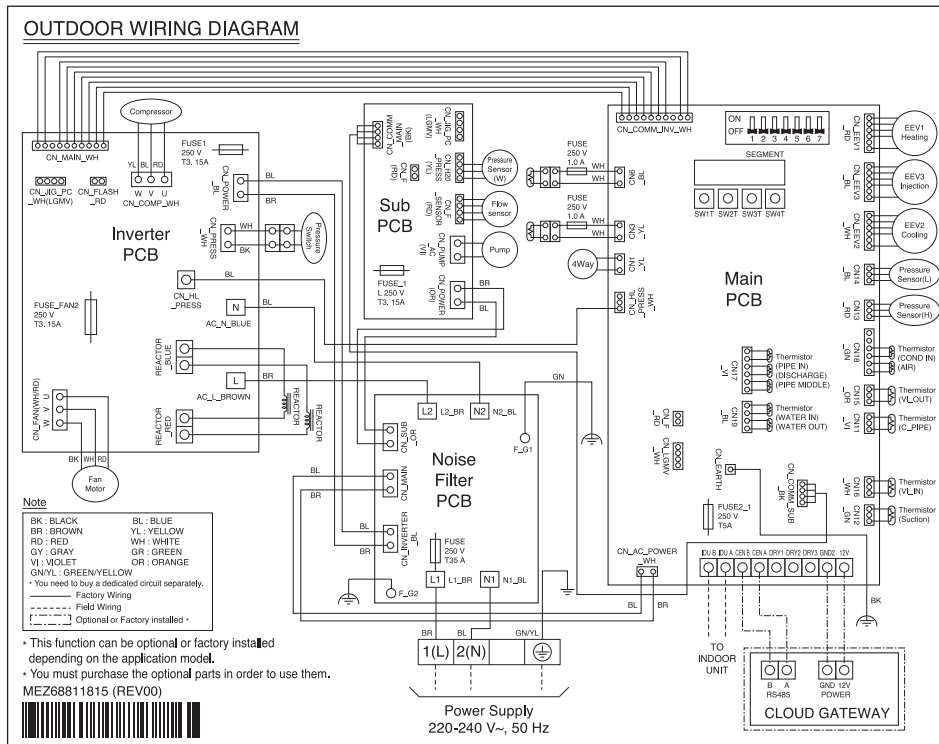
Indoor Unit(Including field wiring) : K1 Chassis, 10



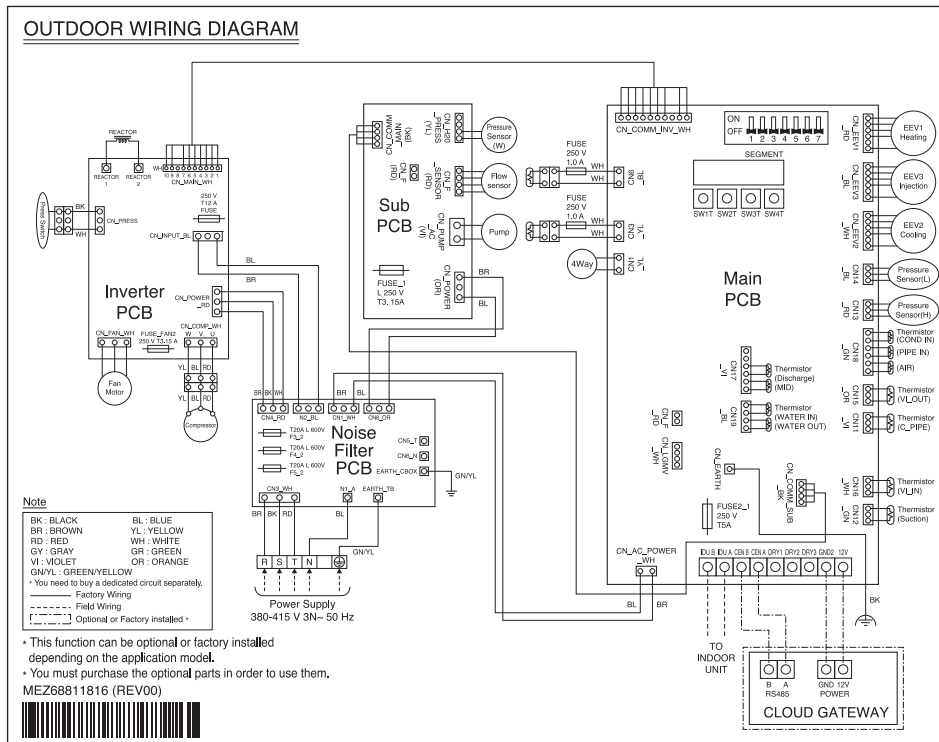
Inddor Unit(Including field wiring) : K1 Chassis , 3Ø



