⚠ Read this document carefully before using this device. The guarantee will be expired by device demages 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 EPA742 Programmable AC/DC Ammeter

Thank you for choosing **ENDA EPA742** programmable AC/DC ammeter.

▶ 72 x 72mm sized.
▶ 4 digits display.
▶ 5A/60 mV , CT20/30 current transformer or 1A input feature (Please Specify at Order). ⚠
▶ Measuring type can be selected as AC, DC or True RMS.
▶ Programmable scale range between 5A and 9999A.
▶ Multifunctional output (NO) for upper and lower limits (Optional).
▶ 0-20mA, 4-20mA, 0-10V or 1-5V output selection (Optional - Specified devices with output type as 'A' only).
▶ Three-way isolation architecture between input, output and supply.
▶ Communication feature over isolated Modbus RTU protocol (Optional).
▶ Keylock feature.
▶ CE marked according to European Norms.

⚠ **CT20/30 should be ordered separately when required.**

Order Code : EPA742 - ☐☐ - ☐☐ - ☐ - ☐☐☐
                        1   2   3   4

1 - Supply Voltage	2 - Input Type	3 - Output	4 - Isolated Modbus
UV....90-250V AC	CT.................CT20/30 Current Transformer input OR 60mV.	R.........08A Relay	RSI.......RS485 Modbus Available (Specify at order)
LV......10-30V DC / 8-24V AC	X1.........................1A Default (Blank)......5A or 60mV.		

CE R⊛HS Compliant

INPUTS

Input Type		EPA742-UV : 5A or 60mV EPA742-UV-CT : CT20/30 current transformer or 60mV EPA742-UV-X1 : 1A
Scale	AC and RMS	**If input type is 5A / 60mV, scale 0A...9999A :** (Specified by ⌐.TR.R parameter. i.e : scale is 0A...5A for ⌐.TR.R = 5)
		If input type is 1A, scale 0A...9999A : (Specified by ⌐.TR.R parameter. i.e : scale is 0A...1A for ⌐.TR.R = 1)
		If input type is CT20/30 / 60mv : If ITYP = CT20 , 0A...300A or CT30 , 0A...120A (Specified by TURN parameter. i.e : scale is 0A..300A / 0A..120A for TURN = 1) If ITYP = SHNT , 0A...9999A (Specified by ⌐.TR.R parameter. i.e : scale is 0A...5A for ⌐.TR.R = 5)
	DC	**If input type is 5A / 60mV, scale :** -999A...9999A (Specified by ⌐.TR.R parameter. i.e : scale is -5A...5A for ⌐.TR.R = 5)
		If input type is 1A, scale : -999A...9999A (Specified by ⌐.TR.R parameter. i.e : scale is -1A...1A for ⌐.TR.R = 1)
		If input type is CT20/30 / 60mV : DC measurement can not be performed by using CT. If ITYP = SHNT , **scale :** 0A...9999A (Specified by ⌐.TR.R parameter. i.e : scale is -5A...5A for ⌐.TR.R=5)
Sensitivity		0.002A x ⌐.TR.R (i.e. : 0.01A for ⌐.TR.R = 5)
Accuracy	AC/RMS	±%1 (full scale) (± 2% For square wave form)
	DC	±%1 (full scale)
Input Range		Input type 60V ; -60mV...60mV ⚠ (Device may be damaged at 50V and above voltages) Input type 1A ; -1A...1A ⚠ (Device may be damaged at 2A and above currents) Input type 5A ; -5A...5A ⚠ (Device may be damaged at 10A and above currents) Input type CT20/30 ; 0 ... 150 mA
Input Impedance		20kΩ for 60mV Input, 90mΩ for 1A Input, 12mΩ for 5A Input, 600mΩ for CT20/30 Input.
Frequency Range		DC , 20Hz - 70Hz

ELECTRICAL CHARACTERISTICS

Supply	90-250V AC 50/60Hz ;10-30V DC / 8-24V AC 50/60Hz SMPS
Power Consumption	Max. 7VA
Wiring	2.5mm² screw-terminal connections
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 (Mechanical 30.000.000; Electrical 100.000 operation. 250V AC, 8A (resistive load).
Analog Output	0-20mA DC, or 4-20mA DC ±0,5% (Load resistance for current outputs Max. 500Ω). 0-10V DC or 1-5V DC, Max. 10mA. ±0,5% (Short circuit protected).

