MAX 创鑫激光

MFPT-100-300M 脉冲光纤激光器

使用手册

版权说明

“ ”

引 语

MFPT

，

，

MFPT

2

…… 1

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第一章 特性说明

MFPT-100-300M

1060-1070 nm

MFPT-100-300M Class 4

第二章 安全信息

1 -

Class 100W 1060nm

2-

1

2

LaserVision USA Kentek Corporation Rochwell Laser Industries

3-

1

2

3

1

2

3

4

5

6

7

8 **焦距 510mm 及以上场镜，除漆效果暂无法保证。**

9 K9 “ ”

4

AC 24VAC

5

1

2 4

5cm

3

6

1

2

3

4

5

6

7

4-

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-

MFPT-M

MOPA

1064 nm

10 kW

25 Pin

1

2

3

4 25 RS232

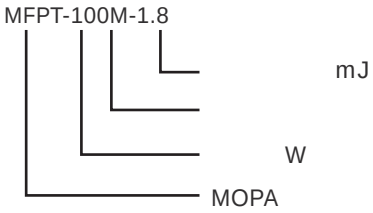
1 2

2-

MFPT-100M	100W
MFPT-120M	120W
MFPT-150M	150W
MFPT-200M	200W

MFPT-250M	250W
MFPT-300M	300W

M:MAX	F:Fiber laser	P: Pulsed	(Q-Switch Q)	MFP
			T: Tunable	MFPT
			P:Picosecond	MFPP
			F: Femtosecond	MFPF
			N Nano	MFPN



第四章 详细规格

1-

	MFPT-100M-1.8	MFPT-120M-1.8	MFPT-150M-1.8	MFPT-200M-1.8	MFPT-250M-1.8	MFPT-300M-1.8
	&					
(W)	≥ 100	≥ 120	≥ 150	≥ 200	≥ 250	≥ 300
(mJ)	1.8					
(ns)	10~500					
(kHz)	1~4000					
(kHz)	55~4000	65~4000	80~4000	110~4000	150~4000	165~4000
M2	<1.6, 1.3					
(%)	<5					
(VDC)	24					
(W)	~550	~600	~700	~900	~1100	~1300
(nm)	1066 ± 3					
3dB (nm)	<15					
(%)	10~100					
(mm)	5~7*				7 ± 1*	
	90%					

