Controller Dimensions and Functions

Functions
• Data logger on SD card
• Heat quantity (Grundfos Direct Sensor™, pulse generator, determination)
• Heating return increase
• Reduction of stagnation phases
• Vacuum (storage tank recoling)
• Circulation (controlled by temperature / time / pulse)
• Back-up heating
• Solid fuel boiler
• Storage tank quick charge
• Bypass
• Thermostat
• Differential thermostat
• Timer
• Interval / vacuum tube collector
• Anti-freeze
• Anti-legionella cyclical storage tank heating
• Display storage tank top
• Alarm output
• Two loading zones

Controller Specifications

The following shall be the specifications for the solar controller:

For a controller, the system shall use the TR0603mc U controller with 6 PT-1000 sensor inputs and 3 outputs. The controller shall be ETL certified for both USA and Canada. The unit shall be microprocessor controlled with date and time, data logging capability with data stored on an SD card, electronic pump speed control on 2 outputs, 1 relay output, and animated multifunction LCD display.

The controller shall have 40 pre-programmed systems and numerous additional functions for meeting customer specific applications.

The solar controller shall have an input for a Grundfos Direct Sensor which allows flow rate measurement convertible to BTU and kWh and suitable for energy monitoring.

The controller shall utilize the TS-Analyzer software to evaluate the data on the SD-card.

The controller shall be equipped with troubleshooting tools that spell out error messages in full text.
## Controller Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Part Number</strong></td>
<td>8718572810</td>
</tr>
<tr>
<td><strong>System voltage</strong></td>
<td>120 V AC, 60 Hz</td>
</tr>
<tr>
<td>Optional</td>
<td>240 V AC, 60 Hz</td>
</tr>
<tr>
<td><strong>Own consumption</strong></td>
<td>≤ 2 W (0.003 HP)</td>
</tr>
<tr>
<td><strong>Inputs</strong></td>
<td>6</td>
</tr>
<tr>
<td>5 x temperature (Pt1000)</td>
<td></td>
</tr>
<tr>
<td>1 x temperature (Pt1000)</td>
<td>or pulse</td>
</tr>
<tr>
<td><strong>Additional input</strong></td>
<td>1 x Grundfos Direct Sensors™</td>
</tr>
<tr>
<td>(Temperature/flow rate)</td>
<td></td>
</tr>
<tr>
<td><strong>Outputs</strong></td>
<td>3</td>
</tr>
<tr>
<td>2 x triac for speed control (R1, R2), max. 130 W / 0.17 HP (120 V AC)</td>
<td></td>
</tr>
<tr>
<td>1 x switch output relay (R3), max. 400 W / 0.5 HP (120 V AC) or R3 dry contact</td>
<td></td>
</tr>
<tr>
<td><strong>Additional output</strong></td>
<td>1 x alarm output</td>
</tr>
<tr>
<td><strong>Power cord</strong></td>
<td>75 inch, 3 x 18 AWG at 221°F</td>
</tr>
<tr>
<td><strong>Hydraulic schemes</strong></td>
<td>40</td>
</tr>
<tr>
<td><strong>Ambient temperature</strong></td>
<td>0°C (+32°F) through 45°C (+113°F)</td>
</tr>
<tr>
<td><strong>Interfaces</strong></td>
<td>SD card, RS232, RS485 (Steca TPC 1 bus)</td>
</tr>
<tr>
<td><strong>Data logging</strong></td>
<td>SD card</td>
</tr>
<tr>
<td><strong>Degree of protection</strong></td>
<td>IP 20 / DIN 40050</td>
</tr>
<tr>
<td><strong>Dimensions (X x Y x Z)</strong></td>
<td>170 x 178 x 90 mm (6.69 x 7.0 x 3.54 inch)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>1.5 kg (48.23 oz.)</td>
</tr>
</tbody>
</table>

*Technical data at 25°C/77°F*

## Datalogging on SD Card and Analysis Software

TR0603mc U stores the solar thermal system’s operational data on an SD card. The analysis software TS Analyzer 1 visualizes the system results.
Display Overview

