ED5229GT-E model

ED5229GTRE model

ED5229GT-E/GTRE Series

GPON EDFA with WDM for IP (OLT) wavelengths Multi Optical Outputs (With Pluggable Cooling fans, fan speed monitoring & alarm / for Outdoor Cabinet Environment)

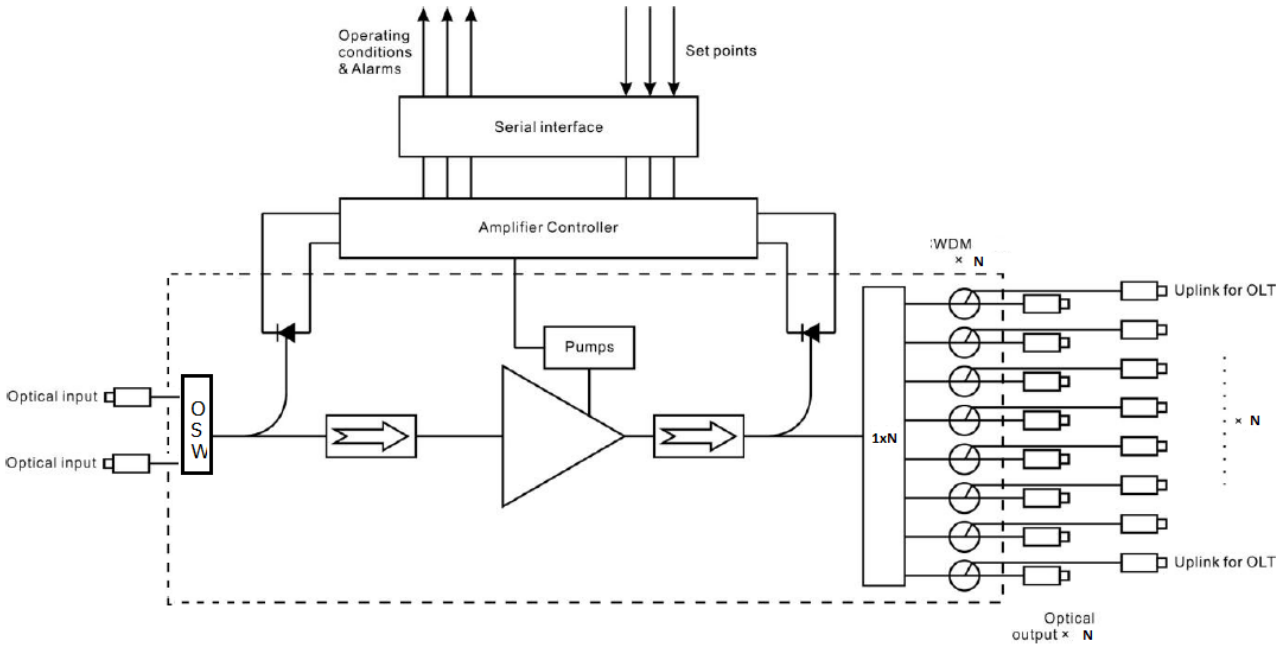
The ED5229GT-E / GTRE series is a high-power multi-ports EDFA optical booster with gain spectrum bandwidth from 1545 to 1563 nm for HFC network. It is designed for the amplification of 1550nm single channel or multi-channel wavelengths (ITU wavelength) with WDM for IP(OLT) signal overlay. The integrated WDM devices are used for combing GPON(IP) signal wavelengths of 1310nm (upstream) & 1490nm (downstream) with 1550nm broadcasting signal in the same fiber. The ED5229GTRE model has an additional built-in optical receiver for directly monitoring the 1550nm signal. The units are specially designed with ruggedized components for operation from -5°C to +65°C which is suitable for both indoor and outdoor cabinet environments. The ED5229GT-E/GTRE has a very compact by design that includes pluggable cooling fan modules on the sides with fan speed monitoring and fan failure alarms. The pluggable power supply modules have on/off switches on the front panel. All optical connectors are positioned at a 60 degree angle to the front panel surface for easy fiber routing. It provides full front-panel access functions including the power supply connections. It is 2 RU in height and by using mounting adaptor brackets it will work on either a 21” and 23” rack and can be installed vertically or horizontally. This series of EDFA offers a flexible solution for broadcasting large area coverage of metropolitan and medium-size cities.

