AM5XT-200 and AM5eXT-200

Ideal Repeaterless T1 HDSL Tester

Wideband Analog Telecom Transmission Testing in an Ultra-Portable Unit

Ameritec

Introduction

Ameritec's AM5 series of Wideband Transmission Test Sets are engineered for peak performance in the field and the lab. They offer a full range of transmission impairment measurements, a highly versatile signal generator and basic telephone signaling in a single compact, portable unit.

The AM5's perform most standard tests, worldwide. The AM5XT-200 meets all North American IEEE 743-1984 standards.

The AM5eXT-200 meets international ITU standards and is CE approved for use in the European Community.

The AM5XT-200 and AM5eXT-200 operate with a bandwidth of 20Hz to 200kHz. The units can perform qualification tests on circuits carrying voice band telephone, high quality audio, DDS to 64KBPS, Basic Rate ISDN, HDSL, or other services using up to 200kHz bandwidth.

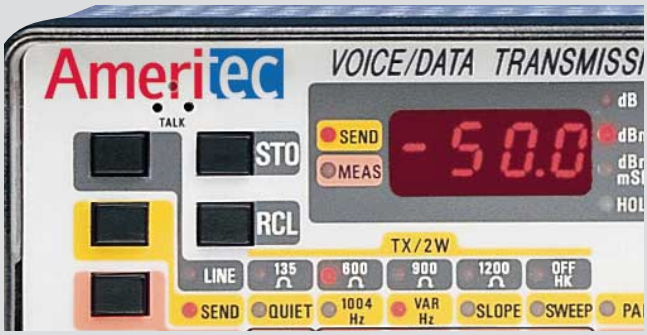
Model AM5XT-200 / IEEE 743-1984 Standard / 200kHz Bandwidth

Model AM5eXT-200 / International ITU Standard / 200kHz Bandwidth
(shown with optional Siemens connectors)

Ease of Operation/Store and Recall

The front panel is arranged as a 5 x 16 push button matrix which allows simple control of all line, send, measure, auxiliary and signaling functions and still allows the operator to view the unit's configuration at a glance. No need to scroll or hunt through confusing menus.

For simplicity of operation, up to 40 test set-ups can be stored in non-volatile memory for instant recall. The complete test set-up is always displayed, but operation is simplified to a few keystrokes.



AM5XT store and recall buttons

When using a pair of AM5 series units, the local unit can exercise remote control over the distant unit through test set-up recall commands issued over the line under test.

An extensive "Help Directory" in memory can be viewed or printed via the optional RS232 port.

Audio Monitor and Speaker Phone

The built-in speaker allows the operator to audibly monitor either the send or receive line under test. A built-in microphone provides "Speaker Phone" or "Push to Talk" operation over the line under test.

Field, Lab or System Use

The units fit anywhere. Use the basic unit as a bench top laboratory instrument, or, with the addition of internal sealed lead acid battery pack and soft case, as a highly compact field instrument. Battery capacity provides for up to eight hours of uninterrupted use between charges.

If your application dictates, add the optional rack mounting kit and RS232 remote control port and integrate it into a system for network testing.

A Wide Variety of Measurements

The AM5 series performs all common voice/data analog transmission tests. All measurements are fully auto-ranging and may either be viewed on the bright LED display or output to a printer.

The following measurements are provided:

	AM5XT	AM5eXT
IEEE 743-1984 Standard	X	
ITU Standard		X
dBm Level (15kHz or 200kHz Filter)*	X	X
dBm Loss (15kHz or 200kHz Filter)*	X	X
Frequency	X	X
Frequency Response (Attenuation Distortion)	X	X
Noise (Wideband or with Filters)	X	X
Noise with Tone (Wideband or with Filters)	X	X
S/N Ratio (Wideband or with Filters)	X	X
Noise to Ground (Wideband or with Filters)	X	X
Impulse Noise (Wideband or with Filters)	X	X
Phase Jitter	X	X
Amplitude Jitter	X	X
Micro Interruptions	X	X
Group Delay		X
Envelope Delay	X	
P/AR	X	X
Inter-Modulation Distortion (4 Tone/2 Tone)	X	X
2 & 4 Wire Return Loss	X	X
Transients (Including Phase & Gain Hits Impulse Noise with Tone & Interruptions)	X	X

*AM5XT-200 and AM5eXT-200 provide 200kHz Bandwidth

Fully Programmable Signal Generator

Any frequency in the 20Hz to 200kHz band can easily be selected at any level from -50dB to +10dB.

