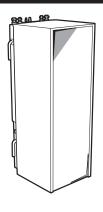


Installation manual

Daikin Altherma low temperature split



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CE-KONFORMITÄTSERKI ÄRUNG
CE-DECLARATION-DE-CONFORMITE
CE-CONFORMITEITSVERKLARING

DECLARACION-DE-CONFORMIDAD
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20 on vastavuses jägmistly est röverenssämmelse med väralisete okkumentlega, kui reid kasutatakse vastavalt meie juhendilete i chonerassiammelse med rägende ständardige) eller andre normgivende dokumentlet), under foutissetning av at disse 21 csonerarea med regjammen signifikation oppivarvalturing program, et everorassiammen varvalturing av at disse 21 csonerarea med regjammen programmen programmen programmen varvalteten v

м-струкции. 22 dilinius Amerian Lurodylus standalus ir (aba) kitus nominius odkumentus su sajga, kad yra naudojami pagal müsynurodymus: 23 tad, ja leidd atüskisti azdağı nodadyumen, atülat sekiq sienn standarlem un dilen nomatiken dokumentem: 24 súv zhode s nasledovrou (ym) nomau (am) alebo niym() nomativnym() dokumentom (am), za predpokladu, že sa používajúv súlade.

25 ürünün, talimatlarımıza göre kullanılması koşuluyla aşağıdaki standartlar ve nom belirten belgelerle uyumludur. s našim návodom:

EN60335-2-40

under iagttagelse af bestemmelseme i: zgodnie z postanowieniami Dyrektyw. gemäßden Vorschriften der: conformément aux stipulations des: overeenkomstig de bepalingen van: siguiendo las disposiciones de: в соответствиис положениями: με πήρηση των διατάξεων των: de acordo com o previsio em: secondo le prescrizioni per: following the provisions of:

10 under iegtlagelse af bestemmelseme 11 entigt Mikraeri 12 gift herhold i bestemmelsene i 13 nouddaen malariak/skiär 14 zet dochzemic i ustanoven i predpisu: 15 prema odredhama: 16 kövela (2): 17 zgodne 2 postanowianiami Dyrektyw

18 in uma pravederifor.
20 vastavatinodobo.
21 vastavatinodobo.
22 laikarits ruostati, paleikiamų.
22 aleikarits ruostati, paleikiamų.
23 derigotipasobas, lasmotektas.
24 odžavajoustanovenia.
25 burun koşullamauygun darak

delineato nel <A> e giudicato positivamente da 11 Information* secondo il Certificato <C>.

a(z) <A> alapján, a(z) igazolta a megfelelést, 21 Забележка* a(z) <C> tanúsítvány szerint. aşa cum este stabilit în <A> şi apredat pozitiv de în conformitate cu Certificatul <C>. kot je določeno v <A> in odobreno s strani zgodnie z dokumentacją <A>, pozytywną opinią i Świadectwem <C>. 16 Megjegyzés* 19 Opomba* 17 Uwaga* 18 Notă* som det fremkommer i <A> og gjennom positiv bedømmelse av ifølge Sertifikat <C> jotka on esitetty asiakirjassa <A> ja jotka on hyväksynyt Sertifikaatin <C> mukaisesti. jak bylo uvedenov < A> apozitivně zjištěno enligt <A> och godkänts av enligt

както е изложено в <**A>** и оценено положително от съгласно Сертификата <С> kaip nustatyta <A> ir kaip teigamai nuspręsta pagal Sertifikatą <C> . ako bolo uvedené v <A> a pozitívne zistené kā norādīts <A> un atbilstoši pozitīvajam vērtējumam saskaņā ar sertifikātu <C>. v súlade s osvedčením <C>. 24 Poznámka* 23 Piezīmes* 22 Pastaba*

<A>'da belirtildiği gibi ve <C> Sertifikasına göre tarafından olumlu olarak değerlendirildiği gibi.

25 Not*

nagu on näidatud dokumendis <A> ja heaks kiidetud järgi vastavalt sertifikaadile <C>.

v skladus certifikatom <C>.

20 Märkus*

kako je izloženo u <A> i pozitivno odjenjeno od strane prema Certifikatu <C>.

15 Napomena* 14 Poznámka*

som anført i <A> og positivt vurderet af i henhold til Certifikat <C>.

10 Bemærk*

positivamente por de acuerdo con el Certificado <C>. como se establece en

сположительным решением <В> согласно Свидетельству <С>.

как указано в < А> и в соответствии

09 Примечание*

tel que défini dans <A> et évalué positivement par 08 Nota* A> conformément au Certificat <C>.

03 Remarque* 02 Hinweis*

04 Bemerk* 05 Nota*

zoals vermeld in 4> en positief becordeeld door 4> overeenkomstig Certificaat 4>.

07 Σημείωση*

06 Nota*

as set out in <A> and judged positively by

01 Note*

according to the Certificate <C>.
when <A> aufgeführt und von positiv
beurteilt gemäß Zertifikat <C>.

13 Huom* 12 Merk*

tal como estabelecido em <A> e com o parecer positivo de de acordo com o Certificado <C>. όπως καθορίζεται στο <**Α>** και κρίνεται θετικά από το <**B>** σύμφωνα με το Π**ιστοποιητικό <C>**.

 v souladu s os vědčením <C>.

<A> DAIKIN.TCF.025E22/12-2013 2082543.0551-QUA/EMC DEKRA (NB0344) ô

18 Directivelor, cu amendamentele respective.
19 Directive vsem sprementam.
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22 Directivoses su papiliýmais.
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25 Deštystimnýs hallenýve Yčnetmelikler.

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4 Richtlinen, zaals geannendeerd.
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6 Directives, seguin bennendado.
7 Oörpyuby, finus gyoun yonnrunfei.
8 Directives, conformealteração em. Директив со всеми поправками.

8848888

Electromagnetic Compatibility 2004/108/EC

Low Voltage 2006/95/EC

DAIKIN

Jean-Pierre Beuselinck Director

Ostend, 3rd of January 2014

Zandvoordestraat 300, B-8400 Oostende, Belgium

DAIKIN EUROPE N.V.

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1 About the documentation

1.1 About this document

Target audience

Authorised installers

Documentation set

This document is part of a documentation set. The complete set consists of:

| Document | Contains | Format |
|---|--|---|
| General safety precautions | Safety instructions that you must read before installing | Paper (in the box of the indoor unit) |
| Indoor unit installation manual | Installation instructions | |
| Outdoor unit installation manual | Installation instructions | Paper (in the box of the outdoor unit) |
| Installer reference guide | Preparation of the installation, technical specifications, good practices, reference data, | Digital files on http:// www.daikineurope.com/ support-and-manuals/ product-information/. |
| Addendum book for optional equipment | Additional info about how to install optional equipment | Paper (in the box of the indoor unit) Digital files on http:// www.daikineurope.com/ support-and-manuals/ product-information/. |

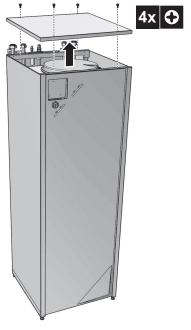
Latest revisions of the supplied documentation may be available on the regional Daikin website or via your dealer.

2 About the box

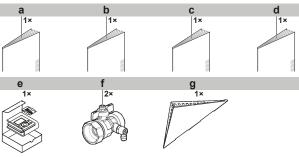
2.1 Indoor unit

2.1.1 To remove the accessories from the indoor unit

- 1 Remove the screws at the top of the unit.
- 2 Remove the top panel.



3 Remove the accessories.



- a General safety precautions
- **b** Addendum book for optional equipment
- c Indoor unit installation manual
- d Operation manual
- e User interface kit: user interface, 4 fixing screws, 2 plugs
- f Shut-off valve
- g User interface cover
- 4 Reinstall the top panel.

