AudioControl Industrial™

SA-3051, SA-3052

Real Time Spectrum Analyzer

The Legend Improves

One-Third Octave Spectrum Analyzer, Memories, Pink Noise, and More

Product Description

The SA-3051 and SA-3052 are microprocessor-controlled, one-third octave, real time spectrum analyzers. They are affordable, rugged, reliable, easy to use, fast to setup, and designed and manufactured by audio enthusiasts who have been building spectrum analyzers for twenty years. This is a true professional instrument at a very favorable price which has made this family of analyzers the world's most popular.

The SA-3051 and SA-3052 come with a complete range of features including pink noise generator, calibrated microphone, memories, SPL functions, ability to average memories, peak hold utilities, comprehensive manual, and large, easy to read display. The SA-3052 is very portable since it also contains an internal battery pack and smart charger, the ability to drive a printer directly, and comes with a carrying case as standard equipment.

Results are easy and quick to achieve since the SA-3051 and SA-3052 are completely self-contained, stand alone devices which do not need a computer to operate. The time from turn on to making measurements is less than three seconds. There is no training necessary.

With their all-metal construction and very rugged design, these are honest products that will last, and be accurate, for many years to come.

Features Summary

- 30 one-third octave bandwidth filters
- fourth order filters conforming to ANSI standards
- internal powered pink noise source to drive any load
- 9 X 30 LED large format display with 1 dB resolution
- six internal memories with lithium battery backup
- averaging for six stored response curves
- four display speeds; fast, medium, slow, 20 second average
- peak hold on frequency response and SPL
- SPL bargraph and full screen digital readout
- 92 dB display range
- signal input from balanced microphone input, balanced phone jack or unbalanced RCA connector
- battery operation (SA-3052)
- parallel printer interface (SA-3052)
- carrying case (SA-3052)
- rack mount (optional)
- A and C weighting (optional)

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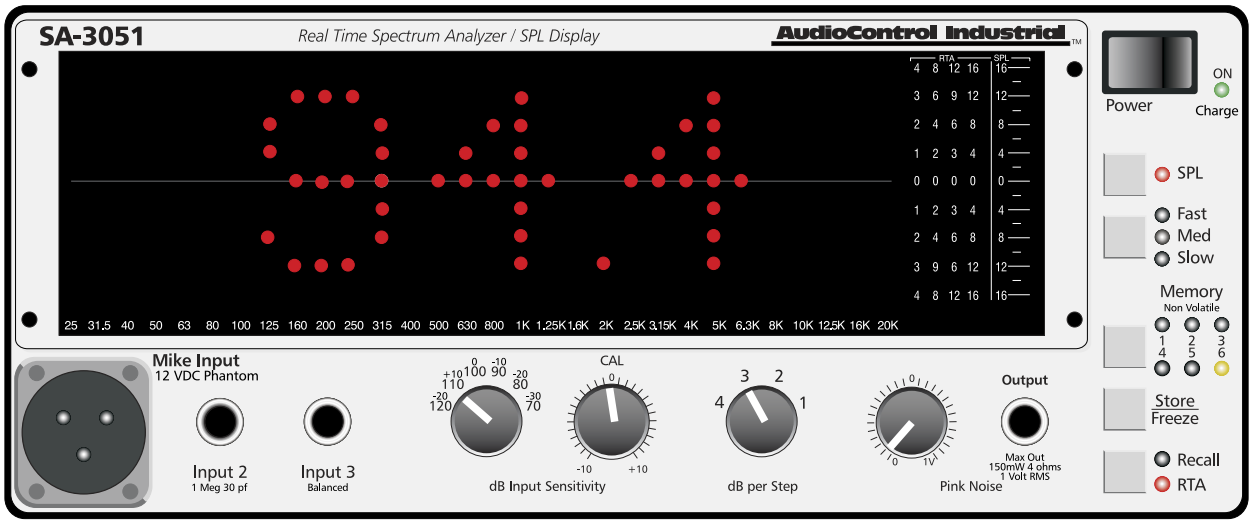

Front Panel Features

LED Display

The left portion of the display shows the one-third octave energy content of the input signal from 25 Hz to 20kHz. Each column within the display represents one one-third octave band. The band centers are marked on the bottom of the screen. The right-hand end of the display indicates the setting of the **dB** switch, and consequently the amount of change in the input signal that each LED on the left- hand side of the display represents.

