MAX 创鑫激光

▲MFPT-120-300CL

▲MFPT-500CL

MFPT-120-500CL 脉冲光纤激光器

使用手册

版权说明

“ ”

引 语

MFPT

，

，

MFPT

2

公司简介

2004

http://www.maxphotonics.com

:
: http://www.maxphotonics.com
: 400-900-9588
: +86-755-36869377
: info@maxphotonics.com

第一章 特性说明

MFPT-120-500CL

1060-1070 nm

MFPT-120-500CL Class 4

第二章 安全信息

1 -

Class 120W

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 220VAC

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-CL

MOPA

1064 nm

10 kW

25 Pin

1

2

3

4 25 RS232

1 2

2-

MFPT-120CL	120W
MFPT-200CL	200W
MFPT-300CL	300W
MFPT-500CL	500W

3-

第四章 详细规格

1-

		MFPT-120CL	MFPT-200CL	MFPT-300CL	MFPT-500CL	
1		&				
2		1060~1070				nm
3		120~130	200~210	300~320	500	W
4	(FWHM)	≤ 15				nm
5		1~4000			1~3000	KHz
6		5			10	m
7		≤ 1.8			50	mJ
8		65~4000	110~4000	165~4000	70~3000	KHz
9		1( ), 10~500			30~500	ns
10		5				%
11		10~100				%
12		4~6				mm
13		≥ 90				%
14					70	mrad
15		≤ 10				us
16		≤ 10				us
17		220				VAC
18		≤ 600	≤ 1000	≤ 1300	≤ 2000	W
19		QCS/			QBH	

*

2-

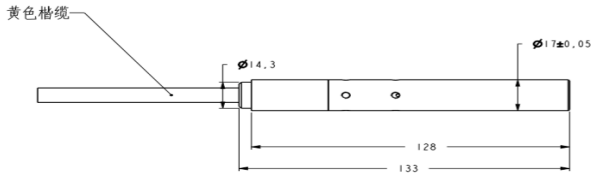
		MFPT-120-300CL	MFPT-500CL	
1		0~40	5~40	
2		10~60	10~60	
3		10~95	10~95	%
4				
5		490.4*422*131.3	720*482.6*190	mm
6		25	52	kg

3-

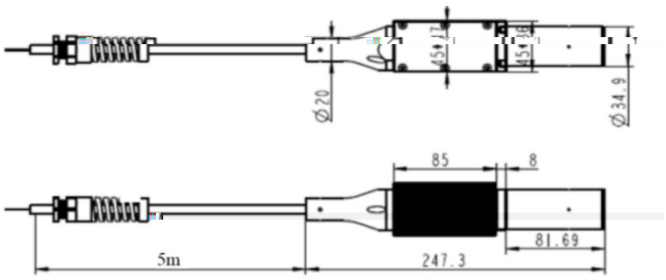
1				
4		≥ 30	30	
		24-26	20-23	
3		≥ 4		bar
4		20		L/min
5		6.5		kW

