

MAX 创鑫激光



MFMC 12000M(W)

使用手册

版权说明

“ ”

引 语

MFMC

MFMC

公司简介

2004

<http://www.maxphotonics.com>



.....	1
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.....	5
1-	5
2-	6
3-	6
4-	8
5-	11
.....	12
1-	12
2-	12
3-	12
4-	13
5-	13
6-	13
7-	14
.....	15
1-	15
2-	16
3-	16
4-LOE&QBH	17
5-	18
6-	19
7-	20
.....	21






1-	.....	21
2-	.....	21
3-	.....	21
4-	.....	28
5-	.....	29
6-	.....	30
7-	.....	36
8-	.....	40
	.....	44
1-	.....	44
2-	.....	45
3-	.....	46
4-LOE	.....	50
	.....	52
1-	.....	52
2-	.....	56
	.....	57
1-	.....	57
2-	.....	58
	.....	60
1-	.....	60
2-	.....	60

第一章 特性说明

MFMC
MFMC
>38%
MFMC
1060nm 1100 nm
Class 4

第二章 安全信息

1 -

MFMC
30KW

1060nm 1100 nm

1

2-

2

LaserVision USA Kentek Corporation Rochwell Laser
Industries

3-

EN IEC 61000-6-4:2019
CISPR 16-2-1
CISPR 16-2-3
EN IEC 61000-6-2:2019

EN 61000-4-2:2009

EN 61000-4-3:2020

EN 61000-4-4:2012

EN 61000-4-5:2014+A1:2017

EN 61000-4-6:2014

EN 61000-4-11:2020

EN 60825-1:2014+A11:2021

CDRH 21 CFR 1040.10

EN 60204-1:2018

	MFMC		CE EMC	
" EMC Directive"		EMC	" EMC"	EN 61000-6-4
EN 61000-6-2				
	MFMC		Class 4	21 CFR
J 1040.10 d				
		Class 4	EN 60825-1	9

4-

1

2

MFMC

3

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10

11

12

"

"

4

1

360-440VAC, 3P+PE

2

3

4

360-440VAC, 3P+PE

5

1

1.0m

2

1.5m

1m

3

4

5

6

7

8

5°

5-

Laser Institute of America(LIA)

13501 Ingenuity Drive, Suite 128

Orlando,Florida 32826

Phone:407 380 1553,Fax: 407 380 5588

Toll Free:1 800 34 LASER

American National Standards Institute

ANSI Z136.1, American National Standard for the Safe Use of Lasers

(Available through LIA)

International Electro-technical Commission

IEC 60825-1, Edition 1.2

Center for Devices and Radiological Health

21 CFR 1040.10 - Performance Standards for Light-Emitting Products

US Department of Labor - OSHA

Publication 8-1.7 - Guidelines for Laser Safety and Hazard Assessment.

Laser Safety Equipment

Laurin Publishing

Laser safety equipment and Buyer' s Guides

第三章 产品描述

1-

MFMC

1
2
3
4
5

1
2

2-

3-

M - F - M - C - XXX - XXXX 1 - 2 - 3 - 4 - 5 - 6		
1		M Maxphotronics
2		F Fiber Laser
3		M Multi-Mode
4		C ContinueWave
5	XXXX	XXXX W
6		

4-

5-



		400VAC
	START	

6-



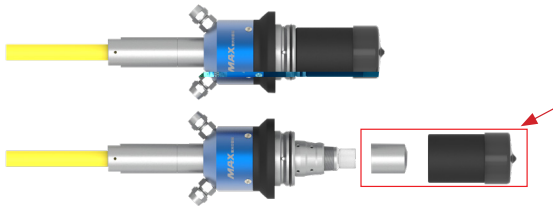
	ETHERNET	(&)
	ECAT IN	IN
	ECAT OUT	OUT
	CTRL	
	POWER	
	380VAC	360-440VAC
	WATER IN	(12kW-1.25
	WATER OUT	(12kW-1.25

7-

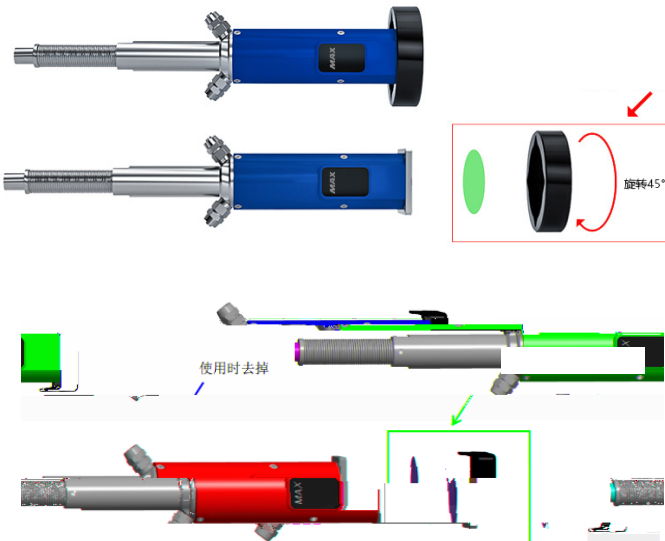
1

LOE

LOE2.0



LOE3.1



第四章 详细规格

1-

	/				
MFMC-12000	100%		12000		W
		5		100	%
	100%	1075	1080	1085	nm
3dB	100%		5	7	nm
	100% >1h		± 1	± 1.5	%
BPP	100um	3		4	mm x mrad
	150um	5.5		6.5	
	200um	7		10	
	300um	10		13	
	400um	14		20	
	600um	24		30	
			10	50	μs
			10	50	μs
	100%			50	KHz
		400			uW
			25	35 30	m
	100 150/300/400/600				μm
		200			mm
	LOE()				

