A Photonwares Company

Bench-top High-power C-/L-Band SM Booster EDFA with Turn Key, Interlock & Status Monitor

User Manual

P/N: EDFA-x1(L)xx12xxxxxxx

Version: 2025-7

> **Warning**
>
> When Emission Button is turned on and there is sufficient laser power to the input port of this device its output will be on at the power level previously set at factory, which is 26dBm. This power level can be changed through provided GUI.

> **Warning**
>
> For amplifiers with output power higher than 30dBm/1W one of the two options of output fiber below is required.
>
> - A pair of fiber optic patch cables with matched high-power connectors
> - Splicing of two matched fiber optic cables
>
> Fail to do so will cause severe damage to output fiber, even to amplifier.

> **Warning**
>
> All fiber connectors need to be cleaned and inspected before connecting them to the input and output of amplifier.
> Fail to do so might cause poor performance of amplifier, severe damage to fiber and even amplifier.

1 Warning

1) Only single mode fiber (SMF, 9/125μm) cable is compatible to this EDFA.

   For fiber cables with high-power connectors, their MFD (mode field diameter) must match that of EDFA output high-power connector.

   Using of other fiber cables, including multimode fiber cables and single-mode fiber cables with different core size, unmatched connector, may cause poor performance or even damage to the EDFA.

2) Only connectors as indicated on the front panel are allowed, such as FC/APC, SC/APC, etc.

3) Clean and inspect connectors and fiber ends prior to installation.

4) Use only industry approved methods, materials, and solutions for cleaning.

5) Always turn off the EDFA prior to plugging/unplugging fiber cable. Failure to do so may cause permanent damage to the EDFA.

2 Summary

This booster EDFA works in C- or L-band. Its front and rear panels are shown in Figure 1.

Figure 1: Front and rear panels of EDFA

Front Panel

- **Turn Key**

  Switch ON/OFF the power of pump circuit.

  Note:

  When it is OFF USB functions are disabled.

- **Power Indicator**

  Will be lighted up in solid green when the power of pump circuit is on.

- **Input & Output**

  The fiber connectors on its front panel are for laser input and output. SMF-28 optical fiber cables are required for this model.

- **Emission Enable Button**

  Enable or disable the emission of laser. Push it down to enable laser emission, and push it one more time to release it thus to disable laser emission.

  OFF: Dark

  ON: Lighted up in blue

  Note:

  a.   Laser emission will be enabled when the following status is met.

  1) GUI setting: Pump On
  2) Interlock: shorted
  3) Emergency button: pulled up.

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b. This EDFA is designed to work between -10 ~ 60°C temperature range. Humidity should not exceed 90%. Installation is recommended in a temperature & humidity controlled, dust-free environment.

- **Emergence Push Button**

In case of emergence push it down to disable laser output.

To resume laser output turn it clockwise.

Rear Panel

- **Power Connector**

This module needs 100-240V AC power. Its on-off power switch locates on rear panel.

- **USB Control**

The type-B USB port is for remote control.

The RS232 port is not functional for this model.

- **Emission Status Monitor**

The BNC connector on rear panel is for output of monitor signal of emission status. Its output can drive an external LED indicator.

EDFA emission on: 3.3V

EDFA emission off: 0.0V

- **Safety Interlock**

The SMA connector on rear panel is for safety interlock input.

Its shield is GND and the core is input. Shorting its core and shield will enable EDFA output. Once they are disconnected output will be shut down immediately. When short-circuit is set up again the output of EDFA will be restored to previous status.

Interlock Status	Emission Control
Open-circuit	Off
Short-circuit	On

3   Connection and Operation

Warning

- **This EDFA will have 30dBm output once the 'Emission' button lights up and > -10dBm input laser power is sent to the input port, even without GUI connection.**

- **An initial 30dBm output was set in factory and can be changed and saved by using GUI.**

1) Plug the AC power cord into the receptacle on the rear panel of the module, and connect to 100-240V AC power source.

2) Clean the FC/APC connectors of SMF-28 fiber cables properly, and then connect them to the corresponding input/output ports.

> *Note: ensure that the wavelength and power of the input light are within the EDFA specifications, i.e. -10 ~ 5dBm @ 1550nm.*

3) Connect interlock input, or leave the shorting cap on the SMA port.

