

# **DCS2-1C600W-48PS(WS20-6)**

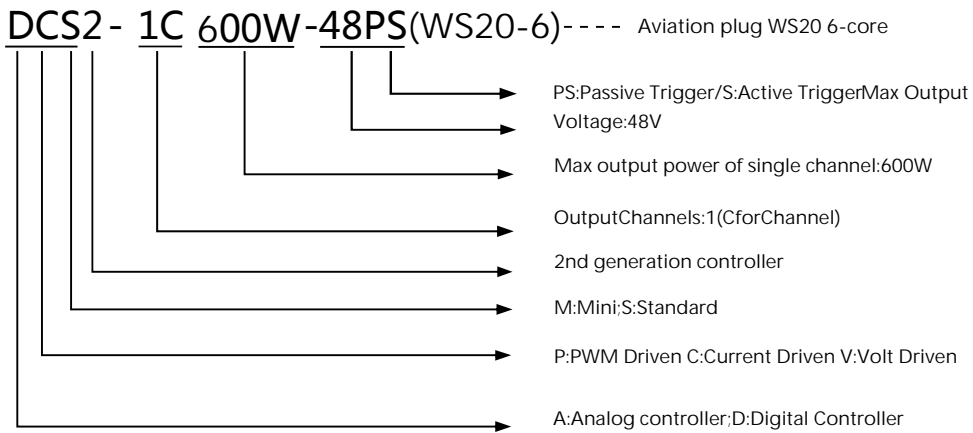
Machine vision light controller operating instructions

Version:V1.0

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# 1、Controller Classification and Naming



Input Voltage of Standard Controller: AC100~220V

Input Voltage of Mini Controller: DC24V

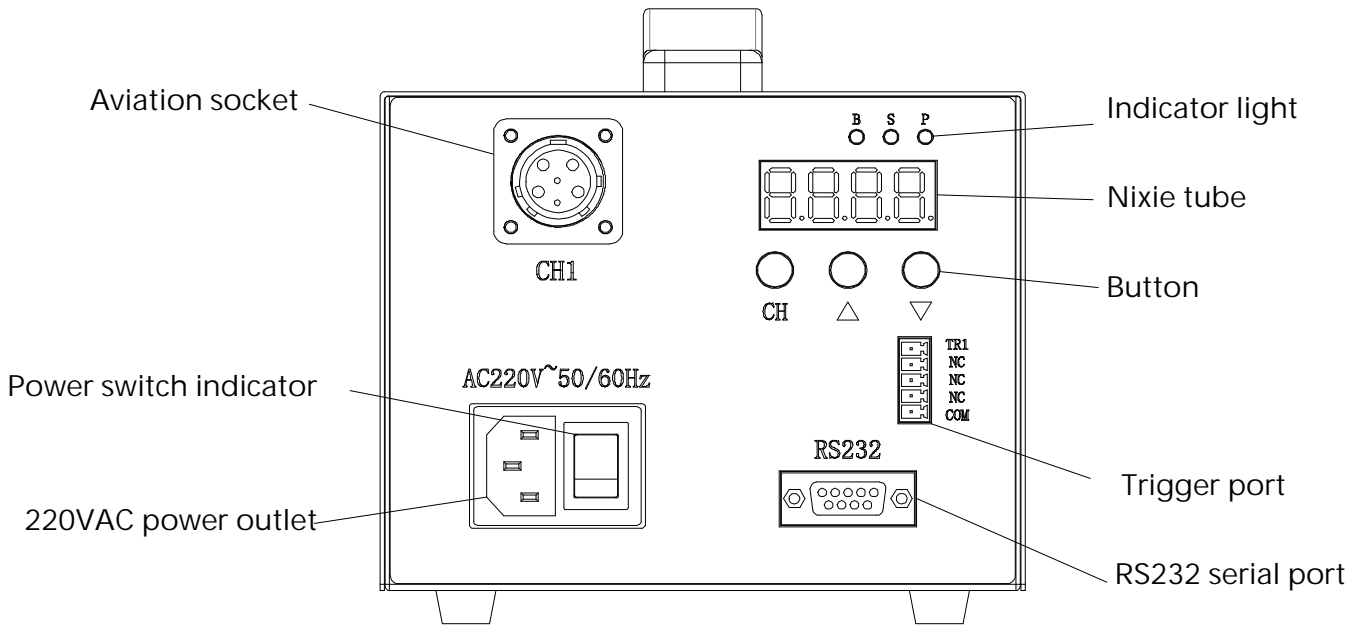
PS (Passive trigger): Input level signal to the controller trigger channel from outside for external trigger control.

