



Single Pump Controller

KK1 Pro single pump controller (220V, 380V)

Easy to use and simple to set, with basic functions

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1.0 Safety information for installing and using the controller

1.1 Area of Application

KK1 Pro controller is designed to control water pumps used in various sewage, waste water and rainwater pump stations.

For activating pumps that run in an Ex-area, the following needs to be considered: The control unit itself has to be mounted outside of the Ex-area. If the floating switch is mounted in the Ex-area, the relevant regulations must be followed.

When connecting motor, the electronic and mechanical motor protection switch must be set according to the standard range given below.

Three-phase AC 380V	4.5KW
	Max.12A
Single-phase AC 220V	2.2 KW
	Max. 12 A

1.2 Qualification of personnel

The personnel for installing, initiating, and maintaining the control unit has to hold according qualifications for this work.

1.3 Safety information for the operator

The existing safety rules of local energy supply companies should be followed. When opening the unit or when maintaining the pump the power to the control unit needs to be completely shut off through an external pre-fuse.

1.4 Hazards if safety information is neglected

Neglecting safety information will endanger people and product/ unit. When neglecting safety information you are subject to lose any entitlement to damages.

1.5 Operating manual

Install, use and maintain the controller according to the user manual.
Please follow the limit values listed in the manual.

A circuit protection to the mains of max. 3 x 16 A needs to be installed

1.6 Arbitrary modification and supply with replacement parts

Modifications of the product are only authorized if cleared with the manufacturer in advance. Original parts and accessories authorized by the manufacturer serve safety purposes. Using different parts may waive **manufacturer' s liability for possible consequences.**

1.7 Prohibited operations

The safety of operation of the delivered product can only be granted when the product is used appropriately according to paragraph 1.1 of the operating manual. The limiting values given in technical values have to be adhered to in any case.

1.8 Transport and storage

The control unit needs to be stored and transported avoiding damage by blows, crush, and temperatures outside the realm of -20°C to +60°C.

2.0 General product specifications, characteristics, and optional modes of operation

2.1 Product specifications

KK1 Pro water pump controller is easy to use and simple to set. The control information such as start time, run time and rated current can be set into the controller through the Set button. All setting data, working current and alarm information can be display on the screen.

2.2 Characteristics

- LCD plain text display	- Current monitoring
- No-load protection	- Float High Level
- Over load protection	- Phase sequence and phase loss alarm
- Input voltage display	- Auto. Inspect.
- Easy to use	- FS Start Delay & FS Stop Delay
- Acoustic alarm	- Forced activation of pump
- Manu/Auto functions	- High anti-interference performance
- 220V and 380V available	- Pump stops automatically after 2-minute operation in manual mode

2.3 Optional functions and components (specially stated in the order if required)

- Level Flow Switch (FS)
- High Level FS
- Schneider Contactor
- Chint Contactor

3.0 Settings, operational elements

3.1 Settings

Through the Set button and LCD display, all information and settings can be checked. If a setting needs to be adjusted, the Set button has to be turned until the display shows the desired setting. Now the Set button needs to be pressed. The value saved last will start to flash. Settings may be changed by turning the Set button. Once the desired value is attained, it needs to be confirmed with the Set button. The value stops flashing and is saved.

3.2 Operating elements

<p>Set button</p>	<p>By turning the Set button, all settings as well as fault messages, motor current, power three-phase voltage can be checked. Additionally, the settings are adjusted with the Set button.</p>	
<p>Manual / Auto</p>	<p>Red LED ON: Fault Yellow LED ON: Pump run Green LED ON: Auto Green LED flashing: Manual Green, yellow and red LEDs OFF: Manually stop the pump (Press "0" to stop the pump manually) In the manual mode, pump will stop automatically after 2 minutes to prevent dry run.</p>	
<p>Alarm</p>	<p>In case of fault, alarm will work to issue a warning sound. For "High Level FS Alarm" or "High Level", the alarm will disappear automatically when the level returns to the Stop Level.</p>	<p>Press the "Select / Confirm" to conceal the alarm.</p>

4.0 Controller setting

4.1 Setting contents

The following chart shows different options for settings. The option will appear in the upper line of the display while the lower line will show the value to be changed. (If there is no setting operation, the screen will turn off automatically in 2 minutes)

