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SERVICE: Phone number - 0 796 793 796

CENTRAL HEATING BOILER TEMPERATURE DIGITAL DRIVER

„TIGRA"

MANUAL

CE

SUPPORT SERVICES: PHONE NUMBER - 0 796 793 796

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1. APPLICATION

„TIGRA” is a driver that ensures the maintenance of set water temperature in a boiler equipped with automatic feeder of solid fuel. Its advanced features provide economic and automatic operation of unit as well as full control over central heating pump, H/W pump, underfloor heating and circulation pump. Time zones, economic functions, day and night settings and new algorithm of control over the blower ensure fuel saving up to 20% in comparison to traditional drivers. Room thermostat output provides convenience and comfort of use. The possibility to connect additional remote control panels (boiler control from any place in the apartment) makes this driver special among other models available on the market.

Every user can connect up to three additional remote control panels, identical to the main panel mounted next to the boiler.

You can ask for the opportunity to buy additional control panels under the telephone number:
(62) 594 33 04 ; 0 796 793 796
or e-mail biuro@kom-ster.pl

The manufacturer provides additional options such as connection of WiFi module, GSM and TV to the driver. In this case, the connector on rear wall of the housing is used. The connector allows you to connect three devices (for example, three remote control panels – this option is already available!). Each of the devices is recognized as an independent unit, so that you can for example connect two remote panels and one WiFi module that allows the driver control and a preview of the boiler on the Internet. It will also be possible to connect for example one panel, one WiFi module and one GSM module.
For more information about the additional modules premieres, contact us on e-mail: biuro@kom-ster.pl. Planned introduction of modules for sale - November 2013.

2. SPECIFICATIONS

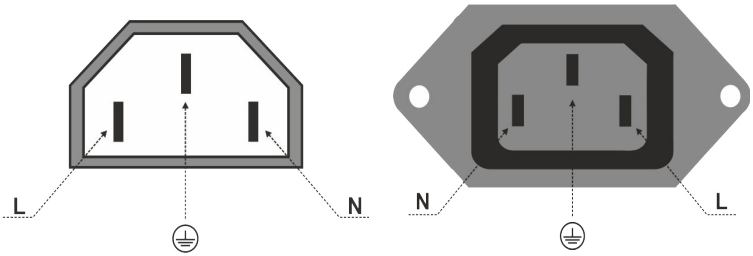
Supply voltage	230 V / 50 hz
Power consumption of the driver	6W
Temperature sensors work range	0-100˚C
Work temperature	0-40˚C
Output load (secured with a fuse 6,3A)	Feeder- 1,5 A Central heating pump- 0,8A H/W Pump - 0,8A Blower- 1,5 A Floor pump - 0,8A Cir. Pump - 0,8A
Circulation pump Anti Stop	1 min every 7 days
Auto pump start (anti-frost)	Less than 5˚C
External breakdown thermostat start (feeder and fan lock)	More than 85˚C
Software security enable	More than 90˚C
Number of time zones	24 for each day
Possibility to connect remote controls	YES/ max 4 panels
H/W pump handling	YES
Circulation pump handling	YES
Floor pump handling	YES
Thermal protection (STB thermostat)	YES

3. CONNECTING EXTERNAL DEVICES
(fuel feeder, fan, circulation pumps)

Using the plugs attached to the driver, connect cables according to the diagram below, and then insert the plugs to the corresponding sockets in the driver housing.

You should examine wire colors in order to connect cables to the corresponding places in connectors.

PLUG **SOCKETS IN THE DRIVER**



Connection on the side of plugs attached to the driver:

1. Connect the **green-yellow** wire - **GROUND** to the central pin (PE ⏚) in the plug.
2. Connect brown and blue wire (N and L 230V) to the pins according to marks in the picture.
   L, brown -PHASE.
   N, blue -ZERO, NEUTRAL
3. Check whether the connections are correct.

Principle of wire connection on the circulation pumps.

1. Take off the lid of pump steering box
2. Connect the green-yellow wire – **GROUND** in the steering box to the zero clamp, marked with ⏚**PE**

3. Brown (L) and blue (N) wires should be connected to the current terminal block.
4. Check whether the connections are correct and screw the steering box.

Specific diagram of connecting the wires to circulation pumps can be found in the pump manual.

Incorrect connection of the wires will cause damage of the driver or devices connected. Installation can be made only by authorized staff. Before connecting the device, remember to remove the driver power cord from the wall socket!!

3.1 CONNECTING REMOTE CONTROL PANELS

Driver TIGRA enables connection of **FOUR** remote control panels marked respectively 0,1,2,3. This number is displayed when turning on the driver by the network button on the splash screen. It is also visible on the tally of every panel. “0” panel is the basic (main) panel, screwed to the main housing of the driver or directly connected to the housing when the main panel is mounted on the boiler and upper housing, for example, behind the container or on rear/side wall of the boiler. On the other hand, every additionally mounted panel in the apartment will be of sequential number 1, 2 or 3. There is no possibility to connect for example two panels of the same number. Driver software automatically detects the connected panel and allows it the control over the whole unit work. Every additional panel looks the same as the main panel (0) and allows the full

regulation of the boiler and view of the heating unit current work mode. There is an ability to mount the panel for example on a wall, metal base, or in any other place you choose.

Modern construction based on two processors allows operation of the unit even without the panel. Any time you can disconnect one of the panels (even the “0” panel) and the driver will work anyway, ensuring the full control over work of the boiler.

