

Line-scan Type Digital Current Controller

新品



Selection Guide

OPT - DPA 60 24 ES -X

- Channels
- Additional info.:E- Ethernet S-stroboscopic
- Max. output voltage: 24V
- Max. output current: 6A
- Digital current controller
- Brand name

Model	Channels	Compatible Light
OPT-DPA6024ES-4	4	OPT 24V LED light
OPT-DPA6024ES-8	8	OPT 24V LED light
OPT-DPA6024ES-16	16	OPT 24V LED light

Product Features

- Programmable trigger function
- Line-scan rows: max. 65,000
- Frequency multiplication and division
- DO isolated differential output
- ≤5μs trigger response time
- Up to 80kHz trigger response frequency
- 256-level light intensity control
- Software trigger function
- Multi-channel simultaneous communication
- Manual setting for max.output current
- 100M Ethernet communication
- RS232 communication

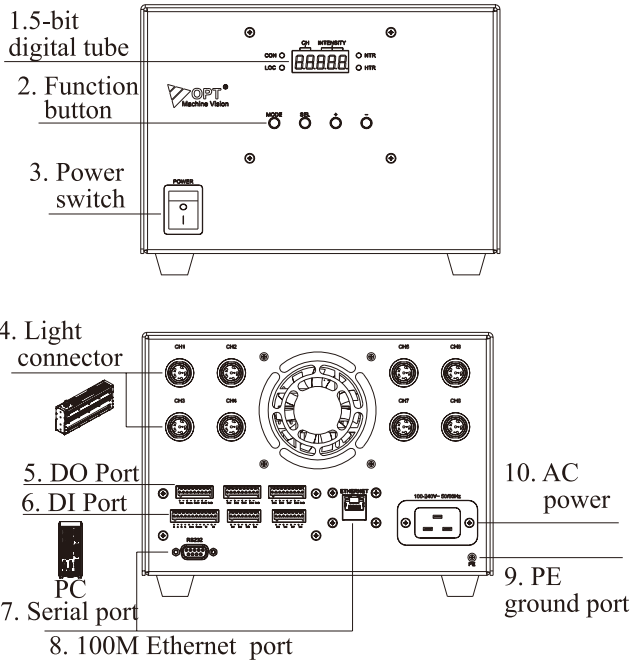
Specifications

Item	Parameter	Description
Input voltage	AC100~240V 50/60Hz	
Input current	4CH/8CH 9A/115VAC 4A/230VAC	
	16CH 16A/115VAC 8A/230VAC	
Lighting mode	Continuous/strobe	Set via the working mode switch or DEMO software

Specifications

Item	Parameter	Description
Manual setting for max. output current	25mA~6A	Set via DEMO software
Intensity control	256 levels	Set via function button or DEMO software
Short-circuit protection	Yes	In case of output short circuit, the short circuit protection will be enabled to close the corresponding channel, and the digital tube will display an error message “Er2”.
Normal trigger	256 intensity levels settable	
Normal trigger time unit	1μs/ 10μs/1ms/100ms	Set via DEMO software
Normal trigger pulse width	1μs~30s	Set via function button or DEMO software
High intensity trigger	6A output per channel	Maximum output voltage: no more than 24V
High intensity trigger time unit	1μs/10μs/1ms	Set via DEMO software
High intensity trigger pulse width	1μs~500ms	Set via function button or DEMO software
Programmable trigger	Support up to 64 processes	The intensity, pulse width and trigger source can be set
Number of line-scan rows	1-65000	Set via DEMO software
Frame signal filtering parameter	0-65000	=0, frame signal edge is valid; > 0, the unit of time is μs. After the edge is captured, it takes effect for a period of time
DI input	4CH: 4 isolated differential inputs	5V 100mA
	8/16CH: 8 isolated differential inputs	
	AB phase, Line, Frame signal input	
DO output	4CH: 4 isolated differential outputs	Low level: 0-2V; high level: 5-24V
	8/16CH: 8 isolated differential outputs	
	Line, Frame signal output	
Frequency multiplication	1、 2、 4、 8、 16、 32	Set via DEMO software
Frequency division	0~200	Set via DEMO software
Trigger response time	≤5μs	See the “Reference Table for Trigger Response Time” for details
Trigger response frequency	80kHz	See the “Reference Table for Trigger Response Time” for details
Trigger delay time unit	1μs/10μs/1ms	Set via DEMO software
Trigger delay	1μs~6500ms	Set via DEMO software
Output power	144W/CH	4/8 total output ≤700W; 16 total output ≤1450W;
Trigger delay	Rs232/ Ethernet	
Standby power consumption	4CH ≤16.2W	220V input
	8CH ≤18.5W	
	16CH ≤22.5W	
Hi-Pot test	AC1500V 1Min	Leakage current <10mA
Insulation	DC500V	Insulation resistance >20MΩ
Operating temperature	-5℃~50℃	
Dimensions (mm³) (L×W×H)	4CH 234*357.5*176	See the dimensional drawing
	8CH 234*357.5*176	
	16CH 189*381.3*309.5	
Weight (Kg)	4CH 3. 2	
	8CH 4.48	
	16CH 8. 9	

