JECOTEC AG

NEW

NP15

TRUE RMS DIGITAL MULTIMETER

with data logger & view function

Functions and features of the multimeter:

- Data logger & view function (up to 32000 readings).
- Plug and Play USB connectivity with PC.
- 100 kHz bandwidth for voltage measurement.
- 1 kHz Low Pass Filter mode.
- NO-GO function.
- VAC with 1 M impedance.
- 4-20 mA/ 0-20 mA scale type measurement.
- Single fuse for mA & A.
- Adjustable square wave output.
- Temperature measurement with J, K, Pt100 & Pt1000 sensors.
- External power adapter for long hours of measurements.
- Selectable clamp ratio for current measurement.
- Conductance measurement.
- Frequency / time period measurement.

Electrical Safety 1000 V CAT III

Electrical Safety 600 V CAT IV

The NP15-2, NP15-3, NP15-5, NP15-6 series of new multimeters is made for professional use that offers safety, high resolution, large range count, reliability, ruggedness, a complete tool for test automation and is equipped with more than 30 different measuring functions.

Application

Low input impedance (Ri = 1MΩ)

Trouble shooting a branch circuit with dead or disconnected circuit is made easy with VAC1MΩ. Low impedance VAC1MΩ measurement helps eliminating error readings resulting from ghost voltages caused by long wires that share a common conduit.

Single fuse(16A)

Instrument contains a single fuse of 16A common for all the ranges of current from 600µA to 10A AC/DC as compared to the two fuses in traditional DMMs. This eliminates the accidental blowing of 1,6A fuse due to operator's error when higher current is applied in lower ranges.

Tool for automation, USB 2.0 Interface (option)

With ready to use communication protocol and plug and play USB 2,0 add-on device, one can easily automate his test system. The extensive data capturing and analysis is possible with DMM software.
With vast functionality and editable report settings DMM software is a real help for easy report generation and analysis of a device under test.

Square Wave Output

A square wave output can be generated from the DMM with the user selectable frequency and adjustable duty cycle.This can be used as baud rate generator,to check flow meters, to test frequency counters, accelerometer and frequency transmitter.
It can also be used as audio signal in audio signal testing.

Current measurement with clamp sensor

Measurement with various clamp sensors is possible, which helps in accurate measurement of current from 60mA to 6000A without interrupting the circuit. The measured current is automatically calculated from the selected clamp ratio.

Low pass filter(LPF) in VAC$_{10MΩ}$ & VAC$_{1MΩ}$

A selectable 1kHz low pass filter offers advanced variable frequency drive filtering to help you accurately analyze non-traditional sine waves and noisy signals.
In LPF mode DMM rejects all high frequency noise making it suitable for making measurements on inverters and high frequency drives.

True RMS measurement with high crest factors

Accurate true RMS measurement of distorted waveform with crest factor CF between 1 to 10.

Data Logging

DMM NP15-2, NP15-3, NP15-5, NP-16 offers continuous data logging of up to 32000 readings with real time stamping. Log rate is adjustable from as low as 0,1 sec to as high as 1hr.

Adjustable Beep Level

With Beep level setting, the limit for continuity can be adjusted from 10Ω to 90Ω depending upon application.

Separate fuse compartment

Easier access to fuse when replacing the blown fuse.

Auto Power OFF with adjustable timing

Flexibility to adjust “Auto off ” period from 5 minutes to 60 minutes.

60mv & 600mV DC & ACDC

This helps in accurate measurement of low output voltages <600mV from sensors & transmitters. High frequency low voltage signal from RF transmitters can also be measured. Signal as low as 0.001mV can be measured accurately.

Min / Max / Avg measurement

Min/Max/Avg function records the minimum, maximum and average of all the readings applied since its activation. With dual display it makes it even flexible for the user to keep the trace of the applied readings while viewing Min/Max/Avg readings. The average reading is useful for smoothing out unstable inputs,& verifying circuit performance.

Dedicated keys for easy navigation

Dedicated navigation keys makes scrolling through menu and setting of parameters easy & comfortable.

External Power Adapter (DC Jack) (option)

The external power supply adapter helps in conserving battery while performing long hours of measurements. When DC jack is connected batteries inside DMM are electronically disconnected, and reconnected in absence of mains, hence there is no need of removing the battery when using the power adapter.

100kHz Bandwidth

Alternating voltages with frequencies up to 100kHz can be measured accurately. This is useful while analyzing high frequency analog signals.

Self battery voltage measurement

Capable of measuring self battery voltage.

Room temperature measurement

Room temperature can be sensed and measured without any external sensor. The same is used as internal reference temperature in thermocouple based temperature measurements

Fully programmable Go/NoGo

The Go/NoGo function gives an indication through a buzzer for the applied input lying inside or outside the set band. The values for low limit, high limit and buzzer condition can be easily set through NoGo function in menu settings. Once the NoGo function is set, user can get busy doing other activities in the vicinity of the meter, whenever the condition is met it will be indicated by a buzzer. It eliminates the need of operator to continuously monitor the display.

View Function

Data logged on meter can be viewed directly on the meter itself, hence the data analysis is also possible without a PC based software. However for graphical and large data analysis PC based optional software can be used.

Dangerous Contact Voltage Indication

Presence of hazardous voltage (>35Vrms 50/60Hz and 50Vdc) at the contact terminal are indicated on display. This is very useful while performing measurements in the circuit which takes longer time to discharge its capacitors, or where unexpected danger voltage are present.

Model Wise Functional Overview

Functions/Features	NP15-2	NP15-3	NP15-5	NP15-6
Voltage VDC (Ri>9MΩ)	•	•	•	•
Voltage VAC TRMS (Ri>9MΩ)	•	•	•	•
Voltage LoZ VAC TRMS (Ri=1MΩ)		•	•	•
Voltage VAC TRMS (Ri>9MΩ) LPF 1kHz		•	•	•
Voltage LoZ VAC TRMS (Ri=1MΩ) LPF 1kHz		•	•	•
Voltage VACDC (Ri>9MΩ)	•	•	•	•
High impedance, high bandwidth mV measurement	600mV	60mV/ 600mV	60mV/600mV	60mV/600mV
Bandwidth VAC & mV ACDC	10kHz	10kHz	10kHz	100 kHz
Frequency Measurement			•	•
Duty cycle %				
Voltage level measurement dB,dBu,dBm		•	•	•
Resistance	•	•	•	•
Conductance measurement	•	•	•	•
Continuity test (I const = 1 mA)	•	•	•	•
Diode measurement (I const = 1 mA)	•	•	•	•
Temperature measurement (TYP J,TYP K)		•	•	•
Temperature measurement (PT100,PT1000)	•		•	•
Capacitance measurement			•	•
Current ADC	600mA	6 A/16 A (20 A)	600 µA/6 mA 60 mA/600 mA 6 A/10 A (16 A)	600 µA/6 mA 60 mA/600 mA 6 A/10 A (16 A)
Current AAC+DC TRMS				
Current AAC TRMS				
Bandwidth @ AAC+DC or AAC 10 kHz	•	•	•	•
Measurement with Clamp Sensor	•	•	•	•
Data Logging / Viewing Function			•	•
Protective rubber holster	•	•	•	•
Fuse 16A / 1000V	1.6A		•	•
0-20mA / 4-20mA percentage scale			•	•
Square wave Out			•	•
Self battery voltage measurement	•	•	•	•
MIN/MAX/AVG and Auto Hold functions	•	•	•	•
Dangerous contact voltage indication	•	•	•	•
REL/Zero function	•	•	•	•
USB IR-interface			Optional	
External power supply adapter				
Measuring Category	1000 V CAT III 600 V CAT IV	1000 V CAT I 600V CAT II	1000 V CAT III 600 V CAT IV	1000 V CAT III 600 V CAT IV

Environmental Condition

Operating temperature	-10 to +50°C
Storage temperature	- 25 to +70°C
Relative humidity	<75% non condensing.
IP	IP 50 for Housing, IP20 for terminals.
Altitude	Up to 2000 m

Technical Specification

Voltage

Measurement Function	Measuring Range	Resolution	Input Impedance	Intrinsic Uncertainty under Reference Condition ±(...% of the rdg.+...Digits)			Overload Capacity [2]	
				DC [7]	AC [1) 3)]	ACDC [1) 3)]	Value	Time
V	6V	100µV	>9MΩ	0.05 + 5	0.5 + 9	1 + 30	1000 V DC/ AC RMS Sine	Continuous
	60V	1mV		0.05 + 5				
	600V	10mV		0.05 + 9				
	1000V	100mV		0.09 + 10				
mV	60mV	1µV	>10MΩ	0.09 + 15	-	1 + 30		Max 10 s
	600mV	10µV		0.09 + 15				

Influence Quantity	Range of Influence	Range	Accuracy	
			NP15-6	Others [4]
Frequency [6)9)]	>15 Hz....45 Hz	60 mV ~ [5], 600 mV ~	3+30	
	>65 Hz....100kHz			
	>15 Hz....45 Hz	6V, 60V, 600V ~	2+9	3+9
	> 65Hz... 1kHz		1+9	3+9
	>1kHz.....20kHz		3+9	4+9 [10)]
	>20kHz....100kHz [8)]		3.5+30	
	>15 Hz....45 Hz	1000V ~	2+9	3+9
	> 65Hz... 1kHz		2+9	3+9
	>1kHz.....10kHz		3+30	

1) Specified Accuracy is valid as of 3% of the measuring range.With Short- circuited test probes: residual value of 1 to 30 d at zero point due to the TRMS converter.

2) At 0°C to 40°C (Accuracy Range)

3) In VAC measurement, Frequency will be shown above 10% of the present range, except for 1000V & 60mV range i.e. 25% & 50% respectively.

4) Frequency Influence upto 10kHz.

5) Frequency response up to 50 kHz

6) Frequency response is valid from 10% to 100% of range

7) With Zero Balancing

8) Frequency response up to 100 kHz, for greater than 50 kHz plus 2.5%

9) Overload capacity of the voltage measurement input: power Limiting: Frequency x Voltage Max : $6x10^6$ V x Hz for V>100V

10) Frequency response greater than 2 kHz plus 2.5%

Frequency, Duty Cycle

Measurement Function	Measuring Range	Frequency	Intrinsic Uncertainty	Overload Capacity [1)]	
				Value	Time
Hz [5)]	600Hz, 6kHz, 60kHz, 600kHz, 1MHz	fmin [2)]: 6Hz	0.05 +5	1000 V DC/ AC RMS Sine	Max 10 s
Hz(V) [3)]	10Hz.....100kHz		0.1 +5 [4)]		
Duty Cycle(%)	2.0...98%	15Hz.... 1kHz	0.1 R + 5 d		
	5.0...98%	.... 10kHz	0.2 R per kHz + 5d		
	10...90%	.... 50kHz	0.5 R per kHz + 5d		

1) At 0°C to 40°C (Accuracy Range)

2) Lowest measurable frequency for square measuring signals symmetrical to the zero point (±5V).

3) Overload capacity of the voltage measurement input :
Power limiting: Frequency x voltage max : $6x10^6$V x Hz for U> 100V.

4) Input sensitivity, sinusoidal signal , 10% to 100% of the measuring range

5) At input ±5Vrms ,Square wave, Bipolar inputs.

