	Description	DN / Ø	Flow rate l/min	Connection thread	Device	Page
Measuring devices	portable		0.02 ... 0.1 / 450	G¼ and G½	VGM	**11.02**
	portable, hand-operated		0.02 ... 0.1 / 450	G¼ and G½	VGR	**11.03**
	for many gases		0.05 ... 0.1 / 6000	G¼ - G1	PVM	**11.06**
	with proportional regulator		0.05 ... 0.1 / 2000	G¼ - G½	PVR	**11.07**
	differential pressure principle		0.03 ... 0.3 / 7000	G¼ - G¾	VPF	**11.08**
Prop. flow valves	for air and water	0.1 /.../ 20	0 ..... 0.3 / 1185	G⅛ - G1	PV21...PV40	**11.10**
	extremely small, 7 mW	0.3 / 0.4	0 ... 6 / 7	flange	PV630, PV631	**11.12**
	pulse-width-modulated, mini	0.2 /.../ 0.8	0 ... 1 / 20	flange	PV202	**11.13**
	pulse-width-modulated	1.2 /.../ 7.1	0 ... 70 / 420	G⅛ - G⅜	PV202	**11.14**
	stainless steel	1.2 / 7.1	0 ... 70 / 420	G⅛ - G⅜	PV202-S	**11.14**
	for water	12.5	0 ... 35 / 37	G⅜ u. G½	PV203	**11.14**
	motorised, for liquids	15 / 20	0 ... 1000 / 3500	G½ - G1	P8	**11.15**
	w/o power consumption	0.2 /.../ 1.5	0 ... 3 / 24	M5	PVK	**11.16**
	flow valve, Y-type	15 /.../ 65	0 ... 14 / 1233	G½ - G2½	PVE	**11.17**
Needle valves	compact	Ø 1.0 - 6.5	0 ..... 0.3 / 425	G¼ and G½	VR6	**11.04**
Pinch valves	POM or Aluminium			G⅜ - G3, DN150	Q	**11.18**

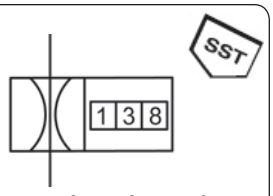
11

Proportional Flow Valves

Portable Mass Flow Meter, w/o Manual Control Valve VGM

Description	Thermal mass flow meter based on high precision MEMS technology (CMOS sensor). Pressure and temperature-insensitive according to the CTA constant temperature principle. Also insensitive to pressure surges.
Media	compressed air or non-corrosive gases **Operating pressure** max. 10 bar
Supply voltage	Standard AA battery or Micro-USB power supply (DIN62684), optionally external power +12 ...+30 V DC (max. 200 mA)
Display	Touch-display 128 x 64 px, blacklighted only with external power supply (Micro-USB or 24 V DC)
Electrical connector	optionally length 2.0 m, with free ends at 24 V DC **Function** totalisator included, physical units can be changed
Alarm functions	3 configurable alarms, programmable as : low alarm, high alarm, window alarm and totalizer alarm. The alarms can be configured with different parameters: delay and alarm duration. Relais: switching current up to 1A, switching voltage 30 V DC

Accuracy	± 2% FS, from 200 l/min ± 3% FS	**Response time**	500 ms at 99% accuracy
Turndown ratio	1:50 (Eco) or 1:1000 (Special)	**Protection class**	IP 50
Flow regulation	manual fine adjustment by 15 turns	**Mounting position**	any, horizontal from 5 bar on
Temperature range	0 °C to 50 °C / 32 °F to 122 °F	**Warm-up time**	< 1 sec. for full accuracy
Material	Body: aluminium, optionally electropolished stainless steel 316	Elastomer:	FKM, optionally EPDM



2...100 ml/min/450 l/min compressed air or gases accurate to 2%

Dimensions A mm	B mm	C mm	Operating pressure max. bar	Accuracy %	Connection thread G	Flow rate ml/min / l/min	Order number
Mass flow meter				w/o manual control valve, LCD-Display, battery mode, portable, aluminium, FKM			**VGM**[*1]
114	44	12.5	10	2	G¼	2 ... 100 ml/min	**VGM-A1**
				2		4 ... 200 ml/min	**VGM-A2**
				2		10 ... 500 ml/min	**VGM-A5**
				2		0.02 ... 1 l/min	**VGM-B1**
				2		0.04 ... 2 l/min	**VGM-B2**
				2		0.1 ... 5 l/min	**VGM-B5**
				2		0.2 ... 10 l/min	**VGM-C1**
				2		0.4 ... 20 l/min	**VGM-C2**
				2		1 ... 50 l/min	**VGM-C5**
160	54	17.5	10	2	G½	2 ... 100 l/min	**VGM-D1**
				2		4 ... 200 l/min	**VGM-D2**
				3		4 ... 300 l/min	**VGM-D3**
				3		9 ... 450 l/min	**VGM-D4**

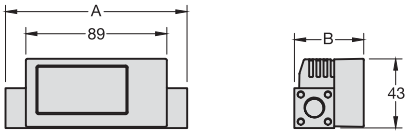
VGM-G¼ mass flow meter

VGM-G½ mass flow meter

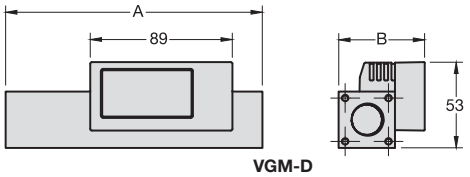
Special options, add the appropriate letter oder number

deviant volume flow	indicate on order		VGM-**XX**
limit switch	min. / max.-alarm, 1 A SPDT switch, incl. 24 V DC supply		VGM- . .2**G**
stainless steel body	electropolished throughout		VGM- . .**S**
EPDM elastomer		for VGM-A1 to -C5	VGM- . .**E**
24 V DC supply	cable attached on the device, length 2 m, with free ends		VGM- . .**2**
panel mounting	cut-out 48 x 96 mm, protection class IP50 in the front		VGM- . .**T**
0.1% accuracy			VGM- . .**H**
carbon dioxide	CO_2		VGM- . .**03**
argon	Ar		VGM- . .**05**
nitrogen	N_2		VGM- . .**07**
helium	He		VGM- . .**09**
hydrogen	H_2		VGM- . .**11**
methane	CH_4		VGM- . .**13**
oxygen	O_2		VGM- . .**15**
propane	C_3H_6		VGM- . .**16**
nitrous oxide	N_2O		VGM- . .**17**
gases	see above	for G½	VGM-**D** . . .

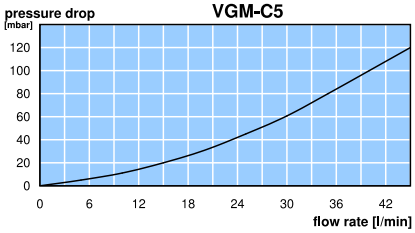
Specific gas calibration			
gas species			max. l/min
nitrogen	07	N_2	450
oxygen	15	O_2	450
argon	05	Ar	300
helium	09	He	450
hydrogen	11	H_2	300
carbon dioxide	03	CO_2	150
propane	16	C_3H_8	80
methane	13	CH_4	100



VGM-A/-B/-C



VGM-D



Calibration or test chart: see chapter for technical informations
[*1] **Note: indicate media, supply and outlet pressure on order**

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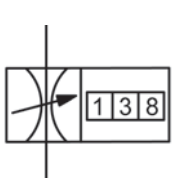
Order example: VGM-A1

Portable Mass Flow Meter, With and Without Manual Control Valve VGR

Description	Thermal mass flow meter based on high precision MEMS technology (CMOS sensor). Pressure and temperature-insensitive according to the CTA constant temperature principle. Also insensitive to pressure surges.		
Media	compressed air or non-corrosive gases	**Operating pressure**	max. 10 bar
Supply voltage	Standard AA battery or Micro-USB power supply (DIN62684), optionally external power +12 ...+30 V DC (max. 200 mA)		
Display	Touch-display 128 x 64 px, blacklighted only with external power supply (Micro-USB or 24 V DC)		
Electrical connector	optionally length 2.0 m, with free ends at 24 V DC	**Function**	totalisator included, physical units can be changed
Alarm functions	3 configurable alarms, programmable as : low alarm, high alarm, window alarm and totalizer alarm. The alarms can be configured with different parameters: delay and alarm duration. Relais: switching current up to 1A, switching voltage 30 V DC		
Accuracy	± 2% FS, from 200 l/min ± 3% FS	**Response time**	500 ms at 99% accuracy
Turndown ratio	1:50 (Eco) or 1:1000 (Special)	**Protection class**	IP 50
Flow regulation	manual fine adjustment by 15 turns	**Mounting position**	any, horizontal from 5 bar on
Temperature range	0 °C to 50 °C / 32 °F to 122 °F	**Warm-up time**	< 1 sec. for full accuracy
Material	Body: aluminium, optionally electropolished stainless steel 316	Elastomer:	FKM, optionally EPDM



2...100 ml/min/450 l/min compressed air or gases accurate to 2%

Mass flow meter

with manual control valve, LCD-Display, needle valve battery mode, portable, aluminium, FKM

Dimensions A mm	B mm	C mm	Operating pressure max. bar	Accuracy %	Connection thread G	Flow rate ml/min / l/min	Order number VGR*1
114	44	12.5	10	2	G¼	2 ... 100 ml/min	**VGR-A1**
				2		4 ... 200 ml/min	**VGR-A2**
				2		10 ... 500 ml/min	**VGR-A5**
				2		0.02 ... 1 l/min	**VGR-B1**
				2		0.04 ... 2 l/min	**VGR-B2**
				2		0.1 ... 5 l/min	**VGR-B5**
				2		0.2 ... 10 l/min	**VGR-C1**
				2		0.4 ... 20 l/min	**VGR-C2**
				2		1 ... 50 l/min	**VGR-C5**
160	54	17.5	10	2	G½	2 ... 100 l/min	**VGR-D1**
				2		4 ... 200 l/min	**VGR-D2**
				3		4 ... 300 l/min	**VGR-D3**
				3		9 ... 450 l/min	**VGR-D4**

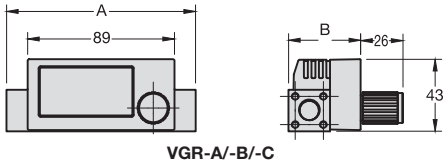
VGR-G¼
mass flow meter
with manual control valve

VGR-G½
mass flow meter

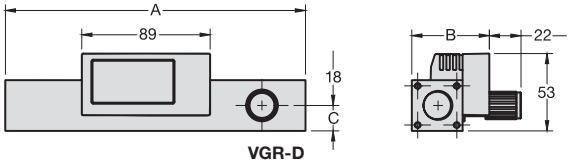
Special options, add the appropriate letter oder number

deviant volume flow		indicate on order		VGR-**XX**
limit switch		min. / max.-alarm, 1 A SPDT switch, incl. 24 V DC supply		VGR- . .2**G**
stainless steel body		electropolished throughout		VGR- . .**S**
EPDM elastomer			for VGR-A1 to -C5	VGR- . .**E**
24 V DC supply		cable attached on the device, length 2 m, with free ends		VGR- . .**2**
panel mounting		cut-out 48 x 96 mm, protection class IP50 in the front		VGR- . .**T**
0.1% accuracy				VGR- . .**H**
carbon dioxide	CO_2			VGR- . .**03**
argon	Ar			VGR- . .**05**
nitrogen	N_2			VGR- . .**07**
helium	He			VGR- . .**09**
hydrogen	H_2			VGR- . .**11**
methane	CH_4			VGR- . .**13**
oxygen	O_2			VGR- . .**15**
propane	C_3H_6			VGR- . .**16**
nitrous oxide	N_2O			VGR- . .**17**
gases		see above	for G½	VGR-**D** . . .

