

# SECTION 12 - MEASUREMENT INSTRUMENTS

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Teaching guide in digital format



Minimum invoiced order: € 130,00 + VAT



**Measurement instruments set**

7250

This kit includes all items needed to perform weight, length, angle capacity, time, temperature, force and electrical measures. Items stored in a small plastic case.

**Equipment supplied**

- 1 Decimal Metric system
- 1 Metric wheel 10m
- 1 Vernier caliper
- 1 Tape measure
- 1 Protractor
- 1 Inclinator
- 1 Big-size vernier caliper
- 1 graduated cylinder 100ml
- 1 graduated cylinder 250ml
- 1 Digital timer
- 1 Spring scale 100g/1N
- 1 Spring scale 250g/2,5N
- 1 Spring scale 1000g/10N
- 1 Mathematical scales
- 1 Digital thermometer -50+150° C
- 1 Wall Thermometer
- 1 Portable Digital Multimeter
- 1 Case



7250

**100-cm ruler with square section**

7009

Faces calibration: 50 cm, 25 cm, 10 cm, 1 cm.

Section sides length: 2 cm.

**100-cm ruler with triangular section**

7011

Faces calibration: 10 cm, 1 cm, 1 mm.

Section sides length: 2 cm.



7009 - 7011

**Decimal measuring system**

7013

It consists of a graduated rigid meter and battens, ten for each number from 1 to 10. It can be used also for decimals and percentages learning.



7013

**Linear ruler**

1116

Fibreglass made, 100 cm length.



1116

**Flexible ruler**

1117

Steel, length 2 m.



1117

**Measuring roller**

1118

10 m length.



1118

**Height meter**

7019

Extremely accurate and sturdy, this height meter is made of plastic and is 2 meters high. Removable and foldable for an easy transport.



7019

**Vernier caliper**

1190

Fibreglass made. 120 mm opening.



1190

**Vernier caliper**

1027

Stainless steel. 150 mm opening.



1027

**Micrometer**

1028

0 to 25 mm opening. With case.

**Micrometer**

1120

25 to 50 mm opening. With case.



1028 - 1120

**Measuring wheel**

7018

This instrument permits to measure long distances and it is useful to compare rotary motion and translation motion. Made of plastic shock-resistant material, it is equipped with a calibrated (in meters and 1/10 of a meter) rev counter. Telescopic arm. The wheel is protected by a rubber ring to prevent the rotary surface from being damaged and avoid noises.



7018

**Protractor**

1030

Stainless steel made.



1030

**Measuring roller**

1411

Fibreglass made. 30 m length.



1411

**Teaching cathetometer**

1037

Dual calibration, horizontal and vertical. Bar height 80 cm



1037

**Cathetometer without base**

1392

Aluminum bar height: 80 cm.



1392

**Inclinometer**

7125

This item is used to measure the angle according to which you can see a tree, a tower, an hill, etc., in order calculate their height using draw to scale. Protractor diameter 30 cm.



7125

**Inclinometer with trestle**

7213

As Inclinometer cod. 7125, but mounted on a telescopic trestle. This trestle permits the clinometer to rotate 360° on the horizontal axis, to be lengthwise and widthways inclined. Instrument height considering the maximum extension of the trestle: 180 cm.



7213

**Giant vernier caliper**

7015

Suitable for measuring big-sized objects. Measuring range: from 1mm to 30 cm.



7015

**Clinometer**

7128

Teaching clinometer, plastic made. Wheel diameter: 13 cm.



7128

**Spherometer**

4027

To measure the bending rays of spherical surfaces.



4027

**Set of 6 capacity measurers**

7025

Transparent plastic made, capacity 0,62 ml, 1,25 ml, 2,50 ml, 5,00 ml, 7,50 e 15 ml.



7025

**Cubic basin of 1 dm<sup>3</sup>**

7020

Transparent-plastic made with plug. Graduated (decilitres).



7020

**Cubic basin of 1 dm<sup>3</sup> with shelves, slide rules and cubes**

7024

Transparent-plastic made. Used to demonstrate the equivalence between a dm<sup>3</sup> and a litre. Equipped with: 9 Shelves 10x10x1cm - 9 Slide rules 10x1x1cm - 10 Cubes 1x1x1cm.



