Smart controller for solar thermal systems SolaH D

Description

SolaH D is a Smart controller for solar thermal systems. It controls different thermal energy sources and consumers in order to maximize the solar energy usage and minimize the costs. The energy sources include solar panels, solid and liquid fuel boilers, electrical heaters, etc. The consumers can be different types of boilers, heating radiators, swimming pools, etc.

Standard Features

The SolaH D controller has all standard features and modes such as:

- Adjustable temperature difference between the boiler and water tank
- Critical maximum temperature in the water tank
- Minimum temperature in the water tank
- Minimum temperature of the solar panel
- Maximum temperature of the solar panel
- Defrost temperature of the solar panel
- Minimum boiler water temperature
- Maximum permitted boiler water temperature
- Set temperature for the second tank (buffer tank or pool)

SolaH D supports the standard protections such as:

- Overheating the tank
- Boiler overheating
- Overheating of the solar panel
- Freezing of the solar panel
- Freezing of water in the heating circuits

Unique features

The SolaH D controller has unique features such as:

- Various easy to use user interfaces - There are several UI options: Display, standalone web UI, home automation integration and our web platform.
- Rich connectivity - WiFi, Bluetooth and Ethernet
- Option for software updates
- Advanced monitoring

SolaH allows the user to monitor the solar to other energy usage ratio, i.e. to track the return of his investment.

- Advanced control

The user can set the required amount of hot water for a specific date and time, so the controller will fulfill the requirements using as much solar energy as possible. For such advanced control, SolaH measures the actual power produced by solar panels, the power of the electrical heater, ΔT between the current and required temperature of the water tank at specific time and Δt between the current time and that time.

The controller can also use the weather forecast to predict whether it is more efficient to use the cheaper night electrical energy.

- Advanced protection

SolaH D can control 2 and 5 wire motor-driven valves. For the last one it uses the information from the limit switches in order to guarantee that the command is executed correctly.

For the closed systems SolaH can measure the pressure level and detect leakages and other failures.

The output ports are equipped with an electrical current meter for power measurement that allows detection of failures such as pump circuit cutoff, etc.

- Two dimensional solar tracker

SolaH can control the pan/tilt of the solar panels array according to daily sun movement. This feature increases the efficiency and is very useful especially when there is a limited space on the roof for extra panels.

It also elegantly solves the problem with the extra energy during the hot days by automatically turning the array on the opposite sun direction.

After recovering (in case of power failure) thy system gets the actual time and date from NTP server (suppose Internet connection) in order to calculate the optimal pan/tilt of the solar panels array.

Construction and drives for the tracking system are also provided.

Technical specifications

Power - 220 V

Maximum power (without external loads) - 3 W

Inputs:

- 2 discrete or analog inputs (3.3 V to 24 V) for impulse signals from flow meters, analog thermometers, level meters (barometric, etc.), pressure sensors, etc

- 4 thermometers with controlled power via I2C. The power of the thermometers can be automatically switched On or Of in order to detect and recover from potential failures
- up to 64 thermometers without controlled power via I2C

Outputs:

- 2 pumps 220V. One of them with controlled speed (energy efficient). There is an option for direct connection (just remove the mechanical switch) to 90% of the conventional circulation pumps with mechanical speed switches
- 1 output for 220 V heater
- 1 discrete 220 V outputs with up to 30W power (solenoid valves, etc.). For high power loads those outputs can be used with 12V external relays
- 1 output for 12 V motor-driven valves with arbitrary configuration of the limit switches providing full control and monitoring of the valve.
- 1 discrete 12 V outputs for solenoid valves, external relays, motor-driven valves, etc
- Sound output (Alarm buzzer)

Communication protocols:

- Ethernet - arbitrary software protocol
- Wi-Fi
- Bluetooth
- UART
- Optional - Modbus RTU via RS485, ZigBee, etc.

Benefits for the customers

- Affordable price
- Variety of easy to use user interfaces
- Rich connectivity
- Advanced control for extra savings
- Advanced protections for high reliability

Additional

The controller as well as the entire system could be powered by backup source and also photovoltaic panel which guarantees proper operation even in case of main power failure.

Warranty period of 24 months.