

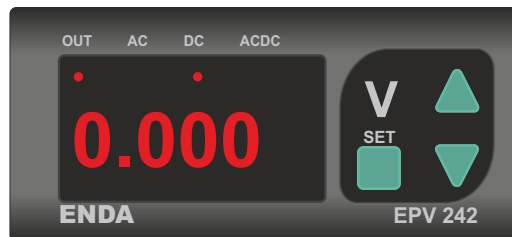


Read this document carefully before using this device. The guarantee will be expired by device damages if you don't attend to the directions in the user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

ENDA EPV242 PROGRAMMABLE AC/DC VOLTMETER

Thank you for choosing **ENDA EPV242** Programmable AC/DC voltmeter.

- ▶ 77 x 35 mm sized
- ▶ 4 digits display
- ▶ Selectable number of decimal point
- ▶ Indicates between -999V and +9999V by using voltage transformer
- ▶ Easy to use front panel keypad
- ▶ Multi-function output for lower and upper limits (NO + NC)
- ▶ Communication feature over isolated RS485, with Modbus RTU (Optional)
- ▶ Measuring type can be selected as AC, DC or true RMS
- ▶ CE Marked according to European Norms.



Order Code : EPV242 - <table border="1"><tr><td>1</td><td>2</td><td>3</td></tr></table>			1	2	3
1	2	3			
1 - Supply Voltage 230.....230V AC LV.....10-30V DC / 8-24V AC	2 - Output R.....08A Relay	3 - Modbus RSI.....RS485 Modbus Available (Specify at order)			



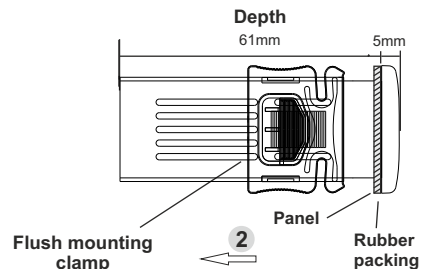
RoHS
Compliant

Technical Specifications

ENVIRONMENTAL CONDITIONS		
Ambient / Storage Temperature	0 ... +50°C/-25 ... +70°C (with no icing)	
Max. Relative Humidity	80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% at 40°C.	
Rated Pollution Degree	According to EN 60529 ; Front Panel : IP65, Rear Panel : IP20	
Height	Max. 2000m	
 KEEP AWAY device from exposed to corrosive, volatile and flammable gases or liquids and DO NOT USE the device in similar hazardous locations.		
ELECTRICAL CHARACTERISTICS		
Supply Voltage	230V AC 50/60Hz ;10-30V DC / 8-24V AC SMPS	
Power Consumption	Max. 5VA	
Wiring	2.5mm² screw-terminal connections	
Scale	AC and RMS DC	For UTRR 0...9999V, for UI00 0.....100V, for U500 0...500V For UTRR -999...9999V DC, for UI00 -100...100V DC, for U500 -500...+500V DC
Sensitivity	0,01V (If, u100 or utrr is selected) 0,1V (If, U500 is selected and higher than -100V, lower from 100V for input values) 1V (If U500 is selected and lower than -100V, higher from 100V for input values)	
Accuracy	AC DC RMS	±%1 (Full scale) (For square wave form ± 2%) ±%1 (Full scale) ±%1 (Full scale) (For square wave form ± 2%)
Input Range	9 and 12 10 and 11	-500V...500V (If u500 is selected, device breaks down at more than ±1250 DC voltages). -100V...100V (If utrr or u100 is selected, device breaks down at more than ±250 DC voltages). 
Input Impedance	9 and 12 10 and 11	870k?
Frequency Range	DC , 10Hz - 200Hz (For square wave form 10Hz-70Hz)	
EMC	EN 61326-1: 2013	
Safety Requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)	
OUTPUTS		
Output (Relay)	250V AC, 8A (for resistive load), NO+NC	
Life Expectancy for Relay	Mechanical 30.000.000 operation; 100.000 operation at 250V AC, 2A resistive load.	
HOUSING		
Housing Type	Suitable for flush-panel mounting. (According to DIN 43 700)	
Dimensions	W77xH35xD61mm	
Weight	Approx. 250g (after packing)	
Enclosure Material	Self extinguishing plastics.	
 Avoid any liquid contact while the device is switched on. DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents.		

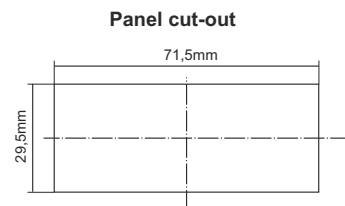
up to date:06.07.2023, modification reserved and can be change any time previous notice !

