DPM-900 Series

Strain Amplifier



DPM-911B DPM-912B DPM-913C

Highly stable/accurate strain measurement amplifiers with easy setup

- Easy setup to significantly reduce work time
- High output (±10 V) and high SN ratio
- Insulation between I/O
- Actual load calibration function for auto sensitivity setting
- Input open detection function detects disconnected measured objects (DPM-913C)

These strain amplifiers ensure highly stable and accurate measurements.
Sensitivity can be easily set by simply configuring the input strain and output voltage through digital switches, thereby significantly improving work efficiency.
A high-pass filter is also included to cancel out the effects of gradual gage/sensor temperature drift.

■Model

Models	Bridge Power Frequency	Frequency Response	SN Ratio
DPM-911B	5 kHz sine wave	DC to 2.5 kHz	54 dB_{p-p} or more*1 60 dB_{p-p} or more*2
DPM-912B	12 kHz sine wave	DC to 5 kHz	53 dB_{p-p} or more*1 57 dB_{p-p} or more*2
DPM-913C	28 kHz sine wave	DC to 10 kHz	48 dB_{p-p} or more*3 53 dB_{p-p} or more*2

*1 RTI: Within 2 $\times 10^{-6}$ $strain_{p-p}$, when 500 $\times 10^{-6}$ strain is input, outputs 10.00 V.
*2 when 1000 $\times 10^{-6}$ strain is input, outputs 10.00 V.
*3 RTI: Within 3.9 $\times 10^{-6}$ $strain_{p-p}$, when 500 $\times 10^{-6}$ strain is input, outputs 10.00 V.

[Common Condition]
Excitation Voltage: 2 V_{rms}, Bridge Resistance: 120 Ω, LPF = FLAT

Specifications

Measuring Target	Strain gage, strain gage transducer
Channels	1 (Synchronized operation of multiple units possible)
Conformity Bridge Resistance	
	60 Ω to 1000 Ω
Gage Factor	2.00 fixed
Bridge Power	
Voltage	2 V_{rms}, 0.5 V_{rms} selectable
Frequency	See table on the left.
Balancing Range	
Resistance	Within ±2 % (±10000 × 10^{-6} strain)
Capacitance	Within 2000 pF
Balancing Method	
Resistance	True electron auto-balance method
	Accuracy: Within ±0.5 $\times 10^{-6}$ strain
	(When 500 $\times 10^{-6}$ strain is input, outputs 10 V, excitation voltage: 2 V_{rms})
Storage	Capacitance: CST method (Auto-tracking)
Nonlinearity	Within ±0.1%FS
	Within ±0.2% FS (913C)
Output Impedance	Approx. 2 Ω
Calibration Signal (CAL)	± (1 to 9999) $\times 10^{-6}$ strain
	[Setting: CAL switch (4-digit digital switch)]
	Accuracy: Within ±(0.5% + 0.5 $\times 10^{-6}$ strain)
	Within ±(0.5% +1 $\times 10^{-6}$ strain) (913C)
	Applicable scope of CAL Accuracy: ± (10 to 9999) $\times 10^{-6}$ strain
Sensitivity Adjuster	The amplifier sensitivity is set in combined with
	the CAL and VOLTAGE OUT switches (4-digit digital switch)
CAL Switch	1 $\times 10^{-6}$ strain steps up to 100 to 9999 $\times 10^{-6}$ strain
VOLTAGE OUT Switch	0.01 V steps up to 1.00 to 10.00 V
	Accuracy: Within ±0.5% [When Bridge power supply is 2 V_{rms}]
	Within ±(0.5%+5 mV) (913C)
	Range: ×200 to ×20000
Sensitivity Fine Adjustment	Range: 1 to 1/2.5
Frequency Response	See table on the left.
	Deviation: Within ±10%
Low-pass Filter (LPF)	Secondary Butterworth Type
	Cutoff Frequency:
	6 steps: 10, 30, 100, 300 Hz, 1 kHz, and FLAT
	Amplitude ratio at the cutoff point: -3 ±1 dB
	Attenuation: -12 ±1 dB/oct.
High-pass Filter (HPF)	Cutoff Frequency: Two levels 0.2 Hz and OFF
SN Ratio	See table below.
Output	OUTPUT A: ±10 V (Load resistance 5 kΩ or more)
	OUTPUT B: ±10 V (Load resistance 5 kΩ or more)
Stability	Temperature Zero: ±0.1 $\times 10^{-6}$ strain/°C
	Zero: ±0.2 $\times 10^{-6}$ strain/°C (913C)
	Sensitivity: ±0.05%/°C
	Time Zero: ±0.5 $\times 10^{-6}$ strain/24h
	Zero: ±1 $\times 10^{-6}$ strain/24h (913C)
	Sensitivity: ±0.3%/24 h
	Power Supply Zero: ±0.05% FS/±10% fluctuation
	Sensitivity: ±0.05 %/±10% fluctuation
	Stability Conditions: 10V output setting with 500 $\times 10^{-6}$strain input
Withstand Voltage	Between measuring bridge - case: 1000 VAC for 1 minutes
	Between AC power - case: 1000 VAC for 1 minutes
Output Voltage Display	4½ -digit digital display (7-segment LED)
	11-segment LED bar graph meter
Excessive Input Display	Output voltage display flickers. (4½-digit digital display only)
Check Function	Bridge check
Input Open Detection Function (913C only)	
	When the input is open, output saturates to the negative side.
Keylock Function	Setting methods other than POWER switch become invalid.
	(However, the setting values of the CAL and VOLTAGE OUT
	switches can be changed.)
Remote Function	Capable of controlling the following functions
	Balance adjustment (BAL)
	Addition of the calibration signal (CAL)
	Keylock
Synchronization Method	Automatically determines internal (INT) or
	external (EXT) and manual setting
TEDS	Read the TEDS information of the TEDS-compatible
	sensor and set the rated output to the output
	voltage of the VOLTAGE OUT switch.