The following pre-set modes are available to facilitate measurement.

- 1004Hz
- Loop Back Tone (Operator Pre-Settable)
- Slope Tones
- Frequency Sweep (With or Without SF Skip)
- P/AR Test tone
- ERL, SRL-LO, SRL-HI Tones for Return Loss Measurements
- Envelope Delay or Group Delay Tones
- 4 Tone or 2 Tone for IMD Measurements

All test tones meet industry standards for purity and accuracy.

Built-In Signaling

The AM5 series units are unique among most transmission test sets in that they provide basic loop start line signaling. They include separate On Hook/Off Hook DC Hold Circuits for Send and Receive Line and the ability to signal using Dial Pulse, DTMF or MF(R1).

This feature is useful in testing dial-up circuits or in commanding responder devices (such as the Ameritec AM3 Series) on 4 wire dedicated circuits.

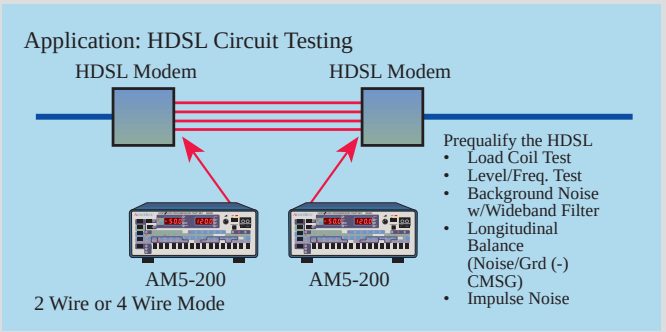
AM5eXT rear panel

Remote Control

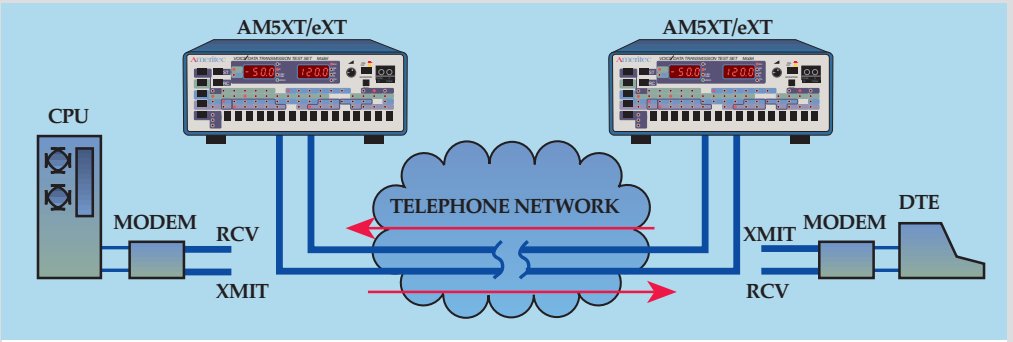
All front panel functions may be remote controlled by simple ASCII character strings to the optional RS232 port.

There is even an "Auxiliary" port which can be used to chain the AM5XT to a second device (for example, a co-located test access switch such as the Ameritec AM6), achieving dual control from a single terminal or computer.

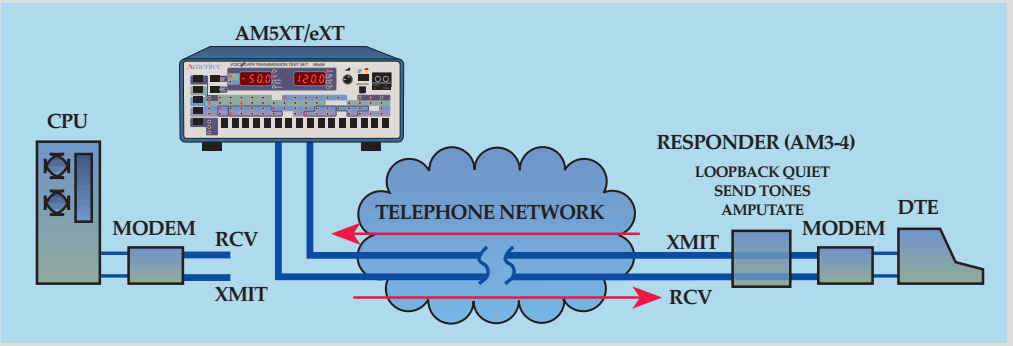
When AM5XT units are used at each end of a line under test, the distant AM5XT signal generator can be commanded to recall test set-ups by sending DTMF commands from the local unit.



