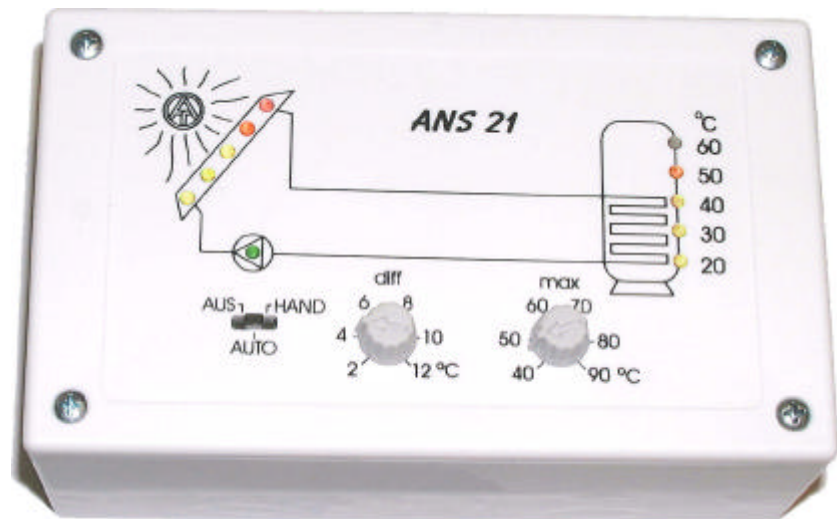




SIMPLE SOLAR CONTROL UNIT



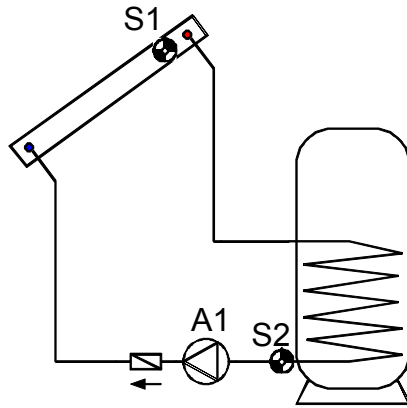
The ANS21 is a solar control unit that has been consciously made easy to install and operate. The temperature of the collector and the tank temperature are displayed by means of luminous bars. The fluent transition between the indicating lights ensures exact temperature readings.

In addition, a switch to a feed pump diagram is possible.

It offers the following functions:

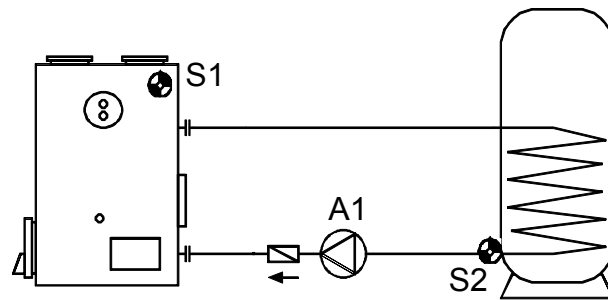
- adjustable temperature difference
- Overheating protection for tank or minimum thresholds for boiler
- separate displays for collector and tank
- Relay output
- Use of KTY (2 kW) or PT1000 temperature sensors
- Detection of short circuit and interruption of the sensors
- Overvoltage protection at all inputs

Solar thermal system function switch in position **S+** (solar)



The pump runs when **S1** has a temperature of **diff** higher than **S2** and **S2** has not exceeded the threshold **max**. $A = S1 > (S2 + diff) \ \& \ S2 < max$

Tank load from boiler function switch on position **L+** (feed pump)



The pump runs when **S1** is greater than the threshold **max** (here used as "min") and **S1** is greater than **S2** by the difference **diff**. $A = S1 > max \ \& \ S1 > (S2 + diff)$

The difference function:

The output only switches the pump when the temperature of the collector or the boiler is greater than the temperature of the boiler by the set difference **diff**.

