

3-Way Proportional Pressure Control Valves

Nominal sizes 4, 6 and 8
Poppet valve, direct operated
Port size G 1/8 to G 3/8



Catalog Register
P16

Publication 7502113.06.10.96

**OBSOLETE
DOCUMENT**

Technical
Reference
Only

Description

General

The proportional pressure control valves allow infinite adjustment and regulation of a pneumatic pressure.

Function

Setting of the pneumatic output pressure is achieved via a diaphragm which, in its regulating position, is influenced by the variable force of a proportional solenoid. The magnitude of the output pressure is proportional to the solenoid force/solenoid current.

If the output pressure exceeds the set value, the valve releases pressure via a secondary exhaust.

If an electronic amplifier is switched in series, the output pressure of the valve is adjustable via a specified level signal. Potentiometers, controllers, etc. can be used for setpoint adjustment.



Connector, Cat. No. **0570275**
(to be ordered separately)

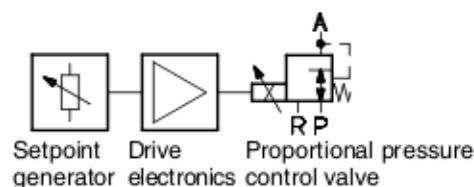
Features

- Minimal hysteresis
- Good repeatability
- Large secondary venting
- Good response sensitivity
- Short actuating time

Applications

- Remote pressure adjustment
- Program controlled pressure adjustment
- Open and closed loop control of rotational speed, position, flow volume and force by means of pressure
- Control of pneumatically actuated positioning and proportioning valves
- Mass retarding

Example of a control for pressure adjustment

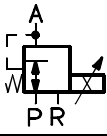


Further versions

- Ports with NPT thread
- Connections with metric thread M 12 x 1.5
- For oxygen
- For hydraulic oil
- For vacuum
- Extended temperature range
- For application in automotive engineering

Parameters

General parameters

Description	3-way proportional pressure control valve
Switching symbol	
Design	Poppet valve, direct actuated
Mounting position	Any, preferably vertical
Flow direction	Fixed
Actuator	Proportional solenoid
Ambient temperature [°C]	–10 ... +40
Material: Body Seals	Al-alloy NBR
Degree of protection	IP 65 with connector

Pneumatic parameters

Fluid	Filtered air, lubricated or unlubricated
Filter [μm]	40
Fluid temperature [°C]	–10 ... +40
Switching time p _v min – 90% p _v max [ms] p _v min – 10% p _v max [ms]	30 60
Nominal flow volume	See characteristic curve
Hysteresis ¹⁾ [% I _N]	< 3
Hysteresis ¹⁾ [% p _v max.]	< 3
Repeatability ¹⁾ [% p _v max.]	< 1
Linearity ¹⁾ [% p _v max.]	See characteristic curve
Sensitivity of response ¹⁾ [% I _N]	< 1

Electrical parameters proportional solenoid

Solenoid Cat. No.	7053	7071	7069	7073	7040 ²⁾	7070 ²⁾	7044 ²⁾
Rated current I _N [mA]	1600		1600		800		800
Rated power P _N [W]	22		22		22		22
Resistance R ₂₀ [Ω]	6.5 ± 3%		6.5 ± 3%		26.2 ± 3%		26.2 ± 3%
Duty cycle [%]	100		100		100		100
Drive electronics	pQ 03, pQ 04 or pQ 11, pQ 12 (see Pages 7 and 8)				pQ 02		

Equipment list (standard units)

Nominal size	Port size	Pressure setting p _v [bar]	Operating pressure max. p _e [bar]	Rated current I _N [mA]	Drive electronics	Weight [kg]	Protection class	Cat. No. Valve Solenoid
4	G 1/8	0 ... 10	max. 10	0 ... 1600	pQ 03, pQ 04 or pQ 11, pQ 12 (see Pages 7 and 8)	0.85	– (Ex)sG4	4088110. 7053 4088110. 7069
4	G 1/8	0 ... 20	max. 20				– (Ex)sG4	4088218. 7071 4088218. 7073
6	G 1/4	0 ... 2.1	max. 7				– (Ex)sG4	4088200. 7053 4088200. 7069
6	G 1/4 ³⁾	0 ... 10	max. 12				– (Ex)sG4	4088210. 7053 4088210. 7069
6	G 1/4 ³⁾	0 ... 14	max. 16				– (Ex)sG4	4088226. 7071 4088226. 7073
6	G 3/8	0 ... 7	max. 10				– (Ex)sG4	4088310. 7071 4088310. 7073

