





No Room For Error!

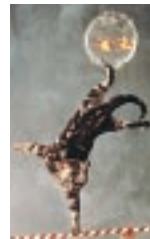
You walk a tightrope every time you send a technician to the customer premises to install and test 2M service. In today's competitive market, the job must be done right the first time, every time — you may not get a second chance. To deliver the precision and efficiency the customer demands, your technicians need more than a limited, single purpose test set. They need a smart instrument that delivers advanced troubleshooting power. The built-in intelligence of the TTC 2230 Communications Analyser brings top-level technology to tech level solutions to revolutionise 2M commissioning and maintenance.



Expert 2M WAN Service Testing and Troubleshooting in a Hand-held Instrument

The lightweight, battery-powered TTC 2230 is engineered to excel and built to endure. With one-touch physical layer and services testing combined in a lightweight, handheld instrument, field technicians can sectionalise problems on the first visit and reduce service escalations. Touch-screen access to statistics for BERT, voice, CAS, PRI, and more give your technicians insight into protocol-based problems without having to carry or operate a protocol analyser.

The TTC 2230 performs some amazing stunts!



Physical Layer Testing *and* Service Commissioning in a Single Instrument

The TTC 2230 gives field technicians the information they need to efficiently and accurately install and commission service. Features include:

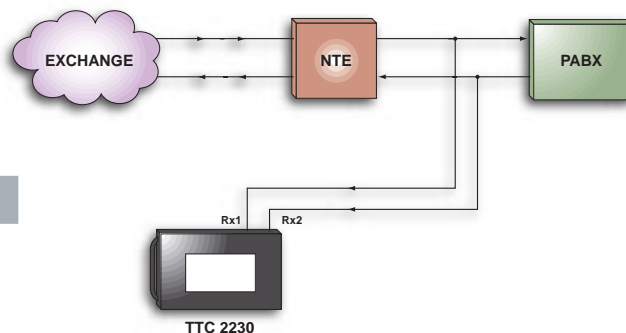
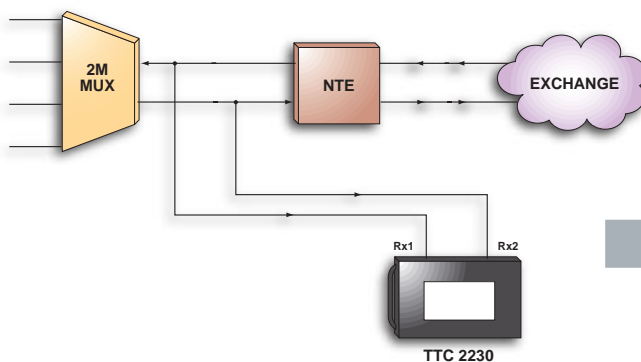
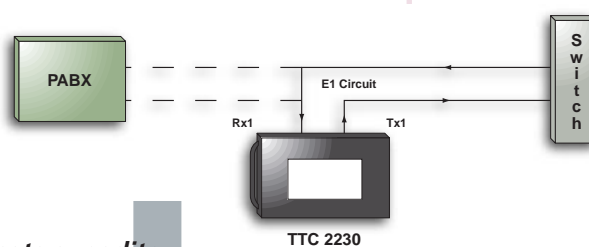
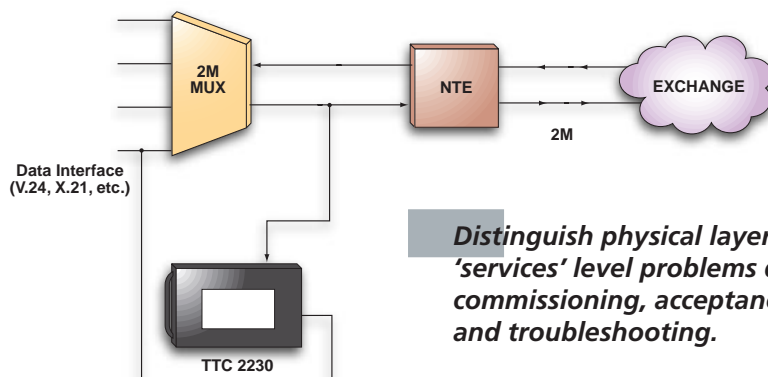
- **Auto-configuration** — synchronise to the E1 framing format while determining channel activity on all timeslots.
- **Datacom interface** — perform BERT at a V.36, X.21, V.24, EIA-530, or V.35 interface. 'Mux wrap' supports simultaneous testing from E1 and datacom interfaces to check multiplexers and NTUs.
- **Drop & Insert** — perform tests on selected timeslots without affecting live traffic on remaining channels.
- **Dual monitor** — two balanced/unbalanced receivers enable complete monitoring of an E1 circuit. Check code errors, frame errors, and timing slips to verify circuit performance. Look for channel activity or drop a channel to the speaker to verify speech quality.
- **Pre-programmed and manual dial sequences** — the CAS and PRI options support emulation of customer premises equipment such as a PABX by placing calls across the network.
- **Channel utilisation** — comprehensive call statistics and call trace information, part of the CAS and PRI options, quickly isolate service problems. Full call statistics such as 'number of connected calls' and 'average call duration time' give a complete view of service quality.
- **Event log** — user-selected error conditions are recorded to the log along with timestamp and error description facilitating monitoring of circuit and service performance.
- **Scan mode** — use the CAS or PRI option to automatically scan all 30 channels for call activity and lock onto the first detected call to analyse signalling information.

