QUICK INSTALLATION AND USAGE GUIDE

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AFRISO

ARC 345 ProClick weather compensation controller

Art.-Nr 15 345 10

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NOTICE

This instruction manual is also available on www.afriso.pl, in the “Online Catalogue” and “Downloads” tabs.

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 heating and cooling systems. Mounted directly on 3- and 4-way mixing valves.
It controls the temperature based on the measured outside (external) temperature and the heating curve.

Additionally, the product can also control a circulation pump. A room thermostat for remote temperature change can also be connected.

SCOPE OF DELIVERY

1. **ARC 345 ProClick** weather compensation controller equipped with three temperature sensors, two pipe mounting adapters, as well as an electric cable with a plug and a circulation pump control cable.
2. Instruction manual.
3. Mixing valve mounting manual.

CONSTRUCTION

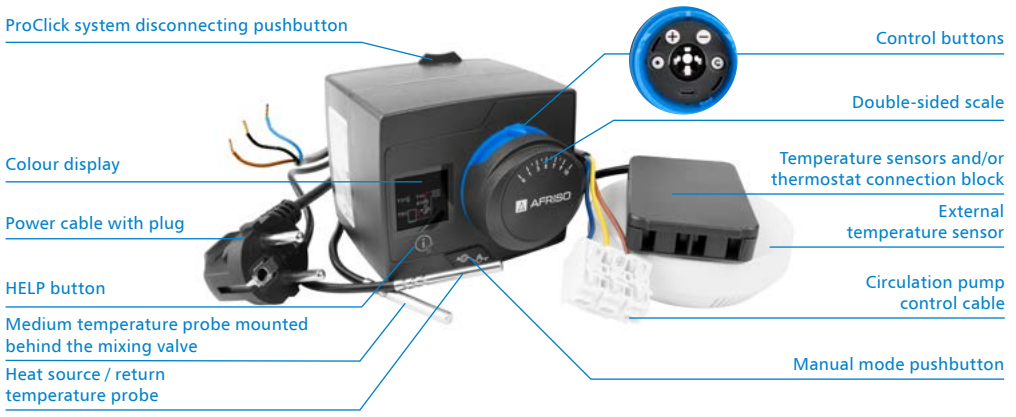

Fig 1. Construction of the ARC ProClick weather compensation controller.

MOUNTING AND OPERATING

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.

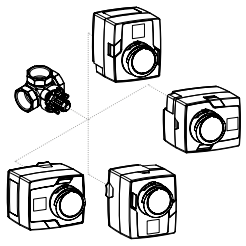

Fig. 2. Possible mounting positions.

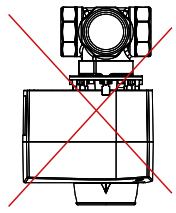

Fig. 3. Improper mounting position.

Mounting/dismounting the controller on a 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.

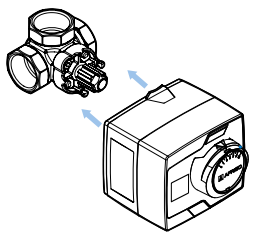

Fig. 4. Mounting/dismounting of an ARC ProClick controller on a valve.

Mode of operation of the 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.

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ELECTRICAL CONNECTIONS

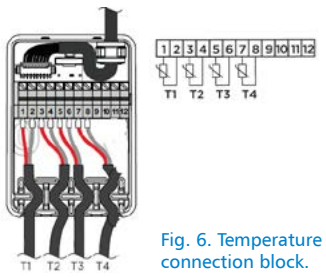


Fig. 6. Temperature sensor connection block.

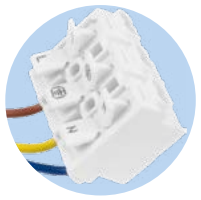


Fig. 7. Circulation pump connection block.

1. The appropriate T1, T2, T3, and T4 temperature sensors should be mounted in accordance with the chosen diagram (Fig. 9., Fig. 10., Fig. 11.) by using the adapters included. The T2 sensor is an external sensor which should be mounted outside, on a north-facing wall, a minimum of two meters above ground level.
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 230V AC power to the device using the power cable with a plug.

