bürkert
FLUID CONTROL SYSTEMS

Direct-acting 2-way standard solenoid control valve

- Excellent range
- Very good response
- Compact valve design
- Orifice sizes 0.8…6 mm
- Optional: Explosion-protected coil

Product variants described in the data sheet may differ from the product presentation and description.

Can be combined with

Type 8605 ▸
PWM Control Electronics for Solenoid Control Valves

Type 2518 ▸
Cable Plug DIN EN 175301-803 - Form A

Type 8611 ▸
eCONTROL - Universal controller

Type description

The direct-acting solenoid control valve Type 2873 is used as the regulating unit in control loops. Due to an elastomeric seat seal the valve closes tight (integrated shut-off function), up to the DN specific nominal pressure. The plunger of the valve is assembled frictionless, which leads to an extraordinary adjustment characteristic. This valve is particularly suitable for demanding control tasks (high control range, dry gases, etc.).

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Visit product website ▸

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1. General Technical Data

Product properties	
Dimensions	Detailed information can be found in chapter "5. Dimensions" on page 5.
Material	
Body	Brass, stainless steel
Seal	FKM, EPDM
Performance data	
Typical values of positioning behaviour[1.]	
Hysteresis	< 5 %
Reproducibility	< 0.5 % of end value[2.]
Response sensitivity	< 0.25 % of end value[2.]
Setting range	1:200
Actuating time (10…90 %)	< 20 ms
Pressure range[3.]	0…16 bar
Nominal operating mode	100 % continuous operation
Electrical data	
Operating voltage	24 V DC (at 5 W and 24 V coil) (12 V on request)
Power consumption	Maximum 9 W
Maximum coil current[4.]	420 mA (at 9 W and 24 V coil)
PWM frequency[5.]	1200 Hz
Medium data	
Operating medium	Neutral gases, liquids on request
Medium temperature	-10 °C…+90 °C (with FKM) -30 °C…+90 °C (with EPDM)
Viscosity	Maximum 21 mm²/s (21 cSt)
Process/Port connection & communication	
Port connection size	Sub-base, G ⅛, G ¼, NPT ⅛, NPT ¼, others on request
Electrical connection	Cable plug Type 2518 acc. to DIN EN 175301-803 form A Detailed information can be found in chapter "Cable plug Type 2518, Form A according to DIN EN 175301-803" on page 13.
Approvals and certificates	
Degree of protection	IP65
Environment and installation	
Installation position	Any, preferably actuator face up
Ambient temperature	Maximum +55 °C

1.) Characteristic data of control behaviour depends on process conditions

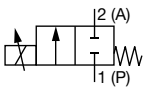
2.) By flow measurement

3.) Pressure data: Overpressure with respect to atmospheric pressure, depending on nominal diameter, tightness seal or nominal pressure

4.) Maximum value: value depends on operating pressure

5.) PWM: pulse width modulation

2. Circuit functions

Circuit functions	Description
	**Type: A, proportional control valve** 2/2 way Direct-acting Normally closed

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3. Approvals

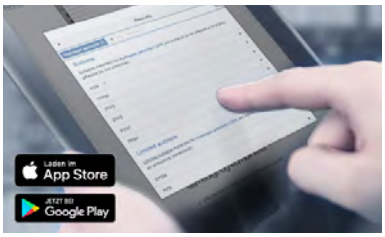
Note:

- The following approvals or conformity certificates must be mentioned in all enquiries. This is the only way to ensure that the product fulfils all the required specifications.
- Not all available device versions can be delivered with the below-mentioned approvals or conformities.

Approvals	Description
	UL recognized
	Conformity of all materials in contact with the medium USP Class VI chapter „87 in vitro“ and „88 in vivo, Implantation“
	Conformity of all materials in contact with the medium FDA – Code of Federal Regulations Title 21 Paragraph 177 (CFR 21 177.2600)
	Conformity of all materials in contact with the medium Regulation (EC) No. 1935/2004 on materials and articles intended to come into contact with food
	Explosion protection ATEX: II 2 G Ex mb IIC T4…T5 Gb II 2 D Ex mb IIIC T130 °C Db IECEx: Ex mb IIC T4…T5 Gb Ex mb IIIC T130 °C Db

4. Materials

4.1. Chemical Resistance Chart – Bürkert resistApp



Bürkert resistApp – Chemical Resistance Chart

You want to ensure the reliability and durability of the materials in your individual application case? Verify your combination of media and materials on our website or in our resistApp.

