

Change in pump operation modes NO HSW->WINTER->SPRING/AUTUMN->SUMMER

Depending on how you connect the central heating system, year season and demand for hot tap water the four modes of operation of central heating and hot tap water pumps are possible.

1. Only central heating pump, no HSW pump (factory setting)

Only the central heating pump is running, which is activated at the temperature preset in the **service** parameters .

Set the parameter **H.S.W setting** liable for H.S.W. to **off**

While changing the **H.S.W setting** parameter depress the button „+” and hold down until the display shows **off**

2. WINTER MODE . Central heating pump and H.S.W. pump .

Set the **Central heating pump engaging** parameter to 35°C (usually it is set to a value of 35°C-45°C);

Set the **H.S.W setting** parameter liable for H.S.W to such a value to which the water in the H.S.W. container must be heated, eg. 50°C.

Central heating and hot tap water pumps are working in parallel during the container charging.

H.S.W. priority switched off – the parameter **H.S.W container priority** is set to **off**.

3. SPRING/AUTUMN MODE . H.S.W Priority.

At the time of H.S.W. heating the central heating pump is switched off

Set the parameter **H.S.W container priority** in the **service** parameter to **on**..

4. SUMMER MODE . Only H.S.W. pump. - boiler is used only to heat the water in the H.S.W container.

Only the H.S.W pump is in service.. Set the **Central heating pump engaging temperature** parameter to **off** in the configuration mode. While changing the **Central heating pump engaging temperature** parameter depress the button „+” and hold down until the display shows **off**. Set the parameter **H.S.W setting** liable for hot tap water to such a value to which the water in the H.S.W. container must be heated, eg. 50°C.

Alarm conditions

1. **Temp. out of scale** - Measuring range of the boiler sensor is exceeded
2. **Heat in feeder** - Feeder overheated. The feeder temperature above the value of the **hopper sensor** or the **hopper sensor activated**. The feeder alarm activation causes:
 - blower operation stoppage, pump activation, activation of the feeder for a specified period in order to remove the burning fuel from the feeder. Time / number of pouring applications is set by the boiler manufacturer (default value: 5 minutes / applications).
 - If after 5 minutes the temperature will not fall by 3°C, then the feeder will be switched on again for a specified period of time. After the cessation of failure the display will alternately show the temperature and alarm condition message. Alarm signaling is canceled by depressing the button 
3. **Basket sensor failure** - Not connected, improperly connected or defected basket temperature sensor. Switch off the basket sensor in the installation parameters till the time of buying a new one.
4. **Central heating sensor failure** - Not connected, improperly connected or defected boiler temperature sensor
5. **HSW sensor failure** - Not connected, improperly connected or defected HSW sensor .
6. **No fuel** – Extinction of the boiler. Signaling cancellation 
7. **Ram jammed** – it refers to a piston feeder . Time exceeded: **Circulation of feeder start**
8. **Weather sensor failure** – Not connected, improperly connected or defected ambient temperature sensor.

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INSTRUCTION MANUAL The controller of central heating boiler operation with screw-conveyor/ram feeder

TITANIC



INSTRUCTION MANUAL CONTENT:

- **configuration parameters and its description** – **maintenance parameters and its description**
- alarms
- change in pumps operations modes (without hot tap water pump, winter, spring/autumn, summer)

MAINTENANCE AND INSTALLATION INSTRUCTION INCLUDES THE FOLLOWING:

- technical data, operations conditions, configuration,
- **installation parameters and its description**
- testing mode of outputs and sensors,

Software version later than: 6.14

Configuration parameters of TITANIC controller for the boiler equipped with screw-conveyor or ram feeder