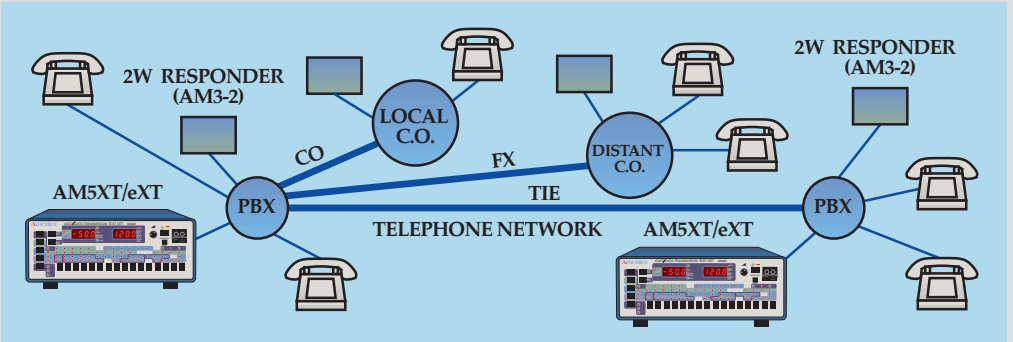
Use two sets for a complete end-to-end test of 4 wire data lines.



Use a single unit with an Ameritec AM3 Series 4 Wire Responder for centralized loopback testing.



Use the AM5XT/eXT built-in dial capability on dial-up networks to access a distant Ameritec AM3 Series 2 Wire Responder or a second AM5XT/eXT for centralized 2 wire testing.



XY Plotter Output (option 25-0045)

Optional rear panel analog outputs are provided for driving an XY plotter or strip chart recorder. This is useful in graphing frequency response, plus group or envelope delay results. This option is standard on the AM5eXT-200 (CE).

Print or Plot Your Results

An accessory printer (Model AM-47XT) is available for use with the unit. When connected to the optional RS232 port, the printer can run a hard copy of any test set-up and/or measurement result. When making envelope delay, group delay or frequency response tests, the "Print Lock" feature may be engaged for an automatic printed record of the test results in both graphic and numeric form.

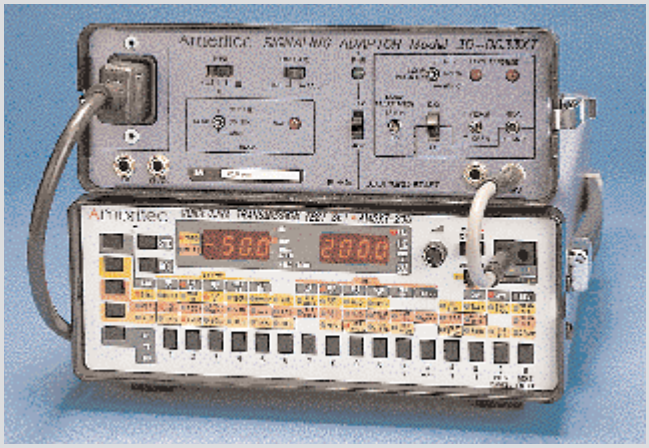
AM-47XT accessory printer.

HDSL Testing

With 200kHz bandwidth, the AM5XT-200 performs full HDSL (High-bit-rate Digital Subscribers Line) testing. HDSL provides DS1 (1.544Mbps) compatibility over two copper twisted pairs with each pair carrying a 2B1Q full duplex data stream. These pairs are tested configuring an AM5XT-200 to generate a sine wave of 196kHz and then making the appropriate level, noise and frequency measurements.

