

# 20028 USB Powered Microohmmeter



32000 points

3200Ω - 10nΩ

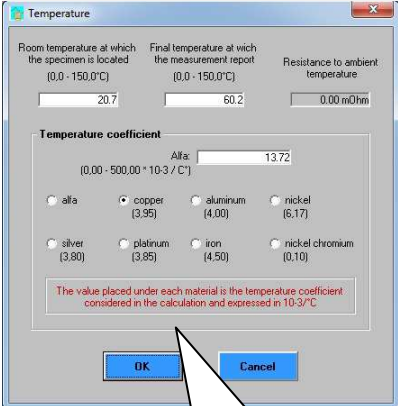
# NEW

**20028** is the first instrument of its kind: a high-performance microohmmeter with USB connection, from which it draws its energy and by which it is controlled by the PC. Thanks to a truly comprehensive software you can manage a variety of measures, perform tests, saving recording data in Excel compatible format or send them directly to Excel where you can do other processing.

- ▶ 32000 measuring points
- ▶ From 4 to 32 measurements per second and average (filter) from 1 to 128 measures
- ▶ 8 ranges from 3200 Ohm to 320  $\mu$ Ohm (from 100 mOhm to 10 nOhm of resolution)
- ▶ Current measurement can be selected
- ▶ Choice of automatic or manual range measurement
- ▶ 19 secondary measures such as: relative measures in absolute and percentage calculated by set or acquired value, measurements of resistance and resistivity, ohm/meter, ohms/kilometer also compensated with the temperature, calculating the change of resistance according to temperature variation and calculation the temperature change according to the change of resistance, resistance measurement temperature compensated even according to CEI EN 60228: 20005-10 already preset, minimum and maximum values
- ▶ Setting cable's length, material, section and temperature such aid in some of the above measures
- ▶ Direct and reverse measurement, positive, negative and bipolar pulse
- ▶ Measurement hold
- ▶ Auto-zeroing of instrument
- ▶ Save/recall the entire setting of the instrument
- ▶ Bar graph and color indication of the PASS and NO PASS band in the test measures
- ▶ Test PASS / NO PASS according to 7 different criteria, also activated by external signal, with acoustic, vocal and visual alert and external transmission on three open-collector outputs of the test result
- ▶ Registration of the main measures up to 32000 samples with a sampling rate of 32 measurements per second to once every 10 minutes
- ▶ Recording with the possibility of vertical and temporal zoom
- ▶ Measure as microvoltmeter with 4 ranges from 320mV to 320 $\mu$ V (resolution from 10 $\mu$ V to 10nV)
- ▶ Selecting the language between Italian, English and German
- ▶ USB powered with a maximum of 2.5 W, with dimensions of 125x46x73mm and with only 260 grams of weight

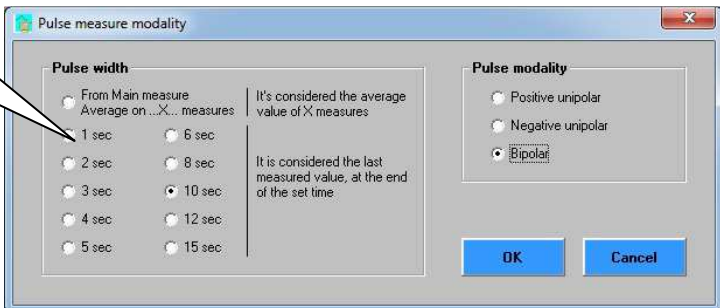


Main program window from which you can select the desired range, the sampling rate, the filter size, the secondary measure and all other operating modes and the operating parameters.

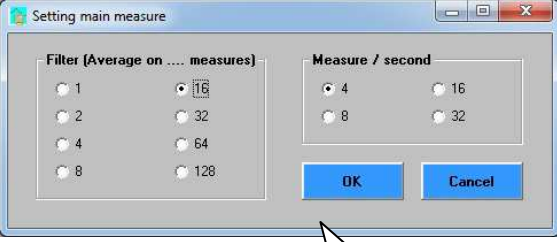
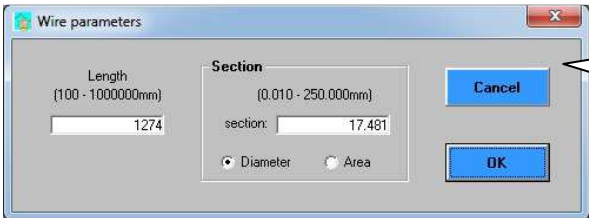


From this window you can set the parameters related to the temperature and the type of material, to calculate the compensated resistance value.

