



# CHP Max™ Headend Optics Platform

## Erbium Doped Fiber Amplifiers

### CHP EDFA

#### Specifications for Standard Input Models

Models	Constant Gain/Power CHP-EDFA-CG-				Constant Power CHP-EDFA-					
	13-1-S	16-1-S	19-1-S	22-1-S	16-1-S	16-4-L	19-1-S	19-2-S	19-4-L	20-8-L
<b>General Specifications</b>										
Optical Wavelength Range, nm	1530 - 1562				1535 - 1562					
Total EDFA Power, nominal, dBm <sup>3</sup>	13	16	19	22	16	22	19	22	25	29
Number of Output Ports	1	1	1	1	1	4	1	2	4	8
Output Power per Port <sup>4</sup>	13	16	19	22	16	16	19	19	19	20
Optical Input Range										
Constant Gain Mode (AGC), dBm <sup>5</sup>	-10 to 12	-10 to 12	-10 to 12	-10 to 12	—	—	—	—	—	—
Constant Power Mode (APC), dBm <sup>6</sup>	-3 to 12	-3 to 12	-3 to 12	-3 to 12	-3 to 12	-3 to 12	-3 to 12	-3 to 12	-3 to 12	-3 to 12
Optical Power Stability, dB <sup>7</sup>	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5	± 0.5
Input Isolation, dB	> 30	> 30	> 30	> 30	> 30	> 30	> 30	> 30	> 30	> 30
Output Isolation, dB	> 30	> 30	> 30	> 30	> 30	> 30	> 30	> 30	> 30	> 30
Remnant Pump Power, dBm	<-25	<-25	<-25	<-25	<-25	<-25	<-25	<-25	<-25	<-25
<b>Noise Figure<sup>8</sup></b>										
In 1550 ± 5 nm, dB, typ./max.	4.5/4.8	4.5/4.8	4.5/4.8	4.5/4.8	5.0/5.5	5.0/5.5	5.0/5.5	5.0/5.5	5.0/5.5	5.0/5.5
In Range λ, dB, max. <sup>10</sup>	5.8	5.8	5.8	5.8	6.5	6.5	6.5	6.5	6.5	6.5
<b>Gain Flatness (dB)</b>										
Optimum Gain per port	12.0	15.0	18.0	21.0	—	—	—	—	—	—
Allowable Gain Variation, dB	± 4.0	± 4.0	± 4.0	± 4.0	—	—	—	—	—	—
Gain Flatness, P-P at opt. gain	2.5	2.8	3.0	3.5	—	—	—	—	—	1.3/5.2 <sup>12</sup>
<b>Power Specifications</b>										
Power Consumption, W, max.	21.7	21.7	21.7	21.7	21.7	43.4	21.7	43.4	43.4	65.1
<b>Physical &amp; Environmental</b>										
Slot Width	1	1	1	1	1	2	1	2	2	3
Dimensions (W x H x D)	Single: 3.18 x 8.7 x 47.0 cm (1.25 x 3.4 x 18.5 in.), Double: 6.36 x 8.7 x 47.0 cm (2.5 x 3.4 x 18.5 in.), Triple: 9.6 x 8.7 x 47.0 cm (3.75 x 3.4 x 18.5 in.)									
Weight	Single: 1.6 kg (3.6 lb.), Double: 2.2 kg (4.9 lb.), Triple: 2.8 kg (6.2 lb.)									
Operating Temperature	Ambient: 0 to 50°C (32 to 122°F), Storage: -40 to 70°C (-40 to 158°F)									
Operating Altitude (AMSL)	-60 to 4,000 meters (197 to 13,123 feet)									
Operating Relative Humidity	5 to 95 %, noncondensing									

# CHP EDFA Technical Specification

## Specifications for High Input Models

Models	High Input, Constant Gain CHP-EDFA-HG-		High Input, Constant Gain/Power CHP-EDFA-PG-	
	20-1-S	23-1-S	20-1-S	23-1-S
<b>General Specifications</b>				
Optical Wavelength Range, nm	1528 - 1562 <sup>1,2</sup>	1527 - 1562 <sup>1,2</sup>	1528 - 1562 <sup>1,2</sup>	1527 - 1562 <sup>1,2</sup>
Total EDFA Power, nominal, dBm <sup>3</sup>	20.5	23.5	20	23.5
Number of Output Ports	1	1	1	1
Output Power per Port <sup>4</sup>	20.5	23.5	20.5	23.5
Optical Input Range				
Constant Gain Mode (AGC), dBm <sup>5</sup>	1 to 14.5	3 to 15	1 to 14.5	1 to 15
Constant Power Mode (APC), dBm <sup>6</sup>	—	—	7 to 17	7 to 17
Optical Power Stability, dB <sup>7</sup>	± 0.5	± 0.5	± 0.5	± 0.5
Input Isolation, dB	> 30	>30	> 30	> 30
Output Isolation, dB	> 30	> 30	> 30	> 30
Remnant Pump Power, dBm	<-25	<-25	<-5	<-25
<b>Noise Figure <sup>8</sup></b>				
In 1550 ± 5 nm, dB, typ./max.	5.0/6.0 <sup>9</sup>	5.0/5.5 <sup>9</sup>	5.0/6.0 <sup>9</sup>	5.0/5.5 <sup>9</sup>
In Range $\lambda$ , dB, max. <sup>10</sup>	7.0 <sup>11</sup>	6.5 <sup>11</sup>	7.0 <sup>11</sup>	6.5 <sup>11</sup>
<b>Gain Flatness (dB)</b>				
Optimum Gain per port	8.0	10.0	8.0	10.0
Allowable Gain Variation, dB	± 2.0	± 2.0	± 2.0	± 2.0
Gain Flatness, P-P at optimum gain	1.2/1.5 <sup>13</sup>	1.1/3.5 <sup>14</sup>	1.2/1.5 <sup>13</sup>	1.1/3.5 <sup>14</sup>
<b>Physical &amp; Environmental</b>				
Slot Width	1	1	1	1
Dimensions (W x H x D)	Single: 3.18 x 8.7 x 47.0 cm (1.25 x 3.4 x 18.5 in.), Double: 6.36 x 8.7 x 47.0 cm (2.5 x 3.4 x 18.5 in.), Triple: 9.6 x 8.7 x 47.0 cm (3.75 x 3.4 x 18.5 in.)			
Weight	Single: 1.6 kg (3.6 lb.), Double: 2.2 kg (4.9 lb.), Triple: 2.8 kg (6.2 lb.)			
Operating Temperature	Ambient: 0 to 50°C (32 to 122°F), Storage: -40 to 70°C (-40 to 158°F)			
Operating Altitude (AMSL)	-60 to 4,000 meters (197 to 13,123 feet)			
Operating Relative Humidity	5 to 95 %, noncondensing			