1. Symbol for solar circuit's switch-on condition fulfilled
2. Symbol for maximum collector temperature reached
3. Symbol for the currently selected temperature sensor
4. Symbol for the solar circuit
5. Symbol for the storage tank
6. Symbol (off) for deactivated storage tank
7. Display of the current measured value such as temperature values and outputs' operating hours
8. Symbol for the activated frost protection function
9. Symbol for the activated holiday/cooling function
10. Symbol for maximum storage tank and swimming pool temperature reached
11. Symbol for swimming pool
12. Symbol for stand-alone operation of the swimming pool heating circuit
13. Symbol for external heat exchanger
14. Symbol for 3-way switching valve
15. Symbol for pump

Terminal Plan

<table>
<thead>
<tr>
<th>Power</th>
<th>Output R1</th>
<th>Output R2</th>
<th>Output R3</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>L</td>
<td>N</td>
<td>R1</td>
</tr>
<tr>
<td>PE</td>
<td>PE</td>
<td>PE</td>
<td>n.c.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>R2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>n.c.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>n.c.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>R3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Power connection**
- Please note the type of power supply required from the type plate on the case of the device
- The protective conductor must also be connected
- Cables conforming to at least type H05 VV-... (NYM...) must be used

**Outputs**
- R1: Semiconductor relays (Triac), also suitable for RPM control max. switching current: 1 A
- Output R2: Semiconductor relays (Triac), also suitable for RPM control max. switching current: 1 A
- Output R3: electromagnetic relays, available with
  - Potential free contact (without wire bridge) or
  - Switched output 230 / 115 V ~ (with wire bridge), Max. switching current 3.5 A

**Inputs**
- Inputs 1 - 5: for Pt1000 temperature sensor
- Input 6: for Pt1000 temperature sensor or impulse generator e.g. for measuring heat quantities
Systems with One Storage Tank

1 collector array

- Internal heat exchanger, intelligent pump control
- Internal heat exchanger, intelligent pump control, heating return increase
- Internal heat exchanger, zone loading, intelligent valve control
- Internal heat exchanger, zone loading, intelligent valve control, heating return increase

- External heat exchanger, intelligent pump control
- External heat exchanger, intelligent pump control, heating return increase
- External heat exchanger, zone loading, intelligent valve control

2 collector arrays (east/west roof)

- Internal heat exchanger, intelligent pump control
- Internal heat exchanger, intelligent pump control, heating return increase
- Internal heat exchanger, zone loading, intelligent valve control
- External heat exchanger, intelligent pump control
Systems with Two Storage Tanks

1 collector array

Internal heat exchanger, intelligent pump control

Internal heat exchanger, intelligent pump control, heating return increase

Internal heat exchanger, intelligent valve control

Internal heat exchanger, intelligent valve control, heating return increase

Internal/external heat exchanger, intelligent pump control

Internal/external heat exchanger, intelligent valve control

External heat exchanger, intelligent pump control

External heat exchanger, intelligent valve control

2 collector arrays (east/west roof)

Internal heat exchanger, intelligent valve control

Systems with Three Storage Tanks

1 collector array

Internal heat exchanger, intelligent pump control

Internal heat exchanger, intelligent valve control
Systems with a Swimming Pool

1 collector array

- Direct flow-through, intelligent pump control
- External heat exchanger, intelligent pump control
- Stand-alone operation of the external heat exchanger, intelligent pump control

2 collector arrays (east/west roof)

- Direct flow-through, intelligent pump control
- External heat exchanger, intelligent pump control
- Stand-alone operation of the external heat exchanger, intelligent pump control
Systems with One Storage Tanks and a Swimming Pool

1 collector array

- External heat exchanger, intelligent pump control
- External heat exchanger, intelligent valve control
- Stand-alone operation of the external heat exchanger, intelligent pump control
- Stand-alone operation of the external heat exchanger, intelligent valve control

Systems with two storage tanks and a swimming pool

1 collector array

- Stand-alone operation of the external heat exchanger, intelligent pump control
- Stand-alone operation of the external heat exchanger, intelligent valve control