R= Range d= digit

Current

Measurement Function	Measuring Range	Resolution	Votlage Drop Approx.	Intrinsic Uncertainty under Reference Condition ±(…% of the rdg.+…Digits)			Overload Capacity [2]	
				DC[4]	AC [1]	ACDC [1]	Value	Time
mA	600 µA	10 nA	60 mV	0.5 + 15	1 + 10	1.5 + 10	0.7A	Continuous
	6 mA	100 nA	60 mV	0.5 + 5	1 + 10	1.5 + 10		
	60 mA	1 µA	60 mV	0.1 + 5	1 + 10	1.5 + 10		
	600 mA	10 µA	60 mV	0.2 + 5	1 + 10	1.5 + 10		
A	6 A	100 µA	60 mV	0.9 + 10	1 + 10	1.5 + 10	10 A: ≤ 5 min [3]	
	10 A	1 mA	300 mV	0.9 + 10	1 + 10	1.5 + 10		

Influence Quantity	Range of Influence	Range	Accuracy	
			NP15-6	Others
Frequency [5]	>15 Hz....45 Hz	600µA..... 10A	3+10	
	>65Hz....10 kHz			

1) Specified Accuracy is valid as of 3% of the measuring range. With Short- circuited test probes: residual value of 1 to 30 d at zero point due to the TRMS converter.

2) At 0°C to 40°C (Accuracy Range)

3) Off time 30 min and TA≤ 40°C

4) With Zero Balancing

5) Frequency response is valid from 10% to 100% of range

Resistance, Diode, Continuity

Measurement Function	Measuring Range[4]	Resolution	Open Ckt. Voltage	Meas. curr. @ range limit	Intrinsic Uncertainty	Overload Capacity	
						Value	Time
Ω [1]	600 Ω	10mΩ	<1.4V	Approx. 300 µA	0.1 + 10	1000 V DC/ AC RMS Sine	Max 10 s
	6kΩ	100mΩ		Approx. 250 µA	0.1 + 10		
	60kΩ	1Ω		Approx. 100 µA	0.1 + 10		
	600kΩ	10Ω		Approx. 12 µA	0.5 + 10		
	6MΩ	100Ω		Approx. 1.2 µA	1 + 10		
	40MΩ	10kΩ		Approx. 125 nA	5 + 10		
Continuity	600Ω	-	Appx. 8V	Approx. 1 mA	3 + 5		
Diode [1]	6.0V [3]	-	Appx. 8V	Approx. 1 mA	0.5 + 5		

1) Measurement of Resistance, Diode will be more accurate after removal from device under test

2) At 0°C to 40°C (Accuracy Range)

3) Displays up to max 6.0 V, "OL" in excess of 6.0V.

4) With Zero Balancing

Temperature

Measurement Function	Measuring Range		Intrinsic Uncertainty	Overload Capacity [1]	
				Value	Time
Temperature °C/°F	Pt 100	-200 °C .. +850 °C	0.3 + 15 [2]	1000 V DC/ AC RMS Sine	Max 10s
	Pt 1000	-150 °C .. +850 °C	0.3 + 15 [2]		
	TC K	-200 °C .. +1372 °C	1% +20 [2]		
	TC J	-210 °C .. +1200 °C	1% +20 [2]		

1) At 0°C to 40°C (Accuracy Range)

2) Plus Sensor Deviation

Capacitance

Measurement Function	Measuring Range	Resolution	V_OMAX	Intrinsic Uncertainty	Overload Capacity [2]	
					Value	Time
F [3)4)]	10 nF	10 pF	0.7 V	1 + 10 [2)]	1000V DC / AC RMS Sine	Max 10 s
	100 nF	100 pF		1 + 6 [2)]		
	1 µF	1 nF		1 + 6 [2)]		
	10 µF	10 nF		1 + 6 [2)]		
	100 µF	100 nF		5 + 6 [2)]		
	1000 µF	1 µF		5 + 6 [2)]		

1) At 0°C to 40°C (Accuracy Range)
2) Applies to measurements at film capacitors and battery operated.
3) Measurement of Capacitance will be more accurate after removal from device under test
4) With Zero Balancing

Square Wave Out

Output	Range	Accuracy
Frequency	30Hz - 10kHz	0.1% x output frquency + 2 counts of display
Duty Cycle	10% - 100%[2]	0.2% of Full scale [1]
Amplitude	Fixed -3.15 to 3.15V	±0.4V
1) For signal greater than 1kHz, add 0.2% per kHz to the accuracy		
2) In Multiple of 10		

Influence Error

Influence Quantity	Range of Influence	Measured Quantity / Measuring Range [1)]	Variation ± (….%of rdg. + ….digits)/10k
Temperature	-10 şC to 21 şC & +25 °C to 50 °C	VDC	0.2 + 20
		V~, VACDC	0.4 + 10
		600Ω to 600 kΩ	0.5 + 10
		> 600 kΩ	1 + 10
		mA/ ADC	0.6 + 10
		mA/ AAC, ACDC	0.8 + 10
		10nF…10µF	1 + 5
		100µF...1000µF	1.5+10
		Hz, %	0.2 + 10
		şC/şF pt100/pt1000	0.5 + 10
		şC/şF thermocouple K/J	0.2 + 10
Relative humidity	75% 3 Days Meter off	V,A,Hz,%,Diode,F,Ω	1 × intrinsic error
Battery voltage	1.8 to 3.6V	V,A,Hz,%,Diode,F,Ω	1 × intrinsic error
1) With Zero Balancing			

Reference Condition for Accuracy

Reference Temperature	23°C ± 1
Relative Humidity	45%...55% RH
Waveform of measured quantity	Sinusoidal
Input frequency	45...65 Hz
Battery Voltage	3 V ± 0.1 V

Influence Quantity

Influence Quantity	Range of Influence	Measuring Ranges	Attenuation
Common Mode interference voltage	Noise quantity max. 1000 V dc	V dc	> 120 dB
	Noise quantity max. 1000 V ~ 50-60 HZ sinusoidal	6.0 V~,60 V~	>80 dB
		600 V~	> 70 dB
		1000 V~	> 60 dB
Normal Mode interference ratio	Noise quantity V ~ Value of the measuring range at a time Max. 1000V~ ,50Hz, 60Hz Sinusoidal	V dc	> 50dB
	Noise quantity max. 1000 V dc	V~	>110dB

Applicable Regulations & Standards

EMC	EN 61000-6-2, EN 61000-6-4
Immunity	EN 61000-4-2: 8 kV atmosphere discharge, 4 kV contact discharge
	EN 61000-4-3: 3 V/m
Safety	EN 61010-1
IP for water & dust	EN 60529: IP 50 for case and IP20 for terminals
Pollution degree:	2
Installation category:	1000 V CATIII / 600 V CATIV, 600V CATII for NP15-3
High Voltage Test	7.4 kV (EN 61010-1), 3.5kV For NP15-3

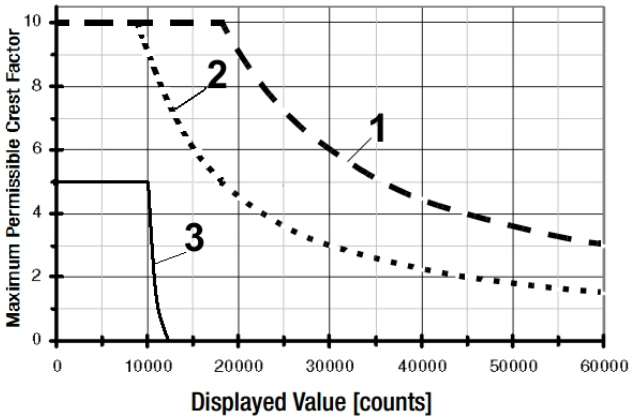
Battery

Battery Voltage	2 X 1.5 V Cells (LR6 Battery)
Battery type	Alkaline manganese cells.
Battery Life	Appx. 100 Hrs. (Backlight off)
Battery test	Automatic display of symbol when battery voltage drops below approx. 2.4V

Mechanical Design

Housing	PC ABS
Dimension	200 x 91 x 54 mm
Weight	Approx. 0.5 kg with batteries

Crest Factor



Additional error caused by signal's crest factor: 1 < CF < 3: 1% R+ 30D
3 < CF < 10: 3% R

Curve 1: Range from 0.06V to 60V,
0.6mA to 60mA, 6A

Curve 2: Range 600V
600mA

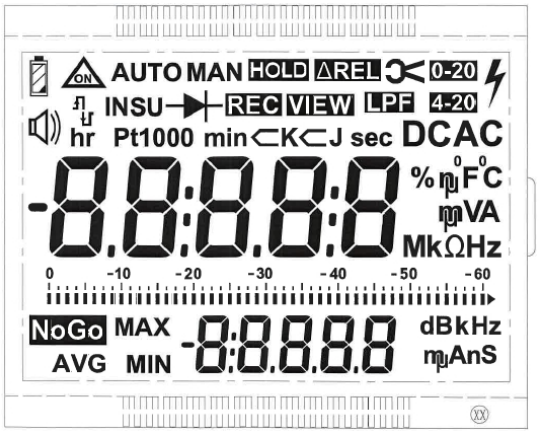
Curve 3: Range 1000V
10A

Note: With Unknown Waveform (CF >2), measurement should be made with manual range selection.
R = Reading
D = Digit

Internal Clock

Time Format	dd.MM.yy hh.mm.ss
Resolution	1 s
Accuracy	±1min. per month
Temperature Influence	50 ppm/K

Display



LCD display field 67 mm X 54 mm with digital display, analog scale and with display of measurement unit, and Various special functions.

Analog

Display:	LCD scale with bar graph or pointer, depending on the selected parameter setting
Scaling:	2 bar/pointer corresponds to 2500 counts at the digital display
Over range Display (Digital):	By triangle " ▶ "
Polarity Display:	With automatic switching
Sample rate (Digital):	10 measurements / sec and display refresh

Digital

Display:	7-segment characters
Character Height:	Main Display - 12.88mm Sub Display - 7.37mm
Resolution:	60,000 counts
Overflow Display:	"OL" is displayed
Polarity Display:	"-" (minus) is displayed if plus pole is connected to " ⊥ "
Measuring Rate:	10 measurement / sec with the Min-Max function except for the capacitance, frequency and duty cycle measuring Function
Refresh Rate:	4 times/ sec
Number of Digits:	5

Fuse

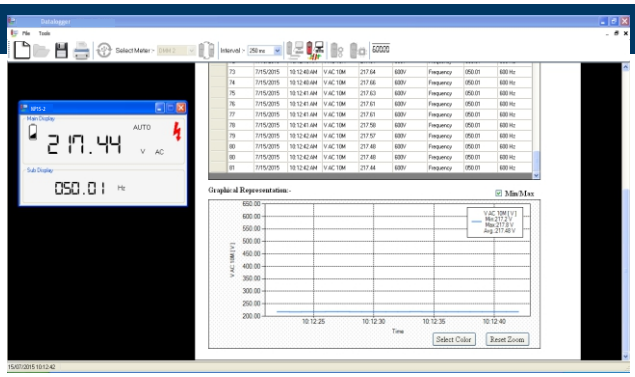
Fuse	FF (UR) 16 A/ 1000 V AC/DC; 10 mm x 38 mm (DMM 6015 & DMM 6016)
	FF (UR) 1.6 A/ 1000 V AC/DC ; 6.3 mm x 32 mm (DMM 6012)
Switching Capacity	30 kA at 1000 V AC/DC (DMM 6015 & DMM 6016)
	10 kA at 1000 V AC/DC (DMM 6012)

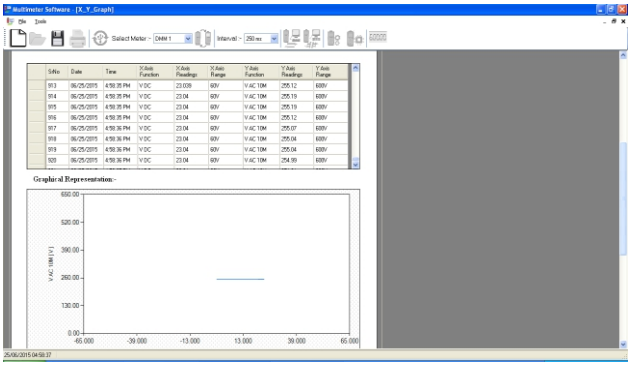
Accessories For Operation at a PC

Interface Adapter For USB Communication

Communication: Bi-Directional
Baud Rate: 9600
Data Bit: 8
Stop Bit: 1
Flow Control: None

A CD ROM is included which contains current drivers for Windows operating systems, Installation Guide and Datalogger User Manual.