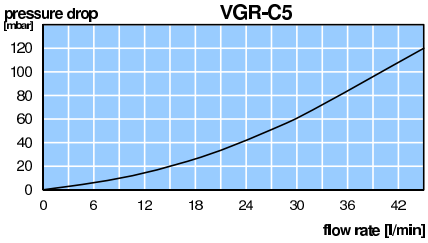
Specific gas calibration			
gas species			max. l/min
nitrogen	07	N_2	450
oxygen	15	O_2	450
argon	05	Ar	300
helium	09	He	450
hydrogen	11	H_2	300
carbon dioxide	03	CO_2	150
propane	16	C_3H_8	80
methane	13	CH_4	100



VGR-A/-B/-C



VGR-D



Calibration or test chart: see chapter for technical informations
*1 Note: indicate media, supply and outlet pressure on order

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Order example:
VGR-A1

Precision Needle Valve VR6

Description	The modular, compact micro needle valve is for fine-flow adjustment of gases and liquids. It consists of an inner valve and body with straight or angle connector. The valve is free from oil and grease.
Media	5 µm filtered compressed air, non-corrosive gases or liquids
Operating pressure	vacuum up to positive pressure of max. 20 bar
Adjustment	The micro valve has a 15-turn spindle to fully open from a closed condition. It operates with virtually no hysteresis and closes clockwise or optionally counterclockwise. The valve needle is non-rotating and thus provides a stable adjustment.
Panel mounting	borehole 15 mm, mounting through two screws M4x10
Temperature range	-20 °C to 150 °C / - 4 °F to 302 °F for FKM, -40 °C to 150 °C / -40 °F to 302 °F for EPDM
Material	Body: anodized aluminium, optionally stainless steel Elastomer: FKM, optionally EPDM Inner valve: nickel-plated brass, optionally stainless steel Knob: plastic

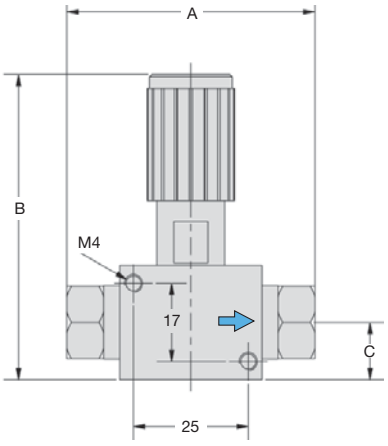
Ø 0…1/6.5 mm compressed air or liquids

Dimensions A mm	B mm	C mm	Needle size mm	K_v-value (m^3/h)	Flow rate water l/min*2	air l/min*1	Connection thread G	Order number
Precision needle valve with straight pass, right-hand closing, with knob, aluminium/brass/FKM, supply: max. 20 bar								**VR**
54	64	10	1.0	0.0007	0… 0.01	0… 0.3	G¼	**VR6-02A**
			1.5	0.005	0… 0.10	0… 2.5		**VR6-02B**
			2.0	0.01	0… 0.15	0… 7.0		**VR6-02C**
			2.5	0.04	0… 0.60	0… 17		**VR6-02D**
			3.0	0.10	0… 2.30	0… 60		**VR6-02E**
62	80	17.5	4.0	0.58	0… 8.00	0…250	G½	**VR6-04A**
			6.5	1.00	0… 16	0…425		**VR6-04B**

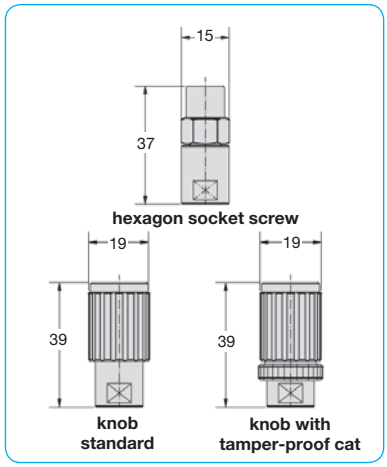
VR6
straight-way valve

Special options, add the appropriate letter

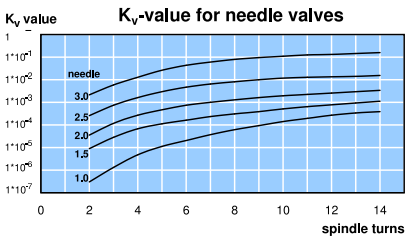
stainless steel body	body and valve made of stainless steel 316	for G¼	VR6-02.**S**
EPDM elastomer	-40 °C to 90 °C / -40 °F to 194 °F, SST body only	for G¼	VR6-02.S**E**
amper-proof cap	on valve with knob, standard		VR6-02.**T**
hexagon socket screw	and locknut		VR6-02.**I**



VR6



Options



*1 at 1 bar operating pressure and open outlet
*2 at 1 bar pressure difference

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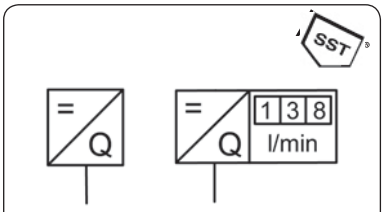
Order example: VR6-02A

Technical features

Benefits:

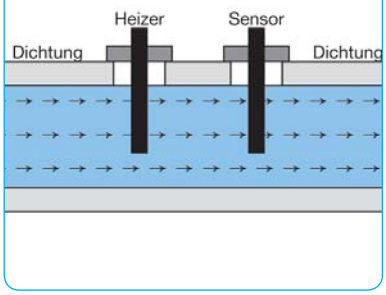
- suitable for nearly all gases and gas mixtures
- no moving parts
- short response time
- unaffected of mounting position
- optionally with unit counter and / or flow meter
- maintenance-free
- low pressure drop



5 ... 100 ml/min / 6000 l/min compressed air or gases

General technical features

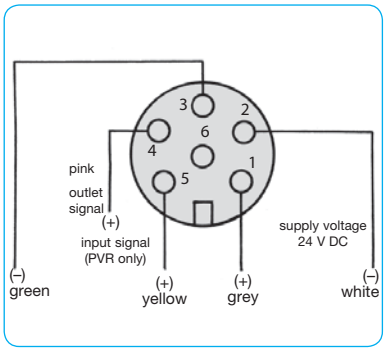
Mounting position	any
Protection class	IP 40
Temperature range	0 °C to 50 °C / 32 °F to 122 °F
Material	Body: aluminium, optionally stainless steel 316L Elastomer: FKM, optionally EPDM or Kalrez Sensor: stainless steel 316L Filter/strainer: stainless steel



functional principle

Pneumatic features

Media	compressed air as well as virtually all gases and mixtures of gases
Operating pressure	max. 10 bar
Differential pressure	max. 5 bar
Mass flow rate	0 ... 100 ml/min / 2000 l/min, for PVR 0 ... 100 ml/min / 6000 l/min, for PVM



PVM and PVR connecting plan

Electrical features

Supply voltage	24 V DC + 10%
Current consumption	max. 75 mA for PVM 11, all other devices max. 250 mA
Signal ranges	4-20 mA, optionally 0 ... 5 V DC
Impedance	> 10 kΩ at voltage signal, < 375 Ω at current signal
Connection	round connector M16x1, 6-pin
EMC	according to CE
Note	at < 100 mbar inlet path is required (PVM only)

gas \ model	PVM23 - PVM27	PVM11
air	1.00	1.00
argon	2.01	1.40
CO_2	1.20	0.74
helium	/	1.41
hydrogen	/	1.01
NH_3	0.80	0.77
N_2O_2	1.00	1.00
C_2H_2	0.75	0.61
C_3H_6	/	0.34
C_3H_8	0.63	0.34
CH_4	0.67	0.76
CO	1.04	1.00
C_2H_4	0.89	0.60
NO	1.02	0.97
HCL	1.58	0.99

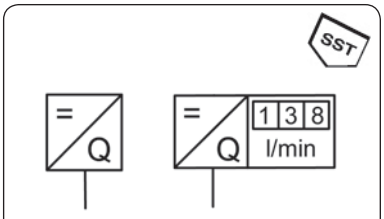
conversion factors for max. flow rate for other gases

Accuracy

Linearity / Hysteresis	> ± 3 % FS
Repeatability	> ± 0.5% FS
Pressure sensitivity	> ± 0.3% FS/bar typ. (air)
Temperature sensitivity	< ± 0.3% / °C (air)
Mounting sensitivity	< 0.3% FS at 90°
Operating time	25 s at 100% of the range
Tightness	< 2 x 10^{-8} mbar l/s He

Mass Flow Meter, Based on CTA Principle — PVM

Description	Mass flow meter directly measuring flow according to constant temperature anemometer principle. PVM 11 measures via a bypass, the other types measure the flow directly.
Features	Low pressure drop and immunity against dirt and humidity. Measurement unaffected by pressure and temperature changes. No moving parts, installation in virtually any position.
Principle	Two stainless steel probes - a heater and temperature probe - protrude inside the bore. A constant difference in temperature is created. The energy required is proportional to flow.
Media	compressed air, air as well as virtually all gases and gas mixtures
Compensation	Neither temperature nor pressure have to be compensated. There are no moving parts within the flow meter, therefore it is virtually wear-free.
Pressure drop	Low pressure drop because solely two stainless steel probes protrude inside the smooth, round measurement cell. The use of screw connections with a nominal size as big as possible is suggested.
Temperature range	0 °C to 50 °C / 32 °F to 122 °F **Operating press.** max. 10 bar **Differential press.** max. 5 bar
Material	Body: aluminium, optionally SST 316L Sensor: stainless steel 316L Elastomer: FKM, optionally EPDM or Kalrez Filter/strainer: stainless steel



5 … 100 ml/min / 6000 l/min compressed air or gases

Dimensions A mm	B mm	C mm	Operating pressure max. bar	Connection thread G	Flow rate ml/min*1 / l/min*1	Order number
Mass flow meter			4-20 mA output signal, supply voltage 24 V DC, w/o display, with coupling socket, for compressed air			**PVM*2**
95	94.5	15	10	G¼	5 … 100 ml/min	**PVM11-12**
					10 … 200 ml/min	**PVM11-22**
					25 … 500 ml/min	**PVM11-52**
					50 … 1 000 ml/min	**PVM11-13**
95	94.5	15	10	G¼	0.10 … 2 l/min	**PVM11-23**
					0.25 … 5 l/min	**PVM11-53**
					0.50 … 10 l/min	**PVM11-14**
95	94.5	15	10	G¼	1 … 20 l/min	**PVM23-24**
					2 … 50 l/min	**PVM23-54**
					5 … 100 l/min	**PVM23-15**
95	98.5	15	10	G½	5 … 100 l/min	**PVM25-15**
					10 … 200 l/min	**PVM25-25**
					20 … 400 l/min	**PVM25-45**
116	123	25	10	G½	20 … 400 l/min	**PVM27-45**
					50 … 1 000 l/min	**PVM27-16**
					100 … 2 000 l/min	**PVM27-26**
130	143	35	10	G1	150 … 2 000 l/min	**PVM28-26**
					200 … 4 000 l/min	**PVM28-46**
					250 … 5 000 l/min	**PVM28-56**
160	172	55	10	G1	250 … 5 000 l/min	**PVM29-56**
					300 … 6 000 l/min	**PVM29-66**

