Operating instructions

ECC room thermostat

Electronic room thermostat for heating and heating/cooling with display

TRA 410, TRA 421

P100015830 C

SAUTER

Creating Sustainable Environments.

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1 Safety instructions

Please follow the information in the operating instructions.
Failure to observe these instructions can cause functional impairments or even damage the device.

Failure to observe the instructions:
SAUTER will not accept any liability for damage caused by the failure to observe these instructions.

The device may only be opened by authorised, qualified personnel when it is disconnected from the power supply.
Only use the device when it is in a technically perfect condition.

Adhere to the ambient conditions specified in the fitting instructions.

1.1 Meaning of the safety instructions

Compulsory note

A compulsory note contains important information that must be observed. Non-adherence can have serious consequences.

General note

A general note contains information that helps you to better understand the topic described.

Reference note

This note contains a reference to an external website.

This note contains a reference to one or more documents with further information on this product.

2 General information

2.1 Introduction

These operating instructions provide important information about handling the electronic room thermostat. To allow safe working, all the specified safety information and activity instructions must be adhered to.

The operating instructions must be read carefully before starting any work.

They are a part of the product and the company operating the system must keep them where they can be accessed at all times.

2.2 Liability limitation

All of the data and information in these instructions has been assembled based on the applicable standards and directives, the current state of the technology and our many years of know how and experience.

The manufacturer will accept no liability for damage resulting from:

- Failure to observe the safety instructions
- Failure to observe the operating instructions
- Improper use
- Use of untrained staff
- Unauthorised modifications
- Technical changes

In all other cases, the obligations agreed to in the supply contract apply, as well as the General Standard Terms and Conditions and delivery conditions of the manufacturer, and the statutory regulations in force at the time the contract was signed.

2.3 Intended use

The room thermostat controls, directly or via a control distributor, the connected thermal actuators for unit valves in a unitary control system. Depending on the model, it is suitable for 24 V or 230 V components.

Depending on the model, the device is suitable for

- fixed installation
- recording the actual temperature (room temperature)
- setting the setpoint temperature
- controlling the actual temperature by activating positioning actuators in heating or heating/cooling mode in an assigned area
- connecting an external sensor

All other uses, changes and modifications are expressly forbidden and lead to risks for which SAUTER is not liable.

3 Operation for the first time

3.1 Setting the setpoint temperature

The setpoint temperature is set by turning the rotary knob to the left or the right.

1. Turn the rotary knob to the **left**.

➲ The temperature is decreased.

or

1. Turn the rotary knob to the **right**.

➲ The temperature is increased.

Fig.1 Front view of TRT 410, 421

3.2 Setting the time and the date

1. Press the rotary knob once
2. Turn the rotary knob once to the right until the setting level
3. Press the knob again to go to the setpoints
4. Turn until you reach the display CLo
5. Press ➲ hours display flashes - enter setting
6. Press ➲ minutes display flashes - enter setting
7. Press ➲ days display flashes - select day
8. Press ➲ the time and day that you set flash - setting was successful
9. Turn knob until BACK is displayed, then press knob

3.3 Setting the weekly switching programme

1. Press the rotary knob once
2. Turn the rotary knob once to the right until the setting level
3. Press the knob again to go to the setpoints
4. Turn until you reach the display Pro
5. To confirm ➲ press rotary knob.

During the selection of the weekly switching programme Pro, the current day and the timeline flash.

6. 888 appears in the display.
7. Select the weekly switching programme that you want by turning and pressing the rotary knob:

1 2 3 4 5 6 7	flashes: weekly switching programme for Mon-Sun
1 2 3 4 5	flashes: weekly switching programme for Mon-Fri
6 7	flashes: weekly switching programme for Sat, Sun
1	flashes: weekly switching programme daily

8. P1 appears in the display (switching command 1 for comfort mode).

   Press and turn to select the switching commands P1…P4; define the respective switch-on and switch-off points in 15-minute steps.