Scope of Supply

Model Name	Scope of Supply
NP15-2	1. Digital Meter
NP15-3	2. Cable Set
NP15-5	3. Protective Case
NP15-6	4. Battery
	5. Operating Manual
	6. Test Certificate
OPTIONAL ACCESSORIES	
1. External Power Supply Adapter	
2. USB Interface Adapter + Software CD	

ORDERING CODE

Digital multimeter NP15 -	X	XX	X	X
Type*:				
NP15-2	2			
NP15-3	3			
NP15-5	5			
NP15-6	6			
Version:				
standard		00		
custom-made**		XX		
Language:				
Polish			P	
English			E	
other**			X	
Acceptance tests:				
with an extra quality inspection certificate				1
with test certificate				2
acc. to custromer's request				X

* see page 14 - Model Wise Functional Overview
** after agreeing with the manufacturer

ITEMS AVAILABLE FROM OUR STOCK:
NP15 - 300E1
version: NP15-3

NP15 - 500E1
version: NP15-5

JECOTEC AG
Riedstrasse 14
CH-8953 Dietikon
Switzerland
Tel.: +41 (0)44 810 29 08
E-Mail: welcome@jecotec.ch
Web: www.jecotec.ch

JECOTEC AG

NP15B

TRUE RMS DIGITAL MULTIMETER with **Bluetooth**

Product Features

- Data logger & View function (up to 32000 readings)
- Bluetooth Connectivity with Mobile & PC
- 100kHz bandwidth for voltage measurement
- 1kHz Low Pass Filter mode
- NO-GO function
- VAC with 1M impedance
- 4-20mA/0-20mA scale type measurement
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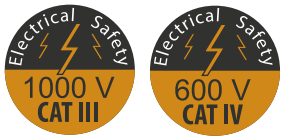
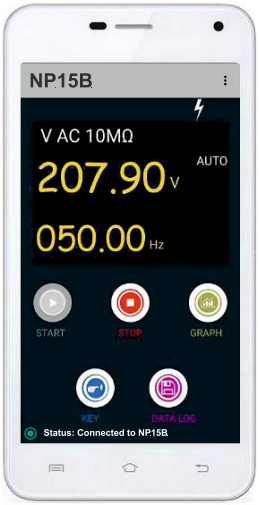


ANDROID



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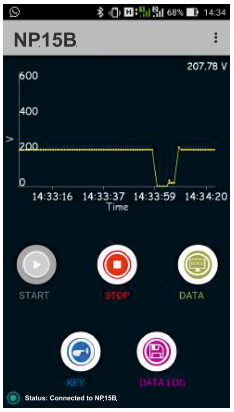
Tool for automation, Bluetooth Interface

With ready to use communication protocol, one can easily automate his test system. The extensive data capturing and analysis is possible with Android Application.

Instead of cable, the higher communication distance can be achieved (10m). The Graphical and Tabular analysis is possible over android app.t



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In LPF mode DMM rejects all high frequency noise making it suitable for making measurements on inverters and high frequency drives.

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Accurate true RMS measurement of distorted waveform with crest factor CF between 1 to 10.

Data Logging

NP15B series offers continuous data logging of up to 32000 readings with real time stamping. Log rate is adjustable from as low as 0.1 sec to as high as 1hr.

Adjustable Beep Level

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Separate fuse compartment

Easier access to fuse when replacing the blown fuse.

Auto Power OFF with adjustable timing

Flexibility to adjust “Auto off ” period from 5 minutes to 60 minutes.

60mv & 600mV DC & ACDC

This helps in accurate measurement of low output voltages <600mV from sensors & transmitters. High frequency low voltage signal from RF transmitters can also be measured. Signal as low as 0.001mV can be measured accurately.

Min / Max / Avg measurement

Min/Max/Avg function records the minimum, maximum and average of all the readings applied since its activation. With dual display it makes it even flexible for the user to keep the trace of the applied readings while viewing Min/Max/Avg readings. The average reading is useful for smoothing out unstable inputs,& verifying circuit performance.

Dedicated keys for easy navigation

Dedicated navigation keys makes scrolling through menu and setting of parameters easy & comfortable.

External Power Adapter (DC Jack)

The external power supply adapter helps in conserving battery while performing long hours of measurements. When DC jack is connected batteries inside DMM are electronically disconnected, and reconnected in absence of mains, hence there is no need of removing the battery when using the power adapter.

100kHz Bandwidth

Alternating voltages with frequencies up to 100kHz can be measured accurately. This is useful while analyzing high frequency analog signals.

Self battery voltage measurement

Capable of measuring self battery voltage.

Room temperature measurement

Room temperature can be sensed and measured without any external sensor. The same is used as internal reference temperature in thermocouple based temperature measurements

Fully programmable GO NO-GO

The Go - NoGo function gives an indication through a buzzer for the applied input lying inside or outside the set band. The values for low limit, high limit and buzzer condition can be easily set through NoGo function in menu settings. Once the NoGo function is set, user can get busy doing other activities in the vicinity of the meter, whenever the condition is met it will be indicated by a buzzer. It eliminates the need of operator to continuously monitor the display.

View Function

Data logged on meter can be viewed directly on the meter itself, hence the data analysis is also possible without a PC based software. However for graphical and large data analysis PC based software can be used.

Dangerous Contact Voltage Indication

Presence of hazardous voltage (>35Vrms 50/60Hz and 50Vdc) at the contact terminal are indicated on display. This is very useful while performing measurements in the circuit which takes longer time to discharge its capacitors, or where unexpected danger voltage are present.

Model Wise Functional Overview

Functions/Features	NP15B-2	NP15B-3	NP15B-5	NP15B-6
Voltage VDC (Ri>9MΩ)	•	•	•	•
Voltage VAC TRMS (Ri>9MΩ)	•	•	•	•
Voltage LoZ VAC TRMS (Ri=1MΩ)		•	•	•
Voltage VAC TRMS (Ri>9MΩ) LPF 1kHz		•	•	•
Voltage LoZ VAC TRMS (Ri=1MΩ) LPF 1kHz		•	•	•
Voltage VACDC (Ri>9MΩ)	•	•	•	•
High impedance, high bandwidth mV measurement	600mV	60mV/ 600mV	60mV/600mV	60mV/600mV
Bandwidth VAC & mV ACDC	10kHz	10kHz	10kHz	100 kHz
Frequency Measurement			•	•
Duty cycle %				
Voltage level measurement dB,dBu,dBm		•	•	•
Resistance	•	•	•	•
Conductance measurement	•	•	•	•
Continuity test (I const = 1 mA)	•	•	•	•
Diode measurement (I const = 1 mA)	•	•	•	•
Temperature measurement (TYP J,TYP K)		•	•	•
Temperature measurement (PT100,PT1000)	•		•	•
Capacitance measurement			•	•
Current ADC	600mA	6 A/16 A (20 A)	600 µA/6 mA 60 mA/600 mA 6 A/10 A (16 A)	600 µA/6 mA 60 mA/600 mA 6 A/10 A (16 A)
Current AAC+DC TRMS				
Current AAC TRMS				
Bandwidth @ AAC+DC or AAC 10 kHz	•	•	•	•
Measurement with Clamp Sensor	•	•	•	•
Data Logging / Viewing Function			•	•
Protective rubber holster	•	•	•	•
Fuse 16A / 1000V	1.6A		•	•
0-20mA / 4-20mA percentage scale			•	•
Square wave Out			•	•
Self battery voltage measurement	•	•	•	•
MIN/MAX/AVG and Auto Hold functions	•	•	•	•
Dangerous contact voltage indication	•	•	•	•
REL/Zero function	•	•	•	•
Bluetooth Interface	•	•	•	•
External power supply adapter	Optional			
Measuring Category	1000 V CAT III 600 V CAT IV	1000 V CAT I 600V CAT II	1000 V CAT III 600 V CAT IV	1000 V CAT III 600 V CAT IV

Environmental Condition

Operating temperature	-10 to +50°C
Storage temperature	- 25 to +70°C
Relative humidity	<75% non condensing.
IP	IP 50 for Housing, IP20 for terminals.
Altitude	Up to 2000 m

Technical Specification

Voltage

Measurement Function	Measuring Range	Resolution	Input Impedance	Intrinsic Uncertainty under Reference Condition ±(...% of the rdg.+...Digits)			Overload Capacity [2]	
				DC [7]	AC [1) 3)]	ACDC [1) 3)]	Value	Time
V	6V	100µV	>9MΩ	0.05 + 5	0.5 + 9	1 + 30	1000 V DC/ AC RMS Sine	Continuous
	60V	1mV		0.05 + 5				
	600V	10mV		0.05 + 9				
	1000V	100mV		0.09 + 10				
mV	60mV	1µV	>10MΩ	0.09 + 15	-	1 + 30		Max 10 s
	600mV	10µV		0.09 + 15				

Influence Quantity	Range of Influence	Range	Accuracy	
			NP15B-6	Others [4]
Frequency [6)9)]	>15 Hz...45 Hz	60 mV~ [5)], 600 mV~	3+30	
	>65 Hz...100kHz			
	>15 Hz...45 Hz	6V, 60V, 600V~	2+9	3+9
	> 65Hz... 1kHz		1+9	3+9
	>1kHz.....20kHz		3+9	4+9 [10)]
	>20kHz....100kHz [8)]		3.5+30	
	>15 Hz...45 Hz	1000V~	2+9	3+9
	> 65Hz... 1kHz		2+9	3+9
	>1kHz.....10kHz		3+30	

1) Specified Accuracy is valid as of 3% of the measuring range.With Short- circuited test probes: residual value of 1 to 30 d at zero point due to the TRMS converter.

