RESOL WMZ-G1

Mounting

Connection

Operation

WMZ-G1

en-US/CA

Manual

www.resol.com

48005460

Thank you for buying this RESOL product.
Please read this manual carefully to get the best performance from this unit.
Please keep this manual carefully.

Table of contents

Subject to technical change. Errors excepted.

General

Safety advice

Please pay attention to the following safety advice in order to avoid danger and damage to people and property.

Instructions

Attention must be paid to the valid local standards, regulations and directives!

Equipment to be installed and used in accordance with the rules of the National Electrical Code (NEC) or with Canadian Electrical Code (CEC), Part I.

Target group

These instructions are exclusively addressed to authorised skilled personnel.

- Only qualified electricians should carry out electrical works.
- Initial installation must be effected by qualified personnel named by the manufacturer.

Description of symbols

WARNING!	Warnings are indicated with a warning triangle! ➔ They contain information on how to avoid the danger described.

Signal words describe the danger that may occur, when it is not avoided.

Warning means that injury, possibly life-threatening injury, can occur.
Attention means that damage to the appliance can occur.

Note
Notes are indicated with an information symbol.

Arrows indicate instruction steps that should be carried out.

Information about the product

Proper usage

The WMZ-G1 is to be used for the measurement and the display of system data by means of Grundfos Direct Sensors™ in compliance with the technical data specified in this manual.

Improper use excludes all liability claims.

CE

Disposal

- Dispose of the packaging in an environmentally sound manner.
- Dispose of old appliances in an environmentally sound manner. Upon request we will take back your old appliances bought from us and guarantee an environmentally sound disposal of the devices.

Technical data and overview of functions

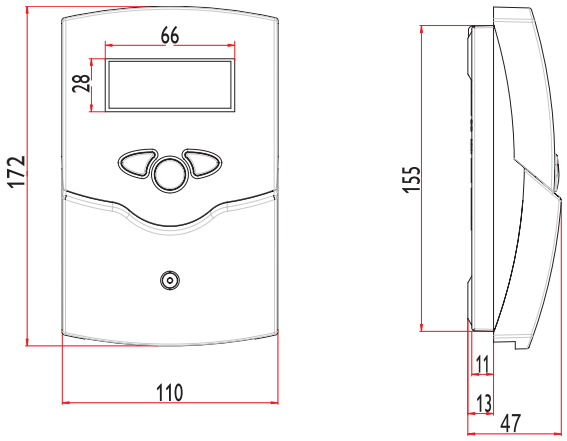
- **Recording of:**
  flow temperature
  return temperature
  power
  heat quantity
  flow rate
  pressure
  differential pressure
  system errors
- **Especially for Grundfos Direct Sensors™**
- **Easy connection**
- **Dot matrix display**
- **Function control**
- **Configurable control parameters**

Included with the WMZ-G1:

1 x WMZ-G1

1 x VBus® slave board

1 x accessory bag
1 x spare fuse T4A
2 x screw and wall plug
4 x strain relief and screw



Technical Data:

Housing:
plastic, PC ABS and PMMA
Protection class:
IP 20 / EN 60529
Ambient temperature:
0 ... 40 °C
Size: 172 x 110 x 47 mm / 6.8" x 4.3" x 2.5"
Installation: wall mounting, mounting into patch panels is possible
Operation: three push buttons at the front of the housing
Inputs: 2 Grundfos sensors VFS, RPS or DPS
Power supply:
115 V~

The WMZ-G1 is a measurement and display unit for solar thermal systems and conventional heating systems. It is possible to connect up to two Grundfos Direct Sensors™. Depending on the number and type of sensors connected, the unit is capable to show temperature values, flow rates and relative or differential pressures or a combination of them.

Heat quantity measurement is possible if two Grundfos Direct Sensors™ are connected and at least one of them is a VFS type sensor. The optional calorimeter especially takes into account that the density and the specific heat capacity of the heat transfer medium depend on the temperature as well as on the mixing ratio of water/glycol. Using these parameters and the measurement of flow rate, flow and return temperature, the unit calculates the heat quantity.

A power failure protection guarantees that the adjusted system parameters and the calculated heat quantity are maintained in the case of power loss. Different sensors can be chosen and configured using the push buttons. The temperature of the selected measuring point, the heat quantity gained, the current power or the flow rate of the system are indicated on the display. A control lamp and a relay are integrated to indicate sensor defects and exceeded or underrun value ranges.

