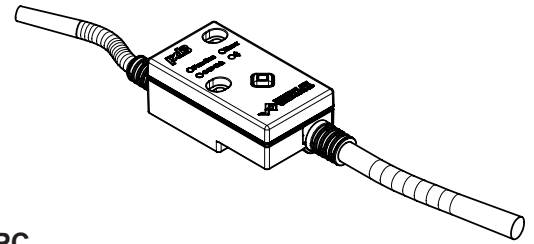


Digital amplifier electronics PD3

- For 1 proportional or switching solenoid
- With cable outlet for free choice of the valve connection plug
- Protection class IP 67
- Interface:
 - IO-Link
 - Analog
 - CANopen / J1939
- Adjustable via Bluetooth by means of the Wandfluh App or via PC


DESCRIPTION

Amplifier with cable outlet for free choice of the connection plug such as DIN EN 175301-803/ISO 4400, AMP Junior Timer or Deutsch DT04-2P. Protection class IP67. The connection and solenoid cable are mounted fixed in the device. With the IO-Link interface, the PD3 electronics can both be controlled and diagnosed. The amplifier is also available mounted directly on the solenoid.

FUNCTION

The electronics has a **Pulse-Width-Modulated** current output. This output is adjustable for a proportional or switching solenoid. The parameterisation is made via Bluetooth by means of the Wandfluh App or by means of the parameterisation and diagnostics software «PASO» of Wandfluh.

APPLICATION

Due to its water spray resistant execution, the amplifier is suitable for most diverse applications. The M12 connector allows easy connection to standardized M12 sensor/actuator boxes. With the IO-Link interface, the PD3 electronics is prepared for IIoT and Industry 4.0.

TYPE CODE

 P D3 4 0 1 D8 0 - A #

Connector																				
Digital																				
Adjustable via Bluetooth by means of the App or PASO																				
Basic amplifier																				
1-solenoid execution																				
Supply voltage	8...32V (IO-Link: only 24V)																			
Analog input	Voltage / current*																			
12-bit resolution	For analog input																			
Option fieldbus:																				
• IO-Link or* analog (without Stab. Output)	<input type="checkbox"/> Standard																			
• Only Analog (with Stab. Output)	<input type="checkbox"/> A																			
• CANopen	<input type="checkbox"/> C																			
• J1939	<input type="checkbox"/> J																			
Connection cable	<input type="checkbox"/> 1.5 m, with M12 plug																			
Design index (subject to change)																				

