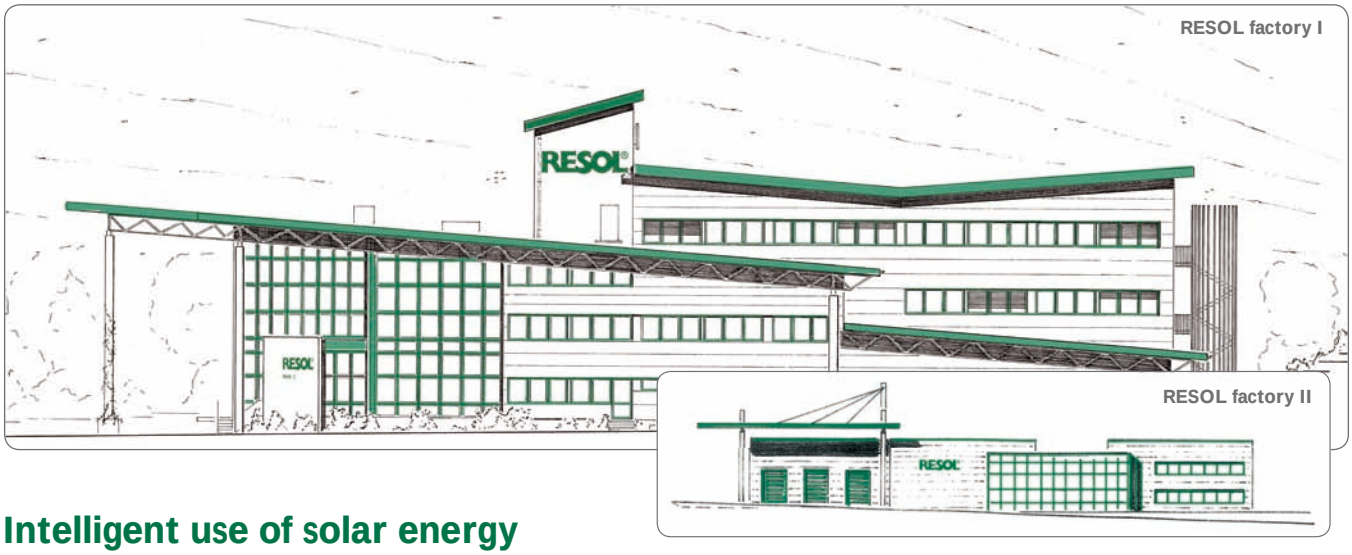
RESOL®

Controllers for solar thermal systems

www.resol.com

US/CA

09/10



Intelligent use of solar energy

Since 1977 RESOL has been standing for intelligent solar thermal control technology.

Caused by the oil crisis in the middle of the 1970s, the social conscience for the use of renewable energies arose and solar energy became very important. In the meantime, solar thermal systems have become an inherent part of construction planning. Not least because of rising energy prices, it frequently becomes a hot topic again. According to scientific research, fossil fuels will have run out by the year 2040, but the effect of that is already tangible both economically and ecologically.

Nowadays, RESOL products optimize the control of about 2.7 million active solar heating and swimming pool systems in 50 countries world-wide.

In recognition of a convincing corporate philosophy, the sophisticated quality and functionality as well as the outstanding design of our products, RESOL has already been awarded with several prizes. The award „Roter Punkt“ by the „Design Center NRW“ and the „IF-Siegel“ of the „Industrie Forum Design, Hannover“ reward the close and long-standing cooperation with rosenthal design, Essen.

The perfect combination of functionality, quality and aesthetics continues to be the decisive principle for RESOL products.

...for more than 30 years!

RESOL products are committed to the future

Letter of equivalency

Dear Sirs,
Dear AHJ Inspector,

TÜV Rheinland of North America, Inc. (TÜV) hereby confirms that the cTUVus Mark and Certificate assigned by us on and for this product exceeds or is equivalent to the Listing Process and Labeling Mark of the Underwriter Laboratories, Inc.

We as a Nationally Recognized Testing Laboratory, authorized by the Occupational Safety & Health Administration (OSHA), have evaluated this Product for fire, shock and life safety in accordance to the appropriate standard(s) contained within our scope as accredited by the Occupational Safety and Health Administration (OSHA). The cTUVus Mark is accepted by city, state, country, federal and provincial authorities and merchants throughout the U.S. and Canada.

Please do not hesitate to contact us for further questions. We are always glad to be at your disposal.

TUV Rheinland of North America

In 2001 RESOL is awarded “Solar-Unternehmen 2000“ by the Initiative Solar-Unternehmen 2001+ for exceptional commitment to production and utilisation of solar energy.

reddot design award winner 2005

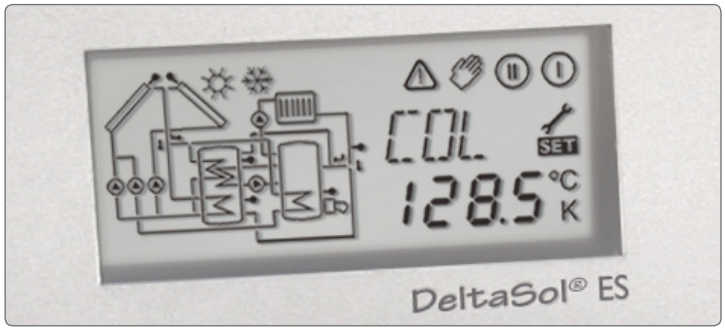
rosenthal design

product design award 2008

Intersolar AWARD 2009 in the solar thermal category

Sophisticated and award-winning design for future-oriented technology

The system-monitoring-display...

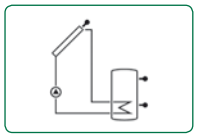


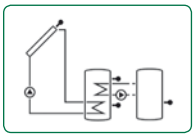
The installer or user does not benefit from ingenious controller functions if the relationship in the solar system does not become clear.

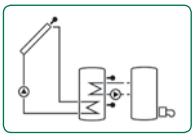
Therefore, RESOL has developed a display for several controllers of the DeltaSol®-series. The display meets the demand for simple system visualization which gives the user an idea of the status of the system and the controller at a glance.

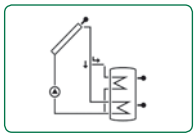
More than 30 different solar systems can be visualized with the display. Flashing symbols for sensors, pumps and valves enable an immediate allocation of temperatures, temperature differences and active actuators. Therefore, adjustment and control of the solar system are also possible without the necessity of reading the manual.

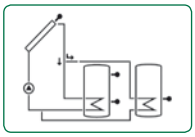
...the whole system at a glance!

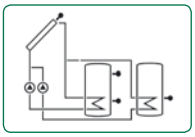

Solar system with 1 tank

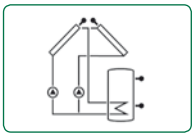

Solar system with 1 tank and heat exchange controller

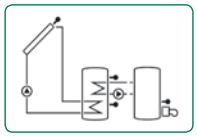

Solar system with 1 tank and thermostatic backup heating

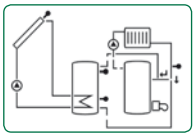

Solar system with tank loading in layers

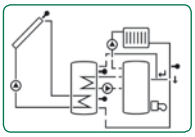

Solar system with 2 tanks, valve logic

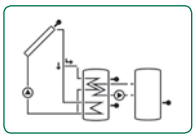

Solar system with 2 tanks, pump logic

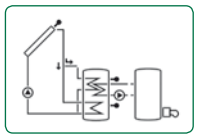

Solar system with east-/west collectors and 1 tank

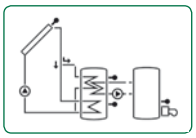

Solar system with 1 tank and solid fuel boiler

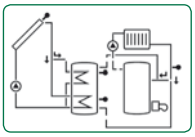

Solar system with 1 tank and heating circuit reverse raising

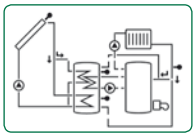

Solar system with 1 tank, heating circuit return preheating and thermostatic backup heating

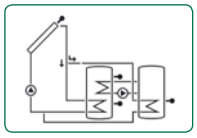

Solar system with tank loading in layers and heat quantity exchange controller

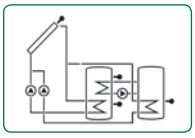

Solar system with tank loading in layers and thermostatic backup heating

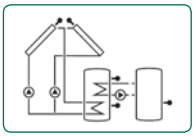

Solar system with tank loading in layers and solid fuel boiler

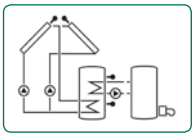

Solar system with tank charge in layers and heating circuit return preheating

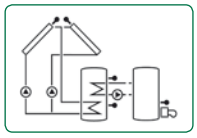

Solar system with tank loading in layers, heating circuit return preheating and thermostatic backup heating

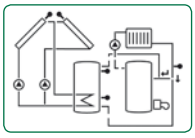

Solar system with 2 tanks, valve logic and heat exchange controller

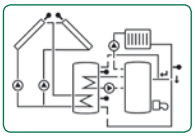

Solar system with 2 tanks, pump logic and heat exchange controller

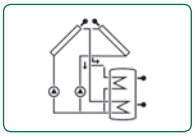

Solar system with east-/west collectors and heat exchange controller

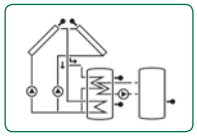

Solar system with east-/west collectors and thermostatic backup heating

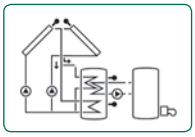

Solar system with east-/west collectors and solid fuel boiler

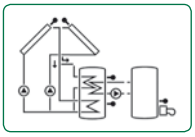

Solar system with east-/west collectors and heating circuit return preheating

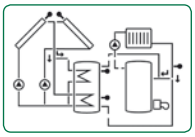

Solar system with east-/west collectors, heating circuit return preheating and thermostatic backup heating

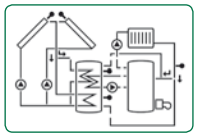

Solar system with east-/west collectors and tank loading in layers

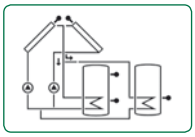

Solar system with east-/west collectors, tank loading in layers and heat exchange controller

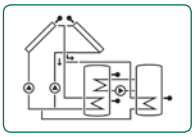

Solar system with east-/west collectors, tank loading in layers and thermostatic backup heating


Solar system with east-/west collectors, tank loading in layers and solid fuel boiler


Solar system with east-/west collectors, tank loading in layers and heating circuit return preheating


Solar system with east-/west collectors, tank loading in layers, heating circuit reverse raising and thermostatic backup heating


Solar system with east-/west collectors and 2 tanks, valve logic


Solar system with east-/west collectors, 2 tanks and heat exchange controller

Functional survey of the DeltaSol® BS series

Intelligent control technology for solar thermal systems and use of heat energy. The controllers of the DeltaSol® BS product series cover the whole spectrum starting from a simple differential controller up to a two circuit solar controller.

	DeltaSol® BS/1	DeltaSol® BS/2	DeltaSol® BS/3	DeltaSol® BS/4	DeltaSol® BS Plus
					
Max. heat sources (collector fields)	1	1	1	1	2*
Max. heat loads (tanks)	1	1	1	1	2*
System monitoring display	✓	✓	✓	✓	✓
Sensor inputs (temperature)	4	4	4	4	4
Relay outputs	1	1	2	2	2
Standard relay	1	-	2	1	-
Speed control	-	✓	-	✓	✓
Second ΔT-function	-	-	-	-	✓
2 tank priority logic	-	-	-	-	✓
Thermostat function	-	-	✓	✓	✓
Real time clock (timer function)	-	-	✓	✓	✓
Energy metering	✓	✓	✓	✓	✓**
Freeze protection function	✓	✓	✓	✓	✓
Tube collector function	✓	✓	✓	✓	✓
Min. collector temperature adjustable	✓	✓	✓	✓	✓
Cooling functions	✓	✓	✓	✓	✓
Emergency shutdown functions	✓	✓	✓	✓	✓
VBus®	✓	✓	✓	✓	✓
Celsius / Fahrenheit conversion	✓	✓	✓	✓	✓
Drainback option	-	✓	✓	✓	✓
Drainback booster option	-	-	✓	✓	✓
Heat dump function	-	-	✓	✓	✓
Energy-saving switch-mode power supply	✓	✓	✓	✓	✓

* depends on selected system layout 2 collectors and 1 tank or 1 collector 2 tanks
** depends on selected system layout

CU 72060171 01
UL 60730-1A:2002
CSA E60730.1:2002

DeltaSol® BS/1

rosenthal design

The RESOL DeltaSol® BS/1 controller is a simple differential controller used in standard solar thermal systems. The controller offers a clear operating concept and is equipped with the newly developed illuminated display with system-monitoring. Flashing symbols for sensors, pumps and valves enable an immediate display of temperatures, temperature differences and active outputs. Adjustment and control of the solar system can be easily carried out. The controller offers functions such as a drainback function.

Unit °F and °C selectable!

- Illuminated system-monitoring-display
- Up to 4 Pt1000 temperature sensors
- Solar operating hours counter
- Energy metering
- Tube collector function
- Drainback function
- Function control
- RESOL VBus®
- Programming and remote control of the system via RESOL ServiceCenter Software possible
- Housing with outstanding design
- User-friendly operation

cTUVus certified!

The controller can be branded with your own logo.
Please contact our sales team.

RESOL DeltaSol® BS/1
Solar controller with tank temperature limitation (68 ... 203 °F)
Article-no.: 115 455 47

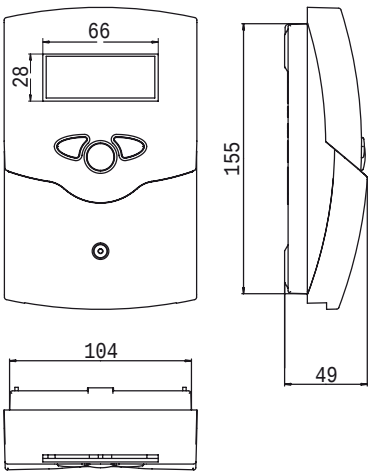
RESOL DeltaSol® BS/1 - Full kit
Solar controller with tank temperature limitation (68 ... 203 °F)
incl. 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 115 455 57

Accessory

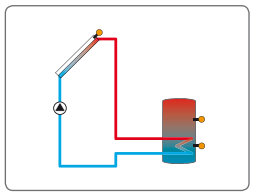
RESOL SP10
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

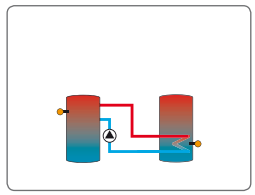
Technical data



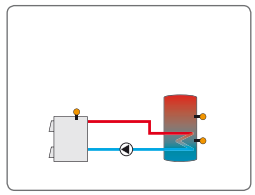
Examples



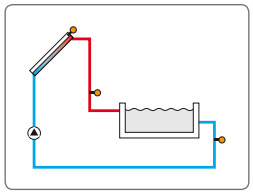
Solar system with 1 tank



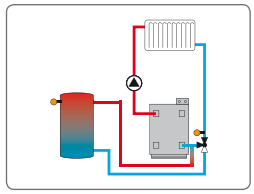
* Heat exchange controller



* Solid fuel boiler



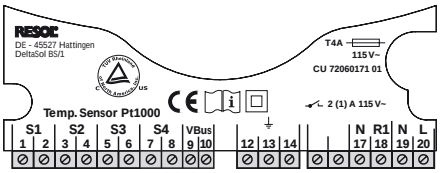
* Solar system with swimming pool



* Heating circuit return temperature offset

* Abstracted display presentation

Electrical connection



Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature:

Size: 172 x 110 x 49 mm

Installation:
wall mounting, mounting into patch panels is possible

Display: system-monitoring for visualization of systems, 16-segment- and 7-segment display, 8 symbols for indication of system status and operating control lamp

Operation:
by 3 pushbuttons at the front of the housing

Functions: Differential temperature controller with adjustable system functions: function control, solar operating hours counter for solar pump and drainback function

Inputs: 4 temperature sensors Pt1000

Output: 1 standard relay

Bus: RESOL VBus®

Power supply: 115 V~

Power consumption: < 1W

Safe and rapid connection

Uncomplicated adjustment and control

Illuminated system-monitoring-display

Easy mounting...

... operation

... and service

DeltaSol® BS/2

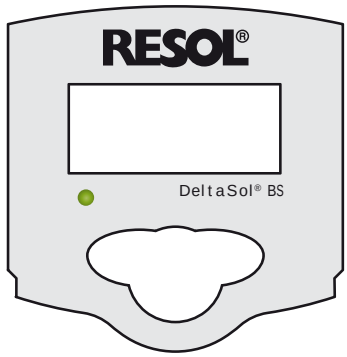
rosenthal design

The RESOL DeltaSol® BS/2 controller is used in standard solar thermal systems. The controller offers a clear operating concept and is equipped with the newly developed illuminated display with system-monitoring. Adjustment and control of the solar system can be easily carried out. The controller offers a drainback function and is equipped with a semiconductor relay for pump speed control.