Changes in a parameter	Manufacturing setting of the controller producer	Setting suggested by boiler manufacturer	Changes in a parameter
1. Boiler setting	55°C		35 – 90°C
2. Dosing time (only screw)	12[sec]		5 – 99[sec]
2. Dosing intervals	30[sec]		5[sec] – 99[min] 59[sec]
3. Blower capacity	3 [process]		1-12 [process]
4. Blowthrough time in maintaining mode	10[sec]		shutdown 5 – 59[sec]
5. Maintaining mode intervals	10 [min]		1 –99 [min]
6. Dosing multiplicity in maintaining mode	1		0-30
7. Hot tap water setting	switch off		30 - 75°C ...switch off
8. Feeder*	switch off		switch on / switch off
9. Hot tap water temperature view	Temperature reading of hot tap water container		0-100°C

*Setting the parameter **Feeder** to „switch off” enable to operate with extra grill (if available). All functions of the controller are active that is blower, pumps, room control, weather control while a feeder is switched off.

Maintaining parameters of TITANIC controller

Changes of a parameter	Manufacturing setting of the controller producer	Setting suggested by boiler manufacturer	Changes of a parameter
10. C.H. pump engaging	35°C		25 - 70°C ...switch off
11. Time of C.H. pump switching off (operations with room thermostat)	5 [min]		switch on...1 - 30...switch off [min]
12. Priority of hot tap water container	switch off		switch off / switch on
13. Decrease of boiler temperature (operations with room thermostat)	0°C		00 - 60°C
14. Clock – current hor	–	00:00 - 23:59 (hour:minutes)	
15. Day	–	Monday - Sunday	
16. Zones	switch off	shutdown 01-08	
Zones operations in days:	switch off	switch off;operating;Sat/Sun;every day	
Time for zone activation		00:00 - 23:59 (hour:minutes)	
Central heating correction		-60 - +60°C	
Hot tap water correction		shutdown -45 - +45°C	

Operation with a room thermostat

The TITANIC controller can be connected with the room thermostat of any manufacturer (room controller) fitted with a potential-free relay output.

Room temperature lower than the set on the thermostat

- open contacts of room thermostat.
- controller performs a normal duty cycle (as if the thermostat was not connected); blower and feeder work according to the relevant settings; central heating pump operates above the temperature of the central heating pump activation;

Room temperature reached

- The room thermostat contacts are closed, letter T lit on the panel.
- The boiler temperature drops by the value set in the parameter

Boiler temperature reduction

- Central heating pump operates according to the parameter **Boiler temperature reduction**.
- if there is demand for hot tap water (need to activate the pump charging the hot tap water container) the boiler temperature will be increased according to the setting of the parameters **H.S.W setting** + **H.S.W surplus**

Disconnect the controller from the mains voltage. Unscrew the lid of the controller. Screw 2 cable wires to the described "room thermostat" connector in the TITANIC controller. There is a cutout in the casing and you should cut the sticker in this place to screw the controller casing. Screw the other side of the wires to the corresponding connectors of the room thermostat.

Operation with a remote control panel (PILOT R)

You can connect the remote control panel PILOT R, manufactured by PPHU „ProND”, to the TITANIC controller.

If the remote control panel is working in a mode of "boiler temperature control" the letter K is lit on the TITANIC controller, and if it works in a mode of "room temperature control" then, the letter P is lit on the TITANIC controller.

During the "Room temperature control " two statuses are possible:

The room temperature is less than one set on PILOT R

- controller performs normal duty cycle; blower and feeder work according to the relevant settings; central heating pump runs above the temperature of the central heating pump activation;

Room temperature reached

- boiler temperature drops according to the description given in the PILOT R service manual
- central heating pump runs according to the description given in the PILOT R service manual
- if there is demand for hot tap water (need to activate the pump charging the hot tap water container) the boiler temperature will be increased according to the setting of the parameters **H.S.W setting** + **H.S.W surplus**

Depending on the control panel used there are different ways to control the TITANIC controller. Detailed instructions and the description of the parameters are available complete with a remote control panel.

