

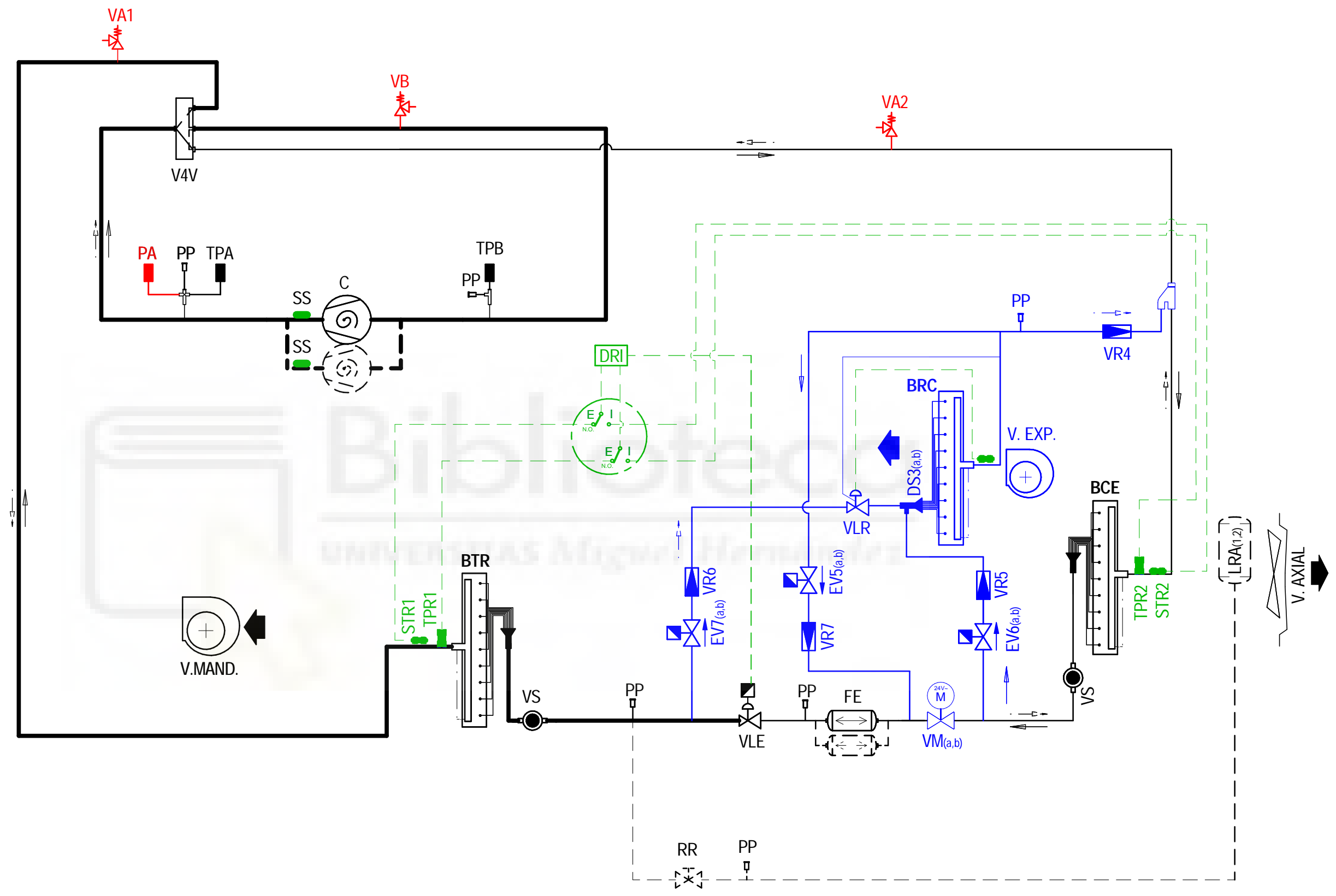


ANEXO V. CLIMATIZACIÓN

FICHAS TÉCNICAS



| LEGENDA LEGEND | |
|-------------------|---|
| BCE | BATTERIA CONDENSANTE E / EVAPORANTE CONDENSING/EVAPORATING COIL |
| BTR | BATTERIA TRATTAMENTO ARIA TREATMENT COIL |
| BRC | BATTERIA RECUPERO CALORE HEAT RECOVERY COIL |
| BP | BATTERIA POST RISCALDAMENTO A GAS POST HEATING COIL |
| C | COMPRESSORE SCROLL SCROLL COMPRESSOR |
| VLE | VALVOLA TERMOSTATICA ELETTRONICA ELECTRONIC THERMOSTATIC VALVE |
| FE | FILTRO DISIDRATATORE DRIER FILTER |
| VS | INDICATORE DI LIQUIDO SIGHT GLASS |
| LRA | RICEVITORE DI LIQUIDO LIQUID RECEIVER |
| RR | RUBINETTO INTERCETTAZIONE TAP-OFF RECEIVER |
| RGC | RUBINETTO POST RISCALDAMENTO A GAS POST GAS HEATING VALVE |
| V4V | VALVOLA INVERSIONE CICLO REVERSING VALVE |
| VM | RUBINETTO MOTORIZZATO REVERSING VALVE |
| EV | ELETTROVALVOLA SOLENOID VALVE |
| VR | VALVOLA DI RITEGNO CHECK VALVE |
| VA1-2 | VALVOLA DI SICUREZZA ALTA PRESSIONE HIGH PRESSURE RELIEF VALVE |
| VB | VALVOLA DI SICUREZZA BASSA PRESSIONE LOW PRESSURE RELIEF VALVE |
| PA | PRESSOSTATO ALTA PRESSIONE HIGH PRESSURE SWITCH |
| TPA | TRASDUTTORE DI ALTA PRESSIONE HIGH PRESSURE TRANSDUCER |
| TPB | TRASDUTTORE DI BASSA PRESSIONE LOW PRESSURE TRANSDUCER |
| SS | SONDA SCARICO DISCHARGE PROBE |
| TPR | TRASDUTTORE DI PRESSIONE VALVOLA TERMOSTATICA THERMOSTATIC VALVE PRESSURE TRANSDUCER |
| STR | SONDA TEMPERATURA VALVOLA TERMOSTATICA THERMOSTATIC VALVE TEMPERATURE SENSOR |
| DRI | DRIVER TERMOSTATICA ELETTRONICA THERMOSTATIC VALVE DRIVER |
| PP | PRESE DI PRESSIONE PRESSURE TAPS |
| → | DIREZIONE FLUIDO IN FUNZIONAMENTO CHILLER CHILLER FLOW DIRECTION |
| → | DIREZIONE FLUIDO IN FUNZIONAMENTO POMPADI CALORE HEATING PUMP FLOW DIRECTION |
| VMAND | VENTILATORE MANDATA SUPPLY AIR FAN |
| VEXP | VENTILATORE ESPUSIONE EXTRACT AIR FAN |
| VAXIAL | VENTILATORE ASSIALE AXIAL FAN |
| (1) | OPZIONALE OPTIONAL |

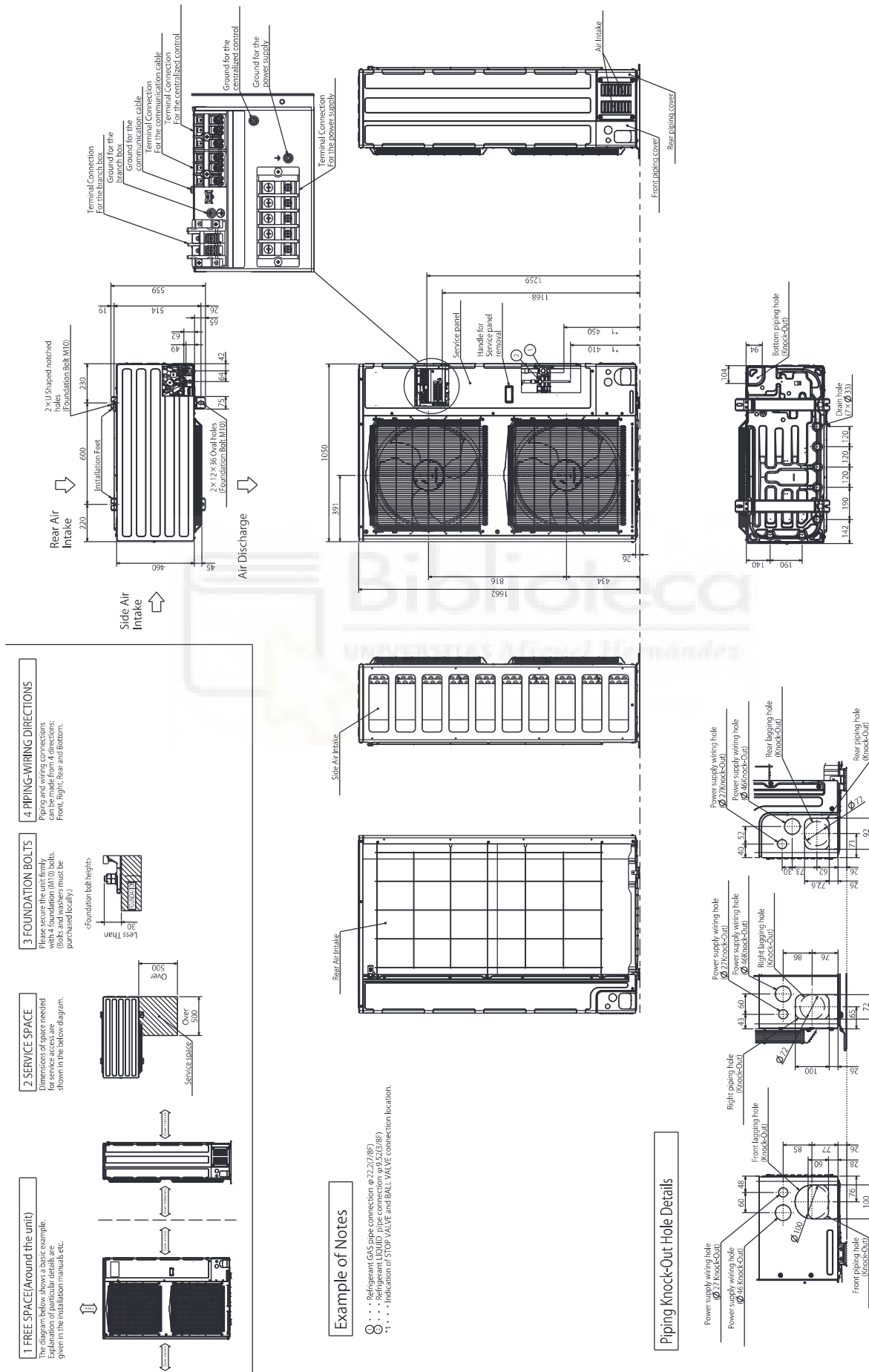


(1)
ATTENZIONE!
 RR - LRA e tutta la linea di collegamento potrebbero non essere presenti.
 RR non costituisce organo di intercettazione; è bloccato in posizione aperto

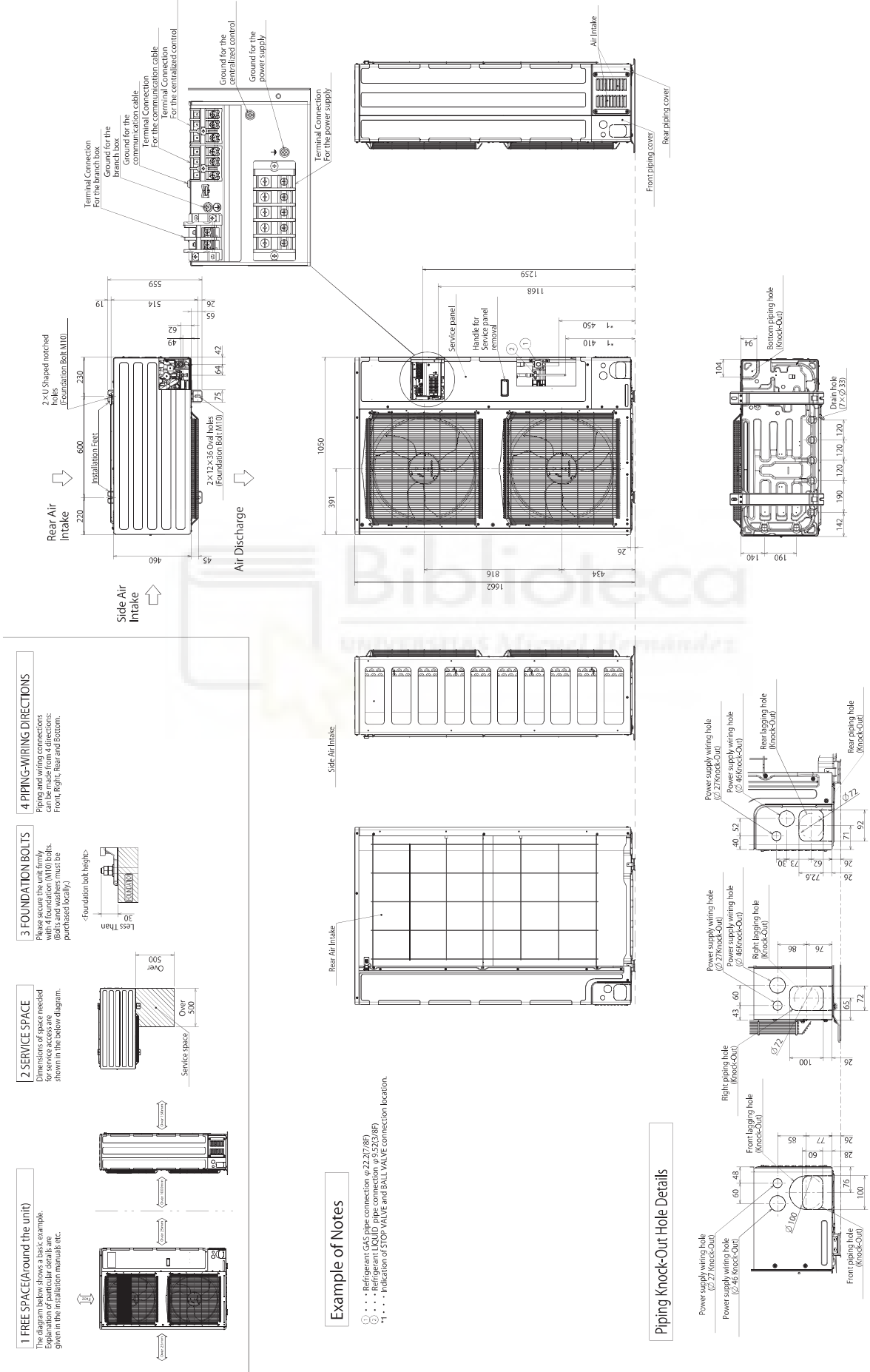
ATTENTION!
 RR - LRA and the connection line may not be present.
 RR is not an interception organ; it is fixed on open position

| | | | |
|---|--|-----------------|---|
| 00 | Emissione | 27/06/2022 | D. Piovesan |
| REV. N° | DESCRIPTION | DATE | DRAWN |
| DESCRIPTION: RCI WRX/WSM2 264÷524 HR-B FB | | | DRAWING N° REV. N° F2P1165014-00 |
| | | | SUBSTITUTES N° F2P1165004-00 |
| DRAWN | D. Piovesan | DATE 27/06/2022 | AUDITED C. Tosca |
| SCALE 1:5 A3 | CONFIDENTIAL DOCUMENT PROPERTY OF MEHTS SPA IT CANNOT BE REPRODUCED NOR DELIVERED WITHOUT COMPANY WRITTEN CONSENT | | SHEET 1 OF 1 |
| | | | CLIMAVENETA MITSUBISHI ELECTRIC HYDRONICS & IT COOLING SYSTEMS S.p.A. |

Unit: mm



Unit: mm

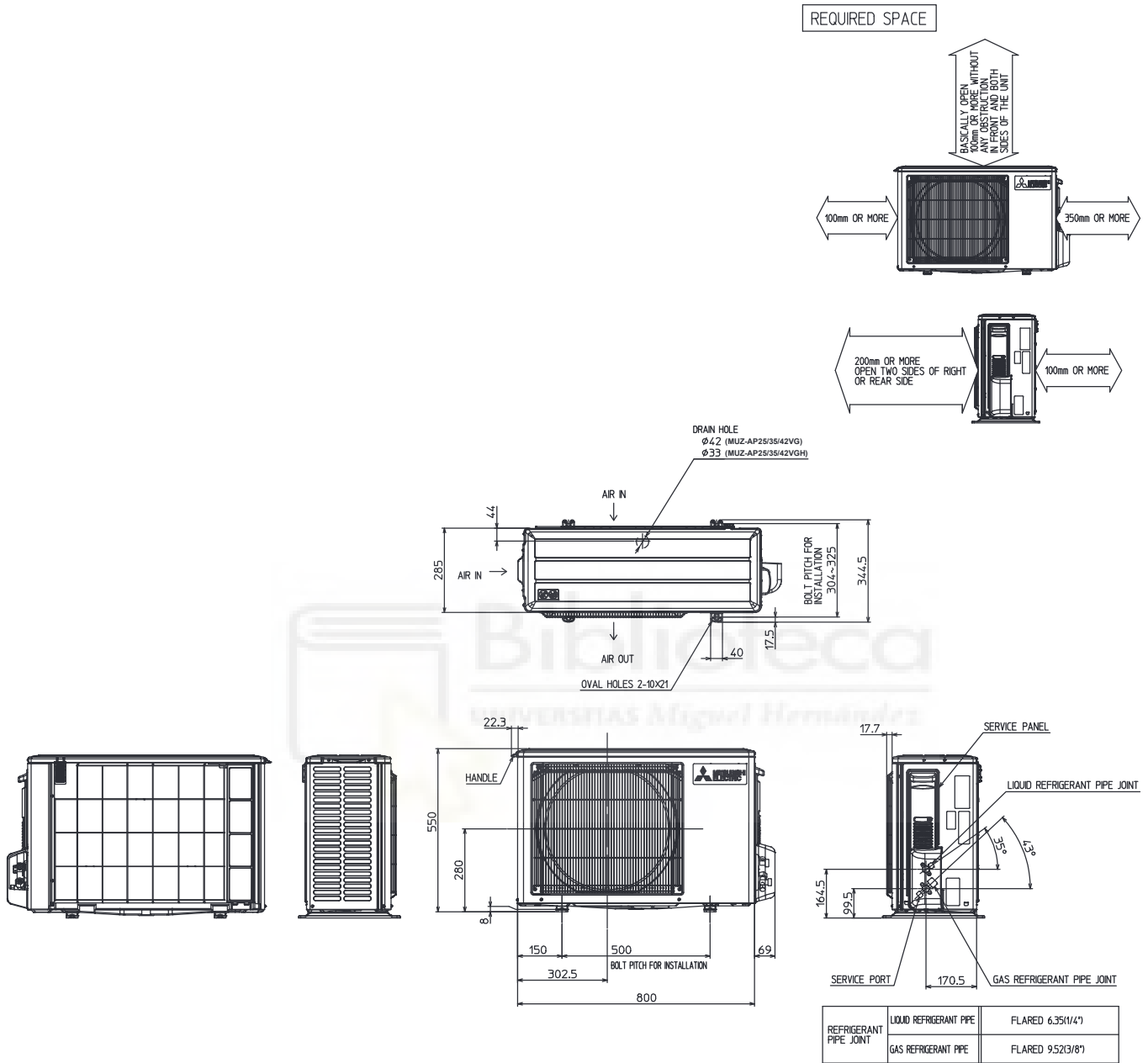


6

OUTLINES AND DIMENSIONS

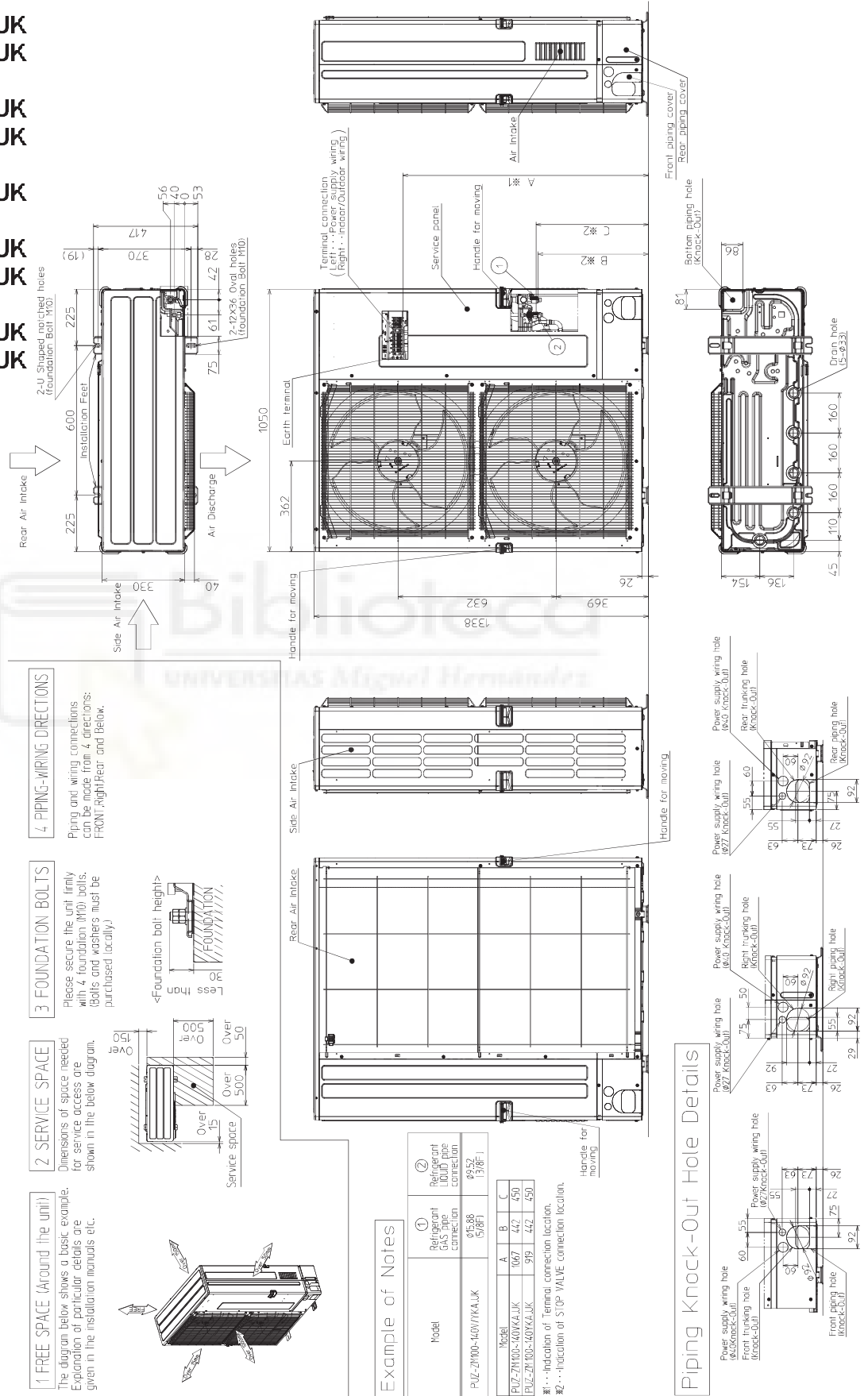
MUZ-AP25VG MUZ-AP35VG MUZ-AP42VG
 MUZ-AP25VGH MUZ-AP35VGH MUZ-AP42VGH

Unit: mm



Unit: mm

- PUZ-ZM100VKA.UK
- PUZ-ZM100VKAR1.UK
- PUZ-ZM125VKA.UK
- PUZ-ZM125VKAR1.UK
- PUZ-ZM125VKAR2.UK
- PUZ-ZM140VKA.UK
- PUZ-ZM140VKAR1.UK
- PUZ-ZM140VKAR2.UK
- PUZ-ZM100YKA.UK
- PUZ-ZM100YKAR1.UK
- PUZ-ZM125YKA.UK
- PUZ-ZM125YKAR1.UK
- PUZ-ZM125YKAR2.UK
- PUZ-ZM140YKA.UK
- PUZ-ZM140YKAR1.UK
- PUZ-ZM140YKAR2.UK





ANEXO VI. VENTILACIÓN





ANEXO DE CÁLCULO DE CONDUCTOS

Fórmulas Generales

Emplearemos las siguientes:

$$P_{ti} = P_{tj} + \Delta P_{tij}$$

$$P_t = P_s + P_d$$

$$P_d = \rho/2 \cdot v^2$$

$$v_{ij} = 1000 \cdot |Q_{ij}| / 3,6 \cdot A_{ij}$$

Siendo:

- P_t = Presión total (Pa)
- P_s = Presión estática (Pa)
- P_d = Presión dinámica (Pa)
- ΔP_t = Pérdida de presión total (Energía por unidad de volumen) (Pa)
- ρ = Densidad del fluido (kg/m^3)
- v = Velocidad del fluido (m/s)
- Q = Caudal (m^3/h)
- A = Area (mm^2)

Conductos.

$$\Delta P_{tij} = r_{ij} \cdot Q_{ij}^2$$

$$r_{ij} = 10^9 \cdot 8 \cdot \rho \cdot f_{ij} \cdot L_{ij} / 12,96 \cdot \pi^2 \cdot De_{ij}^5$$

$$f = 0,25 / [lg_{10} (\epsilon/3,7 \cdot De + 5,74/Re^{0,9})]^2$$

$$Re = \rho \cdot 4 \cdot |Q_{ij}| / 3,6 \cdot \mu \cdot \pi \cdot De_{ij}$$

Siendo:

- f = Factor de fricción en conductos (adimensional).
- L = Longitud de cálculo (m).
- De = Diámetro equivalente (mm).