1 st line	2 nd line	Settings	Explanation
Actual Current	FS: OFF/ON		When the "Level Control" is the "FS" mode, the pump current and FS ON/OFF state will be displayed automatically.
Actual Current	Actual Level	0-200cm	0-200cm; when the "Level Control" is the "Pressure" mode, the actual pump current and level will be displayed automatically.
Voltage Current	Actual 3 phase voltage Working current		Monitor the pump working voltage in real time Monitor the pump working current in real time
Rat. Current	Rated current	1.0–20.0 A	Set the rated current of the pump during normal operation
Max Try run	Non-load run time	1-20 S	The working current during the pump operation is 1/2 of the rated current and the non-load run time exceeds the set non-load time, the pump will stop and an alarm will be issued.
Start Delay	Start delay value	0–99 S	When the FS acts, the pump will be delayed to start. If "0" is set, the start delay is not required.
Running Time	Running time value	1–99 S	When the "Level Control" is the "FS" mode, this time refers the pump running time when the level FS is turned on.

1 st line	2 nd line	Settings	Explanation
Cycle Times	Cycle times value	2-99	When the FS is always in the ON state, and the cycle times of the pump exceeds the set value, the controller will enter the lock state. Press the "Select/Confirm" to conceal an alarm.
Auto. Inspect.	ON/OFF	ON/OFF	The pump will run for 2s automatically every 72h during out-of-service (stop time and auto run time can be set as required by the customer). Enable or disable this function.
Power Supply	3 phase / 1 phase	3 phase / 1 phase	Three-phase / Single-phase; the "Three-phase" or "Single-phase" option is available for power supply.
Service mode	OFF/ON	OFF/ON	ON: Set all data OFF: Only the set data can be displayed; if not in the "ON" state, converted to the "OFF" automatically if out of the service for 20 minutes.
Stop Delay	Stop delay value	0-99 S	When the "Level Control" is "Pressure" mode, and the level reaches the stop level, this delay refers to the continue run time.
Level Start	Level that the pump starts	1-200cm	When the "Level Control" is "Pressure" mode, the value determines the start level of the first pump. (min. 5cm)
Stop level	Pump stop level value	1-200cm	When the "Level Control" is "Pressure" mode, the value determines the stop level of the first pump. (min. 3cm)

1st line	2nd line	Settings	Explanation
High level	Controller alarm level	1-200cm	When the "Level Control" is "Pressure" mode, if the level reaches the High level, the controller will issue a beep sound and start the pump.
Comp height	Height from such as pore to the bottom in the tank	0-99.9cm	When the "Level Control" is "Pressure" mode, with the set Comp height, the height displayed in the "Actual Level" is consistent with the actual height.
Level Control	Select the level control mode		Level Control models available include "FS" or "Pressure"
Language	Available languages		Available languages: Chinese, English, or German language
Alarm info	Alarm information		Include: a. High level alarm! b. Pump non-load alarm! Warning! c. Pump overload alarm! d. Pump cycle times alarm! e. No In the Auto mode, in case of an alarm, jump to the home page.

4.2 Setting method

By turning the "Confirm/Select" set button clockwise, enter the next screen, and by turning the "Set Button" counter clockwise to display the previous screen. Press the Set button to enter the setting screen, with the screen flashing in the inverse white color. By turning the Set button clockwise, increase the value, and decrease the value if counter clockwise; press this button to confirm the set value and return to the display screen.

5.0 Fault messages, possible malfunctions, and solutions

Message on Display	Possible cause	Solution
High level alarm	<ol style="list-style-type: none"> 1. The level floating switch does not work 2. The set run time is too short 3. The delay start time is too long 	<ol style="list-style-type: none"> 1. Check the level floating switch, and remove any impurity if the switch is blocked; if the FS contact failed, replace the floating switch. 2. Adjust the run time. 3. Adjust the delay start time.
No-load	The set run time is too long	Adjust the run time
No-load	The current is too large	<ol style="list-style-type: none"> 1. Check the pump and remove any impurities if winding onto the pump. 2. Check the grid power supply and pump cable for electric leakage. 3. Replace any damaged pump by a new one.
Cycle times	<ol style="list-style-type: none"> 1. The lower FS corresponding to the pump is always in the ON state. 2. The set run time is too short. 3. The floating switch fixed position is too low 	<ol style="list-style-type: none"> 1. Check the level floating switch, and remove any impurity if the switch is blocked; if the FS contact failed, replace the floating switch. 2. Adjust the run time. 3. Adjust the FS position.
In the pressure mode, the water level is displayed incorrectly	<ol style="list-style-type: none"> 1. Air leakage from air pipe 2. When connecting air pipe, the end of the air vent is not immersed in water. 	<ol style="list-style-type: none"> 1. Check each connection of air pipe for air leakage. 2. Press the Manual button to drain the water level below the air intake, and release the Manual button.

