



HT8100 Professional TRMS multimeter + Process Calibrator

Description

The HT8100 is a professional meter performing measurements as TRMS DMM as well as a process calibrator generating 0-20mA and 4-20mA DC current signals. As DMM the instrument carries out AC/DC/AC+DC voltage measurements up to 1000V and AC/DC/AC+DC current measurements up to 1A.

Under the current generation mode you can manually select between 0 to 20mA and 4-20mA as well as automatic ramps on output signal. It is capable of measuring current absorbed by external transducers simulating a current adjustable within the whole measuring range.

The instrument can store measurement results into an internal memory and is designed in compliance with safety standards IEC/EN61010-1 according to CAT III 1000V and CAT IV 600V with double insulation protection.

Functions



- DC/AC TRMS Voltage.
- DC/AC TRMS Current.
- AC+DC Measurements.
- Generation of output current signal up to 24mA DC.
- Selection 0-20mA and 4-20mA output.
- Up to 4 available automatic ramp.
- Loop current measurement of external transducers.
- 250 Ohm HART feature.
- Simulating of external transducers.
- Resistance and continuity test.
- Diode Test.
- Frequency, Data Hold, Min/Max/AVG.
- Manual/Autorange.
- Relative measurements.
- Internal memory.
- Autotest for automatic detection of AC or DC parameters.
- Auto backlight.
- Auto Power Off.

Included Accessories

- Protective rubber holster.
- Test leads (red and black).
- Belt with Magnetic end.
- Couple of Alligator clips/
- Batteries.
- User manual

General Specifications

Display	LCD 5-digit, 50000 dots, decimal sign, and point, auto backlight
Overrange Indication	'OL' or '-OL'
Low Battery Indication	Yes



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	$\pm(1.5\%rdg+40dgt)$ (71Hz \div 1kHz)		
1000.0V (*)	0.1V	$\pm(3.0\%rdg+80dgt)$ (1.001kHz \div 10kHz)		

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 accuracy

$2.0 \leq FC < 2.5 \rightarrow$ Add 2.5% reading to accuracy

$2.5 \leq FC \leq 3.0 \rightarrow$ 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	$\pm(0.05\%rdg + 5dgt)$	1 min (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)	1 min (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 10kHz

Input impedance: 0.1 Ω (input A), 13 Ω (input mA)

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



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	not specified
	50.000V	1V	
	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

**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