RESOL DeltaSol® MiniPool

Mounting

Connection

Operation

48004881

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.

DeltaSol® MiniPool

EN

Manual

www.resol.com

Table of contents

Subject to technical change. Errors excepted.

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!

Subject to technical change. Errors excepted.

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

This manual contains important information about safe and proper usage of this product. Please keep this manual for future reference.

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.

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.

Information about the product

Proper usage

The RESOL DeltaSol® MiniPool is to be used for heating a swimming pool by means of solar collectors and optimised operation of the filter system in compliance with the technical data specified in this manual.
Improper use excludes all liability claims.

CE-Declaration of conformity

The product complies with the relevant directives and is therefore labelled with the CE mark. The Declaration of Conformity is available upon request, please contact RESOL.

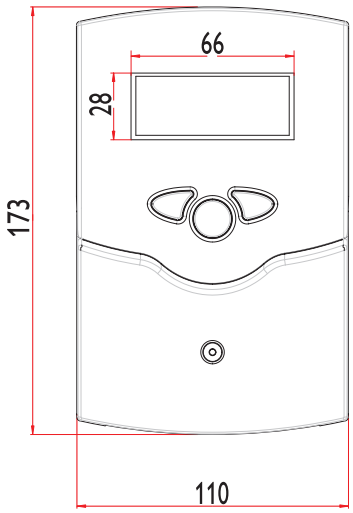
CE

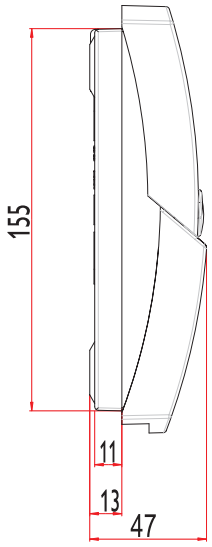
Note
Strong electromagnetic fields can impair the function of the controller.

➔ Make sure the controller as well as the system are not exposed to strong electromagnetic fields.

1. Overview

- Controller for heating a swimming pool by means of solar collectors and optimised operation of the filter system.
- Solar operating hours counter and heat quantity balancing
- 4 sensor inputs
- 2 relay outputs
- Function control
- RESOL VBus®





Included:

1 x DeltaSol® MiniPool

1 x accessory bag
- 1 x spare fuse T0,8A
- 2 x screws and wall plugs
- 4 x strain relief and screws

Additionally included with the full kit:
- 1 x FKP6 sensor
- 2 x FRP6 sensor

Technical data

Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40 050

Ambient temperature: 0...40 °C

Dimensions: 172 x 110 x 49 mm

Mounting: wall mounting, mounting into patch panels is possible

Display:

graphic display, 160 x 64 px

Operation: 3 push buttons at the front

Functions: controller for heating a swimming pool by means of solar absorbers in combination with the optimised operation of the filter system.

Solar loading:

When the absorber temperature is by an adjusted value higher than the pool temperature, solar loading starts. If the difference between flow and pool falls below a certain value, or if the maximum temperature is reached, solar loading is stopped.

Sensor inputs: 4 inputs for Pt1000 sensors

Relay outputs: 2 relay outputs

Bus: RESOL VBus®

Power supply: 220 … 240V~

Total switching capacity:

4 (1) A (220 … 240) V~

Rated impulse voltage: 2,5 kV

Mode of operation: type 1.B

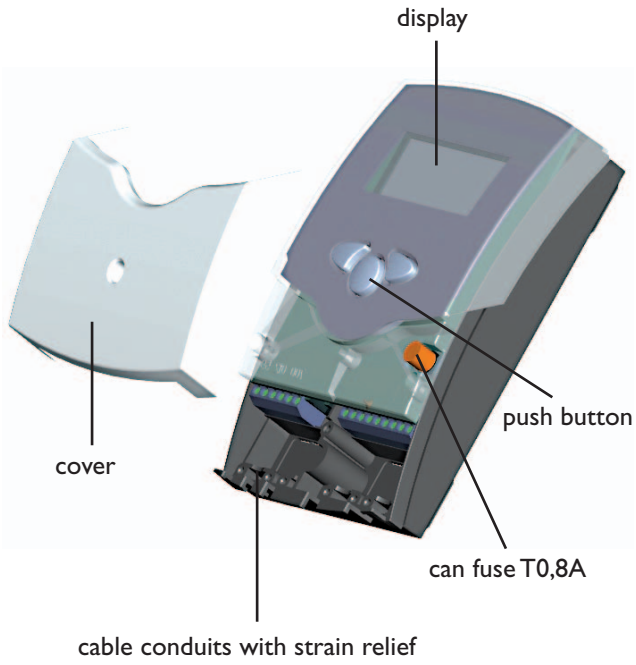
Switching capacities:

