KIKUSUI

6½-Digit Digital Multimeter Designed With User Convenience in Mind

Digital Multimeter

DME1700 Series

NEW

Precise measurements and quick readings for various testing requirements.

Measurement data can be exported directly to a USB flash drive as a CSV file.



Lineup | **DME1700** **DME1701**

Overview & Features

The DME1700 Series digital multimeters have 6½-digit resolution. This series provides various measurement functions, including voltage, current, resistance, frequency, and temperature, making it suitable for many evaluation and measurement applications.
This series features a 4.3-inch TFT color LCD. Auto-ranging provides user-friendly operation. Moreover, DME1700 achieves an accuracy of 0.0035% for DC voltage (10 V range) and 0.01% for resistance (10 kΩ range)*. It delivers dependable measurements in environments that require high precision.
*Value for the DME1701 within one year of calibration.

At the fastest integration time (PLC), the DME1700 achieves a maximum of 300 rdg/s (0.2 PLC) and the DME1701 a maximum of 10,000 rdg/s (0.006 PLC), which is ideal for automated measurement systems that require fast, high-volume measurements.

DME1701 comes standard with LAN. USB, GPIB* and RS-232C* interfaces are available as options, providing flexibility for embedded applications. When used with an optional scanner card, the unit can measure up to 20 channels, making it well-suited for multi-point evaluation.
*Selected at time of order.

Resolution: 6 ½- digit

Enhanced visibility: 4.3-inch TFT color LCD

Basic measurement functions

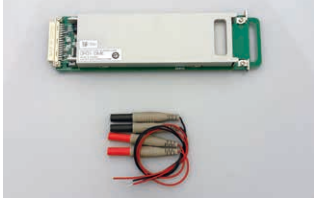
DC voltage	100 mV, 1 V, 10 V, 100 V, 1000 V
AC voltage	100 mV, 1 V, 10 V, 100 V, 750 V
DC current	10 mA, 100 mA, 1 A, 3 A
AC current	10 mA, 100 mA, 1 A, 3 A
2-wire/4-wire resistance	100 Ω, 1 kΩ, 10 kΩ, 100 kΩ, 1 MΩ, 10 MΩ, 100 MΩ (100 MΩ range is 2-wire resistance only)
Frequency and period measurement	3 Hz to 300 kHz
Other measurement functions	Continuity test, diode test, temperature measurement
Measurement range	Selectable in auto range or manual range
Maximum sample count	1,500,000 (DME1701 only)

Standard communication interfaces included (DME1701)

• **LAN, USB** *Options: GPIB, RS232C (selected at time of order)

Options

Name	Applicable models		Model
	DME1700	DME1701	
10-channel scanner card		✔	OP01-DME
20-channel scanner card		✔	OP02-DME
10-channel thermocouple scanner card		✔	OP03-DME
10-channel scanner/10-channel relay card		✔	OP04-DME
RS232C card		✔	RS01-DME
GPIB card		✔	IB08-DME
Kelvin probe (for 4-wire resistance measurements)	✔	✔	TL02-DME
4-wire test lead	✔	✔	TL03-DME


▲OP01-DME


▲IB08-DME

■DC voltage measurement (DCV)

Measurement range	Resolution	Input resistance	DME1700 Accuracy (1 year)	DME1700 Temperature coefficient/°C	DME1701 Accuracy (1 year)	DME1701 Temperature coefficient/°C
100 mV	0.1 µV	> 10 GΩ	0.0090 + 0.0065	0.0005 + 0.0005	0.0050 + 0.0035	0.0005 + 0.0005
1 V	1.0 µV		0.0080 + 0.0010	0.0005 + 0.0001	0.0040 + 0.0007	0.0005 + 0.0001
10 V	10 µV		0.0075 + 0.0005	0.0005 + 0.0001	0.0035 + 0.0005	0.0005 + 0.0001
100 V	100 µV	10 MΩ	0.0085 + 0.0006	0.0010 + 0.0001	0.0060 + 0.0006	0.0010 + 0.0001
1000 V	1 mV		0.0085 + 0.0010	0.0010 + 0.0001	0.0060 + 0.0010	0.0010 + 0.0001

■DC current measurement (DCI)

