CYLMOPV40
Control Card Hardware

Instruction Manual

Content

Preface

Beijing Chongyi Technology Co., Ltd. (CY Tech) is an advanced technology enterprise dedicated to the research, development and application of laser scanning systems. Since its establishment, the company has always focused on providing cutting-edge laser marking, laser cleaning, laser welding software systems and professional technical solutions to global customers. So far, the company has successfully applied for a number of copyright and patent certificates related to laser scanning software. As an enterprise with technology as its core, CY Tech has assembled a R&D team composed of a group of senior engineers and industry experts. Not only are they proficient in various laser scanning technologies and their applications, but they are also able to keenly capture market trends and customer needs and provide tailor-made solutions.

In the field of laser marking, CY Tech has developed a number of efficient and stable software systems. These software systems can be widely used in surface treatment of metals, non-metals, semiconductors and other materials to achieve precise and rapid marking. At the same time, the company also provides customers with one-stop services such as marking effect optimization and material adaptability testing to ensure that customers' products are competitive in the market.

For laser cleaning, CY Tech's R&D team broke through the bottleneck of traditional cleaning technology and developed an efficient and environmentally friendly laser cleaning software system. This system can be widely used for surface cleaning of

various materials, such as metal, plastic, glass, etc., solving various cleaning problems for customers.

What's more, we are also engage in laser welding's R&D, CY Tech also has rich experience and technology accumulation. The laser welding software system developed by the company has the characteristics of high precision, high speed and high stability, and can be widely used in automobile manufacturing, aerospace, electronics manufacturing and other industries.

In addition to providing software systems, CY Tech also provides customers with a full range of technical support and services. The company has a professional pre-sales team and after-sales team that can provide customers with timely and effective technical support and after-sales services. At the same time, the company also provides training and guidance to customers to help them better apply and maintain software systems. The company has strong R&D capabilities and a professional technical team to provide customers with high-quality and reliable technical services. If you need software systems and technical support for laser marking, laser cleaning, laser welding, etc., please contact us!

Security Information

1. Please read this section carefully before using the CYLMOPV40 control card. This product is a system used to control stepper motors. If you have any questions, please contact our company in time.

2. Please prevent the board from being damaged by moisture, dust, corrosion, and impact from foreign objects. When storing and using the board, please avoid damage by electromagnetic fields and static electricity.

3. Before starting the wiring, you need to carefully read the interface definition and instructions, and perform wiring according to the instructions to avoid damage to the board and peripherals.

4. When using it with other boards of our company, you need to read the instructions for use of the stepper motor related parts of the board.

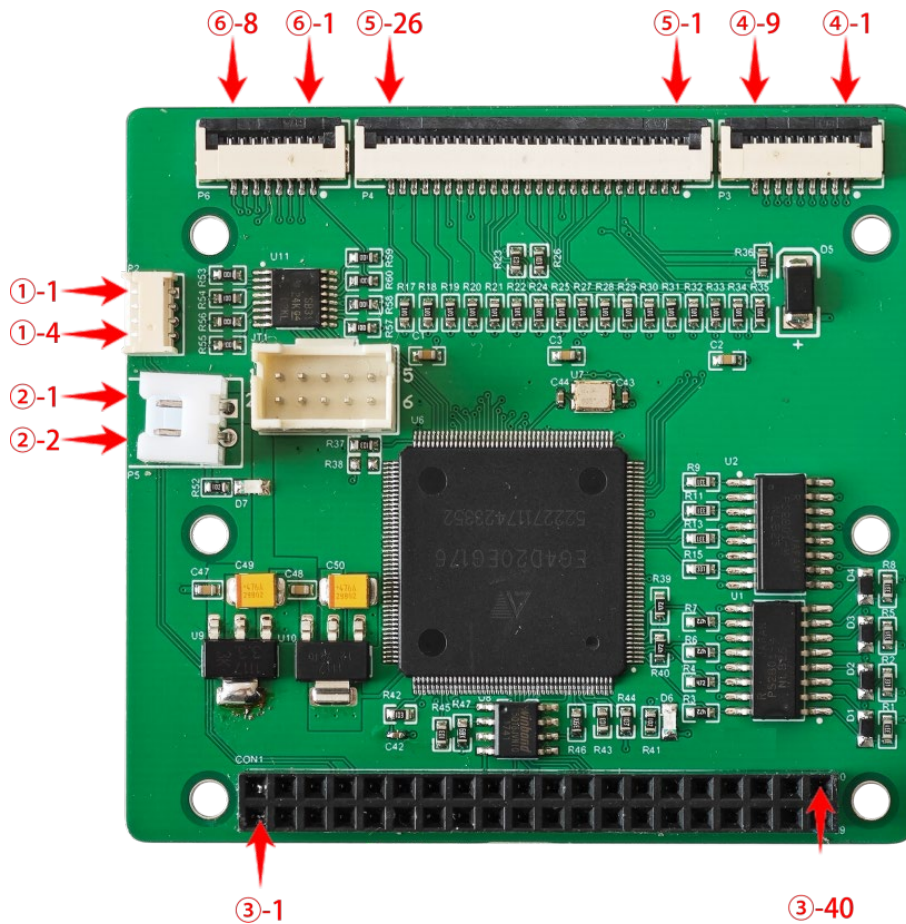# 1. V4.0 System Control Card Wiring Definition and Description

