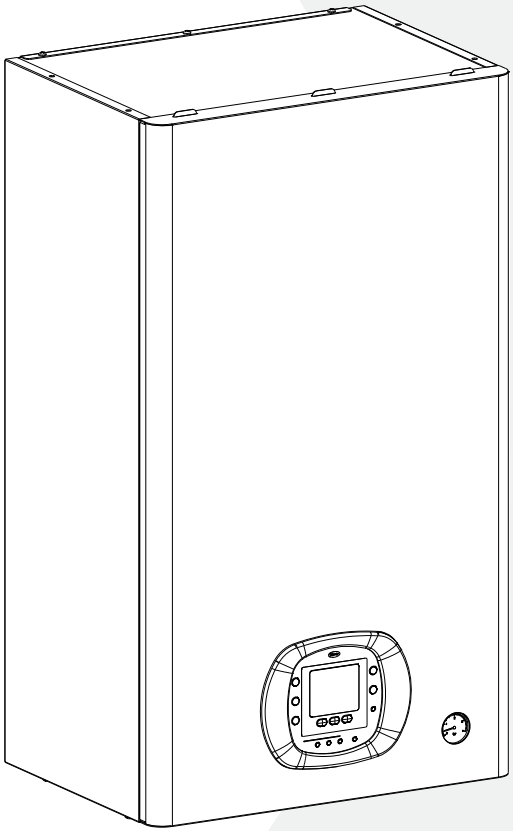
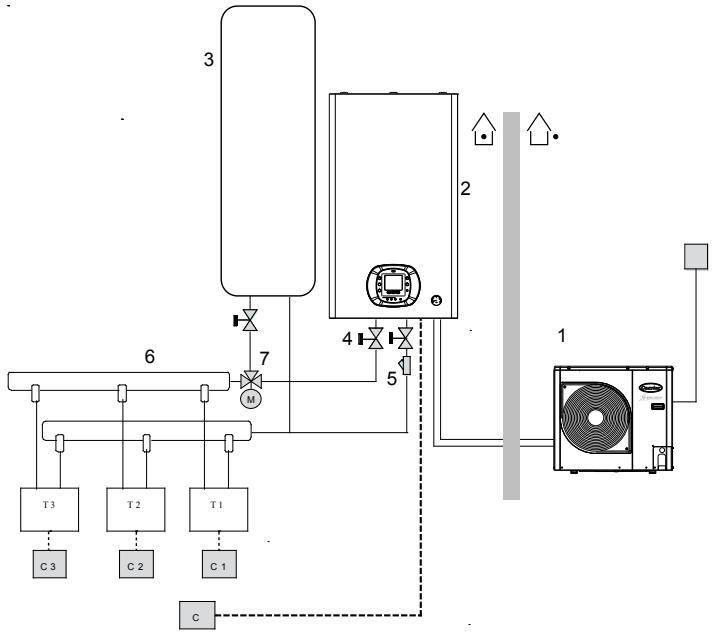
# Control module

Carrier

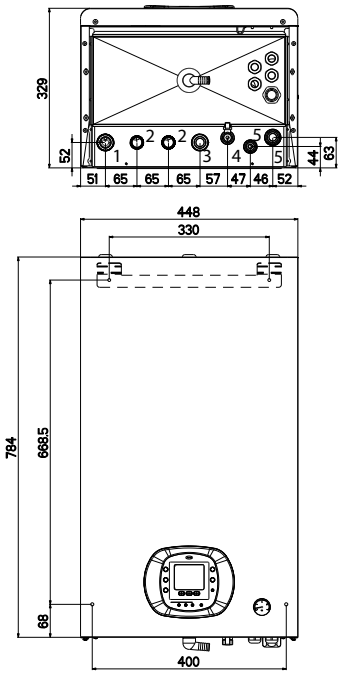
**80AWX**
**80AWH**



## Installation Manual


3
2
1
4
5
6
7
M
T 3
T 2
T 1
C 3
C 2
C 1
C

1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52
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330
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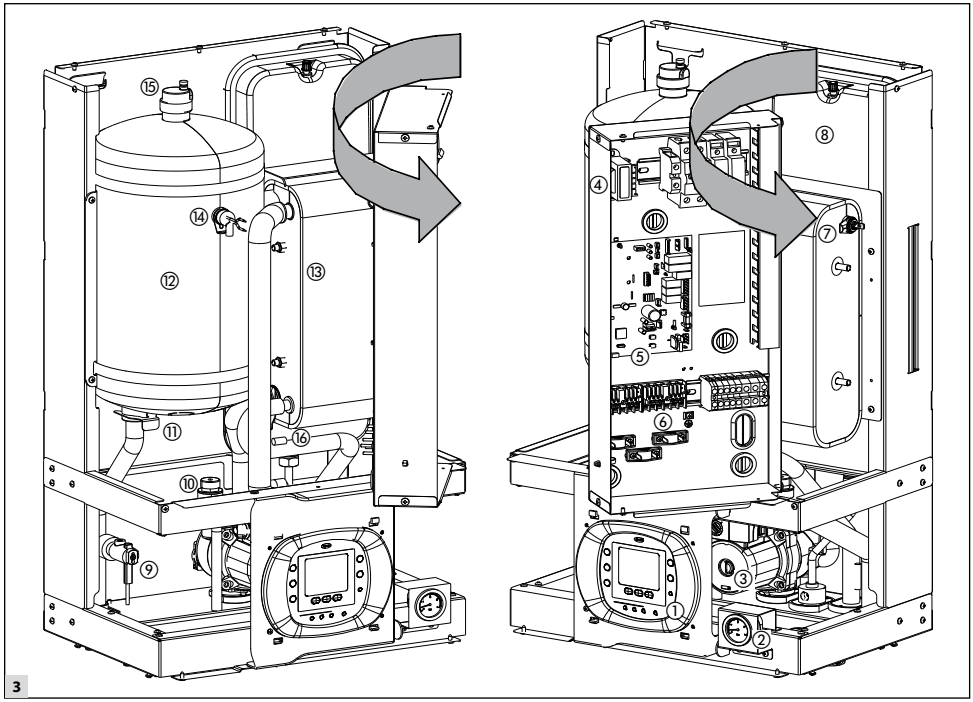
668.5
68
400

2

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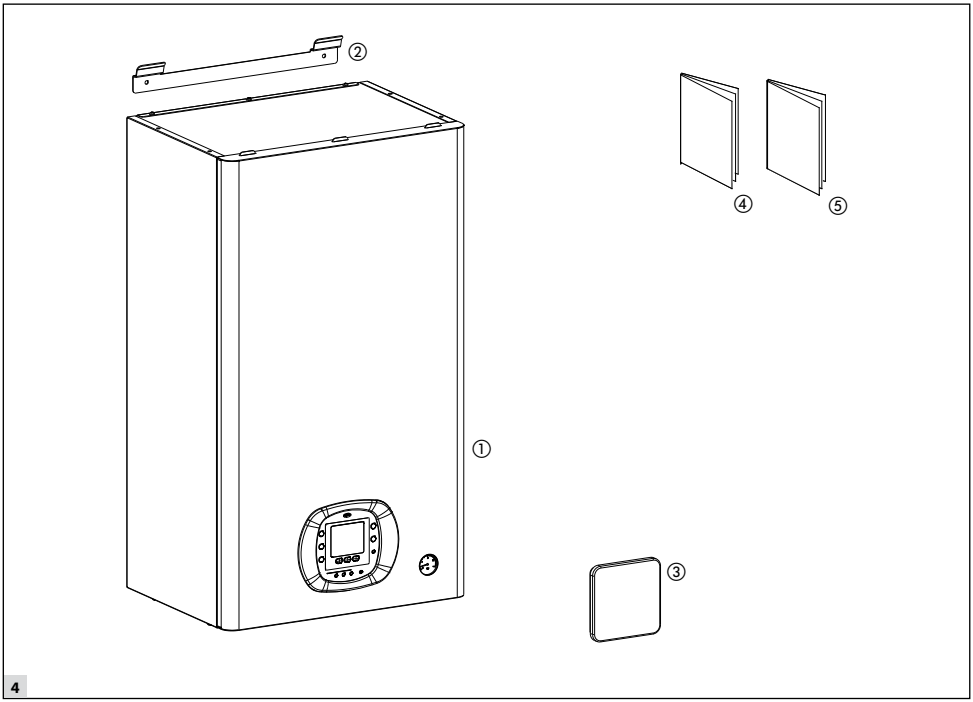