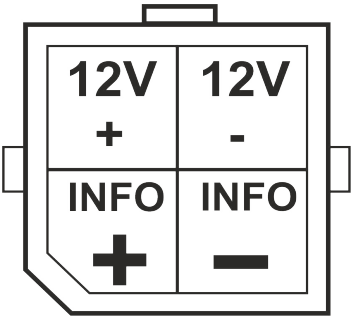
3.2 REMOTE PANELS SUPPLY

Each of remote control panels is directly powered from the driver main housing. The device uses a standard 4-wire cable with 0,5 cross-section which provides power supply (red and blue wire) and data transmission (black and white wire). Description of the panel socket and connection schematic are placed in every panel on rear wall of the housing and in the manual. Description of driver's socket connectors can be found below. There is a possibility to power the panel from independent power supply 12V connected to the wall socket 230V near the device and connect it with the driver central unit by only a 2-wire cable transmitting information. Only two central pins of the panel connector are used then (black and white wire – data transmission).

When connecting more than one remote panel there is no need to connect each panel with the driver! Just connect for example 3 panels in series and only one of them should be connected by a cable with the main driver.

Below you can see a socket for remote panels connecting. Two upper pins are the supply. Two bottom pins – information transmission, data transmission:

- **12V +** RED wire
- **12V -** BLUE wire
- **INFO +** data transmission, BLACK wire
- **INFO -** data transmission, WHITE wire



3.3 PANEL- CENTRAL UNIT COMMUNICATION

To enable communication between the panel(s) and the central unit (main driver), you can use only two central pins on the side of panel and two bottom pins of the connector on the driver housing, marked in the picture as **INFO +** i **INFO –** (black and white wires). In order to supply the panel directly from the driver, you can use two additional pins (outer in the panel and two upper in the connector of the driver, red and blue wires). Panel can be also powered directly from an independent power supply 12V. If the panel has an independent supply, you can use only a 2-wire cable transmitting data (INFO+ and INFO-)

No supply means a mistake in cables connection between pins +12V and -12V. No main screen of the driver (time, mode, set temperature and operating status) is a mistake in cable connection between INFO+ and INFO-). A mistake while connecting the cables may cause damage to the panel or central unit!

4. CONFIGURATION PARAMETERS

FUNCTION	*Factory setting*	*Range*	*Unit*
Set temperature	60	35-90	˚C
Night correction	- 3	- 10...+10	˚C
Economic correction	- 3	0....-10	˚C
C/H pump start temperature	35	Off.....25-70	˚C
H/W temperature	Off	Details in the further part of the manual	˚C
Time of supplying	15	Off...1-205	S
Feed period	90	1-150	S
Feed count	2	Off...1-20	
Blow time	10	Off.....5-59	S
Blow break	10	1-99	Min
Blower level	50	10-100	%
Rotations in the running state	50	10-100	%
Driver switch-off temperature	30	25-35	˚C

5. Service parameters

FUNCTION	*Factory setting*	*Range*	*Unit*
Minimal temperature	40	30-55	˚C
Maximal temperature	80	60-90	˚C
Histeresis	1	1-5	˚C
Minimal blower level	25	20-70	%
Maximal blower level	55	20-70	%
No fuel recovery time	90	Off…-90	Min
Time to stop the pump	3	1-250	Min
H/W container priority	NO	YES / NO	
Feeder alarm temp.	70	Off...35-90	˚C
Clearence time	5	1-30	min
Circulation pump stop temperature	OFF	OFF- 70	˚C
FLOOR temperature	OFF	OFF-50	˚C
Language	POLISH	POLISH, CZECH, ENGLISH	
Fire setting time	2 hours	1- 7	Hour
Extinction time	2 hours	1 - 7	Hour

The service parameters of MIN and MAX blower level can be changed only in very untypical fans, if the rotation changing by means of function BLOWER LEVEL between 10 and 100% are imperceptible. Unnecessary change of settings may cause improper operation of the blower mounted next to the boiler.

6. Front panel buttons

 - Button is used to change the operating mode. In the function MANUAL OPERATION, it is used for the circulation pump enabling/disabling.

Driver „TIGRA" provides work in one of five following operating modes:

- **NORM**- Normal
- **D/N** – The driver automatically decreases temperature at night (11p.m.-6a.m.) by a value set in the menu (Night Correction)
- **ECO**- The driver automatically decreases temperature independently from the time of day by a value set in the menu (Economic Correction)
- **CAL**- Work according to the calendar. The driver in this mode implements the program set by its user. You can set the temperature correction and enabling/disabling of the individual pumps depending on the hour. Calendar setting was described in the further part of this manual. (para 14.2)
- **ROOM** – Work with a room thermostat. The driver when reaching the set temperature in the room, switches to forced running and cyclically enables/disables the central heating pump. The principle of cooperation with the thermostat and the choice of appropriate model was described in the further part of the manual (para 17)


- „UP” button. This button is used to move up (back) in the menu, as well as to return from the menu to the main screen. **During the work in the manual mode, it is used to enable/disable the fan.**


- This button has three meanings:

1. Enter the menu and scroll the individual screens
2. Increase the parameter of function up
3. **In the manual operation mode, when the fan is enabled, this button is used to increase its rotations.**


- This button has three meanings

1. Enter the menu and scroll the individual screens
2. Decrease the parameter of function down
3. **In the manual operation mode, when the fan is enabled, this button is used to decrease its rotations.**


ENTER, this button is used to accept
- switch to edition mode of the function you want to change
- accept entered changes (saving)


This button causes switching to ***OFF*** mode when the boiler is enabled. Fan and feeder are disabled independently from the temperature. Circulation pumps keep working, dependently on temperatures of their enabling/disabling. When pressed, inscription – OFF appears in the main screen. Pressing again causes switching to RUNNING mode, if the temperature of the boiler is higher than the set temperature, or to FIRE SETTING mode when the temperature of the boiler is

lower than the set temperature.

