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Operating Instructions

SO10

Online pulse filter controller

Version 7.0

1. BASIC REQUIREMENTS AND SAFETY

	**High voltage in system is dangerous and may be fatal. Switch off and disconnect from the mains electricity supply before assembly, maintain or repair.**
	**Equipment should be assembled by qualified personnel. During installation all necessary safety measures should be taken.**
	**Equipment should be assembled according to technical documentation. Incorrect configuration may result in invalid operation.**
	**Equipment is intended for industrial use.**
	**Equipment is not intended for use in explosive atmospheres.**
	**Equipment should be protected from precipitation, excessive humidity and temperature.**
	**The producer is not responsible for any loss caused by incorrect installation or use of the equipment.**

2. APPLICATION. GENERAL CHARACTERISTICS.

The SO10 controls the solenoid valves of on-line bag filter. The main operation is the reverse pulse cleaning process. The controller opens solenoid valves which inject compressed air into the filter – it causes dust to come off the bags. The electrical circuits of the valves are tested for short circuits and break. In case of failure the controller skips the faulty valves and signals the alarm.

The basic version (SO10A) is mounted on DIN rail. The controller can be also ordered in a plastic enclosure(SO10T) or a metal enclosure (SO10M).
SO10L version works with low power solenoid valves.

2.1. Technical parameters:

Power supply: - DC current - AC current	 24VDC / 35 W 18..22VAC/50Hz, 35 VA
Number of valves: - SO10-1-3 - SO10-1-6	 3 6
Solenoid valves (transistor outputs) - standard version - low power version (SO10L)	 24 VDC / 4…30 W 24 VDC / 0.4..6 W
Inputs: - PRACA - run - ZZR - stop cleaning	24 VDC/10 mA
Temperature	-20°C .. +60°C
Case : - material - protection class - dimensions	 NORYL UL94 IP20 71x90x58 mm
Enclosure/box dimensions: - SO10T - ABS enclosure, RH-8 - SO10M, SO10MEx – metal enclosure	 260x172x138 mm, IP65 400x300x150 mm, IP66

2.2. LEDs

PRACA	LED is on when the controller is operating LED flashes during final cleaning cycles.
ZAWÓR	LED flashes green when a valve is open. LED is on (yellow) when ZZR input is active (cleaning is paused).
ALARM	LED is on when a faulty valve is detected (short circuit or break)

2.3. Buttons

↵	- confirm the new value of a parameter - go to next screen - press over 1 second to go to parameters 4-6
C	- reset alarm - cancel parameter change - press 2 seconds to activate and show number of the current valve

2.4. Inputs

PRACA stop operating	Active input triggers final cleaning cycles and then stops controller operation.
ZZR pause cleaning	Active signal on the input stops cleaning. The ZZR diode is on. When the signal is deactivated the controller resumes work. It usually is connected to the pressure switch to stop cleaning when the air pressure is too low.

3. OPERATION

The controller works in time mode. The valves are activated for the pulse time (parameter 1). Time between pulses is set in parameter 2. Once all the valves are fired the controller waits a time between cycles (parameter 3).

The final cleaning cycles are triggered by an active PRACA input – it is signalled by pulsing PRACA diode. The number of cycles is defined in the parameter A. After that the cleaning stops (the PRACA diode is off).

4. PARAMETERS

Press ↵ over 1 second to go to parameters 4-6.