The measurement can be pulsed with selectable duration and polarity.

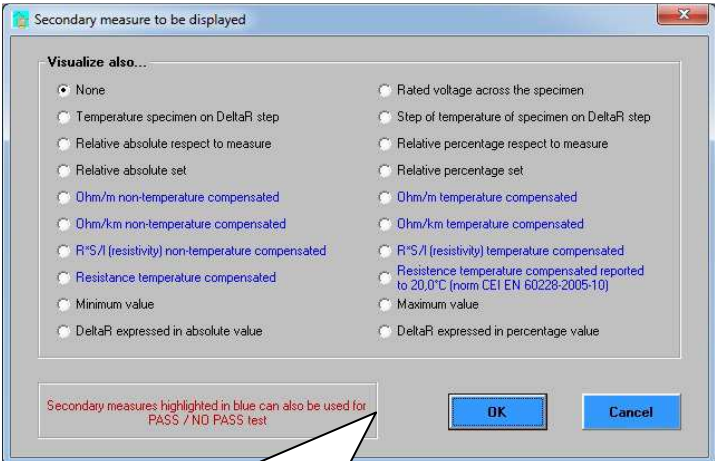


Setting the length and the section, selected as area or diameter, of the cable under test, to calculate ohm/m, ohm/km and resistivity compensated or not temperature-compensated.

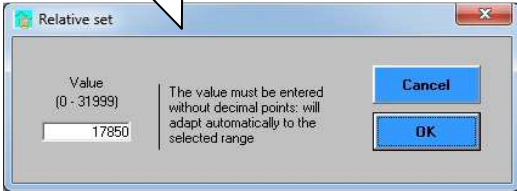


Setting of filter and of number of acquisitions per second.

Sets a value used to calculate the absolute and relative percentage measure.

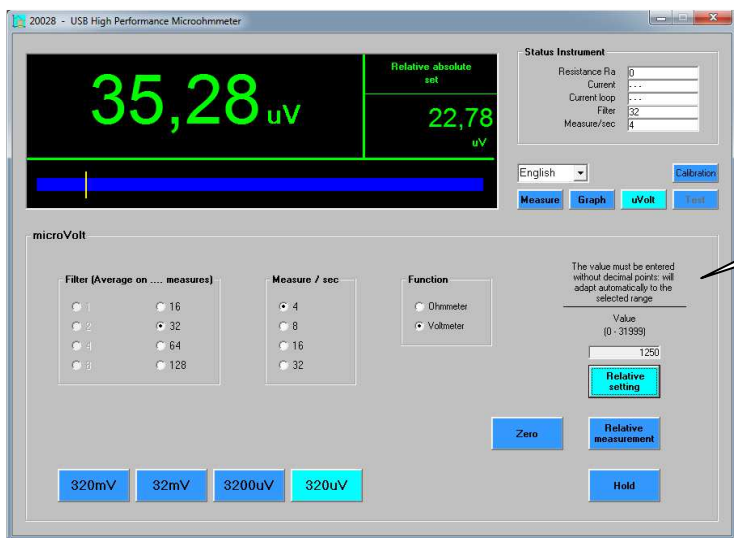


In this window you can choose from various secondary values to be represented on the second display.





In addition to setting 7 different modes and limits for PASS - NO PASS test, you can choose the type and duration of the alert, signaling also provided through open-collector digital outputs to transmit the information remotely. There is also a digital input for starting remotely the test. The test can be done on the main measure and on many secondary measures.



It can also work as a differential microvoltmeter with resolution that reaches 10nV! It also provides the relative measurement calculated respect to a specific value. You can select the filter size and the number of measurements per second regardless of the microohmmeter.