Measurement range	Resolution	Shunt resistance	DME1700 Accuracy (1 year)	DME1700 Temperature coefficient/°C	DME1701 Accuracy (1 year)	DME1701 Temperature coefficient/°C
10 mA	10 nA	5.1 Ω	0.050 + 0.020	0.0020 + 0.0020	0.050 + 0.020	0.0020 + 0.0020
100 mA	100 nA		0.050 + 0.005	0.0020 + 0.0005	0.050 + 0.005	0.0020 + 0.0005
1 A	1 µA	0.1 Ω	0.100 + 0.010	0.0050 + 0.0010	0.100 + 0.010	0.0050 + 0.0010
3 A	10 µA		0.200 + 0.002	0.0050 + 0.0020	0.200 + 0.020	0.0050 + 0.0020

■DC measurement characteristics

Item			DME1700 / DME1701
DC voltage measurement (DCV)	Over-range	For 100 mV to 100 V ranges	20 % over-range allowed
		For 1000 V range	1 % over-range allowed
	A/D converter linearity	For 10 V range	0.0001 % of measurement range
	Input impedance selection *1	For 100 mV to 10 V ranges	10 MΩ ± 1 % or >10 GΩ selectable
		For 100 V to 1000 V range	10 MΩ ± 1 % only
	Input bias current	At 23 °C (73.4 °F)	Less than 50 pA
	Common mode voltage (Between LO terminal and chassis)		Max. 500 Vpk
	Auto zero adjustment additional error for disabled setting	Within ± 1 °C (± 1.8 °F) and within 10 min of the last auto zero adjustment	Adding ± (0.0002 % of measurement range + 3 µV) to accuracy
		Within ± 5 °C (± 9 °F) and within 60 min after the last auto zero adjustment	Adding ± (0.001 % of measurement range + 10 µV) to accuracy
DC current measurement (DCI)	Over-range	For 10 mA to 1 A ranges	20 % over-range allowed
		For 3 A range	No over-range
	Common mode current	50 Hz or 60 Hz	< 600 nApk-pk

■2-wire/4-wire resistance measurement (Ω2W/Ω4W)

Measurement range	Resolution	Test current	DME1700 Accuracy (1 year)	DME1700 Temperature coefficient/°C	DME1701 Accuracy (1 year)	DME1701 Temperature coefficient/°C
100 Ω	100 µΩ	1 mA	0.014 + 0.007	0.0006 + 0.0005	0.010 + 0.004	0.0006 + 0.0005
1 kΩ	1 MΩ		0.014 + 0.001	0.0006 + 0.0001	0.010 + 0.001	0.0006 + 0.0001
10 kΩ	10 mΩ	100 µA	0.014 + 0.001	0.0006 + 0.0001	0.010 + 0.001	0.0006 + 0.0001
100 kΩ	100 mΩ	10 µA	0.014 + 0.001	0.0006 + 0.0001	0.010 + 0.001	0.0006 + 0.0001
1 MΩ	1 Ω		0.014 + 0.001	0.0010 + 0.0002	0.010 + 0.001	0.0010 + 0.0002
10 MΩ	10 Ω	1 µA	0.040 + 0.001	0.0030 + 0.0004	0.040 + 0.001	0.0030 + 0.0004
≥ 100 MΩ *2	100 Ω	1 µA | 10 MΩ	0.800 + 0.010	0.1500 + 0.0002	0.800 + 0.010	0.1500 + 0.0002

■Frequency and period measurement (FREQ/PERIOD)

Input signal range	Frequency measurement range	DME1700 Accuracy (1 year)*3	DME1700 Temperature coefficient/°C *3	DME1701 Accuracy (1 year)*3	DME1701 Temperature coefficient/°C *3
100 mV to 750 V (10 mA to 3 A)	3 Hz to 10 Hz	0.1	0.005	0.1	0.1
	10 Hz to 100 Hz	0.05	0.005	0.03	0.035
	100 Hz to 1 kHz	0.02	0.001	0.01	0.015
	1 kHz to 300 kHz	0.012	0.001	0.01	0.015

■Diode test

Measurement range	Resolution	Test current (±5 %)	DME1700 Accuracy (1 year)	DME1700 Temperature coefficient/°C	DME1701 Accuracy (1 year)	DME1701 Temperature coefficient/°C
10 V (fixed)	10 µV	1 mA	0.01 + 0.03	0.001 + 0.002	0.01 + 0.03	0.001 + 0.002

