

Oscilloscope probes and BNC to 4 mm banana jack attenuators



Designation : Oscilloscope probes and BNC to 4 mm banana jack attenuators.



x1 / x10 OP00C150 oscilloscope probe.



x100 OP10B150 oscilloscope probe.



x10, x20 and x100 BNC4X10, BNC4X20 and BNC4X100 BNC to 4 mm banana jack attenuators.

OP00C150



Designation : x1 / x10 500-volt oscilloscope probe.

Safety : 500 V DC + AC peak CAT II.
Pollution degree 2. Must be grounded.

Description.	Oscilloscope probe.
Attenuation.	x1 / x10.
Bandwidth.	17 MHz / 150 MHz.
Safety according to EN / IEC 61010-031. Maxi. input voltage.	500 V DC + AC peak CAT II. Must be grounded.
Length.	1,20 meters.
Rise time.	20 ns / 2,3 ns.
Compensation range.	From 10 pF to 30 pF.
Voltage coefficient.	≤ 1,5 ppm / V (2 %).
Operating temperature range.	From 0 °C to +50 °C.
Humidity.	85 %RH maxi. (at +35 °C).
Pollution degree.	2.
Operating altitude.	3000 meters maxi. .
Storage temperature range.	From -30 °C to +70 °C.
Weight.	Approx. 0,070 kg.
Part number.	OP00C150



OP10B150



Designation : x100 2000-volt oscilloscope probe.

Safety : 2000 V DC + AC peak CAT II.
Pollution degree 2. Must be grounded.

Description.	Oscilloscope probe.
Attenuation.	x100.
Bandwidth.	150 MHz.
Safety according to EN / IEC 61010-031. Maxi. input voltage.	2000 V DC + AC peak CAT II. Must be grounded.
Length.	1,20 meters.
Rise time.	2,3 ns.
Compensation range.	From 10 pF to 30 pF.
Voltage coefficient.	≤ 30 ppm / V (6 %).
Operating temperature range.	From 0 °C to +50 °C.
Humidity.	85 %RH maxi. (at +35 °C).
Pollution degree.	2.
Operating altitude.	3000 meters maxi. .
Storage temperature range.	From -30 °C to +70 °C.
Weight.	Approx. 0,070 kg.
Part number.	OP10B150



BNC4X10 BNC4X20 BNC4X100



Designation : range of BNC to 4 mm banana jack attenuators for oscilloscopes.

Applications : to replace usual oscilloscope probes when it is necessary to watch voltages on oscilloscopes from hazardous voltage powered electronic circuits.

- **They are not** BNC male to 4mm safety jacks **adaptors**.
- **They are not** BNC **attenuators**.
- **They are** BNC to 4 mm banana jacks **attenuators**.

To watch on oscilloscopes voltages of electronics circuit powered with hazardous voltages it may be valuable to use Electro-PJP's BNC to 4 mm banana sockets attenuators instead of usual oscilloscope probes.

Usual oscilloscope probe.



Electro-PJP's BNC to 4 mm banana jacks attenuator.



Safety BNC male connector.

