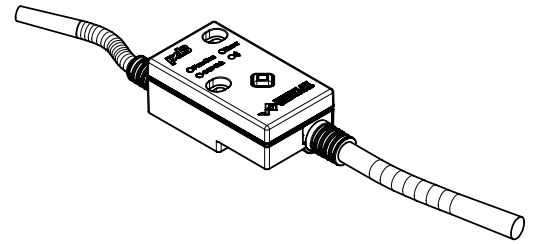


Digital amplifier electronics PD3

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


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.

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

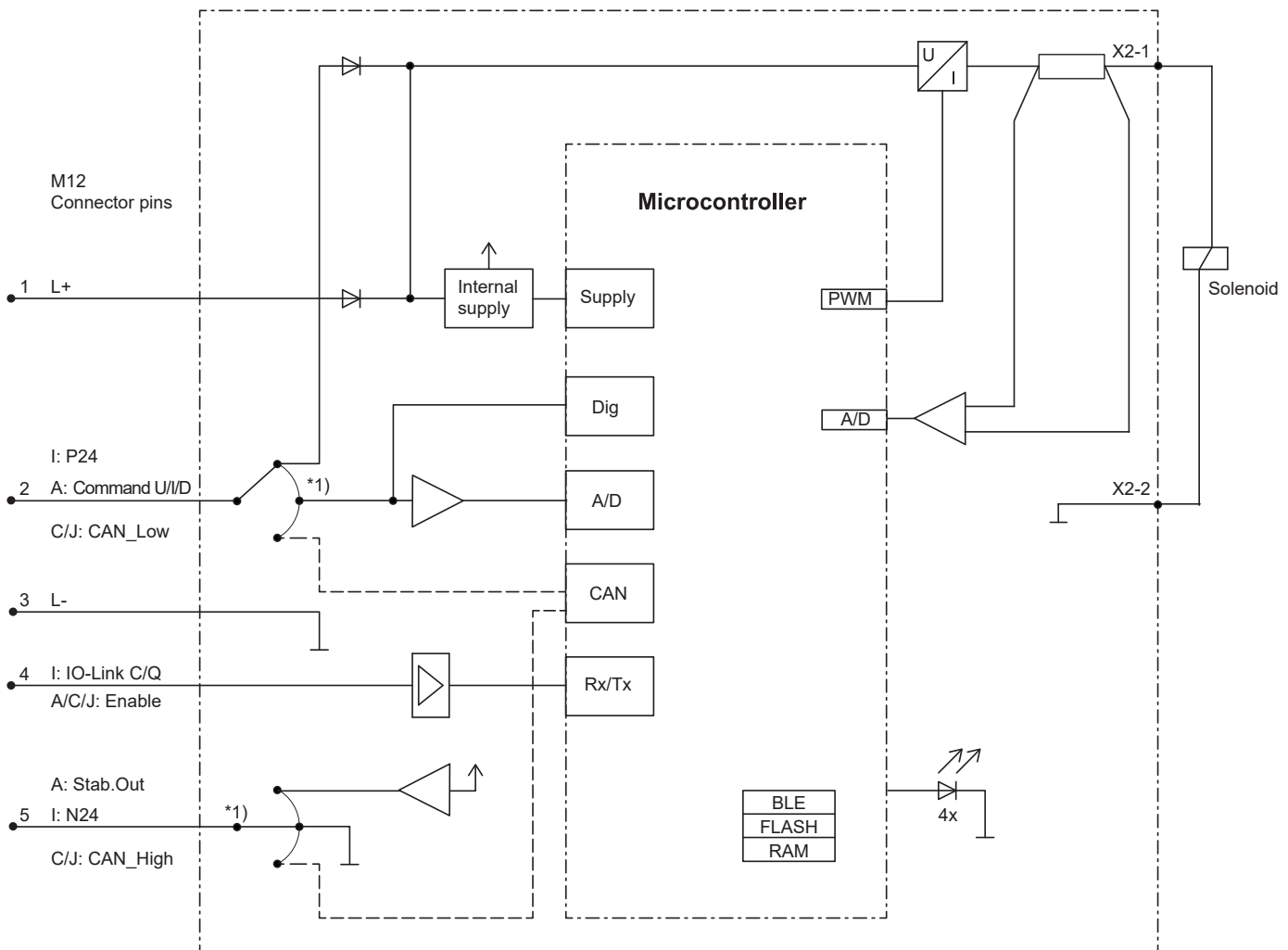
		P	D3	4	0	1	D8	0	-	A	<input type="checkbox"/>	<input type="checkbox"/>	#	<input type="checkbox"/>
Connector														
Digital														
Adjustable via Bluetooth by means of the App														
Basic amplifier														
1-solenoid execution														
Supply voltage	8...32V (IO-Link: only 24V)													
Command value input	Voltage / current / digital / frequency / PWM									only [A] analogue				
12-bit resolution	For analogue input													
Type selection:														
• IO-Link	<input type="checkbox"/> Standard													
• Only analogue	<input type="checkbox"/> A													
• CANopen	<input type="checkbox"/> C on request													
• J1939	<input type="checkbox"/> J on request													
Connection cable	<input type="checkbox"/> 1.5 m, with M12 plug													
Design index (subject to change)														

