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**Microprocessor-based controller
for blowers and central heating circulating pumps
version with REMOTE CONTROL**

MTS 8z

Installation and Operation Manual

Applications

MTS 8z is a microprocessor-based controller designed for the operation of blowers installed at central heating (CH) boilers, and circulating pumps. The device in the version with remote control is used to maintain set temperature in residential buildings, improving thermal comfort and reducing energy consumption. Instead of the factory-installed room sensor the device can be connected to a room thermostat (wired or wireless). The controller is equipped with an “anti-stop” function and dynamic blower control capability.

Technical specifications

Supply voltage	230 V / 50 Hz
Maximum load of outputs	2 x100 VA
Temperature measurement range	0 – 99°C
Alarm	below 9°C and above 92°C

Boiler temperature adjustment range: 20-90°C
Blow-through duration: 0-30 sec
Interval between blow-through operations: from 10 sec to 30 sec
Maximum blower output: from 100% to the minimum value (at 10% increments)
Minimum blower output: 20%, 30%, 40%, 50% or 100%
Activation temperature for CH pump: 20-80°C
Boiler extinguishing temperature: 20-50°C
Blower hysteresis: 0.5- 5°C
Pump hysteresis: 1-15°C
Range of room sensor settings 10-35°C
Firing duration: 0.5-4 hrs
Extinguishing duration: 0-4 hrs
Pump protection against “jam-stopping” – “anti-stop” function; activation for 30 sec every 14 days
Reduced risk of system freeze – pump activation below 9°C

Factory settings

50°C
6 sec
5 min
100%

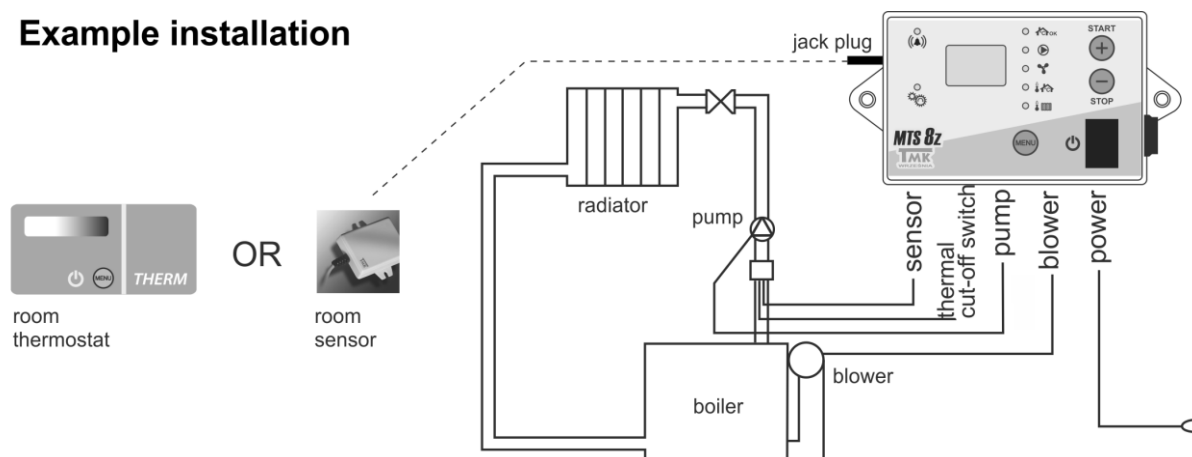
40%
30°C
35°C
0.5°C
2°C
21°C
2 hrs
1 hr

Description of indicator symbols

	room temperature achieved
	pump activated
	blower activated
	display of current room temperature
	display of current boiler temperature

INSTALLATION

Example installation



1. Controller mounting

Mount the controller on a suitable wall using 6 mm wall plugs (the plugs complete with screws are a part of the delivery set).

2. Mounting of boiler sensor and thermal cut-off switch

The sensor and thermal cut-off switch should be installed on a non-insulated pipe going out of the CH boiler.

Fasten the sensor and the thermal cut-off switch to the pipe using two clamps (included in the delivery set) so that they both adhere properly to the pipe.

It is advisable to wrap the pipe with the sensor and the thermal cut-off switch with a thermal insulation material.

Note: The sensor and thermal cut-off switch are not suited for being used directly in the liquid!

3. Installation of room sensor (optionally)

Mount the room sensor on an inside wall which is not directly exposed to sunlight, in a room that is most frequented by residents. Make sure to select a location with free air circulation, away from sources of heat (e.g. heater, oven, fridge, TV set), at a height of 1-1.5 m from the floor.

Connect the MTS 8z controller to the room sensor using a jack plug at the end of the sensor cable. The jack socket is placed on the left-hand side of the controller (see the diagram above).

