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I. General information

1. About this manual

This manual book describes the installation, functions and operation rules of our intelligent controller series for solar water heating control system. When install with other applications on this system, such as solar collector, pump station, and storage, please follow the instruction of correlative suppliers. The installation, electrical connection, adjustment and maintenance should be carried out by a qualified specialist.

2. Safety rules

- The controller can’t be installed in the room where easily inflammable and explosive mixtures (e.g. gas or oil) are present or may occur.
- The controller can’t be installed in the location which exceeds its allowable environment condition.
- All operations which require opening the controller are only to be taken without the power supply. And the operation should be carried out by a qualified specialist.
- Before connecting the electrical wire, make sure that the power supply matches the required parameter. All devices connected to the controller must match the technical parameter of it.
- Once the controller is damaged or failure to work, please take it out of system and inform the supplier.

3. Liability waivers

- Improper installation or operation can cause damages to material and persons. The manufacturer cannot monitor the compliance with these instructions or the circumstances and methods used for installation, operation, utilization and maintenance of this device. Damage by mishandling or improper installation on costumer site is immediately leading to warranty exclusion.
- As faults can never be excluded, we don’t offer a guarantee for the completeness of the drawings and texts of this manual, they only represent some examples. They can only be used on own risk. No liability is assumed for incorrect, incomplete or false information and the resulting damages.
- The manufacturer preserves the right to put changes to product, technical date or installation and operation instructions without prior notice.

4. About Sensors

- Only original equipped NTC10K temperature sensors can be matched the storage and pipeline. It is equipped with 1.5m PVC wire. They can resist the temperature up to 105°C. There is no need to distinguish the positive and negative charges when connect them to the controller.
- All sensor wires can carry low voltage. In order to avoid inductive effects, the wires must not be laid close to 230 V or 400 V cables (The min. distance should be 100mm).
- If external inductive effects exist, e.g. heavy current cables, overhead train cables, transformer substations, radio and television devices, amateur radio stations or microwave devices, then the wires for the sensors must be adequately shielded.
Product description

1 Main technical data
- Dimension: 186×140×41mm
- Input voltage: 220V~240V AC or 100V~120V AC
- Power: ≤3W
- Accuracy of temperature measuring: ±1℃
- Range of temperature measuring: NTC 10K: 0~99℃
- Input signals: 1 x NTC10K sensor temperature probe ≤135℃, PVC cable ≤105℃
- Output signals: 1 x Auxiliary heating output (Max. load current: 12A)
- LCD-display
- Communication port: 1 x RJ45
- Range of environment temperature: -10~50℃
- Water protection grade: IP40

2 Operation regulations
- When connect to power, the default mode is system working mode.
- Press (Set) button to start the system data set mode. Every choice is corresponding to different signal displays.
  Press (increase) buttons to adjust the set value, press (decrease) button to switch on correlative function or confirm the current set value.
  Press (clear) button to cancel correlative function or cancel the current set value, start the system working mode.
- On the system data set mode, if not press any button within 15 seconds, the system will cancel the current set value, and start the system working mode.
- On the system working mode, press "CONFIRM" button to switch on the auxiliary heating output. Press “CANCEL” button to switch off the auxiliary heating output.

3 Wire connection
Functions

1. Time setting
   ◆ Press \( \text{Set} \) button to set the time. Firstly, press \( \text{↓↓} \) buttons to adjust the value.
   ◆ press \( \text{↓↓} \) button to confirm the value. Or press \( \text{Esc} \) button to cancel the value.

2. Three time periods of electric heating:
   ◆ Press \( \text{Set} \) button till the signal \( \text{04:00} \) displays on the screen, to set the three periods of electric heating.
   ◆ Press \( \text{↓↓} \) button to set the hour, press \( \text{↓↓} \) button to set the minute. Press \( \text{↓↓} \) button to confirm the value, press \( \text{Esc} \) button to cancel the value.
   ◆ The default setting value: the first time period: 04:00 turning-on, 05:00 turning-off; the second time period: 10:00~10:00; the third time period: 17:00 turning-on, 22:00 turning-off.
   ◆ After the three periods setting is finished, press \( \text{↓↓} \) button to confirm the value.

3. Thermostatic set on the storage
   ◆ Press \( \text{Set} \) button till the signal \( \text{03} \) displays on the screen, to set the temp. of storage.
   ◆ Press \( \text{↓↓} \) buttons to adjust the temp.. The adjustable range is 45°C-75°C. The default value is 60°C. During the above three periods of electric heating, when the temp. of storage is 5°C less then the setting value, the electric heater starts work to heat the storage. And when the temperature reached the setting value, the electric heater stops work.
   ◆ Press \( \text{↓↓} \) button to confirm the value, press \( \text{Esc} \) button to cancel the value.

4. On the system working mode, press \( \text{↓↓} \) button to switch on electric heating, Press \( \text{Esc} \) button to switch off electric heating.

5. On the system working mode, press \( \text{Set} \) button to recover all the set value to default value.

6. Anti-bacteria protection
   To safeguard the water hygiene, solar system will monitor the storage temperature. If the temp. never reaches 70°C in every 7 days, electric heating will be activated automatically and heats the storage temperate to 70°C.

IV Packing list

<table>
<thead>
<tr>
<th>No.</th>
<th>Item</th>
<th>Specification</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main part</td>
<td>186×140×41mm</td>
<td>1 pc</td>
</tr>
<tr>
<td>2</td>
<td>Power line</td>
<td></td>
<td>1 pc</td>
</tr>
<tr>
<td>3</td>
<td>NTC sensor</td>
<td>1.5m</td>
<td>1 pc</td>
</tr>
<tr>
<td>4</td>
<td>Fixed screw</td>
<td></td>
<td>1 bag</td>
</tr>
<tr>
<td>5</td>
<td>Manual</td>
<td></td>
<td>1 pc</td>
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</table>