VBus® board

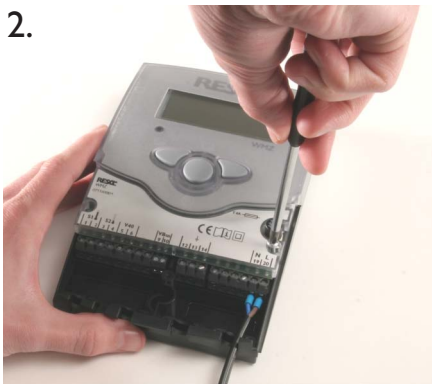
When the WMZ-G1 is connected to a controller, the VBus® master board has to be replaced with the VBus® slave board!

When several WMZ-G1 modules are cascaded and connected to a datalogger or PC (see p. 14), only the VBus® master boards of the WMZ-G1 modules with the subaddress 1 or higher have to be replaced with the VBus® slave boards!

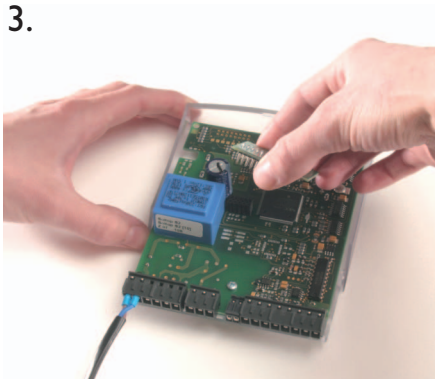
Replacing the VBus® board

1.

2.



3.



WARNING!	Electric shock! **Opening the housing will expose live parts!** ➔ **Switch off power supply and disconnect the device from mains before opening the housing!**

ATTENTION!	ESD damage! Electrostatic discharge can lead to damage to electronic components! ➔ Take care to discharge properly before touching the inside of the device!

➔ Unscrew the cross-head screw of the cover (1.) and remove the cover from the housing.

➔ Unscrew the two lateral srews of the transparent shield (2.) and remove the shield.

➔ Pull out the board which is to be replaced carefully (3.). Replace with new board.

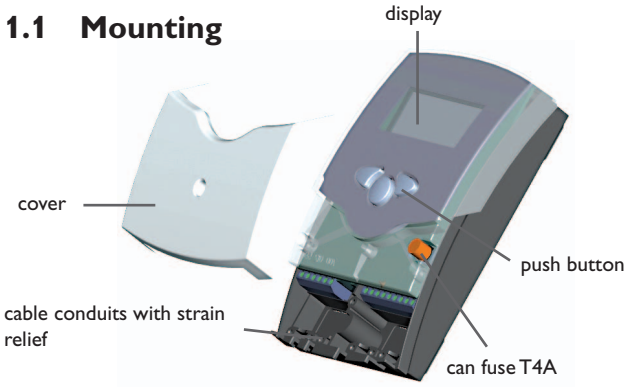
➔ Place the shield back on the housing and attach with the two screws.

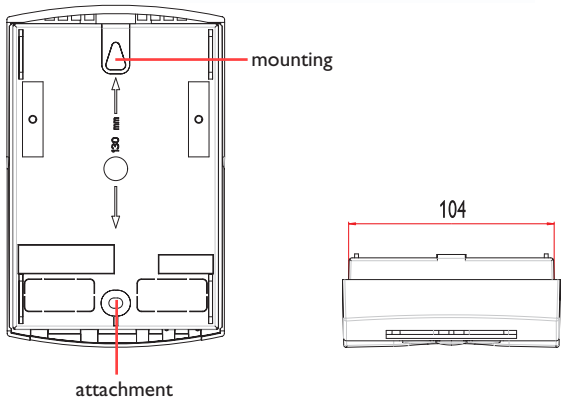
➔ Put the cover on the housing and attach with the cross-head screw.

The VBus® master board is marked with a “B”, the VBus® slave board with a “J” in the upper right corner of the populated side of the board.