(m)	5m*

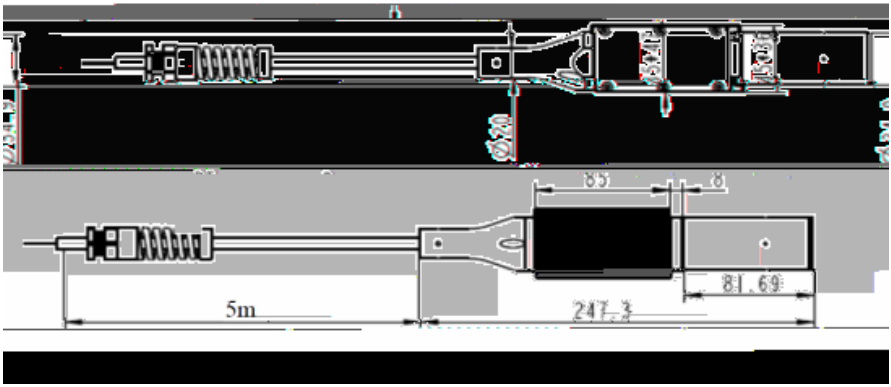
*

2-

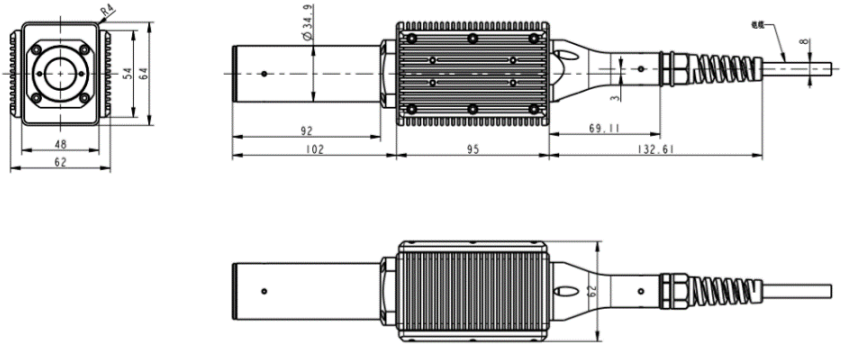
1		0~40	
2		-10~60	
3		10~95	%
4			
5	10%~90%	10	us
6	90%~10%	10	us
7		440.4*328*131.3	mm
8		25	kg

3-

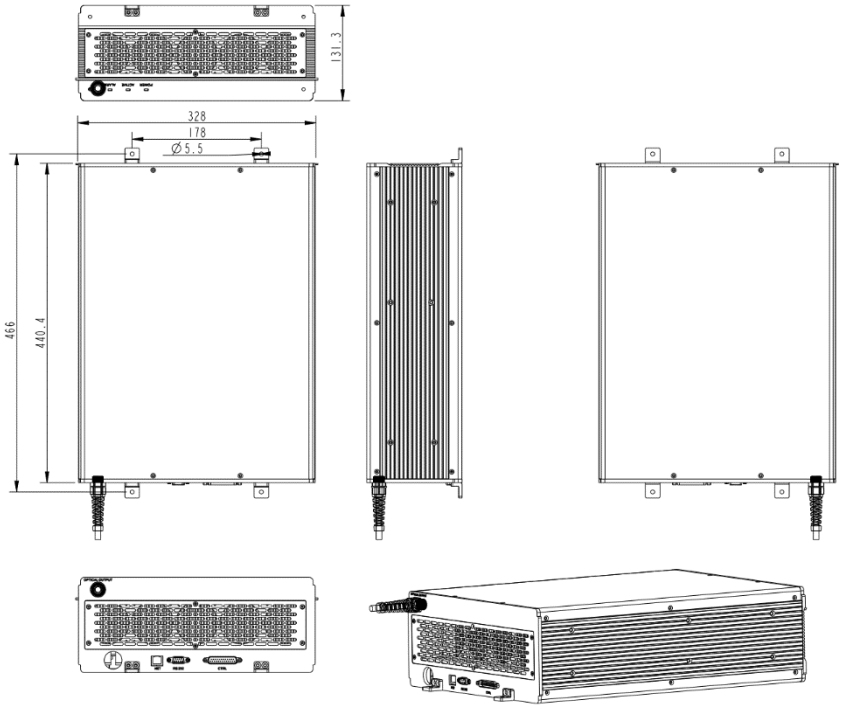
100~200M mm



250~300M mm



100~300M mm



第五章 使用指南

	1

1 -DB25

1

Pin TTL

TTL

Pin #	
1-8 D0-D7	1. 16 0-FF 10 0-255 LSB(D0) Pin1, MSB(D7) Pin8 - 00h(0): - FFh(255): - 00h.
	2. DB25.22 D1 D2

9	
14 15	
11 12 16 21	
17	+5 ± 0.25V DC
18	MO
	: MO
	: MO
19	booster /
	: booster
	: booster
20	( )
22	1. ( ) /
	2. ,
23	: :
24 25	

2 DB-25

1 DB25

2 Pin1~8 8bit Pin1 LSB Pin8 MSB Pin
0~255 0~100%

	1	2	3	4
Pin1	0	0	0	0
Pin2	0	0	0	0
Pin3	0	0	0	0
Pin4	0	0	0	0
Pin5	0	0	0	1
Pin6	0	0	1	1
Pin7	0	1	1	1
Pin8	1	1	1	1
	50%	75%	87.5%	93.75%