START-UP SETUP

1. Initiating the controller settings

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

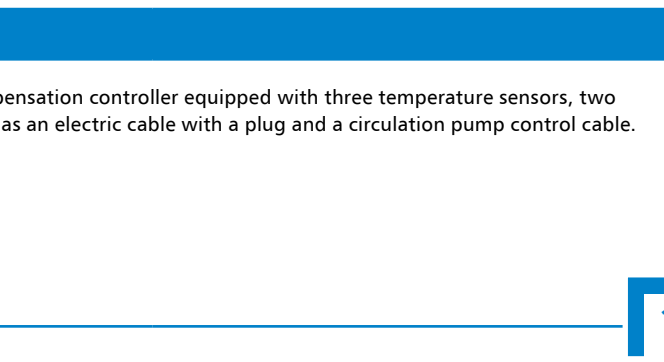
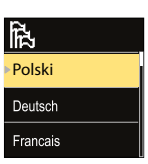


Fig. 8. Controller description.

2. Language selection



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

3. Diagram selection

Select the appropriate diagram in accordance with the mounting position of the mixing valve in the system. The available diagrams are: two diagrams with the mixing valve mounted on the supply pipe (Fig. 9.), two diagrams allowing connection of another controller using BUS communication (Fig. 10.), and two diagrams mounted on a 4-way valve (Fig. 11.).

4. Heating curve steepness (declination)

Choose the appropriate steepness (declination) of the heating curve. The heating curve determines the temperature of the system supply line based on the outside temperature measured. The steeper the curve, the higher the temperature.
The default setting is 1 for radiator heating and 0.5 for manifold heating.
The heating curve parameters can also be changed through the P2.1 and P2.2 parameters in the controller menu.

5. Opening direction

The ↻ setting indicates controller operation to the right – clockwise. The ↺ setting indicates controller operation to the left – counter clockwise. In heating mode, opening the valve causes an increase in the temperature behind the valve, and in the cooling mode – a decrease.

6. 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.

PRE-PROGRAMMED DIAGRAMS

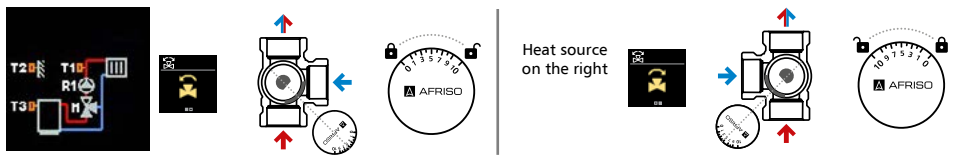


Fig. 9. Diagram with a 3-way mixing valve mounted on the supply pipe (radiator or manifold heating).

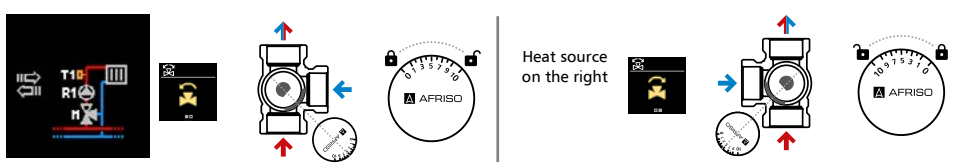


Fig. 10. Diagram with a 3-way mixing valve mounted on the supply pipe (radiator or manifold heating). This version allows for connecting more controllers using BUS communication.

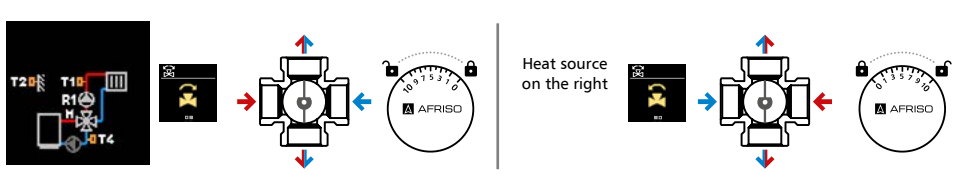


Fig. 11.Diagram with a 4-way mixing valve (radiator or manifold heating) with the return temperature protection function active.

ADJUSTING THE HEATING CURVE BASED ON THE EXPERIENCED ROOM TEMPERATURE

Issue	Recommended action
Room temperature is too low	Increase the value of the P2.2 parameter
Room temperature is too high	Decrease the value of the P2.2 parameter
Room temperature is too low during cold weather	Increase the value of the P2.1 parameter
Room temperature is too high during cold weather	Decrease the value of the P2.1 parameter
The room temperature is optimal during cold weather, but it's too low otherwise.	Decrease the value of the P2.1 parameter and increase the value of the P2.2 parameter
The room temperature is optimal during cold weather, but it's too high otherwise.	Increase the value of the P2.2 parameter and decrease the value of the P2.1 parameter