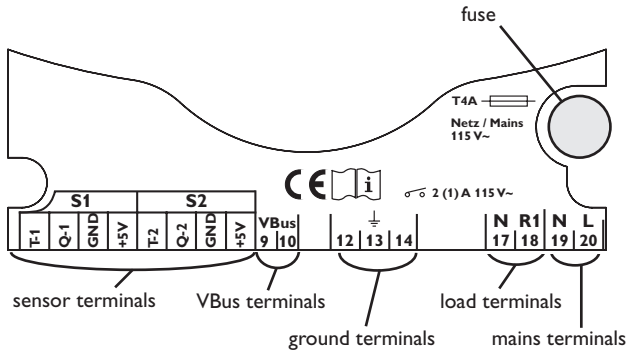
1. Installation

1.1 Mounting





1.2 Connections

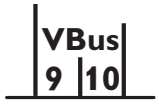


Note

The device must be grounded in order to function faultlessly.

➔ Ground the device properly.

1.3 Data communication / Bus



VBus® terminals

The WMZ-G1 is equipped with the RESOL VBus® for data transfer with and energy supply to external modules. The connection is carried out at the two terminals marked "VBus" (either polarity). One or more RESOL VBus® modules can be connected via this data bus:

WARNING!	**Electric shock!** **Opening the housing will expose live parts!** **➔ Switch off power supply and disconnect the device from mains before opening the housing!**

The unit must only be located in dry interior locations. It is not suitable for installation in hazardous locations and should not be placed close to any electromagnetic fields. The device must additionally be supplied from a double-pole switch with contact gap of at least 3 mm / 0.12" . Please pay attention to separate routing of sensor cables and power supply cables.

➔ Unscrew the crosshead screw in the cover and remove it from the housing.

➔ Mark the upper fastening point on the wall, drill the hole and premount the enclosed wall plug and screw.

➔ Hang the housing at the upper fastening point and mark the lower fastening point on the underground (hole distance 130 mm / 5.1"), drill the holes and put in the lower wall plug.

➔ Fasten the housing.

➔ Complete wiring connections in accordance with terminal allocations.

➔ Put the cover on the housing and attach with the crosshead screw.

ATTENTION!	**ESD damage!** Electrostatic discharge can lead to damage to electronic components! ➔ Take care to discharge properly before touching the inside of the device!

The power supply of the device must be carried out via an external power supply switch only (last step of installation!) and the line voltage must be 115 V. Flexible lines have to be attached to the housing by means of the enclosed strain relief and screws.

The device is equipped with 1 relay to which a **load** can be connected:

Relay 1
R1 = conductor R1
N = neutral line N
12, 13, 14 = grounding

The **sensors** (S1, S2) are connected to the following terminals:

T-1/2 = temperature signal 1/2
Q-1/2 = flow rate signal 1/2 (or relative pressure signal or differential pressure signal depending on the sensor type)
GND = ground
+ 5 V = supply

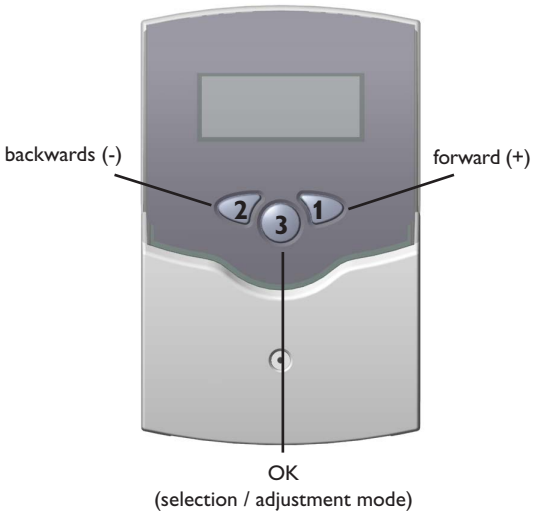
The **RESOL VBus®** connection is carried out at the terminals marked "VBus" with either polarity.

Power supply connection is at the power supply terminals (see figure to the left):

N = neutral line N
L = conductor L
12, 13, 14 = grounding

2. Operation and function

2.1 Push buttons for adjustment



The device is operated via 3 push buttons below the display. The forward-button (1) is used for scrolling forward through the menu or to increase the adjustment values. The backwards-button (2) is correspondingly used for the reverse function.