4) If needed, connect the emission status port to desired external device.

5) Turn power on using the rocker switch on the rear panel of the device.

6) Switch Turn Key to 'ON' position to power on pump circuit and enable USB functions.

7) Make sure Emergency Button is pulled up.

8) Set Interlock at desired status.

9) Connect the USB port on the rear panel to a computer by using the type-B USB cable coming with the device.

10) Change EDFA settings through GUI soaftware, if needed.

11) Push Emission Button down to turn on laser output. It will be lighted up in solid blue. Now the EDFA will have output power if it wasn't set as 'Pump OFF' in GUI.

12) Use GUI for getting EDFA status, changing output power, saving setting, etc. Please see Part 4 for detailed instruction.

13) To turn off EDFA output push Emission Button to pop it up and its blue indicator will turn dark.

14) Switch Turn Key to OFF position to shut down the power of pump circuit and disable USB functions.

4 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 Other Download.

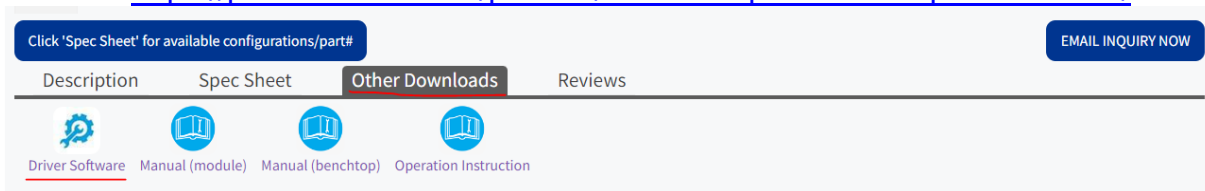https://photonwares.com/product/erbium-doped-fiber-amplifier-module/

Figure 2: Driver download link

2) Unzip the file and run setup.exe to install the GUI on host computer.

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-M

- EDFA-H: standard version EDFAs with 30dBm or higher output power.

- EDFA-L: standard version EDFAs with less than 30dBm output power.

- **EDFA-M: standard M511 EYDFAs with 23-40dBm output power.**

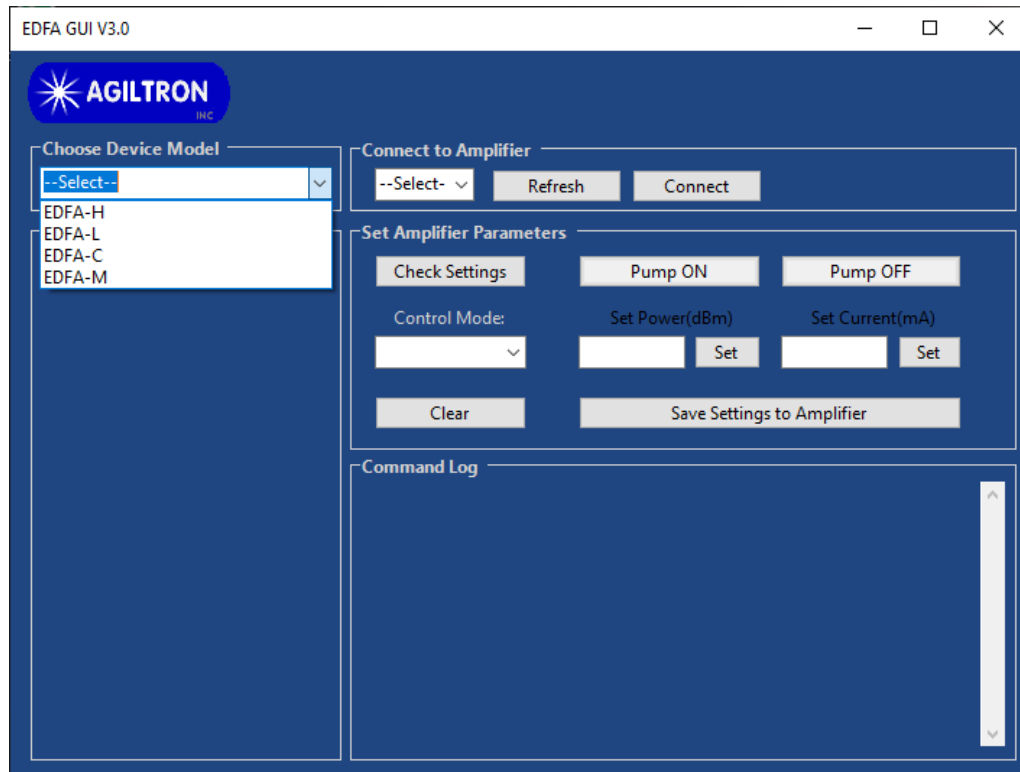- EDFA-C: high-end or special version EDFAs.

