



TA 200 is a controller for outdoor-reset control of heating systems.

It can be used for conventional supply temperature control of mixing valve systems for radiator or floor heating. It can also be used for two or three stage on/off control of gas boilers.

With a room sensor, automatic reset of the supply temperature from the room temperature can be obtained.

Great flexibility in adjusting the reset curve—a number of curves are available for each individual application—enables optimum matching to the pertinent heating

system.

The TA 200 has high and low limits for the supply temperature.

Reading and adjusting of values are easy to make thanks to a display window and push buttons on the front of the controller.

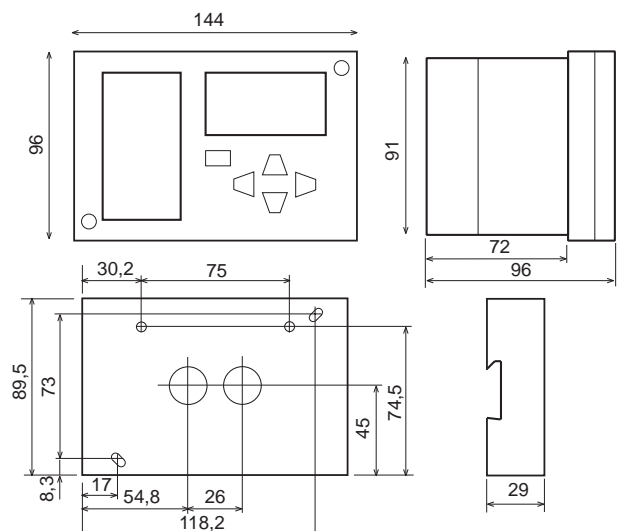
The TA 200 is powered with 230 V AC. It has two relay outputs for heating control. There is also an output for on/off switching of a circulating pump and a time program for switching of external objects, such as time-controlled switching between electric heating and fuel oil heating.

### TECHNICAL DATA

Part number .....	200-1000-000
Power supply voltage .....	220-230 V AC $\pm 10\%$ , 50-60Hz
Power consumption .....	2 VA
Ambient temperature:	
Operation .....	$\pm 0$ °C to +50 °C
Storage .....	-20 °C to +50 °C
Ambient humidity .....	max. 90% RH, non-condensing
Calendar clock accuracy ..	max. dev. 12 min./year at +25 °C
Running reserve, clock .....	12 hours
Materials:	
Housing and cover .....	ABS plastic
Protection .....	IP 40
Colours .....	black/transparent
Control function .....	PI
Application selection .....	DIP-switch with 8 switches
Digital inputs:	
Number of inputs .....	3
Required min. pulse length .....	50 msec.
Required min. pulse cycle time .....	100 msec.
Analog inputs	
Number of inputs .....	3
Sensor type .....	NTC thermistor, 1,8 kohms at +25 °C
Relay outputs:	
Number of outputs .....	4
Function .....	making (NO)
Voltage rating .....	max. 250 V AC
Load rating .....	2 A, min. 50 mA at 24 V

### Standards:

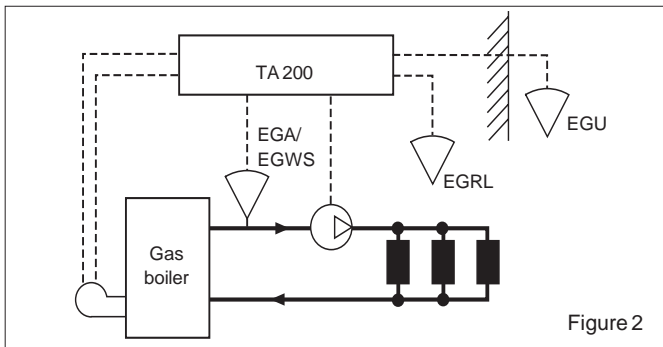
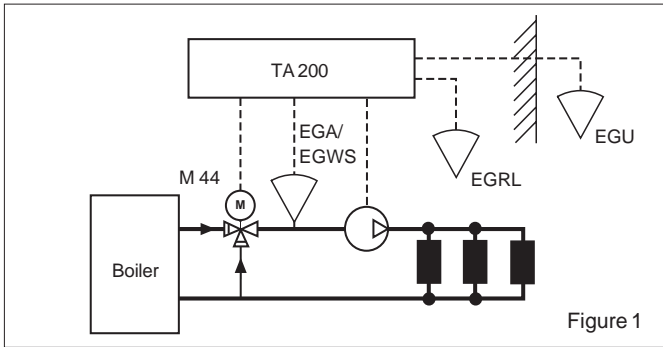
Emission .....	EN 50081-1
Immunity .....	EN 50082-1
Weight .....	0,7 kg
Dimensions WxHxD (mm) .....	144x96x96
	see diagram below
Panel cutout, DIN 43 700 .....	138x92 mm



