Audio Analyzer UPA

10 Hz to 100 kHz

System-compatible analyzer for generating and measuring analog audio signals

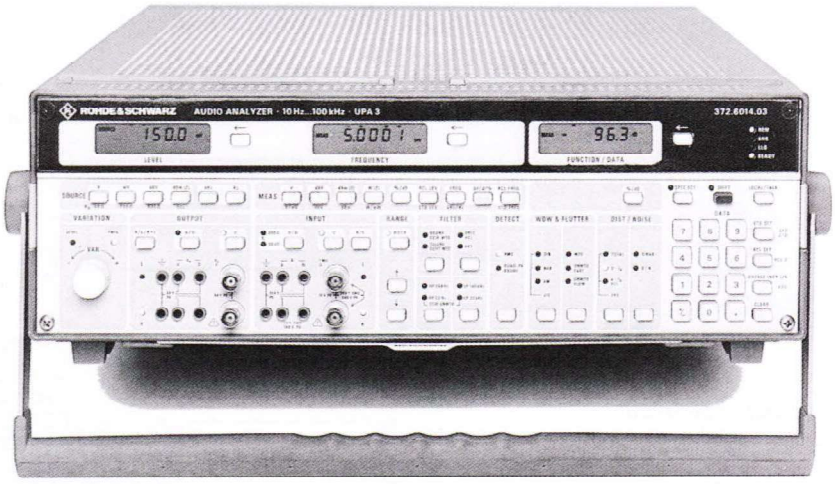

Photo 37920

Brief description

Audio Analyzer UPA is a compact instrument allowing all essential audio parameters to be measured at balanced and unbalanced analog audio interfaces. Due to its large variety of options (see overview on the right) it can be optimally adapted to the specific application.

The great number of filters available makes the UPA suitable for numerous audio measurements. Model UPA3 is a cost-effective test set with a generator and distortion meter.

Due to its remote-control capability (IEC 625/IEEE 488) and high measurement speed, a major application of UPA is in automated testing of audio components in series production.

Main features

- Psophometric measurements to DIN, CCIR, CCITT
- Broadband level meter with true RMS reading or quasi-peak reading
- Simultaneous measurement of level and frequency
- DC voltage measurements
- Combined digital and analog displays for all functions
- Synthesizer generator with low distortion and floating outputs (option)
- Switch-selectable generator output impedance

Overview of options

Designation, functions	Option
Generator: provides level- and crystal-accurate sinewave signals with low distortion and excellent S/N ratio; high frequency and level resolution	UPA-B6
Distortion Meter: measures total harmonic distortion (THD/ THD+N), selective harmonic distortion up to 9th order, sum of all even/odd distortion factors, SINAD	UPA-B8
Wow and Flutter Meter: measures wow and flutter to DIN-IEC, NAB, JIS as well as amplitude variations	UPA-B9
Special Filter: contains a large variety of customary audio filters (see specifications); selected filter is switched into the signal path	UPA-B2
Filter Circuit Board, partly fitted: plug-in filter board with control section fitted; allows configuration of customized filters	UPA-B3
Customized Filter: on request, customized filters (also several filters on one PC board) will be devised and manufactured by Rohde & Schwarz	UPA-B4
Harmonics Filter: comprises AC-supply adapter and PC program disk; allows measurement of harmonic currents of the AC supply in line with European Standard EN 60555 part 2	UPA-B4, model 17
CD Filter: filter board for measurements on CD players and DAT recorders using the test CD; comprises PC program disk for complete automatic measurements	UPA-B4, model 04
Audio Test Disc: signal source for testing CD players, DAT recorders, sound broadcast links, tape recorders, etc	UPA-CD
DC Output: allows XY representation of the selected measurement functions, eg on a recorder	UPA-B1

- Fully automatic distortion meter for measurement of total and selective harmonic distortion or SINAD (option)
- Wow and flutter meter to DIN, CCIR, IEC, NAB, JIS with amplitude variation meter (option)
- Frequency counter and phase meter
- Nonvolatile memory for 50 instrument setups