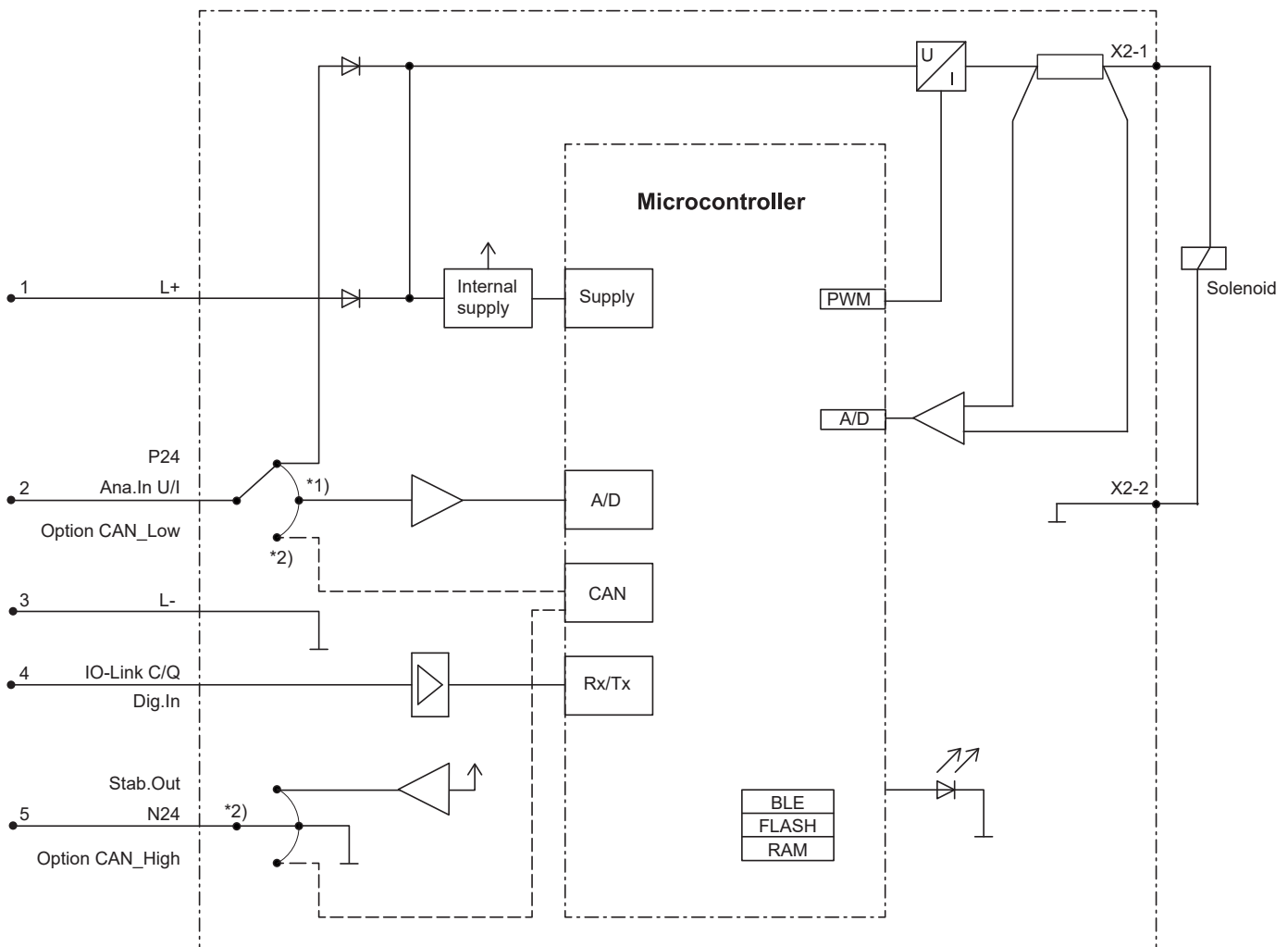
*switchable by software

GENERAL SPECIFICATIONS

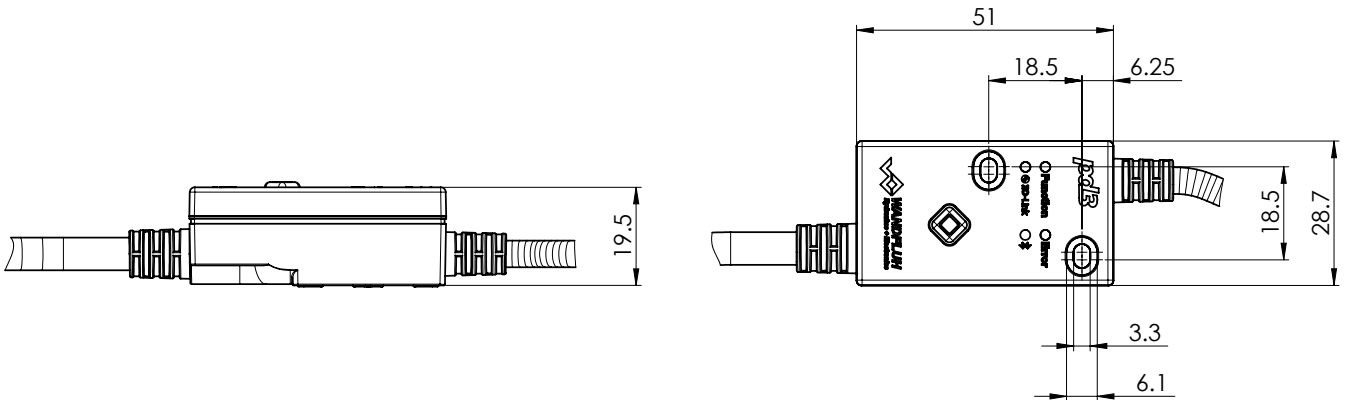
Execution	With cable outlet for free choice of the valve connection plug
Connections	Connection cable PVC with M12 plug (male) 5-pole length = 1.5 m Solenoid cable PVC, 2 x 0,34 mm length = 0,5 m
Dimensions	See drawing page 2
Ambient temperature	-40...+85 °C

