

HT8100

MULTIMETER/PROFESSIONAL PROCESS CALIBRATOR

HT8100 is a professional instrument performing functions as a TRMS multimeter and as a process calibrator capable of generating DC current signals 0-20mA and 4-20mA. As a digital multimeter it mainly carries out measurements of AC/DC voltage, AC/DC current. When generating current (values can be displayed even in percentage) modes 0-20mA and 4-20mA are available with manual and automatic threshold setting on output signal. The instrument also permits to effect measurement of current absorbed by external transducers and simulate a transducer with current adjustable on the whole measuring range. HT8100 can save measurement results into an internal memory and it is designed in compliance with safety standards IEC/EN61010-1 in CAT III 1000V and CAT IV 600V with double insulation protection. Each function can be selected pressing the front panel's keys. The instrument represents the best solution for applications in industrial automation.

FUNCTIONS

- DC/AC TRMS voltage
- DC/AC TRMS current
- AC + DC measurements
- Automatic AC/DC signal detection
- Resistance and continuity test
- Frequency
- Diode test
- DC current generation up to 20mA DC
- Percentage display (0-20mA, 4-20mA)
- Measurement of transducer current (Loop)
- Simulation of an external transducer
- Fused input protection
- Storage to save measurements
- Data HOLD
- MAX/MIN/AVG
- Relative measurement
- Automatic/Manual range
- Auto Backlight
- Auto Power OFF

TECHNICAL SPECIFICATIONS

DC Voltage
Measuring range: 0.001mV ÷ 1000V
Basic accuracy: $\pm(0.05\% \text{ rdg} + 5\text{dgt})$

AC TRMS Voltage
Measuring range: 0.001mV ÷ 1000V
Basic accuracy: $\pm(0.5\% \text{ rdg} + 20\text{dgt})$

DC Current measurement
Measuring range: 0.001mA ÷ 1.0000A
Basic accuracy: $\pm(0.05\% \text{ rdg} + 5\text{dgt})$

AC TRMS Current measurement
Measuring range: 0.001mA ÷ 1.0000A
Basic accuracy: $\pm(1.0\% \text{ rdg} + 20\text{dgt})$

DC Current generation
Measuring range: 0.000mA ÷ 20.000mA
Measuring range: 4.000mA ÷ 20.000mA
Basic accuracy: $\pm 5\text{dgt}$

Resistance and continuity test
Measuring range: 0.01 Ω ÷ 50.000M Ω
Basic accuracy: $\pm(0.1\% \text{ rdg} + 10\text{dgt})$
Buzzer: <30 Ω

Diode test
Measuring range: 2.000V
Basic accuracy: $\pm(1.0\% \text{ rdg} + 10\text{dgt})$

Frequency
Measuring range: 0.01Hz ÷ 100.00kHz
Basic accuracy: $\pm 3\text{dgt}$

GENERAL SPECIFICATIONS

| | |
|------------------------------|---------------------------------------|
| Display: | LCD, 5 digits, 50000 counts |
| Power supply: | 4x1.5V alkaline batteries type AA LR6 |
| Battery life: | 120 hours |
| Auto Power OFF: | after 20 minutes of idleness |
| Safety: | IEC/EN61010-1 |
| Measurement category: | CAT III 1000V, CAT IV 600V |
| Insulation: | double insulation |
| Pollution degree: | 2 |
| Max altitude: | 2000m |
| Dimensions (LxWxH): | 207x95x52mm |
| Weight (batteries included): | 630g |

ACCESSORIES

Standard

- Pair of test leads
- Pair of alligator clips
- Belt with magnetic end for fastening to metal surfaces
- Protection shell
- Batteries
- User manual



HT8100
HV008100



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1. ELECTRICAL SPECIFICATIONS

Accuracy is indicated as $\pm [\%rdg + (\text{numbers of digits} \times \text{resolution})]$ at $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$, $<80\%HR$

DC VOLTAGE

| Range | Resolution | Accuracy | Input impedance | Overload protection |
|----------|------------|------------------------|------------------------|---------------------|
| 50.000mV | 0.001mV | $\pm(0.05\%rdg+30dgt)$ | 10M Ω // <100pF | 1000VDC/ACrms |
| 500.00mV | 0.01mV | $\pm(0.05\%rdg+5dgt)$ | | |
| 5.0000V | 0.0001V | | | |
| 50.000V | 0.001V | | | |
| 500.00V | 0.01V | | | |
| 1000.0V | 0.1V | | | |

