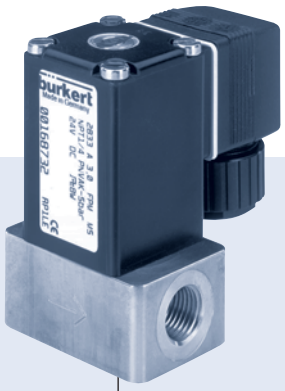
burkert
FLUID CONTROL SYSTEMS

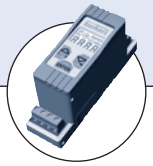
2/2-way proportional valve



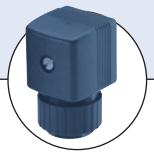
- High sensitivity
- 0 ... 16 bar [1)]
- DN 0.8 ... 4 mm
- 1/8", 1/4" or sub-base
- EEx approvals optional

Type 2833 can be combined with…

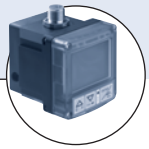
Type 8605
Digital control electronics
Cable plug version



Type 8605
Digital control electronics
DIN-rail version



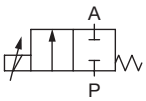
Type 2508
Cable plug



Type 8611
Universal controller

The direct-acting proportional valve Type 2833 can be used as a control valve for process control and is suitable for technical vacuum. Low hysteresis, high repeatability and high sensitivity ensure superior regulation behaviour. Thanks to an elastomeric sealing, the valve closes tightly and securely.

Circuit function A



Direct acting 2-way proportional valve, normally closed

Valve control takes place through the control electronics of Type 8605, which converts an analogue input signal into a PWM signal[2)].

Further, functional features of the Type 8605 electronic control unit:

- Temperature compensation for coil heating by internal current regulation
- Simple zero and span settings
- Ramp function to dampen fast status changes

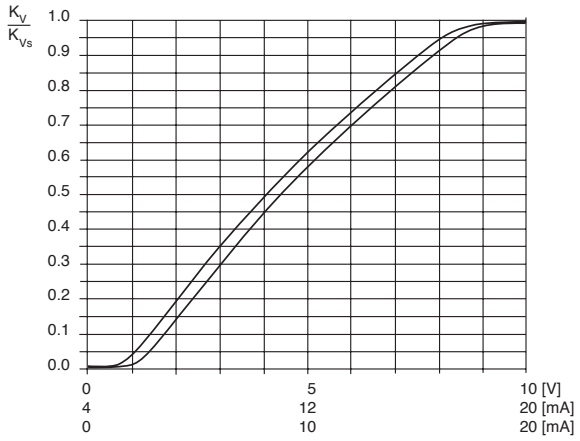
[1)] Pressure data [bar]: Overpressure with respect to atmospheric pressure
[2)] PWM pulse-width modulation
[3)] Characteristic data of control behaviour depends on process conditions

Technical Data - valve	
Body material	Brass, Stainless steel
Seal material	FKM, EPDM on request
Media	Neutral gases, liquids
Medium temperature	-10 ... +90 °C
Ambient temperature	max. +55 °C
Viscosity	max. 21 mm2/s
Operating voltage	24 V DC
Power consumption	9 W
Duty cycle	100 % continuously rated
Port connection	Sub-base, G 1/8, G 1/4, NPT 1/8, NPT 1/4, others on request
Electric connection	Cable plug Type 2508 acc. to DIN EN 175301-803 Form A
Installation	As required, preferably with actuator in upright position
Response time (10 - 90%)	<20ms
Typical control data [3)]	
Hysteresis	< 5 %
Repeatability	< 0.5 % FS.
Sensitivity	< 0.25 % FS
Turn-down ratio	1:100
Protection class - valve	IP65

Technical data - control electronics Type 8605 (see separate datasheet)

DTS 1000082267 EN Version: A Status: RL (released I freigegeben I validé) printed: 15.07.2008

Characteristics of a proportional valve



Advice for valve sizing

In continuous flow applications, the choice of appropriate valve size is much more important than with on/off valves. The optimum size should be selected such that the resulting flow in the system is not unnecessarily reduced by the valve. However, a sufficient part of the pressure drop should be taken across the valve even when it is fully opened.

Recommended value: Δp_{valve} > 30 % of total pressure drop within the system

For that reason take advantage of Bürkert competent engineering services during the planning phase!

