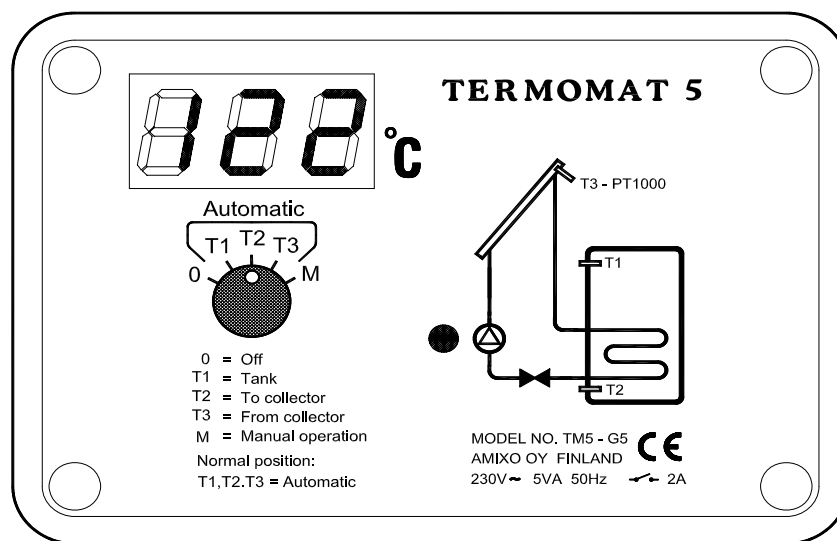


TERMOMAT 5

DIFFERENTIAL TEMPERATURE CONTROL FOR SOLAR HEATING

MOUNTING AND OPERATING INSTRUCTIONS FOR ART. NO 8005

Termomat 5 is a differential temperature control and performance monitor for solar heating systems. Termomat 5 controls the heat collecting pump. It has a digital 3-digit display for three temperatures and a LED indicator for the circulating pump. All essential settings are adjustable.



DELIVERY PARTS

1. Electronic differential control TM 5-G5 with 1.5 m main wire
2. Temperature sensor T1 for storage tank with 3 m wire
3. Temperature sensor T2 for storage tank with 3 m wire
4. Temperature sensor T3 for collector with 20 m wire
5. Housing for collector sensor, 90 mm with ½" threads
6. Two housings for tank sensors, 150 mm with ½" threads
7. Socket for wall mounting
8. Mounting and operating instructions

FUNCTION

Termomat 5 starts the circulating pump when the temperature difference is above the selected value **T_{on}**. When the pump runs the red LED is on.

The pump stops when the temperature difference is below the selected value **T_{off}**. Now the red LED is off.

At delivery the temperature difference is in position **C**. See page 3. Other values can be selected with **T_{diff}** according to the table on page 4.

PROGRAM SELECTOR

With the program selector the desired operation position is selected.

You can read the temperatures of the three sensors on the digital display by turning the program selector into desired position.

POSITION 0:	Shut off, no operation	Pump will not start	Temperature display on T1
POSITION T1 :	Automatic operation	Normal operation	Temperature display on T1
POSITION T2 :	Automatic operation	Normal operation	Temperature display on T2
POSITION T3 :	Automatic operation	Normal operation	Temperature display on T3
POSITION M :	Manual operation	Pump runs	Temperature display on T1

NB! At manual operation the high temperature limiter is shut off.

HIGH TEMPERATURE LIMITER T_{max}

At delivery the high temperature limiter is set on +85°C. If another temperature is desired it can be selected with component T_{max} on page 3. The setting is stepless from +20°C to +99°C. If the temperature T2 reaches the setted T_{max} value, the pump stops. The display alternately shows “**HE**” and **actual temperature**. The system automatically restarts when the temperature T2 is 3°C below T_{max} value.

TEMPERATURE SENSORS

The tank sensors T1 and T2 are 3 m and identical. The collector sensor T3 is 20 m. 3 m of the wire are heat and weather resistant. All wires can be lengthened.

