Grzejemy jak Kawaleria®

Operating and assembly manual: electric tankless water heater for central heating systems (Electric heating boiler)

Basic series:

- **Uhlan** (AsPC-S)
- **Corporal** (AsP)
- **Sergeant** (AsBN)
- **Major** (AsZN)
- **Ensign** (AsC)
- **Mobil** (AsMB)

Industrial series:

- **Hussar** (AsHZ)
- **Battalion** (AsB III)

Please see video prior installation

Elterm boilers technical data

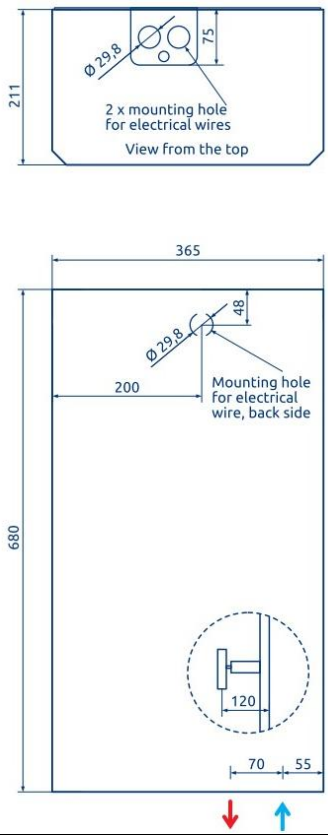
Uhlan (AsPC-S) **Corporal** (AsP) **Sergeant** (AsBN)

Legal Protection
UP RP no. W. 12654

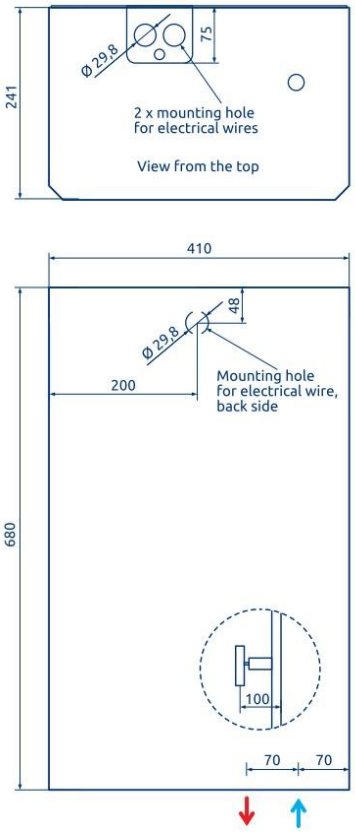
Major (AsZN) **Ensign** (AsC)

Hussar (AsHZ) **Battalion** (AsB III) **Mobil** (AsMB)

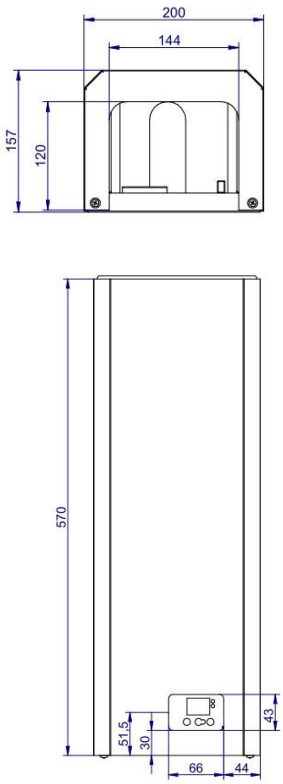
Colonel, Sergeant, Major, Hussar
power 4-12kW



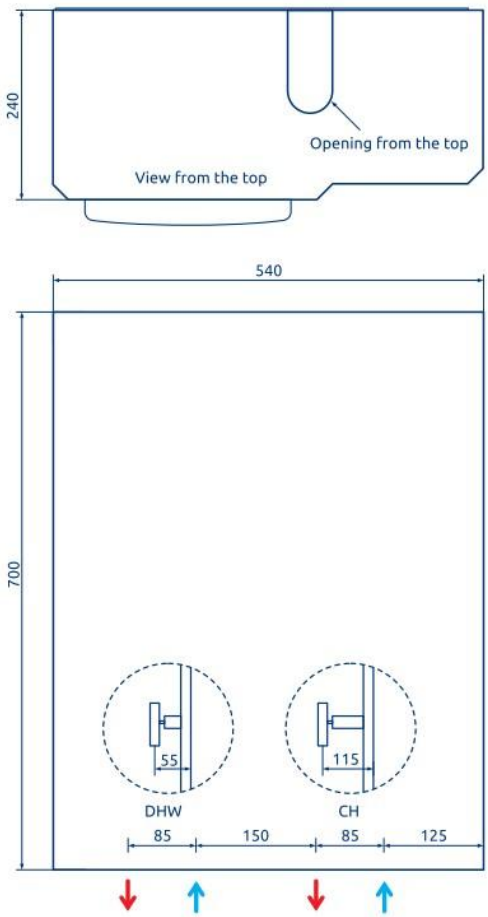
Colonel, Sergeant, Major, Hussar
power 15-24kW



