T-336 Series Advanced Network Modems

Descriptions

The T-336 is a series of high performance, synchronous and asynchronous, full-duplex, multi-standard standalone or rack-mounted modem. It is designed for use on 2-wire dial-up and 2/4- wire leased-line circuits.

The T-336 is fully compliant with ITU-T V.34 recommendation as well as being compatible with ITU-T recommended V.32bis/ V.32, V.22bis, V.23 and V.21 international standards while operating at 33600, 31200, 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, 2400, 1200, and 300 bits per second.

In V.34 mode the T-336 provides full-duplex operation at up to 33.6Kbps on a 2/4-wire PSTN line with features like line probing, symbol rate and carrier frequency automatic selection. A range of performance enhancing techniques are available for V.34 mode, including adaptive precoding, adaptive pre-emphasis, non-linear encoding (Warping), constellation expansion, multi-dimensional trellis coding, transmission power back-off (power drop), V.8 standard modem initialization and shell mapping.

An in-band secondary channel allows the user to monitor and control the remote site unit. The T-336 series also offers auto callback and leased-line security checks in addition to the dial-up security checks.

The TRS32 rack can accommodate up to 16 modem cards with 32 ports, control unit and single or dual redundant power unit. Dual redundant power supply meaning if one power does fail, the other one is capable of powering the entire rack.

Features

- Fully compatible with ITU-T V.34+/ V.34/ V.32bis/ V.32/V.26bis/ V.22bis/ V.22/ V.23/ V.21/ V.24/ V.28/ V.25bis/ V.54/ V.52/ V.42/ V.42bis/ V.14/ V.13/ V.8 and Bell 212A/103
- 19” rack accommodates up to 16 modem cards with hot-swap and profile copy functions
- Achieve throughput up to 115200bps
- V.13 simulated carrier in half duplex
- MNP4®,V.42 error correction
- MNP5® ,V.42bis data compression
- Extended AT and ITU-T V.25bis command set
- Leased line dial back-up and restore in manual or auto mode
- Auto fallback and fall forward
- Remote configuration via secondary channel
- Front panel lock and password protect
- Password & call back security
- Diagnostic capabilities:
  Analog loopback, digital loopback and remote, digital loopback (with pattern or not); BERT test pattern using 511
- Auto or manual dialing/answer
- Front panel configuration via rubber switches and LCD
- Front panel key reset function
- G3 FAX send/receive compatible with EIA-578 Class 1 FAX command (optional)

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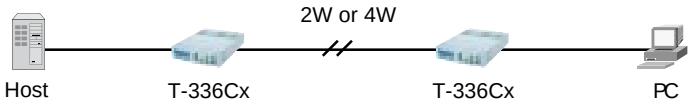
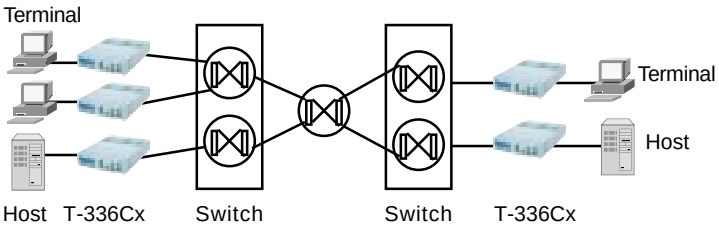
Application Diagram

Basic data transmission over leased line



Basic data transmission over the PSTN



Technical Specifications

Compatibility

- V.34+: 33.6/31.2 Kbps SM (4D TCM)
- V.34: 28.8/26.4/24/21.6/19.2/16.8/14.4/12/9.6/7.2/4.8/2.4 Kbps SM (4D TCM)
- V.32bis: 14400/12000/7200 bps TCM
- V.32: 9600 bps TCM, 9600/4800 bps QAM
- V.26bis: 2400/1200 bps DPSK
- V.22bis: 2400 bps QAM, 1200 bps BPSK
- V.22/Bell 212A: 1200 bps DPSK
- V.23: 1200/75, 600/75 bps FSK
- V.21/Bell 103: 300 bps FSK

