

INPUT

Input Type	DC coupling unbalanced input
Input Connector	BNC receptacle, front panel/rear panel switchable
Non-destructive Maximum Input Current	±30 mA

Gain Setting (V/A)	Maximum Input Current	Input Impedance *1	Recommended Signal-source Resistance *1	Equivalent Input Noise Current Density *1*2
1E10(10 ¹⁰)	±1 nA	30 kΩ (@100 Hz)	1 GΩ or more	2.5 fA/√Hz (@55 Hz)
1E09(10 ⁹)	±10 nA	10 kΩ (@1kHz)	100 MΩ or more	6 fA/√Hz (@200 Hz)
1E08(10 ⁸)	±100 nA	3 kΩ (@1 kHz)	10 MΩ or more	15 fA/√Hz (@200 Hz)
1E07(10 ⁷)	±1 μA	1 kΩ (@1 kHz)	1 MΩ or more	45 fA/√Hz (@1 kHz)
1E06(10 ⁶)	±10 μA	400 Ω (@1kHz)	100 kΩ or more	150 fA/√Hz (@1 kHz)
1E05(10 ⁵)	±100 μA	300 Ω (@1 kHz)	10 kΩ or more	750 fA/√Hz (@1 kHz)
1E04(10 ⁴)	±1 mA	10 Ω (@1 kHz)	1 kΩ or more	6 pA/√Hz (@1 kHz)
1E03(10 ³)	±10 mA	3 Ω (@1 kHz)	100 Ω or more	75 pA/√Hz (@1 kHz)

*1 Supplemental value *2 When input is open with front input, no source capacitance, and filter is on(Auto filtering).

CURRENT SUPPRESSION

Current Suppression	ON or OFF	
Range	7 ranges (8 nA, 80 nA, 800 nA, 8 μA, 80 μA, 800 μA, 8 mA)	
Range Setting	Manual Setting, Auto Setting	
Setting Range	8 nA	-8.000 nA to +8.000 nA Setting resolution 1 pA
	80 nA	-80.00 nA to +80.00 nA Setting resolution 10 pA
	800 nA	-800.0 nA to +800.0 nA Setting resolution 100 pA
	8 μA	-8.000 μA to +8.000 μA Setting resolution 1 nA
	80 μA	-80.00 μA to +80.00 μA Setting resolution 10 nA
	800 μA	-800.0 μA to +800.0 μA Setting resolution 100 nA
	8 mA	-8.000 mA to +8.000 mA Setting resolution 1 μA
Setting Accuracy (Supplemental Value)	8 nA	± (3.0% of Setting + 0.15% of Range)
	80 nA	± (1.5% of Setting + 0.15% of Range)
	800 nA	± (0.8% of Setting + 0.15% of Range)
	8 μA or above	± (0.6% of Setting + 0.15% of Range)

* Auto suppression function is available to automatically select/set current values for input current elimination.

AMPLIFICATION

• Gain/Accuracy(DC)/Frequency Response (When filter is off, and no source capacitance)

Gain Setting (V/A)	Gain/Accuracy	Frequency Response +0.5 dB/-3.0 dB or less	Response Speed*3*4
1E10(10 ¹⁰)	1×10 ¹⁰ ±1.0%	DC to 14 kHz*5	25 μs
1E09(10 ⁹)	1×10 ⁹ ±1.0%	DC to 70 kHz*6	5 μs
1E08(10 ⁸)	1×10 ⁸ ±0.5%	DC to 175 kHz*6	2 μs
1E07(10 ⁷)	1×10 ⁷ ±0.3%	DC to 350 kHz*6	1 μs
1E06(10 ⁶)	1×10 ⁶ ±0.25%	DC to 500 kHz*6	0.7 μs
1E05(10 ⁵)	1×10 ⁵ ±0.25%		
1E04(10 ⁴)	1×10 ⁴ ±0.25%		
1E03(10 ³)	1×10 ³ ±0.25%		

*3 Square waveform output rise time (10%–90%) *4 Supplemental values for reference