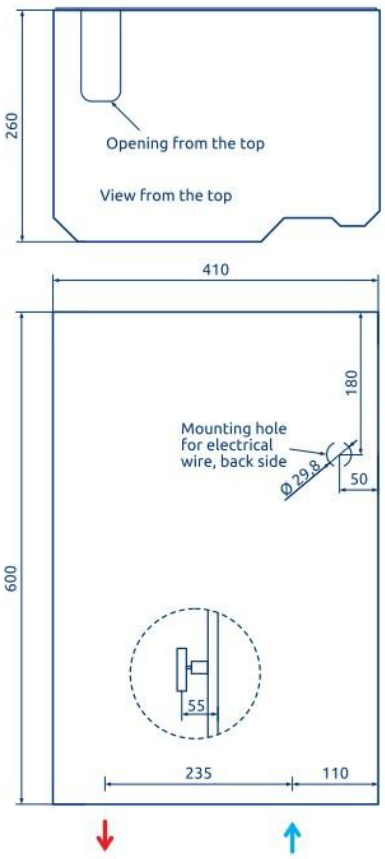
Uhlan
power 4-12kW



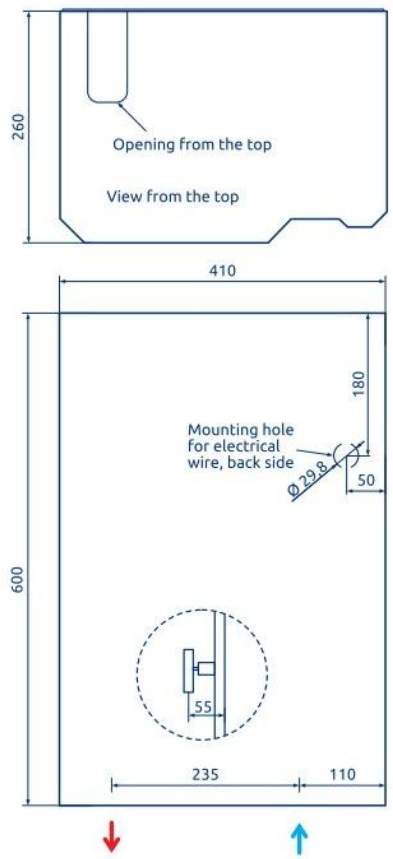
Ensign
power 4-12kW (CH) / 12-21kW (DHW)



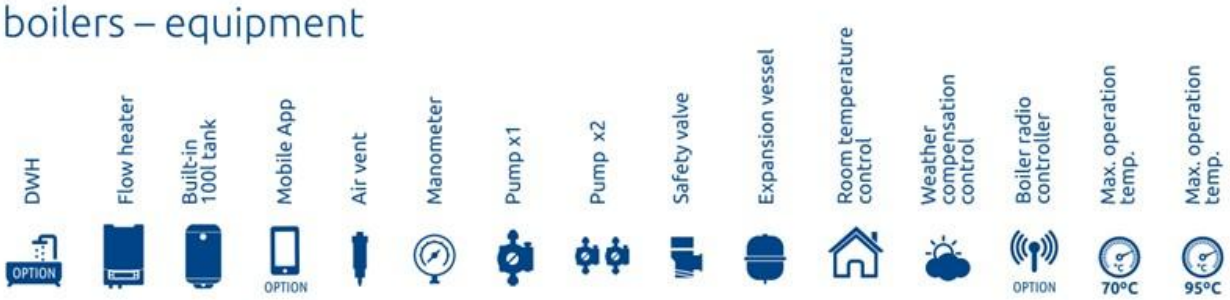
Battalion
power 30-48kW



Mobil
power 4-24kW



Electric boilers – equipment



Electric heating boilers- Basic LED automatics	DWH	Flow heater	Built-in 100l tank	Mobile App	Air vent	Manometer	Pump x1	Pump x2	Safety valve	Expansion vessel	Room temperature control	Weather compensation control	Boiler radio controller	Max. operation temp.	Max. operation temp.
Corporal	○	○	○	○	●	●	○	○	●	○	○	○	○	●	○
Sergeant	●	○	○	○	●	●	●	○	●	○	○	○	○	●	○
Major	●	○	○	○	●	●	●	○	●	●	○	○	○	●	○
Electric heating boiler with low loss header function															
Uhlan SHE	○	○	○	○	●	○	○	○	○	○	○	○	○	●	○

Electric heating boilers - for industry and continuous operation

Electric heating boilers- Basic LED automatics	DWH	Flow heater	Built-in 100l tank	Mobile App	Air vent	Manometer	Pump x1	Pump x2	Safety valve	Expansion vessel	Room temperature control	Weather compensation control	Boiler radio controller	Max. operation temp.	Max. operation temp.
Hussar	●	○	○	○	●	●	●	○	●	●	○	○	○	○	●
Battalion	●	○	○	○	●	●	●	○	●	○	○	○	○	○	●

* AsMB model equipment is equal to Hussar + trolley and additional connection setting

	Power table	50m²	75m²	100m²	125m²	150m²	200m²	250m²	300m²
A+ / A	**Energy efficient building** *20-25cm insulation* *Ca.50kWh/m²/year* *Ca. 40W/m²*	4 kW	4 kW	6 kW	6 kW	9 kW	9 kW	12 kW	15 kW
B / C	**Standard building** *10-15cm insulation* *Ca. 90kWh/m²/year* *Ca. 70W/m²*	4 kW	6 kW	9 kW	9 kW	12 kW	15 kW	18 kW	24 kW
D / E	**Energy intensive building** *0-5cm insulation* *Ca. 150kWh/m²/year* *Ca. 120W/m²*	6 kW	9 kW	12 kW	15 kW	18 kW	24 kW	30 kW	36 kW

Prior purchase please check below electrical requirements table (flow heater and boiler powers do not add up).