4-

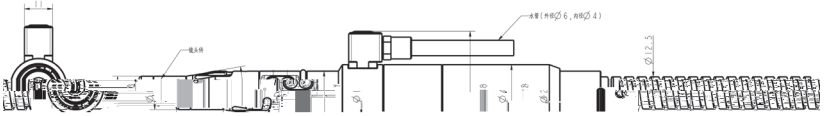
(MFPT-120~300CL) QCS mm



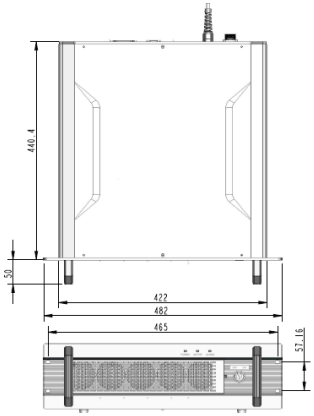
(MFPT-120~300CL) mm

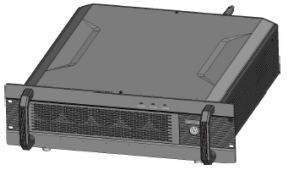


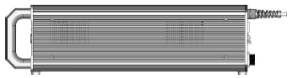
500W QBH mm



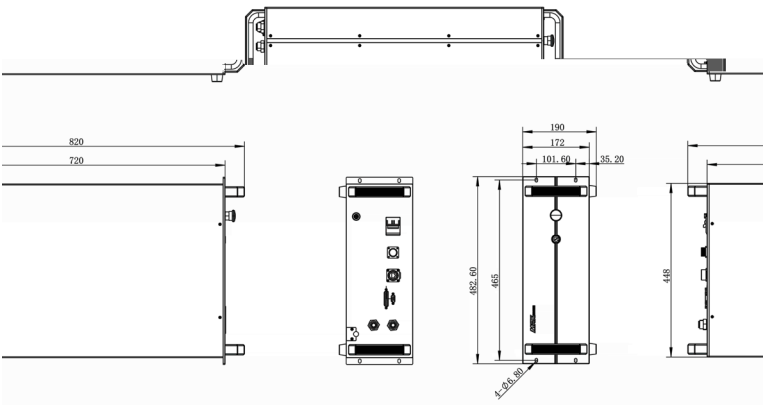
120~300CL mm







500CL mm



第五章 使用指南

	1

1 -DB25

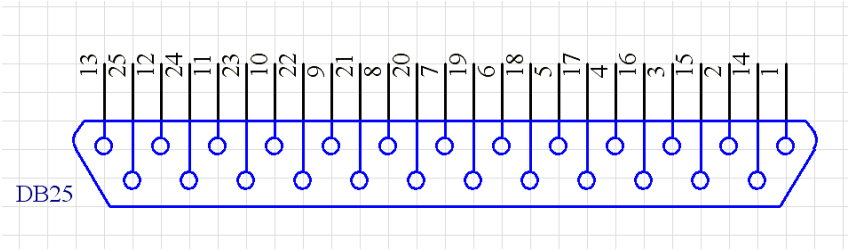
1

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 -

1

1

2 DB25 5.2.2

DB25

3

Pin 18 19 22	
Pin 23	
Pin 20	

4

5 220VAC 10

6 Pin 1~8 Pin 9

7 Pin 18 EE

8 5 ms

9 Pin 19 Pin 19

ON/OFF

10 ON/OFF EM OFF 500 ms

EE

11 EE EM Pin 18 Pin 19

12

2

1 Pin 20

Pin 20

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 -

