MAX 创鑫激光

MFSC 12000X（G5.1）单模块连续光纤激光器

使用手册

“ ”

MFSC

,

,

MFSC

2

MAX 创鑫激光

2004

http://www.maxphotonics.com

:
: http://www.maxphotonics.com
: 400-900-9588
: +86-755-36869371
: info@maxphotonics.com

MFSC

MFSC 1060nm 1100 nm

>33%

MFSC Class 4

1 -

	 
	
	

MFSC 1060nm 1100 nm
20KW

2-

1

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

MFSC CE EMC

“ EMC Directive ” EMC “ EMC ” EN 61000-6-4

EN 61000-6-2

MFSC Class 4 21 CFR

J 1040.10 d

Class 4 EN 60825-1 9

1

2

MFSC

3

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11

12

“ ”

4

1 360-440VAC,3P+PE

2

3

4

360-440VAC,3P+PE

5

创鑫推荐您按照如下的措施操作，以期延长激光器的使用寿命：

1

1.0m

2

1.5m 1m

3

4

5

6

7

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

1-

MFSC

1
2
3
4
5

1
2

2-

3-

M - F - S - C - XXX - XXXX 1 - 2 - 3 - 4 - 5 - 6		
1		M Maxphotonics
2		F Fiber Laser
3		S Single-Mode ( )
4		C ContinueWave
5	XXXX	XXXX W
6		

4-

5-

	START	

6-

	ETHERNET	
	ECAT OUT	
	ECAT IN	
	CTRL	
	BLUETOOTH	
	AC 380V	AC
	WATER OUT	(1.25
	WATER IN	(1.25

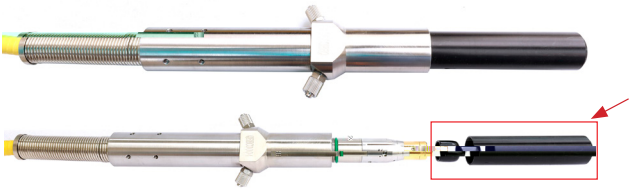
7-

1

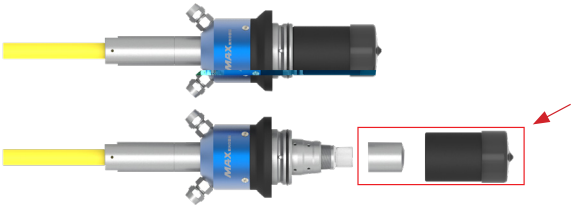
QBH

LOE

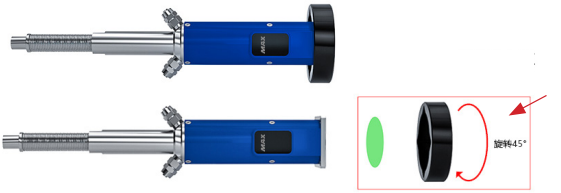
QBH



LOE2.0



LOE3.1



1-

	/				
MFSC-12000	100%		12000		W
		10		100	%
	100%	1070	1080	1090	nm
3dB	100%		5	7	nm
	100% >1h		± 1	± 2	%
	100% >24h		± 2	± 3	%
BPP	50um	1.4		2	mm x mrad
	100um	3		3.8	
			150	200	μs
			150	200	μs
	100%			5	KHz
	100%	200			uW
			25		m
	100 50/150/200				μm
		200			mm

2-

		360	400	440	VAC
	MFSC-12000X 100%			40	KW
		10	25	40	
		10		80	%
	0 / 0				
		-10	25	60	
	* * =535*950*580 /				mm
	MFSC-12000X	240(± 10)			kg

3-

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

40 22 ;

Δp ≤ 0.5bar

;

0

4-LOE&QBH

			L/min	bar	
QBH					28-30
LOE		Φ8	≥ 4	≥ 4	

8mm ≤ 20m;

