ENDA EU SERIES PID UNIVERSAL CONTROLLER

Thank you for choosing ENDA EU Series Universal Controller Devices.

- Dual setpoint value can be selected.
- PT100, J, K, L, T, S, R sensor (thermocouple) types can be selected.
- 0-20mA, 4-20mA, 0-10V, 2-10V, 0-25mV and 0-50mV input selections.
- Auto calculation for PID parameters (SELF TUNE).

Self tune for automatic PID calculation or manually enter PID parameters if known.

- Three different feature can be assigned to digital input.
- Three different feature can be assigned to F function key.
- Soft-Start feature
- Analogue, SSR or Relay Control Output selection.
- 0-20mA and 4-20mA analogue Control selection.
- A1 Relay output programmable as first Alarm or Cooling control output.
- C/2 Relay output can be used as second Alarm or Temperature Control output.
- Heating/Cooling control.
- Zero point input shift
- In case of sensor failure, periodically, auto-periodically running or relay state can be selected.

RS485 Modbus RTU communication protocol feature. (Specify at order).

TECHNICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>EU4420: W48xH48xD87mm, EU7420: W72xH72xD97mm, EU8420: W48xH96xD87mm, EU9420: W96xH96xD50mm.</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 400g (250g for EU4420) After packing.</td>
</tr>
<tr>
<td>Enclosure material</td>
<td>Self extinguishing plastics.</td>
</tr>
</tbody>
</table>

While cleaning the device, solvents (thinner, gasoline, acid etc.) or corrosive materials must not be used.

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<table>
<thead>
<tr>
<th>Input Type</th>
<th>Scale Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT100 Resistance Therm</td>
<td>-199...600°C</td>
<td>±0.2% (for full scale)</td>
</tr>
<tr>
<td>Thermometer EN 60751</td>
<td>-200...600°C</td>
<td>±1 digit</td>
</tr>
<tr>
<td>J (Fe-CuNi) Thermocouple EN 60584</td>
<td>-0.3...1300°C</td>
<td>±0.5% (for full scale)</td>
</tr>
<tr>
<td>K (NiCr-Ni) Thermocouple EN 60584</td>
<td>-0.3...1300°C</td>
<td>±0.5% (for full scale)</td>
</tr>
<tr>
<td>L (Fe-CuNi) Thermocouple EN 60584</td>
<td>-0.3...1300°C</td>
<td>±0.5% (for full scale)</td>
</tr>
<tr>
<td>R (Pt13Rh-Pt) Thermocouple EN 60584</td>
<td>-0.3...1300°C</td>
<td>±0.5% (for full scale)</td>
</tr>
</tbody>
</table>

ENVIRONMENTAL CONDITIONS

- Ambient/storage temperature: 0...+50°C/25...+70°C
- Max. Relative Humidity: Relative humidity 80% for temperatures up to 31°C decreasing linearly to 50% relative humidity at 40°C.
- Rated pollution degree: According to EN 60529; Front panel : IP65, Rear panel : IP20
- Height: Max. 200mm

Keep out of flammable, corrosive gases and chemicals at all times.

ELECTRICAL CHARACTERISTICS

- Power consumption: Max. 5VA
- Power supply: 90-250V AC, 50/60Hz or 24V AC ±%10, 50/60Hz or 9-30VDC / 7-24VAC ±%10 SMPS
- Line resistance: Max. 100 Ohm
- Data retention: EEPROM (minimum 10 years)
- EMC: EN 61326-1: 2013 (Performance criterion B satisfied for EN 61000-4-3 standard).
- Safety requirements: EN 61010-1: 2010 (Pollution degree 2, overvoltage category II)

OUTPUTS

<table>
<thead>
<tr>
<th>Output Type</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/A2</td>
<td>Relay: 250V AC, 2A (for resistive load), NO+NC (Control or Alarm2 Output selection).</td>
</tr>
<tr>
<td>A1</td>
<td>Relay: 250V AC, 2A (for resistive load), NO (Alarm1 and Cooling Control Output selection).</td>
</tr>
<tr>
<td>SSR</td>
<td>Max. SSR Output: 0-20mA, 4-20mA, 24V 20mA. Max. load resistance: 600 Ohm (12 bit 0.2% accuracy).</td>
</tr>
<tr>
<td>Relay output</td>
<td>Without load 30,000,000 switching; 250V AC, 2A (resistive load) 300,000 switching.</td>
</tr>
</tbody>
</table>