This button and OFF mode is often used during opening the door to ensure that the feeder or fan will not be enabled. OFF mode is often used during burning up on additional grate when you want circulation pumps to work, not the feeder not fan. **In the manual operation mode it is used to enable/disable the fuel feeder.**

Explanations of the use of buttons for changing the calendar functions and changing the time are described in the further part of the manual (para 6)

6.1 DIODES INDICATING THE OPERATION OF EXTERNAL DEVICES

FEEDER 
FAN 
CENTRAL HEATING PUMP 
H/W PUMP 
UNDERFLOOR HEATING PUMP 
CIRCULATION PUMP 

Additionally, the panel is equipped with:

 **-** Is a diode indicating temperature set on the room thermostat, reached in the room in the THER mode.

 **- ALARM**. A diode indicating an alarm mode of the device.

7 DRIVER HANDLING

Please contact us if there are any problems with the driver handling or the process of burning, once you read this instruction. Technical service number is given on the title page of this manual. Our serviceman will help you with handling and setting the device.

7.1. First run

The driver can be enabled by the power switch on the left side of the driver upper housing. Current temperature of the central heating boiler will be displayed on the red display. Set temperature (Tset) will be displayed on the LCD and the operating mode of the driver- (OFF). The current time and operating mode are also displayed (factory setting – NORM, more detail description of operating modes in para 11).

In the OFF mode, you can make any changes in menu, because the driver is in "standby" - fan and fuel feeder are not active.

The device can be switched to BURNING UP operating mode using the butt - inscription BURNING UP will be then displayed. Pressing again this button will cause a return to the "standby" mode – OFF.

7.2 Changing the function parameters in the driver menu

Any function parameter changes can be done in the same way:

Using buttons or you switch to menu and then find the function of your interest, the value of which you want to change.

Select the function, and then using this button you switch to the edition screen (green color of the display).

Using again buttons or you can make changes that should be confirmed by this button. The screen will be blue again. The change was accepted. Using this button you can switch to the main screen.

In the summer season, when the boiler is not used, the driver should be in the "OFF" mode. Only then the ANTI STOP function of the central heating circulation pump is on. This function enables the central heating pump cyclically once a week, eliminating that way the phenomenon of the pump getting stiff. You can also enable the driver using the power switch or remove the plug from the power socket, just remember to turn on the central heating pump in the manual mode for a moment once a week.

7.3 Burning up in the boiler

In order to set fire to the boiler, you should switch to the function **MANUAL OPERATION**.

Using the buttons:

 or  you should find the screen **MANUAL OPERATION.**

Using this button  you can accept and turn on the manual operation. The screen will change its color to green. It indicates that the manual operation function is enabled. From that moment you can enable/disable the following receivers:

- fan (button )
- fuel feeder (button )
- central heating circulation pump (button )

Using this button  you can enable the feeder to supply the fuel. While in the manual mode, you can also start the blower and central heating pump at any moment using these buttons on the keyboard.

By enabling/disabling the blower and feeder, reach the temperature of about 40 ˚C.

It is recommended that the circulation pump should work while setting fire in the manual mode.

After setting fire and reaching the appropriate temperature - 40 ˚C, you can exit the MANUAL CONTROL using this button  and

return to the main screen. The display will change its color form green to blue.
The driver will automatically set fire in the boiler and reach the temperature set by the user.
Using this button  you select the operating mode – FIRE SETTING. While setting fire, you adjust the parameters FEED TIME, FEED PERIOD and BLOWER LEVEL according to the clue (!).

Minimal temperature that can be set on the boiler depends on the manufacturer's suggestions of the boiler. More information on that issue can be found in the technical specification of the device. Not following the manufacturer's suggestions and burning in lower temperatures may cause the central heating boiler warranty expire.

Automatic fire setting is indicated by BURNING UP message on the main display. When the boiler reaches the set temperature, inscription RUNNING appears.

During automatic burning up, you should properly choose the parameters FEED TIME, FEED PERIOD and BLOWER LEVEL to maintain the appropriate level of heat on the feeder's head and the best possible flame while burning up. During burning up, the user has only two parameters to use – FEED TIME and BLOWER LEVEL. It is recommended that the feed period was set to 90 sec. Such feed period is the most optimal for boilers of 15-60KW.

8. OPERATING MODES

(standby, stop, setting fire, regulation, running)

After switching off the device using the power switch, the display will show the inscription **OFF**. You can adjust the parameters, but in this mode, the driver does not control the fuel feeder and fan. Circulation pumps work according to the settings depending on temperature.

After pressing the burning up starts, and word **BURNING UP** appears – the feeder and fan start. When the set temperature is reached, the driver switches to the **RUNNING** mode. Only blows work, in order not to extinct. Depending on setting the value FEED COUNT, the feeder starts. (*ie, count set to 3 enables the feeder every third blow, count set to 2 starts the blower every second blow, etc. Feed count set to OFF causes that in the running mode the fuel will not be supplied*). When temperature drops below the set (minus the value of histeresis), the drives switches to the **REGULATION** operating mode. A dose of fuel is automatically supplied and blower starts. In the **REGULATION** mode, it is enabled with a frequency set by using the function FEED TIME and FEED PERIOD. Fan works all the time, increasing the heat to achieve the set temperature again. The drive will switch to **EXTINCTION** mode if there is no fuel left in the container, then the lynchpin will be broken at the drive of the feeder or when the supply system will be broken or when the temperature drops below the value of REGULATOR TURN OFF TEMPERATURE. When for example the regulator turn off temperature is set to 35 degrees and the current temperature at the boiler drops to 34 degrees, after **5 minutes –** extinction starts, which lasts for 2 hours (factory setting, possibility of change). After 2 hours, the driver switches to the **STANDBY** mode. The feeder and fan switch off.