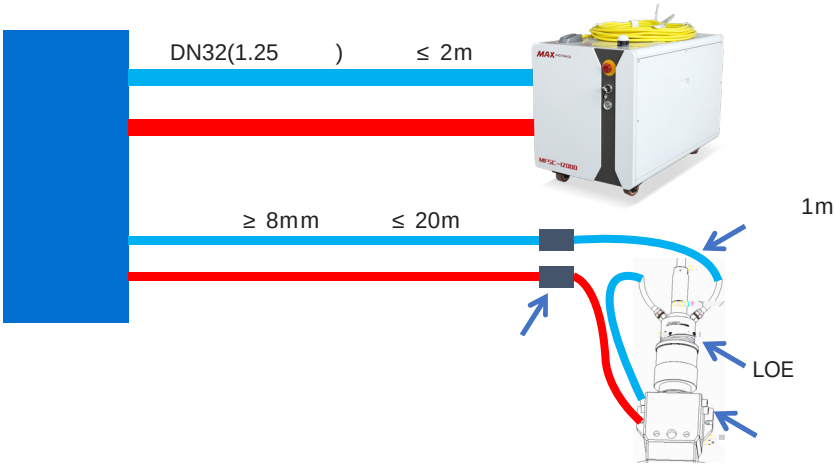
QBH Φ6 LOE Φ8 ≤ 1m;

QBH/LOE ;

QBH Δp ≤ 1.5bar

;

LOE Δp ≤ 3bar



5-

1 1000

2 10 – 40

3 10% - 85%

4

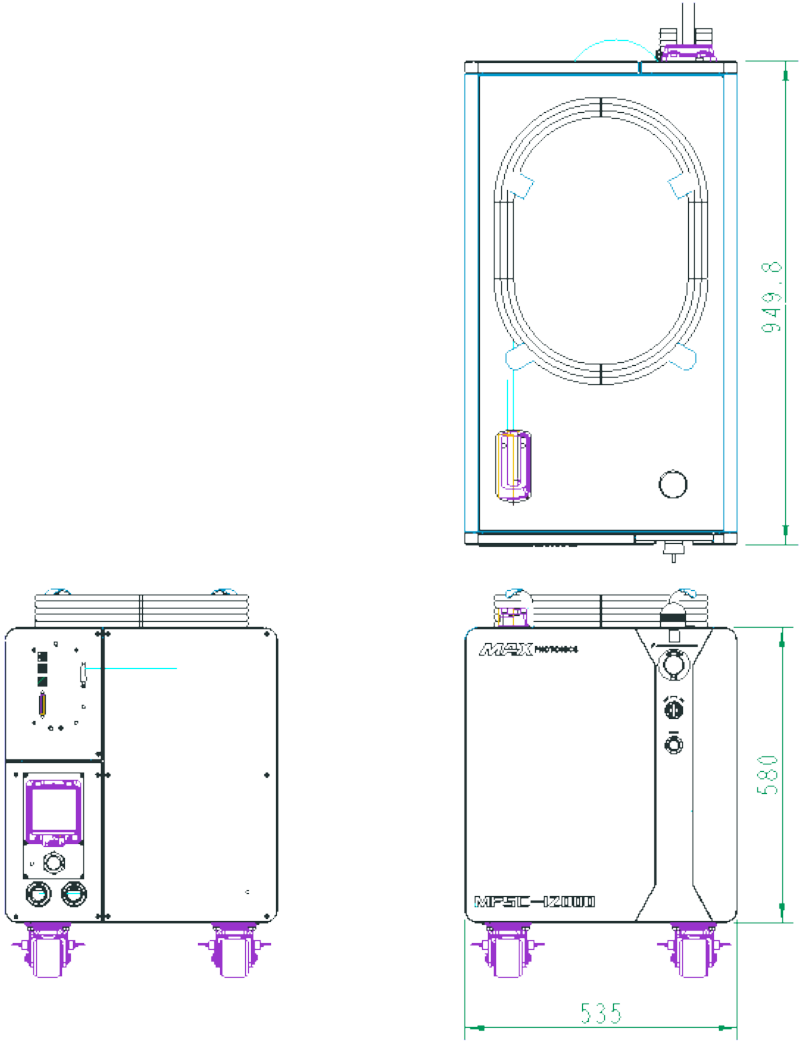
- - 对照表

%	30	35	40	45	50	55	60	65	70	75	80	85	90	95
)	Td( )													
10	-7.0	-5.0	-3.0	-1.3	00	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	29.8	31.2	32.5	33.8	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