To connect the control panel, use four central lines coming out of the controller. Connecting the other lines may damage the controller. To make connection, use RJ12 connectors crimped on the 4-wire, round or flat, telephone cable wire. The cable and connectors crimped on it are delivered with each control panel.

Unscrew the cover of the controller. Insert the cable with the crimped RJ12 plug to RJ12 socket. Pass the cable through the cutout in the back of the controller.

Control panel depending on required temperature

Depending on the parameter **Selection of required temperature** configured in installation parameters various arrangement view of inscriptions shall be visible on control panel:

1. only the setting

- temperature control of the boiler according to value configured in **boiler setting** value



2. setting + zones

- temperature control of the boiler according to value configured in **boiler setting** parameter +/- correction of temperature in parameters **Central Heating Correction** and **Hot Tap Water Correction** in determined time of changes activation – **Time of zone switching off**



3. weather compensated control

setting a boiler temperature according to weather compensated profile. Temperature setting of a boiler is configured on the basis of outside temperature and programmed heat curve. Additional sensor of outside temperature is required.



4. weather control + zones

setting a boiler temperature according to weather compensated profile. Temperature setting of a boiler is configured on the basis of outside temperature and programmed heat curve. The temperature setting of a boiler is changed due to temperature corrections in the parameters **Central Heating Correction** and **Hot Tap Water Correction** in determined time of changes activation – **Time of zone activation**. Additional sensor of outside temperature is required.



Abbreviations description used for the selection of required temperature 2-4:

Np – Temperature setting calculated from heat curve

Nu – Temperature setting configured in the parameter **Boiler setting**

Tk – Current temperature of the boiler

Ns – Setting of boiler temperature calculated with regard of all corrections and reduction from the thermostat or PILOT R

Ns = Nu (or Np) +/- clock correction – reduced from the thermostat or PILOT R.

In modes 2-4 with buttons other temperature and additional parameters can be viewed.

Tc hot tap water container temperature

P averaging weather temperature (averaging time about 2 hours)

Nc hot tap water setting with regard of hot tap water correction

K Central heating correction

C Hot tap water correction

Tr feeder temperature

GENERAL DATA

The TITANIC controller is intended for boilers control that are equipped with screw-conveyor or ram feeder of fuel. For proper operation of a controller and a boiler the temperature sensor of central heating boiler, temperature sensor of a hopper, fan, feeder (for a boiler with ram feeder a sensor of feeder position) is necessary

FRONT PANEL ELEMENTS ARRANGEMENT



	This button is used to switch off and switch on a controller 1 sec. pushing switches on the controller; 6 sec. pushing switches off the controller
	In „START” or „AUTOMATIC” mode - 6 sec. pushing enters into the configuration of parameters of the controller operations. In „MANUAL” mode pushing the button results in switching on/switching off the feeder.
	In „STOP” or „AUTOMAITC” mode the button is intended to implement changes of the parameters „Reading”. In the configuration to reduce the parameter values. In „MANUAL” mode pushing the button results in switching on/switching off central heating pump.
	In „STOP” or „AUTOMAITC” mode the button is intended to implement changes of the parameters „Reading”. In the configuration to increase the parameter values. In „MANUAL” mode pushing the button results in switching on/switching off the blower.
	Switches between modes: „STOP”->„MANUAL”->„AUTOMATIC” 6 sec. switch – proceeding to „STOP” mode. Process on front panel S ->R->A
	Blower operations signalling
	Signalling of the operation of hot tap water pump (pump loading the container of hot tap water – boiler)
	Sygnalizacja pracy pompy C.O.
	Sygnalizacja pracy podajnika

Return to factory settings of configuration/maintenance parameters

Switch off the controller. Keeping the button pushed switch off the controller

The information shall be displayed; **Go to previous setting?**

Pushing results in the return to factory settings of configuration parameters.

If it is pushed while displaying the information **go to previous settings?** the info shall be displayed

Retreat all settings?. If the button is pushed while displaying the info it shall result in the return to all factory setting of maintenance and configuration parameters.

