

# **DPM3-4C072W(72W)-24PS**

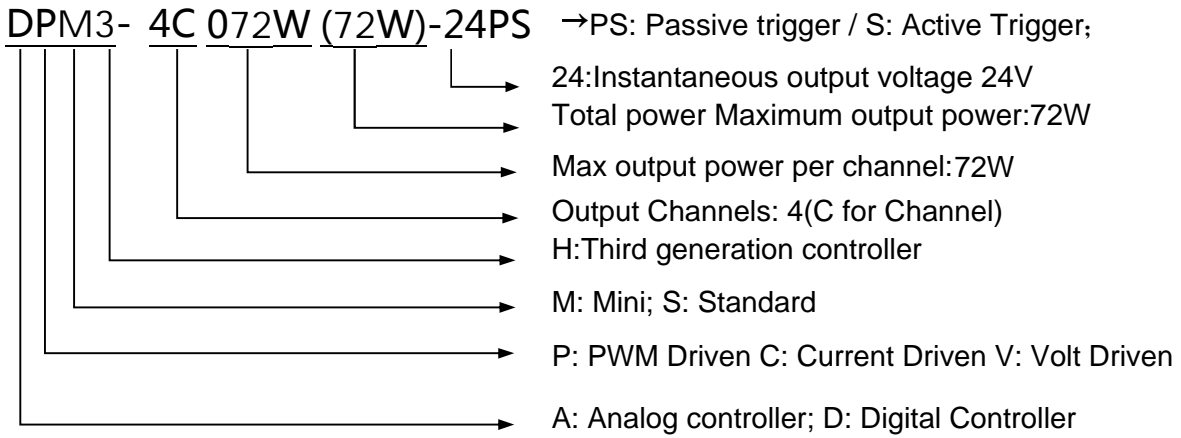
Machine vision light controller operating instructions

Version: V1.0

# Content

1.Controller Classification and Naming.....	1
2.Specifications.....	2
3.Main Fuctions.....	3
4.Instructions and Operations.....	3
4.1 Manual manipulation.....	4
4.2 Port definition.....	5
4.3 Remote operation.....	6
4.4 Communications protocol.....	6
5.Dimensions.....	10
Accessory List.....	11

