

# CryptoMux™ Series

Switchponders for OTN aggregation in high-security networks

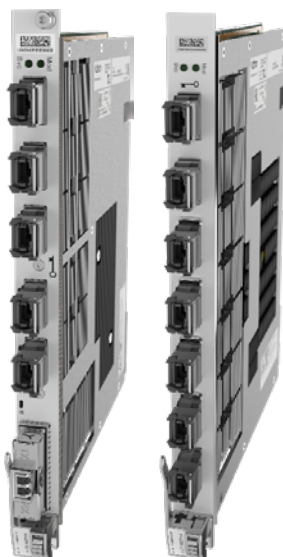
## Benefits

- Built-in cryptographic functions**  
 Featuring AES256 line-rate encryption, hybrid key exchange based on post-quantum and classical cryptography
- Flexible mix of services**  
 Covering a wide range of interface options such as OTN, Ethernet, SDH/SONET and Fibre Channel, from 8Gbit/s to 100Gbit/s
- Wide application range**  
 Configurable to operate as dual multiplexer, add/drop multiplexer (ADM) or ODU switch
- Efficiency with OTN-Grooming**  
 Maximizing transport capacity by densely populating OTN channels
- Leveraging coherent pluggable innovation**  
 High-speed DWDM coherent pluggable technology, including 100ZR+ QSFP28 pluggable optics
- Compact and cost-efficient design**  
 400Gbit/s interface capacity on a card with multi-functional cages that support different types of pluggables
- Designed for Adtran FSP 3000 platform**  
 Extending widely applied FSP 3000 open optical transport solution with sophisticated ConnectGuard™ security features

## Overview

The CryptoMux™ Series is a family of DWDM switchponder cards that integrate OTN switching with DWDM technology and line-rate encryption, enabling secure and cost-effective optical networking. With integrated OTN switching technology, our CryptoMux Series provides an open, flexible, and compact OTN layer for the efficient transport of low-speed services that are groomed into 100 Gbps to 200 Gbps coherent wavelengths. This enables operators to maximize fiber capacity and minimize cost per bit. In addition, our CryptoMux™ Series protects the integrity and privacy of mission-critical, sensitive data with our ConnectGuard™ Layer 1 encryption technology. This solution is fully compatible with Adtran's FSP 3000 open optical transport platform. It is a security hardened version of Adtran's FSP 3000 OpenFabric™ Series.

The CryptoMux™ Series switchponders feature an innovative design with a fully open and flexible front plane with standard pluggable interfaces and no backplane connectivity limitations. With 400 Gbps switching capacity, our CryptoMux™ switchponders are designed to meet the most demanding requirements of metro and edge aggregation networks. The CryptoMux™ Series can be integrated into any network and operate in multiple modes: DWDM multiplexer, add/drop multiplexer (ADM), and OTN cross-connect. They support a flexible mix of SONET/SDH, Fibre Channel, OTN and Ethernet services up to 100 Gbps. Two variants are available: the CryptoMux+™, which provides service aggregation into a single 200 Gbps coherent DWDM line interface, and the CryptoMux™, which provides two 100 Gbps coherent line interfaces using 100ZR+ QSFP28 pluggable optics.



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## High-level technical specifications

### General information

- 400Gbit/s switching capacity per card
- Pluggable network and client interfaces
- Traffic protection options
- Two card variants:
  - CryptoMux™ with two 100Gbit/s grey or coherent network interfaces that support QSFP28 pluggable transceivers, and
  - CryptoMux+™ with one 100 – 200Gbit/s coherent network interface that supports CFP2 pluggable transceivers

### Modes of operation

- Add/drop multiplexing (ADM), multi-service aggregation (muxponder) and OTN switching
- Traffic flow: client to network, client to client (OTN services) and network to network

### OTN switching

- ODU0, ODU1, ODU2, ODU3, ODU4, ODUflex layer
- Non-blocking
- Efficient service grooming

### Supported services

- 10 to 100Gbit/s Ethernet
- OTU2/2e, OTU4
- 8/16/32 Gbit/s Fibre Channel
- STM64/OC192 SDH/SONET
- Flexible combination of services

### Data encryption

- ConnectGuard™ security technology for OTN payload protection
- Built to meet FIPS 140-3 requirements
- AES-CTR-256 mode
- Hybrid key exchange: DH4096 + Classic McEliece
- Fully crypto-agile design

### Chassis options

- Fits in multiple chassis sizes (1RU to 12RU)
- 19", ETSI and 23" ANSI/NEBS rack-mountable
- chassis
- ETSI 300mm and 600mm depth options

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## Applications in your network

### Secure, open and flexible OTN grooming for highest efficiency in metro transport

- Built-in Layer 1 encryption technology for robust protection of data in motion with 100% throughput and ultra-low latency
- Field-proven and robust ConnectGuard™ encryption for mission-critical applications
- Protecting any traffic transported in the OTN payload
- Lowering cost per Gbit/s through:
  - Multi-service aggregation of client services into 100 Gbit/s and 200 Gbit/s coherent wavelengths
  - Add/drop multiplexing of client services into two coherent wavelengths (east/west)
  - OTN switching of client services up to 400 Gbit/s total capacity
- Smooth upgrade of existing network infrastructure to coherent technology
- High-capacity, open and disaggregated metro and core optical network infrastructure
- Efficient use of fiber capacity