Device Overview



Panel

No.	Interface	Description
1	5-bit digital tube	Seen from the left, the first bit represents the tens digit of the number of channels, the second bit represents the ones digit of the number of channels, and the last three bits represent the value corresponding to the current operation.
2	Function button	“MODE” is used to set the working mode. Users can press this button for about 1s in the panel control status to enable the normal mode, common trigger mode or High intensity trigger mode, and the corresponding working mode indicator will be ON. “SEL” used to set parameters. Users can press this button in the panel control status to select the corresponding bit on the digital tube. “+” is used to increase a value, while “-” is used to decrease a value.
3	Power switch	Power on/off the controller
4	Light connector	4/8/16 independent and controllable LED light outputs
5	DO Port	Isolated differential output
6	DO Port	Connect external trigger signal source for synchronous strobe work,trigger pulse width can be set
7	Serial port	Communication with PC via the RS232 interface
8	100M Ethernet port	Communication with PC via the Ethernet interface
9	PE ground port	Communication with PC via the Ethernet interface
10	AC power input	100~240V AC, 50/60Hz

LED light interface

	Location	Definition	Description
	1	Light+	LED light output +
	2	Light-	LED light output -
	3	Fan+	Fan voltage +
	4	Fan-	Fan voltage -
	5	NC	
	6	NC	

Definition of trigger terminal interface

	Location	Definition	DO Description
	1	Line+	Connect to the camera/acquisition card row signal (+)
	2	Line-	Connect to the camera/acquisition card row signal (-)
	3	Frame+	Connect to the camera/acquisition card frame signal (+)
	4	Frame-	Connect to the camera/acquisition card frame signal (-)
	5	GND	Grounding
	6	OUT1-OUT2	Custom interface
	7	DO1-DO8	High-speed differential output interface

	Location	Definition	DO Description
	1	A+	Connect to the A phase signal (+) of encoder
	2	A-	Connect to the A phase signal (-) of encoder
	3	B+	Connect to the B phase signal (+) of encoder
	4	B-	Connect to the B phase signal(-) of encoder
	5	Line+	Connect to row signal (+)
	6	Line-	Connect to row signal (-)
	7	Frame+	Connect to frame signal (+)
	8	Frame-	Connect to frame signal (-)
	9	T1、 T2	Custom interface
	10	DI1-DI8	High-speed differential output interface

Mode switching settings

Mode	Indicator Status
Continuous	CON indicator ON
Normal trigger	NTR indicator ON
High intensity trigger	HTR indicator ON
\	LOC indicator ON, panel locked and the function button is invalid when the software sets the working mode. When the working mode is set to panel mode, the button will be unlocked

