Bulletin MSG11-5715-696/UK

Installation Manual
Series PWD00*-400

Design ≥ 40

E-Module for Proportional Directional Control Valves

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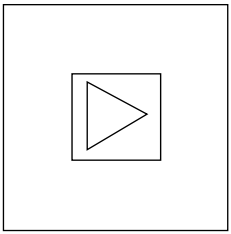
Parker electronic modules PWD00*-400 for rail mounting are compact, easy to install and provide time-saving wiring by disconnectable terminals. The digital design of the circuit results in good accuracy and optimal adaption for proportional directional control valves by a comfortable interface program.



Characteristics of the electronic control module

The described electronic unit combines all necessary functions for the optimal operation of proportional directional control valves without position sensor (series D*FB, D*FW, WLL, RLL). The most important features are:

- digital circuit design
- four parameterizable preset recall channels
- constant current control
- differential input stage
- status output
- four quadrant ramp function
- enable input for solenoid driver
- status indicator
- parametering by USB interface
- connection by disconnectable terminals
- compatible to the relevant European EMC standards
- comfortable interface program
- comfortable PC user software, free of charge: www.parker.com/isde - see "Support", or directly at www.parker.com/propxd.

CE

Ordering Code

PWD	00	☐	–	400	–	⌜⌝
Electronic module directional valves	Variable solenoid current	Command		Module type amplifier, adjustable Min./Max.-limits accel.-/decel.-ramp for each solenoid, 4 internal programmable commands		Design series

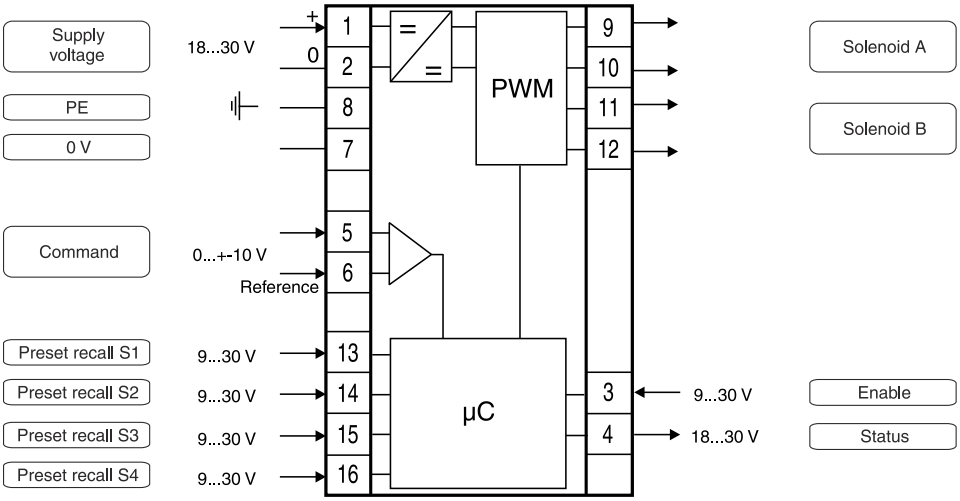
Code	Command
A	0...+/- 10 V
B	0...5...10 V

