

Art.Nr.:

**171 856****Speed controller for hot water preparation****Installation instruction**

ma\_en\_812504\_Speed controller for hot water preparation UVR 61-3 HEP

**Description**

The temperatures and the status of the flow switch can be displayed:

The controller UVR 61-3 HEP can be used to control the speed of the plate heat exchanger pump with pulse width modulation and also for 0 .. 10V control.

A tap process is detected by the connected flow switch (S6) and the plate heat exchanger pump starts. The speed of the plate heat exchanger pump is controlled so that the hot water temperature (Sensor S5) is maintained to the configured value (factory set at 47°C).

S1 = Collector temperature  
 S2 = Buffer temperature  
 S3 = not used  
 S4 = not used  
 S5 = Hot water- tap temperature  
 S6 = Flow switch, display:  
 999 = open, no tap  
 - 999 = closed, tap

The controller is set by factory to „PWM“.

If the pump should be controlled via 0...10V, the parameter have to be changed from „PWM“ to „0...10V“ as described on page 14.

Also the parameters „Output mode“ and „Lower speed limit“ as described on page 16 have to be changed.

The parameters, set by factory, are stored in a EEPROM. The parameters will be also stored in case of mains power failure.

**Note:**

The parameters are concerned by factory for using the IDM- hot water modules. It should only the desired hot water temperature to be changed, if necessary!

**Note:**

For a quick adjustment of the hot water temperature please follow the instructions on page 13 - 14. Under the **Menu item „SWA47“** the desired temperature can be adjusted.

When using a solar system, the program 640 must be configured according to the enclosed instructions manual. The connection of the sensors and the solar loading pump is made according to the wiring diagram.



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### Assembling

If the hot water modul with controller is ordered, the controller and the hot water sensor are already mounted. The pump, the flow switch and the sensor are connected. Only the switch module of the flow switch must be snapped on the flow switch (Cable upwards) and the electric supply must be established (230V/50Hz).

If the controller is retrofitted, it must be taken as follows:

- Remove the mating plug and the standard fitting panel.
- Attach the fitting panel with the controller and the attached plugs on the basic panel sheet. The required holes are prepared.

- Connect the 3-pole black plug for the pump and the 4-pole brown plug for the flow switch onto the mating plug.
- Remove the stopple of the free upper connecting sleeve of the plate heat exchanger.

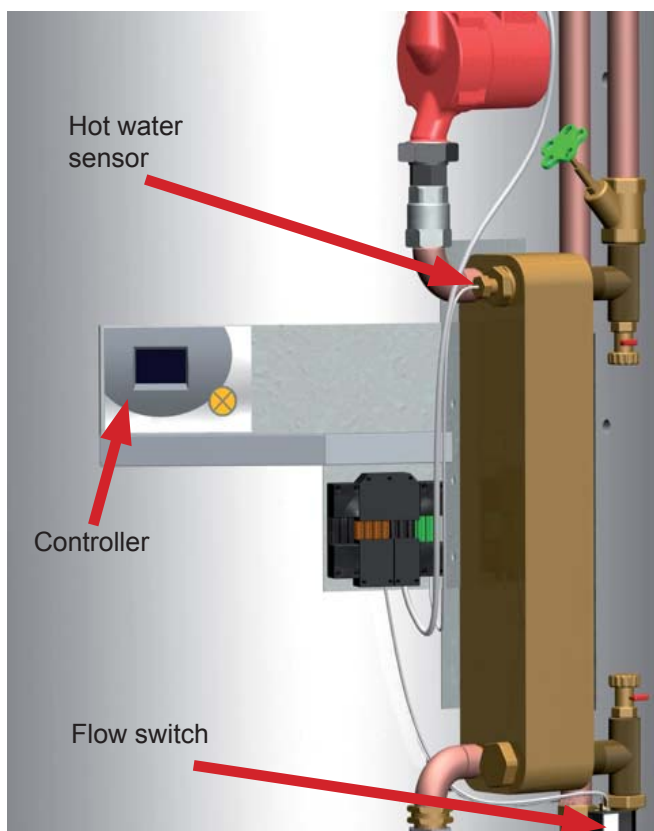
Tighten the upper free connecting sleeve of the plate heat exchanger (1/2"-thread) and plug in the green plug.