A maximum of 4 switching commands (P1...P4) can be defined for each day.

To delete a switching command, the switch-on and switch-off points must be set to the same time.

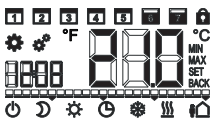
9. You can leave the time programme by turning to BACK and confirming.

4 Functions – settings – parameterisation

The functions, settings and parameterisation of the room-temperature controller are called up using the rotary knob with turning/pressing mechanisms:

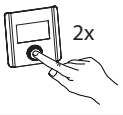
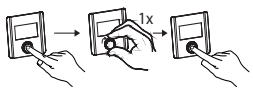
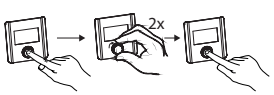
- Pressing the rotary knob
  - calls up menus,
  - activates and deactivates functions,
  - applies settings that have been made and
  - changes parameters.
- You turn the rotary knob to enter settings and select menus and functions.

The basic level and various menus are provided for simple operation and settings:

	**Standard display** In the standard display, all room-temperature controllers show the current actual temperature and the active functions. The TRA421 also has a clock function.
	Operating modes Contains all important basic functions and operating modes.
	Setpoints Contains advanced functions and many setting options for temperature, time, weekly switching programme etc.
	Service parameters Contains various password-protected system parameters. The optimum balance of the overall system is attained via the corresponding settings.

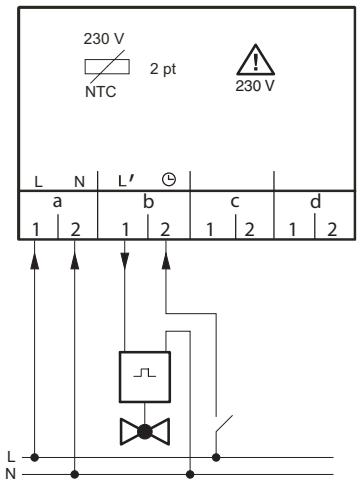
Description of operation

The following table shows basic operation of the setting knob.

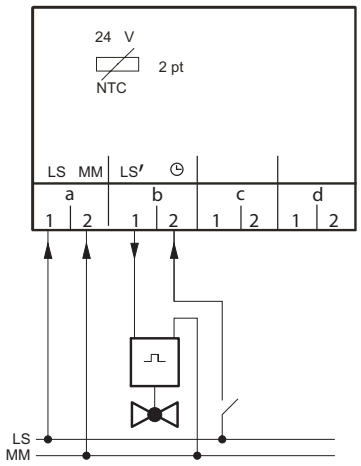
	Adjust setpoint
	Change operating mode
	Change setpoints
	Service parameters for technicians

