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ACT 443 ProClick constant temperature controller

NOTE

The product may only be used if you have fully read and understood these operating instructions. The manual is also available on the AFRISO websites in the Internet.

WARNING



The product may only be mounted, commissioned and disposed of by qualified, specially trained staff. Electrical work should always be entrusted to a qualified electrician.

Alterations performed by unauthorized staff may cause a threat and are forbidden for safety reasons.

The product is powered by 230 V AC. This may cause severe injuries or death.

Do not let the product go into contact with water.

Do not alter the product in any way.

Before mounting the product please read the manual of the mixing valve.

APPLICATION

Used in water based cooling and heating systems. Mounted directly on 3- and 4-way mixing valves. Maintains a constant temperature of the medium in the range of 10÷90°C. Additionally, the product can also control a circulation pump.

SCOPE OF DELIVERY

1. ACT 443 ProClick constant temperature controller equipped with two temperature sensors with a pipe mounting adapter, a knob with a double-sided scale ("from 0 to 10" and "from 10 to 0"), as well as an electric cable with a plug and a circulation pump control cable.
2. Installation and operating manual.
3. Mixing valve mounting manual.

CONSTRUCTION

ProClick system
disconnecting pushbutton

Colour display

HELP button



Fig 1. Construction of the ACT ProClick constant temperature controller

MOUNTING AND USAGE

The controller can be mounted on the valve in four different positions (Fig. 2), the display will always automatically orient itself horizontally. The blue ring with indicator must point upwards. If it does not, pull off the knob and blue ring, then mount it back with the indicator pointing upwards.

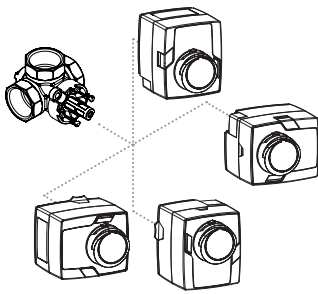


Fig. 2. Possible mounting positions

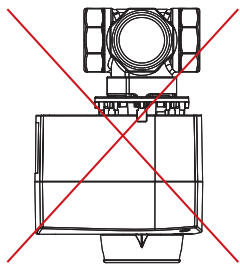
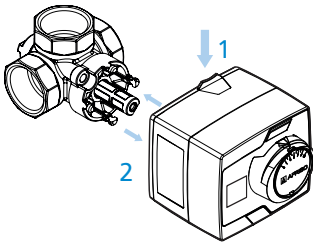


Fig. 3. Improper mounting position

Mounting/dismounting the controller on the ARV Vario ProClick mixing valve

To mount or dismount the controller, press and hold the ProClick system pushbutton (1), and then slide the actuator on or off the valve spindle.



Rys. 4. Fig. 4. Mounting/dismounting of the ACT ProClick controller on the ARV Vario ProClick valve

Mode of operation of the ACT constant temperature controller

Switching between automatic and manual mode can be done using the manual mode pushbutton. When the pushbutton is in the upper position, the controller works automatically. When the pushbutton is pressed down, manual operation, meaning freely turning the knob of the controller, is enabled.