≤ 28 ≤ 50%

6-

mm



1-

2-

360-440VAC

/W	/VAC	/A	/A	/kW
MFSC-12000	400V ± 10%,3P+PE	59	100	≥ 50

3-

CTRL HDB44

HDB44			
33		EXLOCK_CH1B/ 1B	1B/1A ( ) 1B/1A
34		EXLOCK_CH1A/ 1A	
8		CONTROL-/ -	± ( )
23		CONTROL+/ +	± (
39		ERROR/ ALARM_B/ B	- - , V ≤ 30VDC, , I ≤ 100mA
40		ERROR/ ALARM_A/ A	
29		AN1_PWR_PEAK_10V-/0-10V -	1V-10% 10V-100% I 1mA
14		AN1_PWR_PEAK_10V+/0-10V +	
2		PWM1-/ 1-	20VDC ≤ V ≤ 30VDC 0VDC ≤ V ≤ 5VDC I 5mA
17		PWM1+/ 1+	
4		ENABLE1-/ 1-	20VDC ≤ V ≤ 30VDC 0VDC ≤ V ≤ 5VDC I 5mA
19		ENABLE1+/ 1+	
37		EMERGENCY1_INPUT-/ 1 -	± ( )
38		EMERGENCY1_INPUT+/ 1 +	± (

4-

5-

1

2

3

输入

激光调制输入

功率输入
0-10V

T>20ms

红光输出

激光输出

6-

1 U

2 NET4.6.rar NET46-x86-x64-AllOS-ENU.exe
Win10 .NET 4.6

NET46-x86-x64
-AllOS-ENU.exe

3) G6 - V1.0.0.17. rar G6_Series.exe
“ zh ” “ en ”

