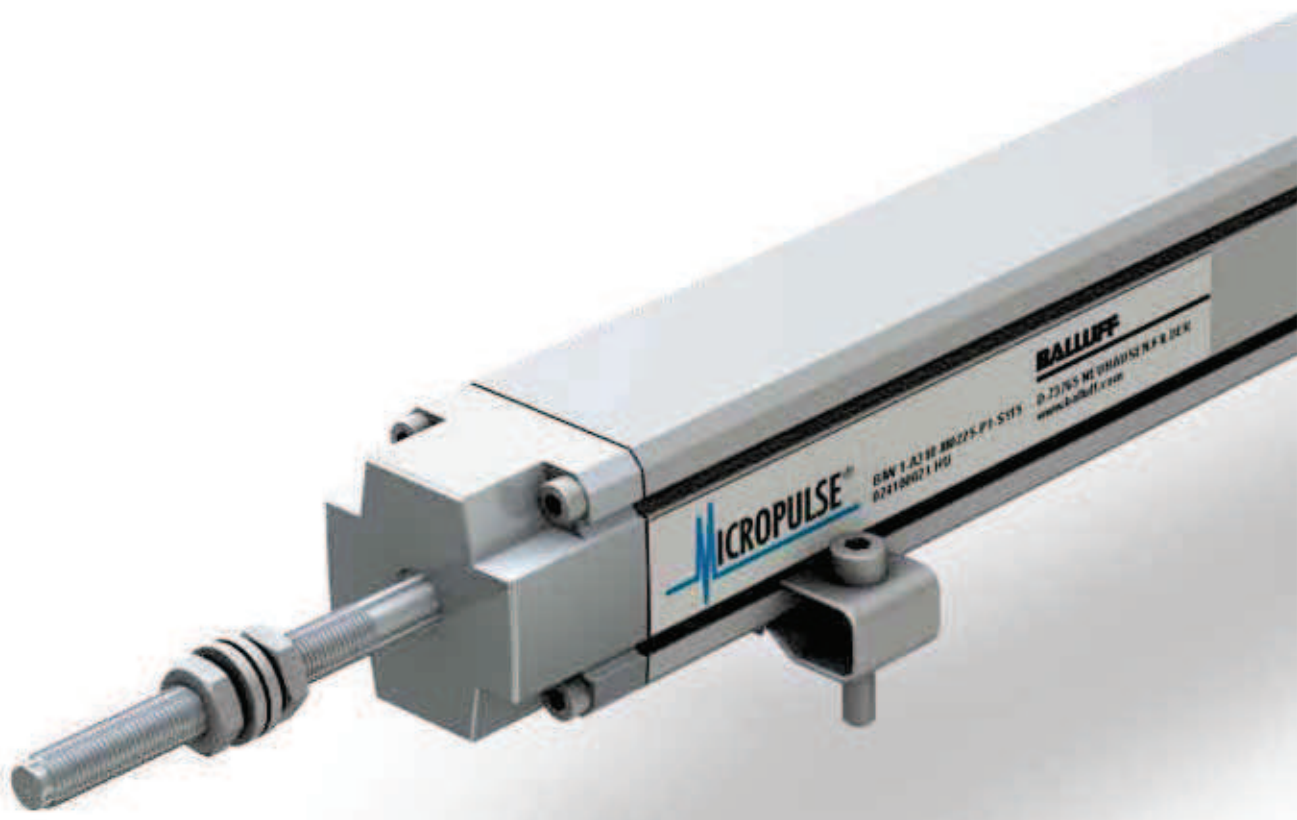
# Micropulse Transducers

## Profile BIW

- The contactless potentiometer in the compact push rod design
- With high measurement rate for quick movements
- The characteristic of the analog output can be inverted via a programming input