	Parameter	Description	Range
1	**Pulse duration**	Time when a valve is open. It is set to fit the length of filtration bags and air pressure. Usually in range 0.1…0.3 s	0.01…1s
2	**Time between pulses**	It is set to fit the filter load (shorter when the load is high). If this time is too short and the air compressors are not powerful enough the air pressure may fall.	1…250s
3	**Time between cycles**	Relevant only in time mode. It is the time count down after all the valves are activated, before starting a new cycle.	0…250min
4	**Number of valves**	Number of valves in a section	
5	**Faulty valves**	Number of the first faulty valve (short circuit or break)	
6	**Final cleaning cycles**	Number of final cleaning cycles (executed after activating PRACA input)	0…5

5. ELECTRICAL CONNECTION

	**Installation works must be carried out while the power supply is disconnected.**
	**The controller does not have a separate power switch. Therefore, if necessary, an external power switch must be used.**

Power supply

SO10A version is delivered with a 230V / 20VAC / 35 VA power transformer. It should be mounted in an enclosure on a DIN rail and a 0.25 A fuse must be installed.
The controller can be supplied directly with 24VDC voltage – then it requires a 1.5A fuse.

SO10T version – the controller together with a power transformer are mounted inside a plastic enclosure. Power supply of 230VAC/50Hz/35W should be connected to a terminal in the cabinet. Power switch is not installed.

Connecting solenoid valves

The table shows length and cross-section of wires to connect solenoid valves 24VDC / 21 W / 0.9 A.

Cross-section	Wire lengths for direct connection
mm^2	m
0.75	44
1.0	58
1.5	88
2.5	145

6. ORDERING INFORMATION

SO10 controllers are manufactured for 3 or 6 valves. Actual number of the valves can be set in parameters.

Symbol SO10x-1-v:

SO10x - type:
- SO10A - to be mounted on the DIN rail
- SO10T - plastic enclosure, IP65
- SO10M - metal enclosure, IP66
- SO10MEx - metal enclosure with EX II certificate, IP66

v – number of valves 3 or 6

Examples

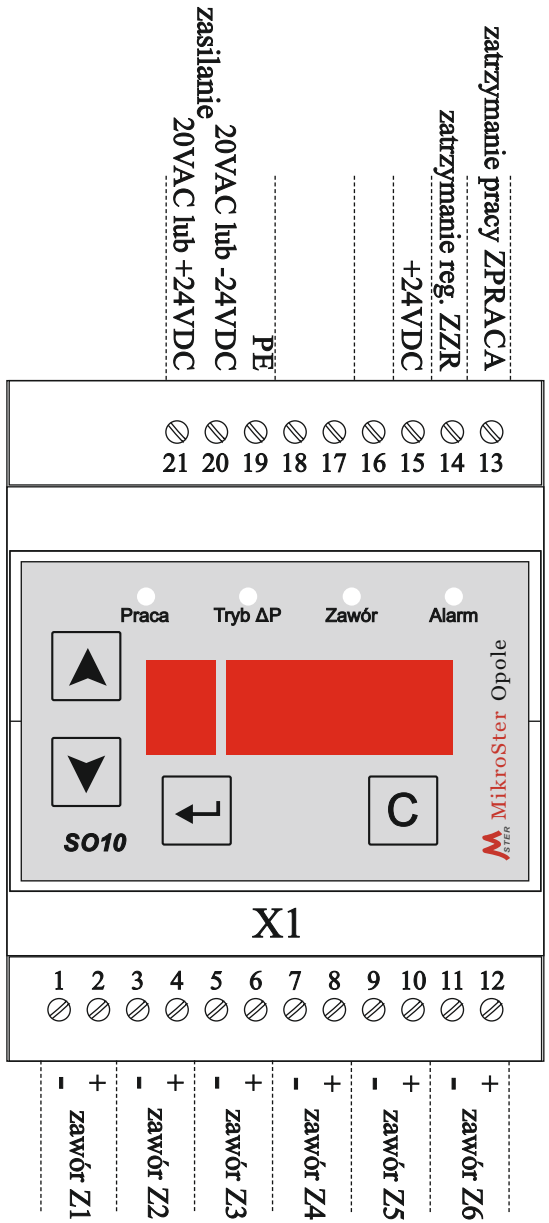
SO10A-1-3
- mounted on DIN rail
- up to 3 valves

SO10M-1-6
- metal enclosure with a power switch and control lamps (power, run, alarm)
- up to 80 valves (requires 4 PR2/10 boxes)