3 Pin 9 Pin 1~8 Pin 9
Pin 9 1µs Pin 1~8
Pin 1~9 2 µs
10 kHz

100 μs

4 Pin 11 Pin 12 Pin 16 Pin 21 Pin 11
Pin 12

Pin12	Pin11	Pin16	Pin21	
X	X	L	L	
X	X	H	L	PD
X	X	L	H	
X	X	X	X	

Pin 18 Pin 19
Pin 11 Pin 12 Pin 16 Pin 21

5 Pin 18 EE 5 ms
Pin 9 EM

PCB Pin 18
Pin 18 Pin 18
PCB Pin 19 Pin 19

6 Pin 19 Pin 19
Pin 19

EE 5 ms EM EE OFF EM ON
EM ON EE ON 5ms
PCB Pin 19 EM
Pin 19 PCB Pin 18

7 Pin 20 Pin 20

0.1~0.9 0.5

8 Pin 22
Pin 22
Pin2 Pin3

Pin18
Pin19 Pin22
Pin18 Pin19 Pin22

9 Pin 23
Pin 18 Pin 19
Pin 23
Pin 18 Pin 19 2 µs

2 Pin 20

Pin 20

3 Pin 1~8 Pin 9

4 Pin 18 Pin 19

5 EE ON EM OFF

6 EE ON EM ON Pin 1~8

7 Pin 22 EE EM OFF

EE EM ON

Pin 18 Pin 19 Pin 22

EE EM

8

Pin 11 Pin 12 Pin 16 Pin 21

9 Pin 16

Pin 21

3 -

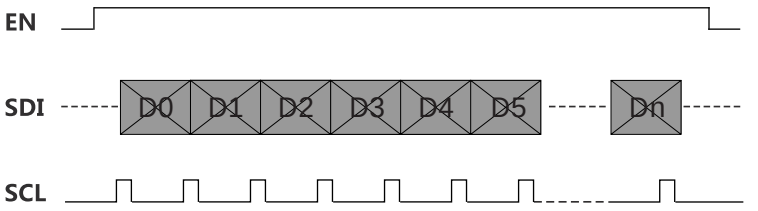
1

DB25 25 PIN1 - PIN25

DB25-PIN2 - SDI

DB25-PIN3 - SCL

DB25-PIN22- EN



EN

2

4 BYTE 32 bit

[HEAD] ->[PULSEWIDTH]