2 (1) A (220 … 240) V~

(standard relay)

2. Installation

2.1 Mounting



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 rooms. It is not suitable for installation in hazardous locations and should be protected against electromagnetic fields. The controller must additionally be supplied from a double pole switch with contact gap of at least 3 mm. Please pay attention to separate routing of sensor cables and mains cables.

➔ Unscrew the crosshead screw from the cover.

➔ Pull the cover downwards to remove it from the housing.

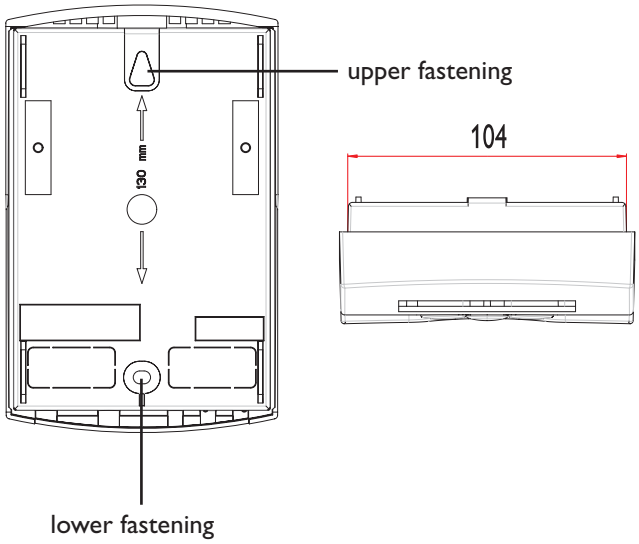
➔ Mark the upper fastening point on the wall, drill and fasten the enclosed wall plug and screw leaving the head protruding.

➔ Hang the housing from the upper fastening point and mark the lower fastening point through the hole in the terminal box (centres 130 mm). Drill and insert the lower wall plug

➔ Fasten the housing to the wall with lower fastening screw and tighten.

➔ Carry out the electrical connections according to the specifications.

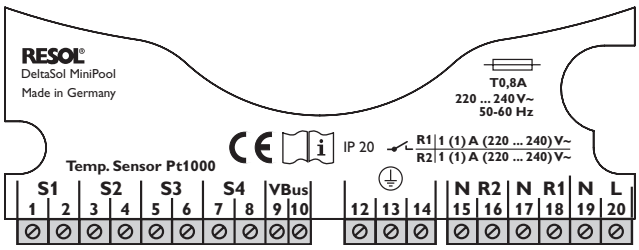
➔ Refasten the cover.



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

2.2 Electrical connection

2.2.1 Overview of electrical connections



Connecting the device to the power supply must always be the last step of the installation!

The power supply of the device must be 220 ... 240 V~ (50 ...60 Hz).

The controller is equipped with two relays to which loads can be connected:

- **Relays R1 and R2** are electromechanical relays:
  R1 and R2 = conductor R1 ...R2
  N = neutral conductor N (common terminal block)
  PE = protective conductor PE (common terminal block)

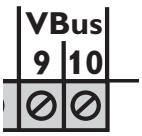
Depending on the product version, mains cable and sensor cables are already connected to the device. If that is not the case, please proceed as follows:

Connect the **temperature sensors** (S1 to S4) to the corresponding terminals with either polarity.