¹⁾ Dither 20 % I_N, 50Hz

²⁾ Not for new constructions

³⁾ Port R = G 1/8

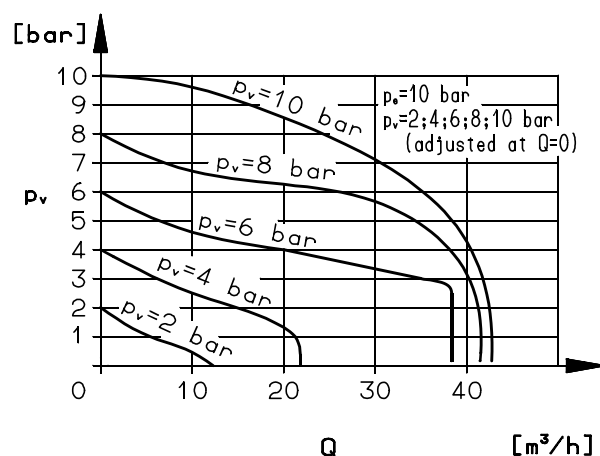
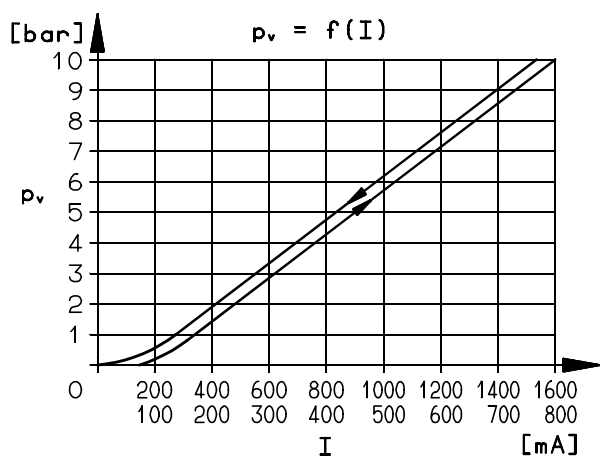
Equipment list (standard units)¹⁾

Nominal size	Port size	Pressure setting p_v [bar]	Operating pressure max. p_s [bar]	Rated current I_N [mA]	Drive electronics	Weight [kg]	Protection class	Cat. No.	
								Valve	Solenoid
4	G 1/8	0 ... 10	max. 10	0 ... 800	pQ 02	0.85	— (Ex)sG4	4088110. 7040	4088110. 7044
4	G 1/8	0 ... 20	max. 20					4088218. 7070	
6	G 1/4	0 ... 2.1	max. 7				— (Ex)sG4	4088200. 7040	4088200. 7044
6	G 1/4 ³⁾	0 ... 10	max. 12					4088210. 7040	
6	G 1/4 ³⁾	0 ... 14	max. 16				— (Ex)sG4	4088210. 7044	4088210. 7044
8	G 3/8	0 ... 7	max. 10					4088226. 7070	
							—	4088310. 7070	