Electrical parameters	4 kW	4 kW	6 kW	6 kW	9 kW	9 kW	12 kW	12 kW	15 kW	18 kW	24 kW
	1 phase	2 phases	1 phase	3 phases	1 phase	3 phases	1 phase	3 phases	3 phases	3 phases	3 phases
Safety fuses (A)	1 x 20	2 x 10	1 x 32	3 x 10	1 x 40	3 x 16	1 x 63	3 x 20	3 x 25	3 x 32	3 x 40
Power cord (mm²)	3 x 4	5 x 2.5	3 x 4	5 x 2.5	3 x 10	5 x 2.5	3 x 10	5 x 4	5 x 4	5 x 6	5 x 10
	27 kW	30 kW	33 kW	36 kW	39 kW	42 kW	45 kW	48 kW	66 kW	96 kW	144 kW
	3 phases	3 phases	3 phases	3 phases	3 phases	3 phases	3 phases	3 phases	3 phases	3 phases	3 phases
Safety fuses (A)	3 x 50	3 x 50	3 x 50	3 x 63	3 x 80	3 x 80	3 x 80	3 x 80	3 x 125	3 x 160	3 x 240
Power cord (mm²)	5 x 16	5 x 16	5 x 16	5 x 16	5 x 25	5 x 25	5 x 25	5 x 25	5 x 50	5 x 70	5 x 120

* The exact cross-section of the power cord is selected by an electrician based on an analysis of local conditions.

APPLICATION

All basic/industrial series heating boilers are designed to provide heating to small and medium sized locations equipped with either open or closed low-temperature (T<100°C) central heating water systems.

AsPC-S boiler in closed central heating system – in closed type layout, the central system needs to be equipped with a safety unit and expansion vessel. Regardless of the system type (open or closed), the boiler needs to work with circulation pump. Safety unit, expansion vessel and circulation pump are not supplied with this model.

AsP, AsBN and AsB III boilers in closed central heating system - in closed type layout, the central system needs to be equipped with an expansion vessel, which is not supplied with above models.

AsZN, AsHZ, AsC and AsMB boilers in closed central heating system – those models are designed for autonomous operation in both open and closed central heating systems – safety unit, expansion vessel and circulation pump is included.

DHW set (option for AsP, AsBN, AsZN, AsHZ and AsB III) – includes electrovalve (DHW priority), wired sensor for tank and activation code. Additional tank with coil (min. 12kW) is required for proper operation.

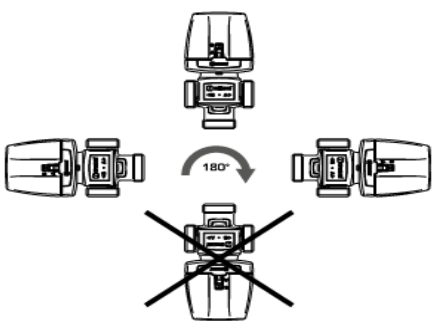
HYDRAULIC ASSEMBLY

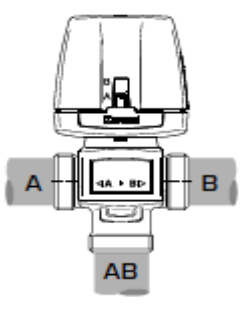
Please familiarise yourself with the electrical and hydraulic diagram and technical data prior to assembly.

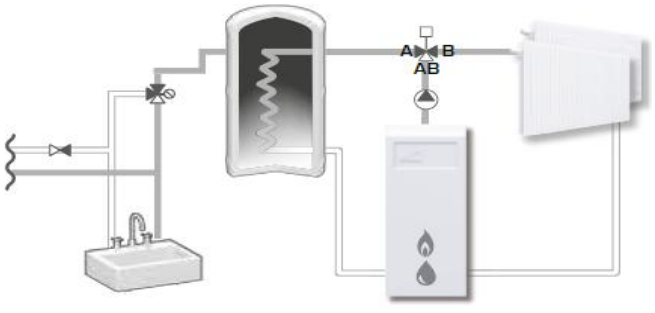
All basic and industrial boilers are hanging (except **AsMB**), vertical devices and after taking down external metal cast, should be hung on the wall using attached mounting screws. Electric heating boiler has to be connected to the central heating system using couplings (¾", 1" or 1¼" – depending on model) according to the direction of water flow (see glued arrows on boiler). Connection to be made in accordance with PN-91/B-02413 (open systems), PN-91/B-02414 (closed systems) or applicable regulations valid in the country of installation. Central heating system has to be thoroughly flushed prior installation. Heating installation should be flushed prior use and filled with water or anti-freeze fluid (1,5 bar).