### Notes:

- Specifically for CORWave II 16-wavelength forward applications
- The range 1540 to 1562 nm is the optimized wavelength range.
- The total output power is within 1 dB of the nominal output power with an input between -6 and -3dBm; the total output power is within 3 dB of the nominal output power with an input between -10 and -6 dBm.
- Factory set point accuracy approximately ± 0.25 dB.
- When operating in the AGC mode, the sum of input power and gain set-point should not exceed the nominal output power (Input Power + Gain Set-point < Nominal Output Power) or high output power shutdown may be triggered. If the input power is <-10 dBm, no optical power is emitted.
- EDFAs operating in APC mode will meet output power specifications with input power levels > -3 dBm. At input power levels between -10 and -3dBm, the EDFA will attempt to maintain the set-point output power but it may be less than specifications.
- Over temperature, wavelength, and polarization.
- Specified for 0dBm optical input.
- The Noise Figure is 5.0 dB typical for the 1540 to 1562 nm range.
- See Optical Wavelength Range specification above.
- The Noise Figure is 6.0 dB typical for CHP-EDFA-xx-20-1-S and 6.5 dB maximum for CHP-EDFA-xx-23-1-S in the 1527 to 1562 nm range.
- For CHP-EDFA-20-8-L, optical power in = 6 dBm, optical power out = 20 dBm/port. The peak to valley gain flatness is 1.3 dB over bandwidth 1550 to 1562 nm and 5.2 dB over bandwidth 1535 to 1562nm.
- For CHP-EDFA-xx-20-1-S, the Gain Rating is 1.2 P-P at optimum gain for the 1540 to 1562 nm range and 1.5 P-P at optimum gain for the 1528 to 1562 nm range.
- For CHP-EDFA-xx-23-1-S, the Gain Rating is 1.1 P-P at optimum gain for the 1540 to 1562 nm range and 3.5 P-P at optimum gain for the 1528 to 1562 nm range.

# CHP EDFA Technical Specification

## Ordering Information

Part Number	Description
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### Constant Gain/Constant Power EDFAs

CHP-EDFA-CG-13-1-S	13 dBm, 1 output port, 1530 - 1562 nm, constant gain/power, SC/APC, 1-wide module
CHP-EDFA-CG-16-1-S	16 dBm, 1 output port, 1530 - 1562 nm, constant gain/power, SC/APC, 1-wide module
CHP-EDFA-CG-19-1-S	19 dBm, 1 output port, 1530 - 1562 nm, constant gain/power, SC/APC, 1-wide module
CHP-EDFA-CG-22-1-S	22 dBm, 1 output port, 1530 - 1562 nm, constant gain/power, SC/APC, 1-wide module

### Constant Power EDFAs

CHP-EDFA-16-1-S	16 dBm, 1 output port, 1535 - 1562 nm, constant power, SC/APC, 1-wide module
CHP-EDFA-16-4-L	22 dBm, 4 output ports, 16 dBm per port, 1535 - 1562 nm, constant power, LC/APC, 2-wide module
CHP-EDFA-19-1-S	19 dBm, 1 output port, 1535 - 1562 nm, constant power, SC/APC, 1-wide module
CHP-EDFA-19-2-S	22 dBm, 2 output ports, 19 dBm per port, 1535 - 1562 nm, constant power, SC/APC, 2-wide module
CHP-EDFA-19-4-L	25 dBm, 4 output ports, 19 dBm per port, 1535 - 1562 nm, constant power, LC/APC, 2-wide module
CHP-EDFA-20-8-L	29 dBm, 8 output ports, 20 dBm per port, 1535 - 1562 nm, constant power, LC/APC, 3-wide module

### High Input and Constant Gain EDFAs

CHP-EDFA-HG-20-1-S	20 dBm, 1 output port, 1528 - 1562 nm, high input constant gain, SC/APC, 1-wide module
CHP-EDFA-HG-23-1-S	23 dBm, 1 output port, 1527 - 1562 nm, high input constant gain, SC/APC, 1-wide module

### High Input and Constant Gain/Constant Power EDFAs

CHP-EDFA-PG-20-1-S	20 dBm, 1 output port, 1528 - 1562 nm, high input, constant gain/power, SC/APC, 1-wide module
CHP-EDFA-PG-23-1-S	23 dBm, 1 output port, 1527 - 1562 nm, high input, constant gain/power, SC/APC, 1-wide module

**Customer Care**—For sales and product information via the ARRIS website (<http://www.arrisi.com>) or as indicated:  
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