DISPLAY ICON DESCRIPTION

Icons displayed

- Heating mode
- Cooling mode
- Operation according to program timer 1 - day temperature
- Operation according to program timer 1 - night temperaturea
- Required daytime room temperature
- Required nighttime room temperature
- Controller switch off
- Manual mode
- Circulation pump operation
- Counter clockwise valve rotation
- **Warning** – in case of a temperature sensor malfunction, the symbol will be red. After the malfunction is removed, it changes the colour to grey.Event history is logged in the "Information" menu.
- Clockwise valve rotation
- Manual intervention
- Party mode
- ECO Mode
- Holiday mode
- Switching to summer mode
- Floor drying program
- Constant temperature mode
- Heating boost
- Thermostat input active
- **Message** – In case the maximum temperature is exceeded or the freeze protection function being activated, the symbol will be yellow. After the return to values considered safe, it changes the colour to grey. Event history is logged in the "Information" menu.

Measured temperature

Required or calculated temperature

- Required or calculated temperature
- Room temperature
- Temperature behind the mixing valve
- Outside temperature
- Return temperature
- Heat/cold source temperature
- T1, T2, T3, T4 — Temperature readings from the T1, T2, T3 and T4 sensors
- TA — Outside temperature read from the master controller
- TQ — Heat source temperature read from the master controller
- Error — Temperature sensor malfunction
- --- — Temperature sensor not found
- The temperature behind the valve is being limited due to inadequate heat source temperature
- The temperature behind the mixing valve is being limited due to the maximum set difference between supply and return temperatures being reached
- The temperature behind the mixing valve is being raised due to the max heat source temperature being exceeded

SETTING THE USER AND SERVICE PARAMETERS

REQUIRED TEMPERATURES

- Day temperature
- Night temperature

USER FUNCTIONS

- Party
- Eco
- Holiday

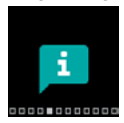
OPERATION MODE

- Operation
- Heating/Cooling
- Manual mode

TIME PROGRAMS

- First time program
- Second time program

INFORMATION



- About controller
- Messages
- Errors
- Delete

DISPLAY

- Language
- Time and date
- Illumination
- Menu exit

STATISTICS

- Graph
- Operation counter
- Change log

P PARAMETERS

- P1 General
- P2 Mixing circuit
- P3 Energy source

S PARAMETERS

- S1 General
- S2 Mixing circuit
- S3 Energy source

F PARAMETERS

- Floor drying

DEVICES

- COM devices
- 868 devices
- BUS devices

FACTORY SETTINGS

- Save settings
- Load settings
- Factory settings

Parameter	Function	Description	Range	Default setting
P1.1	Accuracy	Accuracy of the temperature indication (temperature round up)	- 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
P1.3	Frequency of temperature measurements	Setting how often is temperature saved	1 ÷ 30 min	5 min
P1.4	Tones	Setting the tones of the controller	- Off - Keypad - Errors - Keypad and errors	Keypad
P1.6	Sensitivity of "Help" key (%)	Setting the sensitivity of the "Help" key.	0 ÷ 100%	40%
P1.7	Automatic switchover summer/ winter	Automatically switching to summer mode based on the average daily outside temperature.	- No - Yes	Yes
P1.8	Average outdoor temperature for summer/winter switchover (°C)	Setting the average outside temperature threshold. Exceeding it will cause the controller to switch to summer mode.	10 ÷ 30°C	18°C
P1.9	Outdoor temperature by which frost protection will activate (°C)	Setting the outside temperature threshold, under which the controller will active the frost protection mode and the circulation pump.	-30 ÷ 10°C	2°C
P1.10	Requested room temperature by frost protection (°C)	Setting the room temperature under which the frost protection mode will be activated (the function can only be active when a room temperature sensor is connected to the controller).	2 ÷ 12°C	6°C
P1.12	Level of protection against frost	Setting the level of protection against the system medium freezing: • No protection – Set if there is no possibility of the medium freezing. • Level 1 – Set if there is no room sensor connected to the controller, there exists a risk of the system medium freezing. • Level 2 – Set if there is a room sensor connected to the controller. • Level 3 – Heavy risk of the medium in the system freezing.	- No protect. - Level 1 - Level 2 - Level 3 (Maximum protection)	Level 1
P1.13	Compensation of the effect of building on outdoor temperature sensor (°C)	Setting the compensation of the building effect on the external temperature reading caused by the heat accumulation of the building walls.	-5,0 ÷ 0,0°C	-2,0°C
P2.1	Heating curve steepness	Setting the heating curve steepness (declination). The higher the value, the higher the supply temperature	0,1 ÷ 2,6	0.5 – manifold systems 1.0 – radiator systems
P2.2	Parallel shift of heating curve (°C)	Setting the parallel shift of the heating curve (applied to the calculated supply temp.	-15 ÷ 15°C	0°C
P2.3	Duration of BOOST heating (minutes)	Setting the duration of the boost temperature applied at the moment of switching from the night mode to the day mode	0 ÷ 200 min	0 min
P2.4	Room temperature increase by BOOST heating (°C)	Setting the boost temperature value, applied at the moment of switching from the night mode to the day mode	0 ÷ 8°C	3°C
P2.5	The priority of D.H.W. warming	Setting the priority of domestic hot water heating over room heating (the function should be active when additional controllers are used to control the D.H.W. temperature).	- No - Yes	No
P2.6	Cooling curve steepness	Setting the cooling curve steepness (declination). The higher the value, the lower the cooling medium temperature	0,1 ÷ 2,6	0,5
P2.7	Parallel shift of cooling curve (°C)	Setting the parallel shift of the cooling curve (applied to the calculated cold source supply temperature).	-15 ÷ 15°C	0°C
P3.1	Minimum boiler temperature (°C)	Setting the heat source minimum temperature.	1 ÷ 90°C	30°C
S1.1	Hydraulic scheme	Selecting the hydraulic scheme (diagram)	360 ÷ 361	360
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)	- Counter-clockwise - Clockwise	Counter-clockwise

