



High-Power M511 EYDFA UART Protocol V1.3

UART Protocol

1. Port Setting

Baud rate: 115200 bps
Data size: 8 bits
Parity: none
Stop Bits: 1 bit

2. Command (CMD) Packet Format

2.1 Packet sent to device

Description	Frame Head	Frame ID	CMD ID	Data length	data	Checksum
Length (byte)	2	4	1	1	n	1

Frame head 0x55 0xAA

Frame ID xx xx xx xx, 4 bytes HEX data, device ID/SN

CMD ID 1 byte

Data length 1 byte

If Data length is zero, then it's followed directly by checksum

Data Data to send

Checksum Add all data (except the frame head), subtract it from 0xFF and add 0x01

Data format: big endian, most significant byte (MSB) first.

2.2 Response packet from device

Description	Frame Head	Frame ID	CMD ID	Data length	data	Checksum
Length (byte)	2	4	1	1	n	1

Frame head 0xAA 0x55

Frame ID xx xx xx xx, 4 bytes HEX data, MSB first

CMD ID 1 byte

Data length 1 byte

Data Data received

Checksum Add all data (except the frame head), subtract it from 0xFF and add 0x01

Data format: big endian, most significant byte (MSB) first.

2.3 Parameter Scale

Parameter	Scale	Unit
Input power (get)	x100	dBm
Output power (get)	x100	dBm
Output power (set)	x10	dBm
Pump current	x1	mA
Cooling current (get)	x10	mA
Pump temperature (get)	x10	°C
Module temperature (get)	x10	°C
Pre-amp output power (get)	x100	dBm
Pre-amp current (read)	x10	mA

2.4 Checksum Example

Command 55 AA 24 FF 6F 15 0C 00 (not include checksum)

Checksum $0x24+0xFF+0x6F+0x15+0x0C+0x00=0xB3$ (LSB only)
Subtract it from 0xFF, $0xFF - 0xB3=0x4C$, then add 0x01,
and the result Checksum is 0x4D.

Complete CMD 55 AA 24 FF 6F 15 0C 00 4D

3. Communication Notes

- EDFA sends data only when command from master is received with correct device address.
- No response from device to incorrect command.
- When command is correct, then proceed with one of the following:
For 'Set' commands, execute command, then send out response
For 'Get' commands, send out required data.
- A command can be sent out only when previous one is completed.

4. Command List

0x1F	Get device SN
0x2F	Get device status
0x2E	Get device settings
0x20	Set pump on/off
0x21	Set pump-1 mode
0x29	Set pump-2 mode
0x23	Set pump-1 ACC current
0x24	Set pump-2 ACC current
0x25	Set pump-1 APC power
0x28	Set pump-2 APC power
0x26	Set pre-amp mode
0x27	Set pre-amp current
0x5F	Get thresholds

5. Command details

5.1 0x1F Get Device SN

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	1F	00	NULL	1 byte
Slave	AA	55	00	00	00	6F	1F	20	String	1 byte

Example:

Get SN H3012901

Send	55 AA 00 00 00 6F 1F 00 72
Response	AA 55 00 00 00 6F 1F 20 48 33 30 31 32 39 30 31 20 AA

5.2 0x2F Get Device Status

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	2F	00	NULL	1 byte
Slave	AA	55	00	00	00	6F	2F	18	Para.	1 byte

Example:

Sent 55 AA 00 00 00 6F 2F 00 62

Response

AA 55 00 00 00 6F 2F 18 00 00 01 1A 00 B5 17 6C 03 C0 00 00 10 B6 FF CB 08 34 E8 90
0C E2 00 70 92

-- AA 55 Frame head
-- 00 00 00 6F Frame ID: device serial number in HEX
-- 2F CMD ID
-- 18 Data length
-- 00 00 Spare
-- 01 1A Module temperature (28.2°C)
-- 00 B5 Pre-amp temperature (18.1°C)
-- 17 6C Pre-amp current (599.6mA)
-- 03 C0 TEC current (96.0mA)
-- 00 00 Pump-1 current (0.00mA)
-- 10 B6 Pump-2 current 4278mA)
-- FF CB Input optical power (-0.53dBm)
-- 08 34 Pre-amp output power (21.00dBm)
-- E8 90 Output-1 power (-60.00dBm)
-- 0C E2 Output-2 power (32.97dBm)
-- 00 70 Warning 70
 01110000 (see below for details)
-- 92 Checksum

Warning code 00 70

Example 70:

Bit	Value	Meaning	Alarm	Normal
7	0	Overall warning status	1	0
6	1	Pump ON/OFF	0 - OFF	1 - ON
5	1	TEC current	0	1
4	1	Pump temperature	0	1
3	0	Pump current	1	0
2	0	Device temperature	1	0
1	0	Low output power	1	0
0	0	Low input power	1	0

5.3 0x2E Get Device Settings

	Frame Head	Frame ID	CMD ID	Length	Data	Checksum
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Master	55	AA	00	00	00	6F	2E	00	NULL	1 byte
Slave	AA	55	00	00	00	6F	2E	18	Para.	1 byte

Example:

Send

55 AA 00 00 00 6F 2E 00 63

Response

AA 55 00 00 00 6F 2E 18 00 00 00 01 00 01 00 00 00 00 D2 00 00 10 B8 01 4A
01 4A 00 00 00 00 19

-- AA 55 Frame head
-- 00 00 00 6F Frame ID: device serial number in HEX
-- 2E CMD ID
-- 18 Data length
-- 00 00 Pump ON
-- 00 01 Pump-1 mode (ACC)
-- 00 01 Pump-2 mode (ACC)
-- 00 00 Pre-amp mode (APC)
-- 00 00 Pre-amp current (0mA)
-- 00 D2 Pre-amp power (21.0dBm)
-- 00 00 Pump-1 current (0mA)
-- 10 B8 Pump-2 current (4280mA)
-- 01 4A Pump-1 power (33dBm)
-- 01 4A Pump-2 power (33dBm)
-- 00 00 spare
-- 00 00 Spare
-- 19 Checksum

5.4 0x20 Set Pump On/Off

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	20	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	20	02	Para.	1 byte

Para.:

0x00 0x00 Set pump on
0x00 0x01 Set pump off

Example:

- **Set pump on**

Send 55 AA 00 00 00 6F 20 02 00 00 6F
Response AA 55 00 00 00 6F 20 02 00 00 6F

- **Set pump off**

Send 55 AA 00 00 00 6F 20 02 00 01 6E
Response AA 55 00 00 00 6F 20 02 00 01 6E

5.5 0x21 Set Pump-1 Mode

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	21	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	21	02	Para.	1 byte

Para.:

0x00 0x00 Set APC mode
0x00 0x01 Set ACC mode

Example:

- **Set APC mode**

Send 55 AA 00 00 00 6F 21 02 00 00 6E
Response AA 55 00 00 00 6F 21 02 00 00 6E

- **Set ACC mode**

Send 55 AA 00 00 00 6F 21 02 00 01 6D
Response AA 55 00 00 00 6F 21 02 00 01 6D

5.6 0x29 Set Pump-2 Mode

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	29	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	29	02	Para.	1 byte

Para.:

0x00 0x00 Set APC mode
0x00 0x01 Set ACC mode

Example:

- **Set APC mode**

Send 55 AA 00 00 00 6F 29 02 00 00 66
Response AA 55 00 00 00 6F 29 02 00 00 66

- Set ACC mode

Send 55 AA 00 00 00 6F 29 02 00 01 65
 Response AA 55 00 00 00 6F 29 02 00 01 65

5.7 0x23 Set Pump-1 ACC Current

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	23	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	23	02	Para.	1 byte

Example:

Set ACC 8000mA (0x1F40)

Send 55 AA 00 00 00 6F 23 02 1F 40 0D
 Response AA 55 00 00 00 6F 23 02 1F 40 0D

5.8 0x24 Set Pump-2 ACC Current

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	24	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	24	02	Para.	1 byte

Example:

Set ACC 8000mA (0x1F40)

Send 55 AA 00 00 00 6F 24 02 1F 40 0C
 Response AA 55 00 00 00 6F 24 02 1F 40 0C

5.9 0x25 Set Pump-1 APC Power

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	25	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	25	02	Para.	1 byte

Example:

Set APC 33dBm (0x014A)

Send 55 AA 00 00 00 6F 25 02 01 4A 1F
 Response AA 55 00 00 00 6F 25 02 01 4A 1F

5.10 0x28 Set Pump-2 APC Power

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	28	02	Para.	1 byte

Slave	AA	55	00	00	00	6F	28	02	Para.	1 byte
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Example:

Set APC 33dBm (0x014A)

Send 55 AA 00 00 00 6F 28 02 01 4A 1C
Response AA 55 00 00 00 6F 28 02 01 4A 1C

5.11 0x26 Set Pre-amp Mode

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	26	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	26	02	Para.	1 byte

Para.:

0x00 0x00 Set APC mode
0x00 0x01 Set ACC mode

Example:

- Set ACC mode

Send 55 AA 00 00 00 6F 26 02 00 01 68
Response AA 55 00 00 00 6F 26 02 00 01 68

5.12 0x27 Set Pre-amp Current

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	27	02	Para.	1 byte
Slave	AA	55	00	00	00	6F	27	02	Para.	1 byte

Example:

- Set ACC 800mA

Send 55 AA 00 00 00 6F 27 02 03 20 45
Response AA 55 00 00 00 6F 27 02 03 20 45

5.13 0x5F Get Thresholds

	Frame Head		Frame ID				CMD ID	Length	Data	Checksum
Master	55	AA	00	00	00	6F	5F	00	NULL	1 byte
Slave	AA	55	00	00	00	6F	5F	28	Para.	1 byte

Example:

Send

55 AA 00 00 00 6F 5F 00 32

Response

AA 55 00 00 00 6F 5F 28 00 00 03 E8 00 00 05 14 00 00 03 E8 00 00 05 28 00 00 25 1C 00
00 0F A0 00 00 25 1C 00 00 0F A0 FF FF FF 38 00 00 02 8A 4D

-- AA 55	Frame head
-- 00 00 00 6F	Frame ID: device serial number in HEX
-- 5F	CMD ID
- 28	Data length
-- 00 00 03 E8	Max pre-pump current (1000mA)
-- 00 00 05 14	Max pre-pump DAC (1300)
-- 00 00 03 E8	Max pre-pump TEC current (1000mA)
-- 00 00 05 28	Max pre-pump TEC DAC (1320)
-- 00 00 25 1C	Max pump-1 current (9500mA)
-- 00 00 0F A0	Max pump-1 DAC (4000)
-- 00 00 25 1C	Max pump-2 current (9500mA)
-- 00 00 0F A0	Max pump-2 DAC (4000)
-- FF FF FF 38	Input threshold (-20dBm)
-- 00 00 02 8A	Highest temperature pump is allowed to turn on (65°C)
-- 4D	CRC checksum