

# Halcyon 704A-400

Wideband TIMS / Signaling Test Set



## Supplied Equipment

704A-400 Wideband TIMS / Signaling Test Set, AC Power Adapter, 4-Wire RJ-11 Crossover Cable, Operation Manual, Quick Reference Guides, Carrying Case

## Options (factory installed)

Option A: Signaling & Network Access with DID, PBX/CO Emulation, & Digit Analysis . . . Order No. 18-50704-420  
 Option A1 Caller ID Analysis . . . . . Order No. 18-50704-425  
 Option B: 1.5MHz KHz Frequency Band for ADSL, HDSL, & ISDN Facility Testing . . . . . Order No. 18-50704-410  
 Option H4: Remote Control Test Port and Windows GUI . . . . . Order No. 18-50704-444  
 Option M: Type I through V E&M Signaling and Ring Generation . . . . . Order No. 18-50704-452

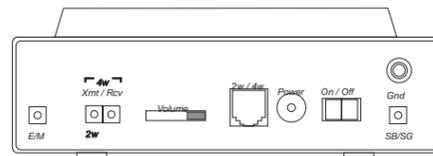
## Accessories

AC Power Adapter . . . . . Order No. 31-50704-010  
 4-Wire RJ-11 Crossover Cable . . . . . Order No. 25-18856-010  
 8' Bantam connector on each end . . . . . Order No. 25-00012-010  
 8' Bantam to Alligator Clip . . . . . Order No. 25-55256-092  
 Operation Manual, MN-704 OP . . . . . Order No. 96-50704-400  
 704A-4XX Series 2-Wire TIMS Quick Reference Guide, QRG-704 #1 . . . . . Order No. 96-50704-451  
 704A-4XX Series 4-Wire TIMS Quick Reference Guide, QRG-704 #2 . . . . . Order No. 96-50704-452  
 704A-4XX Series DID, PBX/CO Emulation Quick Reference Guide, QRG-704 #3 . . . . . Order No. 96-50704-450  
 Carrying Case (CASE-07) Padded, Lightweight . . . . . Order No. 56-55256-010  
 Heavy Duty Shipping Trunk (TRUNK-02) . . . . . Order No. 56-50700-201

## Ordering Information

704A-400 Wideband TIMS / Signaling Test Set . . . . . Order No. 18-50704-400  
 704A-410 Basic 1.5 MHz Wideband Transmission Test Set w/ Option B . . . . . Order No. 18-50704-410  
 704A-430 Basic 1.5 MHz Wideband Transmission Test Set w/ Option A & B . . . . . Order No. 18-50704-430  
 704A-460 Basic 1.5 MHz Wideband Transmission Test Set with Option A, A1, and B . . . . . Order No. 18-50704-460

704A-400 Top View Showing Controls, 2-Wire, 4-Wire, E&M, and Power Connectors.