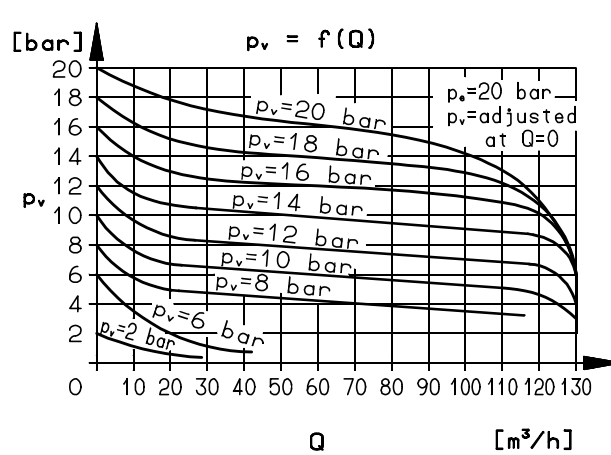
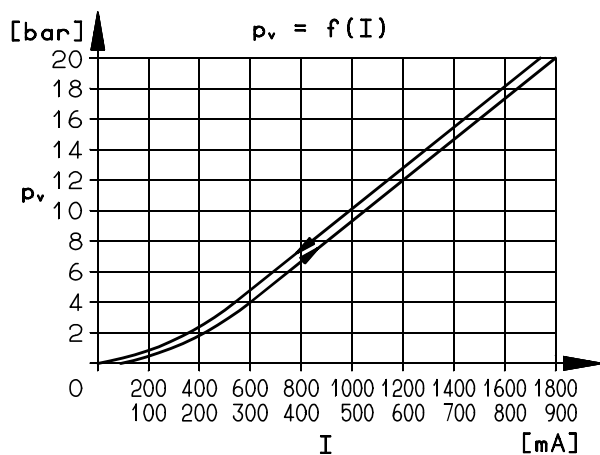
¹⁾ Not for new constructions

Characteristic curves

Cat. No. **4088110**

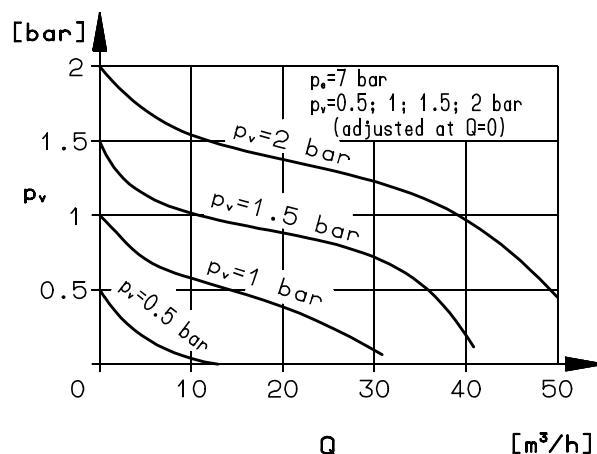
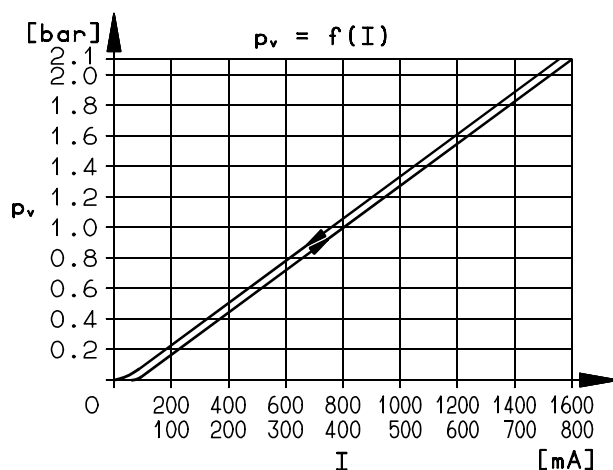


Cat. No. **4088218**

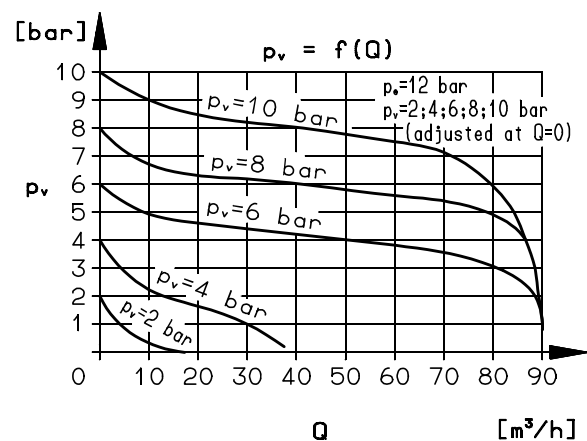
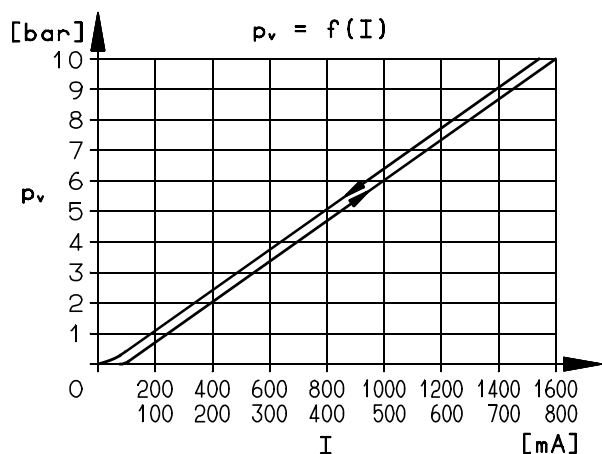


