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## **NE1000 CATV Optical Transmitter**

**Operation Guide**

**V5.0**

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## **INTRODUCTION**

The NE1000 is designed to send PAL and NTSC CATV format television signals down single mode optical fiber. The transmitter converts input CATV RF signals to output optical signals.

The NE1000 is available with 6,8,10,13,16, or 20 mW output power. The transmitter offers an interface for status monitoring and provides a pilot tone to maintain consistent RF power derived from the optical system.

Using a patented predistortion technology and a low noise DFB Laser the NE1000 provides superb performance for large channel loading found in CATV head-ends.

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## **SPECIFICATIONS**

Wavelength	1310 ± 20 nm
Output power options	4mW (6 dBm), 6mW (8dBm), 8mW (9 dBm), 10mW (10 dBm) 13mW (11dBm), 16mW (12dBm) 20mW (13 dBm)
Connector Type	FC/APC; SC/APC

### **Optical Output**

CSO	<-61dBc
CTB	<-65dBc
Bandwidth	45-750 MHz.
Flatness	± 0.75 dB
Pilot Tone	10.7 MHz.

### **RF Input**

Input Power Range	15-25 dBmV/Channel
Gain Control	10 dB
Input Impedance	75 Ω
Return Loss	>16 dB
Connector	F type

### **Status Monitoring**

Monitor Port	D-Sub 15 pin
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### **Power Requirements**

Voltage	90-260 VAC
Frequency	50/60 Hz
Power Consumption	15W

### **Operating Conditions**

Temperature Range	0°C to 50°C
Maximum Humidity	85%
Dimensions	19"W x 1.75"H x 13" D
Weight	4.5 kg