Fig. 5. Operation mode pushbutton

ELECTRICAL CONNECTIONS

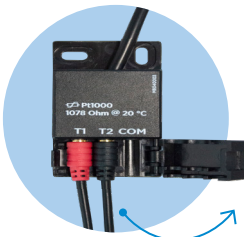


Fig. 6. T1 and T2 sensor connection block

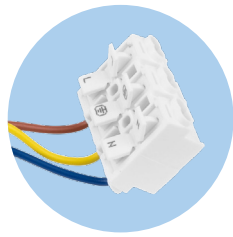


Fig. 7. Circulation pump connection block

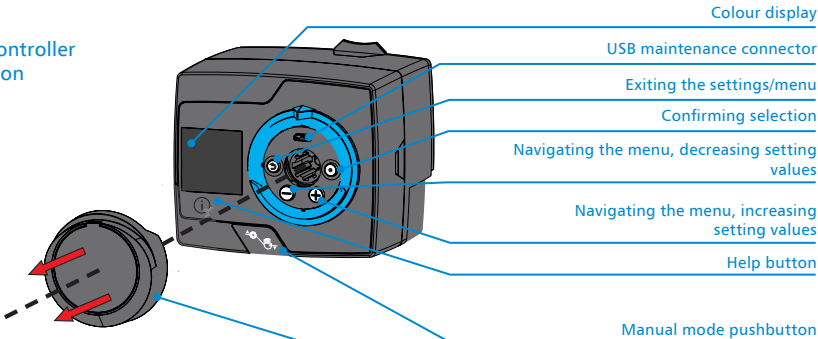
1. The T1 and T2 temperature sensors should be mounted in accordance with the chosen diagram (Fig. 9, Fig. 10, Fig. 11) by using the adapters included, or specially prepared sleeves.
2. Then, connect the sensors to the included connection block in accordance with Fig. 6.
3. Connect the circulation pump to the proper controller connection block (Fig. 7).
4. Connect power to the device using the power cable with a plug.

SETTINGS

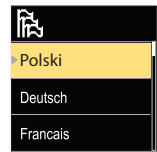
1. Initiating the controller settings

Take off the knob (Fig. 8) and then press and hold the and buttons for 5 seconds.

Fig. 8. Controller description



2. Language selection



Select the required language using the and buttons, confirm your choice with the button.

3. Selection of operating mode

Select the operating mode of the system - heating or cooling.

4. Diagram selection

Select the appropriate diagram in accordance with the mounting position of the mixing valve in the system. The available diagrams are: mixing valve mounted on the heat source return pipe (Fig. 9), on the supply pipe (Fig. 10), or on a 4-way valve (Fig. 11).

5. Opening direction

After selecting the appropriate diagram, the next step is to select the direction of opening the valve. When the ACT 443 ProClick constant temperature controller is mounted on the supply pipe to maintain a constant temperature of the heating medium entering the system, the direction of operation of the controller should be chosen to ensure that rotating the valve sleeve in the chosen direction increases the flow of medium from the heat source into the system. The setting indicates controller operation to the right – clockwise. The setting indicates controller operation to the left – counter clockwise.

6. Temperature setting for heating and cooling mode

The next step is setting the temperature for heating mode. Select the minimum temperature (Tmin), the maximum temperature (Tmax) and the required medium temperature to be maintained after the mixing valve in the range from Tmin to Tmax. After setting the temperatures for heating mode, set the temperatures for cooling mode. The graphic symbolizes the exit from the settings and return to the initial screen.

7. Selecting the scale

In the last step, you need to select the right scale, either "0 to 10" or "10 to 0", corresponding to the chosen diagram (Fig. 9, Fig. 10, Fig. 11). To change the scale, you need to lift up the plate, and put it on again facing the other side.

ARV Vario ProClick

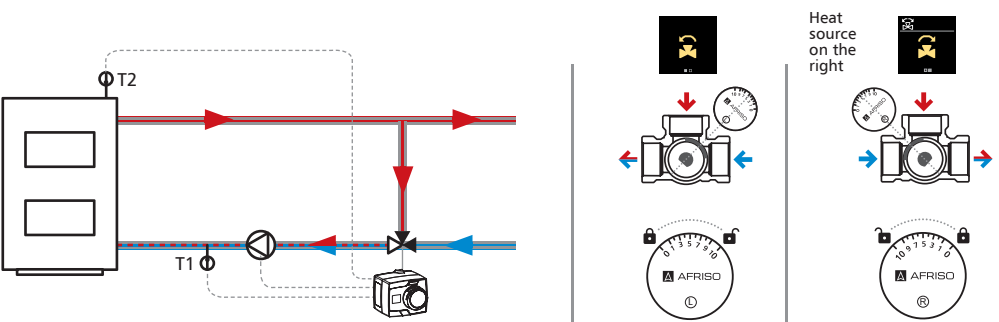


Fig. 9. Diagram with the ARV Vario ProClick mixing valve mounted on the return to the heat source, in order to protect the heat source against low-temperature corrosion

The circulation pump will be switched on after the set heat source temperature (T2) is exceeded. The default value is set at 50°C. This setting can be altered through the S3.2 parameter.

