Bulletin HY11-3236-M1/UK

Installation Manual
Series PCD 00A-400

Amplifier for Proportional Pressure/Throttle Valves

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Note

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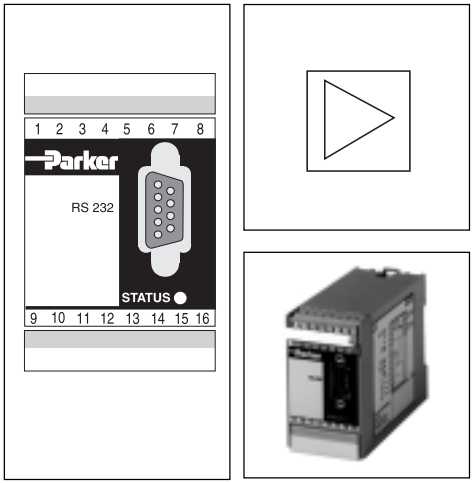
Digital electronic module to drive proportional pressure/ throttle valves without position feedback.



Features

- Digital power amplifier.
- Two independent power stages (two channels).
- Two voltage inputs.
- Programmable via serial interface (RS232).
- Status output.
- One acceleration and one deceleration ramp for each channel.
- Two internal programmable command values for each channel.
- Software for parameterization.
- Also programmable by scientific calculator (HP48G)

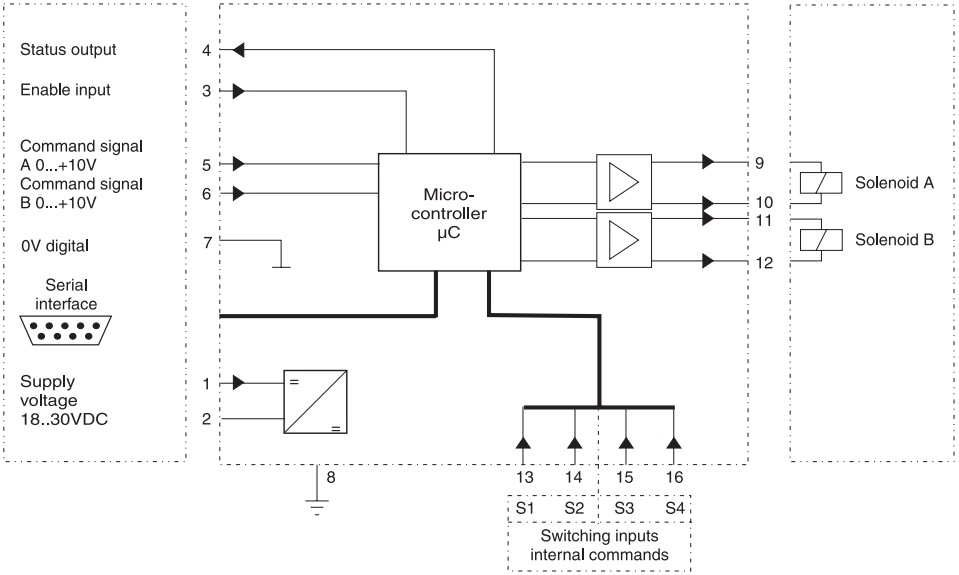
  Ordering code: HP-P*D-GERMAN
  or HP-P*D-ENGLISH

CE

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.