# PRODUCT FEATURES

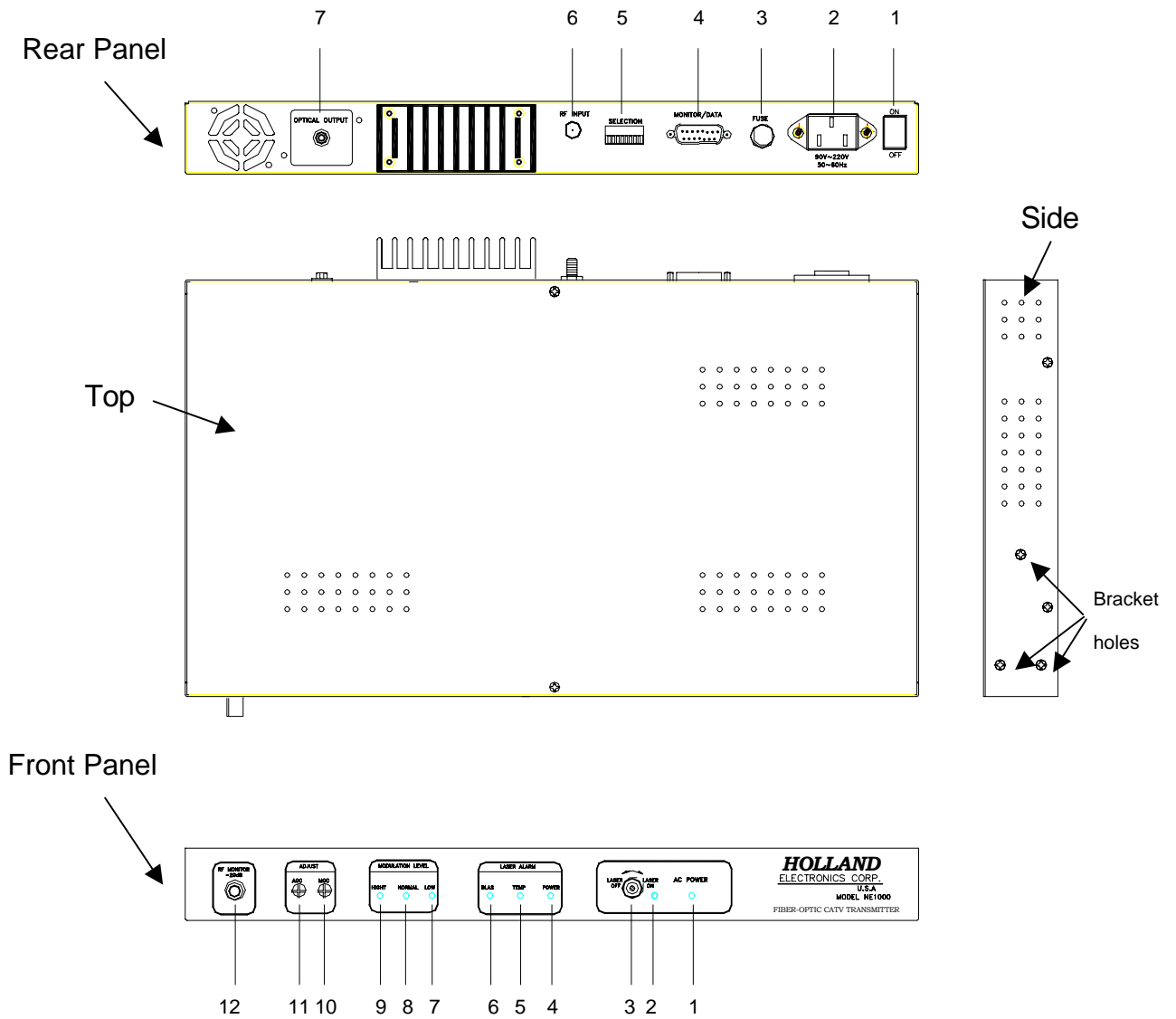


Figure 1. NE1000 CATV Optical Transmitter

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## FRONT PANEL

A diagram of the NE1000 is shown in Figure 1. The NE1000 features are described below.

1. **AC POWER LED** - Lights up when the transmitter is receiving AC power.
2. **LASER POWER LED** - Lights up when the laser is switched on.
3. **LASER ON/OFF KEY SWITCH** – Turns on/off the power to the laser.
4. **POWER LED** - Illuminates when the output power of the LASER is outside the range of maximum or minimum acceptable power.
5. **TEMP LED** - Lights up when the laser temperature is abnormal.
6. **BIAS LED** – Illuminates when the biasing current of the LASER is abnormal.
7. **HIGH LED** - Lights up when the power of the input RF signal is above normal.
8. **NORMAL LED** - Illuminates when the power of the input RF signal is normal.
9. **LOW LED** - Lights up when the power of the input RF signal is below normal.
10. **MGC (Manual Gain Control) Adjustment** – For manually setting the transmitter gain when the transmitter is in MGC mode.
11. **AGC (Automatic Gain Control) Adjustment** – For setting the output power of the transmitter when the transmitter is in AGC mode.
12. **RF MONITOR -20dB** – 75Ω F-type connector test port for measuring input signal level at 20 dB  $\pm$ 1.5 dB lower than the actual signal.

## REAR PANEL

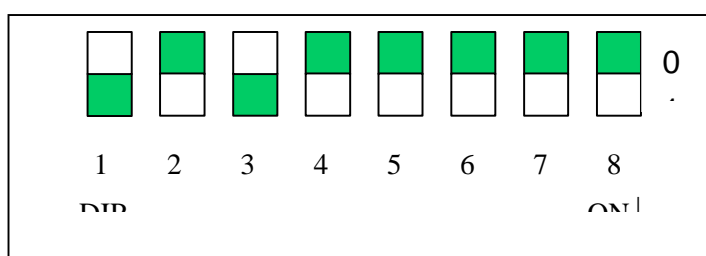
1. **ON/OFF Switch** – Used to turn transmitter on or off.
2. **POWER JACK** – For supplying power to the transmitter.
3. **FUSE** – A 250V 3.15A fuse to protect the transmitter against short circuits and

power surges.

4. **MONITOR/DATA Port** - A 15 Pin D-SUB connector port for monitoring and controlling the transmitter from a remote status monitoring system. The pin definitions and functions of the D-SUB connector are shown in Table 1.
  
5. **SELECTION Dip Switches** – For setting locally defined functions. See Figure 2 and Table 2 for dip switch functions and settings.
  
