



# DATASHEET

## NOVA PRO E NOVA

Multifunction installation Testers

<b>Function</b>		<b>Nova Pro</b>	<b>Nova</b>
<b>Re<math>\Omega</math> Earth Resistance</b>		●	
<b>Ro Soil Resistivity</b>		●	
<b>Continuity</b>	Test Current <b>200mA</b>	●	●
	Test Current (Rapid) <b>7mA</b>	●	●
<b>M<math>\Omega</math> Insulation</b>	<b>50-100-250-500-1000V DC</b>	●	●
<b>RCD</b>	Type <b>A, AC e F</b> up to <b>1A</b>	●	●
	type <b>B e B+</b> up to <b>500mA</b>	●	●
	General and Selective	●	●
	Type <b>EV</b> Test Current <b>6mA AC e DC</b>	●	●
	<b>Uc</b> Touch Voltage	●	●
	<b>AUTO - RAMP - TIME</b>	●	●
<b>Z Loop TT/TN</b>	Impedance <b>L-Pe</b>	●	●
	<b>I<sub>pf</sub></b> Prospective short-circuit current	●	●
	<b>R<sub>s</sub></b> Non-Trip earth Loop Impedance	●	●
<b>Z Line TT/TN</b>	Impedance <b>L-N e L-L</b> (Tri-Phase)	●	●
	<b>I<sub>pf</sub></b> Prospective short-circuit current	●	●
	$\Delta V\%$ Voltage Drop	●	●
<b>Voltage/Frequency</b>		●	●
<b>Phase Rotation</b>		●	●
<b>EVSE Vehicle charging station testing with EV CHECK adapter</b>		●	●
<b>Internal Memory</b>		●	●
<b>Uscita USB</b>		●	●
<b>Rechargeable battery (6 x 1,5V AA)</b>		●	●
<b>CAT IV 300V e CAT III 600V</b>		●	●
<b>Compliant with the Standard EN61557-2-3-4-5-6-7</b>		●	●

## Technical specifications

### 1. Insulation resistance

Insulation resistance (nominal voltages 50V<sub>DC</sub>)

Measurement range according to 61557 from 50k $\Omega$ -80M $\Omega$

Measuring range (M $\Omega$ )	Resolution (M $\Omega$ )	Accuracy
0.1 ÷ 80.0	(0.100 ... 1.999) 0.001	±(5 % of reading + 3 digits)
	(2.00 ... 80.00) 0.01	

Insulation resistance (nominal voltages 100 V<sub>DC</sub> and 250 V<sub>DC</sub>)

Measurement range according to 61557 from 100k $\Omega$ -199.9M $\Omega$

Measuring range (M $\Omega$ )	Resolution (M $\Omega$ )	Accuracy
0.1 ÷ 199.9	(0.100 ... 1.999) 0.001	±(5 % of reading + 3 digits)
	(2.00 ... 99.99) 0.01	
	(100.0 ... 199.9) 0.1	

Insulation resistance (nominal voltages 500 V<sub>DC</sub> and 1000 V<sub>DC</sub>)

Measurement range according to 61557 from 500k $\Omega$ -199.9M $\Omega$

Measuring range (M $\Omega$ )	Resolution (M $\Omega$ )	Accuracy
0.1 ÷ 199.9	(0.100 ... 1.999) 0.001	±(2 % of reading + 3 digits)
	(2.00 ... 99.99) 0.01	
	(100.0 ... 199.9) 0.1	
200 ÷ 999	(200 ... 999) 1	±(10 % of reading)

### Voltage

Measuring range (V)	Resolution (V)	Accuracy
0 ÷ 1200	1	±(3 % of reading + 3 digits)

Nominal voltages ..... 50V<sub>DC</sub>, 100 V<sub>DC</sub>, 250 V<sub>DC</sub>, 500 V<sub>DC</sub>, 1000 V<sub>DC</sub>

Open circuit voltage ..... -0 % / +20 % of nominal voltage

Measuring current ..... min. 1 mA at R<sub>N</sub>=U<sub>N</sub>×1 k $\Omega$ /V

Short circuit current ..... max. 15 mA

The number of possible tests

with a new set of batteries ..... up to 1000 (with 2300mAh battery cells)

Auto discharge after test.

In case the instrument gets moistened the results could be impaired. In such case it is recommended to dry the instrument and accessories for at least 24 hours.

## 2 Continuity resistance

### 7.2.1 Low R

Measuring range according to EN61557-4 is 0.1  $\Omega$  ÷ 1999  $\Omega$ .