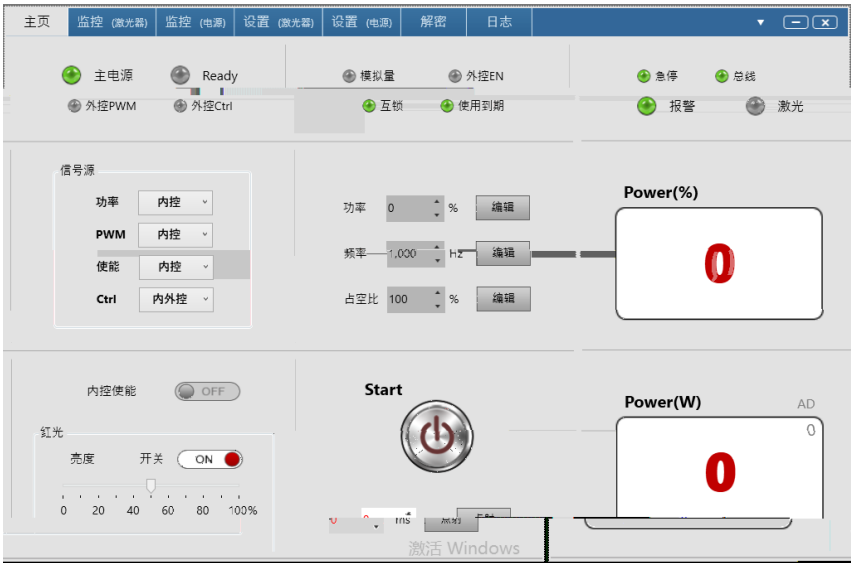
..			文件夹		
Config			文件夹	2024/5/30 14...	
Flash Reader			文件夹	2024/5/30 14...	
APP_Interface.dll	31,744	14,092	应用程序扩展	2024/5/28 14...	73DA03...
APP_Interface.pdb	75,264	17,507	PDB 文件	2024/5/28 14...	24A4C57E
DevExpress.Charts.v11.2.Core.dll	181,152	70,920	应用程序扩展	2014/3/7 11:06	99BB6E...
DevExpress.Data.v11.2.dll	2,680,736	698,762	应用程序扩展	2014/3/7 11:05	DCFCE7...
DevExpress.Xpf.Charts.v11.2.dll	1,304,992	375,624	应用程序扩展	2014/3/7 11:05	8F1E2E8E
DevExpress.Xpf.Controls.v11.2.dll	123,808	42,643	应用程序扩展	2014/3/7 11:05	976D4C...
DevExpress.Xpf.Core.v11.2.dll	4,089,760	1,042,881	应用程序扩展	2014/3/7 11:06	5C1E56E5
DevExpress.Xpf.Gauges.v11.2.dll	1,503,648	628,354	应用程序扩展	2014/3/7 11:06	6068131D
FiberLaser_Lee.dll	328,192	77,389	应用程序扩展	2024/5/30 14...	6536FCD7
FiberLaser_Lee.pdb	470,528	99,271	PDB 文件	2024/5/30 14...	DEA6F283
G6_Series.exe	14,082,560	6,462,948	应用程序	2024/5/30 14...	A2F1895E
G6_Series.exe.config	1,109	459	CONFIG 文件	2022/8/8 11:10	F814DF48
G6_Series.pdb	2,463,232	436,125	PDB 文件	2024/5/30 14...	725BCFAE
ICSharpCode.SharpZipLib.dll	200,704	74,488	应用程序扩展	2014/7/3 10:56	D3160A...
LaserSocketList.dll	8,483,840	1,787,080	应用程序扩展	2019/6/25 18...	59A0FEE7
LaserSocketList.lib	3,694	845	LIB 文件	2019/6/25 20...	74E57CB2
Libencrypt_Upper.dll	331,264	150,077	应用程序扩展	2024/3/29 17...	CCF75C...
log.txt	0	0	文本文档	2023/8/1 10:00	00000000
Log-PowerClosedLoop.txt	5,994	865	文本文档	2024/3/29 14...	4269BF77
Log-PowerLinearity.txt	13,537,545	1,511,287	文本文档	2024/3/29 14...	1DBE5E...
Newtonsoft.Json.dll	504,320	168,421	应用程序扩展	2016/1/28 14...	002EA893
NPOI.dll	1,678,848	506,541	应用程序扩展	2016/5/22 4:35	AFCDD8...
NPOI.OOXML.dll	494,080	172,187	应用程序扩展	2016/5/22 4:35	19603FB9
NPOI.OpenXml4Net.dll	91,136	33,341	应用程序扩展	2016/5/22 4:35	40EEA260
NPOI.OpenXmlFormats.dll	2,121,728	430,696	应用程序扩展	2016/5/22 4:35	00F6EC08
NPOI.xml	2,254,144	277,106	XML 文档	2016/5/22 4:35	8EECB660