7024

**Set of 7 graduated cylinders**

7057

Plastic made.

Capacity:

- 10 ml
- 25 ml
- 50 ml
- 100 ml
- 250 ml
- 500 ml
- 1000 ml



7057

**Series of 200 cubes of 1 cm<sup>3</sup> - 1 g**

7028

Made of coloured plastic. They can be assembled and they allow to measurement of surfaces and volumes. They can be used for measurements weigh with two plates scales.



7028

**Modular metric cube**

7067

Easy to assemble, it consists of 8 edges e 12 bars measuring 1 m, three of them are graduated (dm). All the components are plastic made.



7067

**Pair of hourglasses**

7031

Time of the first: 1 minute; time of the second: 3 minutes. Size: 18x60 mm.



7031

**Hourglass**

7222

With sand, made from sturdy and unbreakable plastic. Size: Ø 60x135mm. Time interval: 10 minutes.



7222



**Sundial model**

7121

This model is supplied without the calibration, which has to be done by the students according to the supplied teaching guide explanations (pdf version). In this guide it is possible to read the physical principles that make it work. It is supplied with protractor and compass.

Size: 20x20 cm.



7121

**Clock model**

7054

Plastic made, it permits to understand how a clock works.

Diameter: 32 cm.



7054

**Digital stopwatch "stratos"**

F1023

Measuring range: 9h, 59 min, 59 sec.

Time unit: 1/100 sec.



F1023

**Analog chronometer "amigo"**

F1006

Model of 15 minutes, accuracy 1/10 of a second.

1. Green button: to start the calculation.

2. Red button: to stop the calculation.

3. Black button: zeroing.

Box made of synthetic material; Ø 60mm.



F1006

**Digital table stopwatch**

1416

- Liquid crystals display: 82x40 mm

- Accuracy: 1/100 sec

- Power supply: 1.5 V battery

- Reading: hours - minutes - seconds.

Clock function, with date, the day of the week and alarm clock to be set.



1416

**Electromagnetic ticker tape timer**

1408

Alternating voltages working 4-8V. Fitted with support, paper roll and carbonate paper disks.

Frequency: 50 Hz.

Power supply not included.

**Spare paper tapes**

1408.1

6 rolls for the ticker tape timer code 1408.

**Carbonate paper disks for ticker tape timer**

1408.2



1408

**Digital stroboscope**

4073

By appropriately adjusting the frequency of the flashes, so that it corresponds to the rotation or oscillation frequency of the observed body, the latter is observed in static conditions. The value of the frequency shown on the display, allows the performance of quantitative experiments on rotary and vibrating motions.

Frequency field: from 100 to 10000 flashes/minute.

Resolution: 1 flash/minute.

Size: 21x12x12 cm.



4073

**Hydrometers**

0,600 - 0,700 g/ml; division 0,001	<b>T50</b>
0,700 - 0,800 g/ml; division 0,001	<b>T51</b>
0,800 - 0,900 g/ml; division 0,001	<b>T52</b>
0,900 - 1,000 g/ml; division 0,001	<b>T53</b>
1,000 - 1,100 g/ml; division 0,001	<b>T54</b>
1,100 - 1,200 g/ml; division 0,001	<b>T55</b>
0,650 - 1,000 g/ml; division 0,005	<b>T56</b>
0,800 - 1,000 g/ml; division 0,002	<b>T57</b>
1,000 - 1,200 g/ml; division 0,002	<b>T58</b>
1,000 - 2,000 g/ml; division 0,01	<b>T59</b>



T50 - T51 - T52 - T53 - T54 - T55 - T56 - T57 - T58 - T59

**Optika precision spring scales**

Transparent plastic made with engraved graduated scale. Protection against overload and possibility to set to zero.