Measuring range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.1 ÷ 20.0	(0.10 $\Omega$ ..... 19.99 $\Omega$ ) 0.01 $\Omega$	±(3 % of reading + 3 digits)
20.0 ÷ 1999	(20.0 $\Omega$ ... 99.9 $\Omega$ ) 0.1 $\Omega$	±(5% of reading)
	(100 $\Omega$ ... 1999 $\Omega$ ) 1 $\Omega$	

Open-circuit voltage ..... 5 V<sub>DC</sub>  
 Measuring current ..... min. 200 mA into load resistance of 2 Ω  
 Test lead compensation..... up to 5 Ω  
 The number of possible tests  
 with a new set of batteries ..... up to 1400 (with 2300mAh battery cells)  
 Automatic polarity reversal of the test voltage.

## 2.1 Low current continuity

Measuring range (Ω)	Resolution (Ω)	Accuracy
0.1 ÷ 1999	(0.1 Ω ... 99.9 Ω) 0.1 Ω (100.0 Ω ... 1999 Ω) 1 Ω	±(5 % of reading + 3 digits)

Open-circuit voltage ..... 5 V<sub>DC</sub>  
 Short-circuit current.....max. 7 mA  
 Test lead compensation ..... up to 5 Ω

## 3. RCD testing

### 3.1 General data

Nominal residual current..... 6mA, 10 mA, 30 mA, 100 mA, 300 mA, 500 mA,  
 650mA, 1000 mA  
 Nominal residual current accuracy.... -0 / +0.1·I<sub>Δ</sub>; I<sub>Δ</sub> = I<sub>ΔN</sub>, 2×I<sub>ΔN</sub>, 5×I<sub>ΔN</sub>  
 -0.1·I<sub>Δ</sub> / +0; I<sub>Δ</sub> = ½×I<sub>ΔN</sub>  
 Test current shape ..... Sine-wave (AC), DC (B), pulsed (A)  
 RCD type..... general (G, non-delayed), selective (S, time-  
 delayed)  
 Test current starting polarity ..... 0° or 180°  
 Voltage range ..... 93V-134V; 185V-266V; 45Hz-65Hz

RCD test current selection (r.m.s. value calculated to 20 ms) according to IEC 61009:

I <sub>ΔN</sub> (mA)	½×I <sub>ΔN</sub>			1×I <sub>ΔN</sub>			2×I <sub>ΔN</sub>			5×I <sub>ΔN</sub>			RCD I <sub>Δ</sub>		
	AC	A	B	AC	A	B	AC	A	B	AC	A	B	AC	A	B
6	3	2,1	3	6	12	12	12	24	24	30	60	60	✓	✓	✓
10	5	3,5	5	10	20	20	20	40	40	50	100	100	✓	✓	✓
30	15	10,5	15	30	42	60	60	84	120	150	212	300	✓	✓	✓
100	50	35	50	100	141	200	200	282	400	500	707	1000	✓	✓	✓
300	150	105	150	300	424	600	600	848	**)	1500	**)	**)	✓	✓	✓
500	250	175	250	500	707	1000	1000	1410	**)	2500	**)	**)	✓	✓	✓
650	325	228	325	650	919	1300	1300	**)	**)	**)	**)	**)	✓	✓	✓
1000	500	350	500	1000	1410	**)	2000	**)	**)	**)	**)	**)	✓	✓	✓

\*) not available

### 3.2 Contact voltage

Measuring range according to EN61557-6 is 3.0 V ÷ 49.0 V for limit contact voltage 25 V.

Measuring range according to EN61557-6 is 3.0 V ÷ 99.0 V for limit contact voltage 50 V.

Measuring range (V)	Resolution (V)	Accuracy
3.0 ÷ 9.9	0.1	(-0%/+10%) of reading + 5 digits
10.0 ÷ 99.9	0.1	(-0%/+10%) of reading + 5 digits

Test current ..... max.  $0.5 \times I_{\Delta N}$   
 Limit contact voltage..... 25 V, 50 V

Fault loop resistance at contact voltage is calculated as  $R_L = \frac{U_c}{I_{\Delta N}}$

### 3.3 Trip-out time

Complete measurement range corresponds to EN61557-6 requirements. Specified accuracies are valid for complete operating range.

Measuring range (ms)	Resolution (ms)	Accuracy
0.0 ÷ 500.0	0.1	±3 ms

Test current .....  $\frac{1}{2} \times I_{\Delta N}$ ,  $I_{\Delta N}$ ,  $2 \times I_{\Delta N}$ ,  $5 \times I_{\Delta N}$   
 Multipliers not available see test current selection table

### 3.4 Trip-out current

Measurement range corresponds to EN61557-6 for  $I_{\Delta N} \geq 10$  mA. Specified accuracies are valid for complete operating range.