Record, save, load a chart is easy. "Auto Zoom" and "Hook scroll" buttons enable immediate optimum and automatic representation of recording with maximum detail. They are also constantly available various information about the recording in progress and the settings made. All this is for the microohmmeter and microvoltmeter function.

Measure	Time	# Sample
1,0102E-04	22:09:48,17; 09/02/16	1
1,0102E-04	22:09:48,43; 09/02/16	2
1,0102E-04	22:09:48,70; 09/02/16	3
1,0103E-04	22:09:48,95; 09/02/16	4
1,0102E-04	22:09:49,21; 09/02/16	5
1,0102E-04	22:09:49,47; 09/02/16	6
1,0103E-04	22:09:49,72; 09/02/16	7
1,0103E-04	22:09:50,00; 09/02/16	8
1,0103E-04	22:09:50,25; 09/02/16	9
1,0103E-04	22:09:50,50; 09/02/16	10
1,0103E-04	22:09:50,78; 09/02/16	11
1,0103E-04	22:09:51,03; 09/02/16	12
1,0103E-04	22:09:51,28; 09/02/16	13
1,0103E-04	22:09:51,56; 09/02/16	14
1,0103E-04	22:09:51,82; 09/02/16	15

The voltmetric or ohmmetric recording can be saved to a file or sent to Excel for further processing.

## TECHNICAL DATA

### GENERAL SECTION

<b>Power supply</b>	exclusively via USB cable
<b>Power requirement</b>	2,5W max
<b>Connection to PC</b>	via USB cable
<b>Representation</b>	on PC by software <b>20028 - USB High Performance Microohmmeter</b>
<b>Save/recall a previous configuration</b>	yes
<b>Language</b>	Italian, English and German
<b>Weight</b>	400 gr. approximately
<b>Dimension</b>	125x46x73mm (W x H x D)

### MICROOHMMETER SECTION

<b>Points of measure</b>	32000
<b>Measurement update rate</b>	4, 8, 16, 32 measurements/second
<b>Filter</b>	average on 1, 2, 4, 8, 16, 32, 64, 128 measures
<b>Range</b>	320,00 $\mu\Omega$ , 3200,0 $\mu\Omega$ , 32,000m $\Omega$ , 320,00m $\Omega$ , 3200,0m $\Omega$ , 32,000 $\Omega$ , 320,00 $\Omega$ , 3200,0 $\Omega$
<b>Resolution</b>	10n $\Omega$ , 100n $\Omega$ , 1 $\mu\Omega$ , 10 $\mu\Omega$ , 100 $\mu\Omega$ , 1m $\Omega$ , 10m $\Omega$ , 100m $\Omega$ ,
<b>Range selection</b>	automatic / manual
<b>Measurement accuracy</b> (range 320 $\Omega$ ÷ 32m $\Omega$ high current)	$\pm(0,05\% + 2 \text{ digit})$
<b>Measurement accuracy</b> (range 320 $\Omega$ ÷ 32m $\Omega$ low current)	$\pm(0,06\% + 3 \text{ digit})$
<b>Measurement accuracy</b> (range 3200 $\Omega$ and 3200 $\mu\Omega$ )	$\pm(0,06\% + 3 \text{ digit})$
<b>Measurement accuracy</b> (range 320 $\mu\Omega$ )	$\pm(0,07\% + 5 \text{ digit})$
<b>Nominal measuring currents</b>	1A, 100mA, 10mA, 1mA, 100 $\mu$ A, 10 $\mu$ A
<b>Cable's compensation / Zeroing</b>	yes
<b>Pulsed measurement</b>	yes: positive, negative and bipolar
<b>Secondary measures</b>	<ul style="list-style-type: none"><li>- Nominal voltage across Rx</li><li>- Temperature of Rx according to <math>\Delta R_x</math></li><li>- Variation of Rx temperature according to <math>\Delta R_x</math></li><li>- Relative absolute and percentage compared to a measure</li><li>- Relative absolute and percentage compared to a set value</li><li>- Ohm/m compensated and not compensated temperature</li><li>- Ohm/km compensated and not compensated temperature</li><li>- R*S/L (resistivity) compensated and non-compensated temperature</li><li>- Temperature compensated resistance</li><li>- Compensation according to CEI EN 60228:2005-10</li><li>- Minimum and maximum values</li><li>- <math>\Delta R_x</math> in absolute value and percentage</li></ul>