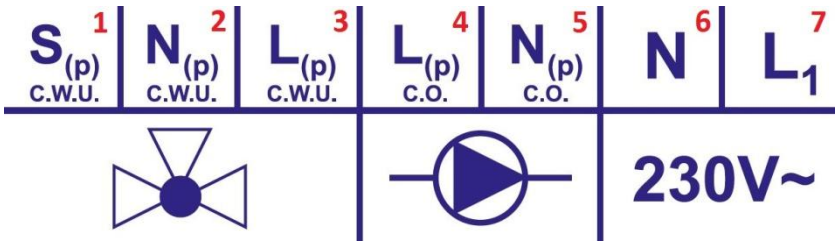
CONNECTION OF DHW SET (option)

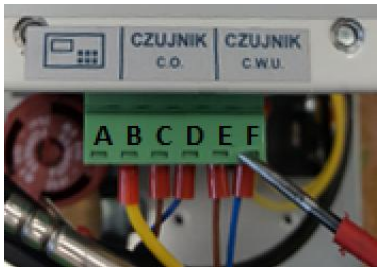
Before connecting DHW set please familiarize yourself with separate electrovalve manual.











PIN 1 –black steering cable (S), PIN 2 - blue - neutral (N) and PIN 3 - brown – line cable (L). PIN E and F - connecting DHW sensor.

Boiler sold with DHW set has this function already activated – no need to change any settings. With separate purchase, both electrovalve and DHW sensor need to be conncted to appriopriate terminals. Additionally at P10 parameter, you need to press and hold → to activate P20 parameter. Choose 7 to activate DHW set, any other choice deactivates this option.

ELECTRICAL ASSEMBLY

Connection to the electrical system needs to be done in accordance with regulations applicable in the country where the given boiler is installed and therefore must be done by a qualified electrician only. Boilers are designed for alternating current, 3-phase power supply (400V 3N~50Hz). Models with 4, 6, 9, 12 and 15kW powers are also available without any processing in 1-phase version (230V 1N~50Hz), greater powers can also be prepared in 1-phase version upon request. Boiler's power supply is connected to terminal strip labeled as $L_1L_2L_3N$. PE wire needs to be connected to screw on mounting plate. Boiler should be connected to permanent electrical system via device enabling boiler's disconnection from heating source at all ends, with the distance between contactors not less than 3mm. Residual current circuit breaker installation is mandatory, see table on page 4 for electrical requirements.

BOILER START-UP

Connection strip

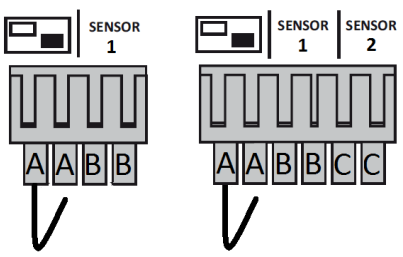
Boiler by default is not equipped with room temperature controller, therefore open bridge (jumper bar) is placed on terminal A. Device will turn heaters on with closed bridge only.

In order to prevent increased components wear and unnecessarily inflated electricity bills - bridge needs to be replaced with wired or wireless, voltage free (zero Volt) room temperature controller as soon as possible.

Terminal A – use to connect voltage free room temperature controller

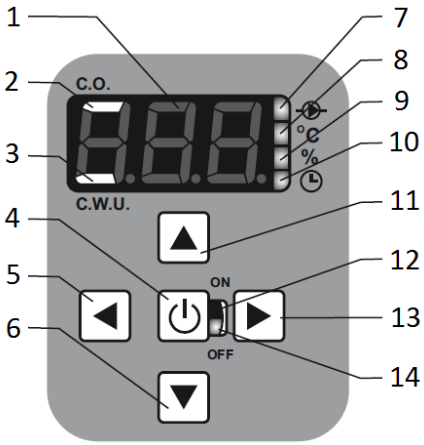
Terminal B – use to connect temperature sensor 1 to boiler's body – central heating function (CH)

Terminal C - use to connect temperature sensor 2 to hot water tank equipped with coil – hot utility water (HUW)



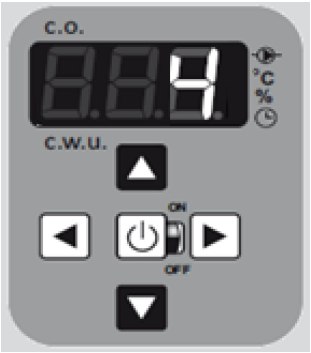
LED display, signaling system and control

1. LED display
2. CH operation diode (AsC, DHW set)
3. HUW operation diode (AsC, DHW set)
4. OK/ON/OFF button
5. LEFT – change button (←)
6. DOWN – decrease value (↓)
8. Diode – °C
9. Diode – power distribution
10. Diode – operating time
11. UP – increase value (↑)
12. ON green diode
13. RIGHT – change button (→)
14. OFF red diode

