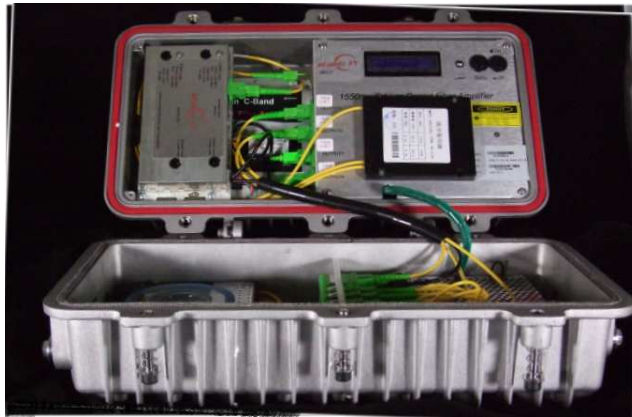


4CHA5900 Series AM 1550 nm Outdoor Optical Amplifier with Return and Splitter



V e r s i o n 1

- Critical components like the Pump laser and Erbium-doped fiber are originally made in the USA
- These Amplifiers have a reliable and stable optical output circuit and a laser thermoelectric temperature control circuit, which ensures the best performance over temperature extremes
- Build-in micro-processor software, monitors: laser status, voltage, input level, output level with a digital display,.
- Once the laser's status has exceeded set parameters, the power supply will be shut down
- Dual Return Receivers each servicing 4 (1310) Return Paths
- Receivers accept down to a -26 dBm return signal for 30 dB C/N
- Automatic return level adjustment

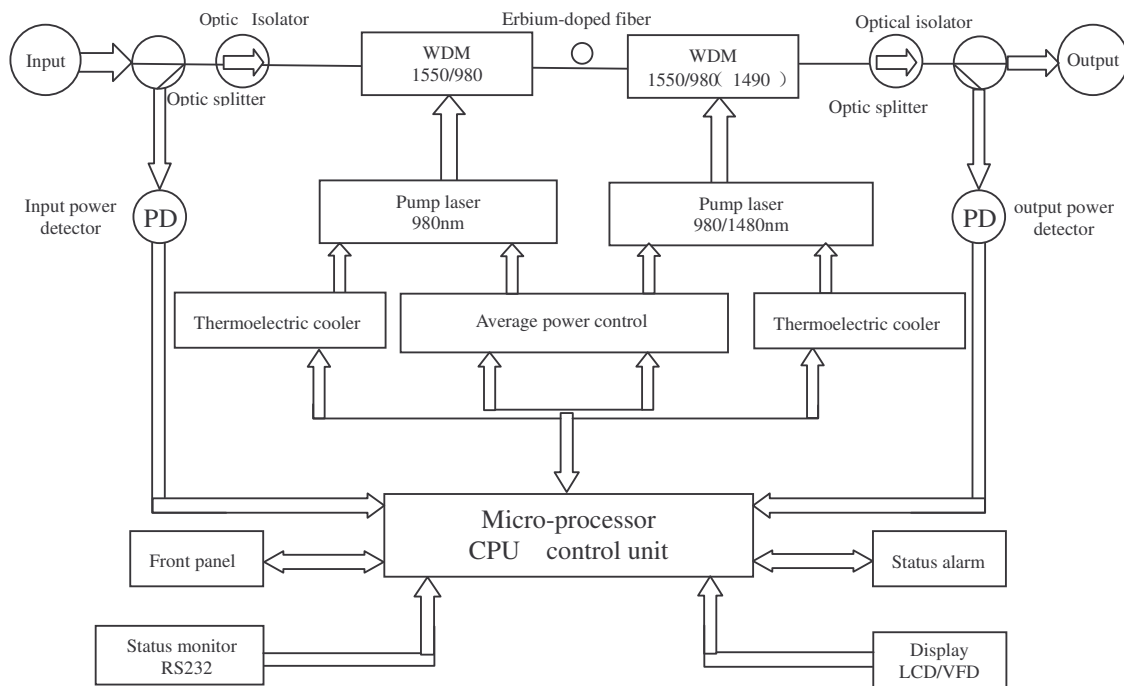


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HA5900 Series Amplifier Technical Manual