- Plug in the power plug.

Now the controller is ready for operation.

#### Note:

**The connection of the controller is made according to the wiring diagram.**



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**Technical data:**Sensor: Sensor KTY81-210, linearized, Accuracy between 10 and 90°C:  $\pm 1^\circ\text{C}$ *Note: All sensor masses are connected internally and optional interchangeable.*

Difference temperature: adjustable from 0,0 to 99 K

Threshold: adjustable from - 20 to 150°C

Speed control: 30 Speed steps, control on absolute value

Temperature display: - 50 bis + 199°C

Resolution: von - 9,9 bis + 100 C mit 0,1 C, sonst 1 C

Accuracy: typ. 0,4 and max.  $\pm 1$  C im zone from 0 to 100 C

Output 1: Triac 250 V/ 1,5A(350 W)

Output 2: Relais 250 V/ 3A(700 W)

Output 3: Relais 250 V/ 3A(700 W)

*Note: All outputs are protected together with 3,15A!*

Electrical supply: 230 V/ 50 Hz

Power consumption: max. 3W

**Note: The system must be grounded in accordance with the provisions!****Resistance value of the temperature sensor KTY(2000  $\Omega$  at 25°C)**

T(°C)	0	10	20	30	40	50	60	70	80	90	100
R(Ohm)	1630	1772	1922	2080	2245	2417	2597	2785	2980	3182	3392

**Trouble-shooting**

If the pump don't run, although hot water is tapping, following points must be checked:

- Is the switch element on the right position (brass part) and in the right direction (cable upwards)?
- Is the float element in the flow switch free and not blocked (e.g. blocked by dirt)?
- Is it possible to switch the pump on and off in manual mode (see Menu point "TST" on page 13)?
- Is the pump running when the white contact of the flow switch is bridged?
- If the controller don't work despite of presence line voltage, the fuse (3.15 A) should be checked or replaced.

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### Operation

The operation of the controller also the navigation by the menus carried out by 4 navigation keys.  
The large majority contains all of the icons needed for all of the important information as well as a plain text field.

### Function of the navigation keys:



- ◀ ▶ = Navigation keys to select the display and change parameters
- ▼ = Entry in a menu, release of a value to modify with the navigation keys (enter key)
- ▲ = Return to the last menu level selected, exit the parameter level for a value (return key).

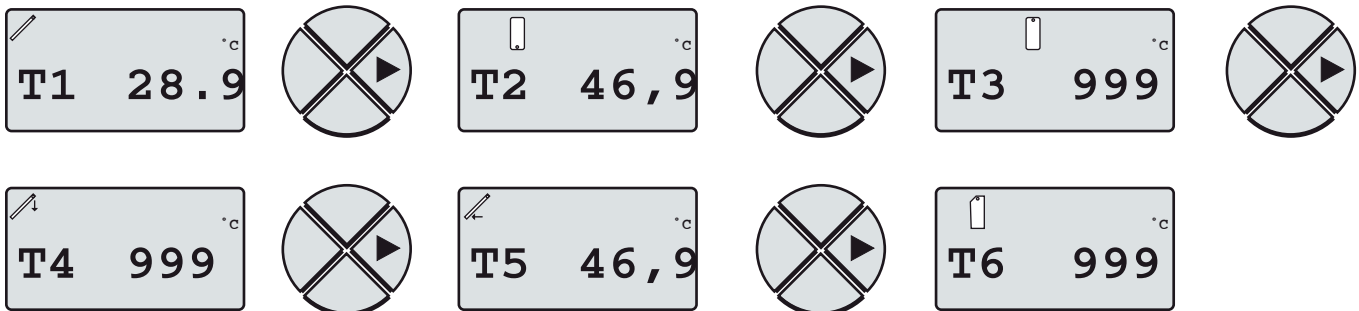
In normal operation, the left/right arrows are the navigation keys to select the desired display, such as hot water tap temperature or plate heat exchanger inlet temperature. Each time a key is pressed, another icon appears with the respective temperature (see below).

In this case the temperature sensor T3 is the flow switch and is displayed as follows:

Hot water preparation not activ: 999

Hot water preparation activ: - 99

In the basic display depending on the program number, only the choice of symbols on the top line is possible.



