



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).
- Programmable scale range between 5A to 9999A.
- Isolated Modbus RTU communication (optional).
- AC, DC, or True RMS measurement feature.
- Triple isolation between input, output and power.
- Keylock feature.
- 0-20mA, 4-20mA, 0-10V or 1-5V output selection.
- CE marked according to European Norms.



RoHS
Compliant

ORDER CODE

ECCC411-xV-CT-RSI

Product Basic Code		Communication (Optional)	
ECCC411	Configurable Current Converter	Blank	N/A
		RSI	Isolated Modbus Rs485
Supply Voltage		Input Type	
UV	90-250V AC	Blank	5A or 60mV
LV	10-30V DC/8-24V AC	CT	CT20/30 veya 60mV
		X1	1A



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	AC and RMS If input type 5A or 60mV ; the scale range is 0A...9999A (cterr parameter determines the scale. ie: if the cterr is 5, scale range is 0A...5A). If input type 1A ; the scale range is 0A...9999A (cterr parameter determines the scale. ie: if the cterr is 1, scale range is 0A...1A). If input type CT20/30 or 60mV ; If the ityp = ct20 scale range is 0A...300A, if set to ct30 scale range is 0A...120A (turn parameter determines the scale. ie: scale range will be 0A...300A / 0A...120A if the turn parameter is set to 1). If the ityp = 5hnt scale range is 0A...9999A (cterr parameter determines the scale. ie: scale range will be 0A...5A if the cterr parameter is set to 5). DC If input type 5A or 60mV ; the scale range is -999A...999A (cterr parameter determines the scale. ie: if the cterr is 5, scale range is -5A...5A) If input type 1A ; the scale range is -999A...9999A (cterr parameter determines the scale. ie: if the cterr is 1, scale range is -1A...1A). If input type CT20/30 or 60mV ; DC measurement not possible with current transformer. If the ityp = 5hnt scale range is -999A...9999A (cterr parameter determines the scale. ie: scale range will be -5A...5A if the cterr parameter is set to 5).
Sensitivity	0.02 X cterr (ie : if the cterr parameter set to 5, sensivity is 0.01A)
Accuracy	AC/RMS DC ±1% (Full scale) (±2% for square waveform). ±1% (Full scale)
Input Range	If input type 60mV : -60mV...60mV (Device will be damaged if 50V and above voltages applied). If input type 1A : -1A...1A (Device will be damaged if 2A and above currents applied). 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	40kΩ for 60mV input. 90mΩ for 1A input. 12mΩ for 5A input. 600mΩ for CT20/30 input.
Frequency Range	DC, 10Hz-200Hz (10Hz-70Hz for square waveform).



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.

