

# VOLTCRAFT

## VOLTCRAFT TOP PERFORMANCE IN EVERY WAY

For more than 40 years, our product range has been dynamically adapting to the constant changes in the industry. We commit to offering first-class quality to our customers while delivering an excellent cost-performance ratio. This philosophy remains the cornerstone of Voltcraft's success.

## VC851 DIGITAL MULTIMETER



### Item no. 2576865

A robust CAT IV (600 V) / CAT III (1000 V) digital multimeter for professional and industrial applications.

### FEATURES

- CAT III max. 1000 V
- CAT IV max. 600 V
- Complies with EN 61010-1
- Measures direct voltage up to 1000 V
- Measures alternating voltage up to 1000 V
- Measures direct and alternating currents up to 10 A
- Measures frequency from 10 Hz to 10 MHz (max. 20 Vrms)
- Displays pulse ratio (duty cycle) in %
- Measures capacitance up to 60 mF
- Measures resistance up to 60 M $\Omega$
- Measuring temperatures from -40 to +1000 °C
- Continuity test (<50  $\Omega$  acoustic)
- Diode test



# TECHNICAL DATA

## Power supply

Operating voltage 3 micro batteries (3x 1.5 V, type AAA)

## Ambient conditions

Operating temperature 0 to +40 °C

Operating humidity ≤80 % RH (non-condensing)

Storage temperature -10 to +60 °C

Storage humidity ≤80 % RH (non-condensing)

Operating altitude max. 2000 m above sea level

## Other

Dimensions (L x W x H) 200 x 91 x 43 mm

Weight 430 g

## Device

Display 6000 counts (digits), TFT

Sample rate approx. 3 measurements/second

AC measurement method True RMS, AC-coupled

Test lead length approx. 120 cm

Measuring impedance ≥10 MΩ//10 pF (V range)

Measuring socket clearance 19 mm (COM-V)

Automatic shut-off after 5, 10, 15, 30 minutes (can be disabled)

Measurement category CAT III 1000 V, CAT IV 600 V

Pollution degree 2

Compliance EN 61010-1

## Direct voltage (V/DC)

Range	Resolution	Accuracy
60.00 mV*	0.01 mV	±(0.5% + 10)
600.0 mV*	0.1 mV	±(0.5% + 5)
6.000 V	0.001 V	±(0.5% + 5)
60.00 V	0.01 V	±(0.5% + 5)
600.0 V	0.1 V	±(0.5% + 5)
1000 V	1 V	±(0.8% + 5)

\*Only available in "mV" mode

Specified measurement range: 5–100 % of the measurement range

1000 V overload protection; impedance: 10 MΩ

The multimeter may display ≤10 counts if a measurement input is short-circuited.

The LoZ low impedance measurement is not specified.

**Alternating voltage (V/AC)**

Range	Resolution	Accuracy
600.0 mV*	0.1m V	$\pm(1.0\% + 10)$
6.000 V	0.001 V	$\pm(0.8\% + 8)$
60.00 V	0.01 V	$\pm(0.8\% + 5)$
600.0 V	0.1 V	$\pm(0.8\% + 5)$
1000 V	1 V	$\pm(1.0\% + 5)$

\*Only available in "mV" mode  
Specified measurement range: 5–100 % of the measurement range  
Frequency range 45 Hz - 1 kHz; overload protection 1000 V; impedance: 10 M $\Omega$   
The frequency shows 20 - 100 % of the measurement range.  
The multimeter may display 10 counts if a measurement input is short-circuited  
TrueRMS peak (Crest Factor (CF))  $\leq 3$  CF to 600 V  
600mV range does not support CF $\leq 3$   
The LoZ low impedance measurement is not specified.

TrueRMS peak for non-sinusoidal signals plus tolerance:  
CF >1.0 - 2.0 + 3%  
CF >2.0 - 2.5 + 5%  
CF >2.5 - 3.0 + 7%

**Direct current (A/DC)**

Range	Resolution	Accuracy
600.0 $\mu$ A	0.1 $\mu$ A	$\pm(0.8\% + 8)$
6000 $\mu$ A	1 $\mu$ A	$\pm(0.8\% + 5)$
60.00 mA	0.01 mA	$\pm(0.8\% + 8)$
600.0 mA	0.1 mA	$\pm(0.8\% + 5)$
6.000 A	0.001 A	$\pm(1.5\% + 8)$
10.00 A	0.01 A	$\pm(1.5\% + 8)$

Overload protection: Fuse  
Fuses:  $\mu$ A/mA = 600mA 1000V high-performance ceramic fuse  
10 A = F10AH1000V high-performance ceramic fuse  
Measuring time 10 A input: 10 seconds with 10-minute intervals

