FTB-85100G Packet Blazer
100G/40G ETHERNET AND OTN TEST MODULE

The industry's first compact, portable 100G/40G Ethernet and OTN testing solution

KEY FEATURES

- 40G/100G Ethernet fully compliant with IEEE 802.3ba standard and OTU3/OTU4 as per ITU-T G.709—all in single module
- OTU3/OTU4 with forward error correction (FEC) and optical transport layer (OTL) testing capabilities as a software option
- 40G/100G Ethernet over OTU3/OTU4 with complete mapping capabilities using GMP
- 40G/100G IP traffic at 100% transmission with full Ethernet statistics and packet capture
- Fully integrated testing capabilities for assessing CFP MSA optical modules with full MDIO access
- Physical-layer performance assessment: PCS and CAUI lanes mappings, skew measurement and signal conditioning
- Remote management and complete automation testing capabilities using SCPI
- Single instrument for lab testing, field trials and early deployments

COMPLEMENTARY PRODUCTS

- Platform FTB-500
- Transport Blazer FTB-8140
- Packet Blazer FTB-8510G
40G/100G ETHERNET—A RAPIDLY EMERGING MARKET

The ongoing growth of enterprise, residential and mobile multimedia services (such as peer-to-peer, IPTV and video-over-Internet) is producing unprecedented levels of traffic, stressing the bandwidth capabilities of metro and core transport networks. Consequently, carriers worldwide are actively seeking strategies to efficiently and cost-effectively scale IP packet transmission. Specifically intended to facilitate this transition, 40G/100G Ethernet technologies offer carriers the flexibility to phase in the implementation of these higher-speed rates to better align capacity increases with their specific growth and budget strategies.

These new data rates are based on the IEEE 802.3ba standard. The most significant concept introduced in this new working standard is the use of parallel optics (including CWDM, LAN WDM and parallel ribbon fiber), which strongly influence the physical coding sublayer (PCS) implementation—one of the new building blocks for 40G/100G Ethernet. The key difference between the IEEE 802.3ba standard and its predecessor is the introduction of PCS lanes (formerly known as virtual lanes). PCS lanes provide an effective method of handling various parallel optical configurations and, therefore, demand a comprehensive solution that can easily test from 10 x 10 Gbit/s to 4 x 25 Gbit/s and, in the future, 1 x 100 Gbit/s configurations. Thorough PCS testing is among the critical layer 1/2/3 tests needed to ensure that 40G/100G Ethernet equipment and network services can be deployed rapidly and with confidence.

THE INDUSTRY’S FIRST RUGGED AND PORTABLE 100G/40G ETHERNET AND OTN COMPLIANT TESTER

The first rugged and portable 100G/40G Ethernet and OTN analyzer on the market, the FTB-85100G Packet Blazer enables teams to efficiently share the equipment in the lab, perform field trials and carry out early deployments, all with a single tester. Purpose-built for applications where thorough testing, portability, true ruggedness and ease of use are required, it offers powerful layer 1/2/3 traffic generation and analysis features to stress and validate network elements and services against demanding corner cases.

The FTB-85100G supports multiple transceiver interfaces and offers unprecedented full-line-rate testing of the physical coding sublayer (PCS). Users can also generate and analyze 100 Gbit/s and 40 Gbit/s line rate Ethernet and IP packets, as well as perform comprehensive EtherBERT™ tests, all via an intuitive graphical user interface (GUI).

With its complete range of test features and automation capabilities, the FTB-85100G can execute multilayer testing to rapidly validate physical-layer characteristics and accurately benchmark Ethernet/IP performance of equipment and services. Its flexible and scalable FPGA-based architecture ensures rapid and seamless incorporation of updates as the standard is ratified and refined moving forward, protecting your testing investment without sacrificing timely support of features and functions.