**Applications**

The TA 200 is intended for supply temperature control in hot water heating systems. Two types of applications are available:

1. Mixing valve control circuit (figure 1).
2. Gas boiler, two or three stage on/off control circuit (figure 2).



Selection of the desired function is done by means of a hardware switch behind the front panel.

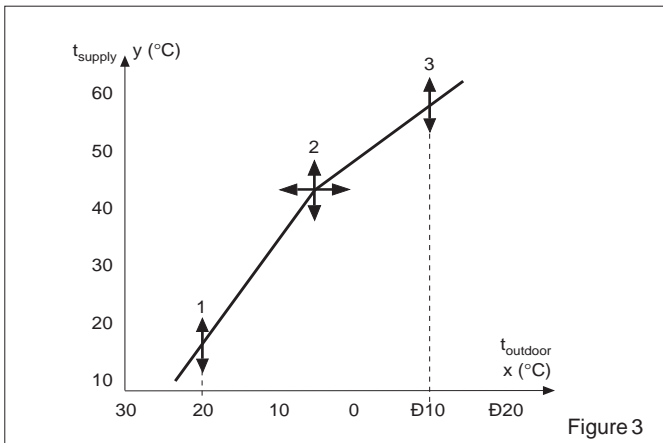
In addition it is also possible to select between radiator and floor heating.

**Reset curve**

The TA 200 controls the supply temperature according to the outdoor temperature. The relationship between the outdoor temperature and the supply temperature is given by means of a reset curve with three adjustable curve points, see figure 3.

Depending on whether radiator or floor heating system has been selected, two different basic reset curves apply. Also the high limit of the setpoint for the supply temperature will be different in the two cases.

A suitable shape, and also parallel displacement, if any is desired, are selected by means of the operator panel.



**Room sensor**

Control can be done with a room sensor, with or without an SP(setpoint) wheel. When a room sensor is installed, it will automatically displace the reset curve for achievement of optimum room temperature control.

**Measurement and control of heat rate**

Digital input X3 can be used for pulse counting. If each pulse equals a certain quantity of energy the current power consumption can be computed.

The heat rate drawn from the heating system can be limited to an adjustable max. value. If the heat rate drawn exceeds the limit set, the TA 200 successively lowers the setpoint for the supply temperature until the heat rate has dropped below the heat rate limit. When the power reduction is active this is indicated on the panel.

**Forced day or night operation**

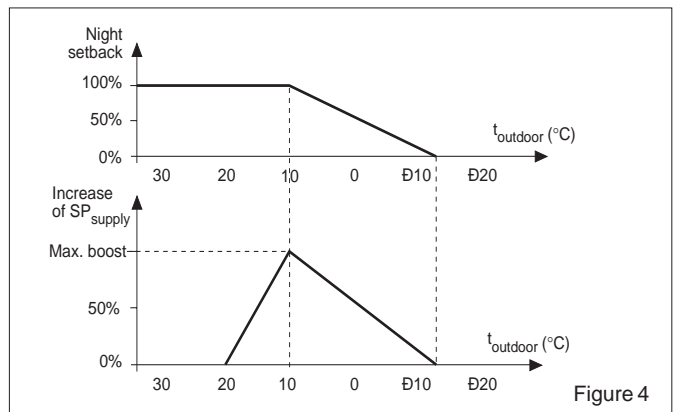
If extended day or night operation is desired, i.e. keeping the temperature at day or night level after the normal switching time between the two, a push button, or a separate timer, is wired to terminals X1 and X2.