PVM23

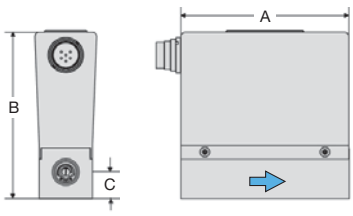
PVM27

Special options, add the appropriate letter oder number

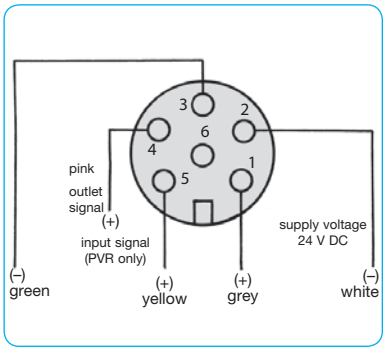
special calibration	range or gas to be indicated on order					PVM . . - . . **Y**
monitor signal	0-5 V, load resistance > 10 kΩ					PVM . . - . . **U**
stainless steel body	316L			for PVM11 to PVM28		PVM . . - . . **S**
				PVM29		PVM . . - . . **S**
EPDM elastomer						PVM . . - . . **E**
Kalrez elastomer						PVM . . - . . **K**
LCD display				for flow, 3½-digit		PVM . . - . . **M**
free of oil and grease	for oxygen and different gases					PVM . . - . . **L**
carbon dioxide	CO_2: **03**	**argon**	Ar: **05**	**nitrogen**	N_2:	PVM . . - . . . **07**
helium	He: **09**	**hydrogen**	H_2: **11**	**methane**	CH_4:	PVM . . - . . . **13**
oxygen	O_2: **15**	**propane**	C_3H_6: **16**	**nitrous oxide**	N_2O:	PVM . . - . . . **17**

Accessories

coupling socket	M16x1, 6-pin with 3 m Kabel	straight	**KM16-A6-3**
other cable length	5 m or 10 m available		



PVM



connecting plan

*1 valid for compressed air at Δp= 5 bar and open outlet. For other gases please apply conversion factor

*2 **Note: indicate media, supply and outlet pressure, temperature on order**

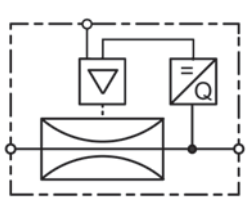
PDF CAD
www.aircom.net

Order example: PVM11-12

Proportional Mass Flow Controller, Based on CTA Principle PVR

Prop.-V. 11

Description	Mass flow meter directly measuring flow according to constant temperature anemometer principle. The measured setpoint is compared with the nominal value. The valve will be readjusted accordingly.
Mechanical Construction	PVR11/12/23: mass flow meter and meter in the same housing PVR 25: mass flow meter and meter together at the measuring bob PVR27: mass flow meter and meter as single components are bolted together
Media	compressed air, air as well as virtually all gases and gas mixtures
Compensation	Neither temperature nor pressure have to be compensated. There are no moving parts within the flow meter, therefore it is virtually wear-free.
Pressure drop	Low pressure drop because solely two stainless steel probes protrude inside the smooth, round measurement cell. The use of screw connections with a nominal size as big as possible is suggested.
Temperature range	0 °C to 50 °C / 32 °F to 122 °F **Operating press.** max. 10 bar **Differential press.** max. 5 bar
Material	Body: aluminium, optionally SST 316L Elastomer: FKM, optionally EPDM or Kalrez Sensor: stainless steel 316L Filter/strainer: stainless steel



5 … 100 ml/min / 6000 l/min compressed air or gases

Dimensions A mm	B mm	C mm	K_v-value (m^3/h)	Operating pressure max. bar	Connection thread G	Mass flow ml/min*1 / l/min*1	Order number
Mass flow regulator				4-20 mA input and output signal, supply voltage 24 V DC, w/o display, with coupling socket, for compressed air			**PVR*3**
95	94.5	15	0.066	10	G¼	5 … 100 ml/min	**PVR11-12**
						10 … 200 ml/min	**PVR11-22**
						25 … 500 ml/min	**PVR11-52**
						50 … 1000 ml/min	**PVR11-13**
95	94.5	15	0.066	10	G¼	0.10 … 2 l/min	**PVR11-23**
						0.25 … 5 l/min	**PVR11-53**
						0.50 … 10 l/min	**PVR11-14**
95	97	15	0.066	10	G¼*2	0.50 … 10 l/min	**PVR12-14**
						1.00 … 20 l/min	**PVR12-24**
						2.50 … 50 l/min	**PVR12-54**
95	94.5	15	0.066	10	G¼	1 … 20 l/min	**PVR23-24**
						2 … 50 l/min	**PVR23-54**
					G½	5 … 100 l/min	**PVR23-15**
145	132	16	0.30	10	G½	5 … 100 l/min	**PVR25-15**
						10 … 200 l/min	**PVR25-25**
						20 … 400 l/min	**PVR25-45**
257	163	25	1.0	10	G½	25 … 400 l/min	**PVR27-45**
						50 … 1000 l/min	**PVR27-16**
						100 … 2000 l/min	**PVR27-26**

PVR23

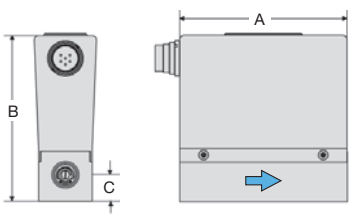
PVR25

Special options, add the appropriate letter oder number

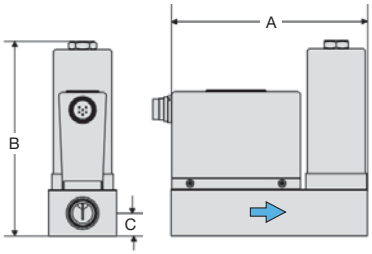
special calibration	range or gas to be indicated on order						PVR . . - . . **Y**
setpoint /monitor signal	0-5 V, load resistance > 10 kΩ						PVR . . - . . **U**
stainless steel body	316L			for PVR11 to PVR25-25			PVR . . - . . **S**
				for PVR25-45 to PVR27			PVR . . - . . **S**
EPDM elastomer							PVR . . - . . **E**
Kalrez elastomer							PVR . . - . . **K**
LCD display				for flow, 3½-digit			PVR . . - . . **M**
free of oil and grease	for oxygen and different gases						PVR . . - . . **L**
potentiometer in cover	for flow regulation, height +40 mm						PVR . . - . . **X67**
carbon dioxide	CO_2:	**03**	**argon**	Ar:	**05**	**nitrogen**	N_2: PVR . . - . . . **07**
helium	He:	**09**	**hydrogen**	H_2:	**11**	**methane**	CH_4: PVR . . - . . . **13**
oxygen	O_2:	**15**	**propane**	C_3H_6:	**16**	**nitrous oxide**	N_2O: PVR . . - . . . **17**

Accessories

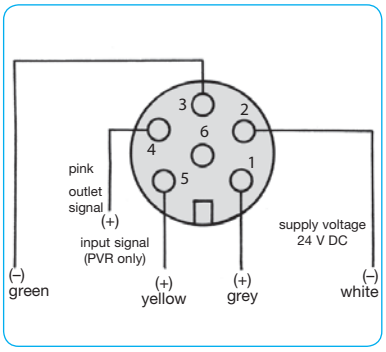
coupling socket	M16x1, 6-pin with 3 m Kabel	straight	**KM16-A6-3**
other cable length	5 m or 10 m available		



PVR11 … PVR23



PVR25 / PVR27



connecting plan

*1 valid for compressed air at Δp= 5 bar and open outlet. For other gases please apply conversion factor.
*2 connection thread G½ on the input side

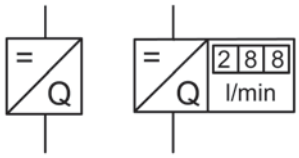
*3 **Note: indicate media, supply and outlet pressure, temperature on order**

PDF CAD
www.aircom.net

Order example: PVR11-12

Flow Monitor Based on Differential Pressure Technology VPF

Description	The flow measurement device works with differential pressure technology. It allows active flow control through continuous real time measurement, realised within 1 ms. There are no moving parts within the flow monitor, therefore it is virtually wear-free.				
Media	compressed air				
Operating pressure	max. 11 bar				
Supply voltage	15…24 V DC, max. power consumption 80 mA				
Display	without display as standard, optionally 4-digit LCD display with 12 mm tall, red figures				
Electrical connector	square connector, 6-pin with coupling socket				
Output signal	0…10 V, optionally 4…20 mA or 20…4 mA		**Accuracy**	< 4% FS at 10% to 100% range	
Repeatability	< 0.25% FS		**Temperature sensitivity**	0.25% per °C / K	
Detectable flow	> 4% FS		**Shock resistance**	25 g	
Response time	1 ms		**Protection class**	IP 54 / Nema 4	
Mounting position	any		**Temperature range**	0 °C to 50 °C / 32 °F to 122 °F	
Material	Body:	anodized aluminium	Elastomer:	NBR/Buna-N	
	Transducer:	aluminium			



30…300 / 7000 l/min compressed air, 1 ms fast

Dimensions A mm	B mm	C mm	Operating pressure max. bar	Connection thread G	Flow rate ml/min*1	Order number

Flow meter

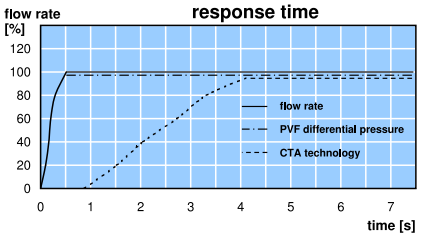
for compressed air, 0…10 V output signal, supply 24 V DC, without display, with coupling socket, open outlet

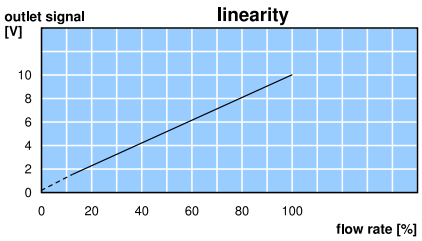
						VPF
102	106	10	11	G¼	30… 300	**VPF-2**
102	119	19	11	G⅜	70… 700	**VPF-3**
102	119	19	11	G½	300…3000	**VPF-4**
102	132	25	11	G¾	700…7000	**VPF-5**

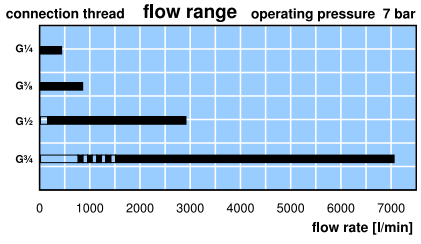
VPF

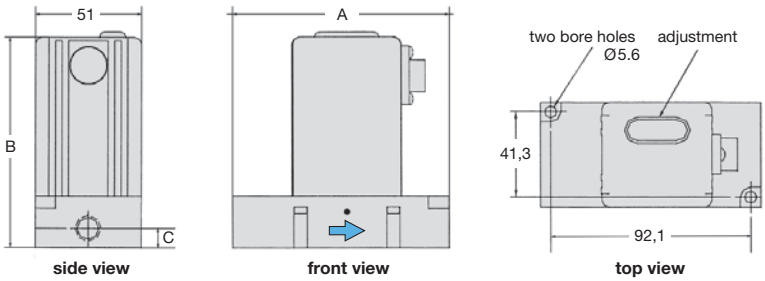
Special options, add the appropriate letter or number

monitor signal	4-20 mA, proportional to flow rate increase	VPF- . **I**
	20-4 mA, proportional to flow rate increase	VPF- . **L**
LED display	4-digit, red figures 12 mm tall	VPF- . **A**
carbon dioxide	CO_2	VPF- . **03**
argon	Ar	VPF- . **05**
nitrogen	N_2	VPF- . **07**
helium	He	VPF- . **09**









side view | front view | top view

VPF

*1 at 10 bar operating pressure and open outlet

PDF CAD
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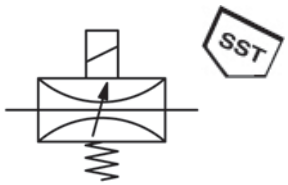
Order example: VPF-2