Power Switch

Depressing the **Power** switch turns the SA-3051/SA-3052 on and off.

Low Batt/Power LED

The **On/Charge** indicator illuminates solid green during normal operation of the SA-3052 and SA-3051. When operating the SA-3052 on the internal rechargeable batteries, a flashing green LED indicates that the batteries need recharging. Once the Low Batt LED has begun flashing, there is approximately ½ hour of battery life remaining. The SA-3052 has a sense circuit that prevents operation of the instrument below critical battery cell voltage. This prevents total battery discharge, which shortens the cell life.

To continue operation, the SA-3052 may be operated from the AC power line. The batteries may be recharged by plugging the SA-3052 into a suitable source of AC power, with the front panel **Power** switch set to the **Off** position. The power LED will glow red while the batteries are charging and flash occasionally when fully charged.

SPL

Momentarily pressing the **SPL** push-button switch toggles the **SPL** bargraph at the right side of the display window on and off. Pressing and holding the **SPL** push-button activates the full-screen digital **SPL** display. The associated LED indicator indicates the status of the **SPL** switch.

Display Speed

The display speed push-button switch is located underneath the SPL switch and to the left of the **Fast, Med** and **Slow** LEDs. The lighted LEDs to the right of the switch indicate the response time of the display. The Fast setting is optimized for looking at transients, the Med setting is useful for program monitoring, and the Slow setting averages 20 samples over a one second period. This works well for measurements using pink noise. A fourth display speed is a 20 second time average. It is indicated by the **Slow** LED flashing.

Memory

The SA-3051/SA-3052 can store up to six different frequency response curves (including the SPL display) in its internal non-volatile memory. These memories are stored at the highest resolution of the SA-3051/SA-3052, so you can scale the display with the **dB/Step** switch during memory recall. Any combination of the memories can also be averaged. An internal back-up battery maintains the contents of the memory for periods of up to ten years, even with the AC power supply disconnected.

Store/Freeze

The **Store/Freeze** switch freezes the display and stores the contents of the display in the memory indicated by the memory LEDs. Pressing and holding the Store/freeze push-button activates the averaging function. The calculated average is stored in memory register six.

Recall-RTA

The **Recall-RTA** push-button switch alternately selects between the normal real-time analyzer mode and the memory-recall mode. The associated LEDs indicate the selected mode.

Pressing and holding the **Recall-RTA** switch activates the peak-hold function. The analyzer now displays the highest peaks of the input signal on a real-time basis.

Pink Noise

The internal pink-noise generator is a digital, laboratory-grade test source accurate throughout the measurement range to within 0.25dB. The maximum output provided at the ¼" tip-sleeve phone jack is 1 volt into a 600 ohm load (unbalanced, ring and sleeve grounded), or 150 mW into a 4 ohm load. The signal level at this connector is controlled by the knob to its immediate left. The pink noise generator has sufficient output to drive virtually any speaker or crossover directly.

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dB Per Step

This switch sets the resolution of the spectrum analyzer portion of the display. The setting represents the value of each LED in the display. Thus, a setting of 1dB per step causes each LED to represent a 1dB change. At the 4-dB-per-step setting, each LED represents a change of 4dB, with a 36dB overall display range.

Memorized response curves are always stored at 1-dB-per-step-resolution, regardless of the setting of the front panel switch. You can select whatever resolution you wish for a stored memory when it is displayed and know that it is accurate.

dB Input Sensitivity

The **dB Input Sensitivity** control and switch select the reference level of the curve shown in the display window. The control to the right of the input selector switch is a fine adjustment and alters the range selected by the switch over an area of ±10 dB. The normal setting for this control is the detented (click-stopped) center position.

Input 3

A ¼" tip-ring-sleeve phone jack is used for connecting to balanced and unbalanced sources. Connect unbalanced sources by using a tip-sleeve (2 conductor) plug inserted into this jack. This input has an impedance of 10 kohms and is suitable for signal levels from -56dBu to +36dBu. An input signal of 0dBu represents 100dB SPL.

Input 2

This is a standard audio (RCA) connector with an input impedance of 1 Mohm in parallel with 30 pF. The particular combination of resistance and capacitance allows connecting a standard audio source to this input. This input is suitable for signal levels from -56dBu to +36dBu. An input signal of 0dBu represents 100dBSPL.