6.0 Installation, electric connection

6.1 Installation

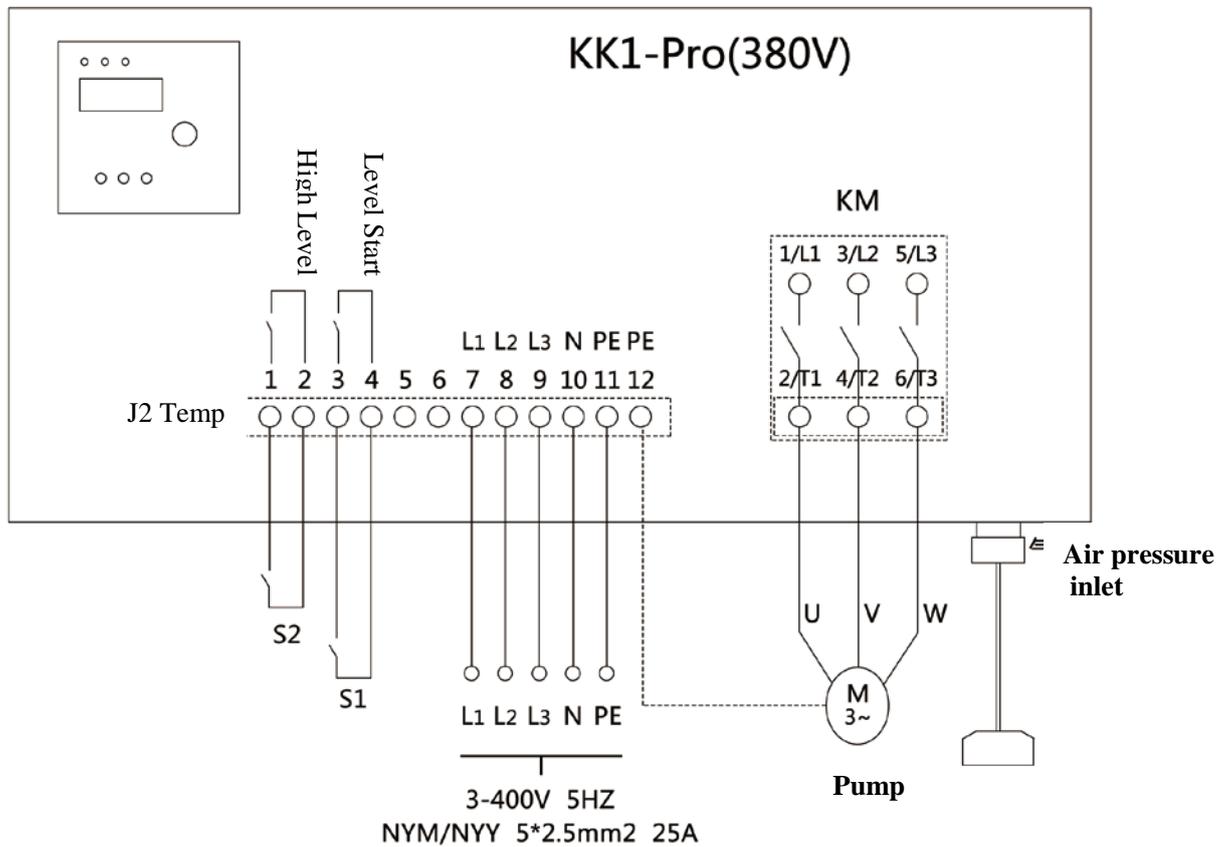
The controller can be connected to three-phase five-wire 380V power supply or single-phase 220V power supply.

