INTIEL

THE ELECTRONICS ON YOUR SIDE

CONTROL PANEL FOR CONTROL AND PROTECTION OF CURRENT AND *cosφ* OF PUMPS
TYPE: PUMP CONTROL

USER'S GUIDE

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CONTROL PANEL FOR CONTROL AND PROTECTION OF CURRENT AND *cosφ* OF PUMPS
TYPE: PUMP CONTROL

TECHNICAL DESCRIPTION

Safety instructions:

- Before installation, check the integrity of the unit and its connecting wires.
- In case of damaged can not be mounted to the removing of the fault.
- The installation and disassembly of the unit must be carried out by qualified personnel who have previously read the product manual.
- Mount in a dry and ventilated place away from heat sources and flammable gases or liquids.
- Make sure that the mains voltage matches the voltage on the rating plate of the unit.
- Use power consumers that match the power output of the appliance.
- In the event of malfunctioning, switch off the appliance immediately and seek authorized service for repair.
- In case of fire, use a fire extinguisher.
- For the purpose of environmental protection, do not throw away electrical appliances and their packaging marked with a symbol

crossed bin 

1. Purpose

The control panel is designed to control pumps used in hydrophore systems, irrigation systems, drilling and drainage systems and more.

The control and protection of the pumps is performed by a controller built into the panel and the dialogue with the user is performed by means of a graphic intelligent display equipped with control buttons.

The control panel is produced in three main variants:

-Control panel for control and protection of single-phase pumps from 0.35 to 2.5 kW / 230V

-Control panel for control and protection of three-phase pumps from 0.5 to 3.5 kW / 400V

-Control panel for control and protection of three-phase pumps from 3.5 to 7.5 kW / 400V

For three-phase pumps, phase order control is provided.

2. Application

- **In hydrophore systems -** when used in hydrophore systems, the pump is controlled according to the maintained pressure in the hydrophore system.

The control panel has the following options for maintaining the pressure:

a./ Through a pressure transmitter *4 to 20 mA* - in this case the pressure is set which will be maintained as well as the hysteresis, according to these values and the measured pressure the pump is switched on and off.

In case the pump is equipped with a frequency inverter, an output from *0 to 10V* is provided for controlling the inverter.

b. / By means of a mounted contact pressure switch - in this case the maintenance of the pressure is performed according to the state of the contact of the pressure switch.

- **In irrigation systems** - when used in irrigation systems, a weekly timer is implemented in the controller through which different intervals for operation of the irrigation system can be set.

- **For control of borehole pumps -** for filling the tank are provided inputs for electrodes for level / common electrode, lower level and upper level / as when reaching the upper level the pump is turned off and when reaching the lower level is turned on. When using a float, it is connected between the input of the common electrode and the other terminal of the float is connected to the input for low and high level / a bridge must be made between them/.

- **For control of drainage systems / emptying of tank /** - for emptying of tank reservoirs are provided for electrodes for level / common electrode, lower level and upper level / as when reaching the upper level the pump is switched on and when reaching the lower level it is switched off. When using a float, it is connected between the input of the common electrode and the other terminal of the float is

connected to the input for low and high level / a bridge must be made between them/.

Pump protection: regardless of the pump application, the consumption current is monitored and the pump is switched off immediately if the consumption current is exceeded.

Idle protection is performed by monitoring *cosφ* and / or current, in case of falling below the set values the pump is switched off, the pump is started during a certain period of time and in case the measured values are above the minimum the pump operation continues.

Protection from the exchanged order of the supply phases - in the case of three-phase pumps the order of the phases is monitored, if it is not correct, the operation of the pump is prohibited.

4. How it works

During the initial start-up, it is desirable to perform the procedure from the "Automatic settings" section.

The controller measures the current and *cosφ* of the motor and monitors the phase sequence (RST) of 3-phase consumers. When the current drops below the threshold for Iph or *cosφ*, as well as when changing the phase sequence, it switches off the motor. Normal operation is restored by measuring current and cosΦ above those for idling or restoring the correct phase order when re-switching on.

In case of overload shutdown, it is necessary to manually switch off and switch on the power supply or from the button after removing the cause.

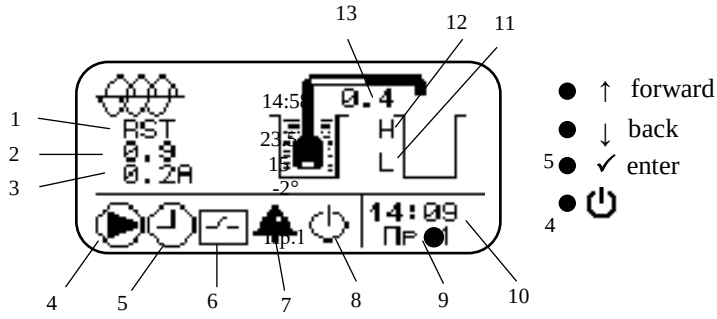
Water level maintenance (input contact) - switches the pump on / off from the sensor level input - low / high.