Input 1

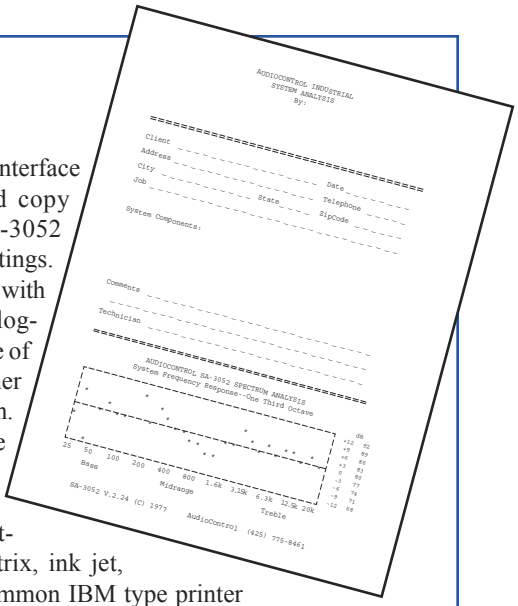
This is a standard +12 volt, phantom-powered, balanced microphone input. The phantom power supply is intended for the AudioControl Industrial CM-10 or high SPL measurement microphones. Ordinary dynamic microphones may also be connected directly to this input providing that they have a balanced output. Unbalanced microphones may not be used. This input is suitable for acoustical levels at the microphone ranging from 44dB SPL to 136dB SPL. The SPL display is only accurate if the AudioControl Industrial CM-10 microphone is used, or if the external microphone matches the sensitivity of the CM-10 microphone.

SA-3052 Additional Features

Battery Pack

The battery pack allows the SA-3052 to operate without connection to AC mains supply. The gel cell battery supply has sufficient capacity to operate the unit continuously for about 4 hours. An internal smart, battery charger functions when the SA-3052 is plugged into AC and automatically adjusts the rate of charge. The power LED on the front panel glows red when the unit is charging its batteries and flashes as full charge is reached.

Printer Interface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SYSTEM ANALYSIS
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Technician
AUDIOCONTROL SA-3052 SPECTRUM ANALYSIS
System Frequency Response--One Third Octave
Bass
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Treble
SA-3052 V.2.24 (C) 1977
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The internal printer interface allows making hard copy printouts of the SA-3052 display and level settings. The printout is a form with space provided for logging the time and date of the job as well as other important information. The printer interface will connect directly to any Centronics-type parallel compatible printer (dot matrix, ink jet, laser, etc.) with a common IBM type printer cable. The SA-3052 does not require a computer or any special printer control codes or emulations.

Carrying Case

The SA-3052 come standard with a soft style, padded, carrying case. The case includes a large pocket on the front for transporting cables, microphone, and power cord. Included are both shoulder and hand carrying straps as well as an access hatch on the bottom for easy charging of the batteries while the unit is in it's carrying case.

Special Product Characteristics

Simple, Easy to Use

- Point and Shoot

No menus, no mouse and no training programs to run the SA-3051 and SA-3052. From the first seconds, you are making measurements— not setting parameters or trying to remember commands. One minute you can be using it on stage and the next for checking out components

Rugged and Reliable

- Built to Last

In its metal case and with its sturdy, real world construction, the reliability of the SA-3051/52 is legendary. Over the years, various units have still functioned after studio fires, rolling down stairs, and being run over by trucks.

Self-contained

- No pluggy, just play

With its built-in pink noise generator and functioning on its own operating system, the SA-3051 and SA-3052 are quick setup, stand alone analyzers which do not depend on an expensive PC or other gear. No updating of operating systems or hassles of a computer. Just flip the power switch and you are in business.

Many Other Uses

- Level Setting and Testing

Top performance comes from careful level setting, something not easy to do by ear. The balanced phone and RCA inputs make setting level as simple as plugging in each component and adjusting the voltage. If you want to test a component, use one of these line level inputs to insure everything is working