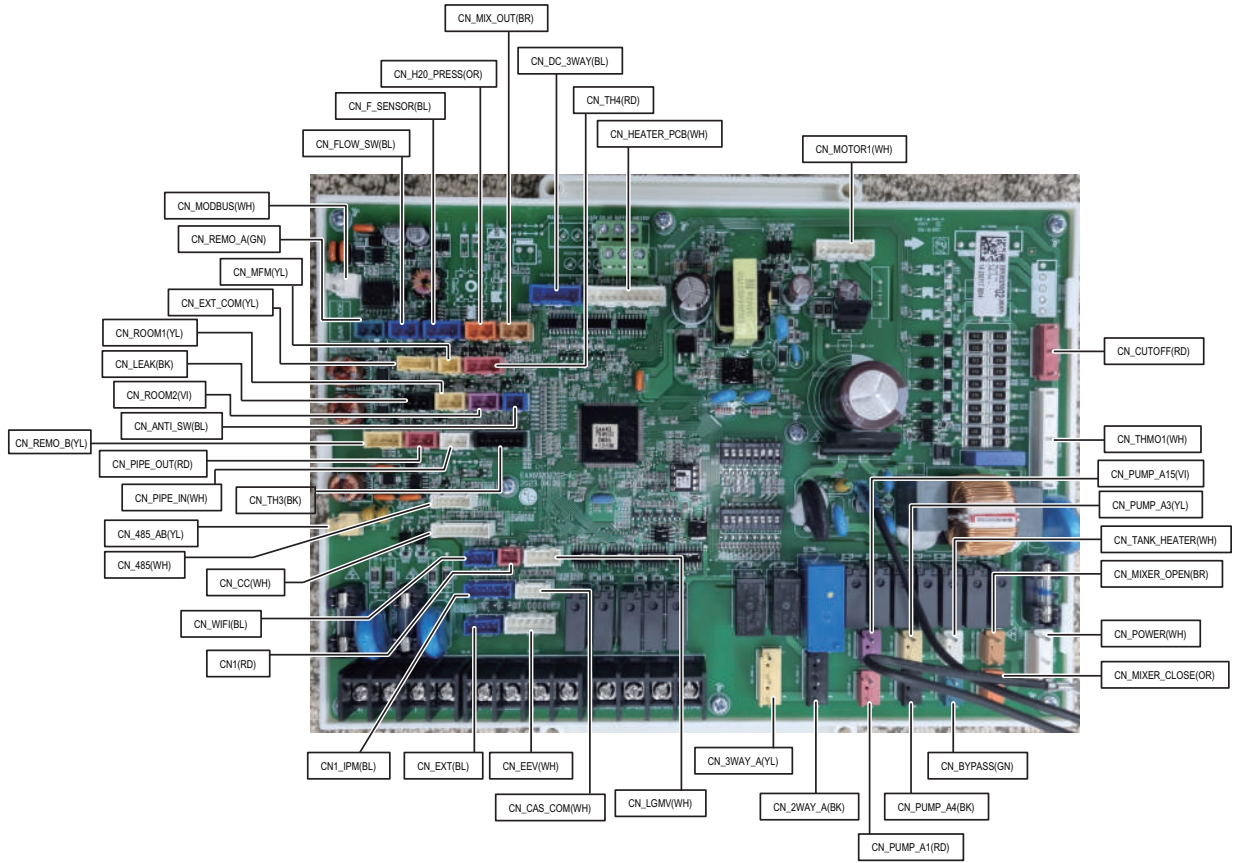
Outdoor Unit(Including field wiring) : UN60B Chassis, 1Ø



