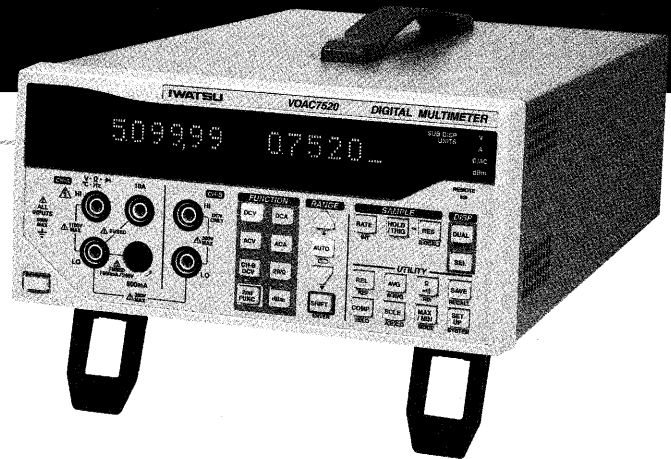
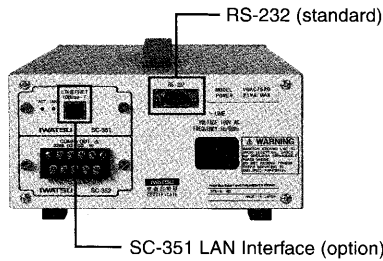


Digital Multimeters

VOAC 7520

1 μ V, full-scale 509999, 5-1/2 digits

Rear Panel



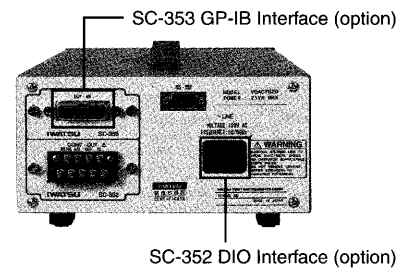
- 2CH input, dual display



VOAC 7521A

1 μ V, full-scale 509999, 5-1/2 digits

Rear Panel



- 4-wire ohms measurement, dual display

Features

- Dual Display**
Single unit can perform measurements normally requiring two units, improving measurement efficiency and enhancing productivity.
- Full Scale**
Features the highest count of any 5-1/2-digit model.
- True RMS Measurement**
Can measure true RMS AC voltage and AC current.
- Versatile Interface**
Standard: RS-232
Options: LAN Interface, GP-IB Interface, DIO Interface
- Versatile Mathematical Functions**
- Long-Time Measurements of up to 3,000 hours**
- 2CH Input (VOAC 7520)**
Single unit can measure separate voltages for two different systems.

Options

• LAN Interface	SC-351
• DIO Interface	SC-352
• GP-IB Interface	SC-353
• Sheath-Type Thermocouple	SC-0107 -200°C - +800°C
• Surface Thermocouple	SC-0116 0°C - +500°C
• Clamp-On Current Probe	SC-011 DC \pm 200 A Max., AC 150 Arms Max.
• High-Voltage Probe	SC-003 Max. DC 30 kV
• High-Resistance Test Lead	SC-004
• Test Leads	SC-020 1 pair (Red x 1, Black x 1)
• 4-Wire Ohms Test Small Clips	KELVIN L For 0.8 - 2.54 pitches KELVIN M For 0.5 - 1.0 pitches KELVIN S For 0.2 - 0.5 pitches
• Arrow Clip	SC-021 AC 30 V/DC 60 V/DC 3 A for SC-020
• Alligator Clip	SC-022 AC 30 V/DC 60 V/DC 10 A for SC-020
• Alligator Clip H	SC-023 600 Vrms, CAT II/10 A for SC-020

VOAC 7520 / VOAC 7521A Specifications

1. Sample Rate

Sample Rate	Resolution	Reading Rate	Hum Rejection
SLOW	5.5-digit	approx. 4 times/sec	Yes
MID	5.5-digit	approx. 20 times/sec	Yes
FAST	4.5-digit	approx. 100 times/sec	N/A