The ED5229GT-E/GTRE EDFA adopts the world’s top class pump lasers and the American brand OFS’ erbium-doped optical fiber. Perfect APC control, excellent design in the ventilation and efficient heat-dissipation ensure the long life and high reliability of the product. The pump laser will switch off automatically if the input optical signal power is too low or missing, which offers safety protection for the lasers. The LCD display and LED indicators on the front panel provide system information, real-time monitoring and alarm functions for operating this equipment. A RS232 interface is available for controlling the unit from a remote PC by a GUI software. Network management via SNMP protocol is possible using the RJ-45 port on the front panel.

Features

- Operation temperature range: -5°C to +65°C (for outdoor cabinet environment)
- 1545~1563 nm operating wavelengths range
- 32 combined output ports and 32 OLT input ports
- All front panel access
- Pluggable cooling fans on the side walls
- Fan speed monitoring and failure alarm
- All of the optical connectors are positioned at a 60° angle for easier fiber cable routing
- Fits into a 19” 21” or 23” wide rack and can be mounted horizontally or vertically.
- Low noise, high reliability
- Precision APC control
- Powerful RS232 supervisory instruction
- Efficient space, flexible installation and easy operation
- A high performance optical output driver circuit and laser TEC to provide a highly reliable EDFA
- A Built-in microprocessor allows the unit to monitor the system parameters
- A pump laser auto shutdown function is available
- LED indicator on the front panel shows the alarm status
- LCD display on the front panel shows the system parameters
- Support firmware upgrade download
- Support SNMP for network management
- 1550nm test port (for ED5229GTRE model only)

Block Diagram



Specifications

ACI Communications, Inc.				ED5229GT-E/GTRE Series EDFA with WDM (Multi optical outputs)			
No.	PARAMETERS	CONDITIONS	UNITS	SPECIFICATION			NOTES
0.	Environmental condition			Min.	typical	Max.	
0.1	Power Consumption		Watt			70	
0.2	Operation Case Temperature		°C	-5		+65	
0.3	Operation Humidity		%RH	0		95	Without Condensation
0.4	Storage Case Temperature		°C	-40		80	
0.5	Storage Humidity		%RH	0		95	Without Condensation
1.	Optical Specifications			Min.	Typ.	Max.	
1.1	Optical Wavelength (GPON / IP)	In vacuum	nm	1270	1310	1350	Pass through
				1480	1490	1505	Pass through
1.2	Optical Wavelength (broadcasting	In vacuum	nm	1545	1550	1563	
1.3	Total Input Power Range	@ λ_{OP}=1550 nm	dBm	-10		+10	
1.4	Saturated Output Power (per port)	@ Pin ≥ -6 dBm @ λ_{OP}=1550 nm	dBm	Pout	Pout +0.5	Pout +1	Pout is selected by customer, eg. Pout= 19 dBm
1.5	Output Power After WDM	≥	dBm	19			For Pout= 19 dBm model
1.6	Output Power Stability	Over λ_{OP}	dB	-0.5		0.5	
1.7	Output Power Uniformity	Among output ports	dB		± 0.5 dB		
1.8	Noise Figure @ Pin=0 dBm (1550 nm)		dB	-	5.5	≤ 6.0	Including optical switch & WDM insertion loss
1.9	PDG (Polarization Dependent Gain)	Over λ_{OP}	dB	-	-	0.4	
1.10	PMD (Polarization Mode Dispersion)	Over λ_{OP}	Ps/nm	-		0.5	
1.11	Optical Return Loss	All ports, min.	dB	50			
1.12	Input Isolation		dB	25			
1.13	Output Isolation		dB	40			
1.14	Insertion loss (IP Wavelength)	@ 1310 nm & 1490 nm	dB			1.0	
1.15	Pump Laser Used	@ ≤ 22 dBm @ ≥ 23 dBm			2 3		
1.16	Residual Pump LD Power	970 ~ 980 nm	dBm			-30	
1.17	Control Mode	APC		APC			
1.18	Number of Output Ports	155nm+IP		32			
1.19	Number of Input Ports	155nm input		2			
		IP(OLT) inputs		32			
2.	Mechanical / Power / Interface Specifications						
2.1	Dimension (W x L x H)	19", 21 or 23", 2RU Rack mount		486 x 229 x 88 mm (for 19" rack) 535 x 229 x 88 mm (for 21" rack) 584 x 229 x 88 mm (for 23" rack)			
2.2	Power Supply	Dual power module / hot standby	Volt	-48 VDC (-30 ~ -72 VDC)			
2.3	Pump Laser Switch			Key Switch			

