Chapter 8: Electrical Specifications

AC Power Input

Voltage	TLS-4A: 115 VAC ±15%
Frequency	49 to 61 Hz
Current	TLS-4A: 0.2 A maximum (nominal line voltage)
Fusing	0.25 A 5 x 20 mm slow blow
Unit dissipation	20 Watts maximum

Telephone Line Circuit (Loop Start)

On-hook voltage	-48 ± 5 Volts (Tip positive referenced to Ring)
Short circuit loop current	< 30 milliamps
Minimum loop current	18 milliamps with a 500-ohm loop

Transmission Specifications

Nominal impedance	900 ohms
Insertion loss	Switchable between 3.4 dB and 16 dB ± 2 dB @ 1 kHz when two lines are connected

Ring Source

Ring voltage	78 VAC ± 10% AC @ 20 HZ sinewave
Ring frequency	Selectable 20, 25, 30, 60 ± 5% Hz
Drive capacity	Up to 5 ringer equivalents (5 REN) total @ 20 HZ sinewave
Ring termination on answer	Within 250 ms
Ring waveform	Selectable step approximated sine or square wave

DTMF Detection

Frequency accept	± (1.5% + 2 Hz)
Frequency reject	± 3.5%
Tone-on time	40 ms minimum
Tone-off time	40 ms minimum
Amplitude	+4 to -18 dBm per frequency
Twist	6 dB or less

Rotary Dialing Detection

Rate	8 to 22 PPS
Percent break range	40% to 80% (LSSGR 6.3.4.6)
Break time	18 ms minimum, 100 ms maximum
Make time	9 ms minimum, 75 ms maximum
Interdigit time	300 ms minimum
End-of-digit detection	100 ms minimum

Loop Current Detect

Minimum off-hook current	15 mA
Maximum on-hook current	10 mA
Off-hook detect time	100 ms max
On-hook detect time	>Flash
Hook flash detect time	300 - 1100 ms (must detect) <280 ms > 1120 must not detect

Ringing Cadence

Ring programming increment	100 ms
Rings per cycle	1 to 3 (programmable)
Ring “on” time	0 to 3 seconds
Ring “off” time	0 to 6.3 seconds

Call Progress Tone Characteristics (Tone levels referenced to 900 ohms)

Dial tone	350 Hz ± 0.5% and 440 Hz ± 0.5% at -19 dBm ±3 dB per tone
Busy and reorder tone	480 Hz ± 0.5% and 620 Hz ± 0.5% at -19 dBm ±3 dB per tone
Audible ringback tone	440 Hz ± 0.5% and 480 Hz ± 0.5% at -19 dBm ±3 dB per tone

Audio Input/Output Jack

Recorder tone	230 ms of 1050 - 1650Hz tone to activate
Audio In impedance	10 k ohms
Audio gain (jack to Tip/Ring)	~ -10.5 dB (-10 dBm out with 1 V in)
Audio Out impedance	600 ohms
Audio gain (Tip/Ring to jack)	~0 dB
Relay contact rating	1 Form A contact, 100 volt maximum, 1 mA maximum, 30 volt-amps maximum
Connector pinout	Pin 1: relay contact Pin 2: ground Pin 3: relay contact Pin 4: audio in to TLS-4A Pin 5: audio out from TLS-4A Shell ground: ground

Mechanical Specifications

Dimensions	2.3" H x 8.5" W x 10.0" D (58 x 22 x 254 mm)
Weight	4 lb. 5 oz. (unit only)

Environmental Specifications

Storage temperature:	
Short-term storage	-40 to +55 degrees C
Long-term storage	-20 to +50 degrees C
Operating temperature	0 to 45 degrees C
Humidity	85% noncondensing, maximum

Regulatory Compliance

Safety	
United States	UL 1459
Canada	CSA C22.2 No. 225-M90
EMC	
United States	FCC Part 15, Class A