BALLUFF

sensors worldwide

MICROPULSE® PF
Low-profile linear position transducer

MICRO*PULSE*®

BALLUFF
BTL0P4E
BTL6-A500-M0203-PF-S115

M5x25 ISO 4762

MICRO*PULSE*® **PF**
Low-profile linear position transducer

The Perfect Fit

Linear position sensors play an important role in today's complex and increasingly efficient manufacturing processes. Providing accurate, reliable, continuous position feedback is only the start. Linear position sensors must also deliver value by being easy to install and easy to use, without taking up valuable space.

The Micropulse® PF-series linear transducer is the *Perfect Fit*. The Micropulse PF provides accurate, reliable linear position feedback in a sleek, low-profile anodized aluminum housing. Incorporating time-tested, field-proven non-contact magnetostrictive sensing technology, the Micropulse PF represents an unmatched combination of performance, usability, and value.

– Low-profile, space-saving housing

– Non-contact magnetostrictive technology

– Absolute analog output

– Stroke lengths up to 180"

– Accurate, rugged, and reliable

– 5-day standard delivery

Assembled
in the USA

Perfect Fit

MICRO*PULSE*® **PF**

Micropulse PF Applications:

- **Plastic injection and blow molding**
- **Woodworking and metalforming**
- **Material handling and packaging machinery**
- **General factory automation**
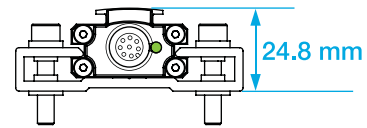
Sliding captive or free-floating position magnets

Freely-positionable mounting clamps included

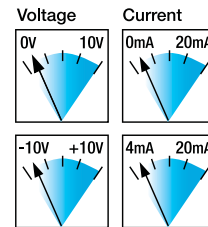## Integrated status LED

Industry-standard M12 connector

Low-Profile Housing

24.8 mm

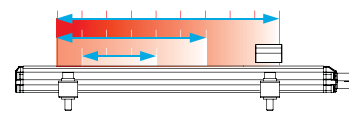Less than 1" high, the Micropulse PF is ideal for space-critical applications.

The rugged, compact, extruded-aluminum housing fits into even the tightest space.

Analog Outputs

Voltage
0V   10V
-10V   +10V

Current
0mA   20mA
4mA   20mA

The Micropulse PF is available with voltage (0…10V, -10…+10V) or current (0.1…20 mA or 4…20 mA) outputs. The sensing element and processing electronics are contained within the Micropulse PF's low-profile housing. No additional processing electronics are required.
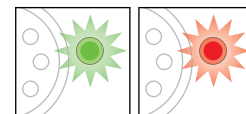
Scalable Stroke

ZERO and SPAN can be easily and quickly programmed anywhere within the active stroke. Programming can be done through the connector, either manually or by using the optional in-line programming box.

Bi-color Status LED

The integrated bi-color status LED provides at-a-glance confirmation of operational status, and also provides visual feedback during stroke scaling.

LED	Operating state
Green	**Normal function** Magnet is within the measuring range
Flashing red	**Out of range** Magnet is outside the measuring range
Red	**Error** No magnet or magnet outside the limits

MICRO*PULSE*® PF
Accessories

Teach Box

Description	Programming box
for series	BTL6 profile PF
Part number	**BTL7-A-CB02-S115**
Degree of protection	IP40
Current draw	max. 50 mA (not including transducer)

Note: The programming box is an optional accessory that can be used to simplify stroke scaling. Stroke scaling can also be done manually through the connector.

Position Magnets

Description	Magnet – sliding captive	Magnet – floating
for series	BTL6 profile PF	BTL6 profile PF
Ordering code	**BAM01FC**	**BAM014M**
Part number	BTL5-T-2814-1S	BTL5-P-3800-2
Material	Housing	Plastic	Plastic
	Sliding surface	Plastic	
Weight	approx. 28 g	approx. 12 g
Magnet traverse velocity	any	any
Operating/storage temperature range	-40...+85 °C	-40...+85 °C
Included		Magnet 2 fastening screws DIN 84 M4x35-A2 with washers and nuts

Control Arm

Description	Control arm with swivel eye and M5 male threaded end
for series	BTL6 profile PF
Version	captive
Ordering code	**length dependent, order by part number below**
Part number	BTL2-GS10-_ _ _ _-A
Material	Aluminum
Weight	approx.150 g/m