SO10T-1-6
- plastic enclosure
- can operate up to 6 valves

Low power version SO10L

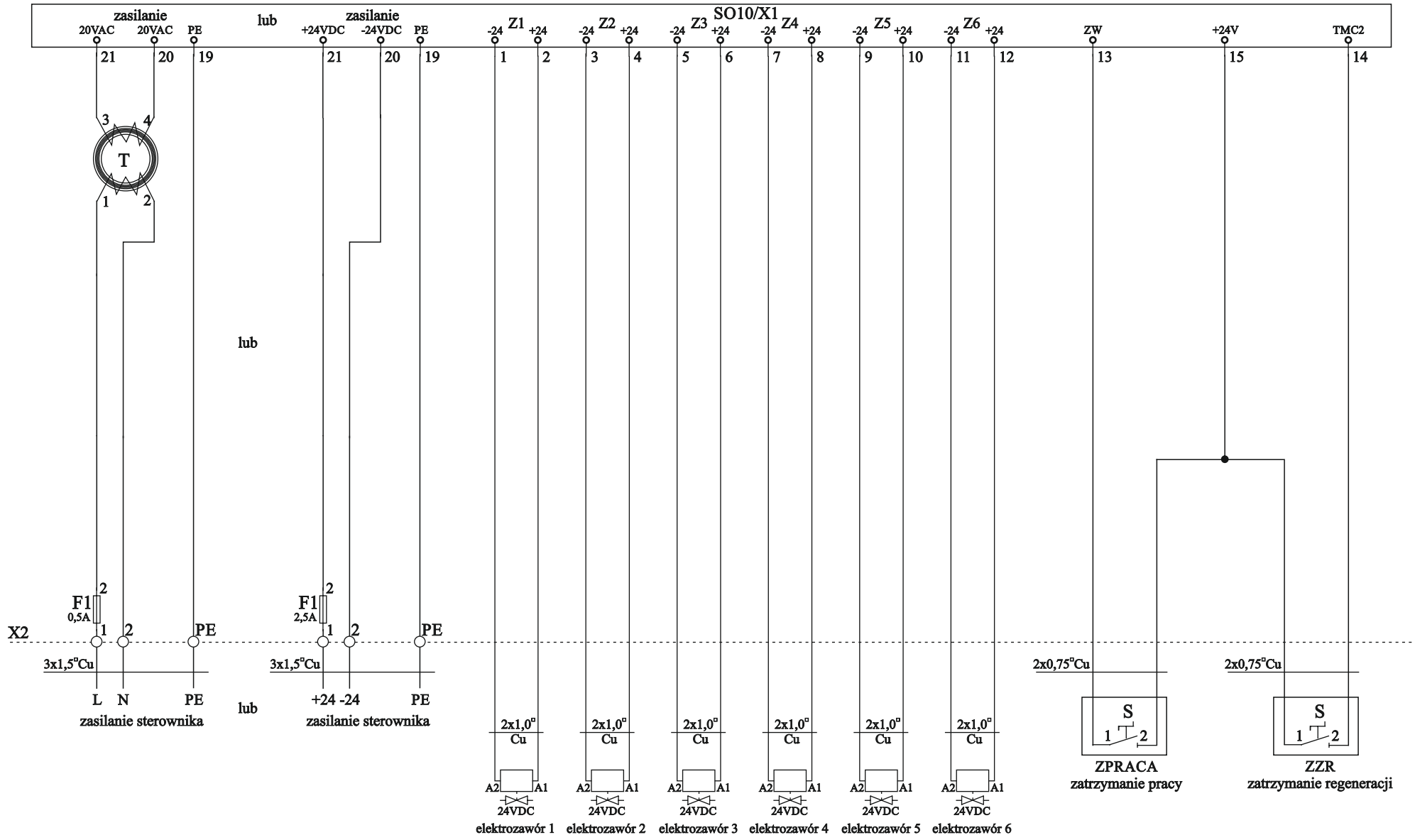
The SO10L version works with relays or with low power solenoid valves. Acceptable current range of a relay/solenoid valve is 0.015…0.25A. For 24VDC relays it translates to power range 0.4…6 W.