**Night setback and morning boost**

During night operation a reduced setpoint is used. To secure that the heating system has capacity to restore the room temperature after a night setback at low outdoor temperatures, the TA 200 is equipped with variable setback.

The magnitude of the setback will depend on the outdoor temperature, according to a curve, the shape of which is determined at two adjustable outdoor temperatures, see figure 4.

A similar adjustment takes place during morning boost. A certain time before the time when day operation should start, the setpoint for the supply temperature is increased by a value which depends on the outdoor temperature, as shown in the lower curve in figure 4. Morning boost is selected separately but the curve is dimensioned using the same outdoor temperature points as for the night setback. The morning boost function is operative up to an outdoor temperature of 20 °C.



**Pump control**

To save energy the circulating pump is automatically stopped when the outdoor temperature exceeds a certain, adjustable value. The pump is also stopped if the calculated setpoint for the supply temperature goes below an adjustable value, in the range 0 to 50 °C (heating is not deemed necessary).

The pump automatically starts when the outdoor temperature goes below +3 °C (freeze protection).

To prevent the pump from seizing, it is exercised for one minute once weekly. The exercising function can be made inoperative.

## Time control

The digital clock in the TA 200 has two time programs. One can be used for switching between day and night temperature, the other can be used for optional functions, such as time-controlled switching between electric heating and fuel oil heating. All times can be set individually for every day of the week, with a resolution of 30 minutes. This means that start/stop times can be set within 15 minutes of the required time, with up to 24 on/off times for each day.

## Day-light Saving Time

Switching to and from Daylight Saving Time (DST) is fully automatic. The DST switching function can also be made inoperative, or, alternatively, adjustable times for switching to and from DST, and also the magnitude of the time change, can be entered.

## OPERATOR PANEL

Reading and entering of values is done from the operator panel on the front of the controller, see figure 5.

Program functions are selected by means of the P buttons. The selected function is shown on the display.

Values that can be changed can be increased or decreased by means of the + or – buttons. The O/I button is used for activating/deactivating the week-days and time intervals on the 24-hour time scale for the two time programs.

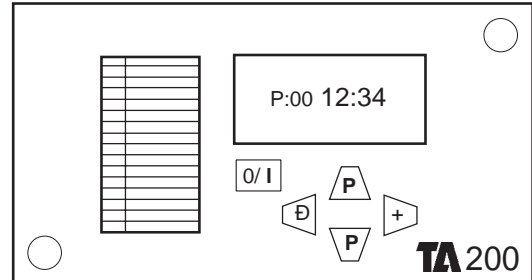


Figure 5

## SETTINGS

### On the DIP switch:

See figure 6.

Switch	Position off (0)	Position on (1)
1	on/off control	mixing valve
2	2-stage on/off	3-stage on/off
3	radiator system	floor heating
4	no room sensor installed	room sensor, type as sw. 5
5	room sensor EGRL	room sensor EGF 1
6-7	(no function)	
8	(hardware reset when switched 0-1-0)	

Factory setting, 1-8: 1000 0000.

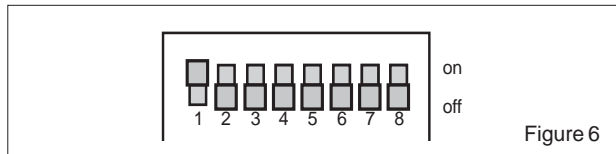


Figure 6

### On the operator panel:

See figure 7.

- P:00 Normal position:  
Day, time, mode and day operation times are displayed  
Change current operating mode
- P:01-P:15 Daily operation:  
Current temperatures are displayed  
Change setpoints, curve displacement and time program  
Change time and date

P:16-P:54 Commissioning, normally not shown

### Change

- reset curve high/low limiting
- shape of reset curve
- energy factor for pulse input
- SP max. heat rate
- parameters, heat rate limiting controller
- parameters, room controller
- parameters, supply temperature controller
- actuator stroke time
- values for variable night setback
- values for morning boost
- activation/deactivation of pump switching functions
- time format i.e. 12/24 hour display
- Daylight Saving Time, information

