

PureGain™ 1600

Fixed Gain, Compact EDFA with Digital Control Electronics



The PureGain™ 1600 Optical Amplifier Series combines state-of-the-art electronics, superior optical performance, a feature-rich control language and a compact form factor to create the most flexible low-cost amplifier on the market. The patented digital control system reduces the thermal dissipation, enabling higher system density and lower operating cost. The PureGain™ 1600 series is available in both narrow-band and broadband models with output power up to 21 dBm.

FEATURES

- Fully Integrated Control Electronics with Transient Control
- Digital Control System with Adaptive Thermal Management
- Output Power up to 21 dBm
- RS232 or I²C™ Command Interface with Monitoring, Alarms and Safety Shut-Down
- Gain Flattening Filter (Option)
- Small Package (70 x 90 x 15 mm)
- Variants available for Single-Channel, Narrowband, or Broadband Amplification



APPLICATIONS

- Metro Regional, Long-Haul and Ultra Long-Haul Networks
- Single-Channel or DWDM Networks
- Amplification at optical Add/Drop nodes
- Transmitter and Receiver Amplification

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KEY OPTICAL SPECIFICATIONS

Optical performance specifications vary depending on the optical design. Specifications presented here are based on typical designs. Avanex can customize the optical design of the PureGain™ 1600 series to meet a wide range of custom requirements.

	Model 1601 Gain-Flattened	Model 1602 Gain-Flattened	Units
Wavelength Range	1530 – 1562	1530 – 1562	nm
Input Power Range	-29 to -5	-20 to -2.5	dBm
Nominal Gain	23	23	dB
Maximum Output Power	17.5	20.5	dBm
Gain Flatness (Typical), Peak-to-Peak	0.9	0.9	dB
Gain Flatness (Maximum), Peak-to-Peak	1.6	1.6	dB
Noise Figure (Typical) At Nominal Gain and Max Output Power	5.0	5.3	dB
Noise Figure (Maximum) At Nominal Gain and Max Output Power	5.5	5.8	dB
Polarization Dependent Gain (Maximum)	0.5	0.5	dB
Polarization Mode Dispersion (Maximum)	0.3	0.3	ps

KEY ENVIRONMENTAL SPECIFICATIONS

	Min	Max	Unit
Operating Case Temperature Range	0	+70	°C
Storage Temperature Range	-40	+85	°C
Operating Humidity ¹	+5	+95	% RH

Note 1. Non-condensing.

KEY CONTROL AND ELECTRICAL SPECIFICATIONS

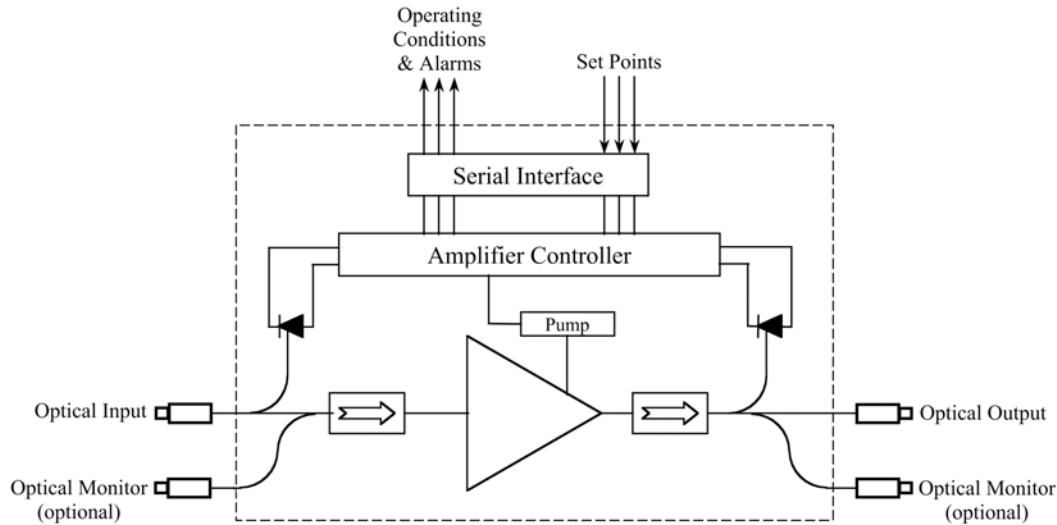
	Model 1601	Model 1602	Units
Maximum Transient Settling Time (15 dB Add/Drop)	500	500	µs
Maximum Transient Overshoot/Undershoot (15 dB Add/Drop)	+/- 1.5	+/- 2.0	dB
Power Supply Voltage	3.2 – 5.25	3.2 – 5.25	V
Power Consumption, Maximum value over life and operating temperature	6	9	W