2. DC Volt (DCV)

Range	Resolution		Input Resistance	Accuracy*	
	5.5-digit	4.5-digit		SLOW/MID	FAST
500 mV	1 μ V	10 μ V	1000 M Ω or more	0.012+5	0.012+10
5 V	10 μ V	100 μ V		0.012+2	0.012+7
50 V	100 μ V	1 mV	approx. 10 M Ω	0.016+5	0.016+10
500 V	1 mV	10 mV		0.016+2	0.016+7
1000 V	10 mV	100 mV			

The accuracy at 500 mV range is specified after zero compensation through the REL operation.

Max. input voltage: 500 mV to 5 V range \pm 800 V (continuous)
50 V to 1000 V range \pm 1100 V (continuous)

Resolution and noise rejection

Resolution	Sample Rate	NMRR	CMRR
5.5-digit	SLOW	55 dB or more	120 dB or more
5.5-digit	MID	55 dB or more	120 dB or more
4.5-digit	FAST	0 dB	55 dB or more

3. CH-B DC Volt (DCV) VOAC 7520 only

Range	Resolution	Input Resistance	Accuracy*	
			SLOW/MID	FAST
5 V	100 μ V	CH-B: H-CH-B: L 10 M Ω \pm 3% CH-B: H-CH-A: L 5 M Ω \pm 3% CH-B: L-CH-A: L 5 M Ω \pm 3%	0.025+2	0.025+30
50 V	1 V			0.025+8
300 V	10 mV		0.025+5	

Max. input voltage: \pm 300 V between CH-A L and CH-B \pm 300 V

Resolution and noise rejection

Resolution	Sample Rate	NMRR	CMRR	Isolation between CH-A and CH-B
4.5-digit	SLOW/MID	55 dB or more	120 dB or more	56 dB or more
4.5-digit	FAST	0 dB	55 dB or more	

4. AC Volt (ACV, DC+ACV) detection of True RMS

Range	Resolution	Measurement Range		Input Resistance
		SLOW	MID/FAST	
500 mV	1 μ V	15 Hz~100 kHz	200 Hz~100 kHz	less than approx. 1 M Ω 100 pF
5 V	10 μ V			
50 V	100 μ V			
500 V	1 mV			
750 V	10 mV			
		45 Hz~100 kHz	200 Hz~20 kHz	approx. 10 M Ω

Accuracy: SLOW Sample (Sine wave)

Frequency	Accuracy*
15 Hz-45 Hz	0.5+150
45 Hz-100 Hz	0.25+150
100 Hz-30 kHz	0.2+150
30 kHz-100 kHz	0.5+300

Coefficient to input other than sine wave

Crest Factor	Frequency	
	1-1.5	1.5-2
15 Hz-30 kHz	0.05%	0.15%
30 kHz-100 kHz	0.20%	—

Response time

Sample Rate	Resolution	Reading Rate	Response Time
SLOW	5.5-digit	4 times/sec	less than 3 sec
MID/FAST	5.5-digit	20 times/sec	less than 2 sec

Max. input voltage: 780 Vrms, \pm 1100 V DC (continuous)
In the case of DC+ACV, 500 (less than 45 Hz) or 300 (45 Hz or higher) must be added to the value of Accuracy digit.
Sample rate of FAST becomes the same value as MID (approx. 20 times/sec).

5. DC Current (DCA)

Range	Resolution		Accuracy*		Input Resistance
	5.5-digit	4.5-digit	SLOW/MID	FAST	
5 mA	10 nA	100 nA	0.05+7	0.05+17	less than 150 Ω
50 mA	100 nA	1 μ A			less than 15 Ω
500 mA	1 μ A	10 μ A			less than 2 Ω
10 A	100 μ A	1 mA	0.2+7	0.2+17	less than 0.1 Ω

Auto range is not available at 5 mA-500 mA range and 10 A range because of using different input terminals.
Max. input current: 5 mA-500 mA range 500 mA (FUSE 0.5A)
10 A range 10 A (FUSE 15A)

