

# Fx-AOT08200, Fx-AOT16200

**AMPLIFIED OPTICAL TRANSMITTER FOR CATV AND SAT IF TRANSMISSION**

## Application



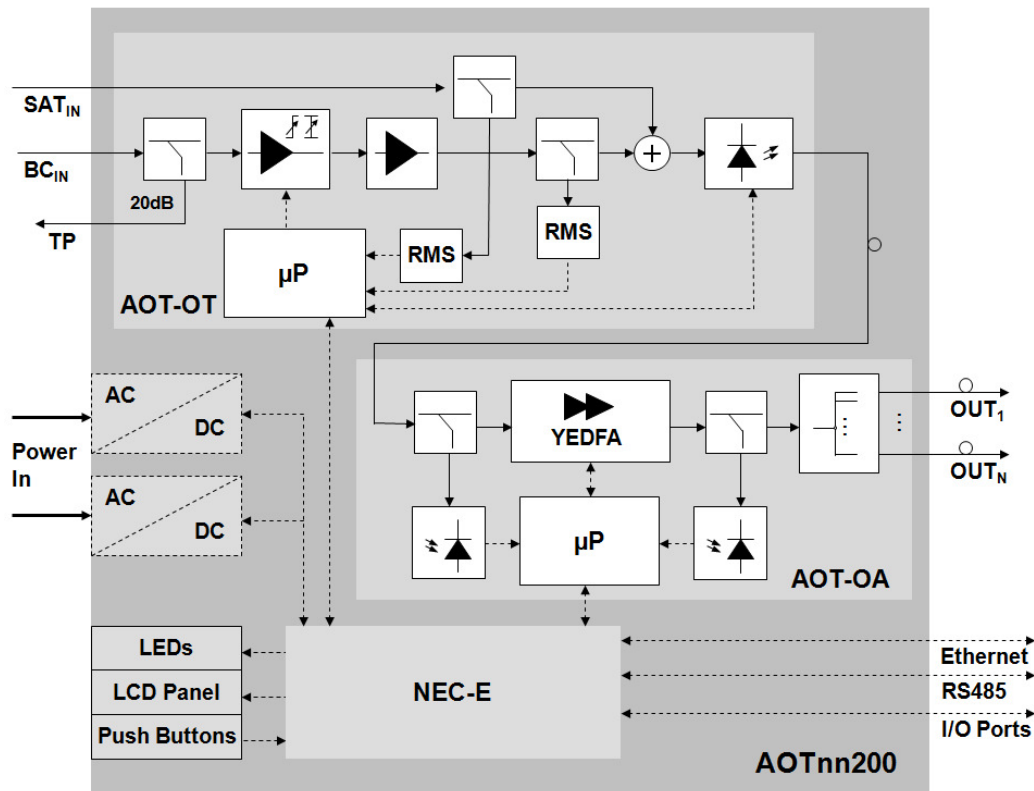
- ▶ Electrical to optical conversion of multichannel CATV signals like AM-VSB, FM, QAM, DTT, DVB-T and DAB signals
- ▶ Electrical to optical conversion of SAT IF video signals like QPSK, 8-PSK and 16QAM by separate input
- ▶ Optical amplification in order to realize several optical outputs to drive FTTx and/or HFC networks
- ▶ Video overlay with 1550 nm wavelength in FTTx networks providing very high optical budget (GPON compatible)

## Features

- ▶ Bandwidth of 5...870 MHz for CATV and 950...2610 MHz for SAT-IF input
- ▶ All-electronically adjustments for CATV input: slope, gain, output power, OMI, pre-chirping etc.
- ▶ Automatic load control (ALC) for constant  $OMI_{\text{toRMS}}$  of CATV signals
- ▶ Separate RF input for SAT-IF signals
- ▶ Front panel RF test point -20 dB
- ▶ SBS suppression and prechirping technology
- ▶ Cladding-pumped ErYd-doped fiber amplification technology with constant output power control
- ▶ Optical output port monitor
- ▶ Dual, hot-plug-in power supply modules for 100...240 VAC or  $\pm 36... \pm 60$  VDC
- ▶ Web and SNMP interface
- ▶ LC display and LED status indication
- ▶ General purpose I/O interface for remote functions
- ▶ Very thin, only 1 U design for mounting into 19", ETSI or JIS racks



