

DC-96A / DC-97A (DC type)

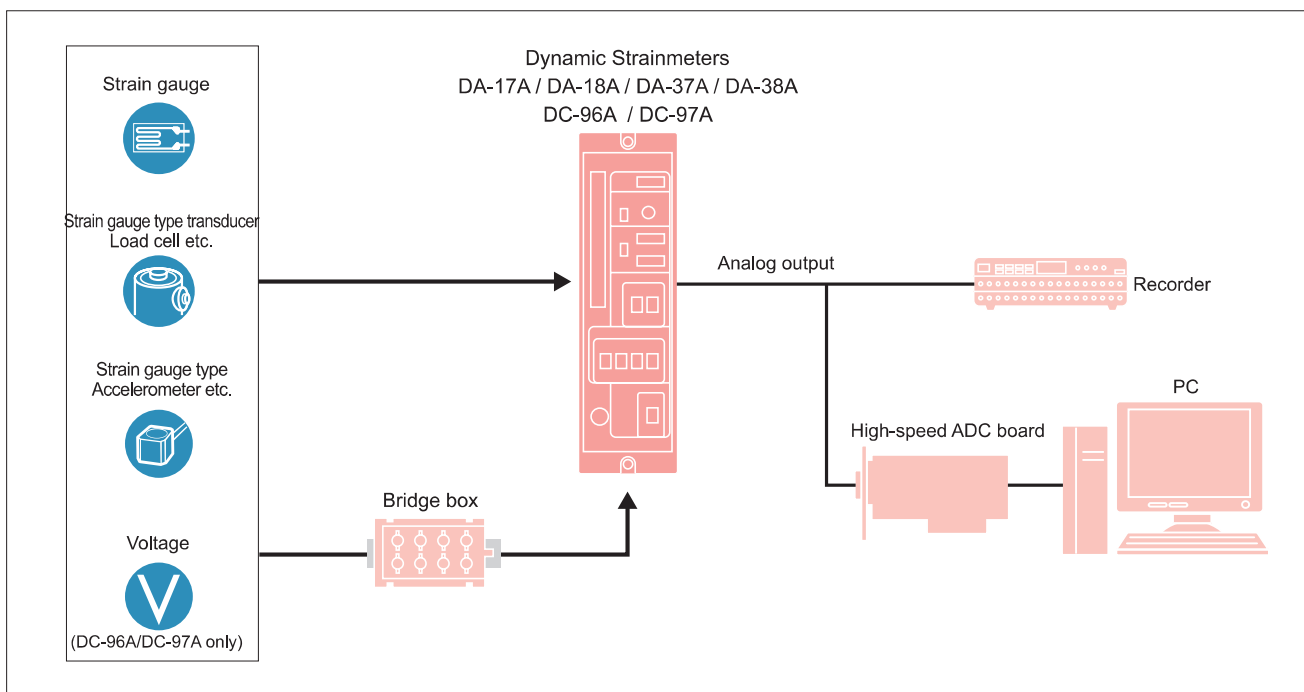
- Broadband response frequency
DC-96A: DC to 200 kHz
DC-97A: DC to 500 kHz
- Digital sensitivity setting. (The amplifier sensitivity is set by selecting the amplifier's rated output (RO) in the range from 1 to 10 V and then setting the corresponding strain on the four-digit digital setting unit.)
- Improved performance of electronic automatic balancing. (The balancing range is 10000×10^{-6} strain and the balancing accuracy is 5×10^{-6} strain.)
- As for the temperature stability of zero-point, high accuracy of 0.5×10^{-6} strain/ $^{\circ}\text{C}$ is achieved.
- Can be used as a DC amplifier.
- Bridge excitation can be switched between constant voltage and constant current.
- Dual output system equipped with conventional output terminals of two systems, voltage and current.
- Built-in low-pass filter and high-pass filter.
- Capable of external control of balance and calibration output.
- Dual power supply method of AC and DC.



Dynamic strainmeter
DC-96A

This is a broadband DC type dynamic strainmeter that is compact and designed for ease of use. A digital sensitivity setting method is adopted for sensitivity adjustment to perform accurate sensitivity adjustments. The range and accuracy of electronic automatic balancing are improved compared to the conventional ones, allowing it to be used for a wide range of measurements. In addition, capacity balancing is not required because this is a DC type. Furthermore, the bridge excitation can be selected from either the constant voltage type or the constant current type. When the constant current method is used for the bridge excitation, there is no sensitivity decrease because of the resistance of the connection cable to the strain gauge type transducer, and bridge box. Although this equipment is designed for one channel use when used alone it can be configured for multichannel use by incorporating it into the dedicated case or rack.