ENVIRONMENTAL CONDITIONS

Ambient/Storage Temperature	0 ... +50°C/-25 ... 70°C (should be no icing or condensation in the environment)
Max. Relative Humidity	80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% at 40°C (should be no icing or condensation in the environment).
Rated Pollution Degree	IP20 According to EN 60529
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.**

HOUSING

Housing Type	Suitable for EN60715 Standards, TH35 rail type.
Dimensions	W72xH72xD94mm
Weight	Approx. 350g (after packing)
Enclosure Material	Self extinguishing plastics.

⚠ **Avoid any liquid contact when the device is switched on.**
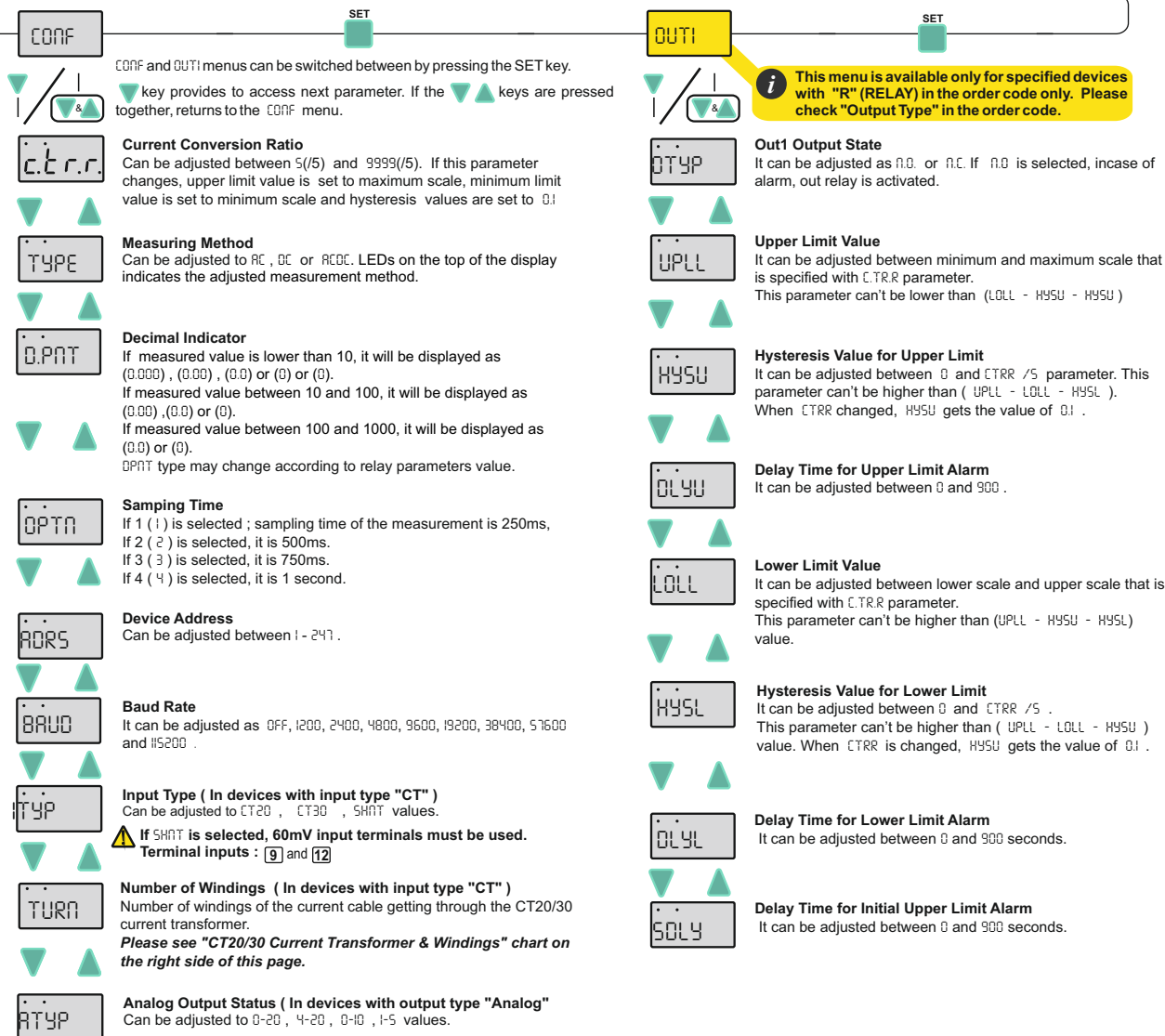**DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents.**

