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## Test & Measurement

- sales
- rentals
- calibration
- repair
- disposal

## Complimentary Reference Material

This PDF has been made available as a complimentary service for you to assist in evaluating this model for your testing requirements.

TMG offers a wide range of test equipment solutions, from renting short to long term, buying refurbished and purchasing new. Financing options, such as Financial Rental, and Leasing are also available on application.

TMG will assist if you are unsure whether this model will suit your requirements.

Call TMG if you need to organise repair and/or calibrate your unit.

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## NP7300

The NP7300 Ranger Network Probe is a multiple WAN protocol test and analysis equipment in a single, rugged, package.



- Comprehensive BRI and PRI ISDN testing
- Comprehensive T1/E1 testing
- High-speed BERT to 2.048 Mbps
- Data line monitor with auto configure, lead status
- VT-220 terminal emulation
- Remote control
- Dual Channel Oscilloscope
- DVOM, continuity tester, dB level meter
- Built-in hard drive for program and data storage

## NP7300 Specifications

### Test Interfaces

34 pin V.35 Interface

25 pin RS-232C/Mil-188C Test Interface

37 pin RS-449/422/423 Test Interface (RS-530 with Optional Cable)

9 pin RS-232C Interface for Serial Printing and Remote Control

Dual Bantam and RJ-48 T1/E1 Interface Jacks

15 pin T1/E1 Interface

BNC Jack for T1/E1 Clock Input, ISDN Clock input and External BERT Clocking

BNC jacks for oscilloscope measurement input

Banana jack inputs for DVOM measurement input

RJ-48 jack for use by the speaker monitor input and for tone generator signal injection input/output

Handset Jack for Voice Communications

ISDN (S/T & U) Interface Jacks

X.21 and G.703 Interface Converters (Optional)

## **PRI ISDN Test Instrument**

Emulation of Network or CPE

Voice, 3.1 Khz Audio, 56K Data, 64K Data, 384K Data, and Nx64K Data Bearer Capabilities Supported

Auto Originate, Auto Terminate, and Manual Call Control

BERT, Loopback, or Drop and Insert of B Channels

Supports Customization of NSF IE

## **BRI ISDN Test Instrument**

Complete Layer 1 Testing for U and S/T Interfaces Including Q/S Commands Embedded Operations Channel (EOC), Drop and Insert of B and D Channels to Handset and Internal Instruments

TE Call Emulation, Voice and Data

U Terminal Emulation

S/T Terminal Emulation

## **Q.921/Q.931 Protocol Analysis**

Multiline decode for AT&T, Northern Telecom, CCITT, Siemens; both NI-1 and NI-2 versions, Australian, Ericsson, Eurospec, French, German (1-TR6), Japan, Swiss and UK

## **LAPD X.25 Protocol Analysis**

Full English Decodes and Online Review, decode AO/DI

## **Protocol Analysis Options**

PPP, Frame Relay, SNA, X.21, X.25, Baudot, DDCMP, ISDN (Q.921/Q.931), LAPD X.25, SS7/SS#7/IS-41

## **T1 / 2.048 MHz / CEPT / E1 Transmission Tests**

US Standard T1-1.544 Mbps

CCITT Standard 2.048 Mbps

Dual T1/E1 Receivers and Transmitters

Clocking: Recovered, External, Internal

Selectable Line Buildout: 0 dB, -7.5 dB, -15 dB

Automatic Line Buildout: 0 to -37 dB

Selectable Line Equalization: 0-133 Feet, 133-266 Feet, 266-399 Feet, 399-533 Feet, 533-655 Feet

Line Codes: AMI, HDB3, B8ZS, B7 and Auto Configure

Framing: Unframed, D1D, D2, D3, D4, ESF, CEPT 2M (E1), Framed 2M, Multiframe, and Auto Configure

Line Terminations: Terminated (US 100 ohms, G.703 at 75 ohms or 120 ohms), Bridged (> 1000 ohms), Drop/Insert Terminated, Drop/Insert Bridged