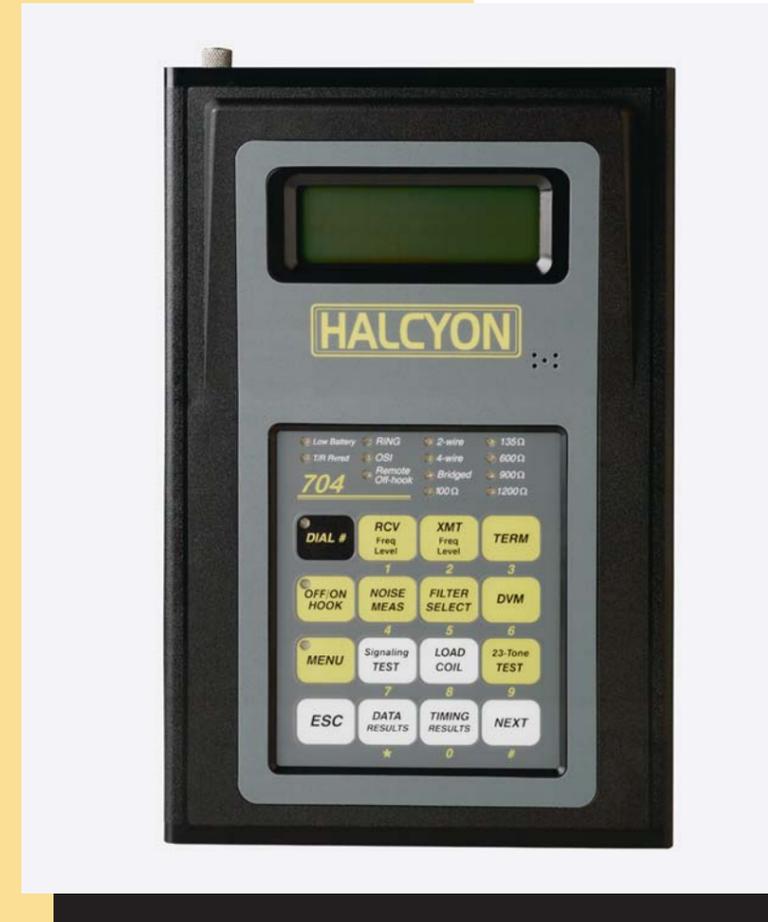


a MicroTel International Company

**CXR Telcom 894 Faulstich Court, San Jose, CA 95112**  
**Tel: (510) 657-8810, FAX: (510) 657-1158**  
**www.cxr.com**

# Halcyon 704A-400

Wideband  
TIMS / Signaling  
Test Set



- ★ 1.5 MHz Frequency range for ADSL/xDSL facility qualification
- ★ Integrated Load Coil Detection
- ★ Complete VF, program and Wideband TIMS (Transmission Impairment Testing)
- ★ Measures Frequency, Level, Noise, Impulse Noise, Signal To Noise, Return Loss
- ★ C-Message, 3KHz Flat, Program Weighted, 15KHz and 50KHz Filters
- ★ 23 Tone Test Sequence per IEEE 743-1995
- ★ Handheld Compact Battery Powered Package
- ★ Class Services "Caller/Name ID Test Functions



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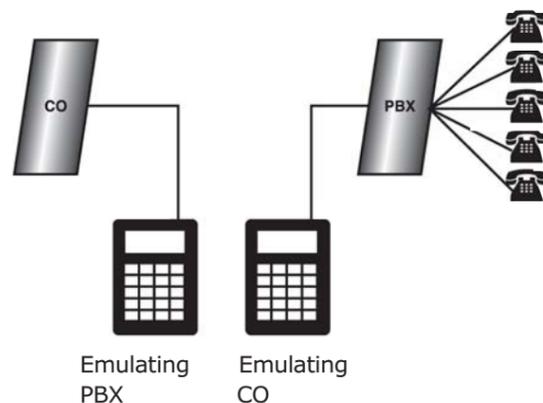


The Halcyon 704A-400 is a hand-held transmission and signaling wideband test set optimized for installation and maintenance of analog voice band, program and wide-band data services including Class Services and circuits utilizing DID Signaling (E911).

When equipped with 1.5 MHz option, it is ideally suited for ADSL, HDSL, ISDN, and DDS Facility Testing. Designed with state-of-the-art technology and engineered for ease of operation, the 704A-400 provides users with single-button test execution allowing quick circuit diagnosis and repair without extensive training. The internal NICAD battery pack provides up to 8-hours of continuous operation. Alternate 704A-NTS1/2 and 704A-PKG#2/3 Universal Data Test Packages are available which include digital testing functions such as 4 wire DEMARC/DS0 DDS test functions, T1/FT1 and BRI-ISDN test capabilities. The rugged hand-held 704A-400 is the complete test solution for installation, facility qualification and maintenance of analog voice and data circuits.