Unit °F and °C selectable!

- Illuminated system-monitoring-display
- Up to 4 Pt1000 temperature sensors
- Solar operating hours counter
- Energy metering
- Tube collector function
- Drainback function
- Speed control
- Function control
- RESOL VBus®
- Programming and remote control of the system via RESOL ServiceCenter Software possible
- Housing with outstanding design
- User-friendly operation

cTUVus certified!



The controller can be branded with your own logo.
Please contact our sales team.

RESOL DeltaSol® BS/2
Solar controller with tank temperature limitation (68 ... 203 °F)
Article-no.: 115 455 67

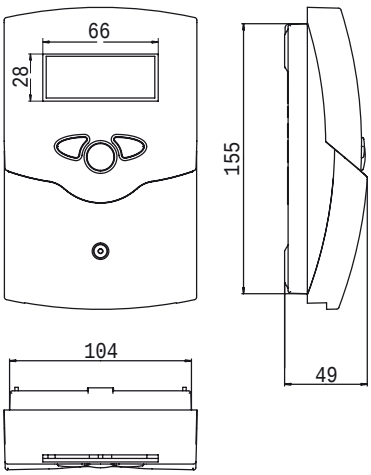
RESOL DeltaSol® BS/2 - Full kit
Solar controller with tank temperature limitation (68 ... 203 °F)
incl. 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 115 455 77

Accessory

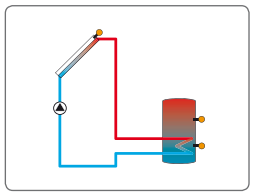
RESOL SP10
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

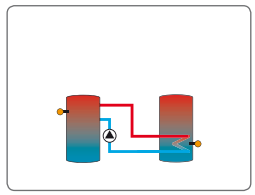
Technical data



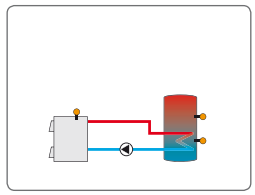
Examples



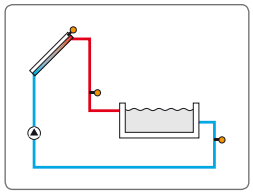
Solar system with 1 tank



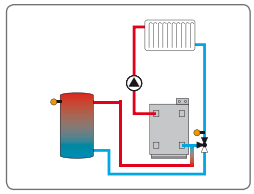
* Heat exchange controller



* Solid fuel boiler



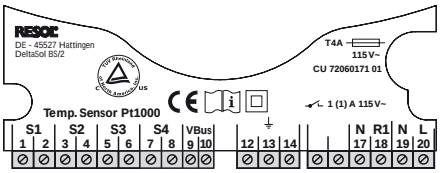
* Solar system with swimming pool



* Heating circuit return temperature offset

* Abstracted display presentation

Electrical connection



Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature: 32 ... 104 °F

Size: 172 x 110 x 49 mm

Installation:
wall mounting, mounting into patch panels is possible

Display: system-monitoring for visualization of systems, 16-segment- and 7-segment display, 8 symbols for indication of system status and operating control lamp

Operation:
by 3 pushbuttons at the front of the housing

Functions: Differential temperature controller with adjustable system functions: function control, solar operating hours counter for solar pump, drainback function and speed control

Inputs: 4 temperature sensors Pt1000

Output: 1 semiconductor relay

Bus: RESOL VBus®

Power supply: 115 V~

Power consumption: < 1W

Safe and rapid connection

Uncomplicated adjustment and control

Illuminated system-monitoring-display

Easy mounting...

... operation

... and service

DeltaSol® BS/3

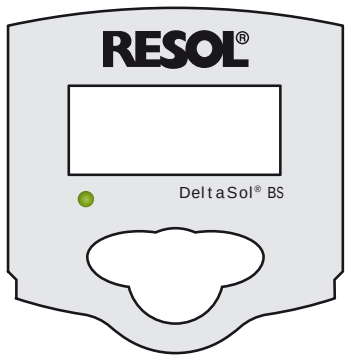
rosenthal design

An extension to the standard version of the DeltaSol® BS/1 controller with 1 standard-relay is the DeltaSol® BS/3 with 2 standard relays and an additional thermostat function. The RESOL DeltaSol® BS/3 controller is used in standard solar thermal systems and is equipped with the display monitoring system. It offers functions such as a drainback function including booster function and a heat dump function. Adjustment and control of the solar system can be easily carried out.

Unit °F and °C selectable!

- Illuminated system-monitoring-display
- Up to 4 Pt1000 temperature sensors
- Solar operating hours counter
- Thermostat function
- 2 basic systems selectable
- Energy metering
- Tube collector function
- Drainback option including booster function
- Heat dump function
- Function control
- RESOL VBus®
- Programming and remote control of the system via RESOL ServiceCenter Software possible
- Housing with outstanding design
- User-friendly operation

cTUVus certified!



The controller can be branded with your own logo.
Please contact our sales team.

Accessory

RESOL SP10

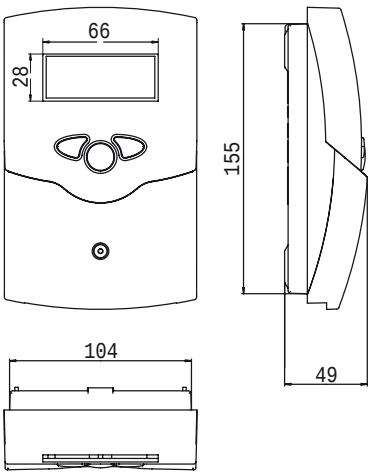
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL DeltaSol® BS/3
Solar controller with tank temperature limitation (68 ... 203 °F)
Article-no.: 115 455 87

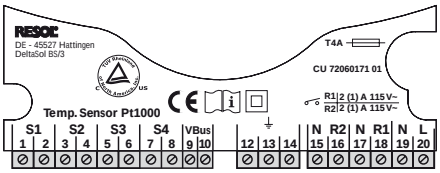
RESOL DeltaSol® BS/3 - Full kit
Solar controller with tank temperature limitation (68 ... 203 °F)
incl. 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 115 455 97

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

Technical data



Electrical connection



Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature: 32 ...104 °F

Size: 172 x 110 x 49 mm

Installation:
wall mounting, mounting into patch panels is possible

Display: system-monitoring for visualization of systems, 16-segment- and 7-segment display, 8 symbols for indication of system status and operating control lamp

Operation:
by 3 pushbuttons at the front of the housing

Functions: Differential temperature controller with adjustable system functions: function control, solar operating hours counter for solar pump, drainback option including booster function and heat dump function

Inputs: 4 temperature sensors Pt1000

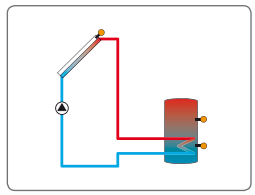
Output: 2 standard relays

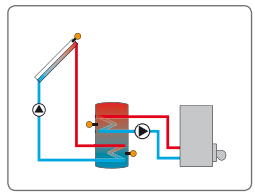
Bus: RESOL VBus®

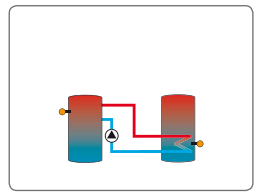
Power supply: 115 V~

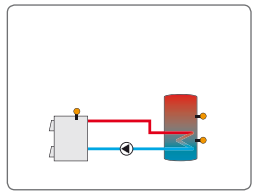
Power consumption: < 1W

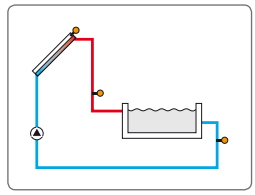
Examples

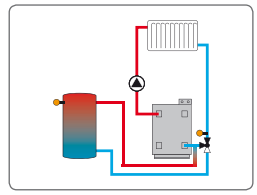

Solar system with 1 tank

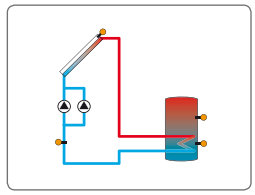

Solar system with 1 tank and thermostat for back-up heating


* Heat exchange controller


* Solid fuel boiler


* Solar system with swimming pool


* Heating circuit return temperature offset


Solar system with booster

* Abstracted display presentation


Safe and rapid connection


Uncomplicated adjustment and control

Illuminated system-monitoring-display


Easy mounting...


... operation


... and service

DeltaSol® BS/4

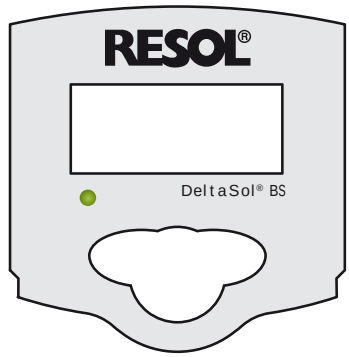
rosenthal design

The RESOL DeltaSol® BS/4 controller is a simple differential controller used in standard solar thermal systems. It is equipped with the system-monitoring-display that allows the user to view the status of the system. The controller offers functions such as a heat dump function and a drainback function including a booster function. The controller is equipped with 1 standard relay and 1 semiconductor relay for pump speed control. Adjustment and control of the solar system can be easily carried out.

Unit °F and °C selectable!

- Illuminated system-monitoring-display
- Up to Pt1000 4 temperature sensors
- Solar operating hours counter
- Thermostat function
- 2 basic systems selectable
- Energy metering
- Tube collector function
- Drainback option including booster function
- Heat dump function
- Function control
- RESOL VBus®
- Programming and remote control of the system via RESOL ServiceCenter Software possible
- Housing with outstanding design
- User-friendly operation
- Pump speed control

cTUVus certified!



The controller can be branded with your own logo. Please contact our sales team.

Accessory

RESOL SP10

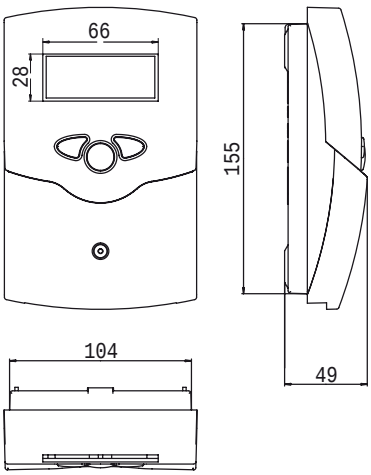
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL DeltaSol® BS/4
Solar controller with tank temperature limitation (68 ... 203 °F)
Article-no.: 115 456 07

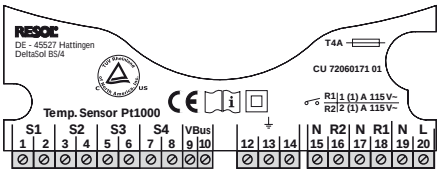
RESOL DeltaSol® BS/4 - Full kit
Solar controller with tank temperature limitation (68 ... 203 °F)
incl. 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 115 456 17

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

Technical data



Electrical connection



Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature: 32 ... 104 °F

Size: 172 x 110 x 49 mm

Installation:
wall mounting, mounting into patch panels is possible

Display: system-monitoring for visualization of systems, 16-segment- and 7-segment display, 8 symbols for indication of system status and operating control lamp

Operation:
by 3 pushbuttons at the front of the housing

Functions: Differential temperature controller with adjustable system functions: function control, solar operating hours counter for solar pump, drainback option including booster function, heat dump function and pump speed control

Inputs: 4 temperature sensors Pt1000

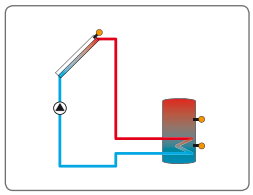
Output: 1 semiconductor relay and 1 standard relay

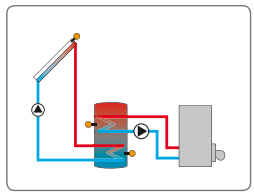
Bus: RESOL VBus®

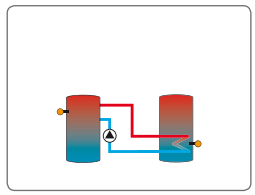
Power supply: 115 V~

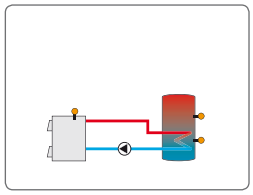
Power consumption: < 1W

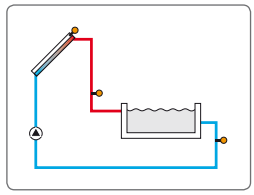
Examples

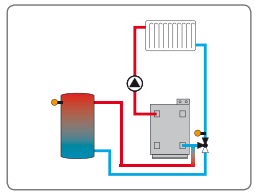

Solar system with 1 tank

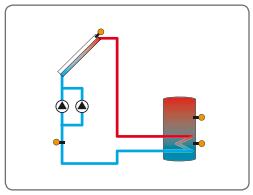

Solar system with 1 tank and thermostat for back-up heating


* Heat exchange controller


* Solid fuel boiler


* Solar system with swimming pool


* Heating circuit return temperature offset


Solar system with booster

* Abstracted display presentation


Safe and rapid connection


Uncomplicated adjustment and control

Illuminated system-monitoring-display


Easy mounting...


... operation


... and service

DeltaSol® BS Plus

rosenthal design

The RESOL DeltaSol® BS Plus system controller is pre-programmed for different systems and is equipped with a energy metering function, a realtime clock and the RESOL VBus®.

The multi-functional and illuminated display enables system-monitoring for intuitive and safe controller configuration and comprehensive visualization of the system status. Simple pictograms provide information on function and operating status of the controller and the system.

This version is equipped with 4 inputs for Pt1000 temperature sensors, tank temperature limitation and manual operation mode. The central element is the 3-key-field below the display.

System survey:

Unit °F and °C selectable!

Arr 1: Standard solar system
Arr 2: Solar system with heat exchange
Arr 3: Solar system with back-up control
Arr 4: Solar system with multi level tank
Arr 5: 2-tank solar system with valve logic
Arr 6: 2-tank solar system with pump logic
Arr 7: Solar system with 2 collectors and 1 tank
Arr 8: Solar system with back-up heating by solid fuel boiler
Arr 9: Solar system with heating circuit return preheating

RESOL DeltaSol® BS Plus

System controller for simple solar and heating systems

Article-no.: 115 456 27

RESOL DeltaSol® BS Plus - Full kit

System controller for simple solar and heating systems
incl. 4 sensors Pt1000 (2 x FKP6, 2 x FRP6)

Article-no.: 115 456 37

- Thermostat function
- Illuminated system-monitoring-display
- Up to 4 Pt1000 temperature sensors
- 2 relays for pump speed control
- Drainback option including booster function
- Heat dump function
- 9 systems selectable
- Energy metering
- Function control
- RESOL VBus®
- Programming and remote control of the system via RESOL ServiceCenter software possible

cTUVus certified!

The controller can be branded with your own logo.
Please contact our sales team.

