



Manual

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SOLAX



Solar control



Version: 06.11.2007



Please read before installation!

FUNCTION

- ▶A solar collector should only be switched on, if the sun shines strong enough. The collectors can cool, if they are activated at the wrong time. ▶The differential-controller (DIF) in the SOLAX activates the solar heating only, if there is enough solar energy for economical heating available.
- ▶The maximum-limiter (MAX) prevents overheating in the midsummer.

🔗 You find further details about setting of DIFF and MAX at "ADJUSTMENT".

THE MOUNTING



The SOLAX is self-sufficient with the assembly base (SOCK12). The wiring occurs at the screw terminal in the base. The base can be napped on a distribution rail with the optimal SOCKSCHN clips.



If you need a filter control with time switch, motor protection, terminals for automatic backwashing and level control, the PSM02 is a good choice! Simply plug the SOLAX into the module slot. The connection with the PSM02 is easy, and the unit is waterproof.



If you need protection against water, because you need to install the SOLAX in humid surroundings, we recommend the MODGEH with clear view cover, installed base and cable grommet.

- ⚠ The assembly place must be ▶dry ▶clean ▶between -10°C and $+30^{\circ}\text{C}$ ▶unreachable for children. ▶fire-proof (e.g., not on a wooden wall) ▶beyond the protective area of the bath.
- At a humid assembly place, use in addition the MODGEH or PSM02!

⚠ IMPORTANT NOTES ⚠

This device works with mains voltage! The electric installation may only be carried out exclusively considering all responsible regulations and norms by a licensed electric expert. The electricity supply must occur over all lines by a switch with at least 3mm contact width (GFCI ground fault circuit interrupter & circuit breaker). Never pull/plug the device off/into base under power. The device must always be secured with screws in the base. All conducting touchable parts (pump, valve, temperature sensor) must be earthed (\perp). A short circuit can damage the device. We (PAUSCH GmbH) reserve ourselves the right on technical amendments without previous announcement. We guarantee the first buyer for the period of ½ year from purchase date, that this product is free from production mistakes and material defects. As far as the applicable laws admit, we take over no farther guarantee, neither expressly nor tacitly, including the guarantee of the quality, marketability or suitability for a certain purpose, with regard to the use of this product. We are indirect in no case responsible for any, accidental, special or secondary damages or for lost profit, lost credit, loss of data which originate from the use of this product or stand with it in connection, also not even when we were informed about the

possibility of such harms. This guarantee expressly covers no product mistakes which originate by chance, inservance of the manual, abuse, wrong use, changes (by other persons than our employees or by PAUSCH authorised repair experts), humidity, the corrosive surroundings, transport, overvoltage or unusual operating conditions. This guarantee does not cover the wear and tear by using the product. No claim to completeness. Provisory sentence mistake and misprint. All rights reserved. Copyright 1982...2007 by PAUSCH GmbH. This device fulfills the requirements of the EU guidelines 73/23/EEC, 89/336/EEC, confirmed by the CE sign.

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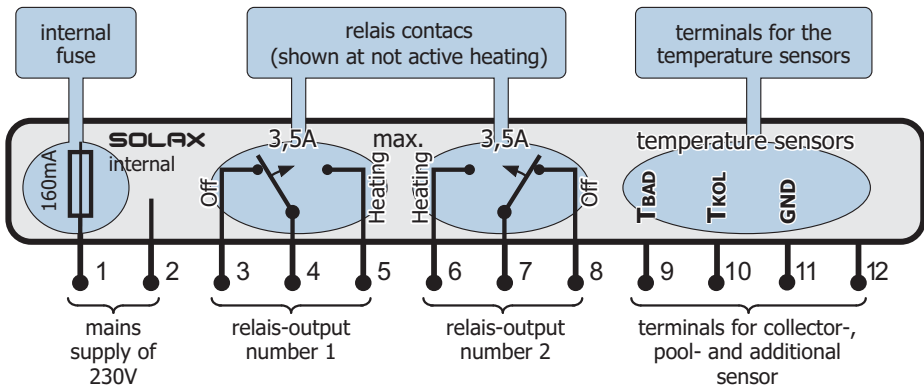
TECHNICAL DATA

Supply: 230V ±10% 50Hz +20%. Power consumption: < 3VA. Switching capacity: 2 x 800VA.
 Protection class: IP50. Adjustment range for MAX-temperature: 20°C ... 40°C.
 Dimensions: l=112, h=52, t=111mm.