Linear, capacity 1N, division 0,01N	<b>1193.1</b>
Linear, capacity 2N, division 0,02N	<b>1256.1</b>
Linear, capacity 5N, division 0,05N	<b>1257.1</b>
Linear, capacity 10N, division 0,1N.	<b>1258.1</b>
Linear, capacity 20N, division 0,2N	<b>1259.1</b>



1193.1 - 1256.1 - 1257.1 - 1258.1 - 1259.1

**Teaching spring balances**

Plastic made with engraved graduated scale. Protection against overload and possibility to set to zero.

Capacity 100 g/1N, division 2 g/0,02N	<b>1347</b>
Capacity 250 g/2,5N, division 5 g/0,05N	<b>1348</b>
Capacity 500 g/5N, division 10 g/0,1N	<b>1356</b>
Capacity 1000 g/10N, division 20 g/0,2N	<b>1357</b>
Capacity 2000 g/20N, division 40 g/0,4N	<b>1358</b>
Capacity 5000 g/50N, division 100 g/1N	<b>1359</b>



1347 - 1348 - 1356 - 1357 - 1358 - 1359

**Set of Spring balances 1424**

Set of Spring balances with double calibration: 100 g/1N ; 250 g/2,5N ; 500 g/5N; 1000 g/10N; 2000 g/20N ; 5000 g/50N. Plastic case.



1424

**Basic scale 7069**

Made from resistant plastic. Capacity: 2000 g, sensibility: 1 g. Plates surface: 100 cm<sup>2</sup>. Supplied with 8 masses and with instructions guide. Size: 30x12x11 cm.



7069

**Two-plates scale 1240**

Wooden base, marble surface, polished brass plates, capacity: 2 Kg. To be used with masses support cod. 1148. Size: 42x15x18 cm.



1240

**Teaching scale 1150**

Wooden base, marble surface, polished brass plates, capacity: 2 Kg, fitted with 1 mass of a 1 Kg, 10 masses of 100g, 10 masses of 10g, 10 masses of a 1g. Size: 40,8x22x18 cm.



1150

**Mathematical scale 7077**

Plastic made. It's an important teaching support for middle school. It is fitted with plates and with two buckets which permit the students to weigh water, sand, and so on, in order to understand scales working and measurement rules.



7077

**Series of 200 g masses 1035**

Made from nickel-plated brass in a plastic holder with cover; gramme fractions are kept in a small support with plexiglass cover; supplied with clasp.



Supplied weights:  
100 g 1pc, 50 g 1pc,  
20 g 2pcs, 10 g 1pc,  
5 g 1pc, 2 g 2pcs,  
1 g 1pc, 500 mg 1pc,  
200 mg 2pcs, 100 mg 1pc,  
50 mg 1pc, 20 mg 2pcs,  
10 mg 1pc.

1035

**Series of 2 kg masses 1148**

Made from raw brass and painted steel, wooden support:  
1000 g 1pc, 500 g 1pc, 200 g 1pc, 100 g 2pcs, 50 g 1pc, 20 g 1pc, 10 g 2pcs, 5 g 1pc, 2 g 2pcs, 1 g 1pc.



1148

**Series of masses with hook 1147**

Made from nickel-plated brass and painted steel with support:  
1000 g 1pc; 500 gr 1pc; 200 g 2pcs; 100g 1pc; 50 g 1pc; 20 g 2pcs and 10 g 1pc.



1147

**Technical balance**

The technical balance allows you to compare two masses. The two plates are supported by a beam that rests on a fulcrum. The beam is symmetrical to the vertical plane passing through the fulcrum and can freely rotate around it.

An index is rigidly attached to the beam. By putting masses on the

**Dimensions:**

Height: 33 cm

Base: 32 x 20 cm

Three adjustable feet

Provided with a weight box, from 10 mg up to 100g

**Bucket & cylinder Apparatus - optional**

1461

Use this technical balance as an hydrostatic scale.



Bucket (external measures):  $h = 60$  mm;  $d = 41$  mm

Cylinder:  $h = 50$  mm;  $d = 30$  mm

The Bucket and Cylinder Apparatus is used to verify the Archimedes' Principle, or law of buoyancy.

