

**Weekly thermostat for boilers Galan - regulator for management of heating elements and circuit SolarSentinel-DBTW
Users guide.**

SHORT DESCRIPTION:

1. Device is applicable to:

- Burners;
- Electric boiler;
- Electric heaters;
- Other heating elements;

Maintain the temperature 1 of the heating element within $TKotMin \leq tkotel^{\circ} \leq TKotMax$ additionally control circulation pump in $tkotel^{\circ} \geq TVIzbr$.

2. Direct and separate boilers control (up to 3kW) and circulation pump (up to 5A).

3. Monitor temperature at 2 / 3 points

4. Fully programmable by 5 main and 16 additional parameters.

5. Power - 220 V AC, own consumption <2VA

6. 2 / 3 pcs. temperature sensors - RTS 1k

7. 2 pcs. individual relays (contact systems) for switching:

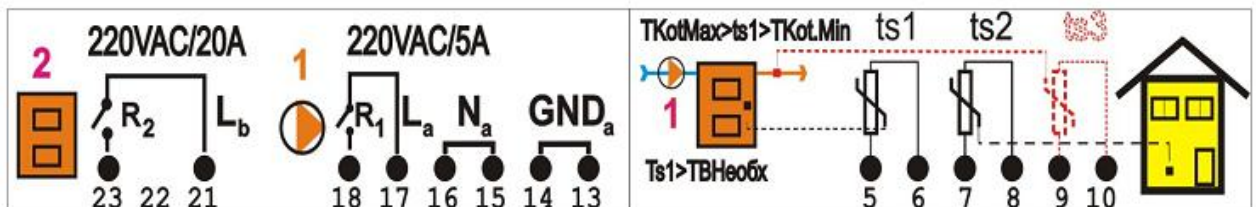
- P1 n.o. contact lodge phase for pump control
- P2 n.o. contact lodge phase for heating element control

8. 8x2 rows indication LCD display

9. Buttons for navigation and control – 4 pcs.

10. Three operation modes - Off (system anti-freeze option), Maximum (continuous operation without taking into account the ambient temperature and a weekly time schedule), Auto (work complies with the ambient temperature and a weekly time schedule)

CONNECTIONS:



- Thermo Sensor: TS1: terminals 5 / 6 - Boiler

- Thermo Sensor: TS2: terminals 7 / 8 - ambient temperature sensor

- Optional thermal sensor: TS3: terminals 9 / 10 - overheating sensor

- Power supply 220V AC - own and for pump - terminals 17 (phase "L") / 16 ("N") / 14 "PE"

- Boiler-input: terminal 21 power - (phase "L_b") / 23- output, 20A max

- Output pump (warming pipes) - terminals 18 (phase) / 15 ("N") / 13 "PE" - 5A.

Power to submit in the guards - to terminal 21-16A, and to a terminal 17 - 6A.

FUNCTIONS:

Boiler / buffer / boiler temperature monitoring, heating element and pump control.

Basic parameters:

1. Starts circulation pump (Circle I) after reaching the desired t boiler temp tkotel – TVlizbr [Range 0 ° C ÷ 85 ° C]. default = 40 ° C
 - 1.a. Round I is forced to start, while Circle II is activated..
2. Start warming up (Circle II) when boilers temperature falls under the minimum "TKotMin" [Range -18 ° C ÷ 85 ° C] default = + 38 ° C
3. Stop heating (Circle II) in excess of maximum temperature "TKotMax" [Range -15 ° C ÷ 125 ° C] default = + 85 ° C

Heater activates to maintain the temperature in the range: $TKotMin \leq tkotel \leq TKotMax$

Additional options:

1. Minimum working time of the pump (Circle II) - "PumpSec" [Range 3 sec ÷ 60 sec.] default = 3 sec.
2. Minimum time of the heater work (Circle II) - "Kot.Sec" [Range 5 sec ÷ 60 sec.] default = 5 sec.

MODES:

- **Off (Изкл)** - The system is turned off. Observe the ambient temperature, fall below +7 ° C system is activated to prevent freezing of the fluid: start-up circulation Circle I and Circle II is activated to keep within limits $TKotMin \leq tkotel \leq TkotMax$; Overheating protection is activated in case of sensor overheating. System deactivates in 85 ° C overheating.
- **Max** - the system is switched to maximum. Not following the ambient temperature! start-up circulation Circle I, and Circle II is activated to keep within limits $TKotMin \leq tkotel \leq TkotMax$; Overheating protection is activated in case of sensor overheating. System deactivates in 85 ° C overheating.
- **Auto** - The system is working in automatic mode. Observe the ambient temperature. Follows adjusted day and week programmator temperatures. Deactivates when ambient temperature is above the set one. Activates when ambient temperature is below the set one: start-up circulation Circle I, and Circle II is activated to keep within limits $TKotMin \leq tkotel \leq TkotMax$; Overheating protection is activated in case of sensor overheating. System deactivates in 85 ° C overheating.

