

User manual

Automatic regulation of burning

Reg250



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1 DEVICE DESCRIPTION

1.1 General Information

Automatic regulation of burning optimizes the burning process in a fireplace or stove with the aim of improving efficiency.

The Timpex automatic regulation of burning has a microprocessor-based control unit, which compares the current situation in the fireplace with a “Optimization of burning process” program; depending on the results, the system adjusts the airflow to the fireplace using an electronically-controlled motorized shutter of EAI (external air intake).

The system can be installed on any fireplace or stove with external air intake.

1.2 Advantages of Automatic Control

- Increases burn time and refueling interval
- Improves fuel economy by up to 30%
- Prevents overheating
- Improves combustion and heating efficiency
- Increases thermal comfort
- Enhances safety of heating
- Improves heating system longevity
- Can control additional external components (depending on device type)
- Signals when refueling is needed
- Provides information on heating system performance

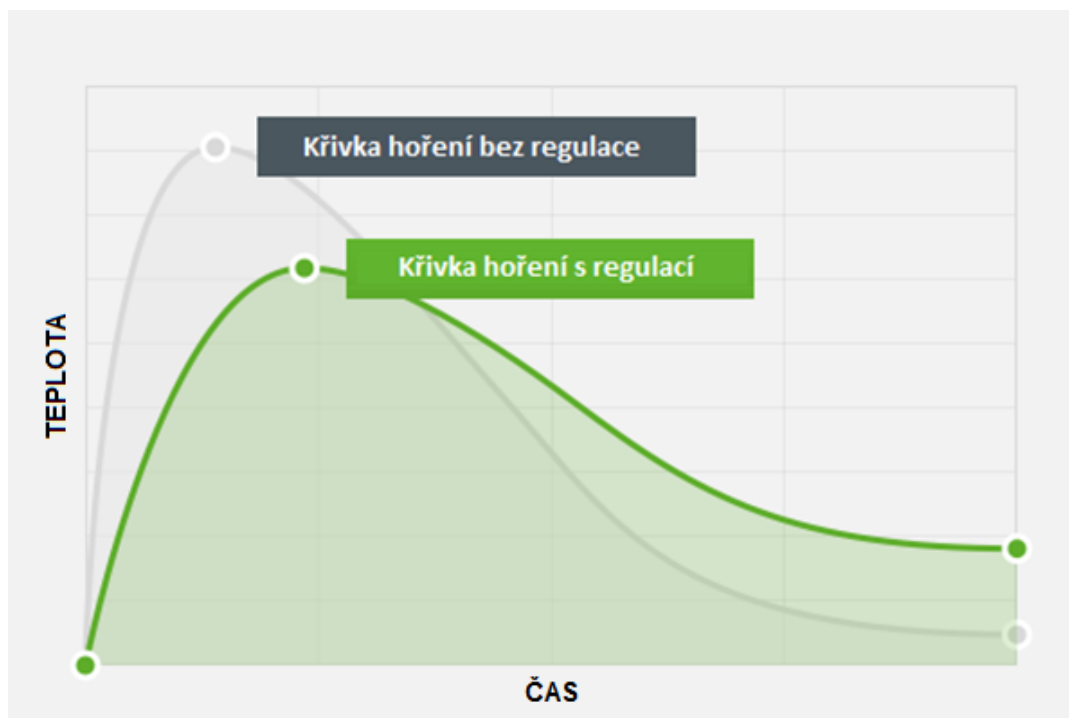
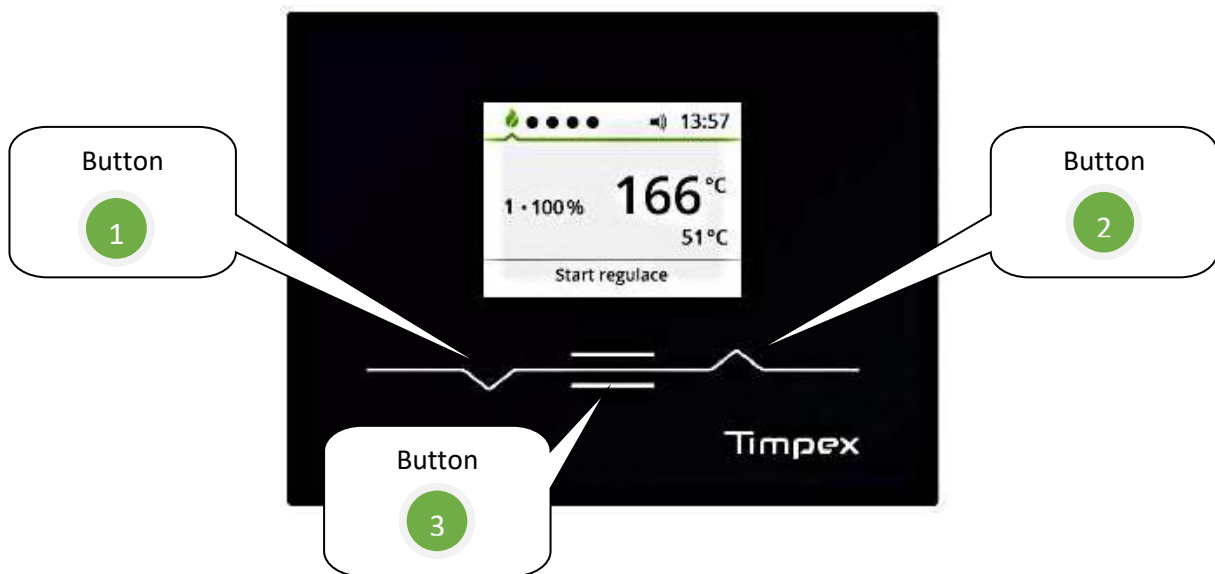