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
1. / 4
EPA742-E-03092022

EPA742 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 decreases faster.

Programming key SET ■ — Used for displaying and configuring the selected parameter value.

▲&▼ By pressing to ▲ ▼ keys together for 3 seconds, xcxcxc message appears and the "Programming Mode" is entered. If the ▲ ▼ keys are pressed during "Programming Mode" or no operation is performed for 3 seconds, returns to the "Running Mode".
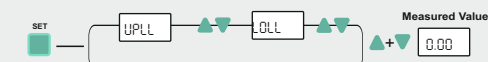
PROGRAMMING MODE

CONF — SET — OUTI — SET

CONF and OUTI menus can be switched between by pressing the SET key.

▼ key provides to access next parameter. If the ▼ ▲ keys are pressed together, returns to the CONF menu.

c.t.r.r. — Current Conversion Ratio
Can be adjusted between 5(/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 0.1.

TYPE — Measuring Method
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 will be displayed as (0.000) , (0.00) , (0.0) or (0) or (0).
If measured value between 10 and 100, it will be displayed as (0.00) ,(0.0) or (0).
If measured value between 100 and 1000, it will be displayed as (0.0) or (0).
DPNT type may change according to relay parameters value.

OPTN — 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.

ADRS — Device Address
Can be adjusted between 1 - 247 .

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

ITYP — Input Type (In devices with input type "CT")
Can be adjusted to CT20 , CT30 , SHNT values.
⚠ If SHNT is selected, 60mV input terminals must be used.
Terminal inputs : [9] and [12]

TURN — Number of Windings (In devices with input type "CT")
Number of windings of the current cable getting through the CT20/30 current transformer.
Please see "CT20/30 Current Transformer & Windings" chart on the right side of this page.

ATYP — Analog Output Status (In devices with output type "Analog")
Can be adjusted to 0-20 , 4-20 , 0-10 , 1-5 values.

OUTI — SET

ℹ This menu is available only for specified devices with "R" (RELAY) in the order code only. Please check "Output Type" in the order code.

OTYP — Out1 Output State
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 (LOLL - HYSU - HYSU)

HYSU — Hysteresis Value for Upper Limit
It can be adjusted between 0 and CTRR /5 parameter. This parameter can't be higher than (UPLL - LOLL - HYSL).
When CTRR changed, HYSU 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 - HYSU - HYSL) value.

HYSL — Hysteresis Value for Lower Limit
It can be adjusted between 0 and CTRR /5 .
This parameter can't be higher than (UPLL - LOLL - HYSU) value. When CTRR is changed, HYSU gets the value of 0.1 .

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

SDLY — Delay Time for Initial Upper Limit Alarm
 It can be adjusted between 0 and 900 seconds.