3 Preparation

3.1 Preparing water piping

3.1.1 To check the water volume

Minimum water volume

ONLY applicable for EHVH04+08S18CA3VF.

The system does not require a minimum water volume. Since an extra flow-through vessel was built into the unit, the total water volume in the installation can be **0 I**. It is however required that when all heat emitters are closed, the user interface displays a minimum water flow of 15 l/min.



INFORMATION

In critical processes, or in rooms with a high heat load, extra water might be required.



NOTICE

When circulation in each space heating loop is controlled by remote-controlled valves, it is important that a minimum water flow of **15 I/min** is guaranteed, even if all the valves are closed.

3.2 Preparing electrical wiring

3.2.1 Overview of electrical connections for external and internal actuators

| Item | Description | Wires | Maximum running current | | |
|------------|---|-------------------|-------------------------|--|--|
| Outdoor | Outdoor unit and indoor unit power supply | | | | |
| 1 | Power supply for outdoor unit | 2+GND or 3+GND | (a) | | |
| 2 | Power supply and interconnection cable to indoor unit | 3 | (c) | | |
| 3 | Power supply for backup heater | See table below. | _ | | |
| 4 | Preferential kWh rate power supply (voltage free contact) | 2 | (d) | | |
| 5 | Normal kWh rate power supply | 2 | 6.3 A | | |
| User inter | rface | | | | |
| 6 | User interface | 2 | (e) | | |
| Optional | equipment | | | | |
| 12 | Room thermostat | 3 or 4 | 100 mA ^(b) | | |
| 13 | Outdoor ambient temperature sensor | 2 | (b) | | |
| 14 | Indoor ambient temperature sensor | 2 | (b) | | |
| 15 | Heat pump convector | 4 | 100 mA ^(b) | | |
| Field sup | plied components | | | | |
| 16 | Shut-off valve | 2 | 100 mA(b) | | |
| 17 | Electricity meter 2 (per meter) | | (b) | | |
| 18 | Domestic hot water pump | 2 | (b) | | |
| 19 | Alarm output | 2 | (b) | | |

| Item | Description | Wires | Maximum running current |
|------|--|----------------------|-------------------------|
| 20 | Changeover to external heat source control | 2 | (b) |
| 21 | Space cool/heat operation control | 2 | (b) |
| 22 | Power consumption digital inputs | 2 (per input signal) | (b) |

- (a) Refer to name plate on outdoor unit.
- (b) Minimum cable section 0.75 mm².
- (c) Cable section 2.5 mm².
- (d) Cable section 0.75 mm² till 1.25 mm²; maximum length: 50 m. Voltage-free contact shall ensure the minimum applicable load of 15 V DC, 10 mA.
- (e) Cable section 0.75 mm² till 1.25 mm²; maximum length: 500 m. Applicable for both single user interface and dual use interface connection.



NOTICE

More technical specifications of the different connections are indicated on the inside of the indoor unit.

| Backup heater type | Power supply | Required number of conductors | |
|--------------------|--------------|-------------------------------|--|
| *3V | 1× 230 V | 2+GND | |

4 Installation

4.1 Opening the units

4.1.1 To open the indoor unit

- 1 Loosen and remove the screws at the bottom of the unit.
- 2 Slide the front panel of the unit downwards and remove it.



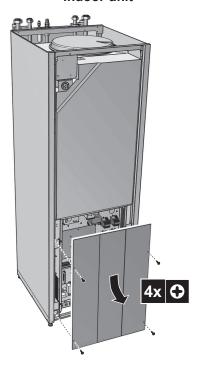
CAUTION

The front panel is heavy. Be careful NOT to jam your fingers when opening or closing the unit.

- 3 Loosen and remove the 4 screws that fix the top panel.
- 4 Remove the top panel from the unit.



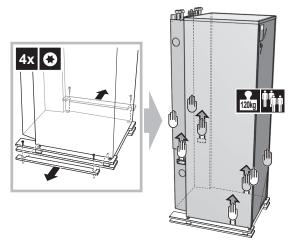
4.1.2 To open the switch box cover of the indoor unit



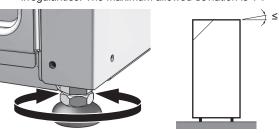
4.2 Mounting the indoor unit

4.2.1 To install the indoor unit

1 Lift the indoor unit from the pallet and place it on the floor.



- 2 Slide the indoor unit into position.
- 3 Adjust the height of the leveling feet to compensate for floor irregularities. The maximum allowed deviation is 1°.

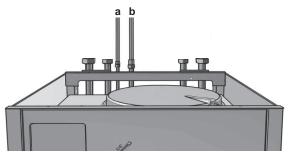


4.3 Connecting the refrigerant piping

See the outdoor unit installation manual for all guidelines, specifications and installation instructions.

4.3.1 To connect the refrigerant piping to the indoor unit

1 Connect the liquid stop valve from the outdoor unit to the refrigerant liquid connection of the indoor unit.



- a Refrigerant liquid connection
- **b** Refrigerant gas connection
- 2 Connect the gas stop valve from the outdoor unit to the refrigerant gas connection of the indoor unit.

4.4 Connecting the water piping

4.4.1 To connect the water piping

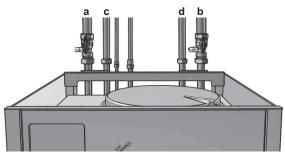


NOTICE

Do NOT use excessive force when connecting the piping. Deformation of the piping can cause malfunctioning of the unit

To facilitate service and maintenance, 2 shut-off valves are provided. Mount the valves on the water inlet and on the water outlet. Mind their the position. Orientation of the integrated drain and fill valves is important for servicing.

1 Install the shut-off valves on the water pipes.



- a Space heating water out
- **b** Space heating water in
- c Domestic hot water out
- d Domestic cold water in (cold water supply)



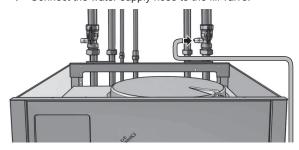
NOTICE

It is recommended to install shut-off valves to domestic cold water in and domestic hot water out connections. Shut-off valves are field supplied.

- 2 Screw the indoor unit nuts on the shut-off valves.
- 3 Connect the domestic hot water in and out pipes to the indoor unit.

4.4.2 To fill the water circuit

1 Connect the water supply hose to the fill valve.



- 2 Open the fill valve.
- 3 Make sure that the automatic air purge valve is open (at least 2 turns).



INFORMATION

For location of the air purge valve, see Components: Indoor unit in the Installer reference guide.

- 4 Fill the circuit with water until the manometer indicates a pressure of ± 2.0 bar.
- 5 Purge as much air as possible from the water circuit.
- 6 Close the fill valve.
- 7 Disconnect the water supply hose from the fill valve.

4.4.3 To fill the domestic hot water tank

- 1 Open every hot water tap in turn to purge air from the system pipe work.
- 2 Open the cold water supply valve.
- 3 Close all water taps after all air is purged.
- 4 Check for water leaks.
- 5 Manually operate the field installed pressure relief valve to ensure that free water flow through the discharge pipe.

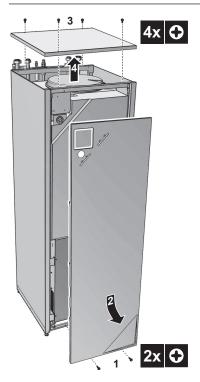
4.4.4 To insulate the water piping

The piping in the complete water circuit MUST be insulated to prevent condensation and reduction of the heating capacity.

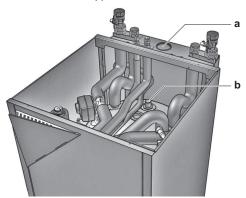
If the temperature is higher than 30°C and the humidity is higher than RH 80%, the thickness of the sealing materials should be at least 20 mm to prevent condensation on the surface of the sealing.