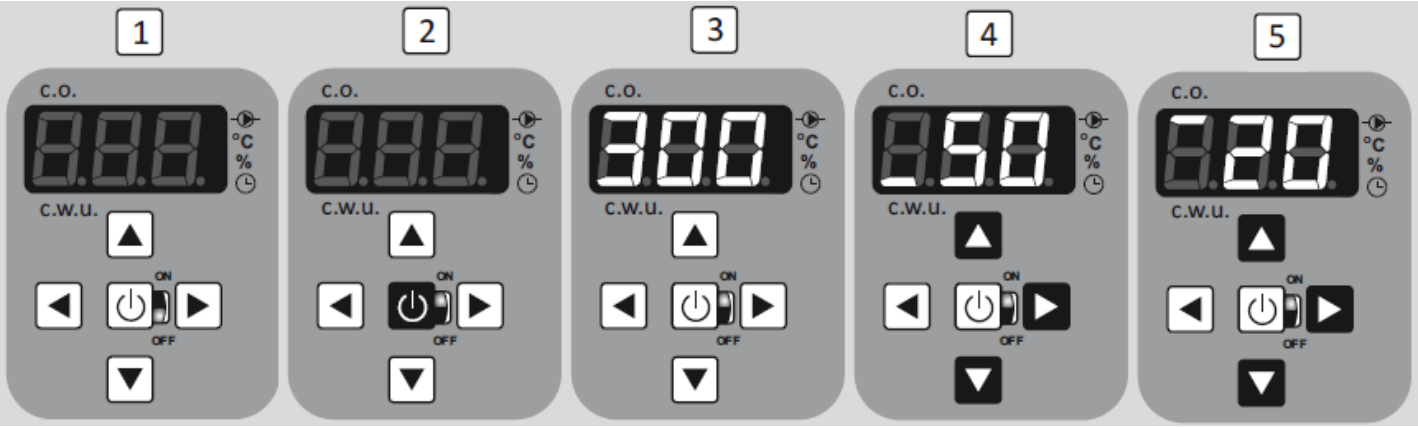


AsPC-S panel

SETTINGS (see page 10 for AsPC-S model)



Boilers **AsP, AsBN, AsZN, AsHZ** and **AsMB** have been programmed with power modulation possibility: 15kW unit power can be reduced to either 4/6/9kW, 18kW unit to 4/6/12kW, and 24kW unit to 12kW. This choice can be made both on initial stage of installation or later one using appropriate parameter (P11 - Max power (kW)).



Make sure the boiler is connected to electrical system in accordance with ELECTRICAL ASSEMBLY section.

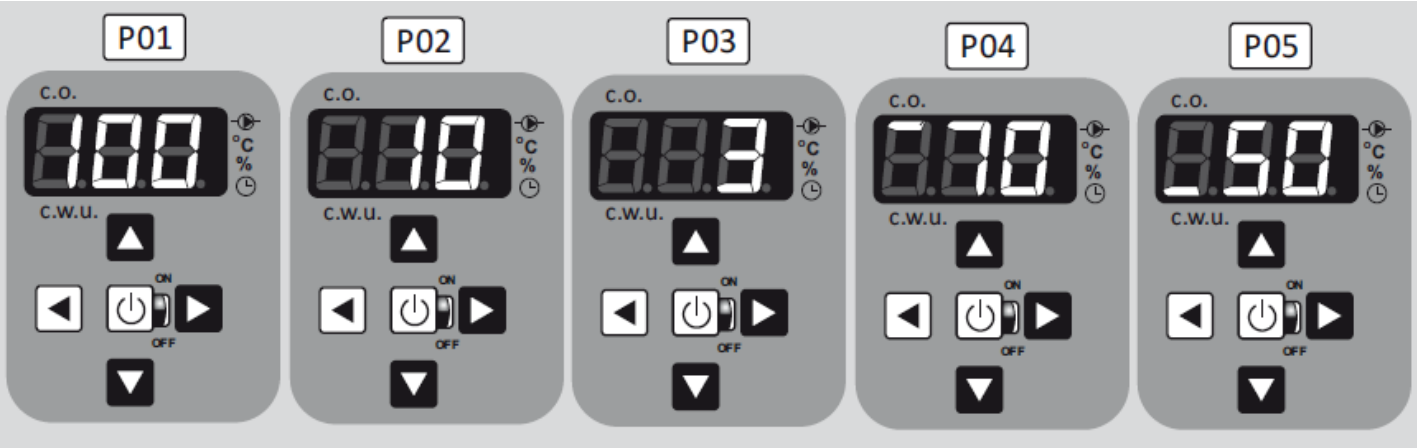
1. Red diode is on, heating is off and boiler in stand-by mode – **recommended mode in off-heating season**

2. Press and hold power button for 5 seconds, green diode appears

3. LED display shows number 300 and starts the countdown. This process cannot be skipped – during this time only central heating pump is activated, heaters remain idle. 300 seconds should be sufficient for bleeding boiler and installation, if it isn't - please turn the boiler off and on again to repeat activity.

4. **With DHW set**. LED display shows number 50 – it represents current HUW temperature set on boiler (bottom line visible on display). ↑ Increase required temperature, ↓ decrease required temperature, ⏻ confirm required temperature, → go to CH temperature setting.

5. LED display shows number 20 – it represents current CH temperature set on boiler (upper line visible on display). ↑ Press once – temperature read starts to pulse, ↑ increase required temperature, ↓ decrease required temperature, ⏻ confirm required temperature, → go to P01 function.



P01 – Boiler power – manual distribution

⏻ Shows current boiler power setting, ↑ increase power (67%, 100%), ↓ decrease power (67%, 33%), ⏻ confirm setting (100% is recommended), → go to P02 function.

P02 – Pump operation time setting

⏻ Shows current pump operating time, ↑ increase operating time, ↓ decrease operating time, ⏻ confirm setting (10 is recommended), ON parameter on display sets continuous pump operation independently of boiler heaters operation status, → go to P03 function.