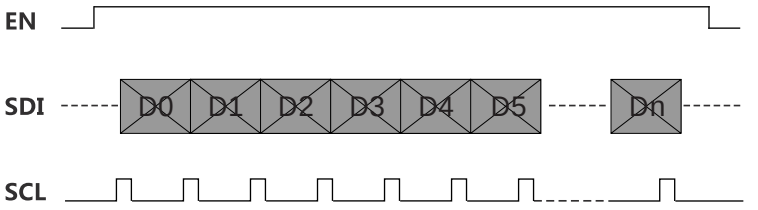
1

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

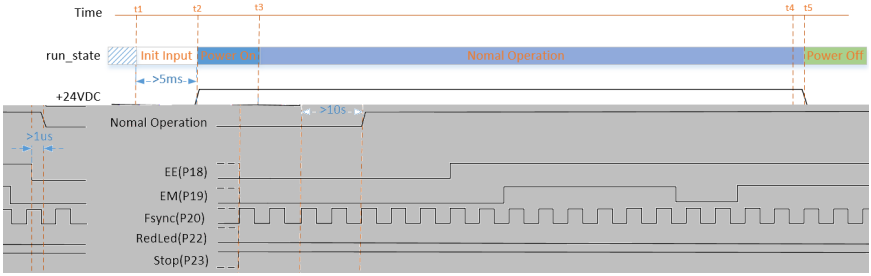
1

5 ms

10 s

2

EE 1 µs



2

1

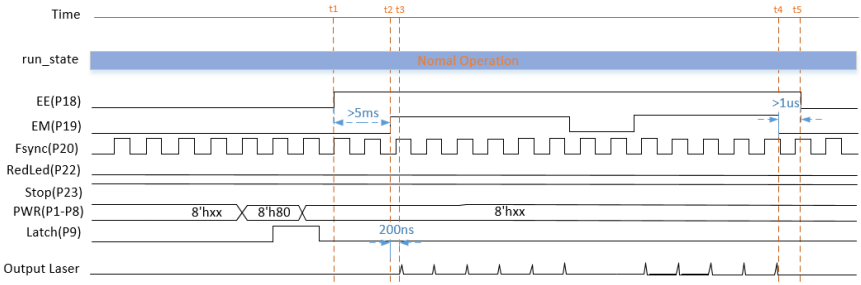
EE 5 ms EM

EM

200 ns

2

EM 1 μs EE



3

1

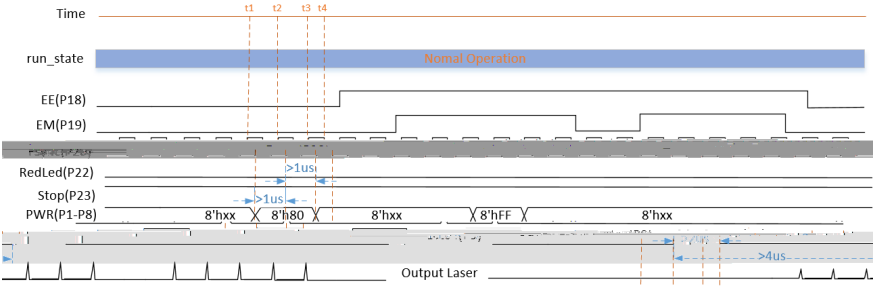
PWR 1 μs Latch

2 μs Latch PWR Latch

100 μs

2

4 μs



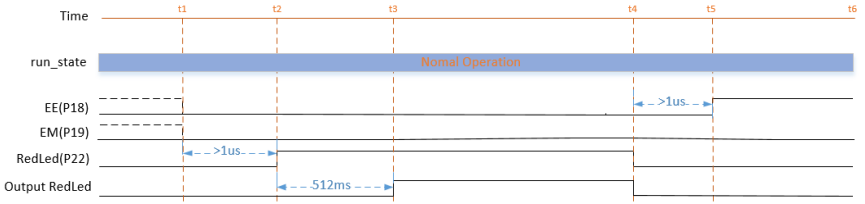
4

1

EE EM 1 μs RedLed

2

RedLed 1 μs



5 STOP

1 Stop

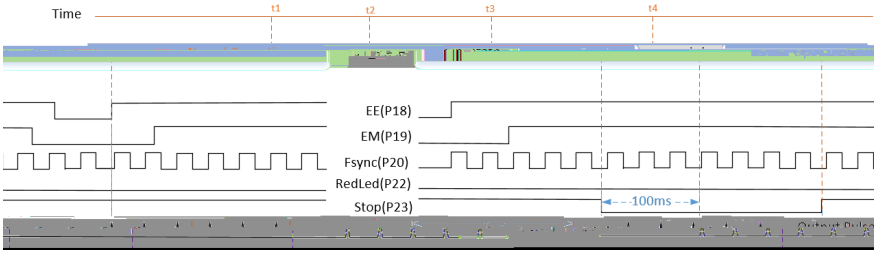
Stop Stop

100 ms

2

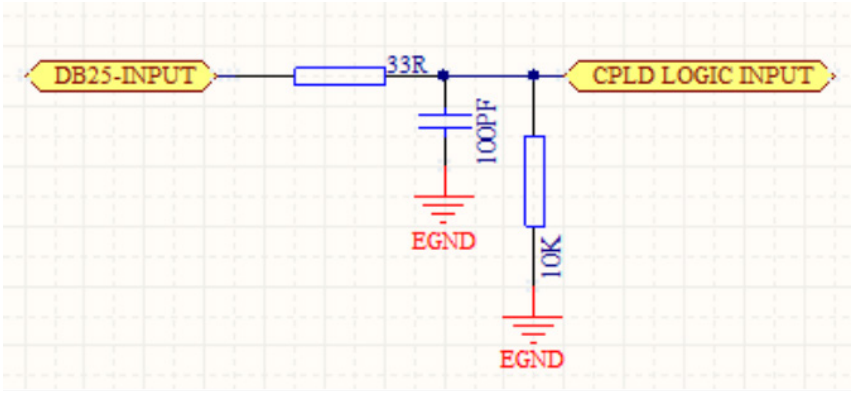
Stop

1 s



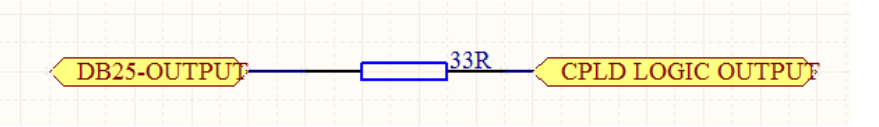
5 -

1



5 ± 2V

2



5V 10 mA

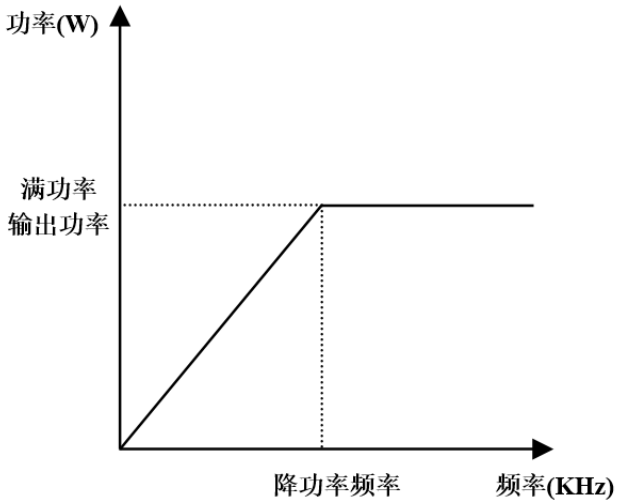
6 -

MFPT

MFPT KHZ