Specifications

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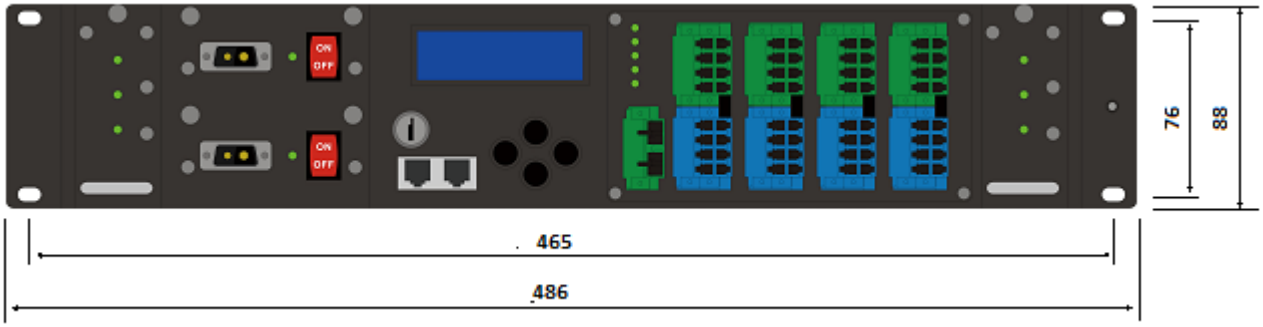
No.	PARAMETERS	CONDITIONS	UNITS	SPECIFICATION			NOTES
2.	Mechanical / Power / Interface Specifications (Continued)						
2.4	LED Indicators			Power, Input, Pump, Alarm			
2.5	User Interface			RS232, RJ45 (Ethernet)			
2.6	Fiber type	Single Mode	μm	9/125			
2.7	Optical Connector	Output ports IP input ports 1550nm input ports		LC/APC LC/UPC SC/APC			With built-in WDM & switch
2.8	Optical Connector Orientation	All ports		60 degree angled to the surface of the Front Panel			
3.	Built-in WDM Specifications			Min.	Typ.	Max.	
3.1	Transmission band Reflection band	For GPON signal	nm		1550, 1490		downstream
					1310		upstream
3.2	Insertion loss: Transmission band Reflection band	≤	dB			0.8 0.6	
3.3	PDL	≤	dB			0.1	
3.4	PMD		ps			0.1	
3.5	Isolation	≥	dB	40			
3.6	PON signal pass-through when EDFA is turned off		nm		1490, 1310		
3.7	Maximum power	WDM Max. power endurance	dBm			26	
4.	Built-in Optical Switch						
4.1	Number of inputs	Main (A), secondary (B)			2		
4.2	Insertion loss	≤	dB			1.0	
4.3	Switching time	≤	second			0.5	
4.4	Switching mode:						
	Switching to secondary input when main input is below predefined level						
	Automatic switches back to main input when main input is turned on again						
	When both main and secondary inputs are below the threshold, the EDFA selects the highest input source						
	Signal passes through when equipment is down						
5.	Configuration and Management						
5.1	Constant Output	@ variable input: -6 ~ +8 dBm					
5.2	Configuration method	Through button panel and web interface					
5.3	Management method	By Web interface with 10/100 Mbps Ethernet port and SNMP					
		Settable threshold of switching					
		MIB file document available for third party integration					
5.4	Managed Information	Input power, output power, power supply status, bias current of pump laser, laser temperature					
		Alarm threshold setting for: input power, output power, bias current of laser, laser temperature					
		Alarm on failure of cooling fans					

