Protection function

Output overvoltage

Internal power

Overload

The following values with accuracy represents warranted performance, values without accuracy are not warranted, they are typical values(typ.) or reference values. Reference values are only supplementary data to use for reference, they do not guarantee performance.

In	р	u	t

Input type	Input A, Input B or addition of input A and input B
	(When two inputs are on, the maximum input voltage is within ±10 V in total)
Input impedance	50 $\Omega \pm 5\%$,10 k $\Omega \pm 5\%$ switchable
	(Unbalanced, switch between two inputs A and B at once)
Maximum input voltage	±10 V
Non-destructive input voltage	
Input terminals	BNC connector Input A : Front panel, Input B : Rea panel
	Lo side is connected to the chassis

Output

Gain setting functionFixed : $\times 1, \times 20, \times 40, \times 100$ Variable: $\times 1(CAL)$ to $\times 3$ consecuting is (Fixed)×(Variable).Gain error $\pm 5\%$ (Fixed)×(Variable).Maximum output voltageLoad of Resistance $100 \Omega^{-1}$ $100 Vms$ (40 Hz to $200 KHz$)DC modeLoad of Resistance $100 \Omega^{-1}$ $100 Vms$ (40 Hz to $200 KHz$)Load of Resistance $150 \Omega^{-2}$ $\pm 150 V$ (DC to 50 KHz)Load of Resistance $150 \Omega^{-2}$ $\pm 150 V$ (DC to 50 KHz)AC modeLoad of Resistance $100 \Omega^{-1}$ $100 Vms$ (40 Hz to $200 KHz$)AC modeLoad of Resistance $100 \Omega^{-1}$ $100 Vms$ (40 Hz to $200 KHz$)Maximum current (AC)HSA42051 : $1 Arms$, $2.63 Ap-p(40 Hz to 200 KHz$)Maximum current (DC)HSA42051 : $14 M SA42052 : \pm 2 A$ Low amplitude frequency responseDCDC modeDC to 100 $ KHz$: $-0.3 dB to +0.5 dB$ (Output Amplitude 20 $ Vms$, reference 400 Hz)AC mode10 Hz to 300 kHz : $-3 dB to +0.5 dB$ (Output Amplitude 20 $ Vms$, reference 400 Hz)AC mode10 Hz to 300 kHz : $-3 dB to +0.5 dB$ (Output Amplitude 20 $ Vms$, reference 400 Hz)AC mode10 Hz to 300 kHz : $-3 dB to +0.5 dB$ (Output Amplitude 20 $ Vms$, reference 400 Hz)AC mode10 Hz to 300 kHz : $-3 dB to +0.5 dB$ (Output Amplitude 20 $ Vms$, reference 400 Hz)AC mode10 Hz to 300 kHz : $-3 dB to +0.5 dB$ (Output DC offset*3DC modeAdjustment Range : $\pm 1 V or above$ Output DC bias <td< th=""><th>Output</th><th></th></td<>	Output			
Output polarity In-phase or reversed phase (switchable with switch on front pane Gain setting function Gain setting is (Fixed)×(Variable). Gain error ±5% (Fixed Gain : x1, x20, x40, and x100, Variable Gain: CAL, Input voltage 0.1Vms or more, at 400 H Maximum output voltage DC mode Load of Resistance 100 Q ⁺¹ 100 Vrms (40 Hz to 200 kHz) 40 Vrms (20 Hz to 500 kHz) Load of Resistance 100 Q ⁺¹ 100 Vrms (40 Hz to 200 kHz) 40 Vrms (20 Hz to 500 kHz) AC mode Load of Resistance 100 Q ⁺¹ 100 Vrms (40 Hz to 200 kHz) ±150 V (10 Hz to 500 kHz) AC mode Load of Resistance 100 Q ⁺¹ 100 Vrms (40 Hz to 200 kHz) ±150 V (10 Hz to 500 kHz) Maximum current (AC) HSA42051 : 1Arms, 2.83Ap-p(40Hz to 200 kHz) ±155 V (200 kHz to 500 kHz) Maximum current (DC) HSA42051 : 1Arms, 2.83Ap-p(40Hz to 200 kHz) ±55 V (200 kHz to 500 kHz) Maximum current (DC) HSA42051 : 1A A HSA42052 : 2A Low amplitude frequency response DC mode DC to 100 kHz : -0.3 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : 0 dB to +0.5 dB 300 kHz to 500 kHz : 0 dB to +0.5 dB 300 kHz to 500 kHz : 0 dB to +0.5 dB 300 kHz to 500 kHz : 0 dB to +0.5 dB 300 kHz to 500 kHz : 0 dB to +0.5 dB 300 kHz	Output mode	Constant Voltage (CV)		
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$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Output polarity	In-phase or reversed phase (switchable with switch on front panel)		