By immersing the filled cylinder into the water, you can notice an apparent weight reduction: the upward buoyant force that is exerted on a body immersed in a fluid, whether fully or partially submerged, is equal to the weight of the fluid that the body displaces. By filling the hollow bucket with water, the buoyant force is balanced.



**Electronic scale, accuracy 1g KW2828**

Capacity 5000 g, accuracy 1g.  
Dual power supply: AC/DC adapter (included) and batteries (not included).



KW2828

**Electronic scale, accuracy 0,1g LG501**

Capacity 1000 g, accuracy 0,1g  
Stainless steel plate: 150x180 mm.  
Display LCD. Dual power supply: adapter AC/DC (included) and battery.



LG501

**Mohr-Westphal scale**

Used to measure the density of the liquids up to the fourth decimal number. This set of scales is made from high quality material. The support allows to height adjustment. It is fitted with an aerometer, a thermometer, a glass cylinder, a masses holder with hooks and clasp.



1040

1040



For the full range of Optika scales, please visit [www.optikabalances.com](http://www.optikabalances.com)

**Electronic scale, accuracy 0,1g**

L3201

Capacity 3100 g, accuracy 0,1 g. Diameter plate 130 mm.  
External calibration. Power supply included.



L3201

**Electronic scale, accuracy 0,01g**

I3102

Capacity 3100 g, accuracy 0,01 g. Diameter plate 130 mm.  
External calibration. Power supply included.

**Electronic scale, accuracy 0,01g**

I1202

Capacity 1200 g, accuracy 0,01 g. Diameter plate 130 mm.  
External calibration. Power supply included.

**Electronic scale, accuracy 0,01 g**

I622

Capacity 620 g, accuracy 0,01 g.  
Diameter plate 130 mm.  
External calibration.  
Power supply included.



I3102 - I1202 - I622

**Electronic scale, accuracy 0,01 g**

M202

Capacity 200 g, accuracy 0,01 g. Plate Ø 110 mm. External calibration. Power supply included. Also works with AA batteries (not included).

**Electronic scale, accuracy 0,01 g**

M422

Capacity 420 g, accuracy 0,01 g. Plate Ø 110 mm. External calibration. Power supply included. Also works with AA batteries (not included).

**Electronic scale, accuracy 0,1 g**

M1001

Capacity 1000 g, accuracy 0,1 g. Plate 150x140 mm. External calibration. Power supply included. Also works with AA batteries (not included).

**Electronic scale, accuracy 0,1 g**

M1501

Capacity 1500 g, accuracy 0,1 g. Plate 150x140 mm. External calibration. Power supply included. Also works with AA batteries (not included).

**Electronic scale, accuracy 0,1 g**

M2201

Capacity 2200 g, accuracy 0,1 g. Plate 150x140 mm. External calibration. Power supply included. Also works with AA batteries (not included).



M202 - M422 - M1001 - M1501 - M2201

**Electronic scale, accuracy 0,001 g**

H423

Capacity 420 g, accuracy 0,001 g  
Diameter plate 80 mm.  
Display LCD.  
Power supply included.



H423

**Electronic scale, accuracy 0,0001g B164A**

Capacity 160 g, accuracy 0,0001 g.  
Diameter plate 80 mm.  
External calibration.  
Power supply included.



B164A

**Certified masses**

Weight of 100 g class E2 **PS100E2**  
Weight of 100 g class F1 **PS100F1**

Weight of 200 g class F1 **PS200F1**  
Weight of 1000 g class F1 **PS1F1**  
Weight of 2000 g class F1 **PS2F1**



**Big thermometer model 7055**

It is possible to make scroll a coloured tape on a scale calibrated in Celsius and Fahrenheit, height: 60 cm and width: 15 cm.



7055

**Thermometer for demonstration AF10**

Length: 65 cm, diameter: 3 cm.  
Blue-coloured alcohol.  
Scale: -20 +110°C, div. 1°C.



AF10

**Alcohol thermometers**

Permanent graduated scale, chemical products-resistant.  
Stem diameter: 6.5 mm, minimum length of the non-graduated part: 40 mm. All ecological thermometers, no risk of contamination in case of break.

