The power of unused energy
enocean

Energy Harvester
ECO 100

User Manual V1.01
February 2006

Revision History

The following major modifications and improvements have been made to the first version of this document (User Manual ECO 100, V1.0):

No	Major Changes

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Important!

This information describes the type of component and shall not be considered as assured characteristics. No responsibility is assumed for possible omissions or inaccuracies. Circuitry and specifications are subject to change without notice. For the latest product specifications, refer to the EnOcean website: http://www.enocean.com.

As far as patents or other rights of third parties are concerned, liability is only assumed for devices, not for the described applications, processes and circuits.

EnOcean does not assume responsibility for use of devices described and limits its liability to the replacement of devices determined to be defective due to workmanship. Devices or systems containing RF components must meet the essential requirements of the local legal authorities. The approval requirements described in this document are of best knowledge without any warranty.

The devices must not be used in any relation with equipment that supports, directly or indirectly, human health or life or with applications that can result in danger for people, animals or real value.

Components of the devices are considered and should be disposed of as hazardous waste. Local government regulations are to be observed.

Packing: Please use the recycling operators known to you. By agreement we will take packing material back if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or that we are not obliged to accept, we shall have to invoice you for any costs incurred.

Table of Contents

1. GENERAL DESCRIPTION

The energy module ECO 100 is an energy converter for linear motion. It can be used to power the PTM 230 radio module or derivates.

The energy output at every actuation of the spring is sufficient to transmit 3 sub-telegrams with a PTM 230 module. Possible applications are miniaturized switches and sensors in building technology and industrial automation.

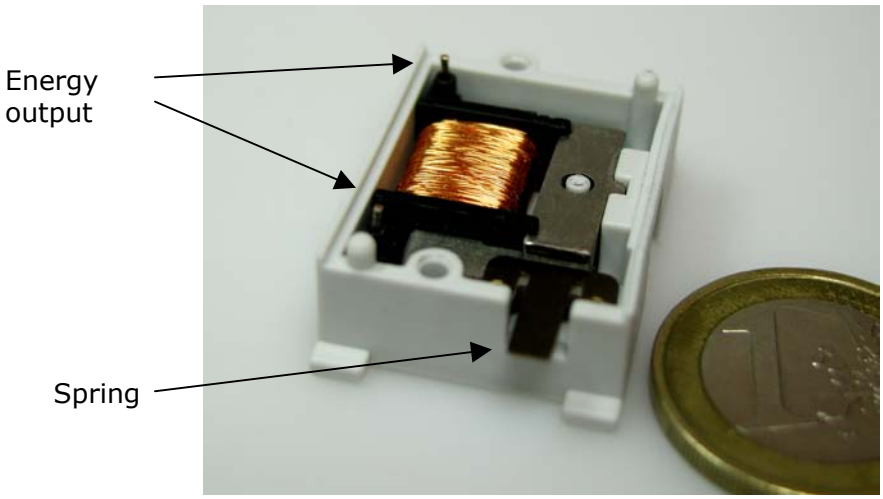


Figure 1: Electro-dynamic energy harvester ECO 100

1.1 Functional Principle

A common electro-dynamic energy transducer is actuated by a spring, which can be pushed from outside the device. When the spring is pushed up or down, electrical energy is provided at the energy output pins. With this amount of energy it is possible to transmit an RF telegram with a connected PTM 230 module.

1.2 Typical Applications

- **Wireless switches for building automation**
- **Wireless position switches for industrial automation**
- **Call button transmitters**

1.3 Features Overview

Device dimensions: ..... 33.3 x 22.0 x 10.8 mm
Device weight: .....10 g ± 1g
Actuating force / travel:..... 2.0±0.5 N / 2.0 mm
Switching cycles (up or down): ..... >60.000 at 25°C
Output pulse: T (rise time)..... Typical 1,4 ms
Output pulse: U_{END} (voltage in the capacitor at the end of the energy pulse) .. typ. 5 V ± 25%