Model 30-0033XT Signaling Adaptor

The Model 30-0033XT is a Signaling Adaptor packaged within the cover (lid) of an AM5 Series Transmission Test Set or can be used as a stand alone unit. It provides for Loop Start, Ground Start, DID and Types 1, 2 and 3 E&M signaling. It also incorporates a ring generator with manual cadence selection and automatic ring trip. The unit supplies switch selectable -24 and -48 VDC line supply voltages and a switch to allow for simulation of 1240 Ω loop resistance.



AM5XT-200 instrument with 30-0033XT Signaling Adaptor

DDS/SW56 Loopback Test Set 30-0070 S:

The DDS Loopback Test Set provides CSU Loopback, DSU Non-Latching Loopback, DSU Latching Loopback and a Manual (or Forced) Loopback. DSU Latching is accomplished with or without secondary channel.

Model 30-0070 S DDS/SW56 Loopback Test Set.

The unit will transmit straightaway test patterns to the distant end with manual selection of test patterns 511, 2047, SP1, SP2, SP3, SP4 and SP5. Once again, Secondary Channel is supported during all straightaway tests.

Supported data rates are 2400, 4800, 9600, 19.2K, 56K, 64K and Switched 56K bits per second.

Switched 56K testing is performed by connecting a telephone butt set or AM5XT to the TIMS TX port to provide ON/OFF Hook and pulse dial functions. Far end signaling (wink, delay, answer) is indicated via front panel LED.

The DDS Loopback Test Set is packaged into a front panel cover lid for an Ameritec AM5XT series Transmission Test Set. It can also be used as a stand alone unit.

DDS Loopback Test Set 30-0070

Similar to the 30-0070 S Test Set except without SW56 capability.

Accessories and Options

Unit with cover, manual, power cord, optional soft case, printer and cables.

Provided: Model AM5XT-200 or AM5eXT-200, or AM5eXT (CE) removable front cover with cord storage, power cord and instruction manual.

Portable or Rack Mount: No other analog transmission test set this full-featured is so convenient. About the size and weight of a telephone directory, it is easily transported from lab to field. For permanent installations, a rack mounting kit is available for the AM5XT and AM5eXT models which will allow 19" relay rack mounting in only two rack increments of space.

Optional Battery: An optional internal, rechargeable battery pack is available for full portable "cordless" operation. The batteries are of the sealed lead acid type and require no maintenance. A front panel low battery indicator indicates when recharging is needed.

The built-in charger allows the batteries to be charged even while the unit is in operation.

Unit shown in rack mount configuration.

Options:

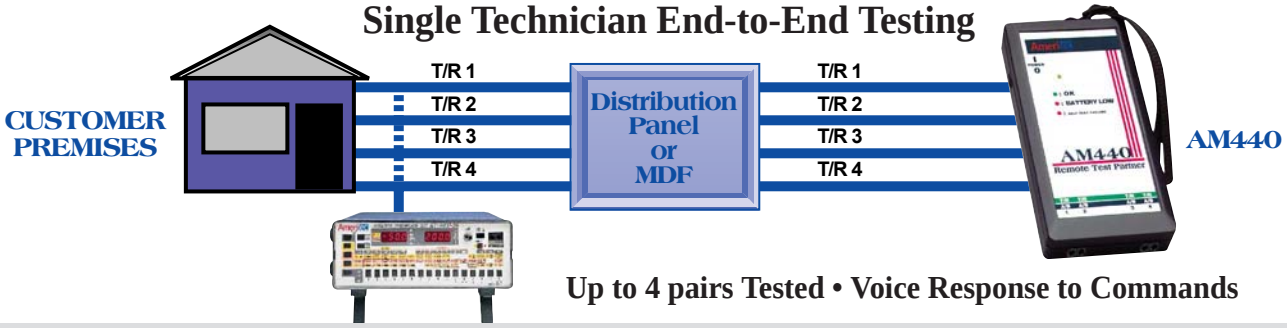
25-0019	RS232 Remote Control Port with Auxiliary RS232 Output Port. This option required for printer plotting or printer output. Included with AM5eXT-200(CE).
24-0017	Internal Power Pack (Sealed Rechargeable Lead Acid Batteries) and Internal Charger. Included with AM5eXT-200(CE).
25-0041	"Siemens" Type Line Test Set Connections.
25-0045	Analog XY Plotter Output (Prerequisite 25-0019) Included with AM5eXT-200(CE).
25-0145	Adds 310 type input jacks.
25-0240	Complex Impedance (AM5eXT-200). Contact factory for details.