- ε = Rugosidad absoluta del conducto (mm).
- Re = Número de Reynolds (adimensional).
- μ = Viscosidad absoluta fluido (kg/ms).

Componentes

$$\Delta P_{tij} = m_{ij} \cdot Q_{ij}^2$$

$$m_{ij} = 10^6 \cdot \rho \cdot C_{ij} / 12,96 \cdot 2 \cdot A_{ij}^2$$

- C_{ij} = Coeficiente de pérdidas en el componente (relación entre la presión total y la presión dinámica) (Adimensional).





ANEXO VI. VENTILACIÓN

FICHAS TÉCNICAS





RECUPERADOR DE CALOR Modelo ARR CC 30 (H / V)



DATOS GENERALES

| | |
|---------------------------------------|--|
| <u>CAUDAL NOMINAL:</u> | 3.000 m³ /h |
| <u>CONTROLADORES:</u> | Element, CO ₂ , Externo Avanz (batería hidráulica) |
| <u>FILTRACIÓN:</u> | Impulsión: F7, F6+F8, F7+F9 Retorno: G4, F5, F6, F7, F8, F9 Presostatos incluidos de serie |
| <u>ACESESORIOS OPCIONALES:</u> | Control Remoto Tejado para intemperie Viseras de impulsión y retorno Transductor de presión |
| <u>MÓDULOS ADICIONALES:</u> | Baterías hidráulicas de frío y calor Batería de expansión directa Lámparas germicidas Módulos fotocatalíticos |



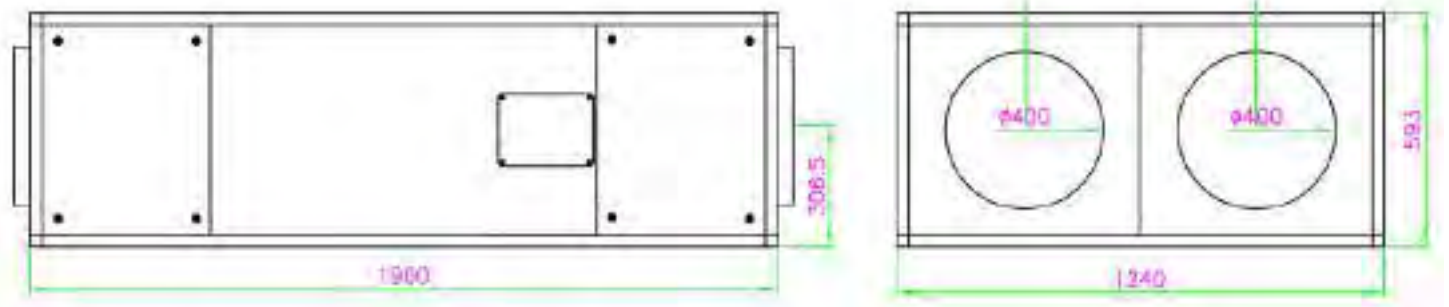
ELEMENTOS CONSTRUCTIVOS

| | |
|---------------------------------|--|
| <u>Estructura:</u> | Aluminio extruido con esquinas de poliamida y paneles laterales registrables |
| <u>Panel:</u> | 25 mm con aislamiento en Lana de Roca de densidad 70 kg/m ³ |
| <u>Acabado Interior:</u> | Chapa galvanizada 0,5 mm |
| <u>Acabado Exterior:</u> | Chapa Prelacada 1 mm, Ral 9010 |
| <u>Medidas (mm):</u> | Largo 1.900 Ancho 1.240 Altura 953 |
| <u>Peso:</u> | 246 Kg |
| <u>Montaje:</u> | Horizontal |

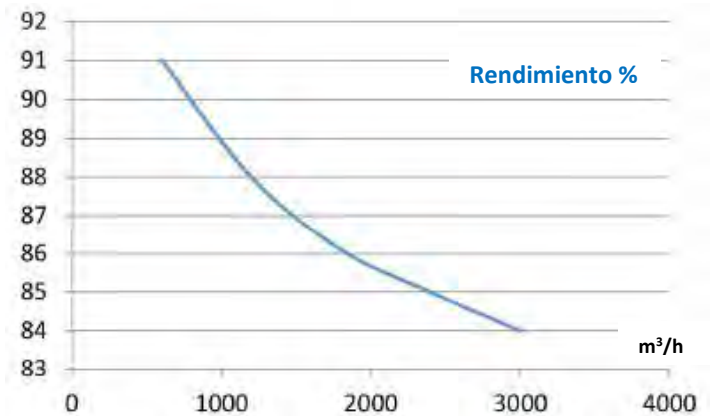
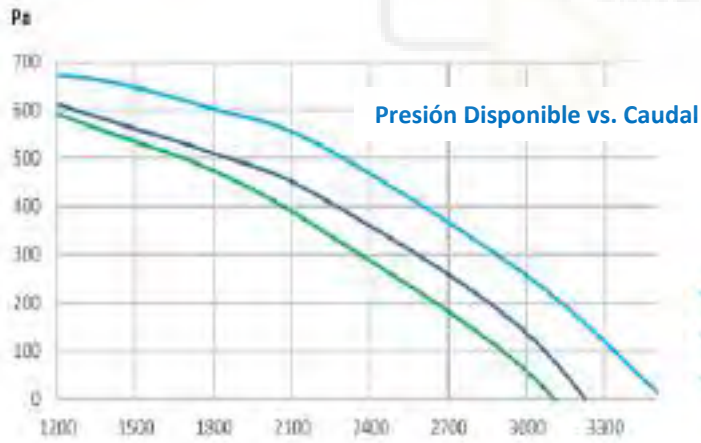
DATOS TÉCNICOS

| VENTILADOR IMPULSIÓN | | | |
|----------------------|----------------------------|---------------------------|-----------------------------|
| <u>Denominación</u> | <u>Potencia</u> | <u>Aliment. Eléctrica</u> | <u>Consumo</u> |
| PLUG-FAN EC | 0,74 kW | 1~ 230 V 50Hz | 3.80 - 2.70 A |
| VENTILADOR RETORNO | | | |
| <u>Denominación</u> | <u>Potencia</u> | <u>Aliment. Eléctrica</u> | <u>Consumo</u> |
| PLUG-FAN EC | 0,74 kW | 1~ 230 V 50Hz | 3.80 - 2.70 A |
| RECUPERADOR DE CALOR | | | |
| <u>Tipo</u> | <u>Potencia Recuperada</u> | <u>Eficiencia Nominal</u> | <u>Observaciones</u> |
| Contraflujos | 22,01 kW | 86,80% | By-Pass motorizado incluido |

DIMENSIONES (mm)



CURVAS DE TRABAJO



NIVELES SONOROS (Potencia Sonora Irradiada – dBA)

| Frecuencia (Hz) | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K | Total |
|---|----|-----|-----|-----|----|----|----|----|----------|
| Pot. Sonora (dBA) | 39 | 41 | 53 | 55 | 60 | 59 | 39 | 30 | 63,7 dBA |
| NPS – Nivel de presión sonora a 1,5 m en descarga libre | | | | | | | | | 49,2 dBA |
| <i>Datos para caudal nominal del recuperador</i> | | | | | | | | | |

DATOS GENERALES

| | |
|---------------------------------------|--|
| <u>CAUDAL NOMINAL:</u> | 3.000 m³ /h |
| <u>CONTROLADORES:</u> | Element, CO ₂ , Externo Avanz (batería hidráulica) |
| <u>FILTRACIÓN:</u> | Impulsión: F7, F6+F8, F7+F9 Retorno: G4, F5, F6, F7, F8, F9 Presostatos incluidos de serie |
| <u>ACESESORIOS OPCIONALES:</u> | Control Remoto Tejado para intemperie Viseras de impulsión y retorno Transductor de presión |
| <u>MÓDULOS ADICIONALES:</u> | Baterías hidráulicas de frío y calor Batería de expansión directa Lámparas germicidas Módulos fotocatalíticos |



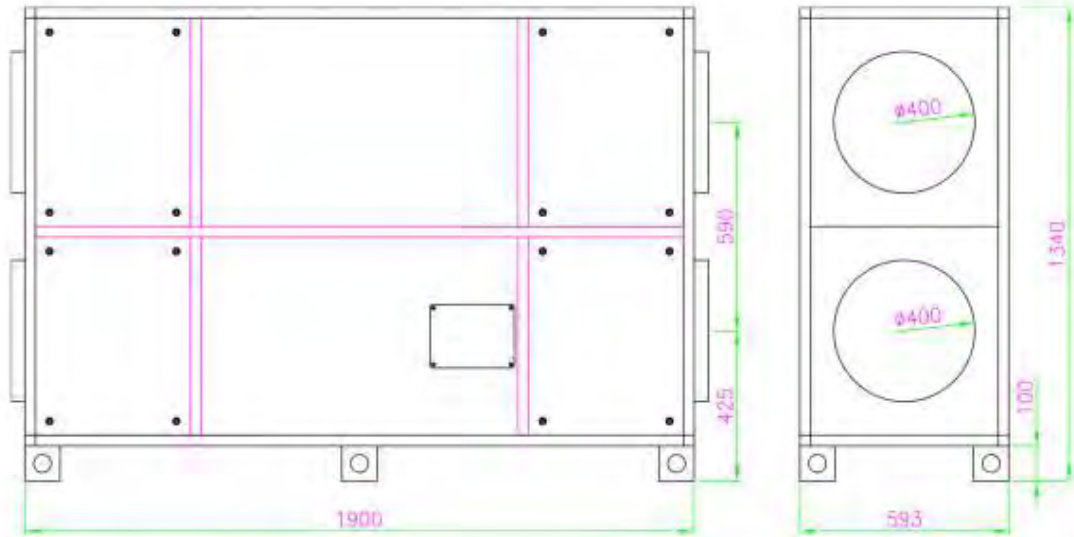
ELEMENTOS CONSTRUCTIVOS

| | | | |
|---------------------------------|--|-----------|--------------|
| <u>Estructura:</u> | Aluminio extruido con esquinas de poliamida y paneles laterales registrables | | |
| <u>Panel:</u> | 25 mm con aislamiento en Lana de Roca de densidad 70 kg/m ³ | | |
| <u>Acabado Interior:</u> | Chapa galvanizada 0,5 mm | | |
| <u>Acabado Exterior:</u> | Chapa Prelacada 1 mm, Ral 9010 | | |
| <u>Medidas (mm):</u> | Largo 1.900 | Ancho 593 | Altura 1.240 |
| <u>Peso:</u> | 246 Kg | | |
| <u>Montaje:</u> | Vertical | | |

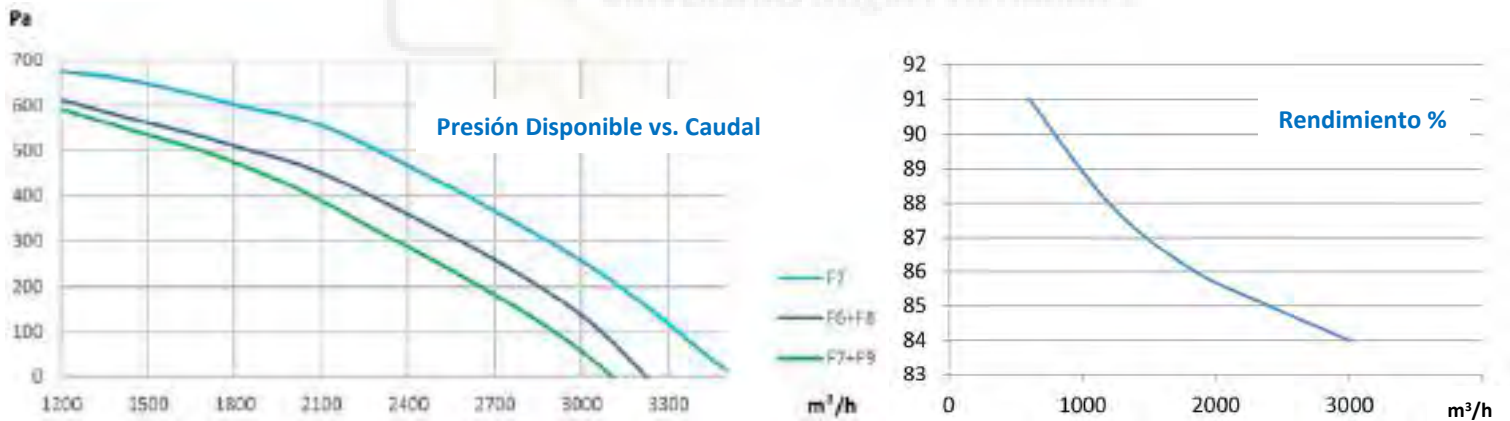
DATOS TÉCNICOS

| VENTILADOR IMPULSIÓN | | | |
|----------------------|----------------------------|---------------------------|-----------------------------|
| <u>Denominación</u> | <u>Potencia</u> | <u>Aliment. Eléctrica</u> | <u>Consumo</u> |
| PLUG-FAN EC | 0,74 kW | 1~ 230 V 50Hz | 3.80 - 2.70 A |
| VENTILADOR RETORNO | | | |
| <u>Denominación</u> | <u>Potencia</u> | <u>Aliment. Eléctrica</u> | <u>Consumo</u> |
| PLUG-FAN EC | 0,74 kW | 1~ 230 V 50Hz | 3.80 - 2.70 A |
| RECUPERADOR DE CALOR | | | |
| <u>Tipo</u> | <u>Potencia Recuperada</u> | <u>Eficiencia Nominal</u> | <u>Observaciones</u> |
| Contraflujos | 22,01 kW | 86,80% | By-Pass motorizado incluido |

DIMENSIONES (mm)



CURVAS DE TRABAJO



NIVELES SONOROS (Potencia Sonora Irradiada – dBA)

| Frecuencia (Hz) | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K | Total |
|--|----|-----|-----|-----|----|----|----|----|----------|
| Pot. Sonora (dBA) | 39 | 41 | 53 | 55 | 60 | 59 | 39 | 30 | 63,7 dBA |
| NPS – Nivel de presión sonora a 1,5 m en descarga libre | | | | | | | | | 49,2 dBA |
| <i>Datos para caudal nominal del recuperador</i> | | | | | | | | | |

Recuperadores de Calor Serie ARR CC



Luanju Climatización Industrial, S.L.
c/ Castaño, 2
28942 Fuenlabrada (Madrid)
www.luanju.com
Tel.: 918 140 657
luanju@luanju.com

CALIDAD



PRECIO



SERVICIO





ANEXO VII. ACS





ANEXO VII. ACS

FICHAS TÉCNICAS



SERVICE MANUAL

[Model Name]

| | | |
|-------------------|-------------------|-------------------|
| EHSD-MED | EHSC-MED | EHSE-MED |
| EHSD-VM2D | EHSC-VM2D | EHSE-YM9ED |
| EHSD-VM6D | EHSC-VM6D | ERSE-MED |
| EHSD-YM9D | EHSC-YM9D | ERSE-YM9ED |
| EHSD-YM9ED | EHSC-YM9ED | EHPX-VM2D |
| EHSD-TM9D | EHSC-TM9D | EHPX-VM6D |
| ERSD-MED | ERSC-MED | EHPX-YM9D |
| ERSD-VM2D | ERSC-VM2D | EHPX-MED |
| ERSD-VM6D | ERSC-VM6D | EHPX-YM9ED |
| ERSD-YM9D | ERSC-YM9D | ERPX-MD |
| | | ERPX-VM2D |
| | | ERPX-VM6D |
| | | ERPX-YM9D |

Revision:

- Cable length in "7. FIELD WIRING" have been modified in REVISED EDITION-F.

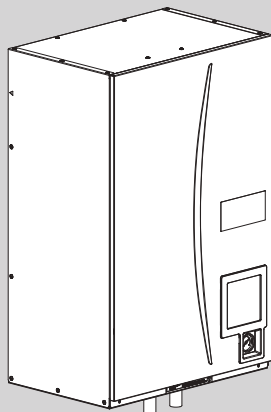
OCH712E is void.

Note:

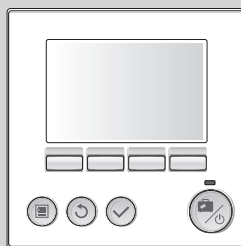
- This manual describes service data of Hydrobox only.

[Service Ref.]

Refer to page 2.



HYDROBOX


 MAIN REMOTE
CONTROLLER

CONTENTS

| | |
|-------------------------------------|----|
| 1. REFERENCE MANUAL | 3 |
| 2. SAFETY PRECAUTION | 4 |
| 3. SPECIFICATIONS | 6 |
| 4. PART NAMES AND FUNCTIONS | 8 |
| 5. OUTLINES AND DIMENSIONS | 9 |
| 6. WIRING DIAGRAM | 11 |
| 7. FIELD WIRING | 17 |
| 8. WATER SYSTEM DIAGRAM | 19 |
| 9. CONTROLS | 22 |
| 10. TROUBLESHOOTING | 43 |
| 11. DISASSEMBLY PROCEDURE | 60 |
| 12. SUPPLEMENTARY INFORMATION | 80 |
| 13. SERVICE AND MAINTENANCE | 81 |

PARTS CATALOG (OCB712)

[Service Ref.]
EHSD-MED.UK
EHSD-VM2D.UK
EHSD-VM6D.UK
EHSD-YM9D.UK
EHSD-YM9ED.UK
EHSD-TM9D.UK
ERSD-MED.UK
ERSD-VM2D.UK
ERSD-VM6D.UK
ERSD-YM9D.UK
EHSC-MED.UK
EHSC-VM2D.UK
EHSC-VM6D.UK
EHSC-YM9D.UK
EHSC-YM9ED.UK
EHSC-TM9D.UK
ERSC-MED.UK
ERSC-VM2D.UK
ERSC-VM6D.UK
ERSC-YM9D.UK
EHSE-MED.UK
EHSE-YM9ED.UK
ERSE-MED.UK
ERSE-YM9ED.UK
EHPX-VM2D.UK
EHPX-VM6D.UK
EHPX-YM9D.UK
EHPX-MED.UK
EHPX-YM9ED.UK
ERPX-MD.UK
ERPX-VM2D.UK
ERPX-VM6D.UK
ERPX-YM9D.UK



OUTDOOR UNIT'S SERVICE MANUAL

| | Service Ref. | Service Manual No. |
|----------------|---|--------------------|
| Split model | SUZ-SWM40VA.TH SUZ-SWM60VA.TH SUZ-SWM80VA.TH | OCH718 OCB718 |
| | PUHZ-FRP71VHA2 PUHZ-FRP71VHA2R1 | OCH665 OCB665 |
| | PUHZ-SW120VHAR5(-BS).UK PUHZ-SW120YHAR5(-BS).UK | OCH533 OCB533 |
| | PUHZ-SHW140YHAR5(-BS).UK | OCH526 OCB526 |
| | PUHZ-SW160YKAR1(-BS).UK PUHZ-SW200YKAR1(-BS).UK | OCH583 OCB583 |
| | PUHZ-SHW230YKA2R2 | OCH594 OCB594 |
| | PUHZ-SHW80VAA(-BS).UK PUHZ-SHW80YAA(-BS).UK PUHZ-SHW112VAA(-BS).UK PUHZ-SHW112YAA(-BS).UK PUHZ-SW75VAA(-BS).UK PUHZ-SW75YAA(-BS).UK PUHZ-SW75VAA-SC.UK PUHZ-SW75YAA-SC.UK PUHZ-SW100VAA(-BS).UK PUHZ-SW100YAA(-BS).UK | OCH651 OCB651 |
| | PUMY-P112VKM4R4(-BS).UK PUMY-P125VKM4R4(-BS).UK PUMY-P140VKM4R4(-BS).UK PUMY-P112YKM4R4(-BS).UK PUMY-P125YKM4R4(-BS).UK PUMY-P140YKM4R4(-BS).UK PUMY-P112YKME4R4(-BS).UK PUMY-P125YKME4R4(-BS).UK PUMY-P140YKME4R4(-BS).UK | OCH673 OCB673 |
| | PUD-SWM60VAA(-BS).UK PUD-SWM80VAA(-BS).UK PUD-SWM80YAA(-BS).UK PUD-SWM100VAA(-BS).UK PUD-SWM100YAA(-BS).UK PUD-SWM120VAA(-BS).UK PUD-SWM120YAA(-BS).UK PUD-SHWM60VAA(-BS).UK PUD-SHWM80VAA(-BS).UK PUD-SHWM80YAA(-BS).UK PUD-SHWM100VAA(-BS).UK PUD-SHWM100YAA(-BS).UK PUD-SHWM120VAA(-BS).UK PUD-SHWM120YAA(-BS).UK PUD-SHWM140YAA(-BS).UK | OCH694 OCB694 |
| | PXZ-4F75VG-E(T)1 PXZ-5F85VG-E(T)1 | OBH923 OBB923 |
| Packaged model | PUZ-WM50VHA(-BS).UK PUZ-WM60VAA(-BS).UK PUZ-WM85VAA(-BS).UK PUZ-WM85YAA(-BS).UK PUZ-WM112VAA(-BS).UK PUZ-WM112YAA(-BS).UK | OCH727 OCB727 |
| | PUZ-HWM140VHA(-BS) PUZ-HWM140YHA(-BS) | OCH748 OCB748 |

Please read the following safety precautions carefully.





⚠ WARNING:
Precautions that must be observed to prevent injuries or death.

⚠ CAUTION:
Precautions that must be observed to prevent damage to unit.

Mitsubishi Electric is not responsible for the failure of locally-supplied parts.