1.4 Environmental Conditions

Operating temperature: ..... -20 up to +65 °C
Storage temperature: ..... -20 up to +65 °C
Humidity:..... 0 % to 95 % r.h., non-condensing, no IP class

1.5 Ordering Information

Type	EnOcean Ordering Code
ECO 100	**S3016-N100**

2. APPLICATION INFORMATION

Mechanical characteristics:

Important notes:

- It is recommended to mount a PCB on top of ECO 100 in order to avoid forces at the energy output pins and to reduce dust inside the energy converter.
- If no PCB is mounted thin wires should be used for the connection between ECO 100 and the radio transmitter.
- For mounting the PCB please use screws of type EJOT KB 22x5.
- The soldering pins are designed for 0.8mm thick PCBs.
- The spring needs play of 0.4mm within operating lever as shown in Figure 4

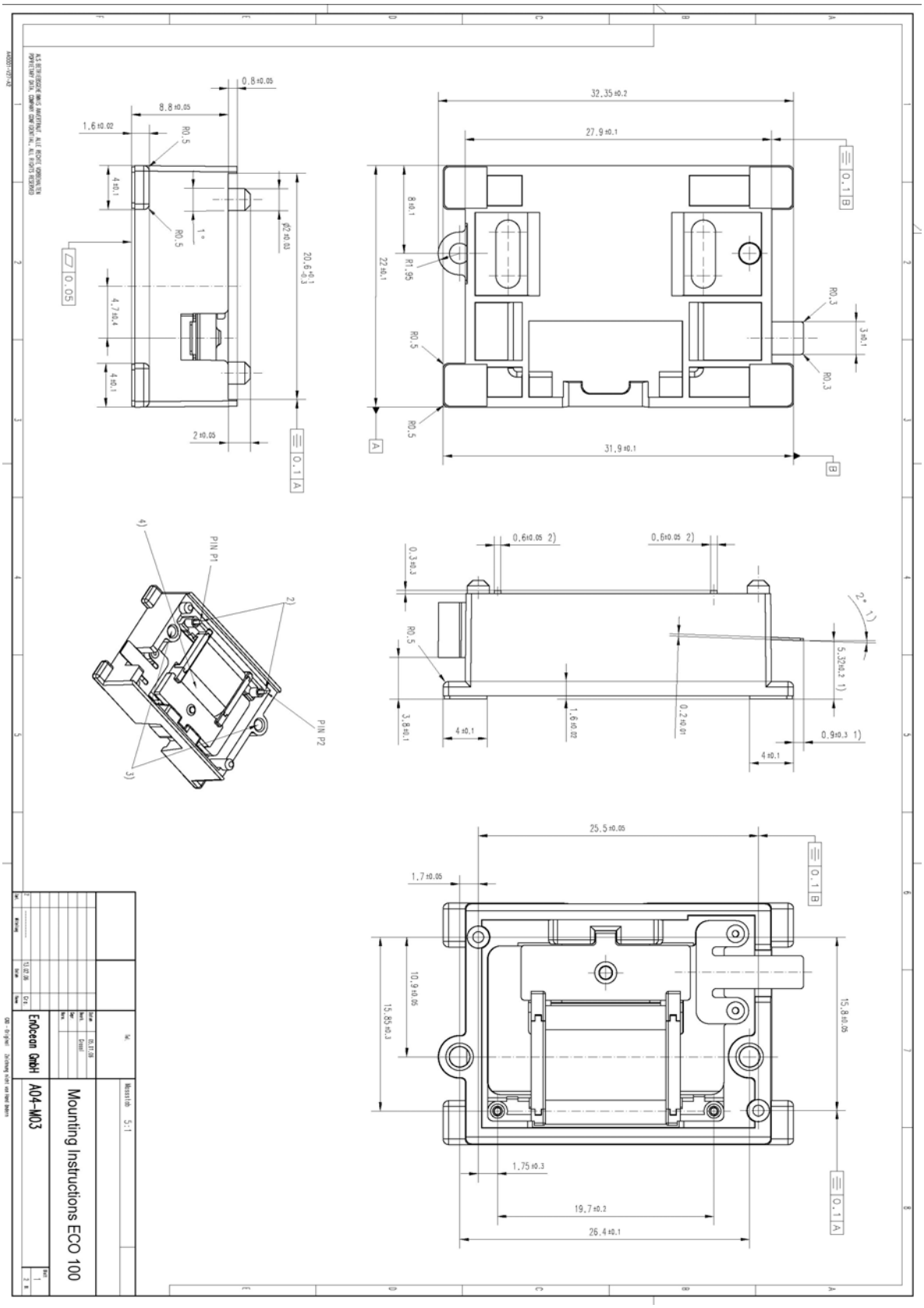


Figure 2: Mechanical dimensions

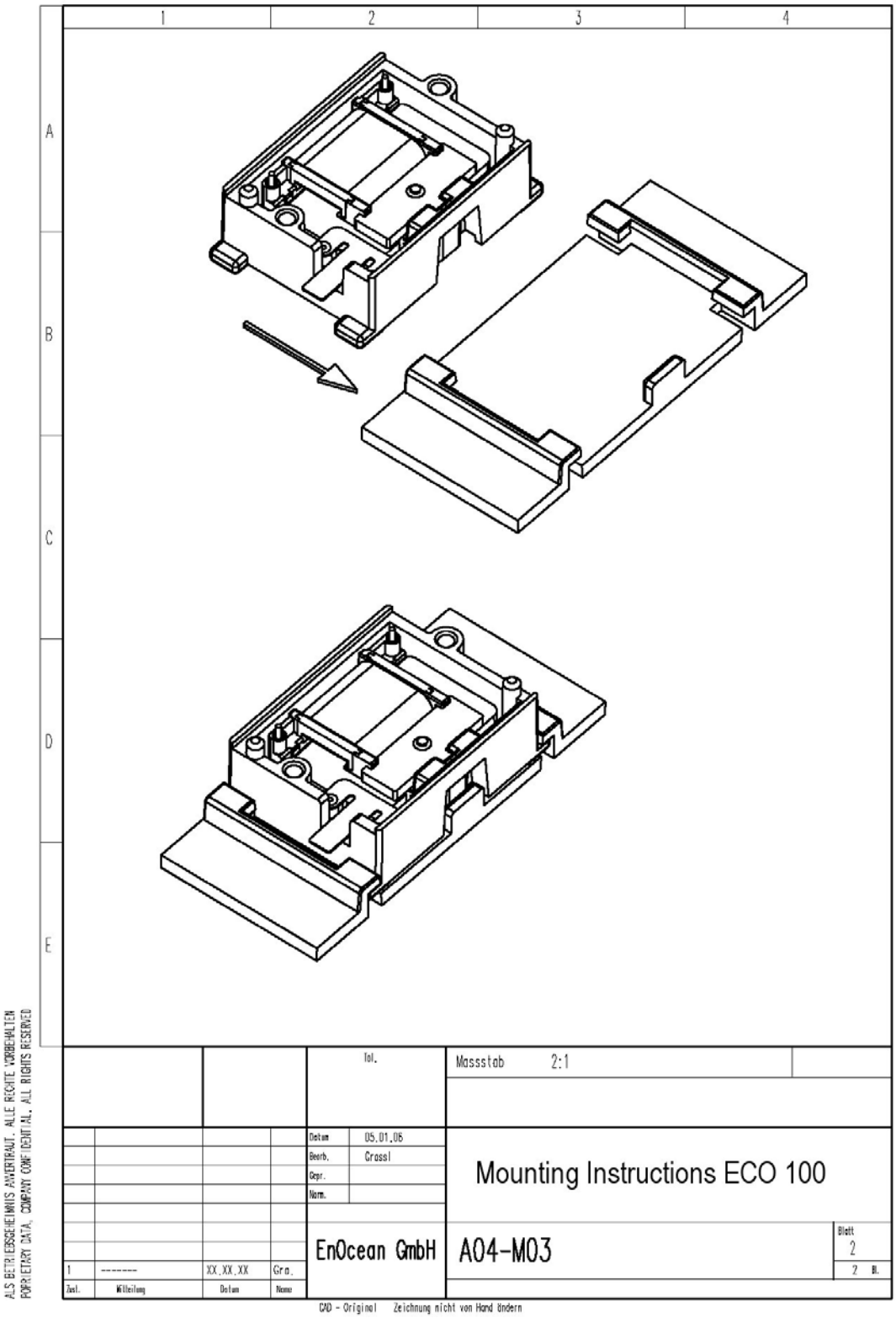


Figure 3: Proposal for mounting

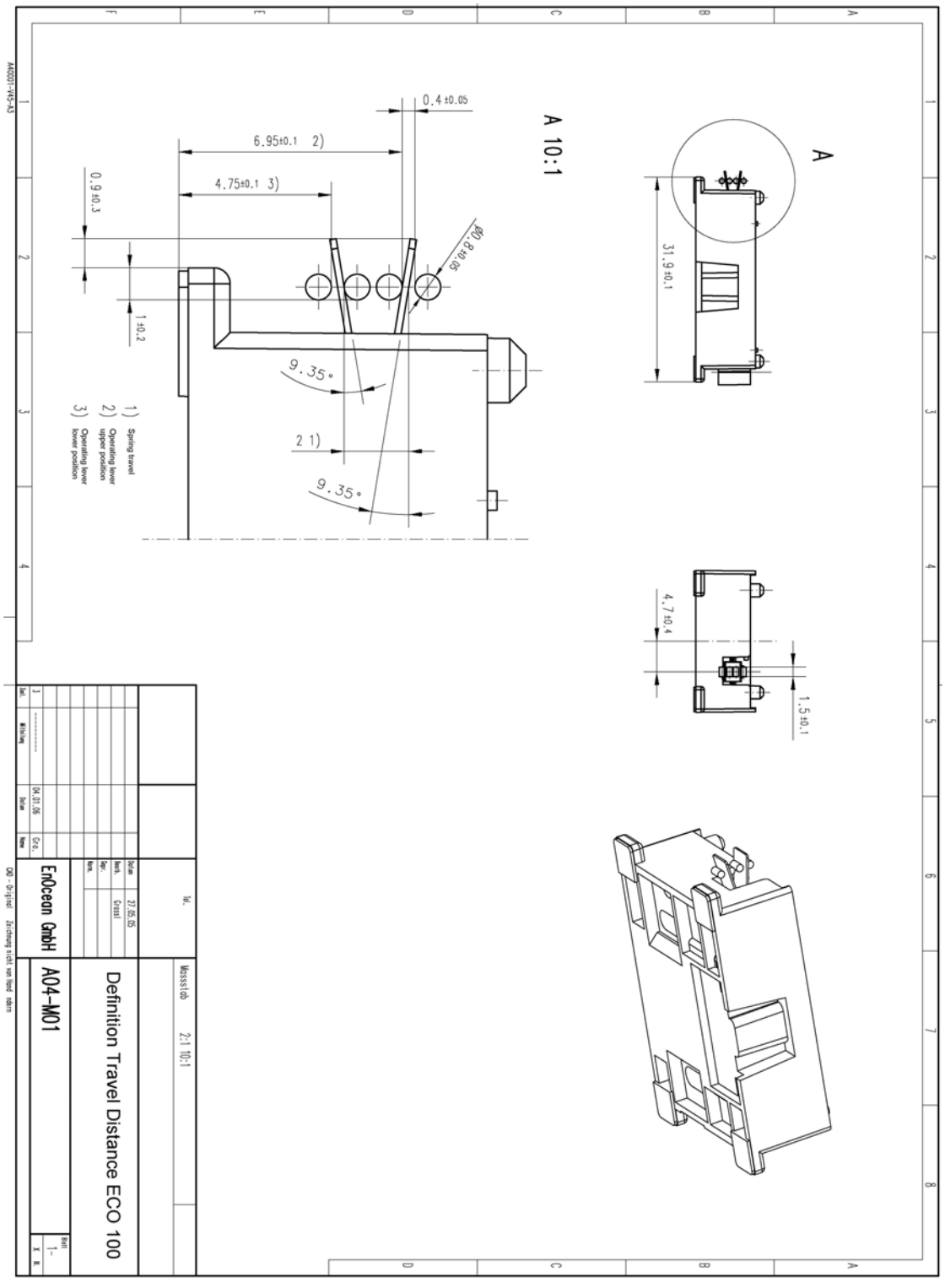
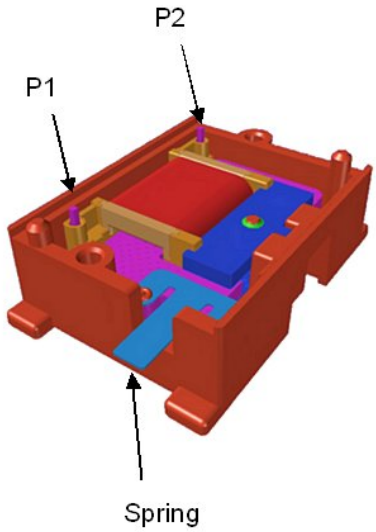


