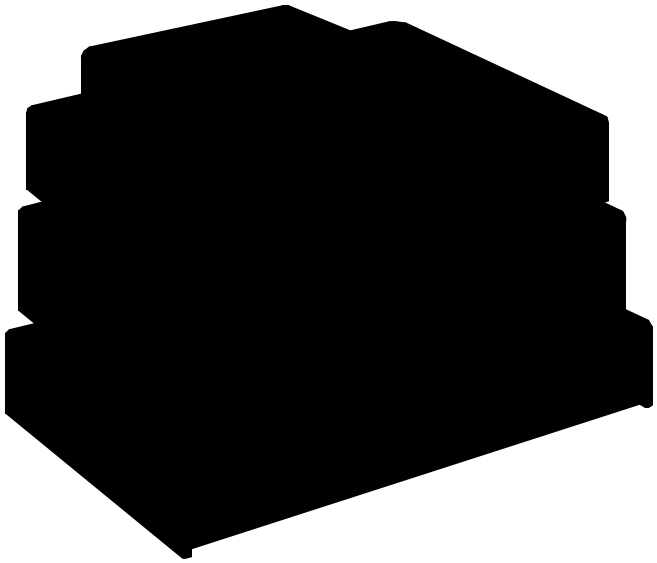
BLACK BOX®
NETWORK SERVICES

ALS-210 and ALS-215 Phone Line Simulators, DLS-225 ISDN Line Simulator, and Advanced Line Emulator



Perfect for testing or trade-show demonstrations, these Simulators provide more than just dial tone—they accurately simulate real-world phone lines.

Key Features

- *Device is pre-programmed, which makes your job easier.*
- *Simulator can be used for a wide range of applications.*
- *The Advanced Line Emulator offers programmable 12- or 16-kHz metering tones. And it stores up to 16 configurations.*
- *With the ALS-215, you get four ports and two talk paths.*
- *With the DLS-225, you don't have to specify ISDN services or buy protocol analyzers.*
- *The DLS-225 provides U or S/T connections.*

With the Phone Line and ISDN Line Simulators, you don't have to order phone lines to test or demonstrate how a product responds to the telephone network. These full-featured devices provide more than just dial tone—they really simulate phone or ISDN lines.

The ALS-210 offers these features:

- Each line has two assigned telephone numbers for each port and accepts any 7- or 11-digit number.
- Accurately simulates how the North American telephone network handles conditions such as "forced disconnect" and "calling party supervision."
- Programmable Caller ID and Visual Message Waiting Indicator (VMWI).
- Programmable ring frequencies and line attenuation.

The ALS-215 has all of the same features as the ALS-210, except for Caller ID and VMWI support. Plus, it provides four ports and two talk paths.

The DLS-225 is the ideal ISDN line simulator. It's an affordable and convenient tool for developing and testing ISDN-BRI products designed for either U or S/T interfaces, including network terminations, Type 1 terminating equipment, and terminal adapters.

What's more, you don't have to specify ISDN services or buy protocol analyzers. The DLS-225 lets you demonstrate physical-layer, data-link-layer, and network-layer operations during multiple, real-time voice or data calls.

Plus, the DLS-225 can simulate multiple switch types (N-1, AT&T, DMS, ETSI), so you can simulate operational differences between switch types. And it comes with Windows® based provisioning software supporting these switch types. Simply connect to the DLS-225 via your computer's RS-232 port.

You can also test PBX PRI telephones with the DLS-225.

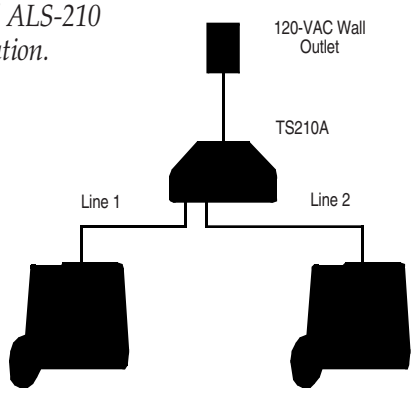
The Advanced Line Emulator features 16 stored configuration settings—including 11 preset country-specific settings and 5 preset North America settings. And it lets you call from one country configuration to another. For more information about the Emulator, see **page 3**.