# 1、 Controller Classification and Naming



Standard Controller: Supply voltage is AC100~220V

MiniController: Supply voltage is DC24V

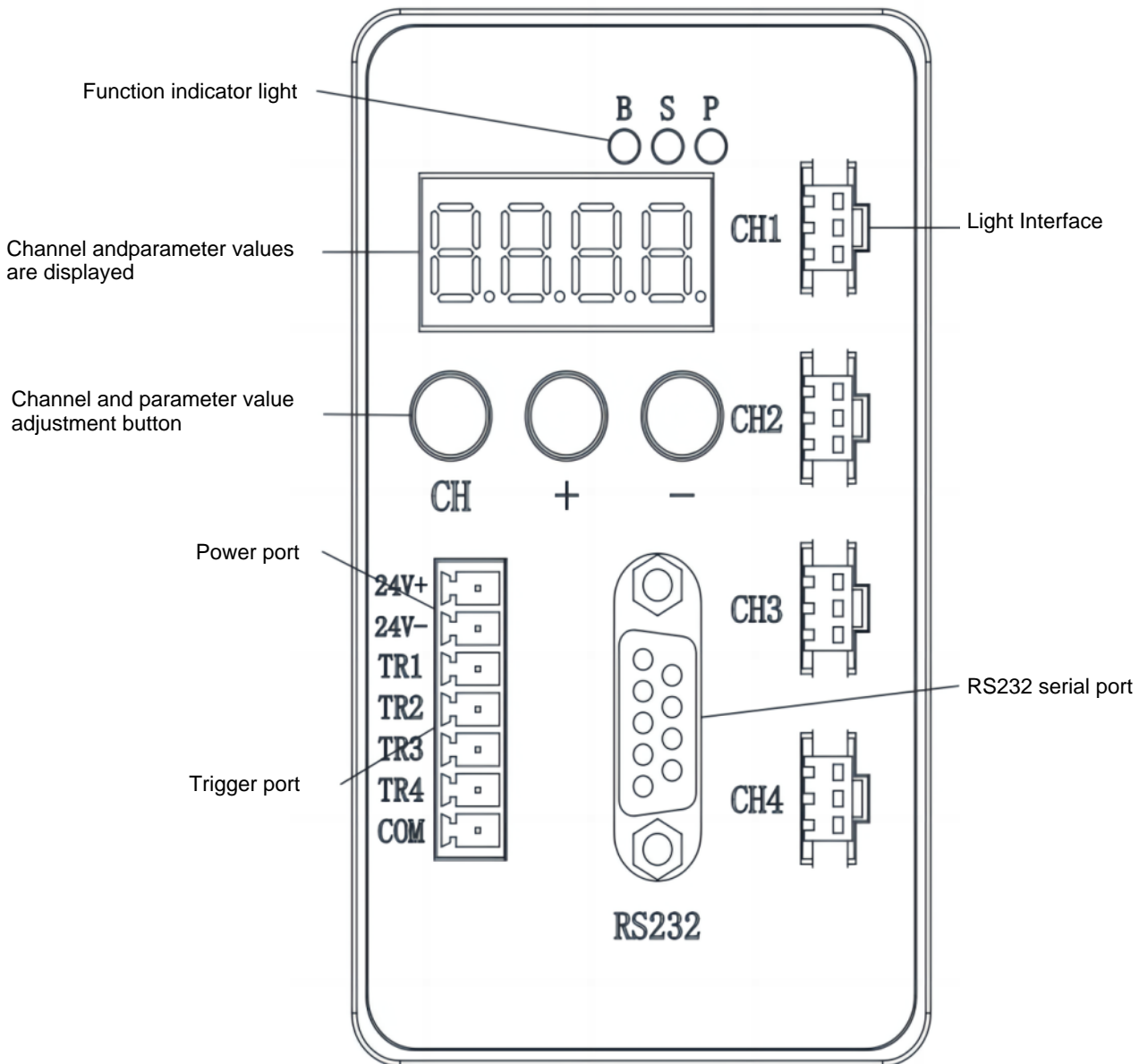
Passive trigger: Transmit state signal to the controller channels to trigger and control it from outside.

Active Trigger: Externally trigger the channel switch to ON / OFF (open circuit or short circuit triggers the channel pins).

## 2、Specifications

Features	Values	Description
Control Mode	PWM	Pulsed drive
Input Voltage	AC 110-220V	-
Output voltage	DC24V	Instant
Channels	4 Channel	-
Manual Control	yes	Adjusted by pressing the key
Remote Control	yes	Through the upper computer software adjustment
Brightness Level Memory	yes	Automatic memory starts in 3s after adjustment
RS232 Baud rate	9600	-
Adjustable Brightness Level	0-999 Level	Manual adjustment by encoder or the upper computer software adjustment
Total output power	72W	-
Single channel maximum current	3A	-
External triggering mode	Passive triggering	Effective trigger voltage range: 5-24VDC
External trigger delay time	H, ON → OFF < 10us	H: High level trigger ; ON and OFF represent the on and off state of LED light
External trigger frequency	< 1/5T	Determined by the external trigger signal, but will be affected by the stroboscopic pulse width
Working condition	Temperature : -10~50℃	-
	Humidity : 20~80%	
Storage environment	Temperature : -20~70℃	-
	Humidity : 10~90%	
Stand-by power consumption	< 3W	-
Dimension	81*60*100mm	L × W × H

### 3、 Main Functions



◆ Indicator light:

B is the power indicator light, always on.

S indicates trigger mode 1, and when trigger mode 1 is selected, the S light is always on.

P indicates trigger mode 2, and when trigger mode 2 is selected, P light is always on.

When S and P are bright at the same time, the strobe pulse width can be set.

◆ Digital tube:

The first bit: "1" "2" "3" "4" "H.", where "1" "2" "3" "4" represents the current channel; "H." indicates the selection of mode triggering mode, and the selectable modes are "0", "1" and "2".

Last 3 bits: represents the brightness value of the current channel, ranging from 0-999.