The user is informed about the EXTINCTION start (after 5 minutes delay) by a short beep when the current boiler temperature drops below the DRIVER SWITCH-OFF TEMPERATURE. 5 min. later the extinction process will start. To switch again to the BURNING UP mode, press  until the message BURNING UP is displayed on the display.

9. ALARMS DEPENDING ON TEMPERATURE

Driver „TIGRA" equipped with many protections informs the user about the following alarms:

9.1 Water temperature higher than 90 ˚C

A very important alarm informing about dangerously high water temperature in the boiler that leads to boiling the fluid in the central heating installation. The alarm is enabled at more than 90 ˚C. The driver display color changes to RED. Red diode ALARM lights up and enables the sound alarm. During the alarm (temperature more than 90 ˚C) the feeder and fan are switched off. Circulation pumps are enabled in the safe mode in order to cool the central heating installation.
This alarm ten lasts until the temperature drops to 89 ˚C.

! During this alarm, there is the inscription CRITICAL TEMP. on the display

9.2 Water temperature in the boiler in the range of 80-90 ˚C

When water temperature in the boiler exceeds the value of 80 ˚C but does not exceed 90 ˚C, information alarm about the incoming danger is activated – CRITICAL TEMP. alarm, which is activated as described above – at more than 90 ˚C. The display in the range of 80-90 ˚C starts blinking red, cyclic sound alarm is activated, but burning in the boiler goes on normally. **This alarm is only an information one and does not interrupt the process of burning.**

! While the alarm, there is the inscription **OVERHEATING** on the display

9.3 SCREW/FEEDER'S PIPE OVERHEATING ALARM

Feeder's sensor (appropriately assembled, in a special bushing intended for this purpose) controls the temperature of the screw in the pipe up to speed. When somehow the heat goes back towards the container, warming the screw to a dangerously high temperature, (factory setting 70 ˚C, possibility of change) the driver enables the alarm. The display starts blinking red. The sound alarm is activated. For safety, the driver enables the feeder for a specific time set in the driver menu (CLEARENCE TIME). Factory setting is 5 minutes, possibility of change. Emergency start of the feeder is to push out the heat from the screw pipe and cool the system, so that the fuel does not burn in the supplier. When the feeder switches off after an emergency start and temperature of the pipe is lower than the value set using the function FEEDER OVERTEMPER. ALARM, situation is safe again. Due to the safety issues, the

alarm can not be interrupted. You can only switch off the sound alarm using any button.

9.4 TEMPERATURE DROP ALARM

Driver „TIGRA" controls the ratio of current temperature to set temperature up to speed. Using the function NO FUEL RECOVERY TIME you can select the time of measuring the drop of temperature below the set. Factory setting is 90 minutes. If during 90 minutes the temperature will continue to decrease, the driver will inform about it by the sound alarm and changing display color. Additionally, the inscription TEMPERATURE DROP appears. You can define the time after which the driver is to indicate such a drop. It can be any value depending on the user needs.

Set the parameter of function NO FUEL RECOVERY TIME to OFF when you do not want the driver to inform you about the temperature drop.

9.5 "ANTI-FROST" ALARM

The driver automatically enables circulation pumps during temperature drop below +5 ˚C in order to mix water in the installation and prevent the fluid solidification.
During the alarm, the display changes color to navy blue. Additionally, sound alarm is activated.

9.6 THERMAL ALARM (HARDWARE PROTECTION)

The driver is equipped with independent thermal protection – the so-called **emergency thermostat** (additional temperature sensor, independent from the C/H sensor). It switches off the

feeder and fan at a constant temperature value of 85-90 ˚C (depends on the termic brake). During emergency switch-off of receivers, the display changes its color to red. Additionally, the inscription **TERMIC BRAKE** appears. Thermal protection works independently from other protections and can work in the same time. EMERGENCY THERMOSTAT has to cool to 50 ˚C. In that time the fan and feeder are unblocked what allows you to burn in the boiler.
Additional emergency thermostat is used to protect installation against overheating resulting from the C/H sensor damage or its accidental removal from the boiler bushing. If the sensor is removed, it does not measure the temperature, so the alarm of too high temperature that disables the feeder and fan, can not be activated. Additional, independent thermostat protects installation when the central heating boiler main sensor fails.

10. TEMPERATURE SENSOR FAILURE ALARMS

Every sensor of the driver „TIGRA" examines up to speed the temperature in the place where it was connected. Lack of measure, temperature, indicates its damage. In the case of damage of the boiler main sensor, it is necessary to change it to a new one. It is not possible to burn in the boiler. In the case of the other sensors damage (of pumps and screw/feeder), it is possible to burn in the boiler in emergency mode – the pump works all the time (no enabling/disabling depending on the temperature). In the case of the feeder sensor damage – temperature is not examined, the alarm of sensor damage is activated. Burning in the boiler is possible without the sensor, you can also disable the alarm (using the function FEEDER ALARM TEMP., decrease the value until OFF is displayed). When the heat moves back towards the container, the driver

will not switch on the feeder in emergency to push out the heat. The sensor should be exchanged to a new one **as soon as possible** and again set to the function parameter to 70 ˚C in order to enable clearence procedure in case of a sudden increase of temperature. Broken temperature sensor in emergency mode provides boiling for 7 days. After that, the alarm will be activated and using the driver will be disabled.

Below there are individual alarms according to sensors damage and possibility to enable alarm (except central heating sensor damage) to emergency burn in the boiler until the sensor is exchanged into a new one.

INSCRIPTION ON THE DISPLAY:

C/H SENSOR FAILURE – MUST REPAIR!