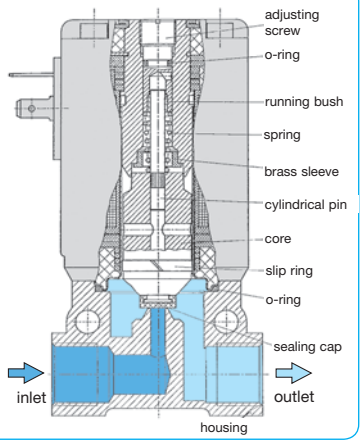
Description	2-way proportional flow valve controls the volume flow of maximum 1185 l/min for air in proportion to the input signal of 0 to 10 V or 0/4 to 20 mA. The proportional valve and the electronic control unit are ordered separately.
Product selection	To achieve the best linear flow characteristics, it is advisable not to reduce the flow too much and to have enough pressure drop at the valve for good control. Reference value: at the valve > 30% of the total pressure drop.
Installation hint	The nominal width of the orifice following the proportional valve should not be smaller than the nominal width of the valve. A constriction of the cross-section after the valve should be categorically avoided!



G⅛ up to G1
compressed air or liquids

General technical features

Design	2-way proportional flow valve, normally closed during absence of current, with additional control module in cable plug or in housing for DIN rail mounting.			
Mounting position	any, preferably upright			
Protection class	IP 65 with coupling socket, IP 40 for DIN rail version			
Temperature range	-10 °C to 90 °C / 14 °F to 194 °F for mediua -10 °C to 55 °C / 14 °F to 131 °F for electronics			
Material	Body: brass	Inner valve:	brass and stainless steel	
	Elastomer:	FKM	Control housing:	plastic



cross section

Pneumatic features

Media	compressed air, non-corrosive gases or liquids, max. viscosity 21 mm²/s, PV40 **for liquids only**
Operating pressure	see chart, max. 16 bar
Flow rate	0...2 / 1185 l/min for air, 0...0.03 / 83 l/min for liquids in detail see chart, at max. supply pressure and Δp = 1 bar

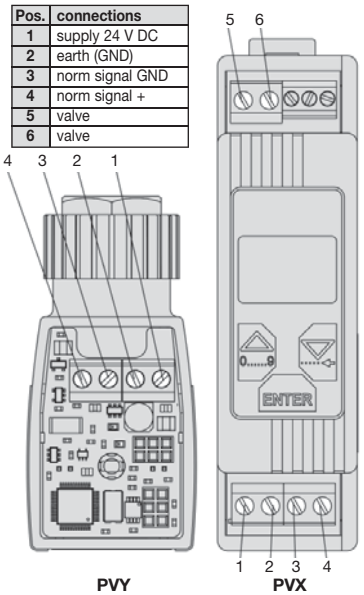
Electrical features

Supply voltage	24 V DC ± 10%, residual ripple max. 5%, with reverse voltage protection
Command signal	0-5 V, 0-10 V, 0-20 mA or 4-20 mA selectable
Impedance	> 20 kΩ at voltage signal < 200 Ω at current signal
Electrical connector	PV21: square connector according to DIN 43650 form B PV22...PV40: square connector according to DIN 43650 form A

Power consumption

electronic	PV21	PV21	PV22	PV34	PV40-04	PV40-06	PV40-08
1 W	2 W to DN 0.6	5 W from DN 0.8 on	9 W	16 W	8 W	10 W	15 W

Pos.	connections
1	supply 24 V DC
2	earth (GND)
3	norm signal GND
4	norm signal +
5	valve
6	valve



control electronics

Accuracy

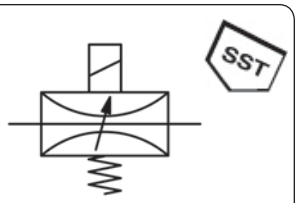
Linearity	< 10 % FS			
Hysteresis	< 5 % FS			
Response sensitivity	< 0.1% FS at DN < 0,8 mm,	< 0.25% FS at DN ≥ 0,8 mm,	< 1% FS at PV40	
Repeatability	< 0.25% FS	at PV22 < 0.5% FS		
Regulating time	PV21: < 15 ms,	PV22: < 20 ms,	PV34: < 50 ms,	PV40: < 200 ms
	each for 90% of the range			

Adjustment

Zero point	The zero point can be decreased or increased.
Range	The range can be decreased or increased.
Ramp	The ramping potentiometer adjusts the time delay with a range of 0 to 10 s in order to dampen sudden changes of the setpoint. Increasing and decreasing ramps have the same delay.
Zero point switch	Using a DIP switch, the zero point switch can be activated or deactivated. It is not necessary to have another switch-off valve.

Technical features

- **Media**: compressed air, non-corrosive gases or liquids, except for PV40
- **Signal range**: 0-5 V, 0-10 V, 0-20 mA, 4-20 mA
- **Pressure range**: vacuum ... 2 / 16 bar
- **Orifice**: DN 0.1 ... DN 20
- **Flow rate**: max. 1185 l/min for air, max. 90 l/min for water
- **Adjustment**: zero point, range and ramp
- **Zero switch-off**: ensures reliable closure of the valve
- **Linearity**: < 10% FS
- **Hysteresis**: < 5% FS
- **Response sensitivity**: < 0.1% FS at DN < 0.8 mm; < 0.25% FS at DN ≥ 0.8 mm; < 1% FS at PV40
- **Repeatability**: < 0.25% FS, < 0.5% FS at PV22
- **Regulating time**: depending on type: < 15 ms, < 20 ms, < 50 ms or < 200 ms
- **Protection class**: IP65 with plug
- **Impedance**: > 20 kΩ at V, < 200 Ω at mA



G⅛ up to G1 compressed air or liquids

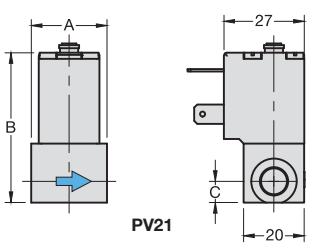
PV21

PV22

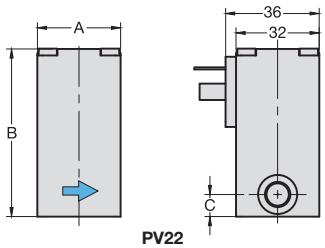
Proportional flow valve

without electronics, brass, FKM, for compressed air, vacuum or liquids*2

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate water l/min*1	air l/min*2	Operating pressure max. bar	Differ.-press. max. bar	Connection thread G	Order number PV
25	50	7	0.1	0.00025	0 ... 0.004	0 ... 0.27	10	10	G⅛	PV21-01
25	50	7	0.2	0.001	0 ... 0.017	0 ... 0.1	10	10	G⅛	PV21-02
25	50	7	0.3	0.002	0 ... 0.033	0 ... 2.2	10	10	G⅛	PV21-03
25	50	7	0.4	0.004	0 ... 0.067	0 ... 4.0	8	8	G⅛	PV21-04
25	50	7	0.6	0.010	0 ... 0.167	0 ... 11	6	6	G⅛	PV21-06
25	50	7	0.8	0.018	0 ... 0.3	0 ... 19	12	6	G⅛	PV21-08
25	50	7	0.8	0.018	0 ... 0.3	0 ... 19	12	12	G⅛	PV21-08B
25	50	7	1.0	0.027	0 ... 0.3	0 ... 19	10	5	G⅛	PV21-10
25	50	7	1.0	0.027	0 ... 0.3	0 ... 19	10	10	G⅛	PV21-10B
25	50	7	1.2	0.038	0 ... 0.633	0 ... 41	8	4	G⅛	PV21-12
25	50	7	1.2	0.038	0 ... 0.633	0 ... 41	8	8	G⅛	PV21-12B
25	50	7	1.6	0.055	0 ... 0.917	0 ... 59	6	3	G⅛	PV21-16
25	50	7	1.6	0.055	0 ... 0.917	0 ... 59	6	6	G⅛	PV21-16B
25	50	7	2.0	0.090	0 ... 1.5	0 ... 97	3	1.5	G⅛	PV21-20
25	50	7	2.0	0.090	0 ... 1.5	0 ... 97	3	3	G⅛	PV21-20B
32	66	8.5	0.8	0.018	0 ... 0.3	0 ... 19	16	8	G⅛	PV22-08
32	66	8.5	0.8	0.018	0 ... 0.3	0 ... 19	16	16	G⅛	PV22-08B
32	66	8.5	1.0	0.027	0 ... 1.0	0 ... 65	14	7	G⅛	PV22-10
32	66	8.5	1.0	0.027	0 ... 1.0	0 ... 65	14	14	G⅛	PV22-10B
32	66	8.5	1.2	0.040	0 ... 0.67	0 ... 43	12	6	G⅛	PV22-12
32	66	8.5	1.2	0.040	0 ... 0.67	0 ... 43	12	12	G⅛	PV22-12B
32	66	8.5	1.5	0.060	0 ... 1.0	0 ... 65	10	5	G⅛	PV22-15
32	66	8.5	1.5	0.060	0 ... 1.0	0 ... 65	10	10	G⅛	PV22-15B
46	72	8.5	2.0	0.10	0 ... 1.66	0 ... 108	8	4	G¼	PV22-20
46	72	8.5	2.0	0.10	0 ... 1.66	0 ... 108	8	8	G¼	PV22-20B
46	72	8.5	2.5	0.15	0 ... 2.5	0 ... 162	5	2.5	G¼	PV22-25
46	72	8.5	2.5	0.15	0 ... 2.5	0 ... 162	5	5	G¼	PV22-25B
46	72	8.5	3.0	0.22	0 ... 3.67	0 ... 237	3.5	1.8	G¼	PV22-30
46	72	8.5	3.0	0.22	0 ... 3.67	0 ... 237	3.5	3.5	G¼	PV22-30B
46	72	8.5	4.0	0.32	0 ... 5.33	0 ... 345	2	1	G¼	PV22-40
46	72	8.5	4.0	0.32	0 ... 5.33	0 ... 345	2	2	G¼	PV22-40B



PV21



PV22

*1 at max. operating pressure and Δp = 1 bar *2 at pressure drop from 6 bar down to 5 bar