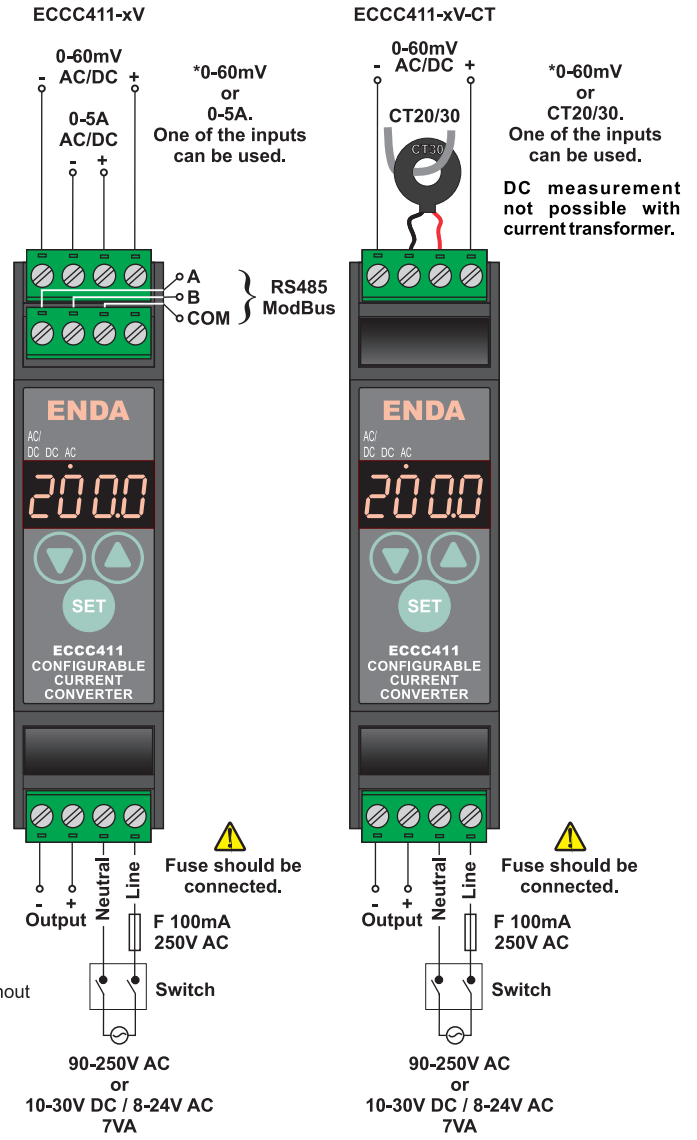
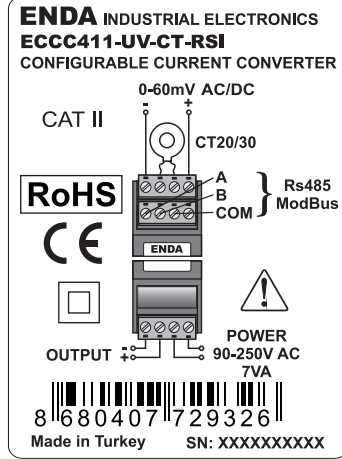
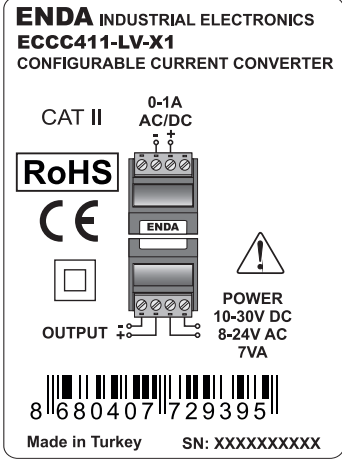
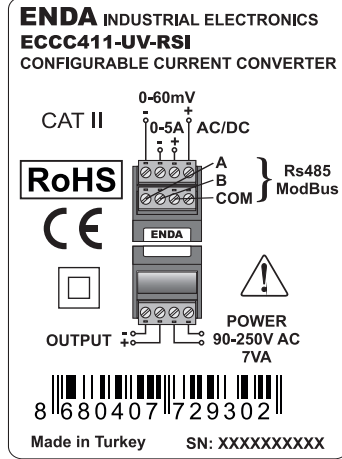
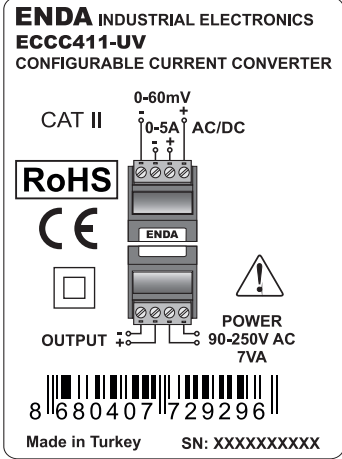
⚠ Avoid any liquid contact when the device is switched on.
DO NOT clean the device with solvent (thinner, gasoline, acid etc.) and / or abrasive cleaning agents.



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CONNECTION DIAGRAM



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

Equipment is protected throughout by DOUBLE INSULATION

Holding screw 0.4-0.5Nm.

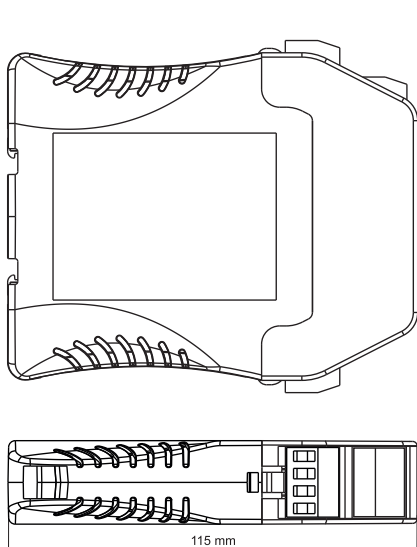


- 1) Mains supply cords shall meet the requirements of IEC 60227 or IEC 60245.
- 2) In accordance with the safety regulations, the power supply switch shall bring the identification of the relevant instrument and it should be easily accessible by the operator.