4.4.5 To connect the recirculation piping

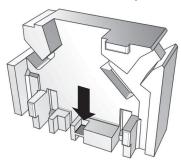
- 1 Loosen and remove the screws at the bottom of the unit.
- 2 Slide the front panel of the unit downwards and remove it.
- 3 Loosen and remove the 4 screws that fix the top panel.
- 4 Remove the top panel from the unit.



- 5 Remove the expansion vessel.
- 6 Remove the upper insulation cover of the unit.



- a Knock-out hole
- **b** Connection for recirculation piping
- 7 Remove the knock-out hole at the backside of the unit.
- 8 Connect the recirculation piping to the recirculation connection and route the piping through the knock-out hole at the backside of the unit.
- 9 Remove the indicated part in the figure below.



10 Re-attach the insulation, expansion vessel and casing.

4.5 Connecting the electrical wiring



DANGER: RISK OF ELECTROCUTION

!\

WARNING

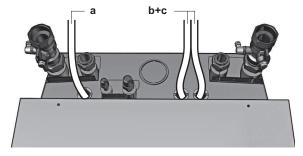
ALWAYS use multicore cable for power supply cables.

4.5.1 About electrical compliance

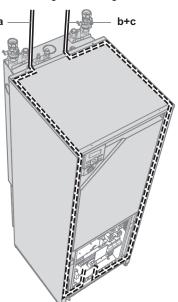
See "4.5.4 To connect the backup heater power supply" on page 8 $\,$

4.5.2 To connect the electrical wiring on the indoor unit

- 1 To open the indoor unit, see "4.1.1 To open the indoor unit" on page 5 and "4.1.2 To open the switch box cover of the indoor unit" on page 5.
- 2 Wiring should enter the unit from the top:



3 Routing of the wiring inside the unit should be as follows:



4 Fix the cable with cable ties to the cable tie mountings to ensure strain relief and to make sure that it does NOT come in contact with the piping and sharp edges.

4 Installation

| Routing | Possible cables (depending on unit type and installed options) | |
|-----------------------------|--|--|
| а | User interface | |
| Low voltage | Power consumption digital inputs (field supply) | |
| | Outdoor ambient temperature sensor (option) | |
| | Indoor ambient temperature sensor (option) | |
| | Electrical meters (field supply) | |
| b | Interconnection cable | |
| High voltage power supply | Normal kWh rate power supply | |
| | Preferential kWh rate power supply | |
| | Power supply for backup heater | |
| С | Preferential power supply contact | |
| High voltage control signal | Heat pump convector (option) | |
| | Room thermostat (option) | |
| | Shut-off valve (field supply) | |
| | Domestic hot water pump (field supply) | |
| | Alarm output | |
| | Changeover to external heat source control | |
| | Space heat operation control | |



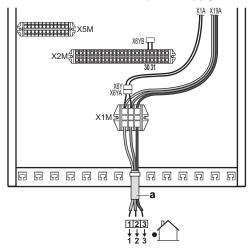
CAUTION

Do NOT push or place redundant cable length in the unit.

4.5.3 To connect the main power supply

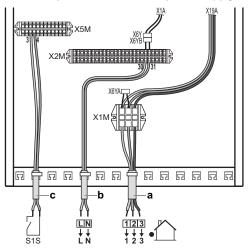
1 Connect the main power supply.

In case of normal kWh rate power supply



Legend: see illustration below.

In case of preferential kWh rate power supply



2 Fix the cable with cable ties to the cable tie mountings.



INFORMATION

In case of preferential kWh rate power supply, the necessity of separate normal kWh rate power supply to indoor unit (b) X2M30/31 depends on the type of preferential kWh rate power supply.

Separate connection to the indoor unit is required:

- if preferential kWh rate power supply is interrupted when active, OR
- if no power consumption of the indoor unit is allowed at the preferential kWh rate power supply when active.

4.5.4 To connect the backup heater power supply

The backup heater capacity can vary, depending on the indoor unit model. Make sure that the power supply is in accordance with the backup heater capacity, as listed in the table below.

| Backup heater type | Backup heater capacity | Power supply | Maximum running current |
|-----------------------|------------------------------|--------------|-------------------------|
| *3V | 3 kW | 1~ 230 V | 13 A |

 Connect the backup heater power supply. Use a single pole fuse for F1B.

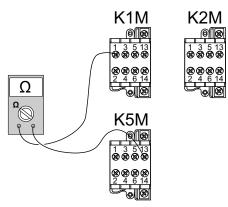
| Backup heater type | Connections to backup heater power supply | Connections to terminals |
|------------------------|---|--------------------------|
| 3 kW 1~ 230 V (*3V) | | _ |

- 2 Fix the cable with cable ties to the cable tie mountings.
- 3 Configure the user interface for the respective power supply. See "5.2.2 Quick wizard: Standard" on page 12.

During connection of the backup heater, miswiring is possible. To detect possible miswiring, it is highly recommended to measure the resistance value of the heater elements. Depending on the different backup heater types, following resistance values (see table below) should be measured. ALWAYS measure the resistance on the contactor clamps K1M, K2M, and K5M.

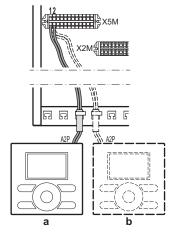
| | | 3 kW |
|-------|--------|----------|
| | | 1~ 230 V |
| K1M/1 | K5M/13 | 52.9Ω |
| | K1M/3 | ∞ |
| | K1M/5 | ∞ |
| K1M/3 | K1M/5 | 26.5Ω |
| K2M/1 | K5M/13 | ∞ |
| | K2M/3 | ∞ |
| | K2M/5 | ∞ |
| K2M/3 | K2M/5 | 52.9Ω |
| K1M/5 | K2M/1 | ∞ |

Example measure resistance between K1M/1 and K5M/13:



4.5.5 To connect the user interface

1 Connect the user interface cable to the indoor unit.



- a User interface delivered with the unit
- **b** Optional user interface
- 2 Fix the cable with cable ties to the cable tie mountings.

To fix the user interface to the unit

1 Insert a screwdriver into the slots underneath the user interface and carefully separate the faceplate from the wallplate.

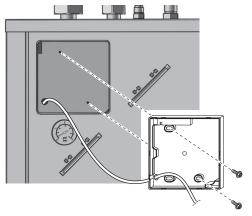




NOTICE

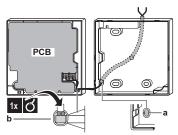
The PCB is mounted in the faceplate of the user interface. Be careful NOT to damage it.

2 Fix the wallplate of the user interface to the frontplate of the unit.



- 3 Cut off a 2 wire conductor.
- 4 Connect the wires to the user interface as shown below.

From the rear



- a Notch this part for the wiring to pass through with nippers etc.
- **b** Secure the wiring to the front part of the casing using the wiring retainer and clamp.
- Reinstall the faceplate onto the wallplate.

To fix the user interface to the wall in case of installation as room thermostat

1 Insert a screwdriver into the slots underneath the user interface and carefully separate the faceplate from the wallplate.



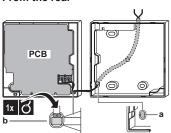


NOTICE

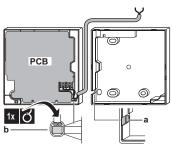
The PCB is mounted in the faceplate of the user interface. Be careful NOT to damage it.

- 2 Fix the wallplate of the user interface to the wall.
- 3 Connect the wires to the user interface as shown below

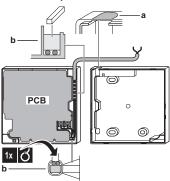
From the rear



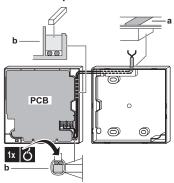
From the left



From the top



From the top center



- a Notch this part for the wiring to pass through with nippers etc.
- **b** Secure the wiring to the front part of the casing using the wiring retainer and clamp.
- 4 Reinstall the faceplate onto the wallplate.