5 Connection diagrams

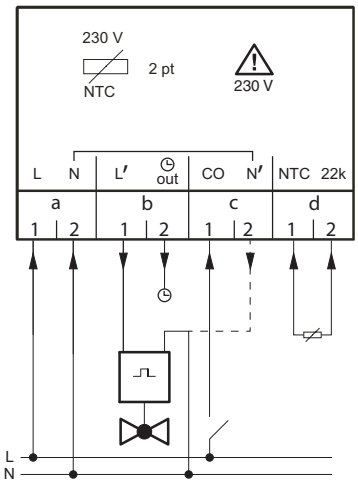
TRA410F210



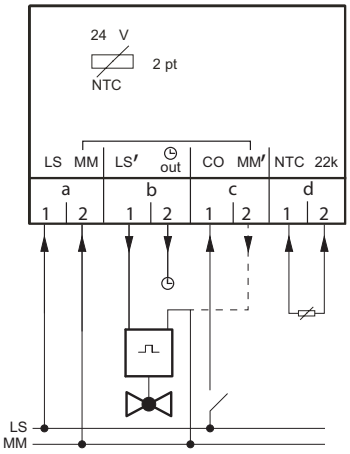
TRA410F212



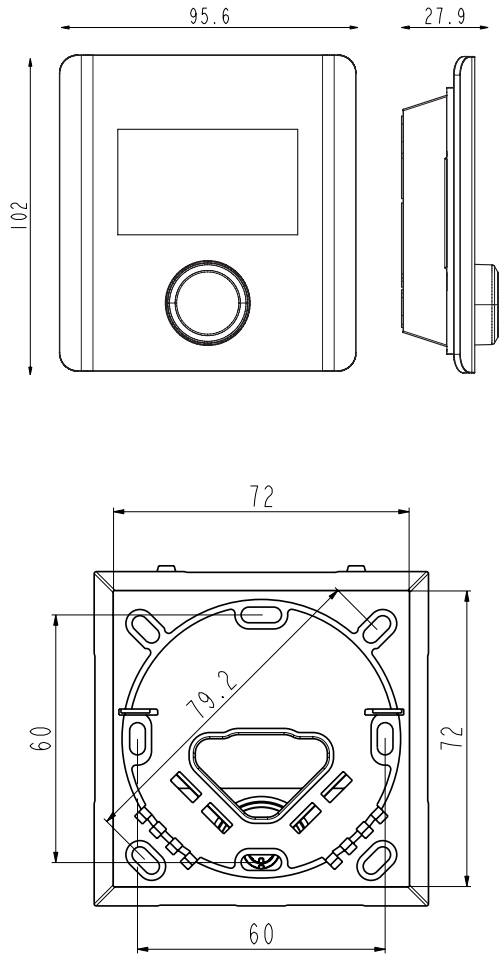
TRA421F210



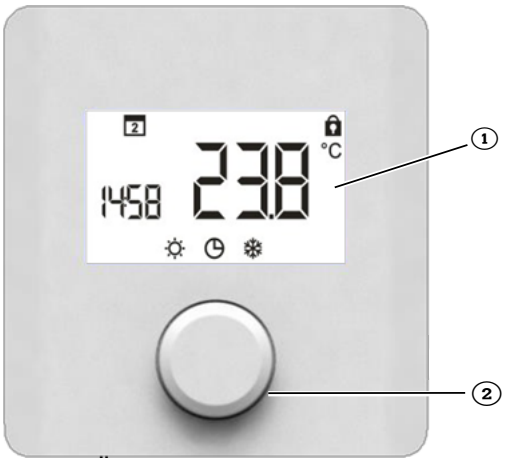
TRA421F212



6 Dimension drawing



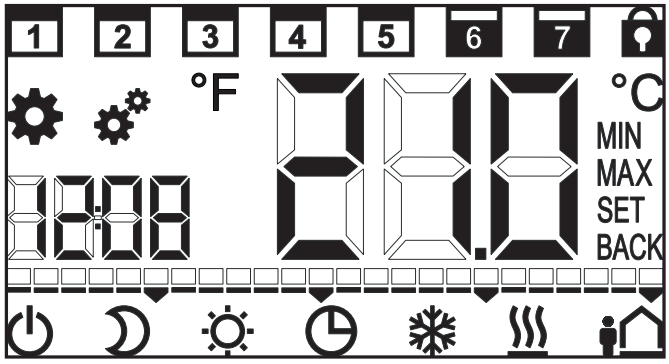
7 Overview of display



① Display

② Rotary knob with turning/pressing mechanism

Overview of display



TRA 410	TRA 421	Display symbol	Description
✓	✓		Operating modes
✓	✓		Settings
	✓		Parameter
✓	✓		Heating
	✓		Cooling
✓	✓		Normal mode
✓	✓		Reduced mode
✓	✓		Out of operation
✓	✓		ECO time programme, internal or external
	✓		Unoccupied
	✓		Time
	✓		Time scale for time programme; one unit = one hour
✓	✓		Current temperature, setpoint temperature

