



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 ECC411 Configurable Current Converter

Thank you for choosing ENDA ECC411 Configurable Current Converter Devices.

- 4 Digits digital indicator.
- Easy to use front panel keypad.
- 5A/60mV, CT20/30 current transformer/60mV or 1A input (specify at order).
- AC, DC, or True RMS measurement feature.
- Programmable scale range between 5A to 9999A.
- 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.



R^oHS
Compliant

ORDER CODE

ECCC411-CT-UV-RS

Product Basic Code		Communication (optional)	
Configurable Current Converter	ECCC411	Blank	N/A
		RS	Isolated Modbus RS485
Input Type		Supply Voltage	
5A or 60mV	----	UV	90-250V AC
CT20/30 or 60mV	CT	LV	10-30V DC/8-24V AC
1A	X1		



CT20/30 current transformer must be ordered separately if required.

INPUTS

Input Type	For ECC411-xV : 5A or 60mV For ECC411-CT-xV : CT20/30 Current transformer or 60mV For ECC411-X1-xV : 1A												
Scale	<table border="1"> <tr> <td>AC and RMS</td> <td> If input type 5A or 60mV ; the scale range is 0A...9999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 5 , scale range is 0A...5A). If input type 1A ; the scale range is 0A...9999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 1 , scale range is 0A...1A). If input type CT20/30 or 60mV ; If the <i>i t y p</i> = <i>C T 2 0</i> scale range is 0A...300A, if set to <i>C T 3 0</i> scale range is 0A...120A (<i>t u r n</i> parameter determines the scale. ie: scale range will be 0A...300A / 0A...120A if the <i>t u r n</i> parameter is set to 1). If the <i>i t y p</i> = <i>S H n t</i> scale range is 0A...9999A (<i>c t e r r</i> parameter determines the scale. ie: scale range will be 0A...5A if the <i>c t e r r</i> parameter is set to 5). </td> </tr> <tr> <td>DC</td> <td> If input type 5A or 60mV ; the scale range is -999A...999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 5 , scale range is -5A...5A) If input type 1A ; the scale range is -999A...999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 1 , scale range is -1A...1A). If input type CT20/30 or 60mV ; DC measurement not possible with current transformer. If the <i>i t y p</i> = <i>S H n t</i> scale range is -999A...999A (<i>c t e r r</i> parameter determines the scale. ie: scale range will be -5A...5A if the <i>c t e r r</i> parameter is set to 5). </td> </tr> </table>	AC and RMS	If input type 5A or 60mV ; the scale range is 0A...9999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 5 , scale range is 0A...5A). If input type 1A ; the scale range is 0A...9999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 1 , scale range is 0A...1A). If input type CT20/30 or 60mV ; If the <i>i t y p</i> = <i>C T 2 0</i> scale range is 0A...300A, if set to <i>C T 3 0</i> scale range is 0A...120A (<i>t u r n</i> parameter determines the scale. ie: scale range will be 0A...300A / 0A...120A if the <i>t u r n</i> parameter is set to 1). If the <i>i t y p</i> = <i>S H n t</i> scale range is 0A...9999A (<i>c t e r r</i> parameter determines the scale. ie: scale range will be 0A...5A if the <i>c t e r r</i> parameter is set to 5).	DC	If input type 5A or 60mV ; the scale range is -999A...999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 5 , scale range is -5A...5A) If input type 1A ; the scale range is -999A...999A (<i>c t e r r</i> parameter determines the scale. ie: if the <i>c t e r r</i> is 1 , scale range is -1A...1A). If input type CT20/30 or 60mV ; DC measurement not possible with current transformer. If the <i>i t y p</i> = <i>S H n t</i> scale range is -999A...999A (<i>c t e r r</i> parameter determines the scale. ie: scale range will be -5A...5A if the <i>c t e r r</i> parameter is set to 5).								
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Sensitivity	0.02 X <i>c t e r r</i> (ie: if the <i>c t e r r</i> parameter set to 5 , sensivity is 0.01A)												
Accuracy	<table border="1"> <tr> <td>AC/RMS</td> <td>±1% (Full scale) (±2% for square waveform).</td> </tr> <tr> <td>DC</td> <td>±1% (Full scale)</td> </tr> </table>	AC/RMS	±1% (Full scale) (±2% for square waveform).	DC	±1% (Full scale)								
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If input type 5A	: -5A...5A	(Device will be damaged if 10A and above currents applied).											
If input type CT20/30	: 0...150mA												
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 Voltage	ECCC411-UV ; 90-250V AC, 50/60Hz. ECCC411-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