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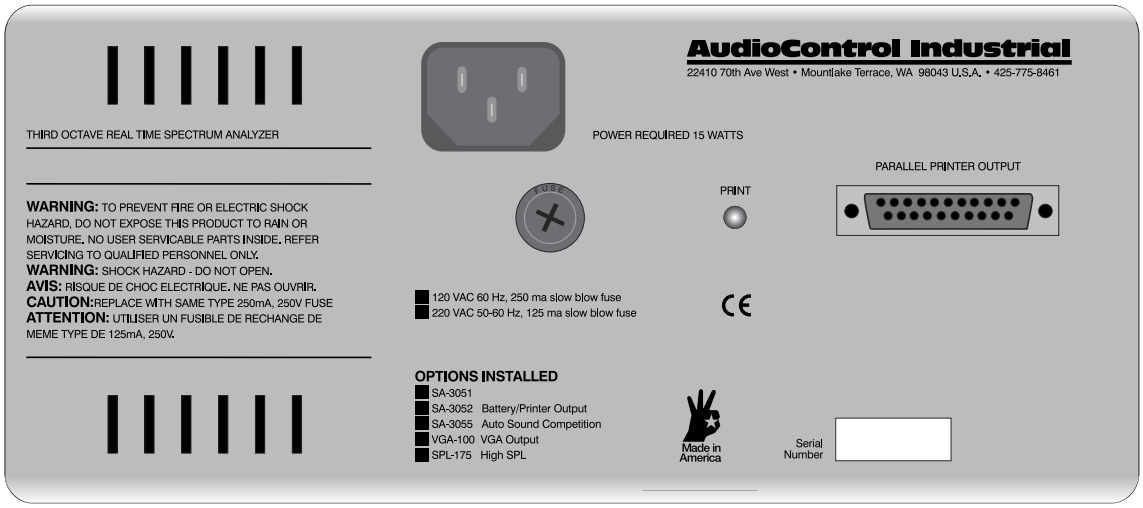

Specifications

Instrument type:
Professional, digitally-controlled, acoustic analyzer, measures one-third octave frequency response and sound pressure level, completely self-contained and portable.

Inputs: (all three inputs are unweighted)

One balanced, low impedance, +12V phantom powered, 3 pin XLR (Neutrik D), microphone type, suitable for 44dB to 136 dB maximum standard

One high impedance (one megaohm), unbalanced RCA type, suitable for -56 to +36 dBu, zero dBu=100 dB SPL

One high impedance (10K ohm), balanced 1/4" tip, ring, sleeve type, suitable for -56 to +36 dBu, zero dBu=100 dB SPL

Outputs: Pink noise, unbalanced 1/4" type, with 150 mW and level control

Printer (SA-3052 only), centronics parallel, DB-25 standard connector, multiple output formats automatically generated based on program selected.

Display: Screen; high brightness and contrast, large viewing angle, 2.5" high by 7.8" long, 9 X 31 LED matrix

Resolution; frequency response, 1,2,3, or 4 dB per LED, setable from front panel; SPL, in centibels (one-tenth decibels), both display types have peak hold options

Decay Time; fast, medium, one second averaged slow, 20 second averaged slow

Frequency centers; 30 one-third octave bands from 25 to 20 kHz on ISO preferred 1/3 octave center frequencies.

Microphones:
For both microphones; electret, flat response, omni-directional, condenser type with 3 pin XLR connector. 15 foot cable supplied, maximum cable length recommended is 250 feet.

Standard, 4 inch, short nose, nickel plate, tube. Suitable range is from 44 dB to 136 dB SPL.

Due to continuing product improvement, specifications are subject to change without notice, like the Pacific Northwest weather. This fact sheet written on a really grey and gloomy day brightened by a great product.

SPL: Large digital readout, peak hold on highest SPL, fast capture timing via microprocessor.

Batteries: Memories, internal lithium battery backed cmos RAM, for six memories.

Operating (SA-3052 only); internal gel cells with integral charging circuit, charging status via two color power LED on front of unit. No separate charger required. Continuous operation capacity is about four hours, intermittent use, five hours. 50% re-charge in three hours.

Physical: Dimensions, smaller than a breadbox, 4.1" tall, 10" wide, 13.5" deep. 2" high, Flip out front feet for easy viewing.

Weight, complete package, carrying weight, SA-3051, 8 pounds; SA-3052, 11.5 pounds

Soft carrying case (SA-3052), large front pocket for microphones, cables and power cord. Shoulder and hand carrying straps with quick release connectors. Bottom power cord access flap for effortless battery re-charging.

Country of Origin:
United States of America

Product Configurations

SA-3051: Analyzer, CM-10 microphone

SA-3052: Analyzer, CM-10, internal re-chargeable battery pack, printer interface, carrying case

Accessories

RM-10 Heavy steel 19 inch rack mount adaptor. Requires 3 (5.25 inches) rack spaces

AC-10 Plug-in A & C weighting filter (XLR input)

SRD-10 Compact Disc with numerous test signals. Signal generator on a compact disc

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