

Ziegler

Redefine Innovative Metering

Technical Datasheet

ZDM 104

DIGITAL MULTIMETER

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ZDM 104 Digital multimeter IS suited for universal, general applications in the electrical and electronics fields, as well as in radio and television service, training and education. It is of especially flat design, and thus fit into any bag. The protective cover, which is provided as standard equipment, can be opened at an angle for convenient reading from the workbench, and provides for easy transport.

Product Features

- Direct and alternating voltages from 100V ... 1000V
- Direct and alternating currents from 10 A ... 10.00A
- Resistances from 100mΩ ... 40.00MΩ with zero correction
- Capacitance from 1pF ... 200.00mF with zero correction
- Frequencies from 10.00Hz ... 500.0kHz
- Diode measurement and continuity testing
- Hold measurement
- Relative measurement
- Duty cycle (%) measurement
- Temperature measurement with K Type Thermocouple
- Auto power off facility
- Theft protection, Company name and name of the user can be entered into the field next to the display with an indelible etching needle for identification of the owner
- Auto/Manual ranging facility
- Overload warning: An acoustic signal occurs when measuring AC voltage >750V, DC Voltage >1000V, AC/DC mA current >400.0mA, AC/DC current >10.00A



Fact Sheet

Digital	
Display	7 segment
Character height	10mm
Number of digits/Counts	3 ½ digits 3999 steps
Over range display	“OL” is displayed.
Polarity Display	‘-’ sign is displayed when plus pole at “ “
Measurement rate	3 measurements/s for V, I, Ω, Capacitance, frequency and duty cycle measurements
Applicable Regulations and Standards	
DIN 43751	Digital Measuring Instruments
DIN EN 60529 DIN VDE 0470 part 1	Test instruments and test procedure -Degree of protection provided by enclosures (IP) code

ZDM 104

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Technical Specifications

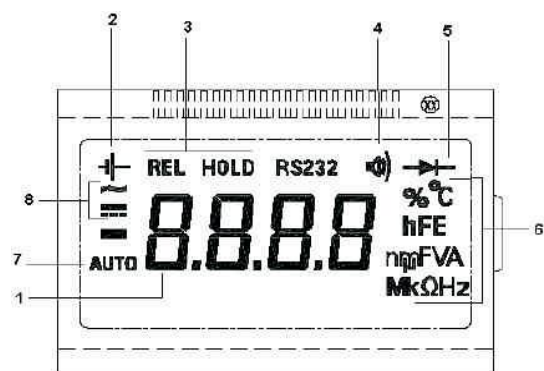
Meas. Function	Measuring Range	Resolution	Input Impedance	Digital display inherent deviation at reference condition ± (...% of rdg. + ...digits)	Overload capacity ¹⁾	
					Overload value	Overload Duration
V (DC)	400.0mV	100µV	>20MΩ	0.75+2	1050 V (DC)	Continuous
	4.000V	1mV	11 MΩ	0.5+2		
	40.00V	10mV	10 MΩ			
	400.0V	100mV	10 MΩ			
	1000V	1V	10 MΩ			
V (AC)	400.0mV	100µV	>20MΩ	1.5+5	1050 V(AC) rms	Continuous
	4.000V	1mV	11 MΩ	1+5		
	40.00V	10mV	10 MΩ			
	400.0V	100mV	10 MΩ			
	1000V	1V	10 MΩ			
			Approx. voltage drop at max. meas. current			
A (DC)	40.00mA	10µA	450mV	0.8+2	480mA	Continuous
	400.0mA	100µA	4.2V	1.5+5	4)	4)
	10.00A ⁴⁾	10mA	750mV			
A(AC)	40.0mA	10µA	450mV	1+5	480mA	Continuous
	400.0mA	100µA	4.2V	2+5	4)	4)
	10.00A ⁴⁾	10mA	750mV			
			Open - circuit voltage			
Ω	400.0Ω	100mΩ	approx. 0.5V	0.8+5	500V DC/AC rms	10 min
	4.000KΩ	1Ω		0.8+2		
	40.00KΩ	10Ω				
	400.0KΩ	100Ω				
	4000KΩ	1KΩ				
40.00MΩ	10KΩ	2+5				
BUZZER	400.0Ω	100mΩ		Acoustic signal for 0...< 100Ω approx.		
DIODE	1.000V	1mV	approx. 1V	2+10		
F	5.000 nF	1pF	fmin	3+40 ²⁾	500V DC/AC rms	10 min
	50.00 nF	10pF		2+10 ²⁾		
	500.0 nF	100pF		0.5+3 ²⁾		
	5.000 µF	1nF		1+2 ²⁾		
	50.00 µF	10nF		1.5+2 ²⁾		
	200.0 µF	100nF		5+10 ³⁾		
Hz ⁵⁾	10.000Hz	0.001Hz	10Hz	0.2+2	≤ 1kHz: 1000V ≤10kHz: 400V ≤500kHz : 40V except 400mV	Continuous
	100.00Hz	0.01Hz	10Hz			
	1.0000KHz	0.1Hz	10Hz			
	10.000KHz	1Hz	10Hz			
	100.00KHz	10Hz	10Hz			
	500.0KHz	100Hz	10Hz			
%	2.0...98%	0.1 %	-	10 Hz...1kHz +5D 1 kHz...10 kHz +5D/kHz		
° C	0...+1300°C	1° C	sensor K NiCr-Ni	2+3	500 V DC/AC rms	10min