Figure 1: Combustion curves

2 CONTROL ELEMENTS

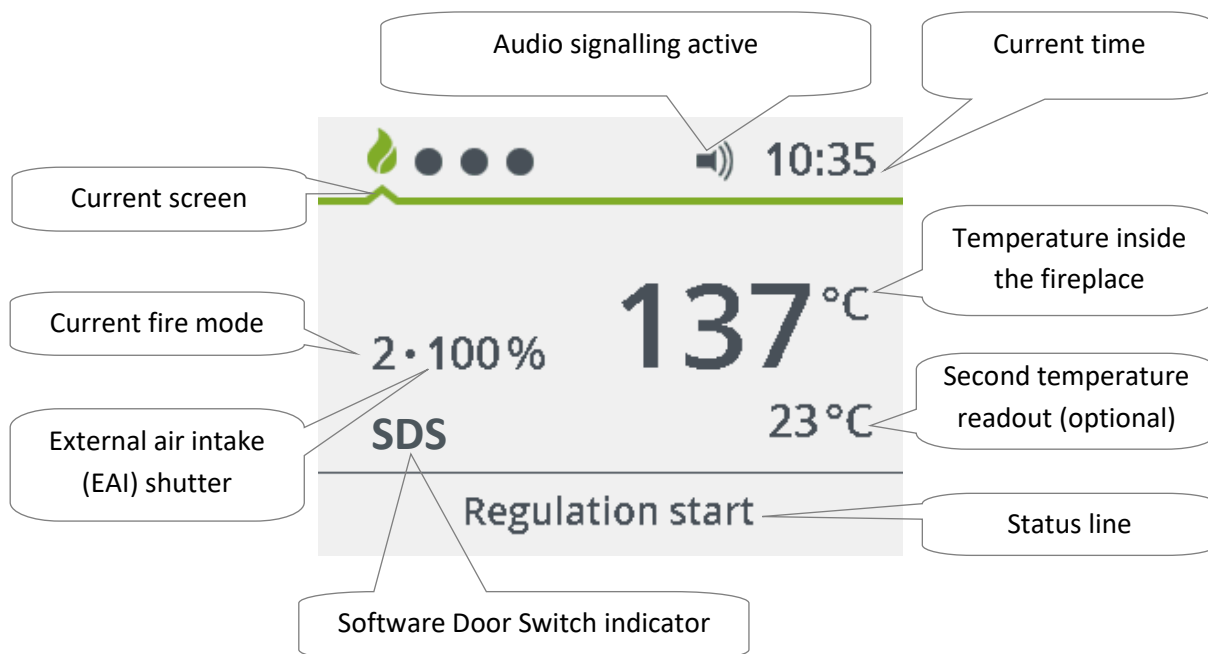


Button description:

- 1** Down arrow
 - Switches between screens
 - Moves down lists in details screens
- 2** Up arrow
 - Switches between screens
 - Moves up lists in details screens
- 3** Confirm
 - Confirms selection
 - **Long-pressing** (2 seconds) while in main screen **starts automatic regulation of burning process**

3 MENU DESCRIPTION

3.1 Main Menu



Audio signaling active symbol

Audio signals include start of burning process, refueling recommended, and going to standby.

Current time display

Displays current time, in 24h format.

Temperature inside the fireplace

Shows current air temperature in the fireplace (at location of temperature sensor).

Second temperature readout (optional)

Shows current temperature at location of second temperature sensor.

Status line

Shows current combustion control status:

- Reset
System is resetting (occurs after electric power loss). Once reset is complete, system will either start the regulation process or go to standby (0%).
- Standby 0%
System is in standby mode; the external air intake shutter is fully closed (0%). Shutter will open once regulation process starts.
- Light up
System is in fire-starting mode.
- Regulation start
System is checking and calibrating its components.