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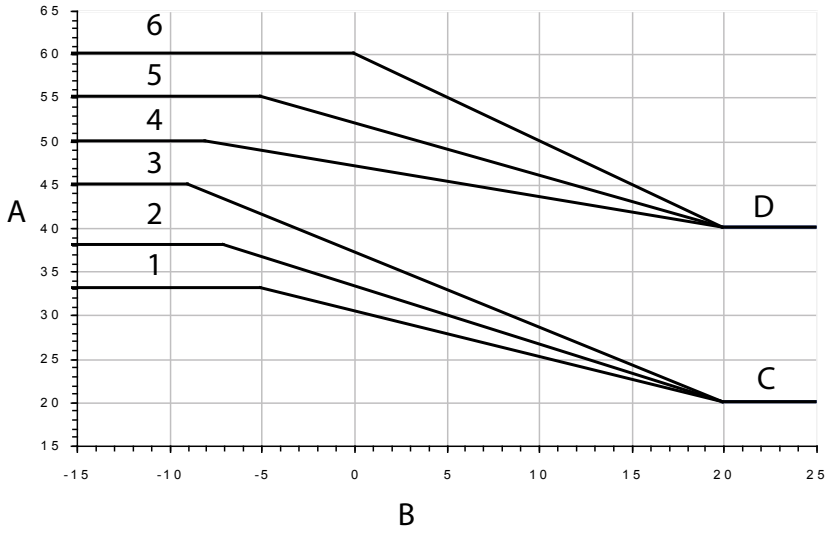
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60
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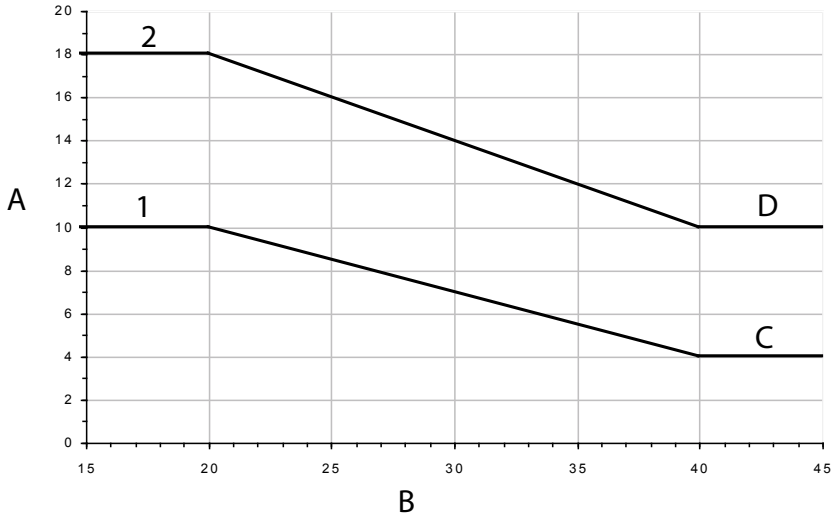
5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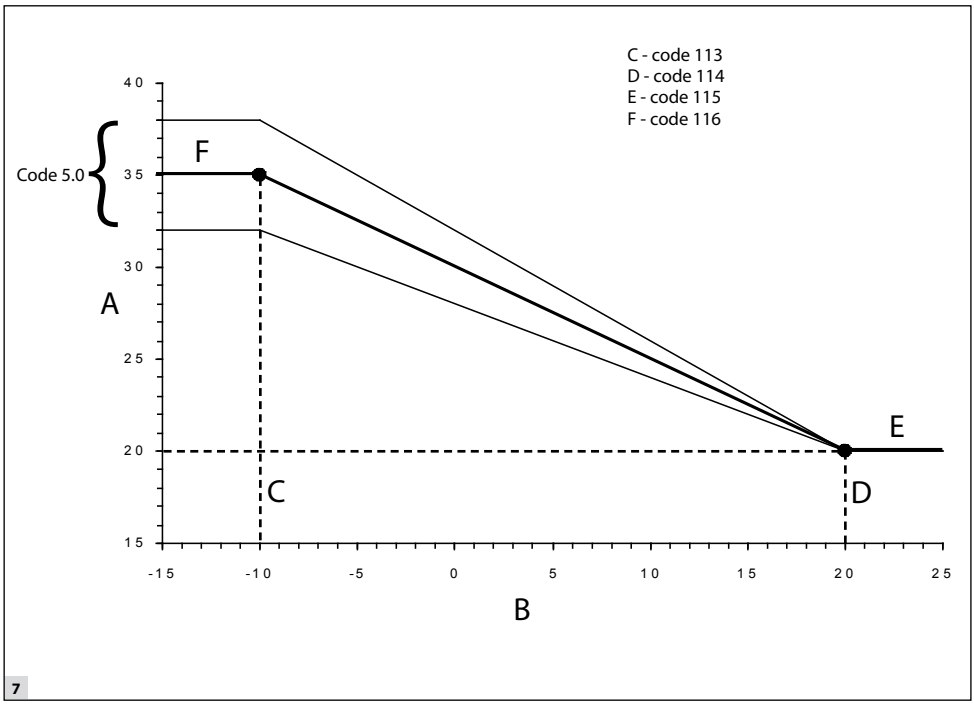
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F - code 116
Code 5.0
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E
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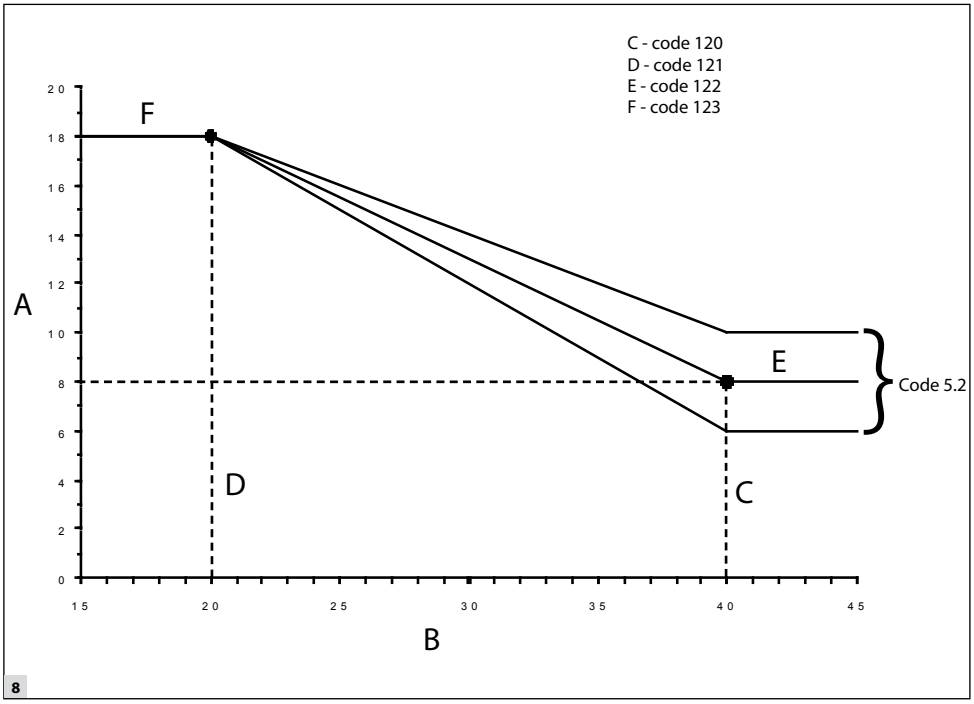
7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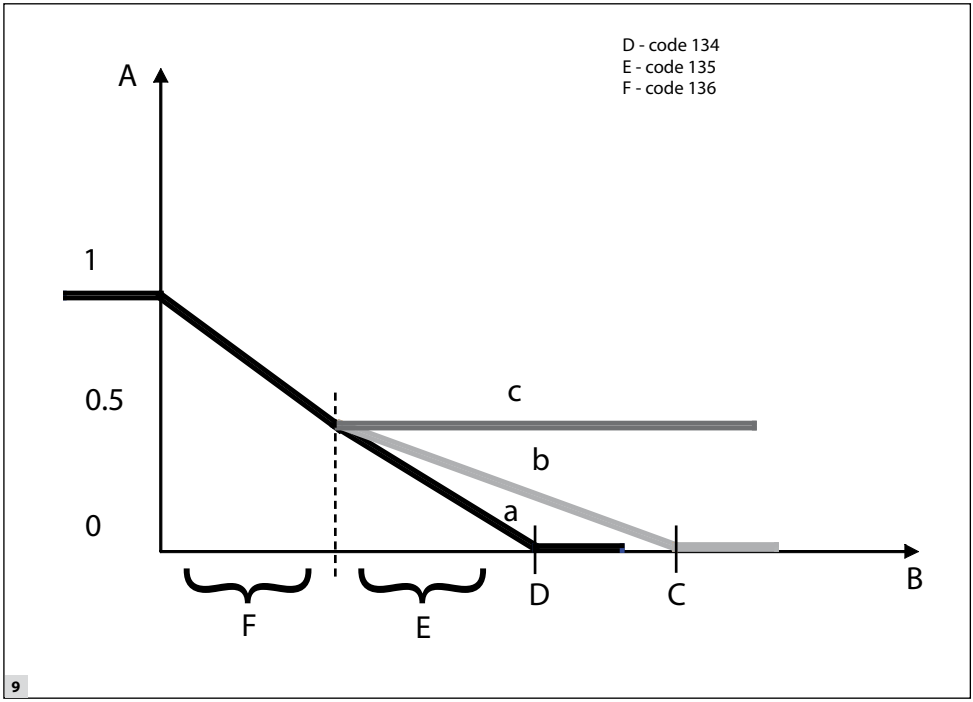
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c
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a
B
D
C
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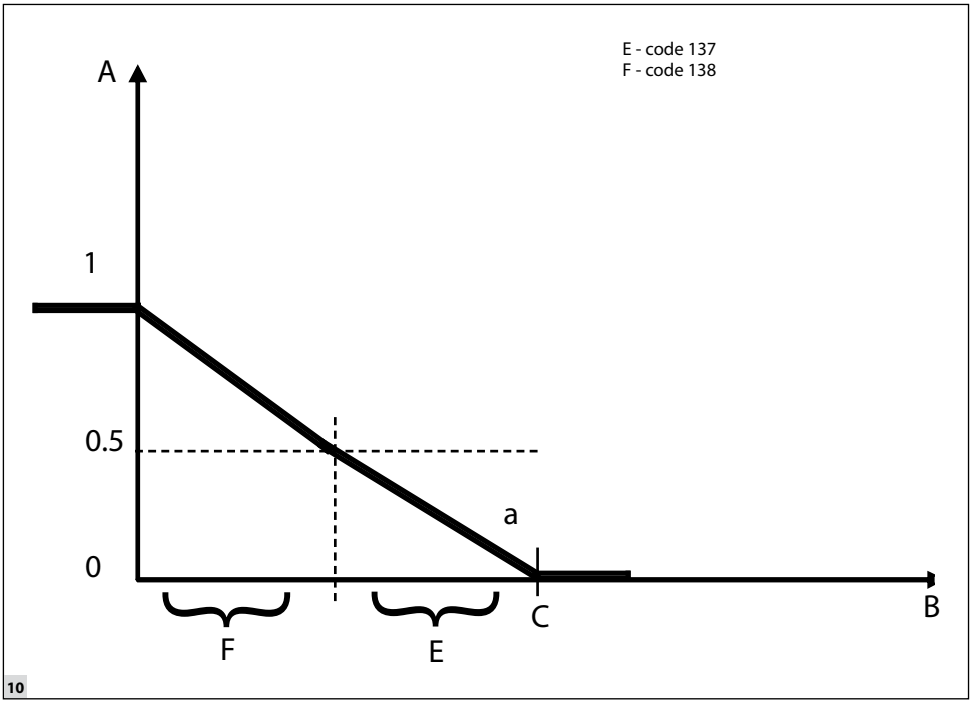
9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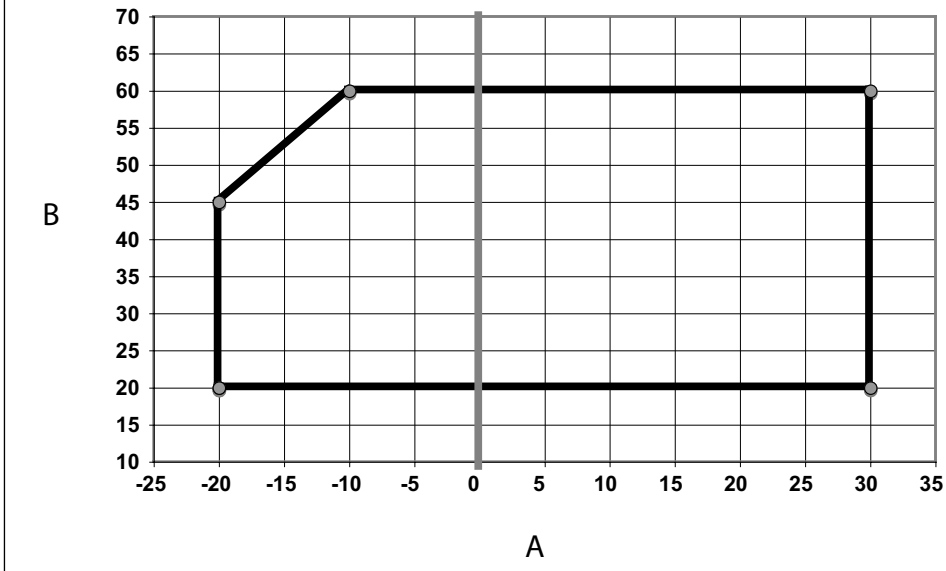
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A