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AC modeLoad of Resistance 100 Ω'100 Vrms (40 Hz to 200 kHz) 40 Vrms (20 Hz to 500 kHz) ±150 V (10 Hz to 50 kHz) ±140 V (50 kHz to 200 kHz) ±55 V (200 kHz to 500 kHz)Maximum current (AC)HSA42051 : 1Arms, 2.83Ap-p(40Hz to 200kHz) HSA42052 : 2Arms, 5.66Ap-p(40Hz to 200kHz) HSA42051 : ±1 AMaximum current (DC)HSA42051 : ±1 AHSA42052 : ±2 ALow amplitude frequency responseDCmodeDC modeDC to 100 kHz : -0.3 dB to +0.8 dB 100 kHz to 300 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB (Output Amplitude 20 Vrms, reference 400 Hz)AC mode10 Hz to 100 kHz : -0.3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz to 20 Vrms, reference 400 Hz)Slew rate450 V/µs or above Adjustment Range : ±1 W or above 0utput DC offset*3DC modeAdjustment Range : ±1 V or above (Input Terminal Short circuit AC modeAdjustment Range : ±1 W or above 0utput DC bias±150 V or above on/off with switch on front panel Hardot in the switch on front panel Hardot in 0.1% or less (20 kHz to 500 kHz, output 80 Vrms) -30 dBc or less (50 kHz to 500 kHz, output 80 Vrms) -30				
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Load of Resistance $150\Omega^{*2}$ $\pm 150 V (10 Hz to 50 kHz)$ $\pm 140 V (50 kHz to 200 kHz)$ $\pm 55 V (200 kHz to 500 kHz)$ $\pm 55 V (200 kHz to 500 kHz)$ $\pm 55 V (200 kHz to 500 kHz)$ Maximum current (AC)HSA42051 : $\pm 1 A$ HSA42052 : $\pm 2 A$ Low amplitude frequency responseDC to 100 kHz : $-0.3 dB to +0.3 dB$ DC modeDC to 100 kHz : $-1 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3.3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3.3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3.3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3.3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3.3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3.3 dB to +0.3 dB$ $100 kHz$ to $300 kHz$: $-3 dB to +0.4 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.4 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.4 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.4 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $300 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $100 kHz$ to $500 kHz$: $-3 dB to +0.5 dB$ $20 tiput DC bias$ $\pm 150 V$ or above on/off with switch on front panelHarmonic distortion 6.1% or less (20 kHz	AC mode			
$\begin{array}{c c c c c c c c c c c c c c c c c c c $				
$\pm 55 V (200 \text{ kHz to } 500 \text{ kHz})$ Maximum current (AC) HSA42051 : 1Arms, 2.83Ap-p(40Hz to 200kHz) HSA42052 : 2Arms, 5.66Ap-p(40Hz to 200kHz) Maximum current (DC) HSA42051 : ±1 A HSA42052 : ±2 A Low amplitude frequency response DC mode DC to 100 kHz : -0.3 dB to +0.3 dB 100 kHz to 300 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.3 dB 100 kHz to 300 kHz : -3 dB to +0.3 dB 100 kHz to 300 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB (Output Amplitude 20 Vrms, reference 400 Hz) AC mode 10 Hz to 100 kHz : -0.3 dB to +0.5 dB 100 kHz to 300 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB (Output Amplitude 20 Vrms, reference 400 Hz) Slew rate 450 V/µs or above Output DC offset*3 DC mode Adjustment Range : ±1 W or above (Input Terminal Short circuit AC mode Adjustment Range : ±1 W or above Output DC bias ±150 V or above on/off with switch on front panel Harmonic distortion 0.1% or less (40 Hz to 1 kHz, output 80 Vrms) 5purious -46 dBc or less (20 kHz to 500 kHz, output 80 Vrms) -30 dBc or less (50 kHz to 500 kHz, output 30 Vrms) Output noise*3 (7.2+0.16×G) mVrms or less (G=1 to 3) (1+0.4×G) mVrms or less (G=20 to 300) (Input terminal short circuit, bandwidth 10 Hz to 1 MHz) Output impedance*4 HSA42051 : [0.19+0.016 /f (1+j)] Ω or less (typ.) HSA42052 : [0.19+0.0084 /f (1+j)] Ω or less (typ.) BNC connector Number of terminals: 2 (One each on the front and rear panel Lo side is connect to chassis. Terminals on front panel and rear panel are connected in paralle				