Figure 3: Remote control software: model selection

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) Click 'Connect' button to build the connection between computer and the EDFA.

8) 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.

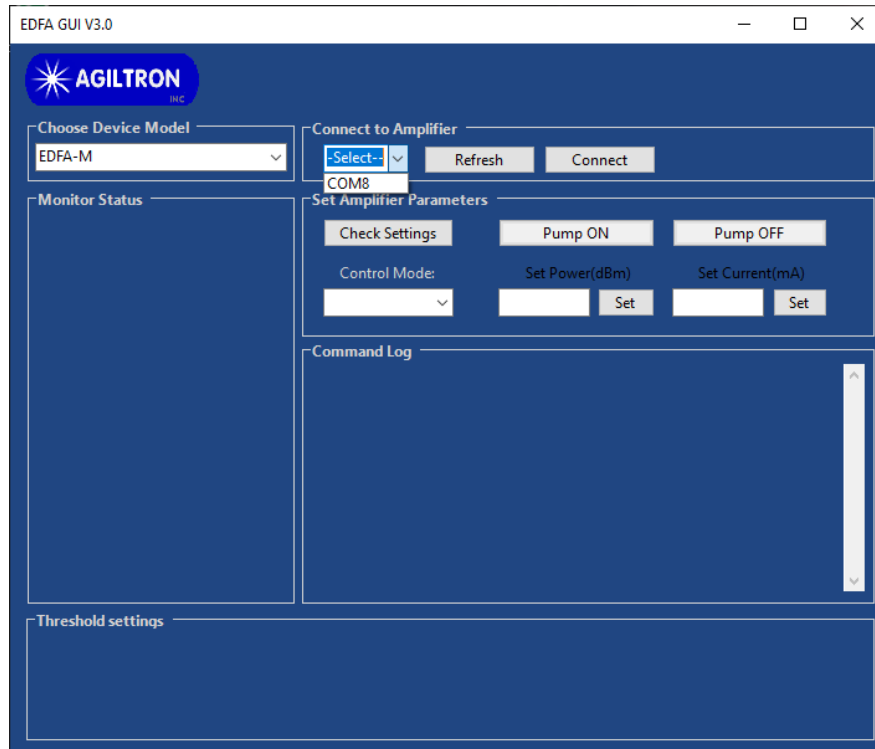9) Check Setting

Click to get the settings from the EDFA.

Figure 4: Remote control software: COM port selection.

