

Switching Tomorrow

knitter-switch



RUTRONIK
ELECTRONICS WORLDWIDE

Agenda

- **Microswitches / Encoder**

Oliver Kluj (Technical Director knitter-switch)

- **Input Systems**

Yingying Liu-Wildner (Product Manager Input Systems)

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Techtalk meets Biotechnology

Micro switches and Encoders

November 09, 2021, Oliver Kluj



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Agenda

- **Microswitches – overview**
- **Encoder – overview**



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Micro switches – AKA snap action switches

- A kind of switches usually not operated by man.
- Main application is detection of presence or correct position of parts, e. g.
- Door contact in microwave ovens. When the door is opened, the magnetron is automatically switched off – radiation is no longer generated.
- Tamper contact – Manipulation on casings lead to „alert“ or is switching off the power supply to protect the operator.

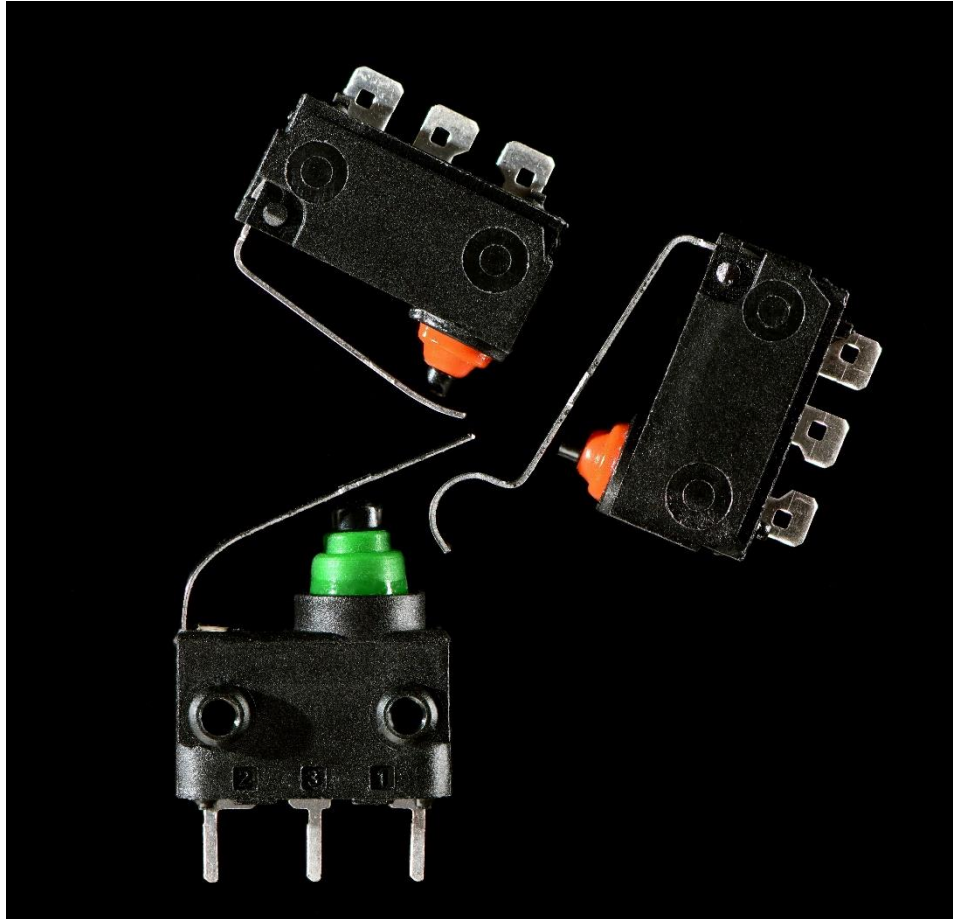
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How to define a micro-switch

- **Rating:**
Typical voltages: signals, e. g. 3.3 V, mains, e. g. 230 V AC
Typical currents: battery powered: μA or mA, mains: 6 to 26 A
 - **Life:**
Tamper contact: no special requirements
Tooling machines: up to 1 000 000 cycles
 - **Sealing:**
Indoor or simple application: no sealing
Outdoor, Instruments: up to IP67
 - **Others:**
temperature, mounting space, connection/wires, ...
-