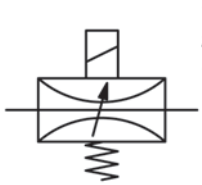
Technische Daten: siehe vorherige Seite

PDF CAD
www.aircom.net

Order example: PV21-01

Technical features

• **Media**	compressed air, non-corrosive gases or liquids, except for PV40	• **Linearity**	< 10% FS
• **Signal range**	0-5 V, 0-10 V, 0-20 mA, 4-20 mA	• **Hysteresis**	< 5% FS
• **Pressure range**	vacuum ... 2 / 16 bar	• **Response sensitivity**	< 0.1% FS at DN < 0.8 mm < 0.25% FS at DN ≥ 0.8 mm < 1% FS at PV40
• **Orifice**	DN 0.1 ... DN 20	• **Repeatability**	< 0.25% FS, < 0.5% FS at PV22
• **Flow rate**	max. 1185 l/min for air, max. 90 l/min for water	• **Regulating time**	depending on type: < 15 ms, < 20 ms, < 50 ms or < 200 ms
• **Adjustment**	zero point, range and ramp	• **Protection class**	IP65 with plug
• **Zero switch-off**	ensures reliable closure of the valve	• **Impedance**	> 20 kΩ at V, < 200 Ω at mA



G⅛ up to G1
compressed air or liquids

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate water l/min*1	air l/min*2	Operating pressure max. bar	Differ.-press. max. bar	Connection thread G	Order number
Proportional flow valve							without electronics, for compressed air, vacuum or liquids*2	brass,	FKM,	**PV**
55	105	11	4.0	0.45	0 ... 7.5	0 ... 485	8	4	G⅜	**PV34-40**
55	105	11	4.0	0.45	0 ... 7.5	0 ... 485	8	8	G⅜	**PV34-40B**
55	105	11	6.0	0.80	0 ... 13.3	0 ... 860	4	2	G½	**PV34-60**
55	105	11	6.0	0.80	0 ... 13.3	0 ... 860	4	4	G½	**PV34-60B**
55	105	11	8.0	1.10	0 ... 18.3	0 ... 1185	2	1	G½	**PV34-80**
55	105	11	8.0	1.10	0 ... 18.3	0 ... 1185	2	2	G½	**PV34-80B**
50	89	12	10	1.4	0 ... 25.0*3	-	10		G½	**PV40-04**
58	110	14	13	2.5	0 ... 45.0*3	-	10		G¾	**PV40-06**
80	155	16	20	5.0	0 ... 90.0*3	-	10		G1	**PV40-08**

PV34

PV40

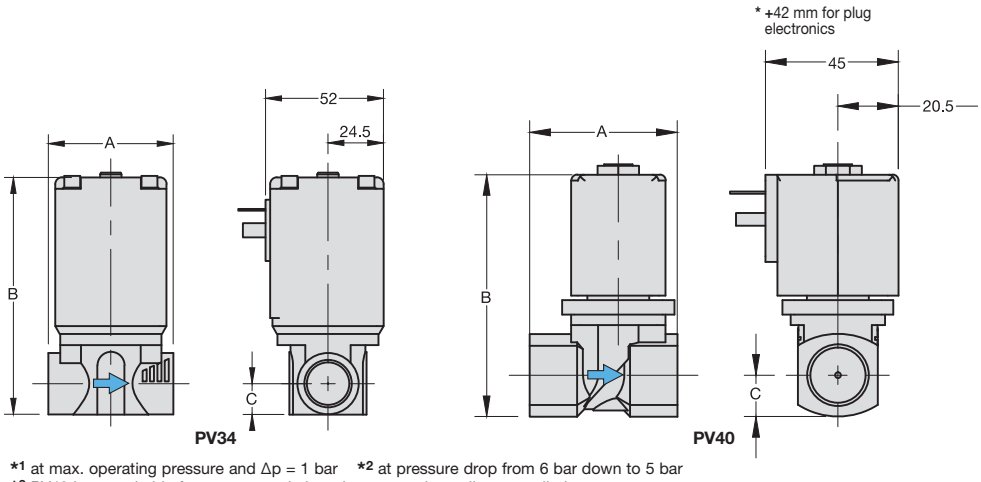
Special options, add the appropriate letter

stainless steel body	SST 316, W.-No. 1.4401	for PV21 to PV34	PV . . - . . **S**

Accessories

plug electronics	24 V DC, 0-5 V, 0-10 V, 0/4 mA - 20 mA	for PV22 to PV40	**PVY-06**
clip-on electronics	24 V DC, 0-5 V, 0-10 V, 0/4 mA - 20 mA	for PV21	**PVX-01**
		for PV22 to PV40	**PVX-02**
coupling socket	according to DIN 43650 form B	for PV21	**2285-0**
	according to DIN 43650 form A	for PV22 to PV40	**2286-0**

PVY **PVX**



*1 at max. operating pressure and Δp = 1 bar *2 at pressure drop from 6 bar down to 5 bar
*3 PV40 is not suitable for compressed air and vacuum, since pilot-controlled

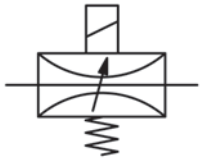
Technical informations: see previous page

PDF CAD
www.aircom.net

Order example: PV34-40

Miniature Piezo Proportional Flow Valve, 7 mW PV630/PV631

Description	The piezo miniature flow valve is highly reliable and combines precise control of flow rates with power consumption under 7 mW. It is extremely compact and weighs only 23 g. Therefore, it is very suitable for battery-operated portable devices. Preferred application in medical engineering. Electronics are not necessary.
Media	50 µm filtered compressed air or non-corrosive gases
Flange connection	according to CNOMO E06.36.120N (15 x 15 mm) or CNOMO E06.05.80 (30 x 30 mm) with adapter
Operating pressure	see chart, max. 8 bar
Supply voltage	0…40 V DC, residual ripple < 10%, without reverse voltage protection
Electrical connector	plug, contact gap 9.4 mm, 3-pin, with coupling socket (Pg 7P), optionally with wire, red (+), black (-)
Note	The current is to be limited by a > 30 Ω resistor connected in series.
Life cycle	< 1 billion switching cycles at 6 bar
Power consumption	< 100 µA, i.e. 7 mW — **Switch-on consumption** 0.6 W
Response time	50 ms — **Protection class** IP 65 with coupling socket
Mounting position	any — **Temperature range** 0 °C to 60 °C / 32 °F to 140 °F
Material	Body: PPS plastic — Elastomer: NBR/Buna-N Inner valve: piezoelectric ceramics — Manifold block: brass (M5), zinc die-cast (G⅛), polyamide (Ø4)



DN 0.3 and DN 0.4 piezo-controlled, 7 mW

Description	Dimensions A mm	B mm	C mm	K_v-value (m^3/h)	Flow rate l/min*1	Operating pressure max. bar	Nominal size DN	Order number
Flow valve					flangeable without manifold block, with coupling socket, 0-40 V DC			**PV630**
NC	15	48	51	0.005	0…6	8	0.3	**PV630-03**
				0.006	0…7	4	0.4	**PV630-04**
NO	15	48	51	0.005	0…6	8	0.3	**PV631-03**
				0.006	0…7	4	0.4	**PV631-04**

PV630-04

Special options, add the appropriate letter

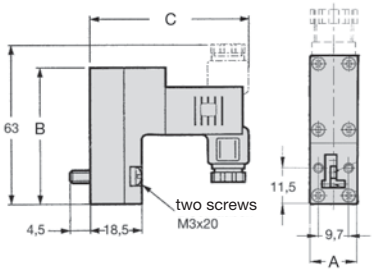
w/o coupling socket	protection class IP00	PV63 . -0 . **X**
with wire	lenght 1 m, red (+), black (-)	PV63 . -0 . **L**

PV630-03L with wire

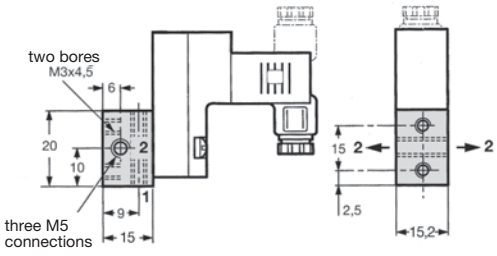
Accessories

manifold block	**M5**	**AP-01**
	G⅛	**AP-02**
	Ø4	**AP-03**
in-line manifold block	**Ø4**	**AP-04**
	G⅛	**AP-05**

PV630-04 accessory: manifold block M5

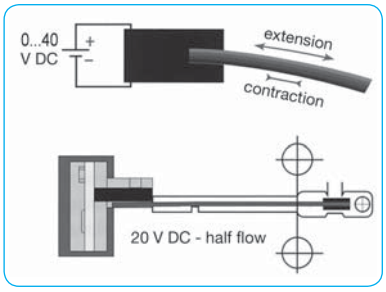


PV630

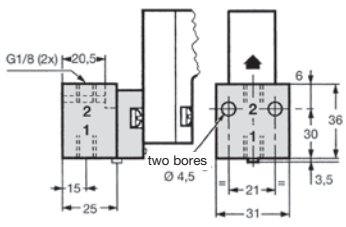


AP-01

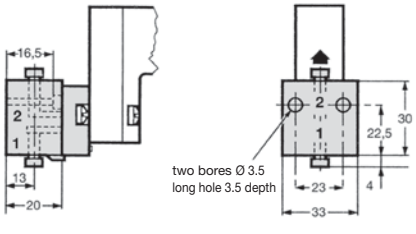
1: inlet
2: outlet



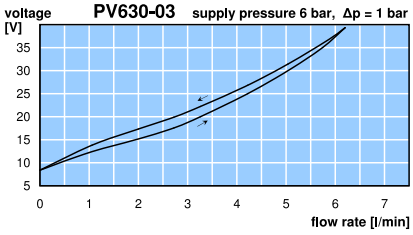
functional principle



AP-02



AP-03



*1 at operating pressure 6 bar and Δp = 1 bar

More miniature valves: see catalogue MV, also in ATEX version

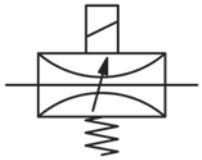
PDF CAD
www.aircom.net

Order example: PV630-03

Miniature-Proportional-Flow-Valve PV202

Prop.-V. 11

Description	The miniature flow valve is highly reliable and combines precise control of flow rate with compact design and only 80 g weight. It can be used for vacuum or pressure up to 12 bar. Plug amplifier required.		
Media	50 µm filtered compressed air, vacuum or non-corrosive gases		
Plug amplifier	Conversion of the analogue signal into a pulse-wide modulated current. Supply voltage: 24 V DC, max. 1.1 A Switchable signal: 0…10 V, 0…20 mA, 4…20 mA Close function: < 2% of max. signal	Adjustment: zero point and range Time ramp: 0.1 to 3 s selectable Frequency: 1000 Hz	
Electrical connector	plug, contact gap 9.4 mm, 3-pin, with coupling socket (Pg 7P)		
Operating pressure	see chart, max. 10 bar	**Life cycle**	> 100 million cycles
Repeatability	< 3% FS	**Linearity**	< 8% FS
Response sensitivity	< 2% FS	**Hysteresis**	< 5% FS
Polarity	any for valve	**Protection class**	IP 65 with coupling socket
Mounting position	any	**Temperature range**	0 °C to 50 °C / 32 °F to 122 °F
Material	Body: brass Inner valve: stainless steel and brass	Elastomer: FPM Manifold: brass (M5), zinc die-cast (G⅛), polyamide (Ø4)	