# Contents



## MICROPULSE®

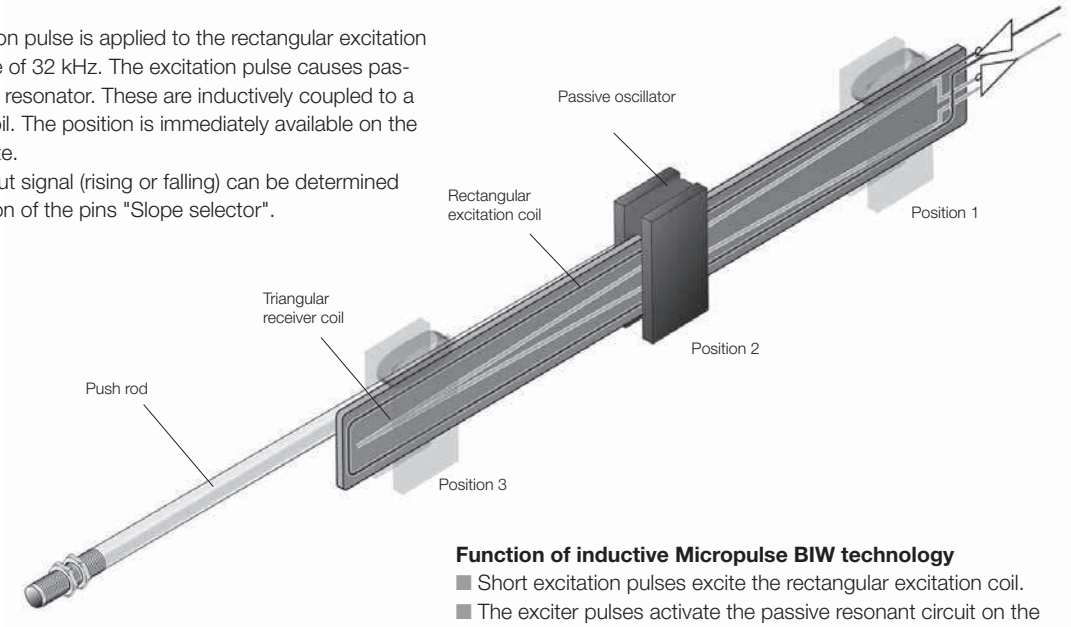
**The inductive BIW transducer is based on a new, patented operating principle which detects the actual position without making contact.**

The BIW transducer contains a transmitter/receiver sensor element and a resonant circuit, all protected by an extruded aluminum housing.

The resonant circuit is attached to a connecting rod, which is secured on the part of the machine whose position needs to be determined.

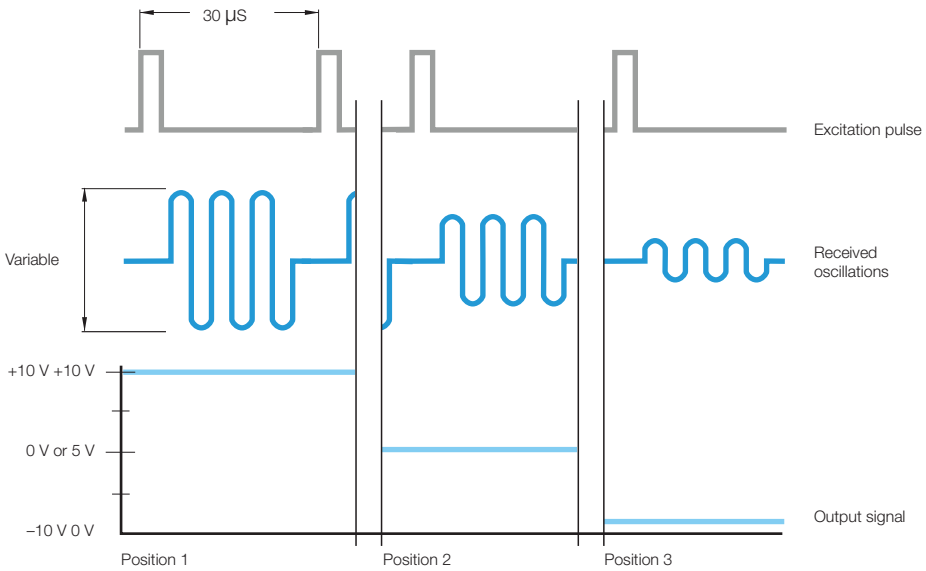
A momentary excitation pulse is applied to the rectangular excitation coil at a sampling rate of 32 kHz. The excitation pulse causes passive oscillations in the resonator. These are inductively coupled to a triangular receiving coil. The position is immediately available on the output, and is absolute.

The slope of the output signal (rising or falling) can be determined through the connection of the pins "Slope selector".