Specifications

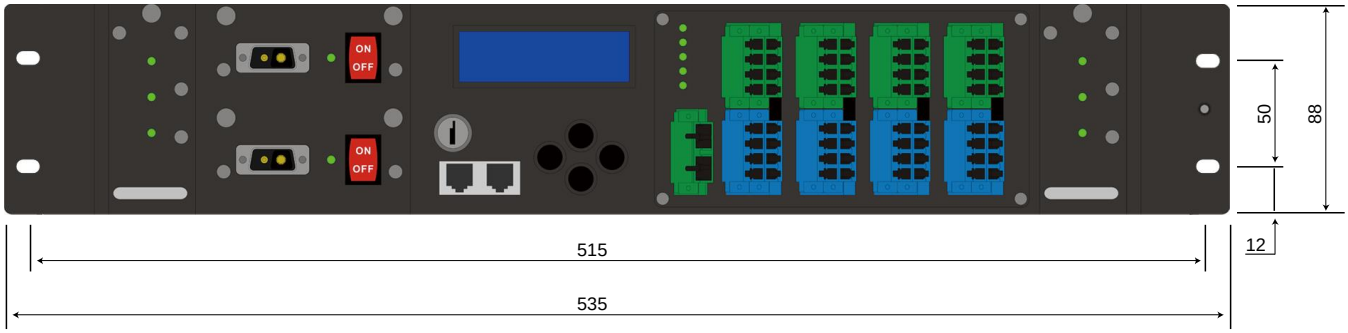
ACI Communications, Inc.		ED5229GT-E/GTRE Series EDFA with WDM (Multi optical outputs)	
6.	Key parts information		
6.1	Pump laser brand & origin	JDSU or Oclaro (Bookham), IPG or similar / USA and Russia	
6.2	EDFA manufacturer origin	Taiwan	
6.3	Laser cooling method	Thermoelectric cooler (TEC)	
6.4	EDFA lifetime	≧10 years	
7.	Built-in Optical receiver (for ED5229GTRE model only)		
7.1	Built-in optical receiver (for 1550nm test port)	@ output of EDFA for broadcast signal testing	
7.2	Optical receiver input	-6 to 0 dBm (typical)	
7.3	Video output level	70 dBμV min., manual adjustable	
7.4	Video performance	47dB min.	
7.5	Test point	F5 3/8-inch female	

Dimensions

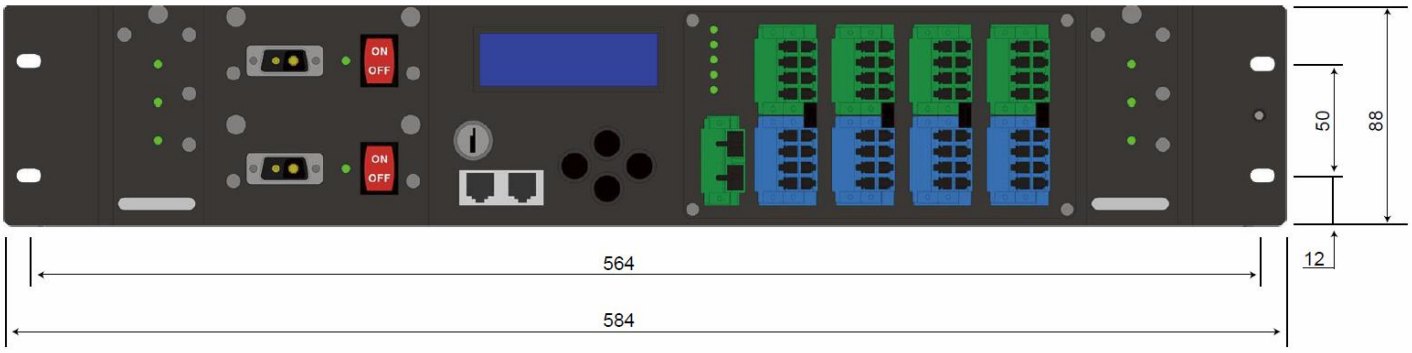
A. Front panel dimension for 19” Rack Mount



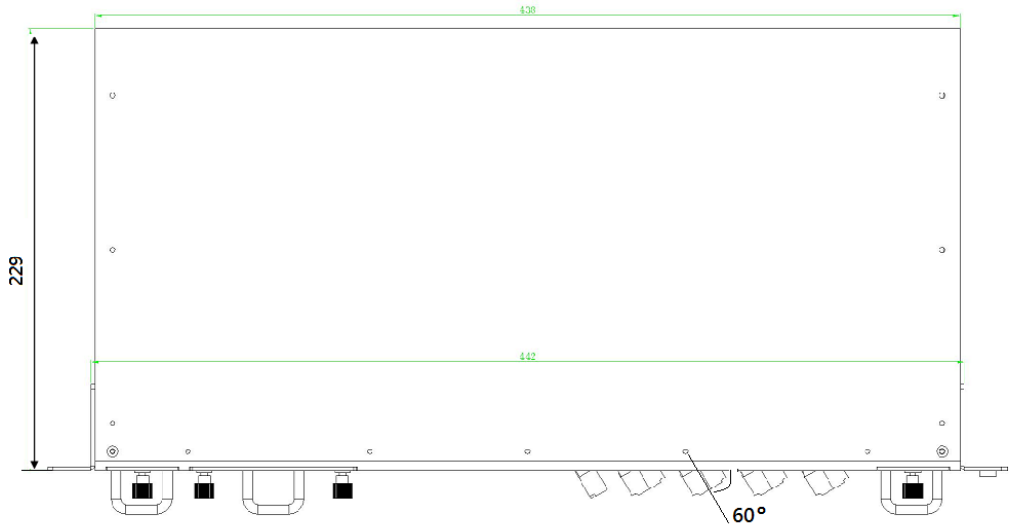
B. Front panel dimension for 21”