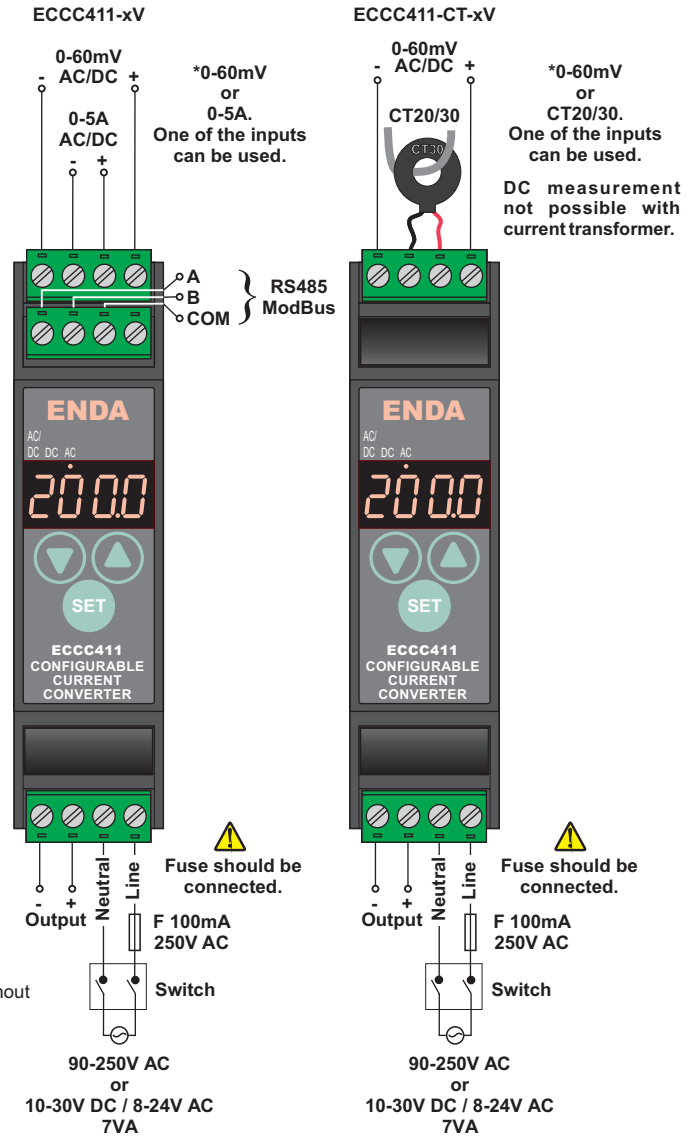
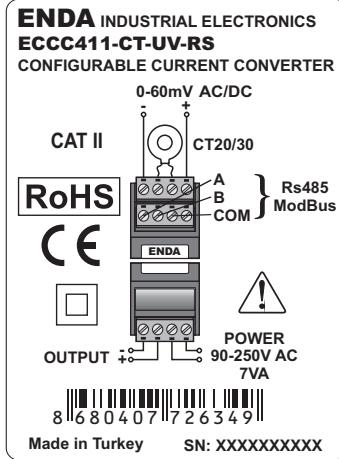
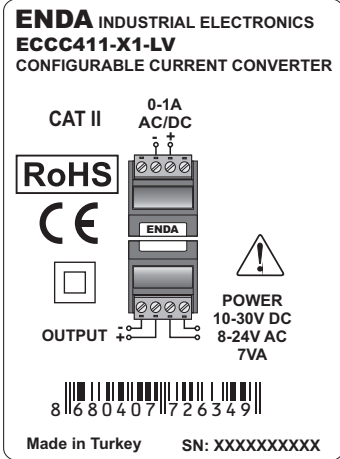
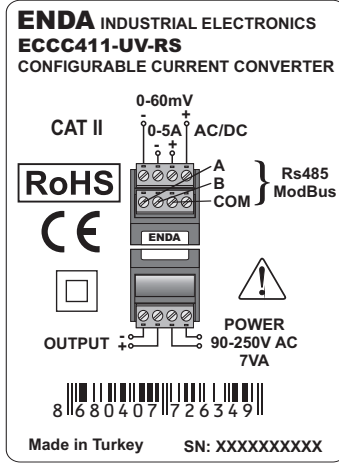
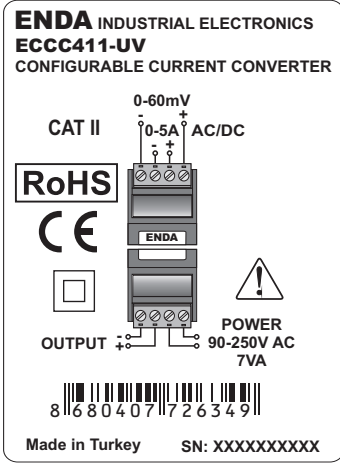
Housing Type	Rail mounted (EN60715, TH35).
Dimensions	W25xH97xD115mm.
Weight	Approx.150 g (After packaging).
Enclosure Material	Self extinguishing plastics.

