ZK-PP系列 PWM&脉冲信号发生器

用户手册

版本: V1.0

青岛无治智能科技有限公司

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目录

1.产品简介

本系列产品为PWM和脉冲信号发生器。有PWM模式和脉冲模式。每次只能使用一种模式，但两种模式可随时切换。

产品特点：

1. 两种模式可以选择：
PWM模式 ——频率(连续）、占空比。脉冲个数不可调，持续发送波形；
PULSE脉冲模式——正脉宽时间、负脉宽时间、延时启动时间、脉冲个数可调。
2. 带启动停止按钮(ZK-PP1K可以外接开关，控制输出信号ON/OFF)。
3. 宽电压输入3.3V-30V,带防反接保护。

应用场景：

1. PWM信号发生器，方波矩形波信号发生器。
2. 用来产生控制直流电机或步进电机驱动器的方波矩形波信号；用于伺服电机、步进电机、电动夹爪，替代PLC脉冲等。
3. ZK-PP1和ZK-PP1K可以配套驱动器实现调光、调速，控制电磁阀等，但不能直接驱动电灯电机电磁阀等负载，ZK-PP2和ZK-PP2K可以直接驱动电灯电机电磁阀等负载。

2.产品技术参数

2.1 工作电压：3.3V~30V，带防反接保护

2.2 频率范围：1Hz~150KHz，精度1%左右

2.3 占空比范围：0-100%，1%步进

2.4 脉冲个数：1-9999，或无穷个
（显示‘----’代表无穷个）

2.5 延时输出时间：0.000s-9999s,最小可设置1ms

2.6 正、负脉宽长度：0.000s-9999s，最小可设置1ms

2.7 信号带载能力：
ZK-PP1 ：小于30mA
ZK-PP2 ：小于8A
ZK-PP1K ：小于30mA
ZK-PP2K ：小于8A

2.8 输出信号幅值：幅值与供电电压相等

2.9 产品尺寸：
ZK-PP1 ：60mm*32mm*10mm
ZK-PP2 ：60mm*32mm*10mm
ZK-PP1K ：79mm*43mm*30mm
ZK-PP2K ：79mm*43mm*30mm

2.10 产品重量：
ZK-PP1 ：18g
ZK-PP2 ：20g
ZK-PP1K ：40g
ZK-PP2K ：42g

2.11 包装形式：防静电袋包装

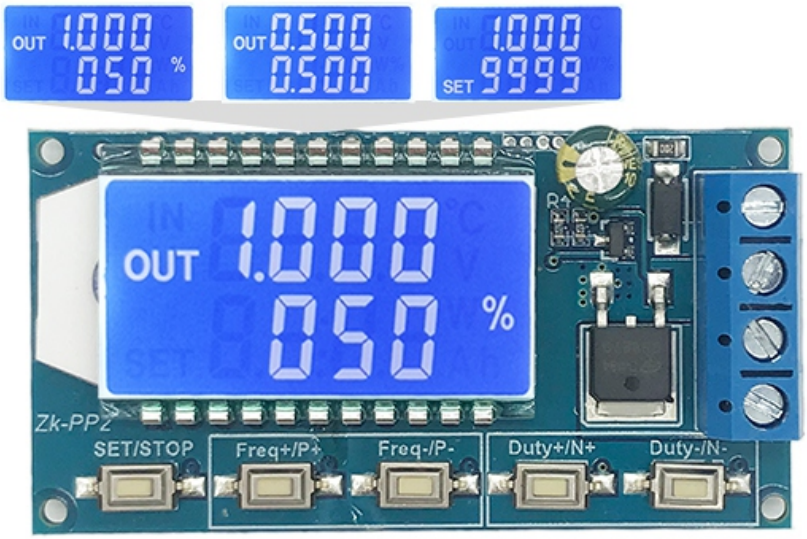
3.产品图解

ZK-PP1


双模式
PWM 发生器+PULSE脉冲发生器
OUT 1.000
050 %
OUT 0.500
0.500
SET 1.000
9999
OUT 1.000
050 %
C1+
Q1
102
PWM+PULSE
Zk-PP1
SET/STOP
Freq+/P+
Freq-/P-
Duty+/N+
Duty-/N-
步进电机 伺服电机 电动夹爪 替代PLC脉冲
启动停止按键
频率、占空比可设置
脉冲个数、脉冲宽度、上电延时时间可设置

ZK-PP2

功率型 **PWM发生器 + 脉冲发生器**



LED亮度调节

电机转速调节

电磁阀定时循环，上电延时启动

开关疲劳试验、电压暂降试验...

ZK-PP1K


双模式 PWM脉冲发生器
脉冲 个数
启停 按键
启停 外接
频率 调节
占空比 调节
脉宽 调节
延时 调节
FREQ/P
OUT 1.000
050 %
DUTY/N
SET
ZK-PP1K
PWM & PULSE GENERATOR
ON
PWM: 1HZ-150KHZ/0-100%
PULSE: 1ms-9999s/1-9999