ARV Vario ProClick

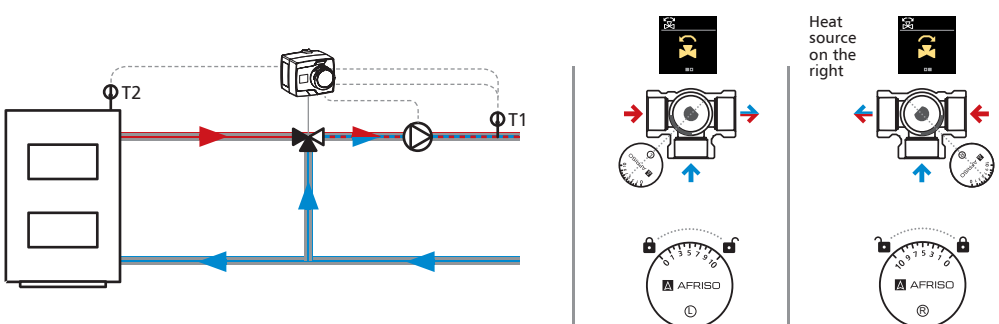


Fig. 10. Diagram with the ARV Vario ProClick mixing valve mounted on the supply pipe to maintain a constant temperature of the medium flowing to the system

The required mixed temperature setting can be changed through pressing and holding both the and buttons for 1 second, without having to go through the whole menu.

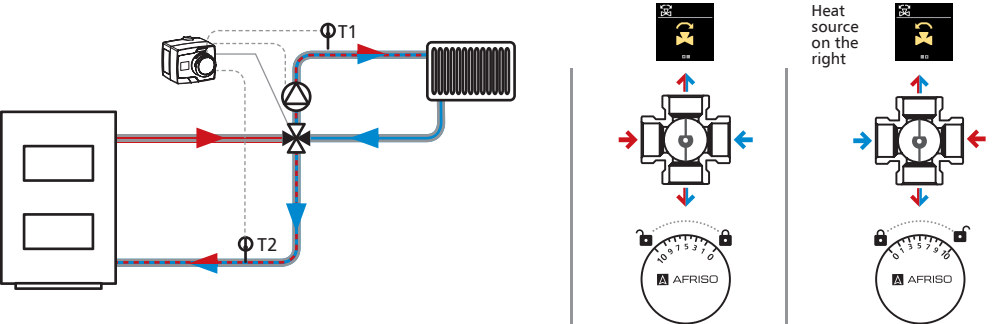
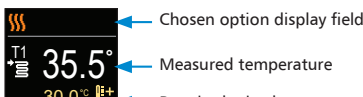


Fig. 11. Diagram with a 4-way mixing valve mounted in order to protect the heat source against low-temperature corrosion

When selecting the diagram with the 4-way valve, the default minimum return temperature (T2) is 50°C. This setting can be altered through the S3.2 parameter. When this temperature is reached, the controller will turn on the circulation pump and start controlling the system supply temperature.

Icon description



Chosen option display field

Measured temperature

Required mixed temperature

- heating mode
- cooling mode
- valve turning to the left
- valve turning to the right
- return temperature sensor
- heat/cold source temperature
- circulation pump operation
- return temperature
- manual mode activated
- required mixed temperature
- sensor malfunction
- maximum temperature exceeded