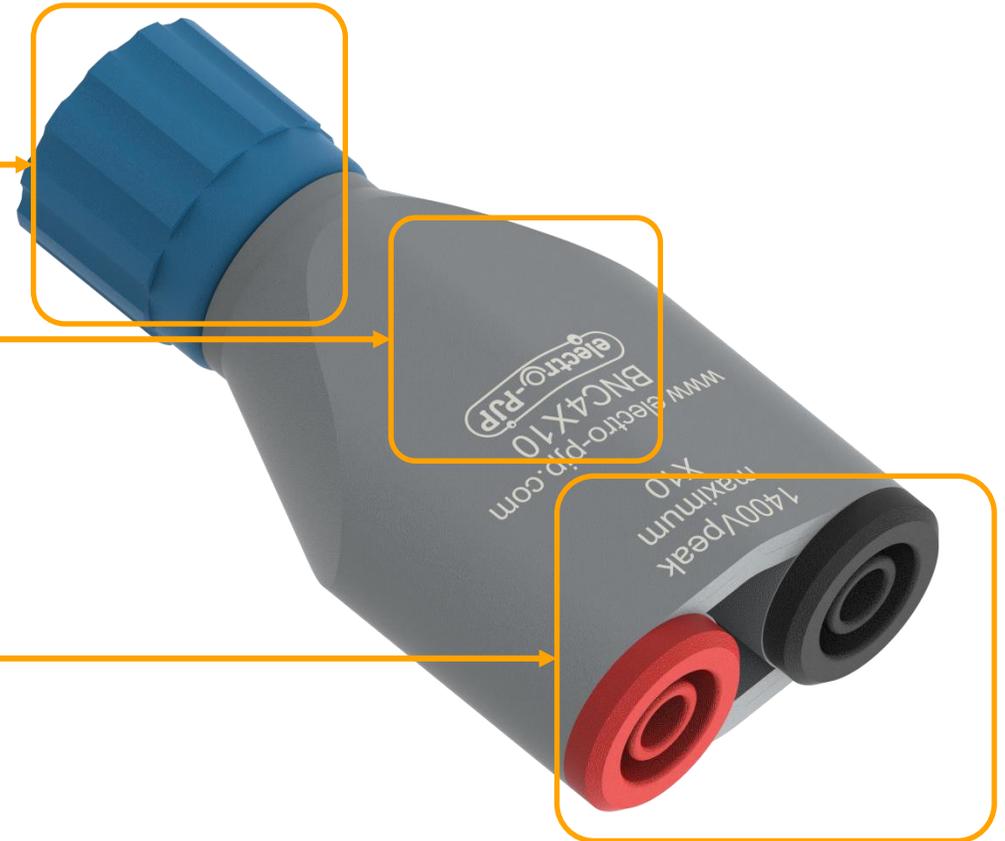
Connects to BNC female socket of 1 M Ω input oscilloscopes.

X10 or X20 or X100 attenuating electronic circuit.

Attenuates the voltages from the 4 mm banana female sockets to the BNC male connector.

Two safety 4 mm banana (female) jacks.

Connect to 4 mm banana plugs test leads to measure voltages.



BNC4X10 BNC4X20 BNC4X100



Designation : range of BNC to 4 mm banana jack attenuators for oscilloscopes.

Application : below this is an example of application, the background is the troubleshooting of an electronic circuit powered by 230 V AC mains. On the left with usual oscilloscope probe. On the right with BNC4X20.

Oscilloscope probes are accurate measurement accessories. Connected to oscilloscopes they allow to watch high frequency voltages.

Reminder :

- **Very** low voltages : ≤ 50 V AC / 75 V DC. Non-hazardous.
- Low voltages : ≤ 1000 V AC / 1500 V DC. **Hazardous.**

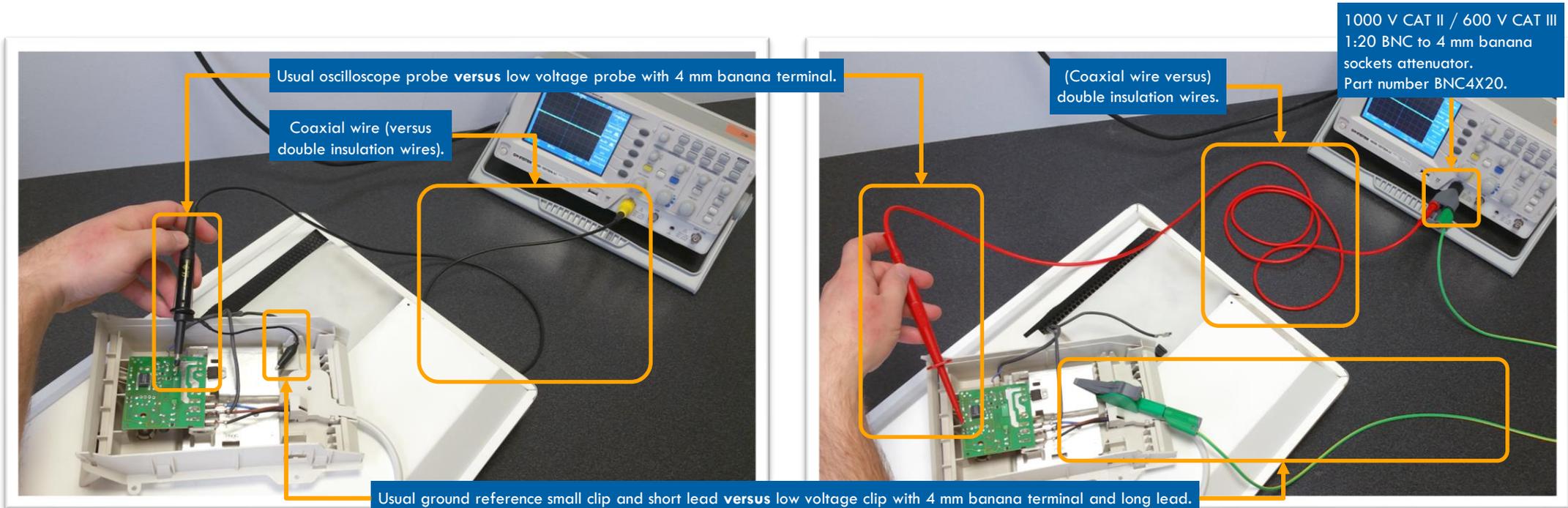
While they are safety they are often used with non-hazardous very low voltages. And they are less used