Measuring range $I_{\Delta}$	Resolution $I_{\Delta}$	Accuracy
$0.2 \times I_{\Delta N} \div 1.1 \times I_{\Delta N}$ (AC type)	$0.05 \times I_{\Delta N}$	$\pm 0.1 \times I_{\Delta N}$
$0.2 \times I_{\Delta N} \div 1.5 \times I_{\Delta N}$ (A type, $I_{\Delta N} \geq 30$ mA)	$0.05 \times I_{\Delta N}$	$\pm 0.1 \times I_{\Delta N}$
$0.2 \times I_{\Delta N} \div 2.2 \times I_{\Delta N}$ (A type, $I_{\Delta N} = 10$ mA)	$0.05 \times I_{\Delta N}$	$\pm 0.1 \times I_{\Delta N}$
$0.2 \times I_{\Delta N} \div 2.2 \times I_{\Delta N}$ (B type)	$0.05 \times I_{\Delta N}$	$\pm 0.1 \times I_{\Delta N}$

Trip-out time

Measuring range (ms)	Resolution (ms)	Accuracy
0 ÷ 300	1	±3 ms

Contact voltage

Measuring range (V)	Resolution (V)	Accuracy
3.0 ÷ 9.9	0.1	(-0%/+10%) of reading + 5 digits
10.0 ÷ 99.9	0.1	(-0%/+10%) of reading + 5 digits

## 5. Fault loop impedance and prospective fault current

### Zloop L-PE, I<sub>pfc</sub> sub-function

Measuring range according to EN61557-3 is 0.25 Ω ÷ 1999 Ω.

Measuring range (Ω)	Resolution (Ω)	Accuracy
0.2 ÷ 9999	(0.20 ... 19.99)    0.01 (20.0 ... 99.9)      0.1 (100 ... 9999)       1	±(5 % of reading + 5 digits)

Prospective fault current (calculated value)

Measuring range (A)	Resolution (A)	Accuracy
0.00 ÷ 19.99	0.01	Consider accuracy of fault loop resistance measurement
20.0 ÷ 99.9	0.1	
100 ÷ 999	1	
1.00k ÷ 9.99k	10	
10.0 ÷ 100.0k	100	

Test current (at 230 V)..... 3.4 A, 50Hz Sine wave (10 ms ≤ t<sub>LOAD</sub> ≤ 15 ms)

Nominal voltage range..... 93 V ÷ 134 V; 185 V ÷ 266 V (45 Hz ÷ 65 Hz)

### Zloop L-PE RCD and R<sub>s</sub>, I<sub>pfc</sub>, non trip subfunction

Measuring range according to EN61557 is 0.75 Ω ÷ 1999 Ω.

Measuring range (Ω)	Resolution (Ω)	Accuracy <sup>*)</sup>
0.4 ÷ 19.99	(0.40 ... 19.99)    0.01	±(5 % of reading + 10 digits)
20.0 ÷ 9999	(20.0 ... 99.9)      0.1 (100 ... 9999)       1	± 10 % of reading

<sup>\*)</sup> Accuracy may be impaired in case of heavy noise on mains voltage.

Prospective fault current (calculated value)

Measuring range (A)	Resolution (A)	Accuracy
0.00 ÷ 19.99	0.01	Consider accuracy of fault loop resistance measurement
20.0 ÷ 99.9	0.1	
100 ÷ 999	1	
1.00k ÷ 9.99k	10	
10.0 ÷ 100.0k	100	

No trip out of RCD.

Nominal voltage range..... 93 V ÷ 134 V; 185 V ÷ 266 V (45 Hz ÷ 65 Hz)

## 6. Line impedance and prospective short-circuit current

Line impedance

Measuring range according to EN61557-3 is  $0.25\Omega \div 1999\Omega$ .

Zline L-L, L-N,  $I_{psc}$  subfunction

Measuring range ( $\Omega$ )	Resolution ( $\Omega$ )	Accuracy
0.2 $\div$ 9999	(0.20 ... 19.99)      0.01	$\pm(5\%$ of reading + 5 digits)
	(20.0 ... 99.9)        0.1	
	(100 ... 9999)         1	

Prospective short-circuit current (calculated value)

Measuring range (A)	Resolution (A)	Accuracy
0.00 $\div$ 19.99	0.01	Consider accuracy of line resistance measurement
20.0 $\div$ 99.9	0.1	
100 $\div$ 999	1	
1.00k $\div$ 9.99k	10	
10.0 $\div$ 100.0	100	

Test current (at 230 V)..... 3.4 A, 50Hz Sine wave ( $10\text{ ms} \leq t_{LOAD} \leq 15\text{ ms}$ )