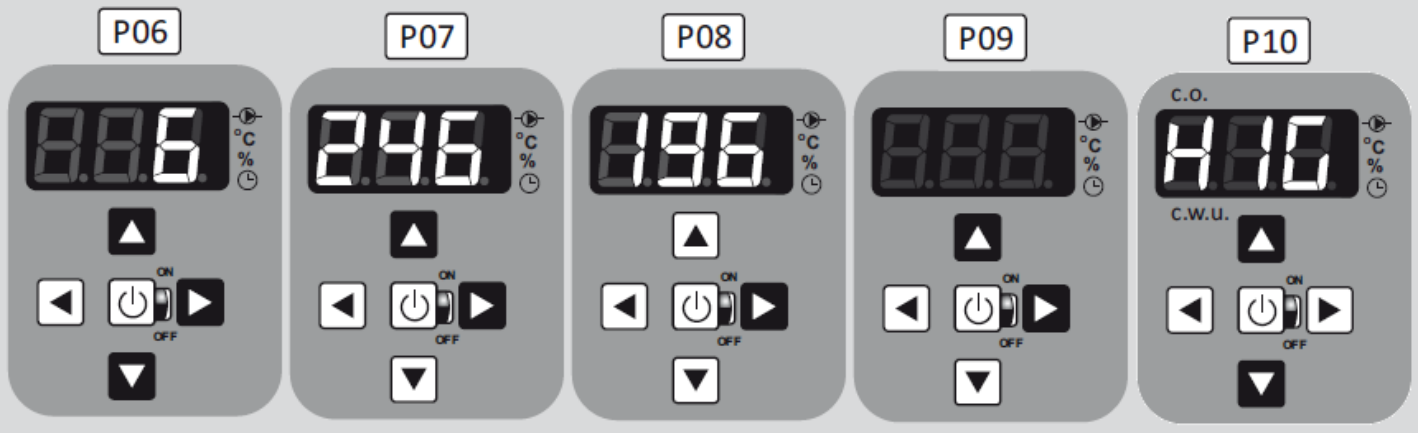
P03 – PID controller

⏻ Shows current PID setting, ↑ increase coefficient ↓ decrease coefficient, ⏻ confirm setting (3 is recommended), → go to P04 function. *Note: if it takes too long for boiler to reach required temperature, set coefficient on 4 or 5 and to 1 or 2 if the increase is too fast.*

P04 – Maximum boiler operating temperature - CH

⏻ Shows set operating temperature, ↑ increase temperature up to 70°C (95°C for AsHZ and ASBIII only), ↓ decrease temperature, ⏻ confirm setting (70 is recommended), → go to P05 function.

P05 – Maximum boiler operating temperature – DHW (with DHW set only) ⏻ Shows set operating temperature, ↑ increase temperature up to 65°C, ↓ decrease temperature down to 5°C, ⏻ confirm setting (50 is recommended), → go to P06 function.



P06 – Boiler operation hysteresis

⏻ Shows current hysteresis setting, ↑ increase value 2-6°C ↓ decrease value 5-1°C, ⏻ confirm setting (6 is recommended), → go to P07 function. *Note: 1-2-3°C setting is available with max temperature of 40°C; 4-5-6°C setting is available with temperatures between 50 and 90°C.*

P07 – Energy consumption in kWh (for preset time not exceeding 24h, after 24h counter stops)

⏻ Shows consumption level in kWh, ↑ counter resets, kWh consumption level is calculated with 1 second updates, → go to P08 function.

P08 – Resettable energy consumption (kWh) meter – useful for PV energy

Display shows 0 kWh, ↑ increase operation limit by 10kWh, ⏻ confirm setting. After using set kWh, countdown stops at 1kWh and diode on main display blinks. For boiler to continue operation, 1kWh needs to be manually changed to 0kWh, which deactivates the meter, → go to P09 function

P09 – Boiler default settings

⏻ Shows currently selected parameter, ↑ restore default settings:

1 - power 100%,

2 – pump operating time 10min.,

3 – PID 3,

4 – CH temperature 70°C,

5 – hysteresis 6°C,

6 – HUW temperature 50°C (for HUW set only),

→ go to P10 function.

Note: upon selecting P09 function, boiler automatically enters bleeding mode – please wait 300 seconds for it to start operating properly.

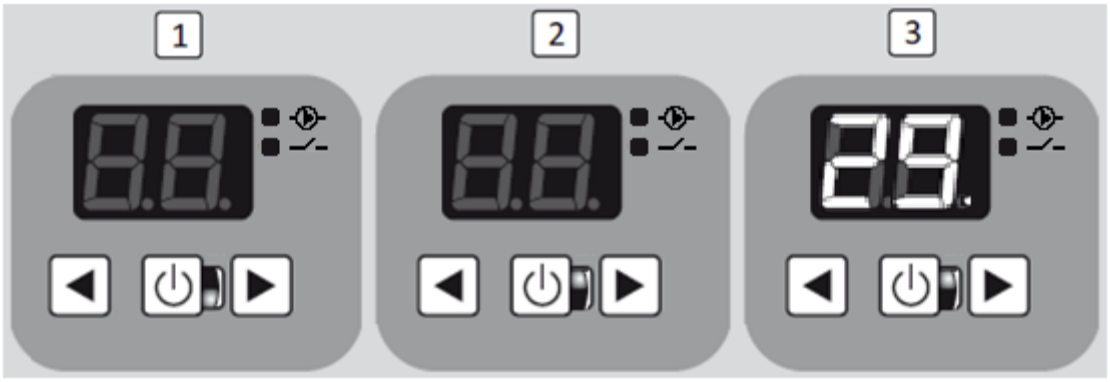
P10 – Hygienisation (for DHW set only)

HIG sign shows, ↑ start process, ↓ stop process. *Note: hygienisation function increases HUW temperature to 70°C level for one hour. Function operation is signalized by lower line blinking.*

P11 – Max power (kW).

