

# OTPN-2000/ OTPT-300A

## HIGH OUTPUT FTTP PREMISE NODE: OPTICAL RECEIVER WITH OPTICAL RETURN TRANSMITTER



### Features / Benefits

- Flagship Model of the OT “Premise Node” family: *High-Output, Premium-Performance & Full-Featured*
- Stable, High RF Output Level (+46 dBmV) over Wide (+3 to -6dBm @ 1310/1550nm) Optical Input range
- Superior Low-Noise Performance (CNR > 49 dB @ -6 dBm Optical Input) & CSO/CTB Specs (> 64/69dB)
- Designed to Directly Feed > 64 television outlets in FTTP applications (more with line extender amplifiers)
- Inter-Stage Slope and RF Input/Output controls via internal Plug-in EQ’s and Plug-In attenuator Pads
- Calibrated external Optical Input Power Meter (1V/mW) and internal RF test points (@ -20dB)
- Full CATV Forward Path Bandwidth (Analog and QAM Digital) 54-1,000MHz ( $\pm 1.0$ dB)
- FP, DFB & CWDM Return Laser Transmitter options (field-installable) for two-way DOCSIS operation
- Choice of Return/Forward Frequency Diplexer Split (42/54MHz -or- 65/85MHz)
- Built-in Universal 90-240 V<sub>AC</sub> (@ 50/60 Hz) CE-approved Power Supply for local powering
- > 6 kV surge tolerant RF output and SMT construction for consistency, reliability & performance
- Compact (3" x 5" x 8"), Lightweight, Rugged machined aluminum housing for easy installation

The **OLSON TECHNOLOGY, INC. PremiseNode Model OTPN-2000** is a high-output, high-performance, full-featured CATV optical node designed around the very latest optical receiver technology to reliably deliver a full slate of multiplexed video, high speed data & telephony services in an HFC/PON fiber-to-the-premise (FTTP) environment.



The unit is ideally suited for direct fiber transmission of CATV RF signals in FTTC, FTTH, MDU, industrial, corporate, government, educational or other I-Net applications where a high performance, compact indoor node is required. The unit is constructed with high quality components to enable it to meet or exceed its performance specifications over a wide temperature range in an uncontrolled environment, but does require protection from the elements. It is configured for standalone desktop, shelf or wall-mounting, or can be 2RU 19" EIA rack-mounted via the optional **OTLL-RMKIT2** kit. The **OTPN-2000** is forced-air cooled via an external high-MTBF fan, which is designed to be field-replaceable without interrupting operation. The base “receiver-only” model is

a rugged, self-contained device with an optical input range which is wider and more sensitive than traditional CATV node receivers, permitting its use in situations where there is a need to extend the fiber link deeper into the subscriber base. In addition, the **OTPN-2000** has innovative output RF level controlling circuitry which delivers stable output level despite potential fluctuations in the power of the incoming optical signal. Adjustments are made with reliable plug-in attenuator pads.

The **OTPN-2000** includes a unique provision which provides for the addition of an optional high-performance return FP, DFB or CWDM laser return transmitter, creating a complete two-way, DOCSIS-compatible indoor node in a low-profile, integrated package. This “sidecar” module, the **OTPT-300A**, is a separate unit, designed so it can be installed up-front or added later in the field with a minimum of effort. The **OTPT-300A** also features an external auxiliary wideband (5-300 MHz) RF input, which eliminates the need for costly sub-band modulators and demodulators in local origination upstream video applications.



The OTPN-2000 is the perfect companion to the Olson Technology, Inc. **LaserLite** (Models OTOT-1000-x & OTOR-300) and **LaserPlus** (Models LP-OT-x and LP-OR) forward TX and return RX product families, but is also designed to mate with optical transmitters and return receivers from most leading manufacturers.