The thermostat function:

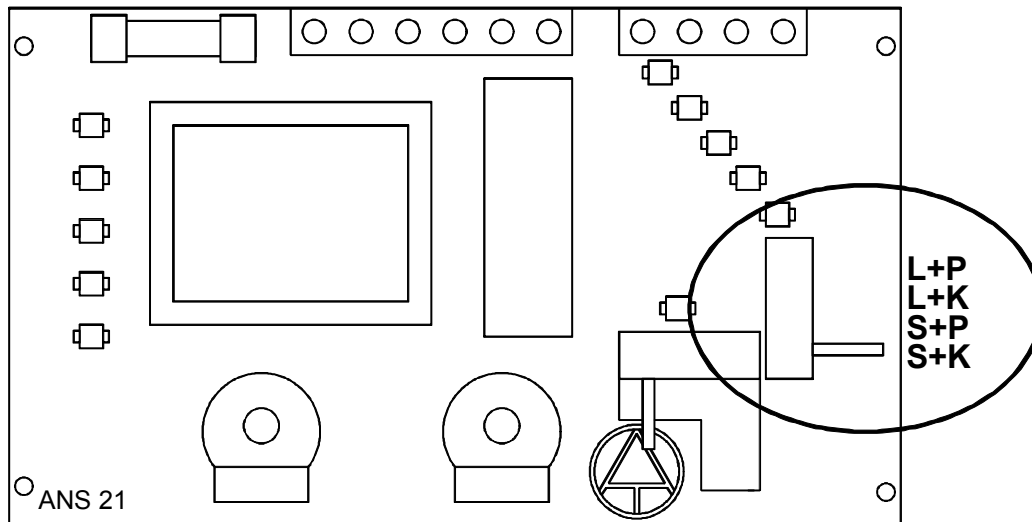
Solar: If the **tank temperature** exceeds the set **maximum threshold**, the pump is switched off regardless of the temperature of the collector (protection from calcification).

Feed pump: If the **boiler temperature** falls below the minimum threshold, the pump is switched off (protection from sooting).

Selection of the program and sensor type:

The selection of the program and the sensor type has to be made before installation.

ALWAYS PULL THE MAINS PLUG BEFORE OPENING THE CASING!



The selection occurs by means of a slide switch on the right border of the board. There is no access possible to the slide switch from outside.

Four positions are available:

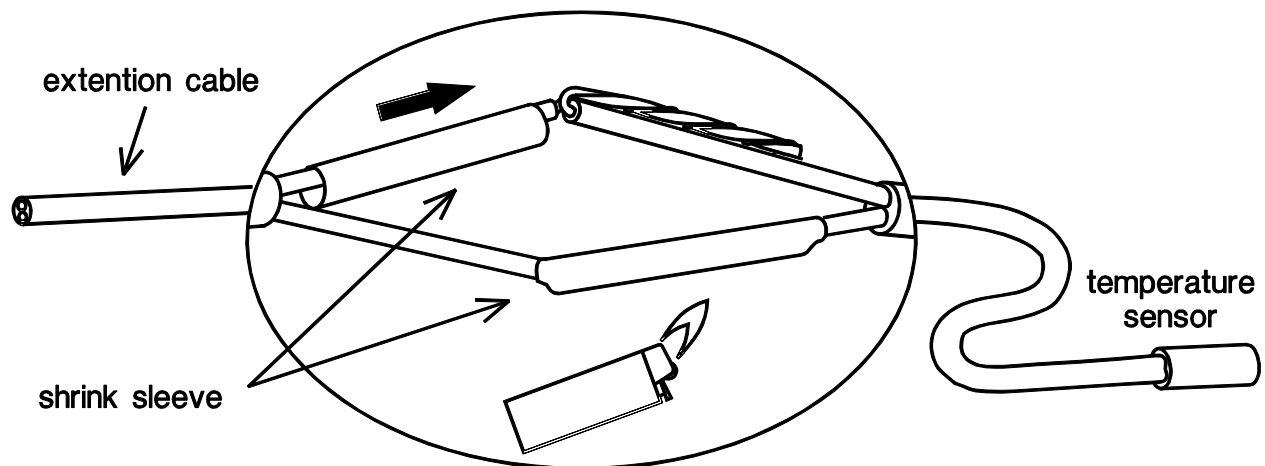
- 1) **S+K** Solar power system with KTY sensors
- 2) **S+P** Solar power system with PT1000 sensors
- 3) **L+K** Feed pump requirement by KTY sensors
- 4) **L+P** Feed pump requirement by PT1000 sensors

Sensor installation:

The sensors must be properly arranged and installed for the system to function correctly.