This inscription and accompanying sound signal + lit alarm diode ⓘ indicate damage of the central heating boiler main sensor. Digit 000 appears on the red display instead of temperature readings. It is not possible to keep using the driver without a new sensor. Please contact the service **0 796 793 796** to buy the new one. Exchange manual will be attached to the sensor. Procedure takes about 2 minutes. Access to quick release plates is not protected with a warranty seal, so the exchange does not cancel the warranty. When the C/H sensor is broken, the fan and fuel feeder are off. Central heating pump is activated in emergency regardless of the setting.

Tflo BREAKDOWN

This inscription on the display and accompanying sound signal + lit alarm diode ⓘ indicate broken underfloor heating sensor. When the sensor is broken, you can delete the alarm and continue to use the possibility to switch on the pump in emergency mode. Just set the maximal possible value using function FLOOR TEMPERATURE. The pump will work in continuous mode, alarm will be automatically deleted. No measurement of the pump will indicate the pump work regardless of the measurement of the broken sensor and thus work without interruption. Space heating is possible until the sensor is exchanged (work in emergency mode - max. 7 days). The second way to delete the alarm is set the value of FLOOR TEMPERATURE (service setting) to OFF. Pump will not work, the driver will not indicate broken sensor error.

To buy a new sensor, contact the service:
0 796 793 796

Tcir BREAKDOWN

This inscription on the display and accompanying sound alarm + lit alarm diode ⓘ indicate broken circulation pump sensor. When the sensor is broken, you can delete the alarm and continue to use the possibility to enable the pump in emergency mode. Just set the maximal possible value using function CYRC. PUMP STOP TEMPERATURE (service setting). The pump will work in the continuous mode, the alarm will be automatically deleted. No measurement will indicate the pump work regardless of the measurement of the broken sensor and thus work without interruption. Water supply will be possible until the sensor is exchanged (work in emergency mode - max. 7 days). The second way to delete the alarm is set the value of function CYRC. PUMP STOP TEMPERATURE to OFF. The pump will not work, the driver will not indicate the broken

sensor error.

To buy a new sensor, contact the service:
0 796 793 796

Th/w BREAKDOWN

This inscription on the display and accompanying sound alarm + lit alarm diode indicate broken H/W pump sensor. If the sensor is broken, you can delete the alarm and continue to use the possibility to enable the pump in emergency mode. Just set the maximal possible value using function H/W TEMPERATURE. The pump will work in the continuous mode, the alarm will be automatically deleted. No measurement will indicate the pump work regardless of the measurement of the broken sensor and thus work without interruption. Heating the water container will be possible until the sensor is exchanged (work in emergency mode – max. 7 days). The second way to delete the alarm is set the value of function H/W TEMPERATURE to OFF. The pump will not work, the driver will not indicate the broken sensor error.

To buy a new sensor, contact the service:
0 796 793 796

Tfeed BREAKDOWN

This inscription indicates broken feeder sensor. Deleting the alarm and information on how to proceed, are described in detail in the introduction to the para 10.

11. MODES

NORM: The driver works accordingly to the basic, normal settings of the menu.
D/N: The driver itself decreases the temperature for a night between 11p.m. and 6a.m. by temperature set in the menu – NIGHT CORRECTION.
CAL: Work according to the calendar (temperature correction at a certain time, the possibility to enable/disable individual circulation pumps depending on the time).
ECO: Decreasing temperature by pressing a button. The driver decreases the temperature by the value set in the menu – ECONOMIC CORRECTION. Additionally, H/W pump and circulation pump are disabled. Set temperature of underfloor heating is automatically corrected proportionately to the value of set temperature decrease.
ROOM: Work with the room thermostat. When the set temperature in a room is reached, the driver switches to forced running and cyclically enables/disables the central heating pump. Principle of cooperation with the thermostat and selection of the appropriate model was described in the further part of the manual.

In the ECO mode, H/W and circulation pumps are never active. You can change the modes using this button

12.CIRCULATION PUMPS HANDLING

The driver TIGRA provides advanced control functions of central heating, H/W, underfloor heating and circulation pumps. Except the set work depend on temperatures, it allows the priority switch off the pump in the **CAL** mode (depending on the time) or start it at a certain time so that it works depending on temperature from the sensor.

12.1 CENTRAL HEATING PUMP

Only this pump is active by default. Switching temperature is set by default to 35 ˚C (possibility to change the switching temperature)

Diode indicating its work - 

It is started depending on the selection of temperature of its start, in function CENTRAL HEATING PUMP SWITCHING TEMP. Below the set temperature, the pump does not work. Histeresis is equal 4 ˚**C**. For example, if CENTRAL HEATING PUMP SWITCHING TEMP. is set to 35 – the pump will start at 35 ˚**C** on the boiler, but it will switch off when temperature drops to 31 ˚**C**.

During work in ROOM mode, it is switched off while reaching the set temperature in the room. When temperature in a room is reached, a cyclic operating mode of the pump starts. The driver switches the pump on for 30 seconds and the pump down time is as much as you set using the function TIME TO STOP CENTRAL HEATING PUMP (service setting).

12.2 DOMESTIC HOT WATER PUMP

Set to OFF by default

Diode indicating its work - 

To start the H/W pump, set the desired temperature in the function H/W TEMPERATURE. When it is reached, the pump will be switched off because the temperature in the container is considered reached. When temperature in the container decreases (histeresis for the H/W pump is equal 3 degrees), the pump will automatically start, warming up the container to the set temperature (H/W

TEMPERATURE).
„Auto start" of the H/W pump is set to 35°**C** by default. This means that the pump will switch on automatically if water temperature in the boiler is higher than 35 ˚C.