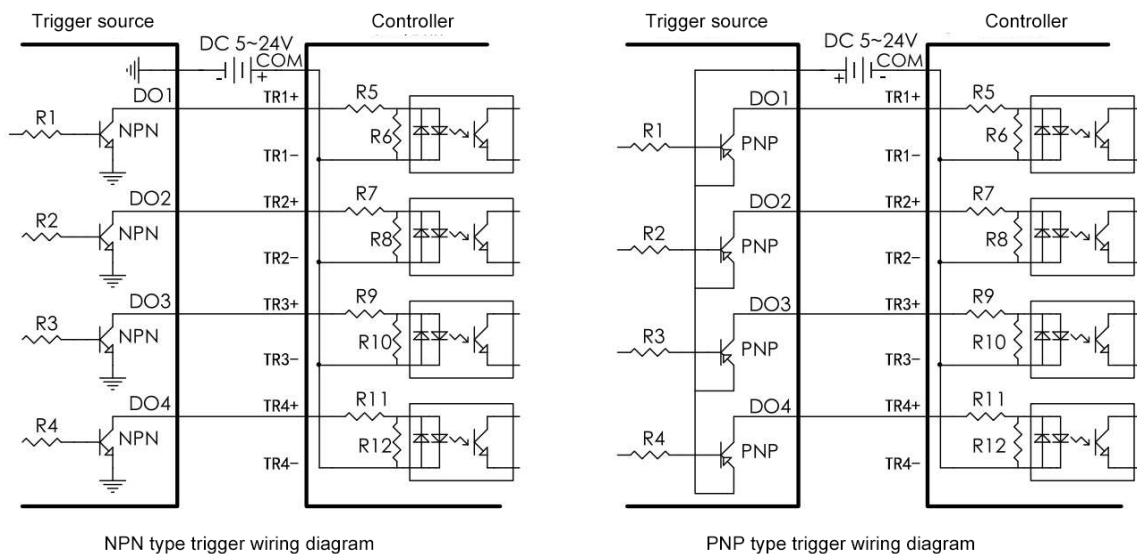
◆ Key: "CH" key is the channel switching key. "+" and "-" are keys to increase or decrease the brightness value or to select the trigger mode.

◆ Mode

Mode	Indicator light	Switchover
Constant light mode	"B" is always bright	H=0
Trigger mode 1	"B" "S" bright	H=1
Trigger mode 2	"B" "P" bright	H=2
	"B" "S" "P" bright	When triggering mode 2, long press CH key for 3 seconds to enter strobe pulse width setting (same for exit).

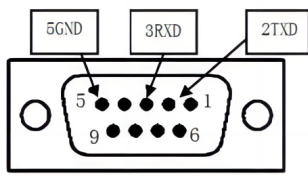
◆ Power input terminal: "24V+" "24V-" is the power supply port of the controller, which needs to be connected with DC24V power supply externally.

◆ Trigger port: "TR1", "TR2", "TR3", "TR4" and "COM" are external trigger access ports. Where "COM" is the public side. The trigger signal is high level, DC5-24V. The wiring diagram is as follows:



◆ Light interface: "CH1", "CH2", "CH3" and "CH4" are 4-way light source interfaces.

◆ RS232 serial port: connect the computer through the RS232 communication interface. Then through the host computer, the brightness level of each channel is set, and the current brightness level of each channel can be read. Serial port connection is defined as follows:



## ◆ Brightness memory function

Through the button on the controller panel or the host computer application software, after adjusting the brightness level of each channel, stop 3S, the controller automatically remembers the brightness level of each channel, and the power is not lost.

# 4. Instructions and Operations

## 4.1 Manual Operation

◆ Through the "CH" button, different channels can be selected or modes can be selected (H=0/1/2) : constant light mode (H=0), trigger mode 1 (H=1), trigger mode 2 (H=2).

◆ In constant light mode (H=0), the adjustment range of brightness value of each channel is 0-999, which can be adjusted by "+" and "-" keys.

◆ Trigger mode 1 (H=1), this mode is the following trigger, at this time, the frequency of light source strobe depends on the frequency of trigger signal, trigger signal is high level, DC5-24V.

◆ Trigger mode 2 (H=2), in this mode, the strobe pulse width is adjustable, the adjustment range is 1-999ms, the trigger signal is the rising edge, DC5-24V. (In this mode, long press the CH key for 3 seconds to set the strobe pulse width of the corresponding channel).

## 4.2 Port definition

"CH" button: channel switch button.

"-" button: Brightness level reduced.

"+" button: Brightness level increased.

By pressing the "CH" button, select the channel number to be controlled. The digital display bit representing the channel number will be automatically incremented by 1 with each press.

