



Please read this document carefully before using this product. The guarantee will be invalidated if the device is damaged by not following instructions detailed in the manual. The company shall not be responsible for any damage or losses however caused, which may be experienced as a result of the installation or use of this product.

ENDA ECVC411 Configurable Voltage Converter

Thank you for choosing ENDA ECVC411 Configurable Voltage Converter Devices.

- 4 Digits digital indicator.
- Easy to use front panel keypad.
- 0-100V AC/DC and 0-500V AC/DC input.
- AC, DC, or True RMS measurement feature.
- Programmable scale range between 1V to 9999V.
- 0-20mA, 4-20mA, 0-10V or 1-5V output selection.
- Triple isolation between input, output and power.
- Isolated Modbus RTU communication (optional).
- Keylock feature.
- CE marked according to European Norms.



RoHS
Compliant



ORDER CODE

ECVC411-xV-RSI

| | | | |
|---------------------------|--------------------------------|---------------------------------|-----------------------|
| Product Basic Code | | Communication (Optional) | |
| ECVC411 | Configurable Voltage Converter | — | N/A |
| | | RSI | Isolated Modbus Rs485 |
| Supply Voltage | | | |
| UV | 90-250V AC | | |
| LV | 10-30V DC/8-24V AC | | |

| INPUTS | |
|------------------------|---|
| Input Type | If the <i>ItYP</i> parameter set to <i>u500</i> , 0V...500V AC/DC input is used for 0V...500V AC/DC scale measurement. If the <i>ItYP</i> parameter set to <i>u100</i> , 0V...100V AC/DC input is used for 0V...100V AC/DC scale measurement. If the <i>ItYP</i> parameter set to <i>uErr</i> , 0-100V AC/DC input is used with voltage transformer measurement and <i>uErr</i> parameter determines the scale. |
| Scale | AC and RMS If the <i>ItYP</i> parameter set to <i>u500</i> , the scale range is 0V...500V AC/DC. If the <i>ItYP</i> parameter set to <i>u100</i> , the scale range is 0V...100V AC/DC. If the <i>ItYP</i> parameter set to <i>uErr</i> , the scale range is 0-9999V AC/DC (<i>uErr</i> parameter determines the scale. ie: scale range will be -999V...1000V if the <i>uErr</i> parameter is set to 1000). |
| | DC If the <i>ItYP</i> parameter set to <i>u500</i> , the scale range is -500V...500V DC. If the <i>ItYP</i> parameter set to <i>u100</i> , the scale range is -100V...100V DC. If the <i>ItYP</i> parameter set to <i>uErr</i> , the scale range is -9999-9999V DC (<i>uErr</i> parameter determines the scale. ie: scale range will be -999V...1000V if the <i>uErr</i> parameter is set to 1000). |
| Sensitivity | 0.01V |
| Accuracy | AC/RMS DC ±1% (Full scale) (±2% for square waveform). ±1% (Full scale) |
| Input Range | 0...500V AC/DC (Device will be damaged if more than ±1250 DC voltages applied). 0...100V AC/DC (Device will be damaged if more than ±250 DC voltages applied). |
| Input Impedance | 880kΩ for 0-500V input. 177kΩ for 0-100V input. |
| Frequency Range | DC, 10Hz-200Hz (10Hz-70Hz for square waveform). |

| ELECTRICAL CHARACTERISTICS | |
|----------------------------|--|
| Supply Voltage | ECVC411-UV ; 90-250V AC, 50/60Hz. ECVC411-LV ; 10-30V DC / 8-24V AC, 50/60Hz. |
| Power Consumption | Max. 7VA. |
| Wiring | 2.5mm ² screw-terminal connections. |
| EMC | EN 61326-1: 2013 |
| Safety Requirements | EN 61010-1: 2010 (Pollution degree 2, overvoltage category II) |

| OUTPUTS | |
|-----------|---|
| mA | 0-20mA DC or 4-20mA DC, ±0,5% (load resistance max. 500Ω). |
| V | 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 (with no icing). |
| 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 ; 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. | |