2 BYTE 2 BYTE

HEAD = 0x A501

PULSEWIDTH=

10ns, 0x A501000A 32bit

4 -

1

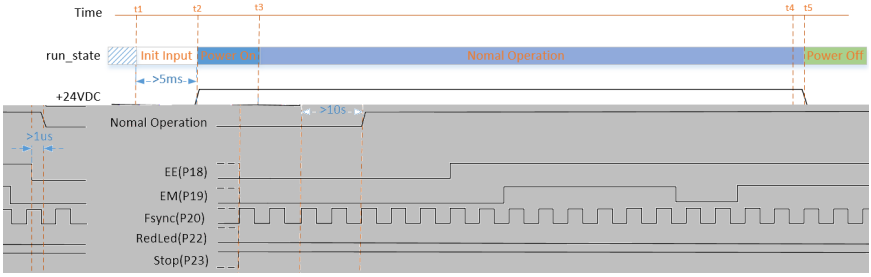
1

5 ms

10 s

2

EE 1 µs



2

1

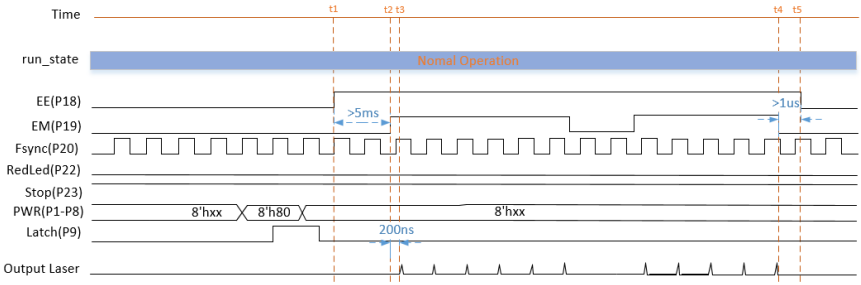
EE 5 ms EM

EM

200 ns

2

EM 1 μs EE



3

1

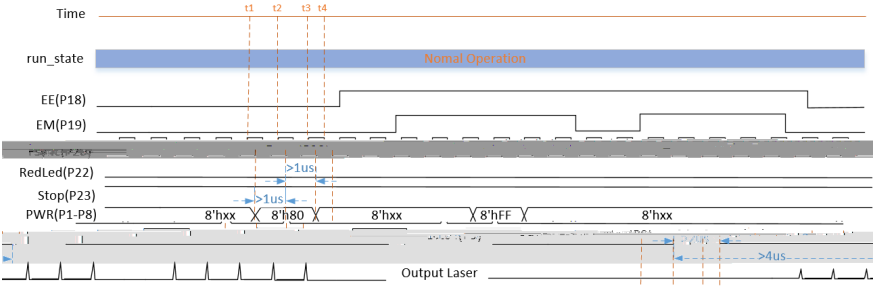
PWR 1 μs Latch

2 μs Latch PWR Latch

100 μs

2

4 μs



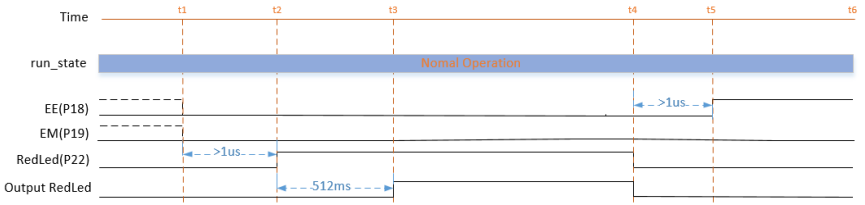
4

1

EE EM 1 μs RedLed

2

RedLed 1 μs



5 STOP

1 Stop

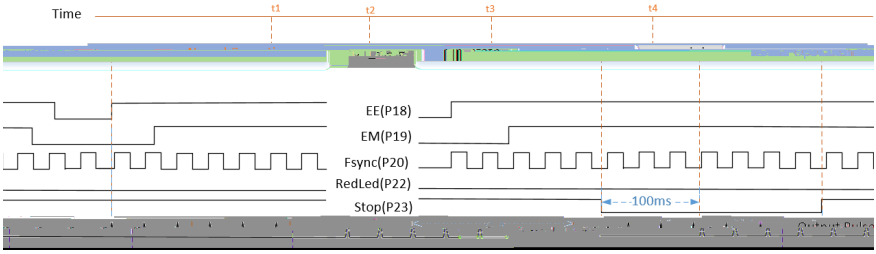
Stop Stop

100 ms

2

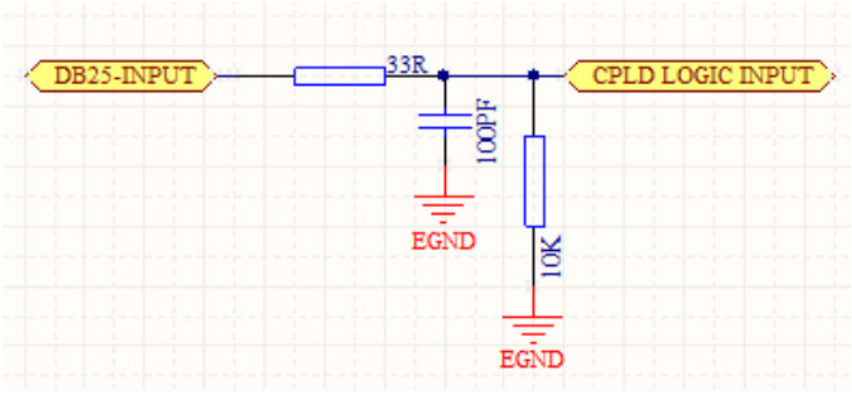
Stop

1 s



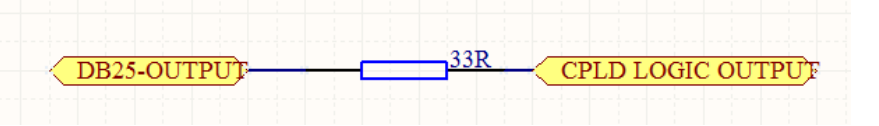
5 -

1



5 ± 2V

2



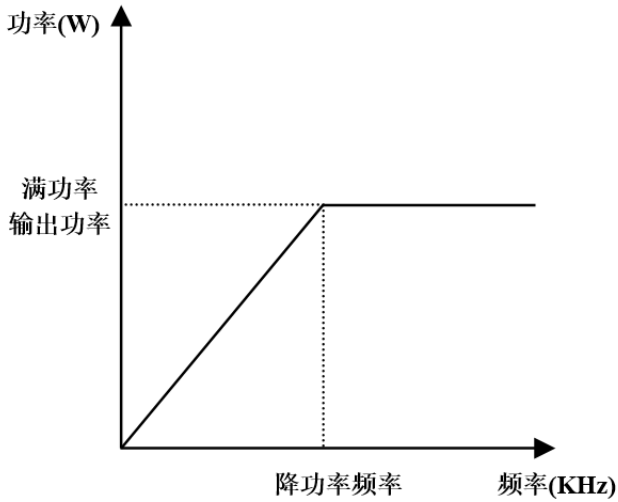
5V 10 mA

6 -

MFPT

MFPT KHZ

ns	/kHz						
	MFPT-100M	MFPT-120M	MFPT-150M	MFPT-200M	MFPT-250M	MFPT-300M	/kHz
1	CW	CW	CW	CW	CW	CW	CW
10	1100	1600	2100	2200	3000	4000	4000
15	680	1100	1400	1400	2000	2500	3000
20	500	900	1150	1050	1600	1700	3000
30	340	600	750	700	1000	1100	2000
40	270	430	540	550	800	850	2000
50	230	340	450	450	650	730	2000
60	200	280	370	400	530	620	2000
80	170	210	280	350	450	530	1500
100	150	165	215	300	400	420	1500
120	120	145	190	260	310	350	1000
150	98	120	150	220	260	320	1000
180	85	100	130	185	220	280	1000
200	80	95	120	170	210	250	1000
220	75	88	115	155	190	240	900
250	70	82	106	145	185	220	800
300	63	75	96	130	170	200	700
350	58	68	90	120	155	185	600
400	55	65	85	115	150	175	500
450	55	65	82	110	150	165	500
500	55	65	80	110	150	165	500