2-

		360	400	440	VAC
	MFMC-12000 100%			33	KW
		10	25	40	
		10		80	%
	0		/		0
		-10	25	60	
	637*1200*627 W*D*H				mm
	MFMC-12000	240(± 10)			kg

3-

1			
2		20	24
3		3	
4	MFMC-12000	100	
5	MFMC-12000	28	
			bar
			L/min
			KW

40

22

;

p 0.5bar

;

0

20%

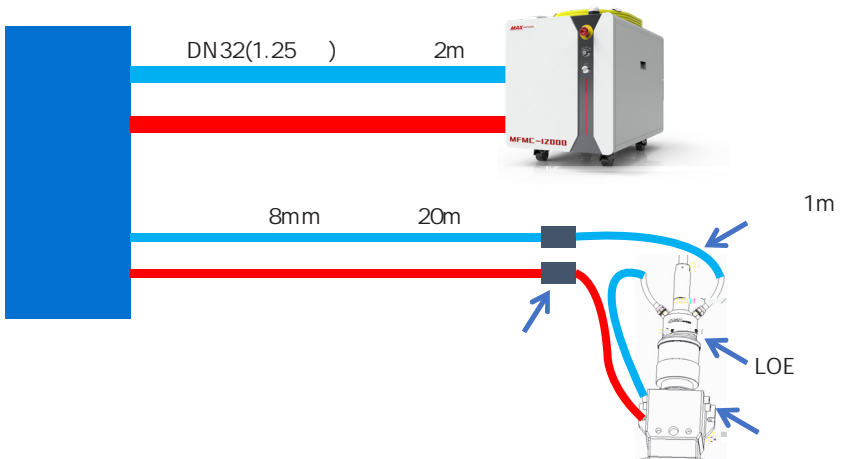
()

-15C

4-LOE&QBH

			L/min	bar	
LOE		8	4	4	28-30

8mm 20m;
 QBH 6 LOE 8 1m;
 QBH/LOE ;
 QBH p 1.5bar
 ;
 LOE p 3bar



5-

1

1000

2

10 - 40

3

10% - 85%

4

%	Td ()													
	30	35	40	45	50	55	60	65	70	75	80	85	90	95
10	-7.0	-5.0	-3.0	-1.3	0.0	1.5	2.5	3.6	4.8	5.8	6.7	7.6	8.4	9.2
11	-6.5	-4.0	-2.0	-0.5	1.0	2.5	3.5	4.8	5.8	6.7	7.7	8.6	9.4	10.2
12	-5.0	-3.0	-1.0	0.5	2.0	3.3	4.4	5.5	6.7	7.7	8.7	9.5	10.9	11.2
13	-4.5	-2.0	-0.2	1.4	2.8	4.1	5.3	6.6	7.7	8.7	9.6	10.5	11.4	12.2
14	-3.2	-1.0	0.7	2.2	3.5	5.1	6.4	7.5	8.6	9.6	10.6	11.5	12.4	13.2
15	-2.3	-0.3	1.5	3.1	4.6	6.0	7.3	8.4	9.6	10.6	11.6	12.5	13.4	14.2
16	-1.3	0.5	2.4	4.0	5.6	7.0	8.3	9.5	10.6	11.6	12.6	13.4	14.3	15.2
17	-0.5	1.5	3.2	5.0	6.5	8.0	9.2	10.2	11.5	12.5	13.5	14.5	15.3	16.2
18	0.2	2.3	4.0	5.8	7.4	9.0	10.2	11.3	12.5	13.5	14.5	15.4	16.4	17.2
19	1.0	3.2	5.0	7.2	8.4	9.8	11.0	12.2	13.4	14.5	15.4	16.5	17.3	18.2
20	2.0	4.0	6.0	7.8	9.4	10.7	12.0	13.2	14.4	15.4	16.5	17.4	18.3	19.2
21	2.8	5.0	7.0	8.6	10.2	11.0	12.9	14.2	15.3	16.4	17.4	18.4	19.3	20.2
22	3.5	5.8	7.8	9.5	11.0	12.5	13.8	15.2	16.3	17.3	18.4	19.4	20.3	21.2
23	4.4	6.8	8.7	10.4	12.0	13.5	14.8	16.2	17.3	18.4	19.4	20.4	21.3	22.2
24	5.3	7.7	9.7	11.4	13.0	14.5	15.8	17.0	18.2	19.3	20.4	21.4	22.3	23.1
25	6.2	8.6	10.5	12.3	14.0	15.4	16.8	18.0	19.1	20.3	21.3	22.3	23.2	23.9
26	7.0	9.4	11.4	13.2	14.8	16.3	17.7	19.0	20.1	21.2	22.3	23.3	24.2	25.1
27	8.0	10.3	12.2	14.0	15.8	17.3	18.7	19.9	21.1	22.2	23.2	24.3	25.2	26.1
28	8.8	11.2	13.2	15.0	16.7	18.0	19.6	20.9	22.0	23.0	24.2	25.2	26.2	27.1
29	9.7	12.0	14.0	15.9	17.6	19.2	20.5	21.3	23.0	24.1	25.2	26.2	27.2	28.1
30	10.5	12.9	14.9	16.8	18.5	20.0	21.4	22.8	23.9	25.1	26.2	27.2	28.2	29.1
31	11.4	13.8	15.9	17.8	19.4	20.9	22.4	23.0	24.8	26.0	26.9	28.2	29.2	30.1
32	12.2	14.7	16.8	18.6	20.3	21.9	23.3	24.6	25.8	27.0	28.1	29.2	30.1	31.1
33	13.0	15.6	17.6	19.6	21.3	22.9	24.2	25.6	26.8	28.0	29.0	30.1	32.1	32.1
34	13.9	16.5	18.6	20.5	22.2	23.8	25.2	26.5	27.7	29.0	29.5	31.1	32.1	33.1
35	14.9	17.4	19.5	21.4	23.0	24.6	26.2	27.5	28.7	29.9	31.0	32.1	33.1	34.1
36	15.7	18.1	20.3	22.2	24.0	25.0	27.0	28.4	29.0	30.9	32.0	33.1	34.1	35.2
37	16.6	19.2	21.2	23.2	24.9	26.5	27.9	29.5	30.7	31.8	33.0	34.1	35.2	36.2
38	17.5	19.9	22.0	23.9	25.8	27.4	28.9	30.3	31.5	32.0	33.9	35.1	36.0	37.0
39	18.1	20.8	23.0	24.9	26.6	28.3	29.6	31.2	32.5	33.6	34.9	36.2	36.8	38.1
40	19.2	21.6	23.8	25.8	27.6	29.2	30.7	32.1	33.5	34.7	35.8	36.8	38.1	39.1