S115 Connectors and Cables

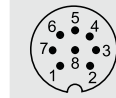| Description	Connector, female, straight, M12	Molded connector with cable, female, straight, M12	Molded connector with cable, female, right angle, M12
Ordering code	**BCC00YA**	**see table below***	**see table below***
Part number	BKS-S115-00	BKS-S115-PU-_ _	BKS-S116-PU-_ _
Number of conductors	8	8	8
Conductor cross section	n/a	0.25 mm²	0.25 mm²
Contacts	Brass, gold-plated	Brass, gold-plated	Brass, gold-plated
Wire connection	Screw terminals	n/a	n/a
Cable jacket material	n/a	Molded-on PUR	Molded-on PUR
Cable jacket diameter	6...8 mm	6.6 +/-0.2 mm	6.6 +/-0.2 mm
Housing material	Nickel-plated brass	Nickel-plated brass and PUR	Nickel-plated brass and PUR
Min. bend radius	Cable dependent	Dynamic = 5 x Ø, Static = 3 x Ø	Dynamic = 5 x Ø, Static = 3 x Ø
Enclosure rating per IEC 60529	IP 67 (when attached)	IP 67 (when attached)	IP 67 (when attached)

*Cable ordering codes

Length (meters)	Straight	Right angle
02	BCC00YE	BCC00YU
05	BCC00YF	BCC00YW
10	BCC00YH	BCC00YY
15	BCC00YJ	BCC00YZ
20	BCC00YK	BCC00Z0
25	BCC00YL	BCC00Z1

Additional cable lengths available on request.

For additional accessories, refer to Technical Description/User Guide, available at www.balluff.com/BTL-PF.

Wiring Table

Pin assignment of S115 connector (view of connector pins of transducer)

Pin	BKS-S115-... BKS-S116-...	-A500	-G500	-C500	-E500
1	Yellow	Not used[1]			
2	Gray	0 V (signal GND)			
3	Pink	Not used[1]			
4	Red	La (programming input)			
5	Green	0 to 10 V	-10 to 10 V	0.1 to 20 mA	4 to 20 mA
6	Blue	GND[2]			
7	Brown	10 to 30 V (supply)			
8	White	Lb (programming input)			

[1]Unassigned leads can be connected to the GND on the controller side but not to the shield.
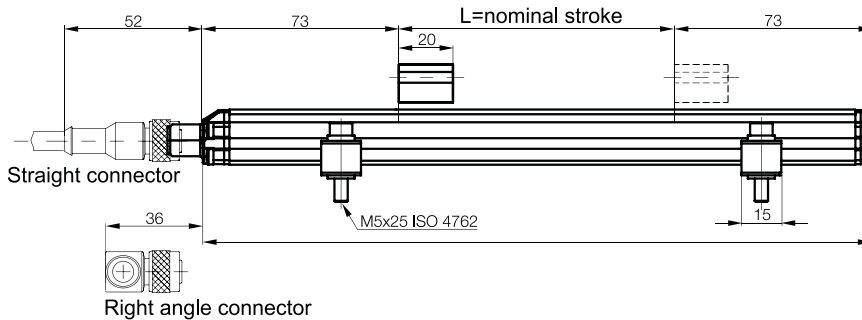[2]Reference potential for supply voltage and EMC-GND.
Note: For proper wiring and grounding information, refer to user's guide available at www.balluff.com/BTL-PF
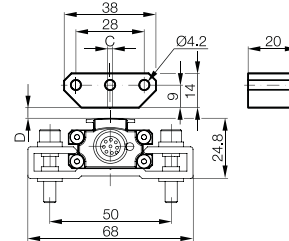
MICRO*PULSE*® **PF**
Specifications