Technical data

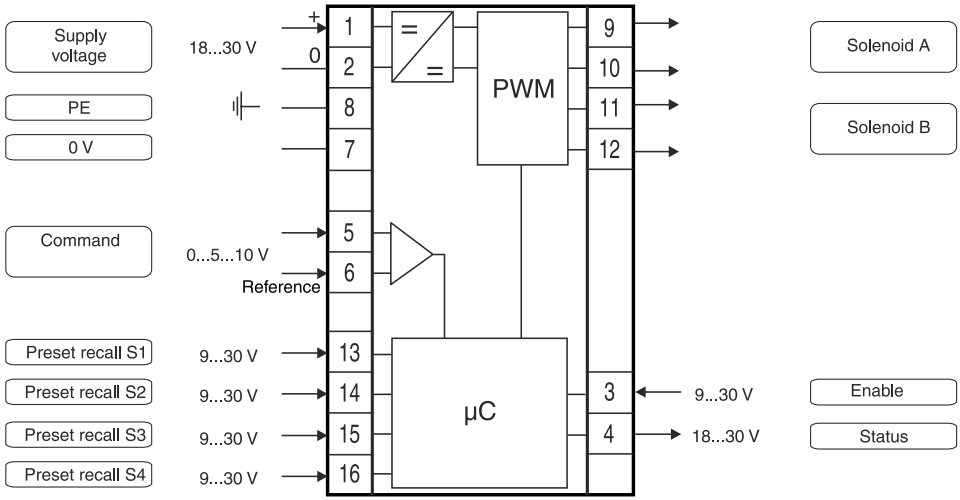
General		
Model		Module package for snap-on mounting on EN 50022 rail
Package material		Polycarbonate
Inflammability class		V0 acc. UL 94
Installation position		Any
Ambient temperature range	[°C]	-20...+60
Protection class		IP20 acc. EN 60529
Weight	[g]	160
Electrical		
Duty ratio	[%]	100
Supply voltage	[VDC]	18...30, ripple < 5 % eff., surge free [1]
Switch-on current typ.	[A]	22 for 0.2 mS
Current consumption max.	[A]	2.2
Pre-fusing	[A]	2.5 A medium lag
Command signal Code A Code B	[V]	+10...0...-10, ripple < 0.01 % eff., surge free, Ri = 150 kOhm 0...5...10 V, ripple < 0.01 % eff., surge free, Ri = 150 kOhm
Input signal resolution	[%]	0,025
Differential input voltage max.	[V]	30 for terminals 5 und 6 against PE (terminal 8)
Enable signal	[V]	0...4: Off / 9...30: On / Ri = 30 kOhm
Channel recall signal	[V]	0...4: Off / 9...30: On / Ri = 30 kOhm
Status signal	[V]	0...0.5: Off / Us: On / rated max. 15 mA
Adjustment ranges		
Min	[%]	0...50
Max	[%]	50...100
Ramp	[ms]	0...32500
Zero offset	[%]	+100...-100
Current	[A]	0.8/1.3/1.8/2.7/3.5
Interface		USB type B
EMC		EN IEC 61000-6-2, EN IEC 61000-6-4
Connection		Screw terminals 0.2...2.5 mm², disconnectable
Cable specification	[AWG] [AWG]	16 overall braid shield for supply voltage and solenoids 20 overall braid shield for sensor and signal
Cable length	[m]	50

[1] If solenoids with a nominal voltage of 24 V are connected, the supply voltage has to be raised to 29 V.

