



crown®

RTA-2 REAL-TIME AUDIO ANALYZER



EXPORTED AS AMCRON

RTA-2 Real-Time Audio Analyzer

The Crown RTA-2 Real-Time Audio Analyzer, requiring 7" (17.8cm) of vertical rack space, was designed for audio-range real-time spectrum analysis in 1/3 and full octave bands. All the sub-systems needed to perform quick, accurate on-site equalization of sound-reinforcement systems are included in the RTA-2. The unit is an affordable addition to the sound engineer's tool box, not merely a super sophisticated bench test unit. It can be used on stage, at the concert, or in the home.

If you are now attempting to equalize sound-reinforcement systems with chart paper, you are spending hours on the job. The RTA-2 can quickly pay for itself by letting you do the job in minutes.

Built in precision and convenience characterize the RTA-2. It includes its own 5" scope, a lighted graticule for photography and easier viewing in dim light, and a pink-noise generator. All you need to furnish is a sound pressure level meter or a balanced low-impedance microphone, preferably one whose frequency response is +1.0dB or better, 20Hz to 20KHz. (One AKG-451E microphone with CK-22 capsule and SA15-1 stand, a \$295 value, is available from Crown for only \$100 when purchased with the RTA-2). The RTA-2 has a built-in phantom power supply for condenser microphones.

Pink-noise output is balanced (XLR connector) or unbalanced at either line or MIC levels.

The RTA-2 is also convenient. Switch select 1/3 and 1 octave display. Controls grouped by function. Optional handles.

120 VAC power, 35 watts. A slow integration time of the display is switch selectable for averaging of the spectrum response. Speed selection is available separately for the 16Hz-630Hz filters and for the 800Hz-20KHz filters.

It weighs only 22 pounds (39 lbs. with optional carrying case which qualifies as carry-on luggage for air travel, 50 lbs. in optional shipping container which is recommended for air travel as checked baggage).

The full audio bandwidth, 16Hz to 20KHz, (compatible with full bandwidth equalizers) is displayed for accurate acoustic equalization utilizing a full 60dB of dynamic range.

The RTA-2 is versatile with two pairs of external inputs which may be X-Y displayed. Rear panel gain controls are provided for each input. Electronic beam gating prevents phosphor burns with no signal input. External display outputs are provided for hook-up to a storage scope or larger display.

"Hi-Low" calibrate positions on the input level attenuator provide a display of pink noise at two levels with a 20dB difference. Front-panel screwdriver adjustments are available for easy calibration.

The filtered signal is fed to precision full-wave detectors which are optimized for use in the RTA-2. Full-wave detection (rather than the 1/2-wave common in other units) provides a more accurate display for each frequency band. In addition, the pink-noise generator is pseudorandom which eliminates random drop-outs. The result is a more accurate real-time

equalization curve achieved sooner and with less effort.

The Crown RTA-2 is useful. For quick, accurate equalization of sound reinforcement systems. For vibration analysis of equipment with rotating or vibrating components. For X-Y comparison of component input and output to determine component distortion and establish available system headroom. For evaluation of speaker performance by comparing amp line output to speaker frequency curve. For scope analysis of component performance. For demonstration to clients of frequency response of components and systems.

Crown has built, for many years, sound-reinforcement system components which are legendary for their ability to endure abuse — whether that be physical damage, extremes of temperature, or long service without maintenance — and keep on functioning to specification. The RTA-2 is built to maintain that tradition. The RTA-2 carries a limited warranty to meet or exceed published specifications for 3 years from date of purchase. The sole exclusion of the warranty is the CRT, which carries a one year limited warranty, excluding breakage and phosphor burns. If the unit fails within the warranty period, Crown will pay for round-trip shipping to a designated repair center, and will repair the unit at no cost to the user.

The RTA-2 is a value. For only \$2395 you can enjoy the benefits of a superb real time analyzer and high quality microphone. It's an investment you need to make, today.