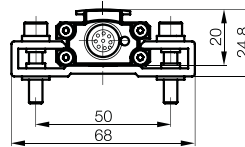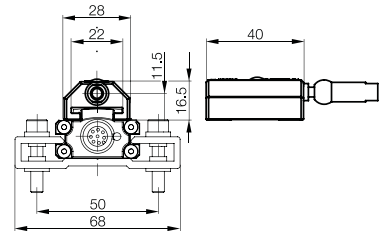| Product Series		**Micropulse® PF Profile Style**
Specifications*		
Measurement type		Linear displacement
Measuring range		51 mm to 4572 mm (2" to 180")
Electrical outputs	Analog voltage	0...10 Vdc -10...+10 Vdc
	Analog current	0.1...20 mA 4...20 mA
Field-scalable stroke		100% field-scalable using programming inputs or optional programming box
Position resolution	Voltage output	≤ 0.35 mV
	Current output	≤ 0.7 µA
Non-linearity	Stroke length ≤ 500 mm	± 200 µm
	Stroke length > 500 mm	± 0.04% of full stroke
Connection type		8-pin, M12 connector
Operating voltage		10...30 Vdc
Operating current		≤ 150 mA
Overvoltage and reverse polarity protection		Yes, up to 36 Vdc
Operating temperature		-25...+70 °C
Humidity		Anodized aluminum
Shock rating		50 g/6 ms per IEC 60068-2-27
Vibration rating		12 g, 10...2000 Hz per IEC 60068-2-6
Environmental rating		IP67 (with connector attached)

*For complete technical specifications, refer to Technical Description/User Guide, available at www.balluff.com/BTL-PF

Floating magnet

Captive magnet

Straight connector

Right angle connector

Mounting clamps

Mounting clamps with isolation washers and screws included with transducer.

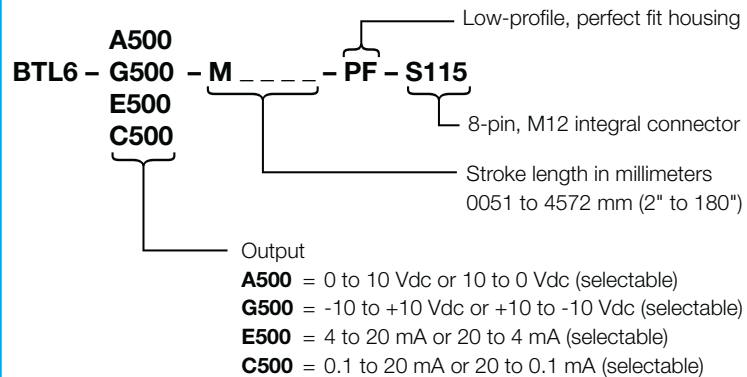**BTL6-A-MF07-A-PF/M5**
1 pair of replacement mounting clamps and screws, item no. 180961

Length			Number of mounting clamp pairs
	to	250 mm	1
251	to	750 mm	2
751	to	1250 mm	3
1251	to	1750 mm	4
1751	to	2250 mm	5
2251	to	2750 mm	6
2751	to	3250 mm	7
3251	to	3750 mm	8
3751	to	4250 mm	9
more than	4251 mm		10

How to order

Low-profile, perfect fit housing

```
           A500
BTL6 – G500  – M _ _ _ _ – PF – S115
           E500
           C500
```

8-pin, M12 integral connector

Stroke length in millimeters
0051 to 4572 mm (2" to 180")

Output
A500 = 0 to 10 Vdc or 10 to 0 Vdc (selectable)
G500 = -10 to +10 Vdc or +10 to -10 Vdc (selectable)
E500 = 4 to 20 mA or 20 to 4 mA (selectable)
C500 = 0.1 to 20 mA or 20 to 0.1 mA (selectable)

Commonly specified stroke lengths:

Inch	**mm**	Inch	**mm**	Inch	**mm**	Inch	**mm**	Inch	**mm**
4	**0102**	6	**0152**	10	**0254**	12	**0305**	18	**0457**
24	**0610**	30	**0762**	36	**0914**	48	**1220**	60	**1524**
72	**1829**	84	**2134**	100	**2540**	120	**3048**	140	**3556**

Inch to millimeter conversion: inches x 25.4 = millimeters

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Packaging

The economical Micropulse PF's low-profile housing makes it ideal for applications on material handling and packaging machinery, such as automatic size changing.

Plastics and Rubber Manufacturing

The Micropulse PF is the ideal replacement for wear-prone resistive linear potentiometers on plastic injection molding and blow molding machinery. Non-contact magnetostrictive technology assures long life and trouble-free operation.

Tire Manufacturing

The Micropulse PF provides accurate, reliable, continuous position feedback on tire manufacturing machinery, such as curing presses and extruders.

www.balluff.com/BTL-PF

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Doc. No. 877743/Mat. No. 210292 E ● Edition 2011-04 ● Replaces Edition 2010-09 ● Product specifications, availability, and pricing are subject to change without notice.

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