



Intelligent Dual Pump Controller

KK2 Pro Dual 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

KK2 dual 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

A circuit protection to the mains of max. 3 x 25 A needs to be installed
(When the max. current of the protection is 3 x 25A, a single-core lead with the cross section of 4 mm² is used)

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

KK2 dual 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	- 72h Auto. Inspect.
- Service Mode	- FS Start Delay & FS Stop Delay
- Acoustic alarm	- Simple pump operation
- Manu/Auto functions	- Dual pump alternation start
- 220V and 380V available	

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



- Level FS
- High Level Flow Switch (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>The image shows a close-up of the LCD display. The screen displays: 泵1: 00.0A 泵2: 00.0A (Pump 1: 00.0A Pump 2: 00.0A) and 液位: 001.1cm (Liquid Level: 001.1cm). Below the screen is a black rotary knob with '选择' (Select) on the left and '确定' (Confirm) on the right.</p>
<p>Manual / Auto</p>	<p>Red LED ON: Fault Yellow LED ON: Run Green LED ON: Auto Green LED flashing: Manual Green, yellow and red LEDs OFF: press "0" to enter the pump forced stop mode. Manual mode has turned off automatically after 2 minutes to prevent dry run.</p>	 <p>The image shows the control panel with two sets of controls. Each set includes a green LED labeled '手动' (Manual) and a red LED labeled '故障' (Fault). Below these are three buttons labeled '自动' (Auto), '运行' (Run), and '故障' (Fault). At the bottom of each set are three buttons labeled '手动 - 0 - 自动' (Manual - 0 - Auto).</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)

1st line	2 nd line Settings	Explanation
Pump Current A 1:	FS S: ON/OFF	When the "Level Control" is "FS" mode, the current pump current, lower FS S and upper FS X ON/OFF will be displayed automatically.
Pump Current A 2:	FS x: ON/OFF	
Pump Current A 1:	Actual level	When the "Level Control" is "Pressure" mode, the pump current and level will be displayed automatically.
Pump Current A 2:		
Voltage		Monitor the pump voltage in real time
Current		Monitor the pump current in real time
Rat. Current	1.0–12.0 A	Set the pump rated current for normal operation
Max Try run	1-60 S	When the pump current during operation is 1/2 of the rated current and the non-load operating time exceeds the set non-load time, pump will stop and issue an alarm.

1st line	2nd line Settings	Explanation
Level start	0-200cm	The value determines the start level of the first pump (min. 5cm)
Level stop	0-200cm	The value determines the stop level of the first pump (min. 3cm)
Peal level start	0-200cm	The value determines the start level of the second pump
Peal level stop	0-200cm	The value determines the stop level of the second pump
Pressure Stop Delay	0-180 S	After the Stop level is reached, the pump will keep running until the pre-set time is over. The value 0 deactivates this function.
High level	1-200cm	When the "Level Control" is "Pressure" mode, and the level reaches the high level, the controller will work to issue a beep sound and start the dual pump.
Comp height	0-99cm	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.
FS Start Delay	0-180 S	In the FS control mode, the lower FS floats, the pump can be delayed to start. With "0" set, the start delay is not required.
FS Stop Delay	0-180 S	In the FS control mode, the lower FS lowers, the pump can be delayed to stop. With "0" set, the start delay is not required

1st line	2nd line Settings	Explanation
Run Time	0-60 min	When one pump is running under the basic load, if the total running time of the single pump exceeds the set "Run Time" , the pump will run alternately. After three alternate runs, the pump will issue an alarm and the LCD display will display the "Run Time Alarm" (0-60min; 0= Turn off this function). The alternate condition is that two pumps are running in the Auto mode.
Auto. Inspect.	0-10 S	After pump is out of service for 72h, the pump will run for 1-10s automatically. 0=Turn off this function.
Power Supply	Three-phase / Single-phase	Three-phase / Single-phase; the "Three-phase" or "Single-phase" option is available for power supply.
Service mode	OFF/ON	ON: Set all data OFF: Only display the set data but unable to set. In the "ON" state, converted to the "OFF" automatically if there is no any operation for 20 minutes.
Single P Mode	ON/OFF	Check which pump can work normally automatically; the single pump can run automatically in the original set mode. Used for maintenance of one pump.
Level Control		Level Control models available include "FS" or "Pressure"
Language		Available language: Chinese, English, or German language

1st line	2nd line Settings	Explanation
Alarm info		Include: a. High level alarm! b. Pump non-load alarm! c. Pump overload alarm! d. Alternate run 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.

Attention when setting: Auto Inspection time < Non-load protection time

5.0 Fault messages, possible malfunctions, and solutions

Message on Display	Possible cause	Solution
High Level	1. The level floating switch does not work 2. The set run time is too short 3. The delay start time is too long	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.