- **Collector sensor (red cable):** Either insert the sensor in a pipe directly soldered or riveted to the absorber and extending out of the collector casing or screw the sensor onto a T piece on the end of the supply line's collecting tube using an immersion sleeve. No water may be allowed to enter the immersion sleeve (danger of freezing).
- **Storage sensor:** The sensor should be used with an immersion sleeve just above the outlet for the exchanger's return line if heat exchangers with ribbed tubes are used and with a T piece on the outlet of the exchanger's feed line if integrated non-ribbed tubes are used. It should not be installed below the respective register or heat exchanger in any case.
- **Boiler sensor (boiler supply line):** This sensor is either screwed into the boiler using an immersion sleeve or at a short distance from the boiler on the supply line.
- **Pool sensor (swimming pool):** Install directly at the outlet from the pool on the suction line as an attached sensor (see attached sensor). Installation using an immersion sleeve is not recommended due to the possibility of condensation within the sleeve.
- **Attached sensor:** Attach to the line using pipe or hose clamps. Make sure the material used is proper (corrosion, temperature resistance, etc.). Then, the sensor has to be well insulated so that the pipe temperature is measured exactly and the ambient temperature does not influence the measurement.

The sensor lines can be extended with a cross-section of 0.75mm^2 for up to 50m and 1.5mm^2 for lines longer than that. The sensor and the extension can be connected as follows: cut the heat-shrinkable sleeve provided down to 4 cm and put it over a wire; twist the naked ends of the wires, and put the heat-shrinkable sleeve over the naked end; heat it carefully (such as with a cigarette lighter) until the sleeve has wrapped itself around the connection.



Installing the device

WARNING! ALWAYS PULL THE MAINS PLUG BEFORE OPENING THE CASING!

Unscrew the four screws on the edges of the case and screw on the basin through the two holes on the bottom side using the fastening screws provided.