6-

1

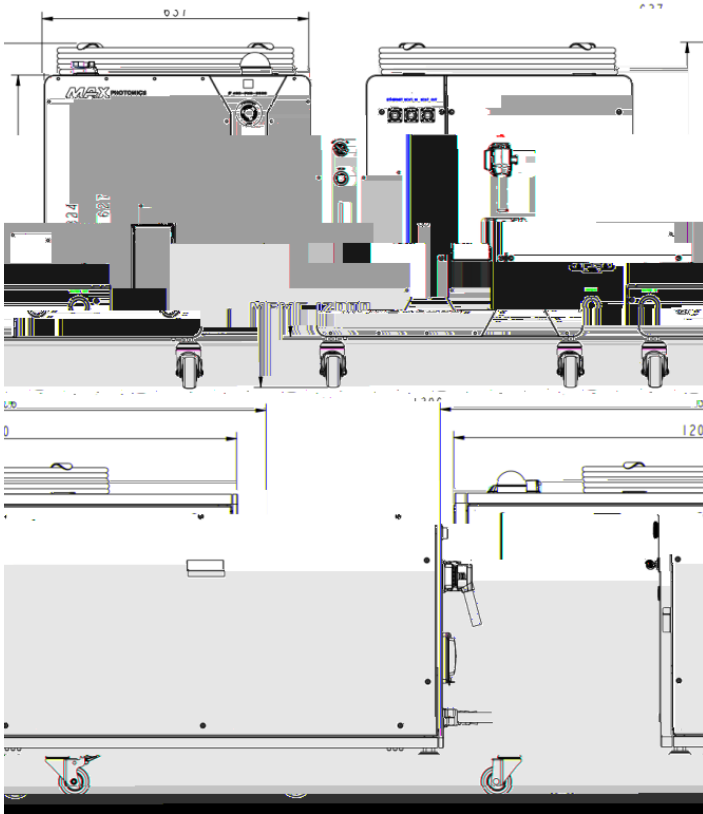
2

3

4

7-

mm



第五章 使用指南

1-

2-

360-440VAC

ΔW	ΔVAC	ΔA	ΔA	ΔkW
MFMC-12000	400V \pm 10%, 3P+PE	56	75-100	50

3-

3.1 CTRL

CTRL

55P

Harting 55DDD(F)

12-30V

0-5V

1	Secure			EXLOCK_ CH1A	1A	
2				EXLOCK_ CH1B	1B	
3				EXLOCK_ CH2A	2A	
4				EXLOCK_ CH2B	2B	
5				EX_EMG_ CH1A	1A	
6				EX_EMG_ CH1B	1B	
7				EX_EMG_ CH2A	2A	
8				EX_EMG_ CH2B	2B	
9				ISO_GND		
10				MAIN_PWR_ STATE		
11				MISSION_ ON_LAMP		24V 100mA
12				MISSION_ ON		
13				ALARM_ OUT-	-	
14				ALARM_ OUT+	+	