Intelligent Testing — the Touch of an Icon Isolates Problems

Customer demand for increased service quality means your field technicians need intelligent test sets that provide more than simple channel activity and decode data. They need an instrument that delivers enhanced, software-assisted troubleshooting without the overhead and complexity of a high-end analyser. With call utilisation and event triggers, the TTC 2230 bridges the gap.

- perform accurate troubleshooting and sectionalisation without being a signalling expert
- reduce the number of service escalations by resolving problems in the field





Well-balanced Performance...



Features

The TTC 2230 accomplishes a variety of tests and functions required when commissioning new service and maintaining or troubleshooting existing circuits. Its functional design reduces costs and saves time because field technicians can carry one easy-to-use instrument to perform numerous tasks.

Single unit testing

- Strong E1/datacom physical and service-layer test capabilities combined in one instrument. CAS and PRI options provide comprehensive emulation and troubleshooting

Easy to use

- Modern touch-screen user interface — touch an icon to launch a test, and the TTC 2230 does the rest
- Large 15 cm diagonal VGA LCD display

Engineered for the field

- Lightweight and battery operated, weighing less than 2.5 kg
- Rugged compact case

Standard dual PCMCIA interface connection

- Compatible with two Type II or one Type III cards



Dual E1

Perform BERT and measure circuit availability per G.821 and M.2100. Monitor both directions of an E1 to identify and sectionalise leased-line problems. Look for channel activity across all timeslots or monitor voice quality. The TTC 2230 provides comprehensive physical layer testing of E1 connections to ensure performance and eliminate finger-pointing.

Frequency Offset (2M) and Synthesiser

Use the optional frequency synthesiser feature to test E1 circuit compliance or benchmark the performance of network elements. Proactively isolate potential sources of network timing problems. For testing datacom interfaces, select any non-standard data rate between 50 bps and 2.048 Mbps.

Datacom Interfaces

DTE and DCE emulation at V.24, V.36, X.21, EIA-530, and V.35 data interfaces. Measure round trip and signalling lead delay or look for clocking problems. 'Wrap' a multiplexer or NTU by connecting simultaneously to the datacom and E1 interfaces. Use an optional Y-cable to monitor passively.

CAS Option

Place calls and monitor signalling performance. Display the status of all 30 channels simultaneously. Call statistics such as 'number of calls attempted,' 'number of connected calls,' and 'average call duration' give a complete picture of service quality. A signalling log for each channel displays call history information. Scan mode looks across all 30 channels and locks onto the first call to provide signalling information.