CONTROL

<table>
<thead>
<tr>
<th>Control type</th>
<th>Single Setpoint and Alarm Control.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control algorithm</td>
<td>On/Off, P, PI, PD (PID) selection.</td>
</tr>
<tr>
<td>A/D converter</td>
<td>14 bit.</td>
</tr>
<tr>
<td>Sampling time</td>
<td>Min. 100ms.</td>
</tr>
<tr>
<td>Proportional band</td>
<td>Can be adjusted between 50.0 and 100.0. If P=100.0, ON-OFF control is selected.</td>
</tr>
<tr>
<td>Control period</td>
<td>Can be adjusted between 1 and 125secs.</td>
</tr>
<tr>
<td>Hysteresis</td>
<td>Can be adjusted between 1 and 50°C/F.</td>
</tr>
<tr>
<td>Output power</td>
<td>Setpoint value ratio can be adjusted between %0 and %100.</td>
</tr>
</tbody>
</table>

HOUSING

<table>
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<tr>
<th>Housing type</th>
<th>Suitable for flush-panel mounting according to DIN 43 700.</th>
</tr>
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ENDA EUXX SERIES PROGRAMMING DIAGRAM

Entering from the "Programming Mode" to the "Running mode":
If no key is pressed within 20 seconds during "Programming Mode", the data is stored automatically and the "Running mode" is entered.
Alternatively, the same function occurs first pressing key is pressing "Programming Mode" is entered. Then environmental parameters are changed, data is recorded and "Running mode" is entered.

C SET/A SET
If key is pressed while holding key, the "Programming Mode" is entered.

C SET
If key is pressed while holding key, the "Programming Mode" is entered.

C A SET
If key is pressed while holding key, the "Programming Mode" is entered.
Mains supply cords shall meet the requirements of the EC directive for Safety.

For PT100 Sensor:
Use the correct compensating cable.
For J - K - T- S and R Thermocouples:
Do not connect the thermocouple cables to the wrong places at the input terminal.

For resistance (PT100) Sensor:
When using 2-wire PT100 sensors, as shown in the figures, make 8 and 9 terminals short circuit for EU4420, EU7420 and EU9420 devices, make 10 and 11 terminals short circuit for EU8420 devices.

**ALARM1 AND ALARM2 OUTPUT TYPES**

**Independent Alarm**
- R.T.P.= INDE
- SV = ON

**Deviation Alarm**
- R.T.P. = DE
- SV = ON

**Band Alarm**
- R.T.P. = BAND
- SV = ON

**Band Alarm With Inhibition**
- R.T.P. = BRN1

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**SETTING UP ALARM CONTROL AND SETPOINT VALUES**

1. **SV = SET point of CONT output set value**
   - (ASV min. = - beginning of scale)
   - (ASV max. = + end of scale)

2. **SV = ASV output set value**
   - (ASV min. = 0, ASV max. = 300)

3. **SV = Alarm output set value**
   - (ASV min. = -300, ASV max. = +300)

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**ERROR MESSAGES**

- PFR: Temperature sensor is broken.
- - - - -: Temperature value is higher than the scale.
- - - - -: Temperature value is broken or over temperature.
While pressing both side of the device in direction 1, push it in direction 2.

For removing the device from the panel:
- While pressing both side of the device in direction 1, push it in direction 2.

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PANEL CUT-OUT
EU4420
EU7420
EU8420
EU9420

Note:
1) While panel mounting, additional distance required for connection cables should be considered (except EU9420).
2) Panel thickness should be maximum 9mm for EU4420, 10mm for EU7420, 8mm for EU8420 and 6mm for EU9420.
3) If there is no free space at back side of the device, it would be difficult to remove it from the panel. Required minimum free space: EU4420 = 100mm, EU8420 = 90mm, EU9420 = 60mm.