Figure 1-(1) Pump laser control card interface labeling diagram

No.	Terminal	Functions	Cables order
①	Serial port	Serial communication	①-1: +5V， ①-2: TX， ①-3: RX， ①-4: GND See Table 1-(2) for details
②	System power supply	Provide power to the system	②-1: +5V， ②-2: GND
③	Core board interface	The connection between the host computer and the control panel	

④	Input and output interface	Detect external input signals and output control signals	④-1: GIN4, ④-2: GIN3, ④-3: GIN2, ④-4: GIN1, ④-5: OUT4, ④-6: OUT3, ④-7: OUT2, ④-8: OUT1, ④-9: GND **See Table 1-(3) for details**
⑤	Laser interface	Output laser control signal	**See Table 1-(5) for details**
⑥	Galvo head interface	Output galvo head control signal	**See Table 1-(4) for details**

Table 1-(1) External interface definition

1.1 Power Supply

The control card can use 5V power supply. It is recommended to choose 2A DC power supply.
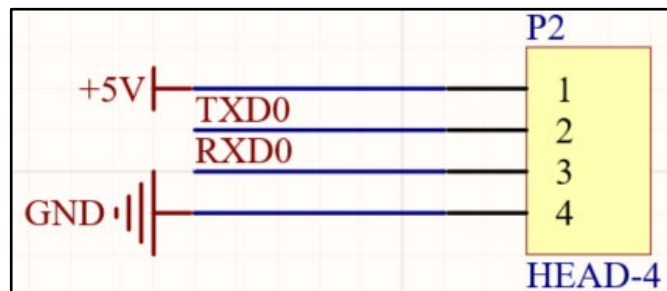
1.2 Serial Port

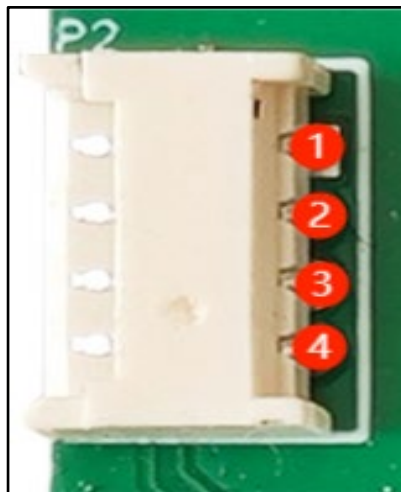Figure 1-(2) Serial port pin definition diagram

Figure 1-(3) Physical screenshot of the serial port interface

Pin	Name	Note
1	+5V	Provide +5V power
2	TX	Send data
3	RX	Receive data
4	GND	Connected to digital ground

Table 1-(2)