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HSA42052 : 2Arms, 5.66Ap-p(40Hz to 200kHz) Maximum current (DC) HSA42051 : ±1 A HSA42052 : ±2 A Low amplitude frequency response DC to 100 kHz : -0.3 dB to +0.3 dB 100 kHz to 300 kHz : -1 dB to +0.5 dB DC mode DC to 100 kHz : -0.3 dB to +0.3 dB 100 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -0.3 dB to +0.3 dB 100 kHz to 300 kHz : -0.3 dB to +0.5 dB AC mode 10 Hz to 100 kHz : -0.3 dB to +0.5 dB 300 kHz to 500 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB (Output Amplitude 20 Vrms, reference 400 Hz) Slew rate 450 V/µs or above Output DC offset*3 DC mode Adjustment Range / ±1 V or above (Input Terminal Short circuit DC mode Adjustment Range : ±1 mV or above Output DC bias ±150 V or abové on/off with switch on front panel Harmonic distortion 10.* % or less (1 Hz to 20 kHz, output 80 Vrms) -30 dBc or less (20 kHz to 50 kHz, output 80 Vrms) Spurious -46 dBc or less (20 kHz to 50 kHz, output 80 Vrms) -30 dBc or less (50 kHz to 50 kHz, output 30 Vrms) Output noise*3 (7.2+0.16×G) mVrms or less (G=1 to 3) (1+0.4×G) mVrms or less (G=20 to 300) (Input terminal short circuit, bandwidth 10 Hz to 1 MHz) HSA4	Maximum aurrant (AC)			
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Low amplitude frequency response DC mode DC to 100 kHz : -0.3 dB to +0.3 dB 100 kHz to 300 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB (Output Amplitude 20 Vrms, reference 400 Hz) AC mode 10 Hz to 100 kHz : -0.3 dB to +0.3 dB 100 kHz to 300 kHz : -1 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB 300 kHz to 500 kHz : -3 dB to +0.5 dB (Output Amplitude 20 Vrms, reference 400 Hz) Slew rate 450 V/µs or above Output DC offset*3 DC mode Adjustment Range : ±1 V or above (Input Terminal Short circuit AC mode Adjustment Range : ±1 W or above Output DC offset*3 DC mode Adjustment Range : ±1 mV or above Output DC bias ±150 V or above on/off with switch on front panel Harmonic distortion 0.1% or less (40 Hz to 1 kHz, output 80 Vrms) factor 0.5% or less (1 kHz to 20 kHz, output 80 Vrms) -30 dBc or less (50 kHz to 50 kHz, output 30 Vrms) Output noise*3 (7.2+0.16xG) mVrms or less (G=1 to 3) (1+0.4xG) mVrms or less (G=20 to 300) (Input terminal short circuit, bandwidth 10 Hz to 1 MHz) Output impedance*4 HSA42051 : [0.19+0.016 xf (1+j)] Ω or less (typ.) HSA42052 : [0.19+0.008 xf (1+j)] Ω or less (typ.) BNC connector Number of terminals: 2 (One each on the front and rear pane Lo side is connect to chassis. Terminals on front panel and rear panel are connected in parallel	Mauline and (DO)			
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Output terminals BNC connector Number of terminals: 2 (One each on the front and rear pane Lo side is connect to chassis. Terminals on front panel and rear panel are connected in paralle	Output impedance*4	HSA42051 : [0.19+0.016 √f (1+j)] Ω or less (typ.)		
Number of terminals: 2 (One each on the front and rear pane Lo side is connect to chassis. Terminals on front panel and rear panel are connected in paralle	/	HSA42052 : [0.19+0.0084 √f (1+j)] Ω or less (typ.)		
Lo side is connect to chassis. Terminals on front panel and rear panel are connected in paralle	Output terminals	BNC connector		
Lo side is connect to chassis. Terminals on front panel and rear panel are connected in paralle		Number of terminals: 2 (One each on the front and rear panels)		
Terminals on front panel and rear panel are connected in paralle				
		Terminals on front panel and rear panel are connected in parallel.		
	1 500 for HSA42052			

