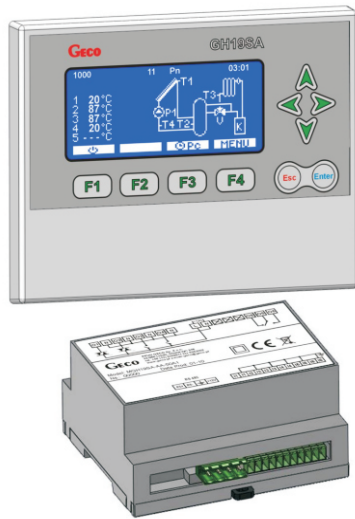


## Solar Collectors Controller **GH19SA**



### APPLICATION

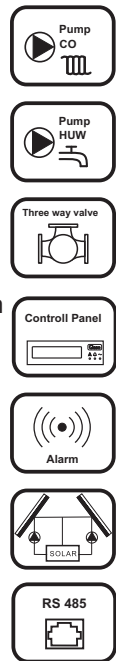
The GH19SA controller is a device that purpovise to control heat water hydraulic system by using solar collectors.

The GECO solar collector controller is applicable to integrated systems with additional external devices (for example: gas boiler or storage tank electrical heater) in even very complex installations with many pumps and three-way valves.

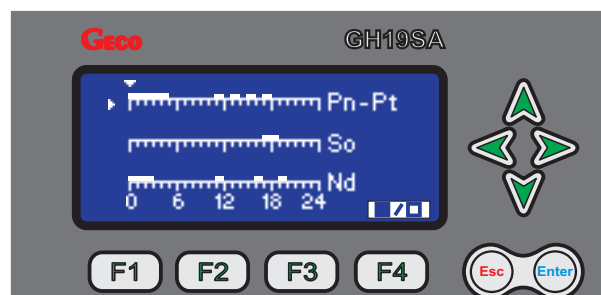
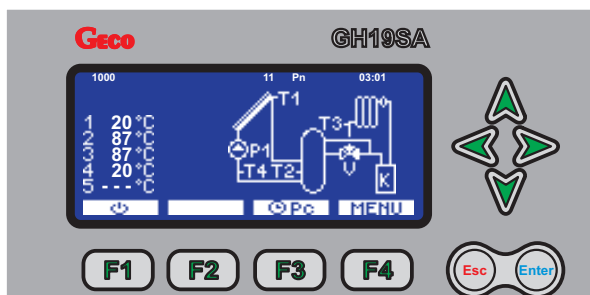
The GH19SA controller contain two modules: control panel and executive module. The control panel can be instaled in the most functional location.

### PROPERTIES

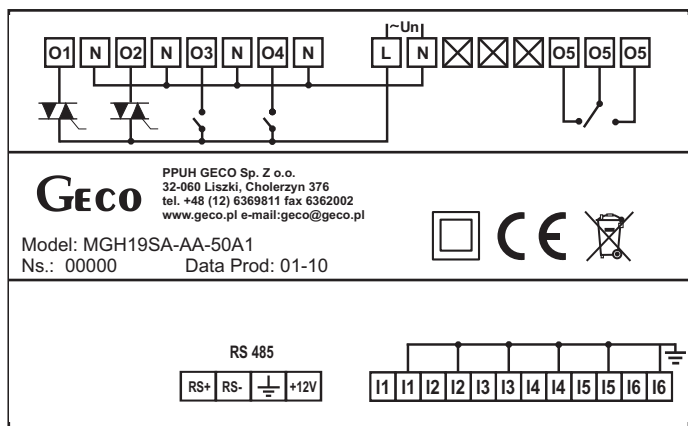
- Controll panel with sizeable LCD display guarantee Users remarkable functionalability and allows easy operation over controller.
- In case of power failure occurs, controller keeps the parameter settings unchanged after re-use by users.
- Sound and corresponding warning appears in case of System Alarm.
- Ability to controll additional hydraulic system variants for second solar collector.
- The module is interconnectable through many-ply RS 485 cable standard.
- The GH19SA controller allows automatic cooperation with 13 different most popular hydraulic system variants (Programs).
- The GECO controller is equipped with two PT 1000 sensor inputs , three NTC10k sensor inputs and five electromagetic relay and triac (SCR relay) outputs.
- Can cooperate with solar circuit pupm, three-way valve, hot water circuit pump and back-up electrical heater.
- Excellent animation function of all running external devices presented on LCD display are very helpful during hydraulic system control.
- The controller contain automatic temperature compensation sensor responsible for errors elimination emarged due to use of the very long wire betwen sensors and modules.