- Burning ↗
System is in burn mode and is currently increasing temperature in the fireplace.
- Burning ↘
System is in burn mode and is currently decreasing temperature in the fireplace.
- Refill
System is recommending refueling the fireplace.
- Glow process
System is in residual heat mode.
- AKU 80%
Accumulation tank is at 80% thermal capacity.
- AKU 90%
Accumulation tank is at 90% thermal capacity.
- AKU 100%
Warning, accumulation tank is at 100% thermal capacity (100% = 80°C).
- Alarm
One of the temperatures being monitored has been exceeded.
- Ventilation
Fuel has burned down; remaining exhaust gases are being ventilated. (Function enabled by qualified technician based on assessment of local conditions.)
- Not fired
The fireplace has gone cold while starting fire (external air intake shutter does not change position)

Software Door Switch (SDS) indicator

Displays SDS activity – in this mode, SDS monitors temperature changes in the fireplace.

SDS is built-in software that can detect when the fireplace door is open and fuel is loaded. When there is a change in temperature, the SDS automatically restarts the regulation process (see Section 4.1).

- SDS is active both when starting fire and when refueling.
 - **An icon on the main screen lights up whenever SDS is active**
- SDS can be turned on and off from the settings menu (see Section 3.4)



SDS is not meant to be a full replacement for a mechanical door switch. We do not recommend using it with systems where the fireplace temperature sensor is affected by water or accumulation heat exchanger.

External air intake shutter position

Shows the position of the external air intake shutter. The indicator value ranges from 0% to 100% (100% = shutter fully open, airflow into fireplace at maximum; 0% = shutter fully closed, no airflow in fireplace).

Fire mode

Displays the fire mode currently selected for the system.

The fire mode setting influences the thermal power output of the heating system.

Fire mode options are:

- **1 Eco mode** (EAI shutter is more closed than in optimum mode)
 - Select for low-power heating; for example, once the space has been heated to the required temperature.
- **2 Optimum mode** (EAI shutter set according to the base program for selected fireplace type)
 - Select when there is no need to use either the high- or low-power modes.

- **3 Turbo mode** (EAI shutter is more open than in optimum mode)
 - Select when high thermal output is required, e.g. when starting fire in a cold fireplace (cold start).
 - FM3 mode is automatically selected whenever a cold start is being performed. Whatever mode had been active previously is restored upon the first subsequent refuel.

Current screen

Shows which menu screen is currently being displayed in detail.

3.2 Last Burn Overview Screen

The screenshot shows the 'Last Burn Overview' screen with the following data points and callouts:

| | | | |
|---|--------------------|--------|--|
| Total burn time* | Time of burning | 3 min | Maximum temperature reached at T1 sensor |
| Maximum temperature reached in water heat exchanger | T1 _{MAX} | 338 °C | |
| | TW _{MAX} | 23 °C | Maximum charge in accumulation tank |
| | AKU _{MAX} | --- % | |

* The time from regulation process start to glow process.

3.3 Input / Output Screen

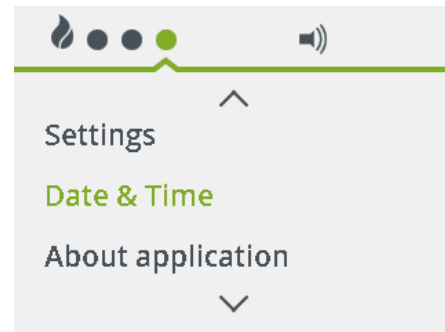
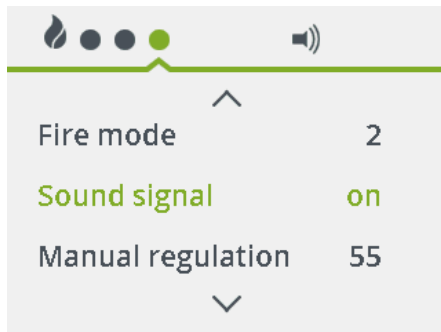
The screenshot shows the 'Input / Output' screen with the following data points and callouts:

| | | | | | |
|-------------------------------------|----|--------|---------------------|-------|-------------------------------|
| List of temperature sensors | T1 | 155 °C | Inp | off | Current status of peripherals |
| | T2 | --- °C | | | |
| | T3 | 49 °C | S1 | 100 % | |
| | T4 | 78 °C | S2 | 0 % | |
| | T5 | 29 °C | R1 | off | |
| | T6 | --- °C | R2 | off | |
| Current temperature sensor readings | | | List of peripherals | | |

Key:

- T - temperature sensor
- S - servo actuator
- R - relay
- Inp - door switch

3.4 Settings Screen



Fire mode

For mode settings see Section 3.1.

