

## EC.441 energy counter

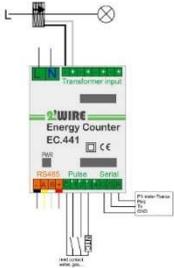


The Energy Counter has 4 inputs for counting, measuring and recording incoming pulses and/or temperature values for the 2-Wire NTC sensor. The supplied power coils are connected to the 4 upper entrances. The energy counter is linked to the web server via the RS.485 Modbus connection. The configuration is done from the web server. The EC.441 module is wired, or wirelessly over the RG.016 module, coupled with the MEMo webserver. Multiple EC.441 modules can be connected to a Memo.

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### 1. Connect:

**Power supply :** connect 230 Volt reference voltage at the top  
**RS485 Modbus:** Connect 4x : G(-),A,B,+



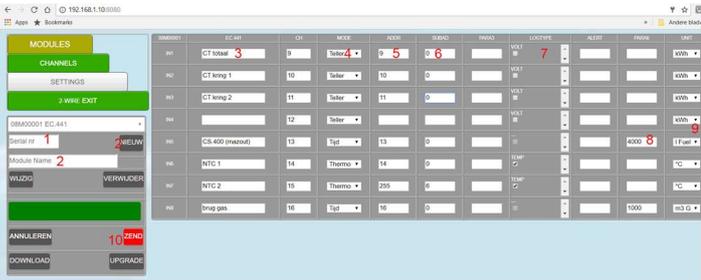
- CT clamp (1-4):**
- Black wire: - clamp
  - White wire : + clamp
- Connecting wires CT : side of the load
- Pulse and inputs (4-8): 4 analog/binary/inputs for:**
- Potential-free contacts (time or counting)
  - NTC feeler (from 2-Wire)

### Comments :

- inputs are optically separated
- extend inputs to a few meters.
- The 4 CTs and the 230Volt input always connect **to the same phase.**
- 4 galvanically isolated pulse inputs 0-5v/2mA, minimum on/off time pulses = 100msec; Min. Pulse duration 20msec; Max.4... 5 pulses per second

### 2. Configuration via tablet of PC:

In the web server, go to /configuration/modules:



1. Enter the serial number printed on the module: Vb.. **08M00001**
2. Give a name to the meter: Vb.. **EC.441** and press **"NEW"**
3. A table appears with 8 rows, 1 row per measuring channel. The first 4 are the power coils, the next 4 are the binary/analog inputs, give a recognizable name to the each energy channel: Ex. CT Total; CT circuit 1; NTC 1;...
4. Always choose mode: **COUNTER** for the CT inputs and for the impulse inputs:
  - **Thermo** for the NTC sensor inputs (From MEMo you can also put THSensor but the unit on °C),
  - **COUNTER** (TELLER) for counting pulses
  - **TIME** (TIJD)for measuring pulse times,...

*Note: The EC.441 can indeed also measure temperatures and log in a range of -15° to +85°. The temperature sensor can be ordered from 2-WIRE. (accuracy 5%)*

In the example below are 4 temperature sensors each with their own Modbus address and subadres 0, so here there are 4 separate log channels each with their own temperature chart.



### MULTIPLE TEMPERATURES I ONE CHART:

In the MEMo2 you can place 2.3 or 4 NTC sensors from the same EC.441 module in one graph: If temperatures in 1 chart are desired: mode = THERMO or THsensor (setting units to °C At Thsensor) and give a Modbus address in the first channel. The successive channels that don't have an address but that have the same mode, will now be in the same chart.

Here's how to create 1 or 2 groups:

	IN4	IN5	IN6	IN7	
Mode TH	TH	TH	TH	TH	= 4 sensoren in 1 grafiek
Adres vb 3	0	0	0	0	
Mode count	TH	TH	TH	TH	= 3 sensoren in 1 grafiek
Adres vb 3	vb 4	0	0	0	
Mode TH	TH	TH	TH	TH	= 2 sensoren in 2 grafieken
Adres vb 3	0	vb 4	0	0	



### TEMPERATURE CORRECTION:

In 'PARA3' a temperature correction can possibly be entered: if the indicated temperature is too high, then negatively enter correction per 0.1°C: (e.g. -30 = 3° lower)

If the indicated temperature is too low, then enter correction per 0.1°C (e.g. 5 = 0.5° increase) (no + mark places !)