CT20/30 Current Transformer & Windings Chart

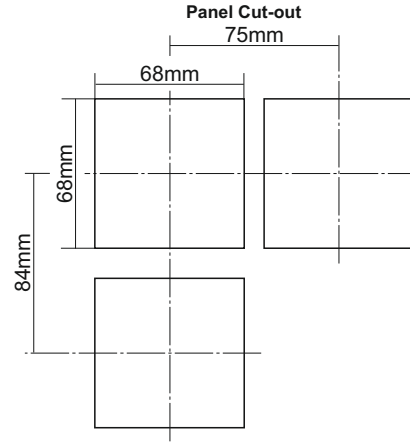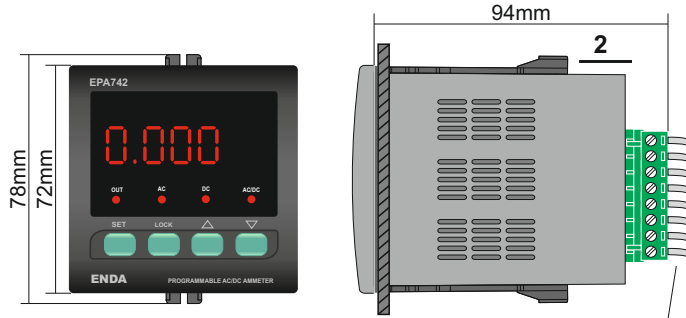| TURN	1	2	3	4	5	6	7	8	9	10
CT20 Iin max(A)	300	150	100	75	60	50	42,8	37,5	33,3	30
CT30 Iin max(A)	120	60	40	30	24	20	17,1	15	13,3	12

⚠ **Note :**
If ITYP parameter set to SHNT , TURN parameter is not appears.
If ITYP parameter set to CT20 or CT30 , CTRR parameter is not appears.

Note :
Before setting the relay parameters, the operating scale must be determined from DPNT parameter.
If DPNT , TYPE and ITYP parameters are changed (if applicable), UPLL , LOLL , HYSU and HYSL values must be checked.

94mm

EPA742

0.000

OUT   AC   DC   AC/DC

SET   LOCK   △   ▽

ENDA   PROGRAMMABLE AC/DC AMMETER

78mm
72mm

2

Connection Cables

Panel Cut-out
75mm
68mm
68mm
84mm

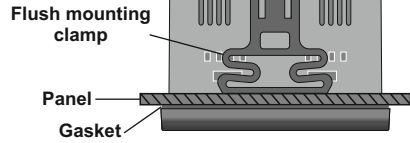**For removing mounting clamps :**
- Push the flush-mounting clamp in direction **1** as shown in the figure left.
- Then, pull out the clamp in direction **2.**

1 **1** **2**

Flush mounting clamp

Panel

Gasket

Note :
1) Panel thickness should be maximum 10mm.
2) There must be at least 90mm free space behind the device, otherwise it would be difficult to remove it from the panel.

ENDA EPA742 is intended for installation in control panels. Device must be used to according to instructions. Mounting and 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 components.

Input

UP.LI + HYS.U
UP.LI
UP.LI - HYS.U

LO.LI + HYS.L
LO.LI
LO.LI - HYS.L

DLY.U   DLY.U   DLY.L   DLY.L   t

Out

OTYP = N.O.   t

Out

OTYP = N.C.   t

	AC	DC	$AC.DC$ (rms)
(sine wave) T/2 T 3T/2 2T	$A\dfrac{1}{\sqrt{2}}$	0.000	$A\dfrac{1}{\sqrt{2}}$
(square wave) T/2 T 3T/2 2T	A	0.000	A
(triangle wave) T/2 T 3T/2 2T	$A\dfrac{1}{\sqrt{3}}$	0.000	$A\dfrac{1}{\sqrt{3}}$

CAUTION :
Only one of the 60mV or 5A/CT20-30 inputs can be used.