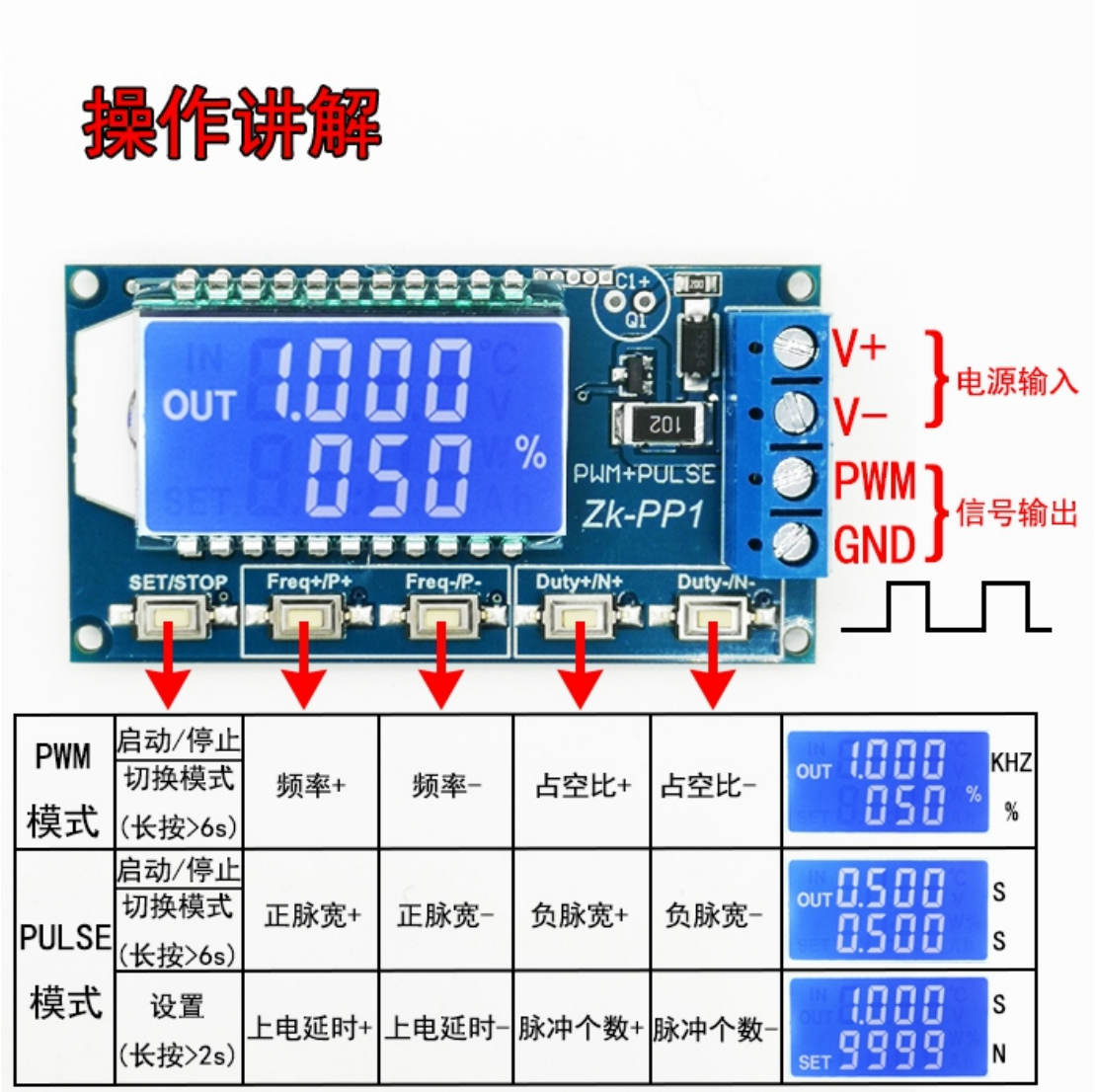
ZK-PP2K


双模式 PWM脉冲驱动器
脉冲 个数
启停 按键
启停 外接
频率 调节
占空比 调节
脉宽 调节
延时 调节
FREQ/P
OUT
1.000
050
%
DUTY/N
SET
ZK-PP2K
High Power PWM Driver
ON
PWM: 1HZ-150KHZ/0-100%
PULSE: 1ms-9999s/1-9999

4. 产品详解

4.1 产品操作详解

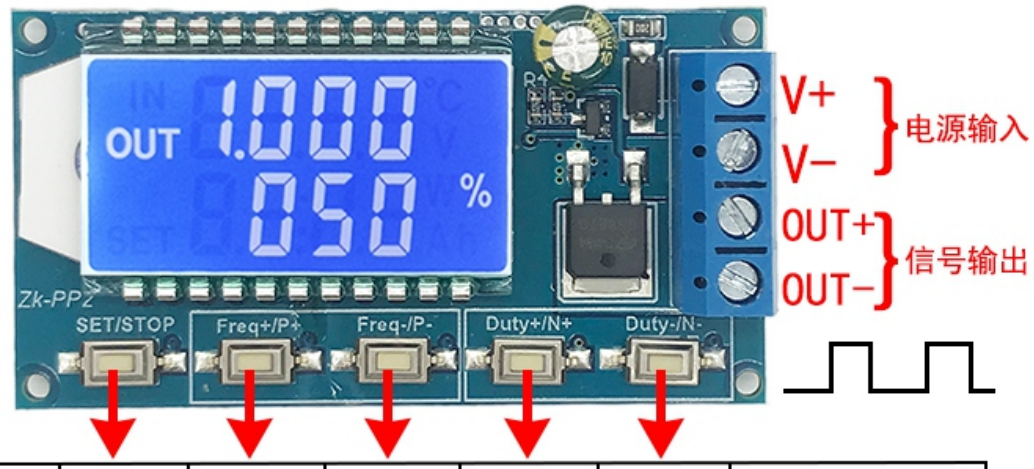
ZK-PP1



PWM 模式	启动/停止 切换模式 (长按>6s)	频率+	频率-	占空比+	占空比-	OUT 1.000 050 % KHZ %
PULSE 模式	启动/停止 切换模式 (长按>6s)	正脉宽+	正脉宽-	负脉宽+	负脉宽-	OUT 0.500 0.500 S S
	设置 (长按>2s)	上电延时+	上电延时-	脉冲个数+	脉冲个数-	1.000 SET 9999 S N

ZK-PP2

操作讲解



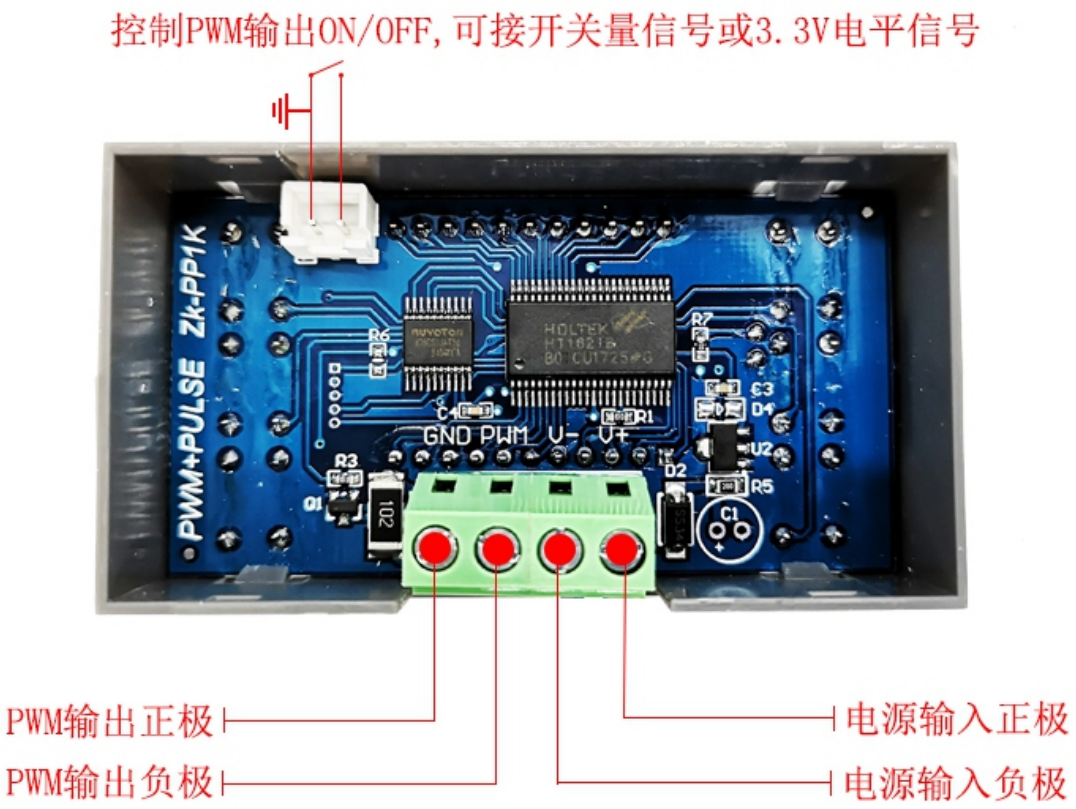
PWM 模式	启动/停止 切换模式 (长按>6s)	频率+	频率-	占空比+	占空比-	OUT 1.000 050 % KHZ %
PULSE 模式	启动/停止 切换模式 (长按>6s)	正脉宽+	正脉宽-	负脉宽+	负脉宽-	OUT 0.500 0.500 S S
	设置 (长按>2s)	上电延时+	上电延时-	脉冲个数+	脉冲个数-	SET 1.000 9999 S N

ZK-PP1K

1.上电即有输出波形；
2.波形幅值=电源电压；
3.输出脉冲个数达到设定值，自动停止输出， ‘OUT’ 消失；
4.按ON键，控制波形的有无，OUT消失代表无输出波形，输出0；
5.上电重启或ON键开启输出，重新计算脉冲个数；

PWM 模式	切换模式 (长按>6s)	频率+	频率−	占空比+	占空比−	启动 /停止	OUT 1.000 050 KHZ %
PULSE 模式	切换模式 (长按>6s)	正脉宽+	正脉宽−	负脉宽+	负脉宽−	启动 /停止	OUT 0.500 0.500 S S
	设置 (长按>2s)	上电延时+	上电延时−	脉冲个数+	脉冲个数−	启动 /停止	1.000 SET 9999 S N