Architect Engineers Specifications

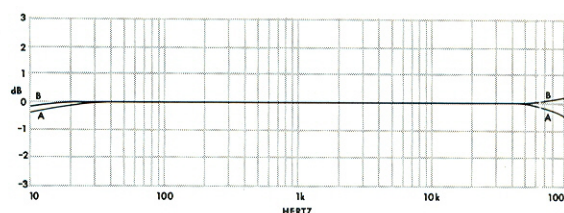
The audio analyzer shall be rugged, portable and easily calibrated. It shall be in a 19" rack-mounted configuration, with a 7" front panel. It shall be capable of displaying on a 5" CRT, in real time, the frequency-amplitude relationship of those frequencies from 16Hz to 20KHz. The dynamic range of the display shall be 60dB, while the vertical sensitivity shall be selectable between 5dB/division and 10dB/division. The format of the display shall be selectable between full octave and one-third octave, and the averaging time of the display shall have fast and slow modes, separately selectable for frequencies below 800Hz, and above 800Hz. There shall be two sets of x-y auxiliary input jacks, each jack with its own attenuator. The beam intensity of the CRT shall automatically be reduced when no signal is applied to prevent phosphor burn. The audio analyzer shall provide a 0-10V ramp at the horizontal scan rate for

driving external displays.

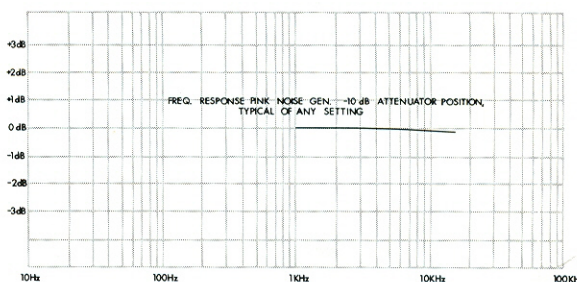
Within the audio analyzer shall be a pink noise generator of the pseudo-random, multiple feedback type. The accuracy of the pink filter shall be +.5dB from 16Hz to 20KHz, limited by .1dB Chebyshev filters at 10Hz and 40KHz.

A phantom power supply shall be included in the audio analyzer, supplying 18VDC for the operation of condenser microphones.

The warranty supporting the audio analyzer shall be an unconditional three year warranty on all parts but the CRT that not only provides for parts, labor, and shipping expense, but also holds that the audio analyzer shall meet or exceed its published specifications for at least three years. The CRT shall carry a one year warranty excluding breakage and phosphor burns. The audio analyzer shall be a Crown RTA-2.



Frequency Response: Mic. Amplifier;
A - 20 dB Gain
B - Minimum Gain



Frequency Response:
Pink Noise Generator

General Specifications

Frequency Range: 16Hz to 20KHz.

Filters: Thirty-two "single pole pair" 1/3 octave bandpass filters centered on 1/3-octave intervals.

Display Modes: 1/3 or 1 octave, push button selected. (Octave filters are combinations of 1/3-octave filters.)

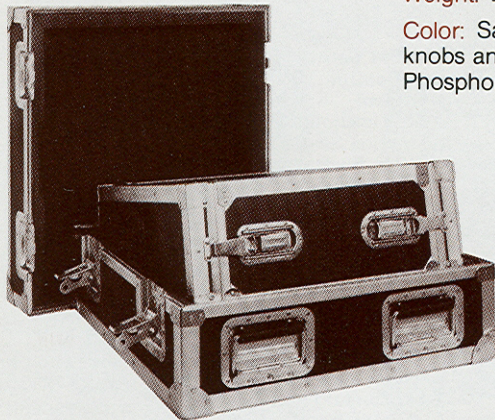
Sensitivity: *Sinusoidal test signal centered on any filter frequency in 1/3 or 1 octave display modes.

**Gaussian pink noise source whose intensity is referenced @ 1KHz.

The balanced (mic) preamp gain is adjustable from 10dB to 26dB using an internal gain set. Set to 20dB at factory. All filters and input amplifiers monitored for overload with catch-and-hold LED (red) with 75 msec hold time.

Indication	
Full Scale	-60dB
Unbalanced 15.2mv to 150v max in*	15.2uv to > .5v*
Balanced .76 mv to 3v max in*	.76uv to 3v max in*
Unbalanced 1mv/ $\sqrt{\text{Hz}}$ min**	1uv/ $\sqrt{\text{Hz}}$ **
Balanced 50uv/ $\sqrt{\text{Hz}}$ **	50nv/ $\sqrt{\text{Hz}}$ **

Environment: 0-50°C. Should be transported as baggage only in optional shipping case.