NOTE :
SUPPLY:
90-250V AC veya
10-30V DC /
8-24V AC
50/60Hz 7VA

17 Line
18 Neutral

Fuse F 100mA 250V AC

Switch

UV / LV Supply

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.
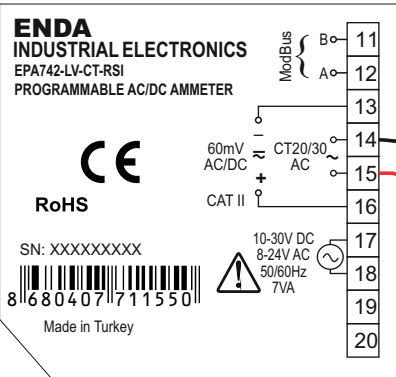
⚠ **Fuse should be connected.**   **Cable size: 1,5mm²**

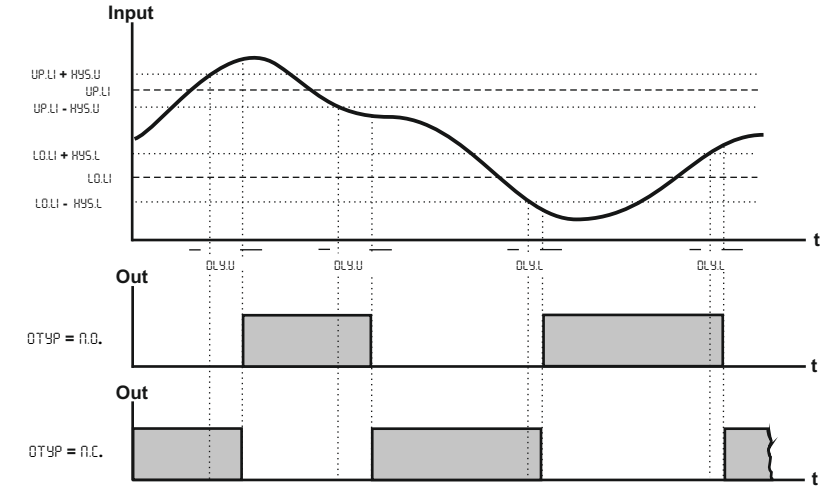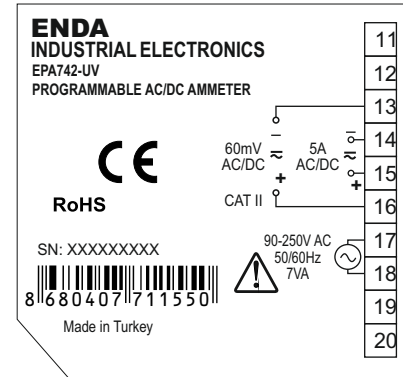□ Equipment is protected throughout by **DOUBLE INSULATION**