Accessory

RESOL SP10

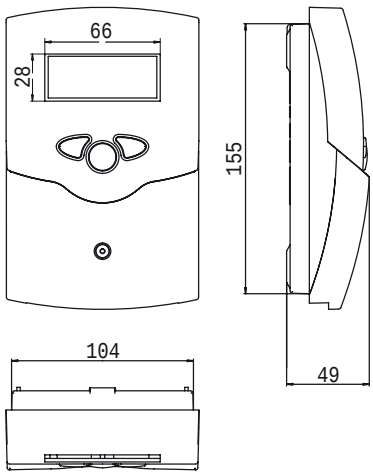
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL SP10

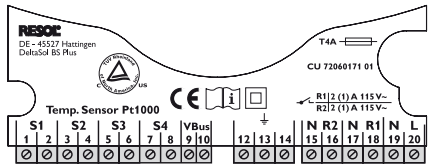
Sensor-overvoltage protection

Article-no.: 180 110 70

Technical data

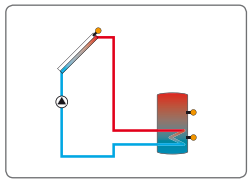


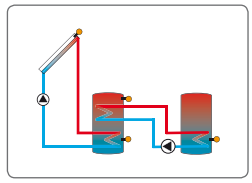
Electrical connection

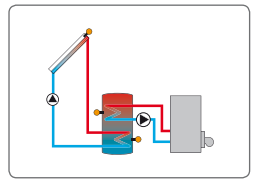


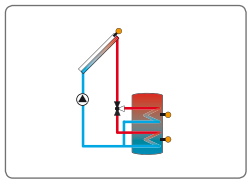
Housing: plastic, PC-ABS and PMMA
Protection type: IP 20 / DIN 40050
Ambient temperature: 32 ...104 °F
Dimensions: 172 x 110 x 49 mm
Installation: wall mounting, mounting into patch panels is possible
Display: system-monitoring for visualization of the systems, 16-segment- and 7-segment display, 8 symbols for indication of the system status and operating control lamp
Operation:
by 3 pushbuttons at the front of the housing
Functions: Differential temperature controller with adjustable system functions. Operating hours counter for the solar pump, tube collector function, thermostat function, pump speed control, energy metering, time-controlled thermostat function, drainback option and heat dump function
Inputs: 4 temperature sensors Pt1000
Output: 2 semiconductor relays
Bus: RESOL VBus®
Power supply: 115 V~
Power consumption: < 1W
Switching capacities:
1 (1) A 115 V~ (semiconductor relay)
1 (1) A 115 V~ (semiconductor relay)

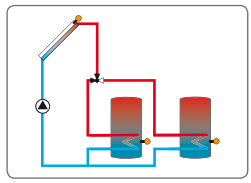
Examples

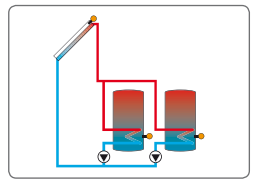

Solar system with 1 tank

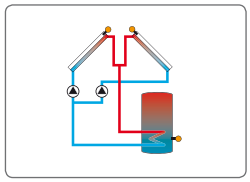

Solar system with 1 tank and heat exchange controller

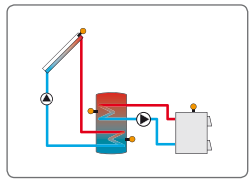

Solar system with 1 tank and thermostatic backup heating

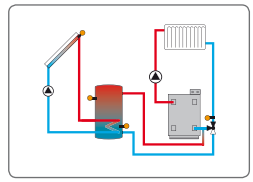

Solar system with tank loading in layers

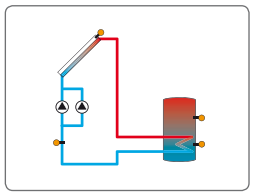

Solar system with 2 tanks, valve logic


Solar system with 2 tanks, pump logic


Solar system with east-/west collectors and 1 tank


Solar system with 1 tank and solid fuel boiler


Solar system with heating circuit return preheating


Solar system with booster


Uncomplicated operation and control


Easy mounting...


... adjustment ...

... and service


Illuminated system-monitoring display

DeltaSol® BX

rosenthal design

- Extra large display
- 4 relay outputs (3 speed controlled)
- 7 sensor inputs
- Inputs for Grundfos Direct Sensors™
- Speed control of high-efficiency pumps
- Datalogging onto SD memory card
- Drainback option
- Heat dump function
- RESOL VBus®
- Energy-saving switch-mode power supply

The controller can be branded with your own logo. Please contact our sales team.

The DeltaSol® BX is equipped with four relay outputs as well as two PWM outputs for the speed control of energy-saving high-efficiency pumps; one of the PWM outputs can be converted into a 0-10 V signal output. Additionally, the controller is equipped with five Pt1000 sensor inputs, two analog Grundfos sensor inputs, an impulse input as well as a supplemental L'-output for the connection of an actuator.

The integrated SD memory card slot enables an easy datalogging to an SD memory card as well as a quick and effortless transfer of logged system data to a PC. The extra-large display vouches for a precise visualization of the system status.

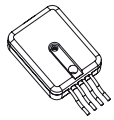
Pre-defined functions allow easier parametrization of the system; functional additions such as a drainback option broaden the range of applications. Of course, the DeltaSol® BX is also equipped with a RESOL VBus®.

Available soon

RESOL DeltaSol® BX
System controller for simple solar and heating systems
Article-no.: 115 450 07

RESOL DeltaSol® BX - Full kit
System controller for simple solar and heating systems incl. 4 sensors Pt1000 (2 x FKP6, 2 x FRP6)
Article-no.: 115 450 17

Accessories

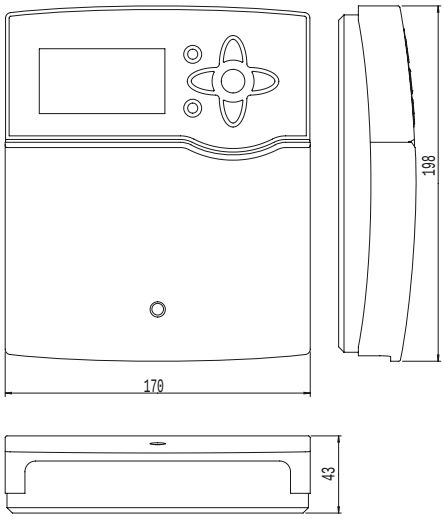


RESOL VBus® / USB
PC connection kit for RESOL controllers with VBus® incl. RESOL ServiceCenter Software
Article-no.: 180 008 50

RESOL AM1
Alarm module for signaling system failures
Article-no.: 180 008 70

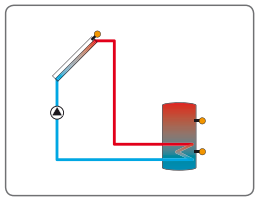
RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

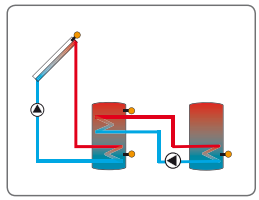
Technical data

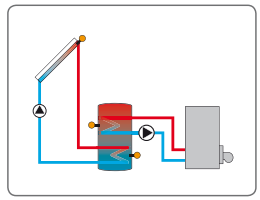


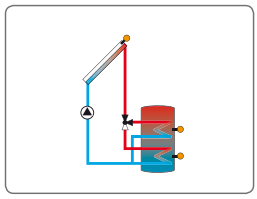
Housing: plastic, PC-ABS and PMMA
Protection type: IP 20 / DIN 40050
Ambient temperature: 32 ... 104 °F
Dimensions: 172 x 110 x 49 mm
Installation:
wall mounting, mounting into patch panels is possible
Display: system-monitoring for visualization of the systems, 16-segment- and 7-segment display, 8 symbols for indication of the system status and operating control lamp
Operation: 7 pushbuttons at the front
Functions: differential temperature controller with adjustable system functions. Operating hours counter for the solar pump, tube collector function, thermostat function, pump speed control, energy metering and time-controlled thermostat function
Inputs:
5 temperature sensors Pt1000, SD memory card slot, 2 Grundfos Direct Sensors™, 1 Impulse input V40
Output: 3 semiconductor relays, 1 standard relay and 2 PWM outputs
Bus: RESOL VBus®
Power supply: 100 ... 240 V~, 50-60 Hz
Power consumption: < 1W
Switching capacities:
1 (1) A 100 ... 240 V~ (semiconductor relay)
4 (2) A 100 ... 240 V~ (standard relay)

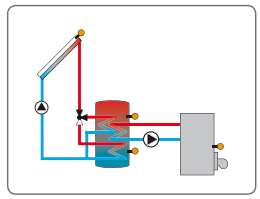
Examples

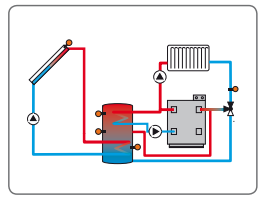

Solar system with 1 tank

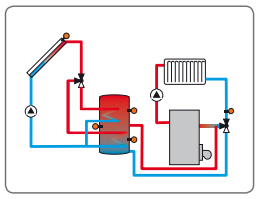

Solar system with 1 tank and heat exchange controller

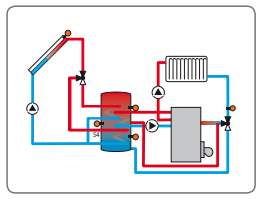

Solar system with 1 tank and thermostatic backup heating


Solar system with tank loading in layers

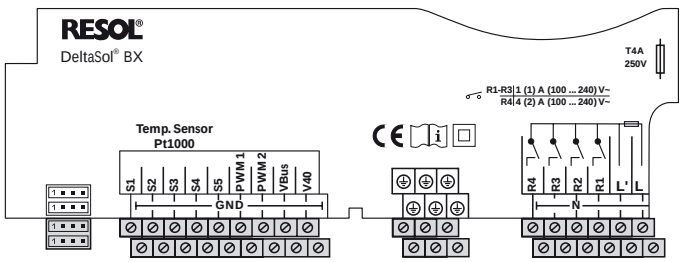

Solar system with tank loading in layers and solid fuel boiler


Solar system with 1 tank, heating circuit return preheating and thermostatic backup heating


Solar system with multi-layer tank and heating circuit return preheating


Solar system with multi-layer tank and heating circuit return preheating and thermostatic backup heating

Electrical connection



DeltaSol® ES

rosenthal design

- Illuminated system-monitoring-display
- 36 basic systems to choose from
- Pump speed control, solar operating hours counter and energy metering
- 8 sensor inputs
- 7 relay outputs
- Function control
- RESOL VBus®
- User-friendly operation
- Easy-to-mount housing with outstanding design

The controller can be branded with your own logo.
Please contact our sales team.

The number of sensor inputs and relay outputs (10/6) bridges the gap between the versions DeltaSol® BS and DeltaSol® M.The sophisticated and shapely design as well as the proven user-friendly operation of this product series are continued and also upgraded by further adjustable parameters.

The controller is pre-programmed for 36 solar and heating systems, the individual installation configuration can be selected via the menu and represented graphically via the system-monitoring display. For data communication and remote maintenance, the controller is equipped with the RESOL VBus® which permits two-way communication between modules, PCs or dataloggers.

Accessory

RESOL SP10

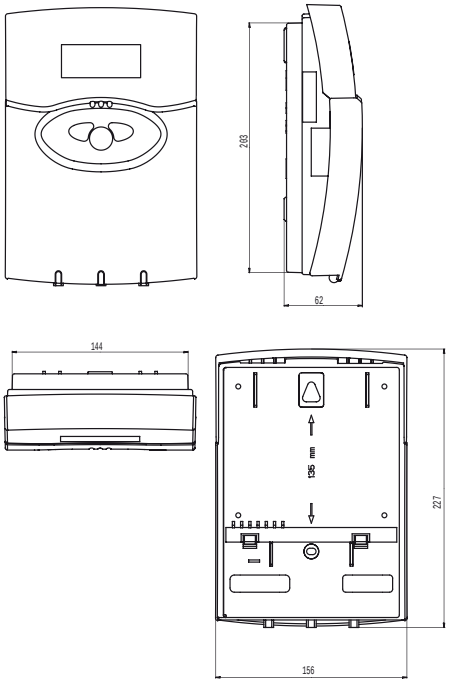
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL DeltaSol® ES
System controller for solar- and heating systems (Unit °C)
Article-no.: 115 661 57

RESOL DeltaSol® ES - Full kit
System controller for solar and heating systems (Unit °C)
incl. 5 sensors Pt1000 (2 x FKP6, 3 x FRP6)
Article-no.: 115 661 67

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

Technical data



Housing: Plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature: 32 ...104 °F

Dimensions: 227 x 156 x 62 mm

Installation:
wall mounting, mounting into patch panels is possible

Display: system-monitoring for visualization of systems, 16-segment- and 7-segment display, 8 symbols for indication of system status and operating control lamp

Operation: 3 pushbuttons at the front

Functions: solar and heating controller with 36 pre-programmed solar and heating systems such as: 2-tank systems, east-/west collectors, heating circuit backup, heat exchange regulation, thermostatic backup heating, solid fuel boilers, adjustable functions and options as energy metering, collector cooling function, tube collector function, freeze protection, minimum temperature limitation, pump speed control, balance and diagnostics functions.

Inputs: 10 sensor inputs for Pt1000, CS10,V40

Output: 7 relay outputs, 3 of them for pump speed control and 1 dry contact relay

Bus: RESOL VBus®

Power supply: 115 V~

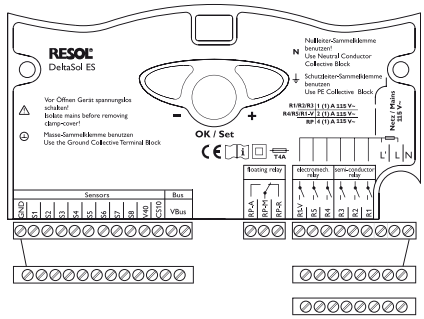
Power consumption: < 3W

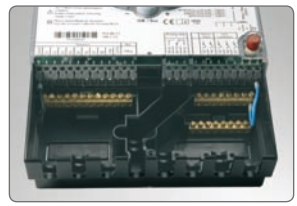
Total switching capacity: 4 (2) A 115 V~

Rapid maintenance

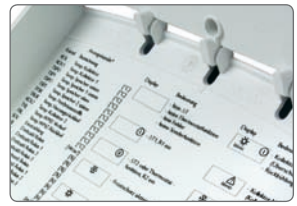
Uncomplicated operation and control

Electrical connection



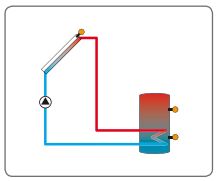


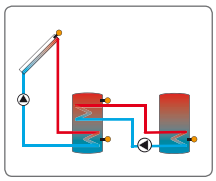
Simple connection...

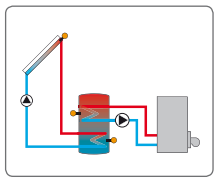


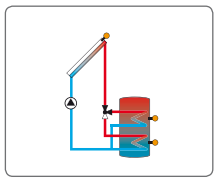
... adjustment

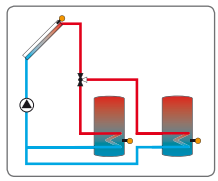
Examples DeltaSol® ES

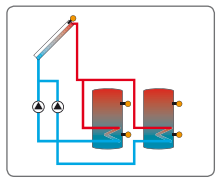

Solar system with 1 tank

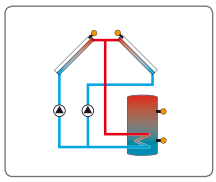

Solar system with 1 tank and heat exchange controller

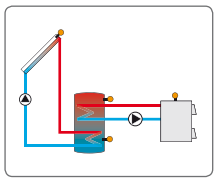

Solar system with 1 tank and thermostatic backup heating

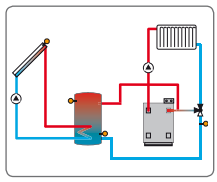

Solar system with tank loading in layers

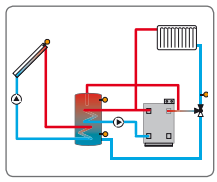

Solar system with 2 tanks, valve logic

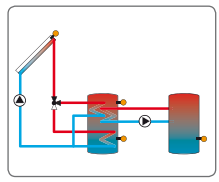

Solar system with 2 tanks, pump logic

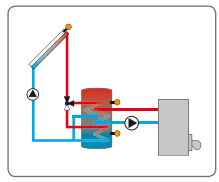

Solar system with east-/west collectors and 1 tank

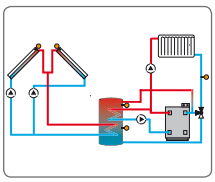

Solar system with 1 tank and solid fuel boiler

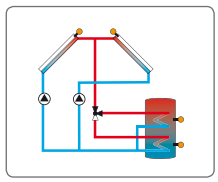

Solar system with 1 tank and heating circuit return preheating

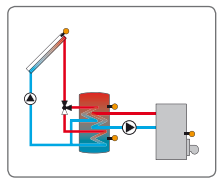

Solar system with 1 tank, heating circuit-return preheating and thermostatic backup heating

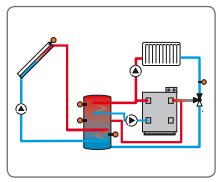

Solar system with tank loading in layers and heat exchange controller

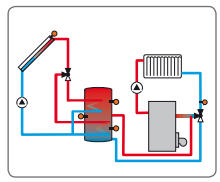

Solar system with tank loading in layers and thermostatic back-up heating

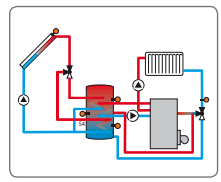

Solar system with east-/west collectors, heating circuit return preheating and thermostatic backup heating

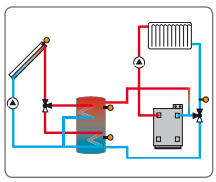

Solar system with east-/west collectors and tank loading in layers

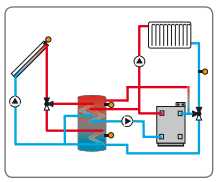

Solar system with tank loading in layers and solid fuel boiler

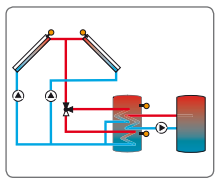

Solar system with 1 tank, heating circuit return preheating and thermostatic backup heating

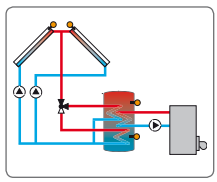

Solar system with multi-layer tank and heating circuit return preheating

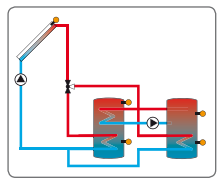

Solar system with multi-layer tank and heating circuit return preheating and thermostatic backup heating