Fig. 12. Description of the symbols displayed on the controller

Fig. 12. Description of the symbols displayed on the controller

SETTING THE USER AND SERVICE PARAMETERS

SETTING THE REQUIRED TEMPERATURE		CONTROLLER STATISTICS OVERVIEW	
	Supply Supply temperature required.		Graph Graph showing the change of T1 and T2 temperatures over time, using data collected over the last 7 days.
	Operation counter Time since the product was last activated.		Change log A log of changed parameters.
SETTING THE OPERATION MODE		SETTING THE USER PARAMETERS	
	Operation Turning the device off/on.		P1 General Setting the temperature round up.
	Heating / Cooling Changing the operation mode from heating to cooling.		P2 Mixing circuit
	Manual Test mode.		P3 Energy source
INFORMATION OVERVIEW		SETTING THE SERVICE PARAMETERS	
	About controller Software version information.		S1 General
	Messages Information about exceeding the max temperatures and activation of the return protection function.		S2 Mixing circuit Service settings of the mixing circuit.
	Errors A list of sensor errors.		S3 Energy source Service settings of the energy (heat) source.
	Delete Deleting messages and errors.		
DISPLAY SETTINGS		FACTORY SETTINGS	
	Language Language selection menu.		Save settings
	Time and date Time and date settings.		Load settings
	Illumination Display brightness (illumination) settings.		Factory settings Resetting to factory settings.

P1 General				
Parameter	Function	Description	Range	Default setting
P1.1	Accuracy	Accuracy of the temperature indication.	- 0,1°C - 0,2°C - 0,5°C - 1°C	0,5°C
P1.2	Automatic shift of clock to summer / winter time	Automatic change to summer / winter time.	- No - Yes	Yes
P1.4	Tones	Setting the tones of the controller.	- Off - Keypad - Errors - Keypad and errors	Keypad
P1.6	Czułość przycisku „Pomoc”	Ustawienie czułości przycisku „Pomoc”.	0÷100%	40%

S1 General				
Parameter	Function	Description	Range	Default setting
S1.1	Hydraulic scheme (diagram)	Selection of the hydraulic scheme (diagram)	1÷3	2
S1.2	Code for unlocking the service settings	The ability to change service parameters.	0000÷9999	0150
S1.3	Actuator opening direction	Setting the direction of rotation of the controller (opening the valve causes an increase of the medium temperature in a heating system, and a decrease in a cooling system).	- Left - Right	Left
S1.4	Antiblock function for mixing valve and pump	Setting the function preventing blocking of the valve and pump. If no activity of the valve or pump is detected in the time specified (week or day), the controller will activate the pump for 60 seconds and turn the valve.	- No - Yes, weekly - Yes, daily	Yes, weekly
S1.6	Setting heating / cooling operation	Using this settings, you can block the automatic switching between heating and colling modes, limiting the controller's operation to purely heating or purely cooling.	- Heating and cooling - Heating only - Cooling only	Heating only
S1.17	Sensor T1 calibration	Adjustment of the displayed measured temperature for the T1 sensor.	-5÷5°C	0°C
S1.18	Sensor T2 calibration	Adjustment of the displayed measured temperature for the T2 sensor.	-5÷5°C	0°C