OPTICAL TRANSPORT NETWORK (OTN) TESTING

Optical transport network (OTN) as per ITU-T G.709 is the transport technology of choice for transporting 40G/100G Ethernet traffic over the core network due to its operation, administration, maintenance and provisioning (OAM&P) supported capability for troubleshooting and maintenance as well as FEC for performance enhancement. The FTB-85100G Packet Blazer supports numerous OTN testing capabilities, including OTU4 (112 Gbit/s) and OTU3 (43 Gbit/s) full-line-rate testing with OTN framing and FEC testing as per ITU-T G.709, enabling breakthrough-level qualification of 100G and 40G Ethernet transmission over OTN. These capabilities are offered as a software option on existing 40G/100G modules.
**40G/100G ETHERNET OVER OTU3/OTU4 TESTING**

ITU-T G.709 defines two approaches for mapping constant bit rate (CBR) and packet-based client signals over OTNs. The client signal can either be mapped using ODUflex—an aggregate of $n \times 1.25$ Gbit/s tributaries—with a bit rate suitable for the client signal or mapping the client signal directly into ODUk, using GMP if the bit rate of the client signal is close to a conventional ODUk ($k = 0, 1, 2, 3, 4$) rate. Using EXFO’s FTB-85100G Packet Blazer, service providers can map 40G/100G Ethernet services over OTN with different traffic characteristics, run bit error-rate (BER) tests end-to-end across the optical transport network and measure the ratio of the error bits compared to the number of sent bits. In this testing configuration, the FTB-85100G Blazer module provides complete analysis of the OTU3/OTU4 transport layer, as well as complete GMP statistics to ensure proper recovery of the client signal at the receive end. EXFO’s 40G/100G Ethernet-over-OTN testing capability includes also validating the 40G/100G Ethernet IP traffic transmission with 100% throughput and ensuring that latency does not impact service providers’ service level agreements (SLAs) with their customers.

**CAUI/XLAUI SIGNAL CONDITIONING**

EXFO’s FTB-85100G Packet Blazer module offers a signal-conditioning tool to characterize the electrical CAUI/XLAUI lanes and troubleshooting electrical-level issues on standard optical interfaces used within 40G/100G systems. This capability provides direct access to amplitude and pre-/post-emphasis control of the 10G electrical CAUI/XLAUI lane transmitters, as well as equalization correction at the receivers. The signal-conditioning interface provides access to the electrical parameters, enabling users to better compensate for signal integrity issues or modify specific electrical parameters to observe the effects of stressing the pluggable optical device. Having the ability to modify signal parameters with a wide dynamic range of amplitude, pre-emphasis and equalization controls, CFP manufacturers can evaluate and optimize the performance of their modules.

