

# VictoriaCombo



*The Only Truly Future-Proof Tester*

# Multitechnology

*SDH, SONET, PDH and T-Carrier up to 10 Gbit/s*



**Trend**Communications

# Beyond Compare

– the most flexible tester in the market

Trend Communications has redefined the concepts of modularity and portability for test and measurement solutions by creating Victoria Combo, the most versatile and flexible network tester on the market.

Victoria Combo adapts to the needs of any user in any testing environment. In no time at all it can be transformed from a light battery-powered handheld into a fully portable test and measurement centre, or a PC-based remote control station. Its big touch screen is ideal for field work, but if you prefer a keyboard or a mouse, you can just plug them in at any time, and use the tester like a desktop computer.

Modularity, total remote control via TCP/IP and full support for next generation technologies are just some of the features that give you unlimited testing capacity, making Victoria Combo the best possible investment for the future of your business.



Victoria Combo is unlike any other modular tester

## Two Steps Ahead

– a revolutionary approach to test and measurement

- Universal tester up to 10 Gbit/s for SDH, SONET, PDH and T-Carrier
- Full Next Generation features
- Removable MicroDrive memory
- Easy-to-clean first-class changeable optical connectors
- Revolutionary 10.4" colour touch screen with 800 x 600 pixel SVGA resolution
- Long battery life
- Free software upgrades



Victoria Combo grows with your network

### Modularity Redefined

Victoria Combo is unlike any other modular tester in that it enables you to use any combination of different or duplicate technology modules. And what's best, with Victoria Combo you don't pay anything extra for modularity; you can acquire Combo as a stand-alone unit and update it with modules later if need be.

### Endless Possibilities

This tester is fully adaptable to field and office work, to a large number of current and future technologies, and to the needs of any user.

With Victoria Combo, distance makes no difference any more, because you can use the tester from anywhere in the world, any time, via TCP/IP and the Internet.

The MicroDrive memory cards enable you to quickly transfer files to and from a PC, and they also work as a memory extension.

This is perhaps the most impressive feature of Victoria Combo; the way in which you can fully customise it according to your needs and working environment. No wonder experts worldwide say that this is the first *true* all-in-one tester.



Adjustable folding support leg for your comfort

# Business Benefits

– significant savings in time, labour and costs



Multiple users can work with Victoria Combo simultaneously

For the next generation of networks you will need a next-generation tester, such as Victoria Combo, a streamlined platform that heralds the arrival of the next generation of testing.

Victoria Combo is a multifunctional test set that makes testing faster, easier and more economic than ever, giving you the freedom you require; *you* choose what to test, when, and from where.

- Familiar and easy-to-use multi-tasking environment
- Battery and mains operated, with full remote control by TCP/IP
- Automatic tests and detailed step-by-step testing
- Adapts 100% to any working conditions

# Demonstrated Quality

– highly sophisticated, yet easy to use

Many manufacturers say that they have interactive user interfaces, but how many of them offer a 10.4-inch touch screen with 800 x 600 pixel colour SVGA resolution? Only one: Trend Communications with Victoria Combo.

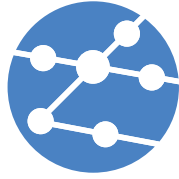
Combine all this with an intuitive icon- and window-based user interface and on-screen help, and you will discover that testing can actually be quite easy and comfortable.

You don't need to be an expert to learn all the secrets and automatic options of Victoria Combo. In fact, you can start using this tester with practically no training at all.

However, if you are an expert user, you won't be disappointed either; just set up the tester according to your needs and run any detailed tests step by step, controlling every phase of the process.



Experience a new way of testing with Victoria Combo



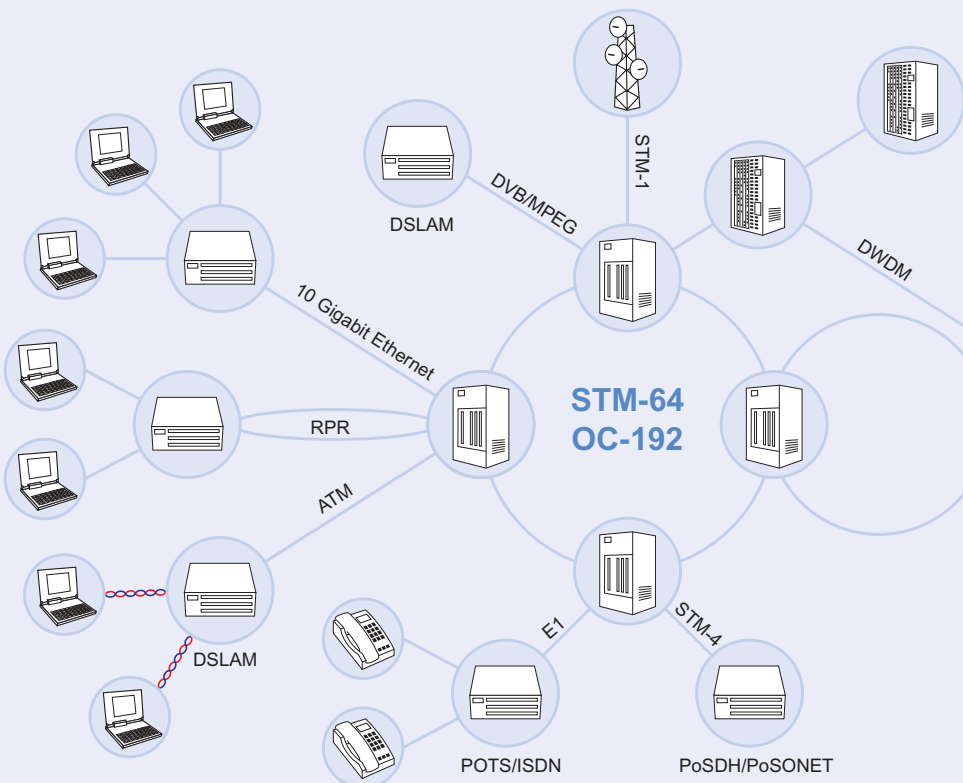
# VictoriaCombo

*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.



## 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.

- 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



- 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

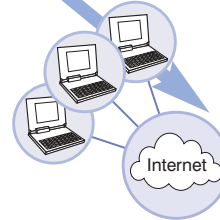
– all the best features in one single tester



Field Use



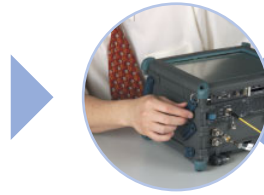
Portable



Remote Test



Modular



Stackable

Victoria Combo adapts to meet even the most demanding requirements

## 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.



## 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.

## 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.





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Distributor

To arrange a demonstration or to obtain the latest information on the Trend **Victoria** Combo or any of Trend's other test equipment, contact your nearest Trend Distributor.

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