2) At 0°C to 40°C (Accuracy Range)

3) In VAC measurement, Frequency will be shown above 10% of the present range, except for 1000V & 60mV range i.e. 25% & 50% respectively.

4) Frequency Influence upto 10kHz.

5) Frequency response up to 50 kHz

6) Frequency response is valid from 10% to 100% of range

7) With Zero Balancing

8) Frequency response up to 100 kHz, for greater than 50 kHz plus 2.5%

9) Overload capacity of the voltage measurement input: power Limiting: Frequency x Voltage Max : $6x10^6$ V x Hz for V>100V

10) Frequency response greater than 2 kHz plus 2.5%

Frequency, Duty Cycle

Measurement Function	Measuring Range	Frequency	Intrinsic Uncertainty	Overload Capacity [1)]	
				Value	Time
Hz [5)]	600Hz, 6kHz, 60kHz, 600kHz, 1MHz	fmin [2)]: 6Hz	0.05 +5	1000 V DC/ AC RMS Sine	Max 10 s
Hz(V) [3)]	10Hz.....100kHz		0.1 +5 [4)]		
Duty Cycle(%)	2.0...98%	15Hz 1kHz	0.1 R + 5 d		
	5.0...98%	.... 10kHz	0.2 R per kHz + 5d		
	10...90%	.... 50kHz	0.5 R per kHz + 5d		

1) At 0°C to 40°C (Accuracy Range)

2) Lowest measurable frequency for square measuring signals symmetrical to the zero point (±5V).

3) Overload capacity of the voltage measurement input :
Power limiting: Frequency x voltage max : $6x10^6$V x Hz for U> 100V.

4) Input sensitivity, sinusoidal signal , 10% to 100% of the measuring range

5) At input ±5Vrms ,Square wave, Bipolar inputs.

R= Range d= digit

Current

Measurement Function	Measuring Range	Resolution	Votlage Drop Approx.	Intrinsic Uncertainty under Reference Condition ±(...% of the rdg.+...Digits)			Overload Capacity [2]	
				DC[4]	AC [1]	ACDC [1]	Value	Time
mA	600 µA	10 nA	60 mV	0.5 + 15	1 + 10	1.5 + 10	0.7A	Continuous
	6 mA	100 nA	60 mV	0.5 + 5	1 + 10	1.5 + 10		
	60 mA	1 µA	60 mV	0.1 + 5	1 + 10	1.5 + 10		
	600 mA	10 µA	60 mV	0.2 + 5	1 + 10	1.5 + 10		
A	6 A	100 µA	60 mV	0.9 + 10	1 + 10	1.5 + 10	10 A: = 5 min [3]	
	10 A	1 mA	300 mV	0.9 + 10	1 + 10	1.5 + 10		

Influence Quantity	Range of Influence	Range	Accuracy	
			NP15B-6	Others
Frequency [5]	>15 Hz....45 Hz	600µA..... 10A	3+10	
	>65Hz....10 kHz			

1) Specified Accuracy is valid as of 3% of the measuring range. With Short- circuited test probes: residual value of 1 to 30 d at zero point due to the TRMS converter.

2) At 0°C to 40°C (Accuracy Range)

3) Off time 30 min and TA = 40°C

4) With Zero Balancing

5) Frequency response is valid from 10% to 100% of range

Resistance, Diode, Continuity

Measurement Function	Measuring Range[4]	Resolution	Open Ckt. Voltage	Meas. curr. @ range limit	Intrinsic Uncertainty	Overload Capacity	
						Value	Time
Ω [1]	600 Ω	10mΩ	<1.4V	Approx. 300 µA	0.1 + 10	1000 V DC/ AC RMS Sine	Max 10 s
	6kΩ	100mΩ		Approx. 250 µA	0.1 + 10		
	60kΩ	1Ω		Approx. 100 µA	0.1 + 10		
	600kΩ	10Ω		Approx. 12 µA	0.5 + 10		
	6MΩ	100Ω		Approx. 1.2 µA	1 + 10		
	60MΩ	10kΩ		Approx. 125 nA	5 + 10		
Continuity	600Ω	-	Appx. 8V	Approx. 1 mA	3 + 5		
Diode [1]	6.0V [3]	-	Appx. 8V	Approx. 1 mA	0.5 + 5		

1) Measurement of Resistance, Diode will be more accurate after removal from device under test

2) At 0°C to 40°C (Accuracy Range)

3) Displays up to max 6.0 V, "OL" in excess of 6.0V.

4) With Zero Balancing

Temperature

Measurement Function	Measuring Range		Intrinsic Uncertainty	Overload Capacity [1]	
				Value	Time
Temperature °C/°F	Pt 100	-200 °C .. +850 °C	0.3 + 15 [2]	1000 V DC/ AC RMS Sine	Max 10s
	Pt 1000	-150 °C .. +850 °C	0.3 + 15 [2]		
	TC K	-200 °C .. +1372 °C	1% +20 [2]		
	TC J	-210 °C .. +1200 °C	1% +20 [2]		

1) At 0°C to 40°C (Accuracy Range)

2) Plus Sensor Deviation

Capacitance

Measurement Function	Measuring Range	Resolution	V_OMAX	Intrinsic Uncertainty	Overload Capacity 2)	
					Value	Time
F 3)4)	10 nF	10 pF	0.7 V	1 + 10 2)	1000V DC / AC RMS Sine	Max 10 s
	100 nF	100 pF		1 + 6 2)		
	1 µF	1 nF		1 + 6 2)		
	10 µF	10 nF		1 + 6 2)		
	100 µF	100 nF		5 + 6 2)		
	1000 µF	1 µF		5 + 6 2)		

1) At 0°C to 40°C (Accuracy Range)
2) Applies to measurements at film capacitors and battery operated.
3) Measurement of Capacitance will be more accurate after removal from device under test
4) With Zero Balancing

Square Wave Out

Output	Range	Accuracy
Frequency	30Hz - 10kHz	0.1% x output frquency + 2 counts of DMM display
Duty Cycle	10% - 100% [2]	0.2% of Full scale [1]
Amplitude	Fixed -3.15 to 3.15V	±0.4V
1) For signal greater than 1kHz, add 0.2% per kHz to the accuracy		
2) In Multiple of 10		

Influence Error

Influence Quantity	Range of Influence	Measured Quantity / Measuring Range 1)	Variation ± (….%of rdg. + ….digits)/10k
Temperature	-10 °C to 21 °C & +25 °C to 50 °C	VDC	0.2 + 20
		V~, VACDC	0.4 + 10
		600Ω to 600 kΩ	0.5 + 10
		> 600 kΩ	1 + 10
		mA / ADC	0.6 + 10
		mA / AAC, ACDC	0.8 + 10
		10nF…10µF	1 + 5
		100µF...1000µF	1.5+10
		Hz, %	0.2 + 10
		°C/°F pt100/pt1000	0.5 + 10
		°C/°F thermocouple K/J	0.2 + 10
Relative humidity	75% 3 Days Meter off	V,A,Hz,%,Diode,F,Ω	1 × intrinsic error
Battery voltage	1.8 to 3.6V	V,A,Hz,%,Diode,F,Ω	1 × intrinsic error
1) With Zero Balancing			

Reference Condition for Accuracy

Reference Temperature	23°C ± 1K
Relative Humidity	45%...55% RH
Waveform of measured quantity	Sinusoidal
Input frequency	45...65 Hz
Battery Voltage	3 V ± 0.1 V

Influence Quantity

Influence Quantity	Range of Influence	Measuring Ranges	Attenuation
Common Mode interference voltage	Noise quantity max. 1000 V dc	V dc	> 120 dB
	Noise quantity max. 1000 V ~ 50-60 HZ sinusoidal	6.0 V~,60 V~	>80 dB
		600 V~	> 70 dB
		1000 V~	> 60 dB
Normal Mode interference ratio	Noise quantity V ~ Value of the measuring range at a time Max. 1000V~ ,50Hz, 60Hz Sinusoidal	V dc	> 50dB
	Noise quantity max. 1000 V dc	V~	>110dB

Applicable Regulations & Standards

EMC	EN 61326 - 1: Class B
Immunity	EN 61000-4-2 : 8 KV atmosphere discharge, 4 KV contact discharge
	EN 61000-4-3 : 3 V/m
Safety	EN 61010-1-2010
IP for water & dust	EN 60529 : IP 50 For Instrument and IP20 for socket
Pollution degree:	2
Installation category:	1000 V CATIII / 600 V CATIV, 600V CATII for NP15B-3
High Voltage Test	7.4 kV (EN 61010-1-2010), 3.5kV For NP15B-3

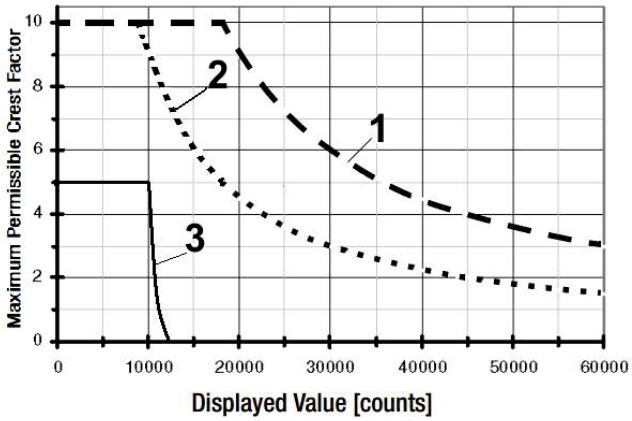
Battery

Battery Voltage	2 X 1.5 V Cells (LR6 Battery)
Battery type	Alkaline manganese cells.
Battery Life	Appx. 100 Hrs. (Backlight off / Bluetooth off)
	Appx. 48 Hrs. (Backlight off)
Battery test	Automatic display of symbol when battery voltage drops below approx. 2.4V

Mechanical Design

Housing	PC ABS
Dimension	200 x 91 x 54 mm
Weight	Approx. 0.5 kg with batteries

Crest Factor



Additional error caused by signal's crest factor: 1 < CF < 3: 1% R+ 30D
3 < CF < 10: 3% R

Curve 1: Range from 0.06V to 60V,
0.6mA to 60mA, 6A

Curve 2: Range 600V
600mA

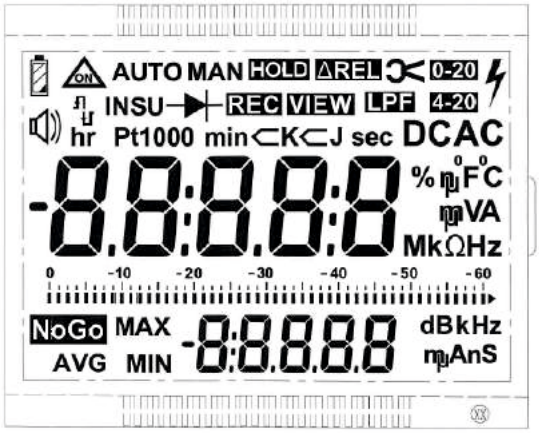
Curve 3: Range 1000V
10A

Note: With Unknown Waveform (CF >2), measurement should be made with manual range selection.
R = Reading
D = Digit

Internal Clock

Time Format	dd.MM.yy hh.mm.ss
Resolution	1 s
Accuracy	±1min. per month
Temperature Influence	50 ppm/K

Display



LCD display field 67 mm X 54 mm with digital display, analog scale and with display of measurement unit, and Various special functions.

