Installation Manual
Series PWD 00A-400

Amplifier for Proportional
Directional Control Valves

Installation Manual

Amplifier Prop. Directional Control Valve
Series PWD 00A-400

Note

This document and other information from Parker Hannifin GmbH, its subsidiaries, sales offices and authorized distributors provide product or system options for further investigation by users having technical expertise. Before you select or use any product or system it is important that you analyse all aspects of your application and review the information concerning the product or system in the current product catalogue. Due to the variety of operating conditions and applications for these products or systems, the user, through his own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance and safety requirements of the application are met. The products are subject to change by Parker Hannifin GmbH at any time without notice.

Parker Hannifin GmbH
Hydraulic Controls Division

Digital electronic module to drive proportional directional control valves without position feedback.

Features

- Digital power amplifier.
- Differential command input.
- Voltage input.
- Programmable via serial interface (RS232).
- Status output.
- Four-quadrant ramp-function.
- Four internal programmable command values.
- Software for parameterization.
- Also programmable by scientific calculator (HP48G)
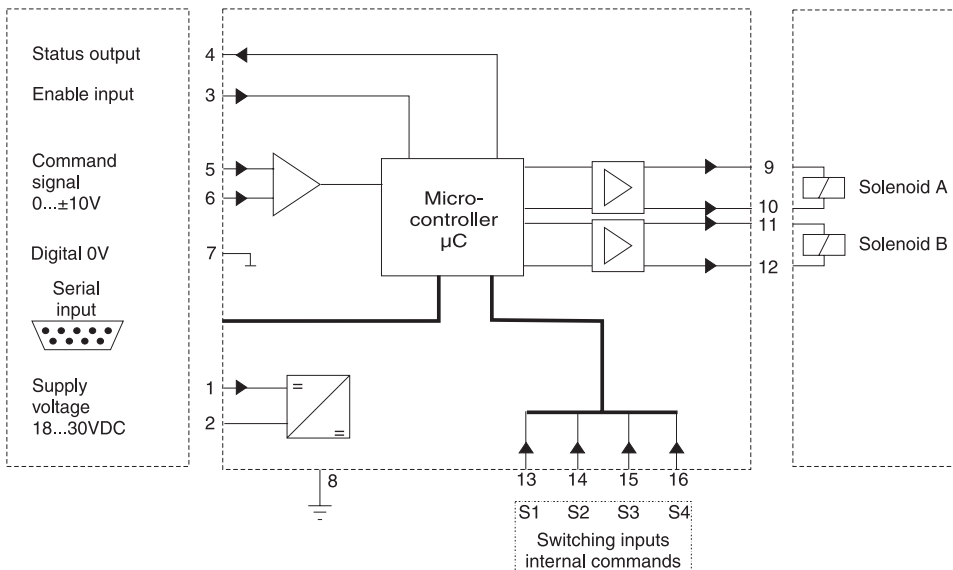 Ordering code: HP-P*D-GERMAN
  or   HP-P*D-ENGLISH
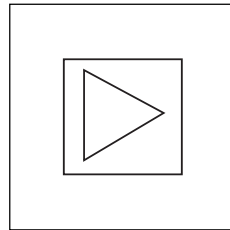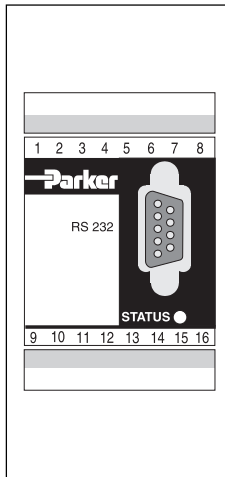
Note

The user software ProPXD is going to be available for download on the PARKER homepage www.parker.com or may be ordered under the ordering code 5715543.

