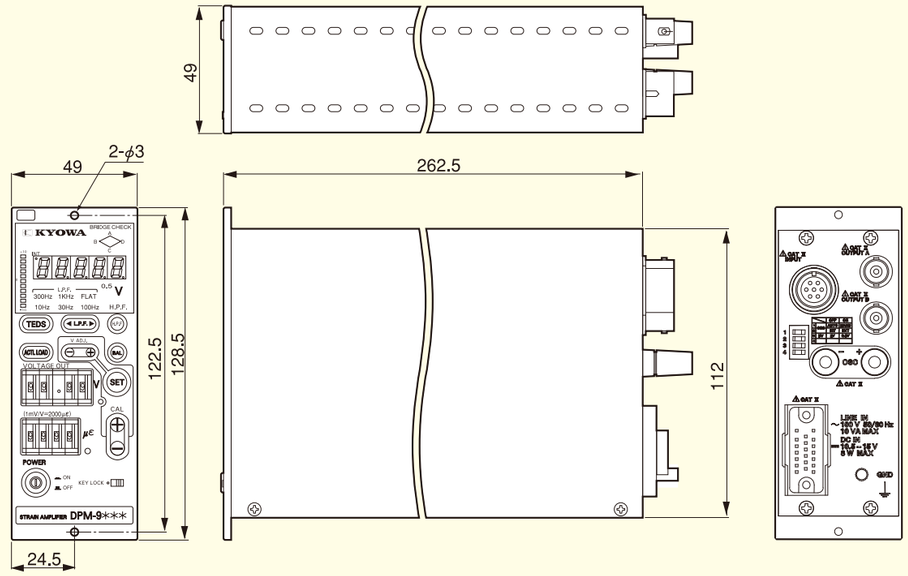
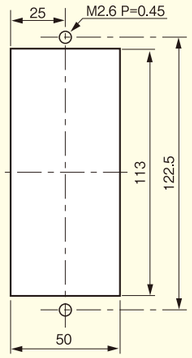
Outside dimension



Panel cut dimensions



Specifications are subject to change without notice for improvement.

Safety precautions Be sure to observe the safety precautions given in the instruction manual, in order to ensure correct and safe operation.

Manufacturer's Representative

JQA-0821
JQA-EM4824

Reliability through integration

KYOWA ELECTRONIC INSTRUMENTS CO., LTD.
Overseas Department:
3-5-1,Chofugaoka,Chofu, Tokyo 182-8520, Japan
Phone: +81-42-489-7220 Facsimile: +81-42-488-1122
http://www.kyowa-ei.com
e-mail: overseas@kyowa-ei.co.jp

Cat.No.401D U21

Printed in Japan 11/11

KYOWA

DYNAMIC STRAIN AMPLIFIER

DPM-900 series

Highly Stable and Accurate,
Easy-to-Set Amplifiers

The type strong against
an inverter noise was
also prepared.
(DPM-951A/952A)

Features

DPM

"Dynamic Strain Amplifiers" assure highly accurate measurement under severe environmental conditions.

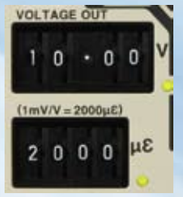
DPM-911B/912B/913B/951A/952A

Setup is easy with simple operation

Simply set the input strain and output voltage on digital switches, and the sensitivity setting is done. This easy setting can help you inprove work efficiency.

Settings can be checked even when power is off

Settings on the digital switches are easy to see and viewable even when the power is turned off.



High voltage output of ± 10V, high S/N ratio

With 10V output and a high S/N ratio, there is no need to worry about the desired data buried in noise.

(Note 1)Settings: BV = 2Vrms, 1000 × 10^{-6} strain input and 10.00V output

(Note 1)

Easy-to-see vertical bar graphs

The conventional horizontal bar graphs were replaced with vertical bar graphs which are easy to see when the instrument is fitted into the housing case. The polarity is also easily distinguishable.

High-pass filter

The high-pass filter cancels the effect of slow changes, such as temperature drift of gages and sensors.

TEDS

Sensitivity of TEDS-installed transducer is automatically registered.

Stable monitor indication

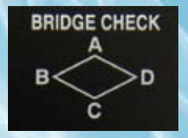
The stable monitor indication saves time in setup and measurement.

Actual load calibration

Sensitivity is automatically set with the actual load calibration function.