Connect the **mains cable** to the following terminals:

19 = neutral conductor N
20 = conductor L
12 = protective conductor ⏚

2.2.2 Data communication / Bus



VBus® terminals

The controller 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:

- RESOL DL2 Datalogger
- RESOL GA3 Large Display
- RESOL SD3 Smart Display
- RESOL STA-W kWh output module
- RESOL VBus®/USB Interface adapter

3. Basic system

Sensor allocation

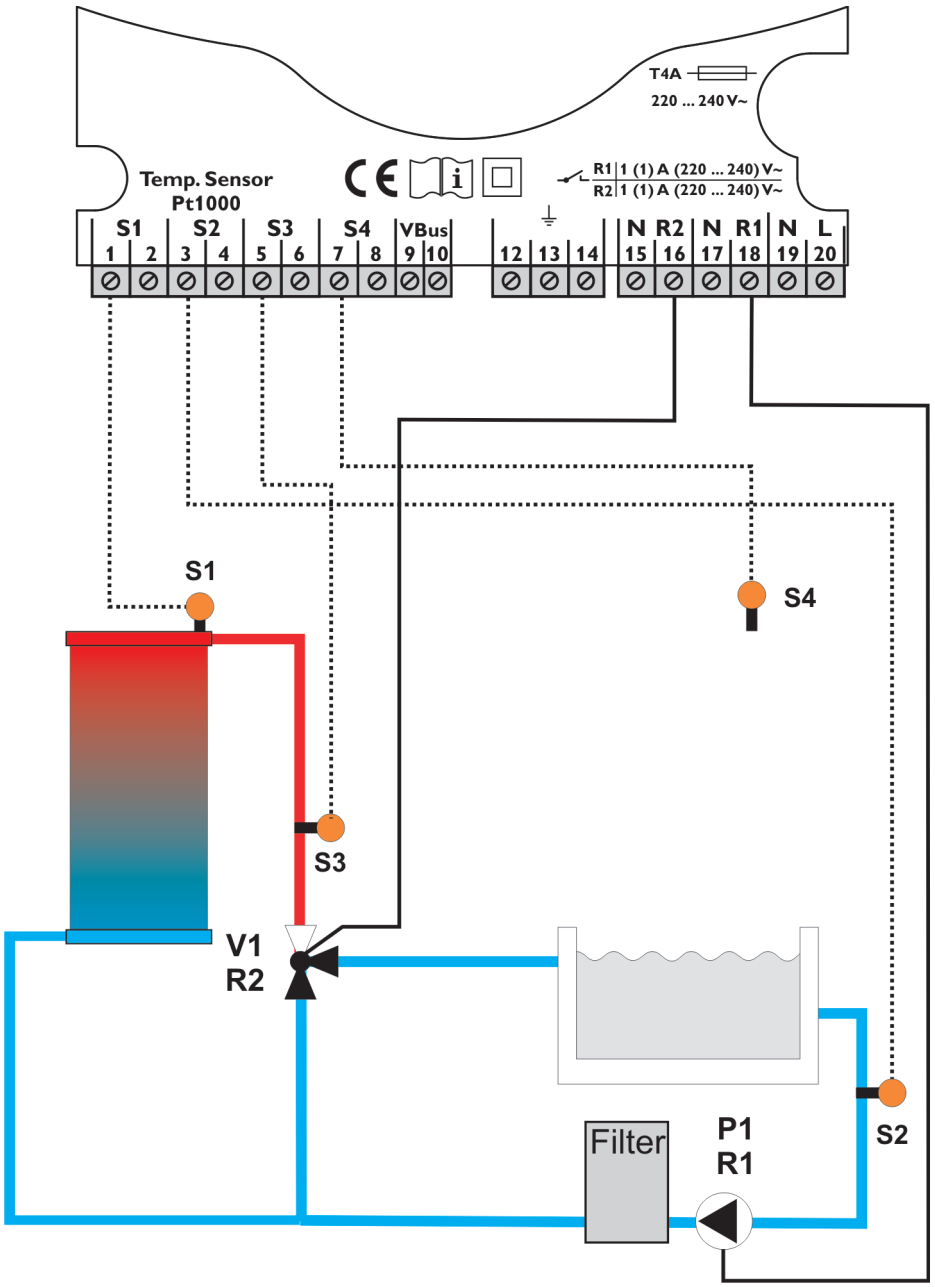
S1	S2	S3	S4
Tabsorber	Tpool	Tflow	T - freely selectable