Accessories:

30-0025	-48 VDC Source Battery Cover
30-0033XT	Signaling Adaptor Cover
30-0070	DDS Loopback Test Set Cover
30-0070 S	DDS/SW56 Loopback Test Set Cover
87-0070B	Padded Soft Carrying Case with Pouch for AM-47XT Printer.
AM-47XT	Hand-Held Printer Plotter with Integral Rechargeable Batteries. Includes a Roll of Paper, AC Adaptor, Connecting Cable. Prerequisite: Option 25-0019
26-0014	Replacement Paper for AM-47XT.
26-0015	Replacement Ink Cartridge for AM-47XT.
85-0076	19" Rack Mount Kit.
48-0062	6 Ft. Bantam to Clip Input Cable, two Req.
48-0047	6 Ft. Bantam to Bantam Input Cable, two Req.
48-0048	6 Ft. Bantam to 310 Input Cable, two Req.

APPLICATION: AM5 and the AM440 Remote Testing Partner

Single Technician End-to-End Testing



Up to 4 pairs Tested • Voice Response to Commands

Through its DTMF dialing capability the AM5 commands the AM440 to:

- Open Tip and Ring for foreign voltage tests
- Ground Tip and Ring for resistance to ground measurements
- Transmit preset tones from 304Hz to 384kHz, slopes, sweeps
- Short Tip to Ring to measure loop resistance
- Quiet Termination for Noise or Impulse Noise testing
- Test for Load Coils

Technical Specifications

LEVEL FREQUENCY

Transmitter

Var Mode: 20Hz to 200kHz in 10 or 100Hz steps or Direct Numeric Entry
1004Hz Mode: 1004Hz Fixed
Slope Mode: (AM5XT) 404, 1004, 3004Hz @ 5 sec. each.
(AM5eXT) 304, 1004, 2004, 3004Hz @ 5 sec. each.
Sweep Mode: Start Freq: 20Hz - 200kHz
Stop Freq: 20Hz - 200kHz
Stop Size: 1Hz - 119.9kHz
Step Dwell: 1/4 sec. - 999.9 sec.
Inter Sweep Delay: 1/4 sec. - 999.9 sec.
SF Skip: (AM5XT) 2450 - 2750Hz
(AM5eXT) 2130 - 2430Hz
Frequency Accuracy: ± .01%
Level Range: -50dBm to +10dBm
Resolution: .1dB

Accuracy:	20	200	20K	150K	200kHz
+10	±.25	±.1	±.25	±.5	
-40	±.5	±.5	±.5	±.10	
-50					

(Accuracy not specified below 400Hz when using 135 Ω (AM5XT) or 150 Ω (AM5eXT) TX termination). Maximum output is +6dBm when using 135 Ω or 150 Ω.

Receiver:

Level Range: -64.9dBm to +10dBm
Resolution: .1dB

Accuracy:	20	200	20K	150K	200kHz
+10	±.5	±.2	±.5	±1.0	
-40	±.5	±.2	±.5	±2.0	
-50	±1.0	±1.0	±1.0	±3.0	

Accuracy is ± .1dB @ 1004 - 1020Hz @ 0 to -20dBm (Accuracy not specified below 400Hz when using 135 Ω (AM85) or 150 Ω (AM85e) TX termination)
Detector: Average
Filters: (AM85)120kHz Lo Pass, 15kHz Lo Pass, 60Hz Hi Pass
(AM85e) 120kHz Lo Pass, Sound UN WTD (J.16), 60Hz Hi Pass
Frequency Range: 20Hz to 200kHz*
Resolution/Accuracy: ± 0.01% of reading ± 1 count
Sensitivity: -55dBm to + 10dBm with S/N Ratio >20dB

NOISE

Transmitter: Quiet Termination

Receiver:

Range: (AM85) 10 to 99dBrn (20 to 99dBrn @ 135 Ω)
(AM85e) -80 to +9dBm (-70 to +9 dBm @ 150 Ω)

NOISE (CONTINUED)