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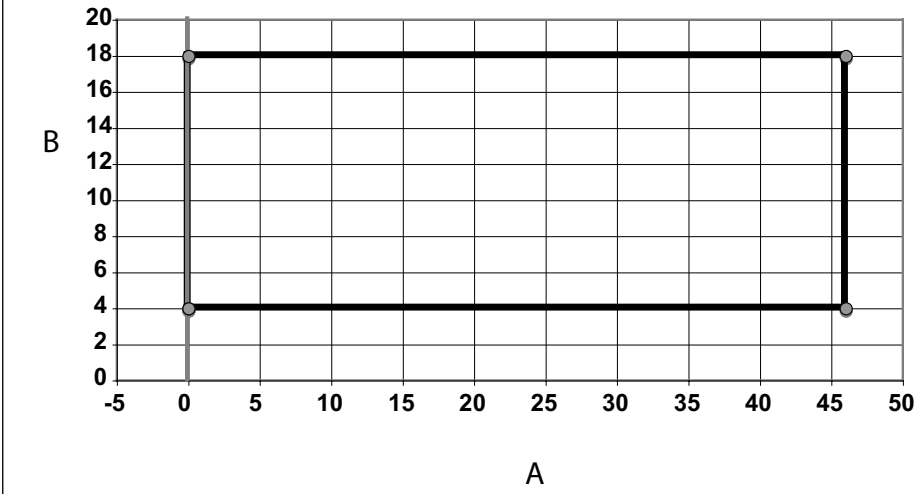
B
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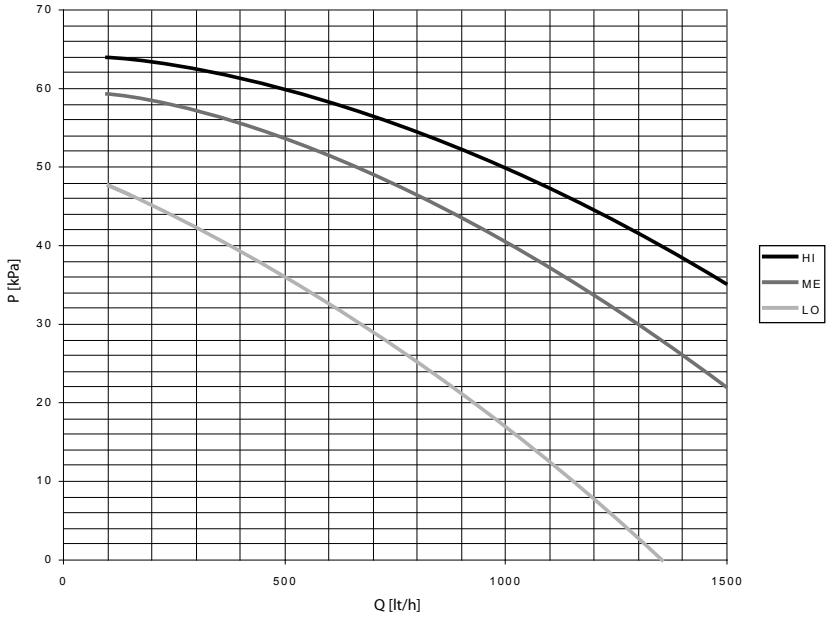
12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P [kPa]
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Q [lt/h]
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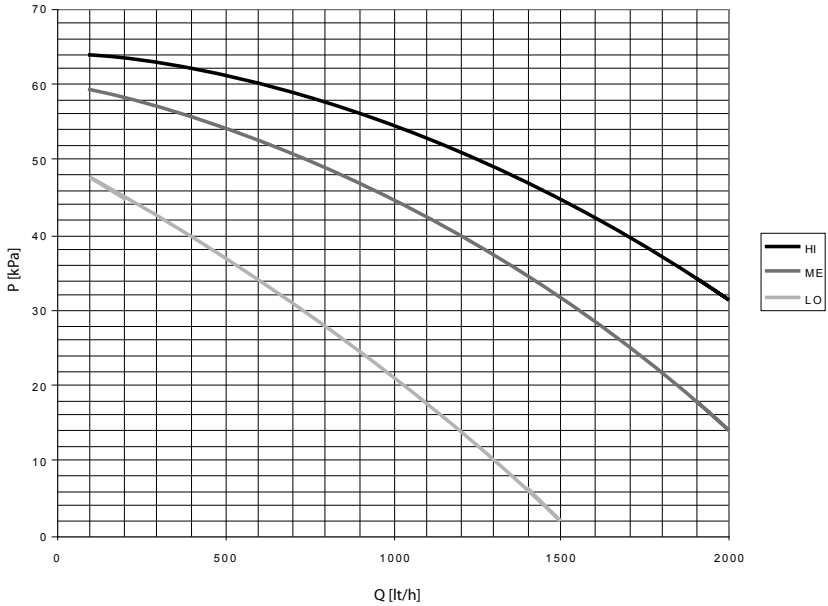
ME
LO

13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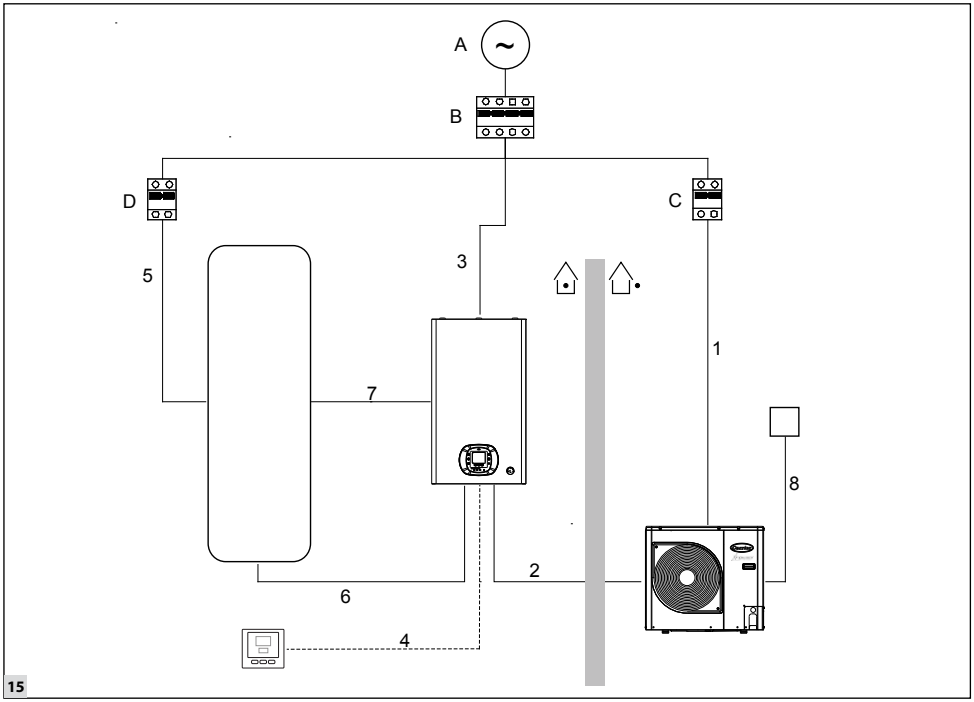
HI
ME
LO

14

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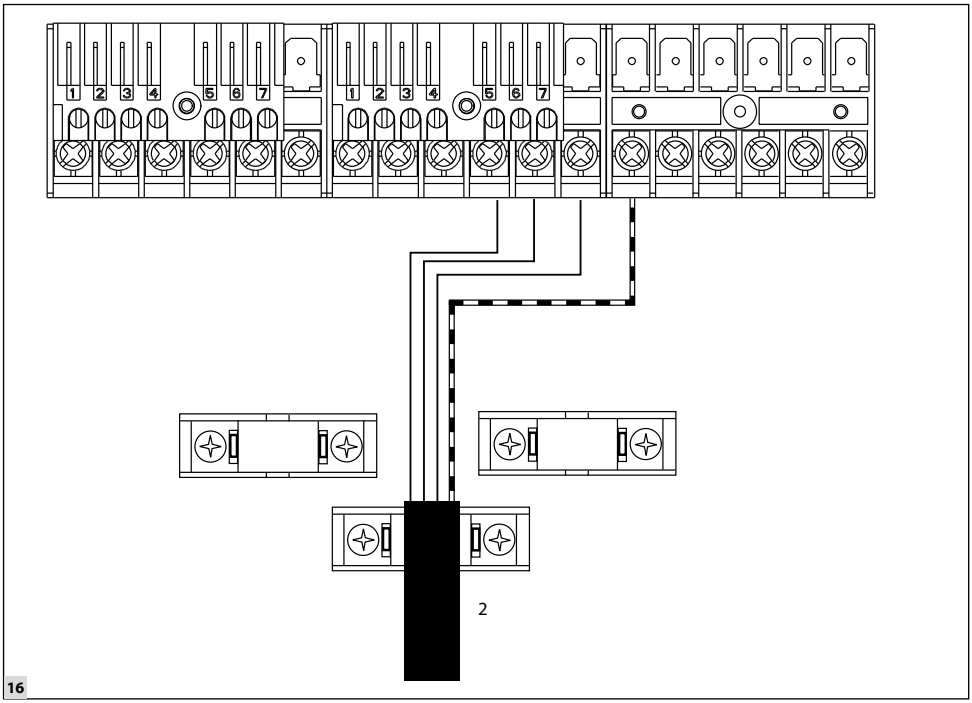


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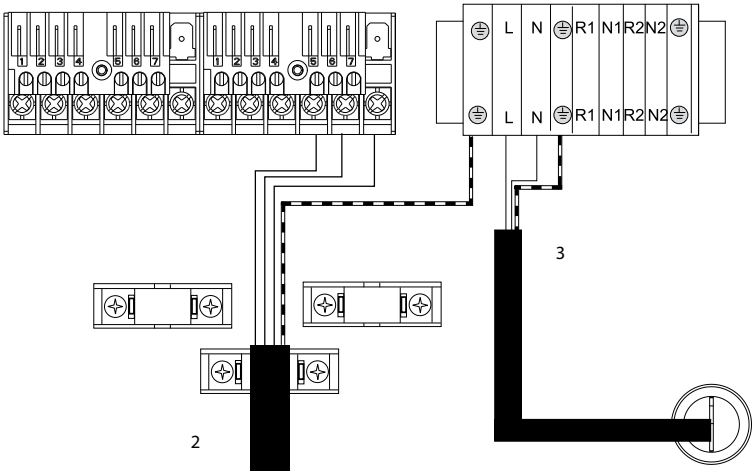
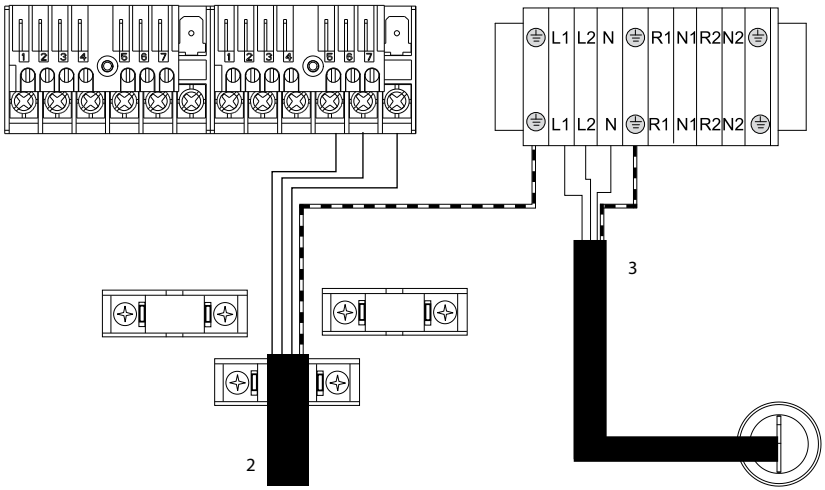
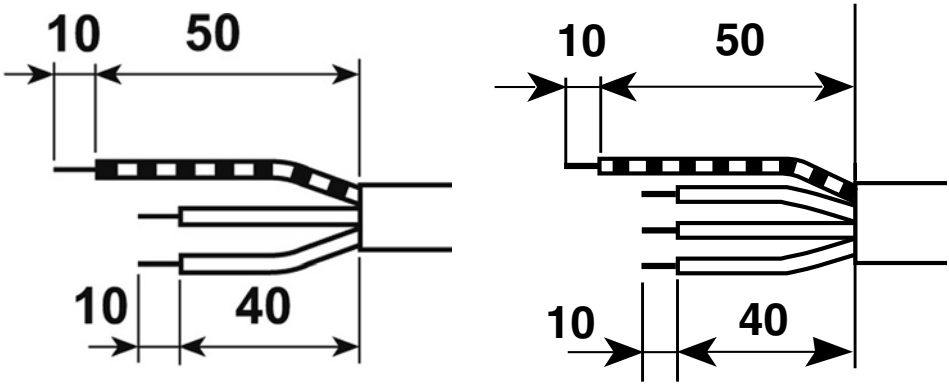

