

CATV OPTICAL TRANSMITTERS

MODELS NE1000LN-* : NE5000L : NE7000



MODEL NE1000LN-*



FEATURES

- **45 - 870 MHz Operation**
- **Power Ranges from 4-20mW**
- **Automatic Gain Control Using Pilot Carriers**
- **Highly Stable Output**
- **Network Management Capability**
- **RS485 Control Interface**
- **LCD Display**
- **Pre-Distortion Circuitry, Low-Distortion Performance, High CNR**

CATV OPTICAL TRANSMITTERS

Holland Electronics' optical transmitters offer great flexibility to meet the demands of today's CATV requirements. The **NE1000** Series transmitters are ideal for offering a combination of analog and digital content. These transmitters utilize a directly modulated 1310nm DFB laser diode and superior circuit design supporting automatic temperature and power control.

Features include gain control (both AGC or MGC) for RF input level and excellent linearity due to patented pre-distortion technology.

The **NE1000** Series transmitters are an ideal solution for today's medium-sized CATV system offering a wide array of services.

CATV OPTICAL TRANSMITTERS



SPECIFICATIONS

OPTICAL	NE1000LN-*	NE5000L
Wavelength	1310 ± 20 nm	1550 ± 10 nm
Output Power (mW) Output Power (dBm)	4, 6, 8, 10, 13, 16, 20 mW 4, 8, 9, 10, 11, 12, 13 dBm	>5 mW >7 dBm
Laser RIN Noise Density	-	<-160 dB/Hz
SBS Suspension Threshold	-	13, 16 & 18 dBm
Return Loss	>60 dB	>60 dB
Output Ports	1	2
Connectors	FC/APC, SC/APC, E2000/APC	FC/APC, SC/APC, E2000/APC
LINK PERFORMANCE		
Composite Second Order (CSO)	<-64 dBc	<-65 dBc @ Port 1 <-63 dBc @ Port 2
Composite Triple Beat (CTB)	<-68 dBc	<-65 dBc
Cross Modulation	<-65 dBc	NA
RF PARAMETERS		
Frequency Range	45 - 870 MHz	45 - 870 MHz
Input Range	15 - 25 dBmV	15 - 25 dBmV
Input Level Narrow Port	-	45 dBmV
Gain Control Range	10 dB	10 dB
Flatness	± .75 dB	± .75 dB
Return Loss	>16 dB	>16 dB
GENERAL		
Power Supply	90 to 260VAC., 50/60 Hz, 15 W (Max.)	90 to 260VAC., 50/60 Hz, 15 W (Max.)
Operating Temperature	0° to 50° Celsius	0° to 50° Celsius
Dimensions	350D x 485W x 45H (mm)	350D x 485W x 45H (mm)
Weight	4.6 kg	4.6 kg

NOTE: All specifications typical unless otherwise noted
* denotes output power mW



SATELLITE OPTICAL TRANSMITTER

	NE7000 *
Frequency Range (RF)	54 - 2050 MHz
Flatness	±1.5 dB
Return Loss	>12 dB
Frequency (Optical)	1310 nm ± 20 nm
Fiber Type	Single Mode
Connectors	FC/APC, SC/APC
Link Loss (950-2050)	13 dB (45 dB C/N)
RF Input	-40 dBm (Min. for Full Output)
Power Supply	9 - 36 VDC @ 250 mA

* = The NE7000 can also be used for up to 4 channel CATV applications. Please call for details.

CATV OPTICAL RECEIVERS

MODELS NE1100L : NE1101L : NE7100



MODEL NE1100L



MODEL NE1101L



FEATURES

- **870 MHz Bandwidth**
- **Optional Return Path Transmitters**
(NE1100L)
- **Rack or Strand Mount**
- **Automatic Gain Control Using Pilot Carriers**

NE1100L: CATV OPTICAL NODE

The **NE1100L** optical node is the perfect solution for operators implementing fiber in their system. By using AGC/MGC, the **NE1100L** provides a stable RF output with a varying optical input. Features an optional return-path transmitter and remote monitor module, along with hermetically-sealed housing and ports for excellent reliability in any environment.

NE1101L: RACK MOUNT CATV OPTICAL RECEIVER

The **NE1101L** utilizes the same tried-and-true technology as the **NE1100L** in an indoor rack-mount design with many additional features, including LCD display, status monitoring and front-panel controls, making it simple to operate.

