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.

CE

RoHS Compliant

ORDER CODE

ECVC411 - UV - RS

Product Basic Code	
Configurable Voltage Converter	ECVC411

Communication (optional)	
—	N/A
RS	Isolated Modbus Rs485

Supply Voltage	
UV	90-250V AC
LV	10-30V DC/8-24V AC

INPUTS		
Input Type		If the ItYP parameter set to u500, 0V...500V AC/DC input is used for 0V...500V AC/DC scale measurement. If the ItYP parameter set to u 100, 0V...100V AC/DC input is used for 0V...100V AC/DC scale measurement. If the ItYP parameter set to utrr, 0-100V AC/DC input is used with voltage transformer measurement and utrr parameter determines the scale.
Scale	**AC and RMS**	If the ItYP parameter set to u500, the scale range is 0V...500V AC/DC. If the ItYP parameter set to u 100, the scale range is 0V...100V AC/DC. If the ItYP parameter set to utrr, the scale range is 0-9999V AC/DC (utrr parameter determines the scale. ie: scale range will be -999V...1000V if the utrr parameter is set to 1000).
	DC	If the ItYP parameter set to u500, the scale range is -500V...500V DC. If the ItYP parameter set to u 100, the scale range is -100V...100V DC. If the ItYP parameter set to utrr, the scale range is -9999-9999V DC (utrr parameter determines the scale. ie: scale range will be -999V...1000V if the utrr 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	2.5mm² 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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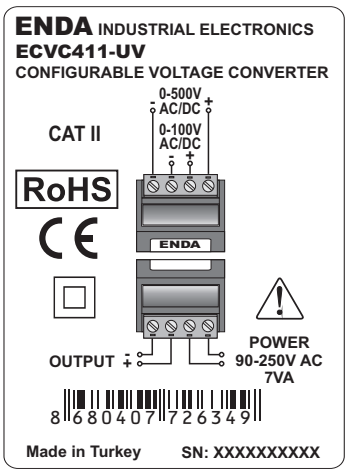
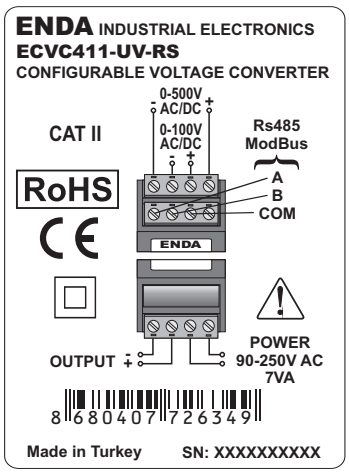
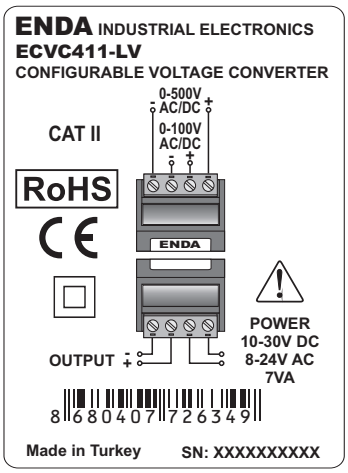
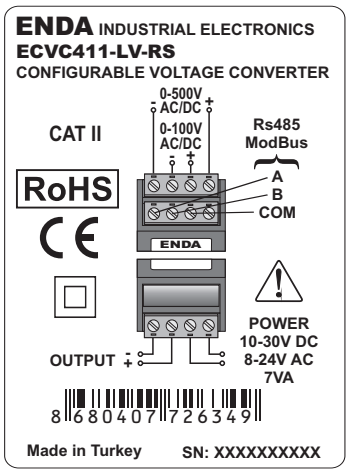
CONNECTION DIAGRAM









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

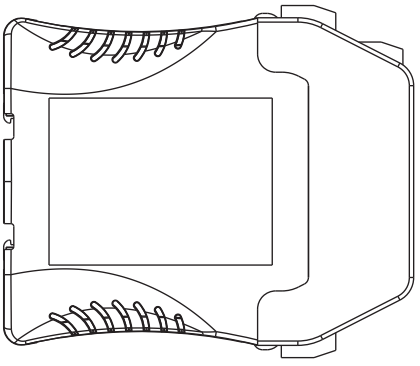
Equipment is protected throughout by DOUBLE INSULATION

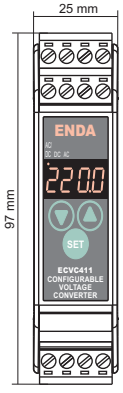
Holding screw 0.4-0.5Nm.

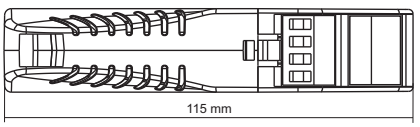
1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

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.