1

2 ≥

MFPT-300M 500 ns

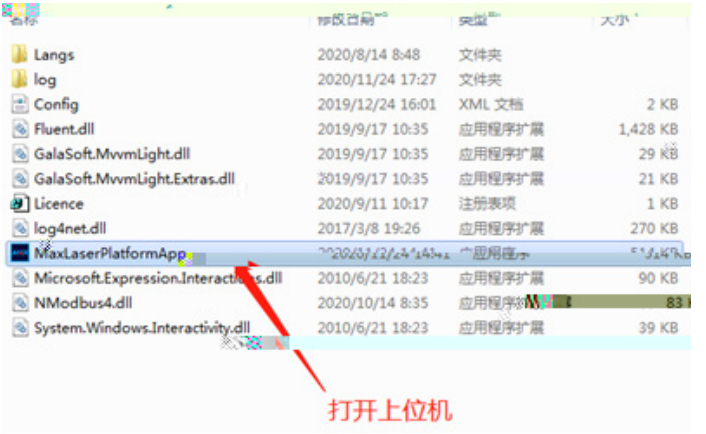
165 kHz

165 kHz 300 W

7 -

1

1 RS232



2 RS232 COM

IP IP IP ,

192.168.10.xxx

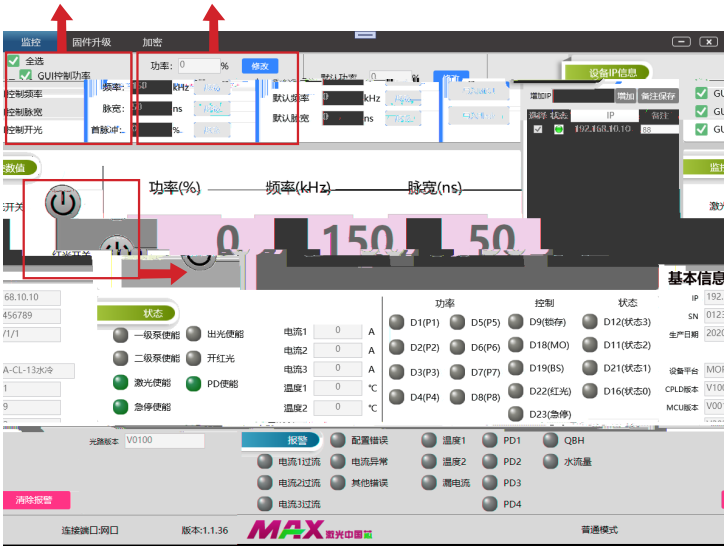
3

3.1

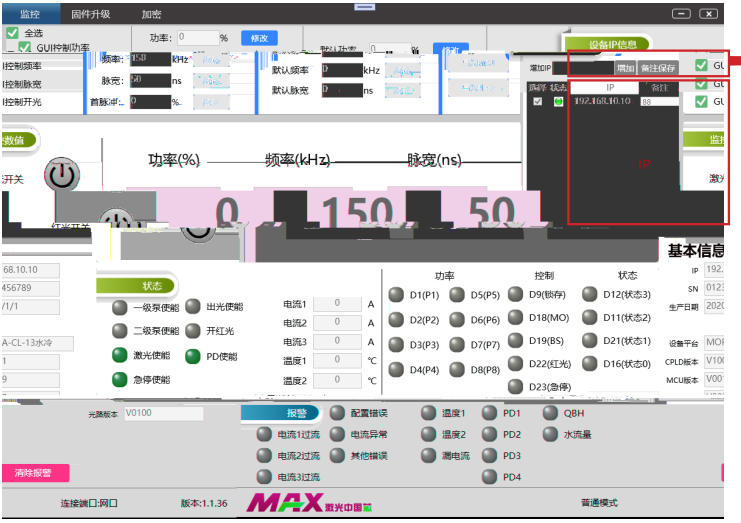
3.2 “ ”

“ ”

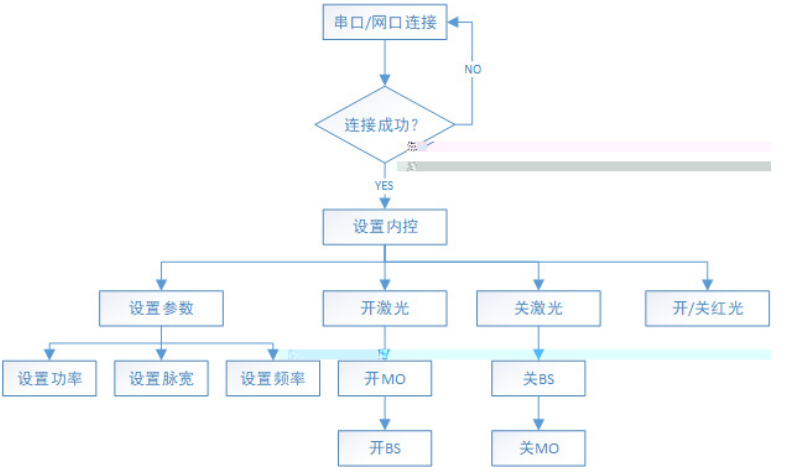
“ ”


监控
固件升级
加密
全选
GUI控制功率
功率(%)
频率(kHz)
脉宽(ns)
0
150
50
基本信息
状态
一级泵使能
二级泵使能
激光使能
出光使能
开红光
PD使能
急停使能
功率
控制
状态
报警
配置错误
电流异常
其他错误
温度1
温度2
漏电流
PD1
PD2
PD3
PD4
QBH
水流量
清除报警
连接端口:网口
版本:1.1.36
普通模式

3.3 1



2



1 MO, BS BS MO

2

3 RS232/

8 -

1

230400

8

1

2

IP 192.168.10.10 5000

3

Modbus RTU

byte	1	1	2	N	2

1. 0x7F

2.