TRA 410	TRA 421	Display symbol	Description
✓	✓	CAL °C	Correcting effect of wall temperature
✓	✓	°C	° Celsius temperature unit
	✓	°F	° Fahrenheit temperature unit
✓	✓	MIN	Minimum limitation of the setpoint temperature
✓	✓	MAX	Maximum limitation of the setpoint temperature
	✓	SET	Confirm entry
✓	✓	BACK	Back
	✓	1	Working days
	✓	7	Weekend
✓	✓		Operation locked
	✓	LEd	Brightness of display backlight
	✓	888	Reset to factory settings
	✓	CLo	Time and day programme
	✓	Pro	**Set** time programme
	✓		Set min. floor temperature

8 Description of operation

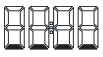
TRA 410	TRA 421	Display symbol	Procedure
✓	✓		Press to call up the menu. Press to change to operating modes.

TRA 410	TRA 421	Display symbol	Procedure
✓	✓		Press to call up the menu. Turn to go to the settings. Press to change settings.
	✓		Press to call up the menu. Turn to go to parameters. Press to change parameters.

8.1 Description of the operating modes

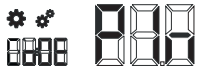
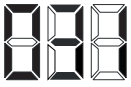
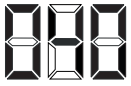
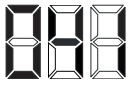
TRA 410	TRA 421	Display symbol	Procedure
✓	✓		Press to confirm the selection. TRA 410: Regulate to the defined setpoint temperature. TRA 421: Regulate to the preset setpoint temperature in the Settings menu.
✓	✓		Press to confirm the selection. Note: Decrease via the room thermostat or an external signal or time programme; it is not possible to activate both. TRA 410: Decrease of 2 °C Note: When the decrease is selected, the Decrease input is deactivated. TRA 421: Regulate to the preset reduced temperature in the Settings menu. Note: When the decrease is selected, the time programme for the decrease is deactivated.
✓	✓		Press to confirm the selection. Note: Decrease via the room thermostat or an external signal or time programme; it is not possible to activate both. TRA 410: The signal of an external timer switches the room thermostat to the ECO mode. TRA 421: Internal time programme is activated; pilot timer output is activated.
	✓		Press to confirm the selection. Turn to set number of absence days; then confirm entry; maximum 99 days. The function is deactivated when the number of days is set to 0 or the setpoint temperature is adjusted.
✓	✓		Press to confirm the selection. Operation is locked; the standard display is shown. To unlock it, press the knob for 5 seconds; a security code for the locking can be entered for TRA 421 - see parameters 030 and 031.
✓	✓		Switches the room thermostat off; the temperature control is deactivated. Press the rotary knob for 5 seconds to turn on; active functions are displayed; last active function is applied. Note for TRA 421: The valve and frost-protection functions remain active; pilot timer output remains active; switching signals are forwarded.
✓	✓	BACK	Press to confirm the selection. The menu is closed. Note: Returns to the basic level if no setting is made for 30 seconds.

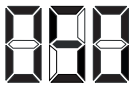
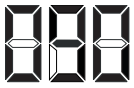
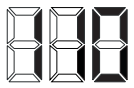
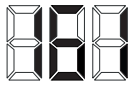
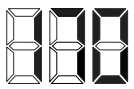
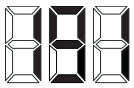
8.2 Description of changing setpoints