Above the text line, the relevant symbol is displayed for information. Below the text line, all relevant notes are displayed during the configuration.

The active output is indicated by the illuminated number on the right side of the display. For example, „1“ lights if the plate heat exchanger pump is in operation, or „3“ for operation of the solar pump.

If you are located within a menu structure, the controller automatically switches after a minute in the temperature display mode, when during this time no key is pressed.

**The controller has already been programmed at the factory for use as speed control of the plate heat exchanger pump and is ready for operation!**

Subsequently, the programming of the controller is described:

In the „PAR“ menu (see following pages), mainly the system diagram (program number) and the settings for the solar differential temperature control are made.

In the menu „MEN“ the settings for the speed controller of the plate heat exchanger pump are described.

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## Setting of the controller / Parametrization in the menu „PAR“

Subsequently the settings of the system diagram (program) and the parameter for the solar difference control and for the speed control of the plate heat exchanger pump are described.



With the arrow key ► select the adjacent window



Press the ▼ key



Set the code, for this purpose press the ▼ key, display begins to flash  
set **Code 32** with the key ►  
confirm with the ▲ key, the display stops flashing



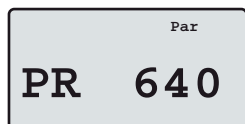
Press the ► key



Program **version** of the controller (It muss not match with this here given version!)



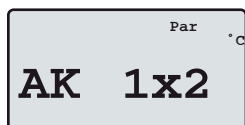
Taste ► betätigen



Set **Program** by factory for the speed control



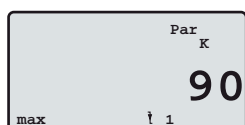
Press the ► key



Cross-bonding for this application is necessary



Press the ► key



MAX-limit switching off threshold for sensor T2 (Buffer sensor), set to **90°C** by factory  
change: press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stops flashing

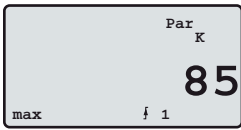


Press the ► key

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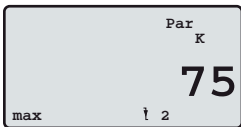
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**Max-limit switching on threshold for sensor T2** (Buffer sensor), set to **85°C** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



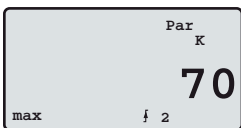
Press the ► key



**Max-limit switching off threshold for sensor T4** (not used), set to **75°C** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



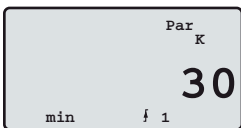
Press the ► key



**Max-limit switching on threshold for sensor T4** (not used), set to **70°C** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



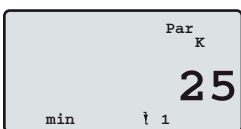
Press the ► key



**Min-limit switching on threshold for sensor T1** (Collector sensor), set to **30°C** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



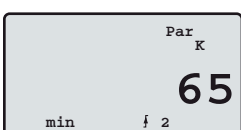
Press the ► key



**Min-limit switching off threshold for sensor T1** (Collector sensor), set to **25°C** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key



**Min-limit switching on threshold for sensor T3** (not used), set to **65°C** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing

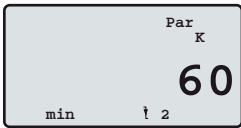


Press the ► key

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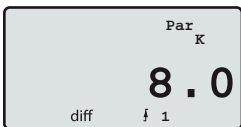
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**Min-limit switching off threshold for sensor T3** (not used), set to **60°C** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



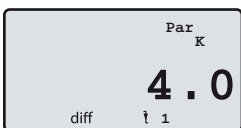
Press the ► key



**Difference switching on threshold for sensor T1** (Collector sensor), set to **8,0 K** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



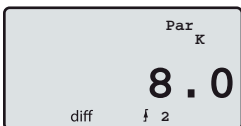
Press the ► key



**Difference switching off threshold for sensor T1** (Collector sensor), set to **4,0 K** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



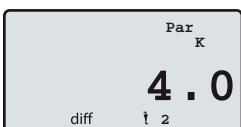
Press the ► key



**Difference switching on threshold for circulation pump** (not used), set to **8,0 K** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key