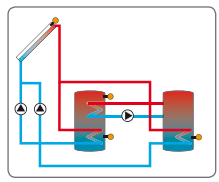

Solar system with tank loading in layers and heating circuit return preheating

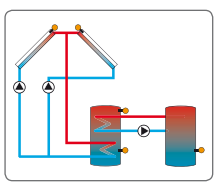

Solar system with tank loading in layers, heating circuit reverse raising and thermostatic backup heating

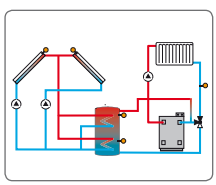

Solar system with east-/west collectors, tank loading in layers and heat exchange controller

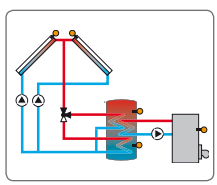

Solar system with east-/west collectors, tank loading controller and thermostatic backup heating

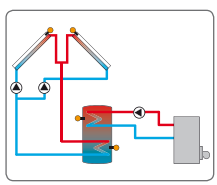

Solar system with 2 tanks, valve logic and heat exchange controller

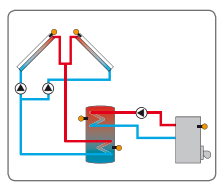

Solar system with 2 tanks, pump logic and heat exchange controller

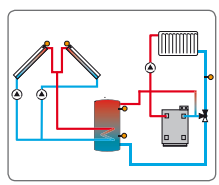

Solar system with east-/west collectors and heat exchange controller

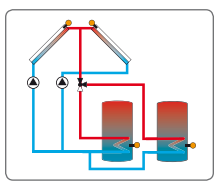

Solar system with east-/west collectors, tank loading in layers and heating circuit return preheating

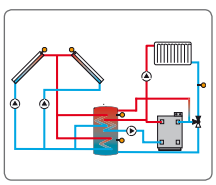

Solar system with east-/west collectors, tank loading in layers and solid fuel boiler

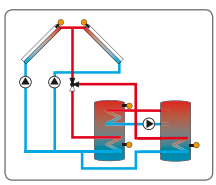

Solar system with east-/west collectors and thermostatic backup heating

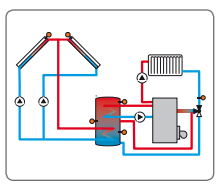

Solar system with east-/west collectors and solid fuel boiler

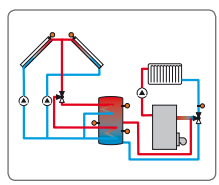

Solar system with east-/west collectors and heating circuit return preheating

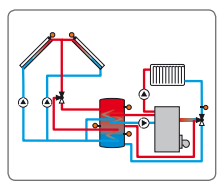

Solar system with east-/west collectors and 2 tanks


Solar system with east-/west collectors, tank loading in layers, heating circuit return preheating and thermostatic backup heating


Solar system with east-/west collectors, 2 tanks and heat exchange controller


Solar system with east-/west collectors, heating circuit return preheating and thermostatic backup heating


Solar system with east-/west collectors, multi-layer tank, heating circuit return preheating


Solar system with east-/west collectors, multi-layer tank, heating circuit return preheating and thermostatic backup heating

Accessories for the controller
DeltaSol® ES

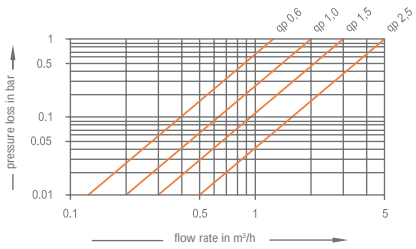
... and Solar cell CS10

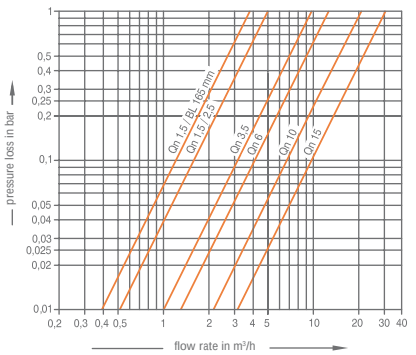
The solar cell is used for detecting the irradiation intensity. The short-circuit current rises with increasing irradiation intensity. Depending on the controller, the sensor can also be used for additional plausibility control or direct control. The connecting cable can be extended to 100 m.

RESOL CS10
Solar cell
Article-no.: 151 003 20

... with energy metering

The V40 is a measuring instrument with a contactor for measuring the flow of water or water-glycol-mixtures and can be connected directly to the controller for energy metering. After a specific volume has passed, the V40 reed switch sends an impulse to the controller. The heat quantity used is calculated from these impulses and the temperature difference measured between flow and return using pre-defined parameters (glycol type, concentration, heat capacity etc.). The temperature sensors are delivered with sensor wells and can be easily installed (also subsequently) into flow and return using a T-piece.





WMZ-kit 1
Flowmeter V40-06 incl. 2 sensors Pt1000 (2 x FRP30)
Article-no.: 290 006 17

WMZ-kit 2
as above, but with flowmeter V40-15
Article-no.: 290 006 27

WMZ-kit 3
as above, but with flowmeter V40-25
Article-no.: 290 006 37

WMZ-kit 4
as above, but with flowmeter V40-35
Article-no.: 290 013 67

WMZ-kit 5
as above, but with flowmeter V40-60
Article-no.: 290 013 77

WMZ-kit 6
as above, but with flowmeter V40-100
Article-no.: 290 013 87

WMZ-kit 7
as above, but with flowmeter V40-150
Article-no.: 290 013 97

Only applicable in combination with a DeltaSol® BX, ES, E, M or MX controller

... GA3/SD3

The large display GA3 and the smart display SD3 are completely mounted display modules used for visualizing collector temperature, tank temperature and the energy yield of a solar thermal system via one six-digit and two four-digit seven-segment displays. Designed for simple connection to all controllers with RESOL VBus®. For further information see pages 38 and 39.

DeltaSol® E

- 7 basic solar systems are possible
- Pump speed control, solar operating hours counter and energy metering
- Internal calorimeter
- 1 internal heating circuit and control of 3 additional weather-compensated heating circuits by additional modules
- 13 sensor inputs
- 7 relay outputs
- Function control
- RESOL VBus®
- Housing with outstanding design
- User-friendly operation

The controller can be branded with your own logo.
Please contact our sales team.

The DeltaSol® E controller is designed for solar thermal systems and heating systems. It is pre-programmed for 7 basic solar systems and up to 30 variations which can even be used to control large systems. A multitude of adjustable functions and options are possible using 7 relay outputs, 13 sensor inputs for Pt1000, CS10, V40 and Din. Due to its intelligent and easy-to-understand system configuration and its integrated calorimeter, the controller also offers the control of complex systems with up to 4 weather-compensated heating circuits. For data communication and remote maintenance, the controller is equipped with the RESOL VBus®, which permits two-way communication between modules, PC's or data loggers.

RESOL DeltaSol® E
System controller for solar and heating systems (Unit °C)
Article-no.: 115 662 27

RESOL DeltaSol® E - Full kit
System controller for solar and heating systems (Unit °C)
incl. 6 sensors Pt1000 (2 x FKP6, 4 x FRP6)
Article-no.: 115 662 37

RESOL DeltaSol® E
System controller for solar and heating systems (Unit °F)
Article-no.: 115 663 17

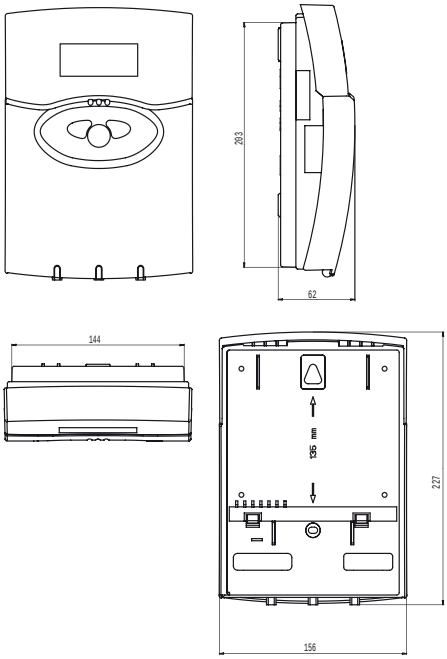
RESOL DeltaSol® E - Full kit
System controller for solar and heating systems (Unit °F)
incl. 6 sensors Pt1000 (2 x FKP6, 4 x FRP6)
Article-no.: 115 663 27

Accessory

RESOL SP10
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

Technical data



Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temperature: 32 ... 104 °F

Abmessung: 227 x 156 x 62 mm

Size: wall mounting, also suitable for mounting into patch panels

Installation: 4-line LC-text display, illuminated, menu-driven (multilingual)

Operation: 3 pushbuttons at the front

Functions: Solar-system controller for application in solar and heating systems. 7 pre-programmed solar- and heating systems, internal calorimeter, 1 internal heating circuit and control of 3 weather-compensated heating circuits by modules. Adjustable system parameters and options (menu-driven), balance- and diagnostics functions, function control

Inputs: 13 sensor inputs for Pt1000, CS10, V40

Outputs: 7 relay outputs, 3 of them semiconductor relays for pump speed control, 3 standard relays and 1 dry contact relay

Bus: RESOL VBus®

Power supply: 115 V~

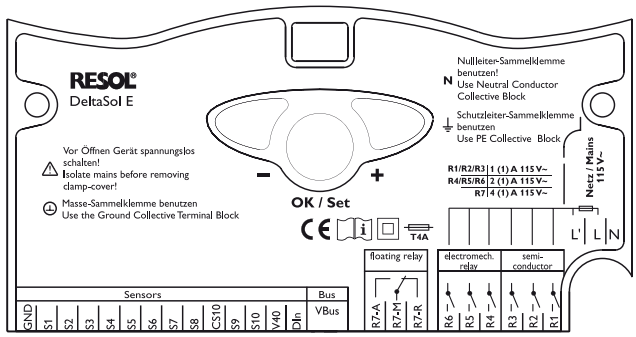
Power consumption: < 3W

Power supply: 4 (2) A 115 V~

Rapid maintenance

Uncomplicated operation and control

Electrical connection

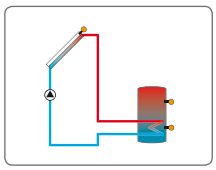


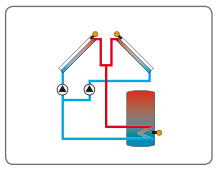
Seven solar basic systems are pre-programmed for the controller

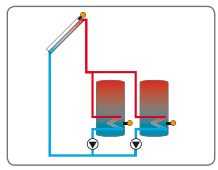
1: Solar system with 1 tank
2: East-/west collectors/1 tank
3: Solar system with 2 tanks
4: East-/west collectors/2 tanks
5: Solar system with 3 tanks
6: East-/west collectors/ 3 tanks
7: Solar system with 4 tanks

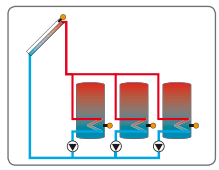
Basic systems DeltaSol® E

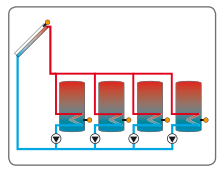
The controller is pre-programmed for 7 basic systems.A multitude of versions is possible by add-on functions and options.

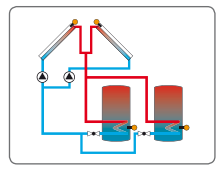

Solar system with 1 tank

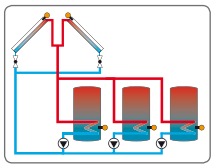

Solar system with east-/west collectors and 1 tank, pump-control


Solar system with 2 tanks, pump control

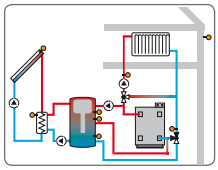

Solar system with 3 tanks, pump control

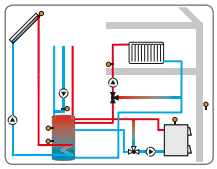

Solar system with 4 tanks, pump control

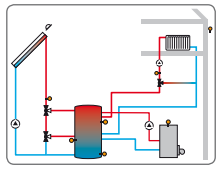

Solar system with east-/west collectors and 2 tanks, pump-/valve control

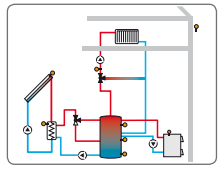

Solar system with east-/west collectors and 3 tanks, valve-/pump control

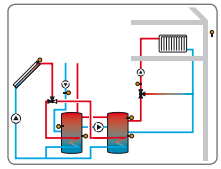
Examples

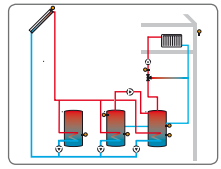

Solar system with combined tank, external heat exchanger, weather-compensated heating circuit, return preheating and backup heating

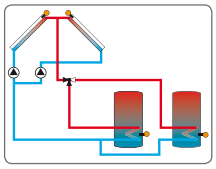

Solar system with weather-compensated heating circuit, solid fuel boiler and circulation pump control

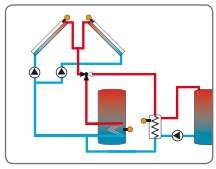

Solar system with tank load in layers, backup heating and weather-compensated heating circuit

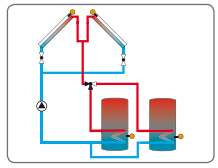

Solar system with external heat exchanger and backup heating by solid fuel boiler

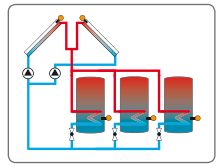

Solar system with 2 tanks, circulation pump control, heat exchange control and weather-compensated heating circuit

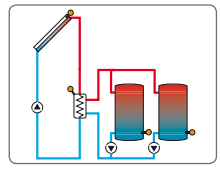

Solar system with 3 tanks pump control, heat exchange controller and weather-compensated heating circuit

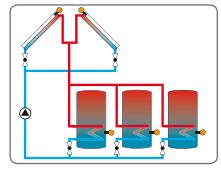

Solar system with east-/west collectors and 2 tanks, pump-/ 3-way-valve control


Solar system with east-/west collectors, 2 tanks and external heat exchanger, 3-way-valve control


Solar system with east-/west collectors and 2 tanks valve-/ 3-way-valve control


Solar system with east-/west collectors and 3 tanks, pump-/ valve


Solar system with 2 tanks and external heat exchanger, pump control


Solar system with east-/west collectors and 3 tanks, valve-control

More examples can be found at www.resol.com

Accessories for controller DeltaSol® E

... with energy metering

The RESOL V40 is a measuring instrument with a contactor for measuring the flow of water or water-glycol-mixtures and can be connected directly to the controller for energy metering. After a specific volume has passed, the V40 sends an impulse to the controller. The heat quantity used is calculated from these impulses and the temperature difference measured between flow and return using pre-defined parameters (glycol type, concentration, heat capacity etc.). The temperature sensors are delivered with sensor wells and can be easily installed (also subsequently) into flow and return by means of a T-piece.

... with additional heating circuit module

The heating circuit module HKM2 as an accessory for the system controller DeltaSol® E makes it possible to control three additional heating circuits. The controller can be extended to a coupled heating/solar controller unit by a simple connection via the VBus®.

... and remote control

The remote control RTA11-M is designed for connection to the HKM2 and the controller and allows a comfortable adjustment of the controllers heating curve. The rise of the heating curve causes an increase in flow temperature, a fall causes a decrease. The remote control additionally contains the functions "heating circuit off" and "rapid warm-up".

... and additional plausibility control

The solar cell is used for measuring the momentary irradiation intensity and allows additional plausibility control for the system status. The connection line can be extended up to 100 m.

... and GA3/SD3

The large display GA3 and the Smart Display SD3 are completely mounted display modules used for visualizing collector temperature, tank temperature and the energy yield of a solar thermal system via one six-digit and two four-digit seven-segment displays. Designed for simple connection to all controllers with RESOL VBus®. For further information see pages 38 and 39.

DeltaSol® M

rosenthal design

- Illuminated text display with menu navigation
- 12 sensor inputs
- 9 relay outputs
- 7 variable basic solar systems
- Add-on options and functions
- Free allocation for temperature difference and thermostat functions
- RESOL VBus® and RS232-interface
- User-friendly operation

The controller can be branded with your own logo. Please contact our sales team.

The DeltaSol® M is equipped with a multi-lingual menu, 9 relay outputs and 12 sensor inputs as well as a multitude of add-on functions and options, which enable the adaptation of the controller to individual solar and heating-systems.

The controller is equipped with an interface for communication with the RESOL ServiceCenter Software (RSC, see page 34).