**EXFO’S CFP-TO-CXP ADAPTER**

The newly introduced CFP-to-CXP adapter kit includes two CFP/CXP adapters and an optical cable supporting 40G/100G Ethernet and OTN rates. The CFP/CXP kit addresses end-to-end system level testing where 40G/100G Ethernet and OTN traffic is carried over the extended CAUI (electrical) lanes between the two CFP/CXP adapters. The CFP/CXP adapter can also be used to connect directly to CXP interfaces on customers’ network elements.
<table>
<thead>
<tr>
<th>Key Features</th>
<th>Details</th>
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<tbody>
<tr>
<td><strong>Detailed compliance testing</strong></td>
<td>IEEE 802.3ba draft 3.2</td>
</tr>
<tr>
<td></td>
<td>CFP MSA draft 1.0 and CFP MSA management interface (MDIO) draft 1.2</td>
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<tr>
<td></td>
<td>ITU-T G.709, G.798 and G.872</td>
</tr>
<tr>
<td><strong>Multi-interface support</strong></td>
<td>MSA-compliant pluggable 4x10G, 4x25G and 10x10G CFPs and CXP transceivers</td>
</tr>
<tr>
<td></td>
<td>100GBASE-SR10/LR4/ER4, 40GBASE-SR4/LR4 and 10 x 10G SMF optical interfaces</td>
</tr>
<tr>
<td></td>
<td>External timing reference (DS1/E1/2MHz)</td>
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<td></td>
<td>Low- and high-speed reference clock output</td>
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<tr>
<td><strong>Robust physical-layer validation</strong></td>
<td>40G/100G XLAUI lanes error generation and monitoring</td>
</tr>
<tr>
<td></td>
<td>PCS lane mapping and monitoring capability</td>
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<td></td>
<td>Per-lane skew generation and measurement</td>
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<tr>
<td></td>
<td>Full MDIO read/write access</td>
</tr>
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<td></td>
<td>Signal conditioning—CAUI/XLAUI pre-emphasis and gain equalization capability</td>
</tr>
<tr>
<td><strong>Layer-2/3 Ethernet testing</strong></td>
<td>40G and 100G unframed BER test and EtherBERT</td>
</tr>
<tr>
<td></td>
<td>40G/100G Ethernet traffic generation and reception at 105% wire speed</td>
</tr>
<tr>
<td></td>
<td>Configurable transmission rate</td>
</tr>
<tr>
<td></td>
<td>MAC and IP header configuration</td>
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<tr>
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<td>Random and fixed packet size generation</td>
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<td></td>
<td>Throughput measurement</td>
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<td>Ethernet latency measurement</td>
</tr>
<tr>
<td></td>
<td>FCS, IP checksum and payload error generation and monitoring</td>
</tr>
<tr>
<td></td>
<td>Complete Ethernet statistics including total and valid frame counts as well as Rx frame sizes</td>
</tr>
<tr>
<td></td>
<td>Flow control analysis</td>
</tr>
<tr>
<td><strong>OTN testing</strong></td>
<td>OTU3 (43 Gbit/s) and OTU4 (112 Gbit/s) unframed and framed BER tests</td>
</tr>
<tr>
<td></td>
<td>FEC testing—error insertion and monitoring</td>
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<td></td>
<td>OTL3.4, 4.4 and 4.10 alarm and error generation and monitoring</td>
</tr>
<tr>
<td></td>
<td>OTL lane mapping and skew generation and measurement</td>
</tr>
<tr>
<td></td>
<td>OTU, ODU, OPU overhead manipulation and monitoring</td>
</tr>
<tr>
<td></td>
<td>OTU, ODU (including ODU TCM), OPU layer alarms/errors generation and analysis</td>
</tr>
<tr>
<td></td>
<td>OTU, ODU (including ODU TCM) trace messages</td>
</tr>
<tr>
<td></td>
<td>OTN round-trip delay (RTD) measurement</td>
</tr>
<tr>
<td><strong>Ethernet mapping over OTN</strong></td>
<td>40G and 100G Ethernet mapping over OTU3 and OTU4, respectively using GMP</td>
</tr>
<tr>
<td></td>
<td>40G transcoding capability with alarms, errors and statistics</td>
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<tr>
<td></td>
<td>Complete GMP alarms, errors and statistics</td>
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<tr>
<td></td>
<td>Payload type 21 mapping support</td>
</tr>
<tr>
<td><strong>Packet capture</strong></td>
<td>Ethernet packet capture up to 4 Mbit/s</td>
</tr>
<tr>
<td></td>
<td>Advanced filtering; capability to configure up to 10 filters of four fields each that can be combined with AND/OR/NOT operations; a mask is also provided for each field value</td>
</tr>
<tr>
<td></td>
<td>Configurable triggers including errors and header fields</td>
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<tr>
<td></td>
<td>Data capture in packet-capture (PCAP) format; read through Wireshark</td>
</tr>
<tr>
<td><strong>Different PRBS patterns per lane</strong></td>
<td>Allows users to configure different PRBS patterns on different CAUI lanes in a 40G/100G and OTU3/OTU4 unframed configurations; typically used when looking at the eye diagram of the CAUI lanes to identify crosstalk issues</td>
</tr>
<tr>
<td><strong>Per-wavelength power measurement</strong></td>
<td>Allows users to measure the received optical power per wavelength in the used parallel optics CFPs</td>
</tr>
<tr>
<td><strong>Remote control</strong></td>
<td>Remote access using VNC or WebVNC</td>
</tr>
<tr>
<td></td>
<td>Remote control for automated testing</td>
</tr>
</tbody>
</table>
**TECHNICAL SPECIFICATIONS**

EXFO’s 40G/100G Ethernet test solution is comprised of the FTB-85100G Packet Blazer module (housed in the FTB-500 portable platform) or the IQS-85100G Packet Blazer module (housed in the IQS-600 rackmount platform). For complete technical specifications on the FTB-500 or IQS-600 platforms, refer to their respective product page on EXFO’s website.