DN 0.8 to DN 2.0
compressed air or gases

Description	Dimensions A mm	B mm	C mm	K_v-value (m^3/h)	Flow rate l/min*1	Operating pressure max. bar	Nominal size DN	Order number
Proportional flow valve flangeable, w/o manifold block, with coupling socket, for compressed air, 24 V DC, direct control, w/o amplifier								**PV202**
NC	15	48	53	0.0012	0… 1	10	0.2	**PV202-002**
				0.0048	0… 5	10	0.4	**PV202-004**
				0.0096	0… 11	10	0.6	**PV202-006**
				0.0180	0… 20	10	0.8	**PV202-008**

PV202

Special options, add the appropriate letter

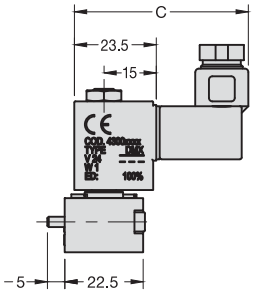
12 V DC	voltage signal	PV202-0. .**V**

PV202
accessory: manifold block M5

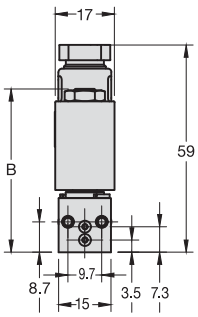
Accessories

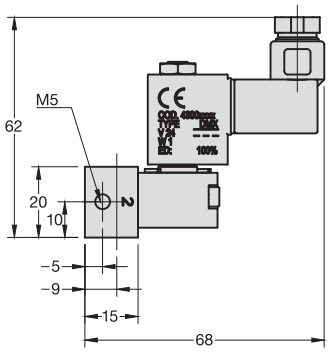
plug amplifier	24 V DC, switchable 0-10 V, 0-20 mA, 4-20 mA	**PVY-05**
manifold block	**M5**	**AP-01**
	G⅛	**AP-02**
	Ø4	**AP-03**
in-line manifold	**Ø4**	**AP-04**
	G⅛	**AP-05**

PVY-05

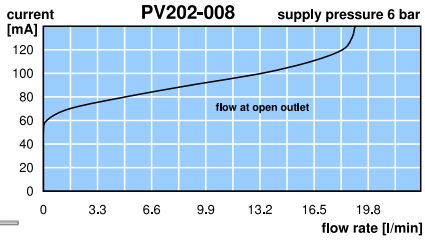


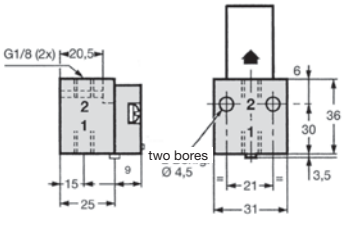
PV202



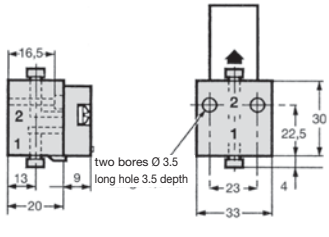


AP-01

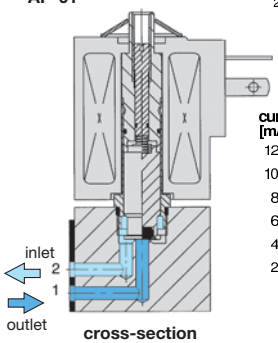




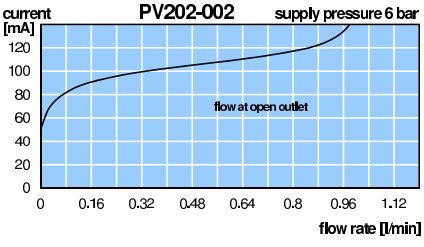
AP-02



AP-03



cross-section



*1 operating pressure 6 bar and Δp = 1 bar

More miniature valves: see catalogue MV, also in Ex ATEX version

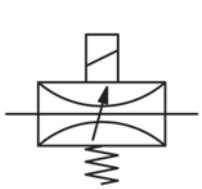
PDF CAD
www.aircom.net

Order example:
PV202-002

Proportional Flow Valve PV202/PV203

Description	The proportional flow valve can be controlled either by 24 V DC or optionally by a plug amplifier with switchable signals.		
Media	50 µm filtered compressed air, vacuum, non-corrosive gases or liquids		
Plug amplifier	Conversion of the analogue signal into a pulse-wide modulated current.		
	Supply voltage: 24 V DC, max. 1.1 A	Adjustment:	zero point and range
	Switchable signal: 0…10 V, 0…20 mA, 4…20 mA	Time ramp:	0.1 to 3 s selectable
	Close function: < 2% of max. signal	Hum frequency:	40 to 700 Hz selectable
Electrical connector	plug, 3-pin, with coupling socket (Pg 9P or PG 11P)	**Operating pressure**	see chart, max. 12 bar
Protection class	IP 65 with coupling socket	**Mounting position**	any
Temperature range	-10 °C to 90 °C / 14 °F to 194 °F at **G⅛: 0 °C to 50°C / 32 °F to 122 °F**		

	PV202, G⅛	PV202, G¼ / G⅜	PV203, G⅜ / G½
Viscosity max.	-	21 mm²/s	40 mm²/s
Power consumption	100…450 mA, 8.6 W	100…500 mA, 11 W	100…500 mA, 11 W
Hysteresis / Sensitivity	< 5% FS / < 1% FS	< 5% FS / < 2% FS	< 7.5% FS / < 2% FS
Repeatability	< 1% FS	< 3% FS	< 3% FS
Body / Inner valve	brass/SST, PTFE, FKM	brass/SST, PTFE, FKM	brass/SST, PTFE, NBR/Buna-N



DN 1.2 up to DN 12.5
compressed air or liquids

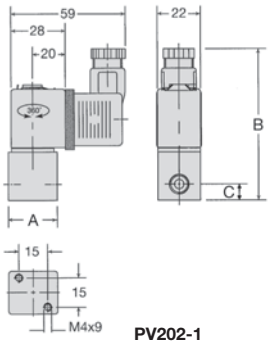
Dimensions A mm	B mm	C mm	Media A: air W: water	Nominal size DN	K_v-value (m^3/h)	Flow rate l/min*1	Supply max. bar	Connection thread G	Order number
Proportional flow valve			24 V DC, direct control, with coupling socket, without amplifier, made of brass						**PV202 / PV203**
25	78	8	A	1.2	0.05	0… 70	8.0	G⅛	**PV202-1-12**
				1.6	0.07	0…110	6.0		**PV202-1-16**
				2.4	0.13	0… 70	4.0		**PV202-1-24**
				3.2	0.18	0…105	2.5		**PV202-1-32**
40	95	20	A/W*3	1.2	0.05	0… 60	16	G¼	**PV202-2-12**
				2.4	0.12	0…110	8.0		**PV202-2-24**
				3.2	0.24	0…170	4.0		**PV202-2-32**
				4.0	0.42	0…280	2.5		**PV202-2-40**
				5.6	0.72	0…310	1.4		**PV202-2-56**
				7.1	0.90	0…390	1.0		**PV202-2-71**
48	97	14	A/W*3	3.2	0.24	0…190	4.0	G⅜	**PV202-3-32**
				4.0	0.42	0…300	2.5		**PV202-3-40**
				5.6	0.72	0…330	1.4		**PV202-3-56**
				7.1	0.90	0…420	1.0		**PV202-3-71**
52	105	14	W	12.5	2.10	0… 35*2	10	G⅜	**PV203-3-125W**
				12.5	2.10	0… 37*2	10	G½	**PV203-4-125W**

Special options, add the appropriate letter

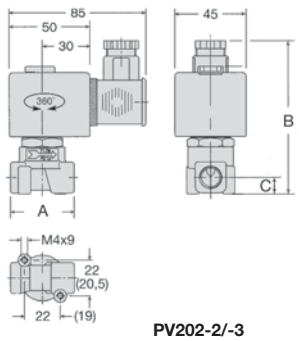
for water or oil		for PV202, G¼ and G⅜	PV202-.-..**W**
stainless steel body	NPT connection thread, FKM elastomere	for PV202	PV202-.-..**S**
12 V DC	voltage signal		PV20.-.-..**12V**

Accessories

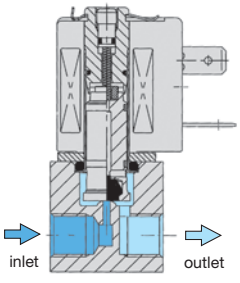
plug amplifier	24 V DC, switchable 0-10 V, 0-20 mA, 4-20 mA	for PV202, G⅛	**PVY-03**
		for all others	**PVY-04**
plug amplifier	12 V DC, switchable 0-10 V, 0-20 mA, 4-20 mA	für PV202, G⅛	**PVY-08**
		for all others	**PVY-09**



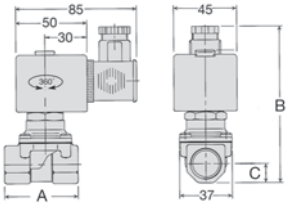
PV202-1



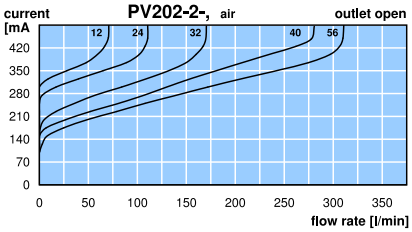
PV202-2/-3

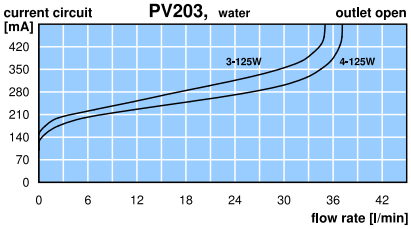


cross-section



PV203-3/-4





*1 for compressed air at operating pressure 6 bar and Δp = 1 bar
*2 flow rate for water since valve is pilot-controlled
*3 for liquids add **W** to order number of type PV202-2/-3


PV202-1


PV202-2


PV203-4


PVY-03

Weitere Miniaturventile: siehe Katalog MV, auch in Ex

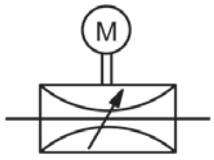
PDF CAD
www.aircom.net

Order example:
PV202-1-12

Motorised Proportional Flow Valve P8

Prop.-V. 11

Description	Motorised proportional flow valve with low power consumption and resistance to contamination. Throttle setting by wear-resistant control drives made of oxide ceramic. Throttling occurs with drip-tight zero shut-off but no gas tightness.
Media	compressed air, vacuum or liquids up to viscosity of 40 mm²/s Hysteresis ± 4%
Operation	DC, synchronous or stepping motor with standard voltage of 24 V DC or AC ±10% residual ripple. All motors fulfil standards EN50.081-1, EN50.082-2 and 89/336/EEC.
DC motor (15 / 24)	Motor with feedback potentiometer for servo-amplifier. Resistor 1kΩ ± 20 %, control e.g. by servo-amplifier. Only part of potentiometer range is used. Voltage for potentiometer: 12 V, max. 10 mA.
DC motor (50 / 51)	With integrated position controller. Setpoint input using jumpers: 0...10 V, 0/4...20 mA. Input resistance: 200 kΩ at voltage signal, 500 Ω at current signal.
Stepper motor (38)	Bipolar, by means of SAA1042A (Motorola) with drop resistance of 44 Ω per phase at a driver (full-step) operating voltage of 24 V ± 5%. 2028 steps for 90° control disc turn, 200 Hz nominal step frequency.
Temperature range	10 °C to 90 °C / 14 °F to 194 °F **Protection class** IP 54
Material	Body: brass Control discs: oxide ceramic Elastomer: NBR/Buna-N, optionally FKM or EPDM



G½ up to G1
compressed air or liquids

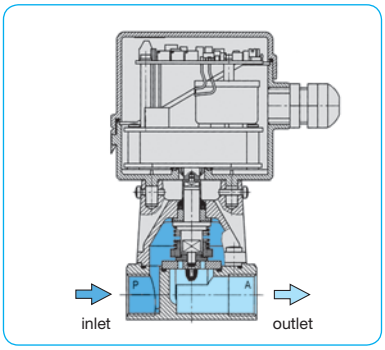
Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate water l/min*1	air l/min*1	Supply max. bar	Connection thread G	Order number
Proportional flow valve					DC motor type 15, with potentiometer, 120 Ncm, 24 V DC, switching time 10...14 s*2				**P8**
55	147	13	15	1.1	0...20	0...1000	10	G½	**P822-15**
55	147	13	20	3.4	0...60	0...3000	6	G½	**P82A-15**
95	164	24	20	4.4	0...70	0...3500	6*3	G¾	**P823-15**
95	164	24	20	4.4	0...70	0...3500	6*3	G1	**P824-15**

P822-15

Special options, add the appropriate letter

cartridge installation instead of thread for DN 15 P825-. .