Display shows currently set power, ↑ increase, ↓ decrease, ⏻ confirm setting

SETTINGS for AsPC-S model



Make sure the boiler is connected to electrical system in accordance with ELECTRICAL ASSEMBLY section.

1. Red diode is on, heating is off and boiler in stand-by mode – **recommended mode in off-heating season**

2. Press and hold power button for 5 seconds, green diode appears

3. LED display shows number 29. with flashing dot and starts the countdown. This process cannot be skipped – during this time only central heating pump is activated, heaters remain idle. 300 seconds should be sufficient for bleeding boiler and installation, if it isn't - please turn the boiler off and on again to repeat activity.

P01 – Boiler power – manual distribution

⏻ Shows current boiler power setting (99% stands for 100%), ▶ increase power (67%, 100%), ◀ decrease power (67%, 33%), ⏻ confirm setting (100% is recommended), ▶ go to P2 function.

P02 – Pump operation time setting

⏻ Shows current pump operating time, ▶ increase operating time (3, 5, 10, ON), ◀ decrease operating time (1, 3, 5, 10), ⏻ confirm setting (10 is recommended), 88 parameter on display sets continuous pump operation independently of boiler heaters operation status, ▶ go to P03 function.

P03 – PID controller

⏻ Shows current PID setting, ▶ increase coefficient (2-5) ◀ decrease coefficient (1-4), ⏻ confirm setting (3 is recommended). *Note: if it takes too long for boiler to reach required temperature, set coefficient on 4 or 5 and to 1 or 2 if the increase is too fast.*

Elterm boilers are equipped in **AntiStop function**. Automatics turns the pump on for one minute once every 14 days, what prevents it's rotor from seizing. AntiStop operates independently from on/off mode. It is therefore highly recommended to keep boiler in off mode (red diode visible) in off-heating season - in this mode device uses just 0,5W!

Do not remove boiler external metal casing once device remains turned on. In case boiler is activated by mistake with no water inside, wait until heaters cool down, fill device with water and switch it on again. Under no circumstances fill device with cold water with heaters still hot! Once water in central heating system is heated, system should be bled once again (special attention must be paid to the bleeding of the central heating pump and boiler air vent).

NOTES

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TROUBLESHOOTING

Symptoms	Causes	Action
1. No diode visible after boiler connection to main power supply	No power supply Thermal switch (100°C) has been activated Automatic thermal switch activated Breakage or mechanical damage of control cables	Check main fuse for boiler power supply Check wiring continuity and status
2. External residual current device is activated	Boiler electronics safety unit triggers activation	Wait for cooling and check cause of overheating: - check pressure in CH system (air-locking) - bleed CH system and pump - check whether heating pump is working - clean central heating filter (if applicable) - check whether valves on radiators are open - check radiators power - reduce boiler power
3. Rapid temp. increase during start (on display)	Lack of circulation in CH system Boiler power to high for radiators	Wait for cooling and activate 100°C thermal switch
4. Diodes visible, pump completed bleeding cycle, yet after 300 seconds boiler does not initiate heating section start	Room thermostat terminals damaged or open bridge	Adjust room thermostat terminals (bridge)
	Defective room thermostat or it's wiring	Check room thermostat battery Check room thermostat wiring (short-circuit) Check wire connection between boiler and room thermostat
	Room temperature reached already, idle time	Wait for room temperature drop (verification)
5. LED display shows one of the below message: **E01** – sensor error – short circuit (insufficient resistance, e.g. sensor wire damaged) **E02** – sensor error – excessive resistance (sensor not connected, wire broken, terminals not tightened properly on terminal strip)	Temperature not measured, damaged sensor	Check if sensor wires are properly tightened to the terminal strip Replace sensor if necessary Check for signs of wire mechanical damage
6. LED display shows one of the below message: **E03** – no room thermostat installed **E04** – too fast temperature increase	No room thermostat connected to the boiler – continuous operation for 96h	By default bridge is made on room thermostat terminal strip – it needs to be replaced by proper room temperature controller. Boiler is designed for operation with any type of voltage free device.
7. LED display shows one of the below message: **E04** – too fast temperature increase	See point 3 above	See point 3 above
8. Once the main switch is activated, diode is on but control buttons are not responding	Electronic board is disconnected from main board (gap has created)	Tighten securing nuts (bottom part)
9. Boiler's main fuse is activated	Insufficient fuses amperage	Replace with appropriate fuse size Disconnect some of the heaters
	Possible heater short circuit	Locate defective heater and disconnect it Replace it in case of insufficient power

Grzejemy jak Kawaleria®

Declaration of conformity CE – EN1/2020

Elterm M.M.Kaszuba Sp.j., ul Przemysłowa 5, 86-200, Chełmno, Polska

We herewith declare, under our sole responsibility, that the following products: Tankless water heater for central heating systems (electric central heating boiler) type **EKW As**:

Variants:

- ~ 230V,50Hz, max.power 4kW, 6kW, 9kW,12kW, 15kW, 18kW, 21kW and 24kW
- 3N~400V,50Hz, max.power 4kW, 6kW, 9kW,12kW, 15kW, 18kW, 21kW, 24kW, 27kW, 30kW, 33kW, 36kW, 39kW, 42kW, 45kW, 48kW and boiler cascades 1,5MW (each boiler up to 48kW)