Annotation!! Factory setting is only exemplary manufacturer, setting that shall be adjusted depending on the fuel quality and boiler size.

Fire up a boiler, setting the boiler temperature

(Power up the controller power supply with 0-1 switch)

1. If the info is displayed

Controller switched off/Titanic [feeder type] it shall be switched on with  button.

2. Current boiler temperature, boiler setting, operation type and info on remote control shall be displayed.

Firing up

3. Proceed to „MANUAL” mode – push  button

Letter **R** shall be displayed (manual mode)

4. With  button power up a feeder to transfer fuel in such a way to form slight cone on a retort. A furnace made of paper and dry wood shall be formed on fuel surface (or ignition oil). Fire up a furnace. When upper layer of fuel starts firing switch on a blower with  button

5. When fuel is fired close doors of a boiler and push  button to proceed to “AUTOMATIC” mode. This mode is signaled with **A** letter

The boiler cannot stay unattended in manual mode operations with a blower activated and/or feeder unattended!!

The control disengaging – that is “AUTOMATIC” mode exit is done if the user keeps  button pushed  for 6 seconds. Letter informing on the process shall be switched from A to S

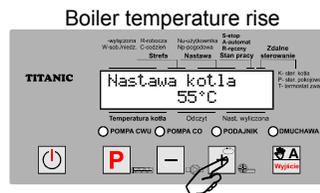
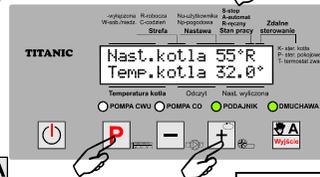
Setting the boiler temperature

Push STOP or AUTOMATIC mode and keep it pushed for about 6 seconds –  button

In the controller with no time zones of temperature change can be done with + and – without entering into configuration parameters

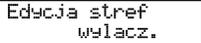
If the info **Boiler setting** is displayed, change the boiler temperature with buttons:

increase in temperature (setting) 
reducing temperature (setting) 

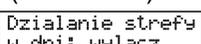


Parameter's name	Description
12. Clock -	Setting current hour
13. Day	Setting current day
14. Zones edition	<p>The controller is equipped with internal clock that influences on values: required boiler temperature and hot tap water. For boiler temperature and hot tap water 8 zones can be configured; separately for working days, Saturdays and Sunday or commonly to activate the zone each day.</p> <p>In each zone we determine the hour of commencement and the correction size that shall be added or reduced from the value determined (from required temperature at the control only the setting or value calculated from heat curve at weather compensated control).</p> <p>Corrections can accept negative and positive values, due to it the boiler temperature and/or hot tap water can be increased. Boiler temperature after making calculation cannot be less than configured in the parameter Limitation of minimal setting and higher than 90°C.</p> <p>The temperature of hot tap water shall not be less than 30°C and shall not exceed 75°C. The setting of hot tap water correction on “switch on” is possible that results in hot tap water pump switching off.</p> <p>Last correction in given day are valid up to the next changes.</p> <p>Ns =Nu (or Np) +/- clock correction – reduced from the thermostat</p>

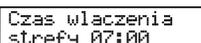
Setting time zones

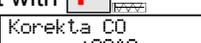
When the screen is displayed  you are allowed to select zones no. with  and  buttons to be configured.

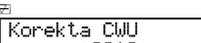
When the zone no. is selected (from 1 to 8) the choice shall be confirmed with 

When the screen is displayed  you are allowed to select zone type (operating, Saturday/Sunday, every day) with  and  button the.

We confirm this with 

When the screen shall be displayed  we configure the hour of zone commencement. We confirm it with 

When the screen shall be displayed  we configure central heating corrections. We confirm it with 

When the screen shall be displayed  we configure hot tap water corrections. We confirm it with 

Entry to setting next zone is done after pushing 

Next click of  button switches to programming mode of maintenance parameters.

