1830 PSI-M 2.4T Muxponder

DMAT6, DMAT6L, DMAT6E, DMAT6EL

The high-capacity 1830 PSI-M DMAT6, DMAT6L, DMAT6E and DMAT6EL muxponders provide an ideal solution for 400GE/800GE aggregation applications over metro, regional, long-haul and subsea networks. Based on Nokia's latest-generation Photonic Service Engine (PSE-6s) coherent optics, these muxponders include 2 x 1.2T WDM line ports, supporting up to 2.4 Tb/s of aggregate bandwidth.

The Nokia PSI-M is a compact modular optical networking platform, optimized for data center interconnect applications over metro, regional, long-haul and subsea distances. As the software industry transitioned to cloud-based applications, it created a tremendous need for optical networks and bandwidth to interconnect data centers over regional, long-haul and ultra-long-haul networks, as well as to connect local data caching sites to their respective metro point of presence locations.

Benefits

- High-performance transport for 400GE/800GE interfaces, along with 100G clients via breakout cable

- Advanced probabilistic shaped modulation (PCS) and FEC based on Nokia latest generation PSE-6s technology

- Client bandwidth sharing across 2 x WDM line ports

- High-capacity transport from metro to LH/ULH distances

- Backward compatibility with existing Nokia PSE-Vs based transponders

- Secure transport with protocol-agnostic, wire-speed Layer 1 encryption

Applications

- High-capacity (2.4 Tb/s) muxponder for DCI, metro, regional, long haul, and subsea applications

- Aggregation and transport of 400GE/800GE router interfaces over optical networks

- Aggregation of 24x100GE/OTU4 interfaces, via breakout cable

- Mixed 100GE/OTU4, 400GE, and 800GE services over same wavelength – up to 1.2 Tb/s per line port

Product description

The DMAT6/L and DMAT6E/EL are high-performance muxponders for aggregating 400GE/800GE client services. These modules support two WDM coherent line ports, designed using the latest generation Nokia PSE coherent optics.

The 2.4T muxponder variants are double-width modules designed for use in the 1830 PSI-M platform. The modules include four 400G client ports and two dual rate 400G/800G ports. In addition, up to 24x100GE/ OTU4 services are supported via breakout cables. The two WDM line ports each support line rates of up to 1.2 Tb/s, with provisioned baud rate and probabilistic constellation shaping (PCS) to maximize wavelength capacity over each network route. The WDM line ports are fully tunable across both C-band and L-band with the respective module variants.

The WDM coherent line interfaces utilize Nokia's latest-generation photonic service engine, incorporating Nokia's sixth-generation coherent DSP and cutting-edge photonics technology. The PSE-6s incorporates PCS, advanced forward error correction (FEC), and granular baud rate tuning.

The PSE-6s also supports bandwidth sharing between client ports and the two WDM line ports. Client bandwidth sharing maximizes optical reach, especially when transporting odd numbers of client interfaces. As an example, 3x400GE clients can transported as 2x600G line wavelengths. The 2.4T muxponder variants are optimized for metro, regional, long-haul, and subsea applications where high-capacity, high-performance reach are required.

The DMAT6E/EL muxponders build on the capabilities of the DMAT6/L, offering several key enhancements. They support higher-performance profiles with improved spectral efficiency in 150 GHz channels, higher baud rates, extended optical reach, and additional client bandwidth sharing configurations to maximize bandwidth efficiency. The DMAT6E/EL also incorporates optional L1 line-side encryption using Advanced Encryption Standard (AES)-256, ensuring robust end-to-end data protection.

Nokia supported products

The DMAT6, DMAT6L, DMAT6E and DMAT6EL are supported on the Nokia 1830 PSI-M platform.

