

# C-Band Low-Latency High-Power SM MSA EDFA

## User Manual

P/N: EDFL-1CxM(H)xxxxxxxxxx

Version: 2025 - 12



# 1 Ambient Parameters

| Parameter                 | Min. | Typical | Max. | Unit | Note                  |
|---------------------------|------|---------|------|------|-----------------------|
| Working Temperature       | -5   |         | 65   | °C   |                       |
| Storage Temperature       | -40  |         | 85   | °C   |                       |
| Working Relative Humidity | 5    |         | 85   | %    | 40°C non-condensation |
| Storage Relative Humidity | 5    |         | 95   | %    |                       |

# 2 Optical Parameters

| Parameter                           | Min                             | Typical | Max  | Unit | Note               |
|-------------------------------------|---------------------------------|---------|------|------|--------------------|
| Return Loss                         | 45                              | -       | -    | dB   |                    |
| Input & Output Fiber type           | SMF-28e, 900um white loose tube |         |      | -    |                    |
| Output Fiber Length                 | 99                              | 100     | 101  | cm   | Can be customized. |
| Input Fiber Length                  | 99                              | 100     | 101  | cm   | Can be customized. |
| Input & Output Fiber Connector Type | FC/APC                          |         |      | -    | Can be customized. |
| Module Dimension                    | (W*L*H)90*70*15                 |         |      | mm   |                    |
| Working Mode                        | ACC                             |         |      |      |                    |
| Output power stability              | -                               | -       | ±0.1 | dB   |                    |
| Input & Output Isolation            | -                               | 35      | -    | dB   |                    |
| In & Out Pump Leakage               | -                               | -       | -30  | dBm  |                    |
| PDG                                 | -                               | -       | 0.5  | dB   |                    |

|                      |      |       |      |     |            |
|----------------------|------|-------|------|-----|------------|
| Operating Wavelength | 1540 | -     | 1565 | nm  |            |
| Input Power Range    | -5   | -     | 10   | dBm |            |
| Gain                 | 20   | 20/30 | 33   | dB  |            |
| Max Output Power     | 30   |       |      | dBm |            |
| Input @ Typical      | 0    |       |      | dBm |            |
| NF                   | -    | 5.5   |      | dB  | @Gain=20dB |

## 3 Electrical Indicators

### 3.1 Power Supply:

| Parameter         | Min  | Typical | Max  | Unit | Note |
|-------------------|------|---------|------|------|------|
| Voltage           | 4.75 | 5.0     | 5.25 | V    |      |
| Current           | -    | -       | 3.0  | A    |      |
| Power Consumption | -    | -       | 25   | W    |      |

### 3.2 Pin definition

#### 3.2.1 Communication Port

Type: 34Pin 2.00mm intervals male socket CJT A2005WV-N-2x17P

#### 3.2.2 Pin definition:

| Pin No. | Name              | Attribute | Level Type |
|---------|-------------------|-----------|------------|
| 1       | NC                | F         |            |
| 2       | NC                | F         |            |
| 3       | +5V               | P         |            |
| 4       | +5V               | P         |            |
| 5       | +5V               | P         |            |
| 6       | +5V               | P         |            |
| 7       | GND               | P         |            |
| 8       | GND               | P         |            |
| 9       | NC                | F         |            |
| 10      | NC                | F         |            |
| 11      | GND               | P         |            |
| 12      | GND               | P         |            |
| 13      | NC                | F         |            |
| 14      | NC                | F         |            |
| 15      | NC                | F         |            |
| 16      | NC                | F         |            |
| 17      | NC                | F         |            |
| 18      | NC                | F         |            |
| 19      | NC                | F         |            |
| 20      | NC                | F         |            |
| 21      | NC                | F         |            |
| 22      | NC                | F         |            |
| 23      | GND               | P         |            |
| 24      | GND               | P         |            |
| 25      | Serial Port Input | I         | LVTTL      |

|    |                    |   |       |
|----|--------------------|---|-------|
| 26 | Serial Port Output | 0 | LVTTL |
| 27 | GND                | P |       |
| 28 | GND                | P |       |
| 29 | +5V                | P |       |
| 30 | +5V                | P |       |
| 31 | +5V                | P |       |
| 32 | +5V                | P |       |
| 33 | NC                 | F |       |
| 34 | NC                 | F |       |

\* P: Power, I: Input, O: Output, F: None

## 4 Serial Port Communication Protocol

| Parameter  | Value | Unit  |
|------------|-------|-------|
| Baud rate  | 9600  | Bit/s |
| Data bit   | 8     | Bit   |
| Stop bit   | 1     | Bit   |
| Parity bit | None  |       |