BERT Test Patterns: Mark, Space, 1:1 (Alt), 1:3, 1:7, 2:8. Yellow Alarms, Blue Alarms, Red Multi-frame Alarms, 3:24, 63, 511, 2047, QRSS, 2<sup>15</sup>-1, 2<sup>20</sup>-1, 2<sup>23</sup>-1, 2<sup>23</sup>-1 with 14 Zero Suppression, 24 bit User Defined Pattern

CSU Loop Up/Loop Down commands, Smart Jack Loop Up/Loop Down commands

Time stamped Error Reporting to Disk and/or Printer

Scripted BERT Testing (User Definable)

PRM and BOM decodes

### ***Drop and Insert***

Drop and Insert to RS-232, RS-449, V.35 Interfaces or Any Protocol Analysis Instrument and BERT

16K BRITE Card Drop to Q.921/Q.931

Handset for DS0 call placement

### ***Channel Display (24 or 32 Channel Display)***

24 T1 or 32 E1 Channels Simultaneously Displayed

Hex, Binary, status

### ***Signaling Bit Display***

24 Channel T1 or 32 E1 Display of Signaling Bits

Wink Measurements for Response and Duration Times (Intrusive and Monitor Modes)

Time stamped Signal Bit Capture, 1-24 channels

## **Digital TIMS**

Transmission and Measurement of Voice Range Tones via T1/E1 Drop and Insert

Drop Out for Measurement or Insert to Generate Level and Frequency for Individual T1 Channels or E1 Timeslots

## **Lead Status Monitor**

Graphics Display: Mnemonical for V.35, RS-422, RS-232

Alarms: Visual and Audible - Triggered when Selected Lead(s) go on or off.

Baud Rate Frequency Counter on Transmit and Receive Clocks

## **Data Line Monitor with Auto Configuration**

Monitor/Emulate Internal RS-232, V.35, RS-449/422/423 Interfaces

Protocols SDLC, SDLC(NRZI), HDLC, BSC, Async, Programmable Sync (1 or 2 character sync), IPARS

Emulation: DTE and DCE

Data Capture from Drop and Insert, BRI, PRI, T1 and E1

Data Monitor and Emulation Rates: 256 Kbps (400 Kbps aggregate)

Codes Sets: ASCII, EBCDIC, 6-bit Transcode, IPARS, EBCD

Lead Status: Real Time Status Displayed During Data Monitoring

Error Checking: CRC-CCITT, CRC-6, CRC-12, CRC-16, LRC and Parity

## **High Speed Bit/Block Error Rate Tester**

Synchronous and Asynchronous Data

Full Duplex and Half Duplex (Ping Pong) Modes

Half Duplex (Ping Pong) Mode is centralized. NP7000 can control up to 32 Remote NP7000's.

Interfaces: RS-232, RS-449/422/423, V.35

Receive / Transmit Patterns: 63, 511, 2047, 4095, Mark, Space, and User Programmable Patterns, (63 byte QBF and 24 bit binary),  $2^{15}-1$ ,  $2^{20}-1$ ,  $2^{23}-1$ , 1:1, 1:3, 1:7, 3:24, QRSS, (63 Byte User Pattern and 4095 Bit Pseudo Random Pattern, Maximum Speed to 128 Kbps)

Data Block Size: CCITT Specifications - 63, 511, 2047, 4095 Bits.

DDS Loop Patterns Supported : OCU, CSU, and DSU Loop Backs (Latching, Non-latching, Release) During T1/E1 Drop & Insert

US Specifications 1000 Bits

Internally Generated Transmit Speeds (bps): 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2000, 2400, 3600, 4800, 7200, 9600, 12000, 14400, 16000, 19200, 28800, 32000, 360000, 48000 Synchronous and Asynchronous, 56000, 57600, 64000, 72000, 128000, 192000, 256000, 384000, 460800, 512000, 576000, 768000, 1024000, 1152000, 1536000, 2048000, External, Synchronous