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Parameter	Function	Description	Range	Default setting
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
S1.5	Cooling operation mode	Setting the cooling operation mode: • Automatic – operation with a room thermostat connected to the controller, and an external sensor. • Outside temperature – operation with the external sensor only. • Room temperature – operation with a room thermostat only. • Constant temperature – operation based on a constant temperature (setting the S2.14 parameter).	- Automatic - Outside temperature - Room temperature - Constant temperature	Automatic
S1.7	Selection of sensor T4 function	Setting the T4 temperature sensor function. When set as a "return pipe sensor", a limit of the supply and return temperature difference (S2.13 parameter) needs to be set, limiting the total power of the heating circuit.	- No sensor - Room sensor - Return pipe sensor	No sensor
S1.8	Building type (time constant) (hours)	Selecting the building type (time constant) based on the insulation present. For well insulated buildings (thick walls, additional insulation), higher values should be selected. For poorly insulated buildings (thin walls, no insulation), lower values should be selected.	0 - 12 h	0 h
S1.9	Selection of AUX (T3 and T4) input function	Setting the operation mode for the thermostat connected to the AUX (T4) input. • Day temperature – operation with the set day temperature. • Cooling – switching the controller mode to cooling. • Time program – operation in accordance with the schedule. • Boost heating – activating the heating boost function. • Night temperature – operation with the set night temperature.	- No function - Day temp. - Cooling - Time program - Boost heating - Night temp.	No function
S1.17	Sensor T1 calibration (°C)	Adjustment of the displayed measured temperature for the T1 sensor.	-5 ÷ 5°C	0°C
S1.18	Sensor T2 calibration (°C)	Adjustment of the displayed measured temperature for the T2 sensor.	-5 ÷ 5°C	0°C
S1.19	Sensor T3 calibration (°C)	Adjustment of the displayed measured temperature for the T3 sensor.	-5 ÷ 5°C	0°C
S1.20	Sensor T4 calibration (°C)	Adjustment of the displayed measured temperature for the T4 sensor.	-5 ÷ 5°C	0°C
S2.1	Influence of room temperature deviation	Setting the influence of the room thermostat reading on the calculated supply temperature. A lower value indicates a smaller influence, a higher value indicates a larger influence.	0,0 ÷ 3,0	1
S2.2	Influence of room sensors T3 and T4	Setting the T3 and T4 sensor influence on the controller operation. • Auto – The room sensor influences the controller operation if it's connected. • Yes – The room sensor influences the controller operation. • No – The room sensor does not influence the controller operation.	- Auto - Yes - No	Auto
S2.4	Pump operation mode	Setting the pump operation mode. • Standard – the circulation pump is turned on when the need for heating or cooling arises. • First program – the circulation pump works in accordance with the first time program. • Second program – the circulation pump works in accordance with the second time program. • Selected program – the circulation pump works in accordance with a custom set time program.	- Standard - First program - Second program - Selected program	Standard
S2.5	Minimum stand-pipe temperature (°C)	Setting the minimum supply temperature.	10 ÷ 90°C	20°C
S2.6	Maximum stand-pipe temperature (°C)	Setting the maximum supply temperature.	20 ÷ 150°C	45°C – manifold systems. 85°C – radiator systems.
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
S2.11	Minimum stand-pipe temperature for cooling (°C)	Setting the minimum supply temperature in cooling mode. WARNING! If the temperature is too low, it may cause condensation on the pipes.	10 ÷ 20°C	15°C
S2.12	Heat-off temperature shift (°C)	The shift of the calculated supply temperature for switching off the heating.	-10 ÷ 10°C	0°C
S2.13	Limitation of temp. difference between stand and return pipe (°C)	Setting the maximum supply and return temperature difference in order to limit the heating circuit power	3 ÷ 30°C	10°C
S2.14	Constant stand-pipe temperature	Setting constant temperature control between 10÷140°C. Enabling this function disables weather compensation control.	- No - Yes	No
S2.15	Circulation pump switch-off delay (minutes)	Setting the delay of the pump deactivation when heating is no longer required.	0 ÷ 10 min	3 min
S2.16	Influence of room temperature deviation for cooling	Set the value of gain of room temperature deviation for cooling. Lower value means lower influence, higher value means higher influence.	0,0 ÷ 3,0	1
S2.19	Initial valve movement from open position (seconds)	Setting the valve movement delay from open position.	0 ÷ 30 seconds	20 s
S2.20	Initial valve movement from closed position (seconds)	Setting the valve movement delay from closed position.	0 ÷ 30 seconds	20 s

