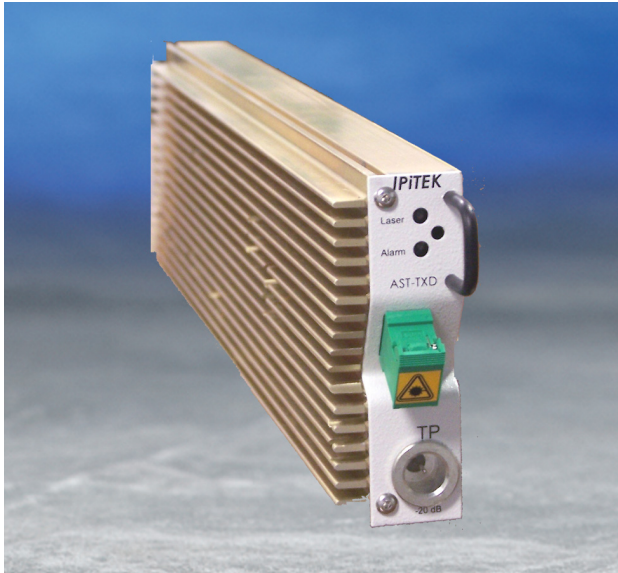


## ADVANCED SERVICES TRANSPORT 1310 nm BROADCAST/NARROWCAST TRANSMITTER AST-TXD



The AST-TXD high performance 1310 nm DFB laser transmitter is designed and engineered to meet current and future requirements for Broadband systems operations. The TXD module provides full bandwidth operation to 1 GHz and laser output powers from 2 dBm to 15 dBm in 1 dB steps. This allows the same transmitter to meet the requirements for all types of services from 1:1 targeted services delivery systems to more traditional architectures with 1:n feeds to multiple nodes from a single transmitter. The AST-TXD supports full bandwidth for NTSC or PAL formats.

The 4RU AST chassis accommodates up to 21 compact, half height transmitter modules, allowing up to 210 transmitters to fit in one standard 6 foot rack. This highest density enables valuable space savings as additional advanced services are offered.

The AST Transmitter provides superior transport of advanced video, voice and data services. The transmitter is provisioned with separate RF inputs for broadcast and narrowcast signals. The unit's advanced design also provides for a combined broadcast/Narrowcast signal that can be applied to the broadcast input only without signal degradation. This feature eliminates the requirement for two different transmitters, providing the highest level of flexibility in system operations.

Engineered with the latest low power components, AST-TXD is both energy efficient and fully hot

### Features and Benefits

- Full 1003 MHz bandwidth
- Separate or combined broadcast and Narrowcast RF inputs
- Wide range of output powers - 2-15 dBm
- Remote and local management through web interface or SNMP
- Options for manual /AGC mode of operation
- CW/Video Mode for module testing
- Quick disconnect connectors for easy replacement
- High density - up to 21 modules in 4 U Chassis & 210 modules in a standard rack

swappable. Level control is provided through an internal attenuator. Moreover, the AST-TXD includes a user selectable AGC that may be utilized instead of manual gain control. The internal system provides gain adjustments with the integrated software, using the remote or local network management. The internal system provides gain adjustments with the integrated software, using the remote or local network management control. AST-TXD also includes a user selectable AGC that may be utilized instead of manual gain control. Additionally, a CW mode is included for ease of testing.

An onboard micro-controller provides complete monitoring and control of the unit with software design including both function control and unit monitoring. The controller system also provides alarm processing and status monitoring functions. These signals are routed to the AST chassis Control and Management module (CMU) that provides unit management through a web browser interface. The management system also provides an SNMP compliant interface to a higher level element manager, such as the IPITEK Node Wizard system or to HP OpenView or Castle Rock SNMPc. Front panel indicators also provide immediate visual indication for Laser On and a summed Fault Alarm.

#### CONTROL FUNCTIONS

- OMI/AGC/RF Level Adjust
- AGC/Manual Gain Operation
- CW/Video Mode for module testing

# SPECIFICATIONS

## Optical

<b>Center Wavelength:</b>	1310 nm, ±10 nm
<b>Optical Output Power:</b>	2 dBm to 15 dBm in 1 dB steps
<b>Optical Connector:</b>	SC/APC; E-2000/APC
<b>RF:</b>	
<b>Bandwidth:</b>	45 to 1003 MHz
<b>Typical Operating Range:</b>	Analog 54 - 550 MHz Digital 550 -1003 MHz
<b>With Separate Inputs</b>	
<b>Broadcast Input Level:</b>	+15, ±0.5 dBmV/ch 79 NTSC Channels or 64 PAL Channels
<b>Narrowcast Input Level:</b>	+15 dBmV ± 0.5 dBm 75 QAM Channels
<b>Isolation: port to port</b>	>50 dB
<b>Combined Input:</b>	+15, ±0.5 dBmV/ch broadcast+QAM@ -6 dBc
<b>Return Loss:</b>	>16 dB
<b>Response Flatness:</b>	± 0.5/0-0.75 dB (typ./Max)
<b>Input Impedance:</b>	75 ohms
<b>Carrier-to-Noise:</b>	Refer To Table
<b>Composite Second Order:</b>	-66 dBc (AST P02 - P14) -65 dBc (AST P15)
<b>Composite Triple Beat:</b>	-70 dBc (AST P02 - P14) -69 dBc (AST P15)
<b>Cross Modulation:</b>	-65 dBc
<b>Power Consumption:</b>	7.4 W typical, 8.4 W Max

