# ULTRASONIC SENSORS
# US

## SWITCHING AND / OR MEASURING


**di-soric**

# ULTRASONIC – A SUCCESS PRINCIPLE
## WITH MANY BENEFITS.

### ALL PRACTICAL BENEFITS – UNIFIED IN ONE SENSOR

**IO-Link – for future-proof communication**
- Constant monitoring of device functions and parameters
- Extended setting options

**Reflective mode – the guarantee of success in the background**
The sensor is taught in to the background, not to the objects to be detected, so it only has to detect a deviation from the background.
- Detection regardless of surface
- Much more stable, simpler processes

**A clear switch point due to temperature compensation**
Even when the temperature fluctuates, constant measurement accuracy thanks to integrated temperature compensation – which can be enabled and disabled.
- Always a clear switch point, even if temperatures change slowly
- Constantly high measurement accuracy for optimum process quality
- Shall be disabled if temperatures change rapidly
- Maximum system availability and reduction in machine downtimes

**Ultra-simple teach-in: 3 teach modes and other settings**
- Window mode
- 2-point mode
- Auto-teach mode
- The output can be switched

**Compact and short from M8 to Q12 – threaded and cuboid designs**
- Simple machine integration, thanks to extremely small and short housing dimensions
- Maximum flexibility even in tight installation spaces
- Retrofit – perfectly suited to retrofitting or replacement

# THE SWITCHING ULTRASONIC RANGE.
## ULTRA-SIMPLE – ULTRA-FLEXIBLE.

### STABLE PROCESSES DUE TO DI-SORIC ULTRASONIC SENSORS.

**Simple machine integration**
thanks to extremely small and, in particular, short housing dimensions

**Maximum flexibility**
due to different designs and configurable operating ranges

**Stable applications**
due to resistance to dirt and insensitivity to noise, independent surface properties such as color

**Stable processes**
thanks to narrow sound beams and optional reflective mode
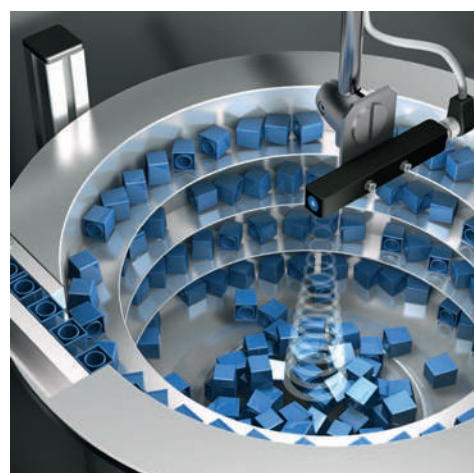
**Durability and a long service life**
due to metal housing, plugs and IP67

**Quickly ready for operation**
due to simple teach-in and IO-Link

**Reliability**
due to high tolerance of contamination and temperature compensation

**IO-Link**

---

**Level control in the hopper**
US Q12

The ultrasonic sensor reliably monitors the fill level in the vibratory feeder. Thanks to its cuboid design, it can even be installed directly on the hopper wall of step feeders.

**Accumulation monitoring for boxes**
US 12 / US 18

The long ranges achieved by the ultrasonic sensor, which works with IO-Link, enable it to reliably identify accumulations and gaps between boxes being transported, ensuring that packages are transported smoothly and without disruption.
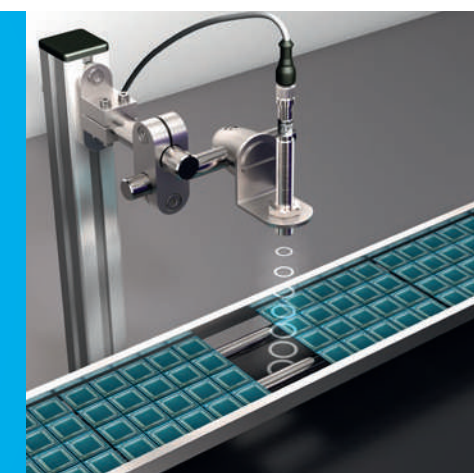
**Detecting the presence of PCBs**
US 08

Its unique M8 design and extremely narrow sound beam make the US 08 the perfect problem-solver where classic proximity switches reach the limits of their scanning ranges. For example, it can be used to detect the presence of PCBs at a greater distance (up to 100 mm).