CATV OPTICAL RECEIVERS



SPECIFICATIONS

OPTICAL	NE1100L	NE1101L	NE7100
Wavelength	1260 - 1600 nm	1260 - 1600 nm	1200 - 1600 nm
Input Power	-6 to 3 dBm	-6 to 3 dBm	> -13 dBm
Detector	InGaAs PIN	InGaAs PIN	InGaAs PIN
Connectors	FC/APC or SC/APC	FC/APC or SC/APC	FC/APC or SC/APC
Return Loss	>60 dB	>60 dB	> 55 dB
RF PARAMETERS			
Frequency Range	45 - 870 MHz	45 - 870 MHz	200 - 2050 MHz
Output Level	36 dBmV (-3 dBm Input)	36 dBmV (-3 dBm Input)	37 dBmV
Flatness	± 1 dB	± 1 dB	-
Gain Control	AGC Module / Plug-In Pads	AGC / MGC	-
Return Loss	>16 dB	>16 dB	12 dB
NETWORK MANAGEMENT			
NMS Data Rate	19.2 Kbps	19.2 Kbps	-
Pilot Carrier	10.7 MHz	10.7 MHz	-
Monitor Connector	15 pin D sub	15 pin D sub	-

OPTIONS

NE1100L	
01	Plug-In Attenuators (0-13 dB)
02	AGC Module
03	Plug-In Equalizer
04	Diplex Filter
05	Directional Coupler / Splitter
06	Return-Path Transmitter

NE1101L	
01	Diplex Filter
02	Network Management

NOTE: All specifications typical unless otherwise noted

CATV OPTICAL AMPLIFIERS

MODEL NE6000L



MODEL NE6000L-*

FEATURES

- **Output Power Range from 14-24 dBm**
- **High Reliability 980/1480 nm Pump Laser Diode**
- **Wide Operating Range with High Gain and Low Noise Figure**
- **Network Management Capability**
- **RS485 Control Interface**

CATV OPTICAL AMPLIFIER

The NE6000L-* is a high-performance optical amplifier designed for 1550 nm-based network applications. This 19" rack-mount module is ideal for long haul applications, fiber-dense systems and transport architectures such as broadcast-layer transmission and redundant rings. Features high-power output ranging from 14 to 24 dBm.

SPECIFICATIONS

OPTICAL	NE6000L-*
Wavelength	1540 - 1560 nm
Noise Figure	<5.0 dB for output power <20 dBm <5.5 dB for output power >20 dBm
Optical Input Power Range	-5 to 10 dBm
Output Power (*)	14 - 24 dBm (must specify power, 1 dB increments)
Polarization Sensitivity	< .5 dB
Output Power Variation	± .5 dB
Optical Connector	SC/APC
Minimum Optical Input Power for Rated Output Power	0 dBm (when output <=20 dBm) 4 dBm (when output <=24 dBm)
PHYSICAL	
Control Interface	RS 485
Power Supply	90 - 260VAC, 50/60 Hz, 50 W (Max.)
Operating Temperature	0° to 50° Celsius
Relative Humidity	85% Max.

NOTE: All specifications typical unless otherwise noted

FIBER OPTIC DISTRIBUTION SYSTEM

MODELS FOD-PF : FOD-AC : FOD-1310TX-* : FOD-FRX : FOD-RPR : FOD-RPT

FOD - MODULAR FIBER OPTIC DISTRIBUTION SYSTEM

The **FOD Modular Fiber Optic Distribution System** consists of a 10-slot mounting rack for holding our modular fiber-optic power supplies, transmitters, amplifiers and receivers. The 8 3/4" rack height covers 5 EIA rack spacings, making the 10 module system space efficient. The **FOD System** has an LCD display for status monitoring and modules can be changed in/out without power shutdown to the distribution system.

UNIVERSAL CHASSIS PLATFORM



MODEL FOD-PF

AC POWER SUPPLY



MODEL FOD-AC

DOWNSTREAM TRANSMITTER



MODEL FOD-1310TX-*

- **10 Plug-in Slot Capacity**
- **RS-232/RS-485 Interface**
- **LCD Display for On-Site Status Monitoring**
- **Only Requires 5-RU**

PARAMETERS	FOD-AC
Input Voltage Range	90 - 260VAC
Output Voltage Range	24 - 26VDC
Output Current	.1 - 8 A
Power Consumption	< 240 W
PHYSICAL	
Operating Temperature	0° to 50° Celsius
Operating Humidity	85% Max.

OPTICAL	FOD-1310TX-*
Wavelength	1310 ± 20 nm
Output Power*	4, 6, 8, 10, 13, 16, 20 mW
Laser Type	Cooled DFB LD w/ isolator
Connector	SC/APC
Laser RIN Noise Density	< -155 dB/Hz
Composite Second Order (CSO)	< -64 dBc
Composite Triple Beat (CTB)	< -68 dBc
Cross Modulation (XMOD)	< -65 dBc

RF PARAMETERS	
Operating Bandwidth	45 - 870 MHz
Analog Channel Loading	45 - 550 MHz
Digital Channel Loading	550 - 870 MHz
RF Input Return Loss	< -16 dB
RF Input Level (Analog)	15 - 25 dBmV (w/ AGC)
PHYSICAL	
Operating Temperature	0° to 50° Celsius
Operating Humidity	85% Max.

