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 commitments for personal injury, material damage or capital disadvantages.

ENDA EPA241A PROGRAMMABLE AC/DC AMMETER

Thank you for choosing ENDA EPA241A programmable AC/DC ammeter.

- 77 x 35mm 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.
- Multifunctional alarm output (NO+NC) for upper and lower limits.
- Optional Rs485 Communication interface (isolated, using ModBus RTU Protocol).
- Measuring type can be selected as AC, DC or true RMS.
- Key lock feature.
- CE marked according to European Norms.

TECHNICAL SPECIFICATIONS

ENVIRONMENTAL CONDITIONS

<table>
<thead>
<tr>
<th>Ambient/storage temperature</th>
<th>Max. Relative humidity</th>
<th>Rated pollution degree</th>
</tr>
</thead>
<tbody>
<tr>
<td>0...+50°C/25 ... 70°C</td>
<td>80% Relative humidity for temperatures up to 31°C, decreasing linearly to 50% at 40°C.</td>
<td>According to EN 60529 Front panel : IP65 , Rear panel : IP20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Height</td>
</tr>
<tr>
<td></td>
<td>Max. 2000m</td>
<td></td>
</tr>
</tbody>
</table>

Do not use the device in locations subject to corrosive and flammable gases.

ELECTRICAL CHARACTERISTICS

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. 5VA

Wiring: 2.5mm² screw-terminal connections

Scale: AC and RMS DC 0A...9999A (specified by CTTR parameter. For example: scale is 0A...5A for CTTR=5.00) -999A...9999A (specified by CTTR parameter. For example: scale is -5A...5A for CTTR=5.00)

Sensitivity: 0.002A x CTTR (For example, 0.01A for CTTR=5.00)

Accuracy: AC ±1% (full scale) (±2% for square wave form) DC ±1% (full scale) RMS ±1% (full scale) (±2% for square wave form)

Input Range: 5A...5A (Device may be damaged at 10A and above currents.) -60mA...60mA (Device may be damaged at 50V and above voltages.)

Input Impedance: 12mΩ 40kΩ

Frequency Range: DC , 10Hz - 200Hz (10Hz - 70Hz for square wave form)

EMC: EN 61326-1:2006 (Performance criterion B for the EMC standards)

Safety requirements: EN 61010-1:2010 (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: Suitable for flush-panel mounting. (According to DIN 43 700)
- Dimensions: W77xH35xD71mm
- 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 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.

Note:
1) Panel thickness should be maximum 7mm.
2) There must be at least 60mm free space behind the device, otherwise it would be difficult to remove it from the panel.

NOTE:
- Fuse should be connected.

CAUTION:
- Equipment is protected throughout by DOUBLE INSULATION.
- Holding screw 0.4-0.5Nm.
- Fuse should be connected.
- Cable size: 1.5mm²

ENDA EPA241A is intended for installation in control panels. Make sure that the device is used only for intended purpose. The electrical connections must be carried out by a qualified staff and must be according to the relevant locally applicable regulations. During 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.

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

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

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EPA241A 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.

Adjusting the Alarm Value

By using and keys, upper limit value can be adjusted between lower scale and upper scale that is specified with . This parameter can't be lower than ( value.

By using and keys, lower limit value can be adjusted between lower scale and upper scale that is specified with . This parameter can't be higher than value.

If both keys are pressed, upper limit value can be adjusted.

If both keys are pressed, lower limit value can be adjusted.

If this key pressed, upper limit value appears.

If this key pressed, lower limit value appears.

By using and keys, upper limit value can be adjusted between minimum and maximum scale that is specified with parameter. This parameter can't be lower than (value.

By using and keys, hysteresis value for upper limit can be adjusted between 0 and 20.

This parameter can't be higher than (value.

By using and keys, delay time for upper limit alarm can be adjusted between 0 and 900 seconds.

By using and keys, lower limit value can be adjusted between lower scale and upper scale that is specified with parameter. This parameter can't be higher than (value.

By using and keys, hysteresis value for upper limit can be adjusted between 0 and 20.

This parameter can't be higher than (value.

By using and keys, delay time for lower limit alarm can be adjusted between 0 and 900 seconds.

If these keys are pressed, revision date appears as day and month.

If these keys are pressed and held for 3 seconds, programming mode is entered or it returns to operating mode. If keys are pressed while parameter names are displayed, it returns to measured value mode.

Programming Mode

Upper limit value

By using and keys, upper limit value can be adjusted between minimum and maximum scale that is specified with parameter. This parameter can't be lower than (value.

If key is pressed, it returns to parameter name.

Hysteresis value for upper limit

By using and keys, hysteresis value for upper limit can be adjusted between 0 and 20.

This parameter can't be higher than (value.

If key is pressed, it returns to parameter name.

Delay time for upper limit alarm

By using and keys, delay time for upper limit alarm can be adjusted between 0 and 900 seconds.

If key is pressed, it returns to parameter name.

Lower limit value

By using and keys, lower limit value can be adjusted between lower scale and upper scale that is specified with parameter. This parameter can't be higher than (value.

If key is pressed, it returns to parameter name.

Hysteresis value for lower limit

By using and keys, hysteresis value for lower limit can be adjusted between 0 and 20.

This parameter can't be higher than (value.

If key is pressed, it returns to parameter name.

Delay time for lower limit alarm

By using and keys, delay time for lower limit alarm can be adjusted between 0 and 900 seconds.

If key is pressed, it returns to parameter name.
Measuring type
If this key is pressed measuring type appears.

SET
by using and keys measuring type can be adjusted ac dc acdc.

Three leds at the top of the display show measuring type.
If key is pressed it returns to parameter name.

Decimal point position
If key is pressed decimal point position appears.
By using and keys decimal point position can be adjusted according to value of the c.trr parameter. If c.trr parameter is lower than 10, measured value can be shown as (0.00) or (0.0). If it is between 10 and 100, measured value can be shown as (0.0) or (0). If it is higher than 100, measured value can be shown as (0).

Sampling time measurement value
If key is pressed, sampling time measurement value appears.
Sampling time of the measurement value is shown on the screen. If 1 is selected, sampling time of the measurement is 250ms, if 2 is selected, it is 500ms. If 3 is selected, it is 750ms. If 4 is selected, it is 1 second.

Address of the device
If key is pressed, address of the device appears.
By using and keys address of the device can be adjusted between 1-247.

Baud rate
By using and keys baud rate of the device can be adjusted to OFF, 1200, 2400, 4800, 9600, 19200.

Alarm output
If key is pressed, alarm output appears.
By using and keys, alarm output state can be adjusted to n.o. or N.C. If it is adjusted to no, output relay is powered at alarm condition.

SET
If key is pressed, it returns to parameter name.

Optn
If key is pressed, sampling time measurement value appears.
Sampling time of the measurement value is shown on the screen. If 1 is selected, sampling time of the measurement is 250ms, if 2 is selected, it is 500ms. If 3 is selected, it is 750ms. If 4 is selected, it is 1 second.

If key is pressed, it returns to parameter name.

(*): There are only c.trr, type, d.Pnt, optn parameters in the devices those have no relay.
(**): The RDS and BAUD parameters are only in the devices those have modbus.
If any key is pressed in 25 seconds or the device is powered down and powered up, then it returns to operation mode.

NOTE: If key is held down while the device is powered up, d.PAr message will appear and factory settings will be restored.

ERROR MESSAGES

Means, measured current value is higher than maximum scale. Means, measured current value is lower than minimum scale.