



RIONOTE

The groundbreaking multi function measuring system from RION

Compact design, easy and intuitive operation

Wireless connections

Use it anytime anywhere!



Analysis result display examples

FFT analysis

RIONOTE enables you to perform FFT analysis on multiple channels simultaneously. The results are shown in clear graphs on the large color screen, in real time, or from stored data when using the recall function. A marker allows you to scroll through the data, and enables the readout of the level of a frequency of interest.



Transfer function

The transfer function represents the relation between an input signal and output signal in the frequency domain, allowing the determination of amplitude and phase. In this mathematical calculation category, the RIONOTE supports coherence function and cross spectrum processing.



Waveform recording

By using the waveform recording program, it is possible to display and record the time waveform of the incoming signal(s). Available recording time depends on the number of input channels and the selected frequency range. The figure below shows a time waveform displayed on the screen of the Main Control Unit.



Waveform post processing

After completing waveform recording (as explained above), the stored waveforms can be displayed on the Main Control Unit's large screen, and played back by using the earphone jack output. Moreover, various secondary post processing functions for the waveform data are available in the Main Control Unit, including FFT analysis as shown in the screen example below.



RIONOTE is combining the newest quality, ease of use and economical sense, which can be configured to up to 16 channels anywhere wireless. The Main Control Unit is program of your choice. All on a large color screen both programs and hardware for this mea



RIONOTE

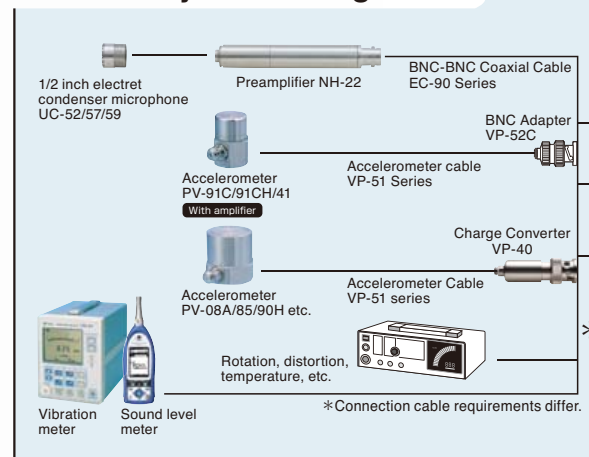
Main Control Unit and Amplifier

Supports direct connection of microphones and piezoelectric accelerometers.



Sensor amplifier slides into the underside of the Main Control Unit

RIONOTE System Configuration



technology with the traditional virtues of RION;
 RIONOTE consists of a Main Control Unit SA-A1
 channels and allowing you to perform measurements
 as easy and intuitive to operate, with the dedicated
 or touch screen. RION will continuously develop
 measuring system of the future.



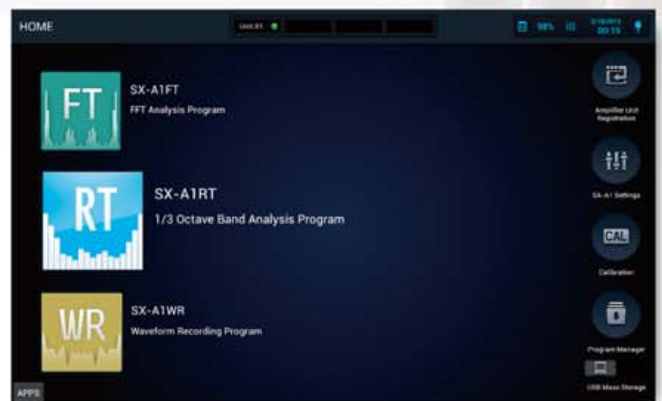
Octave band analysis

Real time analysis of noise or vibration levels for evaluation and designing countermeasures is usually performed by means of octave band analysis (using either octave bands or 1/3 octave bands). The below screen sample of the RIONOTE displays octave analysis results in 4 channels as a graph and numeric values at the same time.



RIONOTE intuitive user interface

Lets the user select the required program for the respective purpose: SX-A1FT (FFT analysis), SX-A1RT (octave band analysis), or SX-A1WR (waveform recording). The right side of the screen provides access to various settings.



RIONOTE also enables the use of a wireless dock or wireless sensor amplifiers to avoid the cost and hassle of cables. A plurality of wireless docks and wireless sensor amplifiers can be used simultaneously, up to 16 channels, to store the measured data in the Main Control Unit as well as in the memory of wireless dock or wireless sensor amplifiers.