– in ECO mode, H/W pump is switched off.
– max temperature that can be reached in the container, will never be greater than the set temperature. For example, if the boiler Tset is set to 50 ˚C, the H/W temperature will not be possible to be set to a value greater than 50 ˚C
– to set the H/W temperature greater than set in the boiler, use the H/W PRIORITY, in which water temperature in the container is the most important for the user, more important than water temperature in the boiler.

12.3 DOMESTIC HOT WATER PRIORITY

When we use H/W priority, the central heating pump is switched off while heating the H/W container. You should set the function H/W PRIORITY to the value „YES" (on). Factory setting is „NO" (off).
Due to the active priority, you can set temperature in the container to a higher (!) value than water temperature in the boiler. Max difference up of H/W temperature value relative to Tset is 8°**C**
For example, when the boiler set temperature is set to 50 ˚C, the H/W temperature can be set to 52, 53, up to 8°**C** higher. Then the boiler set temperature in order to heat up water in the container will be automatically increased to the H/W temperature. REGULATION appears instead of RUNNING. Running appears at the moment of reaching

set temperature in the container. When water in container reaches the set temperature, the boiler will automatically switch back to running, the limit value of which is the boiler set temperature.

The user will be informed about automatic boiler set temperature increase and change to the container set temperature by adequate message on the display. Additional inscription PRIOR. Th/w =.... where ….. is the value set by the user. This temperature is to be reached in the boiler to enable the container when the H/W pump is off and container heated up, it will drop to boiler set temperature.

12.4 UNDERFLOOR HEATING PUMP

Diode indicating its work - 

Factory setting - OFF

– Water set temperature in the underfloor heating system is set using the function FLOOR TEMPERATURE (service setting), no more than the C/H temperature set and no more (if the boiler set temperature is higher than 50˚C) than 50 ˚C – *safety issues*. Temperature in the floor system is considered reached if the underfloor heating sensor detects the set temperature where it was mounted.

– Pump start temperature (auto start) depends on DRIVER SWITCH-OFF TEMP. For example, if you set the driver switch-off temperature to 35 degrees, the underfloor heating pump start temperature (auto start) will occur at a value of 40 ˚C. **The difference is always 5˚C.**

12.5 CIRCULATION PUMP

Diode indicating its work - 

Factory setting - OFF

Independent sensor provides, in contrast to other drivers, that the user of driver TIGRA can select the temperature value at which the pump is to switch off, so that it does not work all the time as the central heating pump.
This function provides H/W supply only to a certain temperature, eg 60 ˚C. Except that, current output from the driver to the circulation pump, due to additional switch-off sensor, can be used to power eg the second underfloor heating pump. Setting the maximal temperature such as 70 degrees, or mounting the sensor on the boiler, and not in an independent measure place, you can set the continuous circulation pump mode, as in the drivers without additional sensor, that enable/disable the circulation pump using ONLY water temperature in the central heating boiler as a base to implement on/off cycles of the circulation pump.

1. Circulation pump stop temperature can be set using the function TIME TO STOP THE CIRC. PUMP (service setting). Maximal value can be set up to 70 ˚C.
2. The pump start temperature (auto start) depends on the DRIVER SWITCH-OFF TEMPERATURE. For example, when you set the driver switch-off temperature to 35 degrees, the underfloor heating pump start temperature (auto start) is at a value of 40 ˚C. The difference is always 5˚C

Remember that in the ECO mode, HDW and circulation pumps are not working.

13. TIME AND DATE SETTINGS

The driver „TIGRA" was equipped with the real time clock. It provides a precise setting the automatic night temperature change and using the week program for both set temperature and circulation pumps.

When you switch off the power supply by power switch, plug output of the driver power outlet or during no current in the electric installation, the real time clock will count down the time correctly only for max. 48 hours. After that time the driver clock is reset. Reset of the current time and day of week is required. When the driver is on, the driver clock reset will not be possible.

SETTING THE CURRENT WEEKDAY AND HOUR

To set the current time, find the function SET TIME in the menu. Confirm the change using the button Inscription SET HOUR will be displayed.
Again confirm by pressing the button . The display color will change to green. Time edition will be possible.
Using buttons and you can set the appropriate value. A change can be confirmed by . The display color will change to blue.
Next, using buttons and you can select minute or weekday you want to change, depending on the needs. Principle of changing minute and day of week is the same as in described before changing the hour.

You can switch to main/start screen using the button  or waiting a moment, then the driver will leave the screen of changing the time and return to the main screen.

14. TIME ZONE SUPPORT (CALENDAR AND DAY/NIGHT MODE)

The driver „TIGRA" provides very advanced and precise control over the set temperature using the calendar, making it possible to program each day of week and every hour in the day, for correcting the set temperature and enable/disable the circulation pumps at a certain day and night time. Except the very precise but complex and time consuming program procedure of the calendar, a very simple time zone, the so-called **DAY/NIGHT** was introduced. This time zone ensures decreasing the night temperature in constant hours 11p.m. - 6a.m. by clicking one button. Using the advanced calendar and simple DAY/NIGHT time zone is described below.

14.1 DAY/NIGHT MODE

Day/night mode (displayed as **D/N** mode) is a simple time zone ensuring the correction of night temperature between 11p.m. and 6a.m. The correction value can be positive and negative.