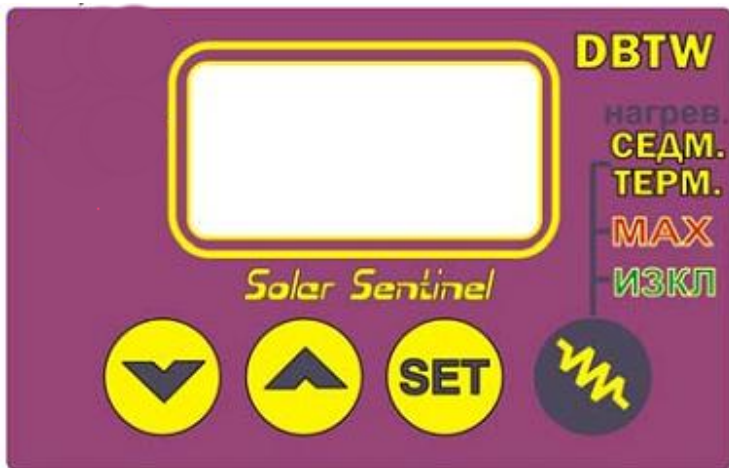
OTHER:

1. Fixed hysteresis 2 ° C for the management of the circulation pump.
2. Display of temperature sensors -40 ° C + 150 ° C
3. Alert the emergency event by flashing the entire screen
4. Indication of operating status of the circulation pump and heating element
5. Brief manual activation of the pump through a combination of buttons.
6. Protection against unauthorized modification of the basic parameters - with a password.
7. Overheating indication.
8. Working mode indication: Off / Max / Auto

PARAMETERS:

1. **ТВнеобх** - Minimum temperature for the pump swith on Circle I. Activated Circle I above this temperature.
2. **TKotMin** - Minimum t ° for the operating range of Circle II (heater). Starts heater when temperature is below this value.
3. **TKotMax** - Maximum t ° for the operating range of Circle II (heater). Stop heater when temperature is above this value.
4. **Kot.Sec** - Minimum work of Round II (heater) in sec.
5. **PumpSec** - Minimum work of Round I (pump) in sec.

CONTROL PANEL:



- 2 lines display
- Three navigation buttons: button-up "Up-↑", button-down "Dn-↓", button "Set"; "^^" additional button for modes selection
- No thermo sensor light signalization (blinking backlight)

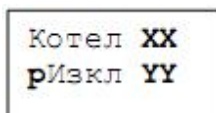
Control buttons:

- Button "Up-↑" / "Dn-↓", up / down movement between screens, holding button "Set" - increases / decreases the selected value of 1;
- Button "Set" changes selected parameter / value
- Button "^^" changes the selected mode **Off / Max / Auto**;

DISPLAY INDICATION AND OPERATION

Screen # 1 - Main Screen

Temperature in the boiler, ambient temperature and nodes status indication.



Line 1: "Котел" (boiler) alternative to "изкл."/"вкл"/"Прерг." (off/on/overheating). Boiler status (off / on / overheating) and boilers temperature "XX" in ° C.

Line 2: "P" Circle I (circulation) condition, when working symbol "P" flashes; Selected mode: OFF / Max / AUTO; room temperature "YY" in ° C

- In the active state of Circle II (heater) line 1 shows alternative Boiler / On, and in non-active state of Circle II is shown Boiler / Off. If overheating is shown alternative Boiler / overheated.

- In the active state of the Circle I (pump), line 2 shows a rotating X symbol, in "P" position, where non-active state of the Circle I, position is empty.

In AUTO mode selected is displayed "Зад >" or "Зад <" (adjusted) depending on whether adjusted ambient temperature is higher or lower than the set one for the current time.

Manual pump activation.

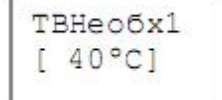
Hold the "Up-↑" pressed.

Click "Dn-↓" to activate the pump manually.

Screen # 1 Temperature required for circulation

Indication - changing the minimum temperature for the start of circulation pump

Line 1: Shows the selected parameter "TVNeobh and number of the screen screen-1



TVNeobh1
[40°C]

Line 2: The value of the parameter

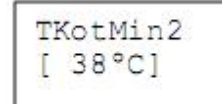
The value is changed after pressing the "Set" button. Adjustment buttons "Up-↑" and "Dn-↓" Output "Set". Range 0 ° C - 85 ° C.

** To change this parameter password is required*

Screen # 2 - Lower limit of the boiler temperature range.

Indication - change of minimum temperature limit.

Line 1: Shows the selected parameter "TKotMin" and number of the screen-2



TKotMin2
[38°C]

Row 2: The value of the parameter

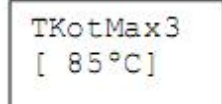
The value is changed after pressing the "Set". Adjustment buttons "Up-↑" and "Dn-↓" Output "Set". Range -18 ° C - 85 ° C.

** To change this parameter password is required*

Screen # 3 - Upper limit of the boiler temperature range.

Indication - Change the upper temperature limit.

Line 1: Shows the selected parameter "TKotMax" and number of the screen-3



TKotMax3
[85°C]

Row 2: The value of the parameter

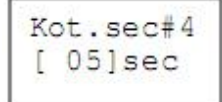
The value is changed after pressing the "Set". Adjustment buttons "Up-↑" and "Dn-↓" Output "Set". Range -15 ° C - 125 ° C.