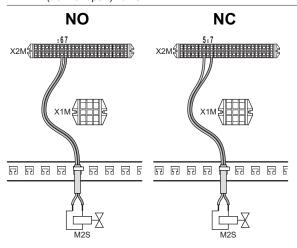
4.5.6 To connect the shut-off valve

 Connect the valve control cable to the appropriate terminals as shown in the illustration below.



NOTICE

Wiring is different for a NC (normal closed) valve and a NO (normal open) valve.



2 Fix the cable with cable ties to the cable tie mountings.

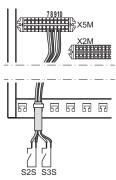
4.5.7 To connect the electrical meters



INFORMATION

In case of an electrical meter with transistor output, check the polarity. The positive polarity MUST be connected to X5M/7 and X5M/9; the negative polarity to X5M/8 and X5M/10.

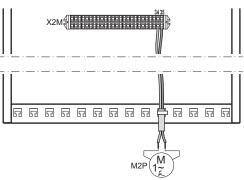
 Connect the electrical meters cable to the appropriate terminals as shown in the illustration below.



2 Fix the cable with cable ties to the cable tie mountings.

4.5.8 To connect the domestic hot water pump

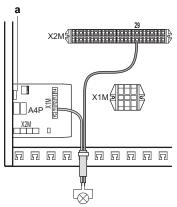
1 Connect the domestic hot water pump cable to the appropriate terminals as shown in the illustration below.



2 Fix the cable with cable ties to the cable tie mountings.

4.5.9 To connect the alarm output

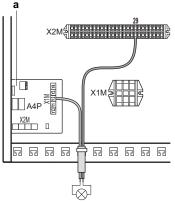
1 Connect the alarm output cable to the appropriate terminals as shown in the illustration below.



- a Installation of EKRP1HB is required.
- 2 Fix the cable with cable ties to the cable tie mountings.

4.5.10 To connect the space heating ON/OFF output

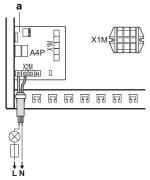
1 Connect the space heating ON/OFF output cable to the appropriate terminals as shown in the illustration below.



- a Installation of EKRP1HB is required.
- 2 Fix the cable with cable ties to the cable tie mountings.

4.5.11 To connect the changeover to external heat source

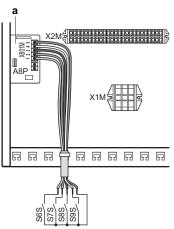
1 Connect the changeover to external heat source cable to the appropriate terminals as shown in the illustration below.



- a Installation of EKRP1HB is required.
- 2 Fix the cable with cable ties to the cable tie mountings.

4.5.12 To connect the power consumption digital inputs

1 Connect the power consumption digital inputs cable to the appropriate terminals as shown in the illustration below.

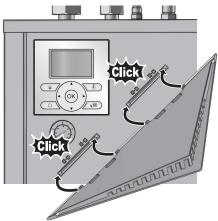


- Installation of EKRP1AHTA is required.
- 2 Fix the cable with cable ties to the cable tie mountings.

4.6 Finishing the indoor unit installation

4.6.1 To fix the user interface cover to the indoor unit

- 1 Make sure that the front panel is removed from the indoor unit. See "4.1.1 To open the indoor unit" on page 5.
- 2 Plug the user interface cover into the hinges.



3 Mount the front panel to the indoor unit.

4.6.2 To close the indoor unit

- 1 Close the switch box cover.
- 2 Reinstall the top plate.
- 3 Reinstall the front panel.



NOTICE

When closing the indoor unit cover, make sure that the tightening torque does NOT exceed 4.1 N•m.

5 Configuration

5.1 Overview: Configuration

If you do NOT configure the system correctly, it might NOT work as expected. You can configure the system with the user interface.

When you turn ON the user interface for the first time (via the indoor unit), a quick wizard starts to help you configure the system. If necessary, you can also make changes to the configuration afterwards



NOTICE

The explanation about the configuration in this chapter gives you ONLY basic explanations. For more detailed explanation and background information, see the installer reference guide.

The configuration influences the following:

- · The calculations of the software
- What you can see on and do with the user interface

Legend for the settings tables:

- #: Breadcrumb in the menu structure
- · Code: Code in the overview settings

When the installer settings are changed, the system will request to confirm. When confirmation is complete, the screen will shortly turn OFF and "busy" will be displayed for several seconds.

The most commonly used installation settings are accessible through the menu structure. Their location is mentioned by the breadcrumb indication (#). Additionally, all installer settings can also be found in "5.3 Menu structure: Overview installer settings" on page 16.

For access to the setting codes, see " To access the installer settings" on page 12.

Not all settings are accessible through the menu structure. Some are only accessible through their code. Then in the table explained below, the bread crumb is set as N/A (not applicable).

To access the installer settings

- 1 Set the user permission level to Installer.
- 2 Go to [A]: => Installer settings.

To access the overview settings

- 1 Set the user permission level to Installer.
- 2 Go to [A.8]: = > Installer settings > Overview settings.

To set the user permission level to Installer

- 2 Press for more than 4 seconds.

Result: / is displayed on the home pages.

3 If you do NOT press any button for more than 1 hour or press again for more than 4 seconds, the installer permission level switches back to End user.

To switch between user permission levels (End user and Advanced end user)

- 1 Go to [6] or any of its submenus: = > Information.
- 2 Press for more than 4 seconds.

Result: The user permission level switches to Adv. end user. Additional information is displayed and "+" is added to the menu title.

3 If you do NOT press any button for more than 1 hour or press again for more than 4 seconds, the user permission level switches back to End user.

5.2 Basic configuration

5.2.1 Quick wizard: Language / time and date

| # | Code | Description |
|-------|------|---------------|
| [A.1] | N/A | Language |
| [1] | N/A | Time and date |

5.2.2 Quick wizard: Standard

Space heating settings

| # | Code | Description |
|-----------|--------|---|
| [A.2.1.7] | [C-07] | Unit temperature control: |
| | | 0 (LWT control): Unit operation is decided based on the leaving water temperature. |
| | | 1 (Ext RT control): Unit operation is decided by the external thermostat. |
| | | 2 (RT control): Unit operation is decided based on the ambient temperature of the user interface. |

| # | Code | Description |
|-----------|--------|---|
| [A.2.1.B] | N/A | Only if there are 2 user interfaces: |
| | | User interface location: |
| | | At unit |
| | | In room |
| [A.2.1.8] | [7-02] | Number of water temperature zones: |
| | | 0 (1 LWT zone): Main |
| | | 1 (2 LWT zones): Main + additional |
| [A.2.1.9] | [F-0D] | Pump operation: |
| | | (Continuous): Continuous pump operation, regardless of thermo ON or OFF condition. |
| | | 1 (Sample): When thermo OFF condition occurs, the pump runs every 5 minutes and the water temperature is checked. If the water temperature is below target, unit operation can start. |
| | | (Request): Pump operation based on request. Example: Using a room thermostat and thermostat creates thermo ON/OFF condition. |

5.2.3 Quick wizard: Options

Domestic hot water settings

| # | Code | Description |
|-----------|--------|--|
| [A.2.2.1] | [E-05] | Domestic hot water tank: |
| | | 0 (No): NOT installed |
| | | 1 (Yes): Installed |
| [A.2.2.3] | [E-07] | Tank booster heater: |
| | | 0 (Horizontal BSH): N/A |
| | | 1 (Backup heater): Installed for domestic hot water heating. |
| [A.2.2.A] | [D-02] | Domestic hot water pump: |
| | | 0 (No): NOT installed |
| | | 1 (Secondary rtrn): Installed for instant hot water |
| | | 2 (Disinf. shunt): Installed for disinfection |
| | | See also illustrations below. |

| Domestic hot water pump installed for | | | | |
|---------------------------------------|--------------|--|--|--|
| Instant hot water | Disinfection | | | |
| -a b g | | | | |