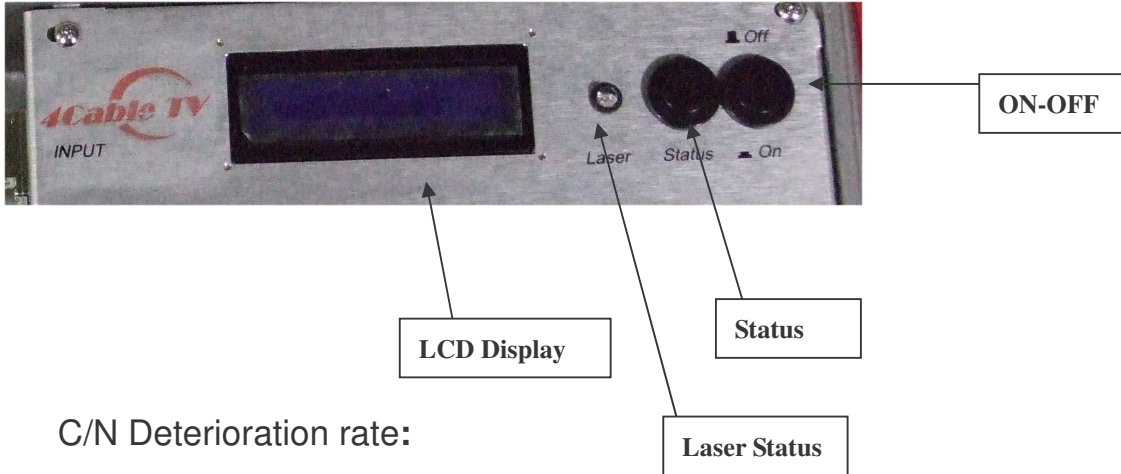
4CHA5900 Series EDFA Block Diagram



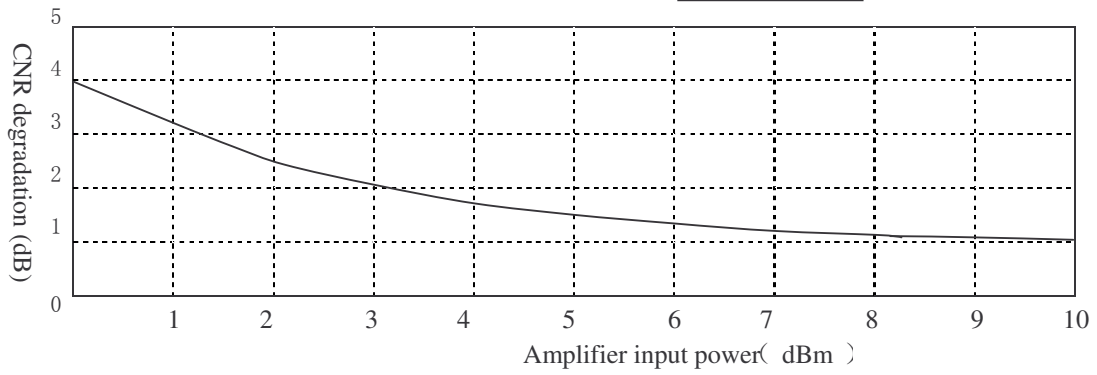


EDFA Specs :

