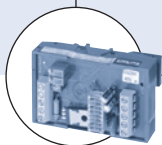


2/2-way proportional valve

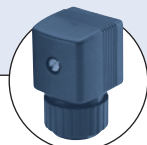
- High sensitivity
- 0 ... 16 bar¹⁾
- DN 0.8 ... 4 mm
- 1/8", 1/4" or sub-base
- EEx approvals optional

Type 2833 can be combined with...



Type 1094

Control electronics
Switch cabinet version



Type 2507

Cable plug

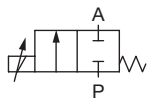


Type 8605

Control Electronics
Cable plug version

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 behavior. 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 1094, which converts an analogue input signal into a PWM signal²⁾.

Further, functional features of the Type 1094 electronic control unit:

- Temperature compensation for coil heating by internal current regulation
- Simple zero and span settings by means of two potentiometers
- Ramp function to dampen fast status changes
- Monitor signal with LED display to assist setup and indication of coil current.

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

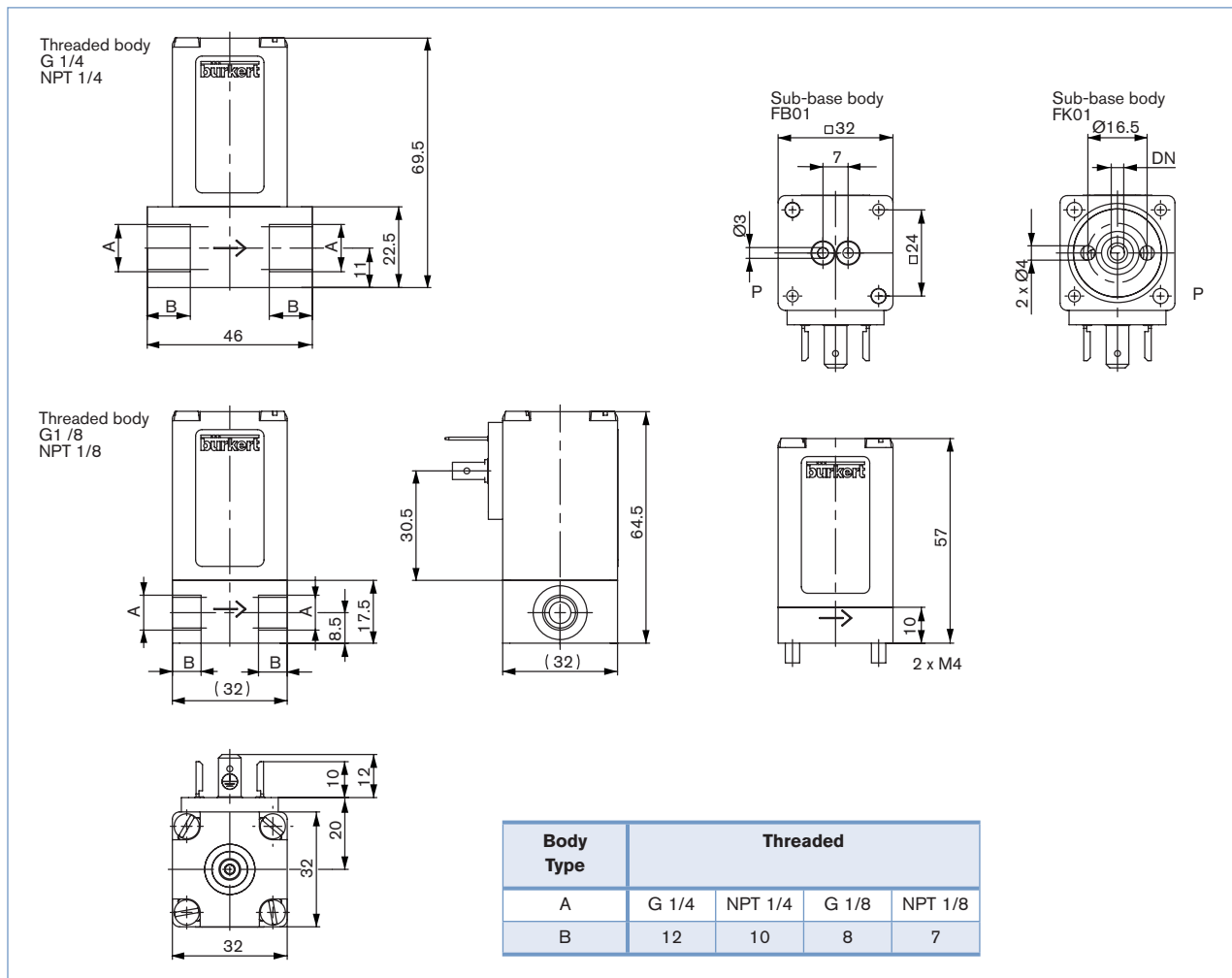
Technical Data - valve

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 mm ² /s
Operating voltage	24 V DC
Power consumption	8 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 (DIN EN 175301-803* Form A)
Installation	As required, preferably with actuator in upright position
Rotation time (10 - 90%)	<20ms
Typical control data³⁾	
Hysteresis	< 5 %