7 basic systems are pre-programmed for the controller:

1: Solar system with 1 tank
2: East-/west collectors/1 tank
3: Solar system with 2 tanks
4: East-/west collectors/2 tanks
5: Solar system with 3 tanks
6: East-/west collectors/3 tanks
7: Solar system with 4 tanks

RESOL DeltaSol® M
System controller for solar and heating systems (Unit °C)
Article-no.: 115 990 17

RESOL DeltaSol® M - Full kit
System controller for solar and heating systems (Unit °C)
incl. 6 sensors Pt1000 (2 x FKP6, 4 x FRP6)
Article-no.: 115 990 27

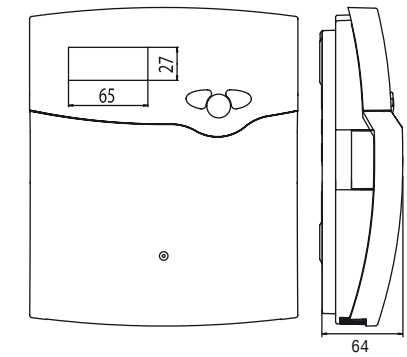
Accessory

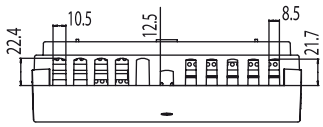
RESOL SP10

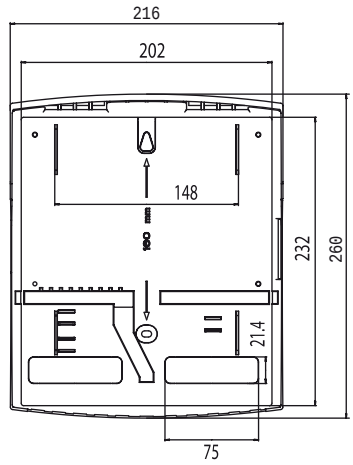
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

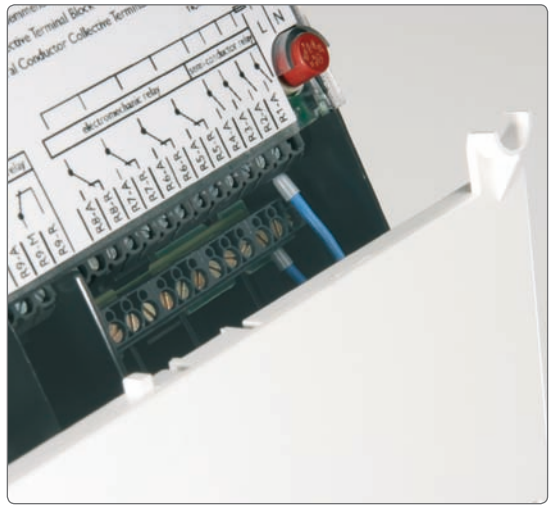
Technical data





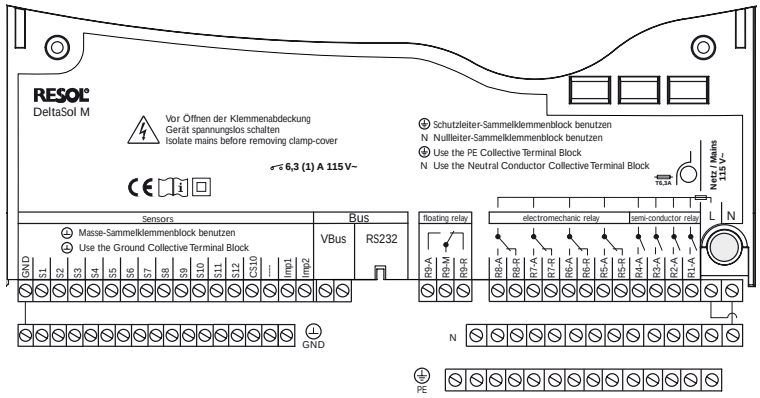


Housing: plastic, PC-ABS and PMMA
Protection type: IP 20 / DIN 40050
Ambient temperature: 32 ... 104 °F
Dimensions: 260 x 216 x 64 mm
Installation: wall mounting, also suitable for mounting into patch panels
Display: 4-line LC-text display, illuminated, menu-driven (multilingual), bicolored LED
Operation: 3 pushbuttons at the front of the housing
Functions: Solar system controller for use in solar- and heating systems. Two integrated calorimeters and control of a weather-compensated heating circuit. Adjustable system parameters and add-on options (menu-driven), balance- and diagnostics functions
Sensor inputs: 12 temperature sensors Pt1000 or 11 sensors Pt1000 and 1 remote control RTA11-M, 2 flowmeters RESOL V40 and 1 solar cell CS10
Relay outputs: 9 relay outputs, 4 of them are standard relays, 4 semi-conductor relays and 1 dry contact relay
Bus: RESOL VBus®, RS232
Power supply: 115 V~
Power consumption: < 3W



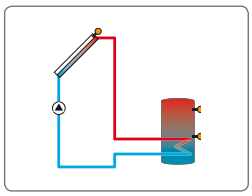
Uncomplicated operation, control, adjustment and service

Electrical connection

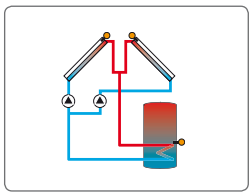


Basic systems DeltaSol® M

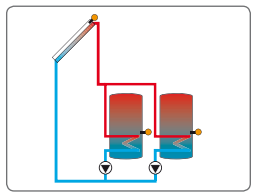
The controller is pre-programmed for 7 basic systems. A multitude of versions is possible by add-on functions and options.



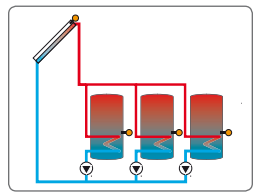
Solar system with 1 tank



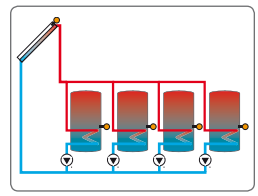
Solar system with east-/west collectors and 1 tank, pump control



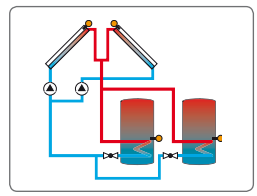
Solar system with 2 tanks, pump control



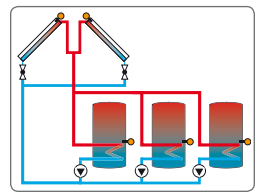
Solar system with 3 tanks, pump control



Solar system with 4 tanks, pump control

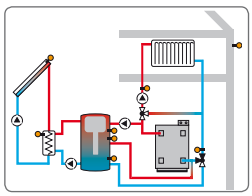


Solar system with east-/west collectors and 2 tanks, pump-/valve control

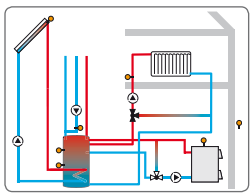


Solar system with east-/west collectors and 3 tanks, valve-/ pump control

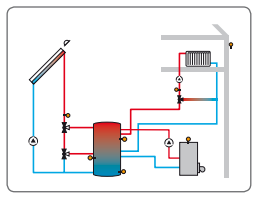
Examples



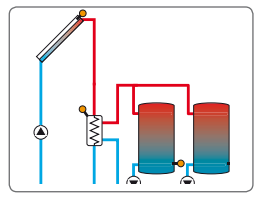
Solar system with combined tank, external heat exchanger, weather-compensated heating circuit, return preheating and backup heating



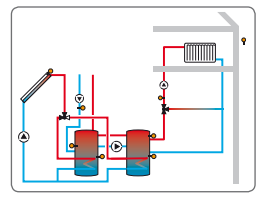
Solar system with weather-compensated heating circuit, solid fuel boiler and circulation pump control



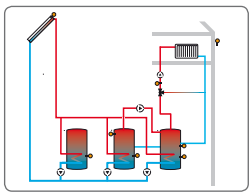
Solar system with tank loading in layers, backup heating and weather-compensated heating circuit



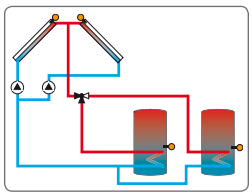
Solar system with external heat exchanger and backup heating by solid fuel boiler



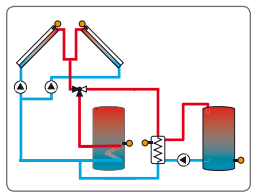
Solar system with 2 tanks, circulation pump control, heat exchange control and weathercompensated heating circuit



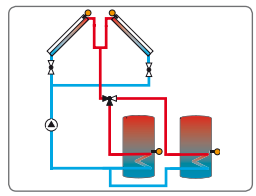
Solar system with 3 tanks pump control, heat exchange controller and weather-compensated heating circuit



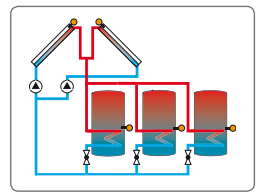
Solar system with east-/west collectors and 2 tanks, pump-/ 3-way-valve control



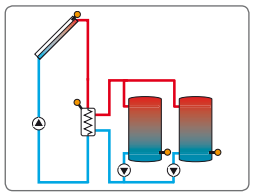
Solar system with east-/west collectors, 2 tanks and external heat exchanger 3-way-valve control



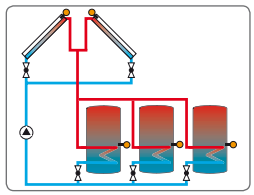
Solar system with east-/west collectors and 2 tanks valve-/ 3-way-valve control



Solar system with east-/west collectors and 3 tanks, pump-/ valve



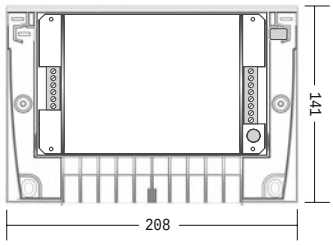
Solar system with 2 tanks and external heat exchanger, pump control

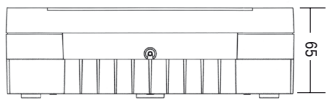


Solar system with east-/west collectors and 3 tanks, valvecontrol

More examples can be found at www.resol.com

Accessories for the controller DeltaSol® M





RESOL HKM2
Heating circuit module
for a weather-compensated heating circuit
Article-no.: 145 440 37

RESOL HKM2 - full kit
Heating circuit module incl. 2 sensors
(1 x FAP12, 1 x FRP21)
Article-no.: 145 440 47

... with additional heating circuit module

The heating circuit module HKM2 as an accessory for the system controller DeltaSol® E/M/MX makes it possible to control an additional heating circuit. The controller can be extended to a coupled heating/solar controller unit by a simple connection via VBus®.

Technical data

Housing: plug-in plastic
Operation: by pushbuttons
Dimensions: 208 x 141 x 65 mm
Protection type: IP21 / DIN 40050
Ambient temperature: 32 ... 104 °F
Inputs: 5 sensor inputs Pt1000, 1 RTA11 (-M)
Outputs: 4 standard relays, one dry contact

Total power supply: max. 4 A
Options (possible): heating circuit, timer, remote control, switching-off of heating circuit, rapid warm-up of the heating circuit, mixer regulation, priority of domestic water, heating circuit pumps, blocking protection, freeze protection, tank backup heating
Power supply: 115 V~
Power consumption: approx. 2 VA

... with solar irradiation measurement

RESOL CS10 (see page 21)
Solar cell
Article-no.: 151 003 20

... GA3/SD3

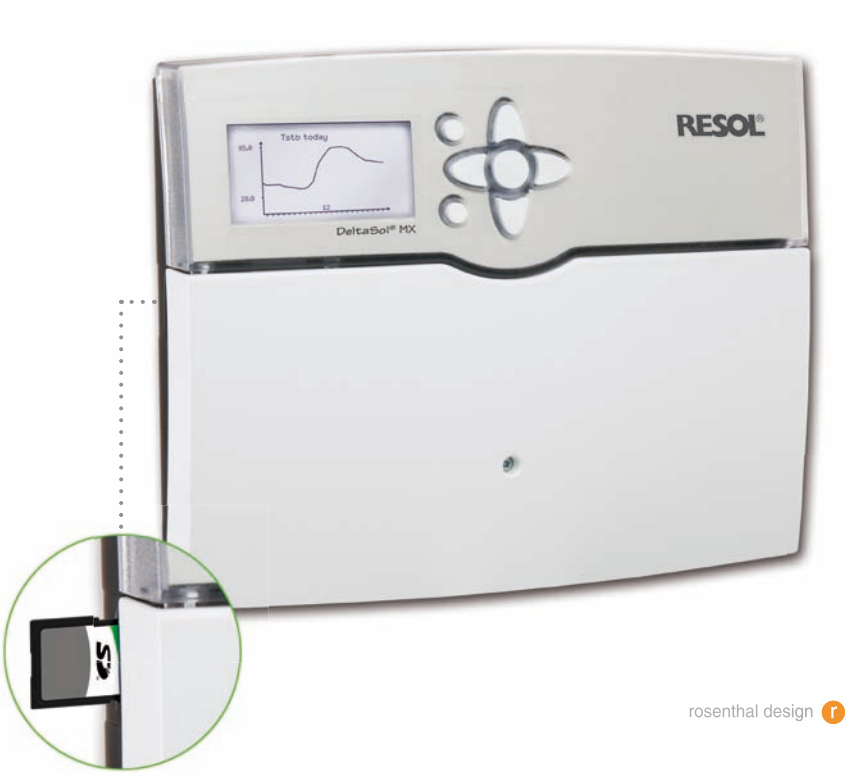
(see pages 38 and 39)

... remote control

The remote control RTA11-M is designed for connection to the HKM2 and DeltaSol® E/M/MX and allows a comfortable adjustment of the controllers heating curve. Increasing the setting causes an increase in flow temperature, a fall causes a decrease. The remote control additionally allows the functions “heating circuit off” and “maximize flow temperature”.

RESOL RTA11-M
Remote control for connection to the HKM2 and the DeltaSol® E/M/MX controller
Article-no.: 136 000 20

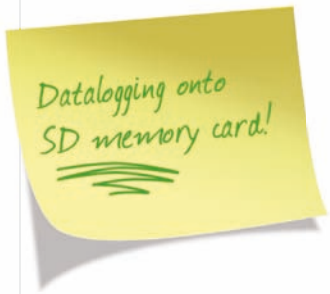
DeltaSol® MX



rosenthal design

- Full graphic display
- 13 relay outputs
- 12 sensor inputs
- Inputs for Grundfos Direct Sensors™
- Speed control of high-efficiency pumps
- Datalogging onto SD memory card
- Drainback option
- RESOL VBus®
- Energy-saving switch-mode power supply

The controller can be branded with your own logo. Please contact our sales team.



The DeltaSol® MX is equipped with 13 relay outputs, four PWM outputs for the speed control of energy-saving high-efficiency pumps; two of the PWM outputs can be converted into 0-10V signal outputs. Additionally, the controller has one frequency input, three impulse inputs as well as a range of different sensor inputs. Up to four extension modules can be connected via the RESOL VBus®.

The integrated SD memory card slot enables an easy datalogging to an SD memory card as well as a quick and effortless transfer of logged system data to a PC. The large full graphic display allows the direct display of balance and progression diagrams.

Pre-defined functions allow easier parametrization of the system; functional additions such as a drainback option broaden the range of applications.

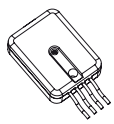
Unit °F and °C selectable!