Beam Gate Threshold:
A - Aux. 1 Horz. Input
B - Aux. 1 Vert. Input

Overall Display Accuracy: (At any filter center frequency. Figures shown are for 5dB/division range. Add +1dB to figures if in 10dB/division range.)

Full scale to -40dB: $\pm 1.0\text{dB}$
-40dB to -50dB: $\pm 1.5\text{dB}$
-50dB to -60dB: $\pm 3.0\text{dB}$

Detector Time Constants: Full wave average responding detectors with dual time constant of 15ms and 47ms (fast) or 15ms and 375ms (slow), push button selectable.

Scan: 32 channels in 16.6ms.

Inputs: Unbalanced - 1 megohm (1/4" phone jacks front and rear, front priority).

Balanced - 2K ohm (female XLR connector on front).

Controls: Power switch (with orange LED "on" indicator).

Fast/Slow integration rate select (800Hz-20KHz).

Fast/Slow integration rate select (16Hz-630Hz).

(5 or 10) dB per division select.

Full or 1/3 octave display select.

Input level (0-70dB, 10dB steps; 40dB range vernier).

Internal balanced-input gain control.

Calibration: Two identified positions on input level control differ by 20dB $\pm 2\%$.

Dimensions: 19x7x15" (48.3x17.8x38.1cm) behind rack mounting surface. EIA 19" rack mount.

Weight: 22 lbs. (10Kg) net.

Color: Satin and charcoal grey with black knobs and bezel. Blue filtered graticule. Phosphor is P31 (blue/green at 2KV).

NOISE GENERATOR

Type: Pseudo-random multiple feedback, 20 stage, optimized for sonic performance.

Repetition rate: 2.1 second.

Pink filter accuracy: $\pm 5\text{dB}$, 16Hz-20KHz, limited @ 10Hz and 40KHz by .1dB Chebyshev filters.

Output:

Attenuator switch setting:	0dB	40dB	Connector
Balanced output	600 ohm	50 ohm	Male XLR front
Unbalanced output	300 ohm	25 ohm	1/4" phone jack front and rear

Controls: On/Off (push/pull). Output level vernier attenuator.

Max output level: 1.1v rms min, crest factor 4.4.

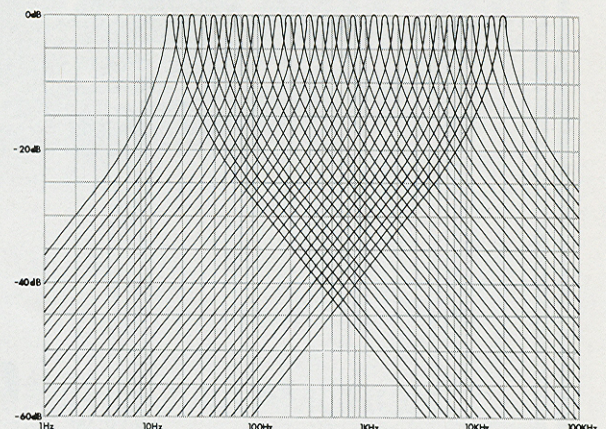
DISPLAY CRT

Outputs: 0-10v ramp at scan rate for external display driving (f axis) 2-8v log output (10dB/volt) (amplitude axis). Both outputs are 600 ohm unbalanced with rear-panel phono jack connectors.

Inputs (external): Two sets of X-Y inputs may be switch selected (Aux 1, Aux 2). Each input has rear-panel phono jack and attenuator control. Input impedance 25K ohm 30%. Beam intensity automatically reduced if no signal (2 sec. delay) to prevent phosphor burn.

Controls: Intensity, focus, graticule illumination, horizontal gain*, horizontal position*, vertical gain*, vertical position, input select, astigmatism (rear).