Trigger function

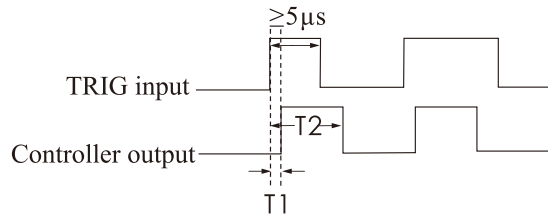
Controllers of this series have three trigger modes: normal trigger, High intensity trigger and programmable trigger modes. It has four trigger polarities: rising edge trigger, falling edge trigger, Positive follow trigger and Negative follow trigger. The default trigger mode is rising edge trigger. For details, see the table below:

Trigger Mode	Trigger Polarity
Common trigger	Rising edge trigger
	Falling edge trigger
	Positive follow trigger
	Negative follow trigger
High intensity trigger	Rising edge trigger
	Falling edge trigger
Programmable trigger	Rising edge trigger
	Falling edge trigger

Trigger Sequence

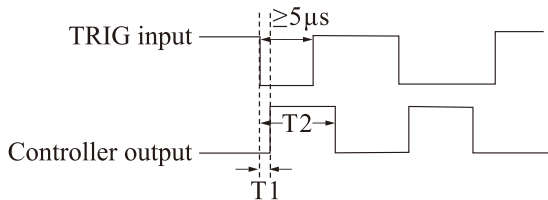
Rising edge trigger

When the trigger signal is the rising edge, the lighting time will be consistent with the set trigger pulse width. The trigger pulse width can be set by DEMO software and function buttons. See the figure below:



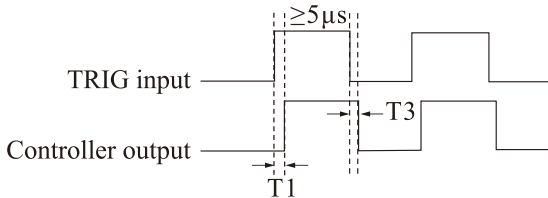
Falling edge trigger

When the trigger signal is the falling edge, the lighting time will be consistent with the set trigger pulse width. The trigger pulse width can be set by DEMO software and function buttons. See the figure below:



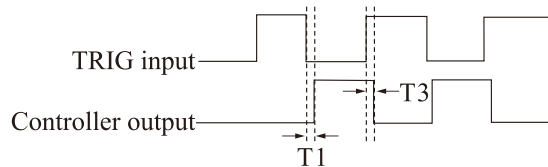
Positive follow trigger

When the trigger signal is high level, the lighting time will be consistent with the high-level pulse with of the trigger signal. See the figure below:



Negative follow trigger

When the trigger signal is low level, the lighting time will be consistent with the low-level pulse with of the trigger signal. See the figure below:



Description:

1. T1 is the time with response, T2 is the trigger pulse width, and T3 is the time without response.
2. T2 range: 1μs to 30s. For T1 and T3 settings, see the reference table for trigger response time.

Reference Table of Trigger Response Time

Trigger Voltage (V)	Output Current (mA)	0.5		1		3		6	
		T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)	T1 (μs)	T3 (μs)
5		5	5	5	5	5	5	5	5
12		5	5	5	5	5	5	5	5
24		5	5	5	5	5	5	5	5

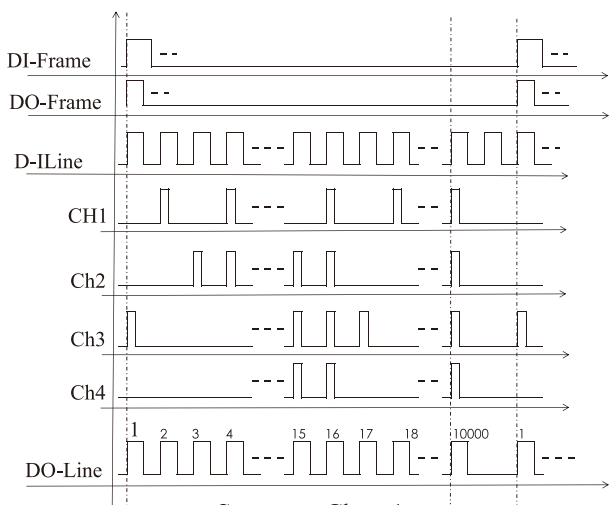
Programmable trigger mode

If the programmable trigger mode is enabled via DEMO, the controller will execute all steps in the flow chart in cycles. Set the flow chart before enabling the programmable trigger mode. See the Flow Chart and Sequence Chart 1.