Circuit Diagram

Installation Manual
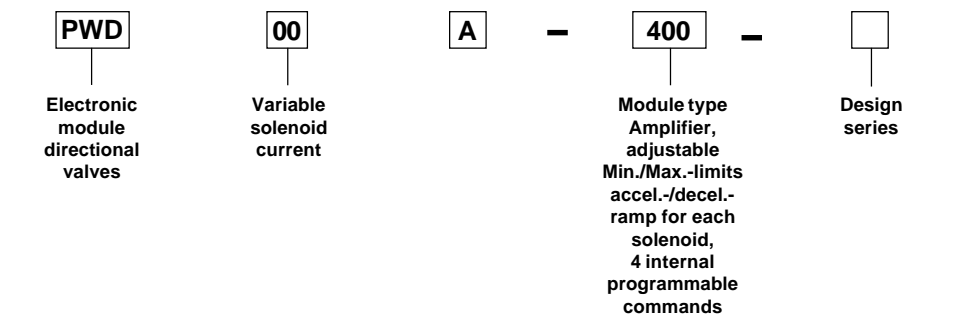
Amplifier Prop. Directional Control Valve
Series PWD 00A-400

Technical data

General		
Construction		Module box for snap-on assembly (EN 50022)

Electrical		
Supply voltage	[V]	8...30
Current consumption max.	[A]	2
Power consumption max. (at 24V)	[VA]	36
Fuse	[A]	2.5 medium lag

Inputs			
Analogue		[V]	0...±10, 150kOhm
Digital	0	[V]	0...5
	1	[V]	8.5...30

Outputs			
Digital	0	[V]	0...0.5
	1	[V]	Supply voltage; 15mA load
Solenoids		[A]	0.8; 1.3; 1.8; 2.7; 3.5

Interfaces		
Serial		RS 232C, null modem

Adjustment ranges			
MIN		[‰]	0...1000 (= 0...50% current)
MAX		[‰]	0...1000 (= 50...100% current)
Ramps		[s]	0...32.5
Dither	Amplitude	[%]	0...100 (= 0...16% current)
	Frequency	[Hz]	0...800
Zero position		[‰]	-1000...+1000 (= -75...+75% current)

Protection		
Industrial protection class		IP20

Environment		
Temperature	[°C]	-40...+70

Connection		
Wire connection		Screwable AWG 24...13, plug in

EMC	
conform to standards	EN 50081-2
	EN 50082-2

If high resistance solenoids with nominal current of 1,3A or 0,8A are used, the supply voltage has to be raised to 24VDC or 29VDC.

Ordering Code

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

IA PWD UK A5.PM6.5 CM

Parker Hannifin GmbH
Hydraulic Controls Division

Installation Manual

Amplifier Prop. Directional Control Valve
Series PWD 00A-400

Signal flow diagram
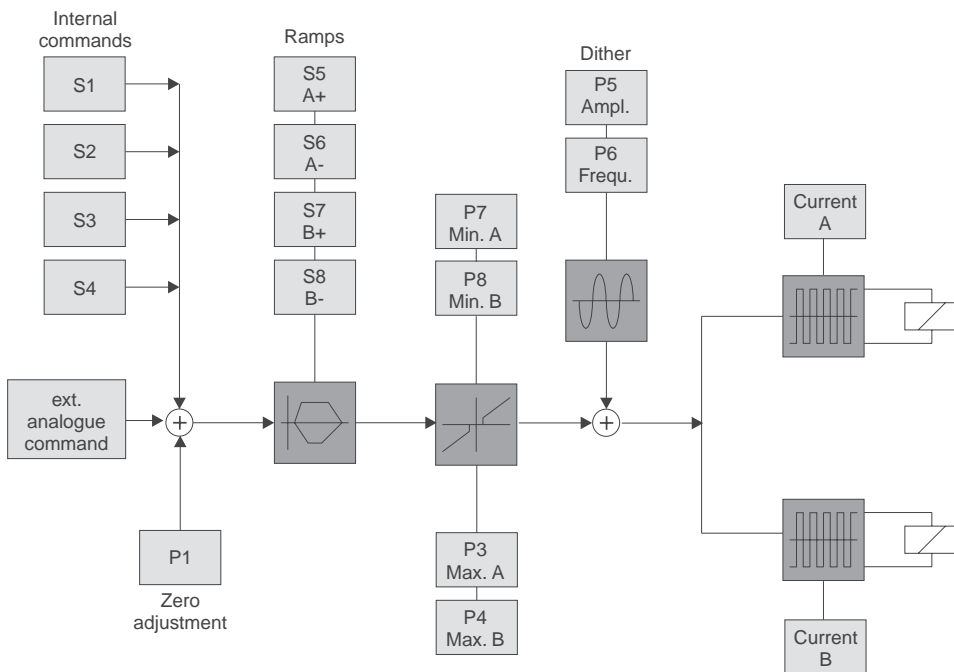
Commands

Additionally to the external analogue command input (Pin 5 and 6), the PWD00A-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.