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Appearance



knitter-switch

Series

DM-VMG

Case length 28 mm

Life: 1 000 000 cycles

Silver alloy contacts, optionally gold

No additional sealing

Temperature limit up to 125 °C

Most powerful model: up to 26 A @ 250 V AC

Quick-connect tabs, PCB-pins or solder-lugs



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Series

DM-SMG

Case length: 22 mm

Rating up to 10 A @ 250 V AC

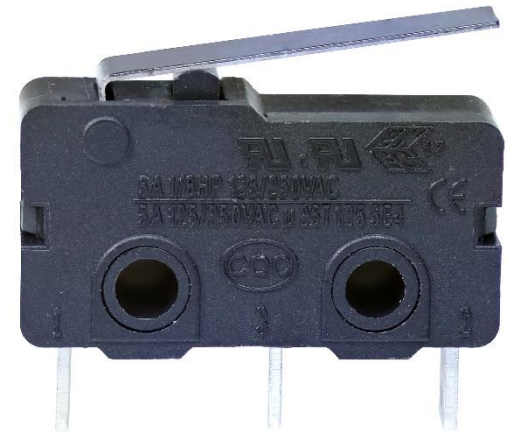
Life: 1 000 000 cycles

Silver alloy contacts, optionally gold

No additional sealing

Temperature limit up to 125 °C

Quick-connect tabs, PCB-pins or solder-lugs



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Series

DM-SWG

Case length 20 mm

Rating up to 6 A @ 250 V AC

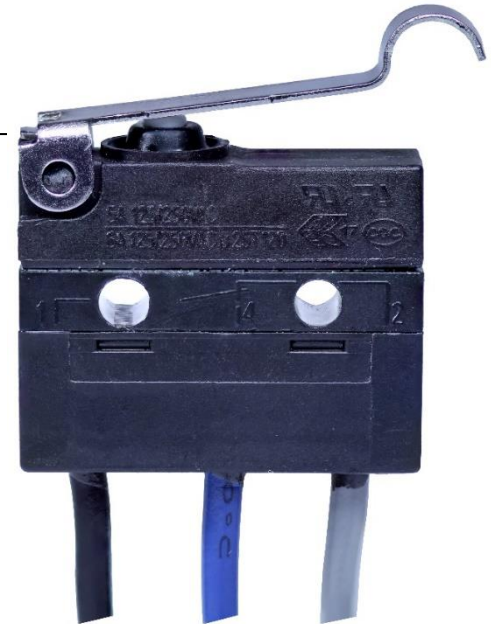
Life: 500 000 cycles

Silver alloy contacts, optionally gold

IP67 sealing / works after 30 min stay in 1m water depth

Temperature limit up to 120 °C

Quick-connect tabs, PCB-pins, solder-lugs or flying leads



knitter-switch

Series

DM-DW

Case length 15 mm

Rating up to 0.1 A @ 125 V AC

DC rating 3 A @ 12 V / Life: 500 000 cycles

Silver alloy contacts, optionally gold

IP67 sealing / works after 30 min stay in 1m water depth

Temperature limit up to 85 °C

PCB-pins or solder-lugs or flying leads



knitter-switch

Series

DM-DM

Case length 13 mm

Rating up to 3 A @ 125 V AC

Life: 1 000 000 cycles

Silver alloy contacts, optionally gold

No additional sealing

Temperature limit up to 85 °C

PCB-pins or solder-lugs



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Series

DM-SSM

Case length 8mm

Rating up to 0.5 A @ 30 V AC

Life: 300 000 cycles

Silver alloy contacts, optionally gold

No additional sealing

Temperature limit up to 85 °C

PCB-pins



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Encoder



A kind of „rotary“ switch, providing a pulse sequence as long as the shaft is turning.

Main application is menu scrolling, setting of data and similar, e. g.

Heating controller

Volume control in radios



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How to define an encoder

- **Resolution:**
number of pulses per 360° turn, number of detents (can even be 0)
- **Principle:**
Mechanical – cost efficient, limited life, passive
Optical – long life (contactless), active
Magnetical - long life (contactless), high resolution, active
- **Others:**
Illumination, with Pushbutton or not, Size, Sealing, Temperature,...