**Alternating current (A/AC)**

Range	Resolution	Accuracy
600.0 $\mu$ A	0.1 $\mu$ A	$\pm(1.0\% + 5)$
6000 $\mu$ A	1 $\mu$ A	$\pm(1.0\% + 5)$
60.00 mA	0.01 mA	$\pm(1.0\% + 5)$
600.0 mA	0.1 mA	$\pm(1.0\% + 5)$
6.000 A	0.001A	$\pm(1.5\% + 10)$
10.00 A	0.01 A	$\pm(1.5\% + 10)$

Overload protection: Fuse  
Specified measurement range: 5–100 % of the measurement range  
Frequency range 45 Hz - 1 kHz; overload protection 1000 V; impedance: 10 M $\Omega$   
The frequency shows 20 100 % of the measurement range.  
Fuses:  $\mu$ A/mA = F600mAH1000V high-performance ceramic fuse  
10 A = F10AH1000V high-performance ceramic fuse  
Measuring time 10 A input: 10 seconds with 10-minute intervals

TrueRMS peak (Crest Factor (CF))  $\leq 3$  CF over the entire range  
TrueRMS peak for non-sinusoidal signals plus tolerance:  
CF >1.0 - 2.0 + 3%  
CF >2.0 - 2.5 + 5%  
CF >2.5 - 3.0 + 7%

## Resistance

Range	Resolution	Accuracy
600.0 $\Omega$ *	0.1 $\Omega$	$\pm(0.8\% + 5)$
6.000 k $\Omega$ *	0.001 k $\Omega$	$\pm(0.8\% + 5)$
60.00 k $\Omega$	0.01 k $\Omega$	$\pm(0.8\% + 5)$
600.0 k $\Omega$	0.1 k $\Omega$	$\pm(0.8\% + 5)$
6.000 M $\Omega$	0.001 M $\Omega$	$\pm(1.0\% + 5)$
60.00 M $\Omega$	0.01 M $\Omega$	$\pm(2.0\% + 5)$

1000 V overload protection  
Measuring voltage: approx. 1 V, measuring current approx. 0.5 mA  
\*Accuracy for measurement range  $\leq 600 \Omega$  was calculated after deducting lead resistance from the REL function

## Capacitance

Range	Resolution	Accuracy
60.00 nF*	0.01 nF	$\pm(3.0\% + 5)$
600.0 nF*	0.1 nF	$\pm(3.0\% + 5)$
6.000 $\mu$ F*	0.001 $\mu$ F	$\pm(3.0\% + 5)$
60.00 $\mu$ F	0.01 $\mu$ F	$\pm(3.0\% + 5)$
600.0 $\mu$ F	0.1 $\mu$ F	$\pm(3.0\% + 5)$
6.000 $\mu$ F	1 $\mu$ F	$\pm(4.0\% + 10)$
60.00 mF	0.01 mF	$\pm(4.0\% + 10)$

1000 V overload protection  
\*Accuracy for measurement range  $\leq 600$  nF only applies when the REL function is used

## Frequency "Hz" (electronic)

Range	Resolution	Accuracy
60.00 Hz	0.01 Hz	$\pm(0.1\% + 3)$
600.0 Hz	0.1 Hz	
6.000 kHz	0.001 kHz	
60.00 kHz	0.01 kHz	
600.0 kHz	0.1 kHz	
6.000 MHz	0.001 MHz	
10.00 MHz	0.01 MHz	

Signal level (without direct voltage component):  
 $\leq 100$  kHz: 0.4 - 20 Vrms  
>100 kHz <1 MHz: 0.4 - 20 Vrms  
 $\geq 1$  MHz - <5 MHz: 0.5 - 20 Vrms  
 $\geq 5$  MHz - 10 MHz: 0.9 - 20 Vrms  
1000 V overload protection  
Duty cycle: 0.1 - 99.9%, not specified

## Diode test

Test voltage	Resolution
Approx. 3.0 V/DC	0.001 V

Overload protection: 1000 V; Test voltage: 1.5 mA typ.

## Acoustic Continuity tester

Measurement range	Resolution
600.0 $\Omega$	0.1 $\Omega$

Response threshold:  $\leq 50 \Omega$  continuous tone;  $> 50 \Omega$  no tone  
Overload protection: 1000 V  
Test voltage approx. 1 V  
Test current 0.5 mA

## Temperature

Range	Resolution	Accuracy*
-40 to <+40 °C	1 °C	$\pm(2,5\% + 5)$
+40 to <+100 °C	1 °C	$\pm(1.0\% + 3)$
+100 to +1000 °C	1 °C	$\pm(1.0\% + 3)$
-40 to <+32 °F	1 °F	$\pm(4.0\% + 8)$
+32 to <+210 °F	1 °F	$\pm(2.0\% + 8)$
+210 to +1832 °F	1 °F	$\pm(5.0\% + 8)$

Overload protection 1000 V  
\* additional tolerance of the temperature probe

## PACKAGE CONTENTS

Digital multimeter // 2x safety test leads with CAT III/CAT IV protective caps // Wire temperature probe, type-K (-20 to +230 °C) // 3x micro batteries (AAA) // Operating instructions