Repeatability	< 0.5 % v. E.
Sensitivity	< 0.25 % v. E.
Turn-down ratio	1:100
Protection class - valve	IP65

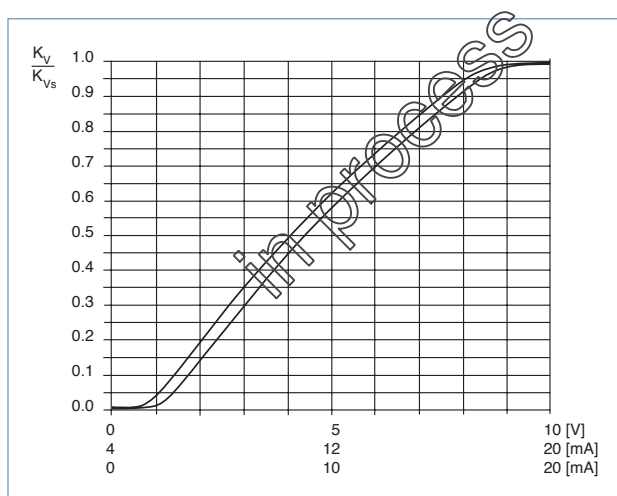
Technical data - control electronics Type 1094

Operating voltage	24 V DC
Voltage tolerance	± 10 %
Ripple	± 10 %
Power consumption	0.5 W (without valve)
Input signal	0 ... 20 mA, 4 ... 20 mA or 0 ... 10 V
Input impedance	210 Ω (current input) 17 kΩ (voltage input)
Output signal	PWM-pulse-width modulation
Ramp time	0 ... 10 s, adjustable
Monitor signal	1 mV ≙ 1 mA effective coil current (used for adjustment of working area)
Version - Variant H	DIN rail version / without ingress protection

Dimensions [mm]



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: $\Delta p_{\text{valve}} > 30\%$ 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 $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1 p_N}{p_2 \Delta p}}$
Supercritical $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{257 p_1} \sqrt{T_1 p_N}$

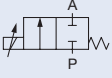
k_v	Flow coefficient	[m³/h] ¹⁾
Q_N	Standard flow rate	[m _N ³/h] ²⁾
p_1	Inlet pressure	[bar] ³⁾
p_2	Outlet pressure	[bar] ³⁾
Δp	Differential pressure $p_1 - p_2$	[bar]
ρ	Density	[kg/m³]
p_N	Standard density	[kg/m³]
T_1	Temperature if fluid medium	[(273+t)K]

¹⁾ measured for water, $\Delta p = 1$ bar, via the device

²⁾ Standard conditions at 1.013 bar³⁾ and 0 °C (273K)