S2 Mixing circuit				
Parameter	Function	Description	Range	Default setting
S2.1	Minimal setpoint temperature in heating mode (°C)	Setting the minimal setpoint temperature of the supply pipe if the "heating" mode of operation is selected. A mixed temperature lower than this parameter cannot be selected.	10÷70°C	Diagram 1 - 45°C Diagram 2 - 25°C Diagram 3 - 25°C
S2.2	Maximal setpoint temperature in heating mode (°C)	Setting the maximal setpoint temperature of the supply pipe if the "heating" mode of operation is selected. A mixed temperature higher than this parameter cannot be selected.	15÷90°C	Diagram 1 - 60°C Diagram 2 - 40°C Diagram 3 - 40°C
S2.3	Minimal setpoint temperature in cooling mode (°C)	Setting the minimal setpoint temperature of the supply pipe if the "cooling" mode of operation is selected. A mixed temperature lower than this parameter cannot be selected.	5÷30°C	16°C
S2.4	Maximal setpoint temperature in cooling mode (°C)	Setting the maximal setpoint temperature of the supply pipe if the "cooling" mode of operation is selected. A mixed temperature higher than this parameter cannot be selected.	10÷40°C	40°C
S2.7	Backlash of mixing valve (seconds)	Adjusting the valve opening time.	0÷5 seconds	1 s
S2.8	Mixing valve P-constant	Adjusting the position of the mixing valve and the intensity of adjustment. A smaller value indicates a shorter valve rotation time, a higher value indicates a longer rotation time.	0,5÷2,0	1
S2.9	Mixing valve I-constant	Adjusting the frequency of checking the mixing valve – how often is the valve position checked. A smaller value indicates a smaller frequency, a higher value indicates a higher frequency.	0,4÷2,5	1
S2.10	Mixing valve D-constant	Adjusting the sensitivity of the mixing valve to supply pipe temperature changes. A lower value indicates lower sensitivity, a higher value indicates higher sensitivity.	0,4÷2,5	1
S2.13	Boiler circulation pump – time of boiler temperature rise (seconds)	The controller will switch the pump on when the temperature measured at the heat source increases by 2°C in the set time interval.	30÷900 seconds	300 s
S2.14	Boiler circulation pump – operation mode	Setting the circulation pump mode of operation: - Standard – the circulation pump operates in accordance with the minimal temperature set at S3.2 when the temperature difference between the T1 and T2 sensors has been exceeded. That difference can be changed in the S2.16 parameter. - Always – the pump is on whenever the T2 temperature is higher than the one set in the S3.2 parameter. When using a diagram with the 4-way mixing valve, the S2.14 parameter is disabled.	- Standard - Always	Standard
S2.15	Boiler circulation pump – switch-off delay (seconds)	Setting the delay of the pump deactivation when heating is no longer required.	30÷900 seconds	300 s
S2.16	Boiler circulation pump – switch-off difference T2-T1 (°C)	Setting the difference between the T2 and T1 sensor temperatures that will cause the deactivation of the circulation pump.	2,0÷8,0°C	3,0°C
S2.19	Initial valve movement from open position (seconds)	Setting the length of the first impulse during the move of the mixing valve from the open position.	0÷30 seconds	20 s
S2.20	Initial valve movement from closed position (seconds)	Setting the length of the first impulse during the move of the mixing valve from the closed position.	0÷30 seconds	20 s