-10°+60°C, divis. 0,5°C, length 305 mm.	<b>T19</b>
-10°+110°C, divis. 0,5°C, length 305 mm.	<b>T20</b>
-20°+110°C, divis. 1°C, length 305 mm.	<b>T22</b>
-20°+150°C, divis. 1°C, length 305 mm.	<b>T23</b>
-0,1°+51°C, divis. 0,1°C, length 470 mm.	<b>T24</b>
-1°+101°C, divis. 0,1°C, length 610 mm.	<b>T25</b>
-10°+250°C, divis. 1°C, length 410 mm.	<b>T26</b>



T19 - T20 - T22 - T23 - T24 - T25 - T26

**Digital electronic thermometers**

-50°+150°C, resolution: 0,1°C, probe integrated in the instrument's body.  
Cap with clip for breast pocket.  
Unit of measurement: °C and °F.

**AF15**



-50°+150°C, resolution: 0,1°C, probe integrated in the instrument's body.

**CHT**



-50°+150°C, resolution: 0,1°C, fitted with steel probe connected to the instrument's body thanks to a cable (1m length).

**CHT-1**



AF15 - CHT - CHT-1

**Ground thermometers, set of 3 7147**

They allow measurement of soil temperature at 3 different depths; 50 cm, 100 cm and 150 cm.



7147

**Thermometer 2038**

Maximum and minimum thermometer (indoor and outdoor). Mounted on a small plastic base and fitted with small roofing for external use.



2038

**Wall thermometer 2080**

-30°+50°C, division 1°C.



2080

**Infrared rays thermometer 2135**

Measurement range: -50~550°C (-58~1022°F)  
Accuracy: ±1.5% or ±1.5°C  
Repeatability: ±1% or ±1°C  
Distance spot ratio: 12:1  
Emissivity: 0.95  
Resolution: 0.1°C / 0.1°F  
Response time: 500 mS  
Wavelength: 8-14 µm



2135

**Ammeter DC 5730**

Safety sockets.  
Range: 0 - 50 mA; 0 - 500 mA; 0 - 5 A.  
Class 2.5.



5730

**Voltmeter DC 5729**

Safety sockets.  
Range: 0 - 3 V; 0 - 30 V; 0 - 300 V.  
Class 2.5.



5729

**Ammeter AC 5732**

Safety sockets.  
Range: 0 - 500 mA; 0 - 1 A; 0 - 5 A.  
Class 2.5.



5732

**Voltmeter AC 5731**

Safety sockets.  
Range: 0 - 15 V; 0 - 150 V.  
Class 2.5.



5731

**Galvanometer 5733**

Safety sockets.  
Range:  $\pm 35 \mu\text{A}$ . Class 2.5.



5733

**Digital Voltmeter DC 5725**

Range: 0-200 V  
Accuracy: 0.5%

**Digital Voltmeter AC 5727**

Range: 0-1000 V  
Accuracy: 1%



5725 - 5727

**Digital ammeter DC 5726**

Range: 0-2 A  
Accuracy: 0.5%

**Digital ammeter AC 5728**

Range: 0-20 A  
Accuracy: 1%



5726 - 5728

**Digital wattmeter 5262**

To measure the energy and / or power absorbed by a resistive charge in a DC or AC electrical circuit. Two measuring units available: mJ / mW for currents up to 10mA J / W for currents up to 10A Capacity: for DC circuits, voltage not exceeding 20V; for AC circuit, voltage not exceeding 14V. Equipped with digital display, reset button, J/W switch and measuring unit selector.