## Features:

- Rugged, Lightweight & Hand-Held
- RJ-11 Modular Jack
- Dual Mini-Phone Jacks (Bantam)
- 2-Wire and 4-Wire Interface
- 100, 135, 600, 900, 1200 Ohm and Bridged
- Measure Line Voltages and Polarity
- Monitoring RINGING Voltage
- ADSL/xDSL Facility Testing
- 1.5 MHz Range - Load Coil Testing
- Signaling-DID/PBX CO Emulation
- Digit Capture/Analysis-Wink Timing
- Class Services Test package
- Complete VF, Wideband TIMS



## Specifications

Operating Environment:	0°C to 50°C 95% R.H. (Non-Condensing)
<b>Physical</b>	
Size:	9.5"L x 6.33"W x 1.4"H
Weight:	2.2 pounds
Power:	5W at 115VAC, 60 Hz nom. from 9VDC external power supply
Battery:	4 hours continuous operation from internal NICAD Pack. Charge time: 14 hours.
2W/4W Interface:	RJ11C or Dual Bantam (210) jacks.
Impedance:	100, 135, 600, 900, 1200 Ohms Terminated, >30K 2W-Bridged
Longitudinal Balance:	>60dB from 200 to 4KHz
Audio:	Internal speaker with volume control
Display:	4-line by 20-character LCD and status LEDs.
Line Hold:	Electronic Internal current limited to 24mA on either the 2W or the 4W- XMT port when Off- Hook.
Dial Mode:	16 character DTMF generation, 10 digit Dial Pulse generation.
Measurements:	Level (dBm), Frequency, Weighted Noise, Notch Noise, Signal to noise ratio, Impulse Noise, Return Loss, 23-Tone Sequence (RMS level/frequency, individual level/frequency, IMD, EDD, S/TD, SNR), Advanced Caller ID CND/CNAM (optional), Line voltage, current and ring voltage.
Load Coil Detect:	Detects presence of up to 3 load coils
<b>Generator</b>	
Variable Tone:	Frequency adjustable from 50 Hz to 1.5Mhz in 1 Hz steps; accurate to within ± 0.5 Hz
Fixed Tones:	Program 50 Hz, 100 Hz, 1 kHz, 5 kHz, 8 kHz, and 15 kHz. (Transmit level fixed at 0.0 dBm). ADSL Tones: 28 KHz, 40 kHz, 48 kHz, 82 kHz, 196 kHz, 392 kHz, (level adj. +7dBm to -40 dBm).
Wideband Sweep:	400 Hz to 3200 Hz in 200 Hz steps, 4800 Hz, 8000 Hz, 28 kHz, 32 kHz, 36 kHz, 48 kHz, 80 kHz, 82 kHz. Level adjustable from +13 dBm to -40 dBm.
3-Tone Slope:	404 Hz, 1004 Hz, 2804 Hz, each at -0.5 Hz. Level adjustable in 4 steps of 0, -10, -13, and -16 dBm ±0.2 dBm.
2713Hz Loop Back	Generated at ±0.5 Hz. Level adjustable as in 3-Tone Slope.
Level Accuracy:	600/900/1200 ohm mode ±0.1 dB from 400 to 10,000 Hz; ± 0.5 dB from 200 to 30,000 Hz
Transmit Level:	+13 dB to -50dB
100/135 Ohm 4W Mode	± 0.2 dB from 400 to 30,000. Optional wide band 135 ohm; ±0.5 dB from 250 to 1.5 mHz. Level adjustable from +13 dBm to -40 dBm in 0.1 dB steps.