6. AC Current (ACA, DC+ACA)

Range	Resolution	Measurement Range		Input Resistance
		SLOW/MID	FAST	
5 mA	10 nA	15 Hz-5 kHz	200 Hz-5 kHz	less than 150 Ω
50 mA	100 nA			less than 15 Ω
500 mA	1 μ A			less than 2 Ω
10 A	100 μ A	45 Hz-5 kHz		less than 0.1 Ω

Accuracy: SLOW Sample (Sine wave) 5% or more against the range

Frequency	Accuracy*	Crest Factor	
		1-1.5	1.5-2
15 Hz-45 Hz	1+200	0.05%	0.15%
45 Hz-1 kHz	0.4+200		
1 kHz-5 kHz	5.0+200		

Response time

Sample Rate	Resolution	Reading Range	Response time
SLOW	5.5-digit	4 times/sec	less than 3 sec
MID/FAST	5.5-digit	20 times/sec	less than 2 sec

Max. input current: 5 mA-500 mA range 500 mA (FUSE 0.5A)
10 A range 10 A (FUSE 15A)

DC component on input current must be included in the Max. input current.
In the case of 10 A range at 45 Hz-1 kHz, 0.3 must be added to %.
In the case of DC+ACA, 500 (less than 45 Hz) or 300 (45 Hz or higher) must be added to the value of Accuracy digit.
Sample rate of FAST becomes the same value as MID (approx. 20 times/sec).

7. Resistance (2 Wire Ω / 4 Wire Ω) 4 Wire Ω : VOAC 7521A only

Range	Resolution		Accuracy*		Test Current
	SLOW/MID	FAST	SLOW/MID	FAST	
50 Ω	0.1 m Ω	1 m Ω	0.025+10	0.025+15	approx. 10 mA
500 Ω	1 m Ω	10 m Ω			approx. 10 mA
5 k Ω	10 m Ω	0.1 Ω	0.014+3	0.014+8	approx. 1 mA
50 k Ω	0.1 Ω	1 Ω			approx. 100 μ A
500 k Ω	1 Ω	10 Ω	0.015+3	0.015+33	approx. 10 μ A
5 M Ω	10 Ω	100 Ω	0.033+30	0.033+30	approx. 1 μ A
50 M Ω	100 Ω	1000 Ω	0.25+30	0.25+30	approx. 100 nA
500 M Ω	1 k Ω	1 k Ω	1.5+50	1.5+50	approx. 10 nA

Max. input voltage: \pm 500 V peak, Open circuit test voltage less than 12 V.

The accuracy at 50 Ω -5 k Ω range are specified after zero compensation through the REL operation*².
Sample rate of FAST at 5 M Ω -500 M Ω range becomes the same value as MID (approx. 20 times/sec).

8. Low-Power Resistance (2 Wire Ω)

Range	Resolution		Accuracy*		Test Current
	SLOW/MID/FAST		SLOW/MID	FAST	
500 Ω	10 m Ω		0.1+5	0.1+15	approx. 1 mA
5 k Ω	0.1 Ω				approx. 100 μ A
50 k Ω	1 Ω		0.2+30	0.2+40	approx. 10 μ A
500 k Ω	10 Ω				approx. 1 μ A
5 M Ω	100 Ω		0.2+30	0.2+30	approx. 100 nA
50 M Ω	1 k Ω		1.5+30	1.5+30	approx. 10 nA

Max. input voltage: \pm 500 V peak, Open circuit test voltage less than 12 V.

The accuracy at 50 Ω -5 k Ω range are specified after zero compensation through the REL operation*².
Sample rate of FAST at 5 M Ω -500 M Ω range becomes the same value as MID (approx. 20 times/sec).