with hazardous low voltages. Because they aren't comforting for the operators who want to work safely on low voltage supplied electronic circuits : the ground reference small clip can disconnect from the grounded part and short-circuit conductive parts, the small tip can be fragile and can't connect reliably (even with adaptors).

However, 4 mm banana measurement accessories provide reliable safety with CAT II, CAT III, and CAT IV

hazardous low voltages. But if they are connected to oscilloscopes (with usual BNC adaptors) the low voltage can damage oscilloscopes because they usually withstand about 20 V peak only.

The Electro-PJP's range of BNC to 4 mm banana jacks attenuators combines the oscilloscope probes world and the 4 mm banana world. It offers 1000 V CAT II / 600 V CAT III safety and X10 or X20 or X100 attenuation.



BNC4X10
BNC4X20
BNC4X100



DATA SHEET (page 6 of 10).

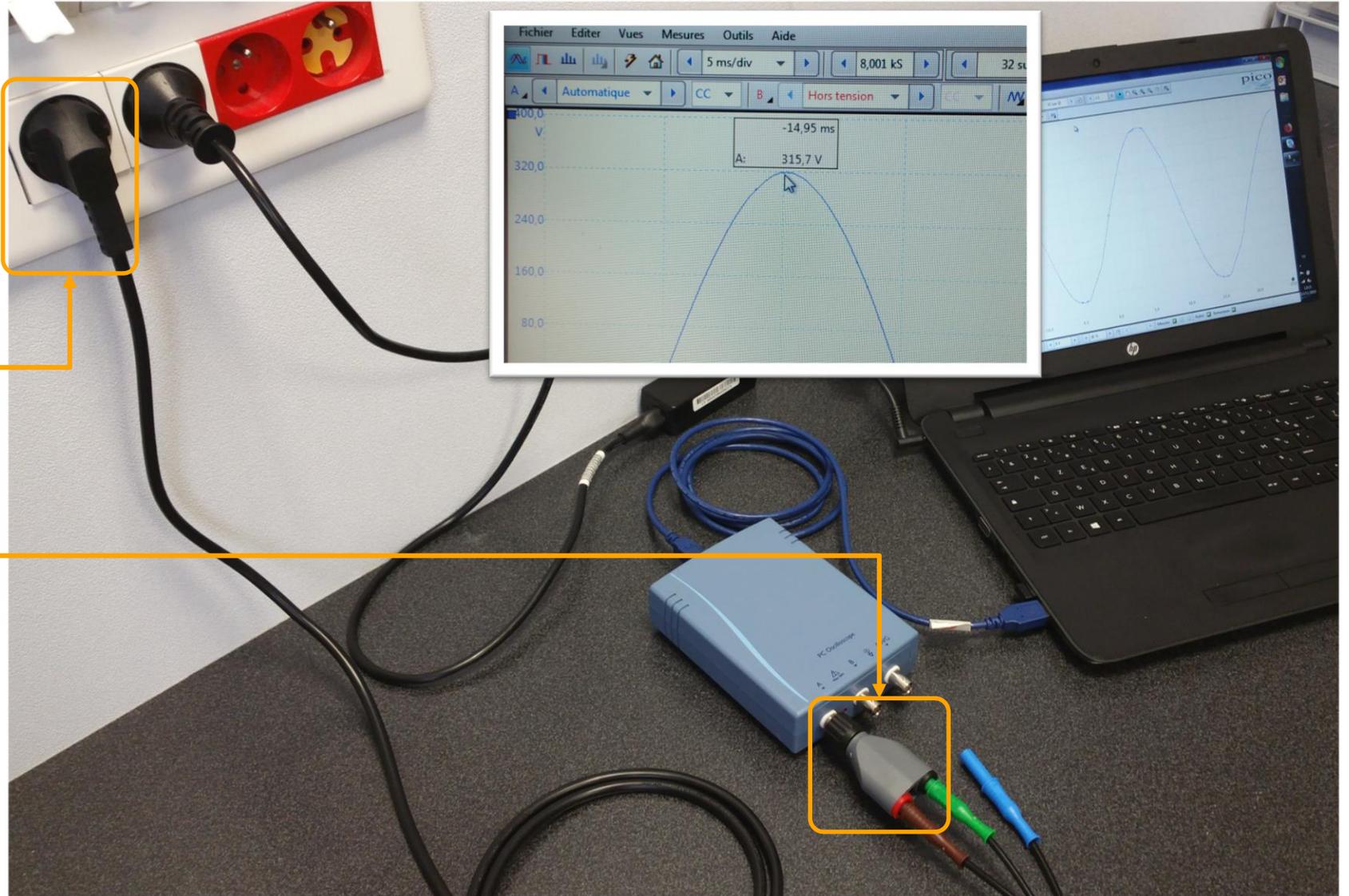
Designation : range of BNC to 4 mm banana jack attenuators for oscilloscopes.