L N R1 N1 R2 N2
L N R1 N1 R2 N2
3
2

17


L1 L2 N R1 N1 R2 N2
L1 L2 N R1 N1 R2 N2
3
2

18


10
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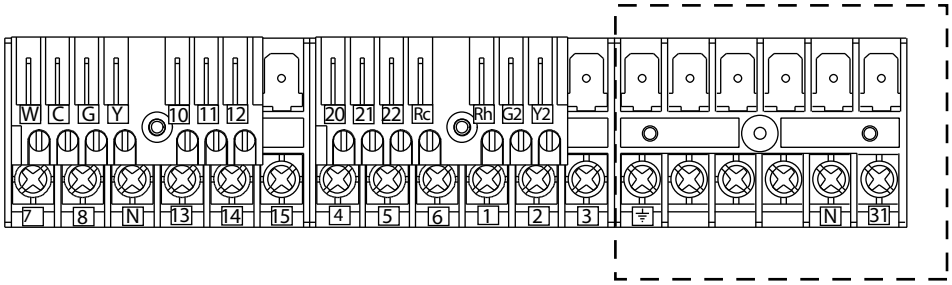
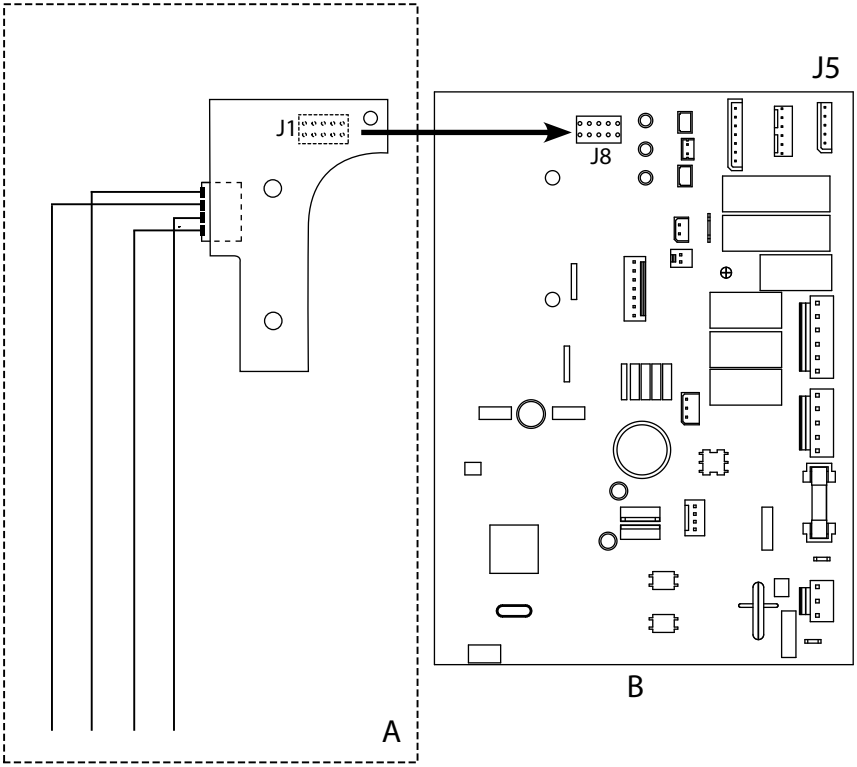
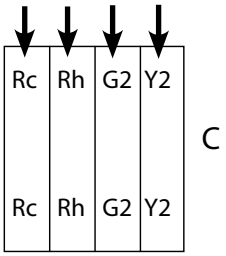
a b

19


W C G Y 10 11 12 20 21 22 Rc Rh G2 Y2
7 8 N 13 14 15 4 5 6 1 2 3 N 31

20


J1
J8
J5
A
B


Rc
Rh
G2
Y2
Rc
Rh
G2
Y2
C

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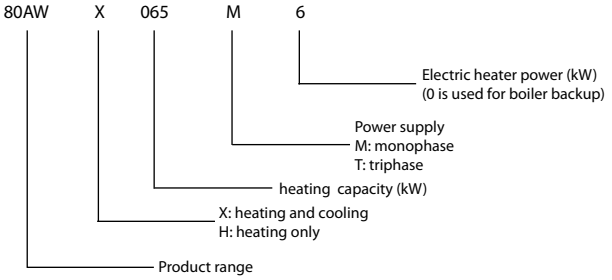
## Introduction

### General information

The hydronic module is the indoor unit of the 38AW heat pump range.
It is used in combination with floor circuit, fan coil units, radiators, domestic hot water tank (with or without solar integration).

The hydronic module controls the CDU and the other heat/cool sources, in order to achieve the desired temperature in the heating / cooling zones and in the domestic hot water.

### Model identification



# Introduction

## Codes and combinations

| Outdoor unit | Indoor unit |
|---|---|
| 38AW050H7<br>38AW065H7 | 80AWX065M0 |
| | 80AWX065M3 |
| | 80AWX065M6 |
| | 80AWX065T6 |
| | 80AWH065M0 |
| | 80AWH065M3 |
| | 80AWH065M6 |
| | 80AWH065T6 |
| 38AW090H7<br>38AW115H7 | 80AWX115M0 |
| | 80AWX115M3 |
| | 80AWX115M6 |
| | 80AWX115T6 |
| | 80AWX115T9 |
| | 80AWH115M0 |
| | 80AWH115M3 |
| | 80AWH115M6 |
| | 80AWH115T6 |
| | 80AWH115T9 |

## Accessories

| Accessory | Code |
|---|---|
| Domestic hot water tank, 1 spiral - 200 lt | 60STS020E03 |
| Domestic hot water tank, 2 spirals - 200 lt | 60STD020E03 |
| Domestic hot water tank, 1 spiral - 300 lt | 60STS030E03 |
| Domestic hot water tank, 2 spirals - 300 lt | 60STD030E03 |
| Remote Outdoor sensor | 33AW-RAS02 |
| Domostic hot water 3 way valve and actuator | 80AW9023 |
| Floor heating thermal cut off (EN1264-4, paragraph 4.2.4.1) | 80AW9024 |
| Additional user interface* | 33AW-CS2 |
| Communication kit | 33AW-CB01 |
| 2 zone kit | 80AW9025 |

* Communication kit (33AW-CB01) is required to complete the installation

## Application scheme

See fig. 1
1. Outdoor Unit
2. Hydronic module
3. Domestic hot water tank (optional)
4. Ball valves (field supplied)
5. Water filter (field supplied)
6. Collectors (field supplied)
7. 3 way valve (optional)

T1, T2, T3: terminals
C1, C2, C3: thermostats connected to terminals
C: user interface (additional or shifted from the unit) or thermostat connected to hydronic module

### Terminals

Terminals can be of the following types:
- floor circuit
- fan coils
- radiators
- low temperature radiators

Different terminals have different water temperature requirements.
To ensure comfort, it is suggested not to use, at the same time, terminals with different water temperature requirements.
Example: it is possible to use floor circuit for heating and fan coil for cooling, but using both at the same time (in heating or cooling) will cause discomfort.
Floor circuit is the recommended terminal, as it ensures the best energy efficiency.

### Room temperature control

Different terminals (T1, T2…Tn) can be placed in a single room or in multiple rooms.
Each of them can have a thermostat, to stop the terminal when a certain temperature is reached.

It is possible to control 1 room with a user interface or a thermostat connected to the unit.
This room should be the one with the highest heating/cooling requirements.
In this room it is not required to place a thermostat on the terminal/s.
It is suggested to place a thermostat on terminals placed in rooms with significantly different thermal requirements.

It is recommended to control the room with the user interface; this way the control adjusts water temperature to meet the setpoint and comfort and energy efficiency are optimized.
If no user interface is used:
- if thermostats are used, set climatic curves slightly higher in heat mode and slightly lower in cool mode
- if no thermostats are used (temperature requirements should be similar for all rooms), climatic curves must be set exactly right for both heating and cooling operation

## Unit description

See fig. 2
1. Outlet water pipe
2. Boiler pipes (only models 80AW----M0)
3. Inlet water pipe
4. Filling valve
5. Refrigerant pipes

See fig. 3
1. User interface (mounted on unit)
2. Manometer
3. Water pump
4. Control box
5. Main board
6. Terminal blok
7. Water temperature sensor - LWT
8. Expansion vessel
9. Flow switch
10. Pressure relief valve
11. Electric heater (not for models 80AW----M0)
12. Buffer tank (10 lt)
13. Brazed plate heat exchanger
14. Water temperature sensor - TWB
15. Air purge valve
16. Refrigerant sensor - TC

## Box content

See fig. 4
1. Hydronic module
2. Wall bracket
3. Replacement cap for shifted user interface
4. Hydronic module manual
5. User interface manual

# Controller operation

System operation is set and monitored through the control settings.
The user interface allows navigating through the settings and modifying them.

| Code Nr. | Level | Variable Name | DESCRIPTION | VALUE RANGE Min | VALUE RANGE Max | DEFAULT |
|---|---|---|---|---|---|---|
| | | | **USER PARAMETERS** | | | |
| 1 | User | USER CONTROL | Use Days button for selection of below<br>0. Home Antifreeze option<br>0 : Disable<br>1 : Enable<br>1. Silent Mode<br>0: Not Active<br>1: Active<br>2. Power Off all the Electric Heater<br>0: Operating as normal<br>1: Electric heater disable<br>3. Specifies if domestic hot water is produced despite sensor diagnostics or disinfection cycle failure<br>The code is self reset to 0 when the above problems are solved<br>0: No<br>1: Yes<br>4. Specifies if the system is allowed to run only with backup / booster heaters when the Outdoor unit is in diagnostics<br>0. No<br>1. Yes<br>5. Domestic hot water BOOSTER: allows to heat up domestic hot water electric heater regardless the heater schedule<br>The code is self reset to 0 once domestic hot water setpoint is reached<br>0. Domestic hot water heater is turned on, if needed, according to schedule<br>1. Domestic hot water heater is turned on, if needed, regardless the schedule<br>6. Water Pump Management zone 1<br>0. Water pump of zone 1 does not stop when room 1 setpoint is reached<br>1. Water pump of zone 1 stops when room 1 setpoint is reached<br>7. Water Pump Management zone 2<br>0. Water pump of zone 2 does not stop when room 2 setpoint is reached<br>1. Water pump of zone 2 stops when room 2 setpoint is reached | 0 | 1 | 1<br><br>0<br><br>0<br><br>0<br><br>0<br><br>0<br><br>0<br><br>0 |
| 2 | User | HOME ANTIFREEZE T° | Home Antifreeze threshold T° value. | 6°C | 12°C | 6°C |
| 3 | User | FREQ REDUCT | Value of the Outdoor unit frequency reduction in % | 50% | 100% | 100% |
| 4 | User | Room Hystersis | Hysteresis on Room Temperature (see thermostat function) | 0,1 | 2 | 0,5 |
| 5 | User | ADJUST T°ZONES | Modifies maximum temperature of heating climatic curve and minimum temperature of cooling climatic curve.<br>Use Days button for selection of below<br>0. Water set point adjustment in Heat mode for zone1<br>1. Water set point adjustment in Heat mode for Zone2<br>2. Water set point adjustment in Cool mode for zone1<br>3. Water set point adjustment in Cool mode for zone2 | -5°C | +5°C | 0°C |
| 6 | User | DAY PERIOD | User can select how many period per day will be avaialble for the scheduling.<br>Use days button for selecting the below.<br>Day 0 - Zone 1&2 Schedule<br>0. no schedule; no Schedule Icon will be displayed<br>1. 2 periods<br>2. 4 periods<br>3. 6 periods<br>Day 1 - Domestic hot water Schedule<br>1. 2 periods<br>2. 4 periods | 1 | 3 | 3<br><br><br><br><br><br>1 |
| 7 | User | TROOM SENSOR ADJ ZONES | Days button shall be used for the below selection<br>0. Room temperature sensor adjustment for zone1<br>1. Room temperature sensor adjustment for zone2 | -5°C | +5°C | 0°C |