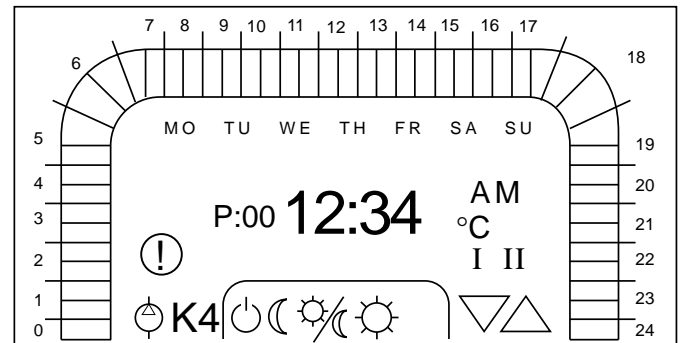


Figure 7

## INDICATION

On the operator panel are a number of special characters which denote specific functions and also operating mode.

See figure 7.

- ⊕ Circulating pump running
- K4 Status of relay output K4 (time pgm 2)
- ⏻ Forced off
- ☾ Forced night operation
- ☀ Auto
- ☀ Forced day operation
- I On/off control: stage I on
- II On/off control: stage II on
- ▽ Mixing valve: decrease
- △ Mixing valve: increase

0-24 Selected time interval, in half-hours

Current weekday according to:

MO	TU	WE	TH	FR	SA	SU
Mon	Tues	Wed	Thur	Fri	Sat	Sun

- P:xx Selected function xx, i.e. display or change value.  
12:34 Current time of the day(at P:00), or some other value, according to selected function P:xx.  
AM/PM 12-hour clock display  
°C Current temperature scale  
(!) Power limiting active

## CONSTRUCTION

The controller is encased in a plastic enclosure with the standardized measurements 144x96x96 mm.

The casing is equipped with a transparent cover with a simple lock.

A brief instruction covering program functions is inserted in a pocket on the front.

The electronic circuitry is located on two circuit boards, connected with a ribbon cable.

The panel board is fastened with screws in the front of the casing, whereas the lower I/O board is fastened with snap-in locks.

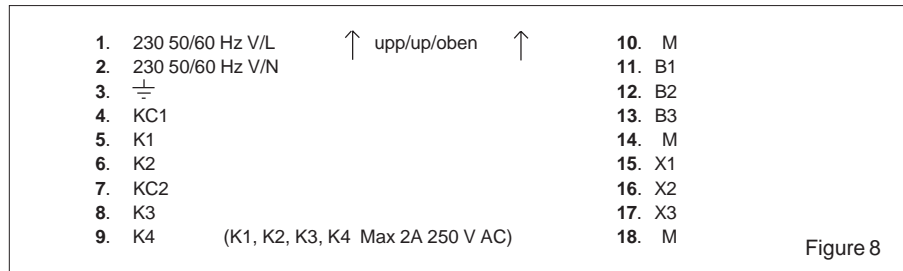
The bottom casing has six holes for connecting cables.

The only care needed is to keep the controller dry and to clean it externally with a dry cloth when needed.

## WIRING

The TA 200 is mounted directly to a wall, or flush-mounted in a panel. It can also be mounted on a 35 mm DIN rail.

- |    |   |
|----|---|
| 1  | 230 V/L Mains, phase (live)   |
| 2  | 230 V/N Mains, neutral  |
| 3  | PE Protective earth   |
| 4  | KC1 Power supply, relays K1 and K2  |
| 5  | K1 Relay K1: increase, stage 1  |
| 6  | K2 Relay K2: decrease, stage 2  |
| 7  | KC2 Power supply, relays K3 and K4  |
| 8  | K3 Relay K3: circulating pump   |
| 9  | K4 Relay K4: optional, time-controlled relay output                               |
| 10 | M Signal ground   |
| 11 | B1 Supply sensor, EGWS/EGA  |
| 12 | B2 Outdoor sensor, EGU  |
| 13 | B3 Room sensor, or thermostat, EGRL / EGF1 (wire 1 or 2; the other, 2 or 1, to M) |
| 14 | M Signal ground   |
| 15 | X1 Input, forced day operation  |
| 16 | X2 Input, forced night operation  |
| 17 | X3 Digital input, pulse counting  |
| 18 | M Signal ground   |



### Length of cables

To terminals B1-B3, and X1-X3:  
Max. 200 m, area 0,5 mm<sup>2</sup>.