ZK-PP1K

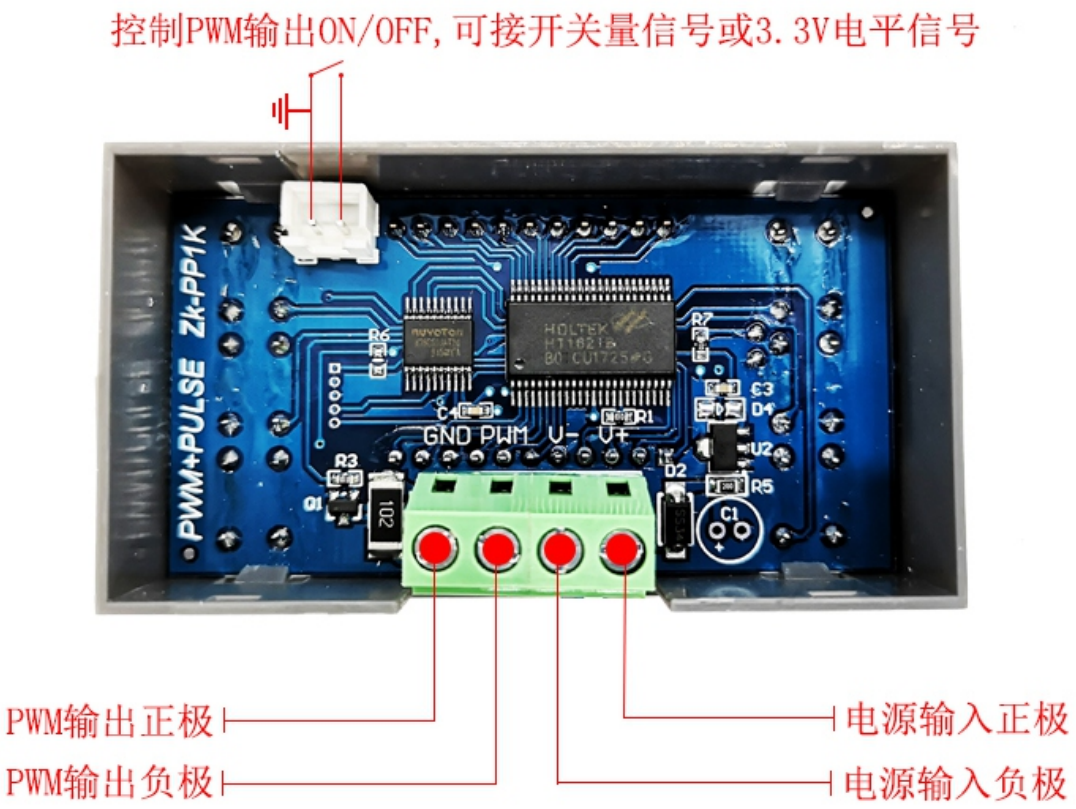

控制PWM输出ON/OFF,可接开关量信号或3.3V电平信号
PWM+PULSE Zk-PP1K
GND PWM V- V+
PWM输出正极
PWM输出负极
电源输入正极
电源输入负极

ZK-PP2K

1.上电即有输出波形；
2.波形幅值=电源电压；
3.输出脉冲个数达到设定值，自动停止输出， ‘OUT’ 消失；
4.按ON键，控制波形的有无，OUT消失代表无输出波形，输出0；
5.上电重启或ON键开启输出，重新计算脉冲个数；

PWM 模式	切换模式 (长按>6s)	频率+	频率−	占空比+	占空比−	启动 /停止	OUT 1.000 050 KHZ %
PULSE 模式	切换模式 (长按>6s)	正脉宽+	正脉宽−	负脉宽+	负脉宽−	启动 /停止	OUT 0.500 0.500 S S
	设置 (长按>2s)	上电延时+	上电延时−	脉冲个数+	脉冲个数−	启动 /停止	SET 1.000 9999 S N

ZK-PP1K


控制PWM输出ON/OFF,可接开关量信号或3.3V电平信号
PWM+PULSE Zk-PP1K
GND PWM V- V+
PWM输出正极
PWM输出负极
电源输入正极
电源输入负极

4.2 产品模式详解

注：ZK-PP1、ZK-PP2、ZK-PP1K和ZK-PP2K模式相同。

4.2.1、 PWM模式（显示屏有“%”为PWM模式）

出厂默认模式为PWM模式，
FREQ+和FREQ-按键设置频率，
DUTY+和DUTY-按键设置占空比；
按ON按键控制信号的输出或者停止，停止时输出为0，屏幕显示有“OUT”标志为有输出，否则为停止输出；
默认出厂频率为1KHZ，占空比为50%。
如需切换为PULSE脉冲模式，长按SET按键（大于6秒）不要松开，会看到屏幕变化，“%”消失，为PULSE模式。

4.2.2、 PULSE脉冲模式（显示屏右侧无“%”显示为PULSE模式）

P+和P-按键设置正脉宽时间，液晶屏上行显示，
N+和N-按键设置负脉宽时间，液晶屏下行显示，单位为秒；
按ON按键控制信号的输出或者停止，停止时输出为0，屏幕显示有“OUT”标志为有输出，否则为停止输出；
默认出厂正脉宽为0.5秒，负脉宽为0.5秒。
脉冲个数与延时时间的设置——在PULSE模式中，长按SET按键2秒钟然后松开，进入脉冲个数与延时时间设置界面，屏幕显示SET，进入后会关断和清零输出脉冲；P+和P-按键设置延时时间，N+和N-按键设置脉冲个数，出厂默认延时时间为0秒，脉冲个数为无穷个（显示----）；再长按SET按键2秒钟，自动回到脉冲界面。
按ON按键，延时设置时间后，开始发出设置好的脉冲个数，如果发送完脉冲个数会自动输出0，如果期间没有发送完按下ON按键会关断和清零输出脉冲，每启动一次就会发出设置好的脉冲个数,脉冲个数发完后显示屏OUT自动消失。

4.3 产品界面详解

注:ZK-PP1、ZK-PP2、ZK-PP1K和ZK-PP2K界面相同

频 率：1.000Khz

占空比：50%

PWM模式界面

正脉宽：0.500s

负脉宽：0.500s

脉冲模式界面

上电延时：1.000s

脉冲个数：9999

脉冲模式设置界面

4.4 产品应用示例

1、PWM输出20KHZ,60%占空比
选PWM模式，频率设置为20.00，占空比设置为60%。

2、输出端开启0.6秒，关断0.2秒，无限循环
选PULSE模式，正脉宽设置为0.600，负脉宽设置为0.200,延时时间设置为0.000,脉冲个数设置为----。

3、上电或按启动按键，延时5秒,然后输出端开启0.6秒，关断0.2秒，无限循环
选PULSE模式，正脉宽设置为0.600，负脉宽设置为0.200,延时时间设置为5.000,脉冲个数设置为----。

