

**Analog switching amplifier for direct installation**

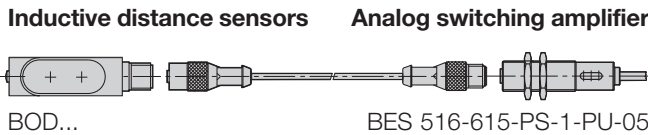
This switching amplifier allows you to easily program sensors having an analog output signal, such as the BOD family, with three switchpoints for direct programming.

The sensor connected to the switching amplifier is simply brought to the desired switching distance from the target. Then connecting the control line to the (+) side of the supply voltage enables

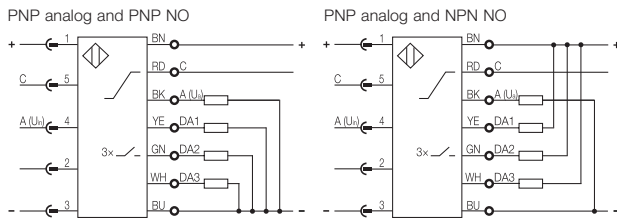
a "Teach-in" mode, whereby the set distance is assigned to the signal level present and this value is stored in the device. This procedure is assisted using LED's. During operation these LED's are available as switching state indicators.

For sensors with a temperature output the analog temperature signal is made available in unchanged form on the device output.

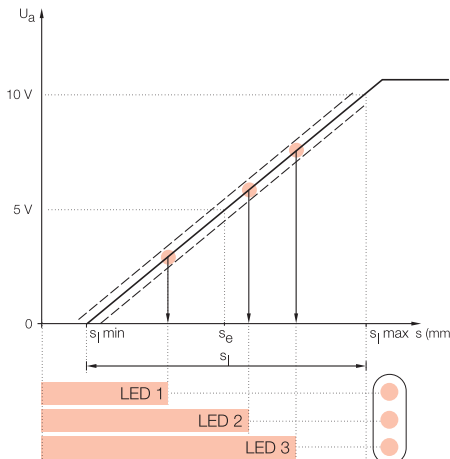
**Wiring example**



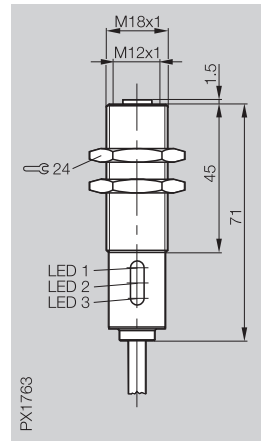
**Wiring diagrams**



**Approach curve**



Housing size	<b>M18x1</b>
Application	Analog sensors BOD



PNP analog and PNP NO	BES 516-615-PS-1-PU-05
PNP analog and NPN NO	BES 516-615-NS-1-PU-05
Rated operational voltage U <sub>e</sub>	24 V DC
Supply voltage U <sub>B</sub>	15...30 V DC
Ripple	≤ 15 % of U <sub>e</sub>
Rated insulation voltage U <sub>i</sub>	75 V DC
Rated operational current I <sub>e</sub>	100 mA
per output	
No-load supply current I <sub>0</sub> max.	≤ 20 mA
Off-state current I <sub>r</sub>	≤ 10 μA
Polarity reversal protected	only against ±-reversal
Short circuit protected	yes
Ambient temperature range T <sub>a</sub>	-10...+70 °C
Switching frequency f	2 kHz
Utilization category	DC 13
Function indicator for each output	yes
Analog input	
Input voltage U <sub>in</sub>	0...10 V (brought out to output A)
Input impedance	4.2 kΩ
Switching outputs	
Freely programmable switching outputs	3
Hysteresis H	500 mV
Temperature drift	≤ 2 % of U <sub>in</sub> max.
Degree of protection per IEC 60529	IP 67
Housing material	CuZn coated
Connection input/output	Connector/ 5 m Cable PUR
No. of wires x cross-section	7x0.25 mm <sup>2</sup>



**Analog switching amplifier for control cabinet installation**

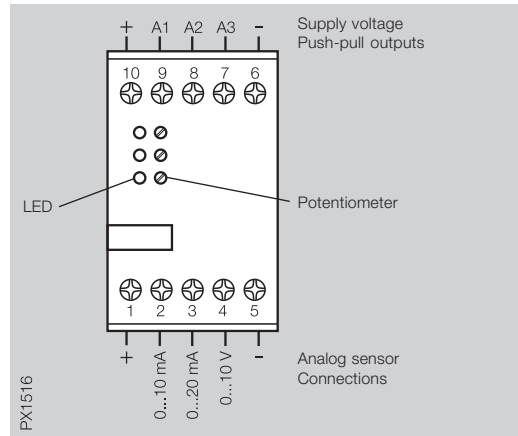
The analog switching amplifier is powered with 24 V and provides the supply voltage for analog sensors like the Balluff BOD. The device is driven directly by the current signals (2) or voltage signals (4).

From this signal, separate push-pull final stages (PNP/NPN) are used to create three switch points (A1...A3) which can be set independently using the potentiometer on the front side. The respective switching state is indicated by an associated LED. The operating direction (rising/falling) can be set using DIP switches inside the unit. This circuit allows width-adjustable "ranges" to be defined (cascading).

The voltage signal (4) proportional to the current can be used to drive additional switching amplifiers (expansion for additional switch points).

The signal inputs on the analog switching amplifier are protected against polarity reversal and the push-pull output stages against short circuit (internal fuses).

Description	<b>Analog switching amplifier</b> for analog current and voltage signals
Application	Analog sensors BOD



Ordering code	BES 516-611-A-1
Supply voltage $U_B$	24 V DC $\pm 10\%$
Ripple	$\leq 10\%$
Input circuit	
Current input terminal 2/terminal 3	0...10 mA/0...20 mA
Input impedance	308 $\Omega$ /154 $\Omega$
Voltage input terminal 4	0...10 V
Input impedance	13 k $\Omega$
Adjustment range	3...100 %
Hysteresis (referenced to set value)	3 %
Output current circuit	
Voltage drop PNP-Transistor	$\leq 3.5$ V
Voltage drop NPN-Transistor	$\leq 2.5$ V
Operating current per push-pull stage	$\leq 200$ mA
Housing material	PC (glass fiber reinforced)
Housing dimensions	74x45x120 mm
Connection	Screw terminals
max. wire cross-section	up to 2.5 mm <sup>2</sup>
Housing attachment	Snap mount on rail
Ambient temperature range $T_a$	0...+50 °C
Degree of protection per IEC 60529	Terminals IP 20, housing IP 40



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