CONNECTION

CONNECTION

If the SOLAX is inserted in the socket SOCK12, it contacts to the screw terminals. This picture shows stylised the SOLAX insides with the function of the 12 screw terminals:



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Explanation: A relay is a kind of switch. This "switch" in the SOLAX is not manually operated like a light switch, but from the SOLAX itself. In the upper picture you see the relay contacts position with switched off solar heating. Contacts are shown in the neutral position (mainsless SOLAX).

⚠ The SOLAX has 2 separate relay outputs. They are always switched on or off together at the same time. Because there are 2 outputs, a filter pump and a valve (or pump) can be simply driven. The connection must take place in such a way, that the filter pump runs and the valve opens, if the SOLAX switches on for heating. → Please, flip the page to see, like it is done:

SETTINGS

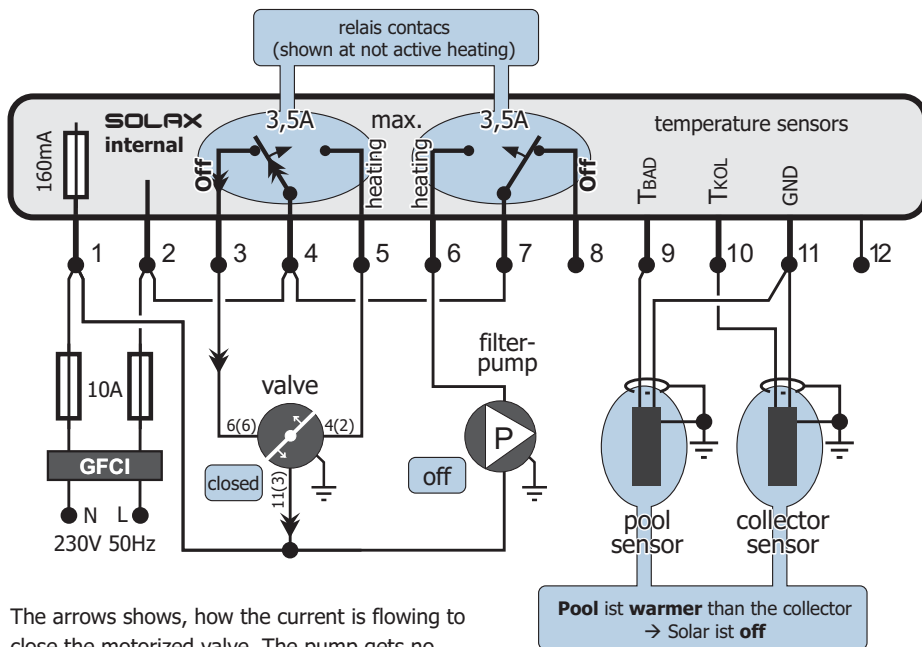
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In this wiring diagram you see the switched off SOLAX with filter pump and motorized valve: If the valve opens and the filter pump is active, a part of the water flows through the collector. If there is no solar-pump, the filter pump must also be switched on. Because of the water quality, the filter pump must run daily also at sunless days, therefore use a time switch in parallel (not shown here). However, the easiest way to do this, is to put the SOLAX without the SOCK12 base into our modular filter control PSM02!

⚡ A magnetic valve is cheaper than an motorized valve. It is simply connected to the terminals 1 and 5 (like a solar pump).

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The arrows shows, how the current is flowing to close the motorized valve. The pump gets no current. If the SOLAX switches on, the relay contacts move to the other side to switch the pump on, and to open the motorized valve.