Diagram



Technical Data

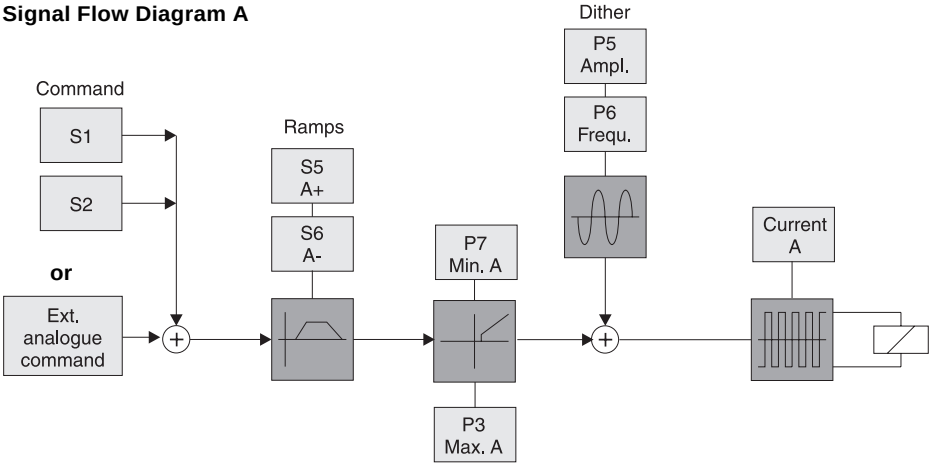
General			
Construction			Module box for snap-on assembly (EN50022)
Electrical			
Supply voltage		[V]	18...30
Current consumption max.		[A]	5
Power consumption (at 24V) max.		[VA]	90
Fuse		[A]	6.3
Inputs			
Analogue		[V]	0...+10V, 150kOhm each channel
			-
Digital	0	[V]	0...5
	1	[V]	8.5...30
Outputs			
Digital	0	[V]	0...0.5
	1	[V]	supply voltage, 15mA load
Solenoids		**[A]**	0.8 / 1.3 / 1.8 / 2.7 / 3.5 each channel
Interfaces			
Serial			RS232C, null modem
Adjustment ranges			
Min.		[‰]	0...1000 each channel (= 0...50% current)
Max.		[‰]	0...1000 each channel (= 50...100% current)
Ramps		[s]	0...32.5
Dither	Amplitude	[%]	0...100 each channel (= 0...16% current)
	Frequency	[Hz]	0...800 each channel
Protection			
Industrial protection class			IP20
Environment			
Temperature		[°C]	-40...+70
Connection			
Wire-connection			screwable; 0.2...2.5mm², 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.

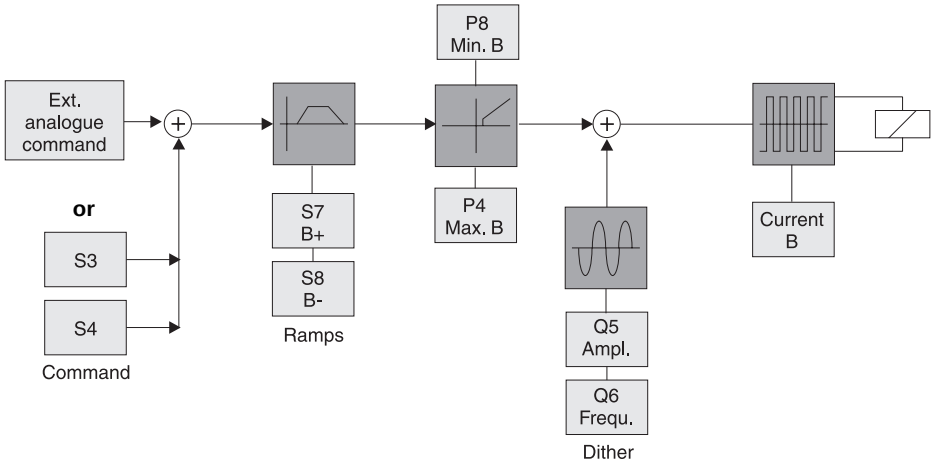
Ordering Code

PCD	00	A	–	400	–	
Electronic module prop. valve with one solenoid	**Variable solenoid current**			**Module type Amplifier, adjustable min./max. limits accel.-/decel.-ramp 2 x 2 internal programmable commands**		**Design series**