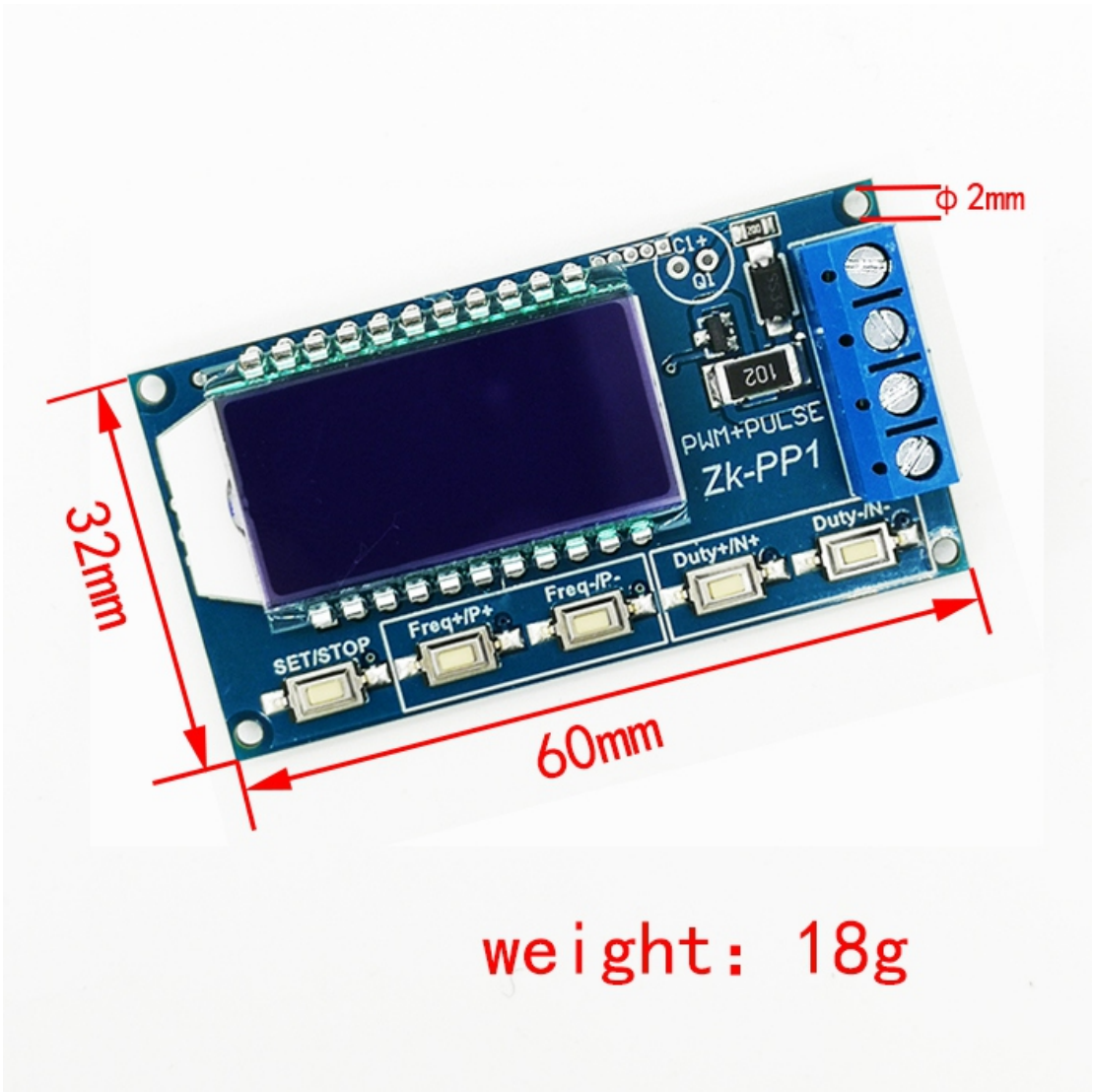
4、上电或按启动按键，延时5秒,然后输出高电平10ms低电平10ms的脉冲100个
选PULSE模式，正脉宽设置为0.010，负脉宽设置为0.010，延时时间设置为5.000，脉冲个数设置为0100。

5、上电延时10秒，然后永久输出信号
选PULSE模式，正脉宽设置为大于0的数即可，负脉宽设置为0，延时时间设置为10.00秒，脉冲数为无穷个（----）。

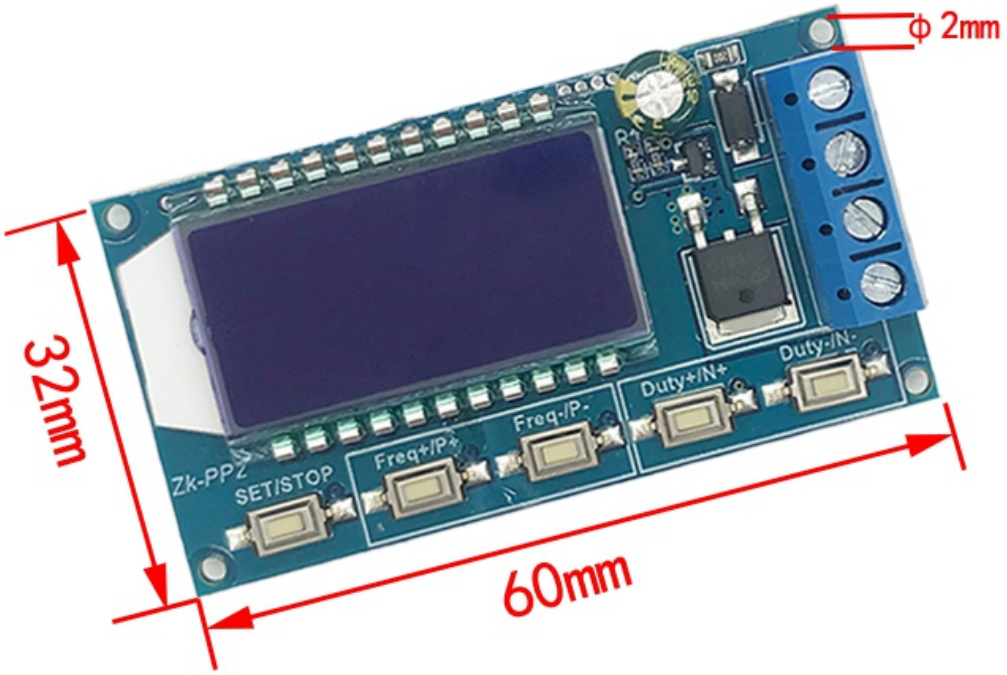
6、其他应用可自己摸索或咨询客服

5.产品外观尺寸图

ZK-PP1



ZK-PP2



weight: 20g

ZK-PP1K


weight:40g
79mm
43mm
39mm
71mm
30mm
FREQ/P
SET
OUT
ZK-PP1K
PWM & PULSE GENERATOR
ON

ZK-PP2K


weight:40g
79mm
30mm
43mm
39mm
71mm
FREQ/P
DUTY/%
SET
ON
OUT
ZK-PP2K
High Power PWM Driver

6.使用注意事项

6.1 请认真阅读使用手册后,再使用本产品！如因错误使用导致模块损坏，或者擅自拆换器件，不退不换。

6.2 输入电压应确保使用直流电，确保不超过DC30V,切勿使用交流电!若电压超压，上电后烧毁模块;

6.3 请确保输入输出接线正确再通电，否则可能会烧毁产品电路。

6.4 注意产品不要受潮，不要让电路板上的元件短路，不要用手触摸板上元件的引脚和焊盘。

6.5 免责声明:本产品不可用于医疗、救生、易燃易爆等领域和场合,对此造成的后果，本公司不承担任何责任。

ZK-PP SERIES
PWM & PULSE SIGNAL GENERATOR

User's Manual

versions: V1.0

Qingdao wuzhi intelligent co. LTD

2019-06-11

Catalogue

1.General Description

This series of products are PWM and pulse signal generator.There are PWM mode and pulse mode.Only one mode can be used at a time, but the two modes can be switched at any time.

Practical scenes

1.PWM signal generator, square wave rectangular wave signal generator

2. Used to generate a square wave rectangular wave signal, which is supplied to a DC motor or a stepper motor driver; Stepper motor, servo motor, electric gripper, robot arm

3. ZK-PP1 and ZK-PPIK can combine the driver to realize dimming, speed regulation, control solenoid valve, etc. ZK-PP2 and ZK-PP2K is possible to directly drive loads such as electric lights, motors, and solenoid valves.

Features:

1.1 Two modes can be selected:

PWM mode - frequency (continuous), duty cycle, Pulse number is not adjustable, continue to send waveform;

PULSE mode - positive pulse width time, negative pulse width time, delayed start time, and adjustable number of pulses.