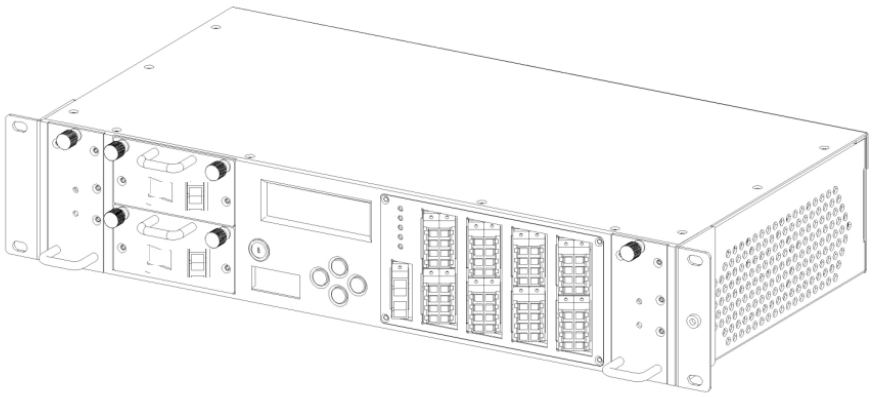
C. Front panel dimension for 23”



D. Length (Depth) dimension of Chassis: 229 mm
Optical Connectors Orientation: 60 degree to the front panel surface



E. Mechanical Chassis



Ordering Matrix

ACI ED5229GT-E/GTRE Series EDFA with WDM Configuration Sheet

Customer: _____

Created By: _____ Order Date: _____

ORDERING MATRIX **2017/9/30**

Position	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
PART NUMBER	E	D	5	2	2	9	G	T	—	E				—						

9 ☐ **TEST PORT**
"—" = No RF test port
R = with 1550nm video test port

10 ☐ **FAN Options**
A = Fixed Fans on back panel, without fan alarm (19" Chassis only)
E = With Angled optical connecctors, LCD on left side, airflow from right to left, Plugable Fan modules on both sides, with fan speed monitoring & fan current data & fan failure alarm (19" Chassis & 21" L adaptor) &Advanced software

11 ☐ **CONTROL INTERFACE**
0: None (Default)
1: SNMP (RJ45)
2: RS232

12,13 ☐☐ **NUMBER OF OUTPUT PORTS**
32: 32 output ports

15,16 ☐☐ **OUTPUT POWER (per port)**
13: 13 dBm Selectable range:
14: 14 dBm 32port: 13 ~ 22 dBm
15: 15 dBm
16: 16 dBm
17: 17 dBm
18: 18 dBm
19: 19 dBm
20: 20 dBm
21: 21 dBm
22: 22 dBm

17 ☐ **OPTICAL CONNECTOR(input - output)**
1: SC/APC - LC/APC

18 ☐ **MAIN POWER**
1: 110/220 VAC (Default)
2: Dual 110/220 VAC
3: Dual -48 VDC
4: Dual -48 VDC, for Front Panel acces

19 ☐ **POWER CORD SETS**
0 = None
1 = North America
2 = International / Europe
3 = Japan
4 = Australia
5 = Argentina
6 = DC Wire Set(AWG14) with Lugs type terminal, Black Negative(—), Red Positive(+)
7 = DC power connector (DB2 type) with wire terminal Black Negative(—), Red Positive(+)
8 = DC power connector (DB2 type) with wire terminal Red Negative(—), Black Positive(+)
9 = DC Wire Set(AWG14) with Lugs type terminal, Red Negative(—), Black Positive(+)
X = Custom - (Determined by product management)

20 ☐ **PON IP INPUT CONNECTOR**
0= No IP input
1= LC/UPC
2= LC/APC
3= SC/UPC
4= SC/APC

NOTES:

Notes:
1. The GT version represents an EDFA with extended opeation temperature range of -5 to 65 ℃ for outdoor cabinet environment.
2. The GT-E version has all optical connectors positioned at a 60 degree angle to the front panel surface. And airflow direction is changed to be from right to left.

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