Figure 1 shows the EPV 242 digital multimeter. The top part is a front view with a 35mm height and a 77mm width. The display shows 0.000. The bottom part is a back view showing the 12-pin connector and the label with technical specifications and a barcode.



- Push the flush-mounting clamp in direction **1** as shown in the figure left.
- Then, pull out the clamp in direction **2**.

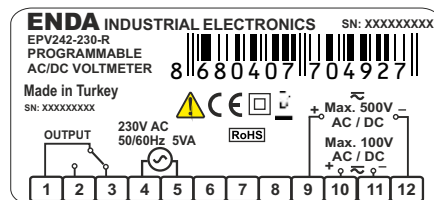
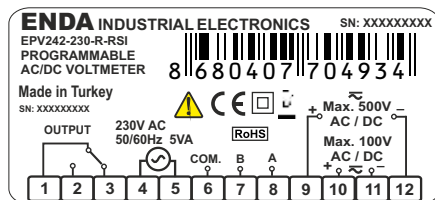
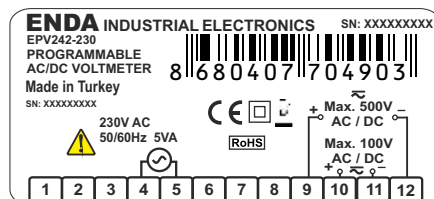
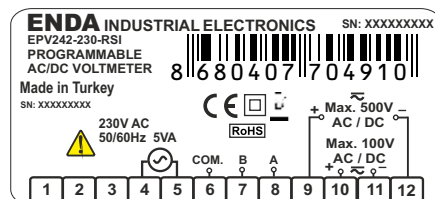
2) There must be at least 60mm free space behind the device, otherwise it would be difficult to remove it from the panel.



Holding screw
0.4-0.5Nm.

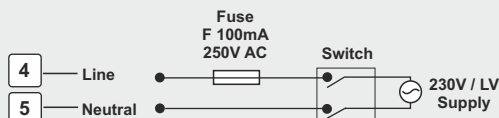
Equipment is protected throughout by
DOUBLE INSULATION

If 1tYP input type "u100" or utr is selected, the measurement terminals 10 and 11 of the terminals must be connected. Otherwise, measurement will be incorrect.



	ac	dc	Ac.dc (rms)
	$A \frac{1}{\sqrt{2}}$	0.000	$A \frac{1}{\sqrt{2}}$
	0.308 A	$A \frac{2}{S}$	$A \frac{1}{\sqrt{2}}$
	0.386 A	$A \frac{1}{S}$	$A \frac{1}{2}$
	A	0.000	A
	$A \frac{1}{2}$	$A \frac{1}{2}$	$A \frac{1}{\sqrt{2}}$
	$A \sqrt{\frac{d}{T} - \frac{d^2}{T^2}}$	$A \frac{d}{T}$	$A \sqrt{\frac{d}{T}}$
	$A \frac{1}{\sqrt{3}}$	0.000	$A \frac{1}{\sqrt{3}}$

184-253V AC
or
10-30V DC /
8-24V AC
50/60Hz 5VA



Note : 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.

 Fuse should be connected.

Cable Size: 1,5mm²:

MODBUS CONNECTION DIAGRAM

120 Ohm

Master

Slave - 1

Slave - 2

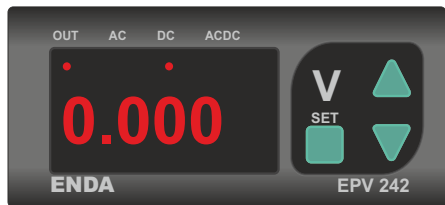
Up to 127 slave devices can be controlled.

Slave - 127

120 Ohm

 Termination should be accomplished by attaching 120 Ohm resistors to the start and at the end of the communication line.

* Applies to devices with Modbus function.

