

# FINISAR®

## Key Features

- ▶ DOCSIS 3.1 compatible: All-Digital QAM loading from 50 MHz to 1.2 GHz
- ▶ Wavelength can be tuned across the entire C-band at 100GHz ITU DWDM spacings
- ▶ Packaged in standard XFP pluggable optical module
- ▶ Built-in digital diagnostic functions
- ▶ Link distance up to 60 kilometers without any dispersion compensation
- ▶ LC Angled-Physical Contact (APC) optical connection for low reflection
- ▶ Low power consumption
- ▶ Compliant with SCTE 195 2013: Interface Specifications for an RF-Modulated Small Form Factor Pluggable Optical Module
- ▶ Mechanical dimensions compliant with 10 Gigabit Small Form Factor Pluggable Module (XFP) Multi-Source Agreement (INF-8077i, Rev. 4.5)

## Applications

- ▶ 1550nm Broadcast with DWDM Narrowcast Overlay architectures
- ▶ All-Digital QAM networks
- ▶ RF-over-Glass (RFoG)

## Pluggable XFP-RF Transmitter for Hybrid Fiber Coaxial (HFC) Applications

### Wavelength tunable, 1.2 GHz pluggable optical transmitter module

#### Overview

Finisar's XFP-RF transmitter is a small form factor hot-pluggable optical module that is compliant with interface specifications developed by the Society of Cable Telecommunications Engineers (SCTE). It can be fully loaded with digital QAM channels from 50 MHz to 1218 MHz to enable cable operators to more effectively segment their serving groups and offer more services to their subscribers. The small XFP module significantly reduces power consumption and increases density for downstream transmitters. These modules can be integrated into today's Hybrid-Fiber Coaxial (HFC) optical broadband platforms and tomorrow's converged access platforms (CCAP).

The transmitter wavelength can be tuned up to any of the 43 different Dense Wavelength Division Multiplexing (DWDM) wavelengths across the entire C-band in 500 ms. This increases operational efficiencies in deploying DWDM networks and reduces inventory of transmitters at different fixed wavelengths. Wavelength tunability also opens the possibility of novel HFC architectures that can dynamically route services and increase bandwidth capacity in the cable operator's access network.

#### Key Advantages

- ▶ 2x to 4x density improvement over current transmitter solutions
- ▶ At least 50% less power consumption per transmitter
- ▶ Enables future HFC architectures to route services dynamically by changing the wavelength of the transmitter
- ▶ Enables pluggable optics to be utilized directly in next-generation Cable Modem Termination Systems and QAM modulators



# Pluggable XFP-RF HFC Transmitter

## Specifications

Parameter	Value
Optical Output Power	+5 dBm or +6 dBm minimum (see product selection table below)
Optical Wavelengths	ITU DWDM Channels 18 to 60 (1528.77 nm to 1529.55 nm)
Center Wavelength Spacing	100 GHz
Wavelength Tuning Time	0.5 seconds typical
Optical Connection	LC/APC receptacle (angled physical contact)
Optical Fiber Distance	0 km to 60 km
Fiber Dispersion Compensation, Internal or External	Not applicable
SBS Suppression	+13 dBm typical (higher SBS suppression available)
Modulation Error Ratio (MER)	41 dB, Minimum (64 channels of 256 QAM, link distance of 50km) 37 dB, Minimum (154 channels of 256 QAM, link distance of 50km)
RF Bandwidth	50 MHz to 1218 MHz
RF Input Level	Dependent on host module (+3 dBm composite typical into XFP-RF)
RF Impedance	Dependent on host module (100 $\Omega$ differential into XFP-RF)
RF Flatness	1.0 dB max, peak to peak, 50 MHz to 1003 MHz 1.5 dB max, peak to peak, 50 MHz to 1218 MHz
RF Input Return Loss	16 dB min, 52 MHz to 1218 MHz
Dimensions	78 mm (L) X 18.35 mm (W) X 8.5 mm (H) 3.0 in (L) X 0.7 in (W) X 0.3 in (H)
Mounting	XFP cage assembly on host module
Operating Temperature Range	0°C to 70°C
Storage Temperature Range	-40°C to 85°C
Power Consumption	3 Watts typical
Data/Control	Digital diagnostic functions via two-wire serial interface

## Product Selection

Part Number	Output Power	Wavelength Control	Wavelength Range
XT05AAQTENJD1860	+ 5 dBm	Wavelength-Tunable	43 channels from ITU 18 to 60
XT05AAQ5ENJDxxx	+ 5 dBm	Fixed Wavelength	Single-channel between ITU 18 to 60
XT06AAQTENJD2035	+ 6 dBm	Wavelength-Tunable	16 channels from ITU 20 to 35
XT06AAQ5ENJDxxx	+ 6 dBm	Fixed Wavelength	Single-channel between ITU 20 to 35

xxx – fixed wavelength designated with ITU DWDM channel number (e.g. "210" for ITU channel 21)



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