⚠ 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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Şerifali Mah. Barbaros Cad. No:18 Y.Dudullu 34775
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Tel : +90 216 499 46 64 Pbx. Fax : +90 216 365 74 01
url : www.enda.com.tr

CONNECTION DIAGRAM



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

Equipment is protected throughout by DOUBLE INSULATION

Holding screw 0.4-0.5Nm.

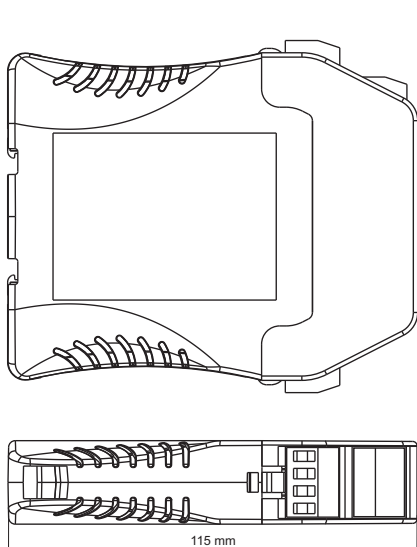


- 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
- 2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

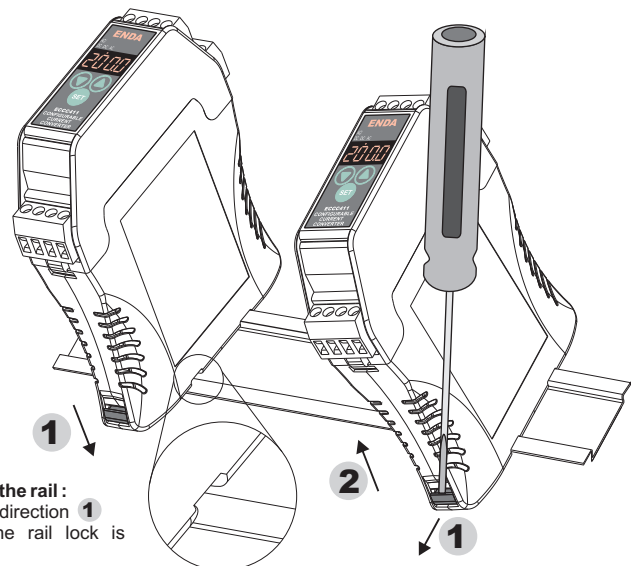


ENDA ECCC411 Series converters are rail mounted devices. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of the cables that are connected to the device must be free of energy. The device must be protected 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