1.2 With start-stop button(ZK-PP1K and ZK-PP2K external switch can also be used to control output signal ON/OFF).

1.3 Wide voltage input 3.3-30V, with anti-reverse protection, 5.08mm terminal wiring

2.Technical Parameters

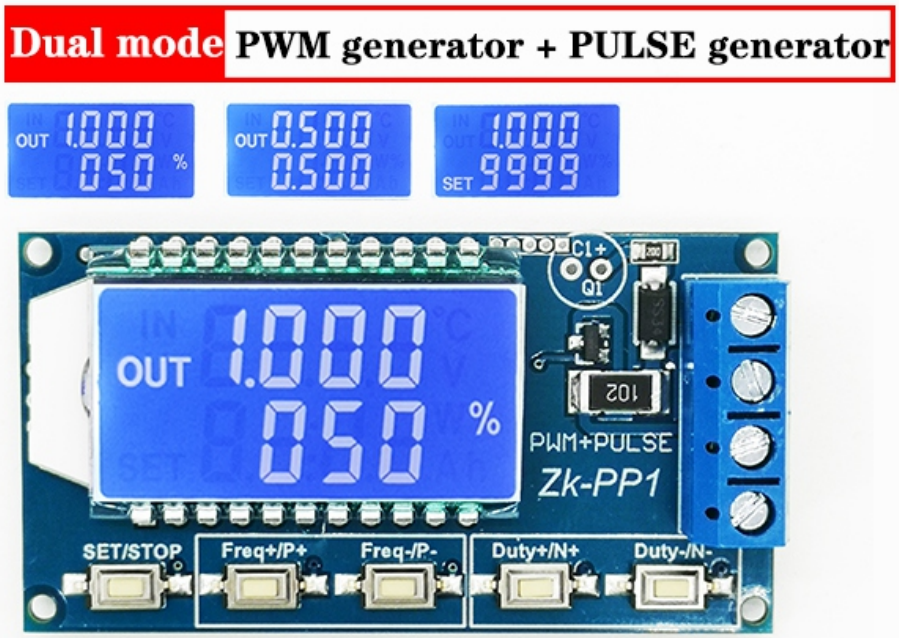
2.1 Working voltage: 3.3V~30V, with anti-reverse protection.
2.2 Frequency range: 1Hz~150KHz, accuracy about 1%.
2.3 duty cycle range: 0-100%, 1% stepping.
2.4 number of pulses: 1-9999, or infinite (display '----' stands for infinity).
2.5 delay output time: 0.000s-9999s, the minimum can be set 1ms.
2.6 positive and negative pulse width length: 0.000s-9999s, the minimum can be set 1ms.
2.7 signal loading capacity:
ZK-PP1 :less than 30mA.
ZK-PP2 :less than 8A.
ZK-PP1K:less than 30mA.
ZK-PP2K:less than 8A.

2.8 Output signal amplitude: amplitude is equal to the supply voltage.
2.9 Product size:
ZK-PP1 :60mm*32mm*10mm
ZK-PP2 :60mm*32mm*10mm
ZK-PP1K:79mm*43mm*30mm
ZK-PP2K:79mm*43mm*30mm
2.10 Product Weight:
ZK-PP1 :18g
ZK-PP2 :20g
ZK-PP1K:40g
ZK-PP2K:42g

2.11 Packing: Anti-static bag

3. Product Picture

ZK-PP1



Stepper motor, servo motor, electric jaw, in–stead of PLC pulse

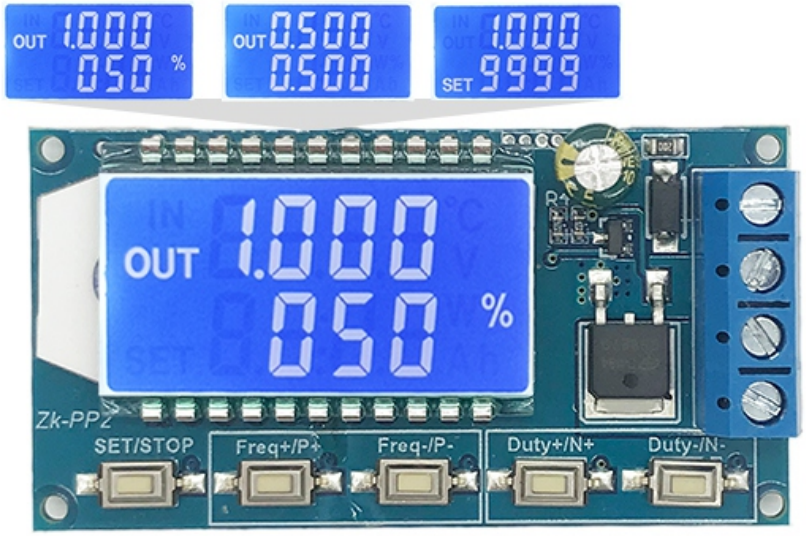
Start stop button

Frequency, duty cycle can be set

Pulse number, pulse width, power–on delay time can be set

ZK-PP2

Power output	PWM generator + PULSE generator



LED brightness adjustment

Motor speed adjustment

Solenoid valve timing loop, power-on delay start

Switch fatigue test, voltage sag test...

ZK-PP1K


Dual mode PWM pulse generator
Pulse Number
ON/OFF Button
ON/OFF External
Fre- quency Adjust
Duty cycle Adjust
Pulse width Adjust
Delay Adjust
FREQ/P
OUT 1.000
050 %
DUTY/N
SET
ZK-PP1K
PWM & PULSE GENERATOR
ON
PWM: 1HZ-150KHZ/0-100%
PULSE: 1ms-9999s/1-9999

