

Dynamic Strain
Measuring Instruments

Outline

1-channel

2-channel

Telemeter

Multi-channel

Other

DPM-911B/912B/913C

Strain Amplifier



High stability High accuracy Easy operation

- Easy operation greatly reduce the working hours.
- Digital switch makes setting easy and the value set is easily seen even when power is off.
- High voltage output of ± 10 V and high SN ratio are ensured.
- Vertical bar meter is easy to check.
- The HPF cancels the effect of slow changes, such as temperature drift of gages or sensors.
- Sensitivity of TEDS compatible transducers is automatically registered.
- Input and output are isolated.
- Sensitivity is automatically set with the actual load calibration function.
- Built-in check function on bridge circuit
- Broad frequency response DC to 10 k Hz (913C)

Models

Models	Carrier Wave Frequencies	Frequency Response	SN Ratio
DPM-911B	5 kHz	DC to 2.5 kHz	60dB _{p-p} or more
DPM-912B	12 kHz	DC to 5 kHz	58dB _{p-p} or more
DPM-913C	28 kHz	DC to 10 kHz	53dB _{p-p} or more

(At bridge excitation=2 V_{rms}, bridge resistance 120 Ω , LPF=FLAT, 1000 $\times 10^{-6}$ strain input, 10.00 V output set)

Specifications

Measuring Targets	Strain gages, strain-gage transducers
Channels	1
	Simultaneous operation is available by using multiple units.
Applicable Bridge Resistance	60 to 1000 Ω
Gage Factor	2.00 fixed
Bridge Excitation	2 V _{rms} , 0.5 V _{rms} , switchable
Balance Adjustment	Resistance: Within $\pm 2\%$ ($\pm 10000 \times 10^{-6}$ strain) Capacity: Within 2000 pF
Balance Adjustment Method	Resistance: Auto balance Accuracy: Within $\pm 0.5 \times 10^{-6}$ strain (When 500 $\times 10^{-6}$ strain is input, outputs 10 V, excitation voltage: 2 V _{rms}) Capacitance: CST method (Capacitance self-tracking)
Nonlinearity	Within $\pm 0.1\%$ FS Within $\pm 0.2\%$ FS (913C)
Output Impedance	Approx. 2 Ω
Calibration Strain (CAL)	$\pm (1 \text{ to } 9999 \times 10^{-6} \text{ strain})$ Setting: CAL switch (4-digital switch) Accuracy: Within $\pm (0.5\% + 0.5 \times 10^{-6} \text{ strain})$ Within $\pm (0.5\% + 1 \times 10^{-6} \text{ strain})$ (913C) Applicable scope of CAL accuracy: $\pm (10 \text{ to } 9999) \times 10^{-6} \text{ strain}$
Sensitivity Adjustment	Sensitivity is set in combination with CAL and VOLTAGE OUT switches (4-digit digital switches). CAL switch range: 100 to 9999 $\times 10^{-6}$ strain by 1 $\times 10^{-6}$ strain step VOLTAGE OUT switch range: 1.00 to 10.00 by 0.01 V step Accuracy: Within $\pm (0.5\% + 5 \text{ mV})$ Range: $\times 200$ to $\times 20000$
Fine Sensitivity Adjustment	Range: 1 to 1/2.5
Frequency Response	See table below. Deviation: $\pm 10\%$
LPF	Transfer characteristic: 2nd order Butterworth Cutoff frequencies: 10, 30, 100, 300 Hz, 1 k Hz and FLAT - 6 steps Amplitude ratio at cutoff point: -3 ± 1 dB Attenuation: -12 ± 1 dB/oct. (Except when DPM-911B is set to 1 kHz)
HPF	Cutoff frequencies: 0.2 Hz, OFF - 2 steps
SN Ratio	See table below.
Output	OUTPUT A: ± 10 V (Load resistance 5 k Ω or more) OUTPUT B: ± 10 V (Load resistance 5 k Ω or more)
Stability	Temperature Zero point: Within $\pm 0.1 \times 10^{-6}$ strain per $^{\circ}\text{C}$ Zero point: Within $\pm 0.2 \times 10^{-6}$ strain per $^{\circ}\text{C}$ (913C) Sensitivity: Within $\pm 0.05\%/^{\circ}\text{C}$ Time Zero point: Within $\pm 0.5 \times 10^{-6}$ strain/24 h Zero point: Within $\pm 1.0 \times 10^{-6}$ strain/24 h (913C) Sensitivity: Within $\pm 0.3\%/24\text{h}$ Power supply Zero point: Within $\pm 0.05\%$ FS/power fluctuation $\pm 10\%$ Sensitivity: Within $\pm 0.05\%$ /power fluctuation $\pm 10\%$
Withstand Voltage	1000 VAC for 1 minute between measuring bridge and case 1000 VAC for 1 minute between AC power supply and case
Output Voltage Indication	4 1/2 digit digital display (7-segment LED) 11-segment LED bar meter
Over Input Indication	Output voltage display flashing (4 1/2 digit digital display only)
Check Functions	Bridge check
Input Open Detection Function	When the input is open, output saturates to the negative side. (913C only)
Key Lock Functions	Locks all keys other than POWER switch. (Allows settings on CAL and VOLTAGE OUT switches to be changed.)
Remote Functions	Capable of controlling the following functions. Balance adjustment execute (BAL), calibration strain output execute (CAL), key lock
Synchronization Method	Automatically determines internal (INT) or external (EXT) and manual setting.
TEDS	Reads the sensor TEDS information, and sets the rated output to the VOLTAGE OUT output voltage.