Wireless Dock and Amplifier

Separate type wireless dock and amplifier (2 channel or 4 channel configuration)

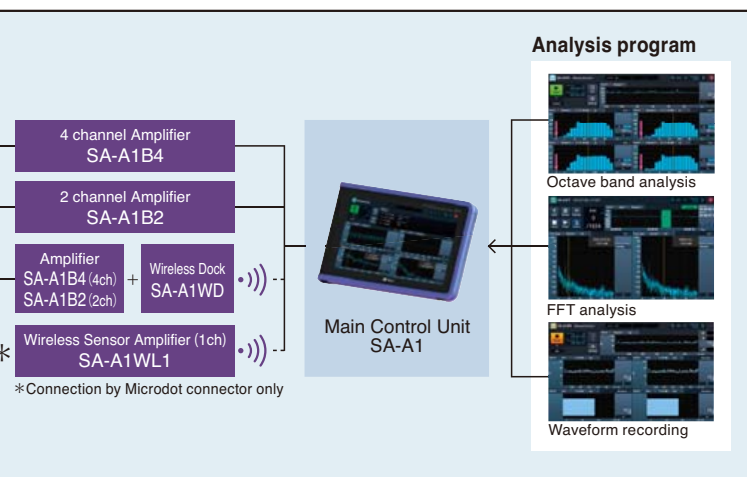
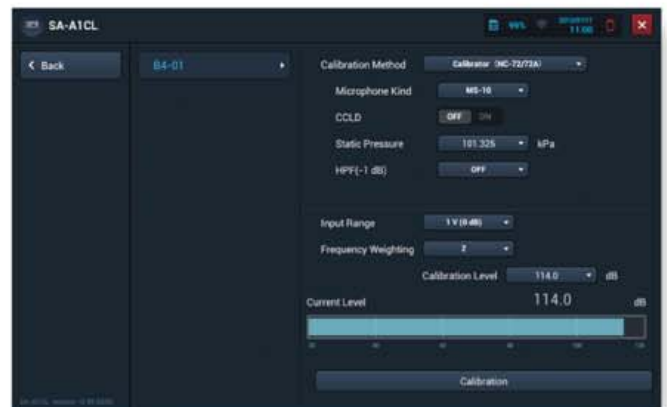


Wireless Sensor Amplifier

Integrated type wireless dock and amplifier (single channel configuration)

RIONOTE calibration screen

Serves for calibration of microphones or accelerometers connected to the SA-A1.



■ Specifications

RIONOTE Main Control Unit SA-A1, RIONOTE 4 channel/2 channel Amplifier SA-A1B4/B2

| | |
|-----------------------------------|---|
| Input section | |
| Number of channels | 4 (2), BNC connectors |
| Max. input voltage | ±13 V |
| CCLD | 2 mA 24 V |
| Amplifier section | |
| Frequency Range | DC to 20 kHz or 1 Hz to 20 kHz |
| Input range | -40 dB to 20 dB, 20-dB steps, 0 dB ref. $V_{rms} = 1 V$ |
| Residual noise | At range full-scale: -85 dB or less (0 dB range, AP level) |
| Dynamic range | 100 dB or better (0 dB range, $f_s = 51.2 \text{ kHz}$, 400 line FFT noise level) |
| Phase difference between channels | ±1 deg. or less (1 Hz to 20 kHz, same input range) |
| A/D converter section | |
| A/D converter | 24 bit, delta-sigma type, simultaneous sampling |
| Sampling frequencies | 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz, 48 kHz, program dependent |
| Display | |
| Touch panel | 10.1 inch TFT color LCD, 1 280 x 800 pixels |
| Touch panel | Multi-touch |
| Input/output section | |
| USB | USB 2.0 Type B x 1 |
| Earphone jack | Yes |
| SD card slot | Yes (SDHC support, max. 32 GB) |
| DC input | |
| Number of channels | 1, BNC connector |
| Input voltage range | 0 to 10 V |
| A/D converter | 10 bit successive approximation type |
| Sampling frequency | Approx. 1 Hz |
| Other items | |
| External trigger | |
| Max. trigger input voltage | 5 V |
| Trigger threshold | TTL |
| Other trigger specifications | Open collector supported, internal pull-up 3.3 V |
| Power supply | Li-Ion battery (battery life approx. 4 hours, depending on usage conditions), AC adapter |
| Dimensions, Weight | 188 (H) x 275 (W) x 30 (D) mm SA-A1: 1 200 g (incl. 280 g battery, SA-A1B4 mounted) |
| Operating temperature range | -10 °C to +50 °C |

RIONOTE Wireless Dock, SA-A1WD (and Amplifier SA-A1B4/B2)

| | |
|----------------------------------|---|
| Input | 4 or 2 channels (Amplifier SA-A1B4/B2 needed) |
| Signal transfer to main platform | |
| Wired | Ethernet 100 base-TX |
| Wireless | WLAN (IEEE802.11a/b/g/n, 2.4/5 GHz), ZigBee (IEEE802.15.4, 2.4 GHz) |
| Distance of wireless transfer | about 50 m* |
| Interface | USB2.0 (miniB, data output to PC) |
| Memory | SD card (on Amplifier SA-A1B4/B2) |
| Power supply | 8 IEC R6 (sizeAA) batteries, AC adapter |
| Dimensions, Weight | Approx. 42 (H) x 193 (W) x 95.6 (D) mm, Approx. 500 g (incl. battery) |

