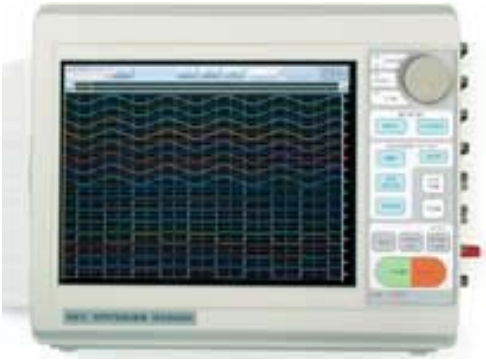
Data Acquisition System

OMNIACE RA2300



RA2300

FEATURES

● **Simple“Pen-recorder”Mode**
Visualized amp.setting-display & touch panel provide simple operation like Pen-Recorder.

● **Direct input from Sensors**
11 types of input amp. are available for Voltage, Strain, Temp, Vibration,Pressure, F/V and other signal input.

● **High-speed thermal printing**
Chart speed 100mm/s (recording density : 20 dots/mm) to 1mm/min (recording density 80 dots/mm) is selectable.

● **Standard LAN and USB I/F**
LAN (100BASE-T) for data communication, and USB (1.1) for connecting to external storage device are equipped as standard I/F.

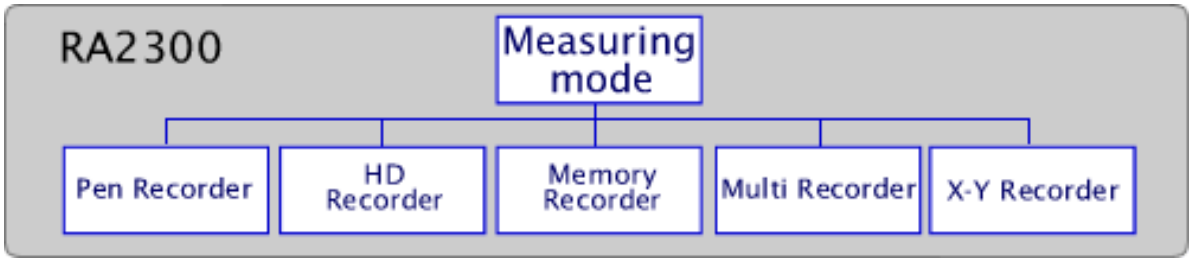
● **Dynamic wave form in Wide Display**
12.1 inches TFT color display improves visibility of measuring data

● **Large size HDD like 120days-recording**
Built-in large capacity 40GB HDD enables 120 days-recording (based on sampling speed 10ms, 16ch)

● **16 ch Analog + 16 ch Digital**
Max. 16ch signal inputs (8 slots) are prepared or various sensors. And 16ch Digital are available separately from these input slots at option, for measurement of diverse signal-timing and contact-condition.

Select most suitable measurement mode for your application

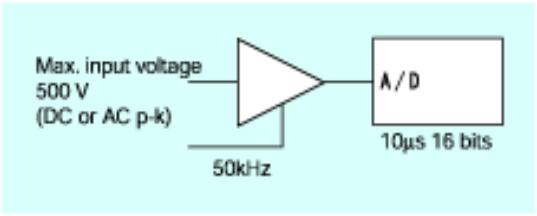
5 measurement modes are available, such as Pen-Recorder like pen-writing recording, HD-Recorder for long term recording.Each measurement mode is dedicated for each application. OMNIACE III RA2300 offers simple and certain operation for exact data acquisition.



Selection of input unit according to easurement target

2-ch high-resolution amp (AP11-101)

This is a DC amp that can record at a high resolution of 16 bits. Channels are isolated from each other and have a withstand voltage for input of 500 V max. (DC or AC peak values). This amp contains two channels per unit.



TC/DC amp (AP11-107)

This amp can be used as a thermocouple amp or DC amp. When temperature measurement using a thermocouple amp and voltage measurement using a DC amp are necessary, this amp is useful because no amp replacement is required.Moreover, four types of thermocouples, R, T, J, and K, can be connected and high-speed temperature measurement as fast as 10 µs is possible. This amp contains one channel per unit.