1.3 Input and Output Interface

Port	Mode	Function
GIN1	Default	GIN1 and GND short contact trigger marking
GIN2	NONE	GIN2 input is invalid
	LIFT TO STOP	Shorting GIN2 and GND allows laser marking; GIN2 is disconnected from GND, and GIN1 trigger marking is invalid; During the marking process, GIN2 and GND are disconnected and marking stops.
	PRESS TO STOP	During the marking process, GIN2 and GND are short-circuited, and both laser marking and red-light preview stop.
GIN3 GIN4	Can be configured according to user needs	
GOUT1	Default	Output level signals to the outside world. After clicking on power on, red light or marking in the main interface, a high-level signal will be output; after clicking on power off or entering standby mode (see software description), the level will be pulled down.
GOUT2	Check the end signal	The level is pulled low before marking starts, pulled high after marking is completed, and the high level continues for a period of time and then pulled low. The high-level duration is set by software. In this mode, the level of GOUT2 is not affected by power-off and power-on states.
	Check the end signal	GOUT2 and GOUT1 output signals are synchronized
GOUT3 GOUT4	Can be configured according to user needs	

Table 1-(3)

1.4 Galvo Head Control

The galvo head control signal is a digital signal and can be directly connected to the digital galvo head.
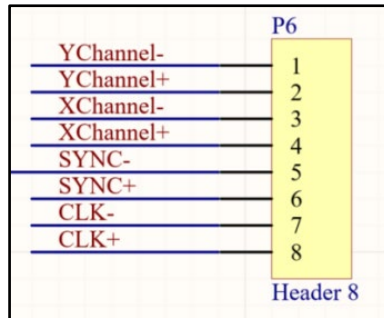

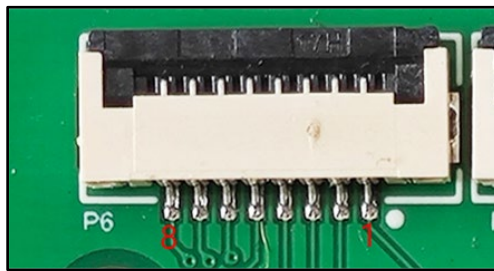Figure 1-(4) Schematic diagram of galvo head pin definition

Figure 1-(5) Actual screenshots of the galvo head interface

Pin	Name	Note
1、2	YCHANNEL-；YCHANNEL+	Galvo head X-axis data channel
3、4	XCHANNEL-；XCHANNEL+	Galvo head Y-axis data channel
5、6	SYNC-； SYNC+	Galvo head synchronization signal
7、8	CLK-； CLK+	Galvo head synchronized clock

Table 1-(4)

For a dual-axis galvo head, you only need to connect four groups of eight signal lines: CLK, SYNC, XChannel, and Ychannel. It is recommended that digital signals be connected using shielded twisted pairs.
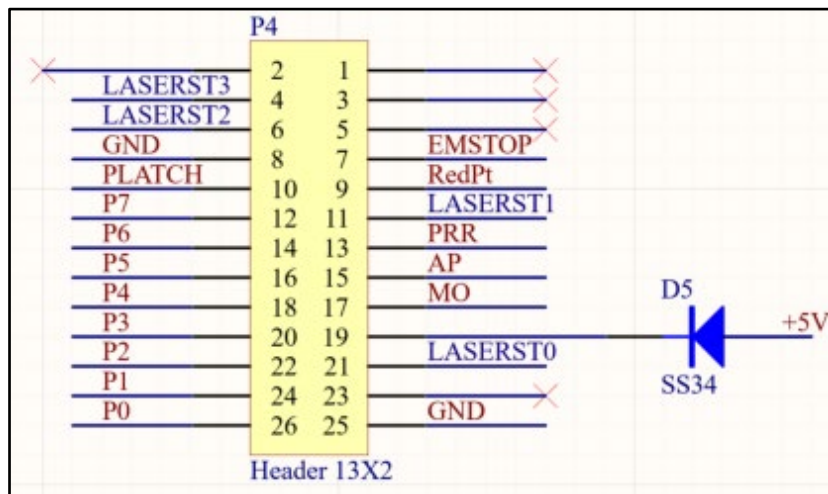
1.5 Laser Source Interface