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

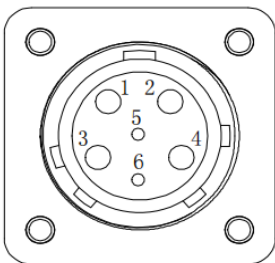
## 2、Specifications

Features	Values	Description
Control Mode	constant current	
Input Voltage	AC100-220V	-
Output voltage	DC48V	
Channel	1	-
Manual Control	yes	Adjusted by pressing the key
Remote Control	yes	Adjusted by upper computer software
Brightness Level Memory	yes	Automatic memory starts in 3s after adjustment
RS232 Baud rate	9600	-
Adjustable Brightness Level	0-255 levels	Long Press for rough adjustment; Short Press for subtle adjustment; Upper computer software control is available.
Single channel Max. current	12.5A	-
External triggering mode	Passive trigger	Valid trigger voltage range: 5-24VDC
External trigger delay time	H, ON → OFF < 60us	H:High level trigger ; ON and OFF represent the on and off state of LED light
External trigger frequency	< 1/T	Determined by the strobe time, T=1ms, the external trigger frequency is at most 1KHz
Short-circuit protection	yes	When the circuit is short, the corresponding channel output is automatically closed
Overcurrent protection	yes	Beyond 72W, all channels are automatically closed and Err1 is displayed. Restart and restore after the exception condition is removed
Working condition	Temperature:-10~50°C	-
	Humidity:20~80%	
Storage environment	Temperature:-20~70°C	-
	Humidity:10~90%	
Stand-by power consumption	< 3W	-
Dimensions	340*150*148mm	L×W×H

### 3、 Main Functions



◆ Light interface: CH1 is the light source interface. Defined as follows:



Pin	Definition
1,3	Light source positive electrode(48V+)
2,4	Light source negative electrode(48V-)
5	Fan positive electrode (24V+)
6	Fan negative electrode (24V-)

◆ 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, ranging from 1-999ms.

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

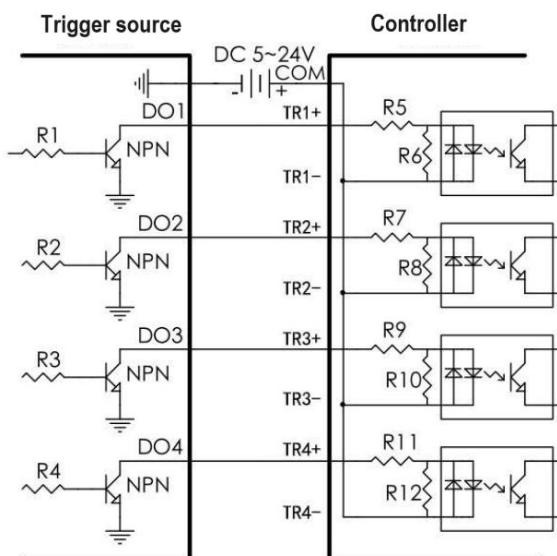
Last 3 bits: represents the brightness value of the current channel, ranging from 0-255.

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

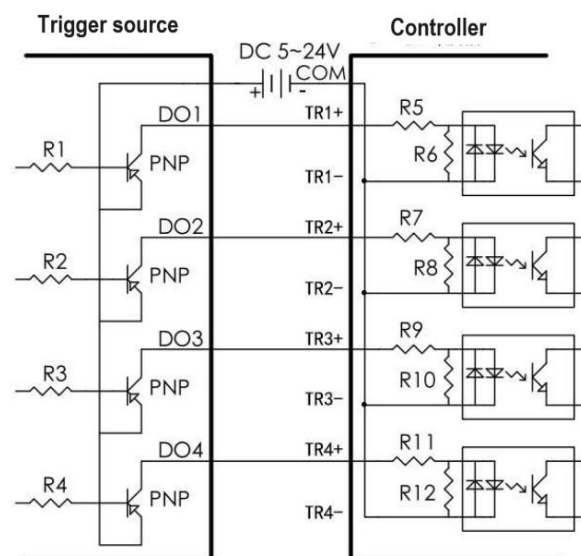
◆ Mode

Mode	Indicator light	Switchover
Constant light mode	“B” 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).