Bridge checkup

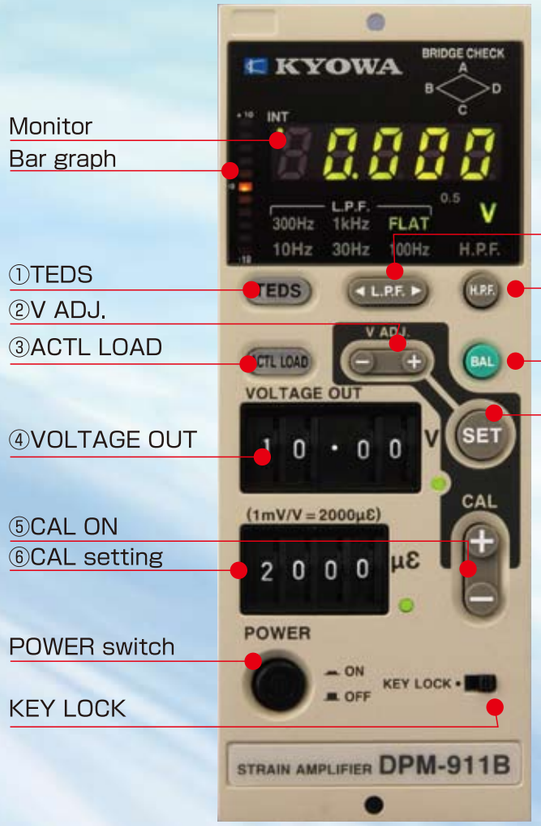
Disconnection can be checked through the entire input system, including cables and connectors.



High response frequency of DC～10khz

DPM-913B

Name of Parts and System Configuration

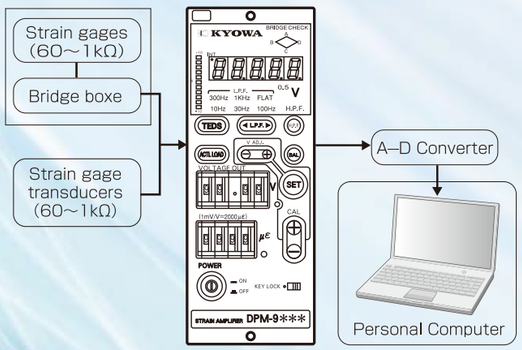


①Sets TEDS mode by pressing and holding down this button.
②Activates fine zero adjustment of output voltage and fine sensitivity adjustment.
③Sets the setting mode using input strain by pressing and holding down this button.
④Sets output voltage.
⑤Adds positive or negative calibration strain set on the CAL switch to output by pressing + or - button.
⑥Sets the amount of input strain or calibration strain to output.
⑦Changes cutoff frequency in the low-pass filter (LPF).
⑧Enables/disables the high-pass filter.
⑨Activates balance adjustment by pressing this button twice, or checks disconnection by pressing and holding down the switch.
⑩Sets internal gain of this instrument according to settings on the CAL and VOLTAGE OUT switches by pressing this button twice.

⑪OUTPUT A
⑫INPUT
⑬OUTPUT B
⑭Setting
⑮OSC
⑯Concentrated
⑰GND

⑪BNC connector - Outputs voltage according to settings.
⑫NDIS standard connector - Connects a strain gage transducer or bridge box.
⑬BNC connector - Outputs voltage according to settings.
⑭Specifies the oscillator used and bridge excitation.
⑮OSC (internal oscillator) input/output terminal - Cascade connection of + and - terminals enables two or more dynamic strain amplifiers to operate simultaneously.
⑯Normally connects the power cable. When the instruments are fitted into the housing case, applications including several control signals are available.
⑰Ground terminal

System configuration



Specifications

●Highly precise type

Model	Frequency response range	S/N ratio
DPM-911B	DC to 2.5kHz	60dBp-p or more
DPM-912B	DC to 5kHz	57dBp-p or more
DPM-913B	DC to 10kHz	53dBp-p or more

(BV = 2Vrms, bridge resistance 120Ω, LPF = FLAT, 10.00V output with 1000 μ m/m input)