Determination of the kv value

Pressure drop	kv value for liquids [m³/h]	kv value for gases [m³/h]
Subcritical $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000\ \Delta p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1\ \rho_N}{p_2\ \Delta p}}$
Supercritical $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000\ \Delta p}}$	$= \frac{Q_N}{257\ p_1} \sqrt{T_1\ \rho_N}$

k_V	Flow coefficient	[m³/h] [1]
Q_N	Standard flow rate	[m_N^3/h] [2]
p_1	Inlet pressure	[bar][3]
p_2	Outlet pressure	[bar][3]
Δp	Differential presure p_1-p_2	[bar]
ρ	Density	[kg/m³]
ρ_N	Standard density	[kg/m³]
T_1	Temperature if fluid medium	[(273+t)K]

[1] measured for water, Δp = 1 bar, via the device

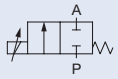
[2] Standard conditions at 1.013 bar[3] and 0 °C (273K)

[3] Absolute pressure

DTS 1000082267 EN Version: A Status: RL (released I freigegeben I validé) printed: 15.07.2008

Ordering chart

All valves with FKM seal

Control function	Orifice [mm]	Port connection	kvs value water [m³/h] [1]	QNn value [l/min] [2]	Maximum pressure [bar] [3]	Coil power consumption [W]	Maximum coil current [mA]	Item no. Brass body	Item no. Stainless steel body
A 	0.8	sub-base FB01	0.018	19	16	9	400	175 860	175 861
		G 1/8	0.018	19	16	9	400	175 862	175 863
		NPT 1/8	0.018	19	16	9	400	175 864	175 865
	1.2	sub-base FB01	0.040	43	12	9	400	175 866	175 867
		G 1/8	0.040	43	12	9	400	175 868	175 869
		NPT 1/8	0.040	43	12	9	400	175 870	175 871
	1.5	sub-base FB01	0.060	65	10	9	400	175 872	175 873
		G 1/8	0.060	65	10	9	400	175 874	175 875
		NPT 1/8	0.060	65	10	9	400	175 876	175 877
	2.0	sub-base FB01	0.100	108	8	9	400	175 878	175 879
		G 1/8	0.100	108	8	9	400	175 880	175 891
		NPT 1/8	0.100	108	8	9	400	175 892	175 893
		G 1/4	0.100	108	8	9	400	175 896	175 900
		NPT 1/4	0.100	108	8	9	400	175 901	175 902
	2.5	sub-base FB01	0.150	162	5	9	400	175 922	175 923
		G 1/4	0.150	162	5	9	400	175 924	175 926
		NPT 1/4	0.150	162	5	9	400	175 927	175 928
	3.0	sub-base FK01	0.220	237	3.5	9	400	175 929	175 930
		G 1/4	0.220	237	3.5	9	400	175 932	175 933
		NPT 1/4	0.220	237	3.5	9	400	175 938	175 939
	4.0	sub-base FK01	0.320	345	2	9	400	175 940	175 941
		G 1/4	0.320	345	2	9	400	175 942	175 943
		NPT 1/4	0.320	345	2	9	400	175 944	175 945

[1] **kVs value:** Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.
[2] **QNn value:** Flow rate value for air with inlet pressure of 6 bar1), 1 bar pressure differential and +20 °C.
[3] **Pressure data [bar]:** Overpressure with respect to atmospheric pressure

Please note that the valves are delivered without control electronics unit and cable plug (see Accessory Ordering Information).

Further versions on request

Materials
Seal material FFKM - Resistant to aggressive media
Seal material EPDM

Analytical
Oxygen version
Part oil-, fat- and silicon free

Electrical connection
12 V Coil

Approvals
Ex version - II 2G EEx m IIC T4, PTB No. 02 ATEX 2094X with or without terminal box
UR
CSA