Application : below this is an example of application, the background is the watching of the voltages of a mains power socket on a laptop.
The voltages come to BNC4X20. It attenuates the 230 V AC RMS voltage before coming to the USB oscilloscope.
The USB oscilloscope has two 20 volt DC + AC peak channels. Thanks to BNC4X20 the USB oscilloscope complies with 230 V AC RMS voltages.
The oscilloscope software is set at 1 M Ω input impedance and for X20 attenuation probes. The screen shows voltage peaks at 315,7 V.



“Schuko” CEE7/7 right-angled mains plug to three straight 4 mm banana plugs lead.
Part number SchukoRACEE7/7/2310A200.

1000 V CAT II / 600 V CAT III
1:20 BNC to 4 mm banana sockets attenuator.
Part number BNC4X20.

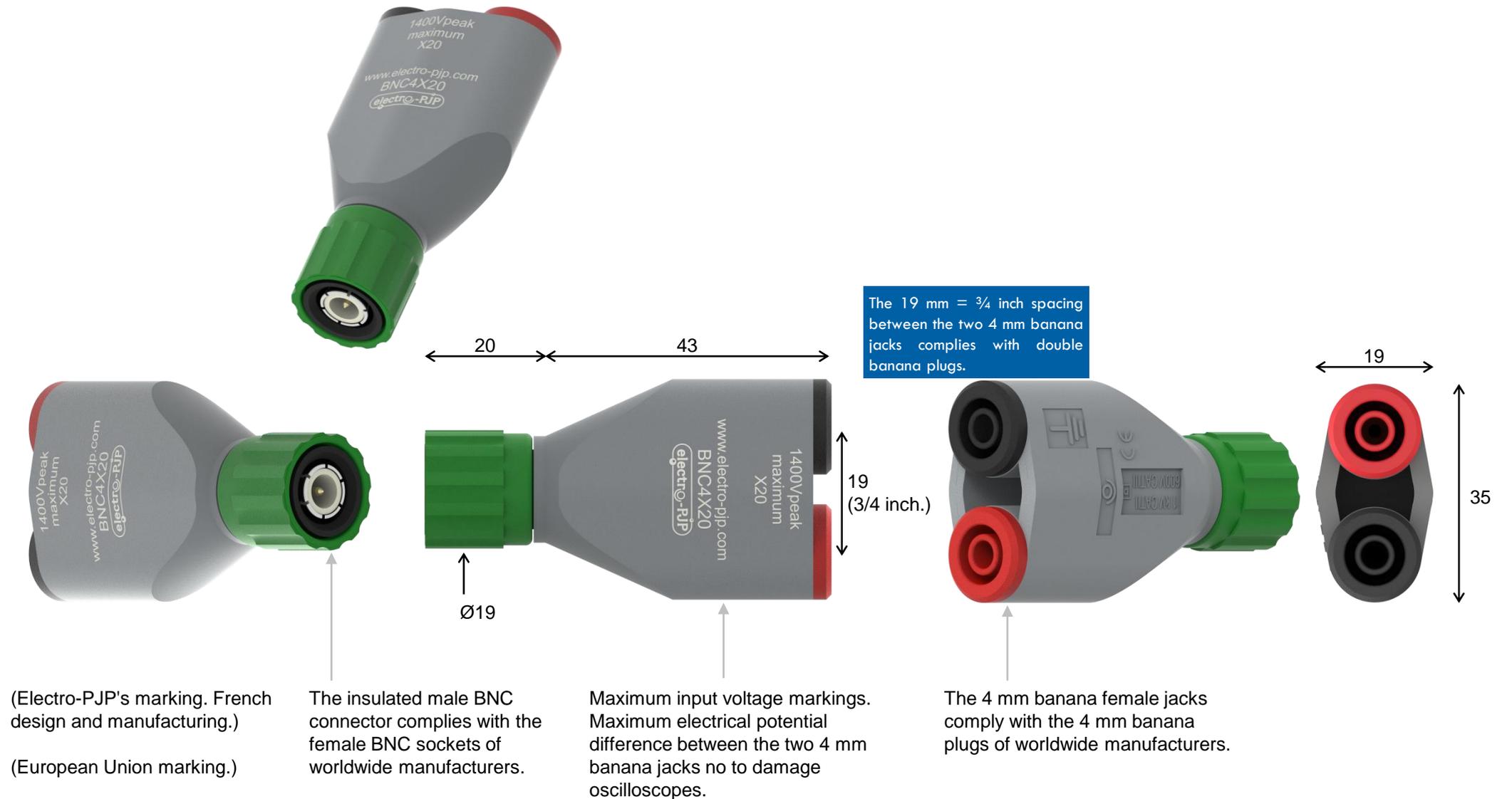


BNC4X10
BNC4X20
BNC4X100



Designation : range of BNC to 4 mm banana jack attenuators for oscilloscopes.

Applications : to replace usual oscilloscope probes when it is necessary to watch voltages on oscilloscopes from hazardous voltage powered electronic circuits.

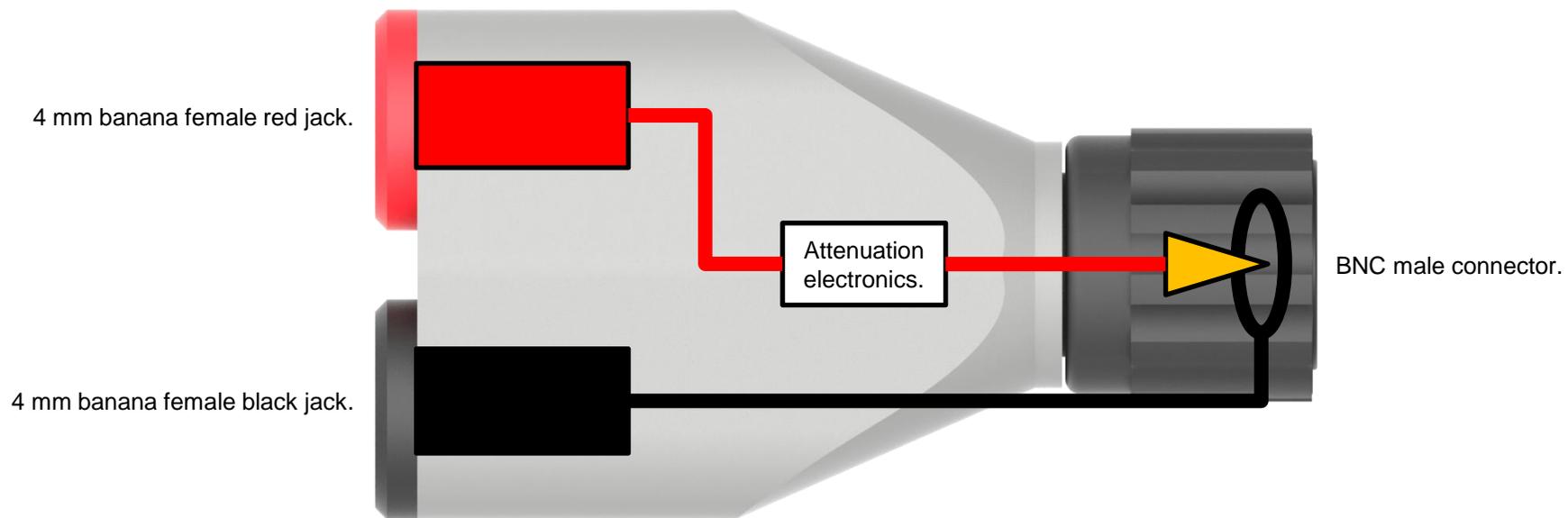


BNC4X10
BNC4X20
BNC4X100



Designation : range of BNC to 4 mm banana jack attenuators for oscilloscopes.