### Block Diagram



### General Technical Data

Wavelength	[nm]	1550 ... 1560
Optical output power	[dBm]	+20 ±0.5 dB
Polarization dependence	[dB]	0.5 dB
Side mode suppression	[dB]	> 30
Optical isolation	[dB]	35
Optical return loss	[dB]	> 40
SBS threshold <sup>1,2,3)</sup>	[dBm]	≥ +21 for 10 km fiber length
	[dBm]	≥ +19 for 20 km fiber length
RF-connectors/ impedance		F-female, 75Ω, front side mounted
Optical connectors		LC/APC, front side mounted
Optical fibre		Standard single mode 9/125 μm
Control interfaces		
Ethernet 10/100 Mbps		RJ45, rear side mounted
BKtel RS485 bus		RJ45, rear side mounted
I/O ports		Mini, rear side mounted
Climatic specification		
Operation		ETS 300 019, class 3.1
Storage		ETS 300 019, class 1.2
EMI		EN 50083-2
Safety		EN 60950, Laser class 1M according IEC 60825-1 (eyesafe for normal viewing)
Power supply		100 ... 240 VAC or ±36...60 VDC (dual redundant, hot pluggable) < 65 W power consumption
Enclosure dimensions		19" / 1 rack unit [RU] (optionally compatible to ETSI or JIS standards)
Weight	[kg]	9 (including two power supplies)

### CATV Signal Data

CATV input impedance	[Ω]	75	
Frequency range	[MHz]	5 ... 870	
Frequency response at 80 dBμV / 5%			
5 ... 7 MHz	[dB]	±1.5	
7 ... 47 MHz	[dB]	±0.75	
47 ... 606 MHz	[dB]	±0.5	
606 ... 870 MHz	[dB]	±0.75	
Return loss			
5 ... 47 MHz	[dB]	≥ 18	
47 ... 870 MHz	[dB]	≥ 20 (at 47 MHz) – 1.5 dB/oct., min. 15	
Input level (referred to OMI = 5%)	[dBμV]	73 minimum	
Gain adjustment range	[dB]	0 ... 24	
Slope adjustment range (10...870 MHz)	[dB]	-3 (cable equivalent) ... +16 (cable equalization)	
Testpoint attenuation	[dB]	20	
CNR <sup>1,2,3)</sup>			
47 ... 600 MHz	[dB]	> 46	
600 ... 862 MHz	[dB]	> 45	
CSO <sup>1,2)</sup>			
47 ... 600 MHz	[dB]	> 60 <sup>4)</sup>	> 58 <sup>5)</sup>
600 ... 862 MHz	[dB]	> 56 <sup>4)</sup>	> 52 <sup>5)</sup>
CTB <sup>1,2)</sup>	[dB]	> 63	

### SAT IF Signal Data

SAT-IF input impedance	[Ω]	75	
Frequency range	[MHz]	950 ... 2610	
Frequency response	[dB]	±2	
Return loss			
950 ... 1750 MHz	[dB]	≥ 10	
1750 ... 2610 MHz	[dB]	≥ 6	
Nominal input level per SAT IF carrier	[dBμV]	90 <sup>3)</sup>	
CNR <sup>1,3)</sup> referred to nominal SAT IF carrier	[dB]	> 24	
Spurious signals <sup>1,4)</sup> referred to nominal SAT IF carrier	[dB]	> 34	

### Test Conditions

- <sup>1)</sup>  $P_{opt, in} = -6$  dBm, appropriate receiver technology with  $I_{eq} = 4$  pA/√Hz and  $\eta = 0.95$  A/W (at 1550 nm) used, CATV and SAT-IF signals transmitted together (see also test condition 4 below)
- <sup>2)</sup> C42 channel allocation with OMI= 3.9% measured with 5 MHz noise bandwidth
- <sup>3)</sup> 36 SAT-IF carriers with  $OMI_{SAT} = 1.0\%$  for SAT-IF carriers, measured with 27 MHz noise bandwidth
- <sup>4)</sup> Internal prechirping parameter "fiber length compensation" set according to connected optical fibre length
- <sup>5)</sup> Internal prechirping parameter "fiber length compensation" set to 7 km, actual fiber length between 0 ... 12 km

### Available Types

Fx-AOT08200	Amplified optical transmitter with 8 ports of 20.0 dBm optical output power each
Fx-AOT16200	Amplified optical transmitter with 16 ports of 20.0 dBm optical output power each