Installation Manual

Amplifier Prop. Directional Control Valve
Series PWD 00A-400

Ramp-function / Min-Max-function

The PWD00A-400-Electronic includes four internal programable ramps. Acceleration and/or deceleration are adjustable for each solenoid separately.
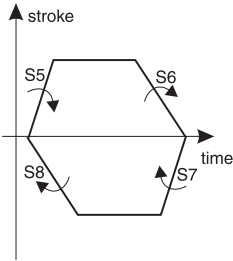
Additionally a current step may be programmed for each solenoid (Min), and the current may be limited for each solenoid (Max).

stroke
S5 S6
S8 S7
time

current
P7: Min A
P8: Min B
P3: Max A
command
P4: Max B
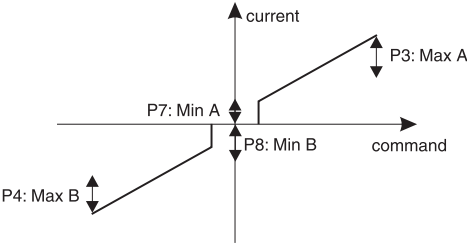
Nominal current adjustment

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 a serial connection (RS232-null modem) by
- the computer-software,
- the calculator-software
- or a terminal program (9600, 8, n, 1).

The computer-software and the calculator-software show the parameters in text-form. So they are easy to use.

If you want to communicate via a terminal program, the syntax is:
- Show the actually programmed value:
  <Parameter> ↵   e. g.: P5 ↵
- Change a value:
  <Parameter>=<new value>↵   e. g.: P5=10 ↵
- Load Default-Values: L ↵

Parameter	Range	Default value	Unit	Function
P1	0...±1000	0	‰	Zero point adjustment
P2	-	-	-	Reserved
P3	0...1000	1000	‰	Max. current A-solenoid
P4	0...1000	1000	‰	Max. current B-solenoid
P5	0...100	0	%	Dither amplitude, 100% = 16% max. current
P6	0...800	0	Hz	Dither frequency
P7	0...1000	0	‰	Min. current A-solenoid
P8	0...1000	0	‰	Min. current B-solenoid
S1	-1000...+1000	0	‰	Internal command 1
S2	-1000...+1000	0	‰	Internal command 2
S3	-1000...+1000	0	‰	Internal command 3
S4	-1000...+1000	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	-	-	Nominal current A-solenoid, 0=0.8A; 1=3.5A; 2=2.7A; 3=1.8A; 4=1.3A
IB	0, 1, 2, 3, 4	-	-	Nominal current B-solenoid, 0=0.8A; 1=3.5A; 2=2.7A; 3=1.8A; 4=1.3A

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

IA PWD UK A5.PM6.5 CM

Installation Manual

Amplifier Prop. Directional Control Valve
Series PWD 00A-400

Standard Paramters

Valve	Solenoid	Nominal Current		Dither	
		I$_{max}$ A-side (IA)	I$_{max}$ B-side (IB)	Amplitude (P5)	Frequency (P6)
D1FW	K	1.8A (3)	1.8A (3)	20	100
	M	2.7A (2)	2.7A (2)	20	100
	L	3.5A (1)	3.5A (1)	20	100
D3FW	K	2.7A (2)	2.7A (2)	20	100
	M	3.5A (1)	3.5A (1)	20	100
RLL NG06	G09	2.7A (2)	2.7A (2)	20	130
WLL NG06	G09	2.7A (2)	2.7A (2)	20	110
WLL NG10	G10	3.5A (1)	3.5A (1)	20	130
D*1FW	L	2.7A (2)	2.7A (2)	20	100