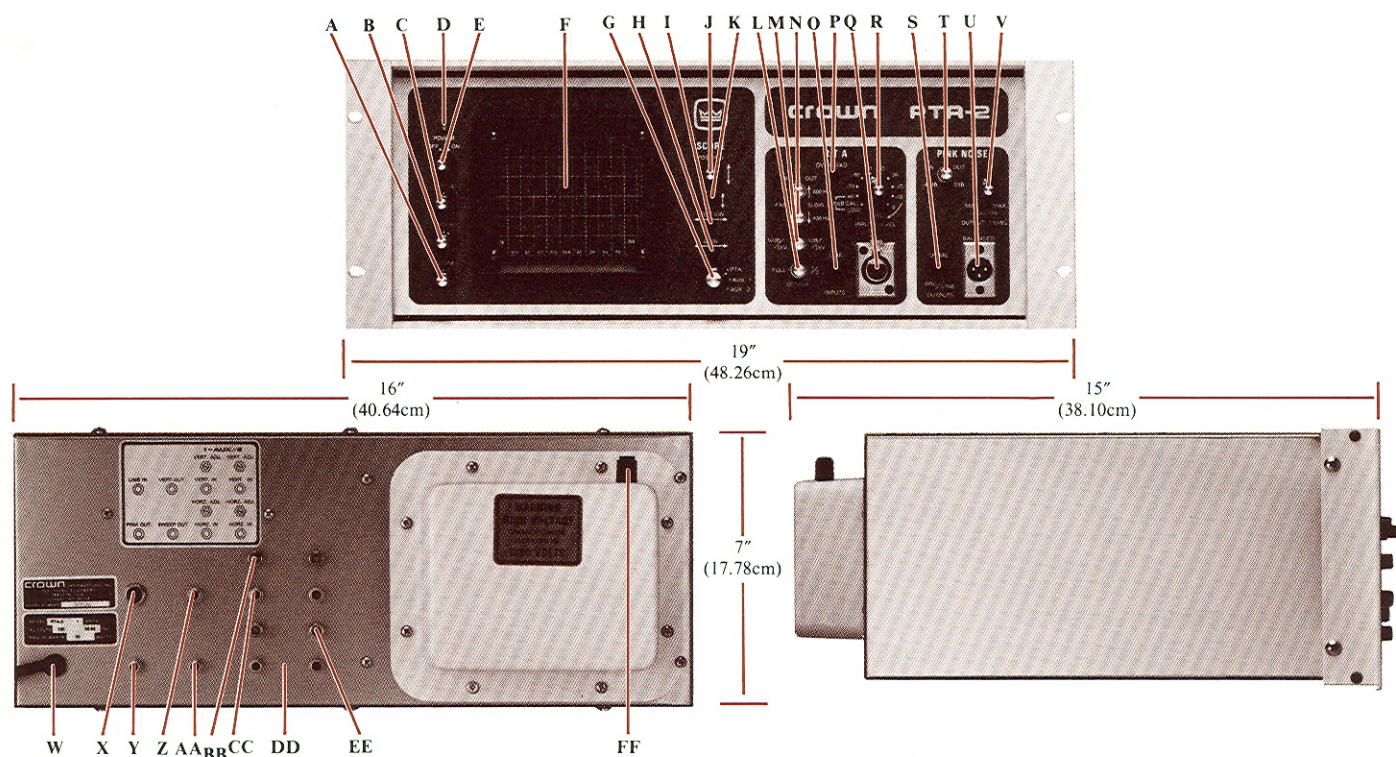
*Screwdriver adjust.



* Does not conform to any ANSI class

1/3 Octave Filter Characteristics

Controls - Connections - Dimensions



A-Illumination Control
B-Intensity Control
C-Focus Control
D-Power On LED
E-Power On/Off Switch
F-5" CRT Graduated Display
G-Function Switch
H-Horizontal Gain Control

I-Horizontal Position Control
J-Vertical Position Control
K-Vertical Gain Control
L-Full - 1/3 Octave Function Switch
M-dB/Division Function Switch
N-Fast/Slow Function Switches
O-Line Input Jack (1/4" Phone)
P-Overload LED Indicator

Q-Mic Input Jack
R-Input Level Control
S-Unbalanced Mic/Line Output Jack (1/4" Phone)
T-Signal Strength Switch
U-Balanced Mic Output
V-Output Level Control
W-AC Power Line
X-Line Level Input Jack (1/4" Phone)

Y-Pink Noise Output Jack (Pin)
Z-Vertical Output Jack (Pin)
AA-Sweep Output Jack (Pin)
BB-Vertical Adjust Controls
CC-Vertical Input Jacks (Pin)
DD-Horizontal Input Jacks (Pin)
EE-Horizontal Input Controls
FF-Astigmatism Control



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1718 W. Mishawaka Road, Elkhart, IN 46517

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