Characteristic curves

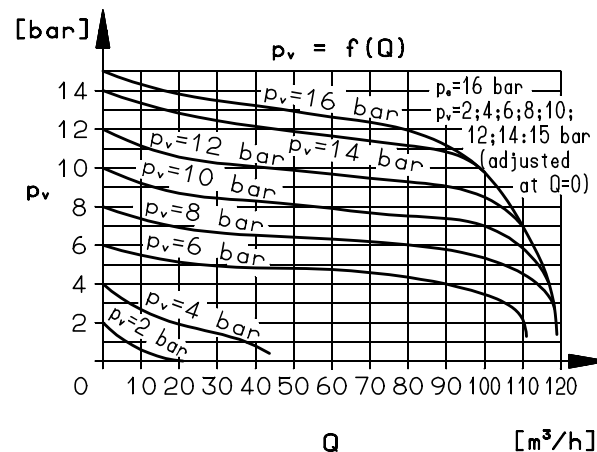
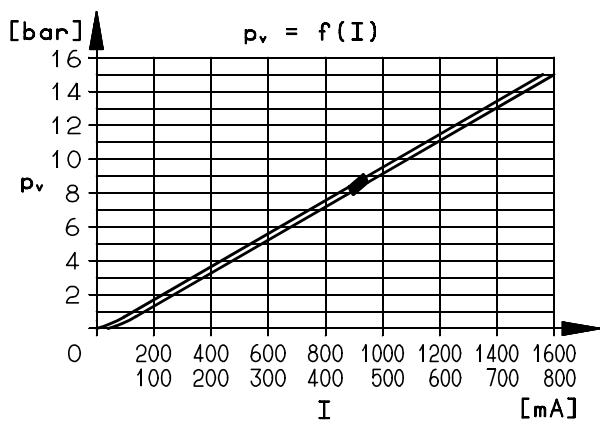
Cat. No. 4088200



Cat. No. 4088210

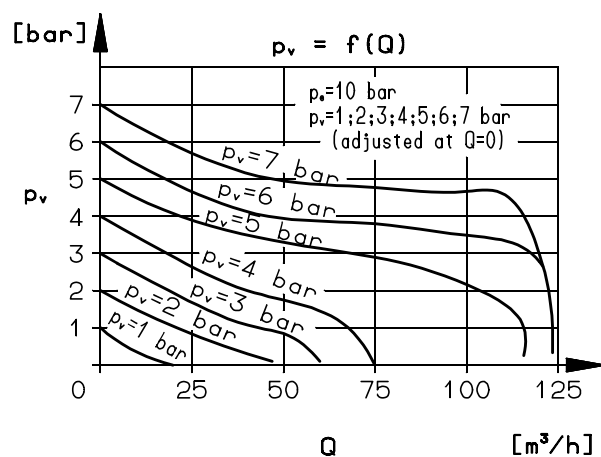
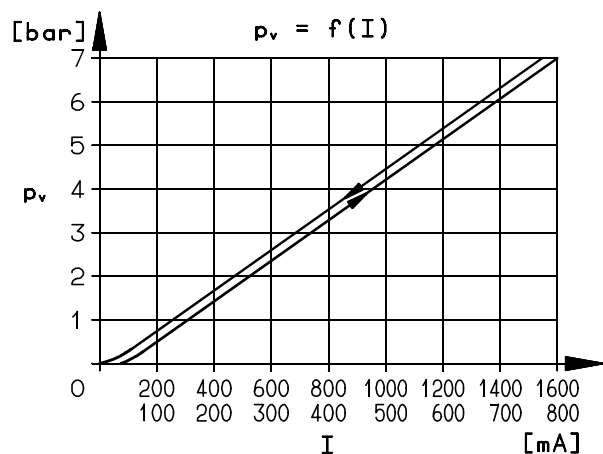