◆ Trigger port: "TR1" and "COM" are external trigger access ports (Note: "NC" means no need to connect). Where "COM" is the public side. The trigger signal is high level, DC 5-24V. The wiring diagram is as follows:



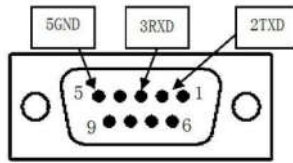
NPN type trigger wiring diagram



PNP type trigger wiring diagram

◆ 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 the constant light mode (H = 0), the brightness value of each channel can be adjusted from 0 to 255, which can be adjusted by the "+" 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 can be adjusted, the adjustment range is 1-999ms, the trigger signal is high level, 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 decreases.

"+" 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 Operations

(1)、Open the executable file "Mini controller upper computer V2.0.exe", and the following interface pops up:



(2)、Interface Introduction

### ◆ Communication status bar

- COM port: Serial port selection, select the COM port to which the controller is connected.
- COM State: Communication status bar, indicating whether the controller and the computer are connected successfully.

After clicking "Start connection", the state is shown:

1. serial port connection failed .
2. serial port connection succeeded.

◆ **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. (Note: Before the connection of the high power controller, the 255 level should be selected).
- 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	Byte Length	Stop Bit	Parity Check
9600 bps	8 bits	1 bit	/

Data format (Frame format)

1 Bit	1 Bit	1 Bit	3 Bit	2 Bit
Particular character	Command character	Channel character	Data	XOR/ANDCheck word

PS:All communication by tesarein ASCII code

◆ Particular character = \$

◆ Command character = 1,2,3,4,5,6.The definitions are:

1:Turn on the corresponding channel

2:Turn off the corresponding channel

3:Set parameters of the corresponding channel brightness

4:Read parameters of the corresponding channel brightness

5:Set the corresponding channel strobe pulse width

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 &.

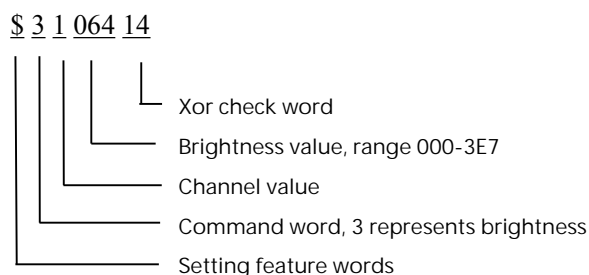
When the command word is 4, if the controller receives the command successfully, it will return the brightness setting parameter of the corresponding channel (the return format is the same as the sending format). If the controller fails to receive the command, it returns &.

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 word = 1,2,3,4 indicates four output channels.
- ◆ Data = XXX (XXX=000 ~ 0FF), corresponding to the channel power supply Settings, the high is in the front, the low is in the back.
- ◆ Xor and Check word = The XOR checksum of the bytes other than the check word (including the signature word, command word, channel word, and data). The high half-byte ASCII code of the checksum is the first, and the low half-byte ASCII code is the second After.
- ◆ **Example:** If the first channel brightness is set to 100, then write down "\$3106414" in ASCII code.



Xor check word operation process is as follows:

	Character string		ASCII Code	ASCII code in hexadecimal	Higher half-byte and Lower half-byte data in 8421 code
Particular Character	\$		36	24	0010 0100
Command Character	3		51	33	0011 0011
Channel Character	1	→	49	31	0011 0001
Value	0		48	30	0011 0000
	6		54	36	0011 0110
	4		52	34	0011 0100
Xor sum					0001 0100
Xor check word					1 4

**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 ~ 0FF 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 : \$220291f

	Character string		ASCII Code	ASCII code in hexadecimal	Higher half-byte and Lower half-byte data in 8421 code
Particular Character	\$		36	24	0010 0100
Command Character	2		50	32	0011 0010
Channel Character	2	→	50	32	0011 0010
Value	0		48	30	0011 0000
	2		50	32	0011 0010
	9		57	39	0011 1001
Xor sum					0001 1111
Xor check word					1 f