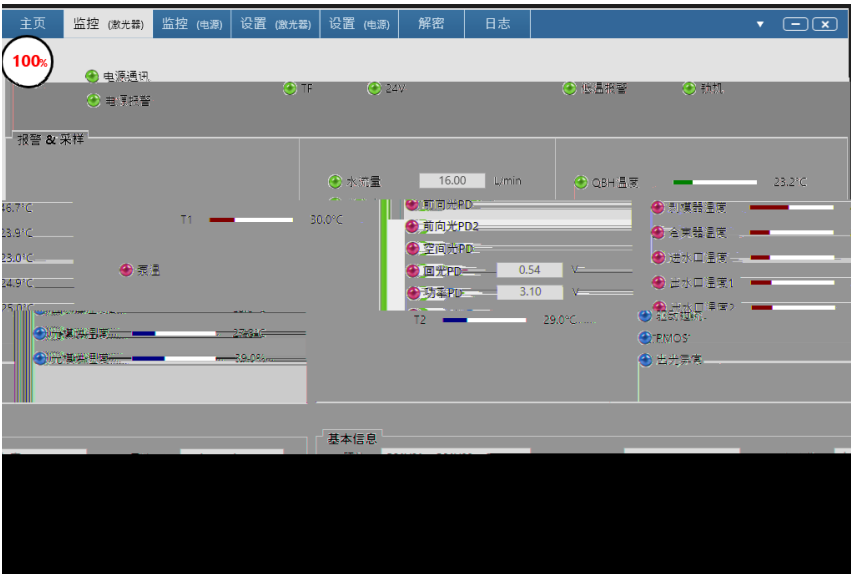
4

5


简体中文
English
光纤激光器
IP
192.168.0.178
登陆
http://www.maxphotonics.com
软件版本 1.0.0.17（2024/05/30） （测试版）

6 PC IP


主页
监控 (激光器)
监控 (电源)
设置 (激光器)
设置 (电源)
解密
日志
主电源
Ready
外控PWM
外控Ctrl
模拟量
外控EN
互锁
使用到期
急停
总线
报警
激光
信号源
功率
内控
PWM
内控
使能
内控
Ctrl
内外控
功率
0
%
编辑
频率
1.000
Hz
编辑
占空比
100
%
编辑
Power(%)
0
内控使能
OFF
Start
Power(W)
AD
0
0
红光
亮度
开关
ON
0
20
40
60
80
100%
激活 Windows


主页
监控 (激光器)
监控 (电源)
设置 (激光器)
设置 (电源)
解密
日志
100%
报警 &采样
水流量
16.00
L/min
QBH温度
23.2°C
T1
30.0°C
前向光PD2
空间光PD
回光PD
0.54
功率PD
3.10
T2
29.0°C
基本信息

7


主页
监控 (激光器)
监控 (电源)
设置 (激光器)
设置 (电源)
解密
日志
密 码：
加密序号：
解密错误次数： 0
解 密
若解密错误次数达到10次

U

		/ /
1	PD	PD 1. 2.
2	PD2	, PD 1. , , 2.
3		,
4	PD	, PD 1.

5		, 1. 2. 3. 4. 5. , 3-5 , ,
6		, 1. , 2. MOS ,
7	PMOS	, 1. , 2. PMOS MOS
8		, 1. 2.

9	T1	,
10	T2	,
11	QBH	, QBH QBH
12	QBH	, QBH
13		,

14		,
15		,
16		,
17	1	,
18	2	,

19		, 1. 2.
20		, 2. 2.
21		,

2-

1

LOE 1000

2

1 “ OFF ”

2 20

2.2.5

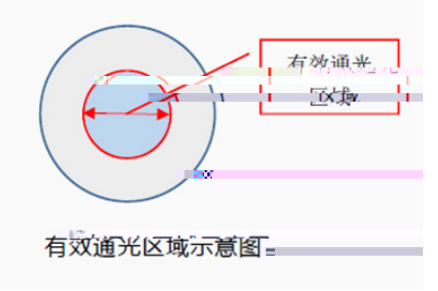
3

4 3

5 :

	(φ3mm)	(φ3mm)
4000W-20KW		≤ 0.1 ≤ 0.005
2000W-4000W	≤ 0.05 ≤ 0.002	≤ 0.1 ≤ 0.005
2000W ( )	≤ 0.1 ≤ 0.005	≤ 0.1 ≤ 0.01

