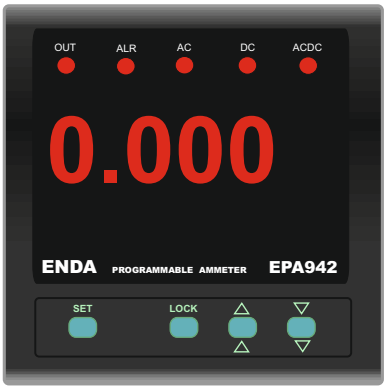
Read this document carefully before using this device. The guarantee will be expired by damaging of the device if you don't attend to the directions in the user manual. Also we don't accept any compensations for personal injury, material damage or capital disadvantages.

ENDA EPA942 PROGRAMMABLE AC/DC AMMETER

Thank you for choosing **ENDA EPA942** Programmable AC/DC Ammeter.

- 96 x 96mm sized.
- 4 digits display.
- Easy to use with front panel keypad.
- Can be used with current transformer or shunt.
- Programmable scale between 5A and 9999A.
- Multi-functional alarm output for Lower and Upper limits (NO+NC).
- Multi-functional alarm setpoints with Alarm Output (NO+NC).
- Multifunctional alarm output (NO+NC) for upper and lower limits.
- Communication feature over isolated RS485, using ModBus RTU protocol.(Optional).
- Measuring type can be selected as AC, DC or true RMS.
- Key lock feature.
- CE marked according to European Norms.



Order code : EPA942 - □□ (1) - □□ (2) - □□□ (3)

1 - Supply Voltaje	2 -Output	3 - Modbus
230.....230V AC LV.....10-30V DC / 8-24V AC	R.....10A(Out)Relay 2R.....10A(Out+Alr)Relay	RSI...RS485 Modbus Available (Specify at Order)

RoHS Compliant CE

TECHNICAL SPECIFICATIONS

ENVIRONMENTAL CONDITIONS	
Ambient/stroge temperature	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 degree	According to EN 60529 Front panel : IP65 , Rear panel : IP20
Height	Max. 2000m
Do not use the device in locations subject to corrosive and flammable gases.	

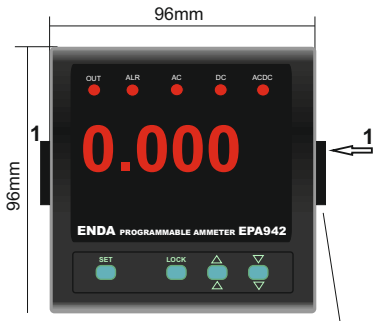
ELECTRICAL CHARACTERISTICS		
Supply	230V AC 50/60Hz ; 10-30V DC / 8-24V AC SMPS	
Power consumption	Max. 5VA	
Wiring	2.5mm² screw-terminal connections	
Scale	AC and RMS DC	0A...9999A (Specified by c.tr.r parameter. For example:scale is 0A...5A for c.tr.r=5.00) -999A...9999A (Specified by c.tr.r parameter. For example:scale is -5A...5A for c.tr.r=5.00)
Sensitivity	0.001A x (c.tr.r /5) (For example , 0.001A for c.tr.r=5.00)	
Accuracy	AC DC RMS	± 1% (full scale) (± 2% For square wave form) ± 1% (full scale) ± 1% (full scale) (± 2% For square wave form)
Input Range	13 & 14 12 & 15	-5A...5A **(Device may be damaged at 10A and above currents)** -60mV...60mV **(Device may be damaged at 50V and above voltages)** ⚠
Input Impedance	13 & 14 12 & 15	12mΩ 40kΩ
Frequency Range	DC , 10Hz - 200Hz (10Hz - 70Hz For square wave form)	
EMC	EN 61326-1: 2013	
Safety requirements	EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)	

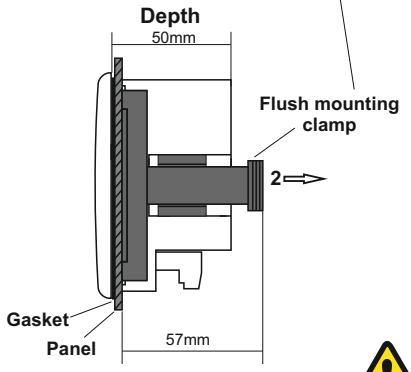
OUTPUTS	
Output	250V AC, 10A (for resistive load), NO+NC
Alarm output	250V AC, 10A (for resistive load), NO+NC
Life expectancy for relay	Mechanical 30.000.000 ; Electrical 100.000 operation.

HOUSING	
Housing type	Suitable for flush-panel mounting.
Dimensions	W96xH96xD50mm
Weight	Approx. 410g (after packing)
Enclosure material	Self extinguishing plastics.
While cleaning the device, solvents (thinner, gasoline, acid etc.) or corrosive materials must not be used.	