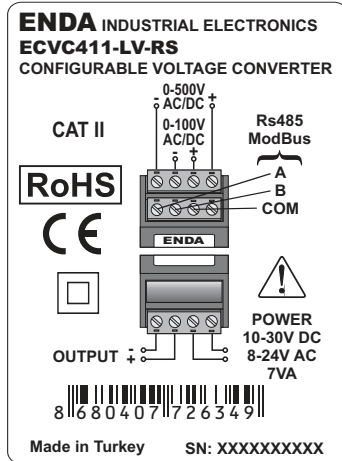
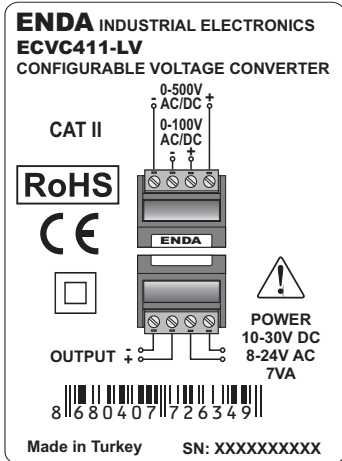
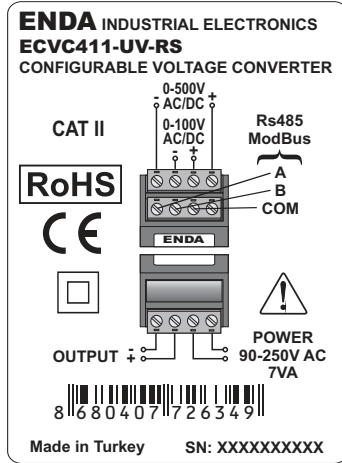
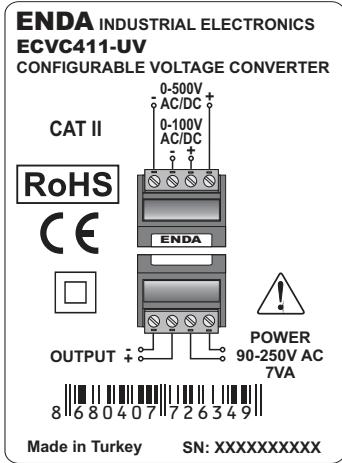
| HOUSING | |
|--|---------------------------------|
| Housing Type | Rail mounted (EN60715,TH35). |
| Dimensions | W25xH97xD115mm. |
| Weight | Approx.150 g (After packaging). |
| Enclosure Material | Self extinguishing plastics. |
| Avoid any liquid contact when the device is switched on. DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents. | |



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CONNECTION DIAGRAM



i Please see "Modbus Connection Diagram" on page 4.

Equipment is protected throughout by DOUBLE INSULATION

Holding screw 0.4-0.5Nm.

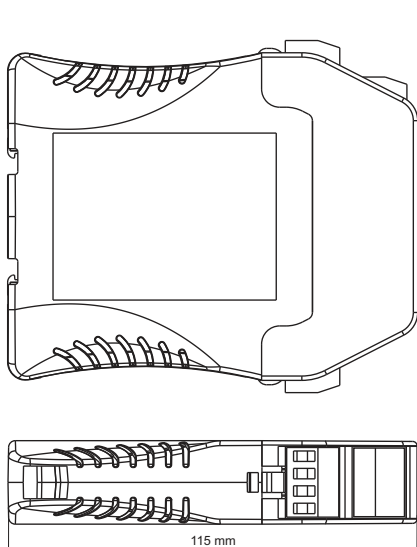


- 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
- 2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