- a Indoor unit
- **b** Tank
- c Domestic hot water pump
- d Heater element
- e Non-return valve
- f Shower
- g Cold water

Thermostats and external sensors

| # | Code | Description |
|-----------|--------|---|
| [A.2.2.4] | [C-05] | External room thermostat for the main zone: |
| | | 1 (Thermo ON/OFF): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition. |
| | | 2 (C/H request): When the used external room thermostat can send a separate heating/cooling thermo ON/ OFF condition. |
| [A.2.2.5] | [C-06] | External room thermostat for the additional zone: |
| | | • 0: N/A |
| | | 1 (Thermo ON/OFF): When the used external room thermostat or heat pump convector can only send a thermo ON/OFF condition. |
| | | 2 (C/H request): When the used external room thermostat can send a separate heating/cooling thermo ON/ OFF condition. |
| [A.2.2.B] | [C-08] | External sensor: |
| | | 0 (No): NOT installed. |
| | | 1 (Outdoor sensor): Connected to PCB measuring the outdoor temperature. |
| | | 2 (Room sensor): Connected to PCB measuring the indoor temperature. |

Digital I/O PCB

| # | Code | Description |
|-------------|--------|---|
| [A.2.2.6.1] | [C-02] | External backup heater source: |
| | | • 0 (No): None |
| | | 1 (Bivalent): Gas, oil boiler |
| | | * 2: N/A |
| | | * 3: N/A |
| [A.2.2.6.3] | [C-09] | Alarm output on optional EKRP1HB PCB: |
| | | 0 (Normally open): The alarm output will be powered when an alarm occurs. |
| | | 1 (Normally closed): The alarm output will NOT be powered when an alarm occurs. This installer setting allows distinction between detection of an alarm and detection of a power failure to the unit. |
| | | See also table below (Alarm output logic). |

Alarm output logic

| [C-09] | Alarm | No alarm | No power supply to unit |
|-------------|---------------|---------------|-------------------------|
| 0 (default) | Closed output | Open output | Open output |
| 1 | Open output | Closed output | |

Demand PCB

| # | Code | Description |
|-----------|--------|--|
| [A.2.2.7] | [D-04] | Demand PCB |
| | | Indicates if the optional demand PCB is installed. |
| | | 0 (No): NOT installed |
| | | 1 (Yes): Installed |

Energy metering

| # | Code | Description |
|-----------|--------|--------------------------------|
| [A.2.2.8] | [D-08] | Optional external kWh meter 1: |
| | | 0 (No): NOT installed |
| | | 1: Installed (0.1 pulse/kWh) |
| | | 2: Installed (1 pulse/kWh) |
| | | 3: Installed (10 pulse/kWh) |
| | | 4: Installed (100 pulse/kWh) |
| | | 5: Installed (1000 pulse/kWh) |
| [A.2.2.9] | [D-09] | Optional external kWh meter 2: |
| | | 0 (No): NOT installed |
| | | 1: Installed (0.1 pulse/kWh) |
| | | 2: Installed (1 pulse/kWh) |
| | | 3: Installed (10 pulse/kWh) |
| | | 4: Installed (100 pulse/kWh) |
| | | 5: Installed (1000 pulse/kWh) |

5.2.4 Quick wizard: Capacities (energy metering)

| # | Code | Description |
|-----------|--------|------------------------------|
| [A.2.3.1] | [6-02] | Booster heater capacity [kW] |

5.2.5 Space heating control

Leaving water temperature: Main zone

| # | Code | Description |
|-------------|--------|--|
| [A.3.1.1.1] | N/A | Set point mode: |
| | | 0 (Absolute): Absolute |
| | | 1 (Weather dep.): Weather- dependent |
| | | 2 (Abs + scheduled): Absolute + scheduled (only for leaving water temperature control) |
| | | 3 (WD + scheduled): Weather- dependent + scheduled (only for leaving water temperature control) |
| [A.3.1.1.3] | [1-00] | Weather-dependent curve (heating): |
| | [1-01] | ^T t ↑ |
| | [1-02] | |
| | [1-03] | [1-02] |
| | | [1-03] |
| | | |
| | | [1-00] [1-01] T _a |
| | | T_i: Target leaving water temperature (main) |
| | | T _a : Outdoor temperature |

Leaving water temperature: Additional zone

| # | Code | Description |
|-------------|--------|--|
| [A.3.1.2.1] | N/A | Set point mode: |
| | | 0 (Absolute): Absolute |
| | | 1 (Weather dep.): Weather- dependent |
| | | 2 (Abs + scheduled): Absolute + scheduled (only for leaving water temperature control) |
| | | 3 (WD + scheduled): Weather- dependent + scheduled (only for leaving water temperature control) |
| [A.3.1.2.3] | [0-00] | Weather-dependent curve (heating): |
| | [0-01] | ^T t ↑ |
| | [0-02] | |
| | [0-03] | [0-01] |
| | | [0-00] |
| | | |
| | | [0-03] [0-02] T _a |
| | | T_i: Target leaving water temperature (additional) |
| | | T_a: Outdoor temperature |

Leaving water temperature: Delta T emitter

| # | Code | Description |
|-------------|--------|---|
| [A.3.1.3.1] | [9-09] | Heating: required temperature difference between entering and leaving water. |
| | | In case a minimum temperature difference is required for the good operation of the heat emitters in heating mode. |

Leaving water temperature: Modulation

| # | Code | Description | | | | | | | |
|-------------|--------|---|--|--|--|--|--|--|--|
| [A.3.1.1.5] | [8-05] | Leaving water temperature modulation: | | | | | | | |
| | | 0 (No): Disabled | | | | | | | |
| | | 1 (Yes): Enabled. The leaving water temperature is calculated according to the difference between desired and actual room temperature. This allows better matching of the heat pump capacity to actual required capacity and results in less start/stop cycles of the heat pump and more economic operation. | | | | | | | |

Leaving water temperature: Emitter type

| # | Code | Description | | | | | | | | | |
|-------------|--|--|--|--|--|--|--|--|--|--|--|
| [A.3.1.1.7] | [9-0B] | Reaction time of the system: | | | | | | | | | |
| | | O: Quick. Example: Small water volume and fan coils. | | | | | | | | | |
| | 1: Slow. Example: Large volume, floor heating loops. | | | | | | | | | | |
| | | Depending on the system water volume and the heat emitters type, the heat up of a space can take longer. This setting can compensate for a slow or a quick heating system by adjusting the unit capacity during the heat up cycle. | | | | | | | | | |

5.2.6 Domestic hot water control

| # | Code | Description | | | | | | |
|-----------|--------|--|--|--|--|--|--|--|
| [A.4.1] | [6-0D] | Domestic hot water Setpoint mode: | | | | | | |
| | | 0 (Reheat only): Only reheat operation is allowed. | | | | | | |
| | | 1 (Reheat + sched.): Same as 2, but between the scheduled heatup cycles, reheat operation is allowed. | | | | | | |
| | | 2 (Scheduled only): The domestic hot water tank can ONLY be heated according to a schedule. | | | | | | |
| [A.4.3.1] | N/A | How is the tank temperature to be displayed on the user interface? | | | | | | |
| | | As temperature.60°C ♦ | | | | | | |
| | | - As graphic: The temperature has to be displayed as available hot water for x persons. If you choose this, you also have to configure which number equals which temperature under [A.4.3.2.1]~[A.4.3.2.6]: † 4 ◆ | | | | | | |
| [A.4.5] | [6-0E] | The maximum temperature that users can select for the domestic hot water. You can use this setting to limit the temperature at the hot water taps. | | | | | | |