- ➔ Select the desired sub-menu using buttons 1 and 2
- ➔ Briefly press button 3 in order to enter the sub-menu,
- ➔ The selected sub-menu is now shown on the display. By pressing the "back"-button, the display returns to the former menu level.
- ➔ Press buttons 1, 2 and 3 several times until the desired menu line is reached.
- ➔ Briefly press button 3 in the relevant menu line for modification of adjustment values – "change value" appears on the display – adjust the requested value by pressing buttons 1 and 2
- ➔ Briefly press button 3 in order to confirm the adjustment.
- ➔ Please reply to the following security inquiry "Save?" by choosing "yes" or "no" (buttons 1 and 2) and confirm with button 3.

Note:
If button 3 is kept pressed for 2 seconds, the display goes back to the main menu

2.2 Menu structure

```
MainMenu
1. Measuredvalues
2. Reports
3. Balancevalues
4. Adjust.values
```

The clear text display shows a 4-line extract of the selected menu.

In the first line of each submenu you will find the option "back" (except in submenu "measured values"), by means of which you can return to the former display level.

After a short time of operation, the display switches to the submenu "measured values" which is then indicated during normal operation.

2.3 Initial commissioning

ADJ. VALUES:	
LANGUAGE	ENGLISH
DATE	01.01.2009
TIME	00:00

- **Language:**

➔ Select the menu item "Language" with button 1 and confirm with button 3

➔ Select the desired language with buttons 1 and 2

➔ In order to confirm the selection, briefly press button 3 and answer the security inquiry with "Yes"

➔ In order to change to the adjustment values menu, select the menu item "back" and confirm with button 3

The following languages are available: German ("Deutsch"), English, Spanish ("Castellano"), French ("Français"), Italian ("Italiano"). The factory setting is "English".

➔ Establish the power supply

In the "Adjust. Values" menu, carry out the adjustments mentioned below. For further information on the adjustment values, see chap. 5.

- **Date:**

➔ Select the menu item "Date" with button 1 and confirm with button 3

➔ Adjust the year, the month and the day with buttons 1 and 2 and confirm each with button 3

➔ In order to confirm the adjustment, briefly press button 3 and answer the security inquiry with "Yes"

- **Time:**

➔ Select the menu item "Time" with button 1 and confirm with button 3

➔ Adjust the hours and the minutes with buttons 1 and 2 and confirm each with button 3

➔ In order to confirm the adjustment, briefly press button 3 and answer the security inquiry with "Yes"

2.4 Operating control lamp

The device is equipped with a red/green operating control lamp. The following operating states can be visualized:

•	green constant	normal operation;
•	green flashing	measured value outside alarm limit
•	red flashing	defective sensor
•	not illumated	no voltage

3. Measured values

S1:
T1: 74.8 ° C
p1: 0.14 BAR
P: 9 W

S2:
T2: 23.9 ° C
Q2: 5.55 L/MIN
HEAT: 19944 WH

Note:
"Power" and "Heat" are only indicated when at least one of the sensors connected is a VFS type sensor and the option "Heatmeter" in the submenu "Adj. values" has previously been set to "Yes".

In the submenu "Measured values", different measurement values are shown: the measured values depend on the sensor type and can be the following:

Sensor 1: T1 (temperature in ° C or ° F)
p1 (pressure in bar)
Q2 (flow rate in l/min, m³/h or gallon/h)
P (in W) – values over 999,999 W cannot be processed. In such a case, both the displayed value and the VBus® data packet value remain at 999,999 W.

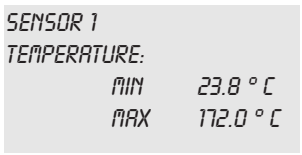
Sensor 2: T2 (temperature in °C or ° F)
p2 (pressure in bar)
Q2 (flow rate in l/min, m³/h or gallon/h)
Heat (in Wh, kWh, MWh, kJ, MJ or GJ.)

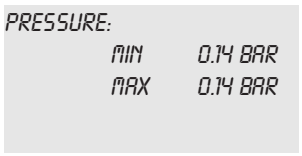
S1 measures the flow temperature, S2 the return temperature.

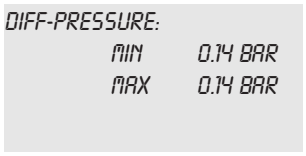
If the flow temperature is lower than the return temperature, heat quantity measurement is not carried out. In that case, the power is displayed as 0.

