



# 960B Multi-Channel Test Instrument Analog Interface Specifications

## 960B 2-wire/4-wire Dry Line Parameters

Input	2-wire loop, 2-wire Dry, 4-wire Normal (Dry)
Holding	$\geq 100$ ma 42.5 to 105 V DC open circuit voltage
DC Blocking	150 V DC
Balance	$> 90$ dB, 50–120 Hz, decreasing 6 dB/octave above 120 Hz
Termination	600 $\Omega$ or 900 $\Omega$ ; return loss $\geq 30$ dB from 200–4000 Hz, $\geq 15$ dB from 20–5000 Hz
Listen and Talk	Mono Speaker & Mic 3.5 mm Jack (standard) Talk capabilities (standard)
Return Loss Termination	600 $\Omega$ or 900 $\Omega$ ( $\pm 1\%$ ) in series with 2.16 $\mu$ F ( $\pm 3\%$ ) or custom termination
AC Impedance to Ground	1 MEG, tip or ring to ground
<u>DTMF Signaling</u>	
Frequency	$\pm 0.5\%$ of Bell standard frequencies
Level	-7.0 dBm0 per tone, accuracy $\pm 0.5$ dB
Timing	50 ms on/off, accuracy 0.5 ms

## AC and DC Measurements 2-wire loop

### DC Measurements

Range	-99 V DC to +99 V DC (with over-range indication)
Voltage Resolution	0.1 V DC
Voltage Accuracy	$\pm 2\%$ of reading, $\pm 0.3$ V DC
DC Measurement Modes	Tip-to-ring, tip-to-ground, ring-to-ground

### Tip-to-Ring Current

Range	$\pm 100$ mA
Resolution	1 mA DC
Accuracy	$\pm 2\%$ of reading, $\pm 1$ mA DC

### AC Measurements

Voltage Range	0–150 V rms
Voltage Resolution	1 V rms
Voltage Accuracy	$\pm 2\%$ of reading, $\pm 0.5$ V rms
Frequency Range	15–120 Hz

Frequency Resolution	1 Hz
Frequency Accuracy	$\pm 1$ Hz
Ring Detect	33 V rms $\pm 7$ V, 20–60 Hz
Termination	(1 REN) resistor in series with capacitor
Isolation	Tip, ring, and station ground are isolated from data interface connector, charging connector, and case by more than 500 volts.

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## Send/Receive Performance

### Send

Frequency Range	20–3980 Hz, 20-7000 Hz (16 KHz)
Resolution	1 Hz
Accuracy	$\pm 0.5$ Hz
Level Range	-60 to +3 dBm
Resolution	1 dB
Level Accuracy	1000 Hz $\pm 0.1$ dB, -19 to 0 dBm 20–3980 Hz $\pm 0.2$ dB, -60 to +3 dBm
Distortion (THD)	1 kHz 70 dB, 0 dBm 200–3700 Hz -60 dB, -16 to 0 dBm 100–3980 Hz -50 dB, -60 to +3 dBm

### Receive

Frequency Range	20–3980 Hz
Resolution	1 Hz
Accuracy	$\pm 1$ Hz
Level Range	-50 to +10 dBm
Resolution	0.01 dB
Level Accuracy (terminated)	1000–1020 Hz $\pm 0.1$ dB, -19 to 0 dBm 200–3980 Hz $\pm 0.2$ dB, -50 to +3 dBm 30-200 Hz $\pm 1$ dB, -50 to +3 20–30 Hz $\pm 3$ dB, -50 to +3 dBm

### Noise

Level Range	10–100 dBm
Resolution	1 dB
Level Accuracy	$\pm 1$ dB 20–100 dBm; $\pm 3$ dB 10–20 dBm
Filters	C-msg, C-notch, 3-kHz flat, SNR, PSOPH