* Depending on usage conditions

RIONOTE Wireless Sensor Amplifier, SA-A1WL1

| | |
|-------------------------------|--|
| Input | 1 channel (Microdot connector) |
| Signal transfer to platform | |
| Wired | Ethernet 100 base-TX |
| Wireless | WLAN (IEEE802.11a/b/g/n, 2.4/5 GHz), Zigbee (IEEE802.15.4, 2.4 GHz) |
| Distance of wireless transfer | about 50 m* |
| Interface | USB2.0 (miniB, data output to PC and power supply) |
| Memory | Internal memory (2 GB) |
| Power supply | Li-Ion battery, AC adapter |
| Dimensions, Weight | Approx. 21 (H) x 54 (W) x 83.5 (D) mm, Approx. 100 g (incl. battery) |

* Depending on usage conditions

SX-A1FT, RIONOTE Program for FFT

| | | |
|--|---|--|
| General real-time analysis processing | | |
| Processing outline | FFT analysis (non-continuous frames when used in real time) | |
| Number of channels | Max. 4 channels | |
| Analysis frequencies | 51.2 kHz, 25.6 kHz, 12.8 kHz, 5.12 kHz, 2.56 kHz, 1.28 kHz, 512 Hz, 256 Hz | |
| Trigger | Trigger modes | Free, Single, Repeat |
| | Trigger source | Waveform, External, Rotation speed |
| | Trigger position | ± $\frac{1}{N}$ (N: number of analysis points) |
| Arithmetic functions | Time waveform for 1 frame, Power spectrum, Cross spectrum, Transfer function, Coherence | |
| Window functions | Rectangular, Hanning, Flat-top, Exponential, Force | |
| Number of analysis points | 256, 512, 1 024, 2 048, 4 096, 8 192, 16 384 | |
| Averaging and other processing functions | Average, Exponential Average, Max Hold | |
| Number of averaging runs | 1 to 1 024 | |
| General post-analysis processing | | |
| Outline | FFT analysis of WAVE files recorded with WR function | |
| Number of channels | Max. 4 channels | |
| Arithmetic functions | Time waveform for 1 frame, Power spectrum, Cross spectrum, Transfer function, Coherence, Overall, Partial overall | |
| Window functions | Rectangular, Hanning, Flat-top, Exponential, Force | |
| Number of analysis points | 1 024, 2 048, 4 096, 8 192, 16 384, 32 768 | |
| Overlap ratio | 0 %, 25 %, 50 %, 75 % | |
| Averaging and other processing functions | Average, Exponential Average, Max Hold | |
| Number of averaging runs | 1 to 1 024 | |

SX-A1RT, RIONOTE Program for 1/3 Octave Analysis

| | | |
|--|--|---|
| Standard compliance | JIS C1513 Class 1, JIS C1514 Class1, IEC 61260:1995 Class1, ANSI S1.11-2004 Class1 | |
| Band filter center frequencies and number of bands | | |
| Octave bands | 0.5 to 16 000 Hz, 17 bands | |
| 1/3 octave bands | 0.4 to 20 000 Hz, 49 bands | |
| Instantaneous value data (every 100 ms) | Time weighted level L_p , Time averaged level L_{eq} , Time weighted maximum level L_{max} | |
| Processing value data | Time averaged level L_{eq} , Sound exposure level L_E , Time weighted maximum level L_{max} , Time weighted minimum level L_{min} , Time percentile level L_N (5, 10, 50, 90, 95, 33.3), max. 5 values | |
| Store function | Auto/Manual | |
| Time weighting characteristics | F (Fast) 125 ms, 630 ms, S (Slow) 1 s, 10 s | |
| Frequency weighting characteristics | A, C, Z | |
| Trigger | Trigger modes | Free/Single/Repeat |
| | Trigger source | AP level, Band level, External signal, Time |

SX-A1WR, RIONOTE Program for Waveform recording

| | | |
|------------------------------|---|---------------------------------------|
| Number of recording channels | 1 to 4 channels + rotation or DC (1 s intervals) | |
| Sampling frequencies | 51.2 kHz, 25.6 kHz, 12.8 kHz, 2.56 kHz, 1.28 kHz, 256 Hz | |
| Quantization | 16 bit/24 bit | |
| Trigger | Trigger modes | Free/Single/Repeat |
| | Trigger source | Waveform/Time/External/Rotation speed |
| Voice memo marker function | Yes | |
| Monitor output (playback) | Allows listening to recorded data (51.2 kHz, 25.6 kHz, 12.8 kHz only) | |
| Recorded data | WAVE format | |

* Windows is a trademark of Microsoft Corporation.

* Specifications subject to change without notice.


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