SOFTWARE FUNCTIONS, MONITORS AND ALARMS

The software interface of the PureGain™ 1600 Series is based on Avanex’s Optical Amplifier Command Set, providing extensive control and monitoring functions.

Functions	In-Service Firmware Upgrades
	Auto Shut Down
	Gain Control Mode with automatic power limiting
	Output Power Control Mode
	Pump Current Control Mode
	Eye-Safe Power Mode
	Non-volatile event log
Monitors	Total Input Power
	Total Output Power
	Pump Status
	Module Temperature
Alarms	Loss-of-Signal Alarm
	Low Output Power Alarm
	Module Temperature Alarm
	Pump Temperature Alarm
	Pump Bias Alarm

OPTICAL/ELECTRICAL SCHEMATIC



ELECTRICAL PIN ASSIGNMENTS

The electrical interface is via one 2-millimeter pitch, 30-pin socket (Samtec p/n: SMM-115-02-H-D-LC)

Pin	Description	Pin	Description
1	Power Supply	2	Power Supply
3	Reserved (do not connect)	4	Reserved (do not connect)
5	Ground	6	Ground
7	Serial Input	8	Serial Output
9	Ground	10	Ground
11	No internal connection	12	Reset
13	Amplifier Disable	14	Output Power Mute
15	EDFA Case Temperature Alarm	16	Common alarm
17	Pump Temperature Alarm	18	Pump Bias Alarm
19	Input LOS Alarm	20	Output/Gain Alarm
21	Reserved (do not connect)	22	Reserved (do not connect)
23	I ² C SCL (Optional)	24	I ² C SDA (Optional)
25	Ground	26	Ground
27	Reserved (do not connect)	28	No internal connection
29	Power Supply	30	No internal connection

PureGain™ 1600

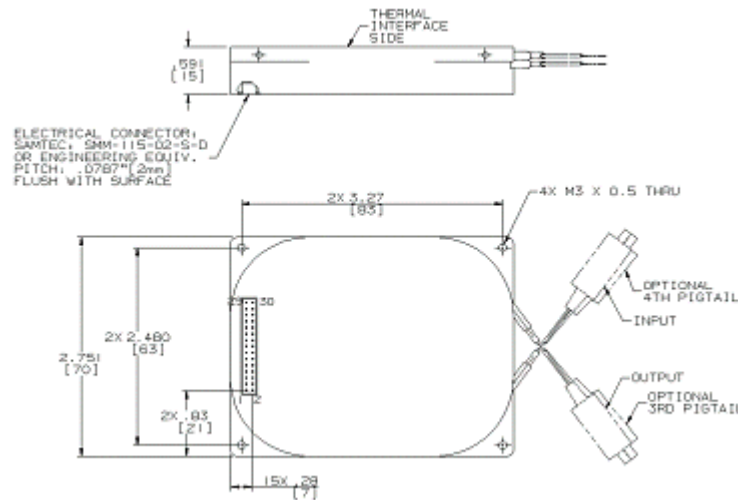
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OPTICAL PIGTAILS

Fiber Type	Corning SMF-28™ or equivalent
Pigtail Buffer diameter	900 μm
Pigtail Length	≥ 1000 mm
Pigtail Colors	Blue (input), Red (output) Black (monitors)
Connector Type	No connector

MECHANICAL FOOTPRINT



Note: Dimensions are in inches; dimensions in brackets are in millimeters.

COMPLEMENTARY AMPLIFIER PRODUCTS

- PureGain™ 1700 Fixed Gain, Ultra-thin EDFA with Digital Control Electronics
- PureGain™ 2800 Variable Gain EDFA with Digital Control Electronics

Performance figures contained in this document must be specifically confirmed in writing by Avianex before they become applicable to any particular order or contract. Avianex reserves the right to make changes to the products or information contained herein without notice.

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