- Be sure to perform periodical maintenance.
- Be sure to follow your local regulations.
- Be sure to follow the instructions provided in this manual.

MEANINGS OF SYMBOLS DISPLAYED ON THE UNIT

| | | |
|---|----------------------------------|---|
|  | WARNING (Risk of fire) | This mark is for R32 refrigerant only. Refrigerant type is written on nameplate of outdoor unit. In case that refrigerant type is R32, this unit uses a flammable refrigerant. If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire. |
|  | | Read the OPERATION MANUAL carefully before operation. |
|  | | Service personnel are required to carefully read the OPERATION MANUAL and INSTALLATION MANUAL before operation. |
|  | | Further information is available in the OPERATION MANUAL, INSTALLATION MANUAL, and the like. |

⚠ ⚠ WARNING

Mechanical

- The hydrobox and outdoor units must not be installed, disassembled, relocated, altered or repaired by the user. Ask an authorised installer or technician. If the unit is installed improperly or modified after installation by the user water leakage, electric shock or fire may result.
- The outdoor unit should be securely fixed to a hard level surface capable of bearing its weight.
- The hydrobox should be positioned on a hard vertical surface capable of supporting its filled weight to prevent excessive sound or vibration.
- Do not position furniture or electrical appliances below the outdoor unit or hydrobox.
- The discharge pipework from the emergency/safety devices of the hydrobox should be installed according to local law.
- Only use accessories and replacement parts authorised by Mitsubishi Electric ask a qualified technician to fit the parts.

Electrical

- All electrical work should be performed by a qualified technician according to local regulations and the instructions given in this manual.
- The units must be powered by a dedicated power supply and the correct voltage and circuit breakers must be used.
- Wiring should be in accordance with national wiring regulations. Connections must be made securely and without tension on the terminals.
- Earth unit correctly.
- Discharge the condenser before the work involving the electric parts.

General

- Keep children and pets away from both the hydrobox and outdoor units.
- Do not use the hot water produced by the heat pump directly for drinking or cooking. This could cause illness to the user.
- Do not stand on the units.
- Do not touch switches with wet hands.
- Annual maintenance checks on both the hydrobox and the outdoor unit should be conducted by a qualified person.
- Do not place containers with liquids on top of the hydrobox. If they leak or spill onto the hydrobox damage to the unit and/or fire could occur.
- Do not place any heavy items on top of the hydrobox.
- When installing, relocating, or servicing the hydrobox, use only the heat pump's specified refrigerant to charge the refrigerant lines. Do not mix it with any other refrigerant and do not allow air to remain in the lines. If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards.
- The use of any refrigerant other than that specified for the system will cause mechanical failure or system malfunction or unit breakdown. In the worst case, this could lead to a serious impediment to securing product safety.
- In heating mode, to avoid the heat emitters being damaged by excessively hot water, set the target flow temperature to a minimum of 2°C below the maximum allowable temperature of all the heat emitters. For Zone2, set the target flow temperature to a minimum of 5°C below the maximum allowable flow temperature of all the heat emitters in Zone2 circuit.
- Do not install the unit where combustible gases may leak, be produced, flow, or accumulate. If combustible gas accumulates around the unit, fire or explosion may result.
- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odour.
- Pipe-work shall be protected from physical damage.
- The installation of pipe-work shall be kept to a minimum.
- Compliance with national gas regulations shall be observed.
- Keep any required ventilation openings clear of obstruction.
- Do not use low temperature solder alloy in the case of brazing the refrigerant pipes.

⚠ CAUTION

| |
|---|
| Use clean water that meets local quality standards on the primary circuit. |
| The outdoor unit should be installed in an area with sufficient airflow according to the diagrams in the outdoor unit installation manual. |
| The hydrobox should be located inside to minimise heat loss. |
| Water pipe-runs on the primary circuit between outdoor and indoor unit should be kept to a minimum to reduce heat loss. |
| Ensure condensate from outdoor unit is piped away from the base to avoid puddles of water. |
| Remove as much air as possible from water circuit. |
| Refrigerant leakage may cause suffocation. Provide ventilation in accordance with EN378-1. |
| Be sure to wrap insulation around the piping. Direct contact with the bare piping may result in burns or frostbite. |
| Never put batteries in your mouth for any reason to avoid accidental ingestion. |
| Battery ingestion may cause choking and/or poisoning. |
| Install the unit on a rigid structure to prevent excessive sound or vibration during operation. |
| If power to the hydrobox is to be turned off (or system switched off) for a long time, the water should be drained. |
| Preventative measures should be taken against water hammer, such as installing a Water Hammer Arrestor on the primary water circuit, as directed by the manufacturer. |
| In order to prevent condensation on emitters, adjust flow temperature appropriately and also set the lower limit of the flow temperature on site. |

As for the handling of refrigerant, refer to the outdoor unit installation manual.

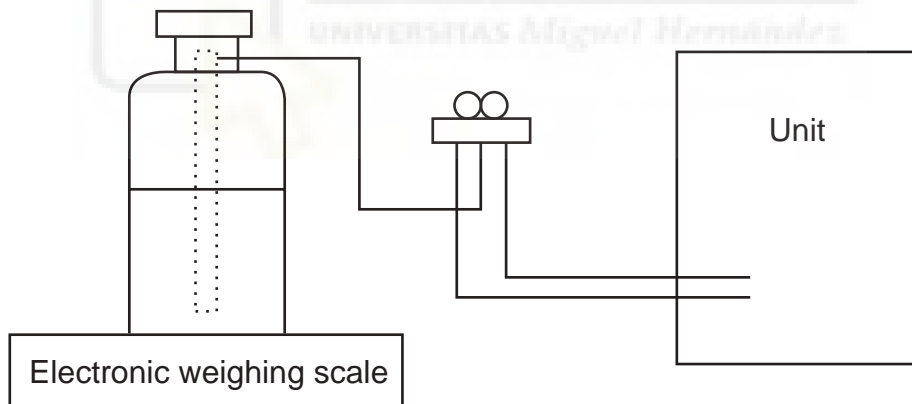
[1] Cautions for service

- (1) Perform service after recovering the refrigerant left in unit completely.
- (2) Do not release refrigerant in the air.
- (3) After completing service, charge the cycle with specified amount of refrigerant.
- (4) If moisture or foreign matter might have entered the refrigerant piping during service, ensure to remove them.

[2] Additional refrigerant charge

When charging directly from refrigerant cylinder

- (1) Check that cylinder for R410A or R32 on the market is syphon type.
- (2) Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)



[3] Service tools

Use the service tools below as exclusive tools for R410A or R32 refrigerant.

| No. | Tool name | Specifications |
|-----|--------------------------------|--|
| 1 | Gauge manifold | · R410A or R32 |
| | | · Use the existing fitting specifications. (UNF1/2) |
| | | · Use high-tension side pressure of 5.3 MPa-G or over. |
| 2 | Charge hose | · R410A or R32 |
| | | · Use pressure performance of 5.09 MPa-G or over. |
| 3 | Electronic weighing scale | — |
| 4 | Gas leak detector | · Use the detector for R134a, R407C, R410A or R32 |
| 5 | Adaptor for reverse flow check | · Attach on vacuum pump. |
| 6 | Refrigerant charge base | — |
| 7 | Refrigerant cylinder | · R410A or R32 |
| | | · Top of cylinder (Pink) · Cylinder with syphon |
| 8 | Refrigerant recovery equipment | — |

| Model name | EHSD-MED | EHSD-VM2D | EHSD-VM6D | EHSD-VM9D | EHSD-MED | ERSD-VM2D | ERSD-VM6D | ERSD-VM9D | EHSD-MED | EHSD-VM2D | EHSD-VM6D | EHSD-VM9D | EHSC-MED | EHSC-VM2D | EHSC-VM6D | ERSC-MED | ERSC-VM2D | ERSC-VM6D | ERSC-VM9D |
|--|---|------------------|------------------|------------------|----------|------------------|------------------|------------------|----------|------------------|------------------|------------------|------------------|------------------|------------------|----------|------------------|------------------|------------------|
| Overall unit dimensions (Height x Width x Depth) | | | | | | | | | | | | | | | | | | | |
| Weight (empty) | 36 kg | 43 kg | 44 kg | 44 kg | 38 kg | 44 kg | 43 kg | 44 kg | 44 kg | 38 kg | 44 kg | 44 kg | 48 kg | 47 kg | 48 kg | 41 kg | 48 kg | 48 kg | 48 kg |
| Weight (full) | 38 kg | 48 kg | 49 kg | 49 kg | 39 kg | 50 kg | 49 kg | 50 kg | 50 kg | 42 kg | 53 kg | 54 kg | 54 kg | 54 kg | 54 kg | 44 kg | 54 kg | 54 kg | 55 kg |
| Water volume of heating circuit in the unit *1 | 1.7 L | 5.2 L | 5.2 L | 5.2 L | 1.7 L | 5.2 L | 5.2 L | 5.2 L | 5.2 L | 2.6 L | 6.1 L | 6.1 L | 6.1 L | 6.1 L | 6.1 L | 2.6 L | 6.1 L | 6.1 L | 6.1 L |
| Unvented expansion vessel(Primary heating) | — | 10 L | — | — | 10 L | — | 10 L | — | — | — | 10 L | — | 10 L | — | — | — | — | — | 10 L |
| Charge pressure | — | 0.1 MPa (1 bar) | — | — | — | 0.1 MPa (1 bar) | — | — | — | — | 0.1 MPa (1 bar) | — | — | 0.1 MPa (1 bar) | — | — | — | — | 0.1 MPa (1 bar) |
| Control thermostat | 80°C | | | | | | | | | | | | | | | | | | |
| Pressure relief valve | 0.3 MPa (3 bar) | | | | | | | | | | | | | | | | | | |
| Flow sensor | Min. flow 5.0 L/min (See table 10.6.1 about water flow rate range) | | | | | | | | | | | | | | | | | | |
| Manual reset thermostat | — | — | 90°C | — | — | — | 90°C | — | — | — | 90°C | — | — | — | — | — | — | — | 90°C |
| Thermal Cut-out (for dry run prevention) | — | — | 121°C | — | — | — | 121°C | — | — | — | 121°C | — | — | — | — | — | — | — | 121°C |
| Water (primary circuit) | 28 mm / Compression | | | | | | | | | | | | | | | | | | |
| Refrigerant (R32/ R410A) | Liquid Gas | | | | | | | | | | | | | | | | | | |
| Flow temperature | Heating Cooling | | | | | | | | | | | | | | | | | | |
| Room temperature | Heating Cooling | | | | | | | | | | | | | | | | | | |
| Ambient *2 | — | | | | | | | | | | | | | | | | | | |
| Outdoor temperature | Heating Cooling | | | | | | | | | | | | | | | | | | |
| Control board (including 3 pumps) | Power supply (Phase, voltage, frequency) Breaker (*when powered from independent source) | | | | | | | | | | | | | | | | | | |
| Booster heater | Power supply (Phase, voltage, frequency) Capacity Current Breaker | | | | | | | | | | | | | | | | | | |
| Electrical data | — | ~N, 230 V, 50 Hz | 3~, 230 V, 50 Hz | 3~, 400 V, 50 Hz | — | ~N, 230 V, 50 Hz | 3~, 400 V, 50 Hz | 3~, 400 V, 50 Hz | — | ~N, 230 V, 50 Hz | 3~, 400 V, 50 Hz | 3~, 400 V, 50 Hz | ~N, 230 V, 50 Hz | 3~, 230 V, 50 Hz | ~N, 230 V, 50 Hz | — | ~N, 230 V, 50 Hz | 3~, 400 V, 50 Hz | 3~, 400 V, 50 Hz |
| Sound power level | 41 dB(A) 40 dB(A) | | | | | | | | | | | | | | | | | | |

< Table 3.1 >

*1 Piping to Expansion vessel is not included in this value.

*2 The environment must be frost-free.

*3 See outdoor unit spec table. (min. 10°C)

Cooling mode is not available in low outdoor temperature.

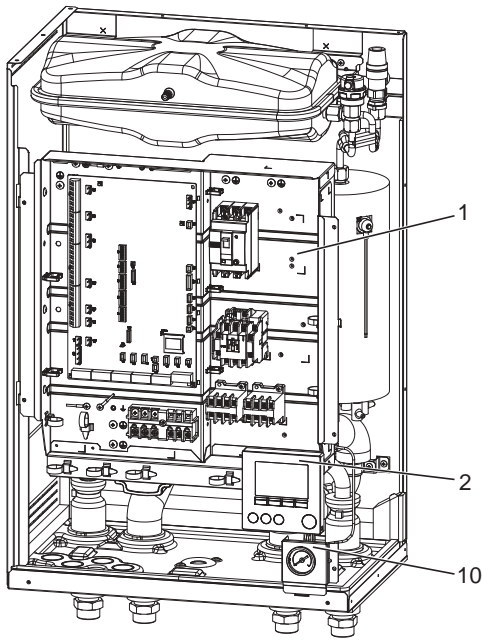
If you use our system in cooling mode at the low ambient temperature (10°C or below), there are some risks of plate heat exchanger damages by frozen water.

| Model name | ERSE-YM9D | ERSE-MED | EHSE-YM9D | EHSE-MED | EHPX-MED | EHPX-VM2D | EHPX-VM6D | EHPX-YM9D | EHPX-MID | ERPX-VM2D | ERPX-VM6D | ERPX-YM9D |
|--|--|----------|------------------|----------|----------|-----------|------------------|------------------|----------|------------------|------------------|------------|
| Overall unit dimensions (Height x Width x Depth) | 800 x 530 x 360 mm | | | | | | | | | | | |
| Weight (empty) | 64 kg | 62 kg | 63 kg | 61 kg | 25 kg | 32 kg | 33 kg | 33 kg | 30 kg | 33 kg | 34 kg | 35 kg |
| Weight (full) | 74 kg | 72 kg | 73 kg | 71 kg | 26 kg | 36 kg | 37 kg | 38 kg | 31 kg | 37 kg | 38 kg | 39 kg |
| Water volume of heating circuit in the unit *1 | 10.0 L | 10.0 L | 10.0 L | 10.0 L | 1.0 L | 4.5 L | 4.5 L | 4.5 L | 1.0 L | 4.5 L | 4.5 L | 4.5 L |
| Unvented expansion vessel(Primary heating) | — | — | — | — | — | — | — | — | — | — | — | — |
| Charge pressure | — | — | — | — | — | — | — | — | — | — | — | — |
| Control thermostat | 0.1 MPa (1 bar) | | | | | | | | | | | |
| Water circuit (Primary) | 80°C | | | | | | | | | | | |
| Pressure relief valve | 0.3 MPa (3 bar) | | | | | | | | | | | |
| Flow sensor | Min. flow 5.0 L/min (See table 10.6.1 about water flow rate range) | | | | | | | | | | | |
| Booster heater | 90°C | — | 90°C | — | — | — | 90°C | — | — | — | 90°C | — |
| Manual reset thermostat | 121°C | — | 121°C | — | — | — | 121°C | — | — | — | 121°C | — |
| Thermal Cut-out (for dry run prevention) | 28 mm / Compression | | | | | | | | | | | |
| Water (primary circuit) | G1-1/2-B | | | | | | | | | | | |
| Refrigerant (R32/R410A) | Ø9.52 mm | | | | | | | | | | | |
| Liquid | — | | | | | | | | | | | |
| Gas | Ø25.4 mm (Brazing) | | | | | | | | | | | |
| Flow temperature | — | | | | | | | | | | | |
| Heating | 20 - 60°C | | | | | | | | | | | |
| Cooling | — | | | | | | | | | | | |
| Room temperature | 10 - 30°C | | | | | | | | | | | |
| Heating | — | | | | | | | | | | | |
| Cooling | 5 - 25°C | | | | | | | | | | | |
| Ambient *2 | 0 - 35°C (≤ 80 %RH) | | | | | | | | | | | |
| Guaranteed operating range | See outdoor unit spec table | | | | | | | | | | | |
| Heating | *3 | | | | | | | | | | | |
| Cooling | *3 | | | | | | | | | | | |
| Power supply (Phase, voltage, frequency) | ~N, 230 V, 50 Hz | | | | | | | | | | | |
| Control board (Including 3 pumps) | 10 A | | | | | | | | | | | |
| Breaker (*when powered from independent source) | — | | | | | | | | | | | |
| Power supply (Phase, voltage, frequency) | 3~, 400 V, 50 Hz | — | 3~, 400 V, 50 Hz | — | — | — | ~N, 230 V, 50 Hz | 3~, 400 V, 50 Hz | — | ~N, 230 V, 50 Hz | 3~, 400 V, 50 Hz | — |
| Capacity | 3 kW +6 kW | — | 3 kW +6 kW | — | — | 2 kW | 2 kW +4 kW | 3 kW +6 kW | — | 2 kW | 2 kW +4 kW | 3 kW +6 kW |
| Current | 13 A | — | 13 A | — | — | 9 A | 26 A | 13 A | — | 9 A | 26 A | 13 A |
| Breaker | 16 A | — | 16 A | — | — | 16 A | 32 A | 16 A | — | 16 A | 32 A | 16 A |
| Sound power level | 45 dB(A) 40 dB(A) | | | | | | | | | | | |

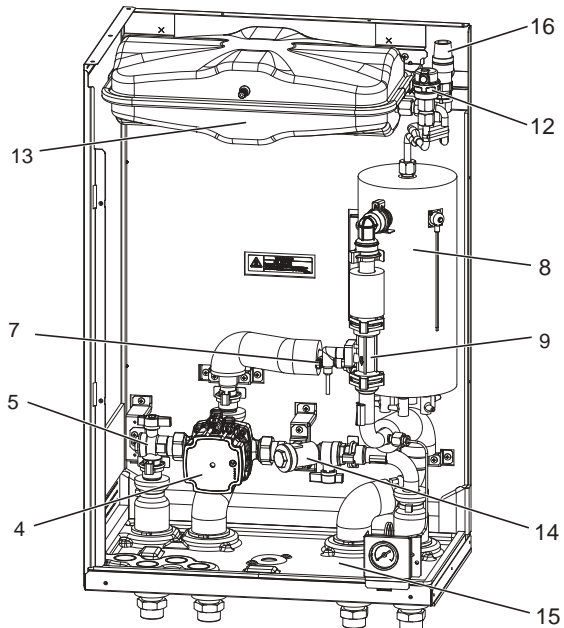
<Table 3.2>

*1 Piping to Expansion vessel is not included in this value.
 *2 The environment must be frost-free.
 *3 See outdoor unit spec table. (min. 10°C)
 Cooling mode is not available in low outdoor temperature.
 If you use our system in cooling mode at the low ambient temperature (10°C or below), there are some risks of plate heat exchanger damages by frozen water.

<E*PX-*M**D> (Packaged model system)

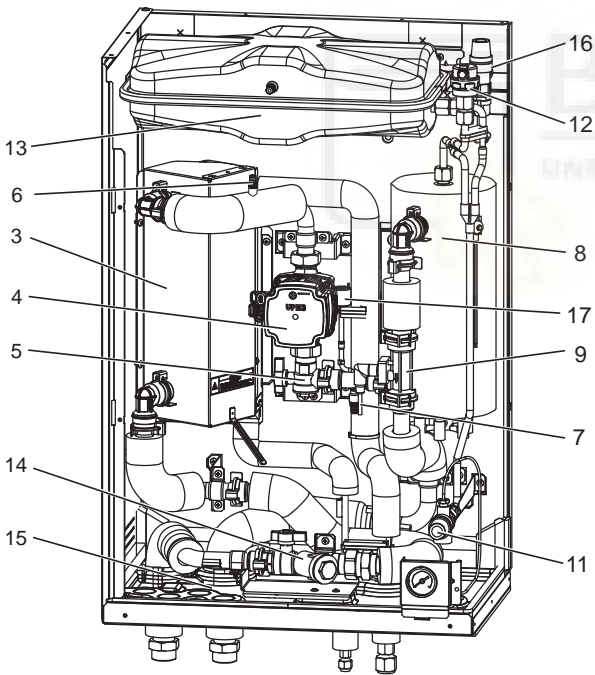


<Figure 4.1>



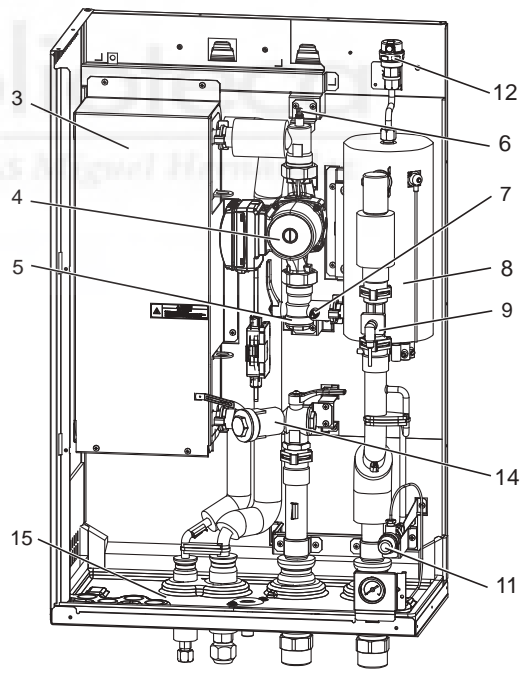
<Figure 4.2>

<E*S*-*M**D> (Split model system)



<Figure 4.3>

<E*SE-*M*ED> (Split model system)



<Figure 4.4>

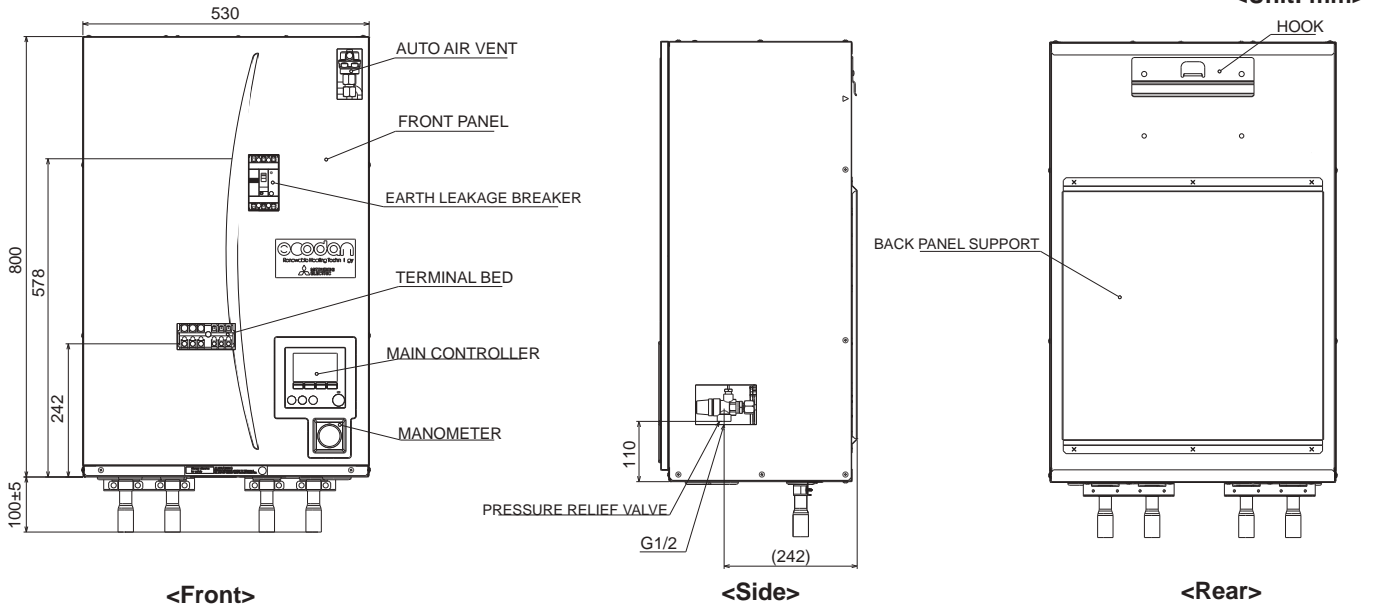
| No. | Part name | EHPX-*M*(E)D | ERPX-MD | ERPX-*M*D | EHS*-MED | EHS*-*M*D | EHS*-YM9ED | ERS*-*M*(E)D | ERS*-MED |
|-----|--|--------------|---------|-----------|----------|-----------|------------|--------------|----------|
| 1 | Control and electrical box | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 2 | Main remote controller | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 3 | Plate heat exchanger (Refrigerant - Water) | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 4 | Water circulation pump 1 | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 5 | Pump valve | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 6 | Air vent (manual) | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 7 | Drain cock (Primary circuit) | ✓ | - | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 8 | Booster heater 1,2 | ✓ | - | ✓ | - | ✓ | ✓ | ✓ | - |
| 9 | Flow sensor | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 10 | Manometer | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 11 | Pressure relief valve (3 bar) | - | - | - | ✓ | ✓ | ✓ | ✓ | ✓ |
| 12 | Automatic air vent | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 13 | Expansion vessel | ✓*1 | ✓ | ✓ | - | ✓ | - | ✓*2 | - |
| 14 | Strainer valve | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 15 | Drain pan | - | ✓ | ✓ | - | - | - | ✓ | ✓ |
| 16 | Pressure relief valve (5 bar) | ✓*1 | ✓ | ✓ | - | ✓ | - | ✓*2 | - |
| 17 | Pressure sensor | - | - | - | ✓*3 | ✓*3 | ✓*3 | ✓*3 | ✓*3 |