NOTE: All specifications typical unless otherwise noted

FIBER OPTIC DISTRIBUTION SYSTEM

MODELS FOD-FRX : FOD-RPR : FOD-RPT

FORWARD-PATH OPTICAL RECEIVER



MODEL FOD-FRX

OPTICAL	FOD-FRX
Photodiode Type	InGaAs PIN
Wavelength	1310 ± 20 nm; 1550 ± 20 nm
Connector	SC/APC
Power Input Range	-10 to 3 dBm
RF PARAMETERS	
Operating Bandwidth	45 - 870 MHz
RF Output Level (Analog)	36 dBmV/Ch. @ -3 dBm Optical Input
Gain Control Range	10 dB
Slope Adjustment	-1 to 2 dB
RF Output Return Loss	< -16 dB
Flatness	± 1 dB
Pilot Tone for AGC	10.7 MHz ± 50 kHz
PHYSICAL	
Operating Temperature	0° to 50° Celsius
Operating Humidity	85% Max.

DUAL-RETURN-PATH RECEIVER



MODEL FOD-RPR

OPTICAL	FOD-RPR
Photodiode Type	InGaAs PIN
Wavelength	1310 ± 20 nm; 1550 ± 20 nm
Connector	SC/APC
Power Input Range	-10 to 3 dBm
RF PARAMETERS	
Operating Bandwidth	5 - 300 MHz
RF Output Level (Analog)	> 46 dBmV/Ch. @ -10 dBm Optical Input
Gain Control Range	25 dB
RF Output Return Loss	< -16 dB
Flatness	± .75 dB
PHYSICAL	
Operating Temperature	0° to 50° Celsius
Operating Humidity	85% Max.

CATV RETURN-PATH TRANSMITTER



MODEL FOD-RPT
(For Use in NE-1100L)

OPTICAL	FOD-RPT
Laser Type	Isolated, Uncooled, FP Laser (FP-B) Nonisolated, Uncooled FP or DFB Laser (FP-A/DFB-A)
Wavelength	1310 ± 20 nm
Connector	SC/APC
Output Power	> 0 dBm (FP-A, DFB-A); > -3 dBm (FP-B)
RF PARAMETERS	
Operating Bandwidth	5 - 100 MHz
RF Output Return Loss	< -16 dB
RF Input Level (1 Video)	< 15 dBmV
Data Input Level (When NPR > 40 dB)	8 - 18 dBmV
PHYSICAL	
Operating Temperature	-40° to 60° Celsius
Operating Humidity	90% Max.

NOTE: All specifications typical unless otherwise noted

FIBER OPTIC DISTRIBUTION SYSTEM

ATTENUATORS : PATCHCORDS & PIGTAILS : COUPLERS

ATTENUATORS

Available in single or dual window with 1-20 dB values. SC, FC, UPC & APC performance designs available.



MODEL ATD-FCU-*

SPECIFICATIONS	ATTENUATORS
Wavelength	1310, 1550 nm (±2 nm)
Accuracy	±.75 dB (1-3 dB values), ±1.5 dB (4-20 dB values)
Housings	Brass, Zinc
Return Loss	>50 dB Standard, >65 dB APC
Operating Temperature	-40° to +75° Celsius

ORDERING	WINDOW	CONNECTOR	PERFORMANCE	ATTENUATION
AT	S = Single D = Dual	SC FC	U = UPC A = APC	1 - 20 dB (1 dB Increments)
Ex. = AT	D	FC	A	3

PATCHCORDS & PIGTAILS

Holland Electronics' high quality patchcords are available in standard or custom lengths, in UPC or APC and in simplex or duplex configurations. All patchcords come with a performance certification report and are guaranteed to meet all specifications.



MODEL J1-S-FC-U-FC-A

ORDERING	LENGTH	FIBER	CONNECTOR	PERFORMANCE	CONNECTOR	PERFORMANCE
J	Meters	S = Single M = Multi	FC SC	U = UPC A = APC	FC SC	U = UPC A = APC
Ex. = J	1	S	FC	U	FC	A

COUPLERS

Couplers configured in bare fiber, connectorized, open or enclosed with feed-thrus or connectors.



MODEL OCP-12-S-50-S

SPECIFICATIONS	PATCHCORDS
Wavelength	1310, 1550 nm (±40 nm)
Directivity	> 50 dB
Polarization Dependence	< .1 dB
Coupling Ratio	50/50, 45/55, 35/65, 25/75, 15/85
Operating Temperature	-40° to +75° Celsius

ORDERING	# SPLITS	MODE	RATIO	PERFORMANCE
OCP	12 = 1x2 13 = 1x3	S = Single M = Multi	50 = 50/50 XX = XX/100-XX	H = High (3.7 dB, 50/50) S = Super (3.6 dB, 50/50)
Ex. = OCP	12	S	50	S

NOTE: All specifications typical unless otherwise noted