PRI Option – Future Release

Emulate a PABX and place calls to verify feature provisioning and call routing. Monitor 30 channels simultaneously to identify call activity and call type. Comprehensive statistics provide insight into D-channel performance and channel utilisation.



Fast, Simple, Intuitive.

TTC 2000 Test Pad™ Architecture

- **Touch-Screen Graphical User Interface**

The graphical user interface (GUI) is based on a powerful combination of touch-screen software and a VGA-compatible grey-scale LCD. No test instrument has ever been this simple or elegantly durable. Testing is automatic — with the touch of an icon, technicians can have the information they need and be on their way to the next test site.

- **Field-Replaceable Battery**

The unpredictability associated with field testing demands battery operation. Powered by a state-of-the-art nickel-metal-hydride (NiMH) battery, the TTC 2230 goes wherever you need it. The battery is easily accessible — replace it as needed and resume testing in seconds.

- **Advanced Low-Power Technology**

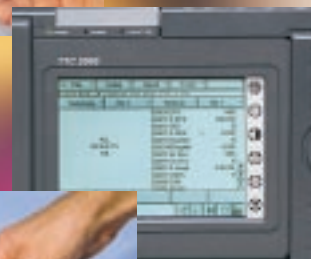
The TTC 2230 utilises technology advances in low-power design, high-integration ASICs, and state-of-the-art memory and logic devices to minimise size and maximise battery life. Each battery charge delivers four hours of uninterrupted battery operation.

- **Rugged Field-Oriented Design**

The TTC 2230's mechanical enclosure is protected by a rubber overmold to absorb the impact of unexpected falls. In addition, we engineered a custom mounting to house the LCD and touch screen digitiser to protect against unavoidable impacts and mechanical twist. Every instrument is durability-tested to withstand heat, cold, and vibrations.

- **Modular Architecture**

The TTC 2230's TTC 2000 platform sets a new standard for flexibility and future growth potential for lightweight, handheld test instruments. The TTC 2230 application module separates easily from the TTC 2000 platform so you can plug in other applications as your testing needs change.



TTC

Customer Services

Your decision to purchase a TTC product means you have invested in test equipment that will evolve with your network. TTC add even more value to your product with the following services:

Customer Care

Call Customer Care to get information on products, upgrades, training, software enhancement agreements, and product maintenance agreements.

Warranty and Instrument Service

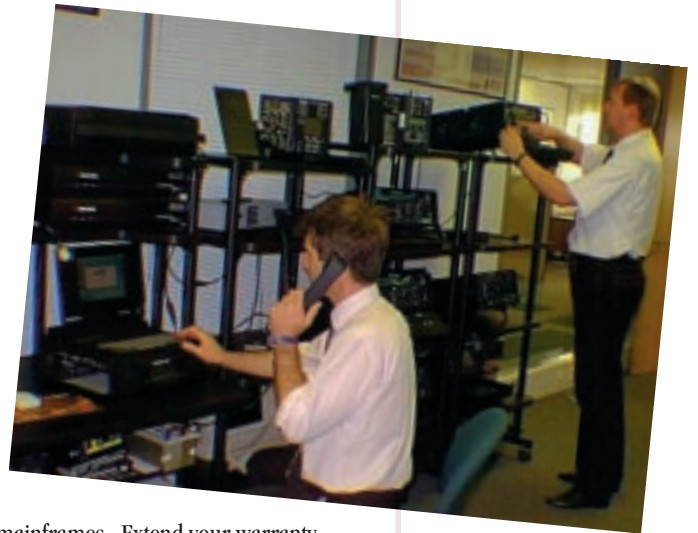
TTC service excellence starts with a three-year warranty on all mainframes. Extend your warranty with a product maintenance agreement, which includes plans for service and calibration.

Technical Assistance

Call TTC for free, expert consultation on any technical problem. Our engineers can help you with product configuration, test applications, circuit qualification, network synchronisation, and more.

