

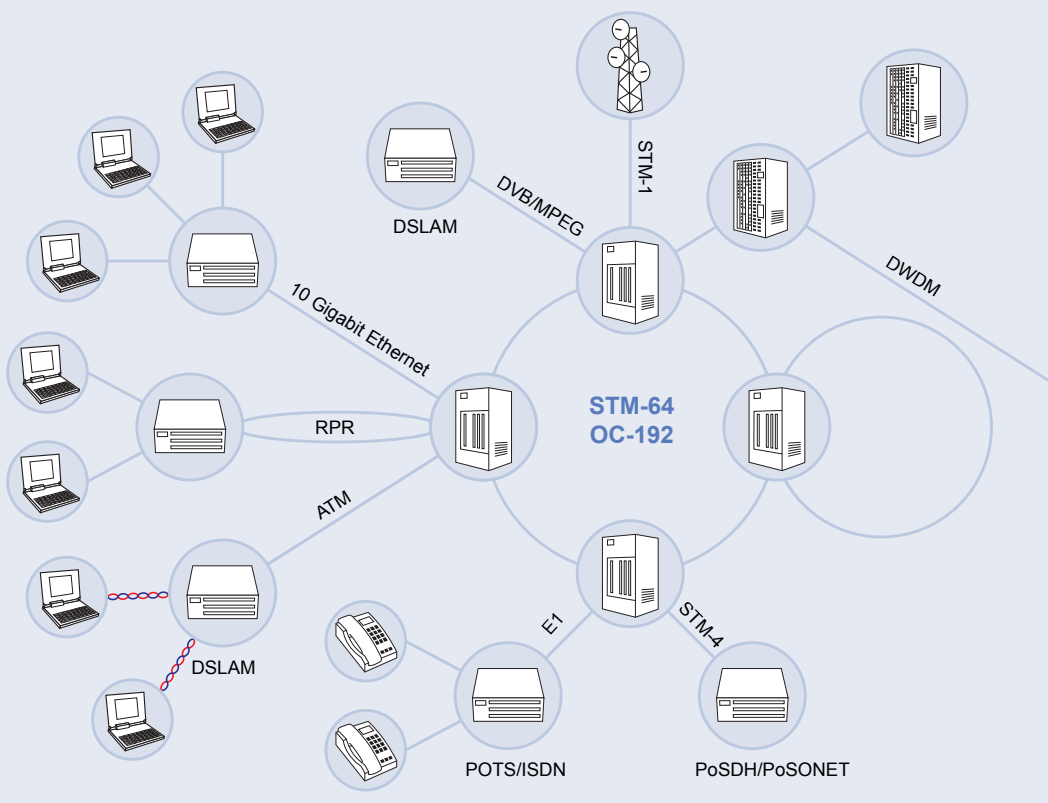
VictoriaCombo

Multitask, Multiuser, Multitechnology



New technologies, deregulatory policies and the appearance of Next Generation Networks have redefined the telecom business. The Internet and all the technologies associated with it have modified network architectures, giving rise to circuit and packet convergence. This is why today's operators have to reduce operational costs while constantly improving the profitability of their networks, to maintain the existing customers and attract new clients.

Trend Communications has now addressed the growing need for a solution to meet these challenges. The result is Victoria Combo, an open, stackable solution that heralds the arrival of a new concept for Test and Measurement solutions.



- Modular, stackable and expandable, for a wide range of applications
- Reliable, Linux-based graphical user interface
- Fast-charge batteries
- Multitask and Multiuser
- Ethernet, TCP/IP, Wireless and RS-232 connectivity
- One single connector for all electrical interfaces
- Optical Receiver Shutdown
- ITU-T-compliant line attenuation compensation
- Combined SDH/SONET tests
- Clear Pass/Fail screen
- Reference Clock Output
- All you need for installation, Bringing-into-Service and maintenance

The Next Generation Network is based on multi-technology SDH/SONET nodes.

TrendCommunications

Universal Connectivity

– your window to the world

Multitask and Multiuser

Combo is a multitask tester that can run both simultaneous and separate tests with each and every one of its modules. It is also a multiuser test set, offering fast and flexible test and measurement access to many technicians at a time.



Auto-Setup and Fast Scan

The Auto-setup function detects the signal structure, coding and mapping automatically.

The Fast Scan is a function that examines the signal and detects alarms and errors in synchronous tributaries.