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Appearance



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Series

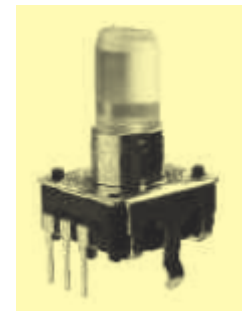
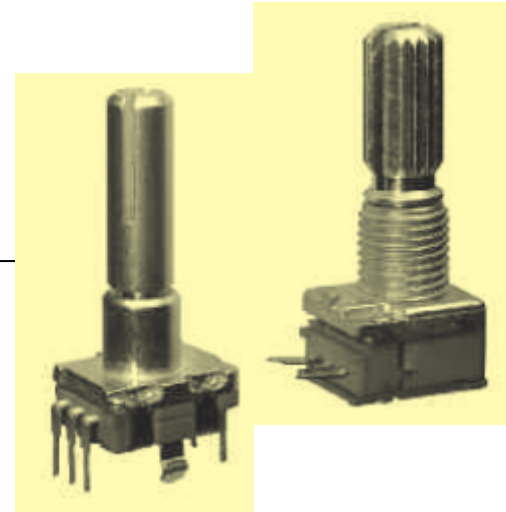
MER/MERS/MERP/MERPS 9, 10, 11, 12, 23, ...

Mechanical Encoders in different sizes:

- Up to 24 pulses per turn
- Up to 30 detents per turn
- Life up to 100 000 cycles

Options (selection):

- Illumination (clear plastic shaft)
- round or hollow shaft
- Pushbutton, travel 0.5 mm or 1.5 mm
- Shaft length, mounting thread, sealing



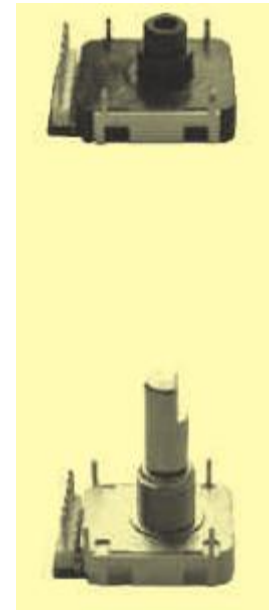
Series

MEOP 14, 19

Optical Encoders for 3.3 or 5 V supply
Up to 24 pulses and detents per turn
Life up to 1 000 000 ccles

Options (selection):

- round metal or plastic shaft
- Pushbutton, travel 0.3 mm or 1 mm
- Integrated pulse former (Schmitt trigger)
- Connection by pin header or wires



Series

MEHA 14

HALL Encoders for 3.3 or 5 V supply
Up to 512 pulses per turn
Life up to 1 000 000 cycles



Options (selection):

- Shaft diameter/length/shape
- Pushbutton
- Binary or Gray-Code output
- Connection by pin header or wires



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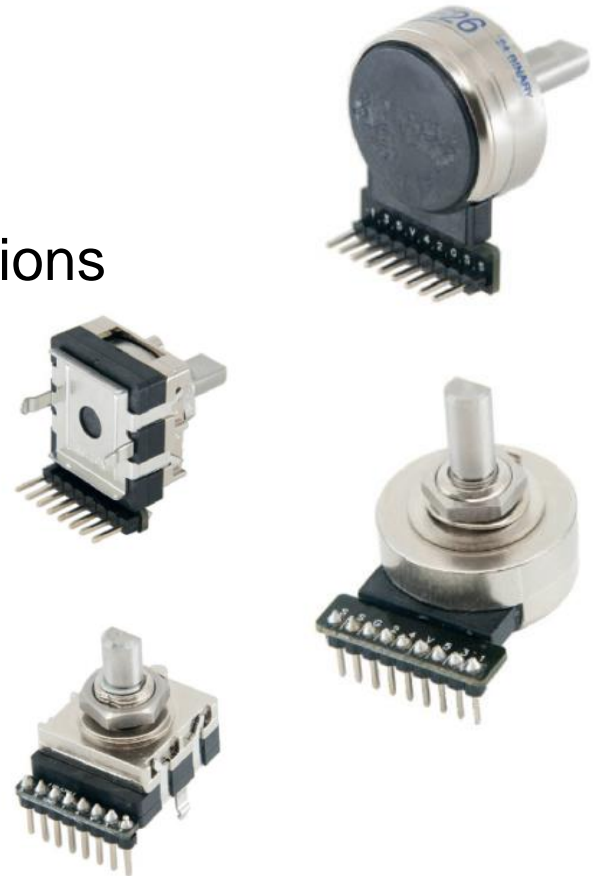
Series

MAOP 20, 26

Optical Encoders for 3.3 or 5 V supply
Absolute encoder for 12, 16 or 32 positions
Life up to 1 000 000 cycles

Options (selection):

- Shaft diameter/length/shape
- Pushbutton
- Binary or Gray-Code output
- Connection by pin header or wires