<Table 4.1>

Note:
For installation of all E***-*M*ED models, make sure to install a suitably sized primary-side expansion vessel. (See figure 8.1 and 8.2 for further guidance)

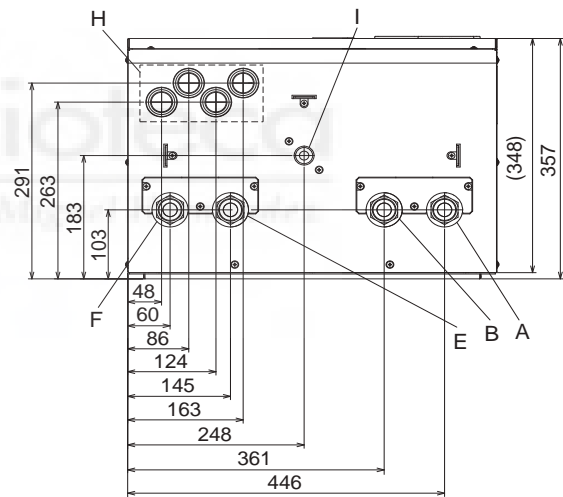
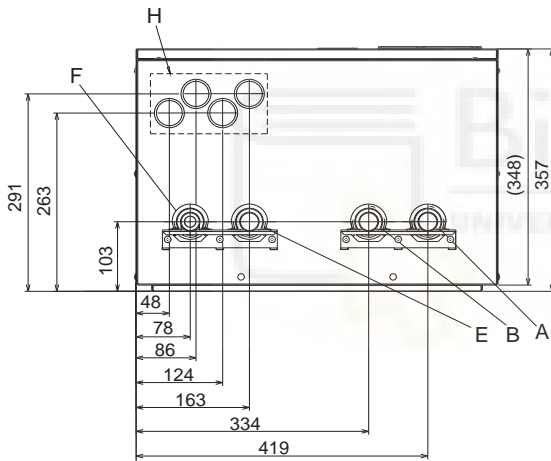
*1 EHPX-YM9ED and EHPX-MED are not included.
*2 ERSE-YM9ED is not included.
*3 Only 2HP (E*SD) model.

5-1. Technical Drawings



<EHPX> (Packaged model system for heating)

<ERPX> (Packaged model system for heating and cooling)



<View from below>

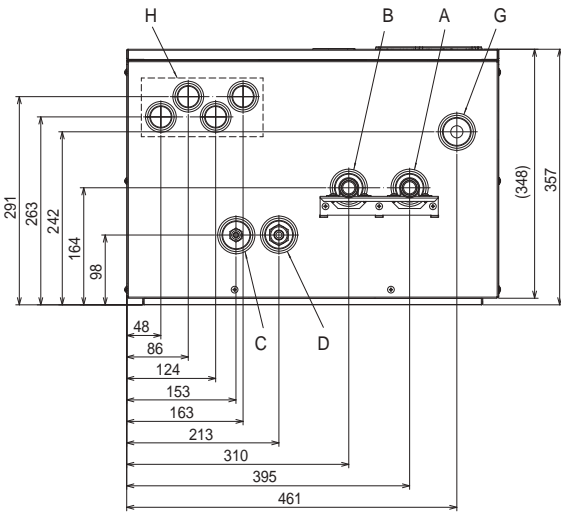
<View from below>

| Letter | Pipe description | Connection size/type |
|--------|---|--|
| A | Space heating/Indirect DHW tank (primary) RETURN connection | 28mm/Compression (EHSD/EHSC/EHPX-*) G1 nut (ERSD/ERSC/ERPX-*) G1-1/2 nut (E*SE-*) |
| B | Space heating/Indirect DHW tank (primary) FLOW connection | 28mm/Compression (EHSD/EHSC/EHPX-*) G1 nut (ERSD/ERSC/ERPX-*) G1-1/2 nut (E*SE-*) |
| C | Refrigerant (Liquid) | 6.35 mm/Flare (E*SD-*) 9.52 mm/Flare (E*SC-*) 9.52 mm/Flare (E*SE-*) |
| D | Refrigerant (Gas) | 12.7 mm/Flare (E*SD-*) 15.88 mm/Flare (E*SC-*) Brazing connection I.D. ø25.4 (E*SE-*) |
| E | Flow connection FROM heat pump | 28 mm/Compression (EHPX-*) G1 nut (ERPX-*) |
| F | Return connection TO heat pump | 28 mm/Compression (EHPX-*) G1 nut (ERPX-*) |
| G | Discharge pipe (by installer) from pressure relief valve | G1/2" female (valve port within hydrobox casing) |
| H | Electrical cable inlets ① ② ③ ④ | For inlets ① and ②, run high-voltage wires including power cable, indoor-outdoor cable, and external output wires. For inlets ③ and ④, run low-voltage wires including external input wires and thermistor wires. For a wireless receiver (option) cable, use inlet ④. |
| I | Drain socket | O.D. ø20 |

<Table 5.1>

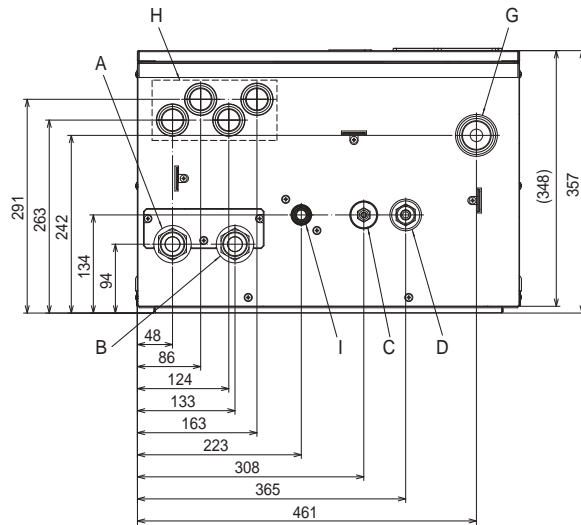
<Unit: mm>

<EHS*> (Split model system for heating)



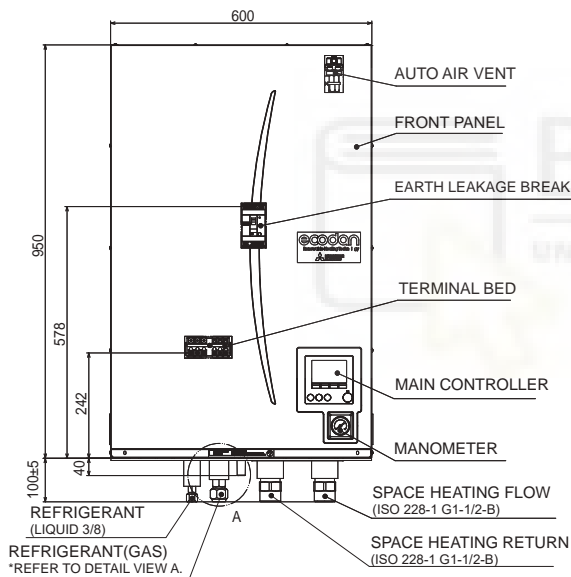
<View from below>

<ERS*> (Split model system for heating and cooling)

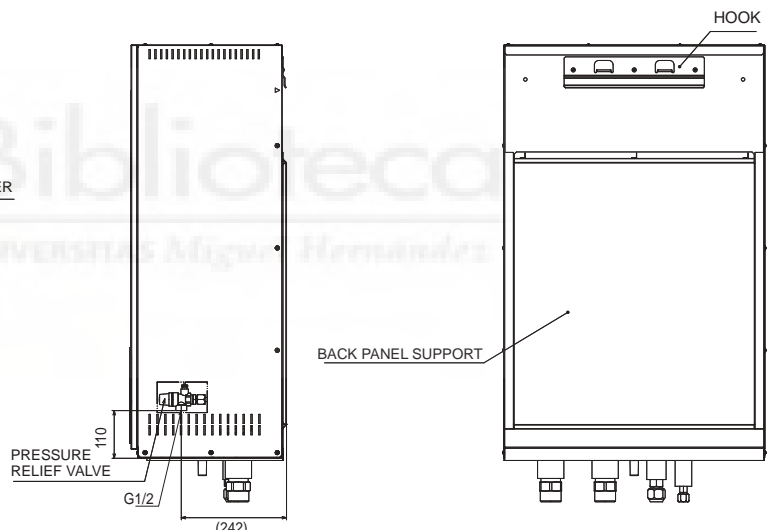


<View from below>

<E*SE> (Split model system for heating/ heating and cooling)

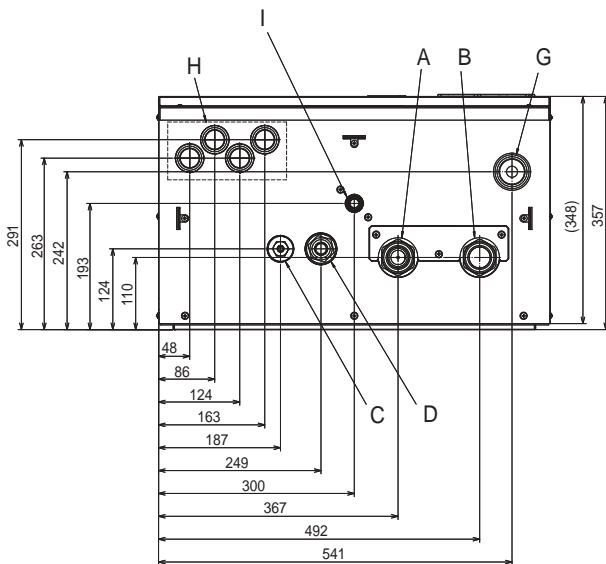


<Front>



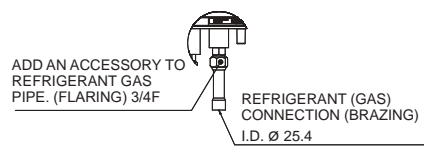
<Side>

<Rear>



<View from below>

DEATIL VIEW A



6-1. EHSD-MED.UK, ERSD-MED.UK, EHSC-MED.UK, ERSC-MED.UK, EHSE-MED.UK, ERSE-MED.UK, EHPX-MED.UK, ERPX-MD.UK

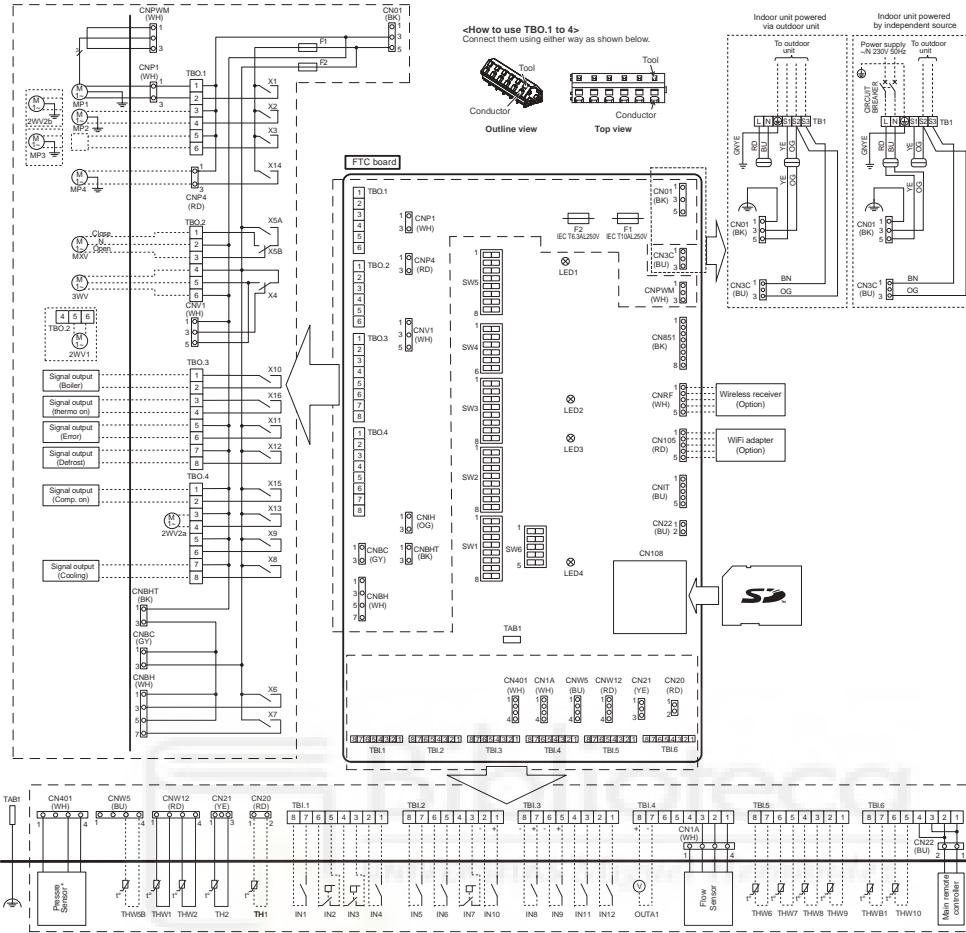


Table 1 Signal Inputs

| Name | Terminal block | Connector | Item | OFF (Open) | ON (Short) |
|------|----------------|-----------|-----------------------------|---|--------------------------------------|
| IN1 | TBL.1 7-8 | — | Room thermostat 1 input *1 | Refer to SW2-1 in <Table 6.6.1 DIP Switch Functions>. | |
| IN2 | TBL.1 5-6 | — | Flow switch 1 input | Refer to SW2-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN3 | TBL.1 3-4 | — | Flow switch 2 input (Zone1) | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN4 | TBL.1 1-2 | — | Demand control input | Normal | Heat source OFF/Boiler operation *3 |
| IN5 | TBL.2 7-8 | — | Outdoor thermostat input *2 | Standard operation | Heater operation/Boiler operation *3 |
| IN6 | TBL.2 5-6 | — | Room thermostat 2 input *1 | Refer to SW3-1 in <Table 6.6.1 DIP Switch Functions>. | |
| IN7 | TBL.2 3-4 | — | Flow switch 3 input (Zone2) | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN8 | TBL.3 7-8 | — | Electric energy meter 1 | Refer to installation manual. | |
| IN9 | TBL.3 5-6 | — | Electric energy meter 2 | | |
| IN10 | TBL.2 1-2 | — | Heat meter | | |
| IN11 | TBL.3 3-4 | — | Smart grid ready input | | |
| IN12 | TBL.3 1-2 | — | Smart grid ready input | | |
| INA1 | TBL.4 1-3 | CN1A | Flow sensor | | |

- *1. Set the ON/OFF cycle time of the room thermostat for 10 minutes or more; otherwise the compressor may be damaged.
- *2. If using outdoor thermostat for controlling operation of heaters, the lifetime of the heaters and related parts may be reduced.
- *3. To turn on the boiler operation, use the main remote controller to select "Boiler" in "External input setting" screen in the service menu.

Table 2 Outputs

| Name | Terminal block | Connector | Item | OFF | ON |
|-------|----------------|-----------|--|---------|---------|
| OUT1 | TBO.1 1-2 | CNP1 | Water circulation pump 1 output (Space heating/cooling & DHW) | OFF | ON |
| OUT2 | TBO.1 3-4 | — | Water circulation pump 2 output (Space heating/cooling for Zone1) | OFF | ON |
| OUT3 | TBO.1 5-6 | — | Water circulation pump 3 output (Space heating/cooling for Zone2) *1 | OFF | ON |
| OUT4 | TBO.2 4-6 | CNV1 | 3-way valve (2-way valve) output | | |
| | | CN851 | 3-way valve output | Heating | DHW |
| OUT5 | TBO.2 1-2 | — | Mixing valve output *1 | Stop | Close |
| OUT6 | TBO.2 2-3 | — | Booster heater 1 output | OFF | ON |
| OUT7 | — | CN813 | Booster heater 2 output | OFF | ON |
| OUT8 | TBO.4 7-8 | CNIH | Cooling signal output | OFF | ON |
| OUT9 | TBO.4 5-6 | CNIH | Immersion heater output | OFF | ON |
| OUT10 | TBO.3 1-2 | — | Boiler output | OFF | ON |
| OUT11 | TBO.3 5-6 | — | Error output | Normal | Error |
| OUT12 | TBO.3 7-8 | — | Defrost output | Normal | Defrost |
| OUT13 | TBO.4 3-4 | — | 2-way valve 2a output *2 | OFF | ON |
| OUT14 | — | CNP4 | Water circulation pump 4 output (DHW) | OFF | ON |
| OUT15 | TBO.4 1-2 | — | Comp. ON signal | OFF | ON |
| OUT16 | TBO.3 3-4 | — | Thermo ON signal | OFF | ON |
| OUTA1 | TBL.4 7-8 | — | Analog output | 0V-10V | |

Do not connect to the terminals that are indicated as "—" in the "Terminal block" field.
 *1. For 2-zone temperature control.
 *2. For 2-zone valve ON/OFF control.

| Symbol | Name |
|----------------------------------|--|
| TB1 | Terminal block -Power supply, Outdoor unit- |
| ECB1 | Earth leakage circuit breaker for booster heater |
| MP1 | Water circulation pump 1(Space heating and DHW) |
| MP2 | Water circulation pump 2 (Space heating for Zone1)(Local supply) |
| MP3 | Water circulation pump 3 (Space heating for Zone2)(Local supply) |
| MP4 | Water circulation pump 4 (DHW)(Local supply) |
| 3WV(2WV1) | 3-way valve (2-way valve 1)(Local supply) |
| 2WV2a | 2-way valve (For Zone 1)(Local supply) |
| 2WV2b | 2-way valve (For Zone 2)(Local supply) |
| MXV | Mixing valve (Local supply) |
| BHT | Thermostat for booster heater |
| BHF | Thermal fuse for booster heater |
| BH1 | Booster heater 1 |
| BH2 | Booster heater 2 |
| BHC1 | Contact for booster heater 1 |
| BHC2 | Contact for booster heater 2 |
| BHCP | Contact for booster heater protection |
| TH1 | Thermistor (Room temp.)(Option) |
| TH2 | Thermistor (Ref. liquid temp.) |
| THW1 | Thermistor (Flow water temp.) |
| THW2 | Thermistor (Return water temp.) |
| THW5B | Thermistor (DHW tank water temp.)(Option) |
| THW6 | Thermistor (Zone1 flow temp.)(Option) |
| THW7 | Thermistor (Zone1 return temp.)(Option) |
| THW8 | Thermistor (Zone2 flow temp.)(Option) |
| THW9 | Thermistor (Zone2 return temp.)(Option) |
| THW10 | Thermistor (Mixing tank temp.)(Option) |
| THWB1 | Thermistor (Boiler flow temp.)(Option) |
| IN1 | Room thermostat 1 (Local supply) |
| IN2 | Flow switch 1 (Local supply) |
| IN3 | Flow switch 2 (Local supply) |
| IN4 | Demand control (Local supply) |
| IN5 | Outdoor thermostat (Local supply) |
| IN6 | Room thermostat 2 (Local supply) |
| IN7 | Flow switch 3 (Local supply) |
| IN8 | Electric energy meter 1 (Local supply) |
| IN9 | Electric energy meter 2 (Local supply) |
| IN10 | Heat meter (Local supply) |
| IN11 | Smart grid ready input (Local supply) |
| IN12 | Flow sensor |
| INA1 | Flow sensor |
| FLOW TEMP. CONTROLLER (FTC) | |
| TBO.1-4 Terminal block -Outputs- | |
| TBL.1-6 | Terminal block -Signal Inputs, Thermistor- |
| F1 | Fuse (IEC T10AL250V) |
| F2 | Fuse (IEC T6.3AL250V) |
| SW1-6 | DIP switch *See Table 6.6.1 |
| X1-16 | Relay |
| LED1 | Power supply (FTC) |
| LED2 | Power supply (Main remote controller) |
| LED3 | Communication (FTC-Outdoor unit) |
| LED4 | Reading or writing data to SD card |
| CNPWM | Pump speed control signal for MP1 |
| CN108 | SD card connector |