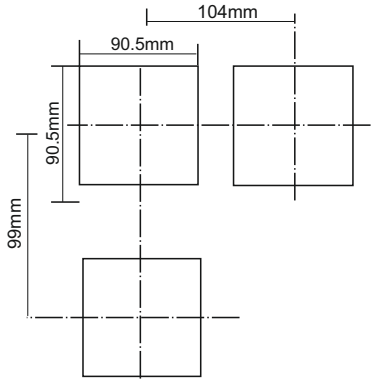
SURAN Industrieelektronik
An der Hanfrötze 6 / D-77731 Willstätt
Tel.: +49 (0)7852 / 4889 962
E-mail : info@suran-elektronik.de
Internet : www.suran-elektronik.de

DIMENSIONS





Panel Cut-out



For removing mounting clamps :

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

1) Panel thickness should be maximum 10mm.
2) There must be at least 60mm free space behind the device, otherwise it would be difficult to remove it from the panel.

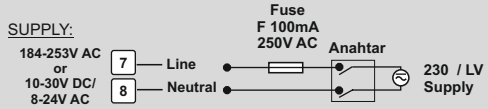
CONNECTION DIAGRAM

ENDA EPA942 is intended for installation in control panels. Make sure that the device is used only for intended purpose.The electrical connections must be carried on by a qualified staff and must be according to the relevant locally applicable regulations. During an installation, all of the cables that are connected to the device must be free of electrical power. The device must be protected against inadmissible humidity, vibrations and severe soiling. Make sure that the operation temperature is not exceeded. The cables should not be close to the power cables or

CAUTION :

If 5A and 60mV inputs are connected at the same time, the measurement will be incorrect.

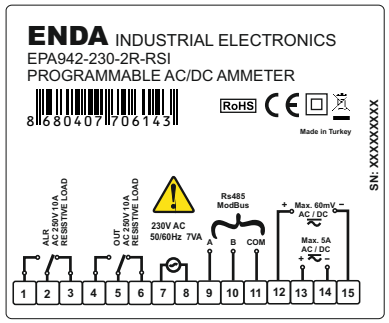
NOTE :

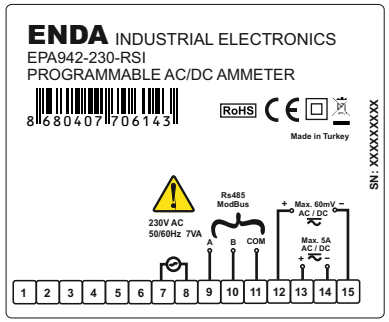


Fuse should be connected.

Cable size: 1,5mm²

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.

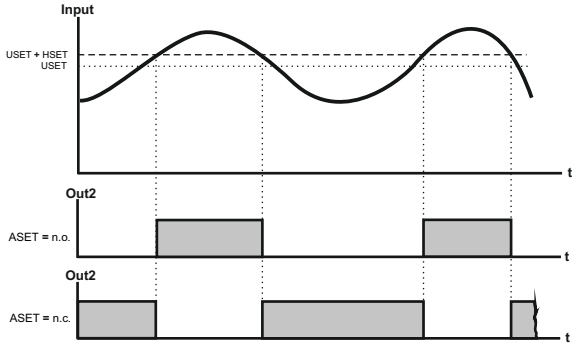




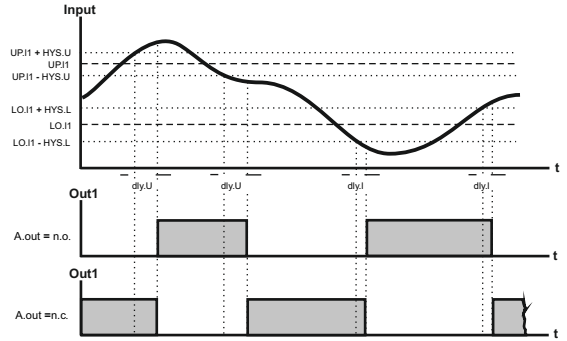
Equipment is protected throughout by DOUBLE INSULATION

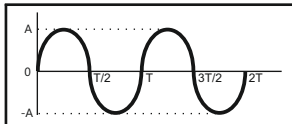
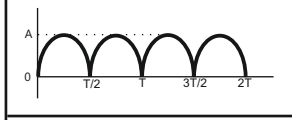
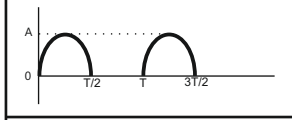
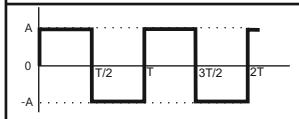
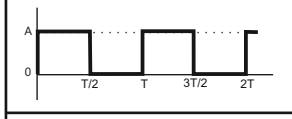
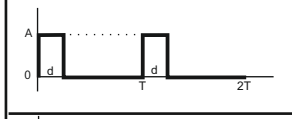
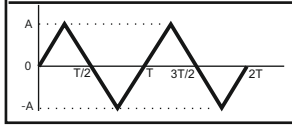
Holding screw 0.4-0.5Nm.