15	Secure			REDAY_ LAMP		24V	100mA
16				LASER_ REDAY			
17				EMG_ BUTTON_ COM	_COM		
18				EMG_ BUTTON_ NC	_NC		
19	CTRL			EX_ CONTROL-	-		
20				EX_ CONTROL+	+		
21				EX_RESET-	-	100ms	
22				EX_RESET+	+		
23				AUX_CTRL_A	A		
24				AUX_CTRL_B	B		
25	LASER			RED_CTRL-	-		
26				RED_CTRL+	+		
27				EX_EN-	-		
28				EX_EN+	+		
29				EX_PWM-	-	50KHZ	
30				EX_PWM+	+		

31	LASER			AN_GND		0-10V	0-10V
32				AN_0-10V	0-10	0-100%	10mA
33		NC	NC	NC	NC	NC	
34				PWR_OUT-	-		
35				PWR_OUT+	+	0-8V	10mA
36				Program_ Start			
37				Program_ Stop			
38				SYNC_IN			
39				Laser_ Request			
40				SYNC_OUT			
41				End_of_ Program			
42				Program_ interrupted			
43				ISO_GND	DI/DO	DI/DO	
44				Laser_ assigned			
45				ISO_GND	DI/DO	DI/DO	

46	LASER			Wave_NO_ Bit_0	Bit0	Wave_NO_Bit_0 LSB Wave_NO_Bit_7 MSB
47				Wave_NO_ Bit1	Bit1	
48				Wave_NO_ Bit2	Bit2	
49				Wave_NO_ Bit3	Bit3	
50				Wave_NO_ Bit4	Bit4	
51				Wave_NO_ Bit5	Bit5	
52				Wave_NO_ Bit6	Bit6	
53				Wave_NO_ Bit7	Bit7	
			PE	PE		

3.2 EtherCAT

EtherCAT

ECAT IN ECAT OUT

EtherCAT

DH-24-RJ45

RJ45

EtherCAT

EtherCAT		EtherCAT	
		250us	
		CoE PDO SDO	
		DC	
		100BASE-TX	
		100Mbit/s	
		5	
		100M	
		65535	
	EtherCAT	44	~1486
		<1us	
	80	50us	
EtherCAT	FMMU	2	
		2	
		16	
	Eeprom	2KB	

3.3 ETHERNET

ETHERNET

DH-24-RJ45 RJ45 ETHERNET TIA/EIA-

568B

PIN		
1	TX+	+
2	TX-	-
3	RX+	+
4	NC	
5	NC	
6	RX-	-
7	NC	
8	NC	

4-

1

2

3

4

5 (MAIN SWITCH) ON

6 "ON"

7 START



6-

1

<http://www.maxphotonics.com/Cn/Software.html>

名称	修改日期	类型	大小
 G3-Series(Maxphotonics) - 1.0.0.86.rar	2021/8/5 14:10	WinRAR 压缩文件	23,406 KB
 NET4.6.rar	2021/6/30 15:03	WinRAR 压缩文件	63,911 KB

2 NET 4.6.rar NET46-x86-x64-AllOS-ENU.exe
Win10 .NET 4.6



NET46-x86-x64
-AllOS-ENU.exe

3 G3-Series(Maxphotonics) - 1.0.0.86.rar G3-
Series(Maxphotonics) - 1.0.0.86.exe " zh"
" en"

名称	修改日期	类型	大小
 G3-Series(Maxphotonics) - 1.0.0.86.exe	2021/3/29 10:18	应用程序	25,639 KB

4



5



6

PC

IP 192.168.0.178



7



8 / /



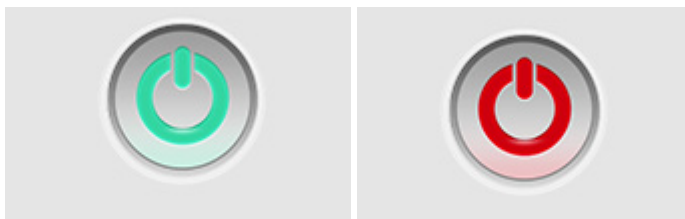
9



10



/ /



11

MAX 创鑫激光 主页 监控 波形卡 诊断 设置 解密 日志

出光 报警 急停0
就绪 预警 互锁

点射控制
0 ms 编辑
点射 关

整机 功率(W) AD 12052
8744

红光 关闭

激光器	Mod1	Mod2	Mod3	Mod4	Mod5	Mod6	Mod7
输出电压(V)	106.66	106.66	106.66	106.73	106.52		
输出电流1(A)	8.79	8.85	8.7	8.74	8.79		
输出电流2(A)	8.79	8.7	8.76	8.79	8.83		

散热器1温度报警 23.00°C
 金手指温度报警 23.00°C
 水冷板温度1报警 21.64°C
 水冷板温度2报警 NC
 激光功率管1
 激光功率管2
 激光功率管3
 激光功率管4
 激光功率管5
 激光功率管9
 空壳光1报警
 空壳光2报警