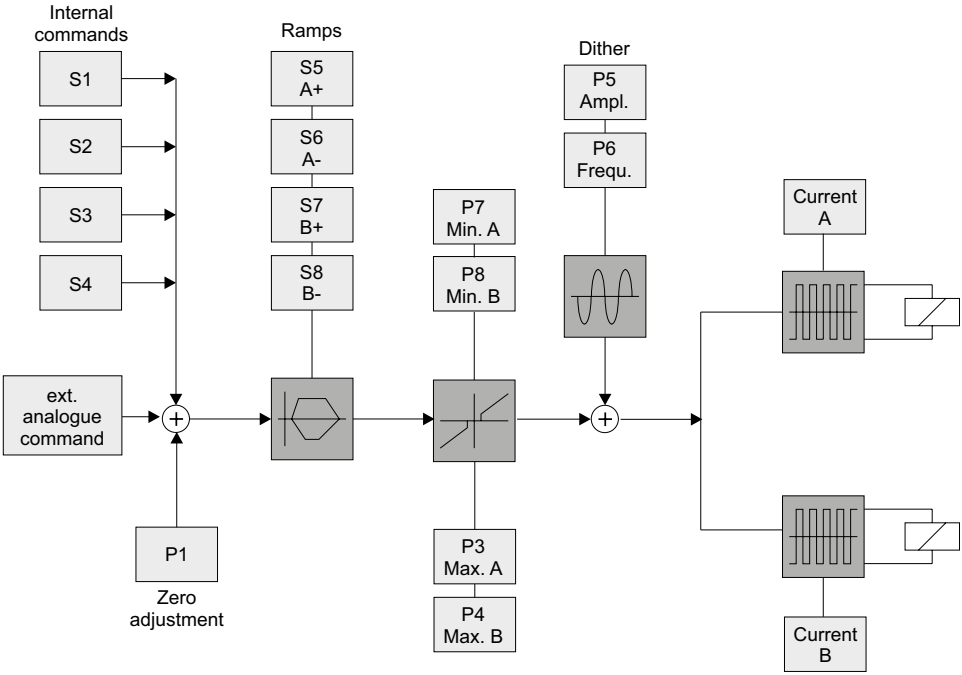
Circuit Diagram PWD 00A-400



Circuit Diagram PWD 00B-400



Signal flow diagram



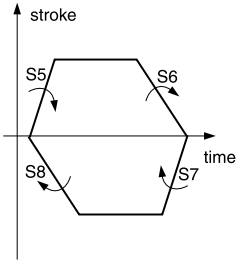
Commands

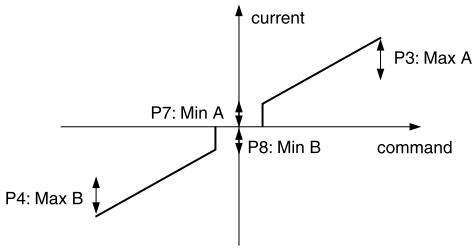
Additionally to the external analogue command input (Pin 5 and 6), the PWD00*-400 electronic includes four internal programmable command values S1 to S4, which can be activated by the switching inputs (Pins 13, 14, 15, 16). S1 at pin 13 has the highest priority, S4 at pin 16 the lowest.

Ramp-function / Min-Max-function

The PWD00*-400 electronic modules includes four internal programable ramps. Acceleration and/or deceleration are adjustable for each solenoid separately.

Additionally a current step may be programmed for each solenoid (Min), and the current may be limited for each solenoid (Max).





Nominal current adjustment

The nominal current can be adjusted by one parameter separately for each solenoid (Pin 9, 10, and 11, 12). The default nominal current is 800mA.

Parameterization

All parameters can be adjusted via USB connection by the computer-software.
The computer-software shows the parameters in text-form. So they are easy to use.

⚠ The connected valve may not operated before loading an appropriate parameter set from the PC into the module electronics.

Example of parameter chart

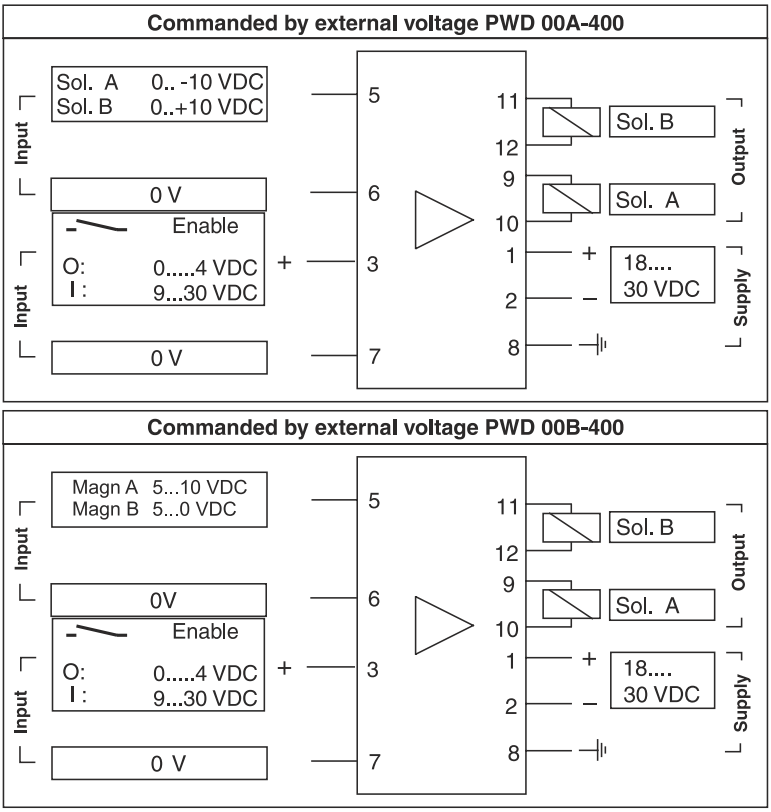
Parameter	Range	Default value	Unit	Function
P1	0.0...±100.0	0.0	%	Zero point adjustment
P3	50.0...100.0	100.0	%	Max. current A-solenoid
P4	50.0...100.0	100.0	%	Max. current B-solenoid
P5	0.0...10.0	0.0	%	Dither amplitude
P6	0...300	0	Hz	Dither frequency
P7	0.0...50.0	0.0	%	Min. current A-solenoid
P8	0.0...50.0	0.0	%	Min. current B-solenoid
S1	-100.0...+100.0	0.0	%	Internal command 1
S2	-100.0...+100.0	0.0	%	Internal command 2
S3	-100.0...+100.0	0.0	%	Internal command 3
S4	-100.0...+100.0	0.0	%	Internal command 4
S5	0...32500	0	ms	Acceleration A-solenoid
S6	0...32500	0	ms	Deceleration A-solenoid
S7	0...32500	0	ms	Acceleration B-solenoid
S8	0...32500	0	ms	Deceleration B-solenoid
IA	0, 1, 2, 3, 4	0	-	Nom. current A-solenoid, 0=0.8A; 1=3.5A; 2=2.7A; 3=1.8A; 4=1.3A
IB	0, 1, 2, 3, 4	0	-	Nom. current B-solenoid, 0=0.8A; 1=3.5A; 2=2.7A; 3=1.8A; 4=1.3A
E25	0, 1	0	-	Operating threshold MIN, 0=1%, 1=0.1%