5262

**Coulombmetro 5721**

For charge detection and measurement. Useful for a wide range of experimental applications including charging by induction or Coulomb's law. Power supply: 9V Battery PP3 type  
Dimensions: 130x60x90mm  
Weight: 0.20kg  
Range: 0 - 1999nC  
Resolution: 1nC  
Accuracy:  $\pm 10\%$  of full scale



5721

**Analogue portable multimeter 5116**

Function	Measurement ranges	Allowance	Remarks		
Voltage DC	( $\pm$ )0 ~ 0.25, 2.5, 10, 50, 250, 10000 V	Within $\pm 3\%$ F.S.	Input impedance 30 K $\Omega$ /V		
Voltage AC	0 ~ 10, 50, 250, 10000V	Within $\pm 4\%$ F.S.	Input impedance 10 K $\Omega$ /V		
Current DC	( $\pm$ )0 ~ 0.25, 2.5, 25, 250, mA 10 A (10 A $\pm 5\%$ F.S.)	Within $\pm 3\%$ F.S.	Voltage drop 250 mV		
Current AC	0 ~ 10 A (10A $\pm 5\%$ F.S.)	Within $\pm 4\%$ F.S.			
Resistance	Range	Min.	Mid.	Max.	Within $\pm 3\%$ of scale length
	x1	0.2 $\Omega$	20 $\Omega$	2 K $\Omega$	
	x100	20 $\Omega$	2 K $\Omega$	200 K $\Omega$	
	x1 K	200 $\Omega$	20 K $\Omega$	2 M $\Omega$	
	x10 K	2 K $\Omega$	200 K $\Omega$	20 M $\Omega$	
CONT test	about 3 K $\Omega$ conduction				
Decibel	- 10 ~ + 22 dB ~ + 62 dB				



5116

## Digital portable multimeter

5196

## Model with display LCD 3,5 digit

Input impedance	10 M $\Omega$ for VDC and 4,5 M $\Omega$ for VAC
Precision	Voltage DC $\pm 0,8\%$ + 5 digit Current DC $\pm 1,5\%$ + 5 digit Voltage AC $\pm 1,5\%$ + 5 digit Resistance $\pm 0,8\%$ + 5 digit
Range	Volt DC 200 mV - 2 V - 20 V - 200 V - 600 V maximum resolution 0,1 mV Ampère DC 200 $\mu$ V - 2 mA - 20 mA - 200 mA - 10 A maximum resolution 0,1 $\mu$ A Volt AC 200 V - 600 V maximum resolution 100 mV Ohm 200 $\Omega$ - 2 K $\Omega$ - 20 K $\Omega$ - 200 K $\Omega$ - 2 M $\Omega$ - 20 M $\Omega$ maximum resolution 0,1 $\Omega$
Functions	Continuity test with buzzer signaling Diodo tester Memory Transistor tester (hFE)
Protections	Up to 200mA with fuse - 10A without fuse
Power supply	Battery 9 V type 6F22 (included)
Dimensions/Weight	145x80x35 mm. / 200 gr.
Accessories included	Test leads Instructions



5196

## Digital portable multimeter

5197

## Model with display LCD 3,5 digit

Input impedance	10 M $\Omega$ for all ranges voltmetric
Precision	Voltage DC $\pm 0,8\%$ + 4 digit Current DC $\pm 1,0\%$ + 5 digit Voltage AC $\pm 1,0\%$ + 5 digit Current AC $\pm 1,5\%$ + 5 digit Resistance $\pm 1,2\%$ + 3 digit
Range	Volt DC 200 mV - 2 V - 20 V - 200 V - 1000 V maximum resolution 0,1 mV Ampère DC 200 $\mu$ V - 2 mA - 20 mA - 200 mA - 10 A maximum resolution 0,1 $\mu$ A Volt AC 200 mV - 2 V - 20 V - 200 V - 750 V maximum resolution 0,1 mV Ampère AC 200 $\mu$ A - 2 mA - 20 mA - 200 mA - 10 A maximum resolution 0,1 $\mu$ A Ohm 200 $\Omega$ - 2 K $\Omega$ - 20 K $\Omega$ - 200 K $\Omega$ - 2 M $\Omega$ - 20 M $\Omega$ maximum resolution 0,1 $\Omega$
Functions	Continuity test with buzzer signaling Diodo tester - Memory - Transistor tester (hFE) Battery test (1.5V and 9V) - LED test
Protections	Measures in Ampère with fuse
Power supply	Battery 9 V type 6F22 (included)
Accessories included	Test leads - Protective shell Instructions