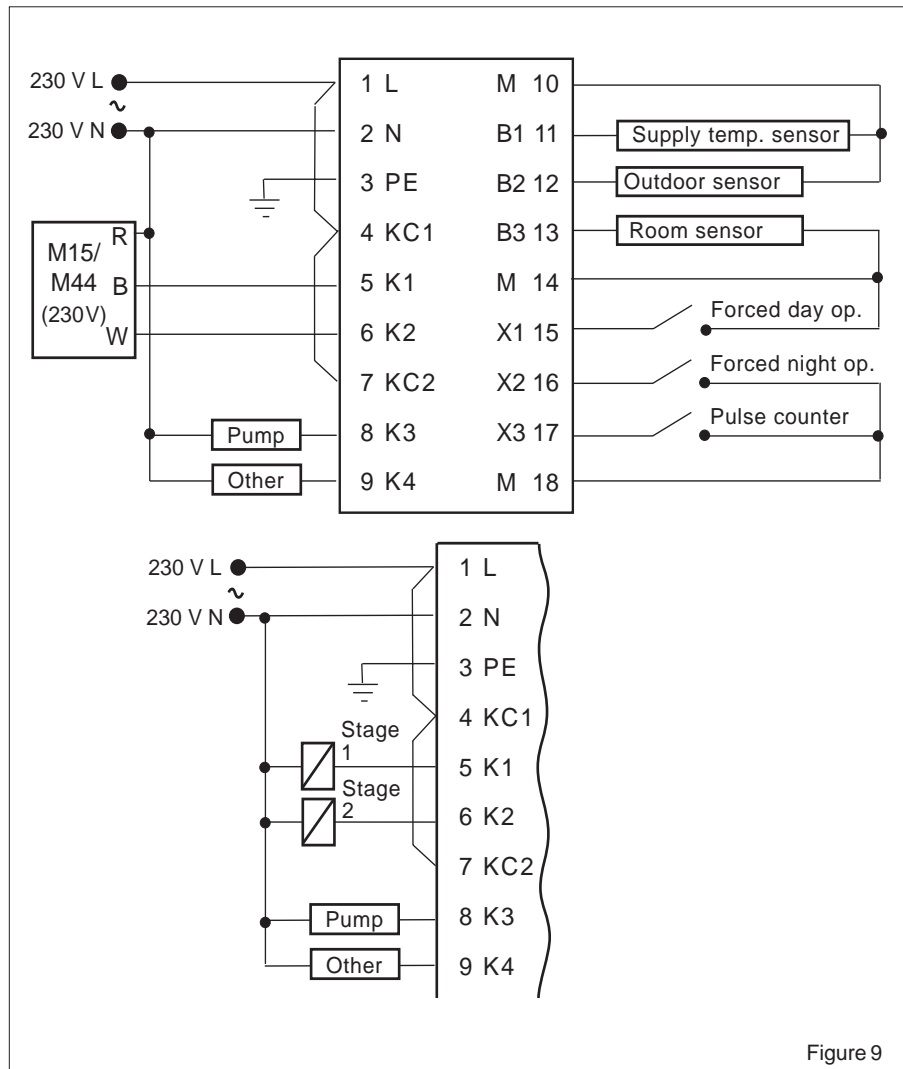
To other terminals:  
Max. 100 m, area 1,5 mm<sup>2</sup>.

Cables for power supply and for temperature sensors should be installed well separated (spaced 20 cm or more).

The TA 200 has six cable inlet holes. Two of these are sized for Pr 18,6 (Pg 11) cable glands.

Signal and power supply cables, that enter the casing from the rear, must be routed well separated.

Also 24 V power supply cables must be installed in compliance with local high voltage wiring regulations in force.



## ACCESSORIES

TA 200 User's Guide,  
part no. 0-004-1201.