Factory setting is (- 3 ˚C). If you want the driver to decrease or increase the night temperature automatically, enter the right value using the function NIGHT CORRECTION, unless the factory setting

meets the users' needs. Condition of automatic decreasing the temperature is to set the driver mode to **D/N**.
It can be done by using this button  and set until the inscription **D/N** is displayed in the right upper corner of the screen. Since then, between 11p.m. and 6a.m., the driver will automatically decrease the temperature by the value of DAY/NIGHT correction set in the driver menu (note that factory setting is minus 3 ˚C). It is not recommended to make corrections greater than +, - 3˚C

14.2 CALENDAR

Calendar mode (CAL) is used to precise setting of the set temperature correction depending on the hour and day of week. Each weekday allows each of the 24 hours per day to be programmed. Except the temperature correction at a certain hour, you can also activate or deactivate the circulation pumps (HDW, underfloor heating and circulation pumps by setting them so that at a certain time one of the pumps switches off or on and work depending on temperature settings. The driver uses calendar mode and implement program set by the user when the driver works in **CAL** mode.

Find the function CALENDAR in the menu. When you want to edit the calendar, press this button  until the display color changes to green and allows to make changes.

Then, using buttons  and  you can select (day, hour, correction type NORM, ECO, D/N and enable or disable the H/W, circulation (C) and underfloor heating (U) pumps).
After selection with the use of these buttons, you can press button and then using buttons  or  you can set the day.
The change should be confirmed by the button . Do the same for the hour. In the case of parameter CORR (correction), you can select from NORM (normal), ECO (economic correction)

and D/N (night correction) modes. If for example you set the Friday 5p.m. COR: **ECO** and H/W pump to **OFF**, the temperature will automatically drop at that time by the ECONOMIC CORRECTION value (set in the menu) and the H/W pump will be switched off, although it is set to ON in the menu (calendar is of higher priority). If at 6p.m. The same day NORM mode and H/W pump is set to ON, there will be no temperature correction and H/W pump will be switched on again.

In the case of the other pumps (underfloor and circulation), you can choose the switch off of a certain pump **(0)** at a certain time or switch on **(1)** so that it works according to the temperature settings, as in the normal mode.
(1) in the menu is the pump work, while (0) is switching off the pump at a certain hour.

In this way you can program each day in a week and every hour. Everything you set at eg 3p.m. will be implemented until 4p.m. If you want the temperature drop by the correction value take place eg during 4p.m.-8p.m., you have to program the following hours: 4p.m., 5p.m., 6pm. and 7p.m.

15. TEMPERATURE SENSORS

The driver „TIGRA" is equipped with 6 temperature sensors (five digital and one bimetallic sensor).

1. Central heating boiler temperature sensor

The sensor examines the current water temperature in the

boiler. It is displayed up to speed on red display. The driver program is implemented on its base. It should be mounted to ensure the best contact of the sensor with bushing for its assemble on the boiler upper cover. When the sensor is mounted on supply pipe, it should be assembled using a cable tie so that the metal element of the sensor contact the pipe with the best surface possible. The cable can not contact the elements of installation!!

To provide accurate temperature measurement, it is recommended to use heat transferring paste. Do not use oil! It may damage the sensor.

2. Feeder temperature sensor

This sensor examines temperature of the pipe in which the fuel is supplied by the screw. Alarm program is implemented on the basis of temperature measurement. In the case of exceeding the set temperature in the function (FEEDER OVERTEMPER. ALARM), fuel is cleared (clearence time is set in the function CLEARENCE TIME). It is to push out the heat from the feeder pipe. **The sensor should be mounted directly on the screw pipe by inserting the sensor pipe in specially prepared for it place – bushing next to the screw pipe.**

3. HDW, circulation pump and underfloor heating pump temperature sensors.

These sensors measure temperature in places of mounting, on the basis of which the pump enable/disable program is implemented.

4. Emergency thermostat.

It is an independent, bimetallic sensor. It protects the

installation against overheating. It works independently from the driver. In the case of detection the temperature higher than 85-90 ˚C (depending on the sensor)- it switches off the blower and feeder, eliminating burning up in the boiler. When temperature drops below 50 ˚C- the blower and feeder start again.

This sensor should be mounted by a cable tie to the supply pipe, remembering that the wire can not contact the central heating installation.

- do not immerse the sensors in water, oil, etc.
- while assembly and operation, pay special attention that the sensor wires can not contact the hot elements of the installation.

Alarms concerning broken sensors are described in para 10 in this manual.

Any moment of the driver operation you can preview the current temperature of every sensor. One of the menu screens allows the possibility to preview temperature in the following order from the top:

- H/W temperature **(Th/w)**
- feeder temperature **(Tfeed)**
- circulation pump sensor temperature **(Tcir)**
- underfloor heating pump temperature **(Tflo)**

16. CONFIGURATION PARAMETERS DESCRIPTIONS

C/H pump start temperature:
Central heating pump starts above this temperature (exception

is the use of a room thermostat, or set the priority of H/W). Below this temperature, the pump is switched off (histeresis is 4 degrees).

H/W temperature

This parameter is used to set desired temperature in H/W container. Above the set temperature, H/W pump is not working. Below – it starts. Histeresis is equal 3 degrees. H/W pump can be switched off (H/W TEMPERATURE must be set to OFF).

Feed time (function active while fire setting and control)

It is the time for which the feeder is to be switched on to supply fuel in control or fire setting state.

Feed period (function active while fire setting and control)

It is time between supplying fuel in control or fire setting state, in other words – the pause between the next doses of fuel set by the function FEED TIME.

Feed count (function active in RUNNING state)

It is a value that means how many blows have to pass until the feeder switches on in order to supply the fuel. Feed count is obtained in RUNNING state. Depending on the count set to eg 2, the feeder will start every second blow and supply the fuel accordingly to the value of BLOW TIME. If the BLOW TIME is set to eg 10 and the count to 2, the feeder will start every second blow for 10 seconds.

Blow time (function active in RUNNING state)

It is the time for which the blower is enabled at the moment of blow start. The blow can be switched off. In order to do that, set the blow time to value OFF.