## Specifications (cont'd.)

### Signaling (optional)

Signaling Interfaces:	Emulate network and terminal end of Loop Start, Ground Start, Direct Inward Dial, E&M I-IV, Originate or terminate call, Analyze digits, perform transmission tests.
Signaling Modes: CO Emulation:	MF/DTMF/Dial Pulse analysis Wink start or immediate start
Measurements:	Pre-wink, wink duration and answer delay for up to 999ms with 1 ms resolution
Loop Current Detection:	Loop current detector must exceed 20 ms to detect a valid off-hook state.
DTMF Generation:	Transmit level of -7 ±0.2 dBm, with 1.5 dB twist
MF Generation:	Transmit level of -7 ±0.2 dBm
Dial Pulse Generation:	-10 Pulses per second with 60% break and 250 mS inter-digit time
PBX Emulation Mode:	Wink start or immediate start with pre-wink time of 1 sec and wink duration of 250 mS ± 2 mS
Measurements:	Up to 9999 mS maximum post wink time with 1 mS resolution and ± 1 mS accuracy
Battery Feed:	-48 VDC 400 ohm DC feed limited to 24mA
MF Receiver:	All 15 valid MF tones received at levels as low as -30 dBm
DTMF Receiver:	16 digit receiver (1-9, 0, A, B, C, D, *, #)
Dial Pulse Receiver:	12 digit receiver (1-9, 0, *, 3) Range is from 3 to 29 pulses per second with a 10 to 90% break

### DTMF Analysis

Frequency Meas:	A high/low group frequency accuracy of ± 3Hz with 1Hz resolution
Level Meas:	A high/low tone group range accuracy of +1.5 to -28 dB with 0.1 dB resolution and ± 0.5 dB accuracy
Timing Meas:	1 mS to 65.5 seconds with 1 mS resolution and ± 1 mS accuracy
Tone Acceptance:	Maximum twist of ± 10 dB with 35 mS tone duration. 18 dB maximum dial tone level tolerance

### Class Services Testing (optional)

Enhanced Caller/Name ID Test Functions	
Timing Measurements:	1 mS to 60 seconds with 1 mS resolution and ± 1 mS accuracy

Receiver Sensitivity:	Carrier must be received at -45dB minimum receiver sensitivity
FSK Data Detection:	Continuous phase coherent FSK detection (1200/2200 Hz ± 1%) at 1200 BPS
Ring Voltage Measurements:	40 to 140 Vac with 1 volt resolution and ±2 V accuracy
DTMF Generation:	XMT level of -7 ± 0.2 dBm, w/1.5 dB twist; frequency accurate to ± 0.5 Hz, 75 mS on 75 mS off.
<b>Receiver Level:</b>	+13 to -70 dBm, 0.1 dBm resolution, 100, 135, 600, 900, 1200 ohm 4W mode: ±0.2 dB from 400 to 25,000 Hz, ±0.5 dB from 250 to 35,000 Hz. Wideband 100 and 135 ohm 4- wire mode: ±0.2 dB from 450 to 1000 kHz, ±0.5 dB from 250 to 1.5 mHz
Frequency:	30 to 1.5 mHz with ±1 Hz resolution and 0.1% accuracy at levels down to -50 dBm.
Noise:	15 to 95 dBm with 1 dBm resolution and ± 1dBm accuracy from 20 to 90 dBm
Noise Filters:	C-MSG, 3 kHz Flat (D), Program, 15 kHz Flat, 50 kHz (497F)
Notched Noise:	1010 Hz notch, with a minimum of 50 dB attenuation in the band of 995 to 1025 Hz.
Signal to Noise Ratio:	Holding tone (1004 Hz) must be in the range of +6 to -45 dB: measured S/N ratio range from 10 to 55 dB with 1 dB resolution and ±2 dB accuracy.
3-Level Impulse Noise:	Threshold can be set from 30 to 90 dBm: 3 level difference fixed at 4 dBm with a measure- ment accuracy of ±1 dBm. Blanking interval fixed at 125; with 3 independent counters.
23-Tone Test:	Generate 23-Tone sequence per IEEE-1995 at -6 dBm to -40 dBm. Measures individual frequencies and level, RMS composite tone, IMD, EDD, S/TD and S/NR.
Return Loss:	Three bands: ERL, SRL-HI, SRL-LO: range of 0 to -30 dB with 1 dB resolution and ± 1dB accuracy. Continuous generation of band limited noise signal sent at -6 ±1.0 dBm in each of three bands.
Line Voltage Measurement:	2 to 85 VDC: 0.1 Volt resolution and ±1 Volt accuracy.
Line Current Measurement:	10 to 80 mA; 0.1 mA resolution and ±1mA accuracy.