Ordering chart for accessories

Cable plug Type 2508 according to DIN EN 175301-803 Form A

The delivery of a cable plug includes the flat seal and fixing screw

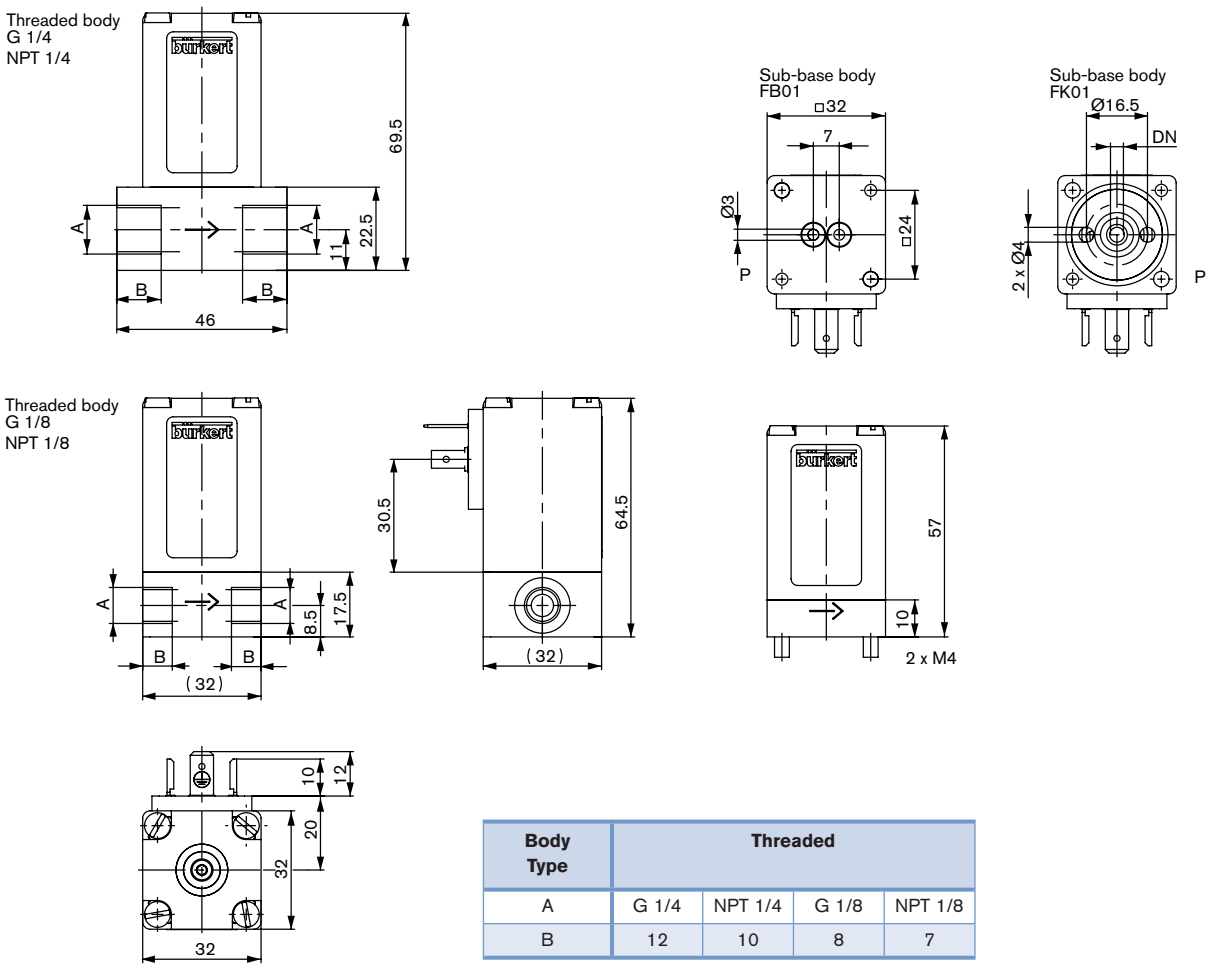
Circuitry	Voltage / frequency	Item no.
None	0 - 250 V AC/DC	008 376
None, with 3 m cable	0 - 250 V AC/DC	783 573

Electronic Control Type 8605

Please see Datasheet

DTS 1000082267 EN Version: A Status: RL (released I freigegeben I validé) printed: 15.07.2008

Dimensions [mm]



Body Type	Threaded			
A	G 1/4	NPT 1/4	G 1/8	NPT 1/8
B	12	10	8	7

For product inquiries, use the specification sheet for proportional valves!

bürkert

Note
You can fill out the fields directly in the PDF file before printing out the form.

Design data for proportional valves

Please fill out this form and send to your local Bürkert Sales Centre* with your inquiry or order

Company	Contact person
Customer no.	Dept.
Address	Tel./Fax
Town / Postcode	E-Mail

= Mandatory fields | **Quantity** | **Desired delivery date**

Process data

Medium				
State of medium		☐ **liquid** ☐ **gaseous** ☐ **vaporous**		
Medium temperature			°C	
Maximum flow rate	Q_{nom} =		Unit:	
Minimum flow rate	Q_{min} =		Unit:	
Inlet pressure at nominal operation	p_1 =		barg	
Outlet pressure at nominal operation	p_2 =		barg	
Maximum inlet pressure	p_{1max} =		barg	
Ambient temperature			°C	

Additional specifications

Body material	☐ Brass	☐ Stainless steel		
Seal material	☐ FKM	☐ other		

Note Please state all pressure values as **overpressures with** respect to atmospheric [barg].

DTS 1000082267 EN Version: A Status: RL (released | freigegeben | validé) printed: 15.07.2008