** To change this parameter password is required*

Screen # 4 - Set the minimum boiler operating time (Circle II).

Indication – boiler minimum working time change.

Line 1: Shows the selected parameter "Kot.sec" and number of the screen-4



Kot.sec#4
[05]sec

Row 2: The value of the parameter

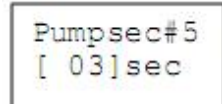
The value is changed after pressing the "Set". Adjustment buttons "Up-↑" and "Dn-↓" Output "Set". Range 5-60 sec.

** To change this parameter password is required*

Screen # 5 Set the minimum pump operating time.

Indication - changing the limit temperature to thaw the collector.

Line 1: Shows the selected parameter "Pumpsec" and number of the screen-5



Pumpsec#5
[03]sec

Row 2: The value of the parameter

The value is changed after pressing the "Set". Adjustment buttons "Up-↑" and "Dn-↓" Output "Set". Range 3-60 sec.

** To change this parameter password is required*

Screen # 6 - Password protected access parameters.

```
Passwrд 6
[00]sec
```

Line 1: Shows the selected parameter "Passwrд" and number of the screen-6

Line 2: The value of the parameter

The value is changed after pressing the "Set". Adjustment buttons

"Up-↑" and "Dn-↓" Output "Set".

Enter the required password.

Screen # 7 - Weekly temperature schedule.

```
Т:Пон=
Н:22Д:23
```

Line 1: Shows the selected day of the week T: Mon, Tue, Wed, Thu, Fri, Sat, Sun

Line 2: Day and night temperatures; H: 22 "- program the temperature during the" night " 22 ° C; E: 23 "- program the temperature during the"

day "23 ° C; Zones Day / Night are provisional and are set separately.

Set the temperature schedule for every day of the week separately for day and night.

The value is changed after pressing the button "Set". The adjusted value is indicated by ">". Adjustment buttons "Up-↑" and "Dn-↓" Output "Set".

Correction does not require a password.

Set temperatures in the range: +15 ° C ^ +29 ° C and OF - off.

Selection of the day of week

```
Т>Пон=
Н:22Д:23
```

Correction temperature Night

```
Т:Пон=
Н>22Д:23
```

Correction temperature Day

```
Т:Пон=
Н:22Д>23
```

Screen # 8 - actuators of the current hour and day of week

```
12:23:26
Пон
```

Line 1: indication / change the time: Current Time: Min: Sec:

Line 2: indication / modifying the weekly calendar: Mon, Tue, Wed, Thu, Fri, Sat, Sun. Value is changed after pressing the button "Set". The

adjusted value is indicated by ">" Fix buttons "Up-↑" and "Dn-↓" Output

"Set".

Correction does not require a password.

Hour

12<23:26
Пон

Minutes

12>23:26
Пон

Seconds

12:23>26
Пон

Day of the week

12:23:26
>Пон

Screen # 9 - actuators of duration of time zone Day

H1:06:30
H2:20:30

Line 1: indication / change the starting time zone Day: Hour: Min

Line 2: indication / change the final time zone Day: Hour: Min

The values are set in 30 minutes

The value is changed after pressing the button "Set". The adjusted value is indicated by ">" Adjustment buttons "Up-↑" and "Dn-↓" Output "Set".

Correction does not require a password.

Start Time

H1>06:30
H2:20:30

End Time

H1:06:30
H2>20:30

Time zone "Day" begins at the time indicated in line1 (H1) and ends at the time indicated in line2 (H2); rest of the time not covered by the zone "Day" is considered as zone "Night"

*** Note: The adjustment of all parameters is only possible after pressing "Set" indicated by placing the value in "[" and "]" or ">". Confirmation of the value - with the button "Set".**

Screen # 10 - Calibration of temperature inputs (service mode).

02f90278
03ff

* password required

TECHNICAL DATA

1. Voltage: 220V \pm 10% / 50Hz. \leq 2VA
2. Mounting: DIN-35mm (euro bus);
3. Dimensions: 68x85x58 mm.
4. Operating temperature range: -5 ° C / +40 ° C
5. Protection class: IP20
6. Humidity: 00-80%
7. Temperature inputs: 2/3 PTC 1k, measurement: -40 ° C-150 ° C -40 °, displaying -40° C \div 150 ° C; accuracy \pm 1 ° C in range (-15 °C \div +100 ° C) and \pm 4 ° C outside the range.
8. Switching options: - Circle 1: 5A / 220V (up to 250W);
- Circle 2: 20A/220V (up to 3kW-AC1; to 1.5kW-AC3)

INSTALLATION AND MAINTENANCE:

All activity for installation and connection of the device to be carried out under intermittent power supply to the device.

The supply of boiler - circle 2 on terminal 21 to be done at AP 16A.

Power for the device and pump terminal 17 to be done at AP 6A.

Warranty period for the device is 24 months.

The warranty covers defects attributable to the manufacturer (manufacturing defect or defective materials).

Not covered by warranty maintenance defects caused by incorrect or unskilled assembly, interference in device, natural disasters, unusual power supply, improper storage or transport.