9. Diode

Test Current	Measurement Range	Accuracy*	Open Circuit Test Voltage	Max. Input Voltage
approx. 1 mA or 10 mA	0.1 mV-5.0999 V	0.014+13	less than 12 V	\pm 500 V peak

10. Temperature

Thermo Couple	Measurement Range	Resolution	Accuracy*	Max. Input Voltage
R	-50~+1768 $^{\circ}$ C	0.1 $^{\circ}$ C	0.2+30	\pm 500 V peak
K (CA)	-270~+1372 $^{\circ}$ C		0.1+15	
T (CC)	-270~+400 $^{\circ}$ C		0.15+15	
J (IC)	-210~+1200 $^{\circ}$ C			
E (CRC)	-270~+1000 $^{\circ}$ C			

Resolution: 4.5-digits, Sample rate at SLOW/MID/FAST: approx. 2 times/sec

11. Frequency (AC couple, Crest Factor: less than 3)

Sample Rate	Reading Rate (Gate time)	Display Digits and Measurement Range	Accuracy*
SLOW	approx. 0.5 times/sec (1s)	6-digit 15,000 Hz~1,000,000 MHz	0.02+2
MID	approx. 4 times/sec (100ms)	5-digit 15,000 Hz~1,000 MHz	
FAST	approx. 10 times/sec (10ms)	4-digit 150.00 Hz~1,000 MHz	

AUTO range of ACV must be used with input attenuator.

Max. input voltage: 780 Vrms, \pm 1100 V peak

12. Chart for combination of Dual Function

	DCV	CHB-DCV	ACV	DC+ACV	DCA	ACA	DC+ACA	2W Ω	4W Ω	Hz	$^{\circ}$ C
DCV	x	O	Δ	Δ	Δ	Δ	Δ	x	x	Δ	Δ
CHBDCV	O	x	O	O	O	O	O	O	O	O	O
ACV	Δ	O	x	O	O	Δ	Δ	x	x	O	x
DC+ACV	Δ	O	O	x	O	Δ	Δ	x	x	O	x
DCA	Δ	O	O	O	x	Δ	Δ	x	x	O	x
ACA	Δ	O	Δ	Δ	Δ	x	O	Δ	Δ	O	x
DC+ACA	Δ	O	Δ	Δ	Δ	O	x	Δ	Δ	O	x
2W Ω	x	O	x	x	Δ	Δ	Δ	x	x	x	x
4W Ω	x	O	x	x	O	O	O	Δ	Δ	x	x
Hz	Δ	O	O	O	O	Δ	Δ	x	x	x	x
$^{\circ}$ C	Δ	O	x	x	x	x	x	x	x	x	x

O: Available, Δ : have a limitation, x: N/A, /: not provided

Refers to Iwatsu Test Instruments Corp. web site for the limitations indicated by Δ .

CH-B DCV: VOAC 7520 only, 4Wires Ω : VOAC 7521A only.

13. General

MATH	Moving Average, Scale, Decibel (dBm, dB μ), Difference, Statistics (MAX, MIN, σ), Comparison (COMP), Arithmetic Calculation between Dual Function	
Memory	DATA	Max. 3,000 data with 10 msec resolution time mark (Elapsed time)
	SET UP	10
Interfaces (Full Remote)	Standard	RS-232
	Option	LAN, GPIB
	Voltage	100 V, 110 V, 220 V, 240 V
Power Supply	Frequency	50 Hz, 60 Hz
	Power Consumption	less than 21 VA (includes options)
Operation Temperature and Humidity	0 $^{\circ}$ C~50 $^{\circ}$ C (less than 80%RH) no-condensation, less than 70%RH at 40 $^{\circ}$ C~50 $^{\circ}$ C	
Storage Temperature and Humidity	-20 $^{\circ}$ C~60 $^{\circ}$ C (less than 70%RH) no-condensation, includes operation temperature	
Size	Measurement	210W x 99H x 353L mm (Options are built into the main unit)
	Weight	less than 3.5 kg (includes options)
Standard Accessories	Fuse, Test Leads, Alignment Screwdriver, Operation Manual, Power Cord	

* Accuracy X% of reading \pm Y digits indicated by X+Y

Accuracy is assured for 1 year after the calibration is performed.

Design and specifications subject to change without notice.

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