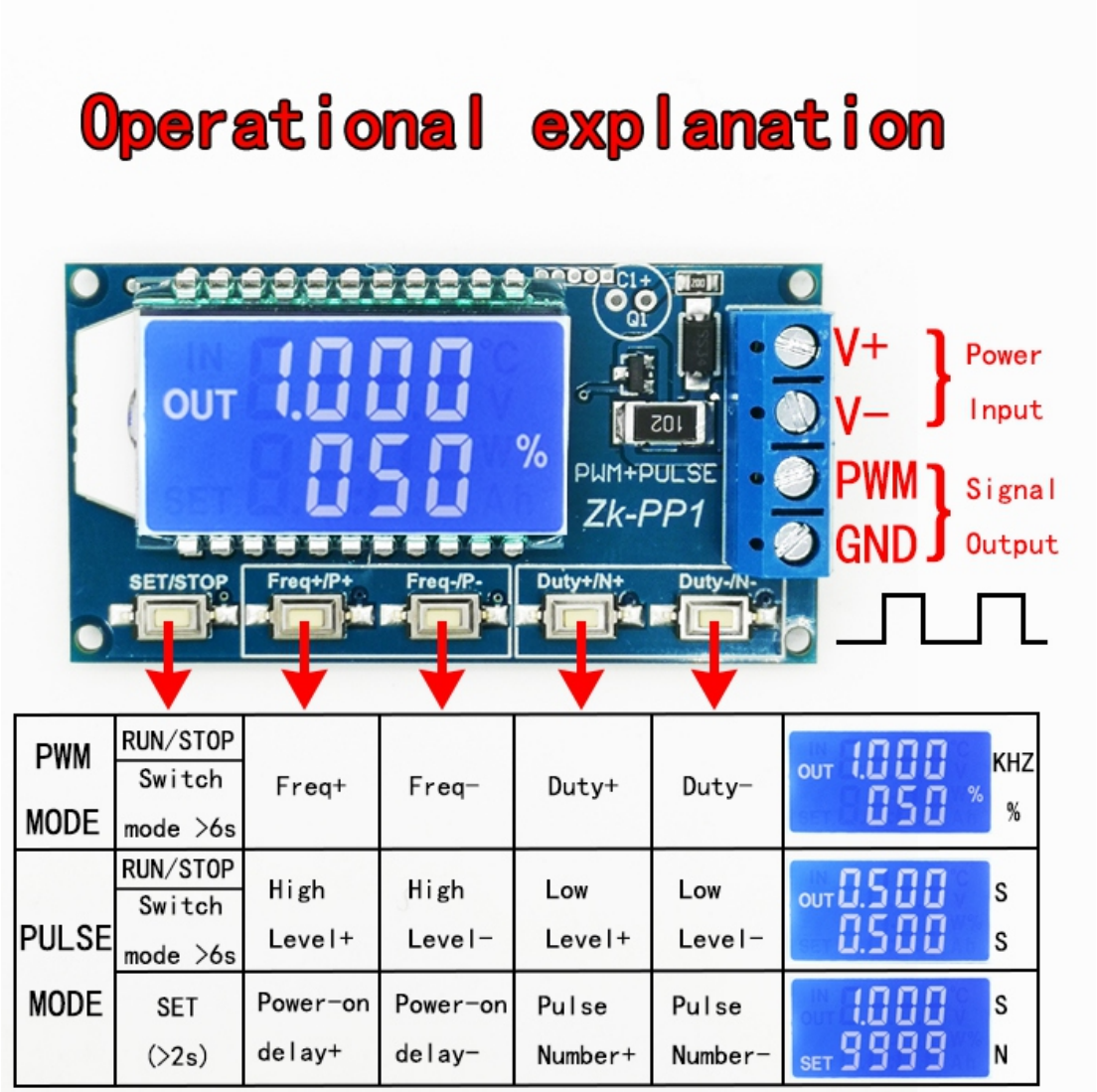
ZK-PP2K


Dual mode PWM Pulse Driver
Pulse Number
ON/OFF Button
ON/OFF External
Fre- quency Adjust
Duty cycle Adjust
Pulse width Adjust
Delay Adjust
FREQ/P
OUT 1.000
050 %
DUTY/N
SET
ZK-PP2K
High Power PWM Driver
ON
PWM: 1HZ-150KHZ/0-100%
PULSE: 1ms-9999s/1-9999

4. Product Overview

4.1 Operation Overview

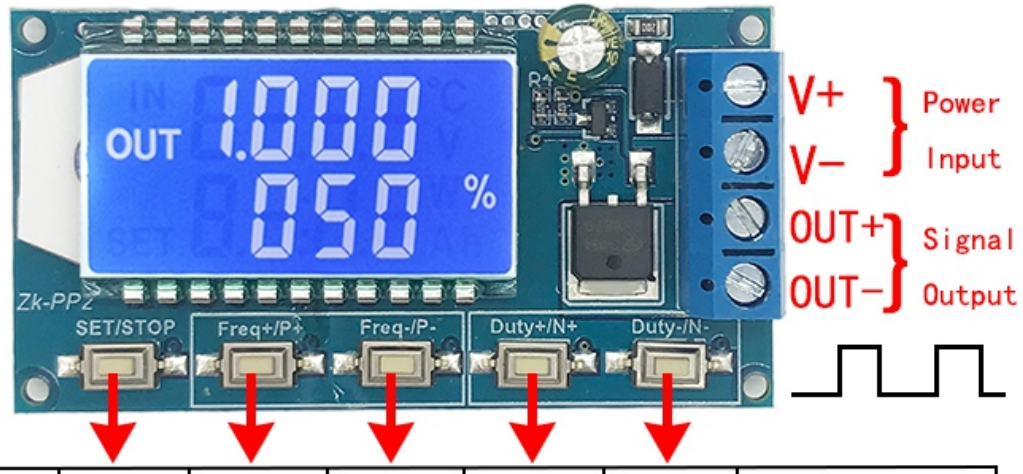
ZK-PP1



PWM MODE	RUN/STOP Switch mode >6s	Freq+	Freq-	Duty+	Duty-	OUT 1.000 050 % KHZ %
PULSE MODE	RUN/STOP Switch mode >6s	High Level+	High Level-	Low Level+	Low Level-	OUT 0.500 0.500 S S
	SET (>2s)	Power-on delay+	Power-on delay-	Pulse Number+	Pulse Number-	SET 1.000 9999 S N

ZK-PP2

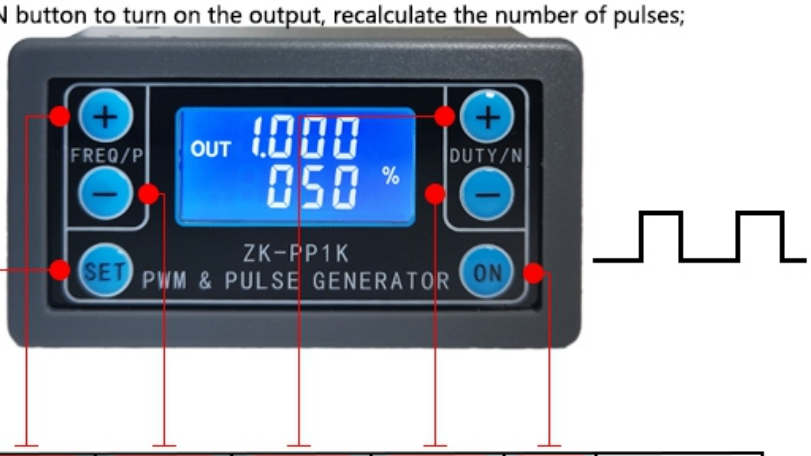
Operational explanation



PWM MODE	RUN/STOP Switch mode >6s	Freq+	Freq-	Duty+	Duty-	KHZ %
PULSE MODE	RUN/STOP Switch mode >6s	High Level+	High Level-	Low Level+	Low Level-	S S
	SET (>2s)	Power-on delay+	Power-on delay-	Pulse Number+	Pulse Number-	S N

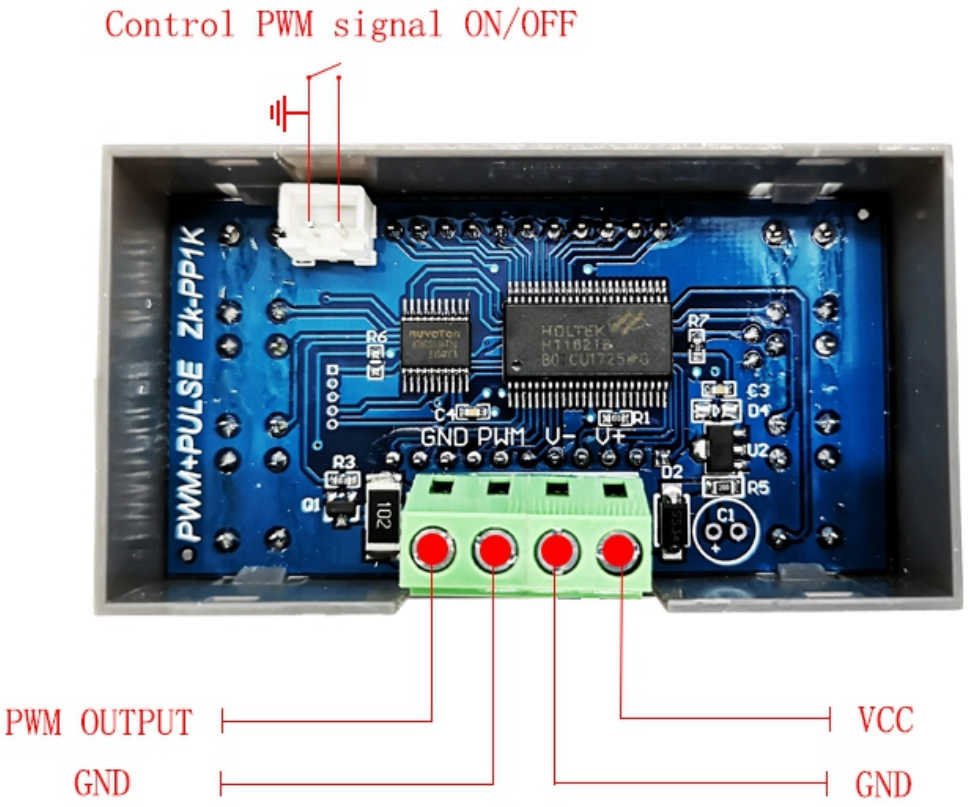
ZK-PP1K

1. There is an output waveform when power is turned on;
2. Waveform amplitude = power supply voltage;
3. The number of output pulses reaches the set value, the output is automatically stopped, and 'OUT' disappears;
4. Press the ON button to control the presence or absence of the waveform. OUT disappears to indicate no output waveform, and output 0;
5. Power-on reset or ON button to turn on the output, recalculate the number of pulses;