6-2. EHSD-VM2D.UK, ERSD-VM2D.UK, EHSC-VM2D.UK, ERSC-VM2D.UK, EHPX-VM2D.UK, ERPX-VM2D.UK

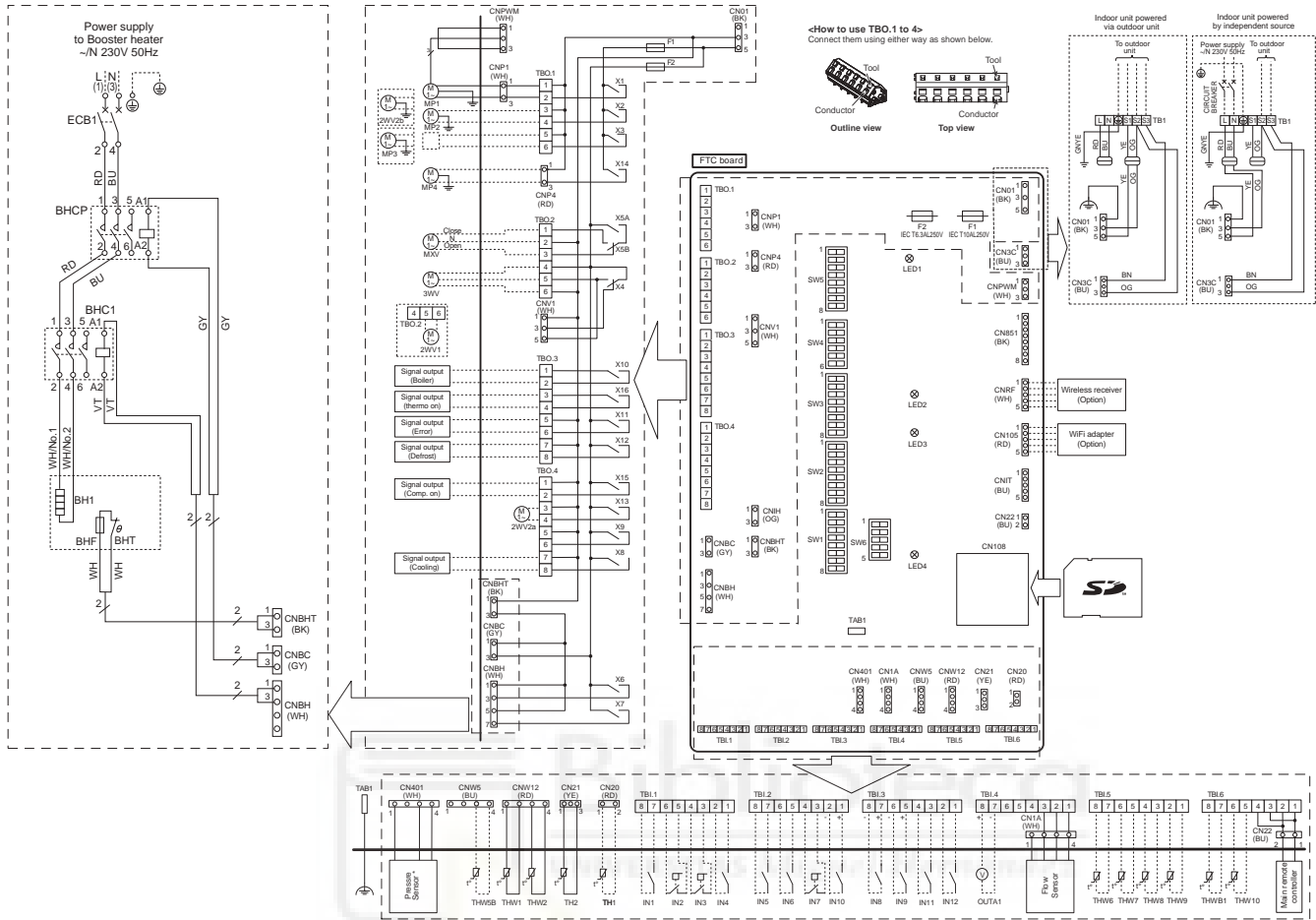


Table 1 Signal Inputs

| Name | Terminal block | Connector | Item | OFF (Open) | ON (Short) |
|------|----------------|-----------|-----------------------------|---|---|
| IN1 | TB1.1 7-8 | — | Room thermostat 1 input *1 | Refer to SW2-1 in <Table 6.6.1 DIP Switch Functions>. | Refer to SW2-2 in <Table 6.6.1 DIP Switch Functions>. |
| IN2 | TB1.1 5-6 | — | Flow switch 1 input | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. | Refer to SW3-3 in <Table 6.6.1 DIP Switch Functions>. |
| IN3 | TB1.1 3-4 | — | Flow switch 2 input (Zone1) | Refer to SW3-1 in <Table 6.6.1 DIP Switch Functions>. | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. |
| IN4 | TB1.1 1-2 | — | Demand control input | Normal | Heat sources OFF/Boiler operation *3 |
| IN5 | TB1.2 7-8 | — | Outdoor thermostat input *2 | Standard operation | Heater operation/Boiler operation *3 |
| IN6 | TB1.2 5-6 | — | Room thermostat 2 input *1 | Refer to SW3-1 in <Table 6.6.1 DIP Switch Functions>. | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. |
| IN7 | TB1.2 3-4 | — | Flow switch 3 input (Zone2) | Refer to SW3-1 in <Table 6.6.1 DIP Switch Functions>. | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. |
| IN8 | TB1.3 7-8 | — | Electric energy meter 1 | Refer to installation manual. | |
| IN9 | TB1.3 5-6 | — | Electric energy meter 2 | | |
| IN10 | TB1.2 1-2 | — | Heat meter | | |
| IN11 | TB1.3 3-4 | — | Smart grid ready input | | |
| IN12 | TB1.3 1-2 | — | Smart grid ready input | | |
| INA1 | TB1.4 1-3 | CN1A | Flow sensor | | |

- *1. Set the ON/OFF cycle time of the room thermostat for 10 minutes or more; otherwise the compressor may be damaged.
- *2. If using outdoor thermostat for controlling operation of heaters, the lifetime of the heaters and related parts may be reduced.
- *3. To turn on the boiler operation, use the main remote controller to select "Boiler" in "External input setting" screen in the service menu.

Table 2 Outputs

| Name | Terminal block | Connector | Item | OFF | ON |
|-------|----------------|-----------|--|---------|---------|
| OUT1 | TBO.1 1-1 2 | CNP1 | Water circulation pump 1 output (Space heating/cooling & DHW) | OFF | ON |
| OUT2 | TBO.1 1-3 4 | — | Water circulation pump 2 output (Space heating/cooling for Zone1) | OFF | ON |
| OUT3 | TBO.1 1-5 6 | — | Water circulation pump 3 output (Space heating/cooling for Zone2) *1 2-way valve 2b output *2 | OFF | ON |
| OUT4 | TBO.2 4-6 | CNV1 | 3-way valve (2-way valve) output | Heating | DHW |
| OUT5 | TBO.2 1-2 | CN85 | 3-way valve output | Stop | Close |
| OUT6 | — | CN81-3 | Booster heater 1 output | OFF | ON |
| OUT7 | — | CN81-7 | Booster heater 2 output | OFF | ON |
| OUT8 | TBO.4 7-8 | — | Cooling signal output | OFF | ON |
| OUT9 | TBO.4 5-6 | CNIH | Immersion heater output | OFF | ON |
| OUT10 | TBO.3 1-2 | — | Boiler output | OFF | ON |
| OUT11 | TBO.3 5-6 | — | Error output | Normal | Error |
| OUT12 | TBO.3 7-8 | — | Defrost output | Normal | Defrost |
| OUT13 | TBO.4 3-4 | — | 2-way valve 2a output *2 | OFF | ON |
| OUT14 | — | CNP4 | Water circulation pump 4 output (DHW) | OFF | ON |
| OUT15 | TBO.4 1-2 | — | Comp. ON signal | OFF | ON |
| OUT16 | TBO.3 3-4 | — | Thermo ON signal | OFF | ON |
| OUTA1 | TB1.4 7-8 | — | Analog output | 0V-10V | |

Do not connect to the terminals that are indicated as "—" in the "Terminal block" field.
*1. For 2-zone temperature control.
*2. For 2-zone valve CN/OFF control.

| Symbol | Name |
|------------------------------------|--|
| TB1 | Terminal block «Power supply, Outdoor unit» |
| ECB1 | Earth leakage circuit breaker for booster heater |
| MP1 | Water circulation pump 1 (Space heating and DHW) |
| MP2 | Water circulation pump 2 (Space heating for Zone1)(Local supply) |
| MP3 | Water circulation pump 3 (Space heating for Zone2)(Local supply) |
| MP4 | Water circulation pump 4 (DHW)(Local supply) |
| 3WV(2WV1) | 3-way valve (2-way valve 1)(Local supply) |
| 2WV2a | 2-way valve (For Zone 1)(Local supply) |
| 2WV2b | 2-way valve (For Zone 2)(Local supply) |
| MXV | Mixing valve (Local supply) |
| BHT | Thermostat for booster heater |
| BHF | Thermal fuse for booster heater |
| BH1 | Booster heater 1 |
| BHC1 | Contact for booster heater 1 |
| BHCP | Contact for booster heater protection |
| TH1 | Thermistor (Room temp.)(Option) |
| TH2 | Thermistor (Ref. liquid temp.) |
| THW1 | Thermistor (Flow water temp.) |
| THW2 | Thermistor (Return water temp.) |
| THW5B | Thermistor (DHW tank water temp.)(Option) |
| THW6 | Thermistor (Zone1 flow temp.)(Option) |
| THW7 | Thermistor (Zone1 return temp.)(Option) |
| THW8 | Thermistor (Zone2 flow temp.)(Option) |
| THW9 | Thermistor (Zone2 return temp.)(Option) |
| THW10 | Thermistor (Mixing tank temp.)(Option) |
| THWB1 | Thermistor (Boiler flow temp.)(Option) |
| IN1 | Room thermostat 1 (Local supply) |
| IN2 | Flow switch 1 (Local supply) |
| IN3 | Flow switch 2 (Local supply) |
| IN4 | Demand control (Local supply) |
| IN5 | Outdoor thermostat (Local supply) |
| IN6 | Room thermostat 2 (Local supply) |
| IN7 | Flow switch 3 (Local supply) |
| IN8 | Electric energy meter 1 (Local supply) |
| IN9 | Electric energy meter 2 (Local supply) |
| IN10 | Heat meter (Local supply) |
| IN11 | Smart grid ready input (Local supply) |
| INA1 | Flow sensor |
| FLOW TEMP. CONTROLLER (FTC) | |
| TBO.1-4 | Terminal block «Outputs» |
| TB1.1-6 | Terminal block «Signal Inputs, Thermistor» |
| F1 | Fuse (IEC T10AL250V) |
| F2 | Fuse (IEC T6.3AL250V) |
| SW1-6 | DIP switch *See Table 6.6.1 |
| X1-16 | Relay |
| LED1 | Power supply (FTC) |
| LED2 | Power supply (Main remote controller) |
| LED3 | Communication (FTC-Outdoor unit) |
| LED4 | Reading or writing data to SD card |
| CNPWM | Pump speed control signal for MP1 |
| CN108 | SD card connector |

6-3. EHSD-VM6D.UK, ERSD-VM6D.UK, EHSC-VM6D.UK, ERSC-VM6D.UK, EHPX-VM6D.UK, ERPX-VM6D.UK

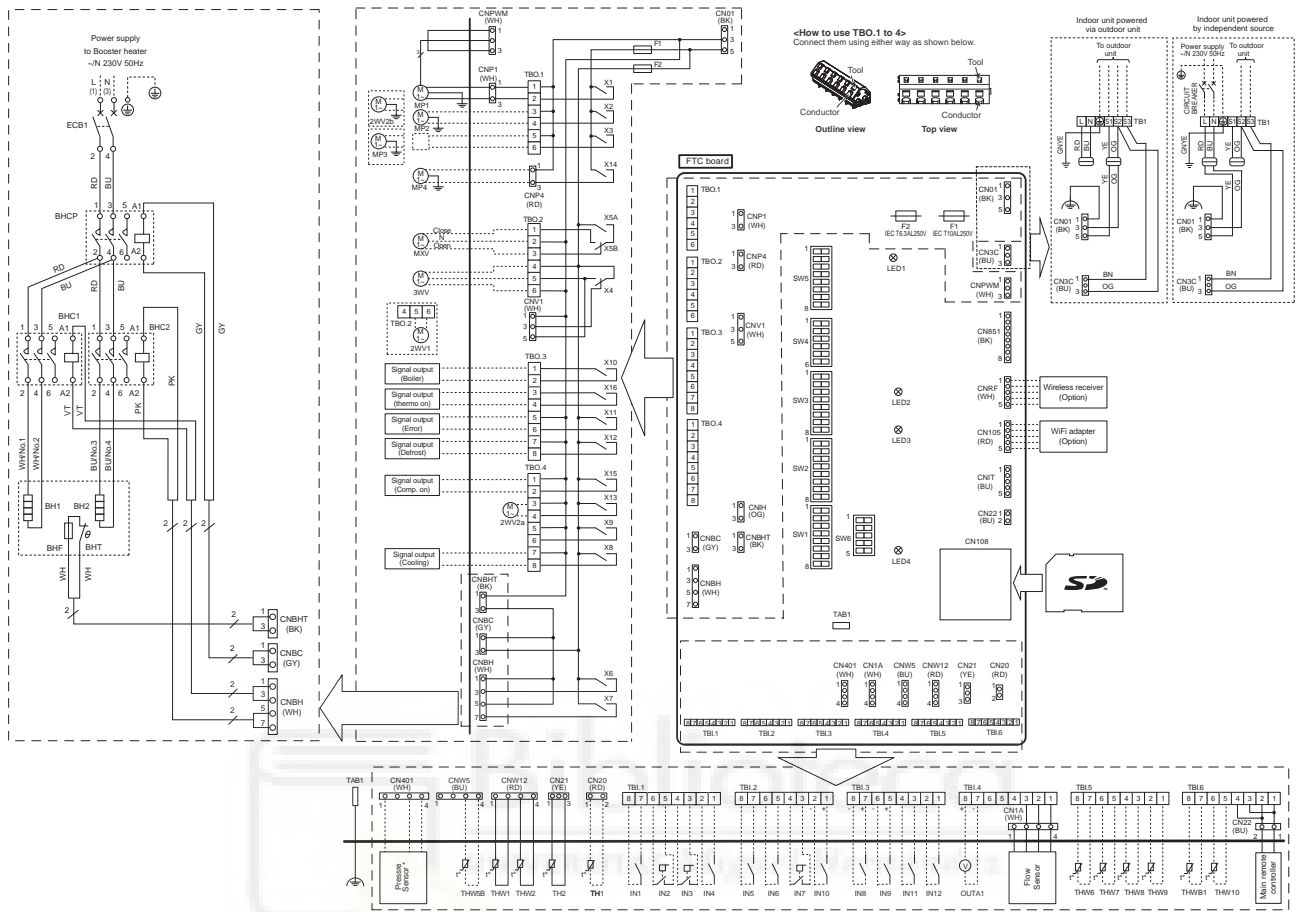


Table 1 Signal Inputs

| Name | Terminal block | Connector | Item | OFF (Open) | ON (Short) |
|------|----------------|-----------|-----------------------------|--|--------------------------------------|
| IN1 | TBL.1 7-8 | — | Room thermostat 1 input *1 | Refer to SW2-1 in <Table 6.6.1 DIP Switch Functions> | |
| IN2 | TBL.1 5-6 | — | Flow switch 1 input | Refer to SW2-2 in <Table 6.6.1 DIP Switch Functions> | |
| IN3 | TBL.1 3-4 | — | Flow switch 2 input (Zone1) | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions> | |
| IN4 | TBL.1 1-2 | — | Demand control input | Normal | Heat source OFF/Boiler operation *3 |
| IN5 | TBL.2 7-8 | — | Outdoor thermostat input *2 | Standard operation | Heater operation/Boiler operation *3 |
| IN6 | TBL.2 5-6 | — | Room thermostat 2 input *1 | Refer to SW3-1 in <Table 6.6.1 DIP Switch Functions> | |
| IN7 | TBL.2 3-4 | — | Flow switch 3 input (Zone2) | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions> | |
| IN8 | TBL.3 7-8 | — | Electric energy meter 1 | | |
| IN9 | TBL.3 5-6 | — | Electric energy meter 2 | | |
| IN10 | TBL.2 1-2 | — | Heat meter | | |
| IN11 | TBL.3 3-4 | — | Smart grid ready input | Refer to installation manual. | |
| IN12 | TBL.3 1-2 | — | Smart grid ready input | | |
| INA1 | TBL.4 1-3 | CN1A | Flow sensor | | |

- *1. Set the ON/OFF cycle time of the room thermostat for 10 minutes or more; otherwise the compressor may be damaged.
- *2. If using outdoor thermostat for controlling operation of heaters, the lifetime of the heaters and related parts may be reduced.
- *3. To turn on the boiler operation, use the main remote controller to select "Boiler" in "External input setting" screen in the service menu.

Table 2 Outputs

| Name | Terminal block | Connector | Item | OFF | ON |
|-------|----------------|-----------|--|--------|---------|
| OUT1 | TBO.1 1-2 | CNP1 | Water circulation pump 1 output (Space heating/cooling & DHW) | OFF | ON |
| OUT2 | TBO.1 3-4 | — | Water circulation pump 2 output (Space heating/cooling for Zone1) | OFF | ON |
| OUT3 | TBO.1 5-6 | — | Water circulation pump 3 output (Space heating/cooling for Zone2) *1 | OFF | ON |
| OUT4 | TBO.2 4-6 | CNV1 | 3-way valve (2-way valve) output | | |
| | | CN851 | 3-way valve output | | |
| OUT5 | TBO.2 1-2 | — | Mixing valve output *1 | Stop | Close |
| | TBO.2 2-3 | — | Mixing valve output *1 | Open | Open |
| OUT6 | — | CNBH13 | Booster heater 1 output | OFF | ON |
| OUT7 | — | CNBH5 | Booster heater 2 output | OFF | ON |
| OUT8 | TBO.4 7-8 | — | Cooling signal output | OFF | ON |
| OUT9 | TBO.4 5-6 | CNIH | Immersion heater output | OFF | ON |
| OUT10 | TBO.3 1-2 | — | Boiler output | OFF | ON |
| OUT11 | TBO.3 5-6 | — | Error output | Normal | Error |
| OUT12 | TBO.3 7-8 | — | Defrost output | Normal | Defrost |
| OUT13 | TBO.4 3-4 | — | 2-way valve 2a output *2 | OFF | ON |
| OUT14 | — | CNP4 | Water circulation pump 4 output (DHW) | OFF | ON |
| OUT15 | TBO.4 1-2 | — | Comp. ON signal | OFF | ON |
| OUT16 | TBO.3 3-4 | — | Thermo ON signal | OFF | ON |
| OUTA1 | TBL.4 7-8 | — | Analog output | 0V-10V | |

Do not connect to the terminals that are indicated as "—" in the "Terminal block" field.
 *1. For 2-zone temperature control.
 *2. For 2-zone valve ON/OFF control.

| Symbol | Name |
|------------------------------------|--|
| TB1 | Terminal block <Power supply, Outdoor unit> |
| ECB1 | Earth leakage circuit breaker for booster heater |
| MP1 | Water circulation pump 1(Space heating and DHW) |
| MP2 | Water circulation pump 2 (Space heating for Zone1)(Local supply) |
| MP3 | Water circulation pump 3 (Space heating for Zone2)(Local supply) |
| MP4 | Water circulation pump 4 (DHW)(Local supply) |
| 3W(2W)1 | 3-way valve (2-way valve 1)(Local supply) |
| 2WV2a | 2-way valve (For Zone 1)(Local supply) |
| 2WV2b | 2-way valve (For Zone 2)(Local supply) |
| MXV | Mixing valve (Local supply) |
| BHT | Thermostat for booster heater |
| BHF | Thermal fuse for booster heater |
| BH1 | Booster heater 1 |
| BH2 | Booster heater 2 |
| BHC1 | Contact for booster heater 1 |
| BHC2 | Contact for booster heater 2 |
| BHCP | Contact for booster heater protection |
| TH1 | Thermistor (Room temp.)(Option) |
| TH2 | Thermistor (Ref. liquid temp.) |
| THW1 | Thermistor (Flow water temp.) |
| THW2 | Thermistor (Return water temp.) |
| THW5B | Thermistor (DHW tank water temp.)(Option) |
| THW6 | Thermistor (Zone1 flow temp.)(Option) |
| THW7 | Thermistor (Zone1 return temp.)(Option) |
| THW8 | Thermistor (Zone2 flow temp.)(Option) |
| THW9 | Thermistor (Zone2 return temp.)(Option) |
| THW10 | Thermistor (Mixing tank temp.)(Option) |
| THWB1 | Thermistor (Boiler flow temp.)(Option) |
| IN1 | Room thermostat 1 (Local supply) |
| IN2 | Flow switch 1 (Local supply) |
| IN3 | Flow switch 2 (Local supply) |
| IN4 | Demand control (Local supply) |
| IN5 | Outdoor thermostat (Local supply) |
| IN6 | Room thermostat 2 (Local supply) |
| IN7 | Flow switch 3 (Local supply) |
| IN8 | Electric energy meter 1 (Local supply) |
| IN9 | Electric energy meter 2 (Local supply) |
| IN10 | Heat meter (Local supply) |
| IN11 | Smart grid ready input (Local supply) |
| IN12 | Smart grid ready input (Local supply) |
| INA1 | Flow sensor |
| FLOW TEMP. CONTROLLER (FTC) | |
| TBO.1-4 | Terminal block <Outputs> |
| TBL.1-6 | Terminal block <Signal Inputs, Thermistor> |
| F1 | Fuse (EC T10AL250V) |
| F2 | Fuse (EC T6.3AL250V) |
| SW1-6 | DIP switch *See Table 6.6.1 |
| X1-16 | Relay |
| LED1 | Power supply (FTC) |
| LED2 | Power supply (Main remote controller) |
| LED3 | Communication (FTC-Outdoor unit) |
| LED4 | Reading or writing data to SD card |
| CNPWM | Pump speed control signal for MP1 |
| CN108 | SD card connector |

6-4. EHSD-YM9D.UK, EHSD-YM9ED.UK, ERSD-YM9D.UK, EHSC-YM9D.UK, EHSC-YM9ED.UK, ERSC-YM9D.UK, EHSE-YM9ED.UK, ERSE-YM9ED.UK, EHPX-YM9D.UK, EHPX-YM9ED.UK, ERPX-YM9D.UK

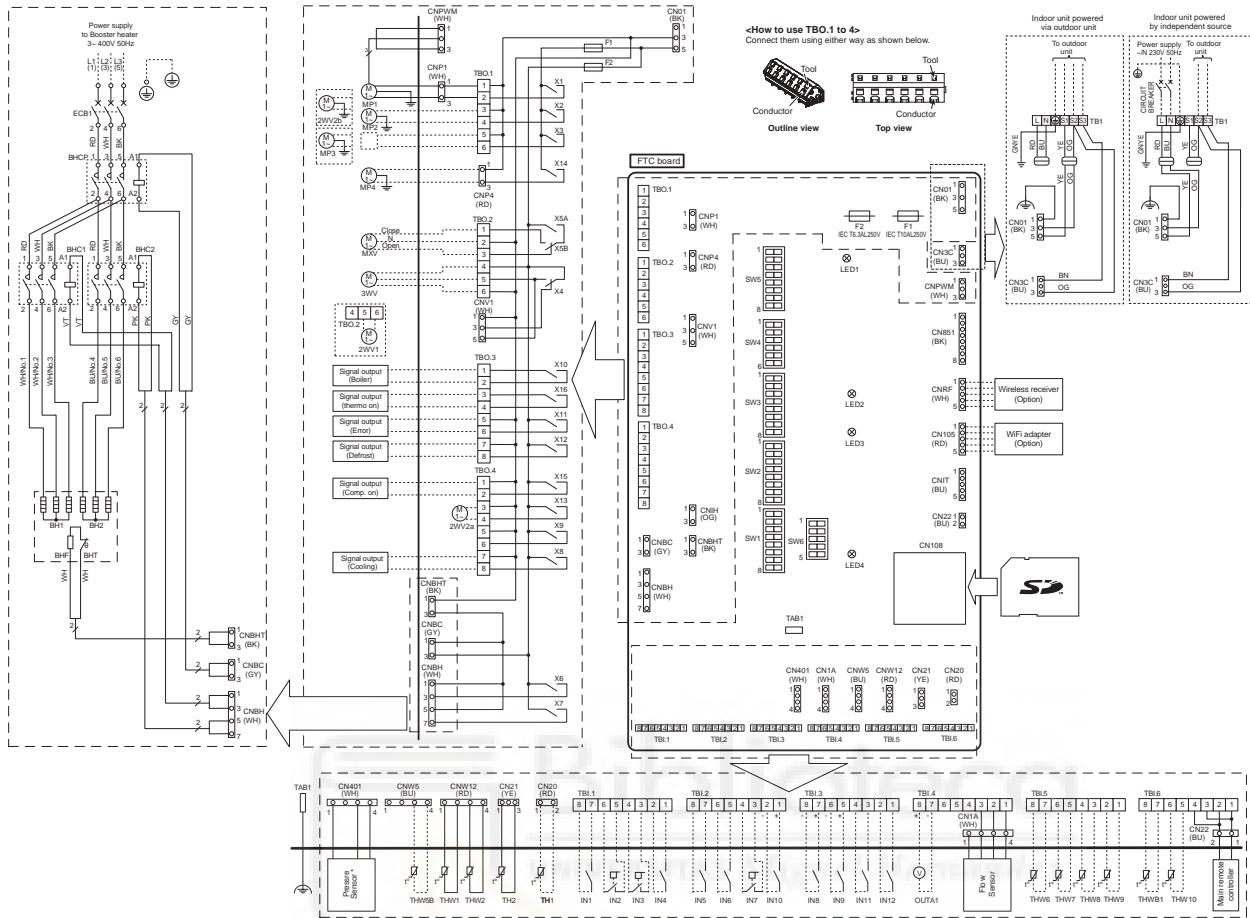


Table 1 Signal Inputs

| Name | Terminal block | Connector | Item | OFF (Open) | ON (Short) |
|------|----------------|-----------|-----------------------------|---|--------------------------------------|
| IN1 | TBI.1 7-8 | — | Room thermostat 1 input *1 | Refer to SW2-1 in <Table 6.6.1 DIP Switch Functions>. | |
| IN2 | TBI.1 5-6 | — | Flow switch 1 input | Refer to SW2-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN3 | TBI.1 3-4 | — | Flow switch 2 input (Zone1) | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN4 | TBI.1 1-2 | — | Demand control input | Normal | Heat source OFF/Boiler operation *3 |
| IN5 | TBI.2 7-8 | — | Outdoor thermostat input *2 | Standard operation | Heater operation/Boiler operation *3 |
| IN6 | TBI.2 5-6 | — | Room thermostat 2 input *1 | Refer to SW3-1 in <Table 6.6.1 DIP Switch Functions>. | |
| IN7 | TBI.2 3-4 | — | Flow switch 3 input (Zone2) | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN8 | TBI.3 7-8 | — | Electric energy meter 1 | | |
| IN9 | TBI.3 5-6 | — | Electric energy meter 2 | | |
| IN10 | TBI.2 1-2 | — | Heat meter | | |
| IN11 | TBI.3 3-4 | — | Smart grid ready input | Refer to installation manual. | |
| IN12 | TBI.3 1-2 | — | Flow sensor | | |
| IN1 | TBI.4 1-3 | CN1A | Flow sensor | | |

- *1. Set the ON/OFF cycle time of the room thermostat for 10 minutes or more; otherwise the compressor may be damaged.
- *2. If using outdoor thermostat for controlling operation of heaters, the lifetime of the heaters and related parts may be reduced.
- *3. To turn on the boiler operation, use the main remote controller to select "Boiler" in "External input setting" screen in the service menu.