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

Current Conversion Ratio.
Can be set between 5 (5) and 9999 (5).
(*ctrr* parameter will not be displayed when the input type (*ityp*) set as *ct20* or *ct30* in "CT" input devices).

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

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).

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

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

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.

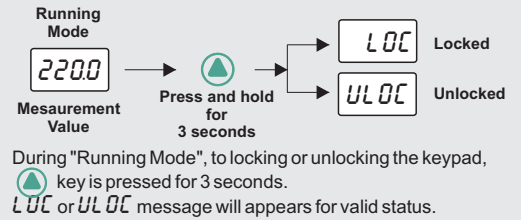
Input Type (In devices with input type "CT").
Can be set to *ct20*, *ct30*, or *shnt*. 60mV input is used if *shnt* is selected.
turn parameter will not be displayed if the *shnt* is selected.

Number of Windings (In devices with input type "CT")
The number of windings (*turn*) of the current cable getting through the CT20/30 current transformer. Can be set between 1 and 10.

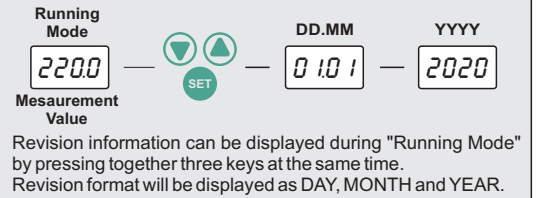
	<i>turn</i>	1	2	3	4	5	6	7	8	9	10
CT20	lin max(A)	300	150	100	75	60	50	42,8	37,5	33,3	30
CT30	lin max(A)	120	60	40	30	24	20	17,1	15	13,3	12

Analog output selection.
One of the analog output selections can be set as follows.
0-20 mA, 4-20 mA, 0-10V, 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 ECC411 MODBUS PROTOCOL ADDRESS MAP

Holding Register Address		Data Type	Data Content	Parameter Name	Read / Write Permission	Default Value
Decimal	Hex					
0000d	0x0000	word	Current conversion ratio.	<i>ctrr</i>	R / W	5
0001d	0x0001	word	Measurement method (0=AC , 1=dC , 2=ACdC).	<i>type</i>	R / W	ACdC
0002d	0x0002	word	Decimal point selection (0=0 , 1=0.0 , 2=0.00 , 3=0.000).	<i>dpnt</i>	R / W	0.00
0003d	0x0003	word	Sampling time duration (1= 250ms, 2= 500ms, 3= 750ms, 4= 1 seconds).	<i>optn</i>	R / W	4
0004d	0x0004	word	RS485 Modbus device address (Can be set between 1 and 247).	<i>addr5</i>	R / W	1
0005d	0x0005	word	Baud rate (0=OFF, 1= 1200, 2=2400, 3=4800, 4=9600, 5= 19200, 6=38400, 7=57600, 8= 115200)	<i>baud</i>	R / W	OFF
*0006d	0x0006	word	Input type. (0= CT20 , 1= CT30 , 2= SHnt)	<i>ityp</i>	R / W	CT20
*0007d	0x0007	word	Number of Windings. The number of windings of the current cable getting through the CT20/30 current transformer. Can be set between 1 and 10.	<i>turn</i>	R / W	1
0008d	0x0008	word	Analog output type (0=0-20mA, 1=4-20mA, 2=0-10V, 3=1-5V).	<i>atyp</i>	R / W	0-20

*6th and *7th addresses are used only in ECCC-CT-xV-RS (input type CT20/30 current transformer) devices.