# THE MEASURING ULTRASONIC RANGE.
## ANALOG OUTPUT AND MULTI-I/O.

**JUST ONE SENSOR FOR BOTH MEASUREMENT TASKS AND OTHER TASKS FOR WHICH ANOTHER SENSOR WOULD BE REQUIRED.**

**Teach, switch and measure**

using MI/O

**Reliable detection**

even of small parts, due to high resolution and narrow sound beam

**Can be configured flexibly**

as an ultrasonic sensor or a barrier

**6 seconds**

is all you need to teach it in and configure it

**Shortest designs**

with lengths from 55.5 mm, M12, M18, M30 and Q12

**Cost saving**

due to connection with 4-core standard sensor circuits instead of expensive 5-core circuits – yet with full functionality

**IO-Link**

# THE WORLD'S FIRST MULTI-I/O
## IN ONE SENSOR: MI/O.

**TRUE MULTI FUNCTIONALITY AND A FULL RANGE OF FUNCTIONS, WITH ONLY 4 PINS.**

**HOW MI/O WORKS**

Using MI/O, a connected IO-Link Master is recognized automatically and the sensor changes to communication mode. Instead of the teach input, a switching output can then be configured.
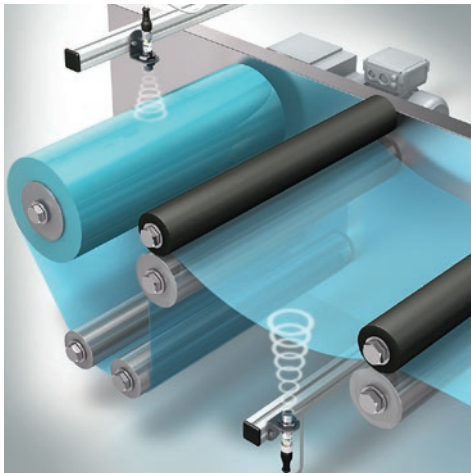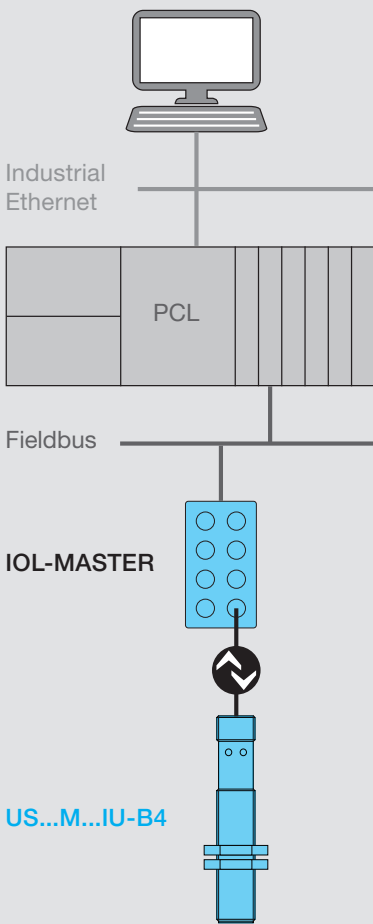
MI/O

| BN | 1 | + |
| BK | 4 | T | T+: TEACH | npn |
| | | | T-: TEACH 🔒 | |
| WH | 2 | | | pnp |
| BU | 3 | − |
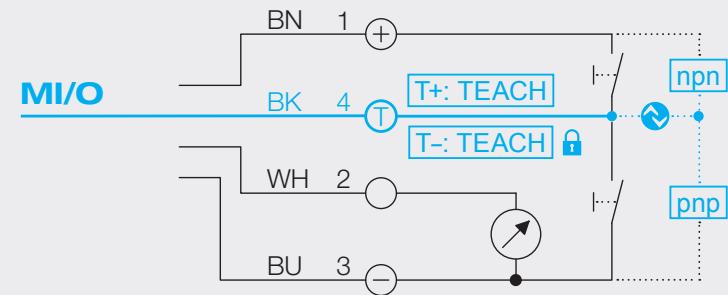
BN: brown | BK: black | WH: white | BU: blue