AC TRMS VOLTAGE

| Range | Resolution | Accuracy (**) (Sinusoidal waveform) | Input impedance | Overload protection |
|-------------|------------|--------------------------------------------------|------------------------|---------------------|
| 50.000mV | 0.001mV | $\pm(0.7\%rdg+20dgt)$ (40Hz \div 70Hz) | 10M Ω // <100pF | 1000VDC/ACrms |
| 500.00mV | 0.01mV | $\pm(1.5\%rdg+40dgt)$ (71Hz \div 10kHz) | | |
| 5.0000V | 0.0001V | $\pm(0.5\%rdg+20dgt)$ (40Hz \div 70Hz) | | |
| 50.000V | 0.001V | $\pm(1.5\%rdg+40dgt)$ (71Hz \div 1kHz) | | |
| 500.00V | 0.01V | $\pm(3.0\%rdg+80dgt)$ (1.001kHz \div 10kHz) | | |
| 1000.0V (*) | 0.1V | | | |

Frequency range: 40Hz \div 10kHz ;(**) For values $<5\%$ of each range add 20dgt to the accuracy(*) Frequency range of this range: 40Hz \div 1kHz

For non-sinusoidal voltages, consider the following crest factors (CF):

1.4 \leq FC $<$ 2.0 \rightarrow Add 1.0% reading to accuracy2.0 \leq FC $<$ 2.5 \rightarrow Add 2.5% reading to accuracy2.5 \leq FC \leq 3.0 \rightarrow Add 4.0% reading to accuracy

Accuracy in AC+DC mode: AC accuracy + DC accuracy + 1.0%reading

Accuracy in HFR mode: AC accuracy + 1.0%reading (40Hz \div 400Hz)

Cutting frequency in HFR mode: 800Hz (-3dB) ; Characteristic attenuation: approx. -24dB

DC CURRENT

| Range | Resolution | Accuracy | Max. meas. time | Overload protection |
|----------|------------|-------------------------|------------------|---------------------|
| 50.000mA | 0.001mA | $\pm(0.05\%rdg + 5dgt)$ | 1min (input A) | max 440mA |
| 1.0000A | 0.0001A | | 10min (input mA) | |

AC TRMS CURRENT

| Range | Resolution | Accuracy | Max. meas. time | Overload protection |
|----------|------------|------------------------------------------------|------------------------------------|---------------------|
| 50.000mA | 0.001mA | $\pm(1.0\%rdg + 20dgt)$ (40Hz \div 70Hz) | 1min (input A) 10min (input mA) | max 440mA |
| 1.0000A | 0.0001A | $\pm(2.0\%rdg + 20dgt)$ (71Hz \div 10kHz) | | |

(*) For values $<5\%$ of each range add 20dgt to the accuracy ; Frequency range: 40Hz \div 10kHzInput impedance: 0.1 Ω (input A), 13 Ω (input mA)

For non-sinusoidal currents, consider the same conditions of TRMS AC Voltage





HT8100

Rel. 1.02 of 14/05/12

Professional TRMS multimeter + Process calibrator

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RESISTANCE

| Range | Resolution | Accuracy | Output current | Overload protection |
|--------------|------------|------------------|----------------|---------------------|
| 500.00Ω | 0.01Ω | ±(0.2%rdg+30dgt) | 1mA | 1000VDC/ACrms |
| 5.0000kΩ | 0.0001kΩ | ±(0.2%rdg+10dgt) | 100μA | |
| 50.000kΩ | 0.001kΩ | | 10μA | |
| 500.00kΩ | 0.01kΩ | ±(0.5%rdg+10dgt) | 1μA | |
| 5.0000MΩ | 0.0001MΩ | ±(1.0%rdg+10dgt) | 100nA | |
| 50.000MΩ (*) | 0.001MΩ | ±(2.0%rdg+10dgt) | 10nA | |

(*) Little instability for < 20 dgt
Max open voltage: approx 3.5V

CONTINUITY TEST

| Range | Buzzer | Accuracy | Open voltage | Overload protection |
|--------|--------|------------------|--------------|---------------------|
| 500.0Ω | <30Ω | ±(0.1%rdg+30dgt) | approx 3.5V | 1000VDC/ACrms |

