



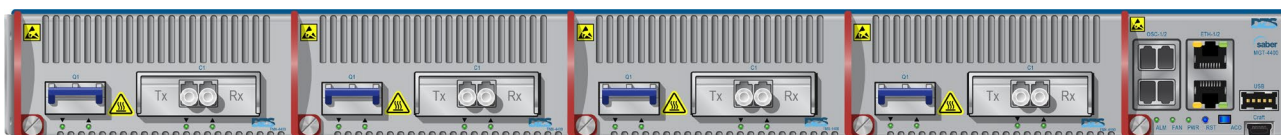
# TMX-440x Family

## Transponder and Muxponder Modules

The TMX-440X Transponders and Muxponders deploy as removable sleds in the SABER-4400 coherent Optical Edge platform. These compact modules are an ideal “pay-as-you-grow” DWDM transport solution for 10G to 400G services. The family includes one-to-one Transponders for 100G to 400G circuits, as well as Muxponders for combining multiple client interfaces from 10G to 200G onto a single 100G to 400G or dual-protected line coherent tunable DWDM interface. Coherent pluggable line optics include both CFP2 and QSFP28-DD with software-programmable modulation formats that can operate in multiple line modes. Full client and line performance monitoring is provided for clear service demarcation, fault localization and SLA assurance. Both line and client protection are available depending on the sled and coherent optical module used. Many of the sleds are hardened and support extended temperature range.

Like all sleds in the SABER-4400 family, the TMX-440X family can be managed at the element level using DZS graphical shelf manager, as well at an end-to-end network level using DZS Cloud Manager. SNMP and NETCONF/YANG are available for third-party control. Data configuration is based upon openROADM data models.

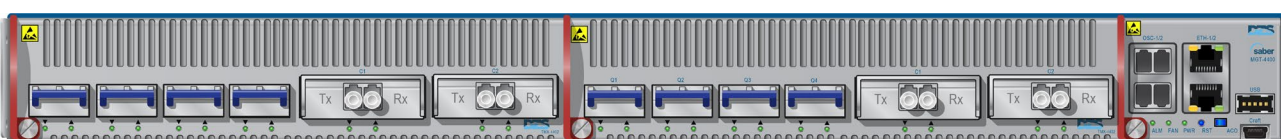
SABER-4400 with 4 TMX-4400 modules



SABER-4400 with 4 TMX-4401 modules



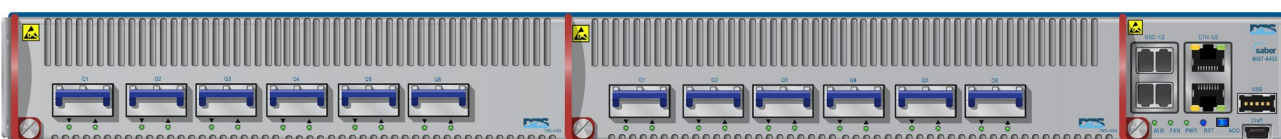
SABER-4400 with 2 TMX-4402 modules



SABER-4400 with 4 TMX-4403 modules



SABER-4400 with 2 TMX-4404 modules



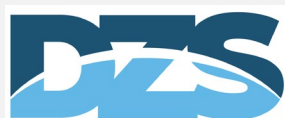
## Features

- Flexible family of sleds for SABER-4400 platform
- Removable, one-slot and two-slot sleds
- Transponder and multi-client port Muxponder options
- Hardened, extended temperature range (ETR) options
- 100G to 400G Coherent DWDM line speeds
- 10G to 400G client speeds
- Client and line protection options
- Client and line encryption options
- Operate with Path Protection Modules (PPM)
- Selection of software-programmable pluggable coherent optics
- CFP2 and QSFP28-DD coherent DWDM line options
- Advanced client and line performance monitoring and alarming
- OpenROADM data management models
- FlexE, Ethernet and OTN Mapping options

## Specifications

Parameter	TMX-4400	TMX-4401	TMX-4402	TMX-4403	TMX-4404
Width	1 slot	1 slot	2 slots	1 slot	2 slots
Transponder/Muxponder	Transponder	Muxponder	Muxponder	Muxponder	Muxponder
Client ports	1	4	4	4	4
Client port speed	100 to 400G	25 to 400G	25 to 400G	25 to 400G	25 to 400G
Line ports	1	1	2	1	2
Line port speed	100 to 400G	100 to 400G	100 to 400G	100 to 400G	100 to 400G
Line interface type	CFP2	CFP2	CFP2	QSFP28-DD	QSFP28-DD
Built-in protection	No	No	Yes	No	Yes
Line encryption	Pluggable dependent	Pluggable dependent	Pluggable dependent	Pluggable dependent	Pluggable dependent
Operating temperature	-40°C to 65°C	-5°C to 50°C	-40°C to 65°C	-5°C to 50°C	-40°C to 65°C
GCC/DCC support	Yes	Yes	Yes	Yes	Yes

Multiplexing Formats					
Client FlexE mapping	Transparent	Yes	Yes	Yes	Yes
Client Ethernet mapping	Transparent	Yes	Yes	Yes	Yes
4x100GE → 400GE	No	Yes	Yes	Yes	Yes
Client OTN mapping	Transparent	Yes	Yes	Yes	Yes



## Sample of Supported Line Pluggable Coherent Optics

Additional options are available.

Refer to Coherent optic datasheets for specifications.

Part Name	Part Number	Description
<b>CPO-DD-ZRP-01</b>	1029-3505	QSFP-DD Coherent tunable DWDM pluggable optic for the TMX-4403 and TMX-4404 sleds. Supports openZR+; Extended Temperature support in TMX-4404 sled.
<b>CPO-CFP2-OPR-01</b>	1029-3503	CFP2 Coherent tunable DWDM pluggable optic for the TMX-4400, TMX-4401, TMX-4402 sleds. Supports openZR+ and openROADM MSAs; Extended temperature support in TMX-4400 and TMX-4402 sleds.

## Sample of Supported Client Grey Pluggable Optics

Additional options are available.

Refer to Coherent optic datasheets for specifications.

Part Number	Description
<b>1029-3600</b>	QSFP28,SR4,100m
<b>1029-3601</b>	QSFP28, LR4,10km, OTU4
<b>1029-3604</b>	QSFP28, LR4,10km, 100GbE
<b>1032-3001</b>	QSFP28-DD,400G,LR4
<b>1032-3002</b>	QSFP28-DD,400G,FR4

## Ordering Information

Model Number	Part Number	Description
<b>TMX-4400</b>	1032-2001	100-400G TRANSPONDER, CFP2 Line, ETR
<b>TMX-4401</b>	1032-2002	4xN CLIENT to 100-400G MUXPONDER, N= 10G-400G, CFP2 Line
<b>TMX-4402</b>	1032-2003	4xN CLIENT to 100-400G MUXPONDER, N= 10G-400G, 2xCFP2 Line, ETR
<b>TMX-4403</b>	1032-2004	4xN CLIENT to 100-400G MUXPONDER, N= 10G-400G, QSFP28-DD Line
<b>TMX-4404</b>	1032-2005	4xN CLIENT to 100-400G MUXPONDER, N= 10G-400G, 2xQSFP28-DD Line, ETR