³⁾ Absolute pressure

Ordering chart

Control function	Orifice [mm]	Port connection	kvs value water [m³/h]	Q _{Nn} value [l/min]	Maximum pressure [bar] ¹⁾	Coil power consumption [W]	Maximum coil current [mA]	Item no. Brass body	Item no. Stainless steel body
	0.8	sub-base FB01	0.018	19	16	8	350	175 860	175 861
		G 1/8	0.018	19	16	8	350	175 862	175 863
		NPT 1/8	0.018	19	16	8	350	175 864	175 865
	1.2	sub-base FB01	0.040	43	9	8	350	175 866	175 867
		G 1/8	0.040	43	9	8	350	175 868	175 869
		NPT 1/8	0.040	43	9	8	350	175 870	175 871
	1.5	sub-base FB01	0.060	65	7	8	350	175 872	175 873
		G 1/8	0.060	65	7	8	350	175 874	175 875
		NPT 1/8	0.060	65	7	8	350	175 876	175 877
	2.0	sub-base FB01	0.100	108	6	8	350	175 878	175 879
		G 1/8	0.100	108	6	8	350	175 880	175 891
		NPT 1/8	0.100	108	6	8	350	175 892	175 893
		G 1/4	0.100	108	6	8	350	175 896	175 900
		NPT 1/4	0.100	108	6	8	350	175 901	175 902
	2.5	sub-base FB01	0.150	162	5	8	350	175 922	175 923
		G 1/4	0.150	162	5	8	350	175 924	175 926
		NPT 1/4	0.150	162	5	8	350	175 927	175 928
	3.0	sub-base FK01	0.220	236	2.5	8	350	175 929	175 930
		G 1/4	0.220	236	2.5	8	350	175 932	175 933
		NPT 1/4	0.220	236	2.5	8	350	175 938	175 939
	4.0	sub-base FK01	0.320	344	1.5	8	350	175 940	175 941
		G 1/4	0.320	344	1.5	8	350	175 942	175 943
		NPT 1/4	0.320	344	1.5	8	350	175 944	175 945

- **k_{vs} value:** Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.
- **Q_{Nn} value:** Flow rate value for air with inlet pressure of 6 bar¹⁾, 1 bar pressure differential and +20 °C.
- Delivered without control electronics unit and cable plug (see Accessory Ordering Information).
- Standard delivery of all devices includes FKM seal.

¹⁾ Pressure data [bar]: Overpressure with respect to atmospheric pressure

Further versions on request

- Seal material FFKM - Resistant to aggressive media
- Seal material EPDM - Standard or FDA approved
- Plunger seal for higher leak tightness
- Ex version - II 2G EEx m IIC T4, PTB No. 02 ATEX 2094X with or without terminal box
- Oxygen version
- Part oil-, fat- and silicon free
- Part plasma cleaned and supersonic washed
- 12 V Coil
- Cable coil 300mm
- Approvals - FM/UL listed
CSA

Ordering chart for accessories

Version	Input signal	Item no.
Cable plug Type 2508 acc. to DIN EN 175301-803*, Form A, unconnected, 0 ... 250 V AC/DC acc. to DIN EN 175301-803*, Form A, unconnected, with 3 m cable, 0...250 V AC/DC		008 376 783 573
Control Electronics Type 1094 in DIN rail housing, for mounting on 35 mm profile rail	0 ... 10 V, 0 ... 20 mA or 4 ... 20 mA (adjustable)	060 657

- The control output signal of Type 1094 is pulse-width modulated.
- The cable plug is delivered with a flat seal and screws for assembling

* previously DIN 43650

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

in process

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

<input type="checkbox"/> Medium	<input type="text"/>		
<input type="checkbox"/> State of medium	<input type="checkbox"/> liquid	<input type="checkbox"/> gaseous	<input type="checkbox"/> vaporous
<input type="checkbox"/> Medium temperature	<input type="text"/> °C		
<input type="checkbox"/> Maximum flow rate	$Q_{nom} =$ <input type="text"/>	Unit:	<input type="text"/>
<input type="checkbox"/> Minimum flow rate	$Q_{min} =$ <input type="text"/>	Unit:	<input type="text"/>
<input type="checkbox"/> Inlet pressure at nominal operation	$p_1 =$ <input type="text"/>	barg	
<input type="checkbox"/> Outlet pressure at nominal operation	$p_2 =$ <input type="text"/>	barg	
<input type="checkbox"/> Maximum inlet pressure	$p_{1max} =$ <input type="text"/>	barg	
<input type="checkbox"/> Ambient temperature	<input type="text"/> °C		

Additional specifications

Body material	<input type="checkbox"/> Brass	<input type="checkbox"/> Stainless steel	
Seal material	<input type="checkbox"/> FKM	<input type="checkbox"/> other	<input type="text"/>
Electrical control unit	<input type="checkbox"/> Switch Cabinet version	<input type="checkbox"/> cable plug version	
	<input type="checkbox"/> 0-20 mA	<input type="checkbox"/> 4-20 mA	<input type="checkbox"/> 0-10 V

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

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In case of special application conditions, please consult for advice.

We reserve the right to make technical changes without notice.

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