All parameters are saved in an EEPROM and become active directly after supply voltage is switched on.

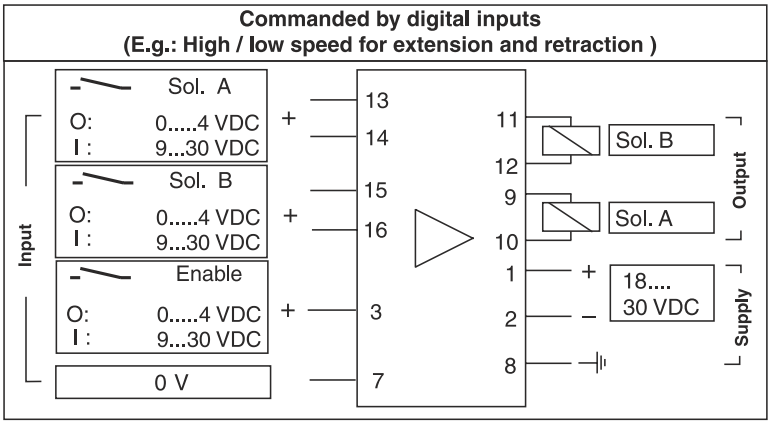
Standard Paramters

Valve	Solenoid	Nominal Current		Dither	
		I_{max} A-side (IA)	I_{max} B-side (IB)	Amplitude (P5) [%]	Frequency (P6) [Hz]
D1FW	K M L	1.8 A (3) 2.7 A (2) 3.5 A (1)	1.8 A (3) 2.7 A (2) 3.5 A (1)	2.0 2.0 2.0	100 100 100
D1FB	M	2.7 A (2)	2.7 A (2)	2.0	100
D3FW	K M	2.7 A (2) 3.5 A (1)	2.7 A (2) 3.5 A (1)	2.0 2.0	100 100
D3FB	M	3.5 A (1)	3.5 A (1)	2.0	130
RLL NG06	G09	2.7 A (2)	2.7 A (2)	2.0	130
WLL NG06	G09	2.7 A (2)	2.7 A (2)	2.0	110
WLL NG10	G10	3.5 A (1)	3.5 A (1)	2.0	130
D*1FW	L	2.7 A (2)	2.7 A (2)	2.0	100

Connection Examples



Connection Examples



Certainly modifications and / or combinations of these examples are possible. The priority of the digital inputs over the analogue input has to be kept in mind!