# Controller operation

| Code Nr. | Level | Variable Name | DESCRIPTION | VALUE RANGE Min | VALUE RANGE Max | DEFAULT |
|---|---|---|---|---|---|---|
| 8 | User | TEMP LIST | Depending on the selection, the following temperatures will be displayed on the user interface<br>1. Temperature of the zone:<br>Zone 1: room temperature<br>Zone 2: room temperature<br>Zone 3: Domestic hot water temperature<br>2. LWT<br>3. Domestic hot water tempe<br>4. TWB<br>5. TW1 (Water temperature in Zone 1)<br>6. TW2 (Water temperature in Zone 2)<br>7. Not used<br>8. Not used | 1 | 8 | 1 |
| 9 | User | FAULT CODES | Hydronic module, zone kit , user interface and outdoor unit fault codes and alarms scrolled @ 1 second. | - | - | - |
| 10 | User | FAULT HISTORY | Stores the recent 4 fault codes and alarms. | - | - | - |
| | | | **INSTALLER PARAMETERS** | | | |
| | | | **System setup** | | | |
| 100 | Inst. | SYSTEM TYPE | This parameter is used by the Installer in order to determine the System type:<br>Select 1 if there is no kone kit connected, otherwise select 2. | 1 | 2 | 1 |
| 101 | Inst. | NOT USED | | | | |
| 102 | Inst. | NOT USED | | | | |
| 103 | Inst. | GMC ADDRESS | This parameter is defining if the board is acting as hydronic module board (master) or zone kit board (slave).<br>To modify this parameter connect the user interface to the specific board through J5 connector; user interface wiring as per connection to W-C-G-Y terminal blocks (see user interface manual)<br>1. Master<br>2. Slave | 1 | 2 | 1 |
| 104 | Inst. | NUI ADDRESS | Specifies the user interface connection. If this parameter is not set properly, user interface does not work.<br>242. User interface connected on W-C-G-Y, see user interface manual<br>243. User interface connected on Rc-Rh-G2-Y2 (see user interface manual) and placed in zone 1<br>244. User interface connected on Rc-Rh-G2-Y2 (see user interface manual) and placed in zone 2 | 242 | 244 | 242 |
| 105 | Inst. | ZONES CTRL | This parameter is defining the Ctrl in zones. Use Day Button and select the following.<br>0. Zone 1 CTRL<br>0. No control<br>1. User interface (additional user interface, connected on Rc-Rh-G2-Y2)<br>2. Sensor<br>3. Thermostat<br>4. Unit user interface removed from unit and mounted in zone; connection on W-C-G-Y<br>1. Zone 2 CTRL<br>0. No control<br>1. User interface (additional user interface, connected on Rc-Rh-G2-Y2)<br>2. Sensor<br>3. Thermostat<br>4. Unit user interface removed from unit and mounted in zone; connection on W-C-G-Y | 0 | 4 | 0 |

## Controller operation

| Code Nr. | Level | Variable Name | DESCRIPTION | VALUE RANGE Min | VALUE RANGE Max | DEFAULT |
|---|---|---|---|---|---|---|
| 106 | Inst. | INTERFACE CONFIG | Use Days button and do the selection of below<br>0. Domestic hot water input - configuration<br>0: contact close: input is active / contact open: input is not active<br>1: contact close: input is not active / contact open: input is active<br>1. Space heat/cool ON/OFF input - configuration (no impact on Domestic Hot Water production)<br>0: contact close: unit produces space htg/clg / contact open: unit does not produce space htg/clg<br>1: contact close: unit does not produce space htg/clg / contact open: unit produces space htg/clg<br>2. Heat / Cool selection input- configuration<br>0: contact close: unit performs space heating / contact open: unit performs space cooling<br>1: contact close: unit performs space cooling / contact open: unit performs space heating<br>3. Hi energy rate input - configuration<br>0: contact close: high energy rate / contact open: normal energy rate<br>1: contact close: normal energy rate / contact open: high energy rate<br>4. External HTG/CLG<br>0: Mode (Heat/Cool) is determined by dry contact<br>1: Mode (Heat/Cool/OFF/Domestic Hot Water) is determined by user interface (106.2 is ignored)<br>5. Cool Z1<br>0: Cool in Zone 1 forbidden<br>1: Cool in Zone 1 permitted<br>6. Cool Z2<br>0: Cool in Zone 2 forbidden<br>1: Cool in Zone 2 permitted<br>7. System ON / OFF input - configuration<br>0: contact close: system OFF / contact open: system running<br>1: contact close: system running / contact open: system OFF | 0 | 1 | 0<br>1<br>1<br>0<br>1<br>0<br>0<br>0 |
| 107 | Inst. | FLOW SWITCH CONFIGURATION | Use Days button and do the selection of below<br>0.<br>0: Open - flowing / Short: not flowing<br>1: Short - flowing / Open: not flowing<br>1.<br>0: Do not allow water flowing when unit pump is OFF (no external pump used)<br>1: Allow water flowing when unit pump is OFF (external pump used) | 0 | 1 | 1<br>0 |
| 108 | Inst. | MASTER OUTPUT CONFIGURATION | Use UP/Down buttons for choosing 1 to 10.<br>1. Fan Coil - Fan coils do not work when Domestic hot water valve is activated<br>2. Fan Coil - Fan coils always working<br>3. Fan coils do not work when Domestic hot water valve is activated, unless the mode is Cool<br>4. Dehumidifier<br>5. All alarms<br>6. Alarms stopping the outdoor unit<br>7. Alarms stopping the entire system<br>9. Defrost<br>10. All alarms + Defrost<br>11. Alarms stopping the outdoor unit + Defrost<br>12. Alarms stopping the entire system + Defrost<br>13. Not used<br>14. Not used<br>15. Not used<br>16. Not used | 1 | 16 | 4 |

## Controller operation

| Code Nr. | Level | Variable Name | DESCRIPTION | VALUE RANGE Min | VALUE RANGE Max | DEFAULT |
|---|---|---|---|---|---|---|
| 109 | Inst. | SLAVE OUTPUT CONFIGURATION | Use Days button for the selection of below<br>**0**<br>0. 3 way valve<br>1. Others<br>**1**<br>0. zone 1: Fan coils do not work when Domestic hot water valve is activated<br>1. zone 1: Fan coils always working<br>2. zone 1: Fan coils do not work when Domestic hot water valve is activated, unless the mode is Cool<br>3. zone 1: Dehumidifier<br>**2**<br>0. zone 2: Fan coils do not work when Domestic hot water valve is activated<br>1. zone 2: Fan coils always working<br>2. zone 2: Fan coils do not work when Domestic hot water valve is activated, unless the mode is Cool<br>3. zone 2: Dehumidifier | 0 | 3 | 1<br>3<br>3 |
| 110 | Inst. | HUMIDITY LIMIT | This code defines the Humidity threshold limit to enable the output for the external de-humidifier | 20 | 100 | 100 |
| 111 | Inst. | ANTIFROST T° | This code is defining the Temperature below which the water frost protection will be activated | 4°C | 10 | 4°C |
| | | | ***Climatic Curve*** | | | |
| 112 | Inst. | HEAT CLIMATIC NUMBER | Use Days button for the selection of Heat climatic curve:<br>0. - zone 1<br>0. No predefined climatic curve(Installer has to set climatic curve)<br>1 - 6. See manual for climatic curve details<br>1. - zone 2<br>0. No predefined Climatic Curve (Installer has to set climatic curve)<br>1 - 6. See manual for climatic curve details | 0 | 6 | 0 |
| 113 | Inst. | REGION T° O | Minimum outdoor T° depending on the country where the system is installed (Heat Climatic Curve Zone 1 and 2) | -20°C | 10 °C | -7°C |
| 114 | Inst. | STOP H T° O | If outdoor T° is equal or greater then the value of this code, minimum water tempreature is considered (Heat Climatic Curve Zone 1 and 2) | 15°C | 50°C | 20°C |
| 115 | Inst. | NO HEAT T W1 | In Heat mode, minimum water T° going to terminal zone 1 (Heat Climatic Curve Zone 1) | 20°C | 60°C | 20°C |
| 116 | Inst. | MAX W T° W1 | In Heat mode, maximum water T° in terminal zone 1 (Heat Climatic Curve Zone 1) | 20°C | 80°C | 35°C |
| 117 | Inst. | NO HEAT T W2 | In Heat mode, minimum water T° going to terminal zone 2 (Heat Climatic Curve Zone 2) | 20°C | 60°C | 40°C |
| 118 | Inst. | MAX W T° W2 | In Heat mode, maximum water T° in terminal zone 2 (Heat Climatic Curve Zone 2) | 20°C | 80°C | 55°C |
| 119 | Inst. | COOL CLIMATIC NUMBER | Days button shall be used for the Selection of Cool climatic curve:<br>0. - zone 1<br>0. No predefined climatic curve(Installer has to draw climatic curve)<br>1 - 2. See manual for climatic curve details<br>1. - zone 2<br>0. No predefined climatic curve (Installer has to draw climatic curve)<br>1 - 2. See manual for climatic curve details | 0 | 2 | 0 |
| 120 | Inst. | MAX REGION T° | Maximum outdoor T° depending on the Country where the system is installed (Cool climatic Curve Zone 1 and 2) | 30°C | 50°C | 40°C |
| 121 | Inst. | COOL STOP T° | If outdoor T° is equal or less then the value of this code, maximum water tempreature is considered (Cool Climatic Curve Zone 1 and 2) | 0°C | 25°C | 22°C |
| 122 | Inst. | MIN COOL W T° | In Cool mode, minimum water T° going to terminal zone 1 (Cool climatic Curve zone 1) | 4°C | 20°C | 12°C |
| 123 | Inst. | MAX COOL W T° | In Cool mode, maximum water T° going to terminal zone 1 (Cool climatic Curve zone 1) | 4°C | 20°C | 18°C |
| 124 | Inst. | MIN COOL W T° | In Cool mode, minimum water T° going to terminal zone 2 (Cool climatic Curve zone 2) | 4°C | 20°C | 6°C |
| 125 | Inst. | MAX COOL W T° | In Cool mode, maximum water T° going to terminal zone 2 (Cool climatic Curve zone 2) | 4°C | 20°C | 12°C |

# Controller operation

| Code Nr. | Level | Variable Name | DESCRIPTION | VALUE RANGE Min | Max | DEFAULT |
|---|---|---|---|---|---|---|
| | | | ***Backup heaters*** | | | |
| 126 | Inst. | AUX NUMBER | Number of backup heaters<br>0. No backup heaters<br>1. 1 backup heater (to be selected in case of boiler backup)<br>2. 2 backup heaters (2nd backup heater activated after 1st backup heater) | 0 | 2 | 0 |
| 127 | Inst. | BACKUP ELECBOIL | Defines the backup energy source:<br>1: Electrical heater<br>2: Gas boiler | 1 | 2 | 80AW---M0: 2<br>Others: 1 |
| 128 | Inst. | EH PRIORITY | This code is defining the electric heater priority between back-up heaters (space heating) and booster heater (sanitary hot water). It is only active if code 127=1<br>0. All electric heaters can be activated at the same time, in case of demand<br>1. Maximum 2 electric heaters can be activated; booster heater has the lowest priority<br>2. Maximum 1 electric heater can be activated; back-up heater 1 has the highest priority (backup heater 2 never on)<br>3. Maximum 2 electric heaters can be activated; booster heater has the lowest priority (backup heater 2 never on)<br>4. Maximum 1 electric heater can be activated; booster heater has the highest priority (backup heater 2 never on) | 0 | 4 | 0 |
| 129 | Inst. | AUX T° O | The outdoor T° must be below this value to allow the backup heaters to be ON (unless there is a failure stopping the outdoor unit and code 1.4 = 1) | -30°C | +40°C | +4°C |
| 130 | Inst. | AUX HYST | If the difference between water setpoint and water temperature is higher than this value, backup heaters are allowed to turn on | 0°C | 10°C | 3°C |
| 131 | Inst. | AUX DELAY | Time delay (minutes) before switching the backup heaters ON | 0 | 60 | 10 |
| 132 | Inst. | OAT BOILER | If, in Heat mode, the Outdoor temperature is less than the value of this code, the outdoor unit is turned OFF and the Boiler is used as heat source. Set to minimum value if you don't want to activate this function. | -30°C | +40°C | -5°C |
| | | | ***Domestic Hot Water*** | | | |
| 133 | Inst. | SHW CARREXT | Defines if Domestic hot water is managed by the system control or by an external control.<br>1. managed by system control<br>2. managed by system control with Solar<br>3. managed by external control<br>If domestic hot water tank is not installed set code to 3 and set code 106.1 = 0 | 1 | 3 | 3 |
| 134 | Inst. | SHW MAX HP T° | If domestic hot water temperature is equal or higher than this value, domestic hot water priority is 0 | 40°C | 80°C | 55°C |
| 135 | Inst. | SHW DELTA MED T° | If domestic hot water temperature is equal to code 134 - this code, domestic hot water priority is 0.5 | 1°C | 15°C | 5°C |
| 136 | Inst. | SHW DELTA ALARM T° | If domestic hot water temperature is equal or lower to code 134 - code 135 - this code, domestic hot water priority is 1 | 1°C | 15°C | 5°C |
| 137 | Inst. | ROOM DELTA MED T° | In heat mode: if room temperature is Room Setpoint - this code, room priority is 0.5<br>In cool mode: if room temperature is Room Setpoint + this code, room priority is 0.5 | 0,5°C | 5°C | 1°C |
| 138 | Inst. | ROOM DELTA MIN T° | In heat mode: if room temperature is Room Setpoint - code 137 - this code, room priority is 1<br>In cool mode: if room temperature is Room Setpoint + code 137 + this code, room priority is 1 | 0,5°C | 5°C | 1°C |
| 139 | Inst. | BOILER WAIT TIME | Time delay after which activating the boiler if domestic hot water priority does not decrease due to heat pump operation.<br>If 0 is selected, boiler does not turn on to support domestic hot water production | 0 | 180 | 15 |
| 140 | Inst. | LEGIONELLA FREQ | Define how often (days) the disinfection cycle starts<br>If 0 is selected Disinfection is not performed. | 0 | 7 | 0 |
| 141 | Inst. | LEGIONELLA START TIME | Start time of the Disinfection cycle (hours) | 0 | 24 | 3 |
| 142 | Inst. | LEGIONELLA TEMP | T° to be reached in the Disifection cycle | 60 | 90 | 75°C |