■Continuity test

Measurement range	Resolution	Test current (±5 %)	DME1700 Accuracy (1 year)	DME1700 Temperature coefficient/°C	DME1701 Accuracy (1 year)	DME1701 Temperature coefficient/°C
1 kΩ (fixed)	10 mΩ	1 mA	0.01 + 0.03	0.001 + 0.002	0.01 + 0.03	0.001 + 0.002

■Measurement characteristics (over-range)

Item		DME1700 / DME1701
Frequency and Period measurement (FREQ/PERIOD)	For ACV input (all measurement ranges)	Shared with AC voltage measurement (ACV)
	For ACI input (all measurement ranges)	Shared with AC current measurement (ACI)
Continuity test (CONT)	1000 Ω range (fixed)	1 % over-range allowed
Diode test	All measurement ranges	No over-range

*1. Specifications for parallel connection of less than 400 pF. *2. The ≥ 100 MΩ range is only available for 2-wire resistance measurement (Ω2W). *3. ±(% of reading) *4. Does not apply to specially ordered or modified products. *5. This is a Class I instrument. Be sure to ground this product's protective conductor terminal. The safety of this product is guaranteed only when the product is properly grounded. *6. Pollution is addition of foreign matter (solid, liquid or gaseous) that may produce a reduction of dielectric strength or surface resistivity. Pollution Degree 2 assumes that only non-conductive pollution will occur except for an occasional temporary conductivity caused by condensation. *7. Only for models with CE marking / UKCA marking on their body. *8. This is a Class A instrument. This product is intended for use in an industrial environment. This product may cause interference if used in residential areas. Such use must be avoided unless the user takes special measures to reduce electromagnetic emissions to prevent interference to the reception of radio and television broadcasts. *9. This product belongs to Group 1 products. This product does not generate and/or use intentionally radio-frequency energy, in the form of electromagnetic radiation, inductive and/or capacitive coupling, for the treatment of material or inspection/analysis purpose.

■AC voltage measurement (ACV)

Measurement range	Resolution	Frequency	DME1700 Accuracy (1 year)	DME1700 Temperature coefficient/°C	DME1701 Accuracy (1 year)	DME1701 Temperature coefficient/°C
100 mV to 750 V	0.1 µV to 1 mV	3 Hz to 5 Hz	1.00 + 0.03	0.100 + 0.003	1.00 + 0.04	0.100 + 0.003
		5 Hz to 10 Hz	0.38 + 0.03	0.035 + 0.003	0.35 + 0.04	0.035 + 0.003
		10 Hz to 20 kHz	0.09 + 0.03	0.005 + 0.003	0.06 + 0.04	0.005 + 0.003
		20 kHz to 50 kHz	0.15 + 0.05	0.011 + 0.005	0.12 + 0.05	0.011 + 0.005
		50 kHz to 100 kHz	0.63 + 0.08	0.060 + 0.008	0.60 + 0.08	0.060 + 0.008
		100 kHz to 300 kHz	4.00 + 0.50	0.200 + 0.020	4.00 + 0.50	0.200 + 0.020

■AC current measurement (ACI)

Measurement range	Resolution	Frequency	DME1700 Accuracy (1 year)	DME1700 Temperature coefficient/°C	DME1701 Accuracy (1 year)	DME1701 Temperature coefficient/°C
10 mA	10 nA	3 Hz to 5 Hz	1.00 + 0.04	0.100 + 0.006	1.00 + 0.04	0.100 + 0.006
		5 Hz to 10 Hz	0.30 + 0.04	0.035 + 0.006	0.30 + 0.04	0.035 + 0.006
		10 Hz to 5 kHz	0.10 + 0.04	0.015 + 0.006	0.10 + 0.04	0.015 + 0.006
		5 kHz to 10 kHz (TYP)	0.10 + 0.04	0.030 + 0.006	0.10 + 0.04	0.030 + 0.006
100 mA	100 nA	3 Hz to 5 Hz	1.00 + 0.04	0.100 + 0.006	1.00 + 0.04	0.100 + 0.006
		5 Hz to 10 Hz	0.30 + 0.04	0.035 + 0.006	0.30 + 0.04	0.035 + 0.006
		10 Hz to 5 kHz	0.10 + 0.04	0.015 + 0.006	0.10 + 0.04	0.015 + 0.006
		5 kHz to 10 kHz (TYP)	0.10 + 0.04	0.030 + 0.006	0.10 + 0.04	0.030 + 0.006
1 A	1 µA	3 Hz to 5 Hz	1.00 + 0.06	1.000 + 0.060	1.00 + 0.06	1.000 + 0.060
		5 Hz to 10 Hz	0.35 + 0.04	0.035 + 0.006	0.35 + 0.04	0.035 + 0.006
		10 Hz to 5 kHz	0.23 + 0.04	0.015 + 0.006	0.23 + 0.04	0.015 + 0.006
3 A	10 µA	3 Hz to 5 Hz	1.00 + 0.06	1.000 + 0.060	1.00 + 0.06	1.000 + 0.060
		5 Hz to 10 Hz	0.35 + 0.04	0.035 + 0.006	0.35 + 0.04	0.035 + 0.006
		10 Hz to 5 kHz	0.23 + 0.04	0.015 + 0.006	0.23 + 0.04	0.015 + 0.006