Available soon

RESOL DeltaSol® MX
System controller for solar- and heating systems
Article-no.: 115 992 07

RESOL DeltaSol® MX - Full kit
System controller for solar and heating systems incl. 6 sensors Pt1000 (2 x FKP6, 4 x FRP6)
Article-no.: 115 992 17

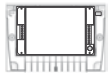
Accessories



RESOL VBus® / USB
PC connection kit for RESOL controllers with VBus® incl. RESOL ServiceCenter Software
Article-no.: 180 008 50

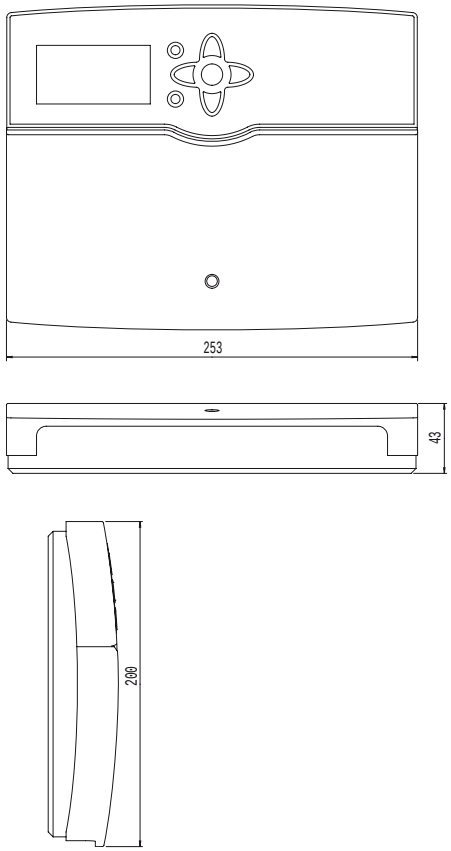
RESOL AM1
Alarm module for signaling system failures
Article-no.: 180 008 70

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70



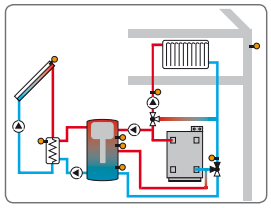
RESOL HKM2 - Full kit
Heating circuit module incl. 2 sensors (1 x FAP12, 1 x FRP21)
Article-no.: 145 440 47

Technical data

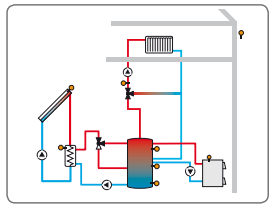


Housing: plastic, PC-ABS and PMMA
Protection type: IP 20 / DIN 40050
Ambient temperature: 32 ... 104 °F
Dimensions: 260 x 216 x 64 mm
Installation: wall mounting, also suitable for mounting into patch panels
Display: Full graphic display
Operation: 7 pushbuttons at the front
Functions: Solar system controller for use in solar and heating systems. 7 integrated calorimeters and control of a weather-compensated heating circuit. Adjustable system parameters and add-on options (menu-driven), balance and diagnostics functions
Sensor inputs: 12 temperature sensors Pt1000 or 10 sensors Pt1000 and 2 remote controls RTA11-M, 2 Grundfos Direct Sensors™, 3 flowmeters RESOL V40 and 1 solar cell CS10
Relay outputs: 13 relay outputs, 12 of them are semiconductor relays for pump speed control, 1 dry contact relay and 4 PWM outputs (two of which convertible to 0-10 V-signal outputs)
Bus: RESOL VBus®
Power consumption: < 1W
Power supply: 100 … 240 V~, 50-60 Hz

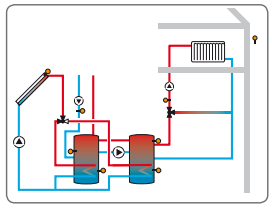
Examples



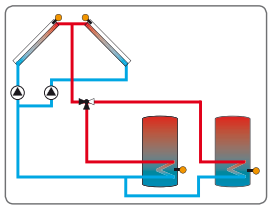
Solar system with combined tank, external heat exchanger, weather-compensated heating circuit, return preheating and backup heating



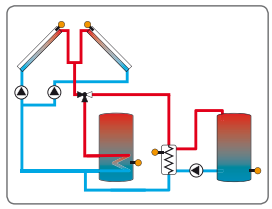
Solar system with external heat exchanger and backup heating by solid fuel boiler



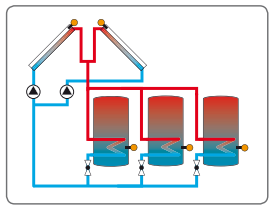
Solar system with 2 tanks, circulation pump control, heat exchange control and weather-compensated heating circuit



Solar system with east-/west collectors and 2 tanks, pump-/ 3-way-valve control

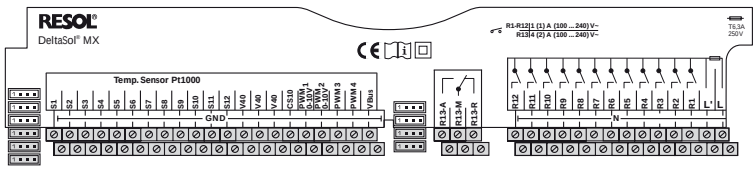


Solar system with east-/west collectors, 2 tanks and external heat exchanger 3-way-valve control



Solar system with east-/west collectors and 3 tanks, pump-/valve

Electrical connection

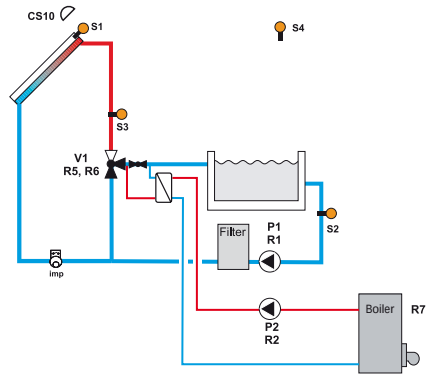


DeltaSol® Pool

rosenthal design

- Controller for heating a swimming pool by means of solar collectors and optimized operation of the filter system
- Solar operating hours counter and energy metering
- 13 sensor inputs
- 7 relay outputs
- Function control
- RESOL VBus®

The controller can be branded with your own logo. Please contact our sales team.



The new system controller for solar swimming pool heating

The RESOL DeltaSol® Pool is a controller for heating a swimming pool by means of solar collectors and optimized operation of the filter system. Backup heating of the swimming pool is varied according to solar power and pool demand, thus saving expensive energy. Furthermore, the controller is equipped with a function control which shows whether the system runs faultlessly or if there is an error.

The controller has many additional pool functions such as: additional filter runtime, maximum limitation of flow temperature and a flushing function.

The DeltaSol® Pool can easily be connected to other modules via the RESOL VBus®.

RESOL DeltaSol® Pool

Heating and swimming pool controller for swimming pool heating

Article-no.: 115 661 77

RESOL DeltaSol® Pool - Full kit

Heating and swimming pool controller for swimming pool heating incl. 3 Pt1000 sensors (1 x FKP6, 2 x FRP6)

Article-no.: 115 661 87

Accessory

RESOL SP10

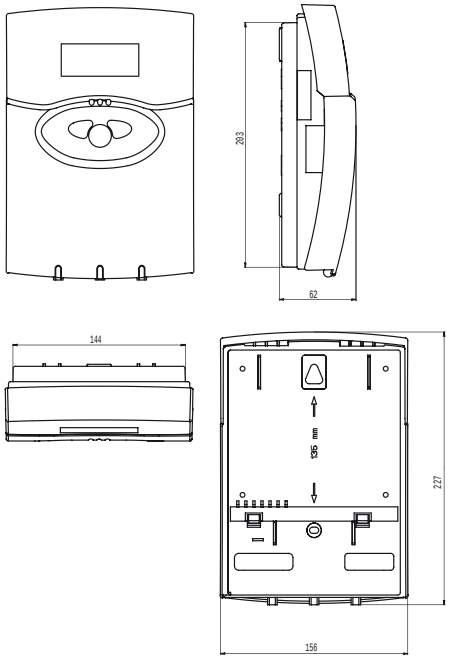
Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL SP10

Sensor-overvoltage protection

Article-no.: 180 110 70

Technical data

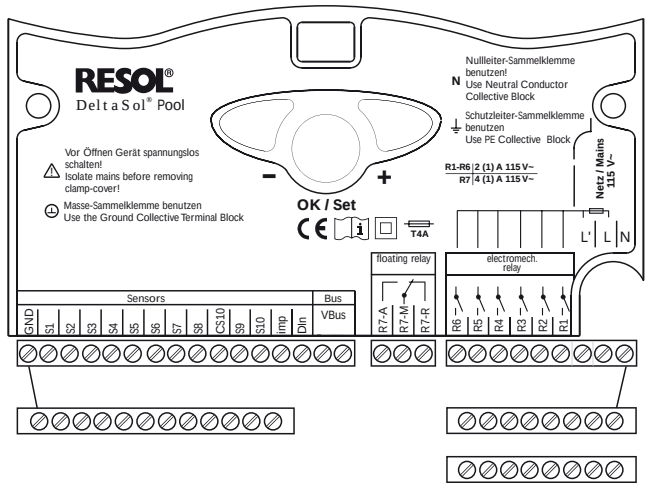


Rapid maintenance

Uncomplicated operation and control

Housing: plastic, PC-ABS and PMMA
Protection type: IP 20 / DIN 40050
Ambient temperature: 32 ... 104 °F
Dimensions: 156 x 227 x 62 mm
Mounting:
wall mounting, mounting into patch panels is possible
Display: 4-line LCD text display
Operation: 3 push buttons at the front
Functions: controller for heating a swimming pool by means of solar collectors and optimized operation of the filter system. Add-on backup heating of the swimming pool depending on the need and on the power of the solar collectors.
Solar loading: When the collector 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: 10 sensor inputs for Pt1000, 1 x CS10, 1 x IMP and 1 digital input
Relay output: 7 relay output, 1 of them floating
Bus: VBus®
Power supply: 115 V~
Switching capacity:
2 (1) A 115 V~ (standard relay)
4 (2) A 115 V~ (dry contact relay)

Electrical connection



Interface adapter VBus® / USB with ServiceCenter software

The new VBus® / USB interface adapter is the interface between the controller and a personal computer. With its standard mini-USB port it enables a fast transmission of system data for processing, visualizing and archiving as well as the parametrization of the controller via the VBus®.

A full version of the RESOL ServiceCenter software is included.

- USB 2.0 full speed compatible
- With mini-USB-B-port
- Remote parametrisation of the controller via VBus®
- Full version of RSC software included on CD-ROM

RESOL VBus® / USB full version

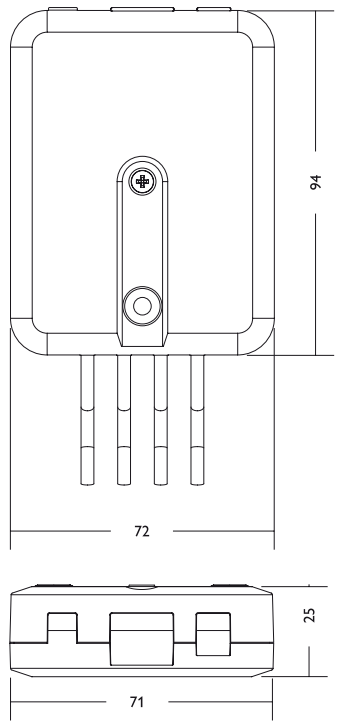
PC-connection set for RESOL controller with VBus®, with software RSC full version

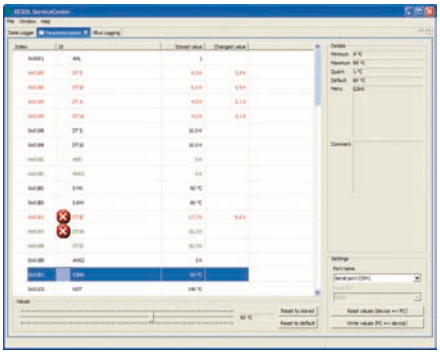
Article-no.: 180 008 80

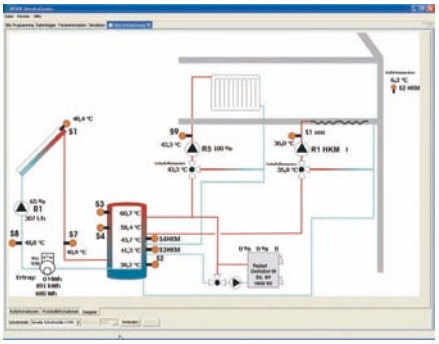
The RESOL VBus® is a two-wire bus, which allows RESOL controllers and additional modules to interchange data. These data are either purely informative or can be used for control purposes. In addition to that, it is possible to feed bus stations with electric energy, provided that their current consumption is low enough (e. g. remote data display); thereby, a special energy supply of the controller is no longer necessary.

The RESOL controllers of the more recent generation are all equipped with connection possibilities for the VBus®. The connections are established by two twisted wires (e. g. bell wire).

Housing: plastic
Protection class: IP20 / DIN 40 050
Dimensions: 95 x 70 x 25 mm
Power supply: via RESOL VBus®







ServiceCenter Software RSC

The modular designed software enables PC-recording of the data measured by the controller, editing of the data files for further processing by standard spreadsheet programs and visualization of individual systems with all measuring- and balancing values.

- VBus®-record: all measuring and balance values received by the VBus® are filed in a text file; this file can be processed by a standard spreadsheet program
- Designer: allows the positioning of the VBus® values on a customized background graphic; in this way, system visualizations for any solar system can be presented in real-time
- Datalogger: possibility to manage any number of datalogger (DL1); the ServiceCenter establishes connection at the push of a button, reads out the data, if necessary, deletes data from the logger and converts data into a text file
- Parametrization: DeltaSol® BS/1-4, BS Plus, ES, E, M, BX, MX can be easily configurated on PC; the values are checked on domains and possible overlappings are transferred by VBus® to the controller
- Support

Interface adapter VBus®/PWM

- Speed control of high-efficiency pumps for controllers without integrated PWM outputs
- Convertible from PWM to 0-10 V signal

Housing: plastic
Protection class: IP20/DIN 40 050
Dimensions: 95 x 70 x 25 mm
Display: Seven-segment LED display
Power supply:
Input voltage of power supply adapter:
100 ... 240 V~ (AC)/50-60 Hz
Input voltage of interface adapter: 12 V⎓ (DC)

The RESOL VBus®/PWM interface adapter enables the speed control of two high-efficiency pumps even without an integrated PWM-output on the system's controller. The adapter is installed between the VBus® output of the controller and the PWM-input of the high-efficiency pump, where it transforms the VBus® data packets into a 0-10 V or a PWM signal.

RESOL Interface adapter VBus®/PWM
VBus® converter into PWM- or 0-10 V-signal
Article-no.: 180 008 60

VBus®Touch

Mobile system monitoring worldwide

VBus®Touch. It is a software especially designed for the Apple iPhone and iPod touch. It displays both live data and a progression chart of the solar system at any place in the world, provided that the system is run by a RESOL controller equipped with a VBus® interface and a datalogger connected to the Internet via LAN. If the iPhone or the iPod touch are in a portrait orientation, a hydronic scheme and live data of the system are displayed. As soon as the device is turned into landscape orientation, the integrated accelerometer switches to the display of a progression chart. By running a finger along the progression chart, a time axis appears that displays the different data from any point in the progression period. In portrait orientation, the background color of the hydronic scheme is automatically adjusted to the current tank temperature.

From the Apple App Store, the software can be installed on the individual device without any expertise required. Already included is the access to two RESOL test systems, so that the application can be viewed and tried with real data without any delay. Take a look at the animated demo of the VBus®Touch software.

Available on the App Store

VBus® is a trademark of RESOL GmbH
App Store, iPod touch and iPhone are trademarks of Apple Inc.

For all iPhone and iPod touch users, a new way to visualize the data of a solar thermal system has become available:

The brand-new VBus®Touch software is now available free of charge in Apple's download portal App Store.

Technical data

Housing: Plastic PC-ABS and PMMA
Protection type: IP 20 / DIN 40050
Ambient temperature: 32 ... 104 °F
Dimensions: Ø 130 mm, depth 45 mm
Mounting: wall mounting
Display: Bar LED for monitoring the memory capacity, 1 illuminated pushbutton for indication of the SD card status
Interfaces:
VBus® for connection to RESOL controllers. LAN
Power supply:
Input voltage of power supply adapter: 100 ... 240 V~
Rated current: 350 mA
Input voltage of Datalogger: 5V DC ± 5 %
Memory: 180 MB internal memory,
with a logging interval of 5 min. sufficient for:

- 30 months for a systems with one DeltaSol® M, one HKM and one WMZ module
- 60 months for a system with one DeltaSol® M and one HKM
- 120 months for a system with one DeltaSol® M

UL-listed!

The datalogger can be branded with your own logo. Please contact our sales team.

Please note:

An SD memory card is a delicate data carrier. The card must not be compressed, distorted, bent or subjected to other forms of strain. Keep the contacts free of any kind of soiling.

Pay attention to the instructions given by the manufacturer of the memory card. The manufacturer of the datalogger does not assume any liability or warranty for damage or loss of data.

Integrated LAN-connection

SD-card slot

Easy monitoring of memory capacity

Datalogger DL2

rosenthal design

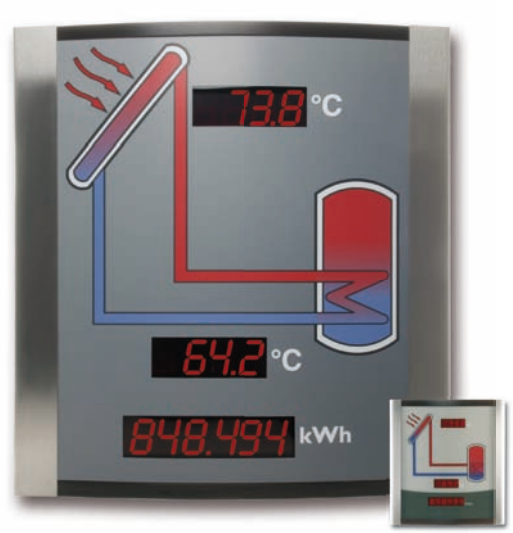
This additional module enables the acquisition and storage of large amounts of data (such as measuring and balance values of the solar system) over a long period of time. The DL2 can be configured and read-out with a standard internet browser via its integrated web interface. For transmission of the data stored in the internal memory of the DL2 to a PC, an SD card can be used. The DL2 is appropriate for all controllers with RESOL VBus®. The datalogger can be connected directly to a PC or router for remote inquiry and thus enables comfortable system monitoring for yield monitoring or for diagnostics of faults.