mm



有效通光区域示意图

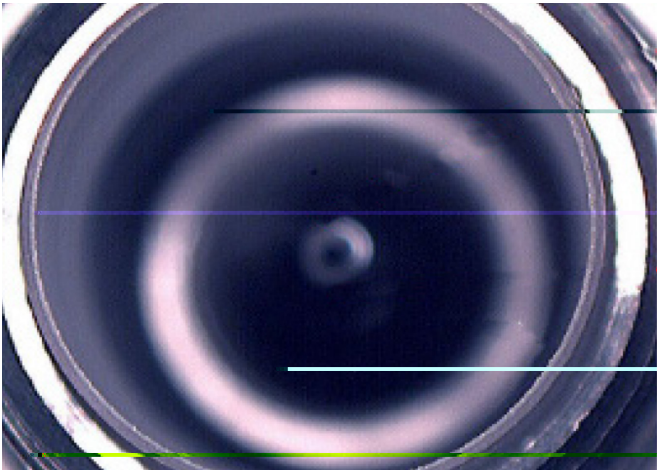
3-

1 **“OFF”**

2

1 20

180° 2



2

3

1

2 20

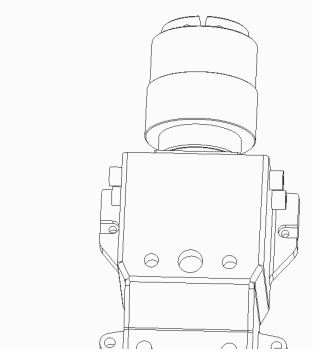
3.2.1

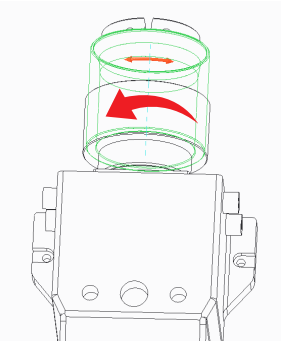
3

4-LOE

1

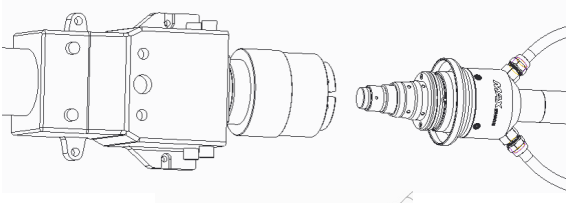
1 LOE LOE

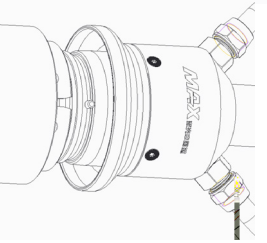


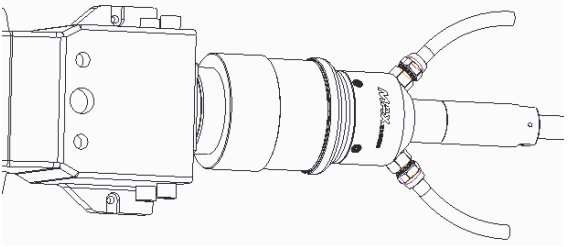


2 LOE LOE

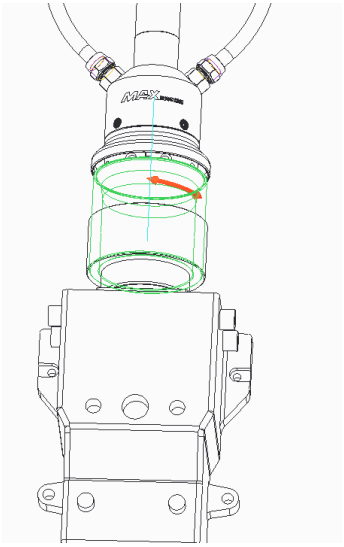
LOE

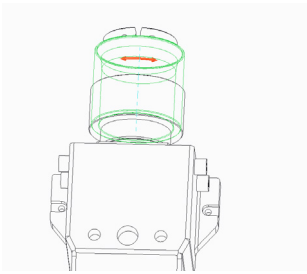






3





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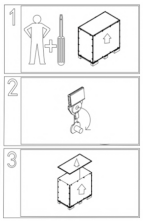
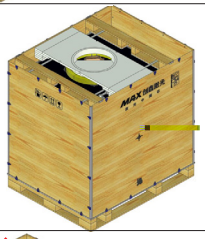
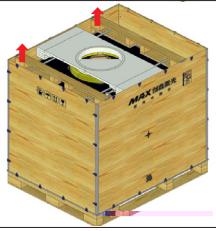
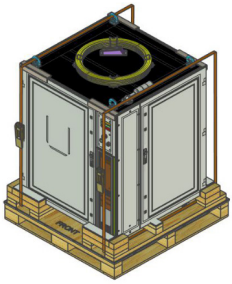
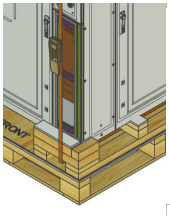
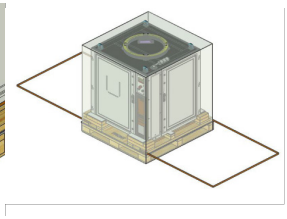
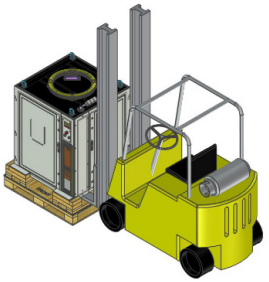