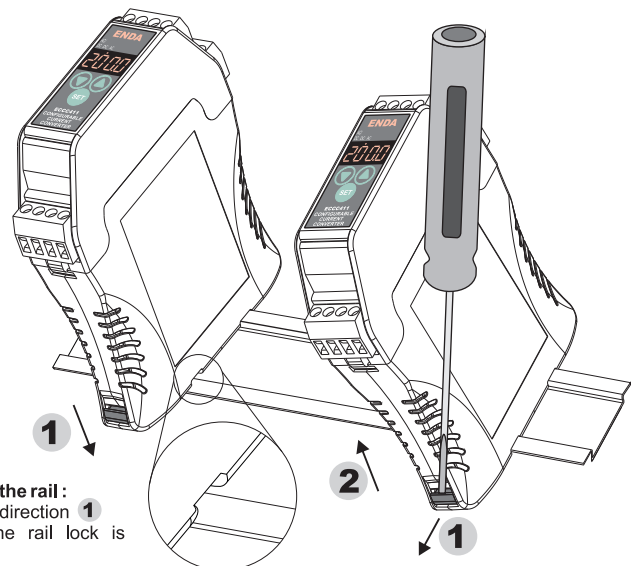


ENDA ECCC411 Series converters are rail mounted devices. Make sure that the device is used only for intended purpose. The shielding must be grounded on the instrument side. During an installation, all of the cables that are connected to the device must be free of energy. The device must be protected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

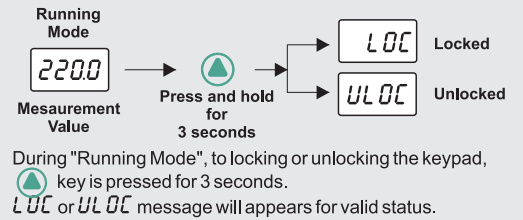
Removing the device from rail :
- Push the rail lock in direction **1** with a screwdriver and pull the device in direction **2**.

TERMS

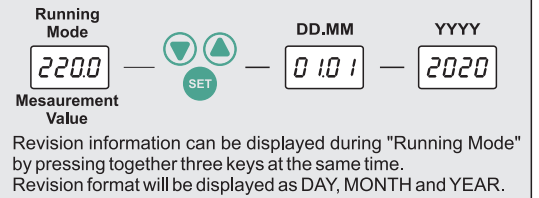


- AC/DC LED lit if the True RMS input type is selected.
- DC LED lit if the DC input type is selected.
- AC LED lit if the AC input type is selected.
- Program Key** (SET) Allows to monitoring and setting up the selected parameter in "Programming Mode".
- Increment Key** (▲) Allows navigating to the 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



DISPLAYING THE REVISION NUMBER



ERROR MESSAGES

- The current value over than the scale value.
- The current lower over than the scale value.

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

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 (itype) 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.
0FF, 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.
cturn parameter will not be displayed if the SHnt is selected.

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

	cturn	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.

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.

	AC	dC	ACdC (rms)
	$A \frac{1}{\sqrt{2}}$	0.000	$A \frac{1}{\sqrt{2}}$
	0.308 A	$A \frac{2}{\pi}$	$A \frac{1}{\sqrt{2}}$
	0.386 A	$A \frac{1}{\pi}$	$A \frac{1}{2}$
	A	0.000	A
	$A \frac{1}{2}$	$A \frac{1}{2}$	$A \frac{1}{\sqrt{2}}$
	$A \sqrt{\frac{d}{T} - \frac{d^2}{T^2}}$	$A \frac{d}{T}$	$A \sqrt{\frac{d}{T}}$
	$A \frac{1}{\sqrt{3}}$	0.000	$A \frac{1}{\sqrt{3}}$

ENDA ECC411 KONFIGURABLE CURRENT CONVERTER 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
¹ 0004d	0x0004	word	RS485 Modbus device address (Can be set between 1 and 247).	<i>Adrs</i>	R / W	1
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
² 0006d	0x0006	word	Input type. (0= CT20 , 1= CT30 , 2= SHnt)	<i>ityp</i>	R / W	CT20
² 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

- 1) 4th and 5th addresses are used only in ECC411-RS (Modbus) devices.
2) 6th and 7th addresses are used only in ECC411-CT (input type CT20/30 current transformer) devices.

ENDA ECC411-RSI KONFIGURABLE CURRENT CONVERTER INPUT REGISTERS FOR OUTPUT DEVICES

Input Register Addresses		Data Type	Data Content	Parameter Name	Read / Write Permission
Decimal	Hex				
0000d	0x0000	word	Measured current value	--	Read Only
0001d	0x0001	word	Decimal point of measured current value	--	Read Only
0002d	0x0002	word	Specified analog output value	--	Read Only

MODBUS CONNECTION DIAGRAM