INFORMATION

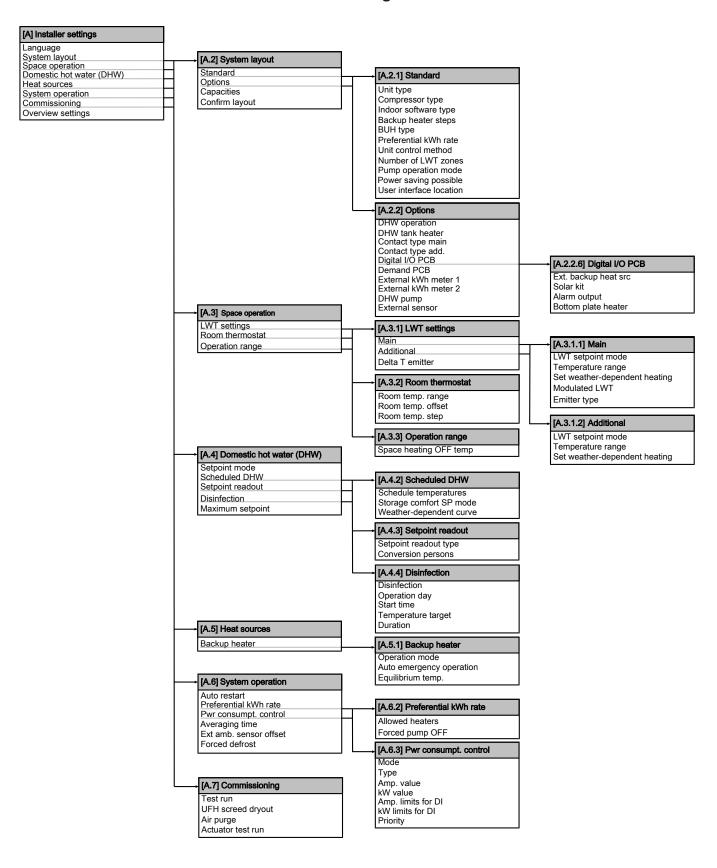
It is recommended NOT to use the selection of ([6-0D]=0, [A.4.1] Domestic hot water Setpoint mode=Reheat only).

The risk of space heating capacity shortage/comfort problems is significant (in case of frequent domestic hot water operation, frequent and long space heating interruption will happen).

5.2.7 Contact/helpdesk number

| # | Code | Description |
|---------|------|---------------------------------------|
| [6.3.2] | N/A | Number that users can call in case of |
| | | problems. |

5.3 Menu structure: Overview installer settings





INFORMATION

Solar kit and bottom plate heater settings are shown but NOT applicable for this unit. Settings shall NOT be used or changed.

6 Commissioning

6.1 Checklist before test run

| Do NOT | operate the system before the following checks are OK: |
|--------|--|
| | The indoor unit is properly mounted. |
| | The outdoor unit is properly mounted. |
| | The following field wiring has been carried out according to this document and the applicable legislation: |
| | Between the local supply panel and the indoor unit |
| | Between the indoor unit and the valves (if applicable) |
| | Between the indoor unit and the room thermostat (if applicable) |
| | Between the indoor unit and the domestic hot water tank (if applicable) |
| | Between the gas boiler and the local supply panel (only applicable in case of hybrid system) |
| | The system is properly $\mbox{\bf earthed}$ and the earth terminals are tightened. |
| | The fuses or locally installed protection devices are installed according to this document, and have not been bypassed. |
| | The power supply voltage matches the voltage on the identification label of the unit. |
| | There are NO loose connections or damaged electrical components in the switch box. |
| | There are NO damaged components or squeezed pipes on the inside of the indoor and outdoor units. |
| | Depending on the backup heater type, the backup heater circuit breaker F1B or F3B on the switch box is turned ON. |
| | There are NO refrigerant leaks. |
| | The refrigerant pipes (gas and liquid) are thermally insulated. |
| | The correct pipe size is installed and the pipes are properly insulated. |
| | There is NO water leak inside the indoor unit. |
| | The shut-off valves are properly installed and fully open. |
| | The stop valves (gas and liquid) on the outdoor unit are fully open. |
| | The air purge valve is open (at least 2 turns). |
| | The pressure relief valve purges water when opened. |



NOTICE

NEVER operate the unit without thermistors, burning of the compressor may result.

6.2 To perform an air purge

Prerequisite: Make sure the user interface shows the home screens and that the space heating and domestic hot water demands are turned off.

- 2 Set the type, speed and circuit.
- 3 Select Start air purge and press OK
- 4 Select OK and press OK.

Result: The air purge starts. It stops automatically when done. To stop it manually, press , select OK and press .

6.3 To perform a test run

Prerequisite: Make sure the user interface shows the home screens and that the space heating and domestic hot water demands are turned off.

- 2 Select a test and press OK. Example: Heating.
- Select OK and press OK.

Result: The test run starts. It stops automatically when done (±30 min). To stop it manually, press , select OK and press .



INFORMATION

If 2 user interfaces are present, you can start a test run from both user interfaces.

- The user interface used to start the test run displays a status screen.
- The other user interface displays a "busy" screen. You cannot stop the test run as long as the "busy" screen is shown.

6.4 To perform an actuator test run

Prerequisite: Make sure the user interface shows the home screens and that the space heating and domestic hot water demands are turned off.

- Make sure the room temperature control, the leaving water temperature control and the domestic hot water control are turned OFF via the user interface.
- 2 Go to [A.7.4]: > Installer settings > Commissioning > Actuator test run.
- 3 Select an actuator and press OK. Example: Pump.
- 4 Select OK and press OK

Result: The actuator test run starts. It automatically stops when finished. To stop it manually, press , select OK and press OK.

6.4.1 Possible actuator test runs

- Booster heater test
- · Backup heater (step 1) test
- Backup heater (step 2) test
- Pump test



INFORMATION

Calibration of the produced heat calculation is included in this test.

Make sure that air is purged before executing the test run. Also avoid causing disturbances in the water circuit during the test run.

7 Hand-over to the user

- Solar pump test
- 2-way valve test
- 3-way valve test
- · Bottom plate heater test
- Bivalent signal test
- Alarm output test
- · Cooling/heating signal test
- Quick heat-up test
- · Circulation pump test

6.5 To perform an underfloor heating screed dryout

Prerequisite: Make sure the user interface shows the home screens and that the space heating and domestic hot water demands are turned off.

- 2 Set a dryout program.
- 3 Select Start dryout and press OK.
- 4 Select OK and press OK.

Result: The underfloor heating screed dryout starts. It stops automatically when done. To stop it manually, press \bigcirc , select OK and press \bigcirc .

7 Hand-over to the user

Once the test run is finished and the unit operates properly, please make sure the following is clear for the user:

- Fill in the installer setting table (in the operation manual) with the actual settings.
- Make sure that the user has the CD/DVD and the printed documentation and ask him/her to keep it for future reference.
- Explain the user how to properly operate the system and what he/ she has to do in case of problems.
- Show the user what jobs he/she has to do in relation to maintenance of the unit.
- Explain the user about energy saving tips as described in the operation manual.

8 Technical data

8.1 Wiring diagram

8.1.1 Wiring diagram: Indoor unit

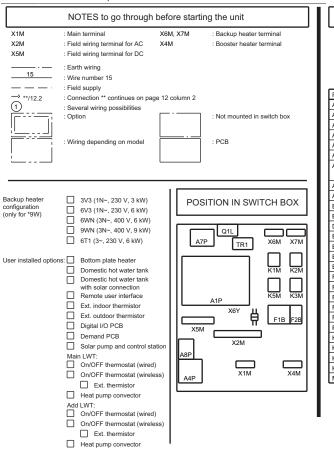
See the internal wiring diagram supplied with the unit (on the inside of the indoor unit switch box cover). The abbreviations used are listed below.