PWM MODE	Switch mode >6s	Freq+	Freq-	Duty+	Duty-	RUN /STOP	OUT 1.000 050 % KHZ %
PULSE MODE	Switch mode >6s	High Level+	High Level-	Low Level+	Low Level-	RUN /STOP	OUT 0.500 0.500 S S
	SET (>2s)	Power-on delay+	Power-on delay-	Pulse Number+	Pulse Number-	RUN /STOP	SET 1.000 9999 S N

ZK-PP1K

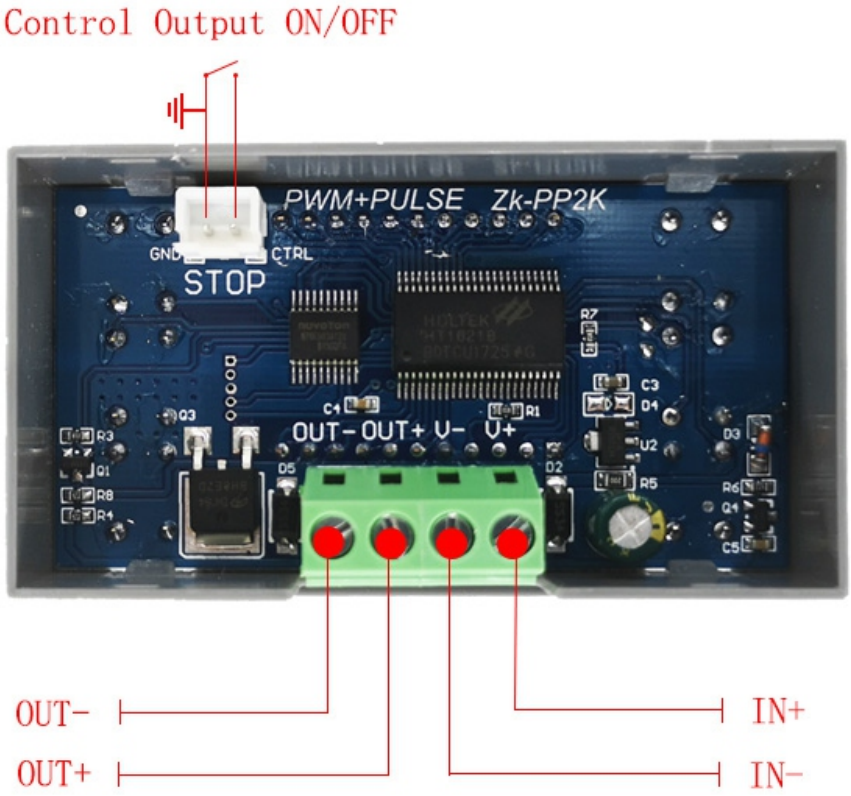

Control PWM signal ON/OFF
PWM+PULSE Zk-PP1K
GND PWM V- V+
PWM OUTPUT
GND
VCC
GND

ZK-PP2K

1. There is an output waveform when power is turned on;
2. Waveform amplitude = power supply voltage;
3. The number of output pulses reaches the set value, the output is automatically stopped, and 'OUT' disappears;
4. Press the ON button to control the presence or absence of the waveform. OUT disappears to indicate no output waveform, and output 0;
5. Power-on reset or ON button to turn on the output, recalculate the number of pulses;

PWM MODE	Switch mode >6s	Freq+	Freq-	Duty+	Duty-	RUN /STOP	OUT 1.000 050 % KHZ %
PULSE MODE	Switch mode >6s	High Level+	High Level-	Low Level+	Low Level-	RUN /STOP	OUT 0.500 0.500 S S
	SET (>2s)	Power-on delay+	Power-on delay-	Pulse Number+	Pulse Number-	RUN /STOP	1.000 SET 9999 S N

ZK-PP2K


Control Output ON/OFF
PWM+PULSE Zk-PP2K
GND
CTRL
STOP
OUT- OUT+ V- V+
OUT-
OUT+
IN+
IN-

4.2 Mode Overview

note: ZK-PP1,ZK-PP2 and ZK-PP1K have the same mode.

4.2.1 PWM mode (display has "%" for PWM mode)

The factory default mode is PWM mode, FREQ+ and FREQ-key set frequency, DUTY+ and DUTY- button set duty cycle; short press ON button control signal output or stop, stop output is 0, the screen displays “OUT” mark as There is output, otherwise it stops output; the default factory frequency is 1KHZ and the duty cycle is 50%.

If you want to switch to PULSE mode, long press the SET button (more than 6 seconds), do not release, you will see the screen change, "%" disappears, it is PULSE mode.

4.2.2 PULSE mode (No "%" on the right side of the display is PULSE mode)

The line above the LCD screen displays the positive pulse width time. The P+ and P- buttons set the parameter. The line below the LCD screen displays the negative pulse width time. The N+ and N- buttons set the parameter. Press the ON button to control the signal output or stop. When the output is stopped, the output is 0. The screen displays “OUT” for output, otherwise it stops output; the default factory positive pulse width is 0.5 seconds and the negative pulse width is 0.5 seconds.

Pulse number and delay time setting - In PULSE mode, press and hold the SET button for 2 seconds and then release, enter the pulse number and delay time setting interface, the screen displays SET, it will be turned off and cleared after entering. ;P+ and P-

seconds, the number of pulses is infinite (display ----); then press SET button 2 In seconds, it will automatically return to the pulse interface, press the ON button, after the delay setting time, start to issue the set number of pulses. If the number of pulses is sent, it will automatically output 0. If the period is not sent, pressing the ON button will turn off. The output pulse is turned off and cleared, and the set number of pulses is issued each time it is started. After the number of pulses is sent, the display 'OUT' automatically disappears.

4.3 Interface Overview

note: ZK-PP1,ZK-PP2 ZK-PP1K and ZK-PP2K have the same interface.