水压值 10.76 L/min
 QOH温度 27.00°C
 回光报警 0.16 V
 QOH故障
 FPGA
 主电源
 红外
 低温报警

急停按钮
 急停状态
 总线卡
 脚踏报警

主电源报警
 MOS1损坏报警
 MOS2损坏报警
 MOS管1无电流报警
 MOS管2无电流报警
 过流1报警
 过流2报警

激活 Windo
软件版本: 1.0.0.0-2024-09-24

12



13



7-

7.1

7.2

The screenshot displays the MAXPHOTONICS software interface. On the left, the '命令编辑' (Command Edit) table is visible:

No.	CMD	Param 1	Param 2
1	SPT	100 ms	10000 W
2	WAIT	TIME	100 ms
3	SPT	100 ms	5000 W
4	WAIT	TIME	100 ms
5	SPT	100 ms	10000 W
6	LOOP	LINE 1	5 次
7	SPT	100 ms	0 W
8	STOP		
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			

On the right, the '图形区' (Graph Area) shows a waveform plot with a red label '波形视图区'. The x-axis is labeled 'Pulse (ms)' and ranges from 0 to 600. The y-axis is labeled 'A.U.' and ranges from 0 to 30. The waveform shows a series of pulses with varying widths and heights. Below the graph is the '波形选择' (Waveform Selection) control area with a red label '波形出光控制区', containing buttons for '出光启动' (Start Light Output) and '出光中止' (Stop Light Output), and a '刷新' (Refresh) button.

1-

	/			
	No.			128
	CMD			
	Param1	1	3	1
	Param2	2	3	2

		255
		/ /

7.3

2

2-

			3-IN
			3-OUT
			3-EXTPWR

7.4

128

255



3-

	1		2		
SPT					2 /
	O-Pmax	W()	O-65535	ms	1
SPR					2 /
	O-Pmax	W()	O-Pmax/ms	ms	1
WAIT	1 2	TIME (SI)	1 2		
EXTPWR	/		/		
OUT			/		
GOTO					

LOOP			
IN	SI	HI/ LOW/ LH/ HL	
STOP	/	/	

7.5

255

7.5.1

- 1
- 2
- 3
- 4
- 5

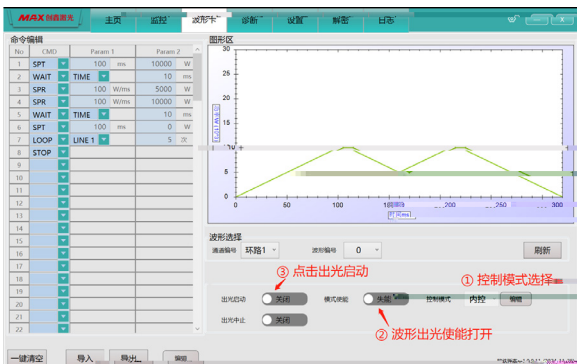
100W/ms 100ms 5000W 100W/ms 10ms 10000W

10ms 100ms 0W 5






7.5.2

- 1
- 2
- 3
- 4
- 5



8-

			/ /
1		PD 1.	PD
2		1. 2. 3. 4.	2. 3-5
3			

4		QBH	QBH
5			QBH
6			
7		1. 2.	

<p>8</p>		<p>1. 2.</p>	<p>MOS</p>
<p>9</p>			
<p>10</p>			

11

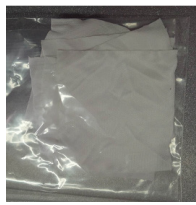


第六章 光纤连接器检查和清洁指南

1-

1

2



3

>99.5%

4

5

20



显微镜



酒精



清洁布



棉签



橡胶指套

2-

1

LOE

1000



2

1

" OFF"

2

20

2.2.5

3

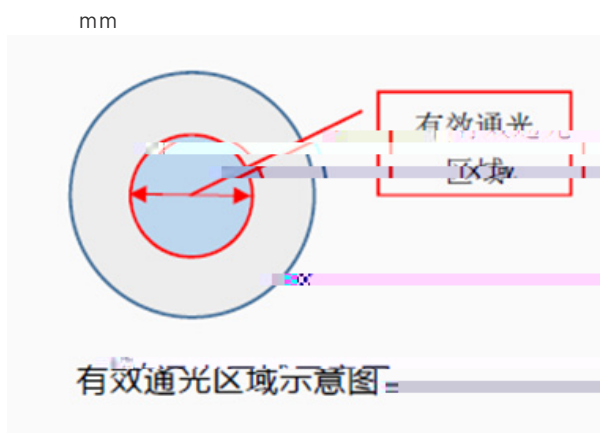
4

3

5

:

	(8mm)	(8mm)
12KW	0.02 0.005	0.1 0.02



3-

1

“OFF”