### FTB-85100G Packet Blazer Module

**CFP Interface**
- **Mechanical**: Compliant with CFP MSA draft 1.0
- **Electrical**: Compliant with CFP MSA draft 1.0
- **High-speed interface**: Compliant with IEEE 802.3ba draft 3.2
- **Management**: Compliant with CFP MSA management interface (MDIO) draft 1.2

**CFP/CXP Adapter**
- **Mechanical**: Compatible with CFP MSA HW specification rev 1.4
- **Electrical**: Compatible with CFP MSA HW specification rev 1.4
- **Signaling**: Compatible with IEEE802.3ba draft 3.2
- **Management**: Compatible with CFP MSA management interface specification rev 1.4

**HDMI Port**: EXFO proprietary

**Additional features on high-speed electrical interface (CAUI/XLAU1)**
- **Frequency measurement accuracy (uncertainty)**: ±4.6 ppm using internal clock
- **Frequency offset generation**: ±150 ppm

### Synchronization Interfaces

<table>
<thead>
<tr>
<th></th>
<th>External Clock DS1/1.5M</th>
<th>External Clock E1/2M</th>
<th>External Clock E1/2M</th>
<th>2 MHz (Trigger)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tx pulse amplitude (V)</strong></td>
<td>2.4 to 3.6</td>
<td>3.0</td>
<td>2.37</td>
<td>0.75 to 1.5</td>
</tr>
<tr>
<td><strong>Tx pulse mask</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pre-amplification (typical) (dBdzx)</strong></td>
<td>0.6 (0 to 133 ft)</td>
<td>1.2 (133 to 266 ft)</td>
<td>1.8 (266 to 399 ft)</td>
<td>2.4 (399 to 533 ft)</td>
</tr>
<tr>
<td><strong>Rx level sensitivity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Transmission bit rate</strong></td>
<td>1.544 Mbit/s ± 4.6 ppm</td>
<td>2.048 Mbit/s ± 4.6 ppm</td>
<td>2.048 Mbit/s ± 4.6 ppm</td>
<td></td>
</tr>
<tr>
<td><strong>Reception bit rate</strong></td>
<td>1.544 Mbit/s ± 50 ppm</td>
<td>2.048 Mbit/s ± 50 ppm</td>
<td>2.048 Mbit/s ± 50 ppm</td>
<td></td>
</tr>
<tr>
<td><strong>Intrinsic jitter (Tx)</strong></td>
<td>ANSI T1.403 section 6.3</td>
<td>GR-499 section 7.3</td>
<td></td>
<td>G.823 section 6.1 G.823 section 6.1 G.703 table 11</td>
</tr>
<tr>
<td><strong>Input jitter tolerance</strong></td>
<td>AT&amp;T PUB 62411</td>
<td>GR-499 SECTION 7.3</td>
<td></td>
<td>G.823 section 7.2 G.823 section 7.2 G.813</td>
</tr>
<tr>
<td><strong>Input impedancce (resistive termination)</strong></td>
<td>75 Ω ± 5 %, unbalanced</td>
<td>75 Ω ± 5 %, unbalanced</td>
<td>75 Ω ± 5 %, unbalanced</td>
<td>75 Ω ± 5 %, unbalanced</td>
</tr>
<tr>
<td><strong>Connector type</strong></td>
<td>BNC*</td>
<td>BNC*</td>
<td>BNC</td>
<td>BNC</td>
</tr>
</tbody>
</table>

**Note**

*a. Adaptation cable required for Bantam connector (EXFO part number: TJ-ELEC-BALUN).*
## FUNCTIONAL SPECIFICATIONS

### 40G/100G UNFRAMED BER TEST

<table>
<thead>
<tr>
<th>Line rates</th>
<th>40G and 100G</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pattern configuration</td>
<td>Square wave training pattern, unframed PRBS in nAUI lanes and unframed interleaved PRBS</td>
</tr>
<tr>
<td>Patterns</td>
<td>PRBS 2E9-1, PRBS 2E11-1, PRBS 2E15-1, PRBS 2E20-1, PRBS 2E23-1, PRBS 2E31-1</td>
</tr>
<tr>
<td>Error measurement</td>
<td>invalid 0, invalid 1, bit error total and bit error rate</td>
</tr>
<tr>
<td>Error injection configuration</td>
<td>Single, rate and continuous</td>
</tr>
</tbody>
</table>