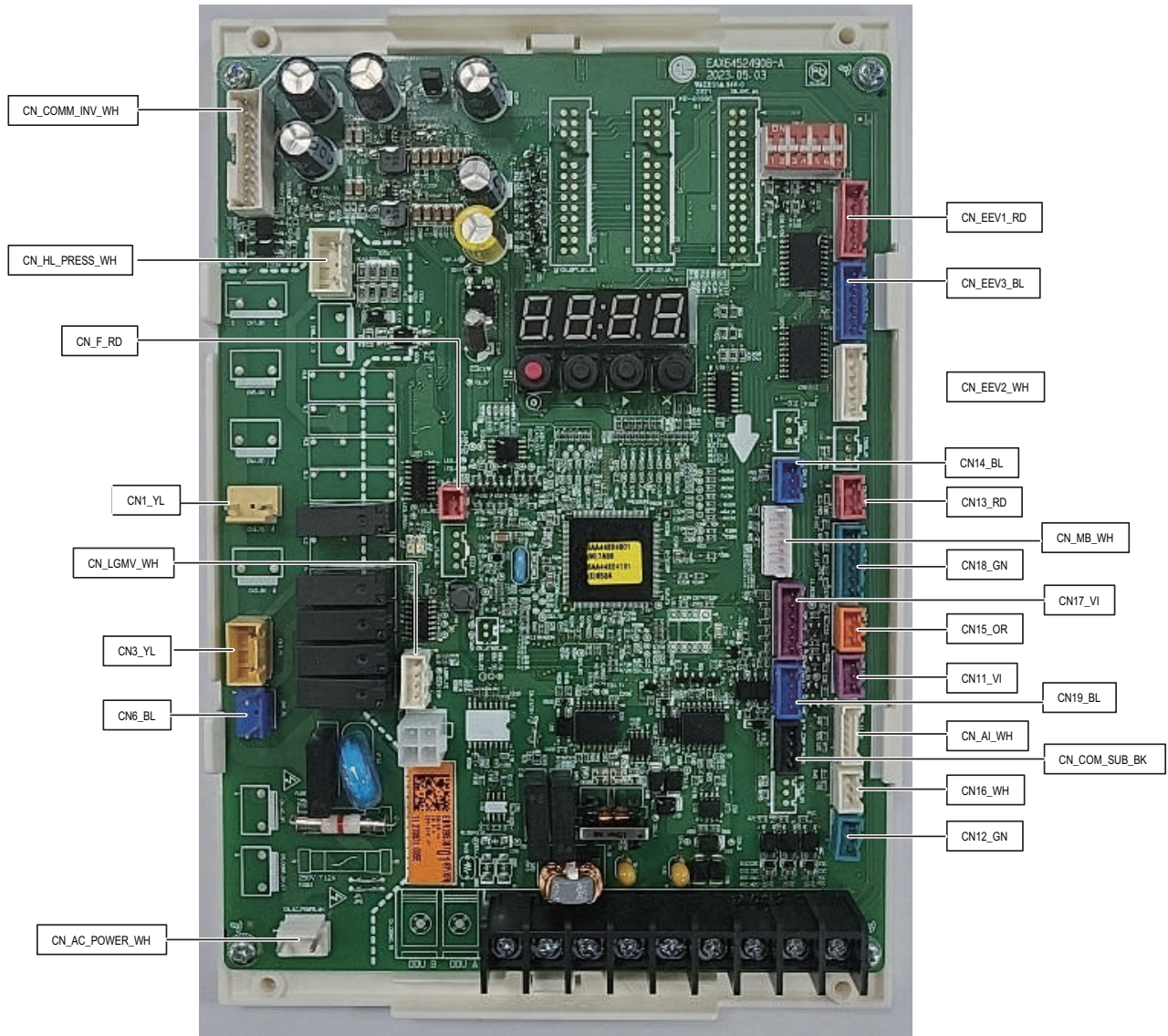
Outdoor Unit(Including field wiring) UN 60B Chassis , 3Ø