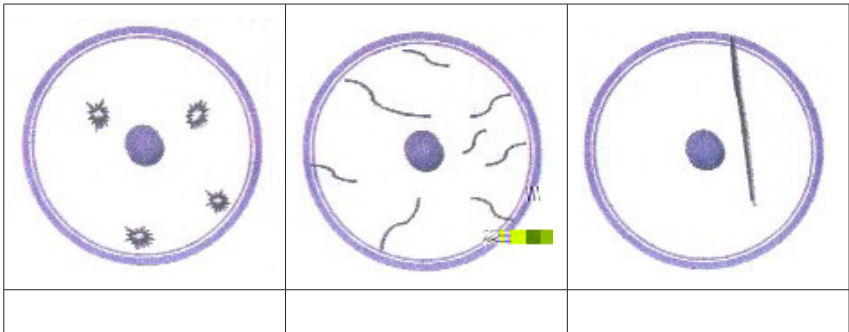
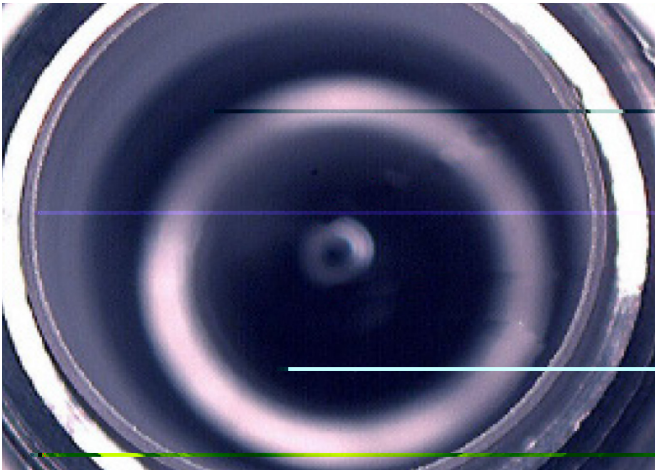
2

1

20

180°

2



2

3

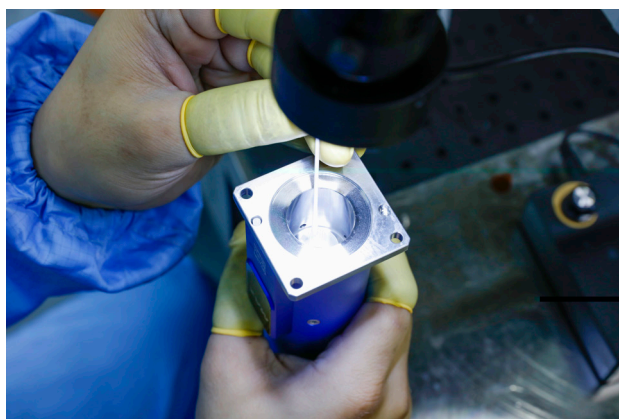
1



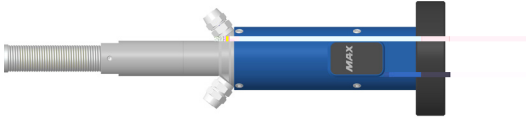
2

20

3.2.1



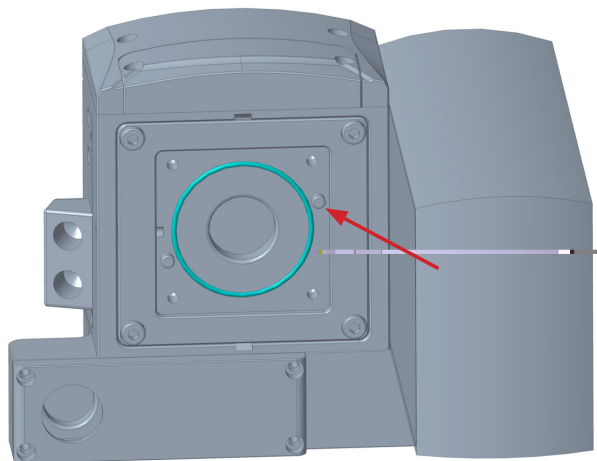
3



4-LOE

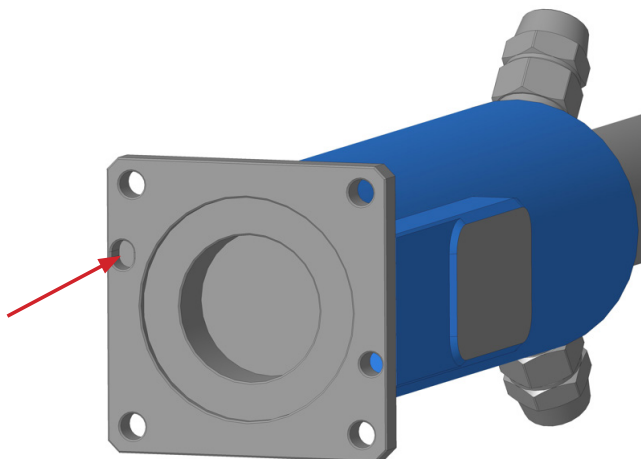
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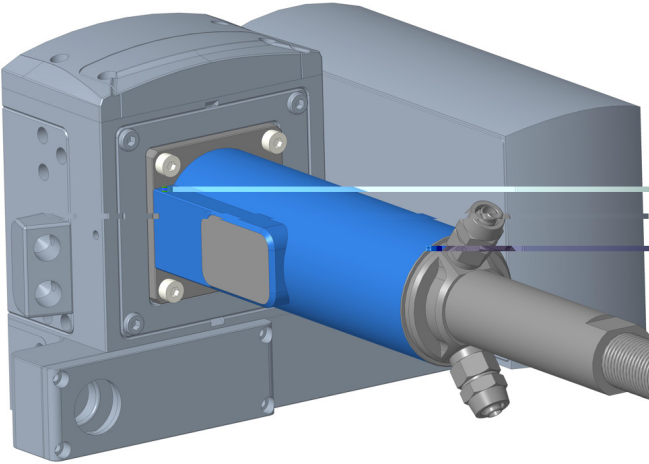
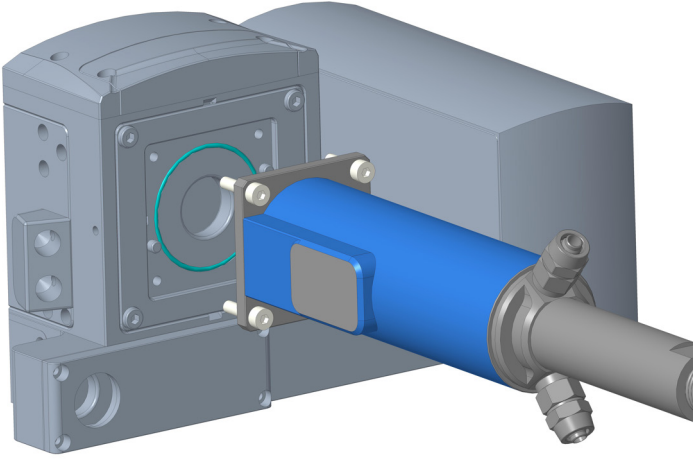
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LOE