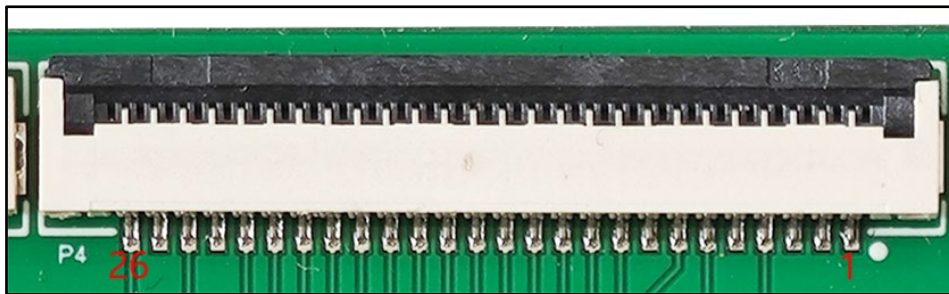Figure 1-(6) Schematic diagram of laser interface pin definition

Figure 1-(7) Physical screenshot of the laser interface part

1.5.1 Fiber Laser Pin Description

Pin	Name	Note
26、24、22、20、18、16、14、12	P0~P7	Laser power value
10	PLATCH	Laser power value latch signal
21、11、6、4	LASERST0~LASERST3	Laser status
19	+5V	+5V power supply
17	MO	Main oscillator on
15	AP	Modulator on

13	PRR	Laser repetition pulse frequency
9	Red Pt	Auxiliary infrared laser
7	EMSTOP	Emergency stop
25、8	GND	Digitally
23、5、3、2、1		

Table 1-(5)

1.5.2 CO2 Glass Tube Pin Description

Pin	Name	Note
10	PLATCH	Switch Signal
16	P5	PWM Signal
8	GND	GND Signal

Table 1-(6)

1.5.3 Pump Laser Pin Description

Pin	Name	Note
10	PLATCH	Switch Signal
16	P5	PWM Signal
8	GND	GND Signal

Table 1-(7)

1.4.4 CO2 RF Tube Pin Description

Pin	Name	Note
13	PRR	PWM Signal
8	GND	GND Signal

Table 1-(8)

2. Main Functions of the Control Card

The CYLMOPV40 control card can be used for laser marking and has a smaller size.

The CYLMOPV40 control card can support fiber laser, CO2 laser, UV laser and other types of lasers.

● With marking function

● Comes with Bluetooth and WIFI modules for Bluetooth and network communication

● One serial port for serial communication

● 4 inputs and 4 outputs (output voltage is 5V)

● Support multiple laser types

● The interface adopts cable arrangement, and the adapter board interface can be designed according to user requirements.
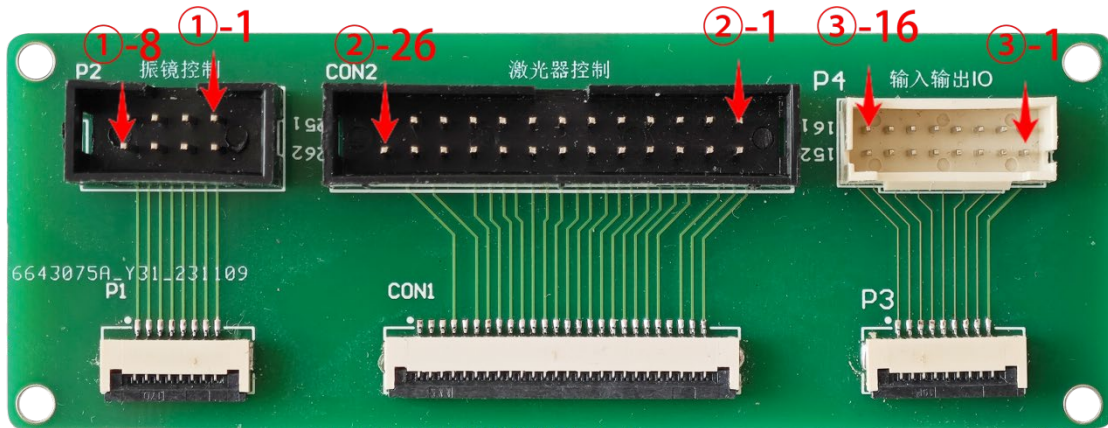
3. Adapter Card Interface Description

Figure 3-(1) Pump laser adapter card interface labeling diagram

No.	Terminal	Functions	Line order
①	Galvo head interface	Output galvo head control signal	See Table 3-(2) for details
②	Laser interface	Used to output laser control signals	See Table 3-(3) for details
③	Input and output interface	Receive external signals or send signals externally	③-16: GIN4, ③-14: GIN3, ③-12: GIN4, ③-10: GIN1, ③-8: OUT4, ③-6: OUT3, ③-4: OUT2, ③-2: OUT1, Others are GND See Table 1-(3) for details