After selecting the channel number, the brightness level of the channel can be continuously adjusted (decreased or increased) by short pressing the "-" button or the "+" button. If the "-" button or "+" button is long pressed, the brightness level of the channel is quickly adjusted.

The controller has the function of brightness memory, and the power is not lost. After each modification, stop 3S, automatic memory. After each re-energize the controller, the channel number displayed by the digital tube and the corresponding brightness level of the channel are the last state of the memory before the power failure.

## 4.3 Remote operation

(1) Open the "Mini controller host computer V2.0.exe" execution file, the following interface appears:



(2) Interface description

### ◆ Communication status bar

▶ COM port: Select the serial port.

▶ COM status: The communication status bar shows whether the controller and the computer are connected successfully. After clicking "Start connection", the state will be shown:

1. Serial port connection failure.

2. Serial port connection success.

### ◆ Channel brightness control bar

▶ Channel X (X=1, 2, 3, 4) : Denotes the number of the controlled channel, respectively.

▶ 0-999: indicates the brightness level adjustment range. You can adjust the brightness level of the controller by dragging the position of the slider.

▶ Communication information: Display the control instructions sent by the host computer to the controller, and the corresponding return value received

## 4.4 Communication protocol

### Hardware specification

Baud rate	Data length	Stop bit	Parity check
9600 bps	8 bits	1 bit	Without



## Data format (frame format)

1byte	1byte	1byte	3byte	2byte
Tagged word	Command word	Channel word	Data	Xor and check words

Note: All communication bytes are in ASCII

- ◆ Tagged word = \$
- ◆ Command word = 1, 2, 3, 4, 5, 6

### Defined respectively as:

- 1: Turn on the corresponding channel brightness
- 2: Turn off the corresponding channel brightness
- 3: Set the corresponding channel brightness parameter
- 4: Read the corresponding channel brightness parameters
- 5: Set the stroboscopic pulse width of the corresponding channel
- 6: Read out the corresponding channel pulse width parameter

When the command word is 1, 2, 3, and 5, if the controller receives the command successfully, the feature word \$ is returned. If the controller fails to receive the command, it returns &.

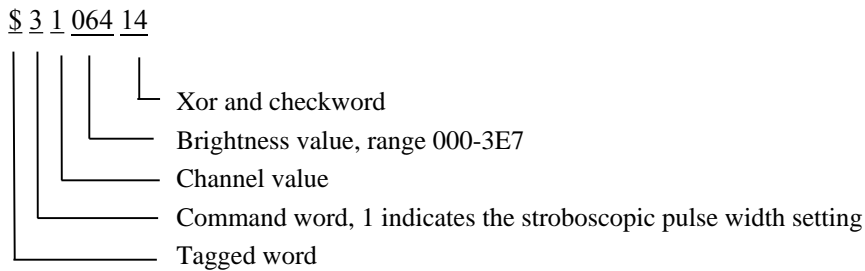
When the command word is 4, if the controller receives the command successfully, it will return the brightness setting parameter of the corresponding channel (the return format is the same as the sending format). If the controller fails to receive the command, it returns &.

When the command word is 6, if the controller receives the command successfully, the pulse width setting parameter of the corresponding channel is returned (the return format is the same as the sending format). If the controller fails to receive the command, it returns &.

### Switch between 3 modes:

Directive	Modes
\$\$100076	Constant light mode
\$\$200075	Trigger mode 1
\$\$300074	Trigger mode 2
\$\$\$00014	Read current mode

- ◆ Channel words =1,2,3,4 represents four output channels.
- ◆ Data = XXX (any value within XXX=000 ~ 3E7), corresponding to the setting parameters of the channel power supply, high bit in the first, low bit in the last.
- ◆ Xor and checkword = The XOR checksum of bytes (including: feature words, command words, channel words, and data) other than the checkword, with the highest half byte ASCII code first and the lowest half byte ASCII code next.
- ◆ **Example:** Set the first channel strobe pulse width to 100us, then write down "\$3106414" in ASCII code



Xor check word operation process is as follows:

	Character string	ASCII code	ASCII codes are represented in hexadecimal	The high half byte and the low half byte are represented by 8421 codes, respectively
Tagged word	\$	36	24	00100100
Command word	1	51	33	00110011
Channel word	1	49	31	00110001
Data	0	48	30	00110000
	6	54	36	00110110
	4	52	34	00110100
Xor sum				00010100
Xor check word				1 6

**Note:** In the operation process of the XOR check word of command words 1, 2, 4 and 6, the value of three bytes of data has no effect on the function of this instruction, and the format is guaranteed to be XXX (XX=000 ~ 3E7 any value).