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Actual Load Calibration	Sets actual load input to the VOLTAGE OUT output voltage. (Condition: Within the setting range of the sensitivity adjuster)
Vibration Resistant	5 to 200 Hz, with 29.4 m/s ² (3 G) in X, Y and Z directions for 12 cycles, 10 min/cycle
Impact Resistant	15 G, 11 ms or less, in X, Y and Z directions, every 3 cycles
Operating Temperature	-10 to 50°C
Operating Humidity	20 to 85% (Non-condensing)
Storage Temperature	-30 to 70°C
Power Supply	90 to 110 VAC (Approx. 12 VA: 100 VAC) 10.5 to 15 VDC (Approx. 0.6 A: 12 VDC) The following products are also available upon request. DPM-xxxx A115: 108 to 132 VAC DPM-xxxx A200: 180 to 220 VAC DPM-xxxx A230: 207 to 253 VAC xxxx: Part of model, example: 911B

Dimensions 49 W × 128.5 H × 262.5 D mm (Excluding protrusions)

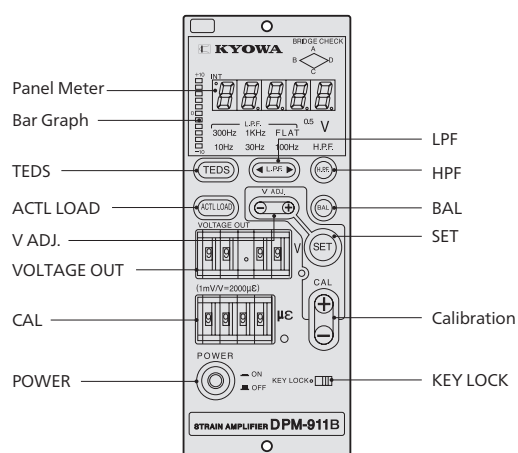
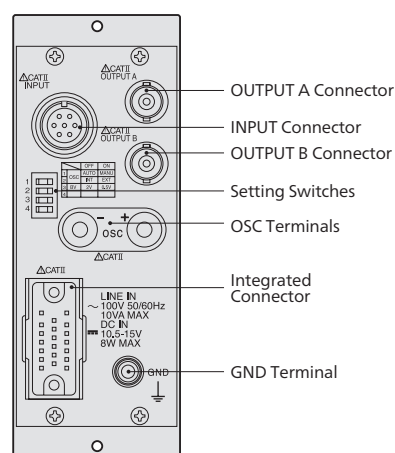
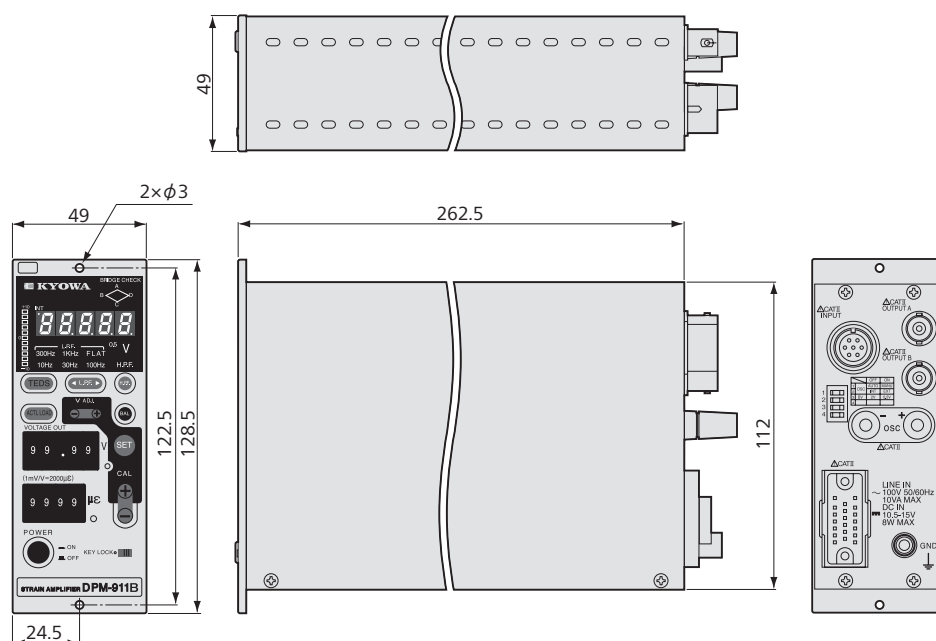
Panel-cut dimensions: 50 W × 113 H mm

Weight Approx. 1.2 kg**Standard Accessories**

Output cable U-08, U-59, 1 each
AC power cable P-25 (With 2-pin conversion plug CM-52)
Fuse (Midget type 0.5 A, 1 A)
Instruction manual
Simple manual sticker

Optional Accessories

Extension cables N-81 to N-85
Bridge boxes DB, DBB, and DBS
Housing case YC-A
Noise filter F-7B, F-BNC, amplifier stand FA-1B,
shielded conversion cable N-117

Front Panel**Rear Panel****Dimensions**

DPM-911B/912B/913C (Figure is DPM-911B.)

DPM-911B/912B/913C
Recommended
products for
combination

Compact Recording System
EDX-10 series
→ 3-49

Universal Recorder
EDX-200A
→ 3-55

Universal Recorder
EDX-100A
→ 3-63

Memory Recorder/Analyzer
EDX-5000A
→ 3-68

A/D Converter+PC