Analog

Display:	LCD scale with bar graph or pointer, depending on the selected parameter setting
Scaling:	2 bar/pointer corresponds to 2500 counts at the digital display
Over range Display (Digital):	By triangle " ▶ "
Polarity Display:	With automatic switching
Sample rate (Digital):	10 measurements / sec and display refresh

Digital

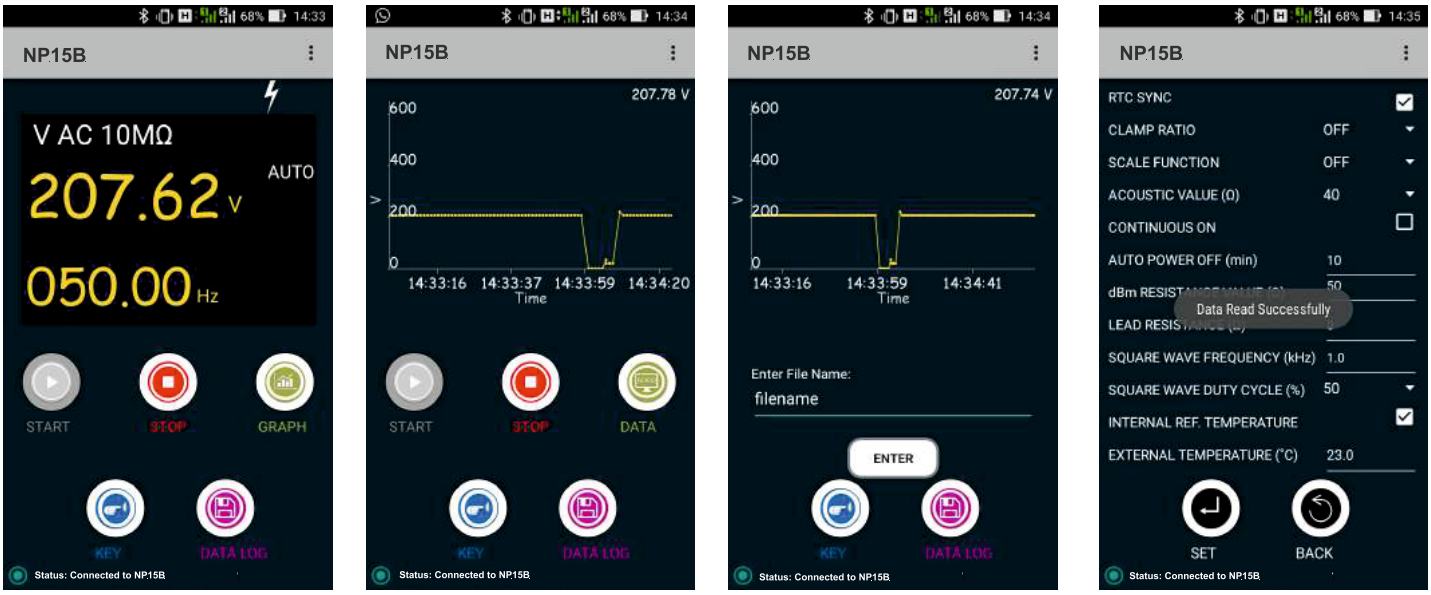
Display:	7-segment characters
Character Height:	Main Display - 12.88mm Sub Display - 7.37mm
Resolution:	60,000 counts
Overflow Display:	"OL" is displayed
Polarity Display:	"-" (minus) is displayed if plus pole is connected to " ⊥ "
Measuring Rate:	10 measurement / sec with the Min-Max function except for the capacitance, frequency and duty cycle measuring Function
Refresh Rate:	4 times/ sec
Number of Digits:	5

Fuse

Fuse	FF (UR) 16 A/ 1000 V AC/DC; 10 mm x 38 mm (NP15B-5 & NP15B-6)
	FF (UR) 1.6 A/ 1000 V AC/DC ; 6.3 mm x 32 mm (NP15B-2)
Switching Capacity	30 kA at 1000 V AC/DC (NP15B-5 & NP15B-6)
	10 kA at 1000 V AC/DC (NP15B-2)

NP15B - TRUE RMS DIGITAL MULTIMETER

Android Application



- Class 2 Bluetooth which is integrated in the instrument achieves transmission ranges of up to 10m.
- Recommended Screen Size: 4.7” to 7" with resolution 1280 x 720p & above.
- Android Version: 4.0 & above.
- Meter Setup Parameter can be configured through application.
- Measured Parameter can be logged in Excel format on mobile’s default memory.
- Function, Range and Relative key’s operation is possible through application.
- Graphical Analysis of measured parameter is possible.
- Offline Data of meter can be retrieved on mobile through application.
- Virtual Display of meter can be observed on mobile application.

Scope of Supply

Model Name	Scope of Supply
NP15B-2	1. Digital Multi-Meter
NP15B-3	2. Cable Set
NP15B-5	3. Protective Case
NP15B-6	4. Battery
	5. Operating Manual
	6. Test Certificate
	7. Datalogger Software
OPTIONAL ACCESSORIES	
1. External Power Supply Adapter	

ORDERING CODE

Digital multimeter NP15B -	X	XX	X	X
Type*:				
NP15B-2	2			
NP15B-3	3			
NP15B-5	5			
NP15B-6	6			
Version:				
standard		00		
Language:				
Polish			P	
English			E	
Acceptance tests:				
with an extra quality inspection certificate				1
with test certificate				2

* see page 4 - Model Wise Functional Overview

JECOTEC AG
Riedstrasse 14
CH-8953 Dietikon
Switzerland
Tel.: +41 (0)44 810 29 08
E-Mail: welcome@jecotec.ch
Web: www.jecotec.ch

NP06
DIGITAL MULTIMETER

- Direct and alternating voltages from 100µV ... 600V
- Direct and alternating currents from 10µA ... 10.00A
- Resistance from 1Ω ... 40.00MΩ with zero correction
- Capacitance from 1pF ... 200.00 µF with zero correction
- Frequencies from 10.00Hz ... 500kHz
- Diode measurement and continuity testing
- Data Hold.
- Relative measurement
- Duty cycle (%) measurement
- Non Contact Voltage Detection

Application

NP06 is suited for universal, general applications in the electrical and electronics fields, as well as in radio and television service, training and education.
It is of especially pocket size design, and thus fit into pocket. The protective cover, which is provided as standard equipment, can be opened for convenient reading from the workbench, and provides for easy transport.

Hold:
By pressing the HOLD key, the currently displayed measurement value can be held and “HOLD” is simultaneously displayed.

Relative measurement (REL):
By pressing the REL key, the zero correction is made. All functions can do zero correction except Hz/Duty.

Automatic/manual measuring range selection:
The measurement functions are chosen with the rotary selector switch. The measuring range is automatically adjusted to the measurement value. The measuring range can also be manually selected with the AUTO/MAN button.
Note : For Frequency (Hz) , Duty cycle (%), and Capacitance (F) measuring range is AUTO . No Manual range selection is possible.

Hz/Duty:
The instrument can measure frequency (Hz) and duty cycle (%) of the AC Voltage by pressing Function (Yellow) key.

Non Contact Voltage Detection:
NP06 allows you to detect the voltage presence in the live circuit without any electrical contact. NCV will be detected above 120V AC without safety cover.

Overload warning :
An acoustic signal occurs when measuring AC voltage>750V, DC Voltage>1000V, AC/DC mA current>400.0mA, AC/DC current>10.00A.

Energy saving circuit (Auto Power Off):
The instrument is switched off automatically, if none of the operating elements have been activated for about 15 minutes.

Protective cover for rough operating conditions:
A protective cover of Rubber Holster with a built-in stand protects the instrument against jolts and falls.

Diode and continuity testing:
This provides for the testing of the polarity of diodes, as well as inspection for short-circuits and circuit interruptions. In addition to the display, resistance of less than approx 60 ± 5Ω are indicated with an acoustic signal

Others:
It has provision of mounting clip for hands free operation in awkward situation .

Reference conditions for Accuracy

Reference Temperature	23°C ± 2K
Relative Humidity	45%...55% RH
Waveform of measured quantity	Sinusoidal
Input frequency	50 Hz
Battery Voltage	3 V ± 0.1 V

Applicable regulations and standards

EMC	EN 61326: Class B
Immunity	EN 61000-4-2 : 8 KV atmosphere discharge, 4 KV contact discharge
	EN 61000-4-3 : 3 V/m
Safety	EN 61010-1-2010
IP for water & dust	EN 60529
Pollution degree:	2
High Voltage Test	3.6 kV

Environmental Conditions

Operating temperature	0 to +50°C
Storage temperature	- 25 to +70°C (without battery)
Relative humidity	45%.....75%
Terminal Protection	IP 52 for instrument and IP20 for terminals.
Altitude	Up to 2000 m

Battery

Battery Voltage	2 X 1.5 V Cells
Battery type	Alkaline manganese Dioxide cells.
Battery Life	Alkaline manganese dry cell: approx. 400 hours.
Battery test	Automatic display of symbol when battery voltage drops below 2.4±0.1V

Influence Quantity

Influence Quantity	Range of Influence	Measured Quantity / Measuring Range [1)]	Variation ± (….% of rdg. + ….digits)
Temperature	0 ºC + 21 ºC and +25 °C to 50 °C	V, A, Diode, F, Hz, %, OHM	1.5 × intrinsic error / 10K
Relative humidity	75% 3 Days Meter off		1 × intrinsic error
Frequency of Measured Quantity	20 Hz.....<50 Hz	400mV~, 600V~	3.5 + 3
	>50 Hz ....500 Hz		
	20 Hz.....<50 Hz	4V~, 40V~, 400V~	
	>50 Hz ....750 Hz		
Battery Variation	Upto Low Battery	V, A, Diode, Hz, %, OHM	20D
		F	70D