### 40G/100G ETHERNET BER TEST

<table>
<thead>
<tr>
<th>Line rates</th>
<th>40G/100G Ethernet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Layer-2/3 header configuration</td>
<td>IP and MAC source/destination addresses</td>
</tr>
<tr>
<td>Stream configuration</td>
<td>Transmit mode, Tx rate, frame size, IFG and sequence tag</td>
</tr>
<tr>
<td>Transmit mode</td>
<td>Continuous and n-Frames</td>
</tr>
<tr>
<td>Tx rate (%)</td>
<td>Utilization and actual</td>
</tr>
<tr>
<td>Frame Size</td>
<td>Fixed and random (from 64 to 16 383 bytes)</td>
</tr>
<tr>
<td>Patterns</td>
<td>PRBS 2E9-1, PRBS 2E11-1, PRBS 2E15-1, PRBS 2E20-1, PRBS 2E23-1, PRBS 2E31-1 and user-configurable pattern</td>
</tr>
<tr>
<td>Error insertion</td>
<td>IP checksum, FCS, pattern</td>
</tr>
<tr>
<td>Error injection type</td>
<td>Manual, rate and continuous</td>
</tr>
<tr>
<td>Ethernet statistics</td>
<td>Rx alarms, Rx errors, Rx valid frame count, IP errors analysis, Rx frame size analysis, total frame count, Rx throughput and flow control analysis</td>
</tr>
<tr>
<td>Ethernet latency statistics</td>
<td>Current, minimum, maximum, average, successful and failed counts</td>
</tr>
<tr>
<td>Rx alarms</td>
<td>FCS, IP, Ethernet frame and sequence tag</td>
</tr>
<tr>
<td>Rx error analysis</td>
<td>Jabber/giant, runt, undersize, oversize, bad FCS and total error count</td>
</tr>
<tr>
<td>Rx valid frame count</td>
<td>Multicast, broadcast, unicast, non-unicast and total valid count</td>
</tr>
<tr>
<td>IP error analysis</td>
<td>Bad IP checksum</td>
</tr>
<tr>
<td>Rx frame size analysis</td>
<td>&lt;64, 64, 65-127, 128-255, 256-511, 512-1023, 1024-1518 and &gt;1518</td>
</tr>
<tr>
<td>Total frame count</td>
<td>Rx count and Tx count</td>
</tr>
<tr>
<td>Rx throughput</td>
<td>Bandwidth (bit/s), utilization (%) and frame rate (frame/s)</td>
</tr>
<tr>
<td>Flow control analysis</td>
<td>Pause frames, abort frames and total pause time</td>
</tr>
</tbody>
</table>
# FUNCTIONAL SPECIFICATIONS (CONT’D)

## OTU3/OTU4 UNFRAMED BER TEST

<table>
<thead>
<tr>
<th>Line rates</th>
<th>OTU3 (43.018 Gbit/s) and OTU4 (111.81 Gbit/s) BER test</th>
</tr>
</thead>
</table>

**Pattern configuration**

Square wave training pattern, unframed PRBS in nAUI lanes and unframed interleaved PRBS

**Patterns**

PRBS 2E9-1, PRBS 2E11-1, PRBS 2E15-1, PRBS 2E20-1, PRBS 2E23-1, PRBS 2E31-1

**Error monitoring**

Invalid 0, invalid 1, bit error total and bit error rate

**Error injection configuration**

Single, rate and continuous

## OTU3/OTU4 FRAMED BER TEST

<table>
<thead>
<tr>
<th>Line rates</th>
<th>OTU3 (43.018 Gbit/s) and OTU4 (111.81 Gbit/s) BER test</th>
</tr>
</thead>
</table>

**Standards compliance**

ITU-T G.709, ITU G.798, ITU G.872

### OTL Layer

**Errors**

LLM, FAS

**Alarms**

OOF, LOF, OOR, AIS, OLA (configurable) *a*, LOL *a*

### OTU Layer

**Errors**

OTU-FAS, OTU-MFAS, OTU-BEI, OTU-BIP-8

**Alarms**

LOF, OOF, LOM, OOM, OTU-AIS, OTU-TIM, OTU-BDI, OTU-IAE, OTU-BIAE

**Traces**

64-bytes trail trace identifier (TTI) as defined in ITU-T G.709

### ODU TCM Layer

**Errors**

TCMi-BIP-8, TCMi-BEI (i = 1 to 6)