Technical Training

Hands-on training is available for all of TTC's products and many communication technologies. Regularly scheduled public training is available at locations worldwide. We also offer on-site training at any location you choose, and we provide computer-based training and customised multimedia courseware.



Customer Services on the Internet

Visit www.ttc.com to request technical assistance or instrument service, register for training (complete course lists and schedules are available online), or consult our Frequently Asked Questions (FAQs).

Specifications

Dimensions and Weight

Overall Dimensions:
34.6 cm (13.625 in) long x 19 cm (7.5 in) wide
x 5.7 cm (2.25 in) deep
Weight:
2.3 kg (5.2 lb)

Environment

Temperature Range:
Operating:
0°C to +45°C
Storage:
-20°C to +60°C

Power Requirements

AC Adapter:
100 - 240 VAC (at 50 - 60 Hz) to 19 VDC
Charging Time:
Maximum of 2 hours from full discharge
Battery Type:
10.8V NiMH

Display

One 15 cm diagonal monochromatic graphic LCD

Top Panel Connectors

E1:
75 Ω /unbalanced:
BNC (4) or 1.6/5.6 mm (4)
120 Ω /balanced:
banana/Siemens (4)
Printer:
Serial 8-pin DIN

Side Panel Connectors

68-pin datacom access (for use with
adapter cables)
40-pin expansion port

Bottom Panel Connectors

Handset port
DC Power Input

Microphone and Speaker (built-in)

Push to talk microphone activation
Speaker — monitor one side or both sides of
conversation
(Optional handset available)

Product Information

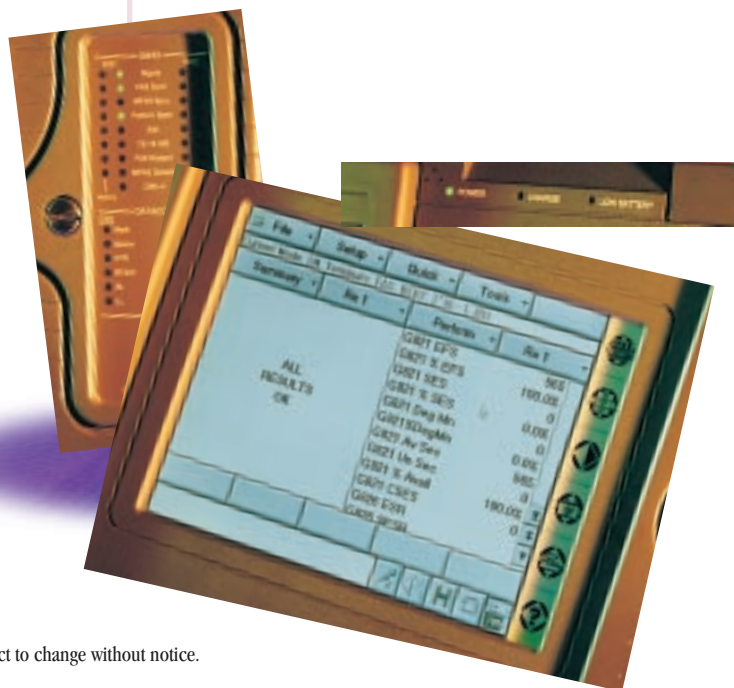
<i>Model No.</i>	<i>Description</i>
Mainframe	
TTC2230	TTC 2230 Communications Analyser. Includes universal AC adapter and canvas carry bag

Mainframe Accessories

TTC2230-BAT	Spare NiMH Battery
TTC2000-LCC	Large Carry Case

Mainframe Options

TTC2230-FREQ	Frequency Offset (2M) and Synthesiser
TTC2230-1.6/5.6	1.6/5.6 mm Unbalanced Connectors
TTC2230-CAS	CAS Emulation/Monitor
TTC2230-PRI	PRI Emulation/Monitor



NOTE: Specifications, terms, and conditions are subject to change without notice.

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OPTIMIZING NETWORK PERFORMANCE