TRA 410	TRA 421	Display symbol	Procedure
	✓		Set the **comfort temperature** in the normal **heating mode** Factory setting: 21 °C Press to confirm the selection. Turn to set the setpoint temperature that you want. Press to confirm the entry.
	✓		Set the **setback temperature** in the heating ECO mode Factory setting: 19 °C Press to confirm the selection. Turn to set the setpoint temperature that you want. Press to confirm the entry.
	✓		Set the **comfort temperature** in the normal **cooling mode** Factory setting: 21 °C Press to confirm the selection. Turn to set the setpoint temperature that you want. Press to confirm the entry.
	✓		Set the **setback temperature** in the cooling ECO mode Factory setting: 23 °C Press to confirm the selection. Turn to set the setpoint temperature that you want. Press to confirm the entry.
	✓		Set the min. **floor temperature** when a sensor is connected and parameterised (parameter 040) Factory setting: 3.0 = approx. 22 °C Press to confirm the selection. Turn to set to a value between 1 and 6. 1.0 = 18 °C and 6.0 = 28 °C Press to confirm the entry. Note: This setting option is only displayed if the parameter for the floor sensor P040, for the comfort temperature, is activated. As soon as the floor temperature has been reached, the internal sensor takes over controlling the room.
	✓		Set the temperature for the **absence function** Factory setting: 16 °C Press to confirm the selection. Turn to set the temperature that you want. Press to confirm the entry. Note: The temperature must be adjusted for summer mode.
✓	✓	MIN MAX	Set the minimum and maximum **temperature limit** Factory setting: Min. 5 °C and max. 30 °C Press to confirm the selection. Turn to set the minimum/maximum temperature. Press to confirm the entry.
	✓		Set the **time and the weekdays** Turn to set the hours, minutes and day. Press to confirm the entry In the case of a power failure, the time and weekday settings are stored for approx. 10 hours

TRA 410	TRA 421	Display symbol	Procedure
	✓	Pro	Set the **weekly switching programme** Factory setting for weekly switching programme (daily Mon-Sun): • Switching command P1: 06h00 to 08h00 comfort mode • Switching command P2: 15h00 to 22h00 comfort mode • P3 and P4 are not preset and can be selected freely. The switching commands (switch-on and switch-off points) must be programmed in ascending sequence. If you add a switching command before P1, then P1 becomes P2 and the new command becomes P1. Note: The thin bar at the bottom shows the time scale in hours; the six boxes stand for 6 hours ☐☐☐☐☐☐. The thick bar at the top shows the comfort mode in hours ■■☐☐☐☐. For settings, see section *3.3 Einstellen des Wochenschaltprogramms*
✓	✓	CAL	**Correction effect** of the **wall temperature** (only internal sensor) Factory setting: 0 °C Press to confirm the selection. Turn to set the correction that you want (steps of 0.1 °C). The effect of the wall temperature can be corrected by ±2 °C. Press to confirm the entry.
	✓	LEd	Set the **display backlight** Factory setting: 50 Press to confirm the selection. Turn to change or switch off the backlight: 0 = off 25 = level 1 50 = level 2 75 = level 3 100 = level 4 Press to confirm the entry.
	✓	rES	Reset to **factory settings** Press to confirm the selection. Turn to set to **YES**. Press the rotary knob for 5 seconds. A restart is performed: all of the settings made are reset to the factory settings; the time and the weekdays must be set again.
✓	✓	BACK	**Back** Press to confirm the selection. You quit the menu. Note: Returns to the basic level if no setting is made for 30 seconds.

8.3 Description of service parameters for TRA 421

Display symbol	Procedure
	Change **parameters**: Press and turn twice to the right to select the **Parameters** menu. The **Code** symbol flashes. Press to confirm the selection. Press and turn to enter the four-digit service code. Factory setting: 1234 Press to confirm the entry. The symbol is displayed. Press to confirm the entry. Press and turn to enter the individual digits of the parameter number. Press to confirm the entry.
	Preset **control algorithm** for the following applications: Factory setting: 0 0 = standard underfloor heating 1 = low-energy underfloor heating 2 = radiator 3 = passive convector (slow warm-up period) 4 = fan convector (fast warm-up period)
	Activate/deactivate the **cooling lock** Factory setting: 0 0 = deactivated 1 = activated Note: When the cooling lock is activated and the operating mode is set to cooling (C/O active), the room thermostat cannot be used for heating.
	Protect the **operation locking** with a **code**: Factory setting: 0 0 = deactivated 1 = activated Note: The locking must be activated in the **Operating modes** menu.
	Change the **code for locking** the operation: Factory setting: 0000
	Activate an **external sensor** Factory setting: 0 0 = internal sensor is operating 1 = external sensor is operating; internal sensor is deactivated 2 = input for external (floor) sensor is activated Note: This is a comfort temperature. As soon as the floor temperature has been reached, the internal sensor takes over controlling the room. Setting the setpoint temperature of the external sensor in the **Settings** menu.
	Set/correct the **floor temperature** or the external sensor Factory setting: 0 °C A difference in the actual floor temperature can be corrected. Setting range -2 °C to +2 °C.