The description of installation parameters and its effect on a boiler operation

Parameter's name	Description
8. Temperature of central heating pump engaging	Above the temperature central heating pump is active all the time (except for setting the priority of hot tap water, the usage of room thermostat or remote control panel). Switching off the pump is in the temperature of 5 °C lower than switching on temperature setting. „switch off“ – switching off central heating pump. Pumps mode „lukewarm“ . While summer season when the boiler of central heating is used only for hot tap water heating the central heating pump shall be engaged – Temperature of central heating pump engaging configure at „switch off“ .
9. Time of central heating pump switching off (operations with room thermostat)	With room thermostat connected the parameter describes the time for central heating pump switching off at the moment of shorting the input of room thermostat that is upon reaching required temperature on room thermostat. The controller starts the pump every time configured in the parameter every 30 seconds. Setting the parameter to „switch on“ results in continuous operations of central heating pump. Setting the parameter „switch off“ results in switching off the pump after shorting the input of room thermostat Excessive time of switching off can be a reason of immediate temperature jump in a room, too low time of switching off results in room overheating. This is experience based parameter.
If the boiler temperature shall increase more than required temperature while loading hot tap water container – central heating pump shall be switched on for 2 minutes every time period configured in the parameter Time of pump switching off to avoid temperature rise in central heating circulation at the moment of loading hot tap water container. Central heating pump shall be switched off for 2 minutes every 5 minutes (time of central heating pump switching off is factory - configured for 5 minutes).	
10. Priority for hot tap water container	„switch off“ – function of a container of hot tap water is inactive. Manufacturing setting Pump type „winter“ „switch on“ – function of a priority of hot tap water is active, central heating pump is switched off while loading a container of hot tap water. Mode „spring / autumn“
11. Decrease of boiler temperature (operations with room thermostat)	With room thermostat connected The amount of boiler temperature reduction after shorting room thermostat input. Excessive temperature reduction of a boiler while the operations of room thermostat can be a reason of flue gas spraying, irregular operation of a boiler and deposition of sediments on boiler walls.

Influence of configuration parameters on the boiler operation

The furnace fires for all heating season and it entails fuel delivery in proper amount depending on fuel quality and boiler size. In „AUTOMATIC“ mode the controller can operate in one out of two modes - "HEATING" or "MAINTAINING".

In „HEATING“ phase (boiler temperature is lower than required) the boiler produces heat to reach required temperature. The fan operates at the same speed configured in the parameter **Blower capacity** and the feeder is switched off in cycles every **Dosing intervals** (in ram feeder for **Dosing time**).

The parameter **Dosing interval** (and for ram feeder **Dosing time** additionally) determines the fuel amount delivered to the furnace.

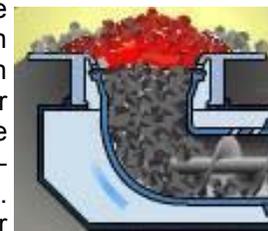
If we notice that in „HEATING“ phase unburned fuel falls from a retort to ash pin the **Dosing intervals** shall be increased.

*In boilers with ram feeder and standard burners of retort the **Dosing time** can be configured on 12 seconds and **Dosing interval** can be also configured. Some boilers require delivering greater fuel amount and greater intervals between dosing (gutter-shaped furnace). Using boilers with ram feeder require observing recommendation and hints of boiler manufacturer.*

While boiler operations it is necessary to observe the amount of air delivered through the blower to be adopted to the fuel combustion on a retort intensity.

- red and fuming fire informs that the air access is too low
- bright and white fire informs that the air access is too large
- proper fire is in the situation when we see clear, **intensively yellow flame** spreading not only upwards but also to the sides.