GENERAL SPECIFICATIONS

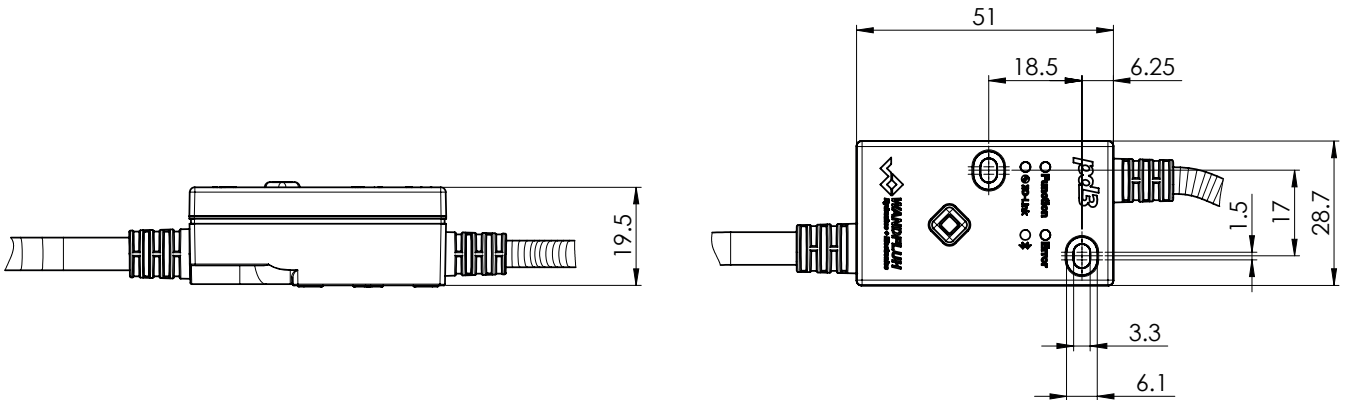
Execution	With cable outlet for free choice of the valve connection plug	
Connections	Connection cable	PVC with M12 plug (male) 5-pole length = 1.5 m
	Solenoid cable	PVC, 2 x 0,34 mm length = 0,5 m
Dimensions	See drawing page 3	
Ambient temperature	-40...+85 °C (Derating see operating manual)	
Installation	2 screws M3x20, tightening torque 0.1 Nm	

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), analogue: 8..32V	Temperature drift	Level adjustable 0...400 mA Factory setting 180 mA
Residual ripple	< 1.3 Vpp	Enable input	<1 % bei $\Delta T = 40^\circ C$ 1 input high-active Switching threshold high 1/2 VCC +2V Switching threshold low 1/2 VCC -2V
Fuse	Low	IO-Link interface	Data line C/Q, COM2 = 38,4 kBaud Use master type B
No-load current	Approx. 30 mA	Bluetooth	Low Energy with access protection Contains FCC ID: QOQ11
Max. current consumption	No-load current + 2,5 A per solenoid	Fieldbus (option)	CANopen (on request) J1939 (on request)
Command value 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) or digital dig. switching threshold high >3V dig. switching threshold low <0.8V	LEDs	Function green Bluetooth blue IO-Link green Error red
Resolution	12-bit	Supply solenoid	with IO-Link galvanically separated via P24/N24
Input resistance	Voltage input >100 k Ω Load for current input = 124 Ω	EMV	2014/53/EU (Radio Equipment Directive) ETSI EN 300 328 47 CFR, Part 15 / ICES-003 ETSI EN 301 489-1 / 301 489-17 EN 61 000-6-2 EN 61 000-6-4
Stabilised output voltage	5 VDC max. load 20 mA	Immunity Emission	
Solenoid current:			
• Minimal current I_{min}	Adjustable 0... I_{max} mA Factory setting 50 mA		
• Maximal current I_{max}	Adjustable I_{min} ...2500 mA Factory setting 700 mA		