4. Installation of room thermostat (optionally)

Mount the room thermostat following guidelines included in the operation manual.

Connect the MTS 8z controller to the room thermostat using a jack plug (included in the delivery set) and a double-wire cable. The jack socket is placed on the left-hand side of the controller (see the diagram above). In the room thermostat connect the double-wire cable to COM and NC terminals which are closed when the thermostat heating indicator is inactive.

Wireless thermostats can also be used.

5. Connection of the supply cable to the blower and pump

- Connect the green-yellow wire (protective neutral conductor) of the 3-wire supply cable to the protective neutral terminal of the motor (marked with an appropriate symbol);
- Connect the brown and blue wires to the **L** and **N** terminals of the motor;
- In the version equipped with an IEC coupler make sure to join the connectors of the controller and the controlled device.

Note: Always ensure that regulator installation is performed by a properly qualified electrician.

6. Connection of the controller


Connect the supply cable to a **230 V, 50 Hz power outlet with an earth contact**.


The ambient temperature in the controller mounting location should not exceed 40°C.


Note: The connection cable of the regulator may only be replaced by the manufacturer.

Note: The MTS 8z controller is only able to operate when the system is filled with water. If the system is empty, the controller must be disconnected from the mains supply. Otherwise the pump may become damaged.


CONTROLLER OPERATION

Switch the controller on using the mains switch .

Press the  **START** button – this is required when the function of automatic boiler firing at mains supply connection (**F8**) is activated.




The process of **FIRING** is initiated and indicated by pulsating green LED . The blower slowly accelerates to reach the preset maximum level.

If during the **FIRING time** (**F2**) the temperature of the boiler falls below the **EXTINGUISHING temperature** (**F1**), the controller does not switch the blower off. Instead, it makes repeated attempts at boiler firing.


After the elapse of the **FIRING time** (**F2**) the controller goes into the **OPERATING** status indicated by the continuous light of the green LED .

Both in the **FIRING** status and in the **OPERATING** status, the closer to the desirable temperature, the slower the operation of the blower because the burning process is the most economical when the blower operates on a continuous basis at a low output.



When the temperature exceeds the preset level, the blower is deactivated, however it becomes periodically activated for short periods defined by the user – **BLOW-THROUGH**.

If the blower must be deactivated, e.g. for adding coal to the furnace, press the  **STOP** button (the LED  goes out). Pressing the  **START** button again resumes the operation of the blower.


If during the **OPERATING** status the boiler temperature falls below the **EXTINGUISHING temperature** (**F1**), the controller enters the **EXTINGUISHING** status, continuous operation of the blower is discontinued and only **BLOW-THROUGH** remains active.

When the **EXTINGUISHING time** elapses (**F3**), the controller automatically changes the working status into **STOP** (the LED  goes out).


The **EXTINGUISHING** status is not activated if the **FIRING time** (**F2**) has not elapsed yet.

The controller activates and deactivates the CH pump according to settings. The  **START** and  **STOP** buttons do not affect the pump's operation.

OPERATION WITH ROOM SENSOR



If the temperature in the room achieves the set value (**P2**), the  indicator lights up. The controller interrupts the operation of the blower and the pump, at the same time activating the combustion of accumulating gases – **BLOW-THROUGH**. The pump is activated in the emergency mode at the preset temperature (**P6**).

To maintain thermal comfort in the rooms, the controller periodically releases portions of hot water into the heaters according to user's settings (**F6**, **F7**).

If the room temperature drops, the controller resumes blower and pump operation. The  indicator then goes out.



If the room sensor cable is disconnected, the controller operates as the basic version, i.e. maintains the set boiler temperature.

OPERATION WITH ROOM THERMOSTAT (WIRED OR WIRELESS)

If the room temperature achieves the value set in the room thermostat, the OK indicator on the controller lights up. The thermostat indicates that the temperature has been achieved by deactivating the heating indicator. The controller interrupts the operation of the blower and the pump, at the same time activating the combustion of accumulating gases – **BLOW-THROUGH**. The pump is activated in the emergency mode at the preset temperature (*P6*). To maintain thermal comfort in the rooms, the controller periodically releases portions of hot water into the heaters according to user's settings (*F6*, *F7*). If the room temperature drops, the controller resumes blower and pump operation. The OK indicator then goes out. If the room thermostat is disconnected, the controller operates as the basic version, i.e. maintains preset boiler temperature.

CHANGE IN DISPLAYED TEMPERATURE AT OPERATION WITH ROOM SENSOR

The controller makes it possible to monitor temperatures measured by both sensors. To switch between boiler and room temperature displays, press the **MENU** button.

 and  indicators show which of the temperatures is displayed at a given moment.