	ns	MFPT-120CL	MFPT-200CL	MFPT-300CL	MFPT-500CL	
1	1	CW	CW	CW	CW	CW
2	10	1600	2200	3000		4000
3	15	1100	1400	2500		3000
4	20	900	1050	1700		3000
5	30	600	700	1100	70	3000
6	40	430	550	850		3000
7	50	340	450	730		3000
8	60	280	400	620	40	2000
9	80	210	350	530		2000
10	100	165	300	420		1000
11	120	145	260	350		1000
12	150	120	220	320	19	1000
13	180	100	185	280		1000
14	200	95	170	250		1000
15	220	88	155	240		900

16	250	82	145	220	13	900
17	300	75	130	200		700
18	350	68	120	185		600
19	400	65	115	175		600
20	450	65	110	165		500
21	500	65	110	165	10	500



1

2 ≥

MFPT-300CL 500 ns

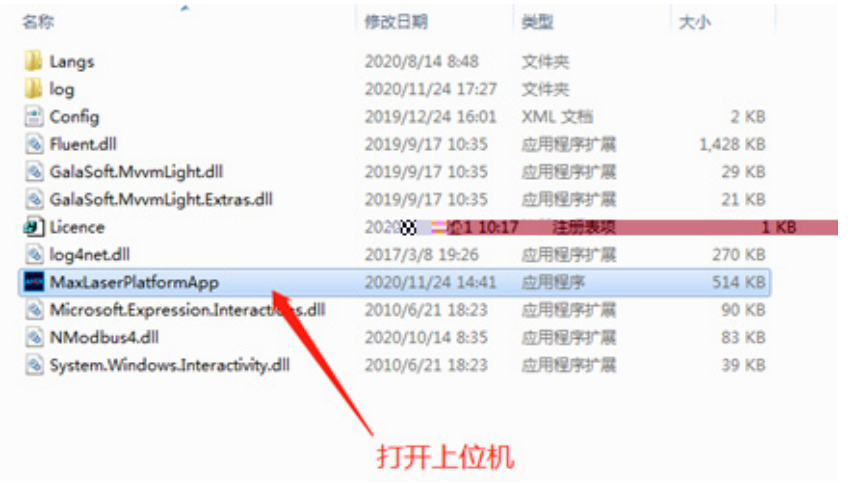
165 kHz

165 kHz 300 W

7 -

1

1 RS232



2 RS232 COM

IP IP IP

3

3.1

3.2 “ ”

“ PD ” “ ”