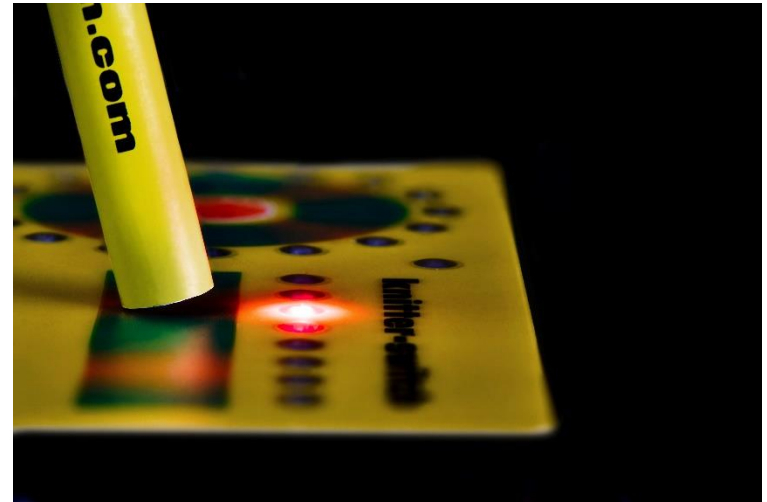
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Techtalk meets Biotechnology

Input Systems

November 09, 2021,
Yingying Liu-Wildner



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Input systems



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The input systems product group includes ...

- Graphic overlay without switching function
- Membranes
- Silicone rubber keypad
- Capacitive touch foils

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Advantages

- Space saving
- Back-printing of the film for a robust, individual design
- Individual tactility
- Dustproof and water resistant
- Easy to clean
- Long life-time cycles



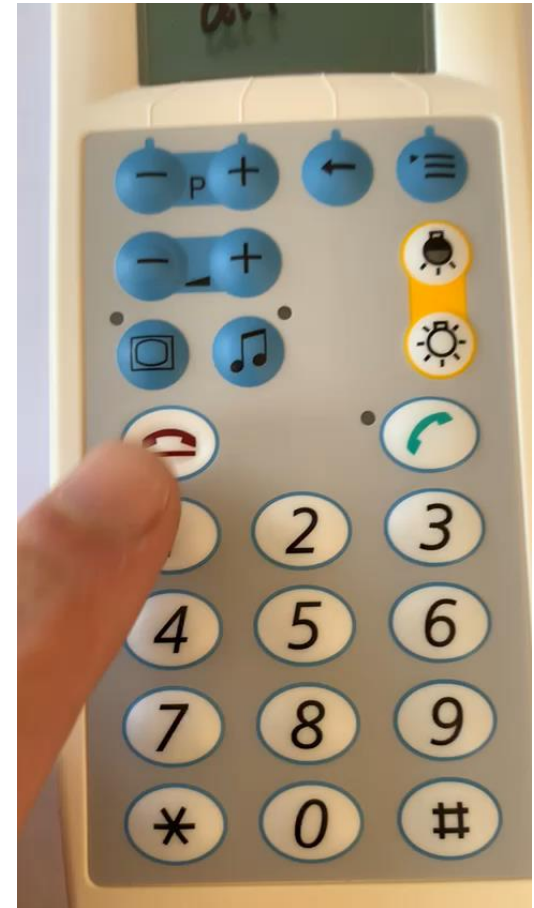
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Medical Projects

Graphic overlay without switching function

Application: Patient Phone in hospital

Product: YFT EM MEDISET 0099 21



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Medical Projects

Membrane

Application: Patient Phone

Product: YFT EM MEDISET6 20



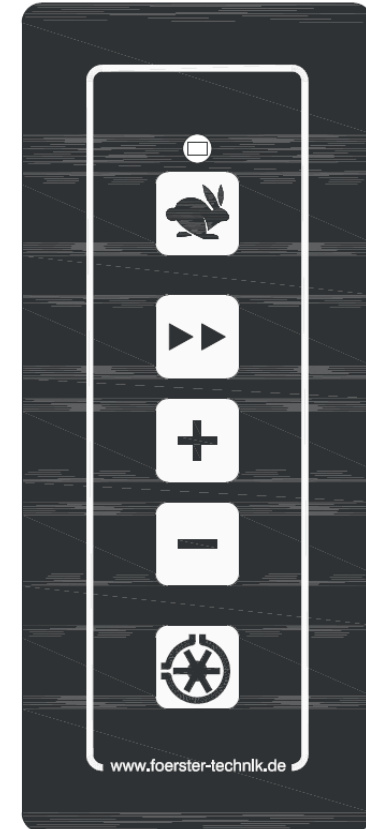
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Agriculture / Smart Farming Project

