

Read this document carefully before using this device. The guarantee will be expired by device damages if you don't attend to the directions in the user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

# ENDA EPV541 AC/DC VOLTMETER

Thank you for choosing ENDA EPV541 AC/DC voltmeter.

- \* 54 x 94mm sized.
- \* 3 digits display.
- \* Values between -100V and 100 V can be indicated with one decimal point.
- \* For maximum 50V AC/DC measurements, measurements between -50V and +50V can be shown with two decimal digits by having 10 times more accurate measurement input.
- \* Easy to configure with front panel keypad.
- \* Multifunctional alarm output (NO+NC) for upper and lower limits.
- \* Communication feature over isolated RS485, using ModBus RTU protocol. (Functional).
- \* Measuring type can be selected as AC, DC or true RMS.
- \* CE marked according to Europan Norms.

Order Code : EPV541 -  $\bigcirc$  -  $\circ$  - -

**1-Output** R.....Relay None...No relay

**2-Supply Voltage 3-M** 230VAC...230V AC R 110VAC...110V AC 24VAC.....24V AC SM.......9-30V DC / 7-24V AC

**R**<sub>N</sub>HS

Compliant



### **Technical Specifications**

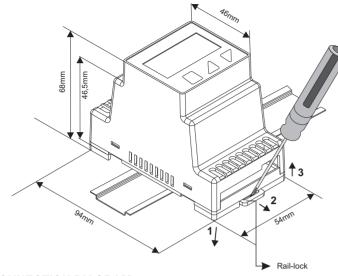
ENVIRONMENTAL	CONDI	TIONS				
Ambient/stroge temp	perature	0 +50°C/-25 70°C				
Max. Relative humidity		80% Relative humidity for temperatures up to 31 % °C, decreasing linearly to 50% at 40°C.				
Rated pollution degr	ee	According to EN 60529 Front panel : IP65 , Rear panel : IP20				
Height		Max. 2000m				
Do not use t	he device	e in locations subject to corrosive and flammable gases.				
ELECTRICAL CHA	RACTE	RISTICS				
Supply	230V AC	+10% -20%, 50/60Hz or 24V AC ±10% , 50/60Hz or optional 9-30V DC / 7-24V AC ±10% SMPS				
Power consumption	Max. 5V	4				
Wiring	2.5mm <sup>2</sup>	screw-terminal connections				
Scale	AC and DC	RMS: If $[., nP; 500]$ is selected, it is 0V500V or If $[., nP; 50]$ is selected, it is 050V				
Sensitivity		: If £,P;500 is selected, it is -500V DC500V DC or If £,P;50 is selected, it is -50V DC50V DC f £,P;50 is selected )				
Sensitivity	0,1V (I	f [ In P;500] is selected and higher than -100V or lower than 100V for input values)				
		$E_{10}P_{3}500$ is selected and lower than -100V or higher than 100V for input values)				
Accuracy	AC	± 1% (Full scale) (For square wave form ± 2%)				
	DC	±1% (Full scale)				
	RMS	±1% (Full scale) (For square wave form ± 2%)				
Input Range		500V (If $L_{10}P$ 500 is selected, device breaks down at more than ±1250 DC voltages.)				
	-50V5	$(\text{If } l = 10^{-10} \text{ S})$ is selected, device breaks down at more than ±125 DC voltages.)				
Input Impedance	870kΩ					
Frequency Range	DC, 10	Hz - 200Hz  (For square wave form 10Hz-70Hz)				
EMC	EN 6132	6-1: 2012				
Safety requirements	EN 6101	0-1: 2010 (Pollution degree 2, overvoltage category II)				

OUTPUTS	
Alarm output	Relay: 250V AC, 8A (for resistive load), NO+NC
Life expectancy for relay	Mechanical 30.000.000 ; Electrical 100.000 operation.

HOUSING	
Housing type	Rail mountable (EN60715,TH35)
Dimensions	W54xH94xD68mm
Weight	Approx. 250g (after packing)
Enclosure material	Self extinguishing plastics.
While cleaning the	device, solvents (thinner, benzine, acid etc.) or corrosive materials must not be used.