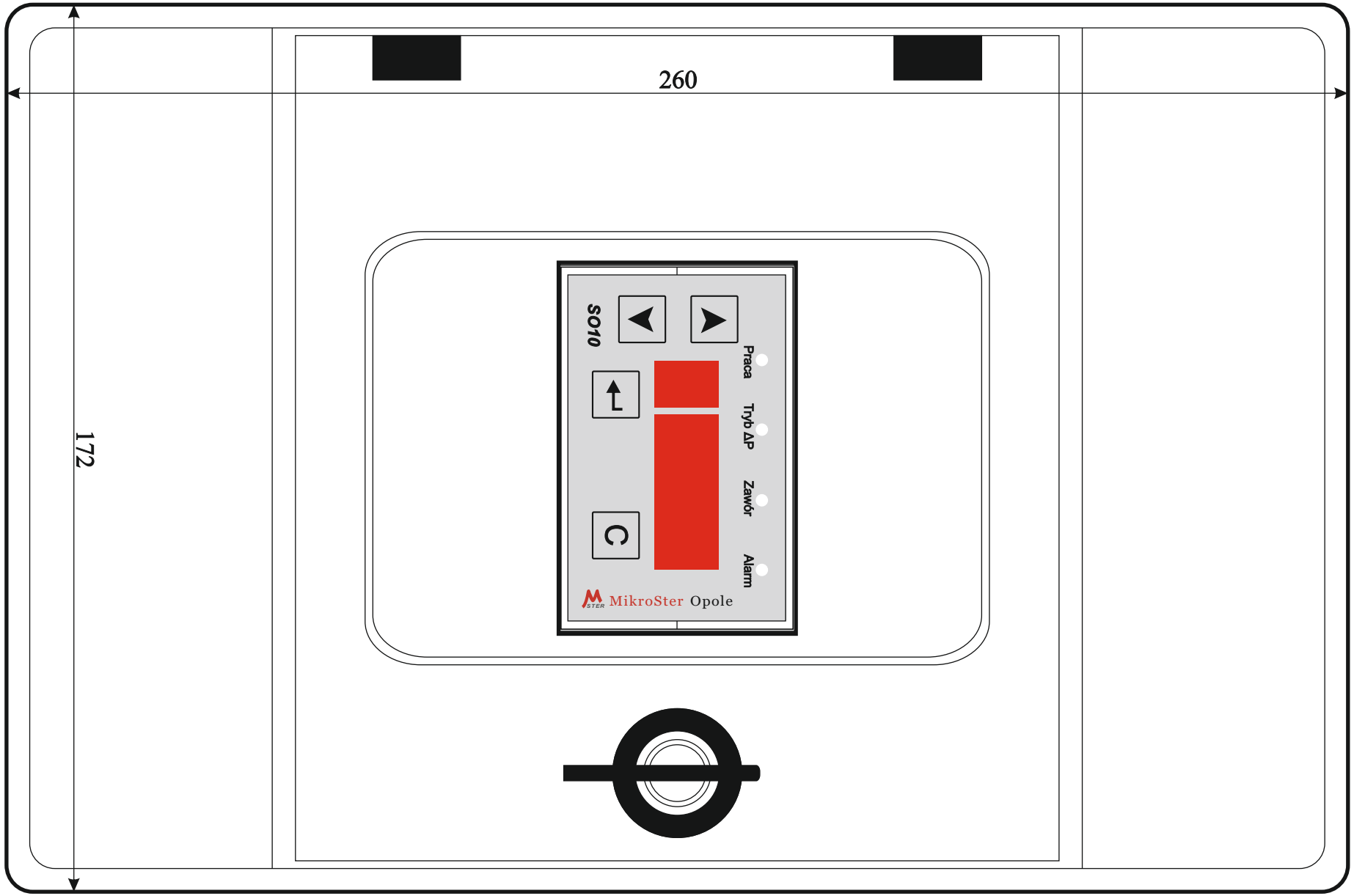
1-11 zaciski nieparzyste Z1-Z6, (-24VDC) - wspólne