Measuring target	Strain gage, strain gage transducers
No. of measuring channels	1 channel/unit
Applicable bridge resistance	60 to 1000 Ω
Gage factor	2.00 fixed
Bridge power voltage	2 V rms,0.5 V rms selectable
Balance adjustment range	Resistance : Within ± 2% (± 10000 μm/m)
	Capacitance : Within 2000 pF
Balance adjustment method	Resistance : True electron auto-balance method
	Accuracy: Within ± 0.5 μm/m
	Storage: Written into nonvolatile memory
	Capacitance : CST (Auto-tracking) method
Nonlinearity	Within ± 0.1% FS
Output impedance	Approximately. 2Ω
Reference equivalent strain (CAL)	± (1 - 9999 μm/m)
	Setting: CAL switch (4-digit digital switch)
	Accuracy : Within ± (0.5% + 0.5 μm/m)
Sensitivity adjustment	CAL switch and VOLTAGE OUT switch
	Amplifier sensitivity is set in combination with CAL and VOLTAGE OUT switches (4-digit digital switches).
	CAL switch range: 100 to 9999 μm/m by 1μm/m step
	VOLTAGE OUT switch range: 1.00 to 10.00V by 0.01V step
	Accuracy : Within ± 0.5%
	Range : ×200 to × 20000
Fine sensitivity control	Range : 1 to 1/2.5
Low-pass filter	Transfer characteristic : 2-pole Butterworth
	Cutoff frequency : 6 steps of 10, 30, 100, 300 Hz, 1 kHz and FLAT
	Cutoff accuracy : −3±1dB
	Attenuation : −12 ± 1dB/oct. (except when the low-pass filter of DPM-911B is set to 1kHz)
High-pass filter	Cutoff frequency : 2 steps of 0.2 Hz and OFF
Output	OUTPUT A: ±10V(load resistance 5kΩ or more)
	OUTPUT B: ±10V(load resistance 5kΩ or more)
Stability	Temperature Zero point : ±0.1μm/m/℃(DPM-911B/912B) ±0.2μm/m℃(DPM-913B)
	Sensitivity : ±0.05%/℃
	Time Zero point : ±0.5μm/m/24h(DPM-911B/912B) ±1μm/24h(DPM-913B)
	Sensitivity : ±0.3%/24h
	Power supply Zero point : ±0.05%FS/power fluctuation±10%
	Sensitivity : ±0.05%/power fluctuation±10%
Withstand voltage	1000 VAC for 1 minute between measuring bridge and chassis
	1000 VAC for 1 minute between AC power supply and chassis
Output voltage indication	4 1/2-digit (7-segment LED) indicator
	11-segment LED bar graph meter
Overinput indication	Output voltage indication flickers (4 1/2 -digit digital indication only)
Checking function	Bridge check
Key lock function	Locks all keys other than POWER switch
	(settings on digital CAL and VOLTAGE OUT switches can be changed)
Remote function	Enables remote execution of balance adjustment (BAL), reference equivalent strain output (CAL) and key lock
TEDS	Reads TEDS information and sets VOLTAGE OUT as rated output
Actual load calibration	Sets VOLTAGE OUT as actual load input
Operating temperature/humidity range	−10 to 50℃, 20 to 85%RH (no condensation)
Power supply	AC115V Type (AC108 to 132V)
	AC200V Type (AC180 to 220V)
	AC230V Type (AC216 to 264V)
	10.5 to 15VDC (Approx. 0.6A/12VDC)
Weight	Approx. 1.2kg
Others	Use of the following conversion machine is posible for DPM-911B
	Rotation transformer type torque converter
	Industance type displacement meter

●Inverter-proof noise type

Model	Frequency response range	S/N ratio
DPM-951A	DC to 2.0kHz	58dBp-p or more
DPM-952A	DC to 5kHz	53dBp-p or more

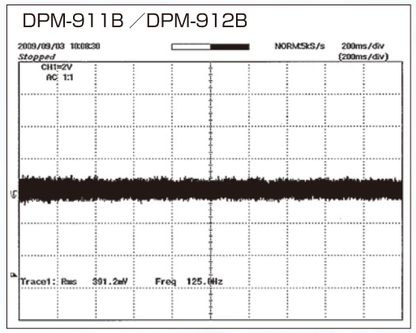
(BV = 2Vrms, bridge resistance 120Ω, LPF = FLAT, 10.00V output with 1000 μ m/m input)