Event amp (AP11-105)

This amp is a logic amplifier that can input eight channels of voltage or contact signals. It is useful for measuring timing or contact signals.
Voltage input: Input voltage 0 to 24 V
H level: 2.5 V or higher
L level: 0.5 V or lower
Contact input:
Open: 2 kΩ or higher
Short: 250Ω or lower

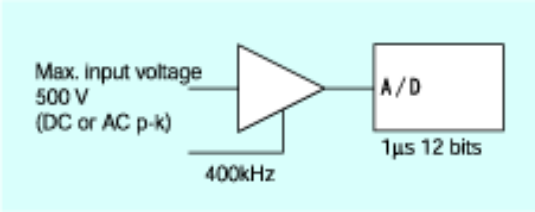
2-ch AC strain amp (AP11-104)

This amp is a 2-channel amplifier that inputs signals from strain gauges or straingauge based sensors. Due to the AC bridge type, it features high noise resistance(against the noise caused by the line voltage), high stability, and a high resolution of 16 bits. Low-noise measurement is possible for measurement using strain gauges, which do not have any shielded wires.
Auto-balance
Bridge voltage: 5 kHz, 2 V rms
Response frequency: 0 to 2 kHz
Gauge factor adjustment function: 1.9 to 2.2

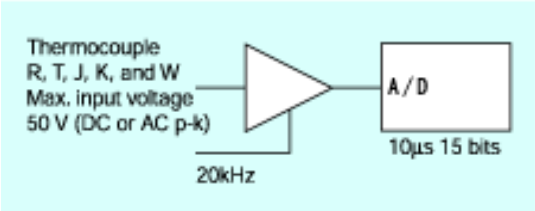
2-ch DC strain amp (AP11-110)

This amp is a 2-channel amplifier that inputs signals from

2-ch high-speed DC amp (AP11-103)
This is a DC amp that can acquire data at a high-speed sampling rate of 1 µs.Channels are isolated from each other and have a withstand voltage for input of 500 V max. (DC or AC peak values). This amp contains two channels per unit.



2-ch TC/DC amp (AP11-106)
This amp can be used as a thermocouple amp or DC amp. When temperature measurement using a thermocouple amp and voltage measurement using a DC amp are necessary, this amp is useful because no amp replacement is required.Moreover, five types of thermocouples, R, T, J, K, and W can be connected and high-speed temperature measurement as fast as 10 µs is possible. Channels are isolated from each other and have an input voltage of 50 V max. (DC or AC peak values). This amp contains two channels per unit.



strain gauges or strain gauge based sensors. Due to the DC bridge type, it features measurement of high-speed strain signals at a high resolution of 16 bits.
Auto-balance
Bridge voltage: 2 VDC, 5 VDC
Response frequency: 0 to 50 kHz

2-ch vibration/RMS amp (AP11-109)
This is a 2-channel amplifier that features a constant-current power supply for amp-embedded sensors, an RMS conversion function, and a band-pass filter.The RMS function in this amp is effective for monitoring the basic frequency level fluctuation in rotation equipment and the fluctuation of the AC power level.For vibration measurement, an amp-embedded charge sensor can be directly connected to this amp unit. For voltage measurement, 500 V (DC or AC peak values)can be directly input. In addition, the band-pass filter offers filtering of necessary frequencies to perform the RMS conversion so that clear waveforms for judgment are available.
Power for sensor: 2 mA/18 V or higher
Voltage measurement range: 100 mV to 500 V
Band-pass filter: -24 dB/oct
A/D: 16 bits

2-ch FFT amp (AP11-102)
This is a 2-channel amplifier that incorporates an anti-aliasing filter required for the FFT processing and the power for an amp-embedded sensor (constant current).The anti-aliasing filter has a dropout feature at -72 dB/1.5 fc so that the aliasing generated in FFT can be eliminated.
Power for sensor: 2 mA/18 V or higher
Voltage measurement range: 100 mV to 500 V
A/D: 16 bits
Fmax: 40 kHz

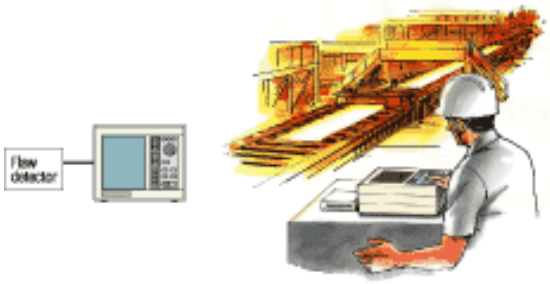
F/V converter (AP11-108)
This unit offers frequency-to-voltage conversion, which is useful in recording rotation changes and revolutions in rotation equipment.
Input frequency: 10 kHz max.
Response time: 20 ms (Range of 10 kHz)