Maintenance of pressure in the system (inlet contact or 4 - 20mA) - switches off the pump when reaching a set pressure and switches on when the reference-hysteresis difference falls.

Produces a control signal 0 - 10V to regulate the speed of the pressure pump when used on a pressure transmitter.

Switches the pump on / off according to a set weekly program when used for an irrigation system.

5. Control panel



1 - current phase sequence;
2 - measured cosΦ;
3 - measured current, by button ✓ switches between I1, I2, I3;
4 - pump operation indicator;
5 - indicator waits for time;
6 - indicator closed contact pressure sensor;
7 - alarm status indicator;
8 - indicator off device;
9 - weekly program number;
10 - current time;
11 - low level indicator;
12 - high level indicator;
13 - measured pressure;

6. Programming

6.1 User settings.

To select a setting, move the "*" cursor with the "▲" or "▼" buttons to change and return to the setting selection, press the "„▬ "button.

The setting that changes starts flashing, you can change its value with the "▲ "or" ▼ "buttons. After completing the settings, select "EXIT" and press the "▬ "button to save the changes.

*P set	5.0Bar
Language	Eng
time&d	08:30 Fr
EXIT	

name	*designation*	*limits*	*factory setting*	*current value (notes)*
Presure seting	Pset	P min ÷ Pmax (Plim)	5.0 Bar	
language	language	Eng/Бъл	Бъл	
Time, day	time&d	hh/mm/d		

6.2 Weekly timer

Weekly timer
*Program 1
00:00 to 24:00
SuMoTuWeThFrSa
EXIT

name	*designation*	*limits*
Program No	Program	1 - 4
interval		00:00 – 24:00
day of the week	SuMoTuWeThFrSa	Su – Sa from Sunday to Saturday

For the controller to work, an interval must be set for at least one of the four programs. When setting the same start and end time of the interval, the program is inactive.

Shutdown by weekly program is indicated by Pr.0, during operation the number of the respective active program is displayed (Pr.1 - Pr.4).

6.3 Alarm messages

The presence of an alarm message is indicated by an icon 

Alarm	
Overload	OK
No water	OK
Phase order	OK

name	*designation*	*condition*	*recovery*
overload	overload	OK / Err	ON/OFF
no water	no water	OK / Err	raising the level
phase order	phase order	OK / Err	correct order

OK – normal condition, Err – alarm

6.4 Service settings

Password:123

The password is reactivated after exiting the menu, if within 15 seconds. no button is pressed.

6.4.1 Common Settings

Common Settings	
*P lim	0 – 10 Bar
P his	2.0 Bar
P in 4 – 20mA	1
Level control	1

Common Settings	
*Phase control	1
Fill time	0 m
No load protect	3
EXIT	

name	*designation*	*lmits*	*factory setting*	*current value (notes)*
Limit of the P set.	P lim	0 – 10 Bar	0 – 10 Bar	
P histiresis	P his	0.5 – PsetBar	2 Bar	
Pressure input 4 – 20mA	P in 4 – 20mA	0 –contact 1 – analog	1	
Level control	Level control	0 – inactive 1 - off high / incl. low 2 - off low / on high	1	
Phase control	Phase control	0 – inactive 1 – active	1	
Fill time	Fill time	0 – 255min	0	
Idle protection	No load prtotect	0 – inactive 1 – on cosφ 2 – on Iпх 3 – on both	3	

6.4.2 Manual settings

Manual settings	
*I under	0.5 A
I nom	5 A
Cos Φ	0,4
EXIT	

name	*designation*	*limits*	*factory setting*	*current value (notes)*
Idle current	I under	0,5 – 20 A	0,5 A	
Rated current	I nom	0,5 – 20 A	5 A	
Cos Φ	Cos Φ	0 – 1	0,4	

6.4.3 Auto settings

Auto settings EXIT

Follow the on-screen instructions:

- idle current setting and cos F.

Make sure that the phase sequence is observed, close the outlet tap and press the ▬ button to switch on the pump. Wait for the measurement to take place and proceed to the next step.

- rated current setting.

Open the outlet tap and press the ▬ button to switch on the pump. Wait for the measurement to take place, then you will see a message about a successful or unsuccessful attempt.