6. **RF INPUT** – 75Ω F-type port
  
7. **OPTICAL OUTPUT** – An FC/APC port for fiber connection. (As an option the port can be configured for SC/APC.) **Do not look into this port when laser is operating. The laser can cause serious eye damage.**

Pin	Function
1	Ground
2	Laser temperature monitor. 1V of output voltage is equivalent to 10°C.
3	Laser bias current monitor. 1V of output voltage is equivalent to 10 mA.
4	Laser output power status. 1V of output voltage is equivalent to 10 mW.
5	Average RF signal power status
6	Internal power supply voltage monitor. 1V of pin output voltage is equivalent to 6 volts of power supply voltage. The normal pin voltage is 2V.
7	Status Monitoring (STM) control signal input. The pin is used when interconnecting a Status Monitoring System.
8	Laser control input. A TTL high input turns the laser off. A TTL low input turns the laser off.
9	RF gain mode control. A TTL high input sets the transmitter to AGC mode. A TTL low input sets the transmitter to the MGC mode.
10~15	Not Used

Table 1. Monitor/Data port connector pin functions



Switch No.	Function
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Figure 2. Dip Switches

1	Selects transmitter gain control mode. The 0 (off) setting selects the MGC mode. The 1 (on) setting selects the AGC mode.
2	Selects transmitter control. The 0 (off) setting is for local control. The 1 (on) setting is for remote transmitter operation.
3	Turns on/off the sound for the alarms. The 0 (off) setting turns the sound off. The 1 (on) setting turns the sound on.
4	Turns on/off the transmitter pilot tone output. The 0 (off) setting allows the 10.7 MHz. pilot tone to be output. The 1 (on) setting turns off the pilot tone output.
5 –8	Not used.

Table 2. Dip Switch Definitions

## **PARTS LIST**

1. 1 NE 1000 CATV Optical Transmitter.
2. 2 LASER Switch Keys
3. 2 Case Holder Brackets
4. 6 M3 Screws
5. 1 AC Power Cord
6. 1 Spare Fuse (250 V / 3.15 A)

## **INSTALLATION INSTRUCTIONS**

1. For 19" rack mounting (optional) - Use the 6 screws to attach the holder brackets to the sides of the NE1000 case. The brackets should be mounted so that the bracket tabs with two holes face the front and point out from the sides of the

case.

2. Make sure the front panel **LASER ON/OFF** Key Switch and the rear panel **ON/OFF** switch are at the OFF position.
3. Connect the AC power cord into the power jack on the rear panel of the NE1000.
4. Connect the RF signal into the **RF INPUT** port.
5. Remove the cover from the rear panel Optical Output port. Connect the optical fiber to the Optical Output port. (Be sure to properly clean the optical fiber connector prior to connecting it to the NE1000.)
6. Properly terminate the other end of the optical fiber (such as into an optical receiver).
7. Plug the power cord into a 110 volt AC power source to power up the NE1000.
8. Set the number 1 dip switch for the intended gain mode (AGC or MGC).
9. Switch the rear panel ON/OFF switch to the ON position. The Front Panel AC POWER LED will light up.
10. Switch the front panel LASER ON/OFF Key to the LASER ON position. The LASER ON LED will light up to indicate that the laser is powered up.
11. Inspect the LASER ALARM indicator LEDs. None of the LEDs should be lit. If any of the LEDs are lit, then turn the laser key back to the off position and contact Holland Electronics LLC for assistance.
12. Inspect the MODULATION LEVEL LED indicators. The transmitter can operate either in LOW, NORMAL, or HIGH modulation levels.

(For AGC mode: If there is less than 80 NTSC channels being input into the NE1000, then the LOW led may light up. The transmitter will operate normally as long as the power for each input channel is 15 – 25 dBmV. )

13. If needed, adjust the AGC/MGC trimpots to get an adequate output power.

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## **TROUBLE SHOOTING**

<b>Troubles</b>	<b>Possible Cause and Solution</b>
The AC Power LED is not lit and the module does not work.	The fuse located on the rear panel is not intact. To check this fuse, first power down the NE 1000 and then remove the fuse from the transmitter. If the fuse is bad then replace the fuse with a good 250V/3.15A fuse. After new fuse is installed, then power up the NE 1000.
The optical output power is low.	<ol style="list-style-type: none"><li>1. Check to make sure the connector that is connected to the NE 1000 is the same cut as is specified for the transmitter. (The standard NE1000 is intended for use with an APC optical connector.</li><li>2. Make sure the fiber connector end surface is clean.</li><li>3. Check the power supply AC voltage. This voltage must not be less than 90 volts.</li></ol>