# Controller operation

| Code Nr. | Level | Variable Name | DESCRIPTION | VALUE RANGE Min | Max | DEFAULT |
|---|---|---|---|---|---|---|
| 143 | Inst. | LEGIONELLA DURATION | Disinfection dwell time (minutes). T° has to be equal or higer than code 142 for this time period | 5 | 180 | 30 |
| 144 | Inst. | LEGIONELLA TIME OVER | If Disinfection cycle is not completed within this time (hours), the antilegionalla cycle is considered failed | 2 | 12 | 4 |
| ***Service / Reading*** | | | | | | |
| 145 | Inst. | OUTPUT TEST | Allows to force board output ON<br>0. No Test<br>1. J7 Pin1<br>2. J7 Pin2<br>3. J7 Pin3<br>4. J7 Pin4<br>5. J4 Pin3<br>6. J4 Pin5 | 0 | 6 | 0 |
| 146 | Inst. | FLOW SWITCH STATUS | Displays the Flow Switch status:<br>1. Water Flowing<br>0. Water not flowing | - | - | - |
| 147 | Inst. | FORCED MODE | Allows to force the system in a specific operating mode:<br>0. No forced mode selected<br>4. Booster Heat: heating at the maximum frequency<br>5. Booster Cool: cooling at the maximum frequency<br>6. Rating Heat: not to be used by installer<br>7. Rating Cool: not to be used by installer<br>10. Pump down: activates the outdoor unit in cool mode for 5 minutes to perform pump down of the refrigerant | - | - | 0 |
| 148 | Inst. | SYSTEM MODE | Operating mode requested by the System Control:<br>0. Off<br>1. Standby<br>2. Cooling<br>3. Heating<br>4. Booster Heating<br>5. Booster Cooling<br>6. Rating Heating<br>7. Rating Cooling<br>11. Timeguard<br>12. Fail | - | - | - |
| 149 | Inst. | CDU MODE | Actual CDU operating mode:<br>1. Off<br>2. Cool<br>3. Heat<br>4. Fail<br>5. Defrost | - | - | - |
| 150 | Inst. | CDU SENSOR VALUES | Days button shall be used to read below values<br>1. Outdoor T°<br>2. Outdoor unit Coil T°<br>3. Compressor Suction T°<br>4. Compressor Discharge T° | - | - | - |
| 151 | Inst. | FREQUENCIES | Days button shall be used to read below values<br>1. Maximum Compressor frequency allowed by System Control<br>2. Compressor frequency requested by System Control<br>3. Actual compressor frequency | - | - | - |
| 152 | Inst. | TEMP DISP | Installer can check temperatures at this code; use Days button for reading below values<br>0. Tank Temperature<br>1. LWT<br>2. Refrigerant Temperature<br>3. Temperature of Sanitary Hot Water<br>4. Water Temp of Zone 1<br>5. Water Temp of Zone 2<br>6. Tank2 Temperature<br>7. Room sensor connected to slave board | - | - | - |

# Controller operation

| Code Nr. | Level | Variable Name | DESCRIPTION | VALUE RANGE Min | Max | DEFAULT |
|---|---|---|---|---|---|---|
| 153 | Inst. | CURRENT WSP FOR ZONES | Current water setpoint defined by the system control for the different zones<br>Use Days button for Reading the below.<br>0. Water setpoint for Zone 1<br>1. Water setpoint for Zone 2<br>2. Current water setpoint | - | - | - |
| 154 | Inst. | RUNTIME | Use Days button to read below values. Real values are read values multiplied by 10.<br>0. Compressor run time (hours)<br>1. Water pump Run time (hours)<br>2. Backup heater 1 run time (hours)<br>3. Backup heater 2 run time (hours) | - | - | - |
| 155 | Inst. | RESET | Use Days button to select the following<br>0. Compressor run time Reset<br>0: No Reset<br>1: Reset<br>1. Water pump run time reset<br>0: No Reset<br>1: Reset<br>2. Backup heater 1 run time<br>0: No Reset<br>1: Reset<br>3. Backup heater 2 run time<br>0: No Reset<br>1: Reset | 0 | 1 | 0 |
| | | | ***Software & Matching*** | | | |
| 156 | Inst. | CDU CAPACITY | Outdoor unit capacity | - | - | - |
| 157 | Inst. | NUI SW VERSION AND RELEASE | User interface Software Version | | | |
| 158 | Inst. | GMC SW VERSION AND RELEASE | System control Software Version & Release | | | |

*Note:*
*- cycle power after modifying Installer parameters*
*- take special care in setting System setup parameters*
*- parameters referring to system with 2 zone kit are written in gray.*

# Controller operation

## Heating / cooling mode

Heating / cooling mode is selected:
- on the user interface by pressing the mode (M) button
- through external contacts if code 106.4 is set to 0 (see paragraph Input Related Functions)

The water temperature is determined according to the outside air temperature, through a climatic curve that the installer is free to set.
The room temperature setpoint is set by the user (see user interface manual).
In heating / cooling modes, the system will also take care of domestic hot water production (if combined with domestic hot water tank).
Water frost protection is active.

### Climatic curves

In heating / cooling modes, the water setpoint is determined through climatic curves.
Code 112 for heating and code 119 for cooling allow choosing between pre-set climatic curves or custom climatic curves.
Pre-set climatic curves are shown in fig. 2 for heating and fig. 3 for cooling.

If custom curves are used, involved codes are shown in fig. 5 for heating and fig. 6 for cooling.
In fig. 5, 6, 7, 8:
A: Water Temperature
B: Outdoor temperature

If code 105.0 is set to 1 or 4 (see paragraph Zone Control Settings), water setpoint calculated through climatic curves is adjusted so that the room temperature matches the room setpoint.

### Backup Heaters (heating mode only)

If the outdoor temperature is lower than code 129 and if the difference between the water setpoint and the water temperature is higher than code 130 for more than code 131 minutes, backup heater 1 is turned on.
If electric heater activation conditions are still valid after code 131 minutes since backup heater 1 activation, backup heater 2 is turned on.
If the outdoor unit is not running because of failure, it is possible to perform the heating duty through backup heaters. See code 1.4 in the variable table.

## Domestic Hot Water mode

Domestic Hot Water mode is selected on the user interface by pressing the mode (M) button.
When this mode is selected, space heating / cooling is not operating; the system is only taking care of meeting the domestic hot water duty.
Water frost protection is active.
Home antifreeze protection is active if enabled (code 1.0).

## OFF mode

When OFF mode is selected, space heating / cooling and domestic hot water heating are not performed.
Water frost protection is active.
Home antifreeze protection is active if enabled (code 1.0).

## Domestic hot water function

Domestic hot water can be managed by the system control or by an external contact (code 133 ).
Domestic hot water is managed by the system control when the unit is combined with a domestic hot water tank listed in paragraph Accessories.
In this case the system control manages domestic hot water production on the base of domestic hot water temperature to optimize overall comfort (see priority logic below), activates booster heater if needed and performs disinfection function.

Domestic hot water is managed by an external contact when it is controlled by an ON/OFF contact (connected to the domestic water input of the system control).
In this case overall comfort is not optimized, booster heater is not activated and disinfection function is not performed.

In all cases, domestic hot water valve is managed by the system control.

In case no domestic tank is connected, set code 133 to 3 and code 106.1 to 0.

Domestic hot water production with outdoor unit or backup boiler is based on priorities (fig. 9 and 10).
Fig. 9
A: Domestic hot water temperature
B: Domestic hot water priority
C: Domestic water setpoint
a: Normal domestic hot water priority line
b: Domestic hot water priority line in case of boiler backup
c: Domestic hot water priority line during disinfection cycle in case of boiler backup

Fig. 10
A: Room temperature
B: Room priority
C: Room setpoint

## Controller operation

a: Room priority line

Note: fig.10 refers to heat mode operation; in cool mode E and F are added to C.

The system will switch from space heating / cooling to domestic hot water production if:
- domestic water priority is higher than room priority for 15 minutes
- room priority is 0 and there is a domestic water demand

The system will switch from domestic hot water production to space heating / cooling if:
- room priority is higher than domestic water priority for 15 minutes
- domestic water priority is 0 and there is a demand on space heating / cooling
- room priority is 1 for 2 minutes

In Domestic Hot Water mode, room priority is set to 0.
If no room sensor is used, room priority is set to 0.5 when there is no domestic hot water demand and to 0 when there is domestic hot water demand.
In case of boiler backup, priority lines are adjusted to optimize energy efficiency.

### Domestic water input

Domestic water input has an effect on domestic hot water priority.
Domestic hot water input can be connected to solar control (set code 133=2), to stop domestic hot water production from the system when solar source is available.

*Domestic water input not active*
When domestic water input is not active, domestic hot water priority is set to 0 (see code 106.0).

*Domestic water input is active*
When domestic water input is active, if domestic hot water is managed by system control (code 133=1 or 2), priority is calculated normally; if it is managed by an external contact (code 133=3), priority is set to 1.

If using a tank listed in the paragraph Accessories and nothing is connected to this input, set code 106.0 = 1

### Booster heater

Booster heater (electric heater inside domestic hot water tank) is activated if domestic hot water temperature is below the setpoint and the schedule allows electric heater activation.
This function is only available if domestic hot water is managed by system control (code 133=1 or 2).
It is possible to force the activation of booster heater by setting code 1.5 = 1.
The code is self reset when the desired setpoint is reached.
If domestic hot water temperature sensor is in diagnostics, booster heater is never activated.

### Disinfection (antilegionella)

This function is only available if domestic hot water is managed by system control.
The disinfection function disinfects the domestic hot water tank by periodically heating water to a specific temperature for a defined time period.
The disinfection function settings must be configured according to national and local regulations.
During disinfection function, booster heater is activated, if needed, regardless the schedule.
In case of boiler backup, priority lines are adjusted to optimize energy efficiency.

### Note:

If domestic water sensor is in diagnostics or disinfection function has not been completed within the defined timeframe, domestic hot water production is stopped, unless code 1.3 is set to 1.
The system will try to perform the disinfection cycle on the next scheduled day.
Code 1.3 is self reset is 0 when domestic water sensor is working and disinfection function is completed.

## Frost protection

This function is active in all operative modes, including OFF.
It prevents water freezing in the circuit and in the domestic water tank.
The activation temperature is determined by code 111.

## Home antifreeze protection

User can activate this function through code 1.0.
Once it is enabled, this function is active in OFF mode and Domestic Hot Water mode.

It prevents the environment to go below a specific temperature, defined by code 2.
It works only if room temperature is measured by the system (code 105.0=1 or 4).

# Controller operation

## Water pump management

This function works only if room temperature is measured by the system (code 105.0=1 or 4).
If code 1.6=0, water pump is always running during space heating / cooling operations.

If code 1.6=1, water pump is turned OFF if room temperature overshoots the setpoint point by code 4 (°C), and turned ON if room temperature is below (in heating, above in cooling) room setpoint by code 4 (°C).

## Pump unblocking procedure

This function is active in all operative modes, including OFF.
If the water pump is OFF for 24 hrs, it is activated for some time to avoid locking.