Start Chemical Resistance Check

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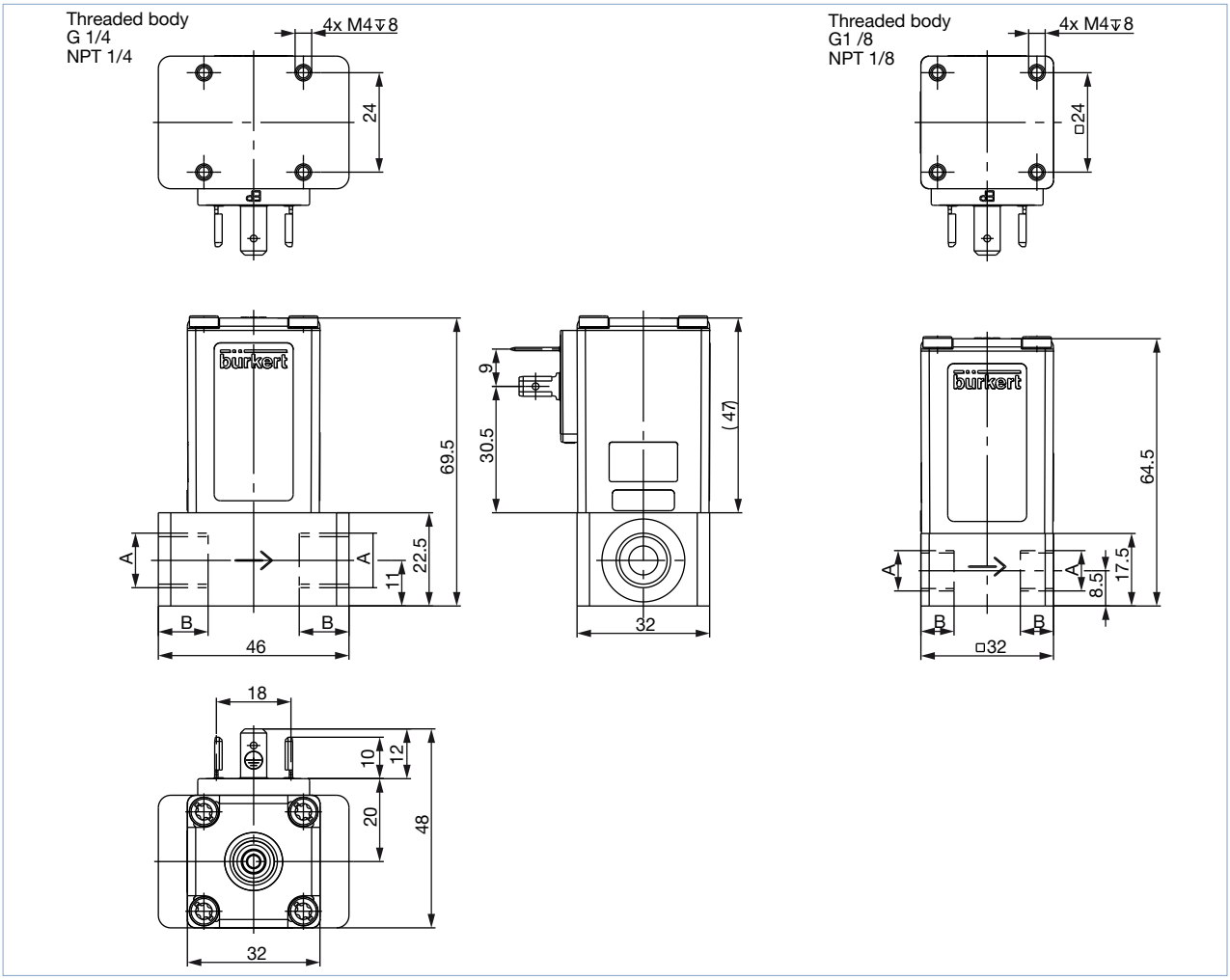
5. Dimensions