## 5 Module Dimensions

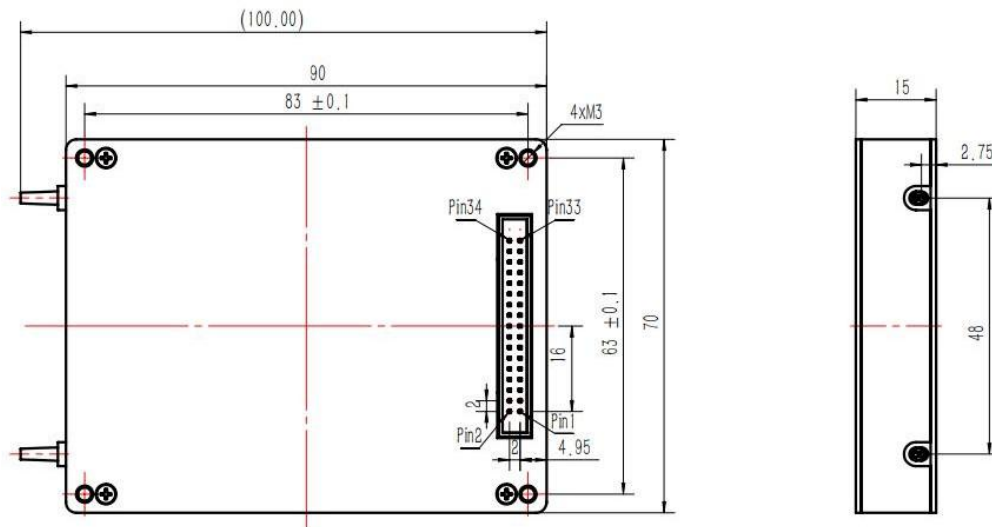
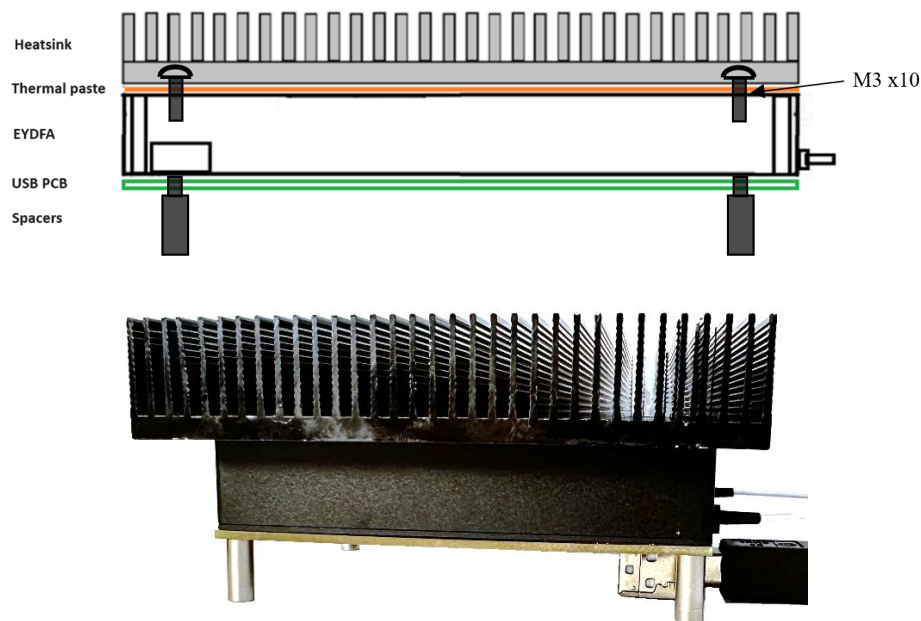


Figure 1: Mechanical Drawing

## 6 Application Notes

### 6.1 Remote Control

- RS232-to-USB converting needs to be done by user. FTDI chip is recommended.
  - \* Benchtop is available at <https://agiltron.com/>.
  - \* RS232-to-USB converting PCB is also available at <https://agiltron.com/>.
- Upon accomplishment of the above EDFA can be remotely controlled by UART commands or the 'EDFA GUI' program (EDFA-L or EDFA-N option) provided.
- Heatsink is needed for this EDFA, as shown below.



*Figure 2: Heatsink installation.*

### 6.2 Handle the EDFA with caution.

- Avoid electrostatic discharge (ESD), which will cause damage of PCBs.
- Make sure tight contact between adaptor PCB and EDFA.
- Prevent short-circuit between pins of the adaptor PCB.
- Make sure 5V DC power supply is free of spike.
- Heatsink must be installed for this EDFA, and thermal paste must be applied between EDFA and heatsink, as shown below. Use M3 spacer to attach USB PCB to EDFA, and use M3x10 screws to attach heatsink to EDFA.