## Output configuration

Multi – purpose output (see paragraph Terminal block description) can be configured to perform different functions (code 108).

**Fan coil**
The output can be used to turn ON / OFF fan coil units. The available options are shown in the variable table.

**Dehumidifier**
The output is used to turn ON/OFF a dehumidifier.

Dehumidifier is turned on in Cool mode, when humidity is higher than value of code 110.
It works only if room control is done by user interface (code 105.0=1 or 4).

**Alarms / Defrosting**
The output is activated to signal some specific conditions. See variable table for details.

## Pump Down

Setting code 147=10, it is possible to force the outdoor unit in Cool mode (also in case of Heating only systems) for 5 minutes, to allow the pump down of the refrigerant.

After 5 minutes operation, the code is self reset to 0.
After Pump Down, the unit will remain OFF until electrical power is reset.

## Silent mode

It is possible to reduce the maximum compressor frequency in defined time periods.
See user interface documentation.
Frequency reduction is expressed as % of maximum frequency and is set by code 3.

When Silent mode is activated, the outdoor unit will be less noisy, but also less powerful, therefore backup and booster heaters could be used more often.

## Zone control settings

Code 105.0 defines which kind of room control is implemented.
0. No control: room temperature is not controlled; comfort is only depending on climatic curve settings.
1. User interface: an additional user interface (see paragraph Accessories) is connected to the unit and is placed in the room.
2. Sensor: used only in combination with 2 zone kit.
3. Thermostat: a thermostat is connected to the Heat / Cool thermostat input.
4. Unit user interface shifted: unit user interface is removed from the unit and placed in the room .

In case the user interface is shifted, fill the gap left on the unit with the provided cap (see fig. 4, item 3).

# Controller operation

## Input related functions

See paragraph Wiring Connection Diagram.
All the input is dry contact.
Input can be independently configured (code 106) to be considered active when open or when close.

### Domestic hot water input
See Domestic hot water function.

### Heat / Cool thermostat input
This input can be used to start/stop space heating/cooling operations.
In case a room thermostat is used, connect it to this input.

### Heat / Cool selection input
This input is used to put the system in Heat mode or in Cool mode.
It is used only if code 106.4 is set to 0.

### Hi energy rate input
In case this input is active and a boiler backup is present, the outdoor unit turns OFF and boiler backup is used to meet the heating and domestic hot water duty.
It has no effect in Cool mode, unless when domestic hot water is produced.

### System ON/OFF input
This input is used to put the system in OFF mode.

## Miscellaneous

Whenever the compressor turns off, it stays off for at least 3 minutes.
Additionally the compressor is prevented to start if previous start happened less then 10 min before.
This time period is referred to as "timeguard".

It is suggested not to disconnect electrical power, even if the system will not be used for long time.
To switch OFF the system, put it in OFF mode; this way system protections are active, improving the lifetime of the unit.

# Installation

## Unit Dimensions and Weights

See paragraph Features for data.

# Installation

## Installation recommendations

Please refer to the Safety information manual.

- This device is destined for installation in sheltered buildings, if possible insulated.
  It should not be installed in very humid rooms (for example laundry rooms) or where it may be subjected to water projections or spray.
- The module is fixed to the wall, make sure the support is sufficiently strong.
- Fix the module using screws/wall plug fixings adapted to the wall structure and the module weight.
- When possible, allow a space of minimum 70 cm below and 30 cm on each side of the module for piping connections and ease of maintenance.
- See paragraphs Water connections and Refrigerant connections.
- In case of installation with fan coils, a minimum water quantity of 3 liters / kW is required; install a buffer tank if required.
- Install a water filter (see fig.1); water pump and heat exchanger warranty are void if filter is not installed..

## Features

| **Hydronic module** | | | | **80AW-065** | | | | **80AW-115** | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **M0** | **M3** | **M6** | **T6** | **M0** | **M3** | **M6** | **T6** | **T9** |
| Outdoor units | | | | 38AW050H7 / 38AW065H7 | | | | 38AW090H7 / 38AW115H7 | | | | |
| Dimensions | Unit | H (mm) | mm | 800 | | | | 800 | | | | |
| | | W (mm) | mm | 450 | | | | 450 | | | | |
| | | D (mm) | mm | 320 | | | | 320 | | | | |
| | Packing | H (mm) | mm | 880 | | | | 880 | | | | |
| | | W (mm) | mm | 530 | | | | 530 | | | | |
| | | D (mm) | mm | 400 | | | | 400 | | | | |
| Weight | Unit | | kg | 48 | | | | 50 | | | | |
| | Gross | | kg | 58 | | | | 60 | | | | |
| Hydraulic data | Hydraulic connections | | inch | 1" M | | | | 1" M | | | | |
| | Hydraulic connections - boiler backup | | inch | 3/4" M | | | | 3/4" M | | | | |
| | Operating water pressure | | kPa / bar | 100 / 1 | | | | 100 / 1 | | | | |
| | Maximum pressure | | kPa / bar | 300 / 3 | | | | 300 / 3 | | | | |
| Hydraulic components | Pump | Type | | water cooled | | | | water cooled | | | | |
| | | Nr of speed | | 3 | | | | 3 | | | | |
| | | Static pressure | kPa | 70 | | | | 70 | | | | |
| | Heat exchnager | Type | | brazed plates | | | | brazed plates | | | | |
| | | Nr. plates | | 48 | | | | 72 | | | | |
| | | Water volume | lt | 0,644 | | | | 0,98 | | | | |
| | Expansion vessel | Volume | lt | 8 | | | | 8 | | | | |
| | | Pre charge pressure | kPa / bar | 100 / 1 | | | | 100 / 1 | | | | |
| | Bleed valve - gas separator | | | √ | | | | √ | | | | |
| | Manometer | | | √ | | | | √ | | | | |
| | Draining valve | | | √ | | | | √ | | | | |
| | Safety valve | | kPa / bar | 300 / 3.0 | | | | 300 / 3.0 | | | | |
| Refrigerant circuit | Connection , liquid side | | inch | 3/8" | | | | 3/8" | | | | |
| | Connection, gas side | | inch | 5/8" | | | | 5/8" | | | | |
| Operating Range | Outdoor temperature | Heating | °C | fig. 11 | | | | fig. 11 | | | | |
| | | Cooling | °C | fig. 12 | | | | fig. 12 | | | | |
| | Water temperature (with outdoor unit) | Heating | °C | fig. 11 | | | | fig. 11 | | | | |
| | | Cooling | °C | fig. 12 | | | | fig. 12 | | | | |
| | Max water temperature (with backup heater) | Heating | °C | 80°C | | | | 80°C | | | | |
| | Indoor temperature | Min | °C | 5 | | | | 5 | | | | |
| | | Max | °C | 30 | | | | 30 | | | | |
| Electrical data | Power supply | Voltage | V | 230 | | | 400 | 230 | | | 400 | |
| | | Frequency | Hz | 50 | | | | 50 | | | | |
| | | Phases | | 1 | | | 3 | 1 | | | 3 | |
| | Operating voltage limits | | V | 207-253 | | | | 207-253 | | | | |
| | Power consumption | | kW | - | 3 | 6 | 6 | - | 3 | 6 | 6 | 9 |
| Electrical components | Circuit breacker electric heater protection | | A | - | 10 | 16 | 16 | - | 10 | 16 | 16 | 25 |

**Note:**
in fig. 11 and 12

**A**: outdoor air temperature
**B**: leaving water temperature

# Installation

## Water connections

Please refer to the Safety Information manual.
- A counter spanner is not needed when tightening hydronic connections to the module.
- To avoid bacteria and dirt proliferation in the circuit, use water treatment mixed water.
- Place valves (not included) at the inlet and outlet of the hydronic module.
- Use pipe 1" or bigger for connections between the hydronic module and terminal.
- Wrap connections with anti-condensate insulation and tighten with tape, without exerting excessive pressure on the insulation.
- When all the installation connections are complete, start water filling.

Maximum distance between 3 way valve and hydronic module : 3m.
Maximum distance between domestic hot water tank and hydronic module: 10 m.

## Refrigerant connections

Please refer to the Safety Information manual.
For piping lengths, refer to the outdoor unit manual.

## Pump speed selection

The pump provided with the module has 3 speeds.
The installer selects the speed of the module pump in order to guarantee the target flow rate (± 20 %) in the space heating /cooling loop, knowing the available pressure of the system at different pump speed (see fig 13 and fig. 14) and the pressure drop of the installation.
Make sure the pressure drop in the domestic hot water loop is not too low; if needed install a valve to modulate pressure drop; in this loop, inlet / outlet temperature difference should be 8 – 10 °C.

| **Hydronic module** | **80AW - 065** | | **80AW - 115** | |
|---|---|---|---|---|
| **CDU** | **38AW050** | **38AW065** | **38AW090** | **38AW115** |
| Nominal Capacity [kW] | 5,0 | 6,5 | 9,0 | 11,5 |
| Nominal DT [°C] | 5 | 5 | 5 | 5 |
| Nominal Flow Rate [lt/h] | 860 | 1118 | 1548 | 1978 |

# Installation

## Power wiring diagram

Please refer to the Safety Information manual and to the electrical scheme supplied with the unit.
Electrical installation must be according to fig. 15.

| | Description | 80AW-065 | | | | 80AW-115 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | M0 | M3 | M6 | T6 | M0 | M3 | M6 | T6 | T9 |
| A | Power supply outdoor unit, backup heater, booster heater | 1pH - 230V | | | 3ph - 400V | 1pH - 230V | | | 3ph - 400V | |
| B | Main breaker (field supplied) | 2 poles | | | 4 poles | 2 poles | | | 4 poles | |
| C | Outdoor unit breaker (field supplied) | 2 poles, 16 A | | | | 2 poles, 25 A | | | | |
| D | Booster heater breaker (field supplied)* | 2 poles, 16 A | | | | 2 poles, 16 A | | | | |

| | Description | Cable Type | 80AW-065 | | | | 80AW-115 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | M0 | M3 | M6 | T6 | M0 | M3 | M6 | T6 | T9 |
| 1 | Outdoor unit power supply cable | H07 RN-F | 3G x 2.5mm$^2$ | | | | 3G x 4mm$^2$ | | | | |
| 2 | Indoor unit power supply and communication cable | H07 RN-F | 3G x 1mm$^2$ | | | | 3G x 1mm$^2$ | | | | |
| 3 | Backup heater power supply cable | H07 RN-F | - | 3G x 4mm$^2$ | 3G x 6mm$^2$ | 4G x 6mm$^2$ | - | 3G x 4mm$^2$ | 3G x 6mm$^2$ | 4G x 6mm$^2$ | 4G x 10mm$^2$ |
| 4 | User interface cable | FROH2R | 4 x 0.75mm$^2$ | | | | 4 x 0.75mm$^2$ | | | | |
| 5 | Booster heater power supply cable* | H07 RN-F | 3G x 4mm$^2$ | | | | 3G x 4mm$^2$ | | | | |
| 6 | Booster heater activation cable | FROH2R | 2 x 1mm$^2$ | | | | 2 x 1mm$^2$ | | | | |
| 7 | Sanitary hot water sensor cable | FROH2R | 2 x 0.5mm$^2$ | | | | 2 x 0.5mm$^2$ | | | | |
| 8 | Remote outdoor sensor cable | FROH2R | 2 x 0.5mm$^2$ | | | | 2 x 0.5mm$^2$ | | | | |

* valid for domestic hot water tanks listed in paragraph Accessories

If the user interface is installed in zone, install it in a place which is representative of the room temperature. Avoid direct contact or proximity with heat or cool sources.
Correct height installation is 1.5 m from the ground.
See electrical scheme.

# Installation

## Wiring Connection Diagram

Units without backup heater: see fig. 16 and fig. 19a.
Units with backup heater, single phase power supply: fig. 17 and fig. 19a.

Units with backup heater, tri-phase power supply: fig. 18 and fig. 19b.