System Block Diagram



Specifications

Number of measuring points	1 point
Applicable gauge resistance	
Constant voltage	60 to 1000 Ω (Bridge excitation 2 V)
Constant current	120, 350 Ω
Gauge factor	2.00
Bridge excitation	
Constant voltage	DC 0.5, 1, 2, 5, 10 V
Constant current	DC about 4.2, 8.3, 17, 42 mA (Bridge resistance 120 Ω) DC about 1.4, 2.9, 5.7, 14, 29 mA (Bridge resistance 350 Ω)
Input resistance	10 M Ω + 10 M Ω (Balanced differential input)
Balancing method	Electronic automatic (remote control possible) Adjustment time: About 2 seconds Using nonvolatile memory
Balancing range	$\pm 10000 \times 10^{-6}$ strain
Balancing accuracy	$\pm 5 \times 10^{-6}$ strain or less
Rated output (RO)	1 to 10 V is set in 1 V steps (Bridge excitation 2 V, SENS of 500×10^{-6} strain or more)
Sensitivity adjustment (SENS)	For rated output of 1 V, 50 to 10000×10^{-6} strain For rated output of 10 V, 500 to 10000×10^{-6} strain Both can be set in 1×10^{-6} strain steps (Bridge excitation 2 V)
As DC amplifier	For rated output of 1 V, 0.050 to 10.000 mV For rated output of 10 V, 0.500 to 10.000 mV Both can be set in 0.001 mV steps
Fine adjustment (I.SENS)	1/10 to 1 (OUT I only)
Sensitivity	50×10^{-6} strain, at bridge excitation of 2 V
OUT V	1 V (5 k Ω load)
OUT I	12 mA or more (30 Ω load)
As DC amplifier	At 0.05 mV
OUT V	1 V (5 k Ω load)
OUT I	12 mA or more (30 Ω load)
Measurement range	$\pm 100000 \times 10^{-6}$ strain (Bridge excitation 2 V)
As DC amplifier	± 100 mV
Nonlinearity	OUT V $\pm 0.02\%$ FS or less OUT I $\pm 0.2\%$ FS or less
Maximum output	
OUT V	± 10 V (5 k Ω load)
OUT I	± 50 mA (30 Ω load, when using 120 Ω bridge) or ± 10 V (5 k Ω load)
Output shift	
Function	Shifts the output with a multi-turn potentiometer.
Shift range	-10 to 10 V or OFF
Calibration output	
Voltage	$\pm$ (RO, RO/2)
Accuracy	$\pm 0.5\%$ RO
Response frequency range	DC-96A: DC to 200 kHz (-3 dB $\pm$ 1 dB) DC-97A: DC to 500 kHz (-3 dB $\pm$ 1 dB) (Low pass filter: PASS, with coupling DC)
Low-pass filter	
Cutoff frequency	10, 30, 100, 300 Hz, 1 k, 3 k, 10 k, 30 kHz (-3 dB $\pm$ 1 dB) and PASS
Cutoff property	Bessel property -12 dB $\pm$ 1 dB/oct

High-pass filter	Coupling AC mode		
Cutoff frequency	0.05 Hz ± 0.015 Hz (−3 dB)		
Cutoff property	−6 dB ± 1 dB/oct		
S/N ratio	For bridge excitation 2, maximum output 10 V		
		DC-96A	DC-97A
	PASS	28 dBp-p or more	30 dBp-p or more
	DC to 10 kHz	40 dBp-p or more	46 dBp-p or more
	DC to 1 kHz	44 dBp-p or more	50 dBp-p or more
	DC to 100 Hz	50 dBp-p or more	56 dBp-p or more
	(SENS = 100 × 10 ^{−6} strain, RO = 1 V)		
Stability			
Zero point	± 0.5 × 10 ^{−6} strain/°C (at max. sensitivity) ± 5 × 10 ^{−6} strain/24 h (at max. sensitivity) (Bridge excitation 2 V)		
Sensitivity	± 0.01%/C° ± 0.05%/24 h		
As DC amplifier			
Zero point	± 0.5 μV/°C (at max. sensitivity) ± 5 μV/24 h (at max. sensitivity)		
Sensitivity	± 0.01%/C° ± 0.05%/24 h		
Output monitor	41-point LED level meter (with over display function)		
Self-diagnosis function	Amplifier sensitivity Bridge excitation Open over		
Common mode rejection ratio	60 dB or more		
Vibration tolerance	29.4 m/s ² (50 Hz, 0.6 mmp-p) three directions		
Operating temperature / humidity range	−10 to +50C° 85% RH or less (No condensation)		
Power supply			
AC power supply	(Either (1) or (2) as specified by the customer)		
(1) Rated voltage	AC 100 V 50/60 Hz		
Allowable voltage	AC 90 to 132 V 50/60 Hz		
(2) Rated voltage	AC 200 to 240 V 50/60 Hz		
Allowable voltage	AC 180 to 250 V 50/60 Hz		
Maximum power consumption	16 VA max		
DC power supply			
Rated voltage	DC 12 to 24 V		
Allowable voltage	DC 10 to 30 V		
Maximum consumption current	0.7 A max		
Outside dimension	40 (W) × 140 (H) × 266 (D) mm (Excluding protrusions)		
Mass	Approx. 1.2 kg		

Standard accessories

Instruction Manual	1
AC power cable (CR-04)*	1
Output cable (CR-30).....	2
Flathead screwdriver	1
Accessory box	1
Warranty certificate	1

* CR-061 is included when the DC power option is specified.