2-12 zaciski parzyste Z1-Z6, (+24VDC) - sterujące

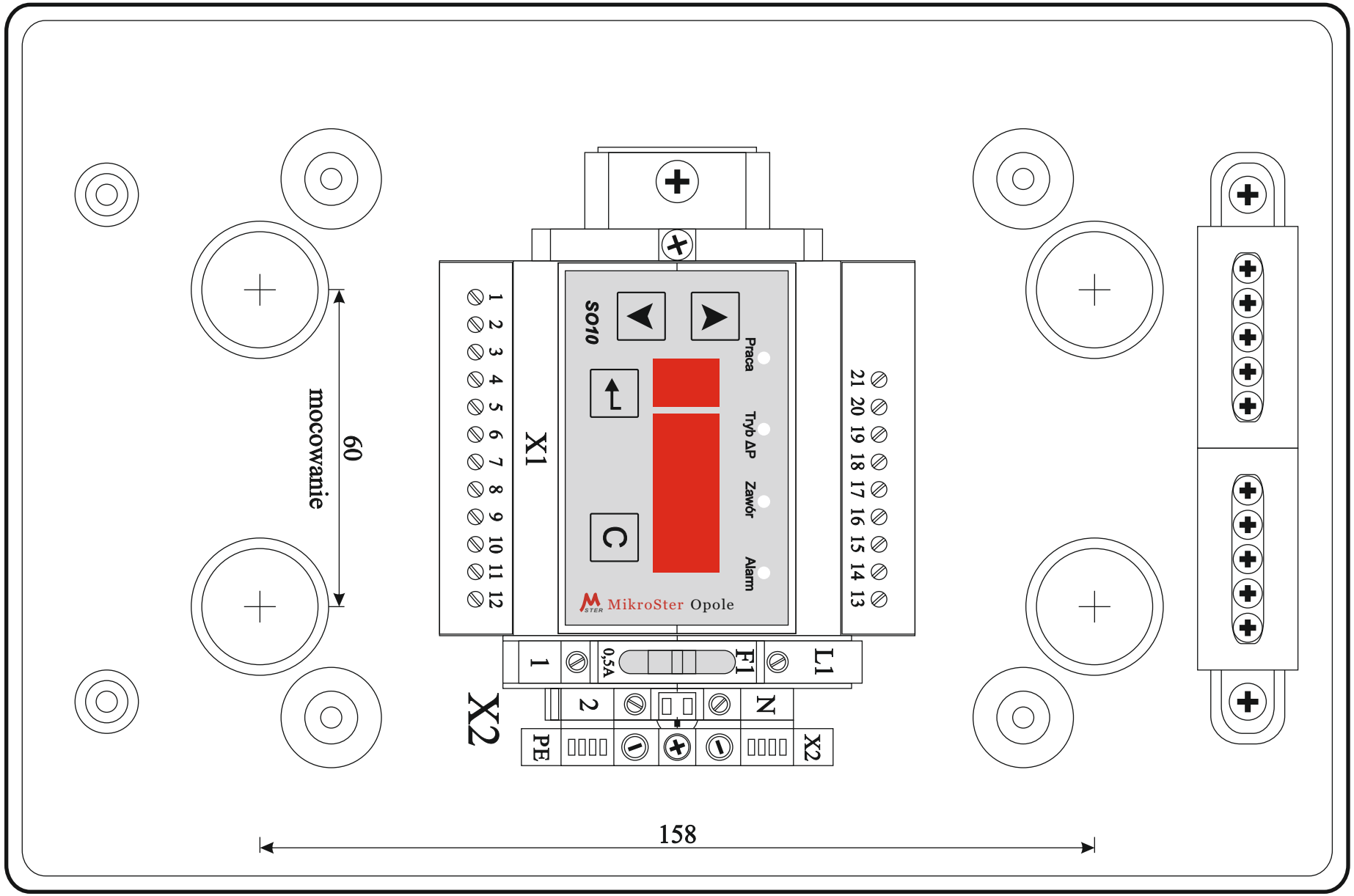
NAZWA PROJEKTU Sterownik filtra pulsacyjnego SO10 w obudowie modułowej z tworzywa	OPIS RYSUNKU Widok sterownika SO10A	NUMER PROJEKTU SO10
Automatyka Przemysłowa MikroSter s.c. - Opole	DATA ZMIANY DATA PROJEKTU 09-06-2017	NUMER RYSUNKU 1