Table 3-(1)

3.1 Galvo Head Control

The galvo head control signal is a digital signal and can be directly connected to the digital galvo head.
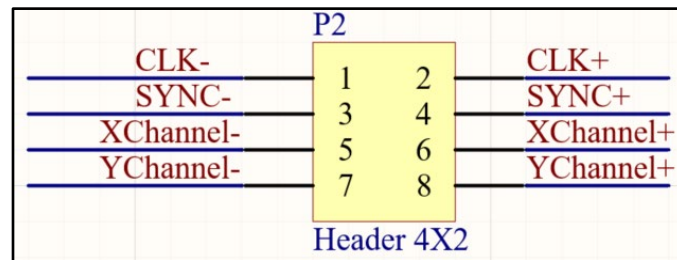

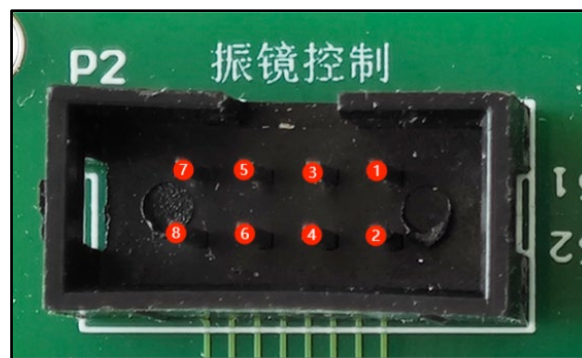Figure 3-(2) Galvo head interface pin definition diagram

Figure 3-(3) Actual screenshot of the galvanometer interface part

Pin	Name	Note
1、2	CLK-; CLK+	Galvo head synchronized clock
3、4	SYNC-; SYNC+	Galvo head synchronization signal
5、6	XCHANNEL-; XCHANNEL+	Galvo head X-axis data channel
7、8	YCHANNEL-; YCHANNEL+	Galvo head Y-axis data channel

Figure 3-(2)

For a dual-axis galvanometer, you only need to connect four groups of eight signal lines: CLK, SYNC, XChannel, and Ychannel. It is recommended that digital signals be connected using shielded twisted pairs.
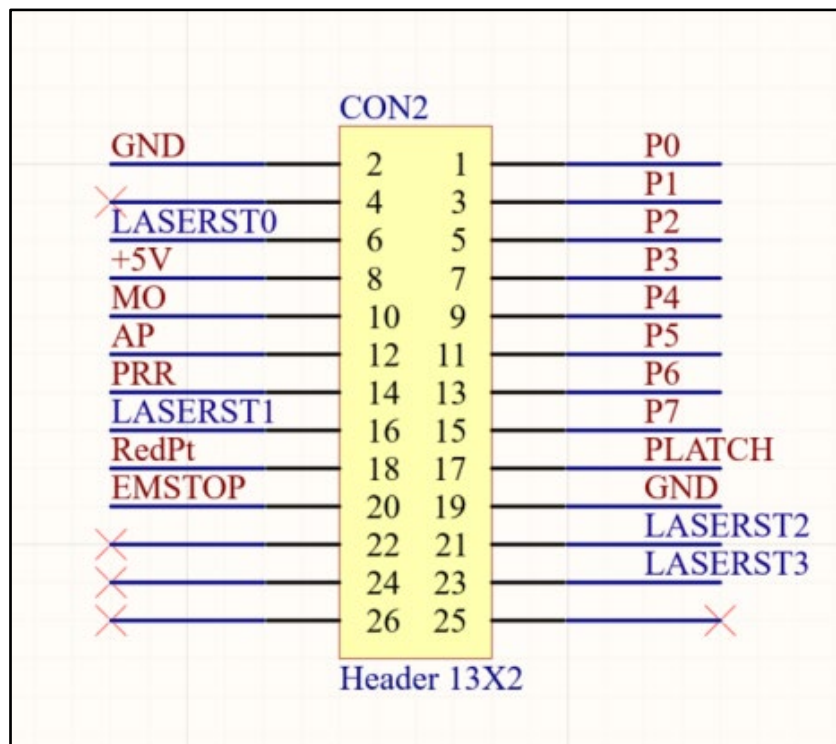
3.2 Laser Source Interface