The sensors must not be placed with current carrying wires because this can disturb the temperature measurement.

Sensor T1 is placed inside the sensor housing on the upper part of the storage tank.

Sensor T2 is placed inside the sensor housing at the bottom of the tank.

Sensor T3 is placed inside the sensor housing on the hot outgoing pipe on the top of the collector.

Place the sensor T3 as close as possible to the solar collector.

TEMPERATURE DISPLAY

The 3-digit display shows the temperatures in °C. You can read the temperatures of the three sensors T1, T2 and T3 on the digital display by turning the program selector into desired position.

When the temperature is above +199°C the display flashes alternately **199°** and “**HI**”.

When the temperature is below -9°C the display flashes alternately **-9°** and “**LO**”.

When starting the display shows the programmed version. Thereafter the high temperature setting **T_{max}** is shown. After that **T_{diff}** is shown (at delivery position **C**, “**6H**” and “**3L**”).

WIRING

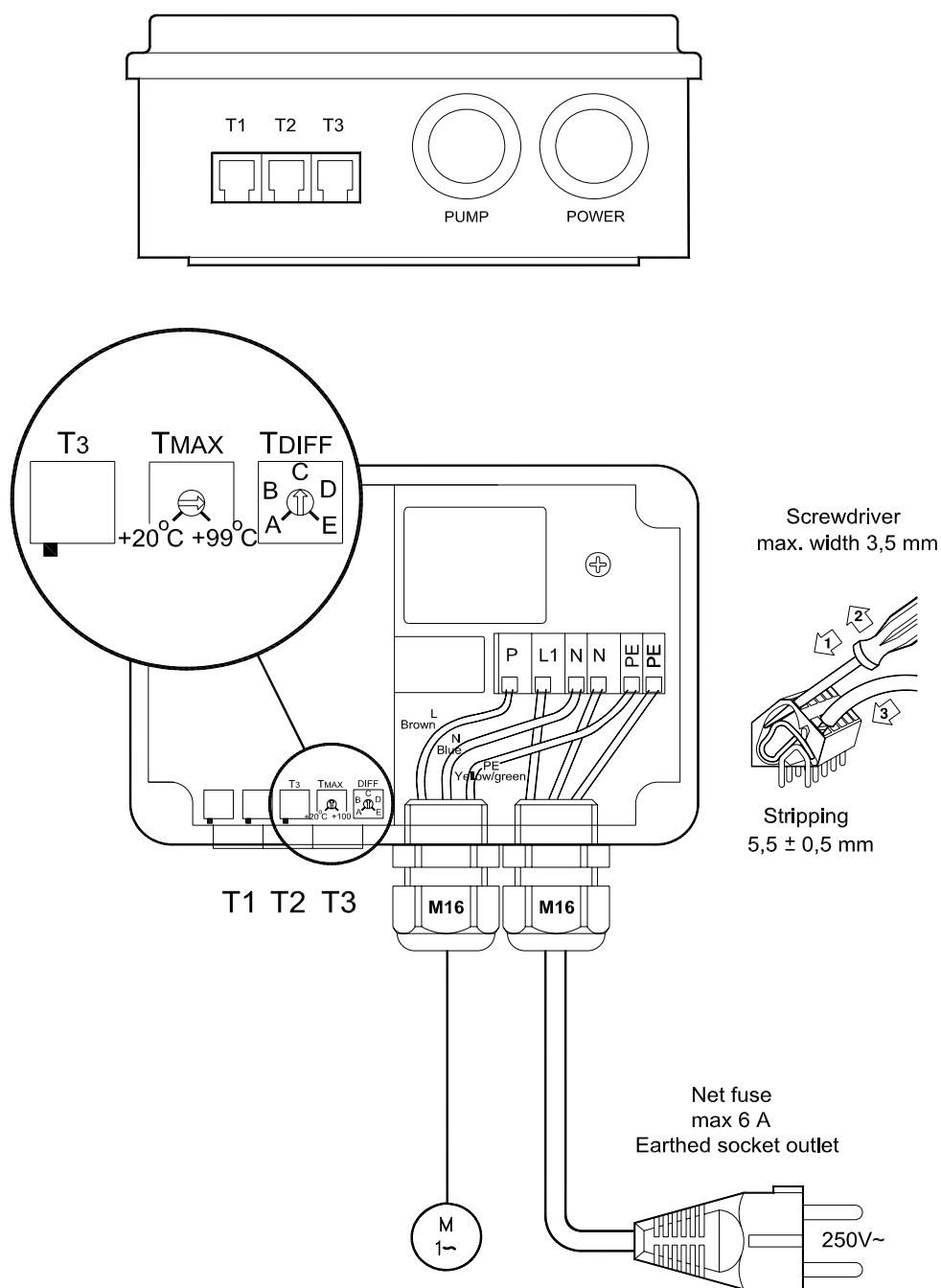
Warning!