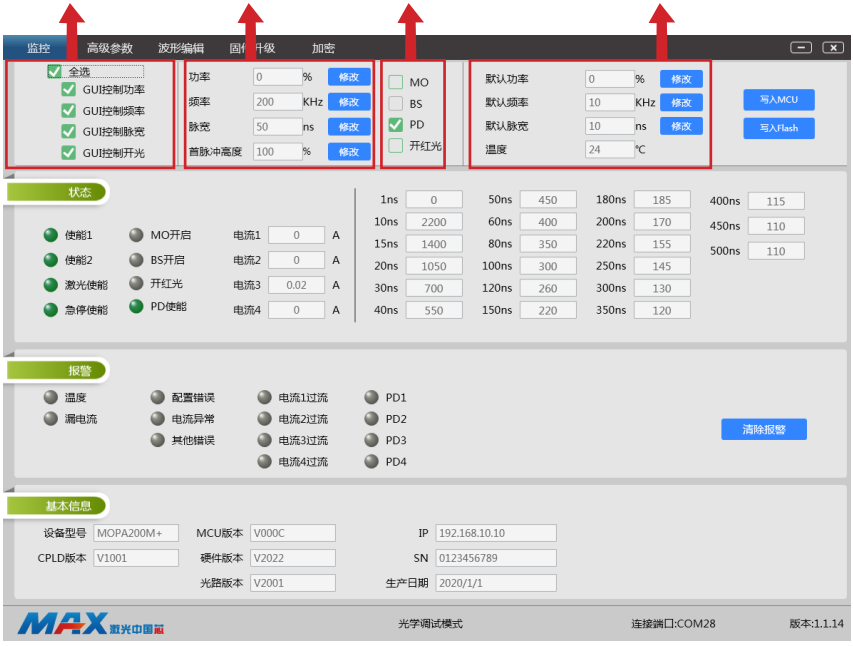
“ MO ” “ BS ”

“ PD ”

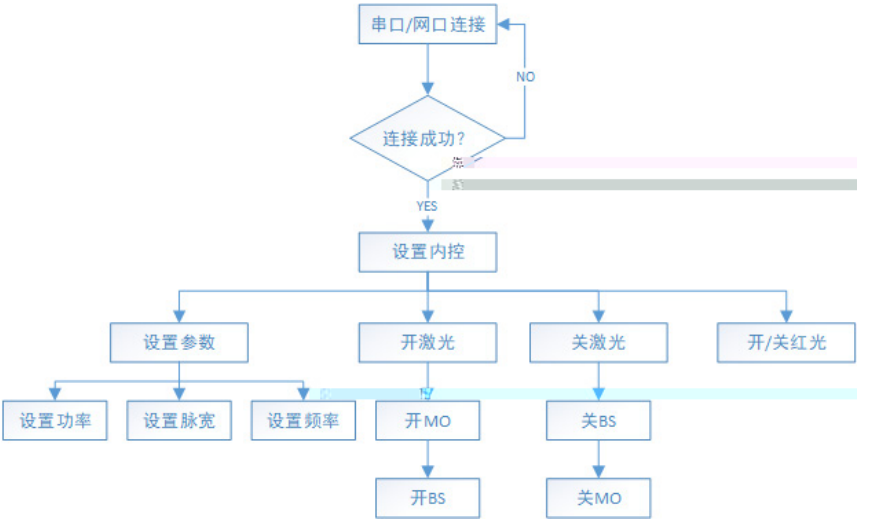
“ ”

ENTER “ ”

“ MO ”.“BS”



2



1 MO BS

2 BS

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,
```

0x77, 0xB7, 0xB6, 0x76, 0x72, 0xB2, 0xB3, 0x73, 0xB1, 0x71,
0x70, 0xB0, 0x50, 0x90, 0x91, 0x51, 0x93, 0x53, 0x52, 0x92,
0x96, 0x56, 0x57, 0x97, 0x55, 0x95, 0x94, 0x54, 0x9C, 0x5C,
0x5D, 0x9D, 0x5F, 0x9F, 0x9E, 0x5E, 0x5A, 0x9A, 0x9B, 0x5B,
0x99, 0x59, 0x58, 0x98, 0x88, 0x48, 0x49, 0x89, 0x4B, 0x8B,
0x8A, 0x4A, 0x4E, 0x8E, 0x8F, 0x4F, 0x8D, 0x4D, 0x4C, 0x8C,
0x44, 0x84, 0x85, 0x45, 0x87, 0x47, 0x46, 0x86, 0x82, 0x42,
0x43, 0x83, 0x41, 0x81, 0x80, 0x40
};

5 MFPT-CL MODBUS

		short	W/R		
	25	1	R	bit4 PD bit[3:0]	7F03001900015FD3 7F03027800B24E
	30000	1	R		7F03753000019417 7F0302000A1049 10ns
	30001	1	R	0-255 255 100% 0 0%	7F0375310001C5D7 7F03020000904E 0

	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

	30028	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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5 DB25

6 PIN18 PIN19

7 5.2 DB25

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