Symbol Rate and Carrier Frequency

Symbol rate (Baud)	Carrier Frequency (Hz)
2400	1600 1800
2800	1680 1867
3000	1800 2000
3200	1829 1920
3429	1959

Data Format

- Synchronous or Asynchronous
- Total bit length: 8, 9, 10, 11

Data Speed

- Asynchronous- 75/300/600/1200/2400/4800/7200/12000/14400/16800/19200/21600/24000/26400/28800/31200/33600/38400/57600/76800/115200 bps
- Synchronous- 1200/2400/4800/7200/9600/12000/14400/16800/19200/21600/24000/26400/28800/31200/33600 bps

DTE Interface

- EIA RS-232C, ITU-T V.24/V.28

Line Requirement

- Dial-up line, 2/4-wire leased line

Transmit Level

- Dial-up line: 0 to -15 dBm; Leased line: 0 to -31 dBm

Receive Dynamic Range

- -4 to -43 / 0 to -33 dBm

Equalization

- Automatic adaptive EQ

Call Progress Monitoring

- Dial tone, Ring, Ringback, Busy and backup dial

Line Status Monitoring

- Tx level, Rx level, S/N ratio, EQM value, delay, phase jitter, freq. offset, far-end freq. offset, far-end echo, DTE format, retrain count, Tx baud rate, Rx baud rate, Tx carrier, Rx carrier, Tx speed, Rx speed, Tx power back-off level, Interface lead monitoring

Memory

- Non-volatile; 2 user profiles and 10 phone numbers with 30 characters each

Line Interface

- Cx/Nx: RJ-11 for dial-up, JM8 (like RJ45) for leased line
- NDx: 6-pin Terminal Block or 50-pin Centronic

Transmit Clock

- Internal, Loopback, or External

Dialing Command and Type

- Extended AT and V.25bis using Tone/Pulse/Mixed

Flow Control

- RTS/CTS, XON/XOFF, CTS only

Power Requirements

- AC: 90 ~ 265 V, Autorange, 47 ~ 63 Hz
- DC: -36 ~ -72 V (optional)
- Dual redundant power unit for rack (optional)

Dimensions and Weight

- Stand alone: 180W x 48H x 262D mm; 1.9 Kg
- Rack-Mount: 480W x 220H x 380D mm (chasis); 0.6 Kg (card)

Operating Environment

- Operating temperature: 0 °C ~ 50 °C
- Storage temperature: 0 °C ~ 50 °C
- Relative humidity: up to 95% (non-condensing)

Ordering Info

Basic Unit	Description
T-336Cx	V.34+, 33600 bps external modem, dial-up & 2/4 wire leased line supported; AC power
T-336Cx/DC	V.34+, 33600 bps external modem, dial-up & 2/4 wire leased line supported; DC power
T-336Nx	Rack-Mounted modem card of T-336Cx; single port per card
T-336NDx	Rack-Mounted modem card of T-336Cx; dual ports per card
Chassis & Accessary	
TRS-32/@/%/^	Shelf for T-336NDx; 19” rack mounted chassis with 50-pin centronic connector with cooling fan
(@) Controller Module	
/NMC-32	Shelf controller with LCD and key pads
/NMC9000	Shelf controller with CS function; w/LCD and key pads
/PW-180A	180W, 90~260VAC, AC power module
/PW-180D	180W, -48VDC, DC power module
(^) Panel Module (optional)	
/TB-32	Optional rear panel: Daughter board for dial-up line & 2-wire connection
TRS-16/@/%/^	Shelf for T-336Nx &T-288NC; 19” rack mounted chassis
(@) Controller Module	
/NMC-16	Shelf controller with LCD and key pads
/PW-130A	90~260VAC, AC power module
/PW-130D	-48VDC, DC power module

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