Heat residuals shall be on the retort collar but fall from the retort only ash shall fall. Eco-pea coal shall be fired only on the retort, however not inside of it. Burnt opening („crater“) in a retort shall inform on too large air stream. Excessive air stream cools the boiler down and results in the performance drop. Adopting the power of air airflow to the furnace is possible due to **Blower capacity** setting. Process 12 is max. airflow power. Reducing airflow power often results in boiler cost-effectiveness increase. The process shall be chosen prior to furnace observing in "HEATING" phase, the process shall be reduced or increased to obtain intensely yellow colour of a flame.



In „MAINTAINING“ phase (when a boiler reached required temperature) the amount of generated heat is reduced to the minimum value that is the amount required for firing maintaining - fuel firing. The fan in this phase of operations is switch on in cycles **Maintaining intervals** to **Blowthrough time**. In „MAINTAINING“ phase the feeder is activated every determined blowthrough – it is configured in the parameter **Delivering multiplicity in maintaining** For example for **Delivering multiplicity in maintaining**=3 feeder is activated every 3rd blowthrough.

Change in configuration parameters of the controller operation

The controller is equipped with 3 groups of parameters:

- configuration parameters available while the controller operation
- maintenance parameters available while switching on the controller with **P** button
- installation parameters available after writing the installer code (maintaining manual)

Change in configuration parameters can be done in the following mode:

„STOP”; „MANUAL”; „AUTOMATIC”.

Entering to programming mode is done after keeping

P button pushed for 6 seconds

In programming mode first configurable parameter is

Boiler setting.

After this parameter choice – changes in the value are conducted with **+** and **-** buttons

Selection of parameters is conducted with **P** button

- switch every parameter forward.

In parameters when minutes and seconds are configured with **P** button there is a switch between min and sec.

At every moment of programming with **Wyjście** button it is possible to proceed one parameter back.

Last but one configuration parameter from a menu is **Hot tap water setting.** If there is no additional hot tap water pump in the installation, this parameter shall be

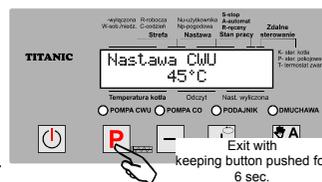
set to **switch off** - switching off hot tap water pump (while configuring this parameter keep **+** button pushed until **switch off** info shall be displayed

In **hot tap water setting** parameter the temperature is configured to be consistent with hot tap water container if in the installation additional pump loading the container of hot tap water is available. The change is done in the same way as in previous parameters that is with **+** and **-** buttons

Current temperature of hot water boiler in a container is displayed as last **“Preview of hot tap water temperature”** Parameters programming exit is done after keeping

P button pushed for 6 seconds

If we do not push Any button the controller exits programming after 476 seconds with saved changed.



Change in maintaining parameters of the controller operation

Any changes in maintenance mode shall not be conducted if any parameters are not understood. In case of any doubt on the parameters it is recommended to contact the controller manufacturer (contact data on 1st page of the manual).

Entry to maintaining parameters programming:

1. Switch on the controller with power switch 0-1 or
2. Keeping **P** button pushed switches on the controller power switch 0-1 or

3. If the info **Configuration release button** occurs

Release button and **P**

First of set parameters shall occur.

Temperature of central heating pump switching off

Next click of **P** results in switching to next parameter.

After this parameter choice – changes in the value are conducted with + and - buttons

increase

reduce

Keeping **P** pushed for 6 seconds saves changes

If the button is not pushed for 6 seconds the exit from the controller after 2 minutes from programming mode without setting changes.

List of all maintaining parameters that can be changed is included in 2nd page.

Next page table includes yellow parameters that can be changed in the controller with selected zone mode. The mode is switched on in installation parameters available for boilers and installers manufacturers. In case of problems While the change of maintenance parameters the „Password” info is displayed as last.

Enter into installer parameters is possible when special code – installer password is written.

Improper change in installation parameters can interfere proper operations of a boiler or stop it (**MAINTENANCE AND INSTALLATION MANUAL**)