Pinning PWD 00A-400

Pin	Description		Pin	Description	
1	+ supply	18...30 VDC	9	solenoid A	
2	GND supply	0 VDC	10	solenoid A	
3	Enable input	9...30 VDC	11	solenoid B	
4	Status output	0 VDC / 18...30 VDC	12	solenoid B	
5	Command +	± 10 VDC	13	int. command 1	0 VDC / 18...30 VDC
6	Command -	± 10 VDC	14	int. command 2	0 VDC / 18...30 VDC
7	GND dig. IO	0 VDC	15	int. command 3	0 VDC / 18...30 VDC
8	PE	Earth	16	int. command 4	0 VDC / 18...30 VDC

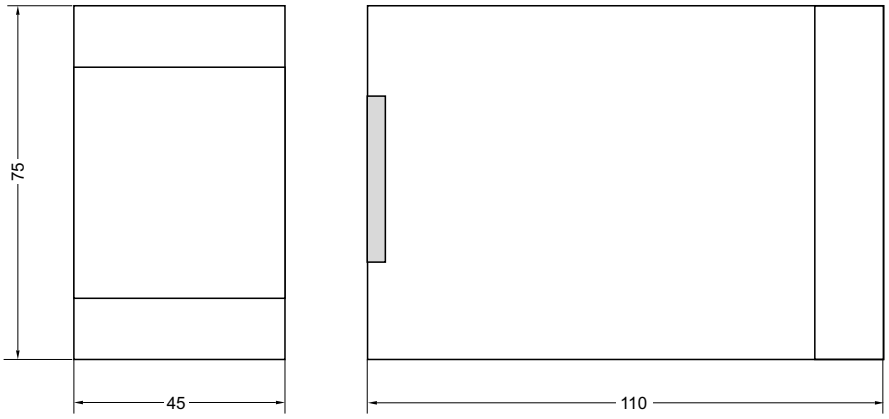
Pinning PWD 00B-400

Pin	Description		Pin	Description	
1	+ supply	18...30 VDC	9	solenoid A	
2	GND supply	0 VDC	10	solenoid A	
3	Enable input	9...30 VDC	11	solenoid B	
4	Status output	0 VDC / 18...30 VDC	12	solenoid B	
5	Command +	0...5...10 VDC	13	int. command 1	0 VDC / 18...30 VDC
6	Command -	0 VDC	14	int. command 2	0 VDC / 18...30 VDC
7	GND dig. IO	0 VDC	15	int. command 3	0 VDC / 18...30 VDC
8	PE	Earth	16	int. command 4	0 VDC / 18...30 VDC

Enable input and status output

The enable input activates (9...30 VDC) the power amplifiers or deactivates them (0 VDC). The status output delivers 18...30 VDC during normal operation. It switches to 0 VDC in case of an error.

Dimensions



Installation guide to electronic modules to provision of electromagnetic compatibility

Power Supply

The utilized power supply has to comply with the EMC-standards (CE-sign, certificate of conformity).

Relais and solenoids operating from the same supply circuit as the valve electronics have to be fitted by surge protection elements.

Wiring Cable

The wires between the installation site of the module and the peripheral units, as power supply, valve solenoids, position transducer, command signal source have to be shielded. The following wire sizes must be reached: power supply AWG 16, other connections AWG 20. The capacity should not exceed a value of approx. 130 pF/m (wire/wire). The maximum cable length is 50 m. No power current lines may be placed within the wired shielded cables to the electronic module. The cable shield has to be connected to ground at both ends (see also chapter “Grounding“). Please be aware of ground loops.

Installation

The module has to be mounted within a conductive, shielded enclosure. Usable is i.e. an EMC-approved control cabinet. A perfect grounding of the enclosure is mandatory (see also chapter “Grounding“).

Grounding

The mounting plate of the valve has to be connected to the grounded metal machine frame. The cable shields must be tied to ground at the control cabinet. A low-ohmic potential compensation wire has to be provided between the control cabinet and the machine frame (cable wire >AWG 7 cross section) to prevent ground loops.