Indoor PCB



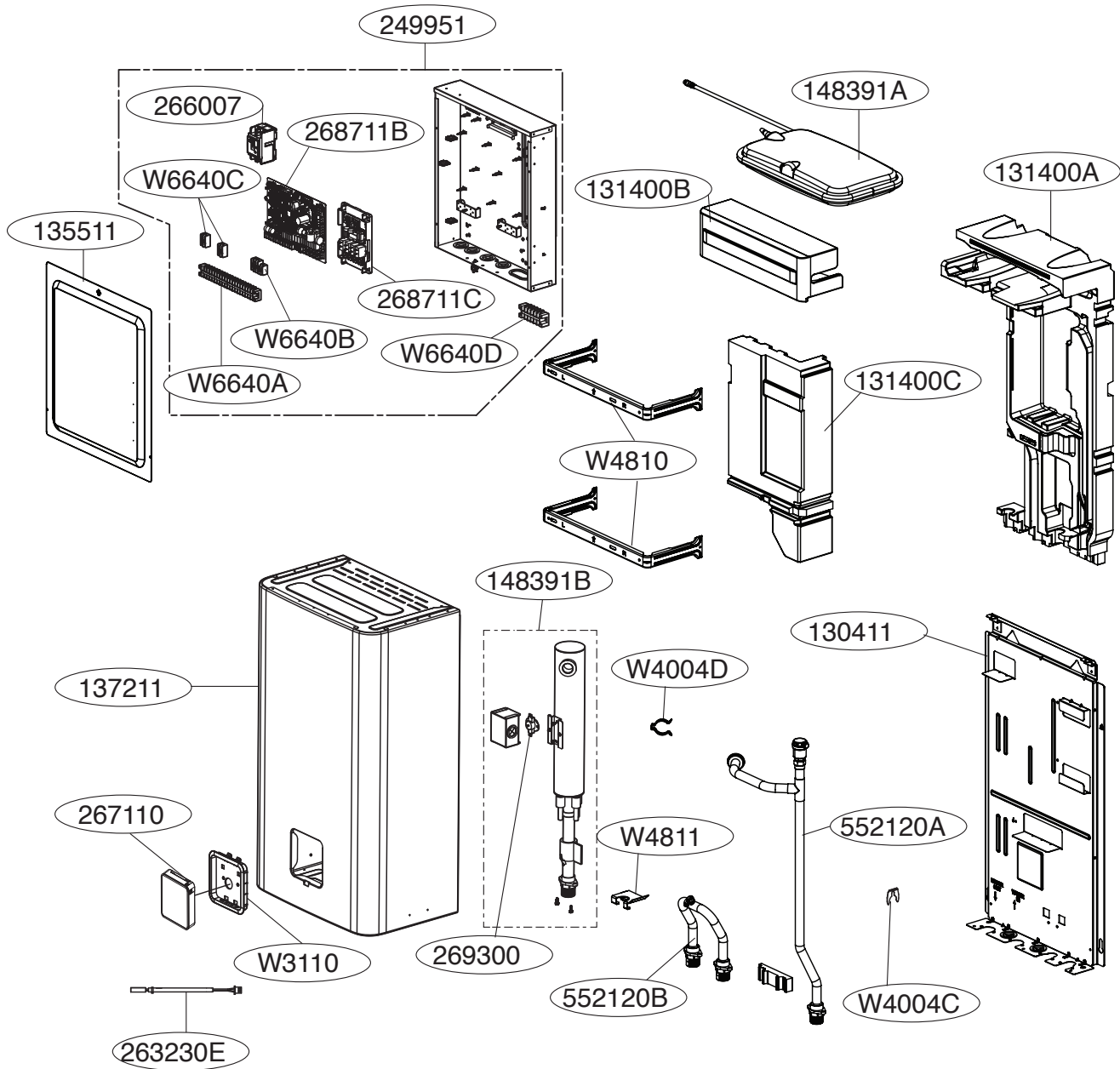
Outdoor PCB



6. Exploded View