INFORMATION

Please note that the following features are NOT applicable for EHVH04+08S18CA3VF and any reference to them in the wiring diagram can be ignored:

- space cooling (units are heating only models),
- bottom plate heater (not present in outdoor unit),
- BUH step 2 (backup heater model is 3V),
- solar kit (not compatible with integrated domestic hot water tank).



LEGEND

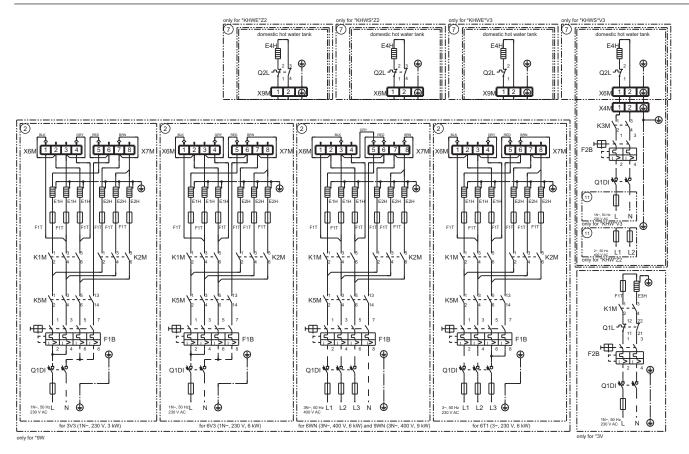


Translation can be found in the installation manual.

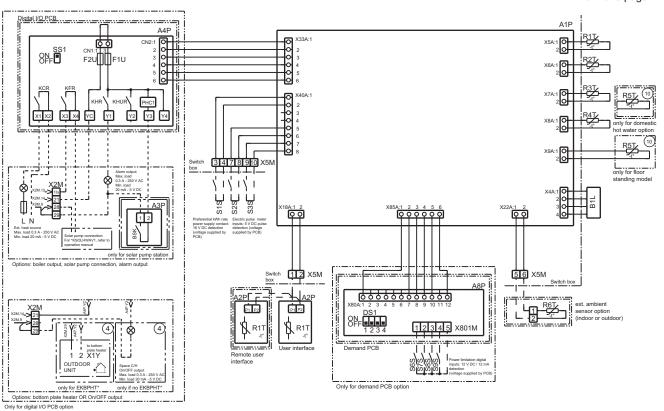
| Part n° | | Description | | | |
|-----------|---|--------------------------------------|------------|-----|--|
| A1P | Г | main PCB | M2P | # | domestic hot water pump |
| A2P | Г | user interface PCB | M2S | # | 2 way valve for cooling mode |
| A3P | * | solar pumpstation PCB | M3S | (*) | |
| A3P | | On/OFF thermostat (PC=power circuit) | ll . | ı | domestic hot water |
| A3P | | heat pump convector | Q1DI, Q2DI | # | earth leakage circuit breaker |
| A4P | | digital I/O PCB | Q1L | Г | thermal protector backup heater |
| A4P | | receiver PCB (wireless | Q2L | * | thermal protector booster heater |
| | ı | On/OFF thermostat) | R1T | Г | outlet water heat exchanger thermistor |
| A7P | Г | pump driver PCB (only for *16*) | R1T (A2P) | Г | ambient sensor user interface |
| A8P | * | demand PCB | R1T (A3P) | * | ambient sensor On/OFF thermostat |
| B1L | | flow sensor | R2T | | outlet backup heater thermistor |
| BSK | | solar pump station relay | R2T | * | external sensor (floor or ambient) |
| DS1 (A8P) | * | dipswitch | R3T | | refrigerant liquid side thermistor |
| E1H | | backup heater element (1 kW) | R4T | | inlet water thermistor |
| E2H | | backup heater element (2 kW) | R5T | (*) | domestic hot water thermistor |
| E3H | | backup heater element (3 kW) | R6T | * | external indoor or outdoor |
| E4H | * | booster heater (3 kW) | | | ambient thermistor |
| F1B | | overcurrent fuse backup heater | R1H (A3P) | * | humidity sensor |
| F2B | * | overcurrent fuse booster heater | S1S | # | preferential kWh rate PS contact |
| F1T | | thermal fuse backup heater | S2S | # | electrical meter pulse input 1 |
| F1U, F2U | * | fuse 5 A 250 V for digital I/O PCB | S3S | # | electrical meter pulse input 2 |
| FU1 | | fuse T 6.3 A 250 V for PCB | S6S-S9S | # | digital power limitation inputs |
| PHC1 | * | optocoupler input circuit | SS1 (A4P) | * | selector switch |
| K1M, K2M | | contactor backup heater | T1R (A7P) | | rectifier bridge (only for *16*) |
| КЗМ | * | contactor booster heater | TR1 | | power supply transformer |
| K5M | | safety contactor BUH (only *9W) | X*M | | terminal strip |
| K*R | | relay on PCB | X*Y | | connector |
| M1P | Γ | main supply pump | | | |

: optional (): standard for *HV*, optional for *HB* #: field supply

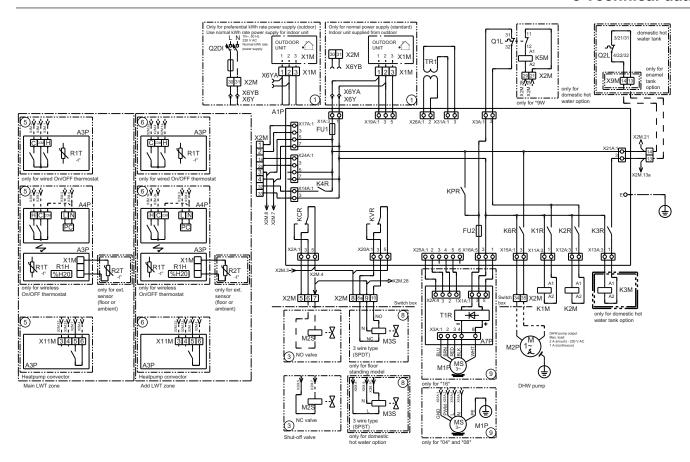
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| A1P | | Main PCB | M1P | | Main supply pump | | | | | |
|----------|---|--|------------|-----|--|--|--|--|--|--|
| A2P | | User interface PCB | M2P | # | Domestic hot water pump | | | | | |
| A3P | * | Solar pump station PCB | M2S | # | 2-way valve for cooling mode | | | | | |
| A3P | * | On/OFF thermostat (PC=power circuit) | M3S | (*) |) 3-way valve for floor heating/domestic hot water | | | | | |
| A3P | * | Heat pump convector | 0401 0201 | ш | | | | | | |
| A4P | * | Digital I/O PCB | Q1DI, Q2DI | # | Earth leakage circuit breaker | | | | | |
| A4P | * | Receiver PCB (Wireless On/OFF | Q1L | | Thermal protector backup heater | | | | | |
| | | thermostat) | Q2L | * | Thermal protector booster heater | | | | | |
| A7P | | Pump driver PCB (not applicable) | R1T | | Outlet water heat exchanger thermistor | | | | | |
| A8P | * | Demand PCB | R1T (A2P) | | Ambient sensor user interface | | | | | |
| B1L | | Flow sensor | R1T (A3P) | * | Ambient sensor On/OFF thermostat | | | | | |
| BSK | * | Solar pump station relay | R2T | | Outlet backup heater thermistor | | | | | |
| DS1(A8P) | * | DIP switch | R2T | * | External sensor (floor or ambient) | | | | | |
| E1H | | Backup heater element (1 kW) | R3T | | Refrigerant liquid side thermistor | | | | | |
| E2H | | Backup heater element (2 kW) | R4T | | Inlet water thermistor | | | | | |
| E3H | | Backup heater element (3 kW) | R5T | (*) | Domestic hot water thermistor | | | | | |
| E4H | * | Booster heater (3 kW) | R6T | * | External indoor or outdoor ambient | | | | | |
| F1B | | Overcurrent fuse backup heater | | | thermistor | | | | | |
| F2B | * | Overcurrent fuse booster heater | R1H (A3P) | * | Humidity sensor | | | | | |
| F1T | | Thermal fuse backup heater | S1S | # | Preferential kWh rate power supply contact | | | | | |
| F1U, F2U | * | Fuse 5 A 250 V for digital I/O PCB | S2S | # | Electrical meter pulse input 1 | | | | | |
| FU1 | | Fuse T 6.3 A 250 V for PCB | S3S | # | Electrical meter pulse input 2 | | | | | |
| PHC1 | * | Optocoupler input circuit | S6S~S9S | # | Digital power limitation inputs | | | | | |
| K1M, K2M | | Contactor backup heater | SS1 (A4P) | * | Selector switch | | | | | |
| K3M | * | Contactor booster heater | T1R (A7P) | | Rectifier bridge (not applicable) | | | | | |
| K5M | | Safety contactor backup heater (only for | TR1 | | Power supply transformer | | | | | |
| | | *9W) | X*M | | Terminal strip | | | | | |
| K*R | | Relay on PCB | X*Y | | Connector | | | | | |