Programmable trigger mode	Description
Number of line-scan rows	In the programmable trigger mode, the controller will count the number of trigger source signals. If the number is greater than the set trigger value, subsequent trigger source signals will be invalid, and triggering will be suspended until a reset signal is received to clear the current value.
Frame signal filtering parameter	=0, frame signal edge is valid; > 0, the unit of time is μs. After the edge is captured, it takes effect for a period of time
Frequency multiplication	The function of DO frequency multiplication can be applied to multiply the frequency of trigger signal, and the multiple is adjustable.
Frequency division	Frequency division can be performed after frequency multiplication. See the Frequency Division Sequence Chart 1 for Single-ended Input Process and Frequency Division Sequence Chart 2 for Double-ended Input Process.

Step	Trigger Source	Brightness				Pulse width			
		CH1	CH2	CH3	CH4	CH1	CH2	CH3	CH4
1	1	0	0	255	0	0	0	100	0
2	1	255	0	0	0	100	0	0	0
3	1	0	255	0	0	0	100	0	0
4	1	255	255	0	0	100	100	0	0
...	...	...	...	...	...	...	...	...	...
15	1	0	255	255	255	0	100	100	100
16	1	255	255	255	255	100	100	100	100

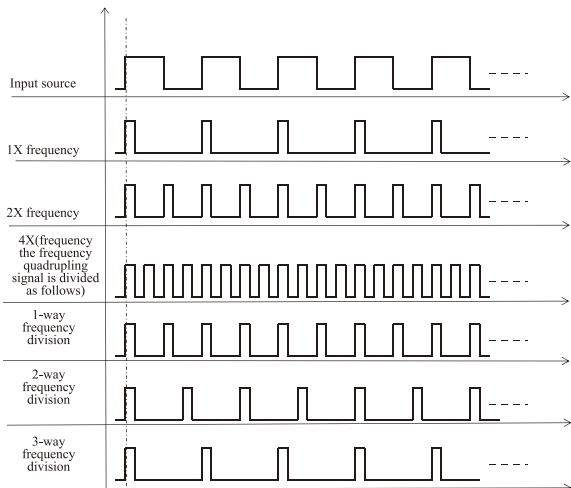
Flow Chart



Sequence Chart 1

Frequency division sequence chart

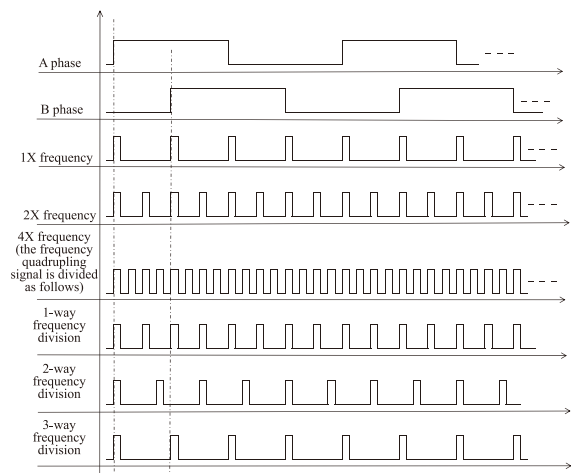
Single-ended input mode: The single-end input interface is optional. When the rising edge of the input signal is detected, there will be the corresponding pulse signal output based on the frequency multiplication parameters, as shown in the table below. Sequence Chart of Single-ended Input Process



Sequence Chart of Single-ended Input Process

Double-ended input mode: The double-ended input interface is fixed, and the DC encoder provides A/B phase input. In addition, the phase difference of 2 input signals should be 90°. When the edge of input signal is detected, there will be the corresponding pulse signal output based on frequency multiplication parameters, as show in the table below.