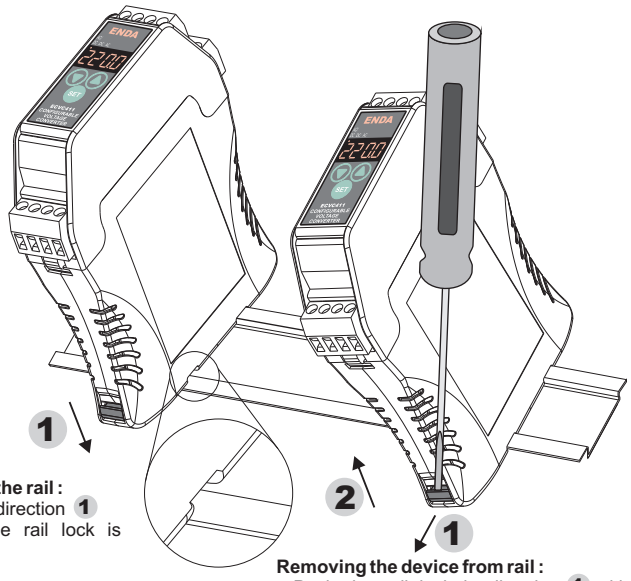
DIMENSIONS







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 .

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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".

LOCKING AND UNLOCKING THE KEYPAD

Running Mode: 220.0 (Measurement Value) → Press and hold for 3 seconds → LOC (Locked) / ULOC (Unlocked)

During "Running Mode", to locking or unlocking the keypad, ▲ key is pressed for 3 seconds.
LOC or UNL message will appears for valid status.

DISPLAYING THE REVISION NUMBER

Running Mode: 220.0 (Measurement Value) — (▼ ▲ SET) — DD.MM: 01.01 — YYYY: 2020

Revision information can be displayed during "Running Mode" by pressing together three keys at the same time.
Revision format will be displayed as DAY, MONTH and YEAR.

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.

PROGRAMMING MODE

220.0 + ▼ ▲ — 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".

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

Voltage Conversion Ratio.
utrr — 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.

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

Decimal Point Selection.
dPnt — 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, (00.00), (00.0) or (00).
If between 100 and 1000, (000.0) or (000).
If over 1000, (0000).

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

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

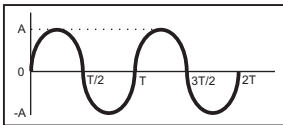
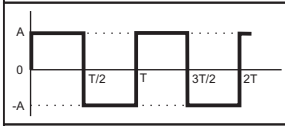
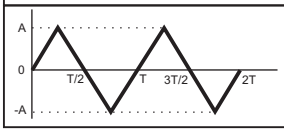
Baud Rate.
bAUd — Baud rate value can be set as follows.
oFF, 1200, 2400, 4800, 9600, 19200, 38400, 57600 or 115200.
⚠ **For Modbus featured devices only.**

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

PARAMETER SETTING DIAGRAM

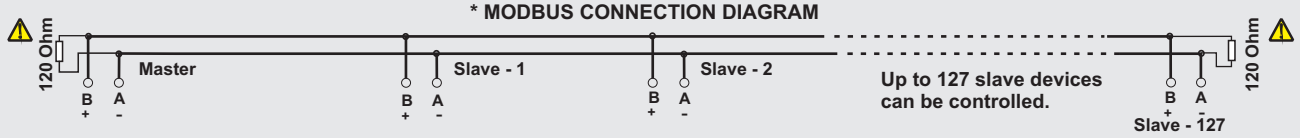
tYPE — SET — ACdC — ▼ — dC — ▲ — AC — SET

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.

	AC	dC	ACdC (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 (u500 , u 100 , utrr).	ItYP	R / W	utrr
0001d	0x0001	word	Voltage conversion ratio.	utrr	R / W	100
0003d	0x0003	word	Measurement method (0=AC , 1=dC , 2=ACdC).	tYPE	R / W	ACdC
0004d	0x0004	word	Decimal point selection (0=0.00, 1=0.0, 2=0).	dPnt	R / W	0.0
0005d	0x0005	word	Sampling time duration (1= 250ms, 2= 500ms, 3= 750ms, 4= 1 seconds).	OPtn	R / W	4
1 0006d	0x0006	word	RS485 Modbus device address (Can be set between 1 and 247).	AdrS	R / W	1
1 0007d	0x0007	word	Baud rate (0=OFF, 1= 1200, 2=2400, 3=4800, 4=9600, 5= 19200 , 6=38400, 7=57600, 8= 115200)	bAUd	R / W	OFF
0008d	0x0008	word	Analog output type (0=0-20mA, 1=4-20mA, 2=0- 10V, 3= 1-5V).	AtYP	R / W	0-20
1) 6th and 7th addresses are used only in ECVC-xx-xx-RS (Modbus) devices.						

*** 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.*