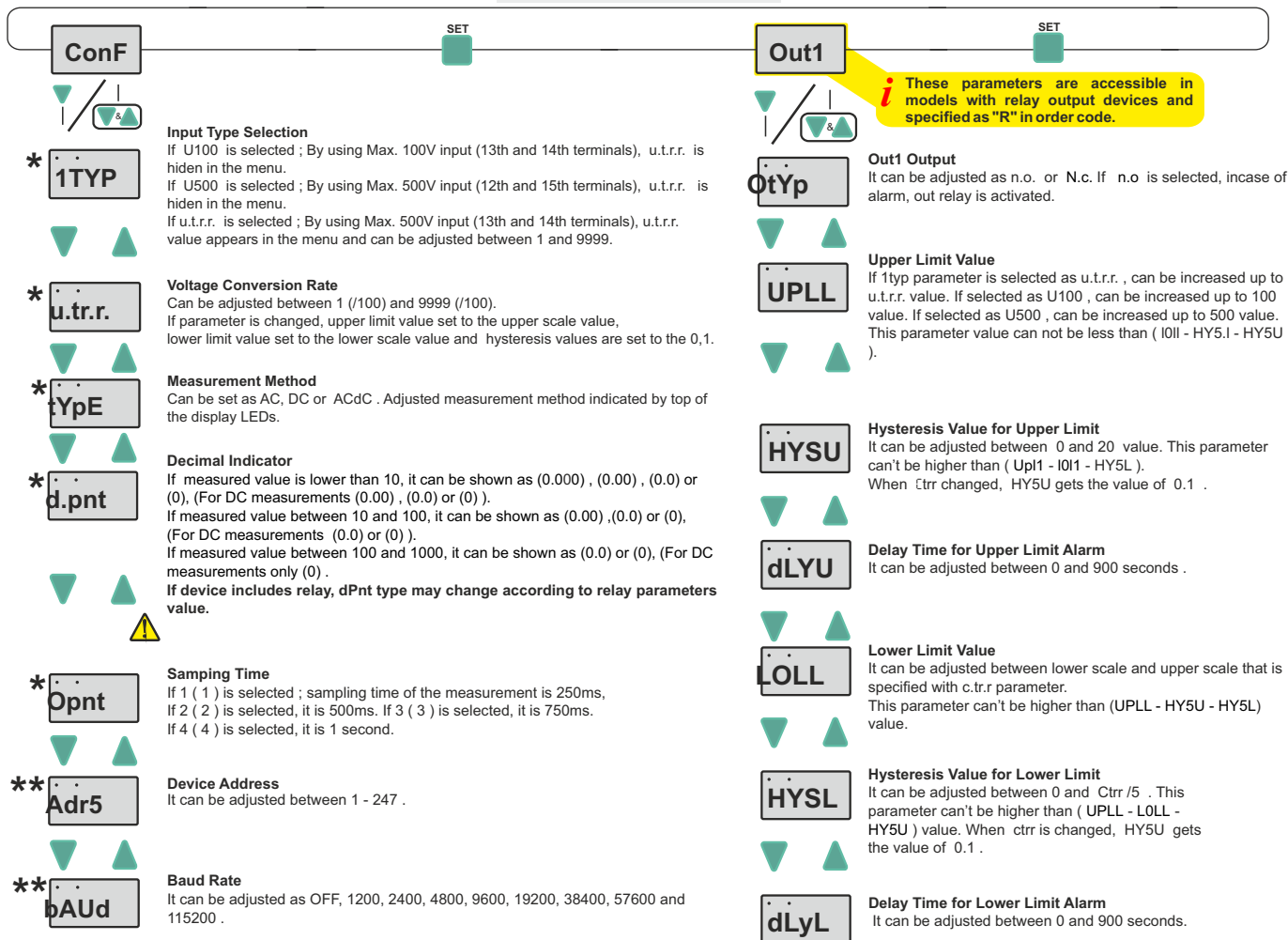


EPV242 PROGRAMMING DIAGRAM

Increment Key	▲	Used for increasing the setpoint value and changing parameters. When held down for a few seconds, configured numeric value increases faster. In "Running Mode", pressed for 3 seconds continuously, activates or deactivates keylock.
Decrement Key	▼	Used for decreasing the setpoint value and changing parameters. When held down for a few seconds, configured numeric value decreases faster.
Programming Key	SET	Used for displaying and configuring the selected parameter value.

If these keys are pressed and held for 3 seconds, "Programming Mode" is entered or it returns to "Running Mode". If ▼ and ▲ keys are pressed while parameter names are displayed, then it returns to measured value.

PROGRAMMING MODE



These parameters are accessible in models with relay output devices and specified as "R" in order code.

LOCKING & UNLOCKING KEYPAD



In "Running Mode", by pressing to ▲ key for 3 seconds, keypad locked or unlocked.

QUICK MENU



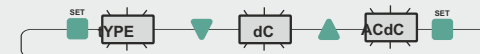
By pressing to SET key for 3 seconds, quick menu is entered.

REVISION NUMBER



If these keys are pressed and held together, revision date appears as day, month and year. While revision information displayed and if one of the pressed key is released, measured value is displayed again.

SETTING UP THE PARAMETERS



If SET key is pressed, the current value of the parameter appears by flashing on the display.

By using "UP" or "DOWN" navigation keys, selected parameter can be adjusted to the desired value.