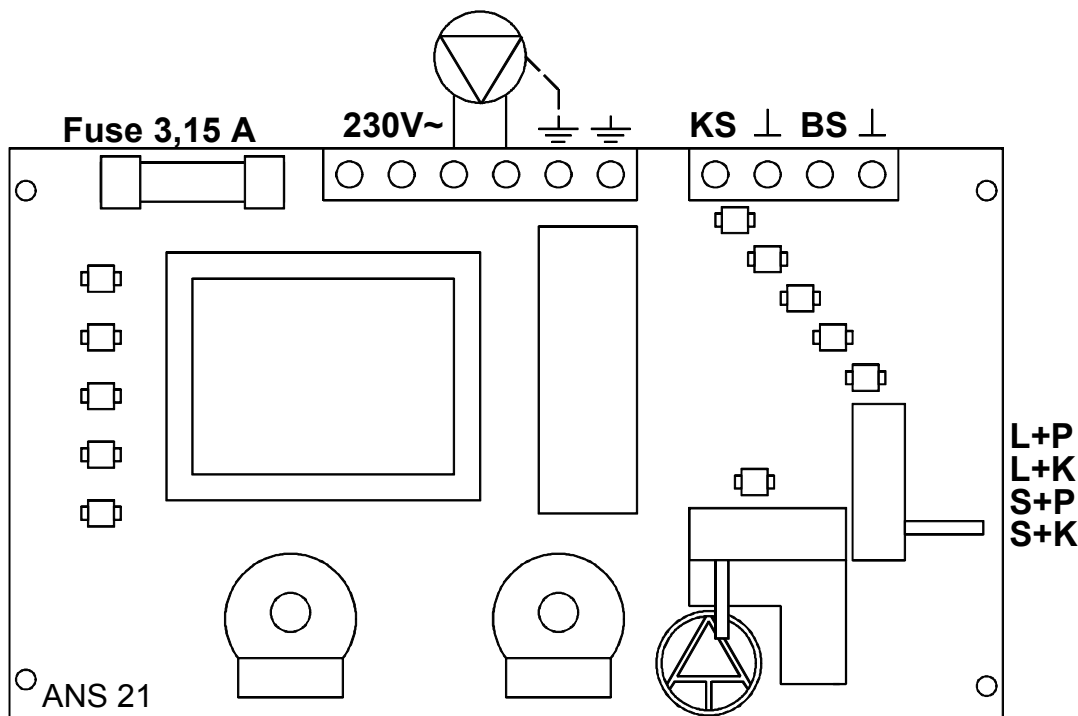
Electrical connection

Only a trained electrician may provide the electrical connection in compliance with local guidelines. The sensor lines must not be laid in the same cable channel as the supply voltage. In a commonly used cable channel, appropriate shielding has to be provided.

Caution: Only work on the inside of the control system when it is dead. The connections are to be put according to the marking of the clamps.

Note: To provide protection from lightning, the system has to be grounded in accordance with the regulations. Sensor failures due to storms and static electricity are usually the result of improper grounding or overvoltage protection on the collector sensor.

Pin configuration:



Tips on troubleshooting:

When the control system does not function properly on automatic mode, the function switch and the sensors should be checked.

A short-circuit or an interruption of a sensor are displayed directly on the control system. If a short-circuit occurs, the lowest LED of the collector or tank icon blinks. In case of an interruption, the top LED of the icon blinks.

In addition, the sensors can be measured by means of an ohmmeter.

T	0	10	20	25	30	40	50	60	70	80	90	100°C
R(KTY)	1630	1772	1922	2000	2080	2245	2417	2597	2785	2980	3182	3392 W
R(PT)	1000	1039	1078	1097	1117	1155	1194	1232	1271	1309	1347	1385 W

If the system is not in operation although supply voltage is connected, the 3.15A quick-blowing fuse that protects the control system and the output should be checked and exchanged if necessary.

Maintenance:

If used properly, the system does not require maintenance.

As the components relevant to accuracy are not subjected to loads if used properly, long-term deviation is very low. The unit thus cannot be adjusted.

The construction characteristics of the unit must not be changed for repairs. Spare parts must correspond to the original parts and be used as intended.

Safety requirements

The unit is state-of-the-art technology and fulfils all of the necessary safety regulations. It may only be used in accordance with the technical data and the safety requirements and regulations below. In using the unit, the safety regulations and laws for each specific application also have to be upheld.

Safe operation is no possible if the unit

.... is obviously damaged,

.... not longer works,

.... was stored for a long time under poor conditions.

If these cases apply, the unit must be taken out of operation and prevented from accidentally going into operation.

Technical data:

Temp.difference:	adjustable from 2-12°C (hysteresis = 3K)
Overheating temp./ Min.threshold:	adjustable from 40-90°C (hysteresis = 3K)
Accuracy:	tip. +-2%
Output:	230V~/ max. 200VA
Power draw:	max. 2 W

We reserve the right to make technical changes.

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Warranty certificate

Technische Alternative GmbH, Amaliendorf, grants a two-year guarantee for the unit purchased starting on the date of purchase. This guarantee comprises repairs (but not the labour for disassembly and reassembly) to remedy labour or material defects that hamper proper functioning. Damage due to overvoltage, improper use, and natural wear is excepted.

Name:

Purchased on:

Address:

From:

Description of error:

Technische Alternative
elektronische Steuerungsgerätes.m.b.H.

Langestraße 124
A-3872 Amaliendorf

Type: **ANS21**

Serial number: