

Trans'Expert

Field SONET/SDH Analyzer



research
& design



manufacturing



installation
& maintenance



network
monitoring



optical
components



Trans'Expert

Field SONET/SDH Analyzer

Benefits and Applications

Trans'Expert has been designed to be a:

- Reliable, cost-effective test solution
- Easy to use test equipment
- Scalable to 10 Gb/s SONET/SDH analyzer

Applications:

- Installation and fast turn-up of high speed transmission systems
- Network troubleshooting

In this new millennium, the communication industry is experiencing explosive growth in demand for new services and transmitted traffic. The number of Internet users and the amount of bandwidth per user is continuously growing. The next generation of mobile networks will be able to carry even more data from almost any location. Consequently, the need for high-quality optical networks capable of managing multiple technologies (voice, video and data) will increase. At the same time, the telecommunications industry must adapt to the new commercial and financial demands.

The new challenge is to deploy more bandwidth, commission networks rapidly, maintain complex networks and provide high quality of service, while simultaneously improving efficiency, reducing operational expenses and managing skilled technician time to create a competitive operational environment.

These challenges require a leading edge tester - the Trans'Expert. The NetTest Trans'Expert field SONET/SDH analyzer is the most comprehensive, user-friendly and cost-efficient transport layer testing platform in the market today. With one of the most complete sets of electrical and optical interfaces available in any portable platform, Trans'Expert enables installation and maintenance professionals to rely on one compact and rugged tool for all transport layer testing needs, from DS1/E1 through OC-192/STM64.

One Tool is All You Need

Never find yourself out in the field with the wrong instrument - Trans'Expert will have the technology you need.

- Full range of interfaces and mappings
- Compact, rugged and evolutionary
- Through Mode Operation
- Mux/Demux SONET/SDH testing
- Drop and Insert
- Signal Qualification

Easy and Efficient

Spend your time analyzing the results instead of trying to understand the equipment. Trans'Expert's user-friendly design reduces the time it takes to learn how to use the instrument and increases measurement time efficiency.

- Intuitive user interface
- Pre-configured tests
- On-line help
- 6 pre-defined reports ready for use

Innovative Design and Features

Trans'Expert's advanced and innovative features, at a field tester price, increase your efficiency and competitiveness.

- Overhead Control and Monitoring
- Round Trip Delay (RTD)
- Network Stress Tests
- Performance and Conformance Analysis
- Automatic Protection Switch (APS)

One Tool is All You Need

Benefits

Everything you need in one smart box

Optimized for all network applications

Full range of standard and concatenated mappings

The Trans'Expert is the perfect tool for installing, maintaining, commissioning and monitoring high-speed SONET, SDH and DWDM transmission systems from DS1/E1 through OC-192/STM64. The scalable architecture of the Trans'Expert provides a growth path for your future test requirements.

Its design, based on re-programmable software and electronic components, enables easy adaptation through software upgrades. The Trans'Expert protects your investment by easily adapting to changes in standard or growing requirements.

Full Range of Interfaces and Mappings

The Trans'Expert provides one of the most complete sets of transmission interfaces and signal mappings among portable test equipment.

Interface	Line Rate (Mbps)
OC-192/STM64	9953.28
OC-48/STM16	2488.32
OC-12/STM4	622.08
OC-3/STM1/STS3	155.52
STS1	51.84
E4	139.264
DS3	44.736
E3	34.368
E1	2.048
DS1	1.544

SONET/SDH interfaces and mappings are available on the same product configuration.

One Compact and Rugged Field Tester

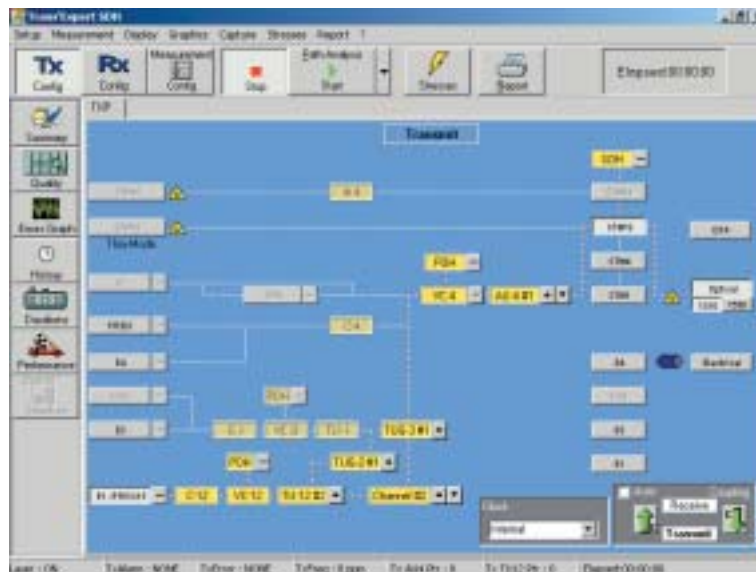
The Trans'Expert is based on a portable platform designed for the harshness of a military environment. Its magnesium alloy housing provides both a rugged and light weight design.



The ultimate in rugged and portable computing - without compromises

Through Mode Operation

Through Mode operation is available intrusively and non-intrusively for all SONET/SDH optical bit rates. Through Mode allows the test set to be placed in-line with a live/test signal. Intrusive Through Mode allows the injection of errors and alarms, APS commands, and overhead bytes manipulation of a SONET/SDH frame while allowing the remainder of the signal to pass through unaffected. Non-intrusive Through Mode allows the tester to monitor SONET/SDH signals while in-line with the network.



The user can easily set a mapping route up to 10 Gbps for standard or concatenated payloads.

Reduce Training Time:

- Speed up your staff learning time with Trans'Expert advanced capabilities and intuitive operation



Light and Portable:

- Rugged and light weight design for portability and field use



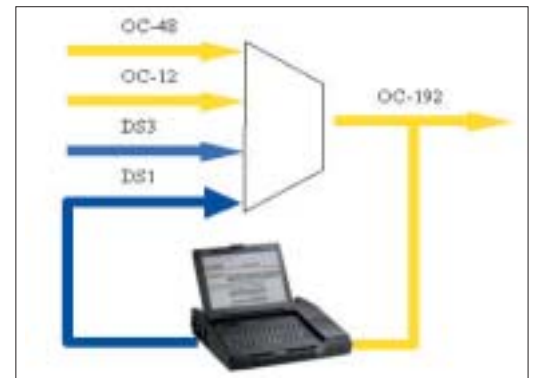
Efficient:

- Looking for trouble? Find it fast, find it anywhere



Mux/Demux SONET/SDH Testing

The Trans'Expert can perform Mux/Demux testing on SONET/SDH multiplexers. The Trans'Expert Transmitter and Receiver interfaces can be configured independently with different bit rates. By configuring the interfaces independently, you can fully characterize terminal multiplexers, add/drop multiplexers and cross-connects. The comprehensive feature set of the Trans'Expert allows it to perform the Mux/Demux without additional test equipment.



Mux/Demux test with Trans'Expert

Drop & Insert Testing

To make additional tests at low level signal, like voice and protocol analysis, Trans'Expert provides external drop and insert capabilities for T-carriers or PDH signals.

The user can also set T-carriers or PDH frames to perform multiplexer/demultiplexer measurements.

Signal Qualification

An integrated optical power meter and frequency meter ensures that the incoming signal is in an acceptable operating range before starting an SDH/SONET measurement.

Easy and Efficient

Benefits

Increased efficiency with Trans'Expert's Intuitive Graphical user interface

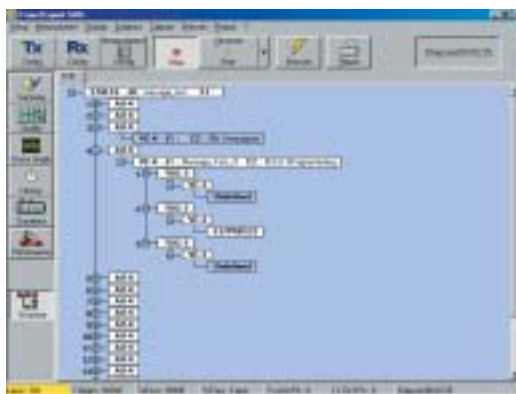
Speed, quality and efficiency are key technician goals. The Trans'Expert's ease of use allows complex operations to be made effortlessly. Highly detailed professional reports can be generated in a concise and easy-to-read format.

With its intuitive Graphical User Interface (GUI), the Trans'Expert makes configuring and performing tests virtually automatic. The unit will intelligently display configuration parameters, network condition and real-time or historical measurements from the beginning of the test.

Easy to Configure

Choose the configuration that's right for you:

- **Automatic configuration:** Trans'Expert scans all interfaces and explores the structure of the input signal. The structure scan measurement displays alarms, traffic and the payload type on all tributaries detected. To configure the test set, just double-click the desired tributary.
- **Configuration by file:** the user can recall a stored configuration from the Trans'Expert's hard disk or from an external storage system (floppy disk, CD-Rom).
- **Interactive configuration:** through the GUI, it is easy to define your test configuration from only one color screen. It is also possible to store it for future use.



Auto-discovery of the signal mapping is accomplished with the structure scan.

Fast Measurement Interpretation

Through a broad range of text and graphical screens, the Trans'Expert provides multiple ways to present your measurement results. From a basic GO/NO GO summary screen to a very detailed "Errors Graph Analysis" screen, you can monitor overall performance or investigate complex network problems.

All screens are active during the measurement. Just use one of them and switch to another one when you need it!



The Quality Measurement Screen provides all the alarms, errors and quality information at all SONET/SDH levels.

On-Line Help

The Trans'Expert intuitive software reduces training time for technicians at all skill levels. A comprehensive "On-Line Help" function provides detailed technical specifications. The "User manual" is only a click away.



Pop-up help menus with ITU and Telcordia standards are only a right-click away.

Benefits

125 μ s events resolution switch to protect measurement

Comprehensive conformance testing

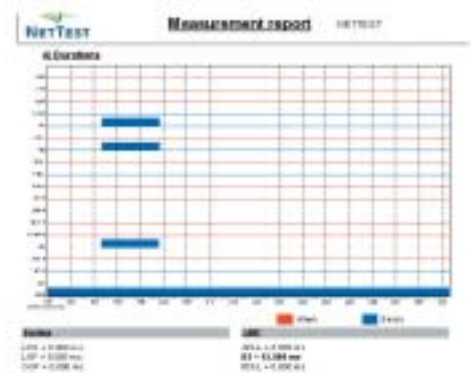
Fast and Professional Reports

Produce, save, process, print or e-mail your reports directly from the Trans'Expert.

Select the set of results you want to produce, fill in the header information associated with the measurement and the Trans'Expert will generate professionally presented documents. A preview of each file is available before printing.

- **Configuration Report** - summarizes the unit configuration for the selected measurement
- **Performance Report** - details in-service performance metrics (as defined in ITU-T M.2100 and ITU-T M.2101)
- **Measurement Synthesis Report** - details all important information from the measurement
- **History Report** - describes events and occurrences throughout the measurement in one-second intervals

- **Event Duration Report** - visually describes alarms, errors and discontinuities in a time-scaled histogram and includes totals for each portion of the synchronous path
- **Complete Report** - comprehensive description of the measurement including all the previous five reports



All the text and graphical results in a professional presentation report.

Innovative Design and Features

With the Trans'Expert, you can perform the most complex SONET/SDH measurements and network analysis by simply clicking the mouse.

Overhead Control and Monitoring

Except for the real time calculated bytes like B1, B2, B3, H3 & H4 the user can modify all the bytes (or messages for path trace bytes) of the transport and path Over Head.

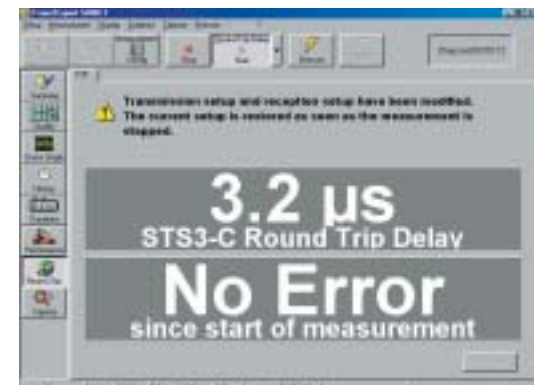
At the receive side, these dynamic signal modifications are monitored in real time and displayed as histograms over the test interval.



Easy access to the SOH and POH bytes.

Round Trip Delay Measurement (RTD)

To qualify long distance links, check satellite hops, or control the latency of complex networks, RTD tests are a requirement. Delay measurements are necessary to quantify the time it takes for digital signals to reach their destination. The Trans'Expert performs RTD measurements at each path level with a resolution better than 100ns! It is possible to simultaneously run quality measurements and RTD tests.



Screen for Delay measurements and Calibration.

Benefits

Never have performance and conformance tests been so easy to set up and interpret

Network Stress Tests

The Trans'Expert provides a comprehensive set of test functions to help qualify your equipment and networks. A complete set of alarms, errors, pointer movements and frequency offsets are available for validation of your management plan.

Performance and Conformance Testing

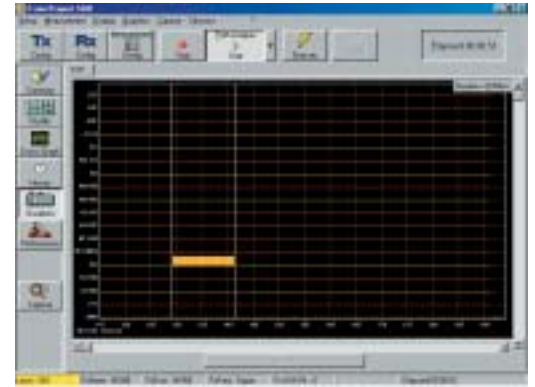
Error performance at the physical layer of digital communications equipment is a major factor in determining transmission quality. Bringing a network into service and validating repairs, requires long duration tests that can demonstrate high availability and performance levels.

ITU-T G.826, G.827, G.828 and Telecordia GR-253 define the parameters to be considered: Errored Second, Severely Errored Second and Unavailability. The Trans'Expert computes these parameters in real time at the line level, VT path and multiplexing section levels.

Recommendations, such as ITU-T M.2100 and M.2101 define acceptance thresholds for any link (submarine, national and more). The Trans'Expert has the threshold and algorithms inside. Just enter the length and kind of link under test and Trans'Expert will perform the measurement during the right time and will provide a direct reading of your performance measurement result.

Automatic Protection Switch (APS) Test

Automatic Protection Switching is one of the most valuable functions of SONET and SDH networks. Therefore, APS measurements are key to validating and qualifying transport equipment and networks. The Trans'Expert can resolve the protection switch event in 125 μ s – the time it takes to transmit a single frame!



Measuring optical networks frame by frame (125 μ s) is mandatory for APS measurements.

Additionally, an easy-to-read histogram enables the visualization of this event over the course of the entire measurement.

The Trans'Expert will also explore the trigger events behind APS switches by examining the content of K1 K2, and the overhead bytes. The unit will extract the value of these bytes as well as their activity throughout a measurement.



Graphical presentation of your performance and availability conformance test result.



NetTest Sales Offices

Australia

NetTest Pty. Ltd
Ground Floor
9 Prospect Street
Box Hill
Victoria 3128
Australia
Tel: +61 039 890 6677
Fax: +61 039 899 5553
E-mail: marketing-apac@nettest.com

Brazil

NetTest (Brazil) Ltda.
Av. Luis Carlos Berrini, 1297
7th Floor - Brooklin
Sao Paulo - SP 04571-010
Brazil
Tel: +55 11 5505-6688
Fax: +55 11 5505-1090
E-mail: jonah.trunk@nettest.com

Canada

NetTest (Canada) Inc.
55 Renfrew Drive
Markham, ON L3R 8H3
Canada
Toll Free: +1 800 465-9400
Tel: +1 905 479-8090
Fax: +1 905 475-6524
E-mail: info@nettest.com

China

NetTest (China) Ltd.
15th Floor, Jingan Center
No. 8 East Beisanhuan Road
100028 Beijing
P.R. of China
Tel: +86 10 6467 9888
Fax: +86 10 6464 4711
E-mail: helpdesk@gnettest.com.cn

Denmark

NetTest A/S
Kirkebjerg Allé 90
2605 Brøndby
Denmark
Tel: +45 72 11 22 00
Fax: +45 72 11 22 10
E-mail: nordic@nettest.com

France

NetTest
45 avenue Jean Jaurès
BP 81
78344 Les Clayes-sous-Bois
France
Tel: +33 1 61 34 34 34
Fax: +33 1 61 34 34 00

Germany

NetTest GmbH
Martin-Kollar-Str. 13
D-81829 München
Germany
Tel: +49 89 99 89 01-0
Fax: +49 89 99 89 01 40
E-mail: info-germany@nettest.com

Italy

NetTest S.p.A.
c/o Centro Dir. Lombardo
Palazzo G - Via Roma 108
20060 Cassina de' Pecchi (MI)
Italy
Tel: +39 02 95 12 621
Fax: +39 02 95 300 320
E-mail: sales_italy@nettest.com

Mexico

NetTest de Mexico
Homero 1933-10
Mexico D.F. 11560
Mexico
Tel: +52 5557 8249
Fax: +52 5557 9843
E-mail: victor.monsivais@nettest.com

Singapore

NetTest a/s
Representative Office
South East Asia
NetTest Pte Ltd
76 Shenton Way #07-00
Singapore 079119
Tel: +65 220 9575
Fax: +65 225 7612
E-mail: marketing-apac@nettest.com

Spain

NetTest (España) S.A.
Centro Empresarial El Plantio
Ochandiano, 8-El Plantio
E-28023 Madrid
Spain
Tel: +34 91 372 92 27
Fax: +34 91 372 97
E-mail: ventas@gnettest.es

Sweden

NetTest A/S
Infracity, Kanalvägen 10C
SE-194 61 Upplands Väsby
Sweden
Tel: +46 8 555 410 65
Fax: +46 8 590 717 81

UK

NetTest Ltd.
York House
School Lane
Chandlers Ford
Hampshire SO53 4DG
UK
Tel: +44 (0) 2380 260 411
Fax: +44 (0) 2380 267 234
E-mail: contact-NEMEA@nettest.com

USA

NetTest, Inc. (The Americas)
800 Federal Street
Andover, MA 01810
USA
Toll Free: +1 800 233 3800
Tel: +1 978 983-3800
Fax: +1 978 983-3899
E-mail: info@nettest.com



NetTest A/S
Kirkebjerg Allé 90
2605 Brøndby
Denmark
Tel: +45 72 11 22 00
Fax: +45 72 11 22 10
E-mail: nordic@nettest.com

NetTest is a leading worldwide provider of testing, monitoring and management systems across both the optical and network layers of communications networks. NetTest provides network operators, network equipment manufacturers, component manufacturers and enterprise service providers with the network testing solutions they need.