- Visualization of system states
- Yield monitoring
- Easy error diagnostics
- Easy configuration by integrated web interface for standard internet browsers
- Export function for further data processing in spreadsheet programs
- Direct connection of PC or router for remote inquiry

RESOL Datalogger DL2
Datalogger incl. RESOL ServiceCenter software full version ready to plug in with power supply adapter and VBus®
Article-no.: 180 007 10

SD-card
SD-card with 1 GB memory capacity
Article-no.: 180 007 40

Large display GA3



rosenthal design

Fig. scale of 1:10

The GA3 is a completely mounted Large-Display-Module for visualization of collector- and tank temperatures as well as heat quantity of the solar system via one 6-digit and two 4-digit 7-segment-displays. An easy connection to all controllers by RESOL VBus® is possible. Stainless steel frame with high quality multiplex wood elements and mounting plates for interior wall mounting. The front plate is made of antireflective filterglass and is printed with a light-resistant UV-lacquering. The universal RESOL VBus® allows the parallel connection of 8 large displays as well as additional VBus® modules. The bus line can be extended using a standard two-wire line.

RESOL GA3

Large display module with 3 displays for collector- and tank temperatures as well as for heat quantity, incl. power supply (Unit °C)

Article-no.: 180 006 50

RESOL GA3

Large display module with 3 displays for collector- and tank temperatures as well as for heat quantity, incl. power supply (Unit °F)

Article-no.: 180 007 87

RESOL GA3

Large display module with 3 displays for collector- and tank temperatures as well as for heat quantity, incl. power supply (costumized front plate)

Article-no.: 360 300 12

Technical data

Dimensions: 530 x 630 x 100 mm

Weight: approx. 10 Kg

Power supply: 115 V~
(by power supply adapter, UL listed; included)

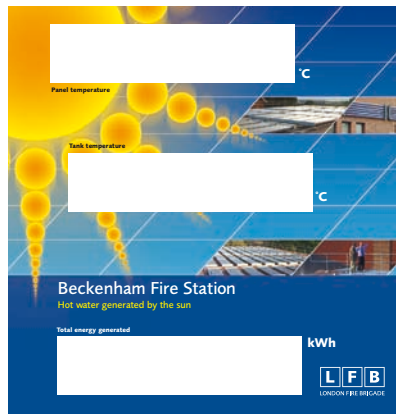
Power consumption: max.12 VA

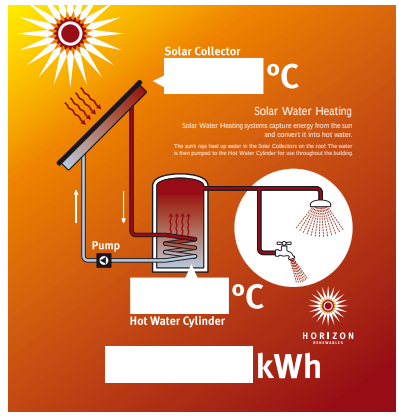
Protection type: IP 30 (appropriate for dry rooms)

Adm. ambient temperature: 32 ... 104 °F

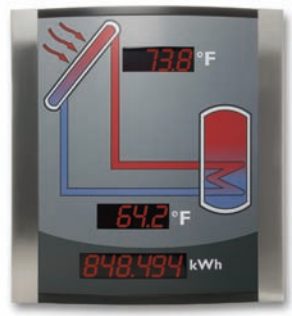
Data input: RESOL VBus®

Further versions and customized layout of the front plate on request.





Examples of customized front plate layouts



Note: The GA3 with temperature indication in °F can only be connected to controllers with temperature indication in °F.

- Simultaneous visualization of collector and tank temperature as well as heat quantity
- One 6-digit and two 4-digit 7-segment LED displays
- Simple connection via RESOL VBus®
- Outstanding design
- Power supply via RESOL VBus®

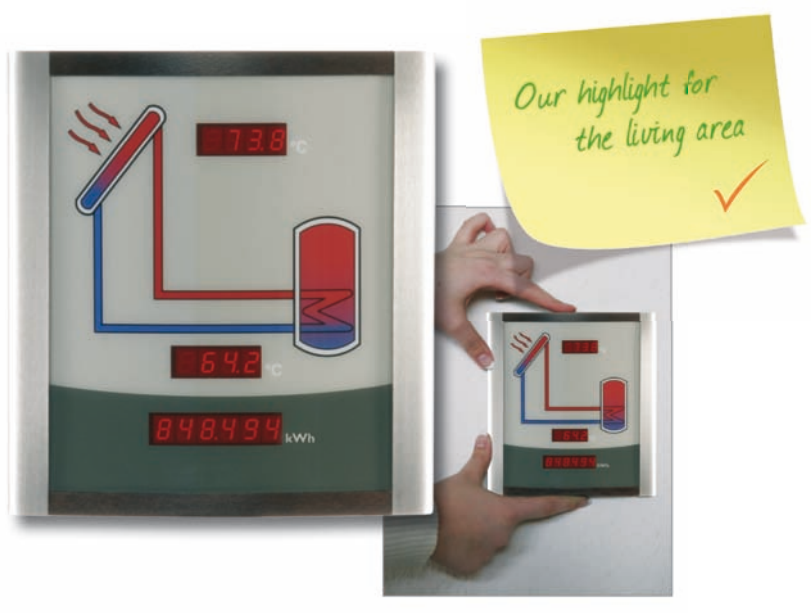
Further versions and customized layout of the front plate on request.

Technical data

Housing: High-grade steel frame with wood elements
Dimensions: 150 x 165 x 24 mm
Protection type: IP20 (suitable for dry rooms)
Protection class: III
Display: Numerical 7-segment LED display
Segment size: 7,5 x 10 mm, 10° digit inclination
Ambient temperature: 32 ... 104 °F
Power supply: via RESOL VBus®
Bus connection: RESOL VBus®

Note: The SD3 with temperature indication in °F can only be connected to controllers with temperature indication in °F.

Smart display SD3



rosenthal design

The Smart Display SD3 is designed for simple connection to RESOL controllers via the RESOL VBus® for visualization of the data issued by the controller: collector and tank temperatures as well as energy yield of the solar system.

The use of high-efficiency LEDs and filter glass assures a high optical brilliance and good readability - even in poor visibility conditions and at a larger distance. An additional power supply is not required.

RESOL Smart Display SD3
Display module for the living area with 3 displays for collector- and tank temperature as well as for heat quantity (Unit °C)
Article-no.: 180 004 90

RESOL Smart Display SD3
Display module for the living area with 3 displays for collector- and tank temperature as well as for heat quantity (Unit °F)
Article-no.: 180 007 77

Pump station FlowCon B

rosenthal design

Standard two-line solar pump station for integration of the DeltaSol® BS controller. The most important hydronic components required for the operation of a solar system are already mounted for easy and quick installation.

RESOL FlowCon B
Standard twin-line pump station
Article-no.: 290 002 77

RESOL FlowCon BL
Standard twin-line pump station incl. AirStopp
Article-no.: 290 002 87

RESOL FlowCon BS - Full kit
Standard twin-line pump station incl. DeltaSol® BS/1 controller and 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 290 010 87

RESOL FlowCon BSL - Full kit
as above, but with AirStopp
Article-no.: 290 016 87

RESOL FlowCon BS - Full kit
Standard twin-line pump station incl. DeltaSol® BS/2 controller and 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 290 012 97

RESOL FlowCon BSL - Full kit
as above, but with AirStopp
Article-no.: 290 016 77

RESOL FlowCon BS - Full kit
Standard twin-line pump station incl. DeltaSol® BS/3 controller and 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 290 006 77

RESOL FlowCon BSL - Full kit
as above, but with AirStopp
Article-no.: 290 006 87

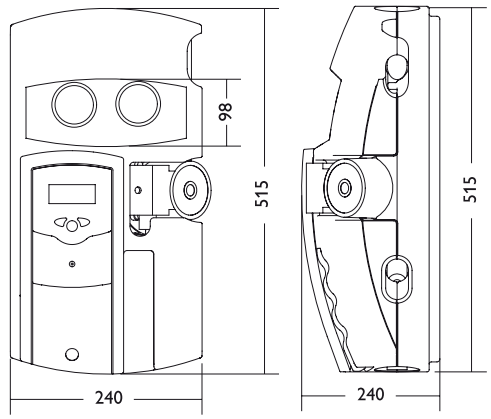
RESOL FlowCon BS - Full kit
Standard twin-line pump station incl. DeltaSol® BS/4 controller and 3 sensors Pt1000 (1 x FKP6, 2 x FRP6)
Article-no.: 290 007 17

RESOL FlowCon BSL - Full kit
as above, but with AirStopp
Article-no.: 290 017 17

RESOL FlowCon BS - Full kit
Standard twin-line pump station incl. DeltaSol® BS Plus controller and 4 sensors Pt1000 (2 x FKP6, 2 x FRP6)
Article-no.: 290 014 87

RESOL FlowCon BSL - Full kit
as above, but with AirStopp
Article-no.: 290 011 47

Technical data



- Prepared for integration of the controller DeltaSol® BS and DeltaSol® BS Plus
- Solar thermal pump WILO Star S16U-15 or S21U-15 (surcharge)
- Dial thermometers for flow and return (°F and °C)
- Return line with ball valve and adjustable non-return valve
- Flowmeter with scale (l/min)
- Safety bracket with safety valve and manometer (psi and bar)
- Fill/Drain valve for filling and flushing of the system
- Wall mounting with screws and dowels
- Heat insulation
- Pre-assembled and ready to plug in

Circulation pump:
WILO Star S16U-15 or S21U-15 (surcharge)

Size: ca. 240 x 515 x 240 mm (incl. insulation)

Nominal size: DN 20

Connections: ¾" IT, (¾" NPT fitting included)

Material: Fittings: brass, Sealings: Viton / Teflon, Insulation EPP

Adm. maximum temperature:
+ 230 °F, temporarily up to +356 °F

Operation pressure: maximum 6 bar

Spring pressure of non-return valves:
2 x 200 mm head = 400 mm head in total

Flowmeter: 1 ... 13 l/min

Technical data

Dimensions: H x W x D = 1000 x 430 x 470 mm
Weight (unfilled): 20 kg
Tank: 30 liters, PE, with suction strainer and check valve
Delivery flow: 5 - 47 l/min
Delivery height: 52 m
Pump power: 115 V~, 1000 W
Isolating ball valves: 3/4" union nut
Check valve: 3/4"
Drain valve: 1/2"
Medium: Water or glycol mixtures
Medium temperature: max. 140 °F

Filling and flushing unit
Article-no.: 290 013 40

Filling and flushing station SBS 1000

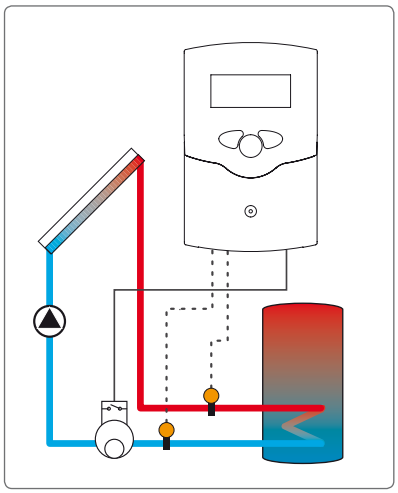
Solar thermal systems are usually filled with water or water-glycol-mixtures as the heat transfer fluid. The filling and flushing station allows quick and clean filling of solar thermal systems with the heat transfer fluid.

The filling and flushing station includes:

- Stainless steel trolley with robust tyred wheels, pump protection and hose holder
- Robust, powerful and silent pump with separate on and off switch
- 30-liter-polyethylene tank with suction strainer, check valve, return turbulence reducer and drain valve
- Pressure-resistant, transparent flow and return hoses for easy visual checking
- Connection hoses with isolating ball valves for preventing the medium from leaking from the hose and for adjusting the delivery rate

SBS 1000
Full kit for filling and flushing solar thermal systems
Article-no.: 280 010 57

Calorimeter WMZ



Universal calorimeter module for solar and heating systems. Operation is directly carried out via the RESOL VBus®.

Graphic-display for indication of flow and return temperature, heat quantity, output, flow rate and sensor faults (balance values are also stored in the case of a power failure). Suited for solar systems with propylene-glycol-mixtures of 0 ... 70 Vol %.

RESOL WMZ - full kit

Calorimeter module incl. 2 temp. sensors Pt1000 (2 x FRP45) and **flowmeter V40-0,6**

Article-no.: 135 304 17

as above, but with flowmeter V40-1,5
Article-no.: 135 304 27

as above, but with flowmeter V40-2,5
Article-no.: 135 304 37

as above, but with flowmeter V40-3,5
Article-no.: 135 305 07

as above, but with flowmeter V40-6,0
Article-no.: 135 305 17

as above, but with flowmeter V40-10
Article-no.: 135 305 27

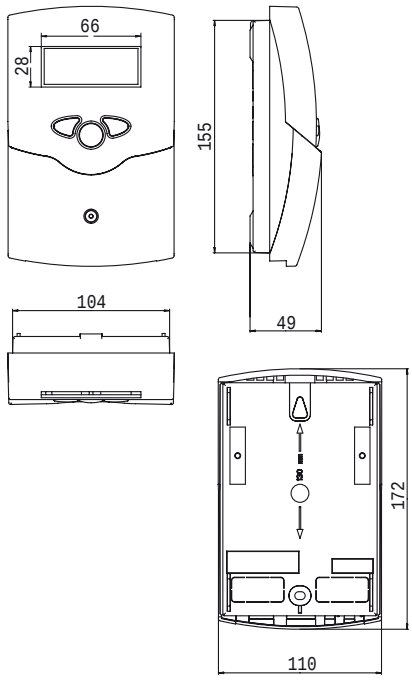
as above, but with flowmeter V40-15
Article-no.: 135 305 37

RESOL WMZ

Calorimeter module

Article-no.: 135 303 57

Technical data



The controller can be branded with your own logo. Please contact our sales team.

Housing: plastic, PC-ABS and PMMA

Protection type: IP 20 / DIN 40050

Ambient temp.: 32 ... 104 °F

Display:
Graphic display as well as bicolored LED

Power supply: 115 V~

Power consumption: approx 2 VA

Settings:

- **Volumetric content of glycol:** 0 ... 70 % (1% - steps)
- **Impulse rate of flow rate:** 0 ... 99 l/Imp (1 l/Imp - steps) for flowmeter RESOL V40

Temperature measurement:
RESOL Pt1000 sensors only

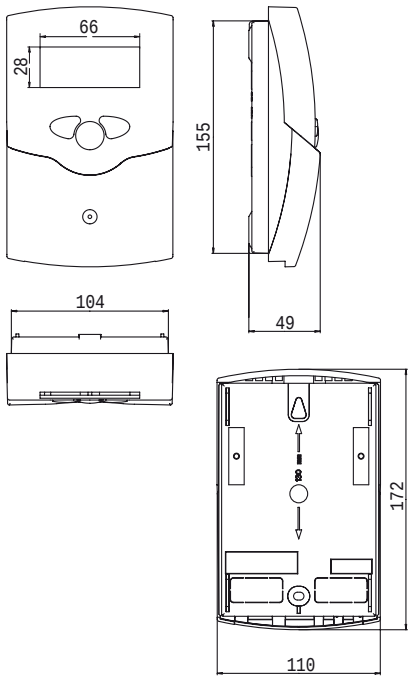
Temperature measurement: ±0,54 °RA

Measuring range: -22 ... + 302 °F

Interface: RESOL VBus®

Not cTUV-UL certified; display in Fahrenheit and BTU in preparation.

Technical data

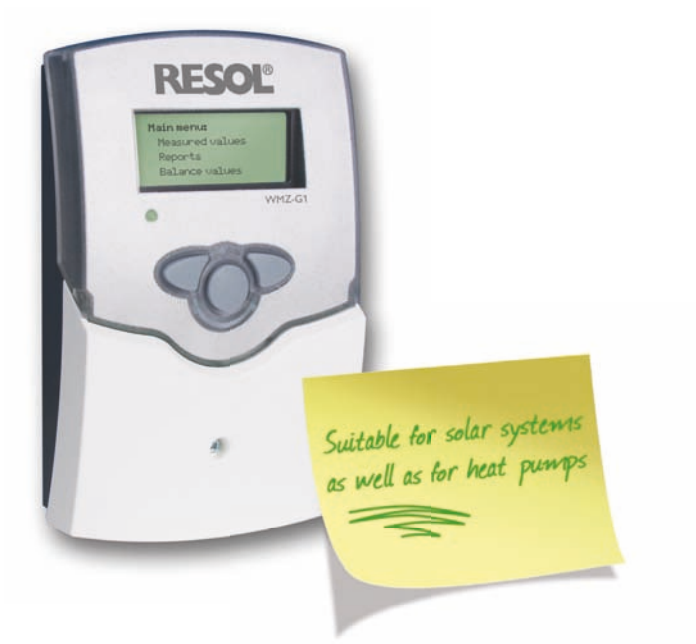


The controller can be branded with your own logo. Please contact our sales team.