0x03

0x06

0x10

1 0x03

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x03	
Register Address H	0x80	
Register Address L	0x00	
Register Count H	0x00	
Register Count L	0x02	
CRCH		CRC
CRCL		CRC

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x03	
Byte count	0x04	
Data1 H	0x01	1
Data1 L	0x2B	1
Data2 H	0x01	2
Data2 L	0x11	2
CRCH		CRC
CRCL		CRC

2 0x03

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x03	
Register Address H	0x80	
Register Address L	0x00	
Register Count H	0x00	
Register Count L	0x01	
CRCH		CRC
CRCL		CRC

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x03	
Byte count	0x02	
Data1 H	0x01	
Data1 L	0x2B	
CRCH		CRC
CRCL		CRC
CRCL		CRC

3 0x06

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x06	
Register Address H	0x80	
Register Address L	0x00	
Present Data1 H	0x00	
Present Data1 L	0x02	
CRCH		CRC
CRCL		CRC

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x06	
Register Address H	0x80	
Register Address L	0x00	
Present Data1 H	0x00	
Present Data1 L	0x02	
CRCH		CRC
CRCL		CRC

4 0x10

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x10	
Register Address H	0x80	
Register Address L	0x00	
Register Count H	0x00	
Register Count L	0x02	
Data Count	0x04	
Present Data1 H	0x01	1

Present Data1 L	0x2B	1
Present Data2 H	0x01	2
Present Data2 L	0x11	2
CRCH		CRC
CRCL		CRC

Field Name	Example(HEX)	Description
Slave Address	0x7F	
Function	0x10	
Register Address H	0x80	
Register Address L	0x00	
Register Count H	0x00	
Register Count L	0x02	
CRCH		CRC
CRCL		CRC

4 CRC

```
u16  Modbus_CRC16( u8 *puchMsg, u16 usDataLen )
{
   u8 uchCRCHi = 0xFF ; //      CRC
   u8 uchCRCLo = 0xFF ; //      CRC
   unsigned long uIndex ; // CRC

   while ( usDataLen-- ) //
   {
      uIndex = uchCRCHi ^ *(puchMsg++) ; //         CRC
      uchCRCHi = uchCRCLo ^ auchCRCHi[uIndex] ;
      uchCRCLo = auchCRCLo[uIndex] ;
   }
```

```
    return ( uchCRCHi << 8 | uchCRCLo ) ;
}

/* CRC                          */
const u8 auchCRCHi[] = {
    0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
    0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
    0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
    0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
    0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1,
    0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41,
    0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1,
    0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
    0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
    0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40,
    0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1,
    0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
    0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
    0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40,
    0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
    0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40,
    0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
    0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
    0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
    0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
    0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0,
    0x80, 0x41, 0x00, 0xC1, 0x81, 0x40, 0x00, 0xC1, 0x81, 0x40,
    0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0, 0x80, 0x41, 0x00, 0xC1,
```

```
    0x81, 0x40, 0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41,
    0x00, 0xC1, 0x81, 0x40, 0x01, 0xC0, 0x80, 0x41, 0x01, 0xC0,
    0x80, 0x41, 0x00, 0xC1, 0x81, 0x40
} ;
```