For mounting the device on rail :

Push the device to rail in direction 1 and make shure that rail-lock is interlocked to rail.

#### For removing the device from rail :

Push the rail-lock with a flat tip screwdriver in direction 2 and pull the device in direction 3.

 $(\ominus)$ Holding screw 0.4-0.5Nm.

Equipment is protected throughout by DOUBLE INSULATION

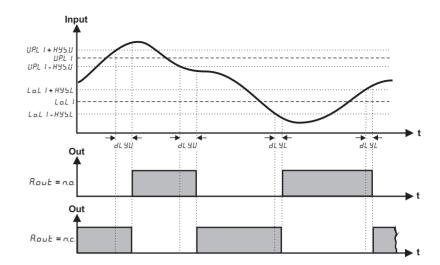
> **R**<sub>N</sub>HS Compliant



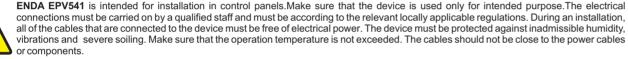
10 -Line

11 -Neutral

- ∞

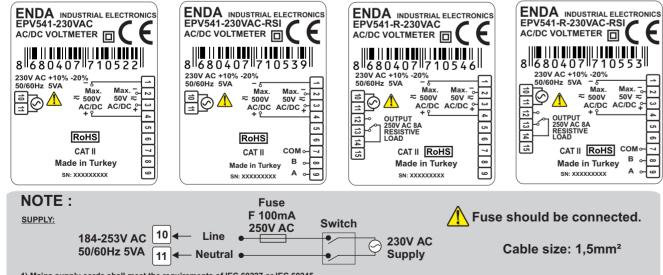


#### CONNECTION DIAGRAM



If  $L_{10}P$  input type "500" is selected, the measurement terminals 1 and 4 of the terminals must be connected. Otherwise the measurement will be incorrect.

If  $L \cap P$  input type "50" is selected, the measurement terminals 2 and 3 of the terminals must be connected. Otherwise the measurement will be incorrect.