Description	Figure-No.	Watt	Δp max./Torque	Switching time*2	
DC motor w/ potentiometer, 120 Ncm	①	1,5 W	6 bar/120 Ncm	10-14 s	P82.-**15**
DC motor w/ potentiometer, 200 Ncm	①	2,0 W	10 bar/200 Ncm	13 s	P82.-**24**
DC motor w/ controller	②	1,5 W	6 bar/120 Ncm	10-16 s	P82.-**50**
DC motor w/ controller	②	2,5 W	10 bar/200 Ncm	13-16 s	P82.-**51**
AC motor 50 Hz	③	3,0 W	6 bar/120 Ncm	10 s	P82.-**36**
stepper motor	④	5,0 W	6 bar/120 Ncm	10 s	P82.-**38**
FKM elastomer					P82.-. .**V**
EPDM elastomer					P82.-. .**E**
free of grease and oil		specially cleaned, suitable for oxygen			P82.-. .**L**
body nickel-plated					P82.-. .**X25**



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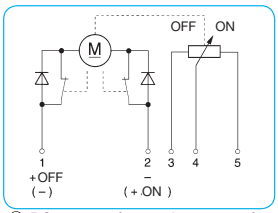
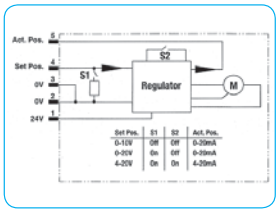
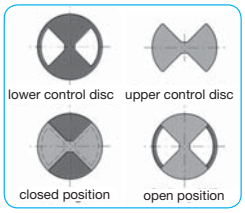


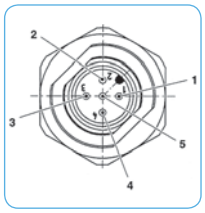
① DC motor w/ potentiometer 15/24



② with position controller 51



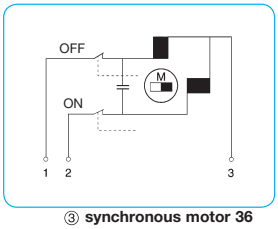
control disc



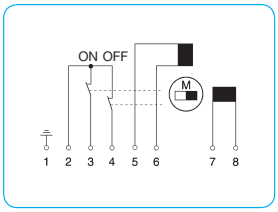
pin configuration 50

PIN	Description
Pin 1	supply voltage 24 Volt
Pin 2	supply voltage 0 Volt
Pin 3	ground potential for set value input and feedback outlet
Pin 4	set value input 0 - 10 V / 0 (4) - 20 mA
Pin 5	feedback outlet 0 (4) - 20 mA

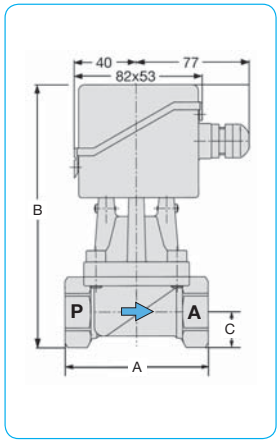
connection diagram



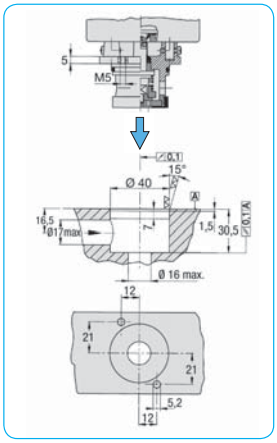
③ synchronous motor 36



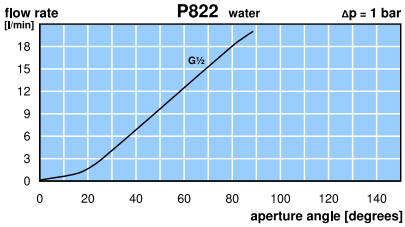
④ stepper motor 38

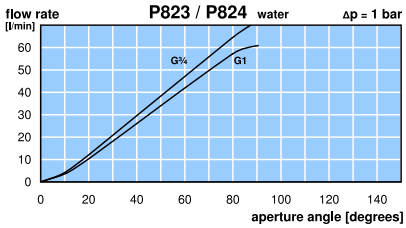


P8



cartridge connection P825





*1 at 6 bar supply pressure and Δp = 1 bar *2 subject to supply pressure *3 10 bar at motor for 200 Ncm

PDF CAD
www.aircom.net

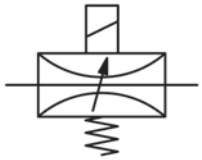
Order example:
P822-15

Miniature Proportional Volume Flow Regulator PVK

Description	Small proportional flow valve for regulating both air and non-corrosive gases. Voltage signal 10 V as standard or optionally 5 V or 20 V DC.
Media	50 µm filtered compressed air or non-corrosive gases
Operating pressure	see chart, max. 7 bar

Electrical specification	command signal	max. voltage	resistance	current consumption	power consumption
	0 - 5 V DC	0 - 6.2 V DC	13 Ω	0 - 370 mA	1.9 W
	0 - 10 V DC	0 - 12.4 V DC	54 Ω	0 - 185 mA	1.9 W
	0 - 20 V DC	0 - 24.8 V DC	218 Ω	0 - 92 mA	1.9 W

Electrical connection	solder lug or terminal lug, 2.5 x 0.5 mm		
Mounting position	any		
Hysteresis	± 10% FS	**Repeatability**	± 3% FS
Temperature range	0 °C to 60 °C / 32 °F to 140 °F		
Material	Body: nickel-plated brass Inner valve: stainless steel and brass	Elastomer:	NBR/Buna-N, optionally FKM or EPDM



DN 0.2 up to DN 1.5
0 - 5 / 10 / 20 V DC

Dimensions A mm	B mm	C mm	Nominal size DN	K_v-value (m^3/h)	Flow rate l/min*1	Operating pressure max. bar	Connection thread M5	Order number
Volume flow regulator M5			0-10 V DC, 2-port/2-way valve for compressed air or non corrosive gases, with terminal lug, brass, NBR/Buna-N					**PVK**
20	40	5	0.2	0.03	0…3	1.7	M5	**PVK-092**
						3.5		**PVK-093**
						7.0		**PVK-097**
20	40	5	0.3	0.07	0…7	1.7	M5	**PVK-132**
						3.5		**PVK-133**
						7.0		**PVK-137**
20	40	5	0.6	0.24	0…24	1.7	M5	**PVK-252**
						3.5		**PVK-253**
						7.0		**PVK-257**
20	40	5	1.0	0.18	0…19	1.7	M5	**PVK-402**
						3.5		**PVK-403**
20	40	5	1.5	0.14	0…14	1.7	M5	**PVK-602**

PVK-257
with M5 connection

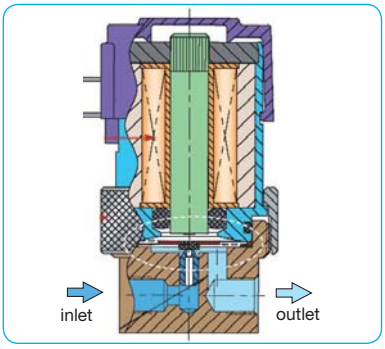
PVK-092AF
with flange connection

Special options, add the appropriate letter

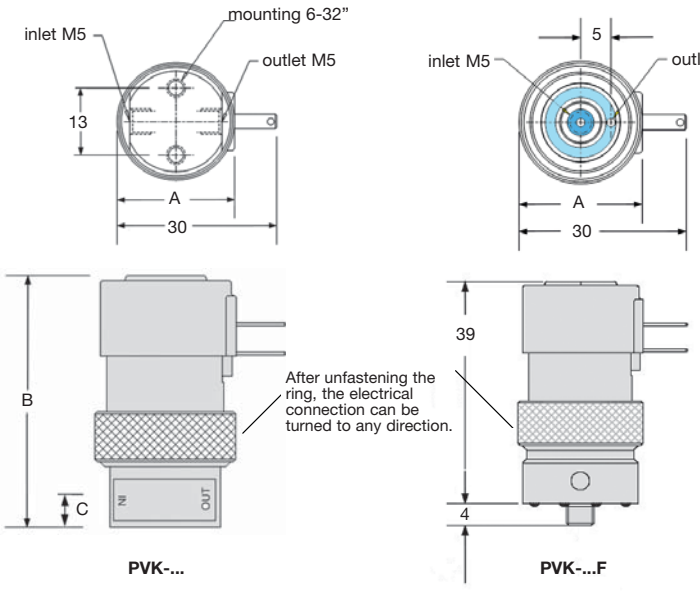
0 - 5 V	input signal max. 6,2 V,	0 - 370 mA,	13 Ω	PVK-. . .**A**
0 - 20 V	input signal max. 25 V,	0 - 92 mA,	218 Ω	PVK-. . .**C**
flange connection	for panel mounting			PVK-. . .**F**
FKM elastomer				PVK-. . .**V**
EPDM elastomer				PVK-. . .**E**

Accessories

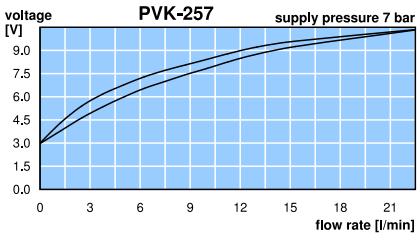
manifold block for valve with flange connection, for 2, 4 ... 12 valves



cross section



PVK-... **PVK-...F**



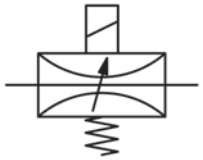
*1 at max. current consumption and max. operating pressure

More miniature valves: see catalogue MV, also in ATEX version PDF CAD www.aircom.net