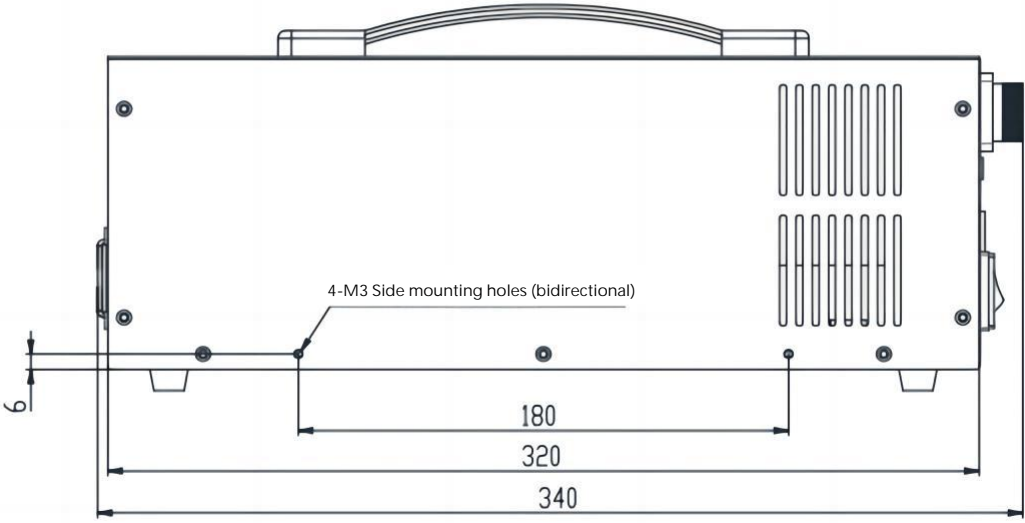
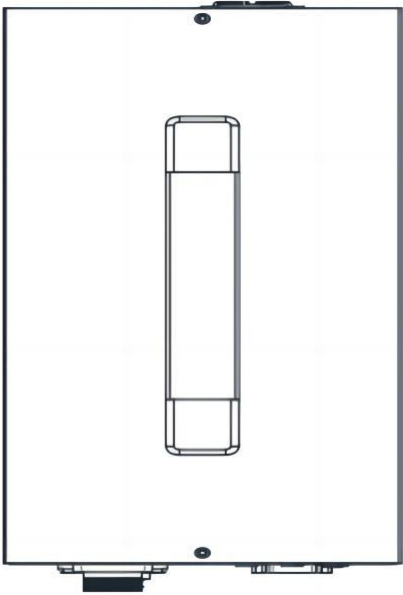
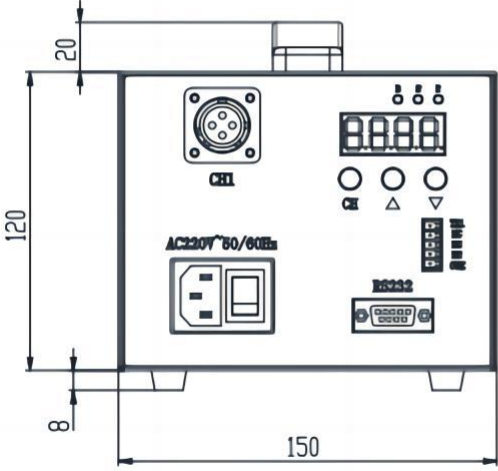
Open 3 channel : \$1306414

	Character string		ASCII Code	ASCII code in hexadecimal	Higher half-byte and Lower half-byte data in 8421 code
Particular Character	\$	→	36	24	0010 0100
Command Character	1		49	31	0011 0001
Channel Character	3		51	33	0011 0011
Value	0		48	30	0011 0000
	6		54	36	0011 0110
	4		52	34	0011 0100
Xor sum					0001 0100
Xor check word					1 4

Read 2 channel power parameters : \$4206410

	Character string		ASCII Code	ASCII code in hexadecimal	Higher half-byte and Lower half-byte data in 8421 code
Particular Character	\$	→	36	24	0010 0100
Command Character	4		52	34	0011 0100
Channel Character	2		50	32	0011 0010
Value	0		48	30	0011 0000
	6		54	36	0011 0110
	4		52	34	0011 0100
Xor sum					0001 0000
Xor check word					1 0

# 5、Dimensions



## Accessory List

Item	Quantity	Remark
DCS2-1C600W-48PS(W20-6)Controller	1	
RS232 Serial port line	1	
5PIN Green terminal male plug	1	
220V/10A Power cable	1	