# PremiseNode OTPN-2000 / OTPT-300A

## **OTPN-2000 / OTPN-2000-PAL (Forward Optical Receiver) SPECIFICATIONS**

### **RF OUTPUT & PERFORMANCE PARAMETERS:**

|   |  |
|---|--|
| <i>Frequency Range (&amp; Flatness)</i> | 54-1,000MHz / 85-1,000MHz ( $\pm 1.0$ dB)      |
| <i>Output Level *</i>                   | +46 dBmV @ 550 MHz *                           |
| <i>Return Loss</i>                      | >16 dB   |
| <i>Impedance</i>                        | 75 Ohm   |
| <i>CNR*</i>                             | >53 dB @ -1 dBm; >49dB @ -6 dBm optical input* |
| <i>CSO*</i>                             | >64 dBc @ -1 dBm optical input*                |
| <i>CTB*</i>                             | >69 dBc @ -1 dBm optical input*                |
| <i>RF Gain Adjustment</i>               | 0-18 dB (with Model# 95080x plug-in pad)       |
| <i>Slope Adjustment</i>                 | 4-17dB (with Model# 95180x plug-in equalizer)  |
| <i>RF Test Point</i>                    | -20dB (internal)                               |
| <i>RF Output Connector</i>              | Type F   |

\* NOTE: Typical; Measured with 12 dB slope to 1,000 MHz; +8dBm optical transmitter with OMI @ 2.8%, and; 77 NTSC Channel loading to 550 MHz & digital loading to 1,000 MHz (-6 dB below analog).

### **OPTICAL PARAMETERS:**

|                                       |   |
|---------------------------------------|---|
| <i>Wavelength</i>                     | 1280-1600nm                                     |
| <i>Optical Input Power Range</i>      | -6 dBm to +3dBm                                 |
| <i>Return Loss</i>                    | >60dB with APC type connector                   |
| <i>Optical Input Power Test Point</i> | 1 V/mW (external)                               |
| <i>Optical Connector</i>              | SC/APC standard; FC/APC optional); 8 degree APC |

### **ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS:**

|                                    |  |
|------------------------------------|--|
| <i>Dimensions</i>                  | 3" H x 4.5" W x 8" D (7.75cm x 12.1cm x 20.5cm)          |
| <i>Weight</i>                      | 3 lb. (1.12 kg)  |
| <i>Operating Temperature Range</i> | -10 to +55°C   |
| <i>Enclosure IP Rating</i>         | IP20   |
| <i>Powering</i>                    | 90 - 240 V <sub>AC</sub> @ 50-60 Hz via IEC320 connector |
| <i>Power Dissipation</i>           | 19W maximum  |
| <i>Cooling</i>                     | Fan cooled, forced air (Field-replaceable)               |



# PremiseNode OTPN-2000 / OTPT-300A

## GENERAL SPECIFICATIONS : OTPT-300A Series (Return Optical Transmitters)

### RF INPUT & PERFORMANCE PARAMETERS:

|   |  |
|---|--|
| Frequency Range (& Flatness) via Diplexer       | 5-42MHz (NTSC) / 5-65MHz (PAL) ( $\pm 1.0$ dB) |
| Freq. Range (& Flatness) via Ext. Aux. RF Input | 5-300MHz ( $\pm 1.0$ dB)                       |
| Return Loss                                     | >16dB @ 5-42MHz or 5-65MHz                     |

### OPTICAL PARAMETERS:

|                          |   |
|--------------------------|---|
| Return Loss              | >60dB with APC type connector             |
| Laser Power Test Point   | 1 V/mW (external)                         |
| Laser Current Test Point | 1 V/50 mA (external)                      |
| Optical Connector        | SC/APC standard; FC/APC optional); 8° APC |

### ELECTRICAL, ENVIRONMENTAL & MECHANICAL PARAMETERS:

|                                |   |
|--------------------------------|---|
| Dimensions                     | 2.5" H x 0.75" W x 7.1" D (6.25cm x 1.8cm x 18cm) |
| Weight                         | 0.5 lb. (0.2 kg)                                  |
| Powering (& Power Dissipation) | via OTPN-2000 (4W maximum)                        |