NAZWA PROJEKTU Sterownik filtra pulsacyjnego SO10 w obudowie modułowej z tworzywa	OPIS RYSUNKU Zasilanie i dwustanowe sygnały wejściowe Bezpośrednie łączenie zaworów	NUMER PROJEKTU SO10
Automatyka Przemysłowa MikroSter s.c. - Opole	DATA ZMIANY DATA PROJEKTU 09-06-2017	NUMER RYSUNKU 2



NAZWA PROJEKTU Sterownik filtra pulsacyjnego SO10 w obudowie modułowej z tworzywa	OPIS RYSUNKU Widok sterownika SO10T w szafce modułowej z tworzywa Widok zewnętrzny obudowy RH-4 (260x172x138)	NUMER PROJEKTU SO10
Automatyka Przemysłowa MikroSter s.c. - Opole	DATA ZMIANY DATA PROJEKTU 09-06-2017	NUMER RYSUNKU 3



NAZWA PROJEKTU Sterownik filtra pulsacyjnego SO10 w obudowie modułowej z tworzywa	OPIS RYSUNKU Widok sterownika SO10T w szafce modułowej z tworzywa Widok wnętrza obudowy RH-4 (260x172x138)	NUMER PROJEKTU SO10
Automatyka Przemysłowa MikroSter s.c. - Opole	DATA ZMIANY DATA PROJEKTU 09-06-2017	NUMER RYSUNKU 4

DEKLARACJA ZGODNOŚCI UE

Nr 031/2016

Declaration of Conformity EC

Producent/ Manufacturer:

Automatyka Przemysłowa Mikroster s.c.
45-339 OPOLE, ul. Telesfora 2

Oznaczenie produktu/ Product designation:

SO10A, SO10T, SO10M - mikroprocesorowy sterownik filtrów pulsacyjnych

Deklarujemy, że oznaczony produkt spełnia wymagania następujących dyrektyw UE:
It is declared that the product is in conformity with the provisions of the following requirement:

1) Dyrektywa 2014/35/UE LVD — Niskonapięciowe wyroby elektryczne
The Low Voltage Directive (LVD)
2) Dyrektywa 2014/30/UE EMC — Kompatybilność elektromagnetyczna
Electromagnetic compatibility (EMC)

i jest zgodny z następującymi normami zharmonizowanymi:
and is compliant with the following standards or normative documents:

PN-EN 61010-1:2002	Wymagania dotyczące bezpieczeństwa przyrządów pomiarowych, automatyki i urządzeń laboratoryjnych. Wymagania ogólne.
PN-EN 61000-6-4:2008	Kompatybilność elektromagnetyczna (EMC) Część 6-4: Normy ogólne Norma emisji w środowiskach przemysłowych.
PN-EN 61000-6-2:2008	Kompatybilność elektromagnetyczna (EMC) Część 6-2: Normy ogólne Odporność w środowiskach przemysłowych.

Opole, 14.11.2016 r.

data i miejsce wystawienia
place and date issue

Marek Dziedzic
Dyrektor Techniczny/ Technical Manager