S3 Źródło ciepła

Parameter	Function	Description	Range	Default setting
S3.1	Protection of the heat source	The protection mode is set according to the T2 sensor reading. - None: The controller omits the T2 sensor. - Tmin: Only the minimum temperature is used (parameter S3.3). - Tmax: Only the maximum temperature is used (parameter S3.4). - Tmin and Tmax: The minimum and maximum temperatures are used (parameters S3.3 and S3.4).	- Brak - Tmin - Tmax - Tmin and Tmax	Tmin and Tmax
S3.2	Operating mode for exceeded maximum heat source temperature	- Source protection. When T2 > T2max (S3.4), the controller opens the mixing valve, allowing the heat source to cool down. When the temperature at the T2 sensor drops below T2max (S3.4), the controller returns to normal operation. In this mode, when the heat source overheats, the controller does not protect the system. - Limited source protection. For scheme "1": When T2 > T2max (S3.4) occurs, the controller automatically adopts the minimum permitted temperature at sensor T1 (S2.1) as the preset temperature at sensor T1 to allow the lowest possible return temperature. When T2 > T2max and T1 > T1max occur at the same time, the controller opens the mixing valve, directing all the medium to the system. When the temperature at the T2 sensor drops below that set in parameter S3.4, the controller restores the default setpoint T1. - System protection. For schemes "2" and "3": When T2 > T2max (S3.4), the controller automatically adopts the maximum allowed temperature at sensor T1 (S2.2) as the setpoint temperature at sensor T1, allowing the heat source to cool down. When T2 > T2max and T1 > T1max occur simultaneously, the controller closes the mixing valve (system protection priority). When the temperature at the T2 sensor drops below that set in parameter S3.4, the controller restores the default setpoint T1.	- Source protection - Limited source protection - System protection	Limited source protection
S3.3	Minimum temperature of T2 sensor in heating mode (°C)	If the temperature at sensor T2 is lower than the minimum set temperature for sensor T2, then the controller turns off the circulation pump and closes the mixing valve.	5+70°C	50°C
S3.4	Maximum temperature of T2 sensor in heating mode (°C)	If the temperature at sensor T2 is greater than the maximum set temperature for sensor T2, then the upper value of the preferred temperature setting (parameter S2.2) is adapted as the preferred temperature for sensor T1.	10+90°C	90°C
S3.5	Hysteresis for heat source protection	Hysteresis setting for heat source protection.	1+10°C	3°C
S3.9	Protection of the cooling source - T2 sensor	The protection mode is set according to the T2 sensor reading. - None: The controller ignores the T2 sensor. - Tmin: Only the minimum temperature is used (parameter S3.11). - Tmax: Only the maximum temperature is used (parameter S3.12). - Tmin and Tmax: The minimum and maximum temperatures are used (parameters S3.11 and S3.12).	- No protection - Tmin - Tmax - Tmin and Tmax	Tmin and Tmax
S3.10	Operation mode for exceeded min. cooling source temperature	- Source protection. When T2 < T2min (S3.11), the controller opens the mixing valve. When the temperature at sensor T2 rises above that set in S3.11, the controller returns to normal operation. - Limited source protection. For scheme "1": When T2 < T2min (S3.11), the controller automatically takes the maximum permitted temperature at sensor T1 (S2.4) as the set temperature at sensor T1. When the temperature at sensor T2 rises above that set in parameter S3.11, the controller restores the default setpoint T1. For schemes "2" and "3": When T2 < T2min (S3.11), the controller automatically takes the minimum permitted temperature at sensor T1 (S2.3) as the setpoint temperature at sensor T1. When the temperature at sensor T2 rises above that set in S3.11, the controller restores the default setpoint T1. - System protection If T2 < T2min (S3.11), the controller closes the mixing valve. When the temperature at sensor T2 rises above the value set in parameter S3.11, the controller returns to normal operation.	- Source protection - Limited source protection - System protection	Limited source protection
S3.11	Minimum temperature of T2 sensor in the cooling mode (°C)	Minimum temperature of sensor T2 in cooling mode is set.	-20+20°C	5°C
S3.12	Maximum temperature of T2 sensor in the cooling mode (°C)	If the temperature at sensor T2 is higher than the maximum set temperature for sensor T2, then the controller switches off the circulation pump and closes the mixing valve.	10+50°C	30°C
S3.13	Hysteresis for cooling source protection	Hysteresis setting for protection of the cooling source.	1+10°C	2°C

TECHNICAL PARAMETERS

Parameter / piece	Value / material
Torque	6 Nm
Temperature range	10÷90°C
Rotation angle	90°
90° turning time	120 s
Power voltage	230 V AC
Ambient temperature range	10÷50°C
Power consumption	max 3 W
Housing protection class	IP42
Dimensions (H x W x D)	85,5 x 97 x 94 mm
Weight	800 g
Mode of operation	Heating, cooling
Power cable length	2 m, with plug
Valve temperature probe cable length	1 m
Heat/cold source temperature probe cable length	3 m
Thermocouple dimensions	ø5 x 30 mm
Temperature sensor type	Pt1000
Circulation pump control cable length	0,5 m, with a connection block
Circulation pump connector load capacity	max 1 A

DECLARATIONS AND STATEMENTS

AFRISO Sp. z o.o. hereby states that this product is compliant with:

- LVD (2014/35/EU),
- EMC (2014/30/EU),
- RoHS II (2011/65/EU) + appendix (2015/863/EU),
- The REACH regulation (1907/2006/UE).



The full text of the EU Declaration of Conformity is available at the following web address: www.afriso.pl.

MAINTENANCE

The ACT ProClick controller is a maintenance-free product.

DECOMMISSIONING, DISPOSAL



1. Disconnect the power supply.
2. Dismount the device.
3. Dispose of the product according to local directives and guidelines. Electronic parts and batteries should not be disposed of with household waste.

The product contains a permanently installed battery. Return the product to the appropriate collecting point or to the manufacturer's or distributor's collecting point.

WARRANTY

Product guarantee in accordance with the general conditions of sale and delivery.

CUSTOMER SATISFACTION

For AFRISO customer satisfaction is paramount. If you have any questions, suggestions or product problems, please contact us.