Clocking DCE Source, DTE Source, External

Character Framing: 5, 6, 7 or 8 Bits, Plus Parity, 1, 1.5, or 2 Stop Bits

Parity: Odd, Even or None

Test Duration: 1, 5, 10, 30 Minutes, Continuous

Lead Status Display

Alarms: Visual and Audible - Conditional Triggering on Bit or Block Error Counts

Single or Block Error Inject

## **VT220 Terminal Emulator**

Programmable function keys (F1-F12) with 20-character answer back message for F1

Code Sets: ASCII or EBCDIC

Character framing: 7 or 8 bits per character width and 1, 1.5 or 2 stop bits

Parity: Odd, Even or None

## **Remote Control (RS-232C/V.24) Port**

Remote unit is controllable from VT220 or PC (Running VT220 emulation)

## **Tone/Sweep Generator**

Fixed Tone 100 Hz - 20,000 Hz with selectable output levels, One Hz increments

Sweep: On screen 21 point frequency Vs level graphs in four ranges; 300 Hz - 3.6 KHz, 100 Hz - 5KHz, 100 Hz - 10 KHz, 100 Hz - 20 KHz

Receive Accuracy: 100 Hz - 40 KHz +/- 2 dB, 900 Hz - 1025 Hz +/- .3 dB

Transmit Level Range: 0 dBm to -16 dBm +/- 1 dB at 135 ohms

## **Dual Channel Oscilloscope**

Display is automatically updated once per trigger point

Triggering Sources: CH-1, External. Slope: + or - selects the positive or negative excursion of the signal to start the sweep

Modes: NORMAL sweep, SINGLE sweep

Maximum Input Voltage: 40 V p-p normal operation protected to 400 V (DC + AC peak)

## **Digital Volt/Ohm Meter**

Input Impedance: 10 M Ohm

Capture Buffer Sizes: user selectable or dynamic based on available memory

Volts AC: 0-400 V (True RMS), 400 mV (100 Hz - 100 KHz), 4 V (100 Hz - 100 KHz), 40 V (100 Hz - 10 KHz), 400 V (50 Hz - 60 KHz +/- 2%)

Volts DC: -400 V to +400 V +/- 2%

dBm: -57 dBm to +54 dBm +/- 2.5%

Ohmmeter: 0 Ohms to 40 Meg Ohms +/- 2.5%

Continuity Thresholds: 50 Ohm, 600 Ohm, 1 K Ohm, 10 K Ohm, 1 M Ohm

## **Speaker Monitor**

Speaker monitor can be used simultaneously with other instruments

Gain: +2dB, +8dB, +14dB, +22dB, +28dB, +34dB

## **Memory**

RAM: 1 Mb program data storage

Flash Memory: 1 Mb non-volatile program storage

## **Data Storage**

Floppy Disk: 2Mb 3.5" diskette with maximum capture buffer size of 600K

Hard Drive: 40Mb with maximum capture buffer size of 16Mb

## **Power**

Removable rechargeable Nickel Cadmium (Ni-Cad) battery. AC adapter included.

Charging time: 3 hours

Operating time on battery: 1-3 hours nominal. (Depends on test functions being performed.)

## **Standard Accessories**

Custom Softcase, Cables, User Manual, System Diskette

AC Adapter 120V / 12 VDC, 2.5 Amps, (International) 220V / 12 VDC, 2.5 Amps

Removable Nickel Cadmium (Ni-Cad) Battery

## **Data Display/Keyboard**

Size: 2000 Characters (80 x 25) supertwist high contrast LCD with backlight

Keys: 65 Full ASCII Character Set. Unsealed, 10 million keystroke operation life

## **Physical Size**

9.88" Wide x 4.37" High x 8.5" Deep (25.10 cm x 11.10 cm x 21.59 cm)

Weight: (Base Unit) 9.2 Pounds (4.17 kg)

## **Environmental**

Operating Temperature: 10ø C to 50ø C (50ø F to 122ø F)

Operating Humidity: 10% to 80% Relative Humidity Non-condensing

Storage Temperature: -30ø C to 60ø C (20ø F to 140ø F).

Storage Humidity: 5% to 95% Relative Humidity Non-condensing