Cat. No. 4088226

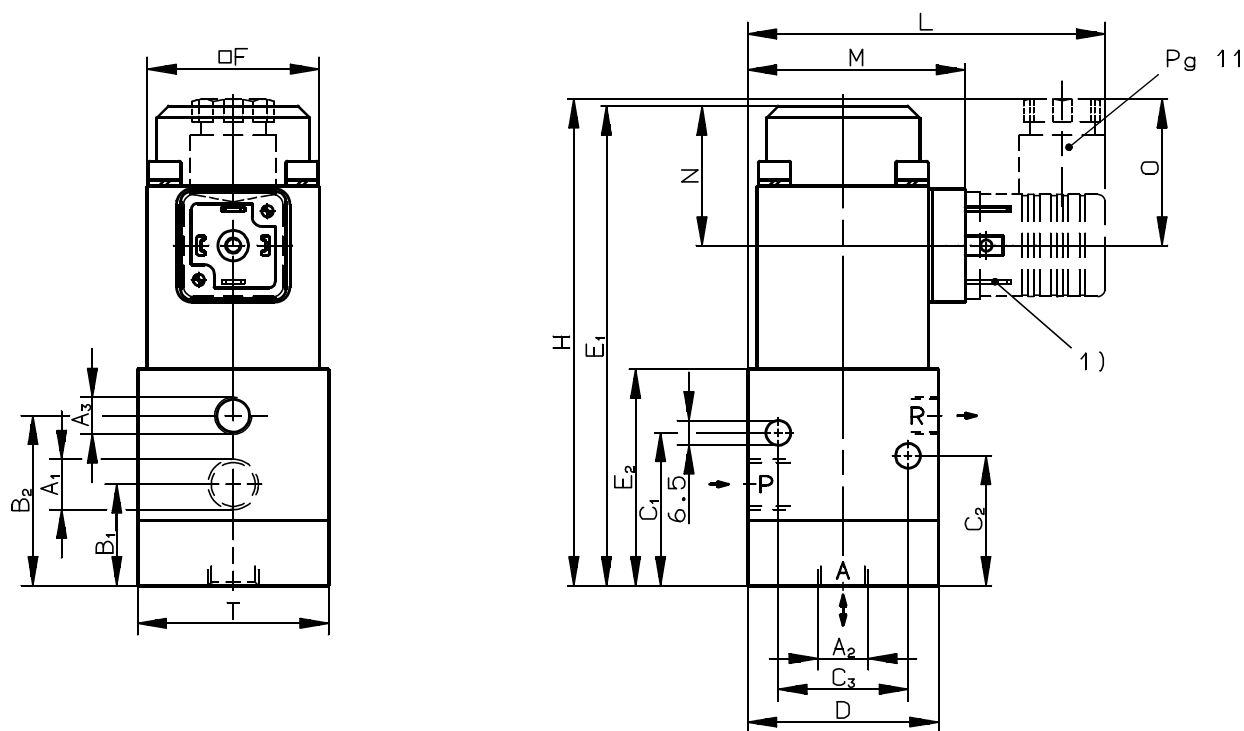


Characteristic curves

Cat. No. 4088310



Dimensional drawing [mm]



