Efficiently test passive components in 24/7 operation. Perform single sweep insertion loss and return loss measurements with unprecedented dynamic range, speed and resolution.

**KEY FEATURES**

- Industry’s fastest swept wavelength measurement of insertion loss (IL) and return loss (RL)
- State-of-the-art electronics achieve full dynamic range characterization in a single sweep, ideal for components with high-contrast spectrum
- Hosts ten hot-swappable modules for testing components with up to 50 optical outputs
- Powerful and intuitive graphical user interface (GUI) for easy test configuration and measurement analysis
- Full-band operational range, covering wavelengths from 1240 nm to 1680 nm
**CTP10 PLATFORM**

The CTP10 is a modular measurement platform for efficient testing of passive components in 24/7 operation. The platform operates together with the T100S-HP tunable laser to achieve high-resolution spectral characterization within seconds. Single-sweep insertion loss measurements with up to 80 dB dynamic range can be performed with unprecedented speed and resolution. With up to 50 detectors connected to the platform, it is an ideal instrument for characterization of large port count components used in DWDM networks and photonic integrated circuit (PIC) applications.

The platform runs a dedicated operating system with powerful data processing electronics so that there is virtually no time lost in measurement data transfer. It also features a large internal hard drive for direct data storage. What's more, the CTP10 can be remotely controlled using a set of SCPI-compatible commands and queries.

**NEXT-GEN MODULES**

The CTP10 platform hosts up to 10 hot-swappable modules, providing a variety of optical tools to perform high-quality IL and RL measurement. The OPM series detectors are offered with a choice of FC or SC fibre optic adaptors. To operate, the CTP10 requires one IL RL OPM2 module and a SCAN SYNC module. Full-band operation can be obtained by adding an FBC module.

### CTP10 OPTICAL MODULES

<table>
<thead>
<tr>
<th>Module Type</th>
<th>Description</th>
<th>Example Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Optical detectors</strong></td>
<td>With a choice of 2, 4 or 6 high-speed InGaAs detectors per unit, the OPM series modules feature state-of-the-art electronics to enable full dynamic range measurement in a single laser sweep.</td>
<td></td>
</tr>
<tr>
<td><strong>Insertion and return loss</strong></td>
<td>Featuring real-time power monitoring, return loss measurement and two optical detectors, the IL RL OPM2 series module is the keystone of the CTP10 platform.</td>
<td></td>
</tr>
<tr>
<td><strong>Wavelength detection</strong></td>
<td>Based on high-speed optical triggered wavelength detection, the SCAN SYNC series module offers uncompromising wavelength accuracy and sampling resolution even for high-speed testing.</td>
<td></td>
</tr>
<tr>
<td><strong>Full-band combiner</strong></td>
<td>The FBC series module offers automated testing across the full telecom range by combining up to 4 tunable lasers into a single output.</td>
<td></td>
</tr>
</tbody>
</table>
POWERFUL INTUITIVE GUI

The feature-rich software offers a powerful and intuitive graphical user interface displayable on two screens: one for active module overview and control of the tunable lasers and another for display and analysis of the swept measurements.

EXAMPLES OF MEASUREMENT TIME OBSERVED ON CTP10

<table>
<thead>
<tr>
<th>Test span</th>
<th>Sweep speed</th>
<th>10 nm/s</th>
<th>40 nm/s</th>
<th>100 nm/s</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 nm</td>
<td></td>
<td>&lt;3 s</td>
<td>&lt;2 s</td>
<td>&lt;2 s</td>
</tr>
<tr>
<td>40 nm</td>
<td></td>
<td>&lt;6 s</td>
<td>&lt;3 s</td>
<td>&lt;3 s</td>
</tr>
<tr>
<td>100 nm</td>
<td></td>
<td>&lt;12 s</td>
<td>&lt;5 s</td>
<td>&lt;4 s</td>
</tr>
<tr>
<td>400 nm</td>
<td></td>
<td>Not measured</td>
<td>Not measured</td>
<td>&lt;15 s</td>
</tr>
</tbody>
</table>

Note
Scans performed with a single T100S-HP laser, except for 400 nm scan performed with three T100S-HP.

MULTIPLE OUTPUT DEVICE TESTING

Insertion loss and return loss measurement can be performed on 50 outputs simultaneously by combining an IL RL OPM2 module with a SCAN SYNC module and completing the platform with 8 OPM6 modules. The Test Setup functionality of the GUI simplifies the testing process of multiple-output optical devices.