Nominal voltage range..... 93V $\div$ 134V; 185V $\div$ 266V; 321V $\div$ 485V (45Hz  $\div$  65Hz)

6.1 Voltage drop:

Measuring range (%)	Resolution (%)	Accuracy
0.0 $\div$ 9.9	0.1	Consider accuracy of the line measurement (only calculated value)

## 7. Phase rotation

Measuring according to EN61557-7

Nominal mains voltage range ..... 50 V<sub>AC</sub>  $\div$  550 V<sub>AC</sub>

Nominal frequency range ..... 45 Hz  $\div$  400 Hz

Result displayed ..... Right:1 2-3 ; Left: 3-2-1

## 8. Voltage and frequency

Measuring range (V)	Resolution (V)	Accuracy
0 $\div$ 550	1	$\pm(2\%$ of reading + 2 digits)

Frequency range ..... 0 Hz, 45 Hz  $\div$  400 Hz

Measuring range (Hz)	Resolution (Hz)	Accuracy
10 $\div$ 499	0.1	$\pm 0.2\%$ + 1 digit

Nominal voltage range..... V  $\div$  550 V

## 9. Earth Resistance (only NOVA PRO)

Measuring range according to EN61557-5 is 100Ωm ÷ 1999 Ω.

Re – Earth resistance, 3-wire, 4-wire

Measuring range (Ω)	Resolution (Ω)	Accuracy
1.0 ÷ 9999	(1.00 ... 19.99)	±(5 % of reading + 5 digits)
	(20.0 ... 199.9)	
	(200.0 ... 9999)	

Max. auxiliary earth electrode resistance Rh.... 100×RE or 50 kΩ (whichever is lower)

Max. probe resistance Rs..... 100×RE or 50 kΩ (whichever is lower)

Rh and Rs values are indicative.

Additional probe resistance error at Rhmax or Rsmax...±(10 % of reading + 10 digits) Additional error at 3 V voltage noise (50 Hz) ±(5 % of reading + 10 digits)

Open circuit voltage..... < 30 VAC

Short circuit current..... < 30 mA

Test voltage frequency..... 126.9 Hz

Test voltage shape..... sine wave

Automatic measurement of auxiliary electrode resistance and probe resistance.

Ro - Specific earth resistance (only NOVA PRO)

Measuring range	Resolution (Ωm)	Accuracy
6.0 Ωm ... 99.9 Ωm	0.1 Ωm	± (5 % of reading + 5 digits)
100 Ωm ... 999 Ωm	1 Ωm	± (5 % of reading + 5 digits)
1.00 kΩm..... 9.99 kΩm	0.01 kΩm	±(10% of read.)for Re 2kΩ... 19.99kΩ
10.0 kΩm..... 99.9 kΩm	0.1 kΩm	±(10% of read.)for Re 2kΩ... 19.99kΩ
100 kΩm ... 9999 kΩm	1 kΩm	±(20% of read.) for Re > 20 kΩ

Principle:  $\rho = 2 \cdot \pi \cdot d \cdot R_e$ , where  $R_e$  is a measured resistance in 4-wire method and  $d$  is distance between the probes.

Rh and Rs values are indicative.



## 10. General data

Power supply voltage .....9 V<sub>DC</sub> (6×1.5 V battery cells, size AA)  
Power supply adapter .....12 V DC / 1000 mA  
Battery charging current .....< 600 mA (internally regulated)  
Voltage of charged batteries .....9 V<sub>DC</sub> (6×1.5 V, at fully charged state)  
Charging duration time .....typical 6h  
Operation .....typical 15 h

Overtoltage category .....CAT III / 600 V; CAT IV / 300 V

Protection classification .....double insulation

Pollution degree .....2

Protection degree .....P 42

Display .....480X320 TFT LCD

COM-Port... .....USB

Dimensions (w × h × d)..... 25 cm × 10.7 cm × 13.5 cm

Weight (without battery) .....1.30 kg

### Reference conditions

Reference temperature range .....10 °C ÷ 30 °C

Reference humidity range .....40 %RH ÷ 70 %RH

### Operating conditions

Working temperature range .....0 °C ÷ 40 °C

Maximum relative humidity.....95 %RH (0 °C ÷ 40 °C), non-condensing

### Storage conditions

Temperature range ..... -10 °C ÷ +70 °C

Maximum relative humidity.....90 %RH (-10 °C ÷ +40 °C)

80 %RH (40 °C ÷ 60 °C)

The error in operating conditions could be at most the error for reference conditions (specified in the manual for each function) + 1 % of measured value + 1 digit unless otherwise specified.



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