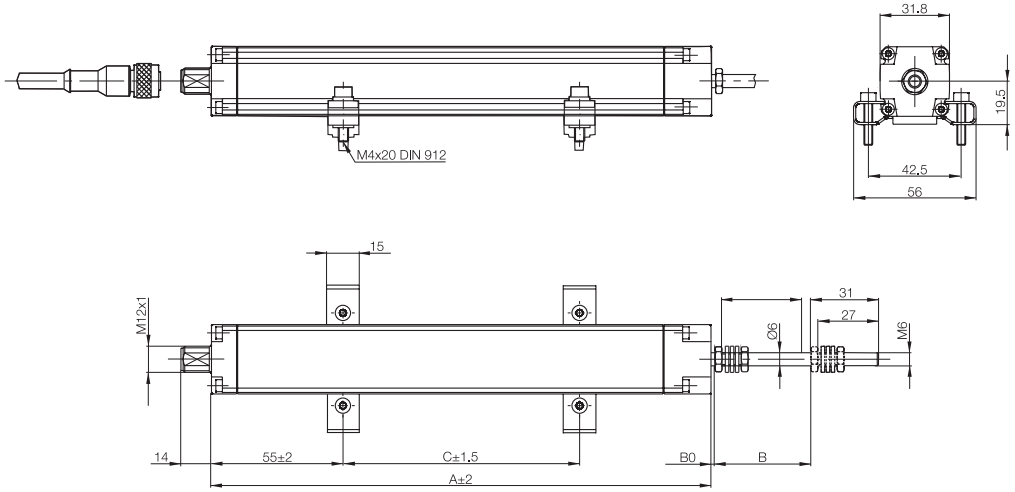

**Function of inductive Micropulse BIW technology**

- Short excitation pulses excite the rectangular excitation coil.
- The exciter pulses activate the passive resonant circuit on the magnet via the excitation coil.
- The resonant circuit on the magnet transmits the frequency inductively to the triangular receiver coil without making contact.
- The amplitude level varies according to the position of the magnet resonant circuit. Comparable to the amplitude level, the electronics integrated in the Micropulse BIW issue a standard analog voltage or current signal.



| | |
|---|---|
| Series | **Profile P1 BIW** |
| Shock load | 100 g/2 ms |
| Vibration | 12 g, 10...2000 Hz |
| Dielectric strength | 500 V (GND to housing) |
| Degree of protection as per IEC 60529 | IP 54 |
| Housing material | Anodized aluminum |
| Fasteners | Mounting clamps |
| Connection | Connector M12, 8-pin standard |
| Standard nominal strokes [mm] | 0075, 0100, 0130, 0150, 0175, 0225, 0260, 0300, 0360, 0375, 0400, 0450, 0500, 0600, 0650, 0750 |






| | |
|---|---|
| Housing length | A = nominal stroke + 100 mm |
| Mechanical zero point | B0 = 0 + 2 mm |
| Electrical zero point | B0 + 5 mm |
| Electrical stroke = mechanical stroke | B = nominal stroke + 10 mm |
| **Recommend clamp distance** | |
| Nominal stroke ≤ 300 mm | C = nominal stroke – 20 mm |
| Nominal stroke 300 mm to ≤ 600 mm | C = nominal stroke – 15 mm |
| Nominal stroke > 600 mm | C = nominal stroke – 10 mm |

**Calculation example:**

BIW1-...-M0100-P1-S115
Nominal stroke 100
A = 200
B = 110
C = 80

**Scope of delivery**
- Transducer
- Quick start instructions
- 2 mounting clamps BIW-A-MF01-M-43

Please order separately:
Plug connectors, page 240

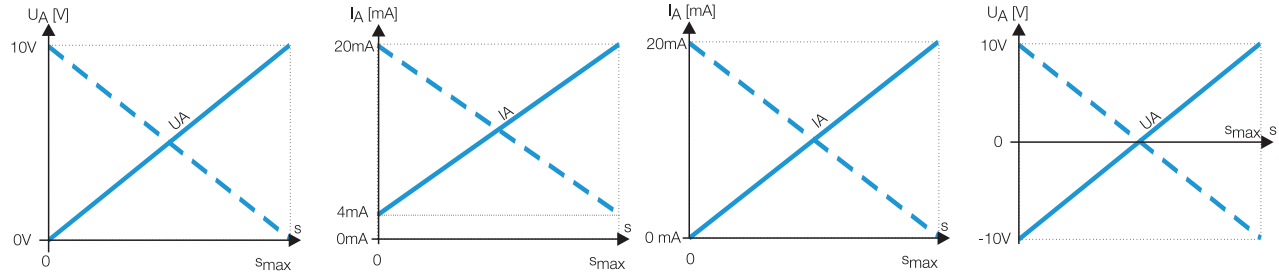
**Caution!**
**Please read the instructions in the user's guide before designing, installing, and commissioning! www.balluff.de**