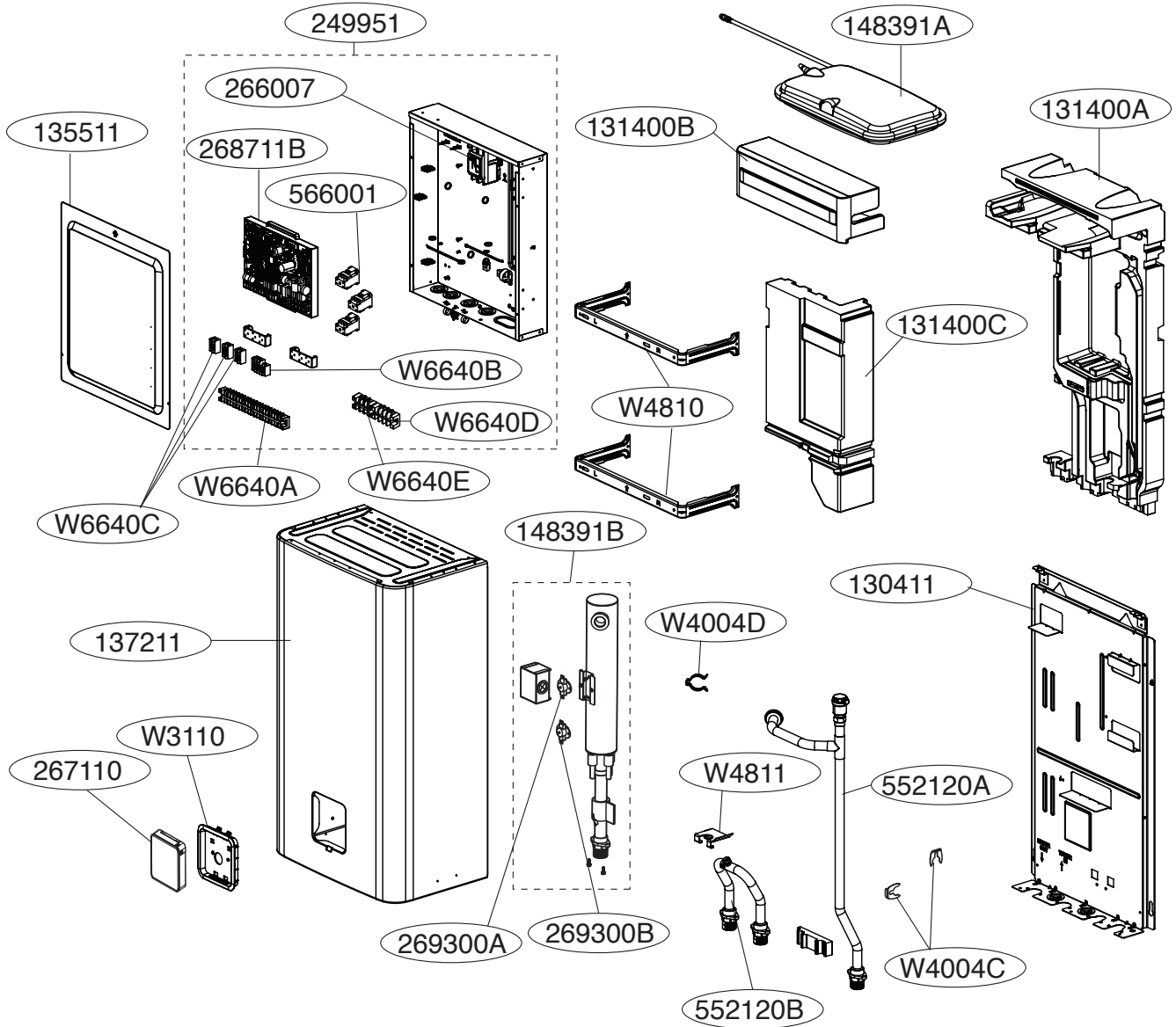
Indoor Unit (1Ø)

Model : HN1616HC NK0



Indoor Unit (3Ø)