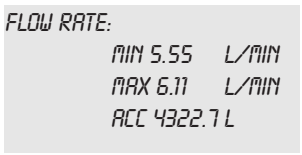
Briefly press button 3 in order to get back to the main menu.

4. Balance values









In this submenu, the balance values for "Sensor 1", "Sensor 2" and "Others" are indicated. When "Heatmeter" has previously been set to "Yes" in the submenu "Adj. values", the balance values for this item are also indicated. The balance values refer to the period of time the device has been in use. If these values are reset to zero, a new operating period starts.

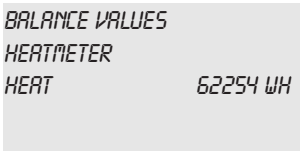
Note:
The indicated balance values depend on the selected sensor type!

Display of balance values "Sensor 1":

- *TEMPERATURE*:
  MIN: minimum temperature at sensor 1 in ° C or ° F
  MAX: maximum temperature at sensor 1 in ° C or ° F
- *PRESSURE*:
  MIN: minimum pressure at sensor 1 in bar
  MAX: maximum pressure at sensor 1 in bar
- *DIFF-PRESSURE*:
  MIN: minimum differential pressure at sensor 1 in bar
  MAX: maximum differential pressure at sensor 1 in bar
- *FLOW RATE*:
  MIN: minimum flow rate at sensor 1 in l/min, m³/h, gallon/h
  MAX: maximum flow rate at sensor 1 in l/min, m³/h, gallon/h
  ACC: accumulated volume since commissioning / last reset in l, m³ or gallons

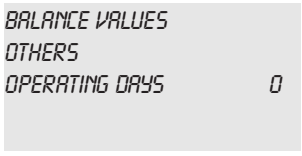
Display of balance values "Sensor 2":

- *TEMPERATURE*:
  MIN: minimum temperature at sensor 2 in ° C or ° F
  MAX: maximum temperature at sensor 2 in ° C or ° F
- *PRESSURE*:
  MIN: minimum pressure at sensor 2 in bar
  MAX: maximum pressure at sensor 2 in bar
- *DIFF-PRESSURE*:
  MIN: minimum differential pressure at sensor 2 in bar
  MAX: maximum differential pressure at sensor 2 in bar
- *FLOW RATE*:
  MIN: minimum flow rate at sensor 2 in l/min, m³/h, gallon/h
  MAX: maximum flow rate at sensor 2 in l/min, m³/h, gallon/h
  ACC: accumulated volume since commissioning / last reset in l, m³ or gallons



Display of balance values "Heatmeter":

- *HEAT*:
  Heat quantity in Wh, kWh, MWh, kJ, MJ or GJ.



Display of balance values "Others":

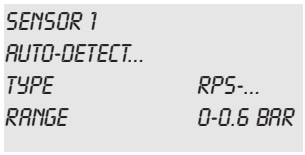
- *OPERATING DAYS*:
  Number of operating days

5. Adjustment values

In this menu the parameters and values for Sensor 1 and Sensor 2, heat quantity measurement and bus mode can be selected and adjusted. Furthermore, date and time have to be set in this menu, see chap. 2.3.

Each sensor has two signals. The first signal of each sensor refers to temperature. The second signal of each sensor depends on the sensor type which can either be VFS for flow rate, RPS for relative pressure or DPS for differential pressure.

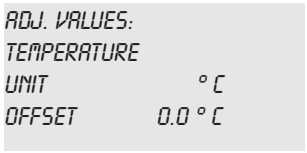
Sensors 1 and 2

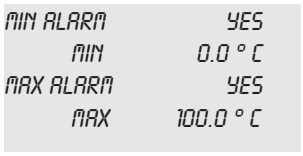


VFS Range:
Custom: Min: 1-19.99 l/min, Max: 1.01-600.00 l/min
1-20 l/min
2-40 l/min
5-100 l/min
10-200 l/min
20-400 l/min

RPS Range:
Custom: Min: 0.00-39.99 bar, Max: 0.01-40.00 bar
0-0.6 bar
0-1 bar
0-1.6 bar
0-2.5 bar
0-4 bar
0-6 bar
0-10 bar
0-16 bar
0-25 bar
0-40 bar

DPS Range:
Custom: Min: 0.00-15.99 bar, Max: 0.00-16.00 bar
0-0.6 bar
0-1 bar
0-1.6 bar
0-2.5 bar
0-4 bar
0-6 bar
0-10 bar
0-16 bar





Signal 1

Select and adjust the parameters and values for the selected sensor

- *AUTO-DETECT...*

  Start automatic sensor identification

  If you select auto-detect, the sensor identifies itself: type and sensor range are transmitted to the device. If no automatic detection is possible, the type and range of the sensor can be adjusted manually.