## OTPT-302A & OTPT-303A SPECIFICATIONS (FP Return Optical Transmitters)

### RF INPUT & PERFORMANCE PARAMETERS:

|                        |                       |
|------------------------|-----------------------|
| Return Path NPR (FP)** | >1dB over 37dB NPR ** |
| NPR 37dB Threshold     | -57dBmV/Hz            |

\*\*NOTE: As measured with 10dB of fiber and OTOR-300 High Sensitivity Return Band Receiver

### OPTICAL PARAMETERS:

|  |  |
|--|--|
| Wavelength                                   | 1310nm $\pm 20$ nm                             |
| Laser Type; Optical Output Power (OTPT-302A) | Fabry-Perot (Unisolated); +1.6 mW $\pm 0.5$ mW |
| Laser Type; Optical Output Power (OTPT-303A) | Fabry-Perot (Isolated); +2.0 mW $\pm 0.5$ mW   |

## OTPT-304A & OTPT-305A SPECIFICATIONS (DFB Return Optical Transmitters)

### RF INPUT & PERFORMANCE PARAMETERS:

|                         |                        |
|-------------------------|------------------------|
| Return Path NPR (DFB)** | >15dB over 41dB NPR ** |
| NPR 41dB Threshold      | -57dBmV/Hz             |

\*\*NOTE: As measured with 10dB of fiber and OTOR-300 High Sensitivity Return Band Receiver

### OPTICAL PARAMETERS:

|  |  |
|--|--|
| Wavelength (OTPT-304A)                       | 1310nm $\pm 20$ nm                         |
| Laser Type; Optical Output Power (OTPT-304A) | Distributed Feedback: +3.0mW $\pm 0.5$ mW  |
| Wavelength (OTPT-305A)                       | 1550nm $\pm 20$ nm                         |
| Laser Type; Optical Output Power (OTPT-305A) | Distributed Feedback: +2.0 mW $\pm 0.5$ mW |

## OTPT-347A thru OTPT-361A SPECIFICATIONS (CWDM Return Optical Transmitters)

### RF INPUT & PERFORMANCE PARAMETERS:

|                         |                        |
|-------------------------|------------------------|
| Return Path NPR (DFB)** | >15dB over 41dB NPR ** |
| NPR 41dB Threshold      | -57dBmV/Hz             |

\*\*NOTE: As measured with 10dB of fiber and OTOR-300 High Sensitivity Return Band Receiver

### OPTICAL PARAMETERS:

|  |  |
|--|--|
| Wavelengths (OTPT-347 thru 361)                      | 1470, 1490, 1510, 1530, 1550, 1570, 1590 or 1610 nm $\pm 3$ nm |
| Laser Type; Optical Output Power (OTPT-347 thru 361) | Course Wave Division Mux: +2.0mW $\pm 0.5$ mW                  |

## ACCESSORIES

| MODEL        | DESCRIPTION                                |
|--------------|--|
| PAD1G-xxx    | Single 1GHz Pad (Forward or Reverse)       |
| PAD1G-KIT-x  | 1GHz Pad Kits (Forward or Reverse)         |
| OTLL-SCFCKIT | SC/APC to DC/APC Optical Connector Adapter |
| OTLL-RMKIT-2 | Rack Mount Kit (Holds 3 OTPN-1000's)       |
| OTOA-1000    | Optical Attenuator                         |
| OTLL-FANKIT  | OTPN-1000 Replacement Fan Assembly         |