**Warning:**

**Improper installation of heatsink will cause damage of EDFA due to overheating.**

- Clean and inspect connectors and fiber ends prior to installation.

- If other optical fiber cable is connected to input/output, must make sure it is SMF-28 fiber, and always make sure tight connection between fiber cables.
- Use only industry approved methods, materials, and solutions for cleaning.
- Always turn off the EDFA prior to plugging/unplugging fiber cable. Failure to do so may cause permanent damage to the EDFA.

## 7 Software Instruction

Note:

USB to COM driver for FTDI devices needs to be installed on the computer for remote control. The driver can be downloaded from <https://ftdichip.com/drivers/vcp-drivers/>.

- 1) Download GUI software 'EDFA GUI V3.0' from the link below, under Step File/GUI.

<https://agiltron.com/product/erbium-doped-fiber-amplifier-module/>

A copy of GUI also comes with EDFA.



Figure 3 Download link of driver

- 2) Run setup.exe to install the GUI on host computer.

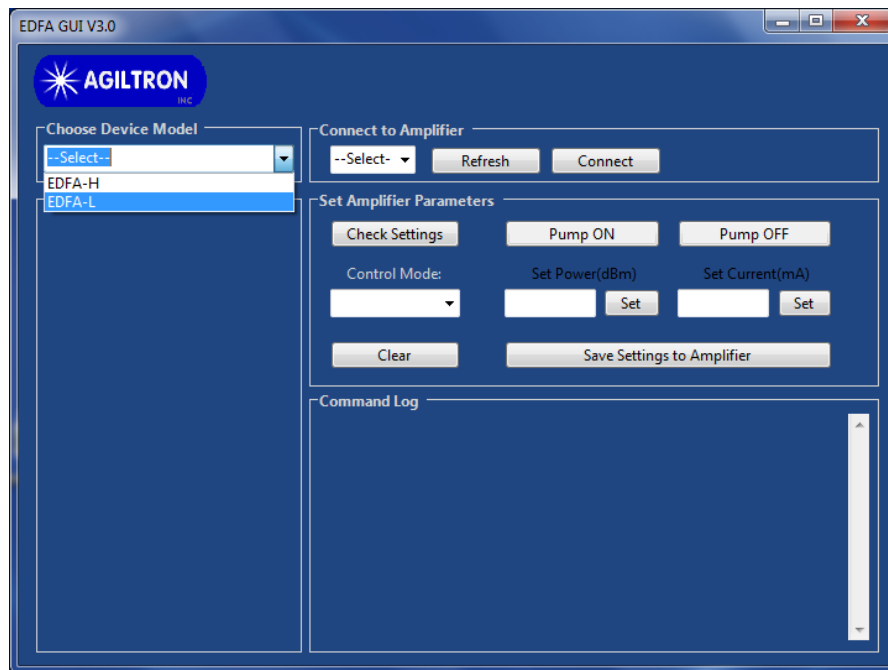


Figure 4 Remote control software: Model selection

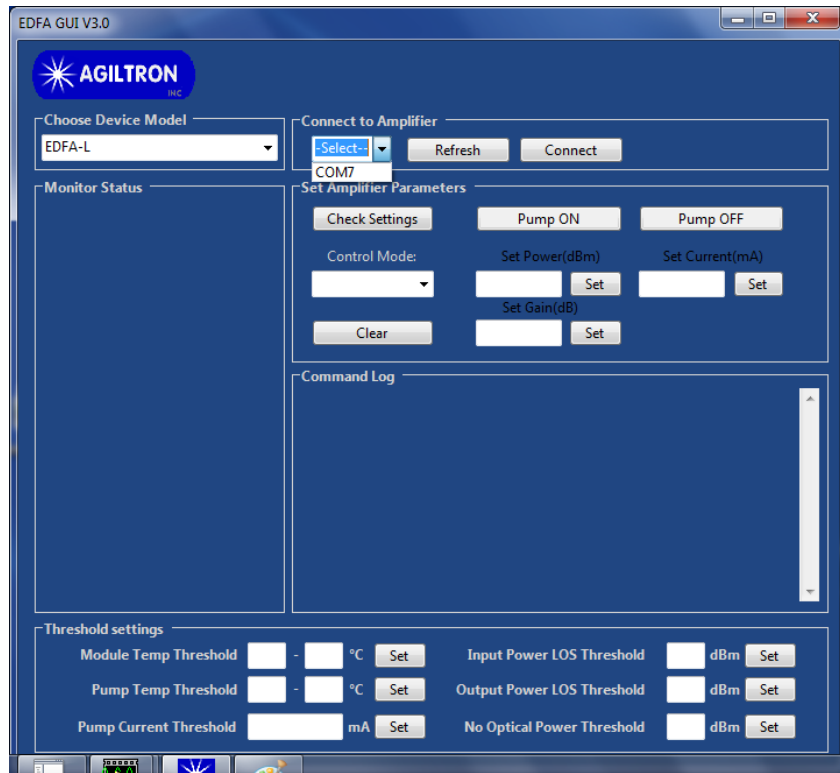


Figure 5 Remote control software: Port selection

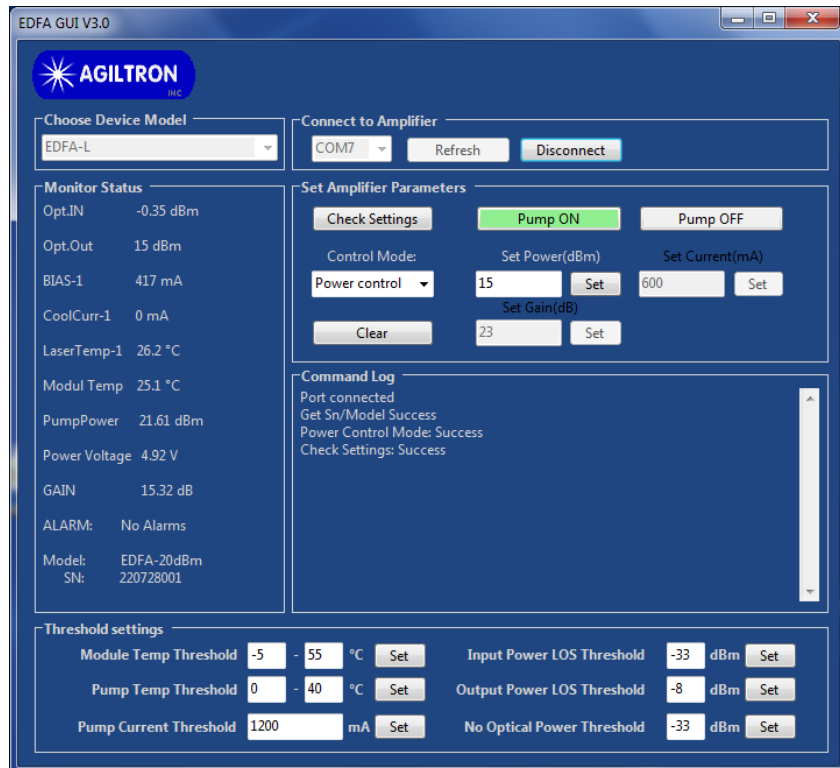


Figure 6 Remote control software: connected successfully.

- 3) Turn on Emission on the front panel of the EDFA to power up the whole unit and enable USB functions.
- 4) Run EDFA GUI V3.0.
- 5) Choose device model EDFA-L.
  - EDFA-H: standard version EDFAs with 23dBm or higher output power.
  - **EDFA-L**: standard version EDFAs with less than 23dBm output power.