Applications : to replace usual oscilloscope probes when it is necessary to watch voltages on oscilloscopes from hazardous voltage powered electronic circuits.



The 4 mm banana female black jack is directly mated to the BNC “ground” contact.
While the 4 mm banana female red jack is mated to the BNC center contact through the attenuation electronics.

BNC4X10 BNC4X20 BNC4X100



DATA SHEET (page 9 of 10).

Designation : range of BNC to 4 mm banana jack attenuators for oscilloscopes.

Safety : 1000 V AC / DC CAT II 600 V AC / DC CAT III.
Reinforced insulation. Pollution degree 2. Grounded or floating ground.

Description.	BNC to 4 mm banana jack attenuators for oscilloscopes.		
Attenuation.	x10.	x20.	x100.
Bandwidth.	5 MHz.		
Safety according to EN / IEC 61010-031. Differential mode.	1000 V AC / DC CAT II 600 V AC / DC CAT III. Reinforced insulation. Pollution degree 2. Grounded or floating ground.		
Maximum input voltage. Common mode.	1400 V DC + AC peak.		500 V DC + AC peak.
Size.	63 mm x 19 mm x 35 mm.		
Rise time.	X		
Compensation range.	None.		
Voltage coefficient.	x10 ±5 %.	x20 ±6 %.	x100 ±6 %.
Operating temperature range.	From 0 °C to +50 °C.		
Humidity.	85 %RH maxi. (at +35 °C).		
Pollution degree.	2.		
Operating altitude.	3000 meters maxi. .		
Storage temperature range.	From -30 °C to +70 °C.		
Weight.	Approx. 0,030 kg.		
Part number.	BNC4X10	BNC4X20	BNC4X100



Oscilloscope probes and BNC to 4 mm banana jack attenuators



Designation : Oscilloscope probes and BNC to 4 mm banana jack attenuators.

Table of the oscilloscope probes and BNC to 4 mm banana jack attenuators.

Description.	Attenuation.	Bandwidth.	Safety according to EN / IEC 61010-031.	Length.	Rise time.	Compensation range.	Accuracy.	Included accessories.	Part number.	
Oscilloscope probe.	x1 / x10.	17 MHz / 150 MHz.	500 V DC + AC peak CAT II, pollution degree 2. Must be grounded.	1,20 meters.	20 ns / 2,3 ns.	From 10 pF to 30 pF.	≤ 1,5 ppm / V (2 %).	<ul style="list-style-type: none"> • Color coding rings. • BNC adapter. • Trimmer tool. • Sprung hook. • Probe tip GND. • Replacement tip. • Probe tip cover. • IC tip insulator. • Tip insulator. • GND lead w/alligator clip. 	OP00C150	
	x100.	150 MHz.	2000 V DC + AC peak CAT II, pollution degree 2. Must be grounded.		2,3 ns.		≤ 30 ppm / V (6 %).	<ul style="list-style-type: none"> • Color coding rings. • Trimmer tool. • Sprung hook. • Replacement tip. • Probe tip cover. • GND lead w/alligator clip. 	OP10B150	
BNC to 4 mm banana jack attenuators.	x10.	5 MHz.	1000 V AC / DC CAT II 600 V AC / DC CAT III, reinforced insulation, pollution degree 2. Grounded or floating ground.	Not applicable.	X	None.	x10 ±5 %.	None.	BNC4X10	
	x20.						x20 ±6 %.			BNC4X20
	x100.						x100 ±6 %.			BNC4X100

Environmental conditions :

- Operating temperature range, from 0 °C to +50 °C.
- Humidity, 85 %RH maxi. (at +35 °C).
- Operating altitude, 3000 meters maxi. .
- Storage temperature range, from -30 °C to +70 °C.