Display symbol	Procedure
	Set the duration of the **backlight** of the display Factory setting: 15 seconds Determines the time period for which the display is illuminated after operation. Setting range: 0 to 30 seconds (in 5-second steps)
	Display the **status of the output signal** Factory setting: 0 When the output for thermal actuators is active, the heating or cooling symbol flashes slowly. If this output is inactive, the symbol is displayed continuously. 0 = deactivated 1 = activated
	Set the **direction of operation** of the room controller (NC or NO) Factory setting: 0 The direction of operation of the room controller and the connected thermal actuators can be defined. 0 = normally closed (NC) 1 = normally open (NO)
	Set the **frost-protection temperature** Factory setting: 5 °C Activates the frost-protection facility when the temperature falls below the set temperature. Setting range: 5 °C to 10 °C
	Activate the **optimised time programme** function Factory setting: 0 If the **optimised time programme** function is activated, the set-point is reached at the defined time. In order to reach the setpoint, heating or cooling mode is initiated in good time ahead of the de-fined time. 0 = deactivated 1 = activated
	Set the **cycle time for the valve protection facility** Factory setting: 14 days Prevents the plug from sticking inside the valve. Setting range: 0 to 28 days
	Define the **actuation duration** while the valve protection facility is active Factory setting: 5 minutes The actuation time can be optimised depending on the running time of the thermal actuator. Setting range: 0 to 10 minutes.
	Define the **pilot timer output** Factory setting: 0 0 = pilot timer output active acc. to time programme 1 = pilot timer output inactive acc. to time programme pilot timer output active when “ECO” operating mode is selected; pilot timer output active when “Switch-off” operating mode is selected. Note: When parameter **P230 =1**, the time programme can be used for local decreasing.

Display symbol	Procedure
	Change the **service code** for the service menu Factory setting: 1234 Note: In order to avoid unwanted access to the service parameters, the service code should only be changed by the installer and documented in a safe location. Select Reset to reset the service code - see the settings in "**Reset to factory settings**".

9 Troubleshooting

Fault/display	Possible cause	Action	To be performed by
	Measured temperature from internal or external sensor outside measuring range	Internal sensor/room sensor ▶ Remove external heat sources in the immediate vicinity until the sensor has cooled down. ▶ Reposition the room sensor if necessary. ▶ Check the room thermostat/ external room sensor and replace if necessary. ▶ Check the connection of the external sensor.	Qualified personnel
	No signal from external sensor	▶ No external sensor present. ▶ External sensor does not correspond to specifications. ▶ Deactivate the external sensor in parameter setting 040. ▶ Check the external sensor and replace if necessary.	Qualified personnel
	Fault in internal sensor	▶ Set to factory settings in the "Settings" menu. ▶ If the room thermostat is faulty it must be replaced.	Operating company

10 Disposal

The local, currently valid laws must be observed when disposing of the device. You will find more information on the materials and substances in the Declaration on materials and the environment for this product.

11 Cleaning

Use a dry, solvent-free, soft cloth to clean the room thermostat. Make sure that no setting is changed during the cleaning.

© Fr. Sauter AG
Im Surinam 55
CH-4016 Basel
Tel. +41 61 - 695 55 55
Fax +41 61 - 695 55 10
www.sauter-controls.com
info@sauter-controls.com

Printed in Switzerland