Typical Application

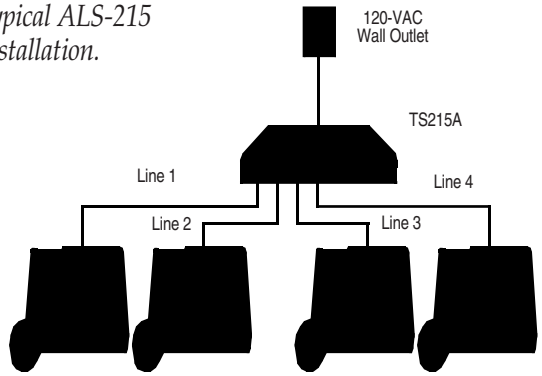
Check or demonstrate telephones, telephone systems, fax machines, or modems without Central Office phone or ISDN lines.

Phone and ISDN Line Simulators provide the simulated Central-Office connection you need for product testing and demonstrations.

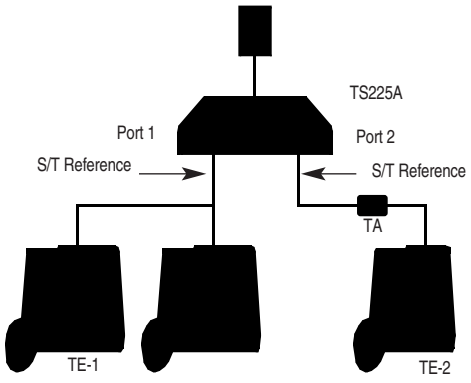
Typical ALS-210 installation.



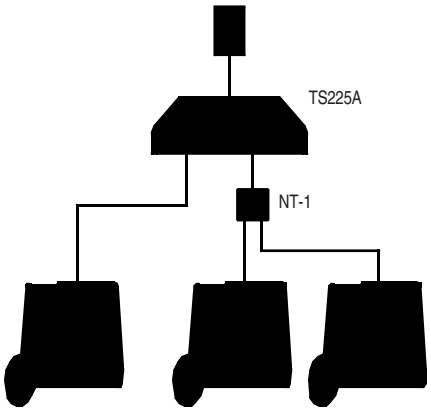
Typical ALS-215 installation.



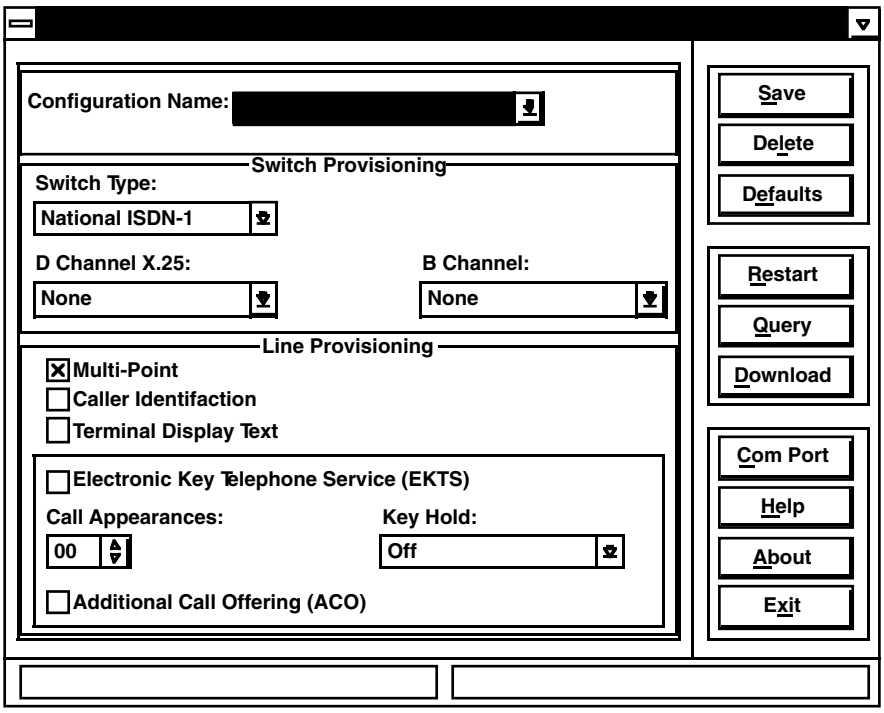
End-to-end emulation using the DLS-225 S/T Interface. The Terminating Equipment may be any ISDN-compatible device (TE-1). Other devices (TE-2) are connected to a Terminal Adapter.