Sensor abbreviations

Sensor	Description
Tabsorber	Absorber temperature
Tpool	Pool temperature
Tflow	Flow temperature
S4	freely selectable; with WMZ Treturn
Treturn	Return temperature

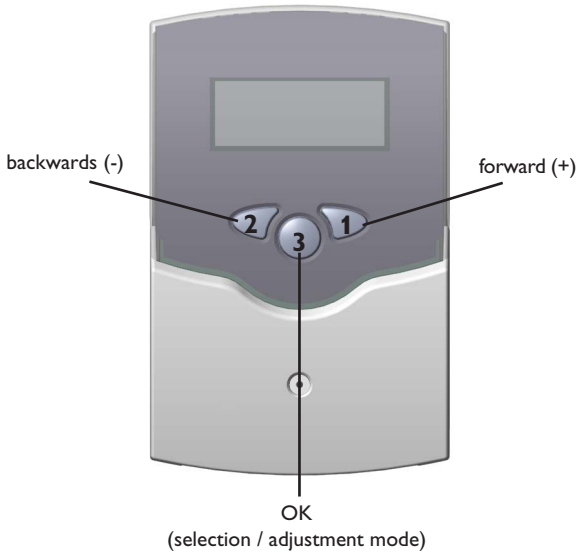
Relay allocation

R1	R2
Filter pump P1	3-way valve V1 Solar: on/off



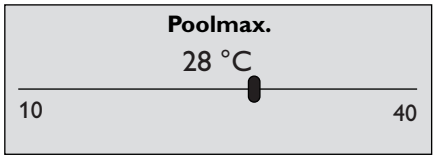
4. Operation and function

4.1 Push buttons



The controller is operated via the three push buttons below the display. The forward-button (1) is used for scrolling forward through the menu or to increase the adjustment values. The backward-button (2) is similarly used for scrolling backwards and reducing values. Button 3 is used for selection of the menu lines and for confirmation.

4.2 Operational concept



Adjustment mode

In the adjustment mode, different functions can be selected and values can be adjusted.

➔ To access the adjustment mode, scroll down past the last adjustment channel and press button 1 for approx. three seconds.

➔ Select the desired value or function by pressing buttons 1 and 2, then confirm by pressing button 3

Adjusting values:

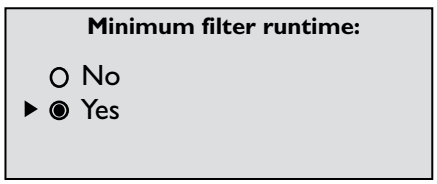
➔ Select the value by pressing buttons 1 or 2, then briefly press button 3; the adjustment range is displayed in the form of a bar.

➔ Adjust the desired value by pressing buttons 1 and 2; this value is shown on the bar by means of a slider.

➔ Briefly press button 3 to confirm the adjustment.

➔ Press button 3 again to store the adjustment. The controller will then go back to the adjustment menu.

If button 3 is not pressed after the adjustment, the display will go back after a few seconds. The adjustment will not be stored.



Selecting a function or option:

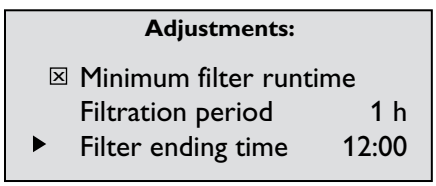
➔ Select the desired function or option by pressing buttons 1 and 2, then briefly press button 3.

➔ Select *YES* to activate the selected function, or select *NO* to deactivate the function.

➔ Briefly press button 3 to confirm the selection.

➔ Press button 3 again to store the adjustment.

➔ An activated function is indicated by means of a marked checkbox. Additionally, the corresponding adjustment values are displayed.



➔ In order to leave the adjustment mode and get back to the display mode, keep button 2 pressed until the first menu item of the main menu is reached.