**Alarms**

TCMi-LTC, TCMi-TIM, TCMi-BDI, TCMi-IAE, TCMi-BIAE

**Traces**

64-bytes trail trace identifier (TTI) as defined in ITU-T G.709

### ODU Layer

**Errors**

ODU-BIP-8, ODU-BEI

**Alarms**

ODU-AIS, ODU-OCI, ODU-LCK, ODU-TIM, ODU-BDI, ODU-FSF, ODU-BSF, ODU-FSD, ODU-BSD

**Traces**

64-bytes trail trace identifier (TTI) as defined in ITU-T G.709

**FTFL**

As defined in ITU-T G.709

### OPU Layer

**Alarm**

OPU-PLM

**Payload type**

Generates and displays received PT value

### GMP

**Alarms**

GMP OOS

**Errors**

Cm CRC-8, CnD CRC-5

**Statistics**

Cm min, Cm max, CnD min, CnD max

### Forward Error Correction (FEC)

**Errors**

Forward-correctable (codeword), FE-uncorrectable (codeword), FEC-correctable (symbol), FEC-correctable (bit) and FEC-stress (codeword)

### OTN Round-Trip Delay (RTD)

**OTN RTD**

Current, minimum, maximum, average, successful and failed counts

### 40GE Transcoding

**Alarms**

1027B block lock, 1027B HI BER

**Errors**

1027B invalid flag, 513B MSEQ violation, 66B PCS-BIP-8 per lane, 66B OTN-BIP-8 per lane, seq violation, POS violation

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**Note**

*a*. Alarm analysis only
FTB-85100G Packet Blazer

MECHANICAL AND ENVIRONMENTAL SPECIFICATIONS

FTB-85100G Module
Size (H x W x D) 96 mm x 152 mm x 292 mm (3 ¼ in x 6 in x 11 ½ in)
Weight 2.5 kg (5.5 lb)
Temperature operating 0 °C to 40 °C
storage −40 °C to 60 °C
FTB-85951 = 100 Gbit/s Ethernet and OTN CFP transceiver (10 x 10G WDM)
FTB-85940 = CFP to CXP adapter module
TK-CXP-CABLE-5M = CFP to CXP adapter kit

CFP/CXP Adapter
Size (H x W x D) 15 mm x 82 mm x 156 mm (½ in x 3 ¼ in x 6 ½ in)
Weight 0.2 kg (0.44 lb)
Temperature operating 0 °C to 70 °C
storage −40 °C to 70 °C

ORDERING INFORMATION

TK-500-85100G-XX-XX-XX-XX

Display =
S1 = TFT active screen
S2 = Outdoor-enhanced screen
Module capacity *=
OCT = Eight-slot module capacity
Battery *=
BTY = With batteries
Options =
OO = Without software option
OTU3 = 43.018 Gbit/s OTN
OTU4 = 111.81 Gbit/s OTN
EoOTN = Ethernet over OTN

Rates
40 GigE = 41.25 Gbit/s Ethernet
100 GigE = 103.125 Gbit/s Ethernet

Example: TK-500-85100G-S1-OCT-BTY-40GigE-OTU3

Notes
a. Always included.
b. Requires 40 GigE rate.
c. Requires 100 GigE rate.
d. Requires OTU3 and/or OTU4 option(s).

TRANSCIEVERS AND ACCESSORIES

TK-500-85100G-XX-XX-XX-XX

FTB-85951 = 100 Gbit/s Ethernet and OTN CFP transceiver (10 x 10G WDM)
FTB-85940 = CFP to CXP adapter module
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Mechanical and Environmental Specifications

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Weight 0.2 kg (0.44 lb)
Temperature operating 0 °C to 70 °C
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TK-500-85100G-XX-XX-XX-XX

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S2 = Outdoor-enhanced screen
Module capacity *=
OCT = Eight-slot module capacity
Battery *=
BTY = With batteries
Options =
OO = Without software option
OTU3 = 43.018 Gbit/s OTN
OTU4 = 111.81 Gbit/s OTN
EoOTN = Ethernet over OTN

Rates
40 GigE = 41.25 Gbit/s Ethernet
100 GigE = 103.125 Gbit/s Ethernet

Example: TK-500-85100G-S1-OCT-BTY-40GigE-OTU3

Notes
a. Always included.
b. Requires 40 GigE rate.
c. Requires 100 GigE rate.
d. Requires OTU3 and/or OTU4 option(s).

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