Figure 3-(4) Laser interface pin definition diagram

Figure 3-(5) Physical screenshot of the laser interface part

3.2.1 Fiber Laser Pin Description

Pin	Name	Note
1、3、5、7、9、11、13、15	P0~P7	Laser power value
17	PLATCH	Laser power value latch signal
6、16、21、23	LASERST0~LASERST3	Laser status
8	+5V	+5V power supply
10	MO	Main oscillator on

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2、19	GND	Digitally
4、22、24、25、26		

3.2.2 CO2 Glass Tube Pin Description

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Pin	Name	Note
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3.2.4 CO2 RF Tube Pin Description

Pin	Name	Note
14	PRR	PWM Signal
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Table 3-(6)

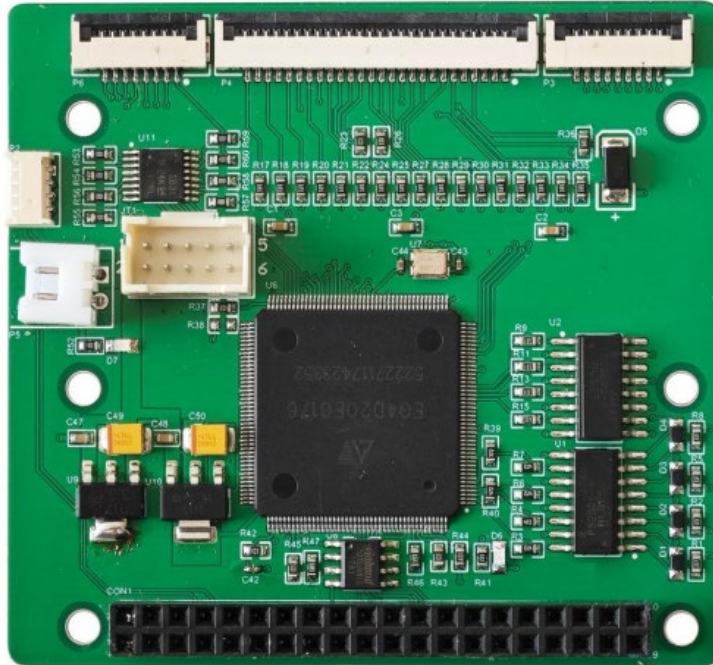# 4. Physical Picture of the Control Card

Figure 4-(1) Physical picture of pump laser control card

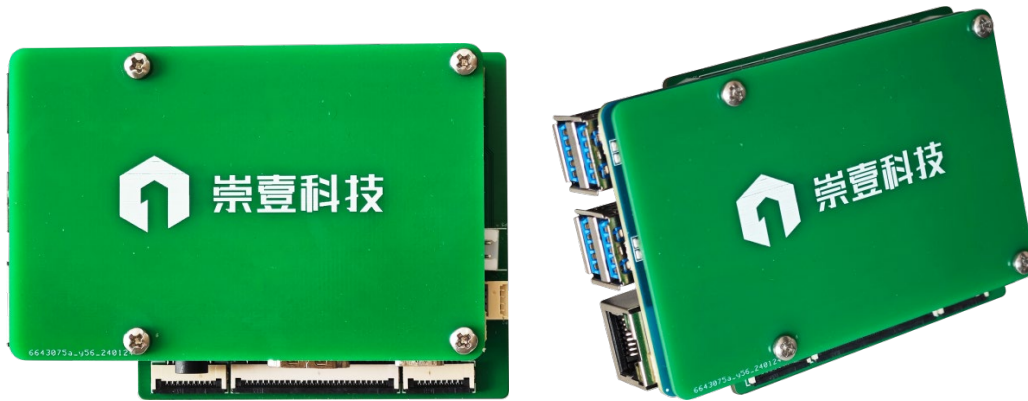Figure 4-(2) Physical picture of pump laser conversion card

Figure 4-(3) (4) Physical picture of CYLMOPV40 control card

If any questions, please be free to contact us. Thank you.

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