Resolution: 1dB
Accuracy: (AM5XT) ±1dB @ 20 to +99dBrn ±2dB @ 10 to 20dBrn (±1dB CMSG.)
(AM5eXT) ±1dB @ -70 to +10dBm ±2dB @ -80 to -70dBm (±1dB PSHO).
Filters: (AM5XT)160kHz Lo Pass C Message, Program, 3kHz Flat, 15kHz Flat, 50KBit, 60Hz
(AM5eXT) 160kHz Lo Pass Psophometric [P.53], Sound WTD [J.16], 3kHz Flat (275-3250Hz 0.71), 2kHz Flat (750 - 2300Hz 0.71), 60Hz
Detector: (AM5XT) RMS
(AM85e) RMS or Quasi Peak [J.16]

NOTCH NOISE (NOISE WITH TONE)

Transmitter: 1004Hz (Holding Tone)

Receiver:

Notch: 995 - 1025Hz >50dB - (0.132)
Other Specifications Same as "Noise" Above.

NOISE TO GROUND

Transmitter: Quiet Termination

Receiver:

Range: (AM5XT) 40 to 129dBrn
(AM5eXT) -50 to +39dBm
Resolution: 1dB
Accuracy: ±1.5dB
Filters/Detector:- Same as "Noise" Above -

SIGNAL TO NOISE RATIO (0.132)

Transmitter: 1004Hz (Holding Tone)

Receiver:

Signal Range: -40 to +10dBm
Noise Range: (AM5XT) 10 to 70dBrn
(AM5eXT) -80 to -20dBm
Ratio Range: 10 to 50dB
Accuracy: ±1dB @ 10 to 40dB
±2dB @ 40 to 45dB
±3dB @ 45 to 50dB
Noise below 20dBrn (-70 dBm) reduces accuracy to ±2dB except when using "CMSG" filter (AM5XT) or "PSHO" filter (AM5eXT)

P/AR

Transmitter: P/AR Waveform per IEEE 743

Receiver:

Range: 0 to 120 P/AR Units
Resolution: 1 P/AR
Accuracy: ±2 P/AR @ 30 to 110 P/AR
±4 P/AR @ 0 to 30 and 110 to 120 P/AR
Signal Level: -40 to 0dBm (Measured with RMS Detector)

RETURN LOSS 2W OR 4W

Transmitter: Band Limited White Noise (ERL, SRL LO, SRL HI) or Sine Wave @ -10 to -2dBm

Receiver

Range: 0 to 40dB (2 Wire), 0 to 50dB (4 Wire)
Resolution: .1dB
Accuracy: ± .5dB
Transhybrid Loss Compensation (TLP): -99.9 to +99.9dB
Detector: True RMS

ENVELOPE DELAY (AM5XT ONLY) PER IEEE 743

Transmitter:

Level Range: -40 to 0dBm
Accuracy: ± .2dBm
Carrier Freq.: 200Hz to 4kHz
Carrier Step Size: 1Hz to 3800Hz
Carrier Step Rate: 1/4 sec. to 999.9 sec.
Accuracy: ± 5 µs @ 600 to 4000Hz
± 15 µs @ 200 to 599Hz

Receiver:

Level Range: -40 to +10 dBm
Accuracy: ± .2dBm
Delay Range: -3000 to +9000 us
Resolution: 1 µs
Accuracy: ± 5 µs @ 600 to 4000Hz
± 15 µs @ 200 to 599Hz
(Accuracy Valid for S/N Ratios >24dB)
Display Averaging: 1/4 sec. to 4 sec.

General:

Mode: Normal, Repeat or Hold
Modulation Frequency: 83-1/3Hz

GROUP DELAY (AM5eXT ONLY) PER ITU 0.81

Transmitter:

Reference Carrier: 200Hz to 20kHz (1.8kHz Default)
Measuring Carrier: 200Hz to 20kHz
Delay Error: ±5 µs @ 200 - 400Hz
±3 µs @ 400 - 600Hz
±1 µs @ 600 - 20kHz
Measuring Sweep: Step Size: 1 - 9999Hz
Step Rate: 1/4 sec. to 999.9 sec.
Level Range: -40 to 10dBm
Level Accuracy: ± .2dB

Receiver:

Input Level Range:-50 to +10dBm (-40 to +10dBm for 135 Ω to 150 Ω)
Level Measurement Accuracy:

Relative Level Reading	Relative Level Accuracy	Absolute Level Accuracy
0 to 10dB	± .15dB	± .25dB
10 to 30dB	± .3dB	± .3dB
30 to 40dB	± .5dB	± .5dB
40 to 50dB	± 1dB	± 1dB

Delay Range: -12,000 to +12,000
Delay Accuracy: 1% of Reading + Errors Below

Measuring Frequency	Additional Error
200 to 400Hz	± 50 µs
400 to 600Hz	± 15 µs
600 to 20kHz	± 5 µs

Amplitude Variation	Additional Error
0 to 10dB	± 5 µs
10 to 30dB	± 10 µs
30 to 50dB	± 20 µs

Display Averaging: 1/4 sec. to 4 sec.
Filter: Switchable 4kHz Low Pass

General:

Modulation Signal: 41.66Hz (40% AM)
Identifying Signal: 166.6Hz (20% AM)
Changeover Period: 240ms

INTERMODULATION DISTORTION PER IEEE 743

Transmitter:

Signal: 4 Tone per IEEE 743
Level Range: -40dBm to 0dBm
Resolution: .1dB
Accuracy: ±1dB
S/N Check: Low Pair per IEEE 743
RCVR Check: 20dB 2nd Order and 30dB 3rd Order Distortion

Receiver:

Level Range: -40 to 0dBm (-30 to 0dBm for 135 Ω or 150 Ω Impedance)
Distortion Range: 10 to 65dB
Response Time: <10 sec.
Display Update: 3 sec.
Resolution: .1dB
Accuracy: ±1dB (10 to 55dB Distortion)
±1.5dB (55 to 65dB Distortion, Level > -30dBm)
±2.5dB (55 to 65dB Distortion, Level < -30dBm)

Filter:

2nd Order: 520Hz + 2240Hz Band Pass
3rd Order: 1900Hz Band Pass
Noise Check: Automatically Compensated
Detectors: RMS

PHASE JITTER PER IEEE 743 AND ITU 0.91

Transmitter:

Signal: 1004Hz (Holding Tone)

Receiver:

Level Range: -40 to +10dBm
Jitter Range: 0 to 30° Peak - to - Peak
Resolution: .1°
Accuracy: ±5% Plus ± .2°
Carrier Filter: 1kHz Band Pass
Demodulation Filter: 20 - 300Hz, 4 - 300Hz, 4 - 20Hz
Display Response: 20 - 300Hz: 4 sec.
4 - 20/4 - 300Hz: 25 sec.

AMPLITUDE JITTER PER IEEE 743

Transmitter:

Signal: 1004Hz (Holding Tone)

Receiver:

Level Range: -40 to +10dBm
Jitter Range: 0 to 25% Peak
Resolution: .1%
Accuracy: ±5% of reading Plus ± .2%
Carrier Filter: 1 kHz Band Pass
Demodulation Filter: 20 - 300Hz, 4 - 300Hz, 4 - 20Hz
Display Response: 20 - 300Hz: 4 sec.
4 - 20/4 - 300 Hz: 25 sec.

IMPULSE NOISE (3 LEVEL) PER IEEE 743 AND ITU 0.71

Transmitter: Quiet 30 Termination

Receiver:

Minimum Threshold: (AM5XT) 30dBrn
(AM5eXT) -60dBm
Threshold Difference: 2, 3, 4 or 6dB
Accuracy: ±1dB
Timer: .1 to 999.9 Min. or Continuous
Max Count: 999.9 Each of three Counters
Dead Time: 1 to 255ms

TRANSIENTS

Transmitter: 1004Hz (Holding Tone)

Receiver: (Common Specifications)

Blanking Interval: 1 to 255ms
Qualification Interval: (AM5XT) 3.5 to 4.39ms
(AM5eXT) 3.6 to 4.4ms
Counting Interval: .1 to 999.9 min.
Dropout Blanking: Dropout Blanks All Counters for Duration Plus 1 sec.
Max Count: 9999 Each of 7 Counters