Unsuccessful attempt may be due to lack of difference between Inom - I ph, as well as incorrect measurement of *cosφ*. In this case you need to make sure that the current is measured correctly and make "Manual settings"

5. Electrical connection and technical data

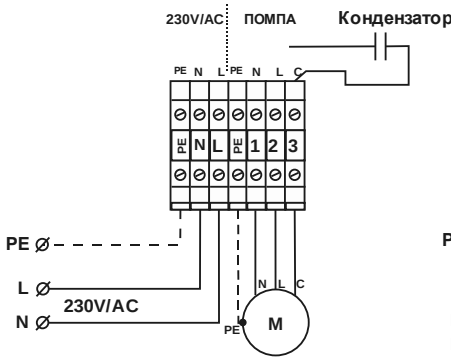


Схема на свързване на монофазна помпа

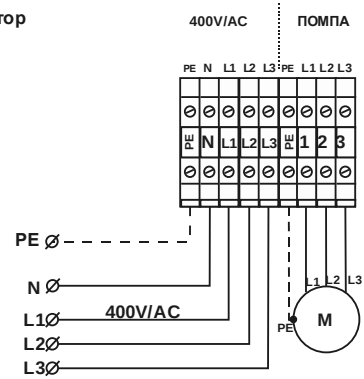
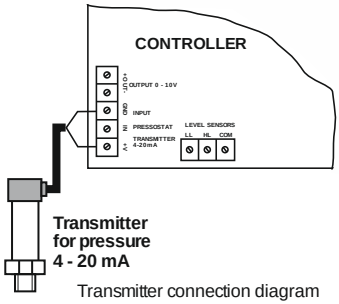
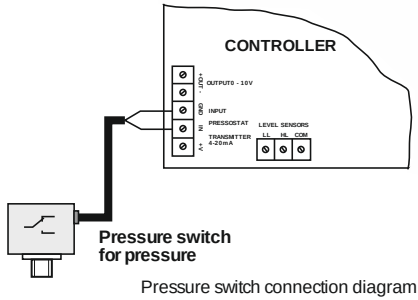


Схема на свързване на трифазна помпа

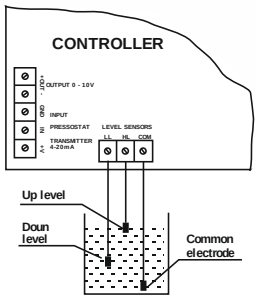
- Connection diagram of sensors according to the application



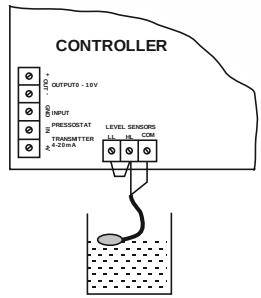
Transmitter connection diagram



Pressure switch connection diagram



Electrode connection diagram for level

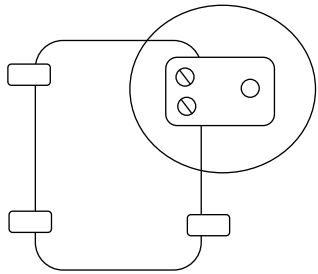


Float connection diagram

- Technical data:

Power supply voltage	
- Single-phase pumps	230V / 50Hz,
- Three phase pumps	400V / 50Hz
Rated power	
- Variant 1	from 0.35 to 2.5kW / 230V / AC
- Variant 2	from 0.5 to 3.5kW / 400V / AC
- Variant 3	from 3.5 to 7.5kW / 400V / AC
Measuring current	1 to 20A
Inputs	
- For level	for electrodes / float
- For pressure	4 – 20mA pressure switch
Outputs	
- For regulation	0 – 10V/20mA
- For pump	25A 230V/AC 18A/400V/AC
Degree of protection	IP65

Box mounting:
The set includes wall mounting plates as well as screws.
On the back of the box at the four ends are placed the plates by means of two screws for each, as shown in the figure.



7. Warranty conditions

The warranty of the product is 24 months from the date of purchase, but not more than 28 months from the date of manufacture, subject to the requirements for installation, operation, storage and transport.

WARRANTY CARD

<table>
<tr><td colspan="4">Manufacturer: INTIEL</td></tr>
<tr><td rowspan="2">Type: CONTROL PANEL FOR CONTROL AND PROTECTION OF CURRENT cosΦ OF PUMPS
Type: PUMP CONTROL</td><td>VARIANT 1
230V/50Hz
0.35 – 3.5 kW</td><td>VARIANT 2
400V/50Hz
0.35 – 3.5 kW</td><td>VARIANT 3
400V/50Hz
3.5 – 7.5 kW</td></tr>
<tr><td colspan="3">Date of manufacture:</td></tr>
<tr><td colspan="4">Quality control:</td></tr>
<tr><td colspan="4">Date of sale:</td></tr>
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