End-to-end emulation using mixed interfaces and configurations. The Port 1 S/T Interface is configured point-to-point, while the Port 2 U interface is point-to-multipoint using an NT-1.



Windows based configuration software (sample screen shown at right) comes with the DLS-225 ISDN Line Simulator.



Technically Speaking

The ALS-210 provides much more than a dial tone. Additional features include:

- Two loop-start lines with single talk path.
- Precise call-progress tones (dial tone, busy, reorder, ringback).
- Dial-up test tones (dial, busy, reorder, ringback, silence).
- Accepts tone and rotary (pulse) dialing.
- Programmable features include primary/secondary telephone numbers up to 16 digits, off-hook modes, network response delays, test tone frequencies, and line attenuation.
- Caller ID.
- Visual Message Waiting Indicator (VMWI).
- Programmable dial-up test tones (dial, busy, reorder, ringback, silence).
- Secondary dial tone.

ALS-215 features include:

- Four simulated phone lines with two talk paths. Each line can have unique primary and secondary phone numbers, up to 16 digits long.
- Precise call-progress tones (dial, busy, and ringback tones). Eight selectable waveforms. Programmable call processing delays. Selectable response to non-valid numbers.
- Simulate a PBX hunt group, "9" access to outside line. Calls can be transferred, put on hold, and conferenced.
- Forced Disconnect.
- Hot Lines.
- Distinctive Ringing.
- Audio Port for recording or playing voice or tones.
- Touchtone command strings set up all features.
- Programmable dialup test tones (dial, busy, reorder, ringback, silence).

DLS-225—Your choice for ISDN line simulation offers these features:

- Time Slot Interchange technology routes Speed and Circuit Mode Data (CMD) connections on either B channel.
- D Channel Packet Handling Function (PHF) simulates X.25 Packet Mode Data (PMD) calls.
- Predefined Service Profiles IDs (SPIDs) auto-initialize Directory Numbers and assign Service Profiles that permit unlimited call types, multiple call appearances, caller ID, and other services.
- ISDN Type 1 Terminating Equipment (TE-1) or Terminal Adapters (TA) may be connected directly to the S/T interface.
- Up to six devices may be configured point-to-multipoint through a Network Termination (NT-1) or at the U interface, or a passive bus arrangement at the S/T interface.

Advanced Line Emulator features include:

- 2 x 2 port or 4-port operation.
- Vacuum fluorescent display for telephone-port status information and other messages.
- 600- or 900-ohm programmable input impedance.
- Programmable ring frequency, ringback tones, voltage, and cadence.
- Programmable loop current and DC signaling.
- Three programmable numbers for each line.
- Call Waiting, Visual Message Waiting, Stuttered Dial Tone.

Options for the TS224A:

- International software module provides 15 stored configurations including 11 predefined country-specific settings and 5 preset North America settings.
- Automated test software module lets you write custom scripts for repetitive testing. Or get status messages on front panel and through the serial port.

Specifications

TS210A:

Interface — RJ-11

Signaling — *Ring Frequency*: 20 Hz, *Dial Tone Delay:* 0.1 seconds, *Network Response Delay:* 0.2 seconds

Line Attenuation — 6 dB

Call Progress Signals/Test Tones — *Dial Tone:* 350 + 440 Hz continuous, *Ringback:* 440 + 480 Hz follows ringing cadence, *Busy:* 480 +620 Hz 500 ms on/500 ms off, *Reorder:* 480 + 620 Hz 250 ms on/ 250 ms off

Forced Disconnect — COD signal issued after 2 seconds of valid on-hook condition; *Signal duration:* 850 ms ±25 ms

Line Impedance — 900 ohms

Temperature — *Operating*: 0 to 50° C; *Storage*: -4 to -20 to 60° C

Relative Humidity — 95%, noncondensing

MTBF — 40.9 yrs.