38

```
/* CRC                    */
const u8 auchCRCLo[] = {
    0x00, 0xC0, 0xC1, 0x01, 0xC3, 0x03, 0x02, 0xC2, 0xC6, 0x06,
    0x07, 0xC7, 0x05, 0xC5, 0xC4, 0x04, 0xCC, 0x0C, 0x0D, 0xCD,
    0x0F, 0xCF, 0xCE, 0x0E, 0x0A, 0xCA, 0xCB, 0x0B, 0xC9, 0x09,
    0x08, 0xC8, 0xD8, 0x18, 0x19, 0xD9, 0x1B, 0xDB, 0xDA, 0x1A,
    0x1E, 0xDE, 0xDF, 0x1F, 0xDD, 0x1D, 0x1C, 0xDC, 0x14, 0xD4,
    0xD5, 0x15, 0xD7, 0x17, 0x16, 0xD6, 0xD2, 0x12, 0x13, 0xD3,
    0x11, 0xD1, 0xD0, 0x10, 0xF0, 0x30, 0x31, 0xF1, 0x33, 0xF3,
    0xF2, 0x32, 0x36, 0xF6, 0xF7, 0x37, 0xF5, 0x35, 0x34, 0xF4,
    0x3C, 0xFC, 0xFD, 0x3D, 0xFF, 0x3F, 0x3E, 0xFE, 0xFA, 0x3A,
    0x3B, 0xFB, 0x39, 0xF9, 0xF8, 0x38, 0x28, 0xE8, 0xE9, 0x29,
    0xEB, 0x2B, 0x2A, 0xEA, 0xEE, 0x2E, 0x2F, 0xEF, 0x2D, 0xED,
    0xEC, 0x2C, 0xE4, 0x24, 0x25, 0xE5, 0x27, 0xE7, 0xE6, 0x26,
    0x22, 0xE2, 0xE3, 0x23, 0xE1, 0x21, 0x20, 0xE0, 0xA0, 0x60,
    0x61, 0xA1, 0x63, 0xA3, 0xA2, 0x62, 0x66, 0xA6, 0xA7, 0x67,
    0xA5, 0x65, 0x64, 0xA4, 0x6C, 0xAC, 0xAD, 0x6D, 0xAF, 0x6F,
    0x6E, 0xAE, 0xAA, 0x6A, 0x6B, 0xAB, 0x69, 0xA9, 0xA8, 0x68,
    0x78, 0xB8, 0xB9, 0x79, 0xBB, 0x7B, 0x7A, 0xBA, 0xBE, 0x7E,
    0x7F, 0xBF, 0x7D, 0xBD, 0xBC, 0x7C, 0xB4, 0x74, 0x75, 0xB5,
```

	30002	2	R	1-4000kHz =100000/	7F037532000275D6 7F0304271000006F45 0x00002710 10000 10kHz
GUI/ DB25	30025	1	W/R	Bit0 / (1 GUI 0 DB25) Bit1 (1 GUI 0 DB25) Bit2 (1 GUI 0 DB25) Bit3 (1 GUI 0 DB25)	7F037549000145CE 7F03020000904E DB25 GUI 7F067549000F080A 7F067549000F080A GUI
	30026	1	W	0-255 255 100% 0 0%	20% 7F06754A0033F81B 0033 7F06754A0033F81B
	30027	2	W	1-4000kHz =100000/ MO BS	100KHz 7F10754B000204 03E80000F2E7 03E80000 03E8 0000 7510754B00022166

	30029	1	W	MO BS	100ns 7F06754D00640824 0064 7F06754D00640824
MO	30030	1	W/R	OFF 0x0000 ON 0x0001	7F06754E0001380F 7F06754E0001380F MO
BS	30031	1	W/R	OFF 0x0000 ON 0x0001	7F06754F000169CF 7F06754F000169CF BS
PD	30032	1	W/R	OFF 0x0000 ON 0x0001	7F06755000015809 7F06755000015809 PD
	30033	1	W/R	OFF 0x0000 ON 0x0001	7F067551000109C9 7F067551000109C9
	40004	1	R		7F039C440001E051 7F0302001D5047 0x001D 29

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6 PIN18 PIN19

7 5.2 DB25

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