5197

**Digital bench multimeter**

5421

**DC Voltage**

Range	Resolution	Accuracy
600 mV	0.1 mV	$\pm (0.6\% + 2)$
6 V	0.001 V	$\pm (0.3\% + 2)$
60 V	0.01 V	
600 V	0.1 V	
1000 V	1 V	$\pm (0.5\% + 3)$

**DC Current**

Range	Resolution	Accuracy
600 $\mu$ A	0.1 $\mu$ A	$\pm (0.5\% + 3)$
6000 $\mu$ A	1 $\mu$ A	
60 mA	0.01 mA	
600 mA	0.1 mA	$\pm (0.8\% + 3)$
10 A	10 mA	$\pm (1.2\% + 3)$

**Resistance**

Range	Resolution	Accuracy
600 $\Omega$	0.1 $\Omega$	$\pm (0.8\% + 3)$ + circuito di test, valore di resistenza di cortocircuito
6 k $\Omega$	0.001 k $\Omega$	$\pm (0.5\% + 2)$
60 k $\Omega$	0.01 k $\Omega$	
600 k $\Omega$	0.1 k $\Omega$	
6 M $\Omega$	0.001 M $\Omega$	$\pm (0.8\% + 2)$
60 M $\Omega$	0.001 M $\Omega$	$\pm (1.2\% + 3)$

- Continuity test
- Resistance

**AC Voltage**

Range	Resolution	Accuracy
600 mV	0.1 mV	40 Hz-50 kHz: $\pm (0.6\% + 5)$ ; >50 kHz-100 kHz: $\pm (1\% + 5)$
6 V	0.001 V	40 Hz-1 kHz: $\pm (0.6\% + 5)$ ; >1 kHz-10 kHz: $\pm (1.0\% + 5)$ ; >10 kHz-100 kHz: $\pm (3\% + 5)$
60 V	0.01 V	40 Hz-1 kHz: $\pm (0.6\% + 5)$ ; >1 kHz-10 kHz: $\pm (1.5\% + 5)$ ; >10 kHz-20 kHz: $\pm (3\% + 5)$ ; >20 kHz-100 kHz: $\pm (8\% + 5)$
600 V	0.1 V	40 Hz-1 kHz: $\pm (0.6\% + 5)$ ; >1 kHz-10 kHz: $\pm (3.5\% + 5)$
1000 V	1 V	40 Hz-1 kHz: $\pm (1.2\% + 3)$ ; >1 kHz-3 kHz: $\pm (3\% + 3)$

**AC Current**

Range	Resolution	Accuracy
600 $\mu$ A	0.1 $\mu$ A	40 Hz~10 kHz: $\pm (1.0\% + 5)$ ; >10 kHz~15 kHz: $\pm (2\% + 5)$
6000 $\mu$ A	1 $\mu$ A	
60 mA	0.01 mA	40 Hz~10 kHz: $\pm (1\% + 5)$ ; >10 kHz~15 kHz: $\pm (3\% + 5)$
600 mA	0.1 mA	
10 A	10 mA	40 Hz~5 kHz: $\pm (2.0\% + 6)$



5421

**Dual oscilloscope 5" - 20 MHz**

5195

Analogue oscilloscope.

**Vertical axis**

Features	Technical specifications
Sensitivity	5 mV/div - 20 V/div in sequenza 1-2-5 12 posizioni
Accuracy	$\pm 3\%$ maggiore
Input impedance	1 M $\Omega$ $\pm 3\%$ , 25 pF $\pm 5$ pF 10:1 sonda: 10 M $\Omega$ $\pm 5\%$ , 16 pF $\pm 2$ pF

**Trigger**

Features	Technical specifications
Trigger sensitivity	INT: CC - 10 MHz 1.0 div CC - 10 MHz 1.0 div TV Signal 2.0 div EXT: CC - 10 MHz 0.3 V CC - 20 MHz 0.5 V TV Signal 0.5 V

**Horizontal axis**

Features	Technical specifications
Scanning speed	0.2 S/div - 0.2 $\mu$ S/div. 19 posiz. in sequenza 1-2-5
Accuracy	$\pm 3\%$



5195