Membrane

Application: Cow feeding machine

Product: YFT RU FO 1999D 19



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Medical Projects

Application: Blood lactate meter

Product: YSS SEN LS40 17

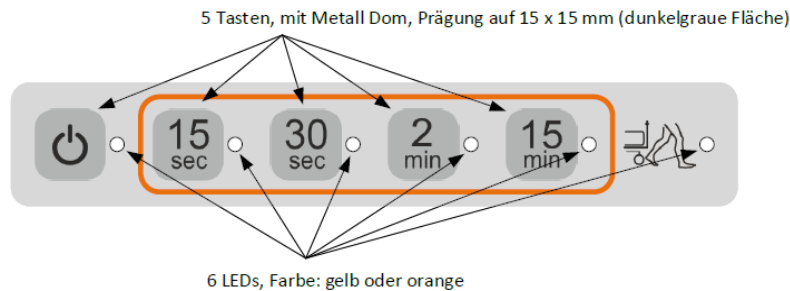


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Medical Projects

Application: Hospital bed control

Product: YFT STM 5B6L 21

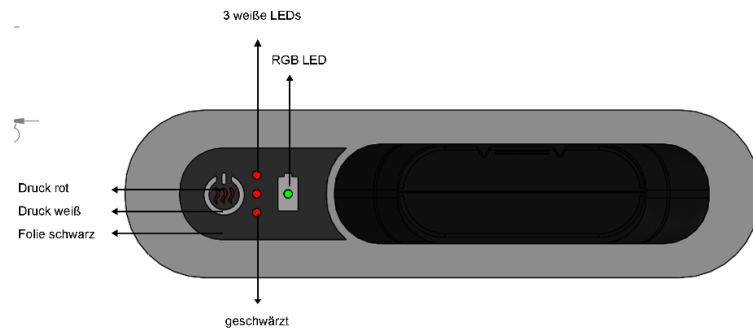


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Medical Projects

Application: Control for heated stretcher

Product: YFT SCD 1B4L4 21



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Medical Projects

Application: Medical manicure and pedicure equipment

Products: YFT UNI 50123 21



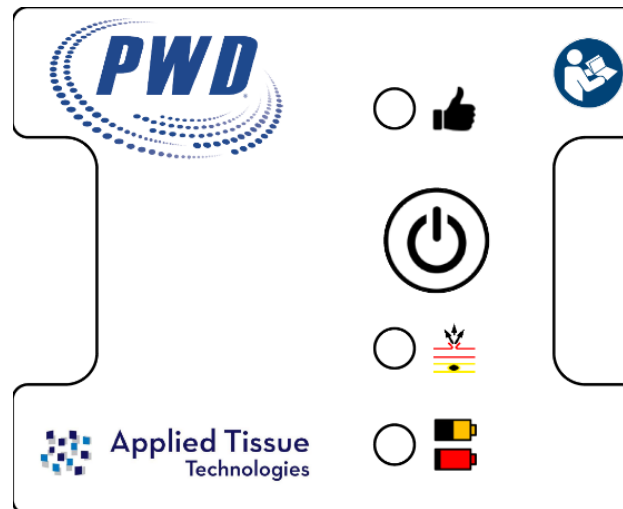
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Medical Projects

Membrane

Application: Negative pressure pump

Product: YFT RU ASK OL1C 21



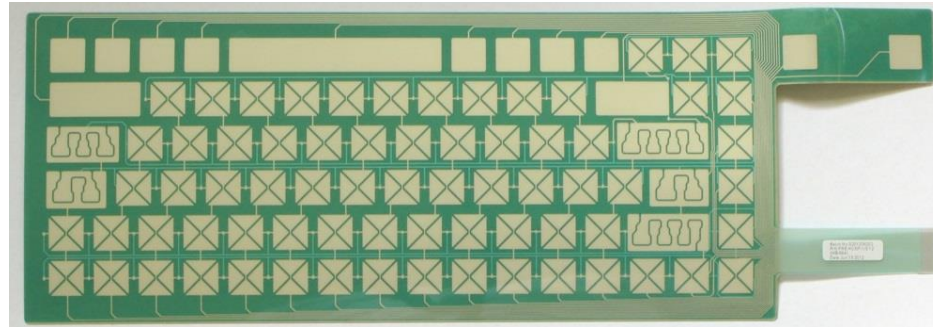
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Medical Projects

Capacitive touch foil

YFT PRE HOSPI DE 11

Touch Keyboard for hospital



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Thank you very much for your attention!

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