### PROSPECT OF CONTROLLER DISPLAY



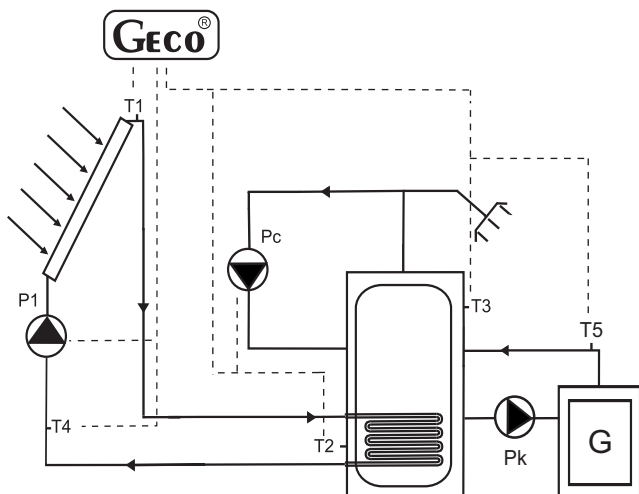
# DIAGRAM OF CONNECTIONS



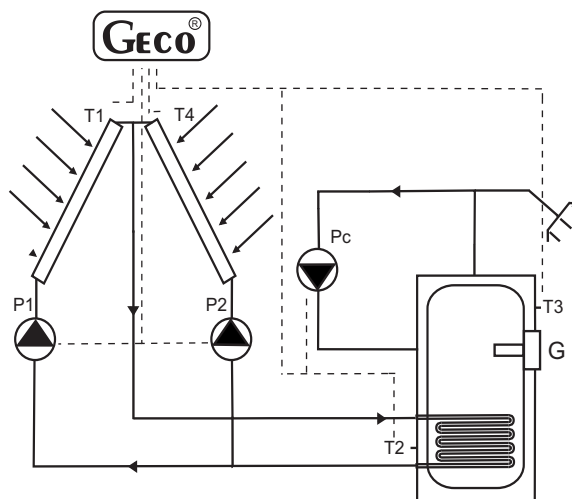
## Diagram of electric connections

| Outputs |   |  |
|---------|---|--|
| 01      | L | Triac (SCR relay), (0 - 230V)            |
| 02      | L | Triac (SCR relay), (0 - 230V)            |
| 03      | L | Electromagnetic relay: 0/230 V           |
| 04      | L | Electromagnetic relay: 0/230V            |
| 05      | L | Electromagnetic relay: (without power)   |
| Un      | L | Controller power supply: ~ 230VAC,       |
|         | N | Switching current: I <sub>max</sub> =10A |
| Inputs  |   |  |
| T1      |   | Platinum temperature sensor - PT1000     |
| T2      |   | Temperature sensor - NTC10K              |
| T3      |   | Temperature sensor - NTC10K              |
| T4      |   | Platinum temperature sensor - PT1000     |
| T5      |   | Temperature sensor - NTC10K              |

# HYDRAULIC SYSTEM DIAGRAM



Rys.2 Heat water hydraulic system diagram with additionally hot water circuit pump and electrical heater.



Rys.2 Heat water hydraulic system diagram with two collectors, back up electrical heater and hot water circuit pump.

# TECHNICAL DATA

|                      |  |
|----------------------|--|
| Power supply voltage | 230V +10%/ -15%  |
| Work temperature     | od +5°C do + 40°C  |
| Humidity             | 20% ÷ 80% RH   |
| Type sensor          | NTC - zakres: od -40°C do 120°C<br>PT 1000 - zak.: od -40°C do 400°C |

| Outputs                | Maksymalne obciążenie ciągłe |      |
|------------------------|------------------------------|------|
| Triac                  | 1A                           | 200W |
| Triac                  | 1A                           | 200W |
| Electromagnetic relay  | 2A                           | 400W |
| Electromagnetic relay  | 2A                           | 400W |
| Electromagnetic relay. | 2A                           | 400W |

### Temp. sensor (NTC) 10 kΩ

| °C  | Ω      |
|-----|--------|
| -40 | 73 061 |
| -30 | 38 544 |
| -20 | 21 199 |
| -10 | 12 110 |
| 0   | 7 162  |
| 10  | 4 372  |
| 20  | 2 747  |
| 30  | 1 773  |
| 40  | 1 173  |
| 50  | 793,2  |
| 60  | 547,8  |
| 70  | 385,7  |
| 80  | 276,4  |
| 90  | 201,4  |
| 100 | 149,0  |
| 110 | 111,8  |
| 120 | 85,05  |

### Temp. sensor (PT1000)

| °C  | Ω       |
|-----|---------|
| -40 | 842,7   |
| -30 | 882,2   |
| -20 | 921,6   |
| -10 | 960,9   |
| 0   | 1000,00 |
| 50  | 1194,00 |
| 100 | 1385,10 |
| 150 | 1573,30 |
| 200 | 1758,60 |
| 250 | 1941,00 |
| 300 | 2120,50 |
| 350 | 2297,20 |
| 400 | 2470,90 |

### GH19SA equipments

#### Standard equipment:

- executive module
- control panel.
- many-ply cable in RS 485 standard
- Collector temperature sensor - T1
- storage tank temperature sensor - T2
- additionally temperature sensor depend on hydraulic system diagram- T3 (T5)
- power cable

#### Optional equipment:

- measuring the awhile heat output sensor or hydraulic system with two collectors sensor-T4
- additionally temperature sensor depend on hydraulic system diagram - T5

#### Controls:

- collector pump
- hot water circuit pump
- electrical heater
- boiler pump
- gas boiler
- three-way valve