Housing: plastic, PC ABS and PMMA
Protection class: IP 20 / DIN 40050
Ambient temperature: 32 ... 104 °F
Display: Graphic display as well as bicolored LED
Power supply: 115 V~
Power consumption: approx. 2 VA
Measuring range: -22 ... +302 °F
Inputs: 2 Grundfos Direct Sensors™ VFS, RPS or DPS
Interface: RESOL VBus®

- Recording of:
  - Flow temperature
  - Return temperature
  - Power
  - Heat quantity
  - Flow rate
  - Pressure
  - Differential pressure
  - System errors
- Easy connection
- Dot matrix display
- Function control
- Configurable control parameters

Calorimeter WMZ-G1



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™, which measure the temperature as well as one additional value – depending on the type: flow rate, relative or differential pressure.

If two Grundfos Direct Sensors™ are connected and at least one of them measures the flow rate (VFS-type), the heat quantity can be calculated. The WMZ-G1 also monitors the operating status of the system and displays deviations.

RESOL WMZ-G1
Calorimeter module for Grundfos Direct Sensors™
Article-no.: 135 307 07

RESOL WMZ-G1
Calorimeter module for Grundfos Direct Sensors™ 24V version
Article-no.: 135 307 17

RESOL WMZ-G1 - Set 1
Calorimeter module for Grundfos Direct Sensors™ incl. VFS 1-12 l and RPS 0-10 bar
Article-no.: 135 323 47

RESOL WMZ-G1 - Set 2
Calorimeter module for Grundfos Direct Sensors™ incl. VFS 2-40 l and RPS 0-10 bar
Article-no.: 135 323 57

RESOL WMZ-G1 - Set 3
Calorimeter module for Grundfos Direct Sensors™ 24V version incl. VFS 1-12 l and RPS 0-10 bar
Article-no.: 135 323 67

RESOL WMZ-G1 - Set 4
Calorimeter module for Grundfos Direct Sensors™ 24V version incl. VFS 2-40 l and RPS 0-10 bar
Article-no.: 135 323 77

Grundfos Direct Sensor™ VFS 1-12 l
Sensor incl. brass fitting, insert and connection cable
Article-no.: 130 000 27

Grundfos Direct Sensor™ VFS 2-40 l
Sensor incl. brass fitting, insert and connection cable
Article-no.: 130 000 37

Grundfos Direct Sensor™ RPS 0-10 bar
Sensor incl. brass fitting and connection cable
Article-no.: 130 000 47

Sensors

Sensor requirements:

The temperature resistance of the sensors has to be guaranteed up to the maximum stagnation temperature of 320 ... 392 °F.

The sensors at working temperatures (68 ... 176 °F) have to measure as accurately as possible in order to ensure that any measurement error of sensors and controller does not exceed 3.6 or 5.4 °Ra. The sensors contain a material that changes its electrical resistance in proportion to the temperature change. The controller measures the resistance and calculates the temperature of the sensor element.

Example: Pt1000 is a platinum (Pt) sensor with a resistance of 1000 Ω at 32 °F.

For wide application requirements, 3 different sensor types are available: immersion sensors, flatscrew and pipe sensors.

The sensor types FK and FR have the same electrical features and are available in the same specification, they only differ in the connecting cable.

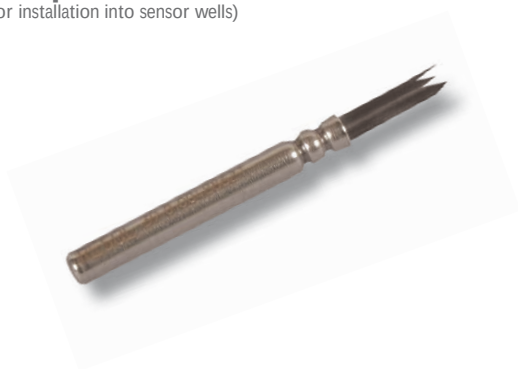
The identification of the cable is indicated by the 2nd letter: type FK... = 1.5 m weather- and temperature resistant silicone cable for a temperature range between -58 ... +356 °F.

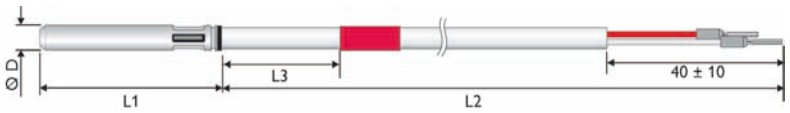
Type FR... = 2.5 m PVC-cable for a temperature range between 23 ... +176 °F.

The measuring precision of our standard "Pt1000"-sensors is +/- 0.54 °F (at 32 °F), the sensor heads are temperature resistant between -58 ... +392 °F; the type is indicated by the 3rd letter "P".

Temperature sensors

(for installation into sensor wells)

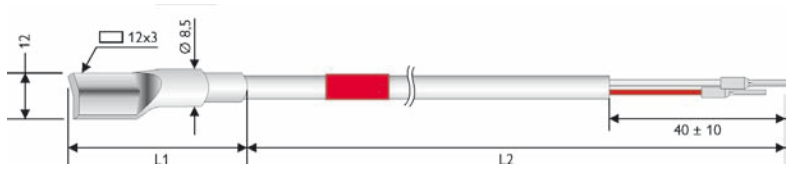




	D [in]	L1 [in]	L2 [in]	Material of cable	Temperature range	Article-no.
FKP6	**0.24**	**1.77**	**57.28**	**Silicone**	**-58 ... +356 °F**	**155 000 20**
FKP6	0.24	1.77	96.65	Silicone	-58 ... +356 °F	155 004 40
FKP6	0.24	1.77	195.08	Silicone	-58 ... +356 °F	155 004 50
FKP6	0.24	1.77	391.93	Silicone	-58 ... +356 °F	155 004 60
FRP6	**0.24**	**1.77**	**96.65**	**PUR**	**-14 ... +176 °F**	**155 000 80**

Cylindrical clip-on sensors

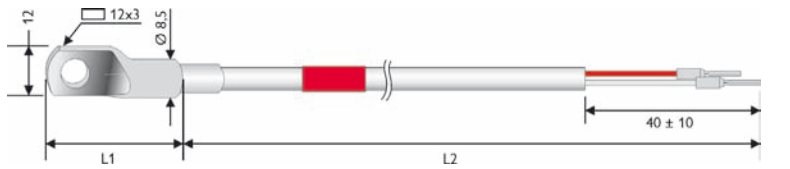
(for surface mounting on tubes, incl. pipe clamp)
Pt1000 version



	L1 [in]	L2 [in]	Material of cable	Temperature range	Article-no.
FKP21	1.53	59.05	Silicone	-58 ... +356 °F	155 003 30
FRP21	1.53	98.42	PVC	-14 ... +176 °F	155 005 40

Bolt-on sensors

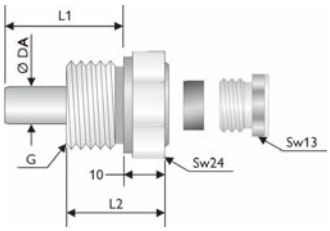
(for installation on planar surfaces)
Pt1000 version

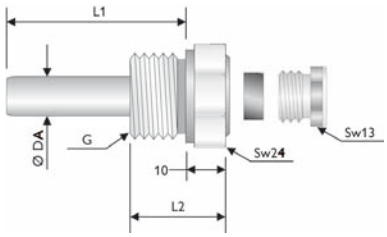


	L1 [in]	L2 [in]	Material of cable	Temperature range	Article-no.
FKP9	1.26	59.05	Silicone	-58 ... +356 °F	155 003 60
FRP9	1.26	98.42	PVC	-14 ... +176 °F	155 003 70

Sensor wells (NPT thread)

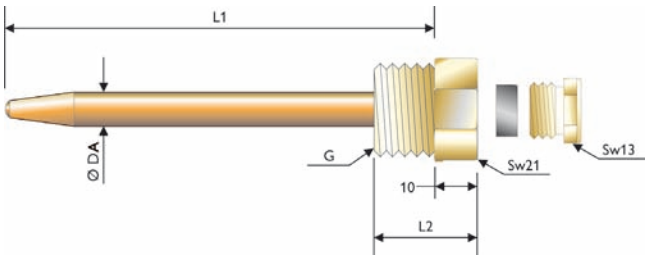
(brass, copper or stainless steel)



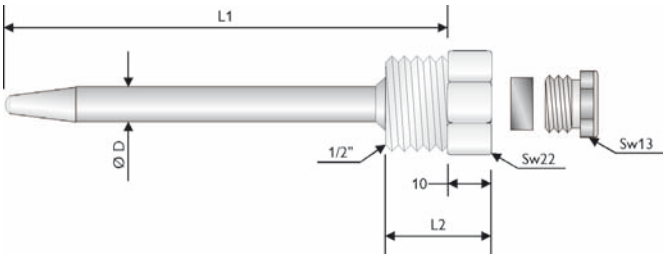


Because of the short component length, it is recommended to use the sensor well TH30 with the temperature sensor FKP5,5 or FRP5,5.

	DA [mm]	DI [mm]	L1 [mm]	L2 [mm]	G [mm]	Material	Article-no.
TH30	9	6,2	30	23	½	Nickel plated copper	280 005 67
TH45	10	6,2	45	23	½	Nickel plated copper	280 000 37



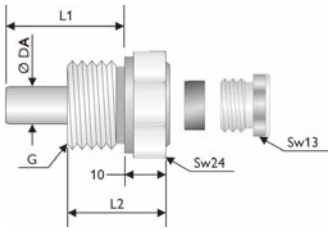
	DA [mm]	DI [mm]	L1 [mm]	L2 [mm]	G [mm]	Material	Article-no.
TH60	8	6,2	60	23	½	Chrome plated copper	280 000 47
TH100	8	6,2	100	23	½	Chrome plated copper	280 000 57
TH150	8	6,2	150	23	½	Chrome plated copper	280 000 67
TH200	8	6,2	200	23	½	Chrome plated copper	280 000 77
TH300	8	6,2	300	23	½	Chrome plated copper	280 000 97

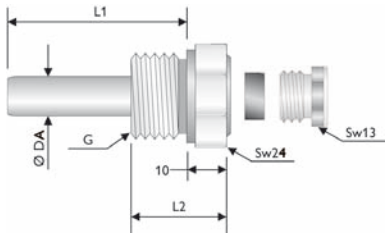


	DA [mm]	DI [mm]	L1 [mm]	L2 [mm]	Material	Article-no.
TH30V	8	6,2	30	23	Stainless steel	280 012 37
TH45V	8	6,2	45	23	Stainless steel	280 010 27
TH60V	8	6,2	60	23	Stainless steel	280 001 07
TH60V/4 (for high temperature sensors KP4/H)	5	4,2	60	23	Stainless steel	290 002 27
TH100V	8	6,2	100	23	Stainless steel	280 002 17
TH100V/4 (for high temperature sensors KP4/H)	5	4,2	100	23	Stainless steel	290 002 37
TH150V	8	6,2	150	23	Stainless steel	280 002 27
TH200V	8	6,2	200	23	Stainless steel	280 002 37

Sensor wells (metric thread)

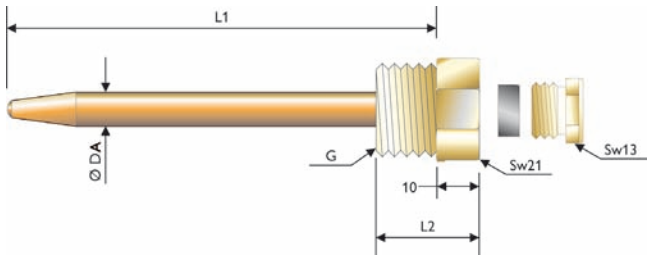
(brass, copper or stainless steel)



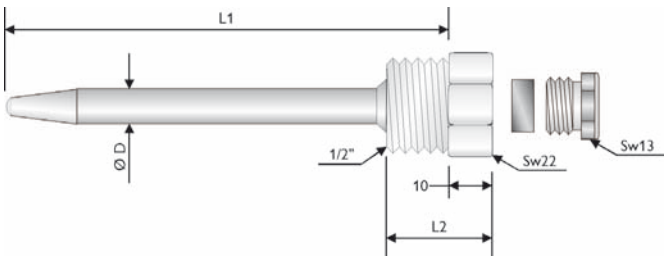


Because of the short component length, it is recommended to use the sensor well TH30 with the temperature sensor FKP5,5 or FRP5,5.

	DA [mm]	DI [mm]	L1 [mm]	L2 [mm]	G [mm]	Material	Article-no.
TH30	9	6,2	30	23	½	Nickel plated copper	280 005 60
TH45	10	6,2	45	23	½	Nickel plated copper	280 000 30

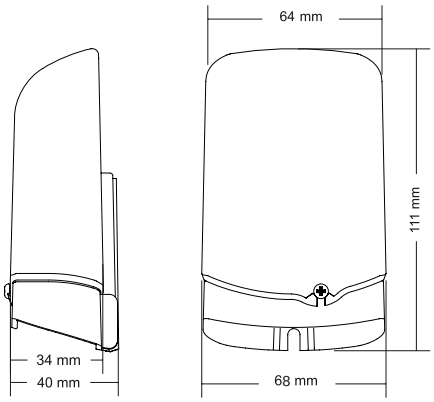


	DA [mm]	DI [mm]	L1 [mm]	L2 [mm]	G [mm]	Material	Article-no.
TH60	8	6,2	60	23	½	Chrome plated copper	280 000 40
TH100	8	6,2	100	23	½	Chrome plated copper	280 000 50
TH150	8	6,2	150	23	½	Chrome plated copper	280 000 60
TH200	8	6,2	200	23	½	Chrome plated copper	280 000 70
TH300	8	6,2	300	23	½	Chrome plated copper	280 000 90



	DA [mm]	DI [mm]	L1 [mm]	L2 [mm]	Material	Article-no.
TH30V	8	6,2	30	23	Stainless steel	280 012 30
TH45V	8	6,2	45	23	Stainless steel	280 010 20
TH60V	8	6,2	60	23	Stainless steel	280 001 00
TH60V/4 (for high temperature sensors KP4/H)	5	4,2	60	23	Stainless steel	290 002 20
TH100V	8	6,2	100	23	Stainless steel	280 002 10
TH100V/4 (for high temperature sensors KP4/H)	5	4,2	100	23	Stainless steel	290 002 30
TH150V	8	6,2	150	23	Stainless steel	280 002 20
TH200V	8	6,2	200	23	Stainless steel	280 002 30

Technical data



- Reliable failure signal by LED
- Connection to a building management system (BMS) possible
- Supply and control via RESOL VBus®

Housing: Plastic (PC 2207 UV); base part: Karilen E 42 D - H201
Protection type: IP 54
Dimensions: 111 x 68 x 40 mm
Mounting: Wall mounting
Ambient temperature: -13 ... +158 °F
Display: 1 LED
Supply: RESOL VBus®
Interface: RESOL VBus®
Output: 1 dry contact relay
Switching capacity: max. 30 V⎓ (DC), 1A; 125 V~ (AC), 0,5 A

DeltaSol® MX

Data communication between the devices takes place via the RESOL VBus®.

Indoor temperature sensor

(for installation on planar surfaces) Version Pt1000

RESOL FRP11
Indoor temperature sensor
Article-no.: 155 003 00

Alarm module AM1

The Alarm module AM1 is designed to signal system failures. It is to be connected to the VBus® of the controller and issues an optical signal via the red LED if a failure has occurred. The AM1 also has a dry contact relay output, which can e. g. be connected to a building management system (BMS). Thus, a collective error message can be issued in the case of a system failure. Depending on the controller and the sensors connected, different fault conditions can be signaled, e. g. sensor failures, excess or negative system pressure as well as errors in the flow rate, such as a dry run of the pump. The Alarm module AM1 ensures that occurring failures can be immediately recognized and repaired, even if the system and the controller are difficult to access or located in a remote place. Thus, the reliability and the stable yield of the system are ensured.

RESOL AM1
Alarm module for signaling system failures
Article-no.: 180 008 70

Outdoor temperature sensor

(for installation on plane surfaces) Pt1000 version

The FAP13 is used for measuring the outdoor temperature with a platinum measuring element. The FAP13 is placed in a weather-resistant housing with outstanding design and is designed for mounting outdoors. Cable glands for the sensor cables at the bottom of the housing allow easy installation.

RESOL FAP13
Outdoor temperature sensor
Article-no.: 155 008 10

Overvoltage protection SP10

Overvoltage protection device placed in housing with outstanding design, suitable for mounting outdoors. We generally recommend installing the overvoltage protection in order to avoid overvoltage damage at collector sensors, e.g. caused by local lightning storms.

RESOL SP10
Sensor-overvoltage protection
Article-no.: 180 110 70

Distributed by:

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