10) Pump ON/OFF

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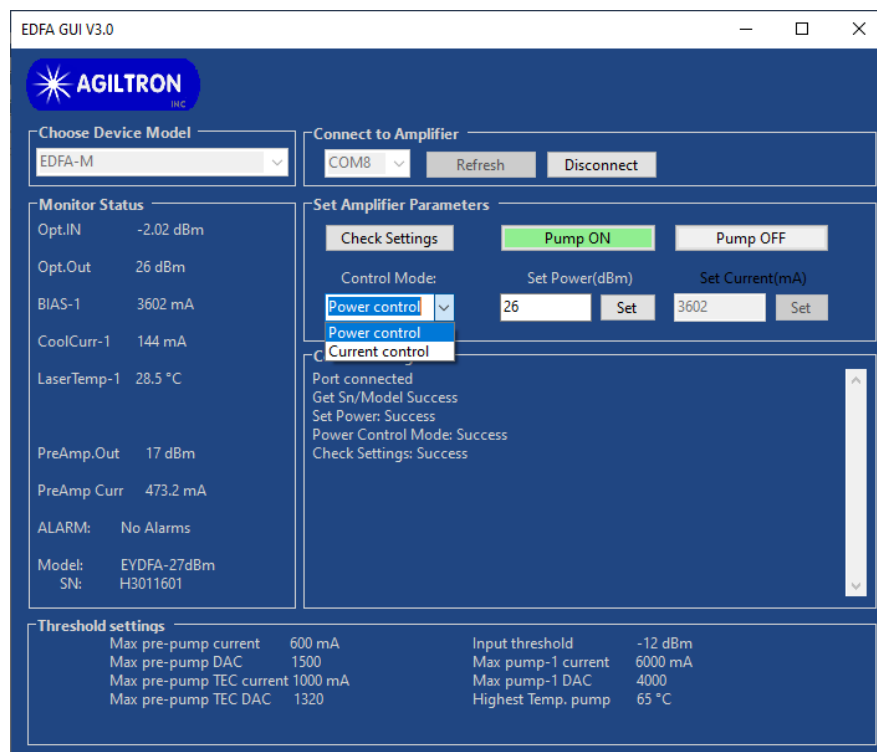

Figure 5: Remote control software: control mode selection

11) Control Mode Selection

Click 'Control Mode' button to get the current mode setting of EDFA.

- Power Control: constant power control mode

- Current mode: constant current control mode

Select the desired mode and input setting value into the corresponding 'Set Power(dBm)' or 'Set Current(mA)' box, then click 'Set' button.

12) Save Settings

Each time when either 'Set' button is clicked all current settings will be saved to EDFA.

When turn on the EDFA next time it will run under saved settings, even without GUI connection.

13) Emission ON/OFF

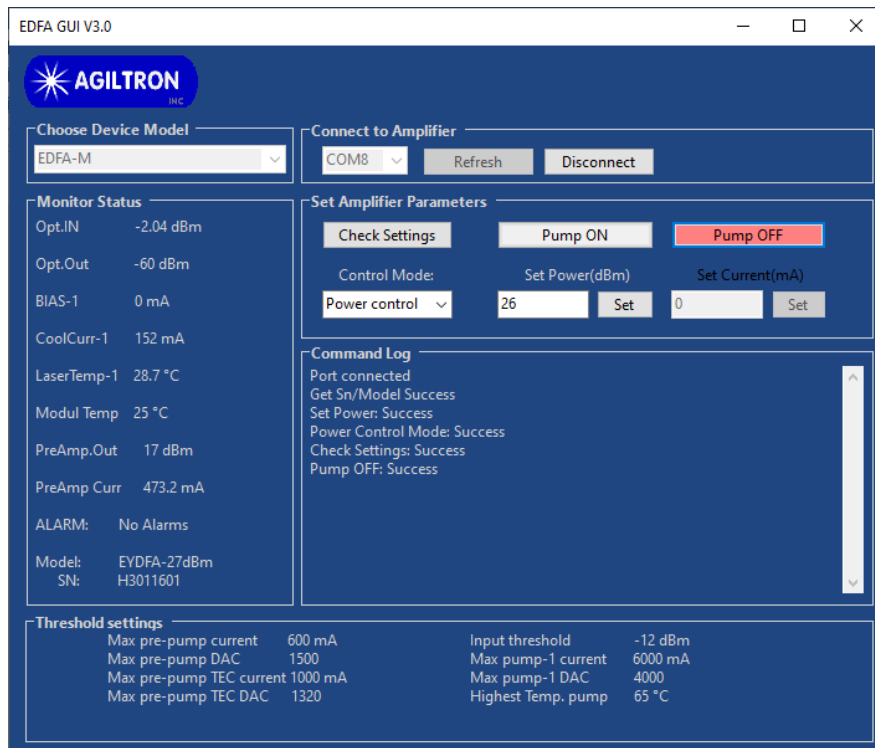Click 'Pump ON' or 'Pump OFF' button to turn on/off the output of EDFA.

Figure 6: Remote control software: output is turned off.

Note:

Laser output will be enabled only when the following hardware status is met.

- Emission button: pushed down & lighted up in solid blue
- Interlock: shorted
- Emergency button: pulled up.