Sound signal

For audio signaling settings (on / off), see Section 3.1.

Manual regulation

Manual regulation mode allows manually selecting the external air intake shutter position – use Buttons 1 and 2 to select and Button 3 to confirm.



By going to manual mode, the user accepts responsibility for any damage that may result from manual changes.

Settings

- SDS - SDS on / off, see Section 3.1
- Brightness - set display brightness – range 1 – 5 (5 = brightest)
- Fade - activation of screen saver after 1 minute of inactivity – on / off
- Brightness at fade - set brightness to use when screen saver is active (5 = brightest)
- Language - change interface language (CZ, EN, DE, PL, RU, UKR)

Date & time

Set current date and time.

About application

Displays terminal and control unit information (date of manufacture, version, fireplace preset list version, SD card).

4 USING THE AUTOMATIC REGULATION OF BURNING

4.1 Start regulation process

- Starting regulation process launches a new automatic regulation of burning process. At start, the external air intake shutter opens fully to provide maximum airflow into the fireplace. An audio signal is played to confirm successful launch.

Regulation process can be started automatically or manually:

- Automatically
 - Physical door switch is installed; or
 - Software Door Switch (SDS) program is active
- Manually



If a door switch is not physically installed and the SDS program is not active (see Section 3.1 – Software Door Switch Indicator), regulation process must be started manually by **pressing and holding Button 3** (the middle button) **for 1 second**.

Regulation process must be restarted whenever starting fire or refueling!

4.2 Refueling

When refueling is needed, the Status Line displays “Refuel” and an audio signal is played.

Always adhere to fuel quantity and type recommendations provided by the fireplace manufacturer.

5 SAFETY INSTRUCTIONS

5.1 What to Do in Case of Power Outage

In the event of mains power failure to the automatic regulation process, there is no need to reduce or stop heating, regardless of which phase the combustion control program was in at the time of the outage. However, unless you have purchased the return spring shutter option, keep in mind that the air intake shutter will have remained in whatever position it was in before power failed.

If you subsequently need to refuel, it is **essential** to manually open the air intake shutter to the 100% position (see Section 5.1.1).



If your heating system includes a water heat exchanger, you cannot continue heating during a power outage, as potentially dangerous unmonitored increases in exchanger water temperature and pressure could occur.

Once electric power has been restored, no further manual changes to the control system are required.

5.1.1 Manually Opening the External Air Intake Shutter

Remove the orange plastic magnet affixed to the EAI shutter. Attach the magnet to the servo motor, in the black circle marked “Magnetic Gear Release”. This releases the gear coupling, allowing you to manually turn the rod that controls the intake shutter angle. Turn the rod clockwise as far as it will go. This opens the shutter to 100%. Once done, remove the magnetic device from the servo motor and return it to its original place.

6 MAINTENANCE AND CLEANING

The Automatic regulation of burning does not require any specific maintenance. To dust off the LCD display, ideally use a display wipe or a slightly wet cleaning cloth. Do not use aggressive detergents or rough cleaning implements, as those might damage the device.

7 HEATING WITH AUTOMATIC REGULATION OF BURNING

Starting the fire

Whenever adding fuel, regulation process needs to be re-started, launching a new automatic process. This may be done automatically or manually (see Section 4.1). Upon starting the program, the EAI shutter opens to 100%, then gradually moves toward closed as per the selected program.

Automatic regulation process

Once the starting temperature /can be set in the range 40-70 °C/ has been reached, automatic regulation process starts. The program ensures optimal combustion and maximizes heating efficiency.

Residual heat mode

Once the conditions for residual heat mode have been reached, an audio signal is played and the display indicates you might wish to add fuel. It is not necessary to refuel immediately; the signals are notifications only.

If you do add fuel, you will need to re-start the combustion control process.

Program end

If no fuel is added, the program continues closing the EAI shutter, until it eventually closes completely (0%).

8 GENERAL NOTICES

- This Manual is an integral part of your purchase; we recommend storing it near the device so as to have it available for reference when needed.
- The device is not designed for any use other than those described in the User and Service Manuals.
- The operator should regularly visually check the condition of the device and provide basic care and maintenance.
- This is an electrical device, and as such, service work requiring electrical modifications may only be performed by duly qualified electrical technicians.
- Keep the device away from water and excessive dampness and only use it within the indicated range of operating conditions. Avoid situations where temperatures near the device fluctuate wildly while air moisture is high, as this might lead to water vapor condensation inside the device, potentially causing electrical malfunctions.
- Disconnect all electrical connections before performing any maintenance on the device!
- In the event of malfunction, please return the device to the distributor, along with a detailed description of the problem.
- Respect the indicated maximum output voltages – see device electrical datasheet.