Message on Display	Possible cause	Solution
High water switch	<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.
A. No-load	<p>The set delay stop time is too long</p> <p>The lower FS failed</p>	<p>Adjust the delay stop time</p> <p>Check the FS</p>
B . No-load	<p>The set delay stop time is too long</p> <p>The lower FS failed</p>	<p>Adjust the delay stop time</p>
A. Over load	<p>The current is too large</p>	<p>Check the FS</p>
		<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.

Message on Display	Possible cause	Solution
B. Over 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.
Run Time Alarm	<ol style="list-style-type: none"> 1. The lower FS is always in the ON state or the level is always at the low start level. 2. Pressure mode: Air pipe inlet is clogged. 3. FS mode: The lower floating switch works abnormally 	<ol style="list-style-type: none"> 1. Check the floating switch or air inlet, and remove any impurity if blocked; if the floating switch contact failed, replace the floating switch. 2. Adjust the run time. 3. Adjust the floating switch position.
Start/stop level	Start level and Stop level are reversed each other	Check the set value
Start/flood level	Alarm level and Start level are reversed each other	Check the set value
Start/ peak level	Low start level and high start level are reversed each other	Check the set value
Phase miss alarm	Phase missing	Check each phase of the input
Phase sequence alarm	Phase sequence error	Check the output phase sequence
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

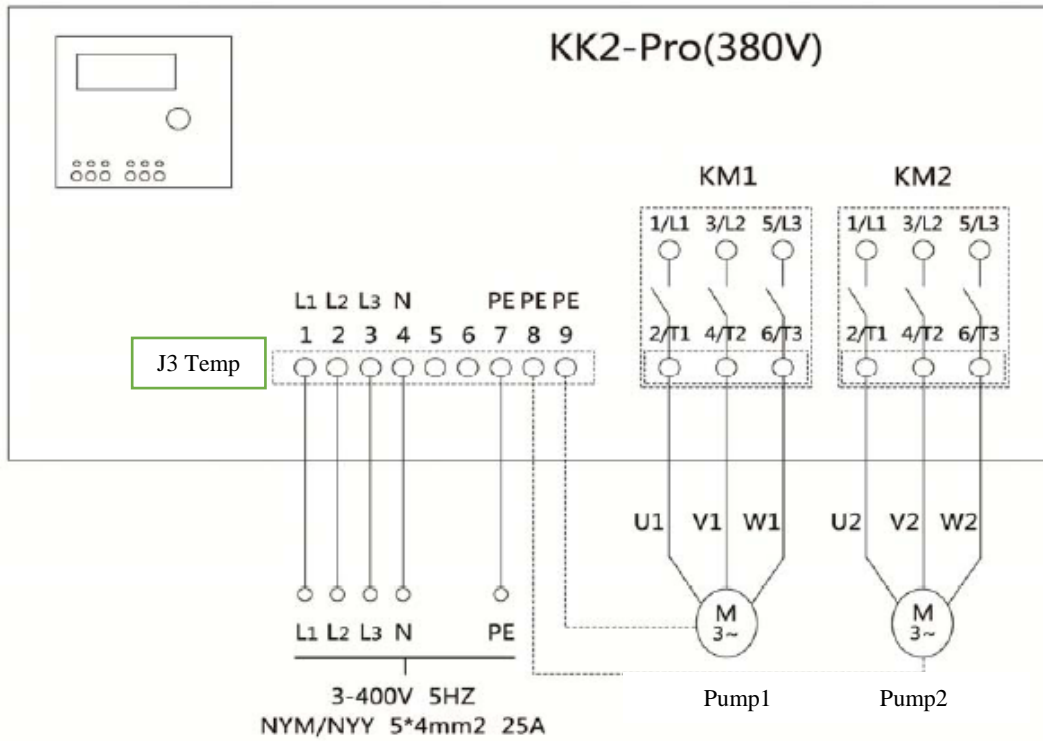
The controller can be connected to three-phase five-wire 380V power supply or single-phase 220V power supply.