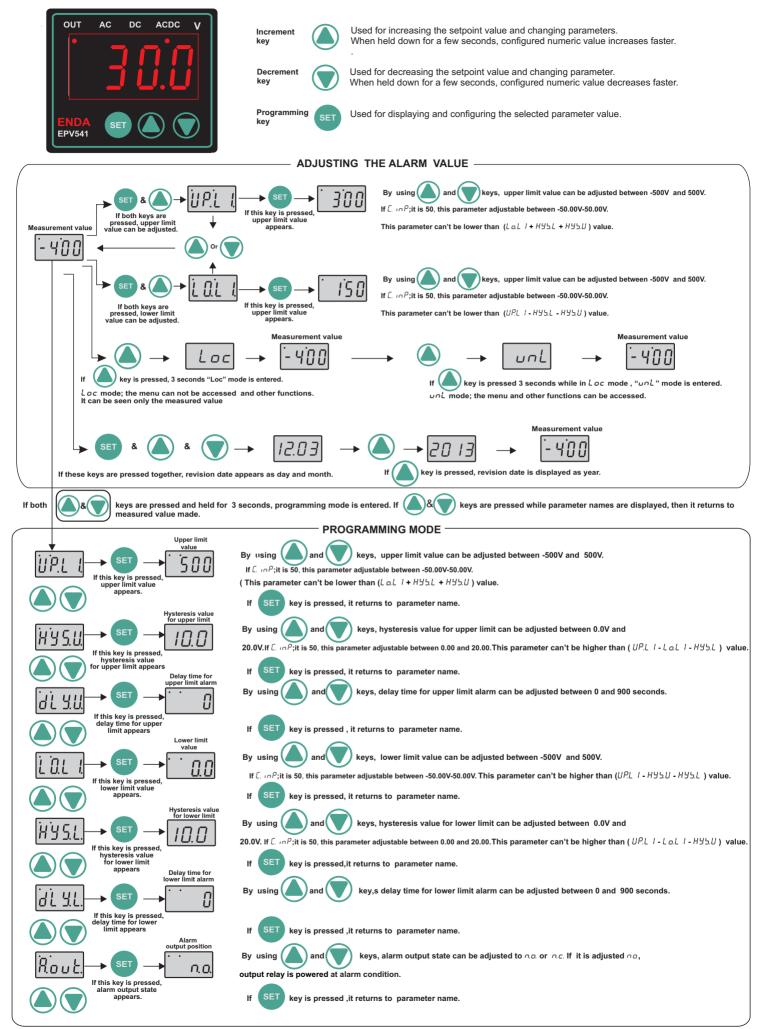


1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.

2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

	Ac	dc	Rc.dc (rms)
	$A\frac{1}{\sqrt{2}}$	0.000	$A\frac{1}{\sqrt{2}}$
	0.308 A	A <u>2</u>	$A\frac{1}{\sqrt{2}}$
	0.386 A	$A\frac{1}{\pi}$	$A\frac{1}{2}$
A 0 −A 	A	0.000	A
	$A\frac{1}{2}$	$A\frac{1}{2}$	$A\frac{1}{\sqrt{2}}$
	$A \sqrt{\frac{d}{T}} - \frac{d^2}{T^2}$	A d T	$A\sqrt{\frac{d}{T}}$
	$A\frac{1}{\sqrt{3}}$	0.000	$A\frac{1}{\sqrt{3}}$