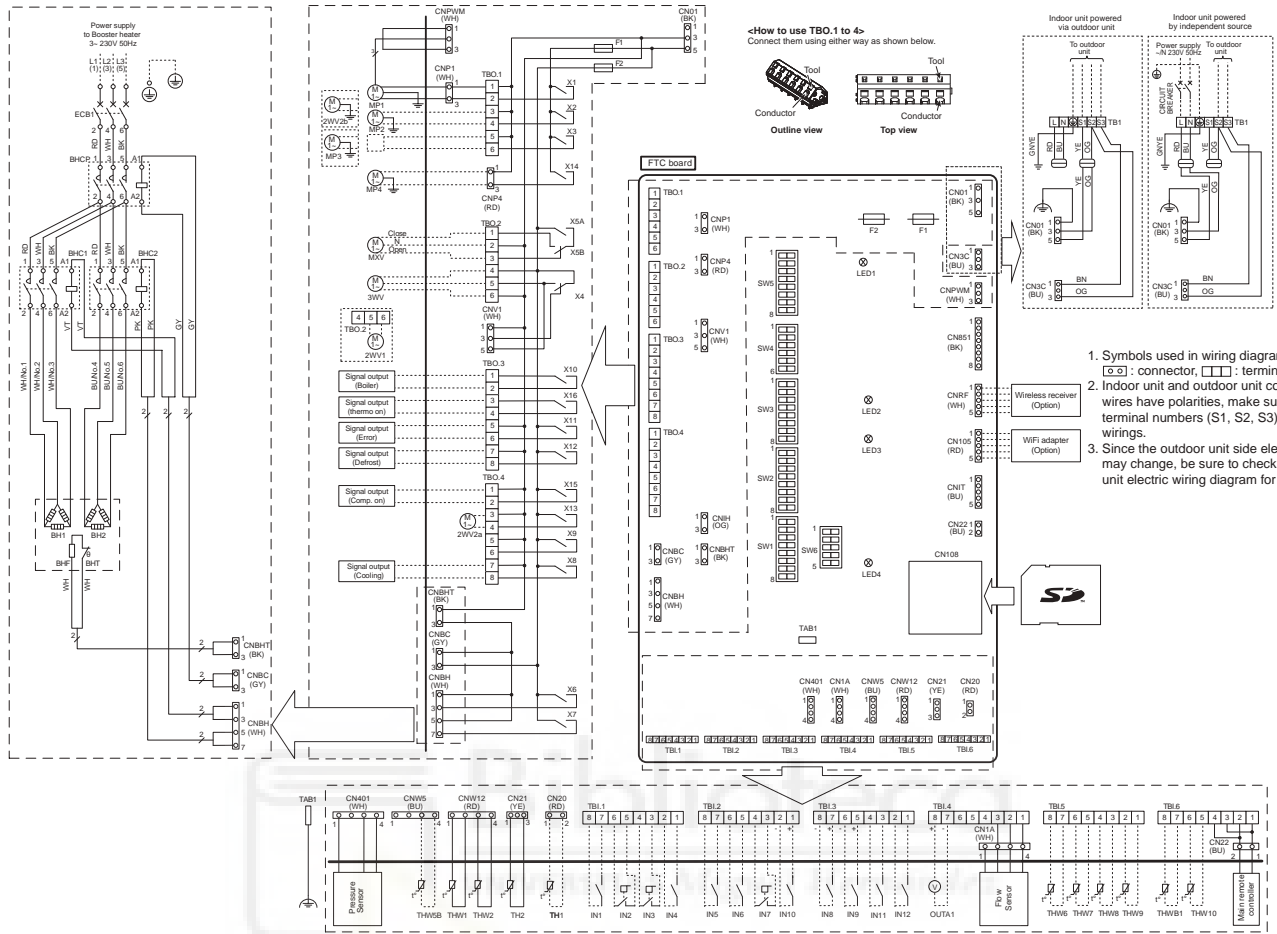
Table 2 Outputs

| Name | Terminal block | Connector | Item | OFF | ON |
|-------|----------------|-----------|--|---------|---------|
| OUT1 | TBO.1 1-2 | CNP1 | Water circulation pump 1 output (Space heating/cooling & DHW) | OFF | ON |
| OUT2 | TBO.1 3-4 | — | Water circulation pump 2 output (Space heating/cooling for Zone1) | OFF | ON |
| OUT3 | TBO.1 5-6 | — | Water circulation pump 3 output (Space heating/cooling for Zone2) *1 | OFF | ON |
| OUT4 | TBO.2 4-6 | CNV1 | 3-way valve (2-way valve) output | Heating | DHW |
| | | CN851 | 3-way valve output | | |
| OUT5 | TBO.2 1-2 | — | Mixing valve output *1 | Stop | Close |
| OUT6 | TBO.2 2-3 | — | Booster heater 1 output | OFF | Open |
| OUT7 | — | QBH13 | Booster heater 2 output | OFF | ON |
| | | QBH57 | Booster heater 2 output | OFF | ON |
| OUT8 | TBO.4 7-8 | — | Cooling signal output | OFF | ON |
| OUT9 | TBO.4 5-6 | CNIH | Immersion heater output | OFF | ON |
| OUT10 | TBO.3 1-2 | — | Boiler output | OFF | ON |
| OUT11 | TBO.3 5-6 | — | Error output | Normal | Error |
| OUT12 | TBO.3 7-8 | — | Defrost output | Normal | Defrost |
| OUT13 | TBO.4 3-4 | — | 2-way valve 2a output *2 | OFF | ON |
| OUT14 | — | CNP4 | Water circulation pump 4 output (DHW) | OFF | ON |
| OUT15 | TBO.4 1-2 | — | Comp. ON signal | OFF | ON |
| OUT16 | TBO.3 3-4 | — | Thermo ON signal | OFF | ON |
| OUTA1 | TBI.4 7-8 | — | Analog output | 0V-10V | |

Do not connect to the terminals that are indicated as "—" in the "Terminal block" field.
 *1. For 2-zone temperature control.
 *2. For 2-zone valve ON/OFF control.

| Symbol | Name |
|-----------------------------|--|
| TBI | Terminal block -Power supply, Outdoor unit- |
| ECB1 | Earth leakage circuit breaker for booster heater |
| MP1 | Water circulation pump 1(Space heating and DHW) |
| MP2 | Water circulation pump 2 (Space heating for Zone1)(Local supply) |
| MP3 | Water circulation pump 3 (Space heating for Zone2)(Local supply) |
| MP4 | Water circulation pump 4 (DHW)(Local supply) |
| SW1(2WV1) | 3-way valve (2-way valve 1)(Local supply) |
| 2WV2a | 2-way valve (For Zone 1)(Local supply) |
| 2WV2b | 2-way valve (For Zone 2)(Local supply) |
| MXV | Mixing valve (Local supply) |
| BHT | Thermostat for booster heater |
| BHF | Thermal fuse for booster heater |
| BH1 | Booster heater 1 |
| BH2 | Booster heater 2 |
| BHC1 | Contactor for booster heater 1 |
| BHC2 | Contactor for booster heater 2 |
| BHCP | Contactor for booster heater protection |
| TH1 | Thermistor (Room temp.)(Option) |
| TH2 | Thermistor (Ref. liquid temp.) |
| THW1 | Thermistor (Flow water temp.) |
| THW2 | Thermistor (Return water temp.) |
| THW5B | Thermistor (DHW tank water temp.)(Option) |
| THW6 | Thermistor (Zone1 flow temp.)(Option) |
| THW7 | Thermistor (Zone1 return temp.)(Option) |
| THW8 | Thermistor (Zone2 flow temp.)(Option) |
| THW9 | Thermistor (Zone2 return temp.)(Option) |
| THW10 | Thermistor (Mixing tank temp.)(Option) |
| THWB1 | Thermistor (Boiler flow temp.)(Option) |
| IN1 | Room thermostat 1 (Local supply) |
| IN2 | Flow switch 1 (Local supply) |
| IN3 | Flow switch 2 (Local supply) |
| IN4 | Demand control (Local supply) |
| IN5 | Outdoor thermostat (Local supply) |
| IN6 | Room thermostat 2 (Local supply) |
| IN7 | Flow switch 3 (Local supply) |
| IN8 | Electric energy meter 1 (Local supply) |
| IN9 | Electric energy meter 2 (Local supply) |
| IN10 | Heat meter (Local supply) |
| IN11 | Smart grid ready input (Local supply) |
| IN12 | Smart grid ready input (Local supply) |
| IN1 | Flow sensor |
| FLOW TEMP. CONTROLLER (FTC) | |
| TBO.1-4 | Terminal block -Outputs- |
| TBI.1-6 | Terminal block -Signal Inputs, Thermistor- |
| F1 | Fuse (IEC T10AL250V) |
| F2 | Fuse (IEC T6.3AL250V) |
| SW1-6 | DIP switch *See Table 6.6.1 |
| X1-16 | Relay |
| LED1 | Power supply (FTC) |
| LED2 | Power supply (Main remote controller) |
| LED3 | Communication (FTC-Outdoor unit) |
| LED4 | Reading or writing data to SD card |
| CNPWM | Pump speed control signal for MP1 |
| CN108 | SD card connector |

6-5. EHSD-TM9D.UK, EHSC-TM9D.UK



1. Symbols used in wiring diagram are, : connector, : terminal block.
2. Indoor unit and outdoor unit connecting wires have polarities, make sure to match terminal numbers (S1, S2, S3) for correct wirings.
3. Since the outdoor unit side electric wiring may change, be sure to check the outdoor unit electric wiring diagram for service.

Table 1 Signal Inputs

| Name | Terminal block | Connector | Item | OFF (Open) | ON (Short) |
|------|----------------|-----------|-----------------------------|---|---|
| IN1 | TBL.1 7-8 | — | Room thermostat 1 input *1 | Refer to SW2-1 in <Table 6.6.1 DIP Switch Functions>. | |
| IN2 | TBL.1 5-6 | — | Flow switch 1 input | Refer to SW2-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN3 | TBL.1 3-4 | — | Flow switch 2 input (Zone1) | Refer to SW2-3 in <Table 6.6.1 DIP Switch Functions>. | |
| IN4 | TBL.1 1-2 | — | Demand control input | Normal | Heat source OFF/Boiler operation *3 |
| IN5 | TBL.2 7-8 | — | Outdoor thermostat input *2 | Standard operation | Heater operation *3/Boiler operation *3 |
| IN6 | TBL.2 5-6 | — | Room thermostat 2 input *1 | Refer to SW3-1 in <Table 6.6.1 DIP Switch Functions>. | |
| IN7 | TBL.2 3-4 | — | Flow switch 3 input (Zone2) | Refer to SW3-2 in <Table 6.6.1 DIP Switch Functions>. | |
| IN8 | TBL.3 7-8 | — | Electric energy meter 1 | | |
| IN9 | TBL.3 5-6 | — | Electric energy meter 2 | | |
| IN10 | TBL.2 1-2 | — | Heat meter | Refer to installation manual. | |
| IN11 | TBL.3 3-4 | — | Smart grid ready input | | |
| IN12 | TBL.3 1-2 | — | Flow sensor | | |
| IN1A | TBL.4 1-3 | CN1A | Flow sensor | | |

1. Set the ON/OFF cycle time of the room thermostat for 10 minutes or more; otherwise the compressor may be damaged.
2. If using outdoor thermostat for controlling operation of heaters, the lifetime of the heaters and related parts may be reduced.
3. To turn on the boiler operation, use the main remote controller to select "Boiler" in "External input setting" screen in the service menu.

Table 2 Outputs

| Name | Terminal block | Connector | Item | OFF | ON |
|-------|----------------|-----------|--|---------|------------|
| OUT1 | TBO.1 1-2 | CNP1 | Water circulation pump 1 output (Space heating/cooling & DHW) | OFF | ON |
| OUT2 | TBO.1 3-4 | — | Water circulation pump 2 output (Space heating/cooling for Zone1) | OFF | ON |
| OUT3 | TBO.1 5-6 | — | Water circulation pump 3 output (Space heating/cooling for Zone2) *1 | OFF | ON |
| OUT4 | TBO.2 4-6 | CNV1 | 3-way valve (2-way valve) output | Heating | DHW |
| OUT5 | TBO.2 1-2 | CNB5 | 3-way valve output | | |
| OUT6 | TBO.2 2-3 | — | Mixing valve output *1 | Stop | Close Open |
| OUT7 | — | CNB1:3 | Booster heater 1 output | OFF | ON |
| OUT8 | — | CNB1:5 | Booster heater 2 output | OFF | ON |
| OUT9 | TBO.4 7-8 | — | Cooling signal output | OFF | ON |
| OUT10 | TBO.4 5-6 | CNIH | Immersion heater output | OFF | ON |
| OUT11 | TBO.3 1-2 | — | Boiler output | OFF | ON |
| OUT12 | TBO.3 5-6 | — | Error output | Normal | Error |
| OUT13 | TBO.3 7-8 | — | Defrost output | Normal | Defrost |
| OUT14 | TBO.4 3-4 | — | 2-way valve 2a output *2 | OFF | ON |
| OUT15 | — | CNP4 | Water circulation pump 4 output (DHW) | OFF | ON |
| OUT16 | TBO.4 1-2 | — | Comp. ON signal | OFF | ON |
| OUT17 | TBO.3 3-4 | — | Thermo ON signal | OFF | ON |
| OUT1A | TBL.4 7-8 | — | Analog output | 0V-10V | |

Do not connect to the terminals that are indicated as "—" in the "Terminal block" field.
 *1. For 2-zone temperature control.
 *2. For 2-zone valve ON/OFF control.

| Symbol | Name |
|-----------------------------|--|
| TB1 | Terminal block <Power supply, Outdoor unit> |
| ECB1 | Earth leakage circuit breaker for booster heater |
| MP1 | Water circulation pump 1(Space heating & DHW) |
| MP2 | Water circulation pump 2 (Space heating for Zone1)(Local supply) |
| MP3 | Water circulation pump 3 (Space heating for Zone2)(Local supply) |
| MP4 | Water circulation pump 4 (DHW)(Local supply) |
| 3W/2W1 | 3-way valve (2-way valve 1)(Local supply) |
| 2W/2a | 2-way valve (For Zone 1)(Local supply) |
| 2W/2b | 2-way valve (For Zone 2)(Local supply) |
| MXV | Mixing valve (Local supply) |
| BHT | Thermostat for booster heater |
| BHF | Thermal fuse for booster heater |
| BH1 | Booster heater 1 |
| BH2 | Booster heater 2 |
| BHC1 | Contact for booster heater 1 |
| BHC2 | Contact for booster heater 2 |
| BHCP | Contact for booster heater protection |
| TH1 | Thermistor (Room temp.)(Option) |
| TH2 | Thermistor (Ref. liquid temp.) |
| THW1 | Thermistor (Flow water temp.) |
| THW2 | Thermistor (Return water temp.) |
| THW5B | Thermistor (DHW tank water temp.)(Option) |
| THW6 | Thermistor (Zone1 flow temp.)(Option) |
| THW7 | Thermistor (Zone1 return temp.)(Option) |
| THW8 | Thermistor (Zone2 flow temp.)(Option) |
| THW9 | Thermistor (Zone2 return temp.)(Option) |
| THW10 | Thermistor (Mixing tank temp.)(Option) |
| THWB1 | Thermistor (Boiler flow temp.)(Option) |
| IN1 | Room thermostat 1 (Local supply) |
| IN2 | Flow switch 1 (Local supply) |
| IN3 | Flow switch 2 (Local supply) |
| IN4 | Demand control (Local supply) |
| IN5 | Outdoor thermostat (Local supply) |
| IN6 | Room thermostat 2 (Local supply) |
| IN7 | Flow switch 3 (Local supply) |
| IN8 | Electric energy meter 1 (Local supply) |
| IN9 | Electric energy meter 2 (Local supply) |
| IN10 | Heat meter (Local supply) |
| IN11 | Smart grid ready input (Local supply) |
| IN12 | Flow sensor |
| IN1A | Flow sensor |
| FLOW TEMP. CONTROLLER (FTC) | |
| TBO.1-4 | Terminal block <Outputs> |
| TBL.1-6 | Terminal block <Signal Inputs, Thermistor> |
| F1 | Fuse (IEC T10AL250V) |
| F2 | Fuse (IEC T6.3AL250V) |
| SW1-6 | DIP switch *See Table 6.6.1 |
| X1-16 | Relay |
| LED1 | Power supply (FTC) |
| LED2 | Power supply (Main remote controller) |
| LED3 | Communication (FTC-Outdoor unit) |
| LED4 | Reading or writing data to SD card |
| CNPWM | Pump speed control signal for MP1 |
| CN108 | SD card connector |

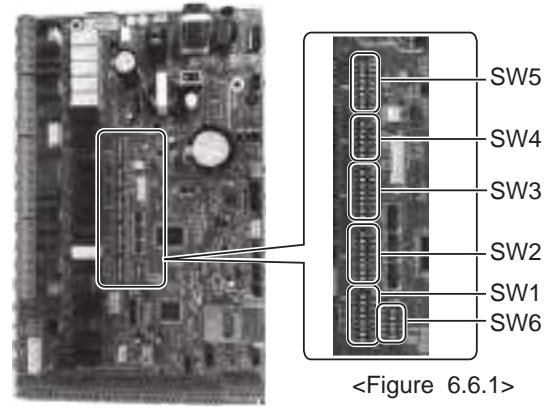
6-6. DIP Switch Functions

The DIP switch number is printed on the circuit board next to the relevant switches. The word ON is printed on the circuit board and on the DIP switch block itself. To move the switch you need to use a pin or the corner of a thin metal ruler or similar.

DIP switch settings are listed below in Table 6.6.1.

Only an authorised installer can change DIP switch setting under one's own responsibility according to the installation condition.

Make sure to turn off both indoor unit and outdoor unit power supplies before changing the switch settings.



<Figure 6.6.1>

| DIP switch | | Function | OFF | ON | Default settings: Indoor model name | | |
|------------|-------|---|--|---|---|-------|-------|
| SW1 | SW1-1 | Boiler | WITHOUT Boiler | WITH Boiler | OFF | | |
| | SW1-2 | Heat pump maximum outlet water temperature | 55°C | 60°C | ON *1 | | |
| | SW1-3 | DHW tank | WITHOUT DHW tank | WITH DHW tank | OFF | | |
| | SW1-4 | Immersion heater | WITHOUT Immersion heater | WITH Immersion heater | OFF | | |
| | SW1-5 | Booster heater | WITHOUT Booster heater | WITH Booster heater | OFF: E***-M*D ON : E***-M2/6/9*D | | |
| | SW1-6 | Booster heater function | For heating only | For heating and DHW | OFF: E***-M*D ON : E***-M2/6/9*D | | |
| | SW1-7 | Outdoor unit type | Split type | Packaged type | OFF: Except E*PX-*M**D ON : E*PX-*M**D | | |
| | SW1-8 | Wireless remote controller | WITHOUT Wireless remote controller | WITH Wireless remote controller | OFF | | |
| SW2 | SW2-1 | Room thermostat1 input (IN1) logic change | Zone1 operation stop at thermostat short | Zone1 operation stop at thermostat open | OFF | | |
| | SW2-2 | Flow switch1 input (IN2) logic change | Failure detection at short | Failure detection at open | OFF | | |
| | SW2-3 | Booster heater capacity restriction | Inactive | Active | OFF: Except E***-VM2*D ON : E***-VM2*D | | |
| | SW2-4 | Cooling mode function | Inactive | Active | OFF: Except ER**-*M**D ON : ER**-*M**D | | |
| | SW2-5 | Automatic switch to backup heat source operation (When outdoor unit stops by error) | Inactive | Active *2 | OFF | | |
| | SW2-6 | Mixing tank | WITHOUT Mixing tank | WITH Mixing tank | OFF | | |
| | SW2-7 | 2-zone temperature control | Inactive | Active *3 | OFF | | |
| | SW2-8 | Flow sensor | WITHOUT Flow sensor | WITH Flow sensor | ON | | |
| SW3 | SW3-1 | Room thermostat 2 input logic change | Zone2 operation stop at thermostat short | Zone2 operation stop at thermostat open | OFF | | |
| | SW3-2 | Flow switch 2 and 3 input logic change | Failure detection at short | Failure detection at open | OFF | | |
| | SW3-3 | — | — | — | OFF | | |
| | SW3-4 | Electric energy meter | WITHOUT Electric energy meter | WITH Electric energy meter | OFF | | |
| | SW3-5 | Heating mode function *4 | Inactive | Active | ON | | |
| | SW3-6 | 2-zone valve ON/OFF control | Inactive | Active | OFF | | |
| | SW3-7 | — | — | — | OFF | | |
| | SW3-8 | Heat meter | WITHOUT Heat meter | WITH Heat meter | OFF | | |
| SW4 | SW4-1 | Multiple outdoor units control | Inactive | Active | OFF | | |
| | SW4-2 | Position of multiple outdoor units control *5 | Sub | Main | OFF | | |
| | SW4-3 | — | — | — | OFF | | |
| | SW4-4 | Indoor unit only operation (during installation work) *6 | Inactive | Active | OFF | | |
| | SW4-5 | Emergency mode (Heater only operation) | Normal | Emergency mode (Heater only operation) | OFF *7 | | |
| | SW4-6 | Emergency mode (Boiler operation) | Normal | Emergency mode (Boiler operation) | OFF *7 | | |
| SW5 | SW5-1 | DHW tank water temperature over heat protection (L4) | Active | Inactive *8 | OFF | | |
| | SW5-2 | Advanced auto adaptation | Inactive | Active | ON | | |
| | SW5-3 | Capacity code | | | | | |
| | SW5-4 | | SW5-3 | SW5-4 | SW5-5 | SW5-6 | SW5-7 |
| | SW5-5 | E*SC-*M**D | ON | ON | ON | ON | OFF |
| | SW5-6 | E*SD-*M**D | ON | OFF | OFF | ON | OFF |
| | SW5-7 | E*SE-*M*ED | OFF | ON | ON | OFF | ON |
| | SW5-8 | E*PX-*M**D | OFF | OFF | OFF | OFF | OFF |
| SW6 | SW6-1 | — | — | — | OFF | | |
| | SW6-2 | — | — | — | OFF | | |
| | SW6-3 | Pressure sensor | Inactive | Active | OFF: Except E*SD-*M**D ON : E*SD-*M**D | | |
| | SW6-4 | Analog output signal (0 to 10V) | Inactive | Active | OFF | | |
| | SW6-5 | — | — | — | OFF | | |

<Table 6.6.1>

- Notes:**
- *1. When the hydrobox is connected with a PUMY-P and PXZ outdoor unit of which maximum outlet water temperature is 55°C, DIP SW1-2 must be changed to OFF.
 - *2. OUT11 will be available. For safety reasons, this function is not available for certain errors. (In that case, system operation must be stopped and only the water circulation pump keeps running.)
 - *3. Active only when SW3-6 is set to OFF.
 - *4. This switch functions only when the hydrobox is connected with a PUHZ-FRP outdoor unit. When another type of outdoor unit is connected, the heating mode function is active regardless of the fact that this switch is ON or OFF.
 - *5. Active only when SW4-1 is set to ON.
 - *6. Space heating and DHW can be operated only in indoor unit, like an electric heater. (Refer to "Indoor unit only operation" in page 42.)
 - *7. If emergency mode is no longer required, return the switch to OFF position.
 - *8. Please make sure to have necessary overheat protection on locally supplied solar thermal system side to secure safety, as the tank temperature could be much higher (than current).