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

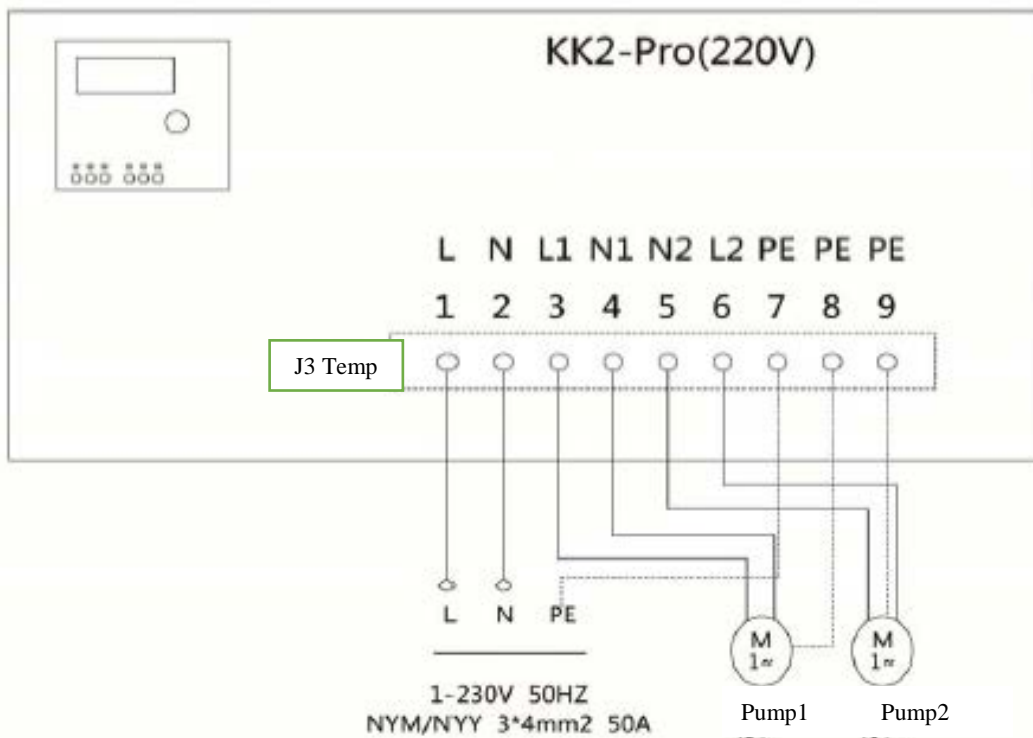
The electric connection must be carried out by the qualified electrical installation personnel according to the current national regulations.

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

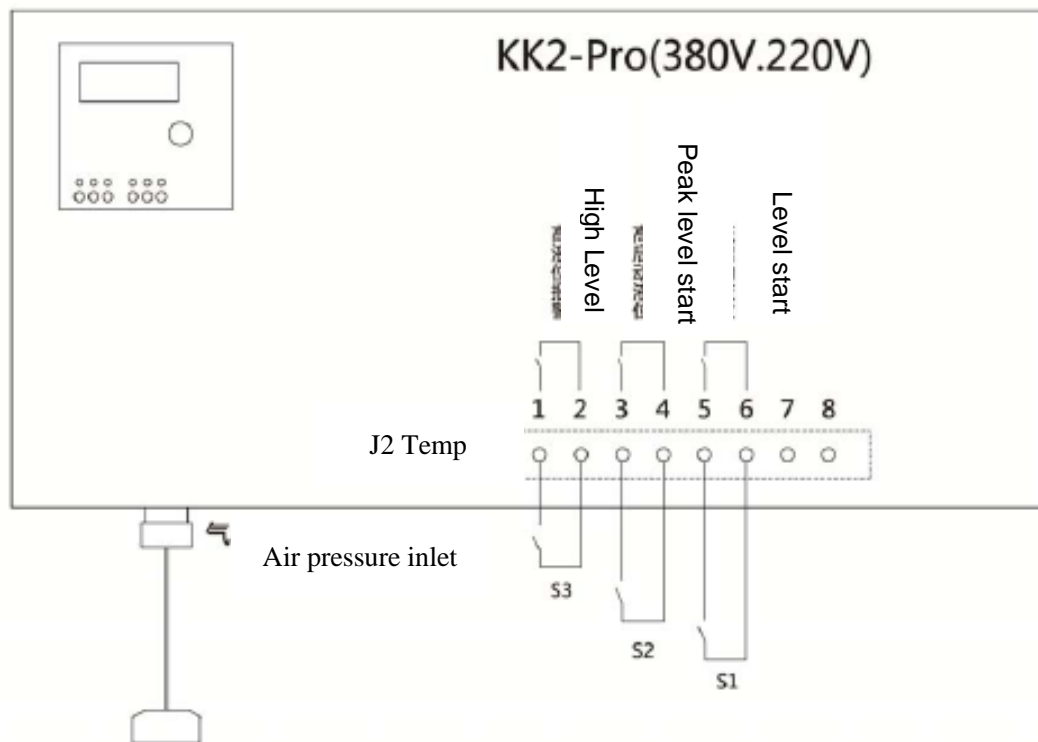
380V power supply and motor wiring diagram



220V power supply and motor wiring diagram



FS and pressure pipe connection



In the pressure mode, the level FSES at 3·4·5·6 positions are not required to be connected.

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.

If one pump needs to be removed for repair, press the "0" manually to turn off the failed pump; the other pump can run normally and automatically according to the previous setting contents.

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. input 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 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		