The display in the graph is called 'ROOMTP' (space mute) for the first sensor (master), and 'SETPT' (set point) for the second sensor. (The regimen only applies when using the Modbus thermostat)

5. Enter **unique** Modbus addresses again and again ( choose the same as the CH number of the module: E.g. 9 (AND NOT 09!!)
6. Enter Modbus sub-address : **always 0** at this module
7. Log type: Only if you're working on charging data to a central server check the parameters you want
8. Pulse value: e.g. 1000 pulses = 1 m3; or **yield after 1** hour (MODE 4 =time): e.g. consumes 4000ml of heating oil after 1 hour
9. Choose Unit kWh for the CT, water m3W, gas m3G, temperature °C...
10. Press "ZEND" if Module OK appears, the programming is in order otherwise see manual (Modbus address error, cabling check,...)

### 3. What values are logged.

MEMo logs every 60 seconds and the values that are logged can be read under point 7 LOGTYPE so this is with the CTs:

- Internal meter reading in kWh, for consumption measurements
- Tension in Volt
- Power in Ampère
- Power in Watt
- Power factor

#### 4. General note:

- An EC module can only use 4 electric consumptions of the same phase.
- Only one-way current is measured
- The smart meter clutch in this module is NOT active..
- Multiple temperatures in one chart see point 2
- Visualization of the channels for the customer : see manual MEMO web server

#### 5. Technical information:

##### General:

Power supply: max 15V/50mA, to be delivered by web server.  
Accuracy: +/- 5% for all measurements

##### Operating conditions:

Operating temperature range: 10 °C to 50 °C  
Storage temperature range: -10 °C to 60 °C  
Maximum humidity: 90%, no moisture condensation  
Max. mounting height : 2000m

##### Physical properties:

Housing: plastic, self-extinguishing acc. UL94-V0  
Degree of protection: IP20, EN 60529  
Mounted on DIN rail, width 2 modules  
Dimensions (h x b x l): 62mm x 90mm x 36mm  
Weight: about 65 grams

##### Connections:

**Bus connection:** SNE (-),A, B and VDD (+), 12 Volt low voltage, preferably shielded EIB bus cable  
**Reference voltage:** 230Vac/ 50 Hz, consumption<1W  
**Entrance IN 1... 4:** connection power transformers : included, max current: 40A  
**Entry IN 5..8:**  
As digital inputs: potential-free !! max 5V/1mA (0-logic: < 0.7V)  
pulse-duration: min. 20 msec , max 5 pulses/second/input  
As analogue inputs: temperature sensor NTC 10k range – 15 to +85°C  
Serial input: NO LONGER ACTIVE in MEMo2

##### Labels:

RoHS: Ricent-toxic, acc. to guidelines WEEE/RoHS  
CE: In accordance with EMC and low voltage directive: HBES – EN 50090-2-2 and EN60950 – 1: 2006.  
Impact voltage : module has been tested and approved on 3kVac. (50 Hz, 1 min) Insulation between reference voltage, power transformers and bus: 3750V

#### 6. Installation instructions

The installation must be carried out by an approved installer and in accordance with the rules in force.

- This device is only suitable for DIN rail assembly in accordance with EN 50022 and must be fitted in a closed distribution board.
- Make sure that a safety interruption of the device is possible. Turn off the module before installing it.
- Do not open the device – the warranty expires when the device is opened.

This manual must be attached to the file of the electrical installation. The 2-Wire website always has the latest manual of the product.

#### 7. Support

Do you want to exchange the product in case of a possible defect? Please contact your wholesaler or the 2-wire support service. The contact details can be found on our website [www.2-wire.net/contact/](http://www.2-wire.net/contact/)

#### 8. Guarantee conditions

The warranty period is two years from delivery date. The date of delivery is the invoice date of purchase of the product by the consumer. If there is no invoice available, the production date applies.

The consumer is obliged to inform Qonnex bvba in writing of the lack of conformity, and this at the latest within two months of adoption. In the event of a lack of conformity, the consumer is only entitled to a free repair or replacement of the product, which is determined by Qonnex. Qonnex is not responsible for any defect or damage caused by improper installation, improper or negligent use, improper operation, product

transformation, maintenance in violation of maintenance regulations or an external cause such as moisture damage or damage from span. The mandatory provisions in national legislation on the sale of consumer goods and the protection of consumers in countries where Qonnex sells directly or through distributors, agents or permanent representatives take precedence over the above provisions

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