

DPM-600 Series

Strain Amplifiers

Manual Balance



DPM-603A

The DPM-600 series is 1-channel strain amplifiers adopting a manual balancing method. While these instruments are of the carrier type, the CST method electrically cancels unbalanced capacitive components, which are automatically tracked even during measurement. Therefore, capacitance changes due to change in measurement environments or external disturbance cause virtually no errors in measurement.

Features

- The CST method cancels unbalanced capacitive components by constantly tracking them to enable stable and precise measurement.
- An outstanding SN ratio enables safe measurement of ultra-small strains.
- Calibration values can be set with the 4-digit switch.
- Over-input indication is provided.
- Wide frequency response range: DC to 10 kHz (DPM-603)
- High vibration resistance ensures stable operation under vibration of 29.42 m/s² (3 G).
- DPM-600B models feature a withstand voltage of 1500 VAC for one minute.

Models

Model	Frequency Response (Dev. ±10%)			Withstand Voltage	
	DC - 10 kHz	DC - 5 kHz	DC - 2.5 kHz	250 VAC	1500 VAC
DPM-603A	●			●	
DPM-602A		●		●	
DPM-601A			●	●	
DPM-603B	●				●
DPM-602B		●			●
DPM-601B			●		●

DPM-B versions are also available in auto balance type (DPM-613B, 612B, 611B).

Specifications

Number of Measuring Channels: 1 (multiple units can be combined for multichannel configuration)
Applicable Bridge Resistance: 60 to 1000 Ω
Bridge Excitation: 2 VAC/0.5 VAC rms, switchable
Carrier Frequency: 5 kHz (DPM-601A/601B), 12 kHz (DPM-602A/602B), 28 kHz (DPM-603A/603B)
Balance Adjustment Range (BAL)
 Resistance: Within ±1% (±5000 μm/m)
 Capacitance: 2000 pF

Balance Adjustment Method

Resistance: Manual balancing (10-turn potentiometer)
 Capacitance: CST (capacitance self-tracking)
Sensitivity: With bridge voltage 2 V rms and input 10 μm/m
 0.2 V or more (load 5 kΩ or more) or 3 mA or more (load 30 Ω)

Output (Dual output):

OUTPUT I ±5 V or more (load 5 kΩ or more)
 ±30 mA or more (load 30 Ω)
OUTPUT V ±5 V or more (load 5 kΩ or more)
 ±5 mA or more (load 30 Ω)

(Models of ±10 V output are optionally available.)

Nonlinearity: Within ±0.2% FS (DPM-603)
 Within ±0.1% FS (DPM-602/601)

Gage Factor: 2.00 fixed

Reference Equivalent Strain (CAL): ±(within 1 to 9999 μm/m)

Setting: 4-digit switch

Accuracy: Within ±(0.5% + 1.0 μm/m) (DPM-603)

Within ±(0.5% + 0.5 μm/m) (DPM-602/601)

Sensitivity Switch (RANGE): 8 steps of 1, 2, 5, 10, 20, 50, 100 [x100 με], and OFF

Fine Sensitivity Control (VERN): 1 to 1/2.5

OUTPUT I Adjustment

Sensitivity: 1 to 1/100

Zero: Approx. ±30 mV

Low-Pass Filter

Cutoff frequency: 6 steps of 10, 30, 100, 300, 1k [Hz] and F (flat)

Amplitude ratio at cutoff point: -3 dB ±1 dB

Attenuation: -12 dB/oct. (except for DPM-601/611 set at 1 kHz)

SN Ratio:

With RANGE set at 1 [x100 με]

40 dB p-p or more (DPM-603)

46 dB p-p (approx. 1/200) or more (DPM-602/601)

With RANGE set at other than 1 [x100 με]

46 dB p-p or more (DPM-603)

52 dB p-p (approx. 1/400) or more (DPM-602/601)

Zero Stability:

±0.2 μm/m/°C, ±1 μm/m/24 h (DPM-603)

±0.1 μm/m/°C, ±0.5 μm/m/24 h (DPM-602/601)

±0.05% FS/±10% power fluctuation

Sensitivity Stability:

±0.05%/°C, ±0.3%/24 h

±0.05%/±10% power fluctuation

Withstand Voltage: (DPM-601B/602B/603B)

250 VAC for one minute between measuring bridge and chassis

1000 VAC for one minute between AC power supply and chassis

1500 VAC for one minute between each of measuring bridge,

output, AC power supply, DC power supply and chassis

under a relative humidity of 70% or less

Over-input Indication: OVER lamp flickers.

Remote Function: Simultaneous calibration of all channels

Vibration Resistance: Conforms to MIL-STD-810C.

10 to 500 Hz 19.61 m/s² (2 G)

5 to 55 Hz 29.42 m/s² (3 G)

12 cycles each in X, Y and Z directions, 15 minutes/cycle

Operating Temperature & Humidity Range:

-10 to 50°C, 85% RH or less (noncondensing)

Storage Temperature: -30 to 70°C

Power Supply: AC line or 10.5 to 15 VDC, 0.35 A

Dimensions & Weight:

49 x 142 x 264 mm (excluding protrusions), approx. 1.5 kg

Standard Accessories

AC power cable P-16 (with conversion adapter CM-33)
 Output cable U-58 for DPM-600A or U-60 for DPM-600B
 Spare fuses (Midget type 0.5A and 1A)
 Miniature screwdriver for DPM-600A or Insulation screwdriver for DPM-600B
 Instruction Manual

Optional Accessories

Bridge boxes DB/DBB (Refer to page 3-18.)
 Housing cases YA-B (Refer to page 3-17.)
 Noise filters F (Refer to page 3-18.)
 Amplifier stand FA-1B (Refer to page 3-18.)
 Extension cables N-81 to N85 (Refer to page 8-5.)

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