Blow break (function active in RUNNING time)

It is the time of fan work break between the further switching cycles during the blows.

Blower level (while control and fire setting)

Maximal blower level expressed in %. The blower level should be chosen according to the kind of fuel. The more caloric the less power should be set on the blower.

Rotations in running state
Rotations of the blower in running state.
Regulator turn off temperature
Temp. below which the driver switches to extinction.

FACTORY SETTINGS RESTORE

At any moment you can switch to factory settings. In order to do that, choose the function FACTORY SETTINGS RESTORE in the menu. Entering the edition mode (green display) will result in displaying NO. By changing it to YES and confirming the change you can restore factory settings.

SERVICE MODE (for advanced users)

Minimal temperature
Minimal temperature that can be set on the driver.
Maximal temperature
Maximal temperature that can be set on the driver.
Histeresis
Boiler histeresis temperature. It is the value by which the temperature is to drop below the set temperature in order to switch on the blower with feeder, and then the driver switches to CONTROL mode.
Minimal blower level
Range of rotations under which the blower can not slow down during work.

Maximal blower level
Maximal rotations with which the blower can work when started.

MIN and MAX settings of the blower level to 70% will cause that the fan always operates at full power regardless of the settings.

At that moment it is possible to connect a fan eg via a contactor. It is not recommended to change MIN and MAX blower level when you want to use the possibility of rotations change. (read more in para 5 – page 7 in this manual).

No fuel recovery time

If during the time set in this function, boiler temp. does not rise by 1 °C, or continuously drops, alarm starts. It indicates no fuel or incorrect fuel supply doses. **More information in para 9.4 of this manual.**

Time to stop the pump

This function is used during work with the room thermostat. It is active in ROOM mode during contacts short circuit– reaching the room temperature. The parameter set to eg 4 means that the pump will switch off after 4 min. and after that time it switches on for 30 s. (the value of 30 s. is a constant value, it is always the time of pump start). Setting the parameter of TIME TO STOP THE PUMP, you set the break in the pump operation. After that break, the pump will switch on for 30 s., to stop working again for the value set in the parameter.

HDW priority

This function is described in more detail in part of the manual on the circulation pumps handling **(para 12.3)**

Feeder overtemper. alarm

If the feeder reaches temperature set in this function, it enables the alarm and fuel clearence procedure starts in order to cool the feeder. Clearence time is set in the function CLEARENCE TIME.

Clearence time

Determines time for which the feeder switches on, if the

temperature sensor detects temperature higher than set in the function FEEDER OVERTEMPER. ALARM.

Fire setting time

Fabric setting is 2 hours (possibility of edition). It is the maximal time for reaching the boiler set temperature. If it is not reached in that time, the driver switches to STANDBY state.

Extinction time

Fabric setting is 2 hours (possibility of edition). After this time the driver switches to STANDBY (switches off) if the temperature drops below the value set using the function DRIVER SWITCH-OFF TEMPERATURE.

17. Use of the room thermostat

The driver TIGRA provides the possibility to connect a room thermostat, examining the room temperature. On this basis, the boiler temperature is controlled and the central heating circulation pump is switched on and off. The room driver after connecting receives a higher priority. The room thermostat can be connected via a 2-wire cable. Common room thermostats using the normally open/normally closed bistable relay.

From the driver TIGRA you should use cinch plug using which you can connect cables connecting with the room thermostat to the cinch socket (). On the side of the thermostat you should insert cables to the appropriate contacts to gain the principle of short circuit of connectors after reaching the set temperature.

Communication between the devices is based on normally open or normally closed contacts. Open – when the set temperature on thermostat is higher than the room temperature. Closed – if the temperature will be reached again.

Principle of operation

To make the communication between the thermostat and driver possible, switch the driver TIGRA into ROOM mode.

If thermostat temperature is higher than the room temperature, the boiler works normally. The blower and feeder work accordingly to the right settings, circulation pumps the same, warming the room.

If room temperature reaches the set on thermostat, contacts will be closed. The red diode THERMOSTAT will be lit in the driver TIGRA. Circulation pump will work for 25s. from the moment of shorting contacts. Then it will be started for 30s. every time set in the function TIME TO STOP THE PUMP.

If the boiler temperature reaches 80 °C, TIGRA switches on the pump, regardless of the work state of the room thermostat.

If the contacts were shorted and the boiler temperature was less than 40 °C, the driver does not switch off the blow and does not stop the feeder cycle. The fan and feeder work until the moment of reaching the boiler temperature of 40 °C. Above this temperature, the driver switches to the running state and normally implements the cycle of blows, as in the RUNNING state. If the room temperature will be greater than the set on thermostat, TIGRA will keep on the boiler the temperature which will result from the RUNNING state, not less than 40 °C, in order not to let the boiler extinction.

If the room temperature drops below the temperature set in the thermostat, the driver switches to the control state. The driver will aim to achieve the RUNNING state, depending on water set temperature in the boiler, and not temperature set in the room. Open contacts of the thermostat (temperature lower than in the room) mean that the boiler starts to work normally, aiming to achieve the set temperature on the boiler as in any other mode, such as NORM.

Safe use of the regulator

1. **The driver can not be exposed to water, work in damp room and in temperature exceeding 40˚C**
2. **At the moment of connecting or disconnecting external devices from the driver or changing fuses, you should remove the power plug from the wall socket.**
3. **During setting fire or surges, unplug the driver from the wall socket.**
4. **During the confusion, or problems with the installation of the controller, please contact the appropriate person. Telephone number is shown on the cover page of this manual.**
5. **The driver assembly should be done by a qualified person. Improper installation, especially the connection of external devices could cause damage to the controller.**