Figure 4: Definition of the rest positions and travel distance of the spring

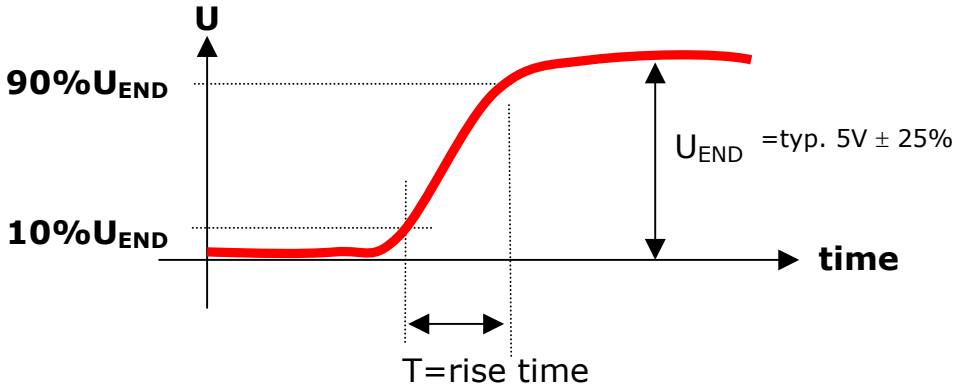
Electrical characteristics:



Polarity:
Spring movement UP
P2 positive
P1 negative

Spring movement DOWN
P1 positive
P2 negative

Figure 5: Definition of polarity



Circuit used to characterise the Output Pulse:

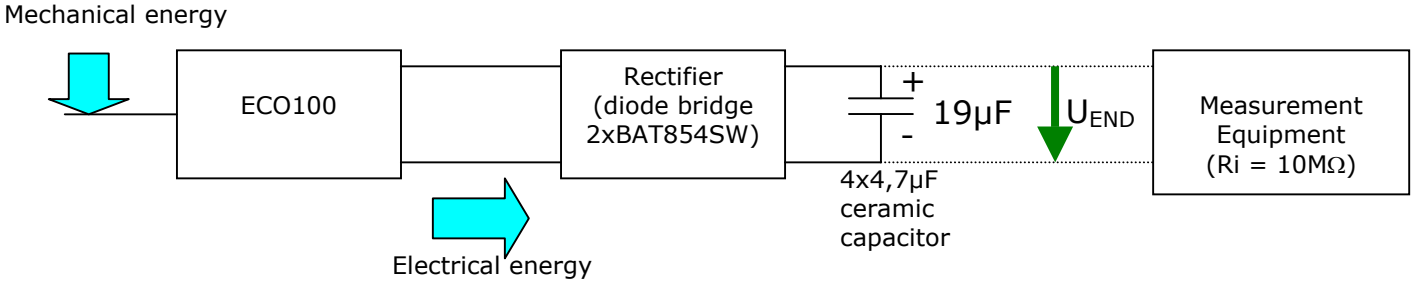


Figure 6: Definition of the output pulse