5.1. Threaded body

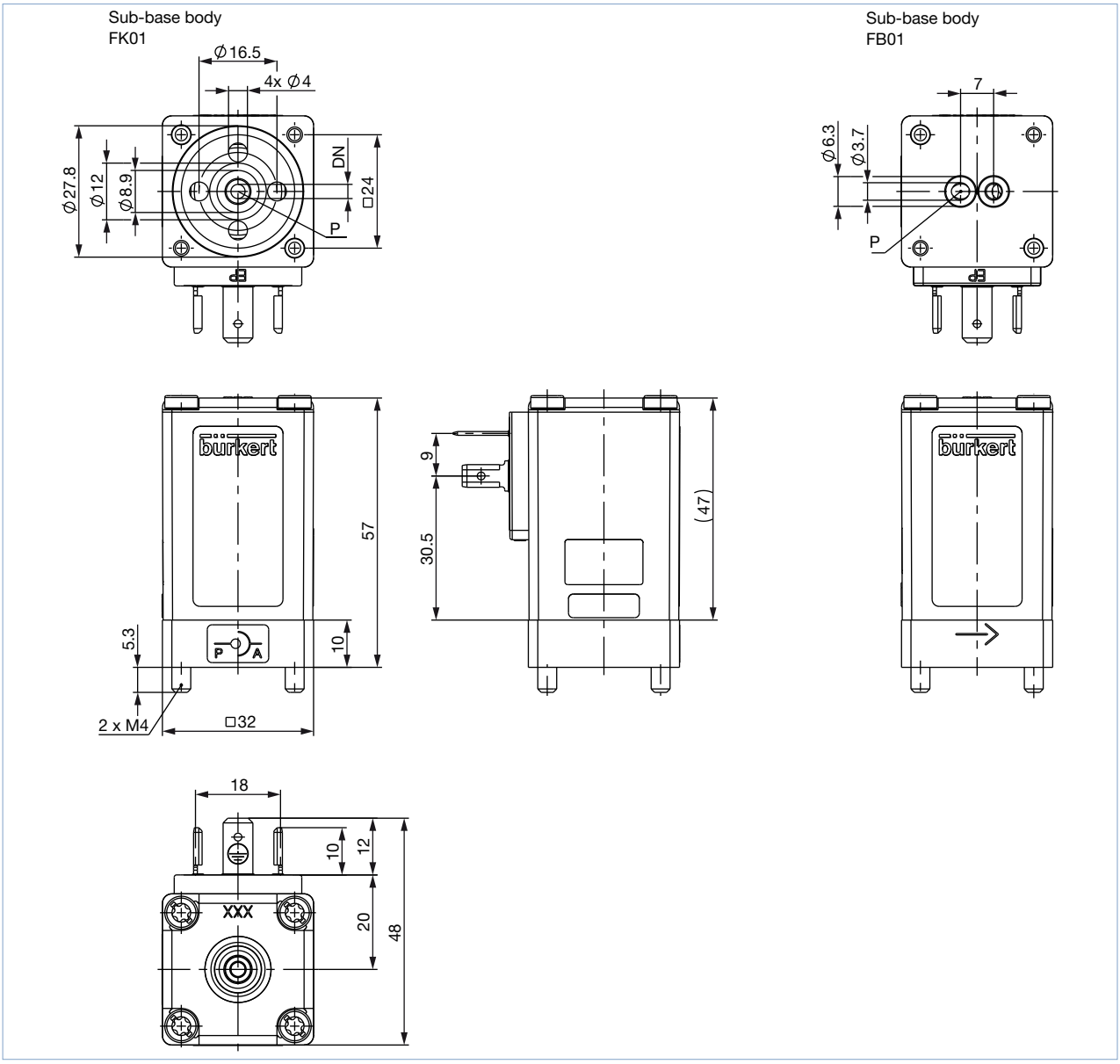
Note:
Dimensions in mm



Body version	Threaded body			
A	G ¼	NPT ¼	G ⅛	NPT ⅛
B	12	10	8	7

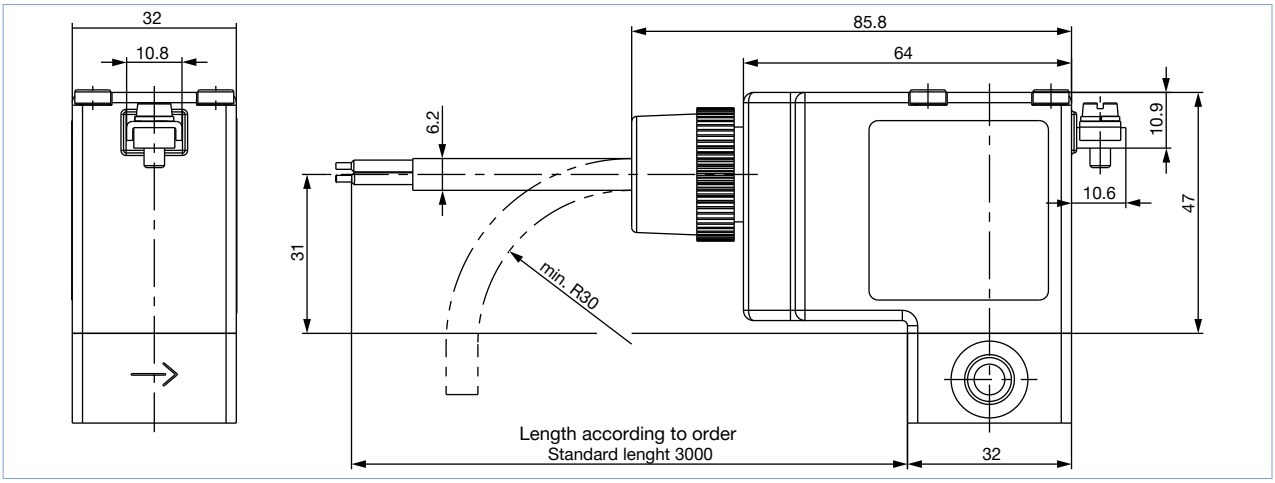
5.2. Sub-base body

Note:
Dimensions in mm



5.3. ATEX version

Note:
Dimensions in mm



6. Performance specifications

6.1. Flow characteristic

Determination of the K_V value

Pressure drop	K_V value for liquids [m³/h]	K_V value for gases [m³/h]
Sub-critical $p_2 > \frac{p_1}{2}$	$= Q\sqrt{\frac{\rho}{1000\,\Delta p}}$	$= \frac{Q_N}{514}\sqrt{\frac{T_1\,\rho_N}{p_2\,\Delta p}}$
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 pressure p_1...p_2	[bar]
ρ	Density	[kg/m³]
ρ_N	Standard density	[kg/m³]
T_1	Medium temperature	[(273+t)K]

1.) Measured for water, Δp = 1 bar, over the value

2.) At reference conditions 1.013 bar and 0 °C (273 K)

3.) Absolute pressure

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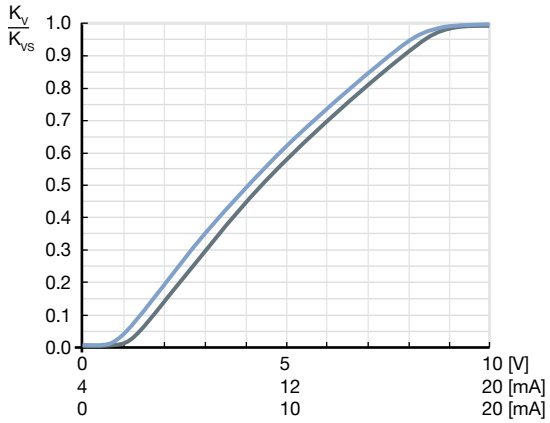
6.2. Exemplary characteristic curve of a proportional valve

Note:
In continuous flow applications, the choice of an 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: $\Delta p_{valve} > 25\,\%$ of total pressure drop within the system

Otherwise, the ideal, linear valve curve characteristic is changed.

If the differential pressure (difference between inlet and outlet pressure) exceeds half the value of the nominal pressure discontinuities may occur.
For that reason take advantage of Bürkert competent engineering services during the planning phase!



7. Product operation

7.1. Control unit

Valve control takes place through a PWM signal (pulse-width modulation). The duty cycle of the PWM signal determines the coil current and hence the position of the plunger.

The Bürkert control electronics Type 8605 (see relevant data sheet **Type 8605** ▶) converts an analogue signal to a reference value corresponding to the valve type PWM signal and provides additional functions such as temperature compensation (coil heating), ramp function and the adjustment of min. and max. duty cycle/coil current for the control range.

Please note the sizing comments for such a control valve in chapter **"6.2. Exemplary characteristic curve of a proportional valve" on page 8**.

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