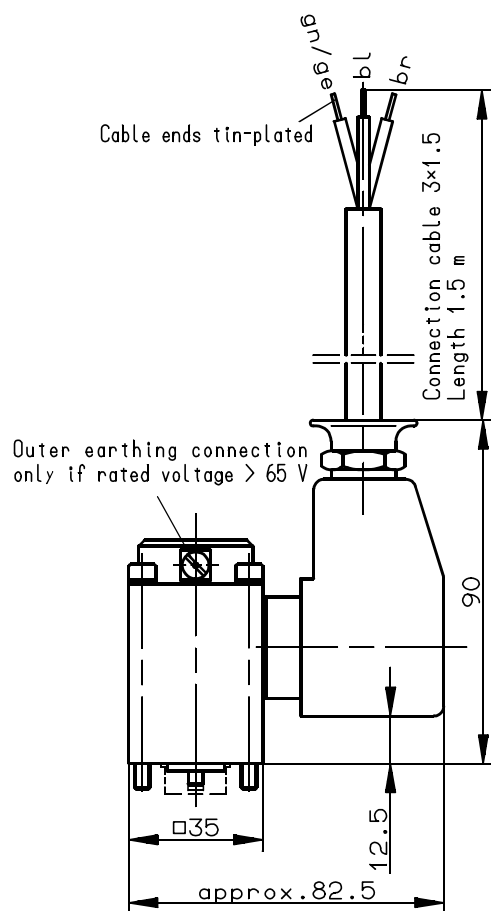
Dimensional table [mm]

Valve Cat. No.	A ₁	A ₂	A ₃	B ₁	B ₂	C ₁	C ₂	C ₃	D	E ₁	E ₂	□ F	H	L	M	N	O	T
4088110	G 1/8	G 1/8	G 1/8	23	50.5	36	36	34	50	121	62.5	35	131	81	52.5	30.9	38	50
4088218	G 1/4	G 1/4	G 1/8	26.5	44.5	40	34	34	50	121	56.5	45	128	93.7	57	31.5	38	50
4088200	G 1/4	G 1/4	G 1/4	30	50	43	38	49	60	117	58.5	35	127	86	57.5	30.9	38	40
4088210	G 1/4	G 1/4	G 1/8	26.5	44.5	40	34	34	50	115	56.5	35	125	81	52.5	30.9	38	50
4088226	G 1/4	G 1/4	G 1/8	26.5	44.5	40	34	34	50	121	56.5	45	127.5	85.5	57	31.5	38	50
4088310	G 3/8	G 3/8	G 3/8	36.5	67	52	52	50	70	142	77.5	45	149.4	103.7	67	31	38.4	55

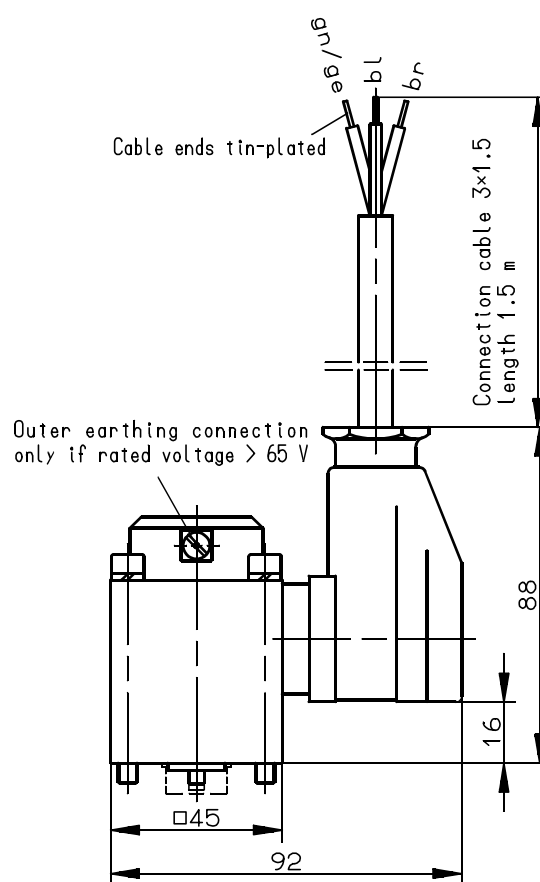
¹⁾ Position of terminal lug with valves 4088218, 4088226 and 4088310

Dimensional drawings [mm]

Solenoid Cat. No. **7069** and **7044**¹⁾



Solenoid Cat. No. **7073**

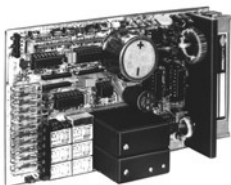


¹⁾ Not for new constructions

Drive electronics

Drive electronics pQ 03

Amplifier with constant current regulator PDM
 Power supply: 24 ± 4 VDC
 Residual ripple: ± 10 %
 Ambient temperature ϑ_{U} : $0 \dots +45$ °C
 Weight 0.4 kg
 Mounting position: Upright
 Free air circulation must be ensured
 Space requirement for installation in 19" card rack: 50 mm
 European format: 100 x 160 mm