➔ Then briefly press button 2 to get back to the display mode.

If no button is pressed for two minutes, the controller will automatically go back to the status display.

5. Status display

In the status display, the operating status of the system is indicated:

SOLAR: ON:	Solar loading is active
SOLAR: OFF:	Solar loading is inactive
COOLING:	Cooling is active, pool temperature is displayed
FILTRATION:	Filter pump is active; the remaining time is displayed

Additionally, possible causes for the SOLAR: ON and SOLAR: OFF status of the system are indicated:

POOL MAX.:	Maximum pool temperature is reached
FLOW MAX.:	Maximum flow temperature is reached
ABS. MAX.:	Maximum absorber temperature is reached
ABS. MIN.:	Minimum absorber temperature is reached
SENSOR FAILURE	

MIN. ON:	Minimum runtime is active
MIN. OFF:	Minimum break time is active

6. Menu structure

6.1 Display values

The following values are displayed:

Display	Description
TABSORBER	Absorber temperature in °C
TPOOL	Pool temperature in °C
TFLOW	Flow temperature in °C
SENSOR4	Temperature at an additional sensor location

Display	Description
TIME	Time
FILTER RUNTIME	Present-day runtime of the filter pump
RELAY1	Relay1 on / off
RELAY2	Relay2 on / off

6.2. Balance values

The following values can be charted:

Display	Description
MAX. TABS.	Maximum absorber temperature
MIN. TABS.	Minimum absorber temperature
MAX. TPOOL	Maximum pool temperature
MIN. TPOOL	Minimum pool temperature
MAX. TFLOW	Maximum flow temperature
MIN. TFLOW	Minimum flow temperature

Display	Description
MAX. SENSOR4	Maximum outdoor temperature
MIN. SENSOR4	Minimum outdoor temperature
OPER. DAYS	Number of operating days of the controller
OPER. HOURS R1	Operating hours of the filter pump (P1 at R1)
OPER. HOURS R2	Solar loading operating hours (V1 at R2)

6.3 Functions / Adjustment values

Display	Description
ΔTON	Switch-on difference
ΔTOFF	Switch-off difference
POOLMAX	Maximum pool temperature
T-ΔTON	Delay
MIN ON	Minimum runtime
MIN OFF	Minimum break time
TIME	Time
MINIMUM FILTER RUNTIME	Minimum filter runtime
CIRCULATION	Circulation function
FLOWMAX.	Maximum flow limitation
ABSORBERMAX.	Absorber maximum limitation
ABSORBERMIN.	Absorber minimum limitation
POOLCOOLING	Pool cooling

For more detailed information about the functions and the corresponding adjustment values see ch. 7 “Functions and options“.

7. Functions and options

Switch-on difference
ADJUSTMENTS/ΔTON
Adjustment range: 0.2 ... 25.0 K
Factory setting: 2.5 K

Adjustment of the switch-on difference (*TABSORBER* - *TPOOL*) for the solar circuit in Kelvin.

Switch-off difference
ADJUSTMENTS/ΔTOFF
Adjustment range: 0.0 ... 24.8 K
Factory setting: 0.3 K

Adjustment of the switch-off difference (*TFLOW* - *TPOOL*) for the solar circuit in Kelvin. The switch-off difference has to be at least 0.2 K lower than the switch-on difference *ΔTON*.

Maximum pool temperature
ADJUSTMENTS/POOLMAX.
Adjustment range: 10 ... 40 °C
Factory setting: 28 °C

Adjustment of the maximum pool temperature in °C.

When the adjusted maximum pool temperature is reached, the solar system switches off. The circulation function is not inhibited.

Switch-on delay
ADJUSTMENTS/T-ΔTON
Adjustment range: 00:01 ... 10:00
Factory setting: 01:00

Adjustment of the switch-on delay *T-ΔTON*. The switch-on conditions must be fulfilled for this period of time for the solar loading to start.