- *TYPE*:

  Select the sensor type by choosing between:

  Off: no sensor type is selected

  VFS: Flow rate sensor: sensor for detecting flow rate

  RPS: Relative Pressure Sensor: sensor for detecting relative pressure

  DPS: Differential Pressure Sensor: sensor for detecting differential pressure

- *RANGE:*

  Select the sensor range.

  The range depends on the previously selected sensor type (see tables to the left).

Adjust the parameters referring to temperature (signal 1):

- *UNIT*:

  Select the unit of temperature. A selection can be made between ° C and ° F.

- *OFFSET:*

  A sensor offset can be carried out.

  Adjustment range: -99.9 ... 99.9 ° C or ° F

- *MIN ALARM:*

  If the minimum temperature is reached, the relay is energized, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu “Reports”.

  ➔ Select “Yes” or “No” to activate or deactivate the function.

  If this function is selected, the minimum value for the alarm has to be adjusted.

  Adjustment range: -888.8 ... 999.9 ° C or ° F.

- *MAX ALARM:*

  If the maximum temperature is reached, the relay is energized, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu “Reports”.

  ➔ Select “Yes” or “No” to activate or deactivate the function.

  If this function is selected, the maximum value for the alarm has to be adjusted.

  Adjustment range: -888.8 ... 999.9 ° C or ° F.

Signal 2

Adjust the parameters and values for the second sensor signal. The second signal of each sensor depends on the sensor type. Therefore, the following parameters and adjustment values depend on the sensor type (flow rate for VFS, pressure for RPS, differential pressure for DPS)

Adjust the parameters referring to the flow rate (signal 2) if a VFS is used:

- *UNIT:* Select the unit of flow rate.

  A selection can be made between l/min, m³/h and gallon/h.
- *OFFSET:* An offset can be carried out. The adjustment range depends on the previously selected unit.
- *MIN ALARM*:

  If the minimum flow rate is reached, the relay is energized, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu “Reports”.

  ➔ Select “Yes” or “No” to activate or deactivate the function.

  If this function is selected, the minimum value for the alarm has to be adjusted. The adjustment range depends on the previously selected unit.
- *MAX ALARM:*

  If the maximum flow rate is reached, the relay is energized, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu “Reports”.

  ➔ Select “Yes” or “No” to activate or deactivate the function.

  If this function is selected, the maximum value for the alarm has to be adjusted. The adjustment range depends on the previously selected unit.

Adjust the parameters referring to relative pressure (signal 2) if a RPS is used:

- *OFFSET:*

  An offset can be carried out.

  Adjustment range: 0 ... 99.99 bar
- *MIN ALARM:*

  If the minimum relative pressure is reached, the relay is energized, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu “Reports”.

  ➔ Select “Yes” or “No” to activate or deactivate the function.

  If this function is selected, the minimum value for the alarm has to be adjusted.

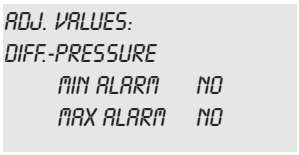
  Adjustment range: 0 ... 99.9 bar
- *MAX ALARM:*

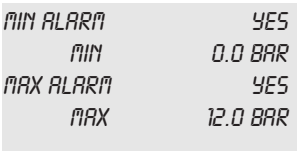
  If the maximum relative pressure is reached, the relay is energized, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu “Reports”.

  ➔ Select “Yes” or “No” to activate or deactivate the function.

  If this function is selected, the maximum value for the alarm has to be adjusted.

  Adjustment range: 0 ... 99.99 bar





Adjust the parameters referring to differential pressure (signal 2) if a DPS is used:

- *MIN ALARM:*

  If the minimum differential pressure is reached, the relay is energised, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu "Reports".