Specifications in brief

Basic unit

AF level meter

Voltage measurement range	10 µV to 300 V, unbalanced 10 µV to 35 V, balanced
Frequency range	10 Hz to 100 kHz
Filters	22.4-Hz and 300-Hz highpass filters 22.4-kHz and 100-kHz lowpass filters, CCIR, CCITT
Other filters	contained in option UPA-B2
Test inputs	floating
Balanced	two 3-contact female connectors, switchable R/L channel, 600 Ω/20 kΩ
Unbalance rejection	>110 dB at 50 Hz
Unbalanced	two BNC female connectors, switchable R/L channel, 1 MΩ
Crosstalk attenuation R/L	>80 dB at 20 kHz
Detector	RMS-responding rectifier, quasi-peak responding rectifier
Level indication	5 digits in mV, V, dBm, mW or W, relative indication in% or dB
Accuracy RMS (sinewave)	±1% ±1 digit (30 Hz to 20 kHz)
Inherent noise	
CCIR, weighted (QPK)	<10 µV (unbalanced, 600 Ω) <20 µV (balanced, 600 Ω)

S/N ratio measurement (with Generator Option UPA-B6)

Signal frequency range	30 Hz to 100 kHz
Display range	0 to 120 dB
Accuracy (S/N ≤60 dB)	±1 dB
Inherent S/N ratio	>85 dB or <20 µV

DC voltage measurement

	0 to ±300 V
Test inputs	see AF level meter, but unbalanced only
Accuracy	±1% ±1 digit

Frequency counter

Frequency measurement range	8 Hz to 250 kHz
Required input voltage	>10 mV (S/N ratio >20 dB)
Accuracy	±0.005% ±1 digit

Phase measurement

Display range	0 to 180°
Resolution	0.1°

Options

Generator (option UPA-B6, standard in UPA3)

Frequency range	10 Hz to 100 (110) kHz
Accuracy	±0.01%
Outputs	like test inputs of AF level meter
Unbalance rejection	>80 dB at 1 kHz (bal., V_{out} >1 V)
Crosstalk attenuation L/R	>80 dB at 20 kHz
Output impedance	30 Ω/200 Ω/600 Ω, selectable
Output voltage, no load	0.1 mV to 12.4 V
Load impedance, max. load	>200 Ω/54 mA
Output circuit	short-circuit-proof, switched off in case of external feeding
Inherent distortion (V_{out} >300 mV)	<–80 dB (30 Hz to 20 kHz)
Frequency response (ref. to 1 kHz)	±0.5% (10 Hz to 20 kHz)

Distortion meter (option UPA-B8, standard in UPA3)

Frequency range, fundamental	10 Hz to 100 kHz
Frequency adjustment	automatic or by frequency preselection
Display modes	total harmonic distortion THD, selective distortion d_2 to d_9, SINAD, level
Display range	–120 to 0 dB (distortion)
Accuracy THD or SINAD, 20 Hz to 20 kHz	±1 dB (harmonics up to 100 kHz)

Wow and flutter meter (option UPA-B9)

Wow and flutter meter	
Measurement method	IEC, NAB, JIS, 2-sigma
Measurement range	0.003 to 5%
Accuracy	±10%
Amplitude variation meter	
Frequency range	2 to 20 kHz
Variation range	
Level	0 to 20 dB
Frequency	0.1 to 300 Hz
Accuracy	±0.25 dB (0 to 3 dB)

Special filter (option UPA-B2)

A-filter	to DIN IEC 651
Bandstop filters	pilot-tone trap with 15-kHz lowpass filter, line-frequency trap with 13-kHz LP (both filters can be combined with A-filter)
Bandpass filters	standard frequencies 315 Hz/1/3.15/6.3/10/12.5 kHz; additionally adjustable fixed center frequencies of 8/9/10/11/12/13/14/15/15.5/16/17/18/19/20/25 kHz; adjustable passband frequencies from 23 Hz to 25 kHz; telephone bandpass filter 320 Hz to 3.4 kHz; bandpass filter 2 to 10 kHz
Lowpass filter	350 Hz/1.04/3.5/7/10.4/15 kHz

General data

Remote control	IEC 625-1 (IEEE 488), control of all instrument functions

Ordering information

Audio Analyzer		
Basic model	UPA	0372.6014.02
with generator and distortion meter	UPA3	0372.6014.03
Options		
Generator (standard in UPA3)	UPA-B6	0373.0010.02
Distortion Meter (standard in UPA3)	UPA-B8	0373.1616.02
Wow and Flutter Meter	UPA-B9	0373.2612.02
Special Filter	UPA-B2	0373.1216.02
Filter Circuit Board, incl. control unit	UPA-B3	0373.1545.02
Customized Filter	UPA-B4	1002.1200.xx
DC Output	UPA-B1	0373.2512.02
Audio Test Disc	UPA-CD	0852.8400.02