➔ First adjust the minutes and confirm the adjustment
➔ Then adjust the seconds and confirm the adjustment

Minimum runtime
ADJUSTMENTS/MIN ON
Adjustment range: 0 ... 10 min
Factory setting: 2 min

Adjustment of the minimum runtime in minutes.

The minimum time for which the solar system remains switched on after the switch-on conditions have been fulfilled. The minimum runtime is not aborted by the maximum pool temperature limitation.

Minimum break time
ADJUSTMENTS/MIN OFF
Adjustment range: 0 ... 10 min
Factory setting: 2 min

Adjustment of the minimum break time in minutes.

The period of time for which the solar system remains switched off after the switch-off condition has been fulfilled.

Time
ADJUSTMENTS/TIME

Adjustment of the current time

Minimum filter runtime
ADJUSTMENTS/MINIMUM FILTER RUNTIME
Selection: "Yes", "No"
Factory setting: "No"

ADJUSTMENTS/FILTRATION PERIOD
Adjustment range: 0 ... 16 h
Factory setting: 5 h

ADJUSTMENTS/ENDING TIME
Adjustment range: 00:00 ... 23:30
Factory setting: 20:00

Adjustment of the minimum filter pump runtime in hours.

The filter pump is switched on for this adjusted *FILTRATION PERIOD* every day.
The filter runtime ends when the adjusted *ENDING TIME* is reached.
The minimum filter runtime will also be complied with in the case of a sensor failure.

Example: With a filter runtime of 4 hours, the filter pump has to be continuously active from 16:00 o'clock on in order to reach the adjusted runtime before the adjusted ending time at 20:00 o'clock is reached.

Circulation function

ADJUSTMENTS/CIRCULATION
Selection: "Yes", "No"
Factory setting: "No"

ADJUSTMENTS/STARTING TIME
Adjustment range: 00:00 ... 23:45
Factory setting: 07:00

ADJUSTMENTS/STOPPING TIME
Adjustment range: 00:15 ... 24:00
Factory setting: 20:00

ADJUSTMENTS/PERIOD
Adjustment range: 1 ... 10 min
Factory setting: 1 min

If the solar system has not been active for the period of one hour, it will be switched on for 1 ... 10 minutes (Flushing the pipes with pool water in order to measure the pool temperature during a system standstill).

Adjustment of the circulation duration in minutes.

Start / end of the circulation period (time).

Flow maximum limitation

ADJUSTMENTS/FLOWMAX.
Selection: "Yes", "No"
Factory setting: "Yes"

ADJUSTMENTS/TFLOWMAX.
Adjustment range: 30 ... 100 °C
Factory setting: 40 °C

Adjustment of the flow maximum limitation.

If this function is active, solar loading will be switched off when the maximum flow temperature is exceeded (scald protection).

Absorber maximum limitation

ADJUSTMENTS/ABSORBERMAX.
Selection: "Yes", "No"
Factory setting: "No"

ADJUSTMENTS/TABS.MAX.
Adjustment range: 60 ... 160 °C
Factory setting: 130 °C

ADJUSTMENTS /ΔTABS.MAX.
Adjustment range: 2 ... 50 K
Factory setting: 10 K

The absorber maximum limitation inhibits solar loading from the absorber if the adjusted temperature threshold (*TABS.MAX.*) is exceeded.

Adjustable switch-on and switch-off hysteresis (*ΔTABS.MAX.*) which prevents the controller from switching on and off again because of very small temperature differences.

Absorber minimum limitation

ADJUSTMENTS/ABSORBERMIN.
Selection: "Yes", "No"
Factory setting: "No"

ADJUSTMENTS/TABS.MIN.
Adjustment range: 10 ... 90 °C
Factory setting: 10 °C

ADJUSTMENTS/ΔTABS.MIN.
Adjustment range: 0.3 ... 10 K
Factory setting: 2.0 K

This function ensures that a solar loading is only effected if a given absorber temperature is exceeded.

Adjustable switch-on and switch-off hysteresis (*ΔTABS.MIN.*) which prevents the controller from switching on and off again because of very small temperature differences.