After the setting up the parameters, if set key is pressed again, adjusted parameter name appears on display.

DEFAULT SETTINGS

Powered on device by pressing ▼ key. dPar message appears on display and device reset to default settings.

ERROR MESSAGES

Measured current value is higher than maximum scale.

Measured current value is lower than minimum scale.

(*) There are only 1typ, u.t.r.r., tYPE, d.Pnt, Opnt parameters in the devices those have no relay.
 (**) The AdrS and baud parameters are only in the devices those have modbus.

ENDA EPV242 DIGITAL VOLTMETER MODBUS PROTOCOL ADDRESS MAP

HOLDING REGISTERS FOR R EXTENSION DEVICES

Holding Register Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission	Status Value
Decimal	Hex					
0000d	0x0000	word	Alarm output status	0tyP	Readable/Writable	no
0001d	0x0001	word	Input type selection	1tYP	Readable/Writable	u.t.r.r
0002d	0x0002	word	Voltage Conversion Rate	u.t.r.r	Readable/Writable	100
0003d	0x0003	word	The upper limit of the setpoint	UPLL	Readable/Writable	500.0
0004d	0x0004	word	The upper limit of the hysteresis value	HY5U	Readable/Writable	1,0
0005d	0x0005	word	Delay time for the upper limit alarm	dlyU	Readable/Writable	0
0006d	0x0006	word	The lower limit of the setpoint	L0LI	Readable/Writable	0,0
0007d	0x0007	word	The lower limit of the hysteresis value	HY5L	Readable/Writable	1,0
0008d	0x0008	word	Delay time for the lower limit alarm	dLyl	Readable/Writable	0
0009d	0x0009	word	Measurement method (0=AC, 1=DC, 2=ACDC)	typE	Readable/Writable	aCdC
0010d	0x000A	word	Decimal point. (0=X, 1=X.X, 2=X.XX, 3=X.XXX)	dpnt	Readable/Writable	0.0
0011d	0x000B	word	Sampling time of the measurement value. If 1 is selected, it is 250ms. If 2 is selected, it is 500ms. If 3 is selected, it is 750ms. If 4 is selected, it is 1 second.	OPTN	Readable/Writable	4
0012d	0x000C	word	Device address for RS485 network connection. Adjustable between 1-247.	aDr5	Readable/Writable	1
0013d	0x000D	word	Baudrate (0=Off; 1=1200; 2=2400; 3=4800; 4=9600; 5=19200 6= 38400; 7= 57600; 8= 115200)	BAUD	Readable/Writable	oFF

*Holding Register Parameter Table (No Relay Models)

0000d	0x0000	word	Input type selection	1tYP	Readable/Writable	u.t.r.r
0001d	0x0001	word	Voltage Conversion Rate	u.t.r.r	Readable/Writable	100
0003d	0x0003	word	Measurement method (0=AC, 1=DC, 2=ACDC)	typE	Readable/Writable	aCdC
0004d	0x0004	word	Decimal point. (0=X.XX, 1=X.X, 2=X)	dpnt	Readable/Writable	0.000
0005d	0x0005	word	Sampling time of the measurement value	OPTN	Readable/Writable	4
0006d	0x0006	word	Device address for RS485 network connection. Adjustable between 1-247.	aDr5	Readable/Writable	1
0007d	0x0007	word	Baudrate (0=Off; 1=1200; 2=2400; 3=4800; 4=9600; 5=19200 6= 38400; 7= 57600; 8= 115200)	BAUD	Readable/Writable	9600

INPUT REGISTERS FOR R EXTENSION DEVICES

Input Register Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x0000	word	Measured voltage value	--	Only Readable

DISCRETE INPUTS FOR R EXTENSION DEVICES

Discrete Input Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
0000d	0x0000	Bit	Relay output state (0=OFF; 1=ON)	--	Only Readable

COILS FOR R EXTENSION DEVICES

Coil Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission	Status Value
Decimal	Hex					
0000d	0x0000	Bit	Alarm output state (0=no; 1=nc)	0tYP	Readable/Writable	no

* Coil and Discrete input parameters are not available in the devices those have no relay

Note 1 : 0tyP menu parameters can be used as "Holding Register" or "Coil."

Note 2 : Received "ModBus input register value" is multiplying by 1000 (based on d.pnt) and mV value reached.

For example ;

if modbus value is 2842, (for d.pnt = 2 (0.00)) $28.42 \times 1000 = 28420$ mV, ie 28.42V

if modbus value is 2842, (for d.pnt = 3 (0.000)) $2.842 \times 1000 = 2842$ mV, ie 2.842V