ALARM OUTPUT CHART



OUTPUT CHART



	ac	dc	Ac.dc (rms)
	$A\frac{1}{\sqrt{2}}$	0.000	$A\frac{1}{\sqrt{2}}$
	0.308 A	$A\frac{2}{\pi}$	$A\frac{1}{\sqrt{2}}$
	0.386 A	$A\frac{1}{\pi}$	$A\frac{1}{2}$
	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	$A\frac{1}{\sqrt{3}}$

EPA942 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.
Decrement Key	Used for decreasing the setpoint value and changing parameters. When held down for a few seconds, configured numeric value increases faster.
Programming Key	Used for displaying and configuring the selected parameter value.
Lock / Unlock Keypad	Locks / Unlocks keypad.

SETTING UP THE PARAMETERS

SET → tYPE ▼ dC ▲ ACdC → SET

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.

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, than it returns to measured value.

PROGRAMMING MODE

ConF → (SET) → Out1 → (SET) → Out2 → (SET)

ConF

* **c.t.r.r.** — **Current Conversion Ratio**
It can be adjusted between **5.00**(/5) and **9999**(/5). If this parameter changes, upper limit value is set to maximum scale ,minimum limit value is set to minimum scale and hysteresis values are set to **0** .

* **tYpE** — **Measuring Method**
It can be adjusted to **ac** , **dc** or **acdc.** LEDs on the top of the display indicates the adjusted measurement method.

* **d.pnt** — **Decimal Indicator**
If measured value is lower than 10, it can be shown as (**0.000**), (**0.00**), (**0.0**) or (**0**), (For DC measurements (**0.00**)).
If measured value between 10 and 100, it can be shown as (**0.00**) ,(**0.0**) or (**0**), (For DC measurements (**0.0**) or (**0**)).
If measured value between 100 and 1000, it can be shown as (**0.0**) or (**0**), (For DC measurements only (**0**).
If measured value is higher than 1000, it can be shown as (**0**) (For DC measurements only (**0**)).
If device includes relay, **dPnt** type may change according to relay parameters value.

* **Opnt** — **Samping Time**
If 1 (**1**) is selected ; sampling time of the measurement is 250ms,
If 2 (**2**) is selected, it is 500ms.
If 3 (**3**) is selected, it is 750ms.
If 4 (**4**) is selected, it is 1 second.

** **Adr5** — **Device Address**
It can be adjusted between **1** - **247** .

** **bAUd** — **Baud Rate**
It can be adjusted as **OFF**, **1200**, **2400**, **4800**, **9600**, **19200**, **38400**, **57600** and **115200**

(*) **c.t.r.r.** , **tYPE** , **d.Pnt** and **0ptn** parameters are available for only that devices have no relays.

(**) **Adr5** and **bAUd** parameters are available for only that devices have ModBus.

Out1

i **Includes in R extension devices.**

OtYp — **Out1 Output Relay Contact Position**
It can be adjusted as **n.o**. **or N.c**. If **n.o** is selected, incase of alarm, out relay is activated.

UPLL — **Upper Limit Value**
It can be adjusted between minimum and maximum scale that is specified with **c.tr.r** parameter. This parameter can't be lower than (**l0ll - HY5U - HY5U**) value.

HYSU — **Hysteresis Value for Upper Limit**
It can be adjusted between **0** and **ctrr /5** parameter. This parameter can't be higher than (**UpIl- l0ll- HY5L**). When **ctrr** changed, **HY5U** gets the value of **0.1** .

dLYU — **Delay Time for Upper Limit Alarm**
It can be adjusted between **0** and **900** .

LOLL — **Lower Limit Value**
It can be adjusted between lower scale and upper scale that is specified with **c.tr.r** parameter. This parameter can't be higher than **UPLL - HY5U - HY5L** value.

HYSL — **Hysteresis Value for Lower Limit**
It can be adjusted between **0** and **Ctrr /5** . This parameter can't be higher than **UPLL - L0LL - HY5U** value. When **ctrr** is changed, **HY5U** gets the value of **0.1** .

dLyL — **Delay Time for Lower Limit Alarm**
It can be adjusted between **0** and **900** seconds.

Out2

i **Includes in 2R extension devices.**

ASET — **Alarm Output Relay Contact Position**
Can be adjusted as **n.o** or **n.c** .
If **n.o** is selected, in case of alarm, **Alr** relay is activated.

U5ET — **Alarm Upper Limit Value**
It can be adjusted between minimum and maximum scale that is specified with **c.tr.r** parameter. This parameter can't be lower than **H5Et** value.

H5ET — **Hysteresis Alarm Value for Upper Limit**
Can be adjusted between **0** and **20**. This parameter can't be higher than **U5Et** or 20 value. When **ctrr** changed, **H5Et** gets the value of **0.1** .

LOCKING & UNLOCKING KEYPAD

LOCK → L0C → Measured Value 0.00 → LOCK → UL0C → Measured Value 0.00

QUICK MENU

SET → UPLL ▲▼ LOLL ▲▼ U5ET ▲▼ ▲+▼ Measured Value 0.00

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

REVISION NUMBER

SET & ▲ & ▼ → Day.Month 01.01 → Year 2015 → Measured Value 0.00

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.

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.