**Difference switching off threshold for circulation pump** (not used), set to **4,0 K** by factory,  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key



Display of the time e.g. **16.24**.  
change: Press the ▼ key, display minutes begins to flash  
Change the setting with ► or ◀  
Press the ▼ key, display hours begins to flash  
Save the setting with ▲, display stopps flashing

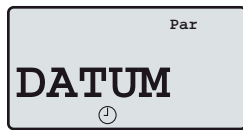


Press the ► key

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In this menu, the day, month and the year can be read and set, also the change between summer-/and wintertime can be automated.

change: Press the ▼ key, display begins to flash

Change the setting with ► or ◀

Save the setting with ▲, display stopps flashing



Press the ▼ key



Set/display the **Month** (e.g. **09**) and day (e.g. **29**)

change: Press the ▼ key, display month begins to flash

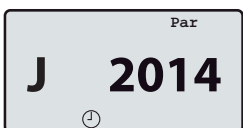
Change the setting with ► or ◀

Press the ▼ key, display begins to flash

Save the setting with ▲, display stopps flashing



Press the ► key



Set/display the year (e.g. **2014**)

change: Press the ▼ key, display begins to flash

Change the setting with ► or ◀

Save the setting with ▲, display stopps flashing



Press the ► key



**Automated Summer-/normal time change**

change: Press the ▼ key, display begins to flash

Change the setting with ► or ◀

Save the setting with ▲, display stopps flashing



Press the ▲ key



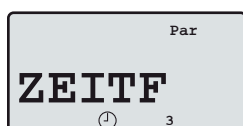
Press the ► key



Press the ► key



Press the ► key



Press the ► key



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Automatic mode for output 1 (= plate heat exchanger pump switches according the program) change: Press the ▼ key, display begins to flash  
Change the setting with ▶ or ◀ (OFF or ON)  
back with ▲, display stopps flashing



Press the ▶ key



**Automatic mode for output 2 (= not used)**  
change: Press the ▼ key, display begins to flash  
Change the setting with ▶ or ◀ (OFF or ON)  
back with ▲, display stopps flashing



Press the ▶ key



Automatic mode for output 3 (= Solar pump switches according the program) change: Press the ▼ key, display begins to flash  
Change the setting with ▶ or ◀ (OFF or ON)  
back with ▲, display stopps flashing



Press the ▶ key



End respectively begin of the menu „PAR“:



Press the ▲ key

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### Average determination for the warmwater temperature sensor (Menu „MEN“)

Subsequently, the setting for the speed controller of the plate heat exchanger pump is described.



Select the adjacent window with the ► key



Press the ▼ key



Language: **Deutsch** is set.  
change with the ▼ key, the display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key



Set the code, for this press the ▼ key, the display begins to flash  
set **Code 64** with the ► key  
Save the setting with ▲, display stopps flashing



Press the ► key



**Sensor menu**



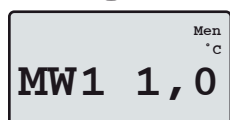
Press the ▼ key



The sensor **S1** (Collector sensor) is a type **PT1000**



Press the ► key



**MW1 1,0** = Average determination sensor S1 is carried out over 1,0 seconds  
(=Factory setting)  
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key



The sensor **S2** (solar return flow sensor) is a type **KTY**

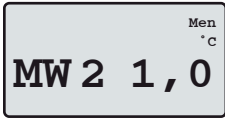
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Press the ► key



**MW 2 1,0** = Average determination sensor S2 is carried out over 1,0 seconds  
(=Factory setting)

change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key

The sensor **S3** (buffer sensor) is a type **KTY**

Press the ► key



**MW 3 1,0** = Average determination sensor S3 is carried out over 1,0 seconds  
(=Factory setting)

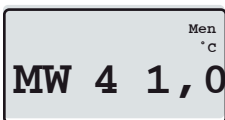
change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key

The sensor **S4** (circulation) is a type **KTY**

Press the ► key



**MW 4 1,0** = Average determination sensor S4 is carried out over 1,0 seconds  
(=Factory setting)

change: Press the ▼ key, display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stopps flashing