Sequence Chart of Double-ended Input Process

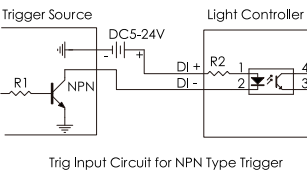


Sequence Chart of Double-ended Input Process

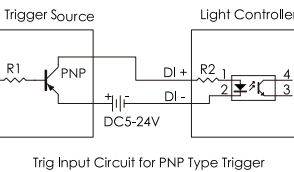
Trigger wiring diagram

Controllers of this series have two wiring modes: DI high-speed input and fixed interface, both of which are high-speed optocoupler isolation inputs. The input voltage of 0-2V corresponds to low level, while the input voltage of 5-24V corresponds to high level.

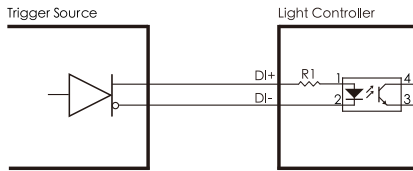
NPN type trigger:



PNP type trigger:



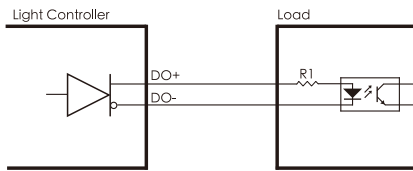
Differential type trigger:



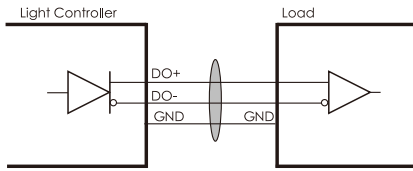
Differential DO wiring description

The Do output is differential isolation output, which can effectively isolate the influence of external interference signals on the controller and facilitate the connection of high-speed differential input devices. For example, the line-scan camera differential input and high-speed optocoupler input can be connected.

1. The differential positive and negative terminals of the controller are connected to the positive and negative terminals of the optocoupler input of an external device. For example, the PLC acquisition card can be connected. See the table below.

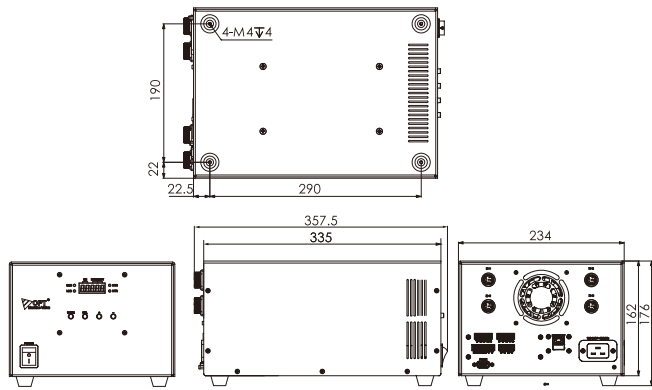


2. Differential positive and negative terminals of the controller are connected with the differential input positive and negative terminals of peripherals respectively. In order to prevent signal cables from external electromagnetic interference, the ground terminal of the differential DO signal should be connected to the signal shield layer of the external device, as shown below.

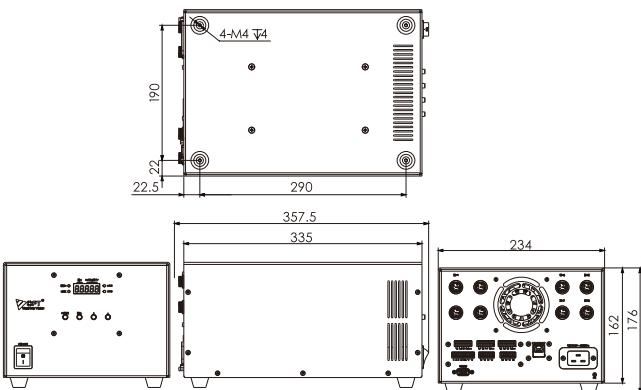


Dimensions (mm)

1.OPT-DPA6024ES-4



2.OPT-DPA6024ES-8



3.OPT-DPA6024ES-16