Shut off the voltage before opening the control unit.

The control unit is to be mounted in a dry place with an ambient temperature from 0°C to +40°C. The socket is mounted on a wall. The control unit is placed on the socket.

The main wire is connected to an earthed socket outlet 230 VAC. Net fuse max. 6 A.






Wires max Ø 10,3 mm, max 2,5 mm², 250 VAC. Wire inlets in control unit M16.



TEMPERATURE DIFFERENCE

The temperature difference is set with the **Tdiff** trimmer on page 3. At delivery the trimmer is on **C**.

Trimmer position **A** is for pool installations. **Tmax** is automatically 30 °C.

Temperature difference $T_{DIFF} = T_{ON} - T_{OFF}$		Pump on T_{ON}	Pump off T_{OFF}	Temperature difference T_{DIFF}
Trimmer position	Code on display	[°C]	[°C]	[°C]
A 	3H 2L	3	2	1
B 	4H 2L	4	2	2
C 	6H 3L	6	3	3
D 	8H 4L	8	4	4
E 	10H 4L	10	4	6

ALARM AND TROUBLE SIGNALS

T1 and T2 show temperatures from -9 °C to 110 °C. Under -9 °C is shown as "-II-".

Over 110°C is shown as "I-I".

T3 shows temperatures from -9 °C to 199 °C. When the temperature is under -9 °C the display shows alternately "-9" and "LO". When the temperature is over 199 °C, "199" and "HI" is shown alternately.

HIGH TEMPERATURE

If the temperature T2 reaches the set high temperature value Tmax the pump stops. The display alternately shows "HE" and **actual temperature** until the system automatically restarts.

CABLE BREAKDOWN OR DISCONNECTED SENSOR

Display shows "I-I".

SHORT-CIRCUIT IN SENSOR

Display shows "-II-".

TECHNICAL DATA

Type of control	On-off, microprocessor
Voltage	230 VAC ~ 50 Hz
Power consumption	5 VA
Output relay contact ratings	2 A 250 VAC
Temperature difference	Tdiff 1°C ... 6°C, adjustable
Type of sensors	T1 and T2 KTY-83-110, T3 PT1000
Temperature range of sensors	T1 and T2 - 30°C ... +100°C T3 - 40°C ... +210°C
Length of sensors	T1 and T2 = 3 m 4 poles PVC insulation T3 = 20 m 4 poles PVC insulation of which 3 m heat and weather resistant wire
Lengthening of sensors	Max 25 m
Temperature display	Range from - 9°C to +199°C, three digits LED 13 mm
High temperature limiter	Tmax +20°C ... +99°C, adjustable
Main wire	Length 1,5 m earthed
Wires	Max Ø 10,3 mm, max 2,5 mm ² , wire inlet M16
Protection class	IP41
Dimensions	60 mm × 85 mm × 125 mm
Weight	0,7 kg