

# Frequently Ask Questions

## EN40 – EN40P – EN’clic



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# 1 DOCUMENT HISTORY

Revision	Date	Author(s)	Modifications List
Draft version	Sep 9 <sup>th</sup> , 2008	Alvin ZHANG	Initial version
First Release	Sep 11 <sup>th</sup> , 2008	Marc Chachereau	First Release



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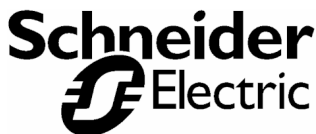
## 2 REFERENCES

### 2.1 Reference documents

Index	Name	Document ID	Author / Entity	Archive Location
1	DES04—Product & system specification	AAV4998104	Marc Chachereau	Symphony
2	DES06—Product design	AAV4998106	Alvin ZHANG Andy WU Marc Chachereau	Symphony
3	User manual for EN40P & EN40 series	AAV74173		Symphony
4	User manual for EN'clic series	AAV75672		Symphony

### 2.2 Glossary

Wording	Meaning
ELN	Electronic
ME	Mechanical
EM	Electromechanical
IP	International Protection
OVC	Over-Voltage Category
PO	Pulse-Output



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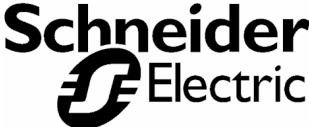
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### 3 INTRODUCTION

This document gathers the FAQ for the products EN40P, EN40 and EN'clic. It gives the answers of the frequently asked questions related to the products.

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## 4 GENERAL QUESTIONS

*Question 4-1: What does this product measure?*

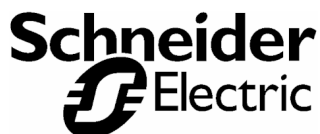
Answer: This product is an AC static watt-hour meter for active energy. It directly measures the active energy on an AC single-phase network.

*Question 4-2: How many references does this product have? What's their main difference?*

Answer: There are 3 references: EN40P, EN40 and EN'clac.  
EN40P: Grey color, with pulse-output for remote transfer.  
EN40: Grey color, without pulse-output for remote transfer.  
EN'clac: White color, without pulse-output for remote transfer.

*Question 4-3: What standards and accuracy class does this product conform to?*

Answer: Class 1 conforming to IEC62053-21, IEC61557-12 (PMD DD) and GB/T17215-2002:  
I<sub>max</sub>: 40A, I<sub>b</sub>: 5A, I<sub>st</sub>: 0.02A  
Class B conforming to EN50470-3:  
I<sub>max</sub>: 40A, I<sub>ref</sub>: 5A, I<sub>min</sub>: 0.25A, I<sub>st</sub>: 0.02A



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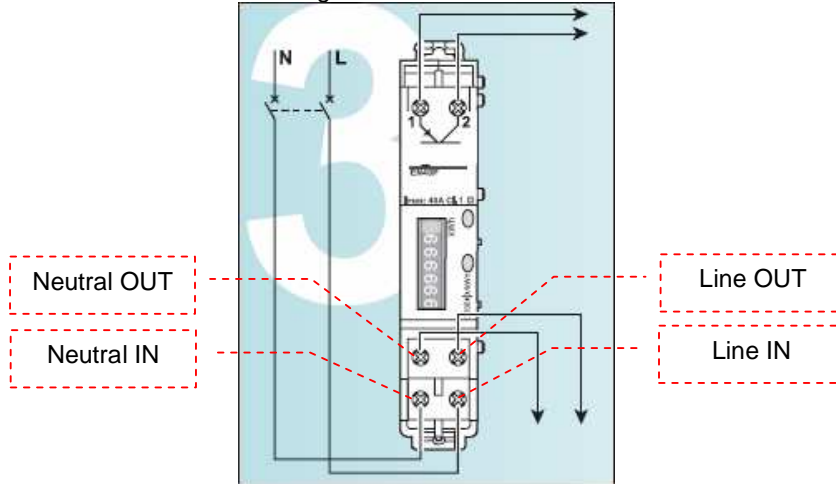
## 5 QUESTIONS ABOUT INSTALLATION AND DISPLAY

*Question 5-1: Where can this meter be mounted?*

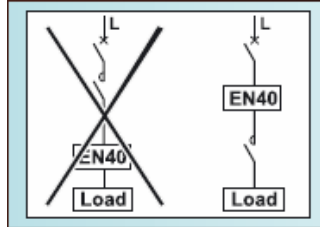
Answer: This meter can be mounted on a standard DIN-rail.