DIODE TEST

| Range | Test current | Accuracy | Open voltage | Overload protection |
|--------|--------------|------------------|--------------|---------------------|
| 2.000V | ±1mA | ±(1.0%rdg+10dgt) | approx ±3V | 1000VDC/ACrms |

FREQUENCY AC VOLTAGE/CURRENT

| Range | Resolution | Accuracy | Overload protection |
|-----------|------------|----------|----------------------------|
| 500.00Hz | 0.01Hz | ±3dgt | 1000VDC/ACrms max 440mA |
| 5.0000kHz | 0.0001kHz | | |
| 50.000kHz | 0.001kHz | | |
| 100.00kHz | 0.01kHz | | |

Minimum frequency value: 5Hz

Sensitivity of signal for frequency measurement

| Function | Range | Sensitivity (peak to peak value) | |
|----------|----------|----------------------------------|----------------|
| | | 5Hz ÷ 10kHz | 10kHz ÷ 100kHz |
| AC mV | 50.000mV | 10mV | 100mV |
| | 500.00mV | | |
| AC V | 5.0000V | 1V | 1V |
| | 50.000V | 1V | not specified |
| | 500.00V | | |
| | 1000.0V | | |
| AC A | 50.000mA | 10mA | |
| | 1.000A | 300mA | |

GENERATED DC CURRENT – Programmable output

| Range | Resolution | Accuracy | Overload protection |
|----------------|------------|------------------|---------------------|
| 0.000÷20.000mA | 0.001mA | ±(0.05%rdg+5dgt) | max 440mA |
| 4.000÷20.000mA | | | |

Power supply: battery level > 4.5V
External power supply simulated mode: 6V ÷ 48V



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GENERATED DC CURRENT – Output ramp

| Ramp type | Description | Action |
|-----------|------------------|----------------------------------|
| | Linear slow ramp | 0% → 100% → 0% in 40s |
| | Linear fast ramp | 0% → 100% → 0% in 20s |
| | Step slow ramp | 0% → 100% → 0% with steps of 15s |
| | Step fast ramp | 0% → 100% → 0% with steps of 5s |

Output voltage: 32.0VDC: Output voltage accuracy: $\pm 5.0\%$ of reading

Power supply: battery level > 4.5V

External power supply in simulation mode: 6V + 48V

LOOP POWER (Loop current)

| Function | Range | Accuracy | Driver | Overload protection |
|-------------------|----------|-------------------------|----------------------|---------------------|
| LOOP | 50.000mA | $\pm(0.05\%rdg + 5dgt)$ | 30V / 1.25k Ω | max 440mA |
| 250 Ω HART | | | 24V / 1k Ω | |

Output voltage: 32.0VDC: Output voltage accuracy: $\pm 5.0\%$ of reading

Power supply: battery level > 4.5V

External power supply in simulation mode: 6V + 48V





2. GENERAL SPECIFICATIONS

Display:

- LCD display, 5 digit with maximum reading 50000 counts with sign, decimal point
- Automatic polarity indication
- "OL" over range indication


Features:

- Data HOLD
- MAX/MIN/AVG for maximum, minimum and average values
- Auto Backlight for automatic activation of backlight
- AUTOTEST for automatic detection of AC or DC measurements
- AC+DC for measurement of DC component overlapped to the alternate signal
- HFR for AC voltage measurement with 800Hz cut-off frequency
- Internal memory for saving/recall data
- RANGE for manual range selection
- REL for relative measurement
- Auto Power OFF after 20 minutes of idleness

Internal memory:

- Max 100 locations

Low battery indication:

- The symbol  appears when the battery voltage is low

Environmental conditions:

- Working temperature/humidity: -10 °C ÷ 30 °C, <85%RH
30 °C ÷ 40 °C, <75%RH
40 °C ÷ 50 °C, <45%RH
- Storage temperature/humidity: -20 °C ÷ 60 °C, <80%RH

General information:

- Max height of use: 2000m
- Pollution degree: 2
- Insulation: double insulation

Power supply:

- 4 x 1.5V alkaline batteries type AA IEC LR6

Sizes:

- 207(L)x95(W)x52(H) mm

Weight (included batteries):

- 630g

Applied standards:

- Safety: IEC/EN61010-1, EN61010-2-030
- Measurement category: CAT IV 600V – CAT III 1000V

This product conforms to the prescriptions of the European directive on low voltage 2006/95/EEC and to EMC directive 2004/108/EEC