### MICROVOLTMETER SECTION

<b>Points of measure</b>	32000
<b>Measurement update rate</b>	4, 8, 16, 32 measurements/second
<b>Filter</b>	average on 1, 2, 4, 8, 16, 32, 64, 128 measures
<b>Range</b>	320,00 $\mu$ V, 3200,0 $\mu$ V, 32,000mV, 320,00mV
<b>Resolution</b>	10nV, 100nV, 1 $\mu$ V, 10 $\mu$ V
<b>Range selection</b>	manual



<b>Peak-to-peak noise</b> (Measurements/second = 4; measurement time = 200 seconds)	range 320mV with filter = 1 range 32mV with filter = 1 range 3200µV with filter = 4 range 320µV with filter = 64	2 dgt (20µV) 2 dgt (2µV) 4 dgt (400nV) 6 dgt (60nV)
<b>Measurement accuracy</b> (range 320mV and 32mV)	±(0,05% + 2 digit)	
<b>Measurement accuracy</b> (range 3200µV)	±(0,06% + 3 digit)	
<b>Measurement accuracy</b> (range 320µV)	±(0,10% + 6 digit)	
<b>Secondary measures</b>	- Relative calculated respect to a measure - Relative calculated respect to a set value	

## CHART SECTION

<b>Maximum number of recordable samples</b>	32000	
<b>Sampling interval</b>	32ms, 64ms, 125ms, 250ms, 500ms, 1s, 2s, 5s, 10s, 20s, 1min, 2min, 5min, 10min	
<b>Recordable greatness</b>	main measure ohmmeter, main measure voltmeter	
<b>Vertical amplitude</b>	from 10 to 32000 points	
<b>Vertical Auto Zoom</b>	yes	
<b>Horizontal amplitude</b>	from 50 to 32000 samples	
<b>Auxiliary signals</b>		
<b>First and last value shown on the display</b>	- Sample number - Sample value - Time and date of the sample	
<b>Data concerning the entire recording (RCD)</b>	- Minimum value of the entire record - Maximum value of the entire record - Difference between the minimum and maximum value of the entire record - Average value of the entire record	
<b>Data concerning the part of visible recording (DSP)</b>	- Minimum value - Maximum value - Difference between the minimum and maximum value - Average value	
<b>Data concerning the mouse position</b>	- Sample number - Sample value - Time and date of the sample - Value corresponding to the vertical position of the mouse	
<b>Save recording</b>	text files Excel compatible format or sent to Excel	
<b>Load previously saved recording</b>	yes	

## TEST SECTION

<b>Settable thresholds</b>	a upper limit and a lower limit	
<b>Test mode</b>	7 different test modes	
<b>Testable measures</b>	main measure and 8 secondary measures	
<b>Sound signals</b>	yes, it can be activated acoustic or voice	
<b>Duration of the test alert</b>	0, 1, 2, 3, 4, 6, 8 seconds	
<b>Activation of test</b>	by form's button or digital input on the instrument	
<b>Type of alert</b>	audible and visual on the form and open collector outputs on the instrument	
<b>Test buttons of the open-collector outputs</b>	yes, for each output	
<b>Each output capacity</b>	500mA 30V	

## **PEDRANTI ELIO**

Via Cesare Battisti, 33/B 21010 Cardano al Campo (VA) Italy

tel. 0331-262605

[www.eliopedranti.it](http://www.eliopedranti.it)    [info@eliopedranti.it](mailto:info@eliopedranti.it)

The company **PEDRANTI ELIO** deals with the design, production and sale, also through dealers, of microohmmeters and their accessories until since 1979. In these 35 years we have always tried to stay at the forefront, offering a wide range of products that cover everyone's needs: from simple and economical model to the high-performance model, always aiming at maximum ease of use, offering the features actually used.

Thanks to the long experience in the design of microohmmeters, but not only in these instruments, we can adapt our products to the specific needs of customers, or even create accessories ad hoc.