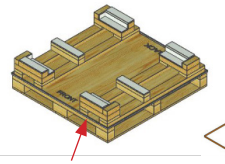
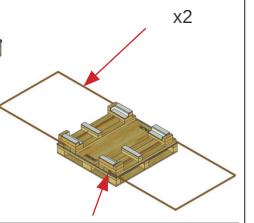
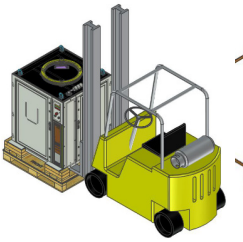
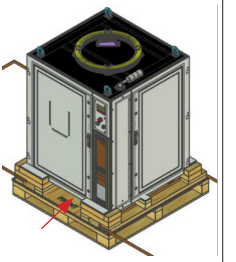
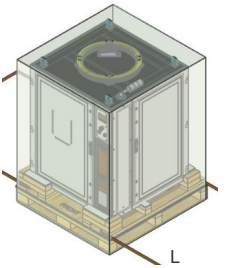
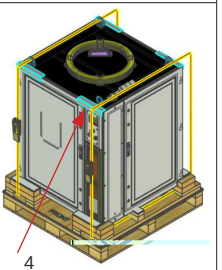
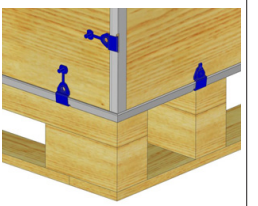
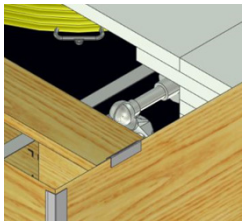
	 
	

	
-> -> ->	
PE 1. 2. 180° 3.	   
	

,	 
	 
PE 4 1. 2. 3. 4.	 
-> -> ->	 

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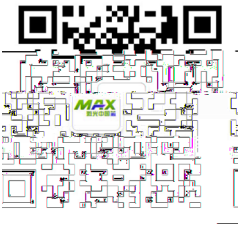

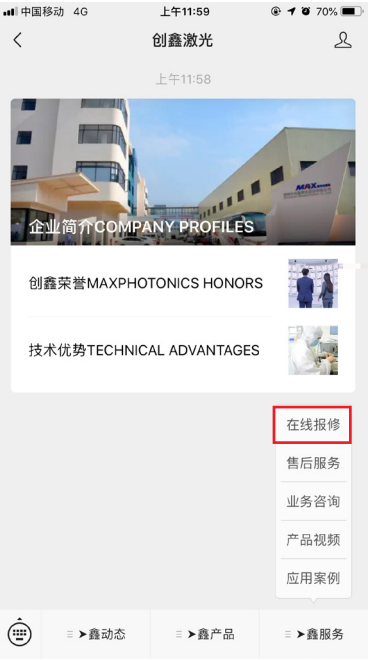

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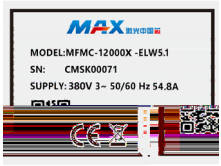
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SUPPLY: 380V 3~ 50/60 Hz 54.8A

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