ELECTRICAL SPECIFICATIONS

Protection class	IP 67 acc. to EN 60 529	Dither	Frequency adjustable 4...500 Hz Factory setting 80 Hz
Supply voltage	IO-Link: 24 V (18..30V), Analog: 8..32V	Temperature drift	Level adjustable 0...400 mA Factory setting 180 mA
Residual ripple	< 1.3 Vpp	Digital inputs	<1 % bei $\Delta T = 40^\circ C$ 1 input high-active Switching threshold high 6...32 VDC Switching threshold low 0...1 VDC
Fuse	Low	IO-Link interface	Data line C/Q, COM2 = 38,4 kBaud
No-load current	Approx. 30 mA	Bluetooth	Low Energy with password protection and encryption
Max. current consumption	No-load current + 2,5 A per solenoid	Fieldbus (option)	CANopen
Analog input	1 input non-differential Voltage / current (switchable by means of parameter) 0...+/- 10V or 0/4...20mA Usable as frequency input (frequency 5...5000 Hz) or as PWM input (automatic frequency detection)	LEDs	J1939 (on request) Function green Bluetooth blue IO-Link green Error red
Resolution	12-bit	EMV	
Input resistance	Voltage input >100 k Ω Load for current input = 124 Ω	Immunity	EN 61 000-6-2
Stabilised output voltage	5 VDC max. load 20 mA	Emission	EN 61 000-6-4
Solenoid current:			
• Minimal current I_{min}	Adjustable 0... I_{max} mA Factory setting 150 mA		
• Maximal current I_{max}	Adjustable I_{min} ...2450 mA Factory setting 700 mA		

BLOCK DIAGRAM


*1) switchable by software
 *2) fix selection according to type code

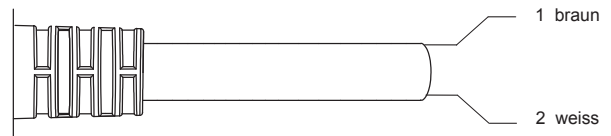
DIMENSIONS

CONNECTOR ASSIGNMENT

Valve connection cable (X1)
 With mounted M12 connector
 5-pole male A coded



- 1 = L+, supply voltage+
- 2 = P24/2L+, additional supply+ (IO-Link) or command value (analog)
- 3 = L-, supply voltage 0 VDC
- 4 = C/Q (IO-Link) or digital input (analog)
- 5 = N24/2L-, addition 0 VDC (IO-Link)
 or Stab. Output (only with option [A] «only analog»)

Solenoid cable (X2)
 Open end for free choice of the valve connection plug



- 1 = Solenoid +
- 2 = Solenoid -

START-UP

Information regarding installation and commissioning are contained in the information leaflet supplied with the amplifier electronics and in the operating instructions.

Additional information can be found on our website:
 «www.wandfluh.com»

Free-of-charge download:

- «PASO» Parameterisation software
- Operating instruction (*.pdf)
- Wandfluh App for Android (Google Play) and iOS (App Store)

ADDITIONAL INFORMATION

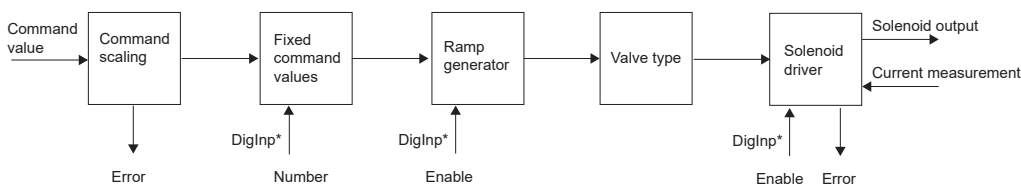
Wandfluh electronics general	Wandfluh documentation register	1.13
Proportional spool valves	register	1.10
Proportional pressure valves	register	2.3
Proportional flow control valves	register	2.6