  ➔ Select "Yes" or "No" to activate or deactivate the function.

  If this function is selected, the minimum value for the alarm has to be adjusted.

  Adjustment range: 0 ... 99.9 bar

- *MAX ALARM:*

  If the maximum differential pressure is reached, the relay is energized, ⚠ appears in the display, the LED flashes green and an alarm message appears in the submenu "Reports".

  ➔ Select "Yes" or "No" to activate or deactivate the function.

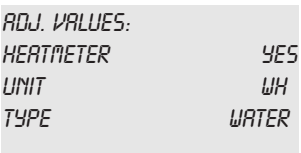
  If this function is selected, the maximum value for the alarm has to be adjusted.

  Adjustment range: 0 ... 99.9 bar

Note:
The parameters and adjustments have to be selected and adjusted for sensor 2 as well. For adjustment, please carry out the steps described for sensor 1!

Heat quantity measurement

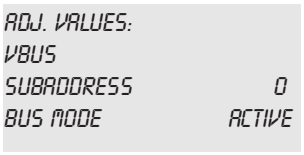
Heat quantity measurement is carried out by means of the difference between the flow and the return temperature as well as the measured flow rate. If the function is activated (factory setting), make the following adjustments:



Adjustments for heat quantity measurement.

- *HEATMETER:*
  Heat quantity measurement can be activated or deactivated with this option.
- *UNIT:*
  ➔ Select a unit for the indication of the heat quantity
  The units Wh or kJ can be selected.
- *TYPE:*
  ➔ Select the type of heat transfer fluid
  Water, Propylene, Ethylene or Tyfocor ®LS can be selected.
- *ANTIFREEZE:*
  ➔ Adjust the concentration of propylene or ethylene glycol in the heat transfer fluid
  This adjustment channel is only visible if "Propylene" or "Ethylene" is selected as "Type".
  Adjustment range: 20 ... 70 %.

VBus® adjustments



VBus® adjustments.

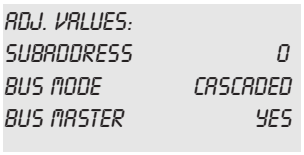
- SUBADDRESS:
  ➔ Adjust a subaddress for a WMZ-G1

  An individual module address can be adjusted for a WMZ-G1. This way, it is possible to use several WMZ-G1 with individual addresses in one system. If several WMZ-G1 (up to 16 in total are possible) are connected to one PC or datalogger, the WMZ-G1 have to be numbered serially, starting with 0. The connection sequence at the VBus®-connection is arbitrary.
  Adjustment range: 0 ... 15.
- BUS MODE:
  ➔ Adjust the bus mode
  Do not change the factory setting if the WMZ-G1 is connected to a RESOL controller with VBus® output terminal (corresponds to the bus mode "Passive").

  Select bus mode "Active", if the WMZ is not connected to a controller and if data are recorded on a PC or datalogger.

  Select bus mode "Cascaded", if several WMZ are connected to a PC or datalogger. The WMZ modules are serially numbered starting with 0 (see above).

  Adjustment range: Active, Passive, Cascaded.



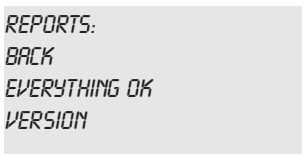
If subaddress "0" and bus mode "Cascaded" are selected, adjustments for the bus master have to be made:

- BUS MASTER:
  ➔ Adjust the bus master
  Select bus master "No" when several WMZ-G1 modules are cascaded and used along with a controller.

  Select bus master "Yes" when several WMZ-G1 modules are cascaded and used without a controller.

Note:
For detailed examples of connection see chapter 7 on page 15 of this manual.

6. Reports



In the submenu "Reports" different messages are indicated. During normal operation, the messages to the left are displayed.

Note:
Error messages depend on the error and on the sensor type selected previously!