## **EPV541 PROGRAMMING DIAGRAM**



Ŀÿ₽			Management				
Έÿρ			Measuring type				
	18	<b>→</b> (*			pe can be adjuste	d to Rc, dc or Rcdc.Three led	15
		meas	y is pressed, uring type	at the top of the display show measuring type.			
		a	Sampling time measurement value	If SET key is pressed, it returns to parameter	er name.		
oPE	<u>п</u>		ET - U	Sampling time of the measurement value is sho If 2 is selected, it is 500ms. If 3 is selected, it is 75			of the measurement is 250
	s s	amplin alue ap	g time measurement	If SET key is pressed, it returns to paramet	er name.		
Rdr		→ s	ET /	By using and keys device addres	s can be adjusted	between 1-247.	
		evice ad	Idress appears.	If SET key is pressed, it returns to paramet	er name.		
bRu.	_	→ S	ey is pressed, e value appears.	By using and keys, baudrate valu	e of the device ca	n be adjusted to OFF,1200,2400,4	4800,9600,19200.
		auurau	e value appears.	If SET key is pressed, it returns to paramete	er name.		
[. in		If this k measur	ey is pressed, ement input	If input type 500 is	selected, max. 500 selected, max. 50V	selected as 500 or 50 . V DC or 500V AC can be applied / DC or 50V AC can be applied	
(*)		type ap		E. In P parameters in the devices those have	ve no relav		
(**)		_		are only in the devices those have modbus.			
()			•	-			
	lf If	: [. in [.inf	P input type "500" is selec ♡ input type "50" is selec	ted, the measurement terminals 1 and 4 must ted, the measurement terminals 2 and 3 must	be connected. Of be connected. Of	therwise the measurement will therwise the measurement will the measurement will be measurement will be a solution of the measurement will be a so	II be incorrect. II be incorrect.
<u> </u>	• د	For	returning to measured va	lue and saving to new settings, one of the fe	ollowing option	s can be applied :	
	l		-			• • • • • • • • • • • • • • • • • • •	
		a) w	alt for 25 seconds without	pressing any key after the pogramming.			
		b) Pı	ress 🔔 and 💙 keys	s together after the pogramming.			
		c) Po	ower down and power up th	e device after the pogramming.			
	•	c) Po					
	i	c) Po		e device after the pogramming. n while the device is powered up, d <sup>PR</sup> r mess	sage will appear a	and factory settings will be re	stored.
	i	NOT	E : If key is held dow	vn while the device is powered up, <i>d.PRr</i> mess e E. ぃヮP ちひ is selected, 서ソちと and 서ソちじ will	• • • •		stored.
	i	NOT	E : If key is held dow	vn while the device is powered up, <i>d.PRr</i> mes	• • • •		stored.
[	<i>i</i>	NOT	E : If key is held dow re the factory defaults, if th	vn while the device is powered up, <i>d.PRr</i> mess e E. ぃヮP ちひ is selected, 서ソちと and 서ソちじ will	be applied as		
	<i>i</i>	NOT	E : If key is held dow re the factory defaults, if th Means, measured current va	vn while the device is powered up, <i>dPRr</i> mess וויי גער אין	be applied as the measurement of the means, measurement of the measure	00 after the factory defaults. red current value is lower than m	
Holding F	DLDING	NOT Befo	E : If key is held dow re the factory defaults, if th Means, measured current va	vn while the device is powered up, <i>dP</i> 유ァ mess le Ĺ <sup>,</sup> ハア 5辺 is selected, <i>H</i> ソンL and <i>H</i> ソンリ will ERROR MESSAGES alue is higher than maximum scale.	be applied as the measurement of the means, measurement of the measure	after the factory defaults.     ired current value is lower than m     OL ADDRESS MAP	inimum scale.
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Holding F           Addres           Decimal           0000d 0           0001d 0           0002d 0           0003d 0           0003d 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00004 0           00003 0           1.2 INF           Pacimal           00001           00014           1.3 DIS           Decimal           0004	DLDING           Register           ssses           Hex           0x0000           0x0001           0x0002           0x0003           0x0006           0x0007           0x0008           0x0000           0x0001           0x0000           0x000           0x000           0x000           0x000           0x00           0x00           0x00           0x00           0x00           0x00	NOT Befo Data Word Word Word Word Word Word Word Word	E : If key is held dow re the factory defaults, if th Means, measured current va END/ SISTERS The upper limit of the setpoint The upper limit of the hysteresi Delay time for the upper limit al The lower limit of the hysteresis Delay time for the upper limit al Measurement method ( <i>D=RL</i> , Sampling time of the measuren it is 500ms.If 3 is selected,it is Device address for RS485 netw Baudrate (0=Off;1=1200;2=240 <b>rameter Table (No Relay Mod</b> Measurement method ( <i>U=RL</i> , Sampling time of the measuren Device address for RS485 netw Baudrate (0=Off;1=1200;2=240 <b>TERS</b> a e d Measured voltage value (v read as. This value is "0" in <b>UTS</b> a e Relay output state (0=OFF	In while the device is powered up, $d^{PRr}$ messive $\mathcal{E}$ . $nP$ 5 $\mathcal{D}$ is selected, $HY5L$ and $HY5U$ will ERROR MESSAGES alue is higher than maximum scale. <b>A EPV541 DIGITAL VOLTMETER MODE</b> Data Content S value larm I=dE, Z=REdE nent value. If 1 is selected, it is 250ms. If 2 is selected, 750ms. If 4 is selected, it is 1 second. work connection. Adjustable between 1-247. 10; 3=4800; 4=9600; 5=19200) els) I=dE, Z=REdE nent value work connection. Adjustable between 1-247. 10; 3=4800; 4=9600; 5=19200) Data Content While the measured value of 3-digit decimal point is o ther cases.) Data Content	be applied as <i>I M</i> eans, measu <b>BUS PROTOCO</b> Parameter <i>Name</i> <i>UPL 1</i> <i>HY5U</i> <i>dLYU</i> <i>LoL 1</i> <i>HY5U</i> <i>dLYU</i> <i>LoL 1</i> <i>HY5L</i> <i>dLYU</i> <i>LoL 1</i> <i>HY5L</i> <i>dLYU</i> <i>LSYPE</i> <i>oPEn</i> <i>RdГ 5</i> <i>BRUd</i> <i>Parameter</i> <i>Name</i> <i>Parameter</i> <i>Name</i>	DD after the factory defaults.         ured current value is lower than m         OL ADDRESS MAP         Read/Write         Permission         Readable/Writable         Readable/Writa	inimum scale.