■AC measurement characteristics

Item			DME1700 / DME1701
Common	AC measurement mode		With anti-aliasing filter AC-coupled digital sampling
	Crest factor (except sine waves)	Crest factor selection	The larger of the following crest factors: • Up to 3:1 of full scale input • Max. 10:1
		Measurement range selection in auto range	Optimal measurement range for the crest factor up to 10:1
		Applying the accuracy characteristics	[Crest factor] × [fundamental frequency] ≤ 3 kHz (applied to all crest factors)
	Volt-Hertz product		8 × 107 V*Hz or below
	Common mode rejection ratio (If LO terminal lead imbalance is 1 kΩ)		>70 dB
	AC filter		Measuring input signals with frequencies greater than the set AC filter bandwidth
	Effect of AC filter bandwidth on aperture time		• 2 ms at 200 Hz • 20 ms at 20 Hz • 200 ms at 3 Hz
	Input impedance (if parallel connection < 100 pF)		1.1 MΩ ± 2 %
	Measurement range additional error	If the input is below 50 kHz and is 1 % to 5 % of the measurement range	Adding 0.1 % of the measurement range to the accuracy
		If the input is 50 kHz to 100 kHz	Adding 0.13 % of the measurement range to the accuracy
AC voltage measurement (ACV)	Over-range	For 100 mV to 100 V ranges	20 % over-range allowedx
		For 750 V range	No over-range
	Maximum DC voltage	All ACV measurement ranges	400 V
AC current measurement (ACI)	Over-range	For 10 mA to 1 A ranges	20 % over-range allowed
		For 3 A range	No over-range

■General Specifications

Item		DME1700	DME1701
Nominal voltage range (allowable voltage range)		100 Vac to 240 Vac (90 Vac to 264 Vac)	
Allowable frequency range		45 Hz to 66 Hz	
Power consumption		25 VAmax	
Environmental conditions	Operating temperature range	0 °C to 50 °C (32 °F to 122 °F)	
	Operating humidity range	80 %rh or less (no condensation)	
	Storage temperature range	-40 °C to 70 °C (-40 °F to 158 °F)	
	Storage humidity range	80 %rh or less (no condensation)	
	Altitude	Up to 2000 m	
Dimensions / Weight		212.8(8.38)W × 88.3(3.48)H× 272.3(10.72)D mm(inches) (Main unit only. Protrusions and other parts are not included) / 2.5 kg (5.5 lbs)	
Interface		n/a	USB, LAN
Safety *4		Complies with the requirements of the following directive and standards: Low Voltage Directive 2014/35/EU *7 EN 61010-1 (Class I *5, Pollution Degree 2 *6), EN 61010-2-030 Measurement Category II 300 V EN 61010-031	
Electromagnetic compatibility (EMC) *4 *7		Complies with the requirements of the following directive and standards: EMC Directive 2014/30/EU, EN 61326-1, EN 61326-2-1, EMI: CISPR 11 (Class A *8, Group I *9), EN 61000-3-2, EN 61000-3-3 EMS: EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11 Applicable under the following conditions: The maximum length of all cabling and wiring connected to the product must be less than 3 m.	
Input protection	INPUT HI terminal	1000 Vpk	
	SENSE HI terminal	350 Vpk (referenced to LO terminal)	
	SENSE LO terminal		
Insulation resistance (Between each terminal and chassis)		500 Vpk, >10 GΩ	
Capacity (Between each terminal and chassis)		< 300 pF	

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