BLOCK DIAGRAM


*1) fix selection according to type code

DIMENSIONS

CONNECTOR ASSIGNMENT

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

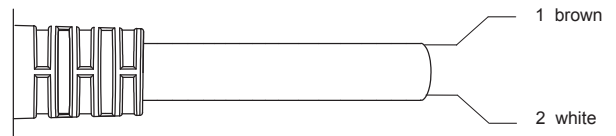

Typ analogue

- 1 (brown) Supply voltage VCC +
- 2 (green) Command value signal
- 3 (grey) Supply 0 VDC/GND
- 4 (white) Digital input
- 5 (yellow) Stabilised output voltage*

Typ I/O-Link

- L+ supply voltage +
- P24/2L+ additional supply +
- L-supply 0 VDC/GND
- C/Q
- N24/2L-additional supply 0 VDC

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



- 1 = Solenoid +
- 2 = Solenoid -

*Caution: Some M12 distributor boxes have the earth connection on pin 5 → Short-circuit hazard!

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:

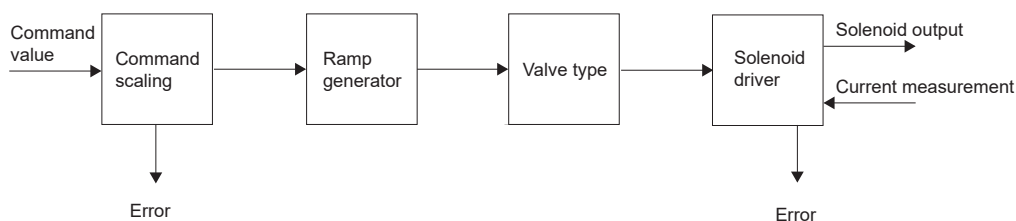
- Operating instruction (*.pdf)
- Wandfluh App for Android (Google Play) and iOS (App Store)

ADDITIONAL INFORMATION

Wandfluh electronics general	Wandfluh documentation register
Proportional spool valves	1.13
Proportional pressure valves	1.10
Proportional flow control valves	2.3
Solenoid coil with PD3	2.6
	1.1-331

ADJUSTMENTS

The PD3 electronics has a Bluetooth interface. Via the Wandfluh App, the PD3 functions can be analysed and all parameters set.

FUNCTION DESCRIPTION


PD3-AMPLIFIER
Command value scaling

Type IO-Link: The command value can only be specified via IO-Link.
 Type analogue: The command value can be specified as a voltage, current, digital, frequency or PWM signal.

Ramp generator

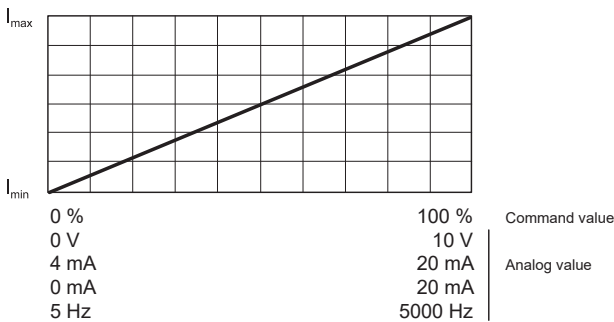
Two linear ramps for up and down are available which can be adjusted separately.

Valve type

Adjustment possibilities: switching solenoid or proportional solenoid.

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

Dependent on a command value signal (IO-Link, 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).

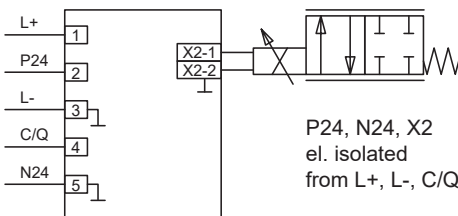
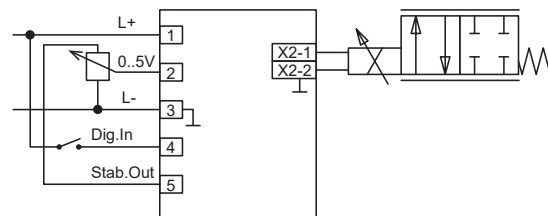

Solenoid driver

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.

Channel enabling

Enable can be configured by means of the App:

- on
- off
- external (enable input with type analogue)
- bus (with type IO-Link)

CONNECTION EXAMPLES
Connection example IO-Link

Connection example analogue with stabilised output

WANDFLUH APP