*Question 5-2: What is the correct way to connect this meter to the AC network?*

Answer: Connection diagram:

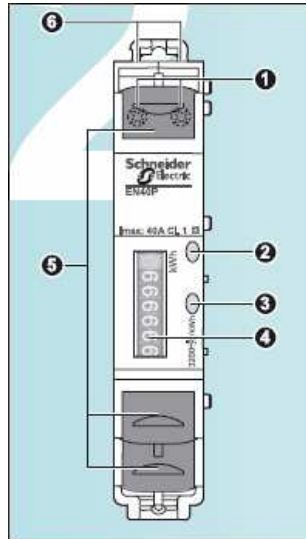


When this meter is associated with a contactor, connect it upstream of the contactor.



*Question 5-3: What does each part of the meter display or be used for?*

Answer: Front view of the meter:



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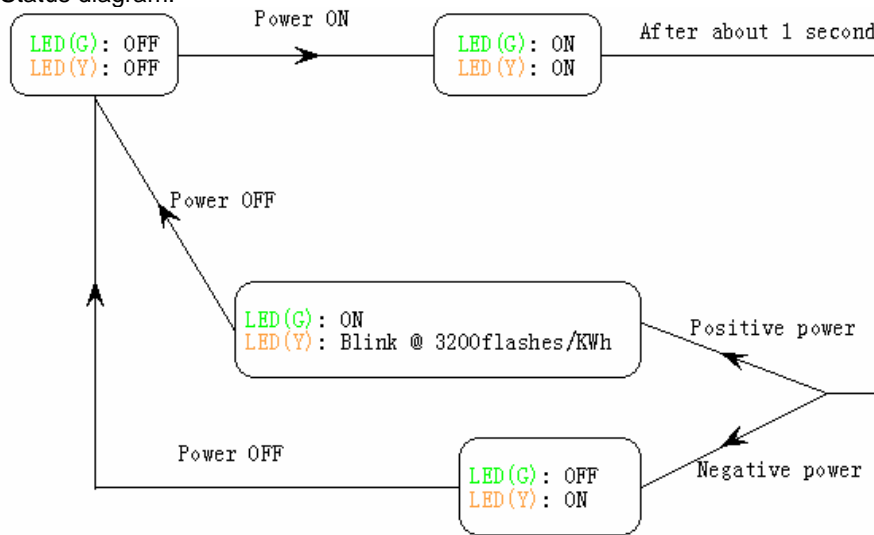
- 1) Pulse output for remote transfer (only for EN40P);
- 2) Green LED: Power on / off indicator;
- 3) Yellow LED: Flashing meter indicator (can be used to check the accuracy of the equipment);
- 4) EM counter for energy consumption display;
- 5) Lead sealing accessory;
- 6) Free holes for the comb busbar.

Question 5-4: What does the different status of two LEDs indicate?

Answer: Status table:

	Power ON		Power OFF
	Positive Power	Negative Power	
<b>Power LED (Green)</b>	On	Off	Off
<b>Indicator LED (Yellow)</b>	Stays on for around 1s after power on, then blinks @ 3200 flashes/KWh	On	Off

Status diagram:



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## 6 QUESTIONS ABOUT PRODUCT'S CHARACTERISTICS

*Question 6-1: What is this product's working voltage range and its frequency range?*

Answer: 230V±20%, 45~65Hz.

*Question 6-2: What is the rated current (maximum current) of this product?*

Answer: 40A

*Question 6-3: What is the start-up current that this meter is able to measure?*

Answer: 0.02A

*Question 6-4: What is the operating temperature range of this product?*

Answer: I≤32A: -25°C~+65°C  
I>32A: -25°C~+55°C

*Question 6-5: What is the IP level of this product?*

Answer: IP40 for the front panel, IP20 for the casing.  
Please select the corresponding cabinet if you require a higher IP level.

*Question 6-6: What is the over-voltage and measurement category of this product?*

Answer: Over-voltage and measurement category III.

*Question 6-7: What is the forecast pollution of the micro-environment of this product?*

Answer: Degree of pollution 2: Normally non-conductive pollution. Occasional condensation causing temporary conductive pollution when the device stops.

*Question 6-8: What is the power consumption of this product itself?*

Answer: <10VA.

*Question 6-9: What is the maximum cable size that the terminals of this product can contain?*

Answer: Power terminals (L&N): 10mm<sup>2</sup>  
Remote transfer terminals (pulse-output): 4mm<sup>2</sup> (only for EN40P)

*Question 6-10: What is the maximum tightening torque of the terminals of this product?*

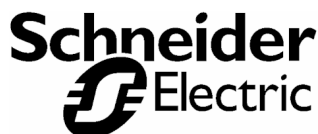
Answer: Power terminals (L&N): 1.2±0.2 N.m  
Remote transfer terminals (pulse-output): 0.8±0.1 N.m (only for EN40P)

*Question 6-11: What is the capacity of this meter's display?*

Answer: 6+1 digits with the unit of kWh (999999.9kWh in maximum).