Figure 1. 1830 PSI-M DMAT6, DMAT6L, DMAT6E and DMAT6EL

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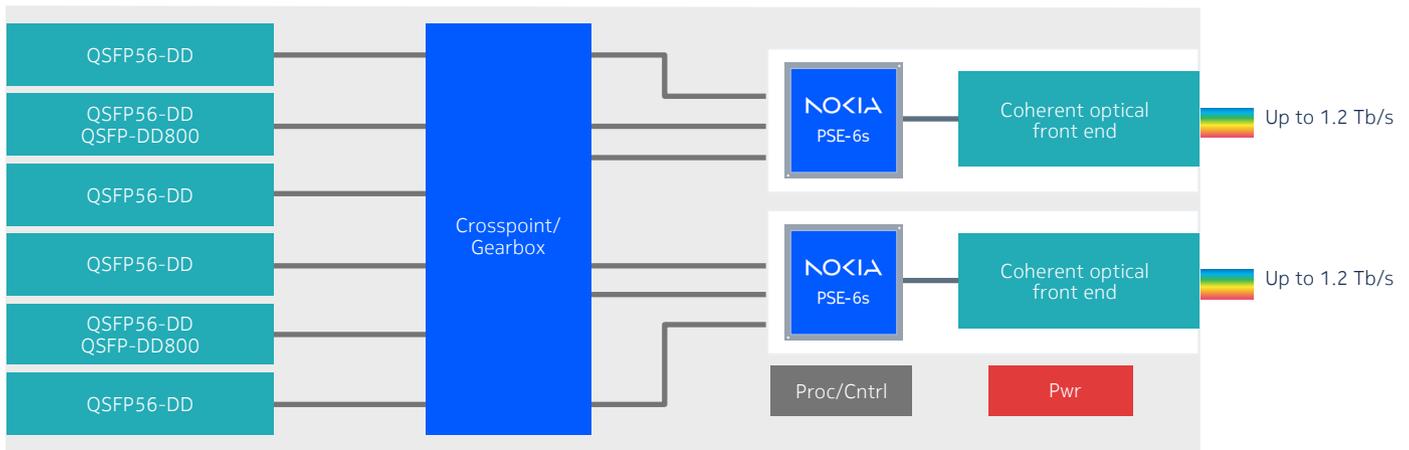
Unit	Part #	Description
DMAT6	3KC82399AA	2.4T Muxponder module
DMAT6 Subsea	3KC82780AA	2.4T Muxponder module, subsea
DMAT6L	3KC82671AA	2.4T Muxponder module, L-band
DMAT6E	3KC82926AA	2.4T Muxponder module, enhanced
DMAT6EL	3KC82927AA	2.4T Muxponder module, enhanced, L-band

Specifications	DMAT6, DMAT6L, DMAT6E, DMAT6EL		
Application	DCI, Metro, Regional, LH, Subsea n x 400GE/800GE Muxponder Up to 24 x 100GE/OTU4 support, via breakout cables Mixed 100G/400G/800G transport		
Line Port	2 x WDM line ports, 130 Gbaud (DMAT6/L), 130-140 Gbaud within 150 GHz (DMAT6E/EL) 100G - 1.2T configurable line rates Probabilistic Constellation Shaping (PCS Gen3), QPSK, Shaped-QAM16, Shaped-QAM64 Nokia SD-FEC (15%, 25%, variable) Continuous baudrate adjustment via baudrate flexible profiles Non-linear compensation Bandwidth line port sharing Unidirectional 3R mode with recoloring Full C-band (DMAT6, DMAT6E) and L-band (DMAT6L, DMAT6EL) with 0.1 GHz central frequency tuning		
Client ports	4 x QSFP56-DD	400GE	(4x100GE/OTU4 via breakout cable)
	2 x QSFP56-DD/QSFP800	400GE/800GE	(4x100GE/OTU4 via breakout cable)
Features	Integrated test signal with loopbacks Comprehensive analog and digital PMs with fast telemetry Client/Line GCC0 LLDP snooping Support up to (2) x DMAT6 modules per PSI-M chassis (4.8 Tb)		
Protection	O-SNCP (OPSB5)/OCHP (OPSUM) optical client and channel protection OLP/OMSP optical line protection L0 Restoration (GMPLS)		
Encryption (DMAT6E, DMAT6EL)	Low latency, configurable line encryption (AES-256)		
Management	WaveSuite management applications suite NETCONF/gNMI/gNOI gRPC streaming telemetry Declarative config		
Operating environment	Normal	0°C to 40°C (32°F to 104°F)	
	Short-term	-5°C to 45°C (23°F to 113°F)	
	Humidity	5% to 85%	
Physical	Double-width module, PSI-M		
Power consumption	275 W (typical)		

About Nokia

Nokia is a global leader in connectivity for the AI era. With expertise across fixed, mobile, and transport networks, powered by the innovation of Nokia Bell Labs, we're advancing connectivity to secure a brighter world.