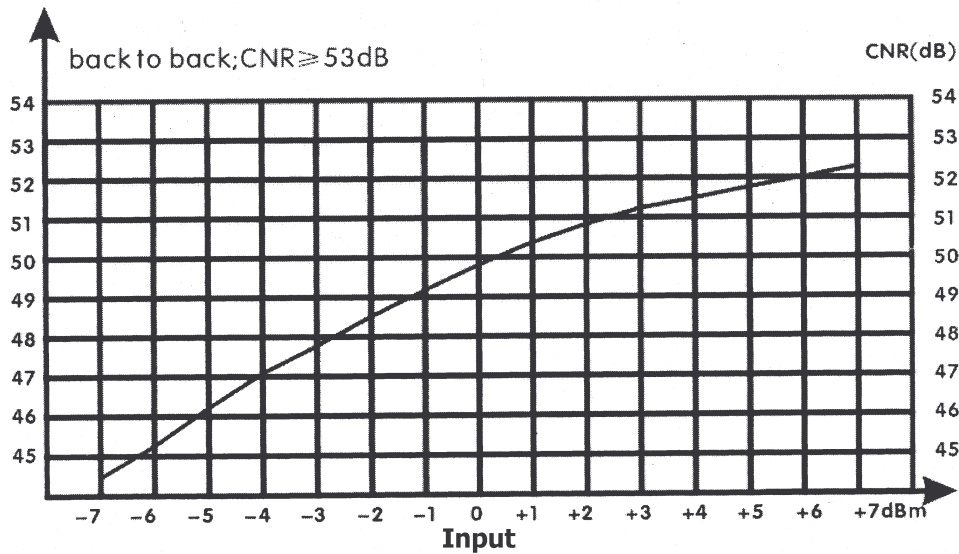
Model		4CHA51	4CHA51	4CHA511	4CHA511	4CHA511	4CHA511	4CHA511	4CHA512	4CHA512	4CHA512	4CHA512	4CHA512	4CHA512		
		13	14	5	6	7	8	9	0	1	2	3	4	5	6	
Fixed output power (dBm)		13	14	15	16	17	18	19	20	21	22	23	24	25	26	
Input power	Power range (dB)	-12 +10														
	Max alarm (dBm)	10														
	Min alarm (dBm)	-12														
	Min (fixed output) (dBm)	3							4							
wavelength (nm)		1530~1560														
Output stability (dB)		< ±0.3														
Noise figure	0dBm input (dB)	≤4.5					≤5.0					≤5.3				
	+6dBm input (dB)	≤5.5					≤6.0					≤6.5				
Polarization (dB)		<0.2														
Polarization-Mode dispersion (PS)		<0.5														
Reflect loss (dB)		>40														
connector		SC / APC														
Network interface		RS232、RS485														
Power (W)		<40														
voltage (V)		45-90 VAC														
Working temperature (°C)		0°C - 65°C														
Storage temperature (°C)		-40°C - +85°C														
size (mm)		9.6 X 6.5 X 15.875														



C/N Deterioration rate:



HA5900L C/N graph :





LCD Display

When the unit is first turned on the front panel will display “4CHA59XX Key Off”

Press the on button and after a short delay the unit will turn on and the display will display

1. **Model** 4CHA51XX EDFA Press the ▲ button and the follow will display in this order;
2. **Output** OUTPUT power will be displayed in (dBm) Tolerance (± 0.2 dBm)
3. **Input** INPUT power will be displayed in (dBm) If the input is over 10 (dBm) the red light will show an alarm condition and begin Blinking. If the Input falls below -12 (dBm) the display will show NO INPUT and the laser power supply will automatically shut down;
4. **Bias** PUMP BIAS in mA The Bias is the key indicator of the lasers proper operation. If the Bias exceeds a fixed range the power supply of the laser will be shut down automatically to protect the laser;
5. **Temperature** PUMP TEMP The laser temp is set to operate in the range of 20°C to 30°C. If this range is exceed the red light will begin blinking and power supply of the laser will shut down automatically;
6. **Cooling/heating** PUMP COOLING/HEATING The units thermoelectric temperature stabilizer will switch between HEATING or COOLING as needed to keep the laser at 25°C. The display will show the mode and the amount of current used to either heat or cool the laser;
7. **+5V voltage READS** +5V If this voltage varies by more than $\pm 0.5V$ the red light will alarm (Blink);
8. **-5V voltage READS** -5V If this voltage varies by more than $\pm 0.5V$ the red light will alarm (Blink);
9. **Serial Number** (S/N);

Status Alarm

The status indication (LED) is near the power supply switch on the front panel.. Green means the Laser is working properly, Red indicates the laser is not working and Red Blinking means the Unit is an alarm condition and needs immediate attention .