Specifications

Measurement Function	Model		Measuring Range	Resolution	Input Impedance		Intrinsic Uncertainty under Reference Condition ±(…% of the rdg.+ …Digits)		Overload Capacity [1]	
	NP06-1	NP06-2			DC	AC/ACDC	DC	AC	Value	Time
V	•	•	400.0 mV	100 µV [4]	>10 MΩ		1 + 9	2 +9 [4]		
	•	•	4.000 V	1 mV			1 + 9	1.5 + 9	1050 V	Continuous
	•	•	40.00 V	10 mV			1 + 9	1.5 + 9		
	•	•	400.0 V	100 mV			1 + 9	1.5 + 9		
	•	•	600 V	1 V			1 + 9	1.5 + 9		
					Voltage Drop. Approx				480 mA	Continuous
mA	•		40.00 mA	10 µA	45 mV		1.5 + 9	1.5 + 9		
	•		400.0 mA	100 µA	450 mV		1.5 + 9	1.5 + 9		
A [7]	•		4.000 A	1 mA	45 mV		2 + 5	2.5 + 9	12 A: = 30 s	
	•		10.00 A	10 mA	120 mV		2 + 5	2.5 + 9		
				Input	Input Impedance					
Ω	•	•	400 Ω	100 mΩ	approx. 0.45V		1 + 5		500V DC/AC rms	5 min
	•	•	4.000 kΩ	1Ω			1 + 5			
	•	•	40.00 kΩ	10Ω			1 + 5			
	•	•	400.0 kΩ	100Ω			1.5 + 5			
	•	•	4.000 MΩ	1 kΩ			2 + 5			
	•	•	40 MΩ	10 kΩ			2.5 +5			
Continuity	•	•	400.0 Ω	100 mΩ			1.5 + 5			
Diode	•	•	1.0V	1 mV	approx. 1V		2.5 + 5			
F	•	•	5.000 nF	1 pF			5 + 40 [2]			
	•	•	50.00 nF	10 pF			3 + 10 [2]			
	•	•	500.0 nF	100 pF			1.5 + 10 [2]			
	•	•	5.000 µF	1 nF			2 + 10 [2]			
	•	•	50.00 µF	10 nF			2 + 10 [2]			
	•	•	200.0 µF	100 nF			5 + 40 [3]			
					f_{min}					
Hz [5][6]	•	•	9.999 Hz	0.001Hz	9 Hz		0.5 + 5		500V DC/AC rms	5 min
	•	•	99.99 Hz	0.01Hz	9 Hz					
	•	•	999.9 Hz	0.1Hz	9 Hz					
	•	•	9.999 kHz	1Hz	9 Hz					
	•	•	99.99 kHz	10Hz	9 Hz					
	•	•	500.0 kHz	100Hz	9 Hz					
Duty Cycle [5][6]	•	•	2....98%	0.10%			10Hz.....1kHz ±5D 1kHz...10kHz ±5D/kHz			

1) At 0°C to 50°C

2) With Zero Adjustment "REL"

3) Time required for Measurement approx, 60 sec

4) Specified Accuracy is valid as of 5% of the measuring range for 400.0mV AC

5) For Hz & Duty Cycle measurement, select proper range for VAC function

6) At input, ±5Vrms, Square Wave, Bipolar inputs.

7) 10A Max 5 Minute

NP06 - DIGITAL MULTIMETER

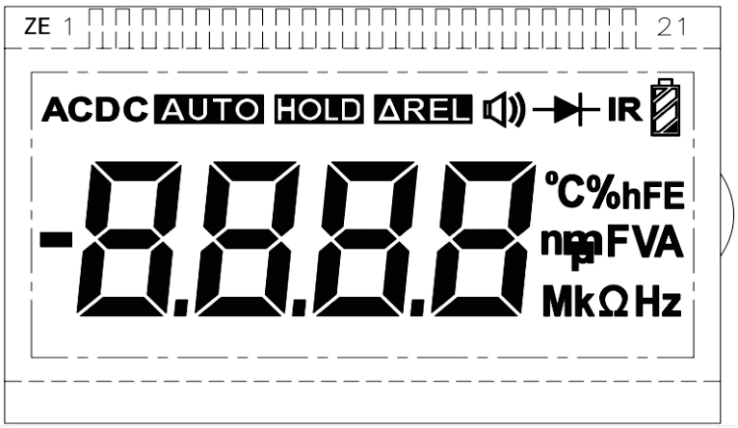
Display

LCD display field (49.7mm x 23.9mm) with digital display & display of unit of measure, current type & various special functions.

Digital

Display	7 segment
Character height	Main Display Character : 12.9 mm
Number of digits/Counts	3 ¾ digits 3999 steps
Overrange display	"OL" is displayed.
Polarity display	"–" sign is displayed when positive pole at "⊥"
Sampling rate	3 measurements/s for V, I , Ω , Capacitance, Frequency and Duty cycle measurement

Analog



1. Digital display with dot and polarity.
2. Low Battery Indication.
3. Display for REL and HOLD.
4. Continuity test display:
   Buzzer symbol appears on screen.
5. Display for diode measurement.
6. Measurement unit display.
7. Display for automatic measuring range selection.
8. Display for selected type of Voltage/Current (AC or DC).
9. Display for overload value "OL".

Fuse

Fuse for ranges up to 400 mA	400 mA / 250V; 5 mm x 25 mm
Fuse for 10 A range	12 A / 250V; 5 mm x 25 mm

Mechanical Design

Protection	Instruments: IP 52 Connector sockets: IP 20
Dimensions	W x H x D:
With Holster	74.3 mm x 154.1 mm x 47.6 mm
Without Holster	68.3 mm x 142.9 mm x 39.3 mm
Weight	Approx. 0.350 Kg with battery

Standard Scope Of Supply

1 Multimeter
1 Cable set
1 Copy Operating Instructions
1 Protective Case (Holster).

Ordering code

Digital Multimeter NP06 -	X	XX	X	X
Model*:				
NP06-1	1			
NP06-2	2			
Version:				
standard		00		
Language:				
Polish			P	
English			E	
Acceptance tests:				
with an extra quality inspection certificate				1
with test certificate				2

* see table on page 3

JECOTEC AG
Riedstrasse 14
CH-8953 Dietikon
Switzerland
Tel.: +41 (0)44 810 29 08
E-Mail: welcome@jecotec.ch
Web: www.jecotec.ch

JECOTEC AG

NP08
DIGITAL MULTIMETER

- Direct and alternating voltages from 100µV ... 1000V
- Direct and alternating currents from 10µA ... 10.00A
- Resistance from 1Ω ... 40.00MΩ with zero correction
- Capacitance from 1pF ... 200.00 µF with zero correction
- Frequencies from 10.00Hz ... 500kHz
- Diode measurement and continuity testing
- Hold measurement .
- Relative measurement
- Duty cycle (%) measurement
- Temperature measurement with K type Thermocouple
- Backlit Facility

Application

NP08 digital multimeter is suited for universal, general applications in the electrical and electronics fields, as well as in radio and television service, training and education.
It is of especially pocket size design, and thus fit into pocket. The protective cover, which is provided as standard equipment, can be opened at an angle for convenient reading from the workbench, and

Hold:
By pressing the HOLD key, the currently displayed measurement value can be held and “HOLD” is simultaneously displayed.

Relative measurement (REL):
By pressing the REL key, the zero correction is made and Relative Value is measured. All functions can measure Relative Value except Hz/Duty.

Automatic/manual measuring range selection:
The measurement functions are chosen with the rotary selector switch. The measuring range is automatically adjusted to the measurement value. The measuring range can also be manually selected with the AUTO/MAN button.
Note : For Temperature (℃) , Frequency (Hz) , Duty cycle (%), and Capacitance (F) measuring range is AUTO . No Manual range selection is possible.

Hz/Duty:
The instrument can measure frequency (Hz) and duty cycle (%) of the AC Voltage by pressing Hz/Duty key.

Temperature Measurement:
RISHABH 410 allows you to measure temperature with “ K ” type Thermocouple (Ni Cr-Ni) sensor in the range from 0℃ to +1300 ℃.

Diode and continuity testing:
This provides for the testing of the polarity of diodes, as well as inspection for short-circuits and circuit interruptions. In addition to the display, resistance of less than approx 55 ± 2.5 Ω are indicated with an acoustic signal

Overload warning :
An acoustic signal occurs when measuring AC voltage>750V, DC Voltage>1000V, AC/DC mA current>400.0mA, AC/DC current>10.00A.

Energy saving circuit (Auto Power Off):
The instrument is switched off automatically, if none of the operating elements have been activated for about 15 minutes.

Protective cover for rough operating conditions:
A protective cover of Rubber Holster with a built-in stand protects the instrument against jolts and falls. It also secures the test probe for one-hand operation, and allows for winding of the measurement cable which provides protection during transport.

Automatic blocking socket(ABS):
The automatic terminal blocking system prevents incorrect connection of test lead and incorrect selection of measurement quantity, which provide safety to the user.

Backlit:
The NP08 multimeter provides facility of measurement in poor light condition by pressing backlit key.

Calibration:
NP08 multimeters are calibrated using precision calibrators having accuracy better than at least 5 to 10 times depends upon the functions and ranges. These sources are calibrated at regular intervals.

Others:
Separate compartment for batteries which makes battery replacement easy and faster. Also it has provision of mounting clip for hands free operation in awkward situation .

NP08 - DIGITAL MULTIMETER

Reference conditions for Accuracy

Reference Temperature	23°C ± 2K
Relative Humidity	45%...55% RH
Waveform of measured quantity	Sinusoidal
Input frequency	50 Hz
Battery Voltage	3 V ± 0.1 V

Applicable regulations and standards

EMC	IEC 61326: Class B
Immunity	IEC 61000-4-2 : 8 KV atmosphere discharge, 4 KV contact discharge
	IEC 61000-4-3 : 3 V/m
Safety	IEC 61010-1-2010
IP for water & dust	IEC 60529
Pollution degree:	2
Installation category:	600 V CATIII / 1000 V CATII
High Voltage Test	3.5 kV (IEC 61010-1-2010)

Environmental Conditions

Operating temperature	-10 to +50°C
Storage temperature	- 25 to +70°C (without battery)
Relative humidity	45%.....75%
Terminal Protection	IP 52 for instrument and IP20 for terminals.
Altitude	Up to 2000 m

Battery

Battery Voltage	2 X 1.5 V Cells
Battery type	Alkaline manganese Dioxide cells.
Battery Life	Alkaline manganese dry cell: approx. 600 hours.
Battery test	Automatic display of symbol when battery voltage drops below approx. 2.4V

NP08 - DIGITAL MULTIMETER

Specifications

Meas. Function	Measuring Range	Resolution	Input Impedance	Digital display inherent deviation at reference conditions	Overload capacity[1]	
			V(AC) /V(DC)	±(...% of rdg + ...digits)	Overload Value	Overload Duration
V(DC)	400.0mV	100µV	>20MΩ	0.75+2	1050V(DC)	Continuous
	4.000V	1mV	11MΩ	0.5+2		
	40.00V	10mV	10MΩ			
	400.0V	100mV	10MΩ			
	1000V	1V	10MΩ			
V(AC)	400.0mV	100µV	11MΩ	1.5+5	1050V(AC) rms	Continuous
	4.000V	1mV	11MΩ	1+5		
	40.00V	10mV	10MΩ			
	400.0V	100mV	10MΩ			
	1000V	1V	10MΩ	1+10		
			Approx. voltage drop at max. meas. current			
A(DC)	40.00mA	10µA	450mV	0.8+2	480mA	Continuous
	400.0mA	100µA	4.2V			
	10.00A [4]	10mA	750mV	1.5+5	[4]	[4]
A(AC)	40.00mA	10µA	450mV	1+5	480mA	Continuous
	400.0mA	100µA	4.2V			
	10.00A [4]	10mA	750mV	2+5	[4]	[4]
			Open-circuit voltage			
Ω	400.0Ω	100mΩ	approx. 0.45V	0.8+5	500V DC/AC rms	10 min
	4.000kΩ	1Ω		0.8+2		
	40.00kΩ	10Ω				
	400.0kΩ	100Ω				
	4.000MΩ	1kΩ		1+5		
	40.00MΩ	10kΩ		2+5		
BUZZER	400.0Ω	100mΩ		Acoustic signal for 0...<75Ω (approx)		
DIODE	1.000V	1mV	approx. 1V	2+10		
F	5.000nF	1pF		3+40[2]	500V DC/AC rms	10 min
	50.00nF	10pF		2+10[2]		
	500.0nF	100pF		0.5+3[2]		
	5.000µF	1nF		1+2[2]		
	50.00µF	10nF		1.5+2[2]		
	200.0 µF	100nF		5+10[3]		
			f_{min}			
Hz [5]	10.000Hz	0.001Hz	10Hz	0.2+2	≤1kHz : 1000V ≤10 kHz: 400V ≤500 kHz: 40V except 400mV	Continuous
	100.00Hz	0.01Hz	10Hz			
	1.0000kHz	0.1Hz	10Hz			
	10.000kHz	1Hz	10Hz			
	100.00kHz	10Hz	10Hz			
	500.0KHz	100Hz	10Hz			
%	2.0...98.0%	0.1%	---	10Hz...1kHz: ±5D 1kHz...10kHz: ±5D/kHz		
			Sensor			
°C	0... +1300 °C	1°C	K Ni Cr-Ni	2+3	500V DC/AC rms	10 min

1) At 0 °C ... + 40 °C

2) With zero adjustment "REL"

3) Time required for measurement approximately 60 seconds.