⊖ **Holding screw 0.4-0.5Nm.**

ENDA
INDUSTRIAL ELECTRONICS
EPA742-LV-CT-RSI
PROGRAMMABLE AC/DC AMMETER

CE   RoHS

SN: XXXXXXXXX

8 680407 711550

Made in Turkey

ModBus { B 11 / A 12 }
13
60mV AC/DC   CT20/30 AC   14
15
CAT II   16
10-30V DC 8-24V AC 50/60Hz 7VA   17 18 19 20

CT30 Akım Trafosu
CT30
Ölçme Girişi 0-120A

ENDA
INDUSTRIAL ELECTRONICS
EPA742-UV
PROGRAMMABLE AC/DC AMMETER

CE   RoHS

SN: XXXXXXXXX

8 680407 711550

Made in Turkey

11
12
13
60mV AC/DC   5A AC/DC   14
15
CAT II   16
90-250V AC 50/60Hz 7VA   17 18 19 20

Please see page 5 for Modbus Connection Diagram

ENDA EPA742-xx-xx-R-RSI DIGITAL AMPERMETER WITH ALARM RELAY OUTPUT MODBUS PROTOCOL ADDRESS MAP

Holding Register Adresleri		Data Type	Data Content	Parameter Name	Read/Write Permission	Default Value
Decimal	Hex					
0000d	0x0000	word	Alarm output status	OTYP	R / W	nO
0001d	0x0001	word	Current replacement rate	CTRR	R / W	5
0002d	0x0002	word	The upper limit of the setpoint	UPLL	R / W	5.00
0003d	0x0003	word	The upper limit of the hysteresis value	HYSU	R / W	0.10
0004d	0x0004	word	Delay time for the upper limit alarm	DLYU	R / W	0
0005d	0x0005	word	The lower limit of the setpoint	LOLL	R / W	0.00
0006d	0x0006	word	The lower limit of the hysteresis value	HYSL	R / W	0.10
0007d	0x0007	word	Delay time for the lower limit alarm	DLYL	R / W	0
0008d	0x0008	word	Measurement method (0=AC, 1=DC, 2=ACDC)	TYPE	R / W	ACDC
0009d	0x0009	word	Decimal point. (0 = 0 , 1 = 0.0 , 2 = 0.00 , 3 = 0.000)	DPnT	R / W	0.00
0010d	0x000A	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	R / W	4
0011d	0x000B	word	Device address for RS485 network connection. Adjustable between 1-247.	ADRS	R / W	1
0012d	0x000C	word	Baudrate (0=Off;1=1200;2=2400; 3=4800; 4=9600; 5=19200 6= 38400; 7= 57600; 8= 115200)	BAUD	R / W	OFF
0013d	0x000D	word	Delay Time for Initial Upper Limit Alarm	SDLY	R / W	0
*0014d	0x000E	word	Input Type (0 = CT20 , 1= CT30 , 2 = SHNT)	ITYP	R / W	CT20
*0015d	0x000F	word	Number of windings for transformer	TURn	R / W	1

⚠ ***14. and *15. addresses are only used in devices with EPA742-xx-xx-R-RSI, input type CT20/30 current transformer.**

ENDA EPA742-xx-xx-x-RSI INPUT REGISTERS FOR OUTPUT DEVICES

Input Register Addresses		Data Type	Data Content	Parameter Name	Read / Write Permission
Decimal	Hex				
0000d	0x0000	word	Measured current value	--	Read Only
0001d	0x0001	word	Decimal point of measured current value	--	Read Only
0002d	0x0002	word	Specified analog output value	--	Read Only

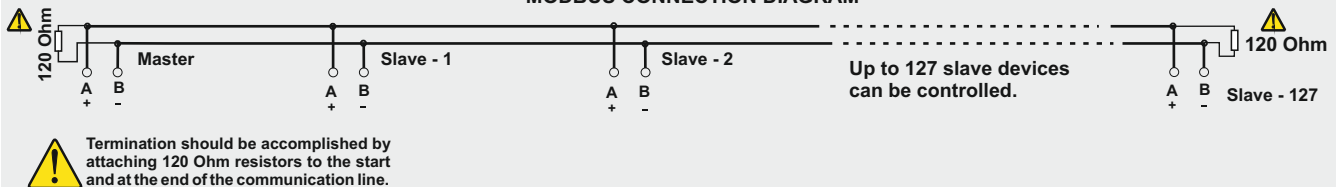## ENDA EPA742-xx-xx-R-RSI DIGITAL AMMETER WITH ALARM RELAY OUTPUT DISCRETE INPUTS

Discrete Input Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission
Decimal	Hex				
00d	0x00	Bit	Relay output state (0=OFF; 1=On)	--	Read Only

ENDA EPA742-xx-xx-R-RSI DIGITAL AMMETER WITH ALARM RELAY OUTPUT COILS INPUTS

Coil Addresses		Data Type	Data Content	Parameter Name	Read/Write Permission	Default Value
Decimal	Hex					
00d	0x00	Bit	Output state (0=nO; 1=nC)	OTYP	R / W	nO

⚠ **Note 1 :** Coil and Discrete input parameters are not available in the devices those have no relay

⚠ **Note 2 :** OTYP menu parameters can be used as "Holding Register" or "Coil.

⚠ **Note 3 :** Value read in 0th address of input register gives the measured value. Also, the 1st address of the input register specifies the decimal part of the measured current value.
For example ;
Value read in 0th address of input register is 2842 , if value read in 1st address from input register as 1, it is 284.2
Value read in 0th address of input register is 2842 , if value read in 1st address from input register as 2, it is 28.42
Value read in 0th address of input register is 2842 , if value read in 1st address from input register as 3, it is 2.842

* MODBUS CONNECTION DIAGRAM

⚠ **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.