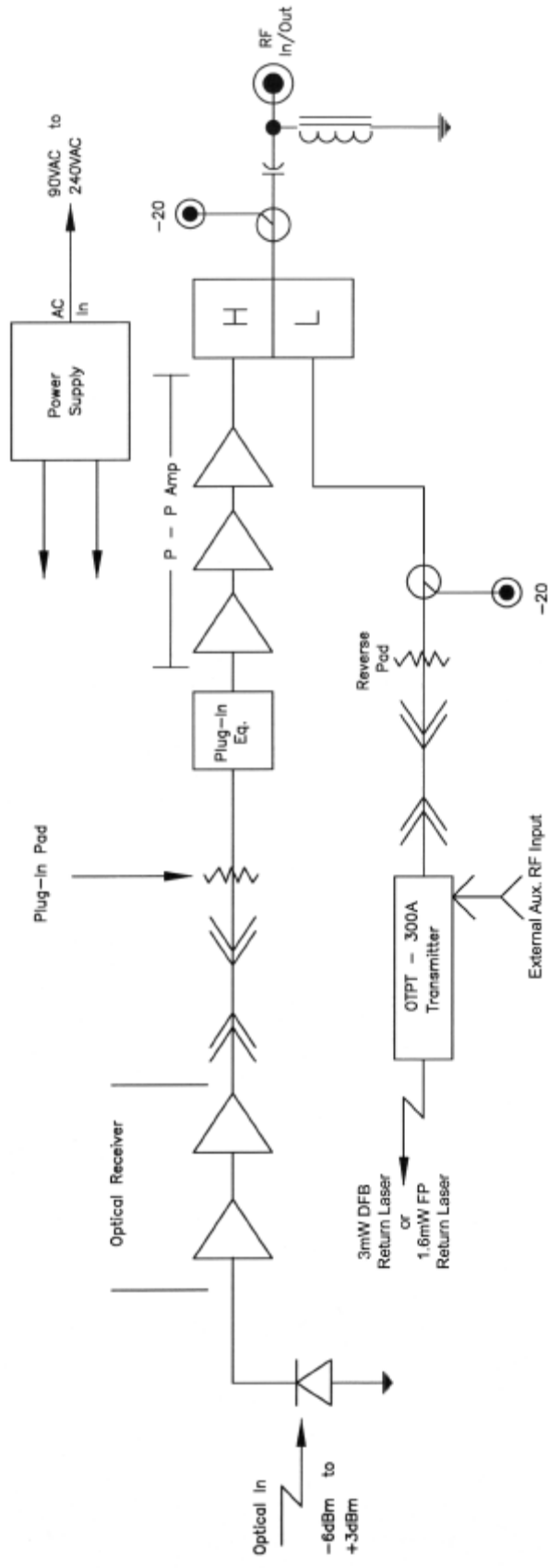
## RELATED OLSON TECHNOLOGY PRODUCTS

| MODEL         | DESCRIPTION  |
|---------------|--|
| OTPN-2000     | Receive only wideband indoor node, 5-42MHz return band |
| OTPN-2000-PAL | Receive only wideband indoor node, 5-65MHz return band |
| OTOR-300      | Indoor return namd optical receiver                    |

## OTPT MODELS

| OT MODEL# | OT PART #  | RETURN LASER          |
|-----------|------------|-----------------------|
| OTPT-302A | 037-010471 | 1.6mW, 1310nm, FP     |
| OTPT-303A | 037-020471 | 2mW, 1310nm, ISO FP   |
| OTPT-304A | 037-000471 | 3mW, 1310nm, DFB      |
| OTPT-305A | 037-030471 | 2mW, 1550nm, DFB      |
| OTPT-347A | 037-040471 | CWDM, 2mW, 1470nm DFB |
| OTPT-349A | 037-050471 | CWDM, 2mW, 1490nm DFB |
| OTPT-351A | 037-060471 | CWDM, 2mW, 1510nm DFB |
| OTPT-353A | 037-070471 | CWDM, 2mW, 1530nm DFB |
| OTPT-355A | 037-080471 | CWDM, 2mW, 1550nm DFB |
| OTPT-357A | 037-090471 | CWDM, 2mW, 1570nm DFB |
| OTPT-359A | 037-100471 | CWDM, 2mW, 1590nm DFB |
| OTPT-361A | 037-110471 | CWDM, 2mW, 1610nm DFB |

# OTPN-2000 / OTPT-300A Block Diagram



# OTPN-2000 / OTPT-300A Performance