4) 12 A/5 min , 16 A/30 s

5) Indication of the frequency measurement expanded to up to 9999 Digits.

Influence Quantities

Quantity	Range of Influence	Measured Quantity/ Measuring Range	Variation [1] ± (….% of rdg. + ….digits)
Temperature	0 °C +21 °C and +25 °C…+50°C	VDC	1 X Intrinsic error / K
		VAC	
		ADC	
		AAC	
		Ω	
		Diode	
		F	
		Hz	
		%	
		°C	
Frequency of the Measured quantity	20 Hz....< 50 Hz	400mV~, 1000V~	2.0+3
	> 50Hz… 500 Hz		
	20 Hz....< 50 Hz	4V~, 40V~, 400V~	2.0+3
	> 50Hz… 1 kHz		
Relative Humidity	55.....75%	V~,VDC	1 x intrinsic error
		A~,ADC	
		Ω	
		F	
		Hz	
		°C	
		%	

Interfernce

Influence Quantity	Range of Influence	Measured Quantity/ Measuring Range	Attenuation
Common Mode interference voltage	Noise quantity max. 1000 V dc	VDC	> 100 dB
		V~	> 100 dB
	Noise quantity max. 1000 V ~ 50 Hz, 60 Hz sinusoidal	400mV~,4V~, 40V~	> 55 dB
		400V~	> 43 dB
		1000V~	> 23 dB
Normal Mode interference voltage	Noise quantity V ~ Value of the measuring range at a time Max. 1000V~ ,50Hz, 60Hz Sinusoidal	VDC	> 43 dB
	Noise quantity max. 1000 V dc	V~	> 55 dB

NP08 - DIGITAL MULTIMETER

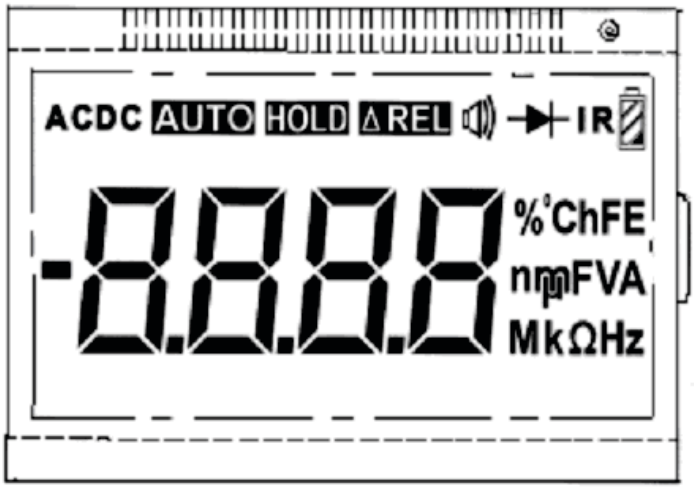
Display

LCD display field 58 mm X 31.4 mm with digital display ,alalog scale and with display of measurement unit, and Various special functions.

Digital

Display	7 segment
Character height	Main Display Character : 15mm
Number of digits/Counts	3 ¾ digits 3999 steps
Overrange display	"OL" is displayed.
Polarity display	"–" sign is displayed when positive pole at "⊥"
Sampling rate	3 measurements/s for V, I , Ω , Capacitance, Frequency and Duty cycle measurement

Analog



1. Digital display with dot and polarity.
2. Low Battery Indication.
3. Display for REL and HOLD.
4. Continuity test display:
   Buzzer symbol appears when acoustic signal is switched on.
5. Display for diode measurement.
6. Measurement unit display.
7. Display for automatic measuring range selection.
8. Display for selected type of Voltage/Current (AC or DC).
9. Display for overload value "OL".

Fuse

Fuse for ranges up to 400 mA	1.6 A / 600V; 6.3 mm x 32 mm
Fuse for 10 A range	16 A / 600V; 6.3 mm x 32 mm

Standard Scope Of Supply

1 Multimeter
1 Cable set
1 Copy Operating Instructions
1 Protective Case (Holster).

Mechanical Design

Protection	Instruments: IP 52 Connector sockets: IP 20
Dimensions	W x H x D:
With Holster	86 mm x 188 mm x 53 mm
Without Holster	79 mm x 174 mm x 38 mm
Weight	Approx. 0.480 Kg with battery

Ordering code

Digital Multimeter NP08 -	XX	X	X
Version:			
standard	00		
Language:			
Polish		P	
English		E	
Acceptance tests:			
with an extra quality inspection certificate			1
with test certificate			2

JECOTEC AG
Riedstrasse 14
CH-8953 Dietikon
Switzerland
Tel.: +41 (0)44 810 29 08
E-Mail: welcome@jecotec.ch
Web: www.jecotec.ch

JECOTEC AG

NEW

NP10

DIGITAL MULTIMETER

Functions and features of the multimeter:

- Direct and alternating voltages from 100 µV...1000 V.
- Direct and alternating currents from 10 µA...10.00 A.
- Resistance from 100 mΩ...60.00 MΩ.
- Capacitance from 1 pF...40.00 mF with zero correction.
- Frequencies from 10.00 Hz...10 MHz.
- Diode measurement and continuity testing.
- HOLD measurement.
- Relative measurement.
- Duty cycle (%) measurement.
- Temperature measurement with K type Thermocouple.
- Peak value measurement.

Electrical Safety 1000 V CAT III

Electrical Safety 600 V CAT IV

Application

Digital multimeters are suited for universal, general applications in the electrical and electronics radio and television service, training and education.

Root mean square value with distorted wave form(for NP10-6 only).
Measuring principal employed permits the measurement of root mean square value (TRMS) of AC quantities regardless of wave form.

Dual Display
The dual display included a main display and a sub display. Main display always display current measurement value where as sub display shows some special measurements like maximum/ minimum value, reference value for relative value measurement. Also dual display is used to display at the same time Voltage/ Current with Frequency, Frequency with Duty cycle etc.

Peak Hold
Minimum and maximum Peak values are hold in VAC, mAAC, AAC.

MIN/MAX Function
By pressing min/max button instrument will start recording minimum and maximum readings.All functions can measure MIN/MAX except Hz/Duty functions.

Temperature measurement
Multimeters measures temperature with “K” type thermocouple (NiCr - Ni) sensor in the range from 0C to 1300 C̊ acc. to EN 60584.

Indication of negative values on the analog scale.
When measuring DC quantities negative values are shown on the analog scale so that variations of the measured value can be observed at the Zero point.
Analog scale that updates at the rate 28 times/sec to observe

Protection from dust and water acc. to EN 60529:
Instrument: IP 52
For terminals: IP20.

Applicable International Safety standards
1000 V CAT III/600V CAT IV as per International Safety standard EN 61010-1 and 61557

Auto Power OFF (APO)
Multimeter has a default auto power off function. If the Meter is idle for more than the 15 minutes, the meter automatically turns the power off.

Hold
By pressing the HOLD/ON key, the currently displayed Measurement value can be held and “HOLD” is simultaneously displayed.

Relative measurement (REL)
By pressing and holding PEAK and then pressing AUTO/MAN key, the zero correction is made and relative Value is measured.
It is not active in Hz/Duty functions.

Automatic blocking System(ABS)
The automatic terminal blocking system prevents incorrect connection of test lead and incorrect selection of measurement quantity, which provide safety to the user.

Auto and Manual ranging modes
In AUTO ranging mode the instrument automatically selects the range with best resolution depending on the applied input.
In manual ranging mode range is user selectable using AUTO/MAN Key.
Note: For AAC, ADC, Temperature ,Continuity ,Diode and Duty cycle measuring range is manual. No AUTO range selection is possible.

Diode and Continuity testing
This provides for the testing of the polarity of diodes, as well as inspection for short -circuits and circuit interruptions. In addition to the display, resistance of less than 30 Ω(approx.) Are indicated with an acoustic signal.

Backlit
Large white LED backlit to work in poorly light area.

ContinuousON mode
In this mode, AUTO POWER OFF is disabled.

Reference conditions for Accuracy	
Reference Temperature	23°C ± 2
Relative Humidity	45%...55% RH
Waveform of measured quantity	Sinusoidal
Input frequency	50 or 60 Hz ±2%
Battery Voltage	3 V ± 0.1 V

Applicable regulations and standards	
EMC	EN 61000-6-2, EN 61000-6-4
Immunity	EN 61000-4-2 : 8 kV atmosphere discharge, 4 kV contact discharge
	EN 61000-4-3 : 3 V/m
Safety	EN 61010-1
IP for water & dust	EN 60529
Pollution degree:	2
Installation category:	1000 V CATIII / 600 V CATIV (for NP10-6, NP10-5, NP10-2) 1000 V CATII / 600 V CATIII (for NP10-3)
High Voltage Test	6.7 kV (EN 61010-1) (for NP10-6, NP10-5, NP10-2) 3.5 kV (EN 61010-1) (for NP10-3)

Environmental Conditions	
Operating temperature	0 to +50°C
Storage temperature	- 25 to +70°C
Relative humidity	<75% non condensing.
Terminal Protection	IP 52 for instrument and IP20 for terminals.
Altitude	Up to 2000 m

Battery	
Battery Voltage	2 X 1.5 V Cells
Battery type	Alkaline manganese Dioxide cells.
Battery Life	for NP10-2, NP10-3, NP10-5: 600 hrs. for VDC, ADC 300 hrs. for VAC, AAC for NP10-6: 400 hrs. for VDC, ADC 200 hrs. for VAC, AAC
Battery test	Automatic display of symbol when battery voltage drops below approx. 2.4V