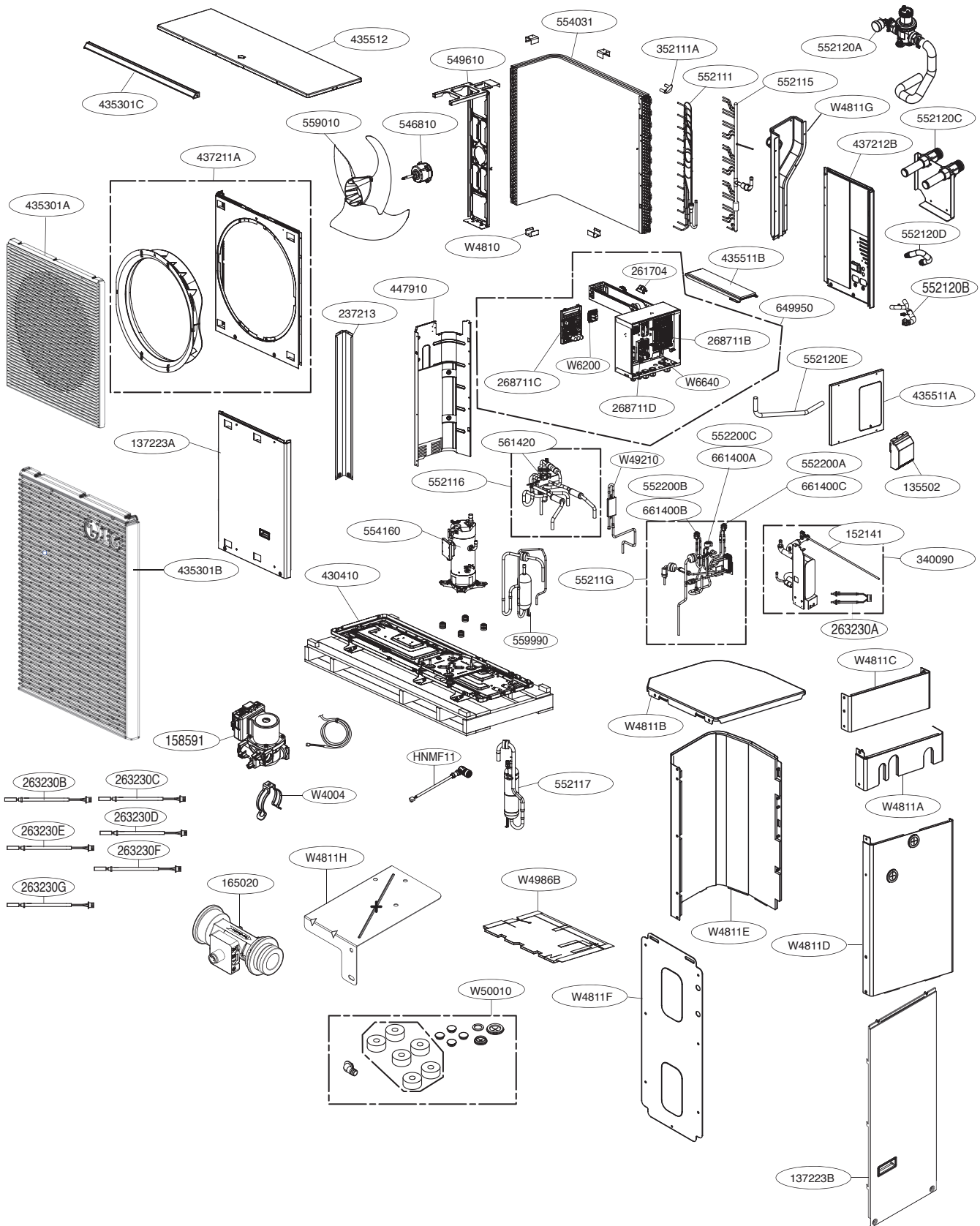
Model : HN1639HC NK0



Outdoor Unit

Model(1Ø) : HM161HF UB60 / HM141HF UB60 / HM121HF UB60

Model(3Ø) : HM163HF UB60/ HM143HF UB60/ HM123HF UB60/ HM093HFX UB60



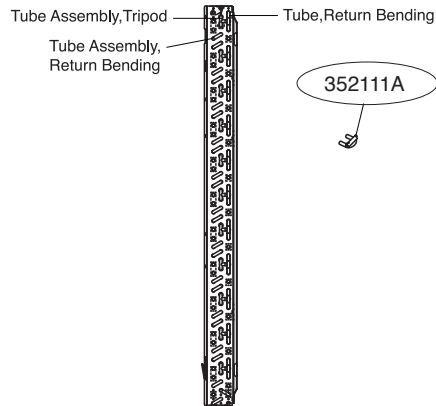
Outdoor Unit

Model(1Ø) : HM161HF UB60 / HM141HF UB60 / HM121HF UB60

Model(3Ø) : HM163HF UB60/ HM143HF UB60 / HM123HF UB60 / HM093HFX UB60

Condenser Assembly

you need to buy these parts when repair condenser assembly.



Thermistor Assembly,NTC

| Location No. | Thermistor Description | Housing Color |
|--------------|----------------------------|---------------|
| 263230A | Water In/Water Out | Blue |
| 263230B | Pipe In_Air | Yellow |
| 263230C | Cond In_Dis_Pipe Mid | Violet |
| 263230D | 5KOHM_PIPE_5P sensor | Violet |
| 263230E | 5KOHM_PIPE | White |
| 263230F | VMMC ELECTRONICS KOREA INC | Orange |
| 263230G | 5KOHM_PIPE | Green |

Condenser Assembly Repaired parts

| Description | Location No. | Quantity |
|----------------------------|--------------|----------|
| Condenser Assembly,Bending | 554031 | 1 |
| Tube Assembly,Connector | 352111A | 1 |



P/NO : MFL68681928