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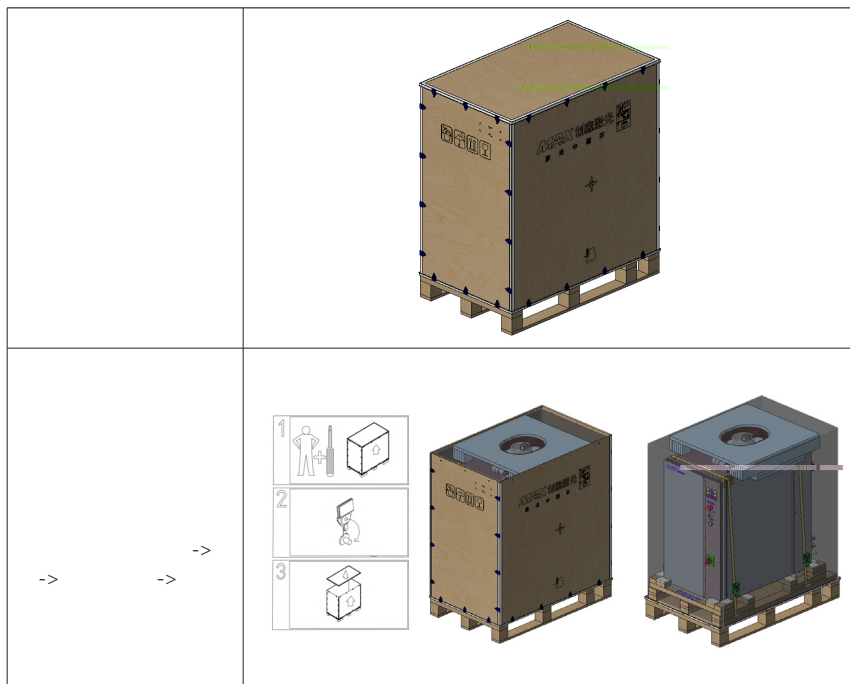