If the unit is in an alarm condition the Micro-processor will power down the laser automatically ,and the panel will show the cause of the fault

In order to protect the laser, there is time-delay function ,after turning on with the key, the laser will start to work after ~10 seconds.



Operational Notes

1. In order to make sure that the reflection loss $>45\text{dB}$, we use SC/APC connector (other types may not work). Keep the connector clean when installing. Clean it with degreased cotton with 99% Isopropyl alcohol after several insertions .
2. Do not turn on the EDFA without the output connected or without protection cover .Otherwise the laser will harm the eyes.
3. Turn the Laser off before disconnecting or connecting from the EDFA output. Failure to do so may cause the connectors to burn.





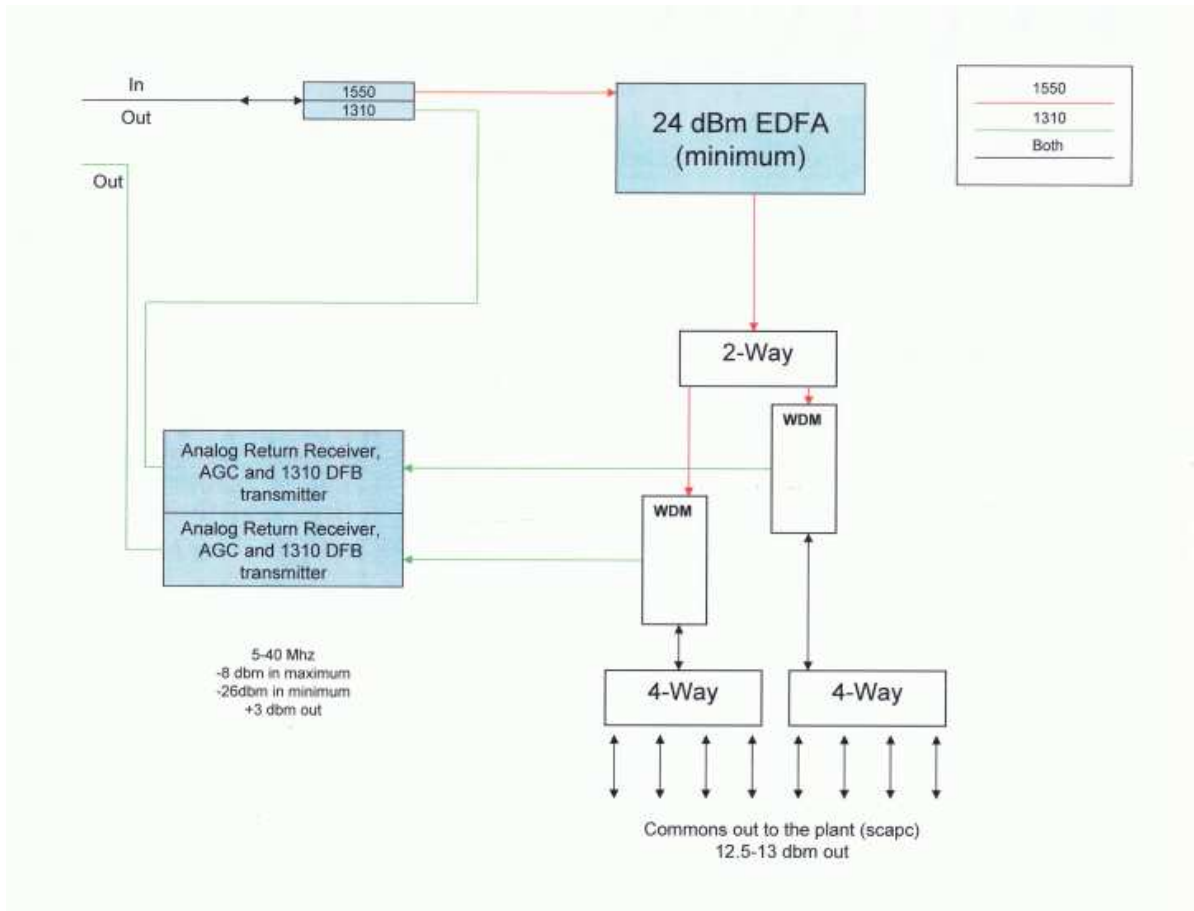
Return Receiver and Transmitter					
Reference Frequencies	-	MHz		5-40	
Output Light Level	-	dBm	-	3	
Input Light	For 30 dB C/N minimum	dBm		-26	
AGC	10 dB input change	dB	-	± 1	
Crosstalk between Receivers		dB	-	≥ 60	
Indicator Light Red		dBm	2	-28	
Test Point Transmitter	1 mW	V		1	
Test Point Receiver	-20 dBm input	V	-	1	