Signal Flow Diagram A



Signal Flow Diagram B

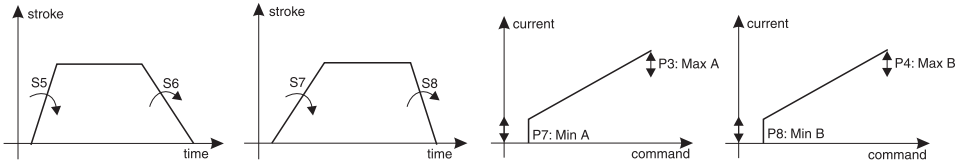


Commands

Additionally to the external analogue command inputs (Pins 5-7 and 6-7), the PCD00A-400-electronic includes, for each channel, two internal programmable command values S1 to S4, which can be activated by the switching inputs (Pins 13, 14, 15, 16). S1 (Pin 13) has a higher priority than S2 (Pin 14) and S3 (Pin 15) has a higher priority than S4 (Pin 16).
If only one amplifier channel is used, it is possible to switch all four internal commands to this channel by setting parameter N=1.

Ramp-function / Min-Max-function

The PCD00A-400-electronic includes two internal programmable ramps for each channel. Additionally a current step may be programmed (Min) and / or the current may be limited (Max) for each



Nominal current adjustment

The nominal current can be adjusted by one parameter separately for each channel (Pin 9, 10, or 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 textform. So they are easy to use.

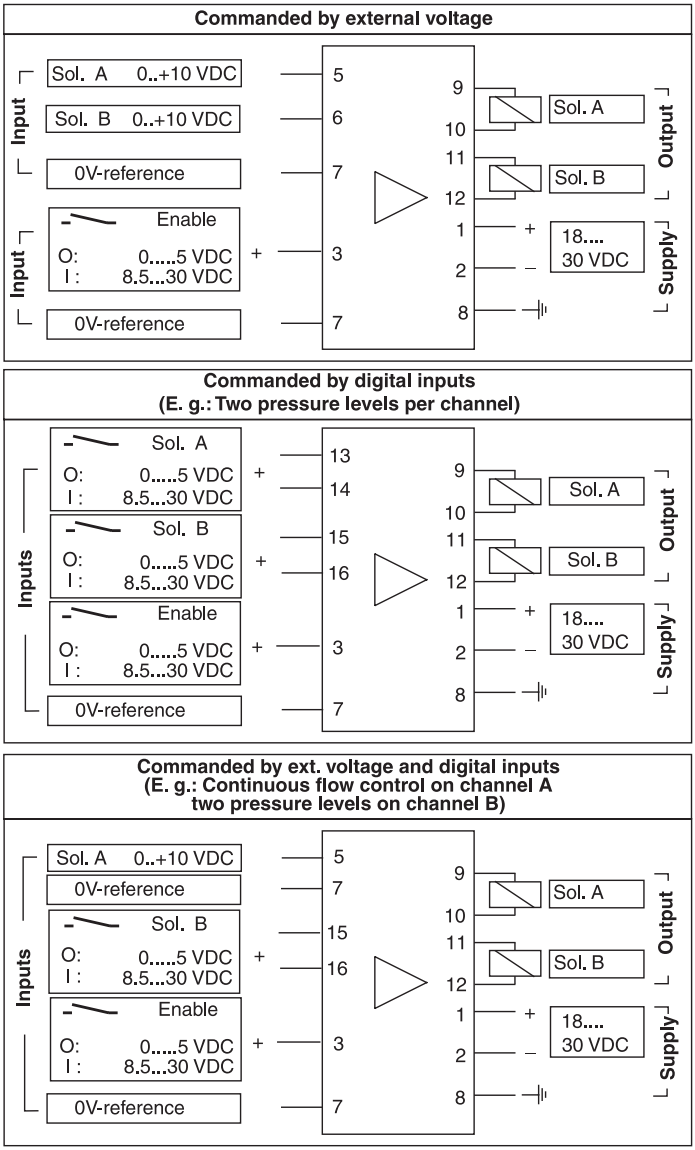
If you want to communicate via a terminal program, the syntax is:

- 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	-	-	-	reserved
P2	-	-	-	reserved
P3	0...1000	1000	‰	max. current A-channel
P4	0...1000	1000	‰	max. current B-channel
P5	0...100	0	%	Dither amplitude A-channel, 100% = 16% max. current
P6	0...800	0	Hz	Dither frequency A-channel
P7	0...1000	0	‰	Min. current A-channel
P8	0...1000	0	‰	Min. current B-channel
Q5	0...100	0	%	Dither amplitude B-channel, 100% = 16% max. current
Q6	0...800	0	Hz	Dither frequency B-channel
S1	0...+1000	0	‰	Internal command 1
S2	0...+1000	0	‰	Internal command 2
S3	0...+1000	0	‰	Internal command 3
S4	0...+1000	0	‰	Internal command 4
S5	0...32500	0	ms	Ramp UP A-channel
S6	0...32500	0	ms	Ramp DOWN A-channel
S7	0...32500	0	ms	Ramp UP B-channel
S8	0...32500	0	ms	Ramp DOWN B-channel
IA	0, 1, 2, 3, 4	-	-	Nominal current A-channel, 0=0.8A; 1=3.5A; 2=2.7A; 3=1.8A; 4=1.3A
IB	0, 1, 2, 3, 4	-	-	Nominal current B-channel, 0=0.8A; 1=3.5A; 2=2.7A; 3=1.8A; 4=1.3A
n	1, 2	2	-	No. of solenoids; to switch int. commands to 1 or 2 channels

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

Connection Examples



Certainly combinations and / or modifications of these examples are possible. The priority of the digital inputs over the analogue inputs has to be kept in mind! Via parameter N=1 all four digital inputs may be dedicated to channel A.

Pinning

Pin	Description		Pin	Description
1	+ supply	18...30 VDC	9	channel A
2	GND supply	0 VDC	10	channel A
3	Enable input	8.5...30 VDC	11	channel B
4	Status output	0 VDC / 18...30 VDC	12	channel B
5	Cmd. A-channel	0...+10 VDC	13	int. command 10 VDC / 18...30 VDC
6	Cmd. B-channel	0...+10 VDC1	4	int. command 20 VDC / 18...30 VDC
7	GND cmds./dig.IO	0 VDC	15	int. command 30 VDC / 18...30 VDC
8	PE	Earth	16	int. command 40 VDC / 18...30 VDC

Enable input and status output

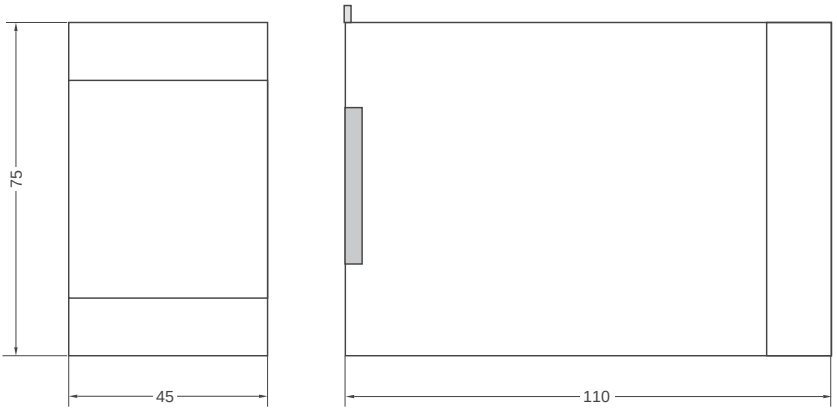
The enable input activates (8.5...30VDC) the power amplifiers or deactivates them (0VDC). The status output delivers 18...30VDC during normal operation. It switches to 0VDC in case of an error.

Standard Parameters

Valve	Solenoid	Nominal Current		Dither	
		I_{max} A-side (IA)	I_{max} B-side (IB)	Amplitude (P5)	Frequency (P6)
TDA	L	1.3A (4) a. P3=700	1.3A (4) a. P4=700	10	70
	M	2.7A (2)	2.7A (2)	5	70
TDA	LA	1.3A (4)	1.3A (4)	10	250
VBY/VMY	L	0.8A (0)	0.8A (0)	15	250

Please obey supply voltage (see technical data sheets).

Dimensions



IA PCD UK A5.PM6.5 CM

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.