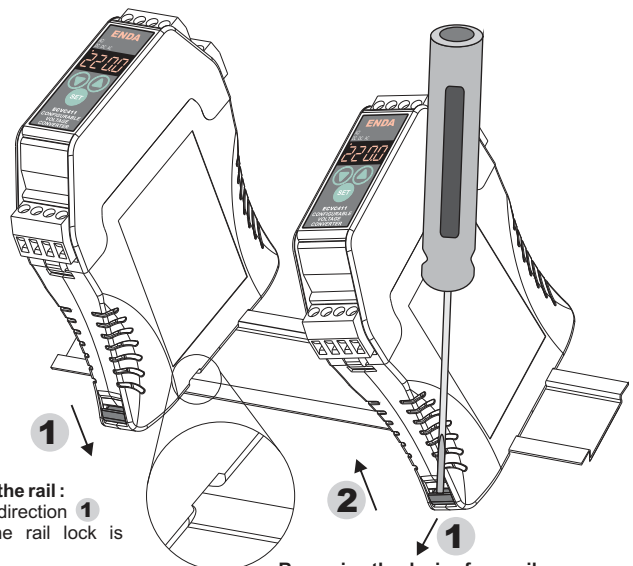


ENDA ECVC411 Series converters are rail mounted devices. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of the cables that are connected to the device must be free of energy. The device must be protected against inadmissible humidity, vibrations, severe soiling and make sure that the operation temperature is not exceeded. All input and output lines that are not connected to the supply network must be laid out as shielded and twisted cables. These cables should not be close to the power cables or components. The installation and electrical connections must be carried on by a qualified staff and must be according to the relevant locally applicable regulations.

DIMENSIONS



MONTAGE



Mounting the device on the rail :
- Push the device to rail in direction **1** and make sure that the rail lock is interlocked to rail.

Removing the device from rail :
- Push the rail lock in direction **1** with a screwdriver and pull the device in direction **2**.

TERMS



- AC/DC LED lit if the True RMS input type is selected.
- DC LED lit if the DC input type is selected.
- AC LED lit if the AC input type is selected.

- Program Key** (SET) Provides to display the parameter value and setting up the selected parameter value in "Programming Mode".
- Increment Key** (▲) Allows navigating to the previous parameter and increase the current parameter value in "Programming Mode". Parameter value will increase rapidly when continuously pressed. Also allows to lock or unlock the keypad in "Running Mode".
- Decrement Key** (▼) Allows navigating to the next parameter and decrease the current parameter value in "Programming Mode". Parameter value will decrease rapidly when continuously pressed. Also allows setting the default value in "Running Mode".

PROGRAMMING MODE

22.00 During "Running Mode", by pressing to (▼) and (▲) keys together for 3 seconds "Programming Mode" is entered. While in "Programming Mode", if the (▼) and (▲) keys are pressed together for 3 seconds or no operation is performed, returns to the "Running Mode".

1tYP **Input Type Selection.**
If *tYP* parameter set to *u500*, 0V...500V AC/DC input is used.
If *tYP* parameter set to *u100*, 0V...100V AC/DC input is used.
If *tYP* parameter set to *utrr*, 0-100V AC/DC input is used with voltage transformer measurement and *utrr* parameter determines the scale.

utrr **Voltage Conversion Ratio.**
The measurement scale is determined with the *utrr* parameter when 0-100V AC/DC input is using. Can be set between *1*(/100) and *9999*(/100).
ie: Scale range will be 0V...1000V if the *utrr* parameter is set to *1000*.

tYPE **Measurement Method.**
Can be set selected as *AC*, *dC*, or *ACdC*.
The LEDs on the top side of the display indicates the selected measurement method.

dPnt **Decimal Point Selection.**
Decimal place changes automatically depended on measurement value. The decimal place can be set as follows:
If less than 10, (*0.000*), (*0.00*), (*0.0*) or (*0*).
If between 10 and 100, (*0.00*), (*0.0*) or (*0*).
If between 100 and 1000, (*0.0*) or (*0*).
If over 1000, (*0*).

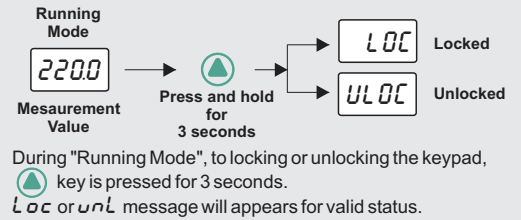
OPt n **Sampling Time.**
Sampling time selections can be set as follows in seconds.
1 = 250ms; *2* = 500ms; *3* = 750ms; *4* = 1 second.

Adr S **Device Address.**
Can be set between *1* and *247*
⚠ For Modbus featured devices only.