**MI/O PIN 4**
A connection PIN that performs multiple functions:
1. Teach-In
2. IO-Link communication
3. Switching output

**IO-LINK**

Industrial Ethernet

PCL

Fieldbus

**IOL-MASTER**

**US...M...IU-B4**

---

**Roller diameter check**
US 18 M 1500 IU-B4

**Sag check (speed regulation)**
US 12 M 400 IU-B4

Using MI/O enables optimal planning of roller replacement through continual sag checks, monitoring and a signal over a configurable switching output if the roller thickness drops below the set minimum.
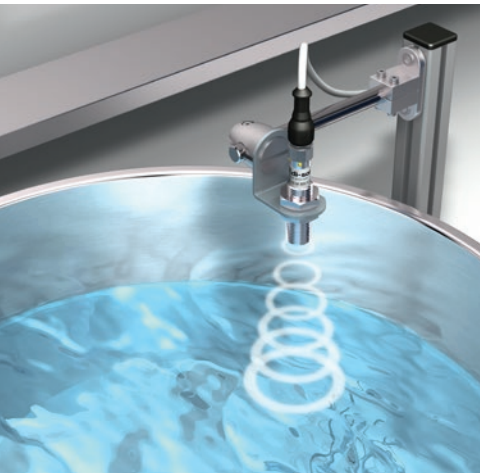
**Container monitoring**
US 18 M 800 IU-B4

The container fill level can be monitored using an analog signal – the additional switching output can be used as a warning output if a critical level is exceeded, or no longer achieved, to control filling or perform an emergency stop, by starting a dry run, to protect the machine.
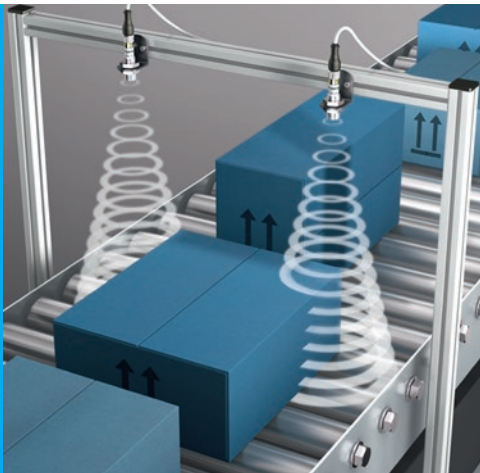
**Box height measurement**
US 18 M 1500 IU-B4

The classic analog application: use this ultrasonic sensor to measure different box heights reliably, using analog signals, no matter what their surface properties, such as color, at a working distance of 1.5 m.

# ULTRASONIC SENSORS US
## SWITCHING

| Type | US 08 M 100 G3-T4 | US 12 M 150 FB G3-B4 | US 12 M 200 G3-B4 | US 12 M 400 G3-B4 | US 18 M 800 G3-B4 | US 18 M 1500 G3-B4 |
|---|---|---|---|---|---|---|
| Design | M8 | M12 | M12 | M12 | M18 | M18 |
| Length | 70 mm | 84 mm | 65 mm | 65 mm | 55.5 mm | 55.5 mm |
| Range | 20 … 100 mm | 0 … 150 mm | 20 … 200 mm | 40 … 400 mm | 80 … 800 mm | 120 … 1500 mm |
| Scanning | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Reflex | ⟳ | ⟳ | ⟳ | ⟳ | ⟳ | ⟳ |
| Extra | | Focusing nozzle | | | | |
| Setting | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ |

| Type | US 30 M 3000 G3-B4 | US 30 M 6000 G3-B4 | US Q12 M 200 G3-T4 | US Q12 M 400 G3-T4 | US Q12 M 400 FP G3-T4 | US Q12 M 400 HP G3-T4 |
|---|---|---|---|---|---|---|
| Design | M30 | M30 | Cuboid | Cuboid | Cuboid | Cuboid |
| Length | 60 mm | 78 mm | 83.5 mm | 83.5 mm | 90.5 mm | 90.5 mm |
| Range | 300 … 3000 mm | 600 … 6000 mm | 20 … 200 mm | 40 … 400 mm | 40 … 400 mm | 40 … 400 mm |
| Scanning | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Reflex | ⟳ | ⟳ | ⟳ | ⟳ | ⟳ | ⟳ |
| Extra | | | | | Fill level monitoring of all media | Sensor with background suppression |
| Setting | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ ⊚ | ▤ ⟳ ⊚ |

Via: ▤ Remote teach  ⟳ IO-Link  ⊚ Potentiometer

# ULTRASONIC SENSORS US
## MEASURING / SWITCHING

| Typ | US 12 M 150 FB IU-B4 | US 12 M 200 IU-B4 | US 12 M 400 IU-B4 | US 18 M 800 IU-B4 | US 18 M 1500 IU-B4 |
|---|---|---|---|---|---|
| Design | M12 | M12 | M12 | M18 | M18 |
| Length | 84 mm | 65 mm | 65 mm | 55.5 mm | 55.5 mm |
| Range | 0 … 150 mm | 20 … 200 mm | 40 … 400 mm | 50 … 800 mm | 150 … 1500 mm |
| Scanning | ⟳ | ⟳ | ⟳ | ⟳ | ⟳ |
| Reflex | ⟳ | ⟳ | ⟳ | ⟳ | ⟳ |
| Measuring | ✓ | ✓ | ✓ | ✓ | ✓ |
| Extra | Focusing nozzle | | | | |
| Setting | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ |

| Typ | US 30 M 3000 IU-B4 | US 30 M 6000 IU-B4 | US Q12 M 200 IU-T4 | US Q12 M 400 IU-T4 | Can be used anywhere: |
|---|---|---|---|---|---|
| Design | M30 | M30 | Cuboid | Cuboid | **IOL-MASTER** IO-LINK DEVICE TOOL |
| Length | 60 mm | 78 mm | 83.5 mm | 83.5 mm | |
| Range | 300 … 3000 mm | 600 … 6000 mm | 20 … 200 mm | 40 … 400 mm | |
| Scanning | ⟳ | ⟳ | ⟳ | ⟳ | |
| Reflex | ⟳ | ⟳ | ⟳ | ⟳ | |
| Measuring | ✓ | ✓ | ✓ | ✓ | |
| Setting | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | ▤ ⟳ | |

- 1 Port > USB
- Universal IO-Link Master with PC software
- For devices with IODD Specification 1.0.1 / 1.1
- Status LED for IO-Link and SIO mode
- M12 connection for devices
- Up to 80 mA over USB connection
- Up to 1 A with AC adapter

Via: ▤ Remote teach  ⟳ Via IO-Link

# SOLUTIONS. CLEVER. PRACTICAL.

## di-soric Headquarters

**Germany:** di-soric GmbH & Co. KG | Steinbeisstrasse 6 | 73660 Urbach
Phone +49 71 81 98 79-0 | Fax +49 71 81 98 79-179 | info@di-soric.com

## di-soric Subsidiaries

**Austria:** di-soric Austria GmbH & Co. KG | Phone +43 7228 72 366 | info.at@di-soric.com
**France:** di-soric SAS | Phone +33 476 61 65 90 | info.fr@di-soric.com
**Netherlands:** di-soric B. V. | Phone +31 413 33 13 91 | info.nl@di-soric.com
**Switzerland:** di-soric SNT AG | Phone +41 44 817 29 22 | info.ch@di-soric.com
**Singapore:** di-soric Pte. Ltd. | Phone +65 6634 38436 | info.sg@di-soric.com

Further information: www.di-soric.com/international                    **www.di-soric.com**