FULL-BAND READY

The CTP10 can operate seamlessly between 1240 nm and 1680 nm and is fully compatible with EXFO’s T100S-HP series of tunable lasers. When combining the T100S-HP-O+, T100S-HP-ES and T100S-HP-CLU with the FBC module, the CTP10 can automatically switch between lasers for fast and reliable full-band testing.
## SPECIFICATIONS—OPTICAL MEASUREMENT

### Wavelength
- Operating wavelength range: 1240 nm–1680 nm
- Absolute wavelength uncertainty (typ.): ±5 pm
- Wavelength repeatability (typ.): ±1 pm
- Wavelength display resolution: 1 pm to 2000 pm

### Optical detectors
- Sensor type: InGaAs
- Compatible fiber type: SMF28
- Compatible optical adaptors: FC or SC connectors
- Maximum safe power: 11 dBm
- Averaging time: Manual: 1 µs to 1 s, automatic
- Optical power acquisition resolution: < 0.0001 dB
- Return loss (typical): > 56 dB

### Optical interfaces
- Optical connectors: FC type
- Maximum safe power:
  - TLS IN: 17 dBm
  - SCAN SYNC: 14 dBm
- Dynamic Range (typical at 10 nm/s): > 80 dB
- Dynamic Range (typical at 100 nm/s): > 70 dB
- Insertion loss uncertainty (typical at 10 nm/s): ±0.005 dB
- Noise $2\sigma$ (at 10 nm/s) (typical):
  - 0 dB to 20 dB: ±0.005 dB
  - 20 dB to 40 dB: ±0.010 dB
  - 40 dB to 50 dB: ±0.035 dB
- Return loss (typical): > 55 dB
- Dynamic range (typical at 10 nm/s): > 55 dB
- Return loss uncertainty (typical): ±0.5 dB
- Measurable power variation (typical): >10,000 dB/nm at 100 nm/s
- Optimum tunable laser sweep speed range: 10 nm/s to 100 nm/s

### Notes
- **a.** For constant temperature of 23 °C ±1 °C, wavelength range: 1250 nm–1650 nm, SMF28 patchcord, FC/APC connector, unless otherwise specified
- **b.** Over one minute, within optimum tunable laser sweep speed range, laser optical power 10 dBm
- **c.** Wavelength range: 1250 nm–1630 nm, tunable laser power 10 dBm, after zeroing of optical detector, averaging time set to Automatic
- **d.** For IL < 20 dB, after power referencing, not including connector uncertainty, degree of polarization < 5%
- **e.** Wavelength range: 1250 nm–1630 nm, tunable laser power 10 dBm
- **f.** For RL < 40 dB, degree of polarization < 5%
- **g.** For IL < 45 dB, tunable laser power +10 dBm
- **h.** Compatible tunable laser sweep speed range: > 500 nm/s
## SPECIFICATIONS—HARDWARE

| Interfaces (rear panel of mainframe) | Display ports | 2x (HDMI + display port)  
| | | Compatible with split screen display and touchscreen with multitouch control |
| | Remote | Ethernet, USB (Option: GPIB) |
| | Electrical inputs (hardware ready) | 10x BNC |
| | Electrical outputs (hardware ready) | 7x BNC |
| | Other inputs | 5x USB 2.0 |
| Interfaces (front panel of mainframe) | Number of module slots | 10 |
| | Other inputs | 3x USB-A 2.0 |
| Data storage | Hard drive | HDD, 2 TB |

### Interfaces

#### General

- **Storage temperature**: –20 °C to 65 °C (–4 °F to 149 °F)
- **Operating temperature**: 5 °C to 40 °C (41 °F to 104 °F)
- **Weight (mainframe)**: 8.5 kg (18.7 lb)
- **Weight (module)**: 1 kg to 1.2 kg (2.2 lb to 2.6 lb)
- **Dimensions (mainframe - H x W x D)**: 178 mm x 482 mm x 435 mm (7 in x 19 in x 17 in)  
| 4U full rack with rackmount fixtures |
| **Power supply** | 100 V to 240 V AC (50/60 Hz) |

## ORDERING INFORMATION

### GPIB option

- 0 = Without GPIB  
- GPIB = With GPIB

Example: CTP10-GPIB

### FBC-58

Example: FBC-58

### IL-RL-OPM2-S8-XX

- **Connector adaptor**
  - FOA-322-EMC = FC ultra-low-reflection: FC (PC/SPC/UPC/APC)

Example: IL-RL-OPM2-S8-322

### SCAN-SYNC-58

Example: SCAN-SYNC-58

### OPMXX-XX

- **Number of detectors**
  - 2 = 2 power meters
  - 4 = 4 power meters
  - 6 = 6 power meters

- **Connector adaptor**
  - FOA-322-EMC = FC ultra-low-reflection: FC (PC/SPC/UPC/APC)

Example: OPM6-322

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