## Specifications

AC Power Input	
Voltage	115 ±15 VRMS
Current	0.2 A max
Fuse	1/4A (fast blow)
Frequency	49.5 to 60.5 Hz
Power Dissipation (with ringing	20 VA max
generator shorted)	
Telephone Line Circuit (Loop Start Operation)	
Voltage (loop start operation)	-24±3 V ref. Ring to Tip; open
	circuit
Current Maximum (Ring and Tip shorted)	68 mA
	OO IIIA
Minimum (at maximum loop of 250 ohms excluding telephone)	20 mA
Telephone Line Circuit (Ground Start	20 11171
Operation) (See Note 1)	
Tip ground connect	175 ±35 ms after uninterrupted
Tip ground connect	ground (1000 ohms or less) is
	applied to Ring
Tip ground release	375 ±35 ms after loop opens
Forced connect	373 233 instance loop opens
Connects Tip ground upon ringing	
Forced disconnect (See Note 2)	375 ±35 ms after Tip ground
	has been released from the
	other line
Maximum current (Ring)	135 mA (Ring grounded)
Maximum current (Tip)	3 mA (Tip ground released)
Ring Source	100 To 10
Voltage	100 ±10 VAC peak
Current	80 mA max
Frequency (square wave)	20 Hz ±1%
Ringer capacity	3 REN (See Note 5.)
Trip	1000 ohms or less
DTMF Detection	
Frequency	
Accept	$\pm (1.5\% \pm 2 \text{ Hz})$
Reject	±3.5%
Tone time	40 ms min
Inter digital time	40 ms min
Amplitude	+4 to -18 dBm per frequency
1	and ≤6 dB difference between
	frequencies
Rotary Detection	•
Rate	5 to 23 PPS
Inter digital time	315 ms min
Break time	30.5 ms min
Make time	12.5 ms min
End-of-digit recognition time	95 ms min
Loop Current Detect (See Note 3)	
On-hook detect	300 ms ±20 ms
Off-hook detect	$100 \text{ ms} \pm 20 \text{ ms}$

## Specifications continued

**Interrupted Ring Timing** 

Ringing Silent 1.6 sec ±10% 4.8 sec ±10%

Tone Characteristics (See Note 4)

Dial tone

 $350 \text{ Hz} \pm 0.5\% @ -16 \text{ dBm} \pm 2.5$ 

dB

 $440 \text{ Hz} \pm 0.5\% \text{ @ -16 dBm} \pm 2.5$ 

dB

Busy tone

 $480 \text{ Hz} \pm 0.5\% @ -16 \text{ dBm} \pm 2.5$ 

dB

620 Hz ± 0.5% @ -16 dBm ± 2.5

dB

500 ms on / 500 ms off,

repeating (60 IPM)

 $440 \text{ Hz} \pm 0.5\% @ -16 \text{ dBm} \pm 2.5$ 

dB

 $480 \text{ Hz} \pm 0.5\% \text{ @ -16 dBm} \pm 2.5$ 

dB

**Environment** 

Ring back tone

Operating temperature Storage temperature

Humidity

0 to 55 °C -40 to 55 °C

85% non-condensing



**Note 1:** After Tip ground is connected, the operation and specifications are identical to loop start operation until Tip ground is released.

**Note 2:** The time will be the same if the other line is in loop start operation.

**Note 3:** In ground start operation the reference is from the time Ring ground is applied.

**Note 4:** Into 600 ohm resistive termination.

REN is a standard ringer load value specified by the FCC. Telephones and other devices have a stated REN value which may range from 0.0 to 1.0. The TLS-3 will drive a total REN value of at least 3.0.