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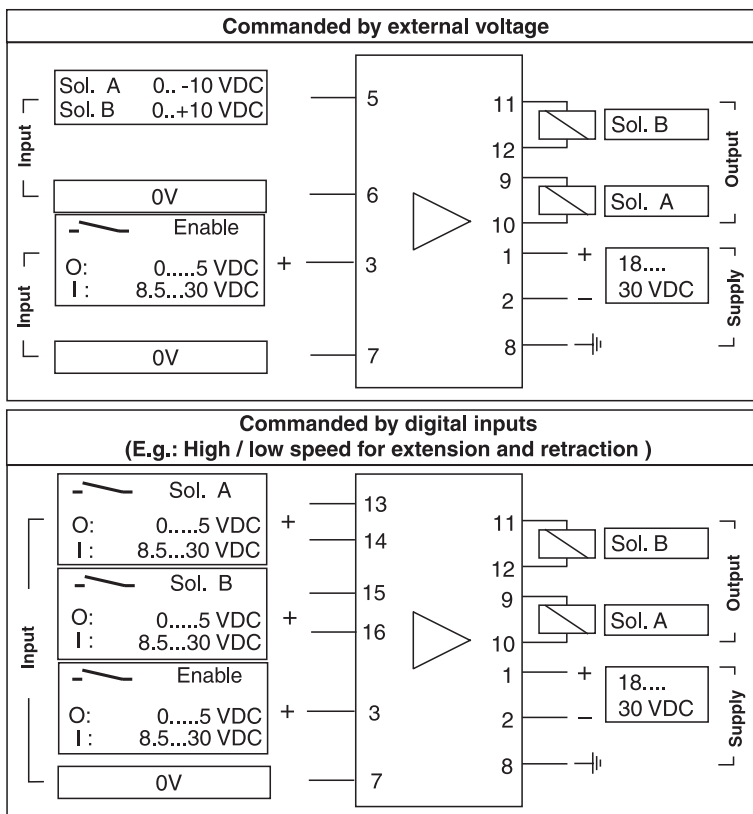
Certainly modifications and / or combinations of these examples are possible. The priority of the digital inputs over the analogue input has to be kept in mind!

Installation Manual

Amplifier Prop. Directional Control Valve
Series PWD 00A-400

Pinning

Pin	Description		Pin	Description
1	+ supply	18...30 VDC	9	solenoid A
2	GND supply	0 VDC	10	solenoid A
3	Enable input	8.5...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. command3 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 (8.5...30VDC) the power amplifiers or deactivates them (0VDC). The status output delivers 18...30VDC during normal operation. It switches to 0VDC in case of an error.

Dimensions

IA PWD UK A5.PM6.5 CM

Parker Hannifin GmbH
Hydraulic Controls Division

Installation Manual

Amplifier Prop. Directional Control Valve
Series PWD 00A-400
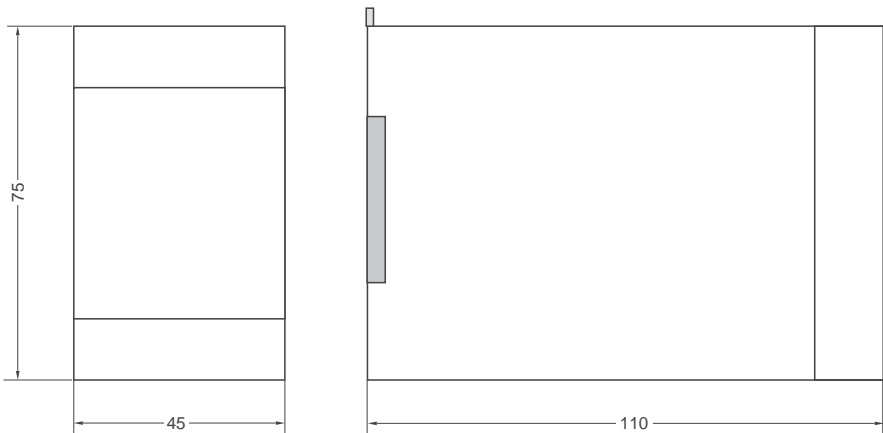
Installation guide to electronic modules to provision of electromagnetic compatibility

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.

IA PWD UK A5.PM6.5 CM

Parker Hannifin GmbH
Hydraulic Controls Division