ACCESSORIES

USB/Bluetooth Dongle for Windows

ADJUSTMENTS

The PD3 electronics has a Bluetooth interface. Via the Wandfluh App, the PD3 functions can be analysed and the most important parameters adjusted. By means of the «PASO» parameterisation software the complete parameterisation and diagnosis can be made. For PCs without integrated Bluetooth, a USB/Bluetooth dongle is required (not included in the delivery).

FUNCTION DESCRIPTION


* The digital input is only present with configuration Analog

PD3-AMPLIFIER
Command value scaling

The command value can be applied as a IO-Link value, voltage, current, digital, frequency or PWM signal. The scaling takes place via the parameter «Interface». Furthermore, the command value can be monitored for a cable break. A dead band can also be set.

Fixed command value (with configuration Analog).

There is 1 fixed command value available, which can be selected via the digital input. This function has to be configured before in PASO.

Ramp generator

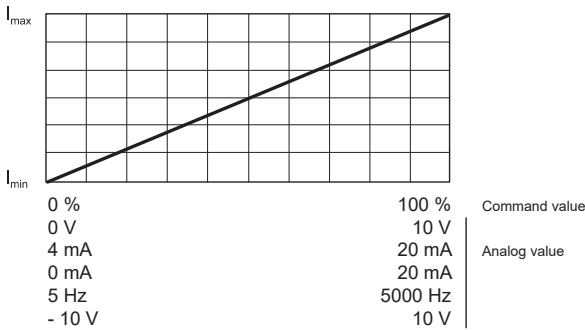
Two linear ramps for up and down are available which can be adjusted separately.

Valve type

Adjustment possibilities: switching solenoid or proportional solenoid.

Mode of operation «Command value unipolar/bipolar (1-Sol)»

Dependent on a command value signal (voltage, current, digital, frequency or PWM), the solenoid is controlled (e.g. 0...10V correspond to 0...100% command value, which again corresponds to I_{min} ... I_{max} solenoid driver).


Signal recording

Furthermore, the «PD3» amplifier electronics have a signal recording function. This, by means of PASO, enables the recording of various system signals, such as command value, solenoid current, etc., which can be represented on a common time axis.

Solenoid driver

A Pulse-Width-Modulated current output is available. A dither signal is superimposed, whereby the dither frequency and the dither level are separately adjustable. The minimum (I_{min}) and maximum (I_{max}) current can be adjusted. The solenoid output can also be configured as switching solenoid output. In this case, a power reduction can be adjusted.

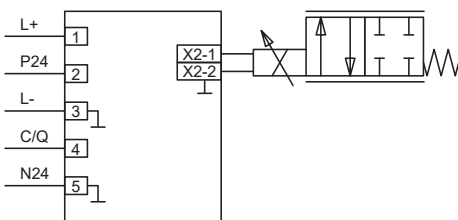
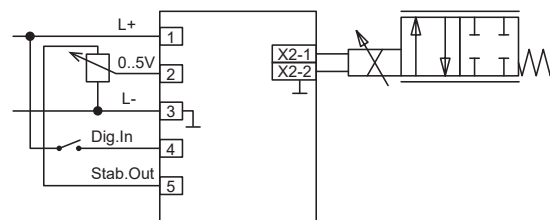
Optimisation of characteristic curve

An adjustable characteristic curve «Command value input – solenoid current output» enables an optimised (e.g. linearised) characteristic of the hydraulic system

Channel enabling

Enable can be configured by means of PASO or the App:

- on
- off
- external (digital input with configuration Analog)
- bus (with configuration IO-Link)

CONNECTION EXAMPLES
Connection example IO-Link

Connection example analog with stabilised output

Connection example analog without stabilised output