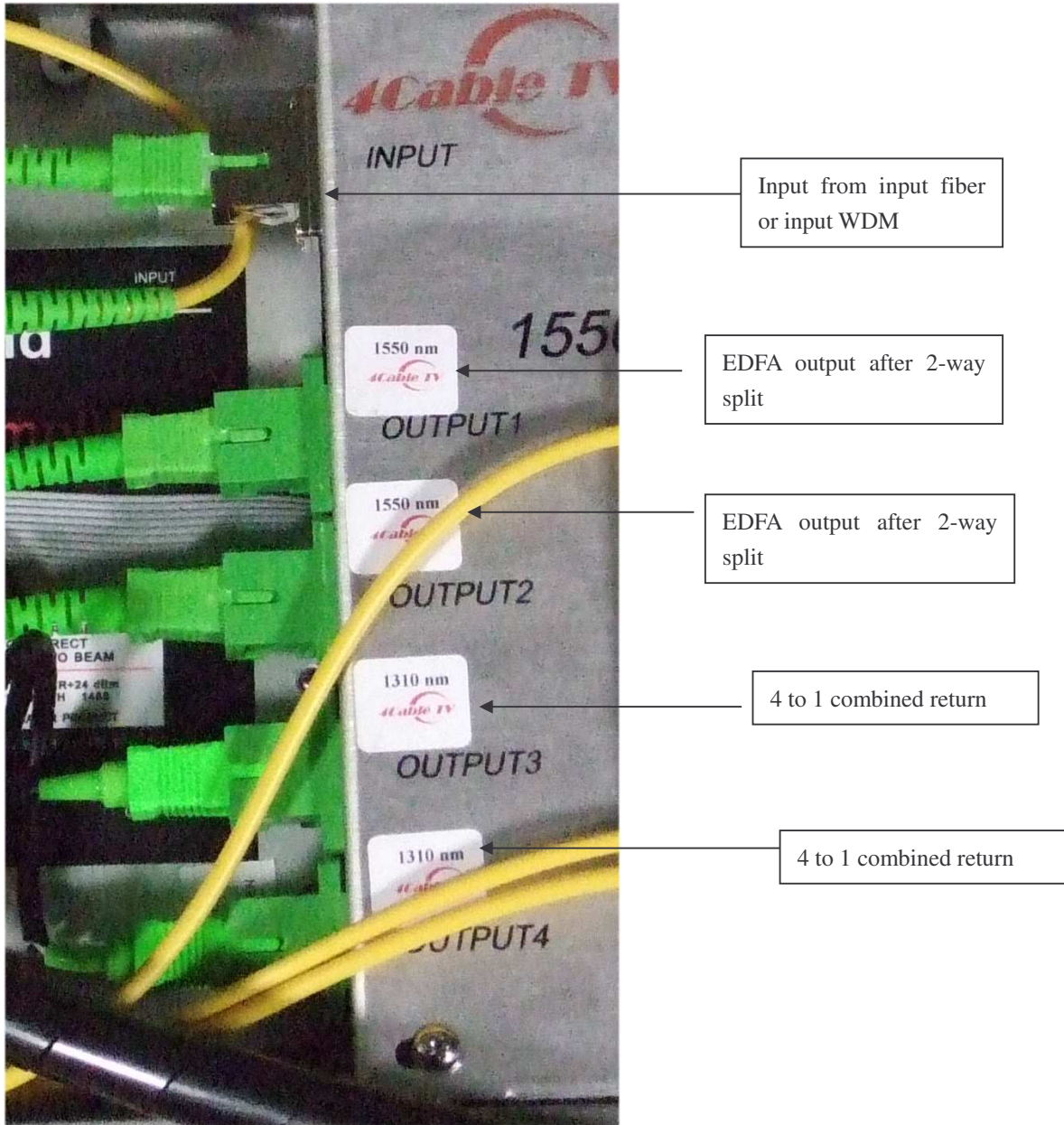
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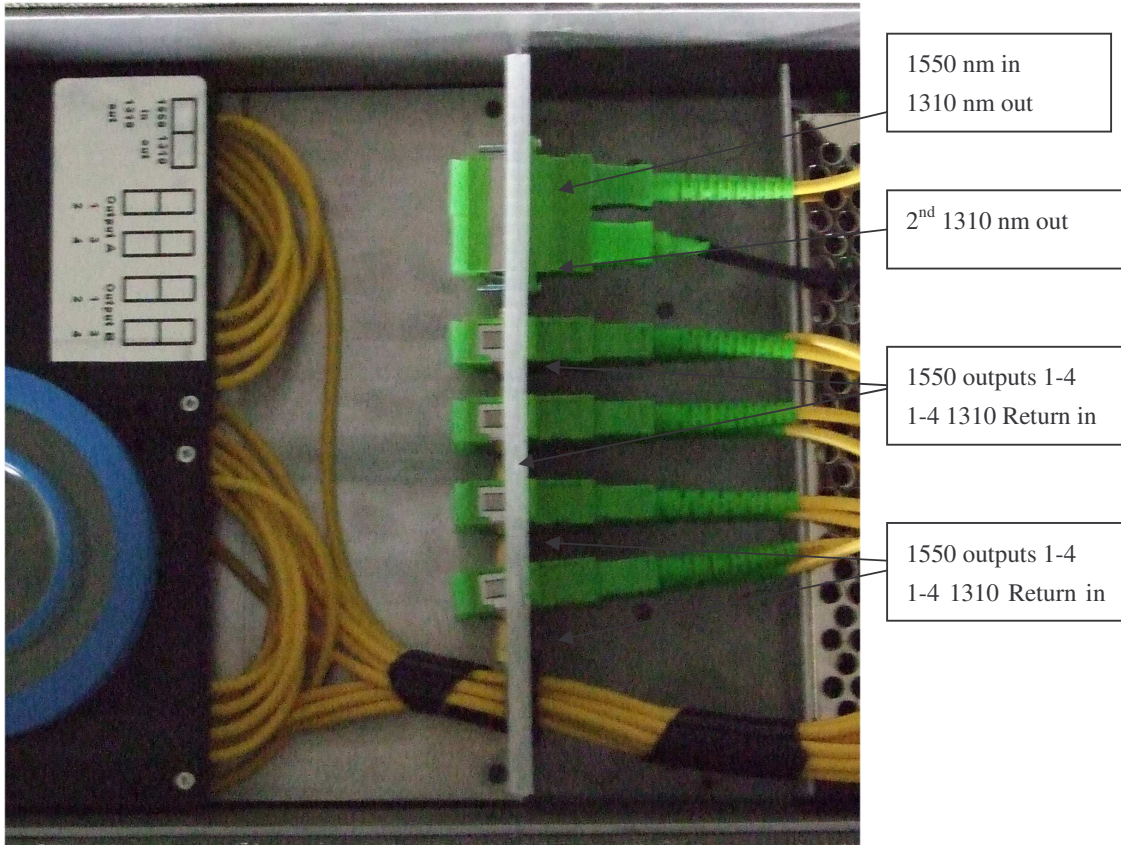
Notes:

- 1. The LCD readout for the EDFA operational parameters only works above 0° C**
- 2. The red alarm light will turn on at -28 dBm. It will return to Green after the level has increased to -26 dBm. There is approximately a 3 second delay to enable capture of the bursting nature of the incoming light. If there is no data transmitted in over 3 seconds the red light will come on.**

RFoG Extender Block Diagram







Contact the Factory for these and other options:

- 1590 or 1610 return inputs
- 1510 or 1690 nm Return
- 4 return paths instead of 2