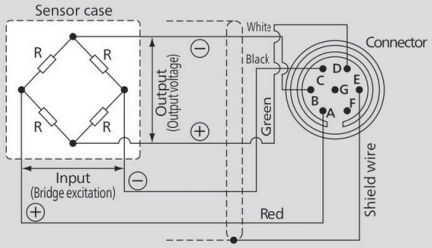
Actual Load Calibration	Set the actual load to the output voltage of the VOLTAGE OUT
	switch.
	(Condition: Within the setting range of the sensitivity adjuster)
Vibration Resistance	5 to 200 Hz, 29.4 m/s^2 (3 G)
	X, Y, and Z directions: 12 cycles with 10 minutes/cycle
Impact Resistance	15 G, 11 msec or less
	X, Y, and Z directions: each 3 times
Operating Temperature	−10 to 50 °C
Operating Humidity	20 to 85 % (noncondensing)
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
Dimension	49 W mm × 128.5 H mm × 262.5 D mm
	(Protruded portion not included)
	Panel cut dimensions: 50 W mm × 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

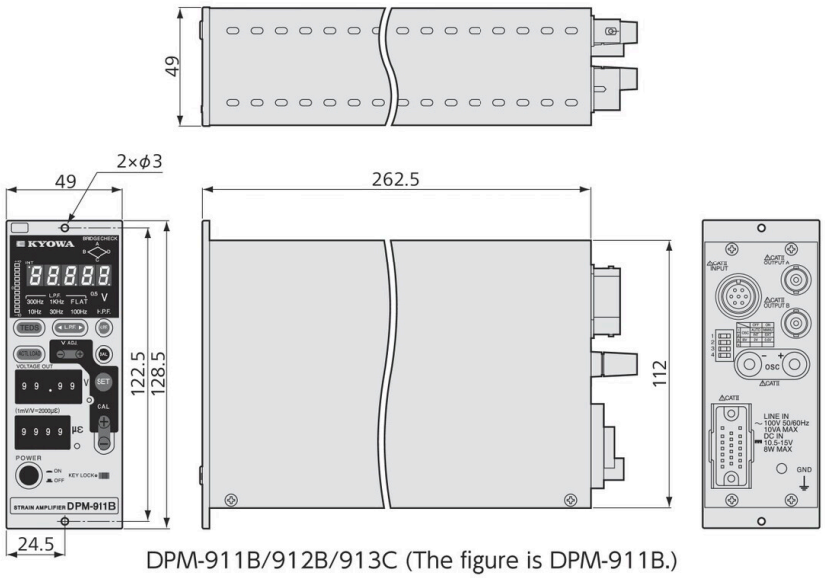
To Ensure Proper Usage

The bridge check function displays disconnection information on the monitor. If there are two or more errors, only one will be displayed at a time.



Wire-breaking locations	Error
A (Red)	Er-a
B (White)	Er-b
C (Black)	Er-c
D (Green)	Er-d
3 wires or more	Er-b

Dimensions



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