*5 Reference frequency 1Hz *6 Reference frequency 10Hz

• Filter

Filter	ON or OFF																				
Setting Range	Response Speed (Rise Time) : 1 μs to 300 ms, In 1, 3 sequences, auto filtering																				
Setting Accuracy	Within ±20% of set time (10%–90% rise time)(Supplemental Value)																				
Filter Characteristics	Low pass filter (LPF), Phase linear type																				
Attenuation(slope)	12 dB/oct																				
Auto Filtering	Filter setting is based on gain setting. If the gain setting is changed during auto filtering, the filter setting will change automatically as well.																				
	<table border="1"> <thead> <tr> <th>Gain Setting (V/A)</th> <th>Filter Setting</th> <th>Gain Setting (V/A)</th> <th>Filter Setting</th> </tr> </thead> <tbody> <tr> <td>1E10(10¹⁰)</td> <td>100 μs</td> <td>1E06(10⁶)</td> <td>10 μs</td> </tr> <tr> <td>1E09(10⁹)</td> <td>100 μs</td> <td>1E05(10⁵)</td> <td>3 μs</td> </tr> <tr> <td>1E08(10⁸)</td> <td>30 μs</td> <td>1E04(10⁴)</td> <td>1 μs</td> </tr> <tr> <td>1E07(10⁷)</td> <td>10 μs</td> <td>1E03(10³)</td> <td>1 μs</td> </tr> </tbody> </table>	Gain Setting (V/A)	Filter Setting	Gain Setting (V/A)	Filter Setting	1E10(10 ¹⁰)	100 μs	1E06(10 ⁶)	10 μs	1E09(10 ⁹)	100 μs	1E05(10 ⁵)	3 μs	1E08(10 ⁸)	30 μs	1E04(10 ⁴)	1 μs	1E07(10 ⁷)	10 μs	1E03(10 ³)	1 μs
Gain Setting (V/A)	Filter Setting	Gain Setting (V/A)	Filter Setting																		
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1E09(10 ⁹)	100 μs	1E05(10 ⁵)	3 μs																		
1E08(10 ⁸)	30 μs	1E04(10 ⁴)	1 μs																		
1E07(10 ⁷)	10 μs	1E03(10 ³)	1 μs																		

• Phase between Input and Output

Phase between Input and Output	Reverse phase (when current flows in input connectors, output potential becomes negative)
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OUTPUT

Output Type	DC coupling unbalanced output
Output Connectors	BNC receptacle, Front/Rear panel, Front and rear connectors output the same signals
Maximum Output Voltage	±10 V (No load)
Maximum Output Current	±10 mA Total current of front and rear connectors
Output Impedance	50 Ω (Supplemental Value)
Output Offset Voltage	±30 mV or less (Gain setting 1E10 V/A) ±20 mV or less (Gain setting 1E03 to 1E09 V/A) (Open input, Current suppression OFF)

GENERAL

Display	3.9 inch, TFT color LCD 4 levels of backlight brightness and OFF	
Saved Settings	10 memories (1 memory is for resume. Memory is saved just before the power source is off and the settings will be recalled after restarting.)	
Input/Output Grounds	Input and output signal grounds are isolated from chassis (signal grounds are common) Signal ground -Withstand voltage between chassis : 42 Vpk (DC+ACpeak)	
Overdetection	Detects excessive signal and displays conditions on LCD screen. Overdetection is to detect current-voltage converted signals and output connectors signals and display them separately.	
External Control	USB : USB1.1, Device class CDC GPIB : IEEE488.2 LAN : 10BASE-T / 100BASE-T, TCP/IP(socket communication)	
Power Supply	AC100 V±10% / 120 V±10% / 230 V +10%, -14% (250 V or less) 50 Hz/60 Hz ±2 Hz, Power consumption: 40 VA or less Overvoltage Category : II	
Chassis Cooling	Forced air cooling. Rear Exhaust.	
Environmental Conditions	Operation	0°C to +40°C, 5% to 85%RH (Absolute humidity is 1 to 25 g/m ³ , no condensation)
	Performance Guarantee	23°C±5°C, 5% to 85%RH (Absolute humidity is 1 to 25 g/m ³ , no condensation)
	Storage	-10°C to +50°C, 5% to 95%RH (Absolute humidity is 1 to 29 g/m ³ , no condensation)
Pollution Degree	2 (offices, laboratories, test stations)	
Warm-up Time	30 min	
RoHS	Directive 2011/65/EU	
Safety Regulations and EMC	EN 61010-1, EN 61010-2-030 EN 61326-1(Group1, ClassA), EN 61326-2-1	
Dimensions	215(W)×88(H)×400(D) mm (excluding protrusions)	
Weight	approx. 4.5 kg (excluding accessories)	
Accessories	Power cord set (3 pin, 2 m) 1, fuse*7 (1 A/250 V time lag, φ5.2×20 mm) 1, instruction manual 1	

*7 Spare fuse. There are 2 fuses in the inlet, 1 working fuse and 1 spare fuse.

OPTIONS

- PA-001-3512 Rackmount Kit (EIA, 1 unit)
- PA-001-3513 Rackmount Kit (EIA, 2 units)
- PA-001-3514 Rackmount Kit (JIS, 1 unit)
- PA-001-3515 Rackmount Kit (JIS, 2 units)

*Note: The contents of this catalog are current as of October 14th, 2020.

Product appearance and specifications are subject to change without notice.

Before purchase, contact us to confirm the latest specifications, price and delivery date.