  - EDFA-C: high-end or special version EDFAs.
- 6) Port Selection:
 

Select the serial port, to which the EDFA is connected, from the 'Port List', and click 'Connect'. If the desired port doesn't show up click 'Refresh' button and try again.
- 7) Once EDFA has been connected successfully the status of the EDFA will be displayed in Monitor Status window. The status keeps updating at an interval of 1 second.
- 8) Check Setting
 

Click to get the settings from the EDFA.
- 9) Pump ON/OFF
 

Click to turn on/off the EDFA pump laser, thus to turn on/off its output.



Figure 7 Remote control software: control mode selection

- 10) Control Mode Selection
  - Click 'Control Mode' button to get the current mode setting of EDFA.

- Set control mode as Current Control’.
- Input setting value into the corresponding ‘Set Current(mA)’ box, then click ‘Set’ button.

#### 11) Save Settings

When power or current setting is changed by user the setting will be saved to EDFA.

#### 12) Emission ON/OFF

Click ‘Pump ON’ or ‘Pump OFF’ button to turn on/off the output of EDFA.

#### 13) Limits Setting

##### Warning

Change these limit settings only when it is necessary.

The following limits can be re-set by user. When the monitor parameters from EDFA beyond the setting range the EDFA will turn off automatically.

- Module Temp Threshold: the allowed temperature of EDFA core
- Pump Temp Threshold: the allowed temperature of pump
- Pump Current Threshold: maximum driving current of pump
- Input Power LOS Threshold: required minimum input optical power
- Output Power LOS Threshold: when output optical power is lower than the set value EDFA will turn off.