Setpoint input	Internal setpoints	Ramps	Front panel	Terminal strip	PID controller	Cat. No.	For further information, see Publication
	Pcs.	Pcs.	3 HE	Form F DIN 41612	for external Control loops		
				Number of pins			
For proportional valves with 1 solenoid Rated current I_N: $0 \dots 1600$ mA, permissible solenoid resistance R_{20}: $2.5 \dots 7$ Ω							HERION 7501722
$0 \dots \pm 10$ V	○	○	○	48	○	5998614	
$0 \dots \pm 10$ V	○	○	●	48	○	5998780	
$0 \dots 20$ mA	○	○	○	48	○	5998615	
digital, 7 bit ¹⁾	○	○	○	48	○	5998616	
$0 \dots \pm 10$ V	4	2	○	48	○	5998617	
$0 \dots \pm 10$ V	○	○	○	48	●	5980030	
$0 \dots \pm 10$ V	4	2	○	48	●	5980029	

¹⁾ 7 bit + sign reversal

Drive electronics pQ 04

Digital amplifier with constant current regulator PDM
 Power supply: $18 \dots 30$ VDC
 incl. residual ripple
 Ambient temperature ϑ_{U} : $0 \dots +50$ °C
 Weight: 0.4 kg
 Mounting position: Upright
 Free air circulation must be ensured
 Space requirement for installation in 19" card rack: 50 mm
 European format: 100 x 160 mm



Setpoint input	Internal setpoints	Ramps	Front panel	Terminal strip	PID controller	Cat. No.	For further information, see Publication
	Pcs.	Pcs.		Form F DIN 41612	for external Control loops		
				Number of pins			
For proportional valves with 2 solenoids Rated current I_N: $0 \dots 800$ mA or $0 \dots 1600$ mA							HERION 7503188
$2 \times 0 \dots \pm 10$ V	4	●	○	48	○	5988019	
$2 \times 0 \dots \pm 10$ V	4	●	●	48	○	5988020	
$2 \times 0 \dots \pm 10$ V	4	●	○	48	●	5988021	
$2 \times 0 \dots \pm 10$ V	4	●	●	48	●	5988022	
Description	Specification					Cat. No.	
Programming unit PM 04	Mounts on amplifier, without keyboard For programming and measuring					5988018	
Operator program pQ04SOFT	Display, documentation, change, storing and loading of parameters with a PC					5988030	

Drive electronics pQ 11

Plug-in type amplifier with constant current regulator PDM
 Degree of protection: IP 65
 Power supply: $18 \dots 32$ VDC
 Residual ripple: ≤ 10 %
 Ambient temperature ϑ_{U} : $-20 \dots +50$ °C
 Mounting position: Optional



Setpoint input (switchable)		Type of connection		Weight	Cat. No.	For further information, see Publication
[V]	[mA]	Connecting cable, 2 m	Connector acc. to DIN 43651	[kg]		
For proportional valves with 1 solenoid Rated current I_N: $0 \dots 1600$ mA						HERION 7502961
$0 \dots 10$	$0 (4) \dots 20$	●	○	0.18	5980085	
$0 \dots 10$	$0 (4) \dots 20$	○	●	0.18	5980081¹⁾	

Mark in table: ○ without, ● with

¹⁾ Cable connector (Cat. No. **0660689**) to be ordered separately

Drive electronics

Drive electronics pQ 12 Amplifier module with constant current regulator PDM Degree of protection: IP 65 Power supply: 18 ... 32 VDC Residual ripple: $\leq 10\%$ Ambient temperature ϑ_U : $-20 \dots +50\text{ }^{\circ}\text{C}$ Mounting position: Optional For attachment on mounting rail acc. to EN 50022	Output currents	Cat. No.	For further information, see Publication
	[mA] 0 ... 1600 / 2400	5980126	HERION 7503109