- 1) At °C ... + 40 °C
- 2) With zero adjustment „REL“;
- 3) Time requirement for measurement approximately 60 seconds
- 4) Max 10 A/30 min, 12 A/5 min, 16 A/30 s
- 5) Indication of the frequency measurement expanded to up to 9999 digits

ZDM 104

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Fuse	
Fuse for ranges up to 400 mA	1.6 A / 600V; 6.3 mm x 32 mm
Fuse for 10 A range	16 A / 600V; 6.3 mm x 32 mm
Mechanical design	
Protection	Instruments: IP 50 Connector sockets: IP 20
Dimensions	
	W x H x D 92 mm x 154 mm x 25 mm
Weight	Approx. 0.25 Kg with battery
Ambient conditions	
Operating temperature range	-10 ⁰ C ... + 50 ⁰ C
Storage temperature range	- 25 ⁰ C + 70 ⁰ C (without batteries)
Relative humidity	45 ... 75 %
Elevation	up to 2000 m
Reference conditions for accuracy	
Reference Temperature	23°C + 2K
Relative Humidity	45%...55%
Waveform of measured quantity	Sinusoidal
Input frequency	50 Hz
Battery Voltage	3 V + 0.1 V
Battery	
Battery	2 numbers of 1.5V mignon cell Zinc-carbon cell as per IEC R6 Alkaline manganese dry cell as per IEC LR6
Service Life	Zinc carbon cell approx. 300 hrs Alkaline manganese dry cell approx. 600 hrs
Battery test	Automatic display of  symbol when battery voltage drops below approx. 2.4V



RISHmax Display

- 1 Digital display with dot and polarity
- 2 Low battery indication
- 3 Display for REL and HOLD
- 4 Continuity test display Speaker symbol appears when acoustic signal is switched on
- 5 Display for Diode Measurement
- 6 Measurement unit display
- 7 Display for automatic measuring range selection
- 8 Display for selected type of Voltage/Current(AC or DC)

ZDM 104

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Influence Variables and Effects

Influence variable	Influence range	Meas. Quantity / Meas. Range	Influence Effect
Temperature	0°C to 21°C and +25°C.... +50°C	V $\overline{\sim}$	0.1 intrinsic error / K
		V \sim	
		mA / A $\overline{\sim}$	
		mA / A \sim	
		Ω	
		F	
		Hz Duty (%) °C	

Influence variable	Influence range (max. resolution)	Frequency	Inherent Error at Ref. \pm (...%rdg. + ...digits)
Frequency VAC	400mV, 1000V	20Hz ... <50Hz >50Hz ... 500Hz	2 + 3
	4V, 40V, 400V	20Hz ... <50Hz 750Hz ... 1KHz	2 + 3

Influence variable	Influence range	Meas. Quantity / Meas. Range	Influence Effect
Relative humidity	55 ... 75%	V \approx	1 x Inherent error
		mA / A \approx	
		Ω	
		F	
		Hz	
		Duty (%) °C	

Influence variable	Interference Magnitude	Meas. Quantity / Meas. Range	Attenuation
Common Mode Interference Voltage	1000V DC/AC 50Hz sinusoidal	All V DC	>100 dB
	1000 VDC	All V DC	>100 dB
	1000V AC 50Hz sinus	400 mV / 4 V AC	>80 dB
		40 V AC	>63 dB
		400 V AC	>43 dB
		1000 V AC	>23 dB
Series - Mode Interference Voltage	MAX. 1000 V AC 50/60Hz	V DC	>43 dB
	MAX. 1000 V DC	V AC	>55 dB

Aux. Voltage Influence

(without $\overline{\sim}$ display)

all ranges except Cap : + 8 D, Cap range : + 20 D

Standard Scope of Supply

- 1 Multimeter
- 1 Cable set
- 1 Copy Operating Instructions
- 1 Protective Cover
- 1 Battery Set

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