Measuring target	Strain gage, strain gage transducers
No. of measuring channels	1 channel/unit
Applicable bridge resistance	60 to 1000 Ω
Gage factor	2.00 fixed
Bridge power voltage	2 V rms,0.5 V rms selectable
Balance adjustment range	Resistance : Within ± 2% (± 10000 μm/m)
	Capacitance : Within 2000 pF
Balance adjustment method	Resistance : True electron auto-balance method
	Accuracy: Within ± 0.5 μm/m
	Storage: Written into nonvolatile memory
	Capacitance : CST (Auto-tracking) method
Nonlinearity	Within ± 0.1% FS
Output impedance	Approximately. 2Ω
Reference equivalent strain (CAL)	± (1 - 9999 μm/m)
	Setting: CAL switch (4-digit digital switch)
	Accuracy : Within ± (0.5% + 0.5 μm/m)
Sensitivity adjustment	CAL switch and VOLTAGE OUT switch
	Amplifier sensitivity is set in combination with CAL and VOLTAGE OUT switches (4-digit digital switches).
	CAL switch range: 100 to 9999 μm/m by 1μm/m step
	VOLTAGE OUT switch range: 1.00 to 10.00V by 0.01V step
	Accuracy : Within ± 0.5%
	Range : ×200 to × 20000
Fine sensitivity control	Range : 1 to 1/2.5
Low-pass filter	Transfer characteristic : 2-pole Butterworth
	Cutoff frequency : 6 steps of 10, 30, 100, 300 Hz, 1 kHz and FLAT
	Cutoff accuracy : −3±1dB
	Attenuation : −12 ± 1dB/oct. (except when the low-pass filter of DPM-951A is set to 1kHz)
High-pass filter	Cutoff frequency : 2 steps of 0.2 Hz and OFF
Output	OUTPUT A: ±10V(load resistance 5kΩ or more)
	OUTPUT B: ±10V(load resistance 5kΩ or more)
Stability	Temperature Zero point : ±0.1μm/m/℃
	Sensitivity : ±0.05%/℃
	Time Zero point : ±0.5μm/m/24h
	Sensitivity : ±0.3%/24h
	Power supply Zero point : ±0.05%FS/power fluctuation±10%
	Sensitivity : ±0.05%/power fluctuation±10%
Withstand voltage	1000 VAC for 1 minute between measuring bridge and chassis
	1000 VAC for 1 minute between AC power supply and chassis
Output voltage indication	4 1/2-digit (7-segment LED) indicator
	11-segment LED bar graph meter
Overinput indication	Output voltage indication flickers (4 1/2-digit digital indication only)
Checking function	Bridge check
Key lock function	Locks all keys other than POWER switch
	(settings on digital CAL and VOLTAGE OUT switches can be changed)
Remote function	Enables remote execution of balance adjustment (BAL), reference equivalent strain output (CAL) and key lock
TEDS	Reads TEDS information and sets VOLTAGE OUT as rated output
Actual load calibration	Sets VOLTAGE OUT as actual load input
Operating temperature/humidity range	−10 to 50℃, 20 to 85%RH (no condensation)
Power supply	AC115V Type (AC108 to 132V)
	AC200V Type (AC180 to 220V)
	AC230V Type (AC216 to 264V)
	10.5 to 15VDC (Approx. 0.6A/12VDC)
Weight	Approx. 1.2kg
Others	Use of the following conversion machine is posible for DPM-951A
	Rotation transformer type torque converter
	Industance type displacement meter

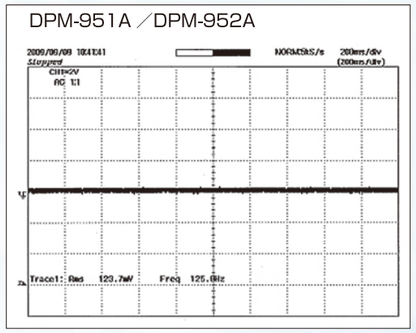
※The comparison table ofonirverter noise will be 6 pages.

Output wave comparison by an input signal with an inverter noise.

DPM-911B／DPM-912B



DPM-951A／DPM-952A



DB

One-touch lock type bridge box
Wiring was economized by easy one-touch lock type terminal box adoption of lead connection.

DB-120V-8/DB-350V-8

*Since this bridge box is [the shield (E terminal)] common, only when connecting DPM-911B/912B / two or more 913B, a shield exchange cable (N-117) is needed for each channel.
DPM-951A/951A can be used connecting as it is.