8 Technical data

* = Optional

(*) = Not applicable

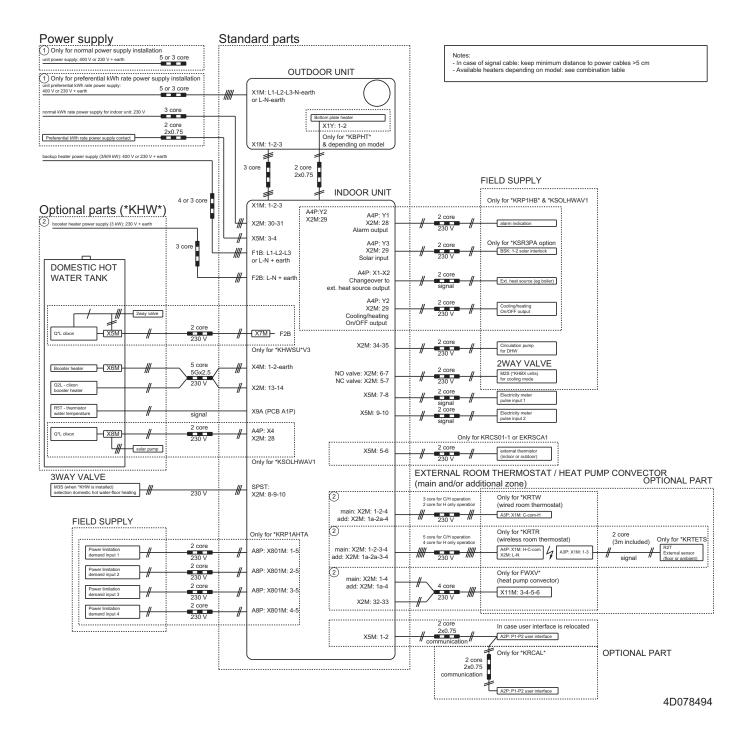
= Field supply

BLK Black
BRN Brown
GRY Grey
RED Red

Notes to go through before starting the unit

| English | Translation |
|---|---|
| X1M | Main terminal |
| X2M | Field wiring terminal for AC |
| X5M | Field wiring terminal for DC |
| X6M, X7M | Backup heater terminal |
| X4M | Booster heater terminal |
| | Earth wiring |
| 15 | Wire number 15 |
| | Field supply |
| —> **/12.2 | Connection ** continues on page 12 column 2 |
| 1 | Several wiring possibilities |
| | Option |
| | Not mounted in switch box |
| | Wiring depending on model |
| | PCB |
| Backup heater configuration (only for *9W) | Backup heater configuration (only for *9W) |
| User installed options | User installed options |
| Bottom plate heater | Bottom plate heater |
| Domestic hot water tank | Domestic hot water tank |
| Domestic hot water tank with solar connection | Domestic hot water tank with solar connection |
| Remote user interface | Remote user interface |
| Ext. indoor thermistor | Extended indoor thermistor |
| Ext outdoor thermistor | Extended outdoor thermistor |
| Digital I/O PCB | Digital I/O PCB |
| Demand PCB | Demand PCB |
| Solar pump and control station | Solar pump and control station |
| Main LWT | Main leaving water temperature |
| On/OFF thermostat (wired) | On/OFF thermostat (wired) |
| On/OFF thermostat (wireless) | On/OFF thermostat (wireless) |
| Ext. thermistor | Extended thermistor |
| Heat pump convector | Heat pump convector |
| Add LWT | Additional leaving water temperature |

Electrical connection diagram Daikin Altherma For more details please check unit wiring



* electrical meter specification

- pulse meter type/voltage free contact for 5 VDC detection by PCB
- possible number of pulse:

0.1 pulse/kWh 1pulse/kWh 10pulse/kWh 100 pulse/kWh 1000 pulse/kWh

- pulse duration:

minimum On time 40ms minimum OFF time 100ms

- measurement type (depending on installation):

single phase AC meter

three phase AC meter (balanced loads) three phase AC meter (unbalanced loads)

* electrical meter installation guideline

- General: it is the reponsability of the installer to cover the complete power consumption with electrical meters (combination of estimation and metering is not allowed)
- Required number of electrical meters:

| Outdoor un | Outdoor unit type | | | *RLQ(04/06/08)* | | | | 14/016 |)*V3 | *R*Q(011/014/016)*W1 | | | | |
|-----------------------|-------------------------------|-------------------------------|---------------|-----------------|---------------|-------------|-------------|------------|---------------|-----------------------|---|------------------|---|---------|
| Indoor unit type | | *HB(H/X)(04/08)CA# | | | *HB(H/X)16CA# | | | | *HB(H/X)16CA# | | | | | |
| | Backup heater type (#) | | 3V / 9W 9W | | 9W | 3V / 9W | 9\ | 9W 9W | | 3V / 9W 1~ 230V | | 9W 3~ 400V | | 9W |
| | Backup heater power supply | 1~ 3~ 230V 400V | | 3~ 230V | 1~ 230V | 3~ 400V | | 3~ 230V | 3~ 230V | | | | | |
| | Backup heater configuration | 3 / 6 kW | 6 k | / 9 <i>N</i> | 6 kW | 3 / 6 kW | 6 / 9 kW | | 6 kW | 3 / 6 kW | | 6 / 9 kW | | 6 kW |
| | | Regular kWh rate power supply | | | | | | | | | | | | |
| | 1~ | 1 | 1 | ı | - | 1 | 1 | 1 | - | 1 | - | 1 | - | - |
| Electrical meter type | 3~ balanced | 1 | 1 | 1 | - | - | 1 | 1 | - | 1 | - | 1 | - | - |
| ineter type | 3~ unbalanced | - | - | 1 | 1 | - | - | 1 | 1 | - | 1 | - | 1 | 1 |
| | Benefit kWh rate power supply | | | | | | | | | | | | | |
| | 1~ | 2 | 1 | | 1 | 2 | 1 | | 1 | 1 | | - | | - |
| Electrical meter type | 3~ balanced | - | - | <u>-</u> | - | - | | | - | 1 | | 1 | | 1 |
| motor type | 3~ unbalanced | - | 1 | | 1 | - | 1 | | 1 | - | | 1 | | 1 |

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