Press the ► key

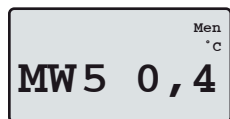
The sensor **S5** (hot water sensor) is a type **KTY**

Press the ► key

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**MW 5 0,4** = Average determination sensor S4 is carried out over 0,4 seconds  
 (=Factory setting)  
 change: Press the ▼ key, display begins to flash  
 Change the setting with ► or ◀  
 Save the setting with ▲, display stopps flashing



Press the ► key



The sensor **S6** (digital input flow) is a **digital** sensor



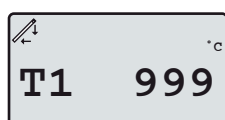
Press the ► key



**MW 6 1,0** = Average determination sensor S6 is carried out over 1,0 seconds  
 (=Factory setting)  
 change: Press the ▼ key, display begins to flash  
 Change the setting with ► or ◀  
 Save the setting with ▲, display stopps flashing



Press the ▲ key, until „ENTER“ appears, with ► the actual temperatures can be displayed



.....

#### Setting of the speed controller (Menu „MEN“)

Subsequently, the setting for the speed controller of the plate heat exchanger pump is described.



Select the adjacent window with the ▶ key



Press the ▼ key



Language: **Deutsch** is set.  
change with the ▼ key, the display begins to flash  
Change the setting with ▶ or ◀  
Save the setting with ▲, display stopps flashing



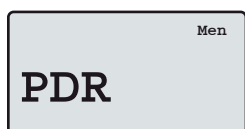
Press the ▶ key



Set the code, for this press the ▼ key, the display begins to flash  
set **Code 64** with the ▶ key  
Save the setting with ▲, display stopps flashing



Press the ▶ key



Speed control of the pump



Press the ▶ key



Absolute value regulation Inverse mode is not set by factory

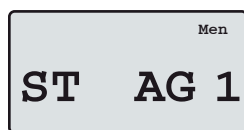


Press the ▼ key

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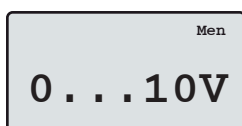
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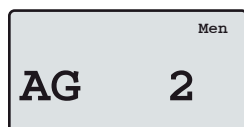
Control output 1



Press the ▸ key

Pulse duration modulation is set by factory  
change to 0...10V is possible

Press the ▸ key



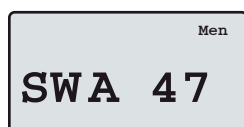
Output 2



Press the ▸ key

**Absolute value regulation Invers mode on sensor 5**, that means,  
with increasing temperature at sensor 5, the speed is reduced  
and vice versa  
Setting by factory: AR I5

Press the ▸ key

Desired value of the absolute value regulation, set by factory:  
**47°C**

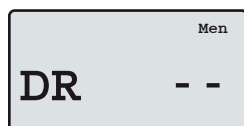
change: press the ▼ key, the display begins to flash

Change the setting with ▸ or ◀

Save the setting with ▲, display stopps flashing



Press the ▸ key

**Difference regulation, deactivated by factory**

Press the ▸ key

Desired value of the difference regulation, set by factory: **40°C**

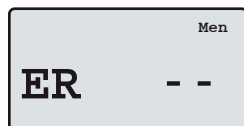
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Press the ▶ key



Event control, deactivated by factory



Press the ▶ key



Threshold value of the event control, set by factory: 40°C



Press the ▶ key



Desired value of the event control, set by factory: 40°C



Press the ▶ key



**Proportional part of the PID\_controller, set by factory: 8**  
 change: Press the ▼ key, the display begins to flash  
 Change the setting with ▶ or ◀  
 Save the setting with ▲, display stops flashing



Press the ▶ key



**Integral part of the PID\_controller, set by factory: 9**  
 change: Press the ▼ key, the display begins to flash  
 Change the setting with ▶ or ◀  
 Save the setting with ▲, display stops flashing



Press the ▶ key



**Differential part of the PID-controller, set by factory: 3**  
 change: Press the ▼ key, the display begins to flash  
 Change the setting with ▶ or ◀  
 Save the setting with ▲, display stops flashing