Specifications

●Form	DB-120V-8 An attached cable (N-104)	
	DB-350V-8 An attached cable (N-104)	
●The number of channels	8	
●Correspondence input	DB-120V-8	
	The 1 gauge method 2-wire system	120Ω
	The 1 gauge method 3-wire system	120Ω
	The 2 gauge method for next doors	60 to 1000Ω
	The 2 gauge method for the neighborhood	120Ω
	The 4 gauge method	60 to 1000Ω
	DB-350V-8	
	The 1 gauge method 2-wire system	350Ω
	The 1 gauge method 3-wire system	350Ω
	The 2 gauge method for next doors	60 to 1000Ω
	The 2 gauge method for the neighborhood	350Ω
	The 4 gauge method	60 to 1000Ω

●The 1 gauge method	One-touch lock type
●An attached cable	N-104 1.5 m in length
	With eight tip NDIS connectors
● Operating temperature-and-relative-humidity range	0～40℃,20～80%(It does not dew.)
●耐振性	29.4m/s²(3G),5 to 200Hz
●Outside dimension	286(W)×22(H)×61.4(D)mm
	(A projection thing is not included.)
●Mass	About 480g

Optional accessories

■Bridge boxes DB, DBB

The bridge box is used for connecting a strain gage into a Wheatstone bridge circuit, and connections include 1-, 2- and 4-gage method, 1-gage 3-wire system, and 2-gage active -active 3-wire system.

	Model	Application	Remarks
	DB-120A	For 120 Ω gages	With 5m chloroprene cable Dimensions: 60 × 42 × 25mm Weight: Approx. 600g (including cable)
	DB-350A	For 350 Ω gages	
	DB-120L	For 120 Ω gages Compact plug-in	5m cable for connection Dimensions: 60 × 20 × 20mm Weight: Approx. 60g (mainframe)
	DB-120T M1	For 120 Ω gages 1-channel measurement One-touch clamping terminal	Dimensions: 110 × 25 × 25mm Weight: Approx. 200g (including cable) With 1.5m chloroprene cable
	DB-120T-8	For 120 Ω gages 8-channel measurement One-touch clamping terminal	Dimensions: 240 × 95 × 25mm Weight: Approx. 1.4kg (including cable) With 1.5m chloroprene cable for each channel *A shieid exchange cable(N-117)is required.
	DBB-120A	For 120 Ω gages 10-channel measurement	Dimensions: 320 × 85 × 61mm Weight: Approx. 800g Cable TT-03, TT-04 (optional)
	DB-120C	For 120 Ω gages for 1-gage One-touch clamping terminal	Dimensions: 22 × 58.5 × 22mm Weight: Approx. 60g Connector PRC03-12A10-7M DB-120C-2 2-wire system DB-120C-3 3-wire system
	DB-120S3	Clamping type Models DB-120S3 for 1-channel measurement DB-120S3-8 for 8-channel measurement Applicable gage resistance 1-gage method 120 Ω 2-gage method 120 Ω Active dummy method 60 to 1000 Ω 4-gage method 60 to 1000 Ω	Dimensions & weight 1-channel measurement: 102.5 × 38 × 20 mm, approx. 100g 8-channel measurement: 102.5 × 42 × 200 mm, approx. 1kg Standard accessories Cable (5m long, with NDIS standard connector) 120 Ω dummy resistance, connector (R05-PB5M)
	DB-120S3-8		

■Noise filters F-7B, F-BNC

(Filters for removing noise containing high frequency components)

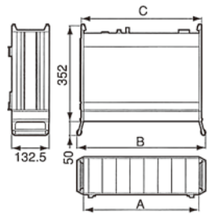
F-7B
For all DPM models

F-BNC
For all DPM models

■Amplifier stand FA-1B

■Portable housing case YB-A

A portable housing case is provided to accommodate DPM-700/900 series models for multiple channel measurement. The POWER, CAL and BAL switches on the case can be used for operating all channels simultaneously. The 700 and 900 series models can be used together.



Model	No. of units	A(mm)	B(mm)	C(mm)
YB-503A	3	163	206	179
YB-504A	4	213	256	229
YB-506A	6	312	355	328
YB-508A	8	411	454	427

■Extension cable N

For the extension of bridge box and transducer cables. An NDIS standard connector plug is provided at an end, and a relay socket of the same standard at the other end.

Model	Cable length
N-81	5m
N-82	10m
N-83	20m
N-84	30m
N-85	50m
N-100	100m

■Shield exchange cable N-117

A shieid is dropped to a DPM case when using DB-120T/350T-8,DB-120V/350V-8 by DPM-911B/912B/913B.