Sensor 1

REPORTS: SENSOR 1 !SIGNAL 1 FAIL	Signal failure at sensor 1, signal 1 (temperature).
REPORTS: SENSOR 1 !SIGNAL 2 FAIL	Signal failure at sensor 1, signal 2 (this can be flow rate, relative pressure or differential pressure depending on the sensor type).
REPORTS: SENSOR 1 !MAX TEMP. ALARM	The adjusted maximum temperature at sensor 1 is exceeded!
REPORTS: SENSOR 1 !MIN TEMP. ALARM	The temperature at sensor 1 has fallen below the adjusted minimum value!
REPORTS: SENSOR 1 !MAX FLOW ALARM	The adjusted maximum flow rate at sensor 1 is exceeded!
REPORTS: SENSOR 1 !MIN FLOW ALARM	The flow rate at sensor 1 has fallen below the adjusted minimum value!
REPORTS: SENSOR 1 !MAX PRESS. ALARM	The adjusted maximum relative pressure at sensor 1 is exceeded!
REPORTS: SENSOR 1 !MIN PRESS. ALARM	The relative pressure at sensor 1 has fallen below the adjusted minimum value!
REPORTS: SENSOR 1 !MAX D.P. ALARM	The adjusted maximum differential pressure at sensor 1 is exceeded!
REPORTS: SENSOR 1 !MIN D.P. ALARM	The differential pressure at sensor 1 has fallen below the adjusted minimum value!

Sensor 2

REPORTS: SENSOR 2 !SIGNAL 1 FAIL	Signal failure at sensor 2, signal 1 (temperature).
REPORTS: SENSOR 2 !SIGNAL 2 FAIL	Signal failure at sensor 2, signal 2 (this can be flow rate, relative pressure or differential pressure depending on the sensor type)
REPORTS: SENSOR 2 !MAX TEMP. ALARM	The adjusted maximum temperature at sensor 2 is exceeded!
REPORTS: SENSOR 2 !MIN TEMP. ALARM	The temperature at sensor 2 has fallen below the adjusted minimum value!
REPORTS: SENSOR 2 !MAX FLOW ALARM	The adjusted maximum flow rate at sensor 2 is exceeded!
REPORTS: SENSOR 2 !MIN FLOW ALARM	The flow rate at sensor 2 has fallen below the adjusted minimum value!
REPORTS: SENSOR 2 !MAX PRESS. ALARM	The adjusted maximum relative pressure at sensor 2 is exceeded!
REPORTS: SENSOR 2 !MIN PRESS. ALARM	The relative pressure at sensor 2 has fallen below the adjusted minimum value!
REPORTS: SENSOR 2 !MAX D.P. ALARM	The adjusted maximum differential pressure at sensor 2 is exceeded!
REPORTS: SENSOR 2 !MIN D.P. ALARM	The differential pressure at sensor 2 has fallen below the adjusted minimum value!

7. Examples of connection

WMZ-G1 module in individual operation mode

- WMZ-G1: master board
  subaddress: "0"
  bus mode: "Active"

WMZ-G1 with controller

- controller: register WMZ-G1 module
- WMZ-G1: slave board
  subaddress: "0"
  bus mode: "Passive"

Cascade without controller

- WMZ-G1 0: master board
  subaddress "0"
  bus mode: "Cascaded"
  bus master: "Yes"
- WMZ-G1 1 ... 15: slave board
  subaddress: 1 ... 15*
  bus mode: "Cascaded"

The connection sequence at the VBus® is arbitrary.

Cascade with controller

- controller: No adjustments have to be made (**WMZ-G1 module must not be registered!**)
- WMZ-G1 0: slave board
  subaddress: "0"
  bus mode: "Cascaded",
  bus master: "No"
- WMZ-G1 1 ... 15: Slave board
  subaddress: 1 ... 15*
  Bus mode: "Cascaded"

The connection sequence at the VBus® is arbitrary.

* The maximum number of cascaded WMZ-G1 modules is 16. Whether this number can be reached depends on the construction.
Disturbing factors can be the following: distances, voltage-carrying lines etc.

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Important notice:
The texts and drawings in this manual are correct to the best of our knowledge. As faults can never be excluded, please note: Your own calculations and plans, under consideration of the current standards and directions should only be basis for your projects. We do not offer a guarantee for the completeness of the drawings and texts of this manual - they only represent some examples. They can only be used at your own risk. No liability is assumed for incorrect, incomplete or false information and / or the resulting damages.

Please note:
The design and the specifications are to be changed without notice.
The illustrations may differ from the original product.