BASIC PARAMETERS MENU

Pressing and holding the **MENU** button for 1 second displays the *P1* symbol on the screen.

Changing parameter number is performed with the \oplus or \ominus button. To edit a selected parameter, press the **MENU** button.


The following parameters are available:

- | | |
|-----------|--|
| <i>P1</i> | - boiler temperature (20-90°C) ⁽¹⁾ |
| <i>P2</i> | - room temperature (10-35°C) |
| <i>P3</i> | - maximum blower output (from 100% to the minimum value at 10% increments) ^(5,6) |
| <i>P4</i> | - minimum blower output (20%, 30%, 40%, 50% or 100%) ^(5,6) – the LED is pulsating |
| <i>P5</i> | - CH pump activation temperature (20-80°C) |
| <i>P6</i> | - temperature of emergency pump activation at achieved room temperature (60-90°C) |
| <i>P7</i> | - duration of blow-through (0-30 sec) ⁽²⁾ |
| <i>P8</i> | - frequency of blow-through operations (from 10 sec to 30 min – in minutes) ^(3,4) |
| - - | - exit from the MENU with saving of changes (after pressing the MENU button) |

Notes to the MENU⁽¹⁻⁶⁾:

1. The maximum setting of the EXTINGUISHING temperature is at least 5°C lower than the boiler temperature setting.
2. The "0" setting denotes blow-through deactivation (**not recommended for reasons of safety**).
3. The time includes blow-through time.
4. For periods shorter than 1 minute time is specified in tenths of a second (e.g. "0.1" = 10 sec).
5. The blower becomes activated to make it possible to assess its actual rotating speed.
6. The "99" display represents 100% output.

SERVICE FUNCTIONS MENU

In order to edit SERVICE FUNCTIONS, disconnect the controller from the mains supply , press the **MENU** button and – without releasing it – switch on the controller.



The screen displays *F1*.

Menu functions are the same as in the **BASIC PARAMETERS MENU**.

The following functions are available:

- F1* - extinguishing temperature (20- 50°C)⁽¹⁾
- F2* - firing time (0.5-4 hrs, at 0.5 hr increments)
- F3* - extinguishing time (0-4 hrs, at 0.5 hr increments)
- F4* - blower hysteresis (0.5- 5°C)
- F5* - pump hysteresis (1-15°C)
- F6* - release of hot water batches to heaters at the achieved room temperature (0-2.5 minutes)
- F7* - frequency of release of hot water batches at the achieved room temperature (5-60 minutes)
- F8* - automatic firing of boiler at mains supply connection (0 – NO, 1 – YES) (factory setting)
- F9* - controller software version number (read-only)
- - - exit from the **MENU** with saving of changes (after pressing the **MENU** button)

RESTORATION OF FACTORY SETTINGS

In order to restore factory settings, disconnect the controller from the mains supply , press the  button and – without releasing it – switch on the controller.

DELIVERY SET

- controller
- clamps (2 pcs.)
- 6 mm wall plugs (2 pcs.)
- jack plug
- room sensor 10 m (optionally)

SAFETY DEVICES

The controller, blower motor and pump motor are protected by means of a 1.25 A fuse which blows up in emergency situations (e.g. short-circuit in the motor or controller).

An additional protective device installed in the controller is the thermal cut-off switch which disconnects the blower independently of the controller when the temperature of the boiler exceeds 90°C (the thermal cut-off switch is reconnected after temperature drops by ca. 30°C).

The situations may occur in the event of pump failure or controller failure.

NOTE

For the controller to maintain preset temperature it may be necessary to seal the boiler. Otherwise the temperature may rise uncontrollably, especially during windy weather.

WARRANTY

TMK sp.j. grants the user a warranty for the MTS 8z controller. The warranty period is 3 years from the date of purchase of the device, however not longer than 4 years from the date of manufacture.

WARRANTY TERMS AND CONDITIONS

Warranty claims shall be accepted provided that the terms and conditions of warranty, and general rules of operation of electronic devices, are complied with as required. TMK sp.j. guarantees appropriate workmanship, high quality and reliable operation of the controller. In the event of any faults in the controller's operation, or defects which can be attributed to the manufacturer, TMK sp.j. shall repair or replace the faulty controller with a defect-free device within 14 working days from the date of returning the controller (in person or through post). The warranty scheme explicitly excludes all defects arising due to the user's fault and, particularly, defects caused by mechanical damage, faulty mounting, water ingress or operation of the device contrary to the general rules of operation of electronic devices. The warranty is only valid with a proof of purchase.

DATE OF SALE:

.....
day, month, year

.....
Seller's stamp and signature

MANUFACTURER:

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DATE OF MANUFACTURE