

H A R D W A R E

AUTO-LAMBDA SFP+

DWDM, 1.25-11.1 Gb/s, 80 Kilometers, C-temp and I-temp

Auto-Lambda is an Infinera-patented technology that simplifies the day-to-day operations of high-volume access applications, such as distributed access architectures (DAA) in cable networks, 4G/5G fronthaul/backhaul in mobile networks, and business Ethernet services, by providing autotuneable 10 gigabits per second (Gb/s) dense wavelength-division multiplexing (DWDM) enhanced small form-factor pluggables (SFP+s). Autotuneability technology is a key enabler for the mass deployment of next-generation access networks as it greatly speeds up and simplifies the deployment of DWDM pluggables while also reducing spares holding costs and management complexity. Infinera's Auto-Lambda technology can be applied to a range of tuneable optics to address a broad range of deployment scenarios.

Benefits

- Simplifies the installation of DWDM access points and ongoing maintenance
- Host-agnostic: Enables tunable DWDM SFP+ capabilities in third-party systems with standard SFP+ ports, without interaction/management from the host system
- Removes the operational need to recognize the specific wavelengths required in each location of the network

In addition to the operational benefits and corresponding operational expense savings of deploying Auto-Lambda in high-volume access applications, Auto-Lambda can significantly reduce the cost of deploying many other DWDM access networks due to the host-agnostic nature of the SFP+ modules. Deploying Auto-Lambda in DWDM access networks, as in the case of backhaul router capacity upgrades, has provided savings of over 50% of the capital expense of the DWDM network through the removal of DWDM hardware as legacy routers become IP over DWDM capable.

Auto-Lambda 10G DWDM 80 Kilometer Optics Options

TRX100122/ATC is a commercial temperature range (C-temp) DWDM Auto-Lambda transceiver, and TRX100124/ATC and TRX100119/ATC are both industrial temperature range (I-temp) DWDM Auto-Lambda transceivers. All 10G Auto-Lambda optics support up to 80 kilometer (km) unamplified fiber distance. The transceivers can also be used over amplified links fulfilling the optical signal-to-noise ratio (OSNR) and dispersion specifications detailed below. For amplified systems, in conjunction with Auto-Lambda, there are a few design considerations and rules that apply. Please contact an Infinera Sales Engineer for more details.

The transceivers support operation on 48/96 DWDM channels on the ITU-T 50/100 gigahertz (GHz) even grid, ranging from channels 913.5 through 961. The search for and establishment of the correct DWDM wavelength is handled by the transceiver itself, without any interaction required from the host system. The same part numbers can be used at both ends of a link, and C-temp and I-temp options can be mixed to support links from central offices and remote outdoor locations.

The transceivers support both dual-fiber and single-fiber DWDM optical networks.

Features

- Multi-rate support – 1.25 Gb/s up to 11.1 Gb/s
- Commercial and industrial temperature range options: 0° to 70° C and -40° to 85° C
- The transceivers comply with applicable small form-factor pluggable (SFP) and SFP+ multi-source agreement specifications
- Duplex LC optical interface
- Digital diagnostic monitoring interface
- Laser safety class 1 according to IEC 60825
- The electrical characteristics comply with the specification in SFF-8431
- The products comply with SFF-8432 mechanical dimensions

Auto-Lambda Autotuneability Process

The Auto-Lambda autotuneability process ensures that the transceiver tunes in to the channel required to operate over the exact port on the DWDM filter to which the transceiver is connected. The maximum tuning convergence time is approximately three minutes when connected to another Auto-Lambda transceiver via DWDM filters. This includes worst-case scan over 48 wavelengths and the Auto-Lambda handshake process—typical tuning time is considerably less than minute and can be as quick as a few seconds.

The TRX100122/ATC and TRX100124/ATC transceivers are targeted for 100 GHz even grid and 48 channels. The TRX100119/ATC transceiver is targeted for 50 GHz grid and 96 channels. Specific use cases might require other grids and channel counts. Please contact Infinera to understand what additional options are available.

Features

General	Min	Typical	Max	Unit	Conditions
Data rate	1.25		11.1	Gb/s	
Modulation format	OOK-NRZ				
Supported data transport protocols	GbE, 10 GbE STM-64/OC-192 4G FC, 8G FC, 10G FC OTU-2, OTU-2e CPRI options: 2, 3, 4, 5, 6, 7, and 8				
Reach		80		km	Fiber type G652
Tuning convergence		60	182	s	48 channel 100 GHz grid
		120	364	s	96 channel 50 GHz grid
Transmitter					
Average output power	-1		+3	dBm	
Nominal center frequency	191.350		196.100	THz	
Nominal channel spacing		50/100		GHz	ITU-T 50/100 GHz grid
Receiver					
Wavelength of operation	1520		1570	nm	
Receiver average power sensitivity (back-to-back)			-24	dBm	
Receiver average power sensitivity with fiber	40 km		-24	dBm	
	80 km		-21	dBm	
Receiver overload	-7			dBm	
OSNR performance without FEC	-30 to 0 km		30	dB	
	0 to 60 km		24	dB	
Environmental, Electrical					
Case operating temperature	0		70	°C	C-temp
	-40		85	°C	I-temp
Power consumption			2.3	W	-40 to +85° C case temp
			1.8	W	0 to 70° C case temp
Ordering Code					
Ordering Code	Description				
TRX100122/ATC	Auto-Lambda SFP+, DWDM, 1.25-11.1 Gb/s, 80 km, C-temp, 48 channels				
TRX100124/ATC	Auto-Lambda SFP+, DWDM, 1.25-11.1 Gb/s, 80 km, I-temp, 48 channels				
TRX100119/ATC	Auto-Lambda SFP+, DWDM, 1.25-11.1 Gb/s, 80 km, I-temp, 96 channels				

Other variants in the portfolio include customized variants with respect to channel support and reach.