Power —
Input Voltage: 120 VAC, *Input Frequency*: 60 Hz, *Output Voltage*: 24 VDC, *Input Current*: 0.18 A, *Output Current*: 0.4 A

Size — 3.8 x 13.9 x 22.9 cm

Weight — 0.6 kg

TS215A:

Interface — RJ-11

Telephone Line Circuit (Loop Start) — *On-hook voltage:* -48 ±5 VDC, *Min. loop current*: 18 mA @ 500 ohms, *Nominal impedance:* 900 ohms, *Insertion loss:* Switchable between -3.4 dB and -16 dB ±2 dB @ 1 kHz, *Flash Hook Detect:* 280 ms to 1120 ms

Ring Source — *Sine wave:* 78 VAC ±10% AC @20 Hz, *Square wave:* 72 ±10 VRMS @ 1 REN, 20 Hz, *Ring frequency:* Selectable 20, 25, 30, 60 ±5% Hz, *Drive capacity:* Up to 5 ringer equivalents (5 REN) total @ 20 Hz sine wave, *Ring waveform:* Selectable step approximated sine or square wave

DTMF and Rotary Dialing Detection — *DTMF Detect Rate:* 40 ms min., *Rotary Detect Rate:* 8 to 22 pps

Programmable Ringing Cadence — *Rings per cycle:* Up to 3 rings in 100 ms increments

Audio Input/Output Jack — *Audio In impedance:* 10 kohms, *Audio In:* -10.5 dB (-10 dBm out with 1 V in), *Audio Out impedance:* 600 ohms, *Audio Out:* 0 dB

Temperature — *Operating:* 0 to 45° C, *Storage:* -40 to 55° C

Relative Humidity — 85% noncondensing

MTBF — 23.6 yrs.

Power —
Input Voltage: 115 VAC; *Input Frequency:* 49 to 61 Hz, *Power Dissipation:* 20 Watts max.

Size — 5.8 x 21.6 x 25.4 cm

Weight —1.9 kg

TS225A:

U Interface — RJ-45 8-pin modular connector, *Maximum cable drop:* 1600 m (using 24 gauge copper wire)

S/T Interface — RJ-45 8-pin modular connector, *Maximum cable drop:* 325 ft. (100 m) (using 24-gauge copper wire)

Switch Types Supported — N1-1, AT&T Custom, DMS Custom, ETSI

Temperature — *Operating:* 0 to 50° C, *Storage:* -40 to 55° C

Relative Humidity — 85% noncondensing

MTBF — 38.1 yrs.

Power — 115/230 VAC (switch-selectable), 49 to 61 Hz, fused at 500 milliamps for 115 VAC, fused at 300 milliamps for 230 VAC

Output to Power External Devices — 40 ±5 VDC, 6 watts maximum

Size — 6.4 x 26.7 x 25.4 cm

Weight — 2.1 kg

TS224A:

Call Progress Tones:

Busy Tone — 480 Hz and 620 Hz ±5% @ -24±3 dBm per tone (default)

Dial Tone — 350 Hz and 440 Hz ±5% @ -13 ±3 dBm per tone (default)

Tone Levels — 200 to 3000 Hz, 1-Hz resolution

Dialing Characteristics:

Frequency Accept — ±1.5% ±2 Hz

Rotary Detection — 8-22 pps

Telephone Interface:

Impedance — 600 W ±2.2 mF or 900+2.2 mF

Loop Current — 10 to 70 mA in 1-mA increments

Ring Cadence — Up to 3 cycles set in 5-ms increments

Ringing Source — 20-80 VAC in 5-V increments

Attenuation — 4-60 dB in 1 -dB steps

Ring Frequency — 17-70 Hz in 1-Hz increments

Approvals — FCC Part 15, CE

Power — 100-240 VAC, 50-60 Hz

Size — 7.4 x 25.4 x 33 cm

Weight —3.2 kg

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Ordering Information

This information will help you place your order quickly.

PRODUCT NAME	ORDER CODE
Advanced Line Emulator	TS224A