6.2 Electrical connection between power supply, water pump and floating switch

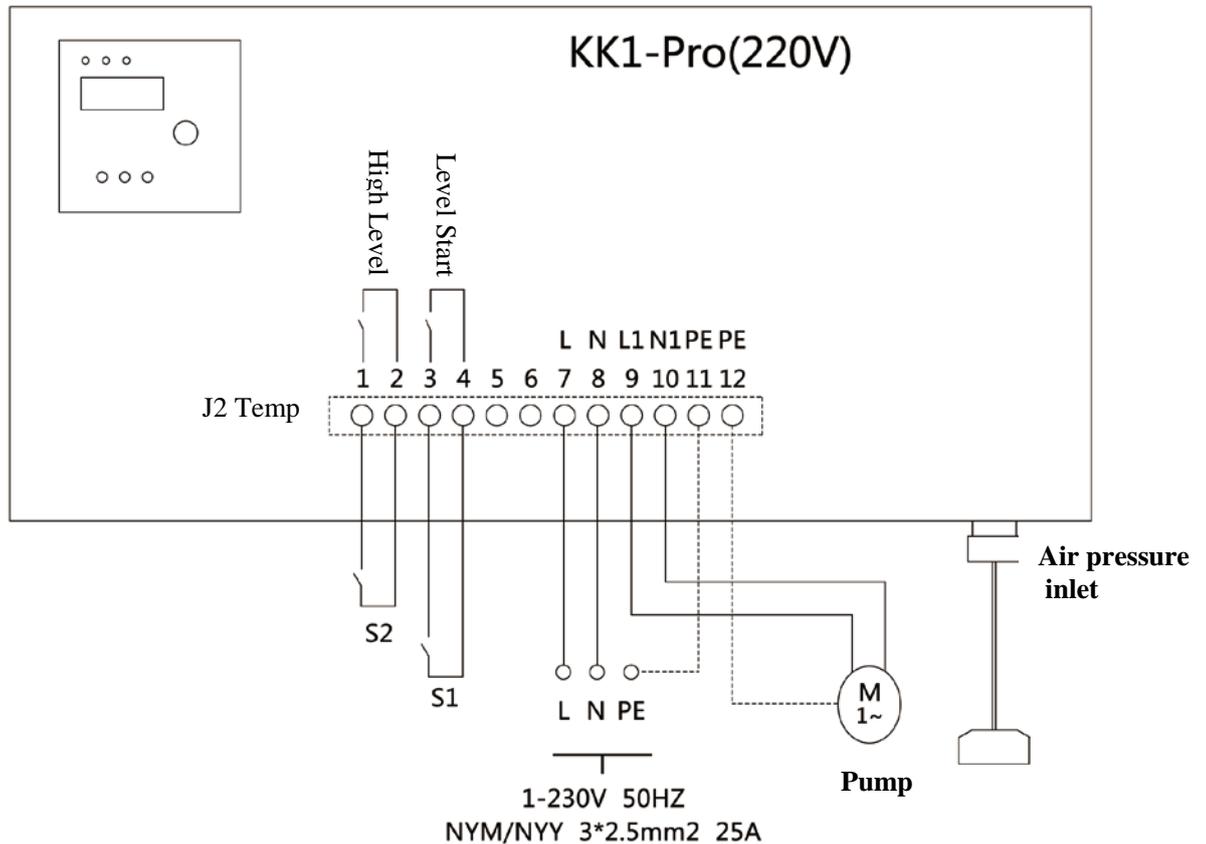
The electric connection must be carried out by the qualified electrical installation personnel according to the current national regulations.

Main circuit requires a fuse with the max. current of three-phase / single-phase 16A.

Connection diagram of 380V three-phase power supply, motor and input signal



Connection diagram of 220V single-phase power supply, motor and input signal



The high level alarm FS is floating over other level sensor. When the high level alarm FS touches, the pump will be started and an alarm will be issued. High level FS and other level sensor will form a dual protection.

7.0 Air pipe connection

The standard configuration of the air pipe connection is 8/6mm hose joint. When connecting air pipe, the controller shall be at the OFF state and the air pipe shall be in the suspension non-pressure state in the entire process. After connecting air pipe and the power supply is turned on, water can be drained in a container! With the pressure mode available to control level, drain the level below the air inlet each time to allow the air inlet in the suspension state. It is recommended to enable the "Stop Delay" function for this.

8.0 Technical data

No.	Item	Technical index	Unit	Remarks
1	3 phase Rat. voltage	350~410	Vac	
2	Max. 3 phase Rat. voltage	418	Vac	
3	3 phase Rat. power	4.5	KW	
4	3 phase Rat. current	8.9	A	Pre-set
5	1 phase Rat. voltage	200~240	Vac	
6	Max. 1 phase Rat. input voltage	264	Vac	
7	1 phase Rat. power	2.2	KW	
8	1 phase Rat. current	12	A	Pre-set
9	Working temperature	-20 - +60	°C	
10	Housing / transparent cover	ABS/PC		
11	Protection type	IP 66		
12	Controller size:	150Wx200Lx100mmH	mm	Not including the water joint
13	Cable hole diameter	2x Ø6~Ø10,2xØ4~Ø8		