Parameter	Function	Description	Range	Default setting
S3.1	Maximum boiler temperature (°C)	Setting the maximum heat source temperature. After reaching the set temperature, the controller will partially open the valve to cool the medium down, while maintaining the maximum supply temperature.	60 ÷ 160°C	90°C
S3.2	Boiler temperature increase for mixing circuit (°C)	Setting the difference between the boiler temperature and the calculated supply temperature. Exceeding this value will activate the heating mode.	0 ÷ 25°C	5°C
S3.3	Minimum boiler return-pipe temperature (°C)	Setting the minimum heat source return temperature when using the 4-way valve diagram. The mixing valve will remain closed until a temperature higher than the value set is reached.	10 ÷ 90°C	45°C

TECHNICAL PARAMETERS

Parameter / piece	Value / material
Torque	6 Nm
Rotation angle	90°
90° turning time	120 s
Power voltage	230 V AC
Ambient temperature	5÷40°C
Power consumption	max 3 W
Housing protection class	IP42
Dimensions (H x W x D)	86,5×80,4×95 mm
Weight	800 g
Mode of operation	Heating, cooling
Power cable length	2 m, with plug
Temperature sensor length for mounting behind the mixing valve	1 m
Heat source / cold source / return probe cable length	3 m
Length and minimum section of the external sensor cable	max 50 m, min 0,5 mm²
Thermocouple dimensions	ø5 x 30 mm
Temperature sensor type	Pt1000
Circulation pump control cable length	0,5 m, with a connection block

DECLARATIONS AND STATEMENTS

AFRISO Sp. z o.o. hereby states that this product is complaint with the following directives:

- LVD (2014/35/EU) on low-voltage equipment,
- EMC (2014/30/EU) on electromagnetic compatibility,
- RoHS II (2011/65/EU) on restricting the use of hazardous substances in electrical and electronic equipment,
- and the REACH regulation on limitations of chemicals 1907/2006/UE.

The full text of the EU declaration of conformity can be found at the following websites: www.afriso.pl and www.afriso.com

MAINTENANCE

The **ARC 345 ProClick** weather compensation controller is a maintenance free product.

DECOMISSIONING, DISPOSAL

1. Disconnect the power supply.
2. Dismount the device.
3. To protect the environment, this product must not be disposed of together with regular household waste. Dispose of the product according to local directives and guidelines. This device consists of materials that can be reused by recycling companies.

WARRANTY

The manufacturer's warranty for this product is 36 months after the date of sale from AFRISO Sp. z o.o. In case of any alteration of the product or usage against this instruction manual, the warranty becomes void.

CUSTOMER SATISFACTION

For AFRISO Sp. z o.o. customer satisfaction is the prime objective. Please contact us if you have any questions, suggestions or problems concerning our product: zok@afriso.pl.