⚠ Dont forget the wire **bridges** between the terminals 2-4 and 4-7!

MODULAR FILTER CONTROL

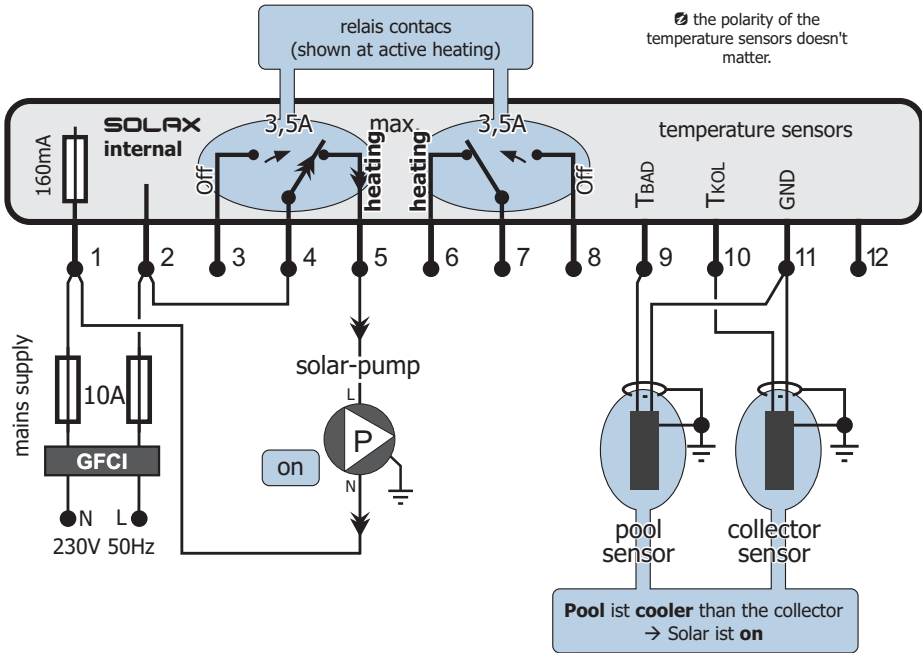


With the modular filter control **PSM02** you don't need these wirings. Simply plug the SOLAX into the module port!

☀ There are also filter controls with integrated solar controller available. E.G. SOLPOOL, DPOOL, PSM03all, PSM04all, ALLPOOL. Get more informations at www.pausch.at

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Here you see the switched on SOLAX with a solar circulating pump: Because the solar heating has now its own pump, the filter pump does not need to be switched on.



In this example, the collector sensor is warmer than the bath sensor → the SOLAX switches on. The arrows show, how the current flows over the filter pump and solar pump.

⚠ Don't forget the wire **bridges** between the terminals 2-4!

HINTS FOR BOTH DIAGRAMMES:

▶ If a connected device consumes more than 3.5A current (more than 800VA), a contactor (=large relay) must be inserted → the contactor's reel is connected instead of the device (for example a Pump). The device is connected with the contactor's switching contacts. Use our contactor in the waterproof case called RELPOW.

▶ All conductive touchable parts of the facility (pump, valve, temperature sensors, ...) must be earthed (≠). → In the base middle there is an earth clip to connect all yellow/green PE wires.



By the way: This product contains valuable raw materials. Dispose it, hence, constitutionally at the end of its life.

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TEMPERATURE SENSORS

The following construction forms are electrically identical and can be used arbitrarily:



The mooring-sensor (**FA**) is fixed at a pipe with a bell, tape or silicone rubber. It is normally used to measure the collector temperature (TKOLL). The FA is also available with a 20m or 30m long shielded cable FKS.



The surface-sensor (**FO**) fits ideally for elastic mat collectors. It is stuck with silicone rubber between the mat ribs.



The immersion-sensor (**FT**) is put in a immersion sleeve (TH...). Usually to sense the pool temperature (TBAD). Also available with 5m long cable.