- Universal SDH, SONET, PDH and T-Carrier interfaces up to 10 Gbit/s
- BER in overhead bytes (OH)
- Path trace in J0, J1 and J2
- G.821, G.826, G.828, G.829, M.2100, M.2101, M.2110 and M.2120 performance measurements
- APS bytes analysis/generation and disruption time measurement
- Network latency (RTD)
- Tandem Connection Monitoring (TCM) and APid tests
- G.783 Pointer Sequences
- Frequency offset generation and measurement

Removable Optical Connectors

Victoria Combo is equipped with first-class optical connectors that are easy to remove or replace. This makes it easy for you to clean the internal parts of your tester and keep it as good as new.

Automatic Testing

You can create a customisable set of automatic tests with a clear pass/fail indication at the end of the process. This functionality makes Victoria Combo easy to use with practically no training at all.

Battery-Operated

The tester includes two independent battery compartments for extended operation, and with the fast-charge function you can quickly charge the batteries.



Simultaneous Measurements

Thanks to its multitasking OS and fully independent modules, you can use Victoria Combo to carry out simultaneous measurements and correlate their results to easily identify faults.

Connectivity

Victoria Combo has built-in Ethernet, USB and RS-232C connectors. The two CF slots extend the possibilities for wireless links and removable memory modules, making your work as mobile and independent as possible.

File Transfer

The built-in browser of Victoria Combo enables you to transfer results, screenshots or configuration files from Victoria Combo onto your computer. You can also use it for on-screen help.

Sleep Mode

You can switch Victoria Combo into power save mode any time, and quickly set it back into action when you wish to continue testing.

- Simultaneous measurements
- Advanced event log and trace
- Compensation of line attenuation in line with ITU-T G.703
- VC-4-4c / STS-12c SPE
VC-4-16c / STS-48c SPE
VC-4-64c / STS-192c SPE
- SDH at 34 Mbit/s in line with ITU-T G.832
- PDH/T-Carrier frame structures at 1.5 Mbit/s, 2 Mbit/s, 8 Mbit/s, 34 Mbit/s, 45 Mbit/s and 140 Mbit/s
- CAS signalling for 2 Mbit/s
- Robbed bit for 1.5 Mbit/s

The NGN Challenge

– all the best features in one single tester

Programmable Frame Capture

To find out the type of traffic being transmitted across the network (C2 and V5 signal tags), analyse its behaviour in uncommon situations (APS K1 and K2 bytes) or verify synchronisation performance, you must evaluate the evolution of certain frame OH bytes across consecutive frames. With the programmable Capture function you can easily capture and check a set of consecutive frames.

Event Log and Trace

Tracing is the most powerful analysing tool any tester can have. With Victoria Combo you can register, filter, search and quantify all the events that occur. You can also easily save, print or transfer results onto a PC.



Modular



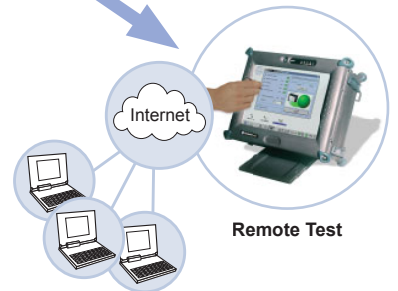
Stackable



Field use



Portable



Victoria Combo adapts to meet even the most demanding requirements

Tandem Connection Monitoring

The TCM function of Victoria Combo enables you to find those network trails where impairments occur to test that SLA is met when the link is shared by many Service Providers.

Error Performance

With Victoria Combo you can carry out all the existing performance measurements: G.821, G.826, M.2100, M.2101, M.2110, M.2120, including G.828 and G.829 measurements.

Event Insertion and Analysis

The alarm and error display of Victoria Combo ranges from event tables to graphical traces. You can always access all your test results in real time.

Furthermore, Combo can generate customisable alarm sequences to check the network equipment.

Generation of G.783 Sequences

One of the main causes of error in SDH and SONET are phase fluctuations (jitter) due to pointer adjustments. Combo can generate pointer justification sequences (ITU-T G.783) to simulate real situations and carry out stress tests in network equipment.

Header and SPE Tests

Victoria Combo enables you to access all frame and container headers, and you can also program and analyse them, as well as carry out standard or programmable BER tests in containers/SPE and OH bytes.

Frequency Offset

The frequency offset function is essential for stress measurements in networks and nodes. It deviates the signal frequency from its nominal value to check the proper behaviour of the DUT in the limits of the tolerable operation margins.



Automatic Protection Switching (APS)

SDH and SONET networks are fault-tolerant where APS is used as the protection strategy. Victoria Combo evaluates those APS mechanisms that are in charge of re-establishing the service in case of failure, and measures the APS switching time.



VictoriaCombo

Interfaces	Optical: 155, 622 Mbit/s & 2.5 Gbit/s (1310 & 1550 nm); 10 Gbit/s (1550 nm) Switch-off timer for optical receivers Easy-to-clean, FC/PC, SC or ST type* optical connectors (field-replaceable) Optical outputs with frequency offset from 0 to ± 40 ppm in steps of 0.01 ppm Electrical: 1.5, 2, 8, 34, 45, 52, 140 and 155 Mbit/s in one single BNC or DIN 1.6/5.6 connector** Electrical outputs with frequency offset from 0 to ± 20000 ppm in steps of 0.01 ppm Reference input: E1/T1, E1/T1 (-20 dB), 1544 kHz, 2048 kHz, signals from 64 kHz to 10 MHz Reference output: 1544 or 2048 kHz, selectable
SDH/SONET	In- and Out-of-Service Measurements 1.5, 2, 34, 45 and 140 Mbit/s signal mapping Concatenation: VC-4-4c/STS-12c SPE, VC-4-16c/STS-48c SPE, VC-4-64c/STS-192c SPE BER testing in containers / SPE payload Value programming and programmable SDH/SONET overhead byte capture Generation/analysis of path trace messages, errors, alarms and FEC G.707 blocks*** Generation/analysis of pointer adjustments, programmable sequences and G.783
PDH/T-Carrier	In- and Out-of-Service Measurements BER testing on framed/unframed patterns Generation/analysis of errors and alarms in framed and unframed signals PCM30/31 for 2 Mbit/s signals with/without CRC and fractional T1 for 1.5 Mbit/s signals Programming and display of signalling bits for 2 Mbit/s and 1.5 Mbit/s signals Framed M13 and C-bit for 45 Mbit/s signals and SF, ESF and SLC-96 for 1.5 Mbit/s signals
Functions	Auto-setup: automatic identification of the incoming signal FastScan: automatic error, alarm and event scan Round Trip Delay (RTD) measurement Automatic Protection Switching (APS) measurement BER testing in SDH/SONET OH channels
Additional features	G.828, G.829, G.821, G.826, M.2100, M.2101, M.2110, M.2120 performance statistics Optical power measurement, frequency and offset measurement Graphical results: real-time event trace with time graphs and histograms Tandem Connection Monitoring (TCM) G.832 transport of SDH signals in 34 Mbit/s frames Automatic pre-programmed tests Remote Control via a standard browser and TCP/IP connectivity Connectivity: Ethernet, Wireless (2 slots for Compact Flash), RS-232, 2 x USB Measurement report printout and file transfer to a Microdrive Memory Card
Relevant Standards	ITU-T: O.181, G.691, G.707, G.783, G.821, G.826, G.828, G.829, G.957, M.2100, M.2101, M.2110, M.2120 ANSI: T1.105-1995, Telcordia GR-253
Safety	Radiated and conducted emission (EMC): EN55022, Immunity to EMC: EN61000-4-3 Immunity to electrostatic discharge (ESD): EN61000-4-2, Electrical Safety: EN60950
Ergonomics	10.4" Colour Touch Screen with SVGA (600x800 pixels) resolution and automatic backlight control Multiposition desk leg Stackable modules. Customisable position. Mainframe size (w x h x d): 270 x 220 x 34.3 mm Rear module size (w x h x d): 270 x 220 x 28.1 mm Application module size 2" for 10 and 2.5 Gbit/s (w x h x d): 270 x 220 x 50.8 mm External power supply or Li-Ion 4.1Ah, 14.8V battery-powered (1 or 2 battery packs) Power Saving mode and fast restart External LEDs: ON/OFF, battery status, LAN connection and USB port activity.
Patent	Modular Telecommunication Test Unit November 27, 2007 U.S. Patent No. 7,302,361

* & ** Ask for your connector

***Optional

Available upon request: Built-in attenuator in the 10 Gbit/s optical interface transmitter module and Splitter in the 10 Gbit/s optical interface receiver module.