NP10 - DIGITAL MULTIMETER

Specifications

Meas. Function	Measuring Range	NP10-2	NP10-3	NP10-5	NP10-6 TRMS	Resolution	Input Impedance	Digital display Inherent deviation at reference condition +(...%rdg + ...digits)	Overload capacity [1] Overload Values	Overload Duration
V(DC)	660.0mV	●	●	●	●	100µV	>100 MΩ // <40pF	0.7 + 5	1000 V DC AC eff / rms Sine wave	Cont.
	6.600V	●	●	●	●	1mV	11 MΩ // <40pF	0.4 + 5		
	66.00V	●	●	●	●	10mV	10 MΩ // <40pF	0.4 + 5		
	660.0V	●	●	●	●	100mV	10 MΩ // <40pF	0.4 + 5		
	1000.0V	●	●	●	●	1V	10 MΩ // <40pF	0.4 + 5		
V(AC)	660.0mV	●	●	●	●	100µV	>100 MΩ // <40pF	1.2 + 5		
	6.600V	●	●	●	●	1mV	11 MΩ // <40pF	**1.0 + 3**		
	66.00V	●	●	●	●	10mV	10 MΩ // <40pF			
	660.0V	●	●	●	●	100mV	10 MΩ // <40pF			
	1000V	●	●	●	●	1V	10 MΩ // <40pF			
A(DC)							Voltage Drop			
	66.00mA	●	●	●	●	10µA	66.00mV	0.8 + 5	**0.7A**	**Cont.**
	660.0mA	●	●	●	●	100µA	66.00mV	0.8 + 5		
	10.00A		16A	●	●	10mA	10.00mV	1.5 + 5	**12A**	
A(AC)	66.0mA	●	●	●	●	10µA	66.00mV	0.8 + 5	**0.7A**	**Cont.**
	660.0mA	●	●	●	●	100µA	66.00mV	0.8 + 5		
	10.00A		16A	●	●	10mA	10.00mV	1.5 + 5	**12A**	
⩾C(AC)	66.00A	●				10mA	66.00mV	0.8 + 5	**0.7A**	**Cont.**
	660.0A	●				100mA	66.00mV	0.8 + 5		
Ω							No load Voltage			
	660.0Ω	●	●	●	●	100mΩ	-3.3V	0.8 + 5	**1000 V DC AC eff / rms Sine wave**	**10Sec.**
	6.600KΩ	●	●	●	●	1Ω	-1.08V	0.8 + 5		
	66.00KΩ	●	●	●	●	10Ω	-1.08V	0.8 + 5		
	660.0KΩ	●	●	●	●	100Ω	-1.08V	0.8 + 5		
	6.600MΩ	●	●	●	●	1kΩ	-1.08V	1.0 + 5		
	66.00MΩ	●	●	●	●	10kΩ	-1.08V	2.0 + 5		
BUZZER	660.0Ω	●	●	●	●	100mΩ	-3.3V	0.8 + 5		
DIODE	2.000V	●	●	●	●	1mV	3.3V	2.0 + 10		
F	6.600nF			●	●	1pF	—	3.0+40		
	66.00nF			●	●	10pF		2.0+10		
	660.0nF			●	●	100pF		2.0+10		
	6.600µF			●	●	1nF		2.0+10		
	66.00µF			●	●	10nF		2.0+10		
	660.0µF			●	●	100nF		5.0+10		
	6.600mF			●	●	1µF		5.0+10		
	40.00mF			●	●	10µF		5.0+10		
Hz	66.00Hz			●	●	0.01Hz	**10** Hz**(Fmin)**	0.2 + 2 [2]		
	660.0Hz			●	●	0.1Hz				
	6.600KHz			●	●	1Hz				
	66.00KHz			●	●	10Hz	—			
	660.0KHz			●	●	100Hz				
	6.600MHz			●	●	1KHz				
	10.00MHz			●	●	10KHz				
%	1.0...98.90%			●	●	0.01%		10 Hz… 1kHz ± 5 Digit [3] 1 kHz … 10 kHz; ± 5 Digit / kHz [3]		
C / F	0...1300°C	●	●	●	●	1°C	—	2.0+3 [4]		
Peak (VAC /A AC)		●	●	●	●			3.0+300	-	-

1) At 0°C ... + 40 °C
2) At input ≥3.5Vrms ,Square wave, Bipolar inputs.
3) For <10 Khz ,Square wave, Bipolar inputs
4) Without sensor

Influence Quantities

Influence Quantity	Range of Influence		Measured Quantity/ Measuring Range	Variation [1] ± (….% of rdg. + ….digits)
Temperature	0 °C +21 °C and +25 °C…+40°C		VDC	1 X Intrinsic error / K
			VAC	
			ADC	
			AAC	
			Ω	
			Diode	
			F	
			Hz	
			%	
			°C	
Frequency of the Measured quantity	20 Hz....< 50 Hz		660mV~	1.0+3
	> 50Hz… 200 Hz			5.0+3
	20 Hz....< 50 Hz		6.6.....1000V~	1.0+3
	> 50Hz… 2 Khz			5.0+7
	20 Hz....< 50 Hz		A~	1.0+3
	> 50Hz… 2 KHz			5.0+7
Waveform of the Measured quantity [2]	Crest Factor CF	1….1.4	V~[3] ,A~[3]	± 1 % of rdg
		1.4….5		± 5 % of rdg
Battery Voltage	[4] …< 2.49 V > 2.49 V …3 V		VDC	5 Digit
			V~,ADC	10 Digit
			AAC	6 Digit
			600 Ω	4 Digit
			6.600 kΩ - 66 MΩ	3 Digit
			nF,µF,mF	5 Digit
			Hz	5 Digit
			%	5 Digit
Relative Humidity	75% 3 Days Meter off		V~,VDC	1 x intrinsic error
			A~,ADC	
			Ω	
			F	
			Hz	
			°C	
			%	

1) With temperature: Error data apply per 10 K change in temperature.

With frequency: Error data apply to a display from 300 digits onwards.

2) With unknown waveform (crest factor CF > 2), measure with manual range selection

3) With the exception of sinusoidal waveform.

4) After the " ▨ " symbol is displayed.

Influence quantities

Influence Quantity	Range of Influence	Measured Quantity/ Measuring Range	Attenuation
Common Mode interference voltage	Noise quantity max. 1000 V dc	VDC	> 100 dB
		V~	> 100 dB
	Noise quantity max. 1000 V ~ 50 Hz, 60 Hz sinusoidal	VDC	>100 dB
		V~	> 50 dB
Normal Mode interference voltage	Noise quantity V ~ Value of the measuring range at a time Max. 1000V~ ,50Hz, 60Hz Sinusoidal	660mVDC, 6.6VDC, 660VDC,1000VDC	> 43 dB
		66 VDC	> 35 dB
	Noise quantity max. 1000 V dc	V~	> 45 dB

Response time (After manual range selection)

Measured Quantity/ Measured range	Response Time [s]		Attenuation
	Of Analog indication	Of digital indication	
VDC ,VAC,°C	0.1	1.0	From 0 to 80 % of upper range limit.
A~,ADC	0.1	1.0	From 0 to 50 % of upper range limit.
660Ω…6.6 MΩ	0.1	1.0	
66 MΩ	0.2	2.0	
Diode	0.1	1.0	From 0 to 80 % of upper range limit.
6.6nF… 66µF	0.7	Max.1	
660µF…6.6 mF	1.4	Max.3	
66 mF	7.0	Max.15	
660 Hz,6.6KHz	2.0	Max.2	
66 KHz,660 Khz,1MHz	0.5	Max.1	
% (10 Hz)	0.7	Max.2.5	

NP10 - DIGITAL MULTIMETER

Display

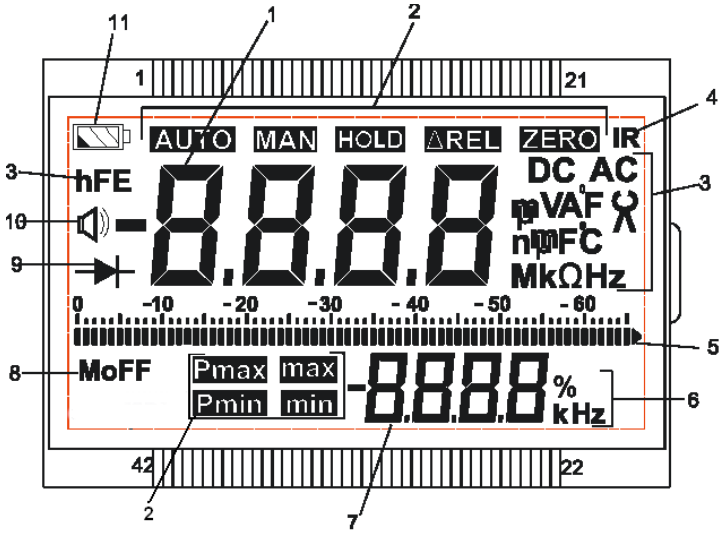
LCD display field 58 mm X 31.4 mm with digital display ,alalog scale and with display of measurement unit, and Various special functions.

Digital

Display	7 segment
Character height	Main Display Character : 12mm Sub Display Character : 7mm
Number of digits/Counts	4 digits 6600 steps
Overrange display	"OL" is displayed.
Polarity display	"–" sign is displayed when positive pole at "⊥"
Sampling rate	2.8 times /sec

Analog

Indication	LCD scale Analog Bar graph
Scale length	55 mm
Scaling	0 to 60 with 66 scale divisions
Polarity Indication	"-" sign on scale digits.
Over range indication	By triangle
Sampling rate	28 times/sec



Multimeter display :

1 Digital Main display with decimal point and polarity
2 Display for Automatic ,manual range Selection ,HOLD ,Relative ,Zero Peak ,Max ,Min.
3 Measurement unit of main display.
4 Display for IR mode indication.
5 Display for Analog scale.
6 Measurement unit of Sub display.
7 Digital Sub display with decimal point and polarity
8 Display for Auto off indication (After 15 Min meter will turn OFF)
9 Diode test Display.
10 Continuity test display.
Speaker symbol appears when acoustic signal is switched on
11 Low battery indication.

Fuse

Fuse for ranges up to 660 mA	1.6 A / 1000V; 6.3 mm x 32 mm
Fuse for 10 A range	16 A / 1000V; 10 mm x 38 mm

Mechanical Design

Protection	Instruments: IP 52 Connector sockets: IP 20
Dimensions	W x H x D:
With Holster	86 mm x 188 mm x 53 mm
Without Holster	79 mm x 174 mm x 38 mm
Weight	Approx. 0.480 Kg with battery

Ambient Conditions

Operating temperature range	0°C ... + 50°C
Storage temperature range	- 25°C ... + 70°C (without batteries)
Relative humidity	45 ... 75 %
Elevation	up to 2000 m

Standard Scope Of Supply

1. Digital Meter
2. Cable Set
3. Protective Case
4. Battery
5. Operating Manual
6. Test Certificate

ORDERING CODE

Digital multimeter NP10 -	X	XX	X	X
Type*:				
NP10-2	2			
NP10-3	3			
NP10-5	5			
NP10-6	6			
Version:				
standard		00		
custom-made*		XX		
Language:				
Polish			P	
English			E	
other*			X	
Acceptance tests:				
with an extra quality inspection certificate				1
with test certificate				2
acc. to custromer's request				X

* see specifications page 23
** after agreeing with the manufacturer

ITEMS AVAILABLE FROM OUR STOCK:
NP10 - 300E1
version: NP10-3

NP10 - 500E1
version: NP10-5

NP10-19_en

JECOTEC AG
Riedstrasse 14
CH-8953 Dietikon
Switzerland
Tel.: +41 (0)44 810 29 08
E-Mail: welcome@jecotec.ch
Web: www.jecotec.ch