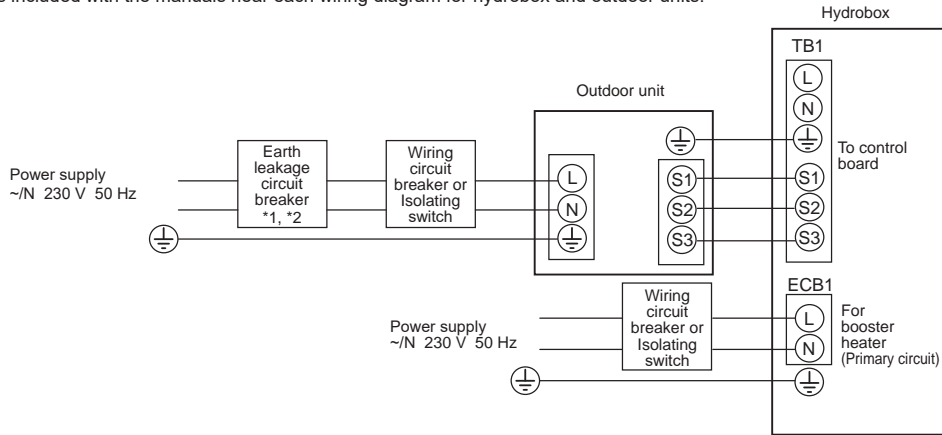
Option1: Hydrobox powered via outdoor unit

PXZ model is not available.

The model is Hydrobox powered by independent source ONLY.

<1 phase>

Affix label A that is included with the manuals near each wiring diagram for hydrobox and outdoor units.

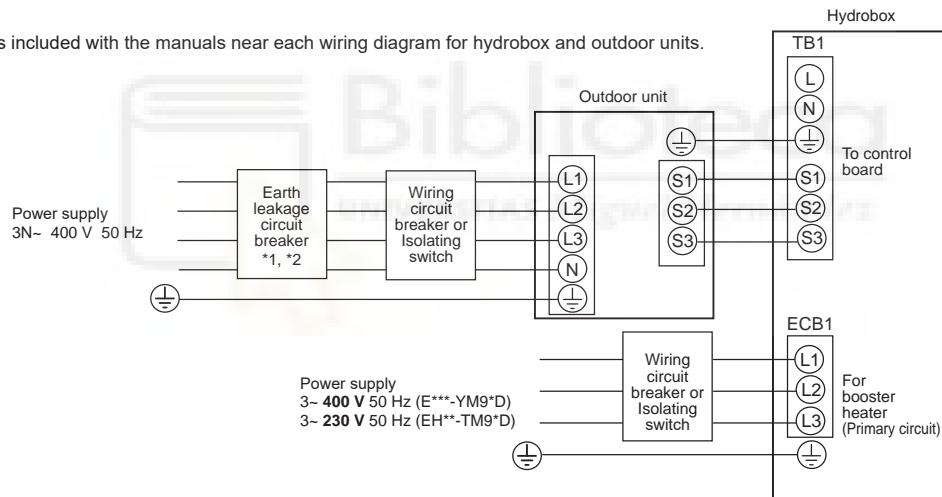


<Figure 7.1>
Electrical connections 1 phase

| Description | Power supply | Capacity | Breaker | Wiring |
|----------------------------------|----------------|----------|---------|---------------------|
| Booster heater (Primary circuit) | ~N 230 V 50 Hz | 2 kW | 16 A *2 | 2.5 mm ² |
| | | 6 kW | 32 A *2 | 6.0 mm ² |

<3 phase>

Affix label A that is included with the manuals near each wiring diagram for hydrobox and outdoor units.



<Figure 7.2>
Electrical connections 3 phase

| Description | Power supply | Capacity | Breaker | Wiring |
|----------------------------------|----------------|----------|---------|---------------------|
| Booster heater (Primary circuit) | 3~ 400 V 50 Hz | 9 kW | 16 A *2 | 2.5 mm ² |
| | 3~ 230 V 50 Hz | 9 kW | 32 A *2 | 6.0 mm ² |

<E*SD/E*SC/E*PX series>

<E*SE series>

| | | | |
|---|--|------------------------------|----------------------------|
| Wiring No. x size (mm ²) | Hydrobox - Outdoor unit | 3 x 1.5 (polar) ³ | 3 x 4 (polar) ⁴ |
| | Hydrobox - Outdoor unit earth | 1 x Min. 1.5 ³ | 1 x Min. 2.5 ⁵ |
| Circuit rating | Hydrobox - Outdoor unit S1 - S2 ⁶ | 230 VAC | 230 VAC |
| | Hydrobox - Outdoor unit S2 - S3 ⁶ | 24 VDC | 24 VDC |

- *1. If the installed earth leakage circuit breaker does not have an over-current protection function, install a breaker with that function along the same power line.
- *2. A breaker with at least 3.0 mm contact separation in each pole shall be provided. Use earth leakage breaker (NV).
The breaker shall be provided to ensure disconnection of all active phase conductors of the supply.
- *3. Max. 45 m
If 2.5 mm² used, Max. 50 m
If 2.5 mm² used and S3 separated, Max. 80 m
- *4. Max. 50 m
If 6 mm² used, Max. 80 m
- *5. If S3 separated, Max. 80 m
- *6. The values given in the table above are not always measured against the ground value.

- Notes:
1. Wiring size must comply with the applicable local and national codes.
 2. Indoor unit/outdoor unit connecting cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60245 IEC 57)
Indoor unit power supply cords shall not be lighter than polychloroprene sheathed flexible cord. (Design 60227 IEC 53)
 3. Install an earth line longer than power cables.
 4. Please keep enough output capacity of power supply for each heater. Insufficient power supply capacity might cause chattering.



mitsubishi electric corporation

HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN

©Copyright 2019 MITSUBISHI ELECTRIC CORPORATION
Issued: May 2022 No. OCH712 REVISED EDITION-F
Issued: Mar. 2022 No. OCH712 REVISED EDITION-E
Issued: Jun. 2021 No. OCH712 REVISED EDITION-D
Issued: Oct. 2020 No. OCH712 REVISED EDITION-C
Issued: Apr. 2020 No. OCH712 REVISED EDITION-B
Issued: Feb. 2020 No. OCH712 REVISED EDITION-A
Published: Oct. 2019 No. OCH712
Made in Japan

Specifications are subject to change without notice.

TECHNICAL & SERVICE MANUAL

R32

[Model Name]

SUZ-SWM40VA

SUZ-SWM60VA

SUZ-SWM80VA

[Service Ref.]

SUZ-SWM40VA.TH

SUZ-SWM60VA.TH

SUZ-SWM80VA.TH

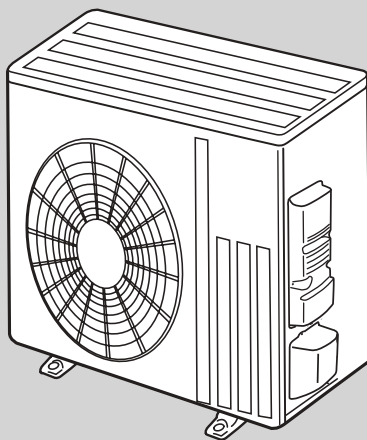
Revision:

- Connectable indoor units have been added in REVISED EDITION-A.

OCH718 is void.

Note:

- This service manual describes service data of the outdoor units only.



SUZ-SWM40VA.TH
SUZ-SWM60VA.TH
SUZ-SWM80VA.TH

CONTENTS

| | |
|--|----|
| 1. COMBINATION OF INDOOR AND OUTDOOR UNITS | 2 |
| 2. SAFETY PRECAUTION | 2 |
| 3. PARTS NAMES AND FUNCTIONS | 9 |
| 4. SPECIFICATION | 10 |
| 5. NOISE CRITERIA CURVES | 12 |
| 6. OUTLINES AND DIMENSIONS | 13 |
| 7. WIRING DIAGRAM | 14 |
| 8. REFRIGERANT SYSTEM DIAGRAM | 15 |
| 9. ACTUATOR CONTROL | 18 |
| 10. TROUBLESHOOTING | 19 |
| 11. DISASSEMBLY PROCEDURE | 29 |

PARTS CATALOG (OCB718)





1 COMBINATION OF INDOOR AND OUTDOOR UNITS

INDOOR UNIT SERVICE MANUAL

| Indoor unit | | Outdoor unit | | |
|--------------------|--------------------|----------------|------------|------------|
| | | Heat pump type | | |
| | | SUZ- | | |
| Service Ref. | Service manual No. | SWM40VA.TH | SWM60VA.TH | SWM80VA.TH |
| EHST17D-VM2DR1.UK | OCH714 OCB714 | ○ | ○ | ○ |
| EHST17D-YM9DR1.UK | | ○ | ○ | ○ |
| ERST17D-VM2DR1.UK | | ○ | ○ | ○ |
| ERST17D-VM6DR1.UK | | ○ | ○ | ○ |
| EHST20D-MEDR1.UK | | ○ | ○ | ○ |
| EHST20D-VM2DR1.UK | | ○ | ○ | ○ |
| EHST20D-VM6DR1.UK | | ○ | ○ | ○ |
| EHST20D-YM9DR1.UK | | ○ | ○ | ○ |
| EHST20D-YM9EDR1.UK | | ○ | ○ | ○ |
| EHST20D-TM9DR1.UK | | ○ | ○ | ○ |
| ERST20D-VM2DR1.UK | | ○ | ○ | ○ |
| ERST20D-VM6DR1.UK | | ○ | ○ | ○ |
| ERST20D-YM9DR1.UK | | ○ | ○ | ○ |
| EHST30D-MEDR1.UK | | ○ | ○ | ○ |
| EHST30D-VM6EDR1.UK | | ○ | ○ | ○ |
| EHST30D-YM9EDR1.UK | | ○ | ○ | ○ |
| EHST30D-TM9EDR1.UK | | ○ | ○ | ○ |
| ERST30D-VM2EDR1.UK | | ○ | ○ | ○ |
| ERST30D-VM6EDR1.UK | | ○ | ○ | ○ |
| ERST30D-YM9EDR1.UK | | ○ | ○ | ○ |
| EHSD-MED.UK | OCH712 OCB712 | ○ | ○ | ○ |
| EHSD-VM2D.UK | | ○ | ○ | ○ |
| EHSD-VM6D.UK | | ○ | ○ | ○ |
| EHSD-YM9D.UK | | ○ | ○ | ○ |
| EHSD-YM9ED.UK | | ○ | ○ | ○ |
| EHSD-TM9D.UK | | ○ | ○ | ○ |
| ERSD-MED.UK | | ○ | ○ | ○ |
| ERSD-VM2D.UK | | ○ | ○ | ○ |
| ERSD-VM6D.UK | ○ | ○ | ○ | |
| ERSD-YM9D.UK | ○ | ○ | ○ | |

2 SAFETY PRECAUTION

MEANINGS OF SYMBOLS DISPLAYED ON THE UNIT

| | | |
|---|----------------------------------|---|
|  | WARNING (Risk of fire) | This mark is for R32 refrigerant only. Refrigerant type is written on nameplate of outdoor unit. In case that refrigerant type is R32, this unit uses a flammable refrigerant. If refrigerant leaks and comes in contact with fire or heating part, it will create harmful gas and there is risk of fire. |
|  | | Read the OPERATION MANUAL carefully before operation. |
|  | | Service personnel are required to carefully read the OPERATION MANUAL and INSTALLATION MANUAL before operation. |
|  | | Further information is available in the OPERATION MANUAL, INSTALLATION MANUAL, and the like. |

2-1. ALWAYS OBSERVE FOR SAFETY

Before obtaining access to terminal, all supply circuits must be disconnected.

2-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilizing refrigerant R32

Preparation before the repair service

- Prepare the proper tools.
- Prepare the proper protectors.
- Provide adequate ventilation.
- After stopping the operation of the air to water heat pump, turn off the power-supply breaker.
- Discharge the condenser before the work involving the electric parts.

Use new refrigerant pipes.

- In case of using the existing pipes for R22, be careful with the following.
- Be sure to clean the pipes and make sure that the insides of the pipes are clean.
 - Change flare nut to the one provided with this product. Use a newly flared pipe.
 - Avoid using thin pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contaminants such as sulfur, oxides, dirt, shaving particles, etc., which are hazard to refrigerant cycle. In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil, etc.

Store the piping indoors, and keep both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

The refrigerant oil applied to flare and flange connections must be ester oil, ether oil or alkylbenzene oil in a small amount.

If large amount of mineral oil enters, that can cause deterioration of refrigerant oil, etc.

Do not use refrigerant other than R32.

If other refrigerant (R22, etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil, etc.

Precautions during the repair service

- Do not perform the work involving the electric parts with wet hands.
- Do not pour water into the electric parts.
- Do not touch the refrigerant.
- Do not touch the hot or cold areas in the refrigerating cycle.
- When the repair or the inspection of the circuit needs to be done without turning off the power, exercise great caution not to touch the live parts.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil, etc.

Use the following tools specifically designed for use with R32 refrigerant.

The following tools are necessary to use R32 refrigerant.

| Tools for R32 | |
|-------------------|---------------------------------------|
| Gauge manifold | Flare tool |
| Charge hose | Size adjustment gauge |
| Gas leak detector | Vacuum pump adaptor |
| Torque wrench | Electronic refrigerant charging scale |

Handle tools with care.

If dirt, dust or moisture enters into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Use the specified refrigerant only.

Never use any refrigerant other than that specified. Doing so may cause a burst, an explosion, or fire when the unit is being used, serviced, or disposed of. Correct refrigerant is specified in the manuals and on the spec labels provided with our products. We will not be held responsible for mechanical failure, system malfunction, unit breakdown or accidents caused by failure to follow the instructions.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

[1] Warning for service

- (1) Do not alter the unit.
- (2) For installation and relocation work, follow the instructions in the Installation Manual and use tools and pipe components specifically made for use with refrigerant specified in the outdoor unit installation manual.
- (3) Ask a dealer or an authorized technician to install, relocate and repair the unit.
For appliances not accessible to the general public.
- (4) Refrigerant pipes connection shall be accessible for maintenance purposes.
- (5) If the air to water heat pump is installed in a small room or closed room, measures must be taken to prevent the refrigerant concentration in the room from exceeding the safety limit in the event of refrigerant leakage. Should the refrigerant leak and cause the concentration limit to be exceeded, hazards due to lack of oxygen in the room may result.
- (6) Keep gas-burning appliances, electric heaters, and other fire sources (ignition sources) away from the location where installation, repair, and other air to water heat pump work will be performed.
If refrigerant comes into contact with a flame, poisonous gases will be released.
- (7) When installing or relocating, or servicing the air to water heat pump, use only the specified refrigerant (R32) to charge the refrigerant lines.
Do not mix it with any other refrigerant and do not allow air to remain in the lines.
If air is mixed with the refrigerant, then it can be the cause of abnormal high pressure in the refrigerant line, and may result in an explosion and other hazards.
- (8) After installation has been completed, check for refrigerant leaks. If refrigerant leaks into the room and comes into contact with the flame of a heater or portable cooking range, poisonous gases will be released.
- (9) Do not use low temperature solder alloy in case of brazing the refrigerant pipes.
- (10) When performing brazing work, be sure to ventilate the room sufficiently. Make sure that there are no hazardous or flammable materials nearby.
When performing the work in a closed room, small room, or similar location, make sure that there are no refrigerant leaks before performing the work.
If refrigerant leaks and accumulates, it may ignite or poisonous gases may be released.
- (11) Do not install the unit in places where refrigerant may build-up or places with poor ventilation such as a semi-basement or a sunken place in outdoor: Refrigerant is heavier than air, and inclined to fall away from the leak source.
- (12) Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- (13) The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance or an operating electric heater).
- (14) Do not pierce or burn.
- (15) Be aware that refrigerants may not contain an odor.
- (16) Pipe-work shall be protected from physical damage.
- (17) The installation of pipe-work shall be kept to a minimum.
- (18) Compliance with national gas regulations shall be observed.
- (19) Keep any required ventilation openings clear of obstruction.
- (20) Servicing shall be performed only as recommended by the manufacturer.
- (21) The appliance shall be stored in a well-ventilated area where the room size corresponds to the room area as specified for operation.
- (22) Maintenance, service and repair operations shall be performed by authorized technician with required qualification.
- (23) Be sure to have appropriate ventilation in order to prevent ignition. Furthermore, be sure to carry out fire prevention measures that there are no dangerous or flammable objects in the surrounding area.
- (24) Do not add the refrigerant more than maximum amount each outdoor units. If it exceeds the maximum amount of refrigerant, it could result in a fire when the refrigerant leaks.

[2] Cautions for unit using R32 refrigerant

Basic work procedures are the same as those for conventional units using refrigerant R410A. However, pay careful attention to the following points.

(1) Information on servicing

(1-1) Checks on the Area

Prior to beginning work on systems containing flammable refrigerants, safety checks are necessary to ensure that the risk of ignition is minimized.

For repair to the refrigerating systems, (1-3) to (1-7) shall be completed prior to conducting work on the systems.

(1-2) Work Procedure

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

(1-3) General Work Area

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out.

Work in confined spaces shall be avoided. The area around the workspace shall be sectioned off. Ensure that the conditions within the area have been made safe by control of flammable material.

(1-4) Checking for Presence of Refrigerant

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

(1-5) Presence of Fire Extinguisher

If any hot work is to be conducted on the refrigeration equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand.

Have a dry powder or CO₂ fire extinguisher adjacent to the charging area.

(1-6) No Ignition Sources

No person carrying out work in relation to a refrigeration system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs shall be displayed.

(1-7) Ventilated Area

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out. The ventilation should safely disperse any released refrigerant and preferably expel it externally into the atmosphere.

(1-8) Checks on the Refrigeration Equipment

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer's maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer's technical department for assistance.

The following checks shall be applied to installations using flammable refrigerants:

- The charge size is in accordance with the room size within which the refrigerant containing parts are installed.
- The ventilation machinery and outlets are operating adequately and are not obstructed.
- Marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected.
- Refrigeration pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being corroded.

(1-9) Checks on Electrical Devices

Repair and maintenance to electrical components shall include initial safety checks and component inspection procedures. If a fault exists that could compromise safety, then no electrical supply shall be connected to the circuit until it is satisfactorily dealt with. If the fault cannot be corrected immediately but it is necessary to continue operation, an adequate temporary solution shall be used. This shall be reported to the owner of the equipment so all parties are advised. Initial safety checks shall include that:

- capacitors are discharged: this shall be done in a safe manner to avoid possibility of sparking;
- no live electrical components and wiring are exposed while charging, recovering or purging the system;
- there is continuity of earth bonding

(2) Repairs to Sealed Components

(2-1) During repairs to sealed components, all electrical supplies shall be disconnected from the equipment being worked upon prior to any removal of sealed covers, etc. If it is absolutely necessary to have an electrical supply to equipment during servicing, then a permanently operating form of leak detection shall be located at the most critical point to warn of a potentially hazardous situation.

(2-2) Particular attention shall be paid to the following to ensure that by working on electrical components, the casing is not altered in such a way that the level of protection is affected. This shall include damage to cables, excessive number of connections, terminals not made to original specification, damage to seals, incorrect fitting of glands, etc.

Ensure that the apparatus is mounted securely.

Ensure that seals or sealing materials have not degraded to the point that they no longer serve the purpose of preventing the ingress of flammable atmospheres.

Replacement parts shall be in accordance with the manufacturer's specifications.

(3) Repair to intrinsically Safe Components

Do not apply any permanent inductive or capacitance loads to the circuit without ensuring that this will not exceed the permissible voltage and current permitted for the equipment in use.

Intrinsically safe components are the only types that can be worked on while live in the presence of a flammable atmosphere. The test apparatus shall be at the correct rating.

Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

(4) Cabling

Check that cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects. The check shall also take into account the effects of aging or continual vibration from sources such as compressors or fans.

(5) Detection of Flammable Refrigerants

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

(6) Leak Detection Methods

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.)

Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25% maximum) is confirmed.

Leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.

If a leak is suspected, all naked flames shall be removed/extinguished.

If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak. For appliances containing flammable refrigerants, oxygen free nitrogen (OFN) shall then be purged through the system both before and during the brazing process.

(7) Removal and Evacuation

When breaking into the refrigerant circuit to make repairs – or for any other purpose conventional procedures shall be used. However, for flammable refrigerants it is important that best practice is followed since flammability is a consideration. The following procedure shall be adhered to:

- remove refrigerant
- purge the circuit with inert gas
- evacuate
- purge again with inert gas
- open the circuit by cutting or brazing.

The refrigerant charge shall be recovered into the correct recovery cylinders. For appliances containing flammable refrigerants, the system shall be “flushed” with OFN to render the unit safe. This process may need to be repeated several times.

Compressed air or oxygen shall not be used for purging refrigerant systems.

For appliances containing flammable refrigerants, flushing shall be achieved by breaking the vacuum in the system with OFN and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum. This process shall be repeated until no refrigerant is within the system. When the final OFN charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. This operation is absolutely vital if brazing operations on the pipe-work are to take place.