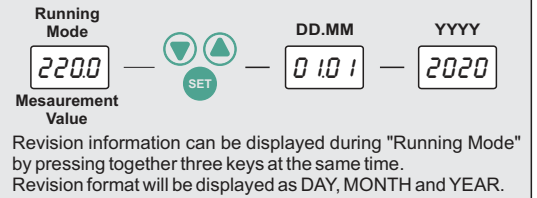
bAUd **Baud Rate.**
Baud rate value can be set as follows.
oFF, *1200*, *2400*, *4800*, *9600*, *19200*, *38400*, *57600* or *115200*.
⚠ For Modbus featured devices only.

AtYP **Analog Output Selection.**
Analog output type selection can be set as follows:
0-20 mA, *4-20* mA, *0-10* V or *1-5* V.

LOCKING AND UNLOCKING THE KEYPAD



DISPLAYING THE REVISION NUMBER



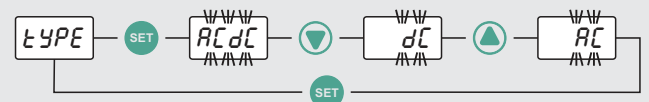
ERROR MESSAGES

- The measured voltage value is higher than the scale.
- The measured voltage value is lower than the scale.

DEFAULT SETTINGS

Power-up the device by pressing and holding down the (▼) key for factory defaults. *dPAr* message will be displayed if the operation success.

PARAMETER SETTING DIAGRAM



When holding the (SET) key, selected parameter flashes and desired value can be adjusted by using increment and decrement navigation keys. If (SET) key is pressed or no operation is performed for 3 seconds, the latest change(s) stored, and returned to the parameter.

| | <i>AC</i> | <i>dC</i> | <i>ACdC</i> (rms) |
|--|------------------------|-----------|------------------------|
| | $A \frac{1}{\sqrt{2}}$ | 0.000 | $A \frac{1}{\sqrt{2}}$ |
| | A | 0.000 | A |
| | $A \frac{1}{\sqrt{3}}$ | 0.000 | $A \frac{1}{\sqrt{3}}$ |

ENDA ECVC411 MODBUS PROTOCOL ADDRESS MAP

| Holding Register Address | | Data Type | Data Content | Parameter Name | Read / Write Permission | Default Value |
|--------------------------|--------|-----------|--|----------------|-------------------------|---------------|
| Decimal | Hex | | | | | |
| 0000d | 0x0000 | word | Input type selection (<i>u500</i> , <i>u100</i> , <i>utrr</i>). | <i>itYP</i> | R / W | <i>utrr</i> |
| 0001d | 0x0001 | word | Voltage conversion ratio. | <i>utrr</i> | R / W | <i>100</i> |
| 0003d | 0x0003 | word | Measurement method (0= <i>AC</i> , 1= <i>dc</i> , 2= <i>ACdc</i>). | <i>tYPE</i> | R / W | <i>ACdc</i> |
| 0004d | 0x0004 | word | Decimal point selection (0= <i>000</i> , 1= <i>00</i> , 2= <i>0</i>). | <i>dPnt</i> | R / W | <i>00</i> |
| 0005d | 0x0005 | word | Sampling time duration (1= 250ms, 2= 500ms, 3= 750ms, 4= 1 seconds). | <i>OPtn</i> | R / W | <i>4</i> |
| ¹ 0006d | 0x0006 | word | RS485 Modbus device address (Can be set between 1 and 247). | <i>AdrS</i> | R / W | <i>1</i> |
| ¹ 0007d | 0x0007 | word | Baud rate (0= <i>OFF</i> , 1= <i>1200</i> , 2= <i>2400</i> , 3= <i>4800</i> , 4= <i>9600</i> , 5= <i>19200</i> , 6= <i>38400</i> , 7= <i>57600</i> , 8= <i>115200</i>) | <i>bAUD</i> | R / W | <i>OFF</i> |
| 0008d | 0x0008 | word | Analog output type (0= <i>0-20mA</i> , 1= <i>4-20mA</i> , 2= <i>0-10V</i> , 3= <i>1-5V</i>). | <i>AtYP</i> | R / W | <i>0-20</i> |

1) 6th and 7th addresses are used only in ECVC-xx-xx-RS (Modbus) devices.