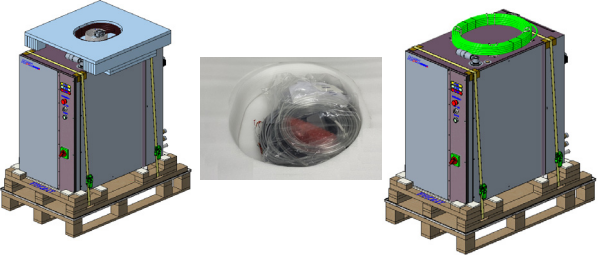
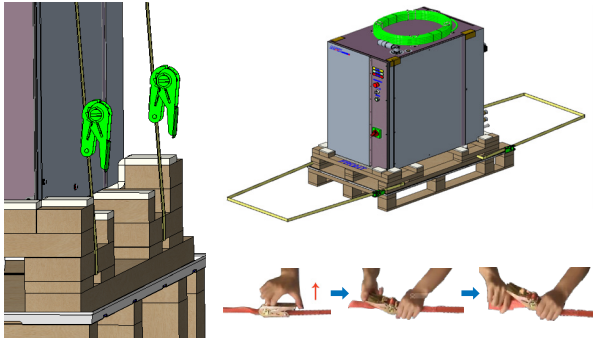
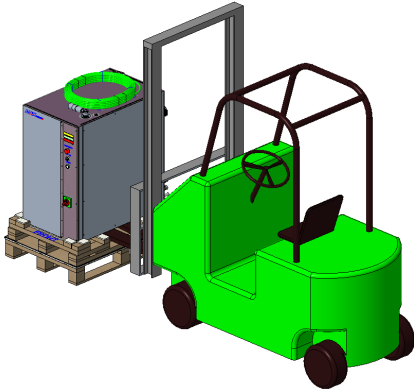
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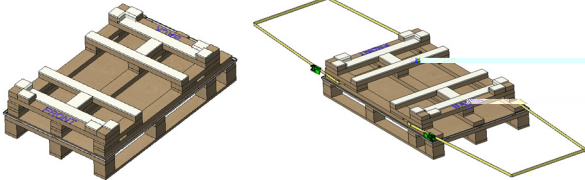
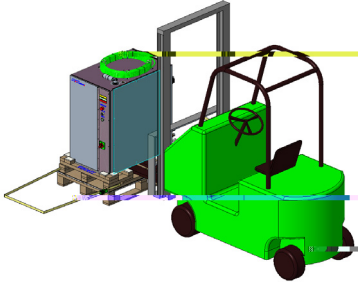
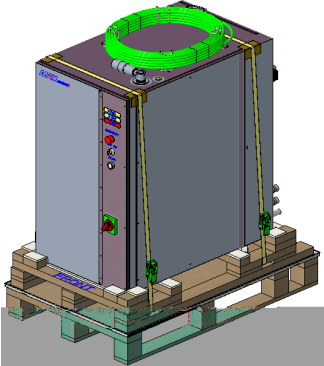
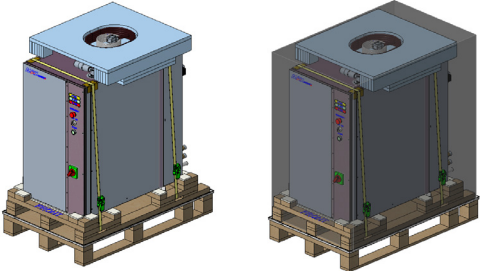
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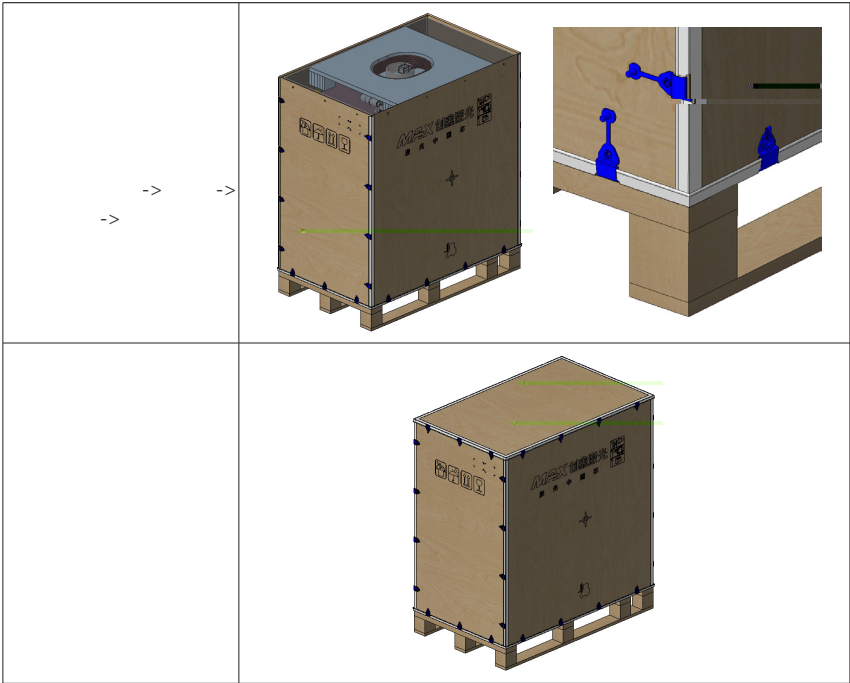
第七章 拆装指南

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<p>1. 2. 3.</p> <p>180°</p>	
	

	
	
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10				1
11				1

第八章 服务与维修

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400-900-9588

1 -> 2

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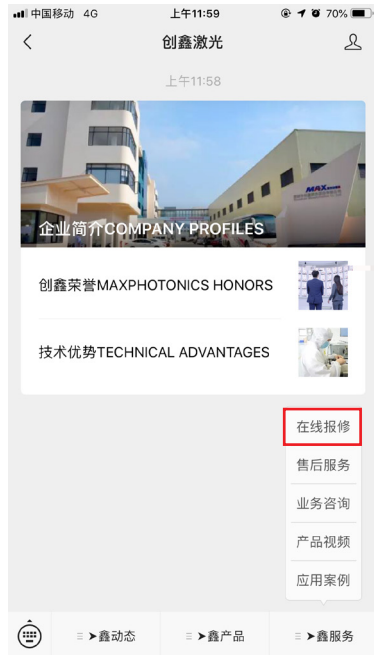
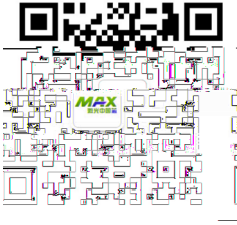
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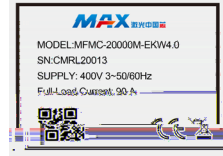
3

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第九章 保修声明

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