Pool cooling function
ADJUSTMENTS/POOLCOOLING
Selection: "Yes", "No"
Factory setting: "No"

EXPERTE/ADJUSTMENTS/ΔTCOOL
Adjustment range: 0.3 ... 10.0 K
Factory setting: 2.0 K

EXPERTE/ADJUSTMENTS/ΔTCOOLON
Adjustment range: 0.3 ... 10.0 K
Factory setting: 3.0 K

EXPERTE/ADJUSTMENTS/ΔTCOOLOFF
Adjustment range: 0.2 ... 10.0 K
Factory setting: 1.5 K

If the maximum pool temperature is exceeded by a certain value (*ΔTCOOL*), this function cools the pool by discharging heat through the absorber. This is only possible if the absorber is cooler than the pool by the adjusted temperature difference *ΔTCOOLON*.
Cooling is switched off when the value *ΔTCOOLOFF* is reached or when *POOLMAX.* is underrun.

The adjustable minimum difference between switch-on and switch-off temperature (hysteresis) prevents the controller from switching on and off again due to very small temperature differences..

Heat quantity balancing
ADJUSTMENTS/HEAT QUANTITY
Selection: "Yes", "No"
Factory setting: "No"

ADJUSTMENTS/FLOW RATE
Adjustment range: 0.1 ... 500 l/min
Factory setting: 5 l/min

Heat quantity balancing is possible if a flowmeter is used. The flow rate should be read from the window of the flow setter at 100 % pump speed and must be adjusted as *FLOW RATE*.

Note
For heat quantity balancing, S4 has to be used for measuring the return temperature (see chap. 3).

Manual operation
MANUAL OPERATION/RELAY1 (2)
Selection: "Off", "On", "Auto"
Factory setting: "Auto"

Each relay can be set into the *OFF* / *ON* / *AUTO* mode. During normal operation, the relay is set to *AUTO*.

Sensors
SENSOR OFFSET
SENSOR1 (2, 3, 4)

Adjustment of the sensor offset.

A sensor offset can be carried out (-5 K ... +5 K, adjustment step size 0.1 K).

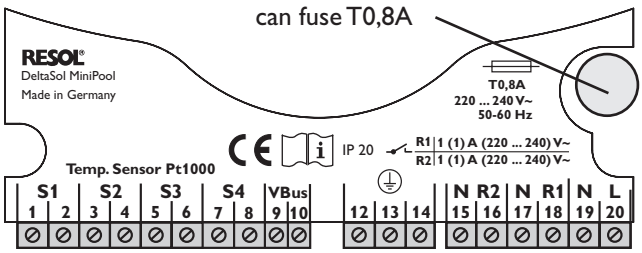
Language
LANGUAGE
Selection: "Deutsch", "English", "francais", "castellano", "italiano"
Factory setting: "Deutsch"

Adjustment of the menu language: *DEUTSCH, ENGLISH, FRANCAIS, CASTELLANO, ITALIANO.*

8. Error indication

A possible failure of the pool-, flow- or absorber sensor will be indicated on the display. The solar system will be switched off or, if already off, remain inactive. In the case of a failure of the outdoor temperature sensor, the system will not be switched off or kept inactive.

9. Troubleshooting



If a malfunction occurs, a message is displayed in the display of the controller:

Operating control lamp off.

Check the power supply. Is it disconnected?

no

The fuse of the controller could be blown. It can be replaced after the front cover has been removed (spare fuse is enclosed in the accessory bag).

yes

Check the supply line and reconnect it.

10. Accessories

Sensors

Our product range includes high-precision platin temperature sensors, flatscrew sensors, outdoor temperature sensors, indoor temperature sensors, cylindrical clip-on sensors and irradiation sensors, also as complete sensors with immersion sleeves.

Overvoltage protection device

In order to avoid overvoltage damage at absorber sensors (e.g. caused by local lightning storms), we recommend installing the overvoltage protection RESOL SP10.

RESOL ServiceCenter Software

The controller data can be read out for visualising and monitoring the system state. The light version of the software is availabe for free download at www.resol.com.

The full version additionally allows easy configuration of the control parameters with a PC.

Notes

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Editor: RESOL - Elektronische Regelungen GmbH

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