Fre:1.000Khz

Duty:50%

PWM mode interface

High:0.500s

Low:0.500s

Pulse mode interface

Delay:1.000s

Number:9999

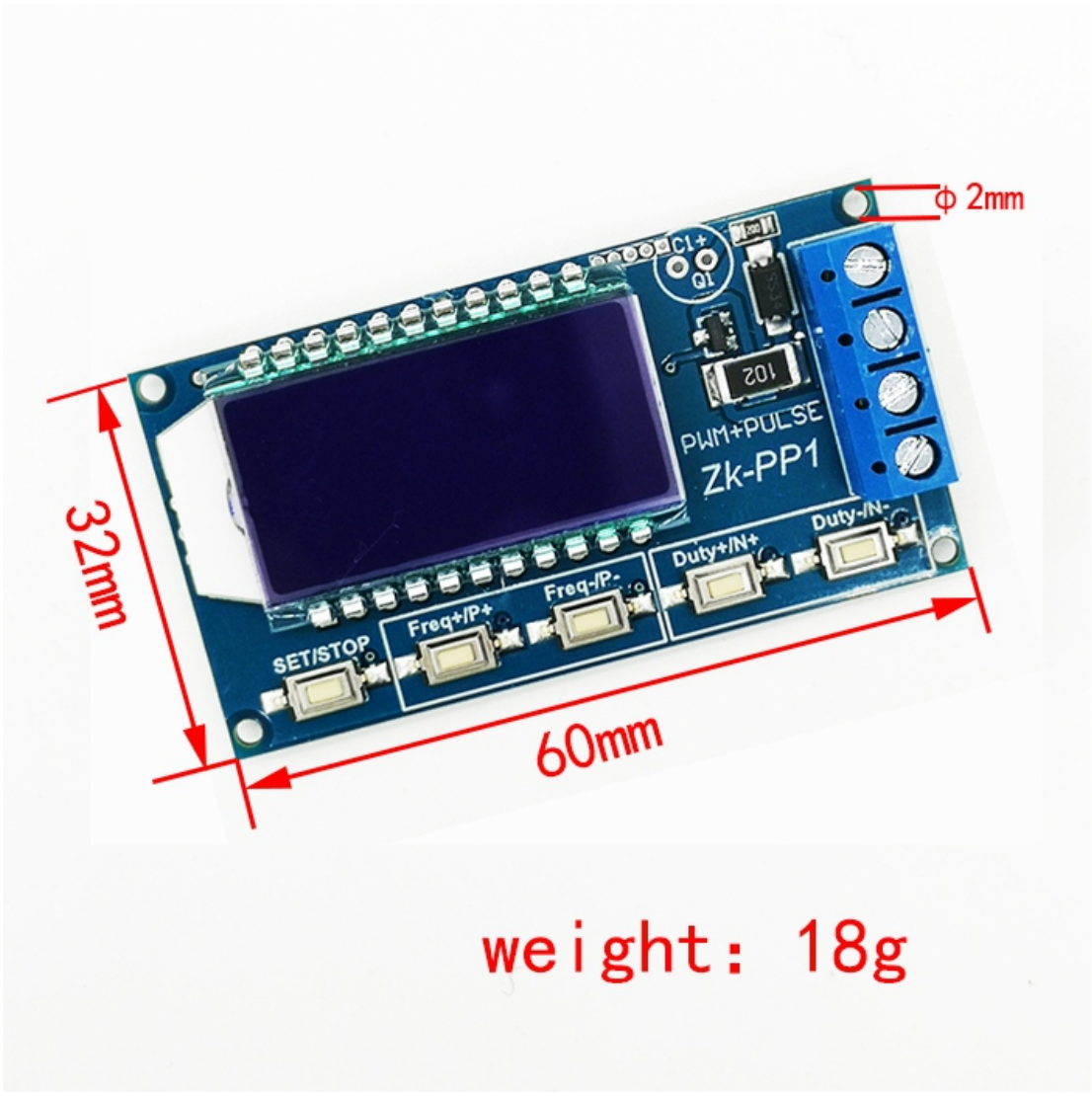
Pulse mode setting interface

4.4 Application Example

4.4.1 PWM output 20KHZ, 60% duty cycle: Select PWM mode, the frequency is set to 20.00, and the duty ratio is set to 060%.
4.4.2 The output is turned on for 0.6 seconds and turned off for 0.2 seconds. Infinite loop: select PULSE mode, the positive pulse width is set to 0.600, the negative pulse width is set to 0.200, the delay time is set to 0.000, and the number of pulses is set to --- -.
4.4.3 Power on or press the start button, delay 5 seconds, then the output is turned on for 0.6 seconds, off 0.2 seconds, infinite loop: select PULSE mode, positive pulse width is set to 0.600, negative pulse width is set to 0.200, delay The time is set to 5.000 and the number of pulses is set to ----.
4.4.4 Power on or press the start button, delay 5 seconds, then output high level 10ms low level 10ms pulse 100: select PULSE mode, positive pulse width is set to 0.010, negative pulse width is set to 0.010, delay The time is set to 5.000 and the number of pulses is set to 0100.
4.4.5 Power-on delay for 10 seconds, then permanently output signal: select PULSE mode, the positive pulse width is set to a number greater than 0, the negative pulse width is set to 0, the delay time is set to 10.00 seconds, and the pulse number is infinite. (----).
4.4.6 Other applications can explore or consult customer service
All setup parameters are not lost when they are turned off.

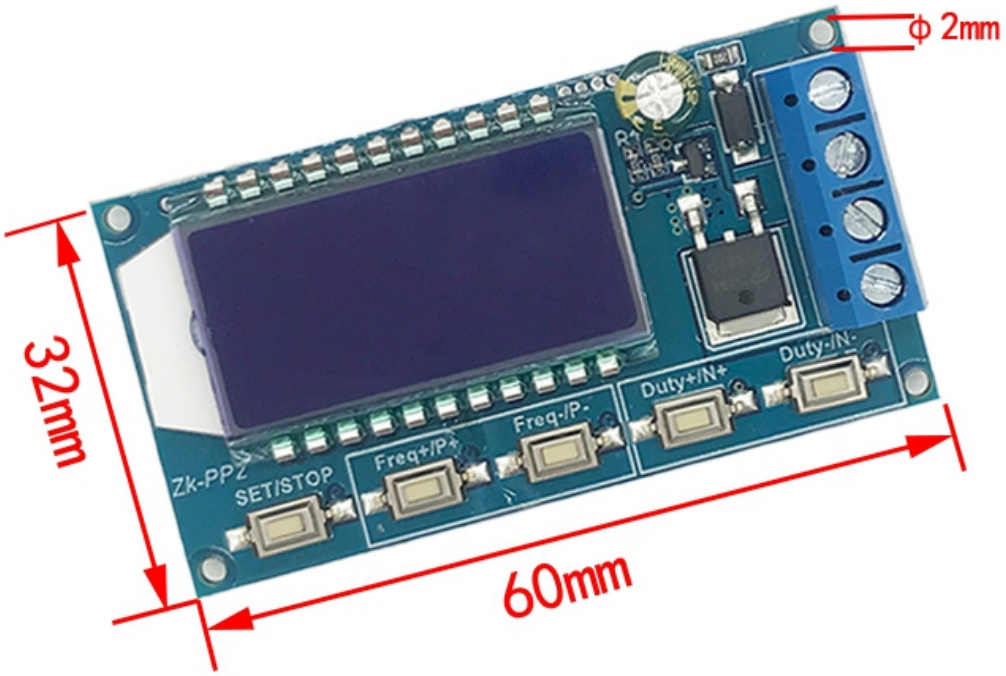
5. Product Appearance

ZK-PP1



weight: 18g

ZK-PP2



weight: 20g

ZK-PP1K

weight:40g

ZK-PP2K


weight:40g
79mm
43mm
39mm
71mm
30mm
OUT
1000
050
%
FREQ/P
DUTY/N
SET
ON
ZK-PP2K
High Power PWM Driver

6. Matters Need Attention

6.1 Please read the manual carefully before using the product ! If the module is damaged due to wrong use, or the device is removed without permission, it shall not be returned or replaced.

6.2 Power supply voltage shall use 3.3V-30V DC power supply, do not use AC power !!! If the voltage is over voltage, the module will be burnt after power on.

6.3 please ensure that the input and output wiring is correct before power on, otherwise it may burn the product circuit.

6.4 Pay attention to the module shall not be affected by moisture, shall not make the components on the circuit board short-circuit, shall not touch the pins and pads of the components on the board by hand.

6.5 Disclaimer: this product is not allowed to be used in medical, life-saving, flammable, explosive and other fields and occasions. Our factory will not assume any responsibility for the consequences caused thereby.