### Terminal block Description

See fig. 20.
Highlighted terminal block only available on 80AW---M0 models.

| Terminal Block | Description | Details |
|---|---|---|
| 1-2-3 | Indoor unit power supply and communication cable | |
| 4-5 | Pump cut off contact (EN1264-4)* | |
| 6 | Booster heater control* (domestic hot water tank) | Output, 230 V, max 2 A (inductive) |
| 7-8-N | Domestic hot water 3 way valve* | Output, 230 V, max 2 A (inductive) |
| 10-11 | Domestic hot water tank sensor* | Input, analog |
| 12 | Hi energy rate input | Input, Dry Contact |
| 13 | Multi - purpose output | Output, 230 V, max 2 A (inductive) |
| 14 | System ON/OFF input | Input, Dry Contact |
| 15 | Comm - low voltage | Input, Dry Contact |
| W-C-G-Y | User interface placed on the unit or removed from the unit and mounted in zone | |
| 20 | Heat / Cool thermostat input | Input, Dry Contact |
| 21 | Heat / Cool selection input | Input, Dry Contact |
| 22 | Domestic hot water input | Input, Dry Contact |
| Rc-Rh-G2-Y2 | Additional user interface or 2 zone kit connection | |
| N | Neutral | |
| 31 | Boiler (only for units 80AW---M0) | Output, 230 V, max 2 A (inductive) |

* See paragraph Accessories

### Communication kit installation

See fig. 21.
A: communication kit (33AW-CB01)
B: unit main board
C: unit terminal block

Connect the board in the kit on the J8 connector of the main board and to the unit terminal block.

# Installation

## Commissioning

### Preliminary Checks

Make sure that:

- hydronic system connections are correctly tightened
- there are no leaks
- the installation is bled; poor bleeding can cause deterioration of pumps and electric heaters
- the pumps are free and bled before power is switched on
- the circuit valves are open and that the pumps are set to the speed determined in the study
- the filling and drain valves are closed
- the water circuit pressure is 1 bar
- the filter is installed
- electrical connections are correctly tightened; poor tightening can cause running problems and overheating which can cause major damage
- earth connections have been made for all the installed components
- no tools or other foreign objects have been left in the unit
- the unit is stable

### Startup

Don't switch on the electric heater circuit breakers until the installation has been fully bled; poor bleeding can cause deterioration of pumps and electric heaters.

- Switch the main isolating switch and the circuit breakers on
- Select OFF mode on the user interface
- Start the outdoor unit by setting code 147 = 4 (booster heat)
- After the outdoor unit has been running for 10 minutes, set code 147=0, check that the unit stops
- Close the valves, switch off the main switch and clean the filter
- Repeat this operation several times if necessary until the filter stops retaining impurities
- Do not forget to exit forced mode (set code 147=0) after the test

# Maintenance

Please refer to the Safety information manual.
The equipment should be serviced in order to maintain performances and reliability.
The product warranty may be invalidated due to wrong or incomplete maintenance.
The user is not authorized to open the unit or remove any of its parts.
Any maintenance activity requiring opening of the unit must be carried out by qualified service personnel.

Carry out the following operations at least once a year:

- check the expansion vessel
- check parts for wear
- check setpoints and operating points
- check safety devices
- check electrical connections for tightness
- check the earth connections
- check for water and refrigerant leaks
- check operation and parameters
- clean the water filter
- check pumps rotation
- check system pressure
- clean the outdoor unit heat exchanger
- clean the condensate tray

## Filter cleaning

- This operation should be performed by authorized service personnel.
- Filter should be cleaned frequently and in case of fault connected to low water flow
- Select OFF mode on the user interface
- Switch off the main switch
- Close the valves at the bottom of the hydronic module.
- Open the filter and clean it
- Close the filter tight, in order to avoid water leakage
- Open the valves at the bottom of the hydronic module
- Add some water if needed
- Switch on the main switch
- Select the desired mode on the user interface

# Maintenance

## Adding water to the circuit

This operation can be performed by the user.
For safety reason, do not open the indoor or outdoor unit.
The corrected operating pressure is 1 bar; if the pressure is lower than 1 bar, it is necessary to add water in the circuit.
See Fig. 2 and 3

- open the filling valve
- close the filling valve when the water pressure reaches 1 bar (check the manometer).

## Diagnostics

In case of system failure, the alarm icon ( ⚠ ) will light up on the user interface.
Failures are identified by a fault code.
Active fault codes will be displayed in sequence, with a change rate of 1 second.

| Error code | Item | Failure when | Consequences | Diagnostics and solutions |
|---|---|---|---|---|
| | | | ***Hydronic module fault codes*** | |
| 3 | TWB | Value out of range | Backup heaters are OFF | Check sensor, wiring and electrical connections |
| 4 | TC | Value out of range | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check sensor, wiring and electrical connections |
| 5 | Domestic hot water temperature sensor | Value out of range<br>+<br>Code 133=1 or 2 | Booster heater OFF<br>Disinfection function not performed | Check sensor, wiring and electrical connections |
| 6 | Communication with user interface (conneted to W-C-G-Y terminal blocks) | Communication lost | "No communication between unit and interface.<br>Room temperature and humidity are not available if code 105.0=1 or 4 or 105.1=1 or 4.<br>Unit runs with values stored in memory" | Check wiring and connections |
| 7 | Communication with additional user interface (connected to Rc-Rh-G2-Y2 terminal blocks) | Communication lost<br>+<br>Code 105.0=1 or/ and 105.1=1 | No communication between unit and interface.<br>Room temperature and humidity are not available<br>Unit runs with values stored in memory | Check wiring and connections |
| 8 | Flowswitch | Water pump is OFF.<br>Flowswitch detetects flow | Outdoor unit, backup heaters, domestic water valve, water pump: OFF | Check setting of code 106.1<br>Check flowswitch. |
| 9 | Flowswitch | Water pump is ON.<br>Flowswitch detects no flow. | Outdoor unit, backup heaters, domestic water valve, water pump: OFF | Check setting of code 106.0<br>Check flowswitch, wiring and electrical connections.<br>Check floor heating thermal cut off if connected<br>If reset is needed, press the red button and check climatic curve settings (codes 133 to 144). |
| 10 | EEProm | EEProm is currupt | Entire system stops | Replace board |
| 11 | Communication Master - Slave | Communication lost<br>+<br>Code 100=2 | Entire system stops | |

## Maintenance

| Error code | Item | Failure when | Consequences | Diagnostics and solutions |
|---|---|---|---|---|
| 12 | Room temperature sensor zone 1 | Value out of range<br>+<br>Code 105.0=1 or<br>Code 105.0=2 or<br>Code 105.0=4 or | Room temperature zone 1 not available | Check user interface wiring and electrical connections<br>Check room sensor, wiring and electrical connections |
| 13 | System configuration | code 100=1<br>+<br>Communication with slave board is detected | Entire system stops | 2 zone kit is installed.<br>Set code 100=2 |
| 14 | HV Communication with CDU | Communication lost | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | |
| 15 | LWT | Value out of range | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check sensor, wiring and electrical connections |
| 16 | Zone control | Code 100=1 + code 105.0=2 | Outdoor unit, backup heaters, domestic water valve, water pump: OFF | Change setting of code 105. |
| 16 | Zone control | Code 100=2 + code 105.0=2 + code 105.1 = 2<br>or<br>Code 100=2 + code 105.0=4 + code 105.1 = 4 | Outdoor unit, backup heaters, domestic water valve, water pump: OFF | Change setting of code 105. |
| 34 | EH temperature warning | Backup heater is active<br>+<br>TWB does not increase by 1°C every 30 min | No effect on system operation | Check backup heater operation, wiring and electrical connections. |
| * | LOW domestic hot water temperature warning | Code 133=1 or 2 + Domestic hot water priority=1 + Booster heater schedule OFF + code 1.5=0 | Domestic water tank electric heater icon ( ) will flash on user interface screen | Domestic hot water temperature is cold and schedule prevents booster heater activation.<br>User can activate booster heater by setting code 1.5=1 (temporary activation) or by enabling it in the schedule. |
| 35 | Disinfection not succesful | Code 133=1 or 2 +<br><br>Disinfection cycle not completed within time defined by code 143 or<br><br>Disinfection cycle not performed due to error 5. | Domestic hot water is not produced (unless code 1.3=1 or the diagnostics is removed cycling power) | Check code 140 to 144.<br>Check booster heater operation.<br>Check booster heater wiring and electrical connections.<br>If code 127=2 check backup heater operation.<br>Check domestic hot water temperature sensor, wiring and electrical connections |
| 36 | Configuration Mismatch | Outdoor unit should run in cool mode<br>+<br>Code 106.5=0 or<br>Code 106.5=0 and code 105.6=0 or<br><br>Unit is heat only (80AWH) | Entire system stops. | Modify setting of code 106.5.<br>Modify requested mode. |
| ***Outdoor unit fault codes*** | | | | |
| 17 | Outdoor air sensor | Value out of range | Outdoor temperature not available | |

## Maintenance

| Error code | Item | Failure when | Consequences | Diagnostics and solutions |
|---|---|---|---|---|
| 18 | G-Tr short circuit protection | Inverter over-current protective circuit operates. Short circuit voltage protection of main circuit operates | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check Outdoor unit board for cabling error |
| 20 | Position Detection Circuit Error | Position detection circuit operates when the compressor is operating despite removal of 3P connector. | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Replace Outdoor unit board |
| 21 | Current Sensor Error | Current detection circuit error:<br>• Current value at AC side is high when compressor is OFF<br>• Phase of power supply is missing | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check outdoor unit board.<br>Check 3 phase power voltage and cables |
| 22 | Outdoor Heat Exchange Sensor (TE) / (TS) | Value out of range | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check sensor, wiring and electrical connections |
| 23 | Discharge Temperature Sensor (TD) | Value out of range | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check sensor, wiring and electrical connections |
| 24 | Outdoor Fan Error | Defective detection of position<br>Operation of outdoor fan over-current protection circuit<br>Outdoor fan locked | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check outdoor fan<br>Check outdoor unit board |
| 26 | Other Outdoor Error | | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | |
| 27 | Compressor Lock | Defective cabling of compressor<br><br>Compressor fault | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check 3 phase compressor power cables<br><br>Replace compressor |
| 28 | Discharge Temperature Error | Error of discharge temperature | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check for refrigerant gas leaks<br>Check PMV operation<br>Check TD sensor operation |
| 29 | Compressor Breakdown | Abnormal compressor operation | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check power supply: AC 220 V +/-10%<br>Overload operation of refrigerating cycle<br>Check current detection circuit at AC side |
| 30 | Other inverter board error | | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | |
| 31 | High Temperature Release | | Outdoor unit stops<br>Domestic water valve OFF if code 127=1 | Check outdoor temperature sensor TE in the Outdoor unit<br>Check Outdoor unit board |
| ***User interface fault codes*** | | | | |
| 70 | Configuration | Code 104 not equal to 242 or 243 or 244 | Communication is disabled | Change setting of code 104. |

## Maintenance

| Error code | Item | Failure when | Consequences | Diagnostics and solutions |
|---|---|---|---|---|
| 71 | Communication of user interface (connected to W-C-G-Y terminal blocks) | No communication for 20 seconds + Code 104=242 | No effect on user interface operation | "Check wiring and connections |
| 72 | Communication of user interface (connected to Rc-Rh-G2-Y2 terminal blocks) | "No communication for 30 seconds + Code 104=242 or Code 104=243 or Code 104=244 " | No effect on user interface operation | Check wiring and connections |
| 73 | Temperature error message | Value out of range | No effect on user interface operation | Check wiring and connections |
| 74 | Humidity error message | Value out of range | No effect on user interface operation | Check wiring and connections |
| 75 | EEprom error message | Values in eeprom corrupted | Communication is disabled | Cycle power. Reset all parameters (see user interface documentation) |

*As this is just a warning to the user, the alarm icon (⚠) is not displayed and no number is associated.

Note:
- in case of diagnostic 35, in addition to the alarm icon (⚠), Domestic Water warning icon(🚿) will light up and Disinfection cycle icon (🦠) will flash
- diagnostics referring to system with 2 zone kit are written in gray.

## Safety recommendations

Please refer to the Safety information manual.

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The manufacturer reserves the right to change any product specifications without notice.

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