Models: AsPC-S, AsP, AsBN, AsZN, AsD, AsC, AsBI, AsBN-W, AsZN-W, AsD-W, AsC-W, AsDC-W, AsBII, AsHZ, AsHN, AsBIII, AsBIV, AsMB , manufactured at the Elterm production plant, are in conformity with the applicable provisions of the following EC Directives:

Number	Title
2006/95/WE as amended	Low Voltage Directive (LVD)
2004/108/WE as amended	Electromagnetic Compatibility Directive (EMC)
2002/95/WE as amended	Directive on the restriction of the use of certain hazardous substanc in electrical and electronic equipment (RoHS)
2002/96/WE as amended	Directive on waste electrical and electronic equipment (WEEE), GIOŚ register number E0001767
ErP 2009/125/WE	General rules for setting requirements concerning Ecodesign for energy related products (Attachment 13)
EU Commission regulation nr 622/2012	With regard to Ecodesign requirements for glandless standalone circulators and glandless circulators integrated in products

and that the standards hereinafter referred to have been duly applied and observed. The harmonized standards applicable to the product to which this declaration of conformity pertains:

Number	Issue	Title
PN-EN 60335-1	2006 (U) as amended	Safety of household and similar devices
PN-EN 60335-2-35	2007 (U) as amended	Particular requirements for tankless water heaters
PN-EN 55014-1	2002 as amended	Interference emission for domestic appliances
PN-EN 55014-2	2004 as amended	Interference immunity
PN-EN 61000-3-2	2004 as amended	Harmonic current emissions
PN-EN 61000-3-11	2000 as amended	Limitation of voltage fluctuations and flicker in low-voltage supply systems
PN-EN 50366	2006 (U) as amended	Electromagnetic fields- methods for evaluation and measurement

Other documents or information required by the EC Directives:

Report number:	Laboratory:
B-47/03	KEWA – ECO, Bydgoszcz
CLBT/ZR/67/2003	GP – CLBT, Warszawa
456/BS/EMC/04	PREDOM – OBR, Warszawa
BE/39/2006	Laboratorium Elektrotechniczne PCBC S.A.
BEM-66/07	Laboratorium Badawcze Maszyn i Urządzeń J.N.B. EUROVITA Sp. z o.o.
B-71/07	Laboratorium Badawcze Maszyn i Urządzeń J.N.B. EUROVITA Sp. z o.o.

Chełmno, May 4th 2020

Maciej Kaszuba

GUARANTEE

Boiler model: Serial number: Production date: Sales date:	Legible stamp and signature of sales point

Stamp of installing company (hydraulics)	Stamp of installing company (electricity)	I declare I have familiarized myself with guarantee terms.
Without above stamps and signatures, guarantee is not valid.		

1. Guarantee for trouble-free operation is valid for a period of 24 months (12 months for **AsMB**).
2. Guarantee expires if any alterations are made to the product without the manufacturer's consent, or if assembly or use are not in accordance with the enclosed operation manual and terms and conditions of guarantee.
3. Guarantee repairs are made by the manufacturer or persons/companies authorized by the same.
4. If filled out incompletely, the guarantee is invalid.
5. If the serviceperson discovers machine failure resulting from the user's fault (e.g. improperly made wiring system, air-locked central heating system, use or assembly that is not in compliance with the user manual etc.), or in the event the guarantee is invalid, the costs of repair and travelling are borne by the claimant.
6. Failure on the part of the user to follow the serviceperson's recommendations provided in the guarantee repair protocol results in the guarantee being suspended until such recommendations are implemented.

Stamp of serviceman, short description of repair and recommendations for the user

Following guarantee repair by the serviceman, one of the below guarantee coupons to be cut off, filled out and handed to the serviceman.

Guarantee coupon I

.....
Full name and address of the boiler owner

.....
Postal code, town /Boiler owner tel. no

....
Production date Boiler serial no.

Guarantee coupon II

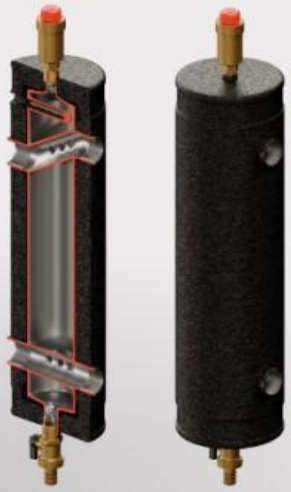
.....
Full name and address of the boiler owner

.....
Postal code, town /Boiler owner tel. no

....
Production date Boiler serial no.

Elterm – leading Polish manufacturer of comprehensive heating solutions!

1 Vertical low loss headers :SHE, SHE-OC, SHE-SM, SHE-CD and SHE-CDI



2 Distribution low loss headers SKE and SKE Condens: SKE 2D+, SKE 2DC+, SKE 4DC+

3 Pump groups: VRG, VTA & Universal

4 Company set – 28 combination: with VRG, VTA valves & universal

5 Squadron set – 6 combinations with thermostatic valve & rotary valve

6 Connecting manifolds 2D+ & 3D+

7 Magnetic filter and basket strainer DRYL

8 Safety heat exchanger Guardian

9 Quartermaster controller


Polish
technological idea
since 1992
Many years of experience in installation industry
We support reconstruction movement in Poland
100% pressure control of all poducts
Polish manufacturer


FAMILY BUSINESS