*Question 6-12: What is the flashing frequency of the yellow indicator LED?*

Answer: 3200 flashes/kWh



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## 7 QUESTIONS ABOUT THE PULSE-OUTPUT (ONLY FOR EN40P)

*Question 7-1: What is the pulse-output typically used for in EN40P series products?*

Answer: To remote transfer the energy consumption.  
Every pulse corresponds to 10Wh active energy consumption.

*Question 7-2: What is the pulse frequency of the pulse-output?*

Answer: 100impulses/kWh

*Question 7-3: What is the pulse-ON state duration of the pulse-output?*

Answer: 120ms

*Question 7-4: What is the maximal frequency of the pulse-output?*

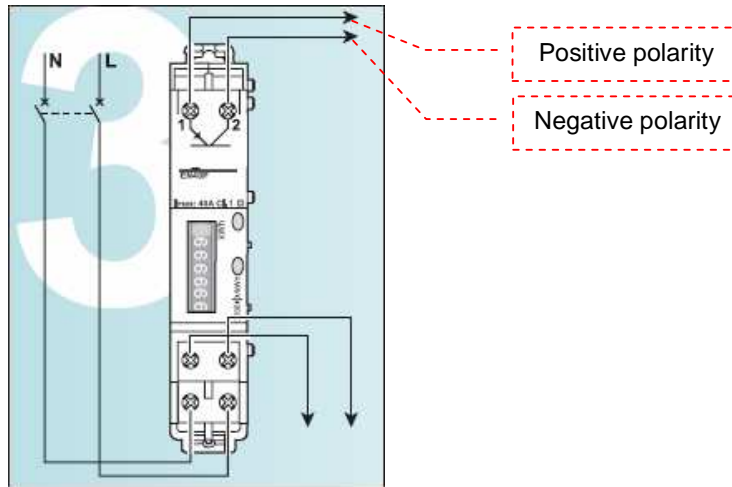
Answer: Correspond to a 40A load and a PF=1, so one pulse every 3.9s.  
 $F_{max} = 1 / (3.9+0.12) \approx 1 / 4 \approx 0.25 \text{ Hz}$

*Question 7-5: What are maximum voltage and current that the pulse-output can withstand and support?*

Answer: 35V, 20mA.

*Question 7-6: What is the right polarity of the two pulse-output terminals?*

Answer: Terminal 1 should be positive and Terminal 2 should be negative if connected to the peripheral circuit.



*Question 7-6: What is the accuracy of the pulse output*

Answer: The accuracy is consistent with the product accuracy class 1 or class index B; refer to 4.3

**Question 7-7: What is the typical peripheral circuit of the pulse-output?**

**Answer:** There are many kinds of peripheral circuits that can be connected to the pulse-output. Below are detailed two typical ones:

**Positive Logic topology: high state is active**

- Vcc is linked to S0+
- S0- is linked to GND through a polarization resistor
- Pulses are emitted between S0- and GND
- When the product is emitting a pulse the S0- output is bring down to 0V during 120ms

Connected to the internal

$$R_{\min} \geq \frac{V_{cc}}{I_{\max}} \Leftrightarrow R \geq \frac{V_{cc}}{20mA}$$

We recommend selecting  $R_{typ} = 2 \times R_{\min}$

U (Volt)	35	24	12	5
I <sub>max</sub> (A)	0.02	0.02	0.02	0.02
R <sub>min</sub> (Ohm)	1750	1200	600	250
R <sub>typ</sub> (Ohm)	3500	2400	1200	500

**Negative Logic topology: low state is active**

- Vcc is linked to S0+ through a polarization resistor
- S0- is linked to GND
- Pulses are emitted between S0+ and Vcc
- When the product is emitting a pulse the S0+ output is bring down to 0V during 120ms

Connected to the internal

$$R_{\min} \geq \frac{V_{cc}}{I_{\max}} \Leftrightarrow R \geq \frac{V_{cc}}{20mA}$$

We recommend selecting  $R_{typ} = 2 \times R_{\min}$

U (Volt)	35	24	12	5
I <sub>max</sub> (A)	0.02	0.02	0.02	0.02
R <sub>min</sub> (Ohm)	1750	1200	600	250
R <sub>typ</sub> (Ohm)	3500	2400	1200	500



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