1	5012 IOF H5A42	US2 27512 IOF HSA42052	
3	G means gain.	*4 f means frequency, unit is Hz.	

Output voltage monitor

Monitor ratio	1/100 of output voltage (1 V / 100 V), same polarity as output voltage
Monitor accuracy	±5.0% (DC to 500 kHz) (Error between output voltage and
	monitor output conversion voltage, load impedance 1 M Ω)
Output impedance	50 Ω±5%
Output terminal	BNC connector (rear panel)

Output level LED meter

Display item	Output voltage and Output current		
	Level display from 0% to 100% with 11 LEDs.		
Detection method	Average value detection (AC+DC). Calibrated with sine wa		
Full scale (100%)	HSA42051 : Voltage : 150 V Current : 1 A		
	HSA42052 : Voltage : 150 V Current : 2 A		

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	supply e	error		when an error is detected. Then output off.	
	Internal	tempera	ture	The front panel overload LED lights up when an error is	
	error			detected.Output turns off if the temperature error continues	
				for 10 seconds or longer.	
	Cooling	fan erro	r	Output turns off when an error is detected.	
/					
_					
		1			
	Exter	hal con	trol in	put/out/out	
		Control		Output on/off	
				id/invalid Setting with the DIP switch on the rear panel	
		Input le		Hi:+4.0 V or more Lo:+1.0 V or less	
	input			ve input +6 V/-5 V	
/		Input ty		Photocoupler LED input (series resistance 150 O)	4
		Signal d	letectio	on cycle 50 ms	
		Output	type	Open collector output	
	Status	- V		nd current 15 V or less, 10 mA or less	
	output	Status i	tem	Output on/off (output on is short-circuited),	
				Overload (output overload is short-circuited)	
		State up	odate (
	Terminal	s		D-sub 9-pin multi connector (rear panel)	
	Outpu	u <mark>t o</mark> n/of	f con	rol	
	Output	on/off		Controlled by front panel switch or external control input	
				(When the external control input is valid, only output off is valid for front panel operation)	
	//		. /		
		r-on sta	atus s		
	Setting			The DIP switch on the rear panel	
	Setting			Output (on/off), Gain, External control (on/off),	
	(9 items	5)		Output polarity, input A (on/off), input B (on/off),	
				Input impedance $(50 \Omega/10 k\Omega)$, DC bias (on/off)	
/	/			AC/DC mode (AC/DC)	
	Gene	ral Info	matic		
	Power in		mail	AC100 V to 230 V±10% (Maximum voltage 250 V), Overvoltage category II	
	Poweri	nput		$50 \text{ Hz} \pm 2 \text{ Hz} \text{ or } 60 \text{ Hz} \pm 2 \text{ Hz} (Single-phase),$	
_				Power consumption (Maximum) 1050 VA	
				Power factor 0.95 or more (AC 100V, 50Hz)	
	Consum	ntion D		HSA42051 : 580 VA or more HSA42052 : 1050 VA or more	
_	Consumption Power Withstanding voltage*			AC1500 V	
		nsulation resistance*		-10 MΩ or higher (DC 500 V)	
Operating environment					
_	Guaranteed performance			+5°C to + 35°C 5% RH to 85% RH	
Storage conditions		mance	_(Absolute humidity 1 to 25 g/m ³ , no condensation)		
		ons	-10° to + 50°C 5% RH to 85% RH.		
			(Absolute humidity 1 to 29 g/m³, no condensation)		
	Dimensions (W×H×D) mm			HSA42051 : 290(W)×132.5(H)×450(D) mr	
			-,	HSA42052 : 350(W)×177(H)×450(D) mm/	
	Weight	(approx.))	HSA42051 : 11kg HSA42052 : 16kg	
		·	, ,		

By detecting excessive output current or excessive internat power loss, the output current is clipped and the front pane overload LED lights yp. Output turns off if the overload condition continues for 10 seconds or longer.

The internal power error LED on the front panel flashes

Output turns off when an error is detected.

*Between power input vs. others and ch

*Note: The contents of this catalog are current as of June 23th, 2023. Product appearance and specifications are subject to change without notice. Before purchase, contact us to confirm the latest specifications, price and delivery date.