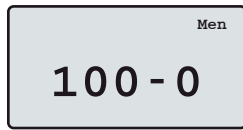
Press the ▶ key

**Following PID-Parameters are valid for  
 hot water station 2.0: P 5, I 11, D 3**

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## Installation instruction

ma\_en\_812504\_Speed controller for hot water preparation UVR 61-3 HEP



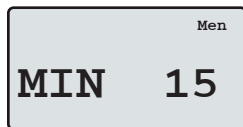
PWM



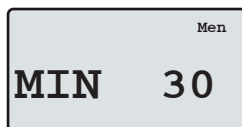
0...10V

Output mode, set to **100-0** for PWM  
and to **0-100** for 0...10V

Press the ► key



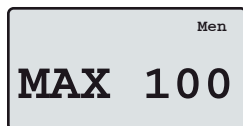
PWM



0...10V

Lower speed limit for the plate heat exchanger pump, set by factory: **0**  
change: Press the ▼ key, the display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stops flashing

Press the ► key



Upper speed limit for the plate heat exchanger pump, set by factory: **30**  
change: Press the ▼ key, the display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stops flashing

Press the ► key

Delay time, set to **0**

Press the ► key



Actual value of the speed control, set is not possible

Press the ► key



Actual speed stage to test the plate heat exchanger pump,  
change: Press the ▼ key, the display begins to flash  
Change the setting with ► or ◀  
Save the setting with ▲, display stops flashing

Press 5x the ▲ key to exit the setting level



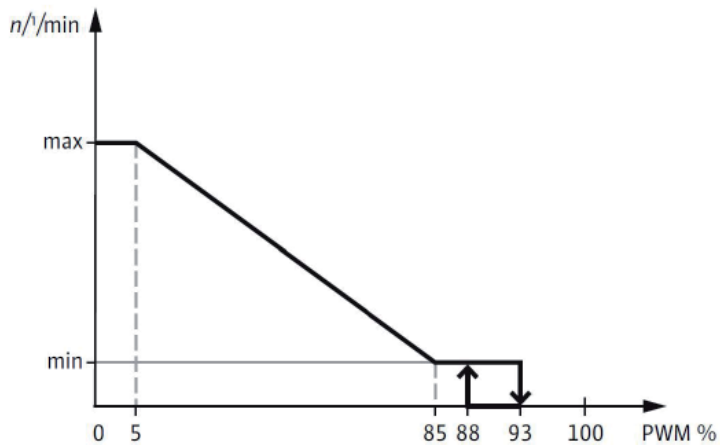
## Speed controller for hot water preparation

## Installation instruction

ma\_en\_812504\_Speed controller for hot water preparation UVR 61-3 HEP

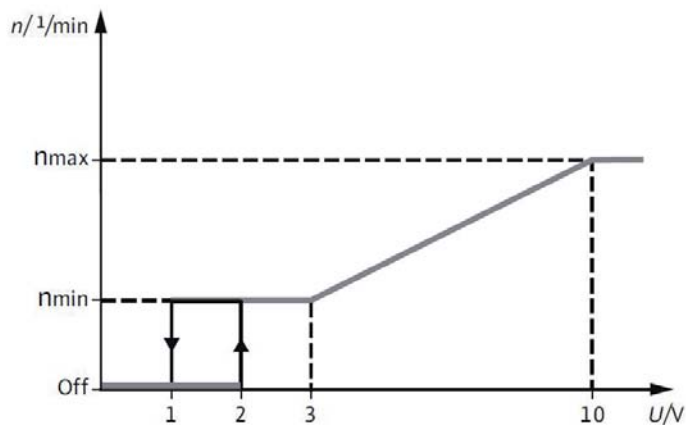


## PWM - pump (Yonos Para)



Configuration menu → **Fresh water**  
minimum speed 20%

## 0-10V - pump (Stratos Para - T2)



Configuration menu → **Fresh water**  
minimum speed 30%

**Caution: Wilo Stratos Para - T1 (with cable break function) don't work!**





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**IDM ENERGIESYSTEME GMBH**

Seblas 16 – 18 A-9971 Matrei in Osttirol

Telefon +43(0)4875.6172-0 Telefax +43(0)4875.6172-85

E-mail [team@idm-energie.at](mailto:team@idm-energie.at)

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