Some collectors are equipped with an immersion sleeve, with a 6mm diameter hole. The miniature immersion-sensor (**FT6**) fits in this sleeve.



Our chromium-plated brass immersion sleeves have 1/2" pipe thread and submerged depths of 30mm (**TH30**), 100mm (**TH100**), or 150mm (**TH150**). Use the **TH25PVC** sleeve for corrosive liquides (salty, acid, chemically loaded water, ...).

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SENSOR CABLE LENGTHENING

The sensors have approx. 20cm long black connection strands. Thus connect to a cable:

① **Junction with a strand wire:** ① Strip. ② Twine strand firmly together. ③ Put on the provided shrink tubing (**SHRINKSEAL**) . ④ Heat it up with a lighter, till a sealing glue oozes out at the edges. Press the still warm tube a little, to remove air inside. This durable connection is absolutely waterproof.

② **Connection with a stiff wire:** Use the waterproof crimp connection (**CRIMPSEAL**) : ① Strip. ② Insert sensor strand and stiff wire. ③ Crimp with a crimping plier. ④ Heat with a lighter. The CRIMPSEAL wrapping shrinks and seals.

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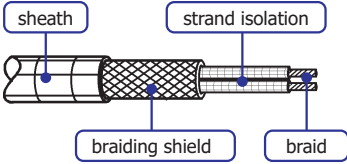
SENSOR CABLE

⚡ In theory you can use any 2-pole cable with minimum 0.15mm² cross section. Keep in mind that small cross section and high lengths cause measurement errors (details at: www.pausch.at). Interfering signals from near cables and induction of lightning overvoltage can jam or destroy the controller and the sensor.

⚠ Therefore use our shielded cable (FKS) at lengths of more than 5m. Connect the shielding with earth (⊕) at the SOLAX: ① Strip the sheath. ② push the braiding shield to the back. ③ Increase the interwoven screen at the beginning of the sheath. ④ Thread by the so resulted hole both strand wires. ⑤ twine the now empty braiding firmly together. ⑥ Connect this braiding together with the yellow/green earth wire (⊕).

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The shielded sensor cable (FKS):



⚠ Disturbances can be induced in an unshielded cable by other close installed cables. This makes the relay flutter and cripples the contacts of the relay. Furthermore the sensor can be easily damaged by indirect lightning. Therefore please use the shielded sensor cable **FKS** for cable length of 5m and above!

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SENSOR PLACING

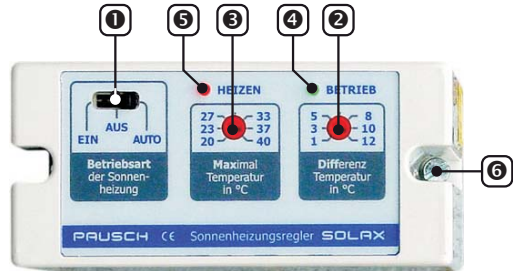
The pool sensor should be close to the bath in a suction pipe, the collector sensor should be placed at the return pipe on a high place. The placement is ok, if the temperatures can be measured correctly also if the heating is not active. **Don't** put an unshielded sensor cable together with other cables in the same raceway. Use the FKS kable!

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❶ Move the **slide switch** to the position AUTO (automatic), so that the SOLAX can switch the heating. At EIN (manually on), the solar heating runs permanently. At AUS (manually off), the heating remains switched off permanently.

❷ The **DIFF** rotary knob specifies how much the collector must be warmer than the pool water, so that the SOLAX switches on the heating. Because the activation of the heating also costs a bit electric energy, heating is worthwhile only from approx. 3°C difference. To not give away too much solar energy, don't adjust the DIFF-Temp higher than 7°C.



INSTALLATION

❸ The **MAX** rotary knob specifies the most desired temperature. Swimming-pools should not be warmer than 30°C. Otherwise, there is too much chemistry needed against algae and bacteria.

❹ The green signal lamp **BETRIEB** (operation) always shines when the SOLAX is supplied with electricity.