Application

Flaw Detection in Conveyor Line in Steel Mill

Operation Test of Power Switchboards and Production Facilities

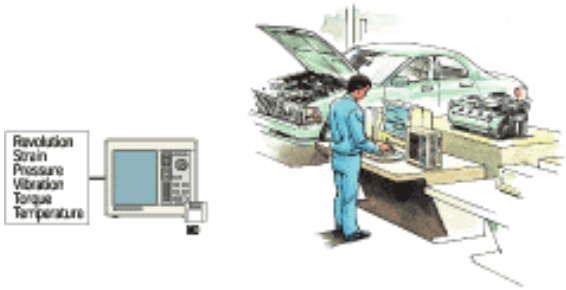
By using the filing function, which operates synchronously with external signals, data can be acquired for a long term. Since the RA1000 Series is small and compact, it does not occupy a large measurement space.



The RA1000 Series is used to measure the operation timing of relays and voltage and current changes in the main power for operation.

Torque Measurement of Engines or Motors

In automobile testing, measurement of revolution, strain, pressure, vibration, torque, temperature, etc is executed. The RA1000 Series incorporates a variety of amplifiers, which can eliminate the need to install separate amplifiers and thus enable operators to perform the tests in a small space.
By using the filing function of the RA1000 Series, long-term data storage in external media at a high sampling speed (200 µs max.) is possible.

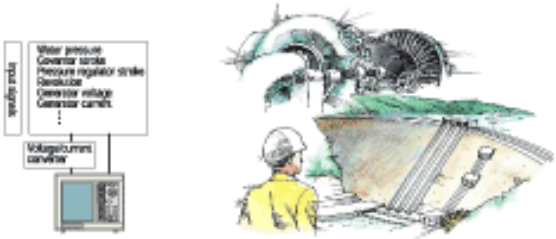


Wide Variety of Tests in Railroad Car

The RA1000 Series can accept oil pressure, air pressure, and acceleration in its AC strain amp, and save the data in the MO directly. Since the RA1000 Series incorporates strain amplifiers, external amplifiers are not necessary, which makes the measurement system compact.
Also, a long-term multi-channel measurement is possible by using the filing function.

Governor Test

The RA1000 Series is used as a recorder for the governor test, in which changing signals such as water pressure, revolution, generator voltage, current, governor, stroke, and pressure regulation stroke are recorded.
Since the data saved in the memory can be automatically stored in a PC card, database creation is possible without expending excessive time and effort. After storing the data, you can confirm the data on the monitor, which eliminates errors caused by variations in reading by operators.

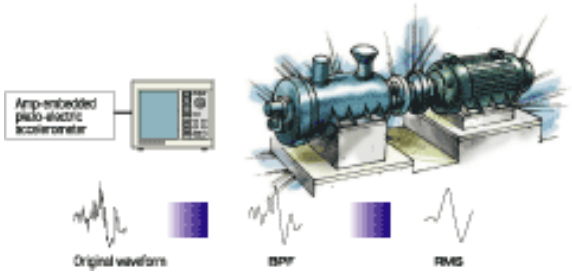


Drop Test for Package

A drop test for packages is performed in order to avoid the damage that may occur during delivery of packaged electronic equipment.
Generally, packages contain materials for packing to absorb shock. This test measures the impact acceleration to obtain the data that is used for the improvement of materials for packing. There are two types of accelerometers that can be used in the drop test: a piezo-electric type or a strain gauge type. The RA1000 Series supports both types.

Monitoring of Vibration Level of Rotating Machine

In order to maintain rotating equipment such as motors, gears, bearings, piezo-electric accelerometers are used to check their vibration level.In this case, a band-pass filter that picks up the signals in the vicinity of the frequency of the rotation is used and RMS conversion is performed based on the signals so that the level changes become more visible.Waveform judgment setting is also possible.



Magnus Test

A Magnus test is a test to examine the response of a sample of tissue that expands or contracts, such as the blood vessel, enteron, or trachea of a mouse or rat, to the medicine applied to the sample.
This test requires a lot of repetition work. The filing and trigger functions of the RA1000 Series provide automatic processing of this work.Moreover, since strain amps can be incorporated, a tension sensor can be directly connected to the main unit,thus eliminating troublesome cabling.In addition, an operator can examine waveforms on the monitor during data acquisition and readout current values calculated by physical conversion.