Ensure that the outlet for the vacuum pump is not close to any ignition sources and that ventilation is available.

(8) Charging Procedures

In addition to conventional charging procedures, the following requirements shall be followed:

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept upright.
- Ensure that the refrigeration system is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the refrigeration system.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak-tested on completion of charging but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

(9) Decommissioning

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of reclaimed refrigerant. It is essential that electrical power is available before the task is commenced.

a) Become familiar with the equipment and its operation.

- b) Isolate system electrically.
- c) Before attempting the procedure, ensure that:
 - mechanical handling equipment is available, if required, for handling refrigerant cylinders;
 - all personal protective equipment is available and being used correctly;
 - the recovery process is supervised at all times by a competent person;
 - recovery equipment and cylinders conform to the appropriate standards.
- d) Pump down refrigerant system, if possible.
- e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.
- f) Make sure that cylinder is situated on the scales before recovery takes place.
- g) Start the recovery machine and operate in accordance with manufacturer's instructions.
- h) Do not overfill cylinders. (No more than 80 % volume liquid charge).
- i) Do not exceed the maximum working pressure of the cylinder, even temporarily.
- j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.
- k) Recovered refrigerant shall not be charged into another refrigeration system unless it has been cleaned and checked.

(10) Labelling

Equipment shall be labelled stating that it has been de-commissioned and emptied of refrigerant. The label shall be dated and signed. For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

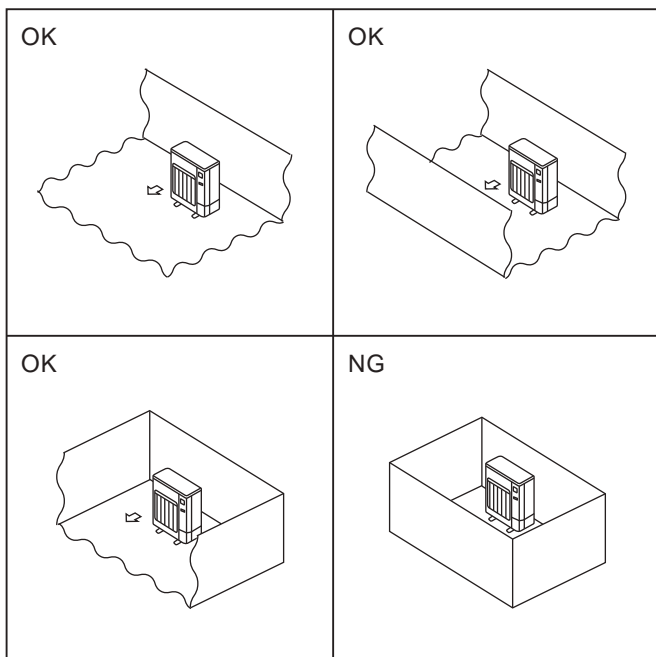
(11) Recovery

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely. When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge are available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i.e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders. If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

2-3. Choosing the outdoor unit installation location



R32 is heavier than air—as well as other refrigerants—so tends to accumulate at the base (in the vicinity of the floor). If R32 accumulates around base, it may reach a flammable concentration in case room is small. To avoid ignition, maintaining a safe work environment is required by ensuring appropriate ventilation. If a refrigerant leak is confirmed in a room or an area where there is insufficient ventilation, refrain from using of flames until the work environment can be improved by ensuring appropriate ventilation.

Install outdoor units in a place where at least one of the four sides is open, and in a sufficiently large space without depressions.

2-4. Minimum installation area

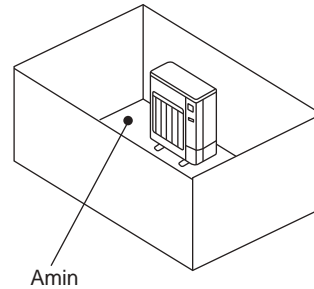
If you unavoidably install a unit in a space where all four sides are blocked or there are depressions, confirm that one of these situations (A, B or C) is satisfied.

Note: These countermeasures are for keeping safety not for specification guarantee.

A) Secure sufficient installation space (minimum installation area A_{min}).

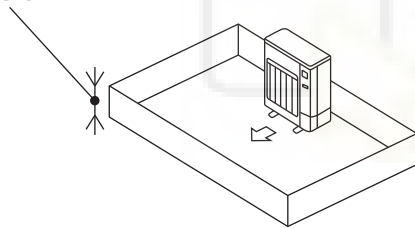
Install in a space with an installation area of A_{min} or more, corresponding to refrigerant amount M (factory-charged refrigerant + locally added refrigerant).

| M [kg] | A_{min} [m ²] |
|--------|-----------------------------|
| 1.0 | 12 |
| 1.5 | 17 |
| 2.0 | 23 |
| 2.5 | 28 |
| 3.0 | 34 |
| 3.5 | 39 |
| 4.0 | 45 |
| 4.5 | 50 |
| 5.0 | 56 |
| 5.5 | 62 |
| 6.0 | 67 |
| 6.5 | 73 |
| 7.0 | 78 |
| 7.5 | 84 |

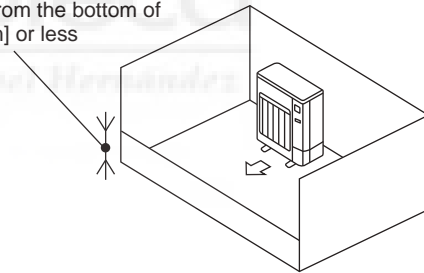


B) Install in a space with a depression height of ≤ 0.125 [m].

Height from the bottom of
0.125 [m] or less



Height from the bottom of
0.125 [m] or less

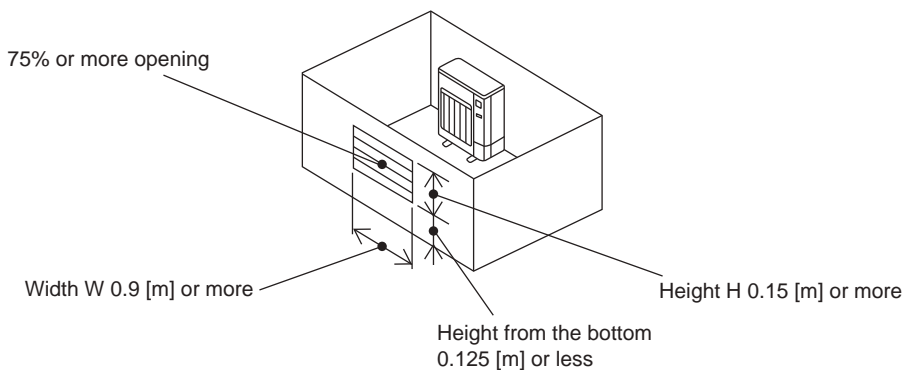


C) Create an appropriate ventilation open area.

Make sure that the width of the open area is 0.9 [m] or more and the height of the open area is 0.15 [m] or more.

However, the height from the bottom of the installation space to the bottom edge of the open area should be 0.125 [m] or less.

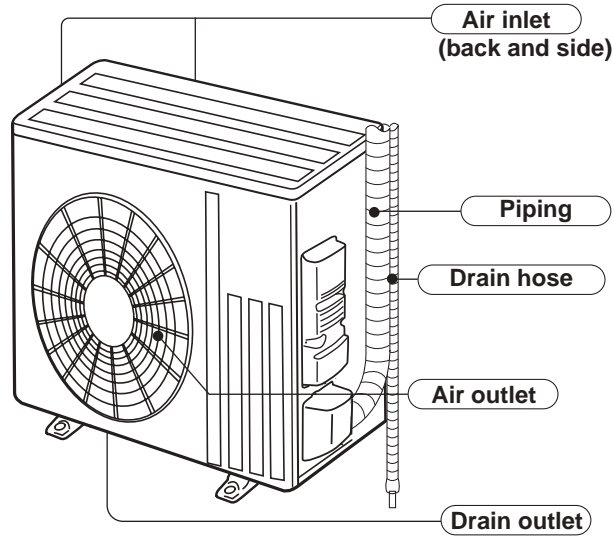
Open area should be 75% or more opening.



3

PARTS NAMES AND FUNCTIONS

SUZ-SWM40VA.TH
 SUZ-SWM60VA.TH
 SUZ-SWM80VA.TH



| Model | SUZ-SWM-VA |
|--------------|------------|
| Drain socket | 1 |

Note:

Do not use the drain socket in the cold region.
 Drain may freeze and it makes the fan stop.



4

SPECIFICATION

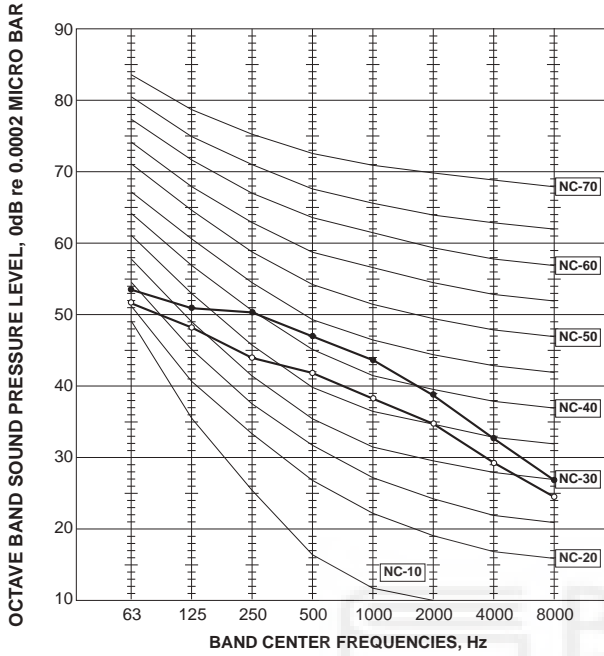
| Service ref. | | | SUZ-SWM40VA.TH | SUZ-SWM60VA.TH | SUZ-SWM80VA.TH | | |
|--------------------|-------------------------------------|--------------------|---|------------------|----------------|-------------|----|
| OUTDOOR UNIT | POWER SUPPLY(Phase, voltage, cycle) | | 1φ, 230V, 50Hz | | | | |
| | | MAX. Current | A | 13.9 | | | |
| | Breaker size | | A | 16 | | | |
| | External finish | | Munsell 3Y 7.8/1.1 | | | | |
| | Refrigerant control | | Linear expansion valve | | | | |
| | Compressor | | Hermetic twin rotary | | | | |
| | | Model | SVB130FBBMT | SVB172FCKMT | | | |
| | | Motor output | kW | 0.9 | 1.2 | | |
| | | Start type | Inverter | | | | |
| | | Protection devices | Discharge thermo Over current High pressure cut (indoor unit) | | | | |
| | Crankcase heater | | kW | - | | | |
| | Heat exchanger | | Air | Plate fin coil | | | |
| | Fan | Fan (drive) × No. | | Propeller fan ×1 | | | |
| | | Fan motor output | | kW | 0.060 | | |
| | | Airflow | | m3/min(CFM) | 34.5 (1217) | 36.4 (1285) | |
| | Defrost method | | Reverse cycle | | | | |
| | Sound power level | | Heating | dB | 58 | 60 | 62 |
| | Dimensions | W | mm (inch) | 840 (33-1/16) | | | |
| | | D | mm (inch) | 330 (13) | | | |
| H | | mm (inch) | 880 (34-5/8) | | | | |
| Weight | | kg (lb) | 54 (119) | | | | |
| Refrigerant (GWP) | | | R32 (675) | R32 (675) | R32 (675) | | |
| | Chargeless | kg | 1.2 (2.6) | | | | |
| | MAX. | kg | 1.6 (3.5) | | | | |
| | Oil (Model) | L | 0.35 (FW68S) | 0.40 (FW68S) | | | |
| Refrigerant piping | Pipe size O.D. | Liquid | mm (inch) | 6.35 (1/4) | | | |
| | | Gas | mm (inch) | 12.7 (1/2) | | | |
| | Connection method | Indoor side | | Flared | | | |
| | | Outdoor side | | Flared | | | |
| | Between the indoor & outdoor unit | Height difference | m | Max. 30 | Max. 30 | Max. 30 | |
| Piping length | | m | 5 to 30 | 5 to 30 | 5 to 30 | | |

Specifications and rating conditions of main electric parts

| Item | Service ref. | SUZ-SWM40VA.TH |
|---------------------------------|--------------------|----------------------------------|
| | | SUZ-SWM60VA.TH SUZ-SWM80VA.TH |
| Smoothing capacitor | (C61) | — |
| | (C62, C63) | — |
| | (CB1, 2, 3) | 560 μ F 450 V |
| Diode module | (DB61) | — |
| | (DB65) | — |
| Fuse | (F61) | — |
| | (F62) | — |
| | (F701, F801, F901) | — |
| | (F601, F880, F901) | T3.15 A L250 V |
| Power module | (IC700) | 20 A 600 V |
| | (IC932) | 5 A 600 V |
| Switch power transistor | (Q821) | — |
| Expansion valve coil | (LEV) | 12 V DC |
| Reactor | (L61) | — |
| | (L) | 282 μ H |
| Diode | (D3A, D3B) | 20 A 600 V |
| Diode module | (DB41A, DB41B) | 20 A 600 V |
| Current-Limiting PTC thermistor | (PTC64, PTC65) | 33 Ω |
| Terminal block | (TB1) | 3P |
| Relay | (X63) | — |
| | (X64) | 20 A 250 V |
| | (X601) | 3 A 250 V |
| | (X602) | 3 A 250 V |
| R.V. coil | (21S4) | 220 - 240 V AC |

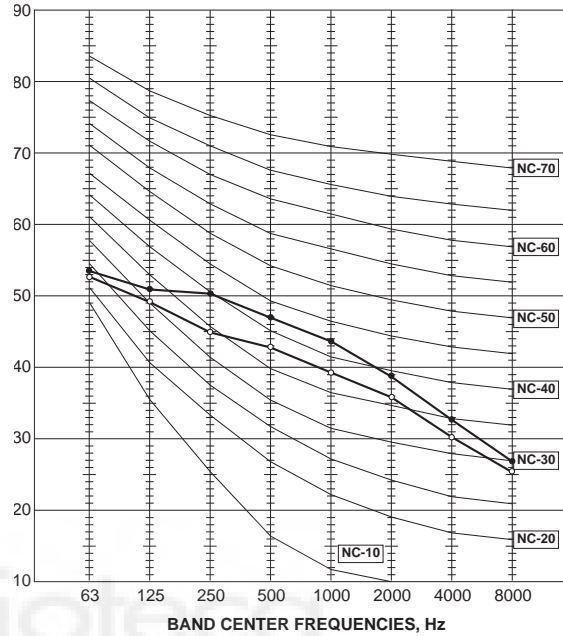
SUZ-SWM40VA.TH

| FUNCTION | SPL(dB(A)) | LINE |
|----------|------------|------|
| COOLING | 49 | ●—● |
| HEATING | 44 | ○—○ |



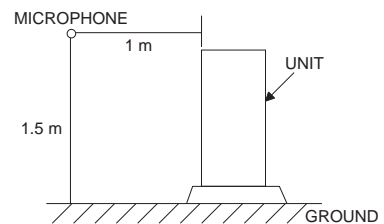
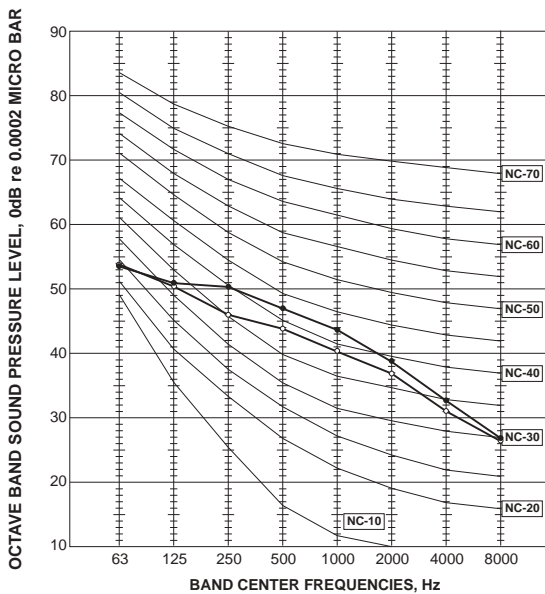
SUZ-SWM60VA.TH

| FUNCTION | SPL(dB(A)) | LINE |
|----------|------------|------|
| COOLING | 49 | ●—● |
| HEATING | 45 | ○—○ |



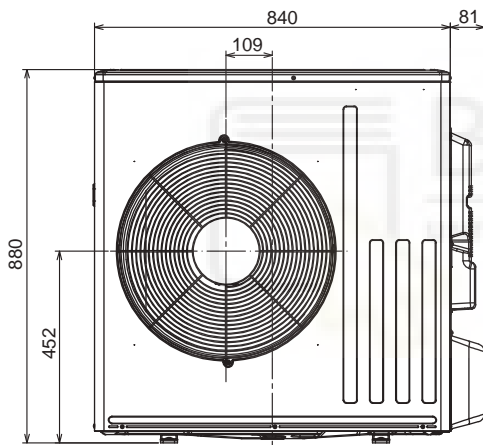
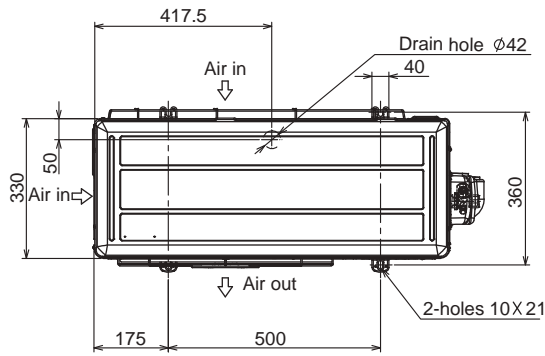
SUZ-SWM80VA.TH

| FUNCTION | SPL(dB(A)) | LINE |
|----------|------------|------|
| COOLING | 49 | ●—● |
| HEATING | 46 | ○—○ |



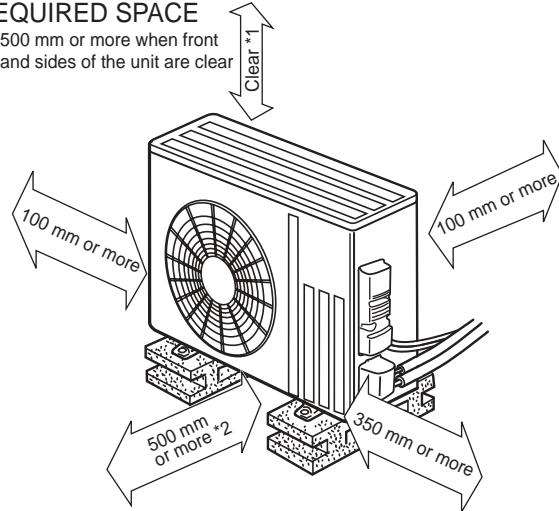
SUZ-SWM40VA.TH
 SUZ-SWM60VA.TH
 SUZ-SWM80VA.TH

Unit: mm

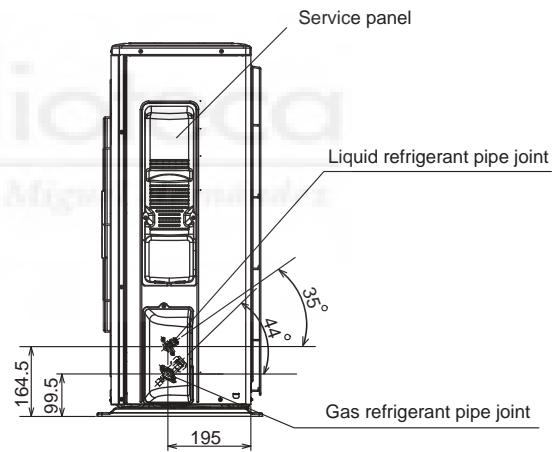


REQUIRED SPACE

*1 500 mm or more when front and sides of the unit are clear



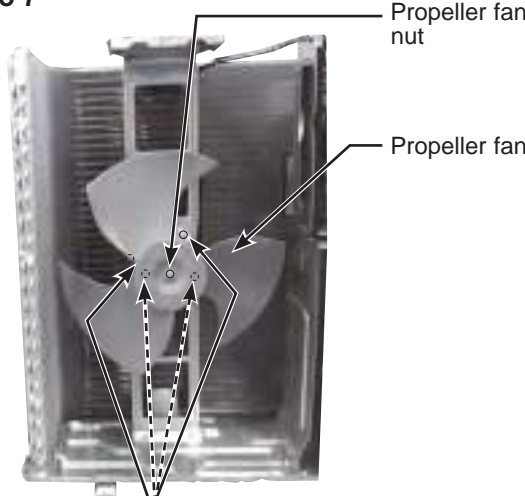
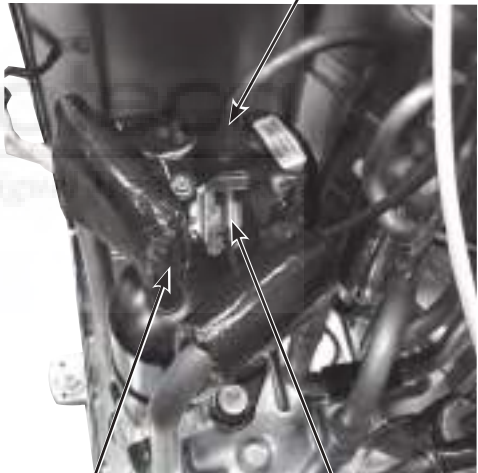
*2 When any 2 sides of left, right and rear of the unit are clear



mm (inch)

| | | |
|------------------------|-------------------------|--------------------|
| MODEL NAME | SUZ-SWM40/60/80VA | |
| REFRIGERANT PIPE JOINT | LIQUID REFRIGERANT PIPE | FLARED 6.35 (1/4") |
| | GAS REFRIGERANT PIPE | FLARED 12.7(1/2") |



| OPERATING PROCEDURE | PHOTOS/FIGURES |
|--|---|
| <p>5. Removing outdoor fan motor</p> <ol style="list-style-type: none">(1) Remove the top panel, cabinet and service panel. (Refer to 1.)(2) Disconnect the following connectors: <Inverter P.C. board> CN931, CN932 (Fan motor)(3) Remove the propeller fan nut.(4) Remove the propeller fan.(5) Remove the screws fixing the fan motor.(6) Remove the fan motor. | <p>Photo 7</p>  <p>Propeller fan nut</p> <p>Propeller fan</p> <p>Screws of the outdoor fan motor</p> |
| <p>6. Removing the compressor and 4-way valve</p> <ol style="list-style-type: none">(1) Remove the top panel, cabinet and service panel. (Refer to 1.)(2) Remove the back panel. (Refer to 1.)(3) Remove the screws fixing the relay panel.(4) Remove the relay panel.(5) Remove the inverter assembly. (Refer to 2.)(6) Recover gas from the refrigerant circuit. <p>NOTE: Recover gas from the pipes until the pressure gauge shows 0 kg/cm² (0 MPa).</p> <ol style="list-style-type: none">(7) Detach the brazed part of the suction and the discharge pipe connected with compressor.(8) Remove the compressor nuts.(9) Remove the compressor.(10) Detach the brazed parts of 4-way valve and pipe. (Photo 5) | <p>Photo 8</p>  <p>Brazed part of the discharge pipe</p> <p>Brazed part of the suction pipe</p> <p>Discharge temperature thermistor</p> |

MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE: TOKYO BUILDING, 2-7-3, MARUNOUCHI, CHIYODA-KU, TOKYO100-8310, JAPAN