## Mechanical/Electrical:

<b>RF Connector:</b>	Quick Disconnect
<b>RF Input Test Point:</b>	-20, ±0.5 dB
<b>Environmental:</b>	
<b>Operating Temperature:</b>	0°C to 50°C
<b>Humidity:</b>	to 95%, non-condensing.
<b>Storage Temperature:</b>	-40°C to +85°C, 24 hours

Model	Minimum Optical Output Power (dbm)	Minimum CNR (dB)	Fiber (km)	Nominal Link Budget (dB)
AST-TXD-P02	2.0	53.2	2.5	2
AST-TXD-P03	3.0	53.2	5.0	3
AST-TXD-P04	4.0	53.2	7.5	4
AST-TXD-P05	5.0	53.2	10.0	5
AST-TXD-P06	6.0	53.2	12.5	6
AST-TXD-P07	7.0	53.2	15.0	7
AST-TXD-P08	8.0	52.7	17.5	8
AST-TXD-P09	9.0	52.7	20.0	9
AST-TXD-P10	10.0	52.7	22.5	10
AST-TXD-P11	11.0	52.2	25.0	11
AST-TXD-P12	12.0	52.2	27.5	12
AST-TXD-P13	13.0	52.2	30.0	13
AST-TXD-P14	14.0	52.2	32.5	14
AST-TXD-P15	15.0	51.5	35.0	15

## Notes:

All performance are specified for:

NTSC: Channel Loading of 79 channels @ +15dbmv/ch+450 MHz digital @ -6 dBc (550 - 1000 MHz)

PAL: Channel Loading of 64 channels @ +15dBmv/ch+430 MHz digital @ -6 dBc (570 - 1000 MHz)

Nominal fiber loss - 0.35 dB/km \* nominal fiber length (SMF-28)

Nominal link budget = nominal fiber loss + passive loss

The passive loss of the total link budget is adjusted to ensure a 0 dBm received optical power at the receiver input.

Specifications are measured using CW carriers per SCTE standards.

# ORDERING INFORMATION

								1		2	3		4		5
A	S	T	-	T	X	D	-	X	-	X	-	X	-	X	X

1. Channel Plan	N = NTSC P = PAL														
2/3. Optical Output Power	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">02 - 2 dBm</td> <td style="width: 50%;">09 - 9 dBm</td> </tr> <tr> <td>03 - 3 dBm</td> <td>10 - 10 dBm</td> </tr> <tr> <td>04 - 4 dBm</td> <td>11 - 11 dBm</td> </tr> <tr> <td>05 - 5 dBm</td> <td>12 - 12 dBm</td> </tr> <tr> <td>06 - 6 dBm</td> <td>13 - 13 dBm</td> </tr> <tr> <td>07 - 7 dBm</td> <td>14 - 14 dBm</td> </tr> <tr> <td>08 - 8 dBm</td> <td>15 - 15 dBm</td> </tr> </table>	02 - 2 dBm	09 - 9 dBm	03 - 3 dBm	10 - 10 dBm	04 - 4 dBm	11 - 11 dBm	05 - 5 dBm	12 - 12 dBm	06 - 6 dBm	13 - 13 dBm	07 - 7 dBm	14 - 14 dBm	08 - 8 dBm	15 - 15 dBm
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4. Pilot Tone	<table style="width: 100%; border: none;"> <tr> <td style="width: 30%;">NTSC</td> <td style="width: 70%;">0 - No Pilot Tone Option</td> </tr> <tr> <td>PAL</td> <td>0 - No Pilot Tone</td> </tr> <tr> <td></td> <td>1 - With Pilot Tone</td> </tr> </table>	NTSC	0 - No Pilot Tone Option	PAL	0 - No Pilot Tone		1 - With Pilot Tone								
NTSC	0 - No Pilot Tone Option														
PAL	0 - No Pilot Tone														
	1 - With Pilot Tone														
5. Connector	E = E2000/APC S = SC/APC														

### Additional Product Information:

1. All powers of the AST-TXD transmitters also include an AGC option. This function is controlled through the AST-CMU, Chassis Management Unit, management system and may be enabled or disabled as desired.
2. The AST-TXD is designed for operation with standard HFC only, or combined HFC and QAM, or QAM only. No modification is required.
3. The AST transmitter family also includes transmitters for operation with CWDM and DWDM systems. For additional information, please visit the IPITEK web site and review the appropriate data sheets.