Order example: PVK-092

Proportional Flow Valve with Y-Type Valve PVE

Description	Compact positioner with analogue control. Compressed air for remote control necessary. The stroke is made proportional to the flow through the parabolic contour of the piston. The valve shuts tight and is of anti-water hammer design.
Media	compressed air, vacuum up to 10^{-2} mbar or liquids up to viscosity of max. 600 cST (mm^2/s)
Control	pneumatic: lubricated, unlubricated and 50 µm filtered compressed air, 4…8 bar, port G⅛ electrical: 0-10 V, optionally 4-20 mA, supply 24 V DC ± 10%, power consumption 150 mA/3.6 W analog position feedback signal 0-10 V / 4-20 mA (after automatic balance)
Control element	2-port/2-way valve, NC (normally closed) as standard, as option 3-port/2-way valve for mixing different media, with standard piston
Electrical connection	cable gland, optionally M12
Mounting position	any
Protection Class	IP 66
Linearity / Hysteresis	< 2% FS
Repeatability	< 1.0% FS
Failsafe	valve closes (NC) in the event of voltage failure, optionally outlet fail freeze feature
Temperature range	Ambient: 0 °C to 50 °C / 32 °F to 122 °F Medium: -10 °C to 180 °C / 14 °F to 356 °F
Material	Control valve body: bronze, optionally SST 316L Cone seal: PTFE Proportional valve body: aluminium, PA and FV



0…77 / 1233 l/min
compressed air or liquids

Dimensions A	B	Ø*1	Nominal size	K_v-value	Supply max.	Flow rate water	air	Connection thread	Order number
mm	mm	mm	DN	(m^3/h)	bar	l/min	l/min	G	

Volumenstromregler

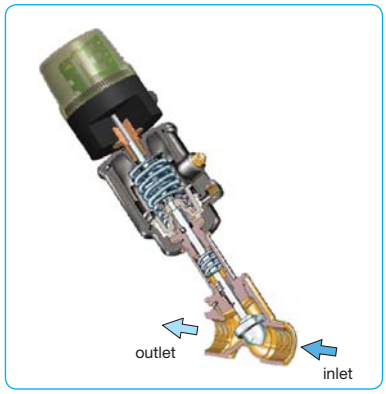
2/2-Wege, NC, Bronze, Steuerdruck 4…8 bar, für Luft oder Wasser, 0-10 V, 24 V DC, failsafe — **PVE**

65	155	63	15	4.6	10	0…	14	5 000	G½	**PVE1-04B**
75	185	63	20	7.1	16	0…	118	7 700	G¾	**PVE1-06C**
90	209	90	25	15	16	0…	250	16 250	G1	**PVE1-08D**
110	246	90	32	21	12	0…	350	22 750	G1¼	**PVE1-10D**
110	298	125	32	22	16	0…	367	23 800	G1¼	**PVE1-10E**
120	245	63	40	29	4	0…	483	31 400	G1½	**PVE1-12C**
120	262	90	40	29	8	0…	483	31 400	G1½	**PVE1-12D**
120	314	125	40	44	16	0…	733	47 600	G1½	**PVE1-12E**
150	259	63	50	40	2	0…	667	43 300	G2	**PVE1-16C**
150	276	90	50	40	6	0…	667	43 300	G2	**PVE1-16D**
150	328	125	50	66	10	0…	1 100	71 500	G2	**PVE1-16E**
190	300	90	65	68	2	0…	1 133	73 600	G2½	**PVE1-20D**
190	352	125	65	74	6	0…	1 233	80 000	G2½	**PVE1-20E**

PVE1
with 2-port/2-way valve

Special options, add the appropriate letter

3-port/2-way valve	for mixing different media, bronze version only	PVE**3**-. . .
fail freeze	if supply voltage fails, outlet pressure will be frozen	PVE.-. . .**3**
SST body	stainless steel 316L, material no. 1.4401	PVE.-. . .**S**
4-20 mA	input signal	PVE.-. . .**I**
for oxygen *2	specially cleaned, with oxygen grease, for G½ to G2	PVE.-. . .**15**
cascade control	double loop, 0-10 V	PVE.-. . .**KU**
	double loop, 4-20 mA	PVE.-. . .**KI**
	double loop, frequency input	PVE.-. . .**KF**
electr. connection M12	with coupling socket	PVE.-. . .**M12**



cross section

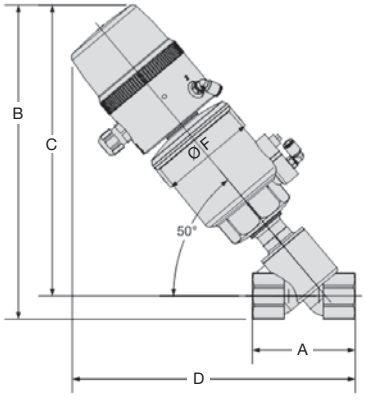
PVE with regulator control	
1	24 V DC supply voltage
2	GND (earth) supply
3	+ setpoint (0-10 V / 4-20 mA)
4	GND (earth) setpoint
5	
6	position feedback
7	+24 V DC ON/OFF output signal

PVE with cascade control	
1	24 V DC supply voltage
2	GND (earth) supply
3	+ setpoint (0-10 V / 4-20 mA)
4	GND (earth) setpoint
5	external signal input
6	
7	+24 V DC ON/OFF output signal

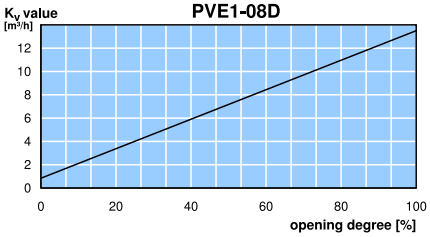
connecting plan

parabolic piston enables stroke-proportional K_v value change

Ø head*1	thread	C	D	ØF
50 mm	½	213	212	69
63 mm	¾	242	245	85
	1½	287	294	85
	2	296	319	85
90 mm	1	261	267	118
	1¼	293	306	118
	1½	304	313	118
	2	313	337	118
	2½	329	369	118
125 mm	1¼	445	354	156
	1½	356	361	156
	2	365	385	156
	2½	380	417	156



PVE1



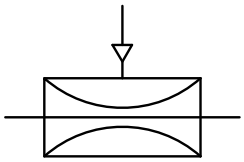
*1 Ø of pilot head
*2 max. 15 bar operating pressure and 60 °C / 140 °F media temperature

PDF CAD
www.aircom.net

Order example:
PVE1-04B

Flow Control Valve / Pinch Valve / 2-Port/2-Way Valve Q

Description	The flow control valve functions as a pinch valve in a new design of housing with full flow cross-section. Since the straight valve passage has neither constrictions nor back-points, there is no danger of clogging or blockage. Frictional loss is at a minimum.
Media	Compressed air, non-corrosive gases, liquids or other paste-like or powdery media. Solids are enclosed by the flexible sleeve at shut-off.
Sleeve	Highly flexible with double-woven reinforcement in eight different grades. Sleeve simple to change.
Pressures	Operating pressure: max. 4.0 bar Pilot pressure: max. 6.5 Differential pressure: max. 2.5 bar Closing pressure: P_1 + 2.5 bar to DN32, P_1 + 2 bar from DN40 on
Vacuum	If vacuum is greater than -100 mbar, vacuum compensation should be provided on the control side.
Accuracy	In the flow range of 0 to 70% the accuracy of the linearity of pilot pressure to flow is approx. 10%.
Mounting position	any
Temperature range	0 °C to max. 100 °C / 32 °F to max. 212 °F, subject to sleeve material
Material	Body: POM at model QP or aluminium die-cast at model QS Sleeve: depending on selected version



DN10 up to DN150

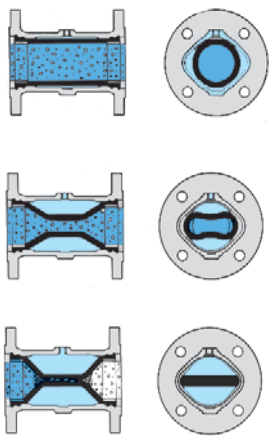
Flow control valve

operating pressure max. 4 bar, pilot pressure max. 2.5 bar above operating pressure — Q

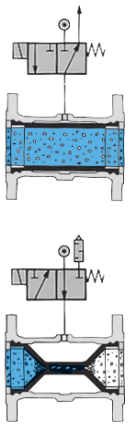
Dimensions A mm	Ø mm	Nominal size DN	Volume of control chamber l	Pilot port G	Operating pressure max. bar	Connection thread G / flange	Order number
80	44	10	0.03	G¼	4	G⅜	**QP10 -03NR**
95	50	15	0.04	G¼	4	G½	**QP15 -04NR**
110	58	20	0.05	G¼	4	G¾	**QP20 -06NR**
125	65	25	0.07	G¼	4	G1	**QP25 -08NR**
140	83	32	0.10	G¼	4	G1¼	**QP32 -10NR**
150	95	40	0.13	G¼	4	G1½	**QP40 -12NR**
200	100	50	0.23	G¼	4	G2	**QS50 -16NR**
240	134	65	0.49	G¼	4	G2½	**QS65 -20NR**
290	154	80	0.95	G¼	4	G3	**QS80 -24NR**
280	220	100	1.80	G⅜	4	flange	**QS100-FLNR**
350	250	125	3.30	G⅜	4	flange	**QS125-FLNR**
420	285	150	6.40	G⅜	4	flange	**QS150-FLNR**

Special options, add the appropriate letter

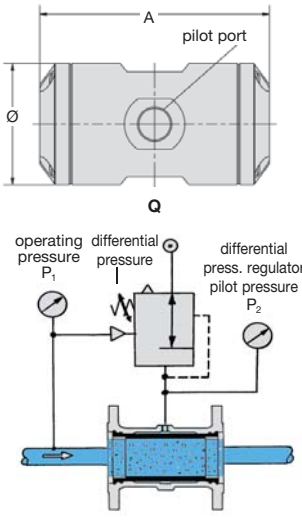
flange connection	according to DIN 2532, PN10	from G1¼ on	Q . . . **-FL** . .
sleeve NR	natural rubber, black	80 °C / 176 °F	Q . . . - . . **NR**
sleeve NRL	rubber, suitable for food, black	70 °C / 158 °F	Q . . . - . . **NL**
sleeve NRLH	rubber, suitable for food, light	70 °C / 158 °F	Q . . . - . . **NH**
sleeve NBR	nitrile rubber / Buna-N, suitable for food	80 °C / 176 °F	Q . . . - . . **NB**
sleeve EPDM	ethylene-prophylene rubber, suitable for food, black	100 °C / 212 °F	Q . . . - . . **EP**
sleeve FKM	fluorine rubber, black	100 °C / 212 °F	Q . . . - . . **FK**
sleeve CR	chloroprene rubber / neoprene, black	80 °C / 176 °F	Q . . . - . . **CR**
sleeve CSM	natural rubber, chlorosulphonylpolyethylene	80 °C / 176 °F	Q . . . - . . **CS**



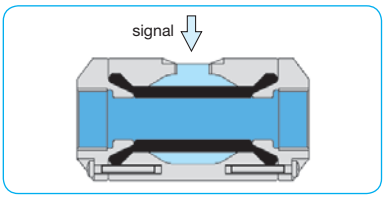
closing sequence



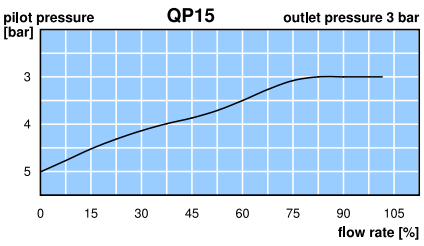
solenoid valve control



constant cross section at changing pressure



cross section



QP made of POM, DN10 - DN25

QP made of POM, DN32 - DN40

QS50 made of aluminium with POM thread

QS100 made of aluminium die-cast

Stainless steel pinch valves: see chapter for stainless steel devices

PDF CAD
www.aircom.net

Order example: QP10-03NR