Receiver (Impulse Noise) Per IEEE 743

- Other Specifications Same as "Impulse Noise" above. -

Receiver (Phase Hits) Per IEEE 743 and ITU 0.95

Threshold Range: 5 - 45°
Accuracy: ±10% ± .5°

Receiver (Gain Hits) Per IEEE 743 and ITU 0.95

Threshold Settings: (AM5XT) 2, 3, 4, 6, 8, 10dB
(AM5eXT) 2, 3, 4, 6, 8dB
Accuracy: ±.5dB

Receiver (Dropouts) Per IEEE 743 and ITU 0.61

Threshold: (AM5XT) 12dB
(AM5eXT) 10dB
Accuracy: ±1dB

Receiver (Interruptions) per ITU 0.61

Threshold: 6 and 10dB
Accuracy: ±1dB
Qualification: <2ms Ignore, > 3.5ms Recognize
Separation: >4ms

MICRO INTERRUPTIONS PER ITU 0.62

Transmitter: 2000Hz

Receiver:

Input Level: -30 to +10dB
Level Threshold: 3, 6, 10 or 20dB Below Initial Level
Accuracy: ±1dB @ 3, 6, 10dB
±2dB @ 20dB
Dead Time: 1 - 255ms
Counters: #1 for .3 to 3ms duration
#2 for 3 to 30ms duration
#3 for 30 to 300ms duration
#4 for 300 to 1 min. duration
#5 for >1 min. duration

GENERAL

Input: 4 Wire, 4 Wire Reverse or 2 Wire (with Internal 2W to 4W Hybrid)
Receive Impedance: (AM5XT) 135, 600, 900, 1200 Ω Terminate
(AM5eXT) 150, 600, 900, 1200 Ω Terminate
High Impedance Bridge: >50K Ω, Bridging Loss <.2dB
Transmit Source Impedance:
(AM5XT) Open, 135, 600, 900, 1200 Ω
(AM5eXT) Open, 150,600, 900, 1200 Ω
DC Blocking: 200 VDC
Balance: >90dB @ 50 - 120Hz Decreasing 6dB/Octave Above 120Hz
Return Loss: >30dB
Hold Circuit: Transmit and Receive Independent. DC=200 Ω, AC > 20K Ω
Signaling: Dial Pulse, DTMF and MF(R1) from Full 16 Button Keypad
Monitor: Built-In Speaker with Selection of Transmit, Receive or Measure Monitor
Talk: Built-In Microphone with Push - to - Talk or Hands - Free Full Duplex (Speaker Phone)
Power: 115 VAC or 230 VAC 50/60Hz @ 26 VAC. Optional Internal Sealed Lead Acid Battery with Recharger
Weight: Net Basic Unit: 6 lb/2.72 kg
Dimensions: 8.3"W x 3.5"H x 12.1"D
210 mmW x 89 mmH x 307 mmD
Operating Temp: 0 to 50° Celsius
Line Connect: Dual Miniature Phone Jacks# (Front Panel) and Screw Terminals (Rear Panel) Optional "Siemens" Jacks (Front Panel)
#*Mates with ADC PJ777 or Switchcraft TT253*
Remote Control Port (Optional): RS232, Serial ASCII, 300/1200/2400/9600 Baud, 3 Wire Send/Receive/Common to DB25 Connector
Aux Port: DB9 Connector
Store/Recall: 40 User Defined Test Setups and 10 User Defined Dialed Numbers Plus Last Number Redial

XY PLOTTER OUTPUT (OPTIONAL)

Group Delay, Envelope Delay or Level/Frequency:

X Axis: OV = Start Frequency
5V = Stop Frequency
Y Axis: OV = Low Plotting Limit
5V = High Plotting Limit
Start and Stop Frequencies and Low and High Plotting Limits are Settable Parameters

Phase Jitter

X Axis: Demodulated Carrier (1kHz @ 10V P-P)
Y Axis: Jitter Wave Form (10° P-P = 2V P-P)

Amplitude Jitter

X Axis: Received Signal (1kHz @ ~ 5V P-P)
Y Axis: Jitter Wave Form (10% ~ 2V P-P)

Transients

X Axis: 4V = Phase Hit Present
Y Axis: 4V = Gain Hit Present
Z Out: 4V = Dropout Present

Micro Interruptions

Z Out: 4V = Interruption Present

All specifications subject to change without notice.

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