The following are several groups of experimental data. If users write their own Demo program, they can refer to the following data for comparison test.

Close channel 2: \$220,291F

	Character string		ASCII code	ASCII codes are represented in hexadecimal		The high half byte and the low half byte are represented by 8421 codes, respectively	
Tagged word	\$	→	36	→	24	→	00100100
Command word	2		50		32		00110010
Channel word	2		50		32		00110010
Data	0		48		30		00110000
	2		50		32		00110010
	9		57		39		00111001
Xor sum							00011111
Xor check word							1 f

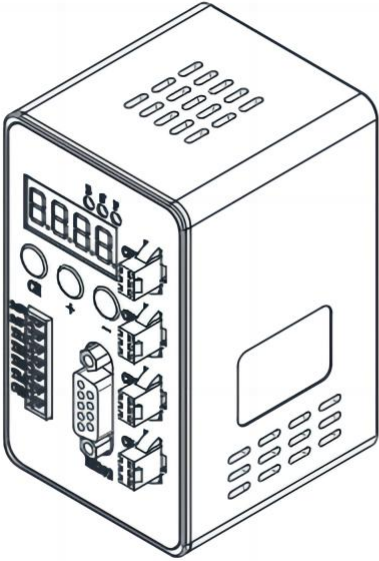
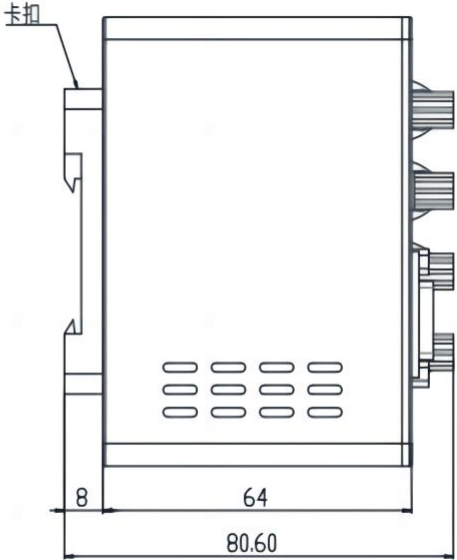
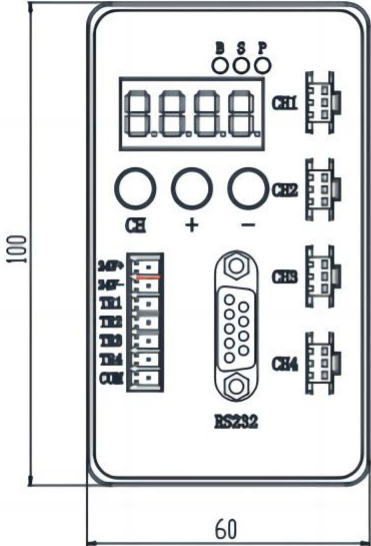
Open 3 channels: \$1306414

	Character string		ASCII code	ASCII codes are represented in hexadecimal		The high half byte and the low half byte are represented by 8421 codes, respectively	
Tagged word	\$	→	36	→	24	→	00100100
Command word	1		49		31		00110001
Channel word	3		51		33		00110011
Data	0		48		30		00110000
	6		54		36		00110110
	4		52		34		00110100
Xor sum							00010100
Xor check word							1 4

Read 2 channel power parameters: \$4206410

	Character string		ASCII code	ASCII codes are represented in hexadecimal		The high half byte and the low half byte are represented by 8421 codes, respectively	
Tagged word	\$	→	36	→	24	→	00100100
Command word	4		52		34		00110100
Channel word	2		50		32		00110010
Data	0		48		30		00110000
	6		54		36		00110110
	4		52		34		00110100
Xor sum							00010000
Xor check word							1 0

# 5、Dimensions



## Accessory List

Name	Quantity	Remark
DPM3-4C072W(72W)-24PS controller	1	
RS232 serial port line	1	
7PIN Green male terminal	1	