❺ The red signal lamp **HEIZEN** (heating) shines if the solar heating is active.

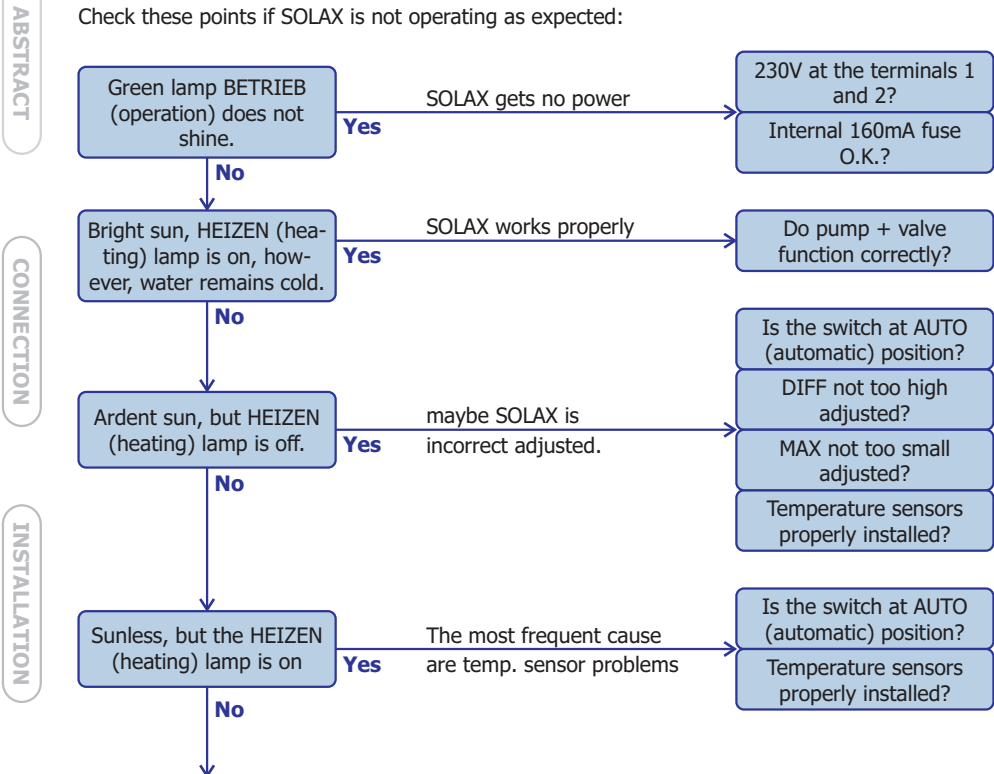
❻ In operation, the device must be screwed to the socket with both screws. ⚠ Do not overtighten the screws!

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PROBLEM SOLUTION

Check these points if SOLAX is not operating as expected:



If you have not found the problem yet, try the following:

- ❶ If the junctions between SOLAX pins and the socket terminals are bad, press gently vertically on every contact to enhance the contact belly and to enhance the contact force. Dont bend the contact in terminal direction. Clean the SOLAX contacts with a very fine sandpaper.
- ❷ Temperature sensor problems are most frequent. ▶Check whether the sensors TBAD and TKOLL are not exchanged. ▶cool the TBAD sensor with an ice cube and check if the SOLAX switches on. ▶check if the SOLAX operates correctly if the sensors are directly connected. ▶measure the resistance of the temperature sensors with an ohmmeter: 0°C÷1630Ω; 10°C÷1783Ω; 15°C÷1854Ω; 20°C÷1927Ω; 25°C÷2000Ω; 30°C÷2076Ω; 35°C÷2152Ω; 40°C÷2230Ω; 50°C÷2417Ω; 60°C÷2597Ω; 70°C÷2785Ω; 80°C÷2980Ω.

⚠ Nerver manipulate under voltage. Pay attention to your safety!
 🔍 Find more information at: www.pausch.at info@pausch.at