# Sampling rate 32 kHz

**Properties**
BIW transducers have these outstanding features:
- High resolution and reproducibility
- Resistance to shock, vibration and noise fields
- An absolute rising or falling analog output signal
- A captive sensor element
- Sampling rate 32 kHz
- Potential-free
- Non-contact measuring principle

| | |
|---|---|
| Series | |
| Output signal | |
| Transducer interface | |
| Customer device interface | |
| Part number | |
| Output voltage $U_{out}$ | |
| Output current $I_A$ | |
| Max. current load per output | |
| System resolution | |
| Repeat accuracy | |
| Sampling rate | |
| Max. linearity deviation | |
| Supply voltage | |
| No-load current consumption | |
| Operating temperature | |
| Storage temperature | |
| Shock load | |
| Vibration | |
| Dielectric strength | |
| Degree of protection as per IEC 60529 | |
| Housing material | |
| Fasteners | |
| Connection | |
| Housing length A | |
| Mechanical stroke B | |

| | **Profile P1 BIW** | **Profile P1 BIW** | **Profile P1 BIW** | **Profile P1 BIW** |
|---|---|---|---|---|
| | Analog | Analog | Analog | Analog |
| | **A** | **E** | **C** | **G** |
| | Analog | Analog | Analog | Analog |
| | BIW1-**A**310-M_ _ _ _-P1-S115 | BIW1-**E**310-M_ _ _ _-P1-S115 | BIW1-**C**310-M_ _ _ _-P1-S115 | BIW1-**G**310-M_ _ _ _-P1-S115 |
| | 0...10 V | | | –10...10 V |
| | | 4...20 mA | 0...20 mA | |
| | 6 mA | | | 6 mA |
| | 5 µm | 5 µm | 5 µm | 5 µm |
| | 10 µm | 10 µm | 10 µm | 10 µm |
| | typ. 32 kHz | typ. 32 kHz | typ. 32 kHz | typ. 32 kHz |
| | ≤ 0.02% | ≤ 0.02% | ≤ 0.02% | ≤ 0.02% |
| | 18...30 V DC | 18...30 V DC | 18...30 V DC | 18...30 V DC |
| | ≤ 80 mA | ≤ 80 mA | ≤ 80 mA | ≤ 80 mA |
| | –20...+85 °C | –20...+85 °C | –20...+85 °C | –20...+85 °C |
| | –40...+100 °C | –40...+100 °C | –40...+100 °C | –40...+100 °C |
| | 100 g/2 ms | 100 g/2 ms | 100 g/2 ms | 100 g/2 ms |
| | 12 g, 10...2000 Hz | 12 g, 10...2000 Hz | 12 g, 10...2000 Hz | 12 g, 10...2000 Hz |
| | 500 V (GND to housing) | 500 V (GND to housing) | 500 V (GND to housing) | 500 V (GND to housing) |
| | IP 54 | IP 54 | IP 54 | IP 54 |
| | Anodized aluminum | Anodized aluminum | Anodized aluminum | Anodized aluminum |
| | Mounting clamps | Mounting clamps | Mounting clamps | Mounting clamps |
| | Connector M12, 8-pin standard | Connector M12, 8-pin standard | Connector M12, 8-pin standard | Connector M12, 8-pin standard |
| | Nominal stroke + 100 mm | Nominal stroke + 100 mm | Nominal stroke + 100 mm | Nominal stroke + 100 mm |
| | Nominal stroke + 10 mm | Nominal stroke + 10 mm | Nominal stroke + 10 mm | Nominal stroke + 10 mm |




Output signal can be inverted via programming inputs.

Please enter code for output signal and nominal stroke in the part number.

**Scope of delivery**
- Transducer
- Quick start instructions
- 2 mounting clamps BIW-A-MF02-M

Please order separately:
Plug connectors, page 232

**Ordering example:**

**BIW1-_ 310-M_ _ _ _-P1-S115**

**Output signal**

| | |
|---|---|
| A | 0...+10 V |
| G | –10...+10 V |
| E | 4...20 mA |
| C | 0...20 mA |

**Standard nominal stroke [mm]**

| | | | |
|---|---|---|---|
| 0075 | 0100 | 0130 | 0150 |
| 0175 | 0225 | 0260 | 0300 |
| 0360 | 0375 | 0400 | 0450 |
| 0500 | 0600 | 0650 | 0750 |