






## Direct acting 2-way basic proportional valve

- High dynamics
- Orifice sizes DN 0.8 ... 4.0 mm
- Good range
- Optional: Explosion-protected coil



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

### Can be combined with

	<b>Type 8605</b> PWM control electronics for electromagnetic proportional valves	▶
	<b>Type 2518</b> Cable Plug DIN EN 175301 - 803 - Form A	▶
	<b>Type 8611</b> eCONTROL - Universal controller	▶

### Type description

Type 2863 is an extremely compact solenoid control valve and is available with an orifice up to 4 mm. It is based on the standard version of Type 2873. It is used as an actuator in closed control loops (pressure, flow, temperature, etc.). Compared with the standard version, the valve is essentially of simpler construction and assembly and testing procedures are optimized, easing high volume series production with shorter delivery times.

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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 <sup>1.)</sup>	
Hysteresis	< 5 %
Reproducibility	< 1 % of end value <sup>2.)</sup>
Response sensitivity	< 1 % of end value <sup>2.)</sup>
Setting range	1:25
Pressure range <sup>3.)</sup>	0...16 bar
Nominal operating mode	100 % continuous operation
Electrical data	
Operating voltage	24 V DC (12 V on request)
Power consumption	Maximal 9 W
Maximum coil current <sup>4.)</sup>	420 mA (at 9 W and 24 V coil)
PWM frequency <sup>5.)</sup>	400 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	21 mm <sup>2</sup> /s (21 cSt)
Process/Port connection & communication	
Port connection size	Sub-base, G 1/8, G 1/4, NPT 1/8, NPT 1/4
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 10.
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
	<b>Type: A, proportional control valve</b> 2/2 way Direct-acting Normally closed

### 3. Approvals

Approvals	Description
 	<b>Explosion protection</b> 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.

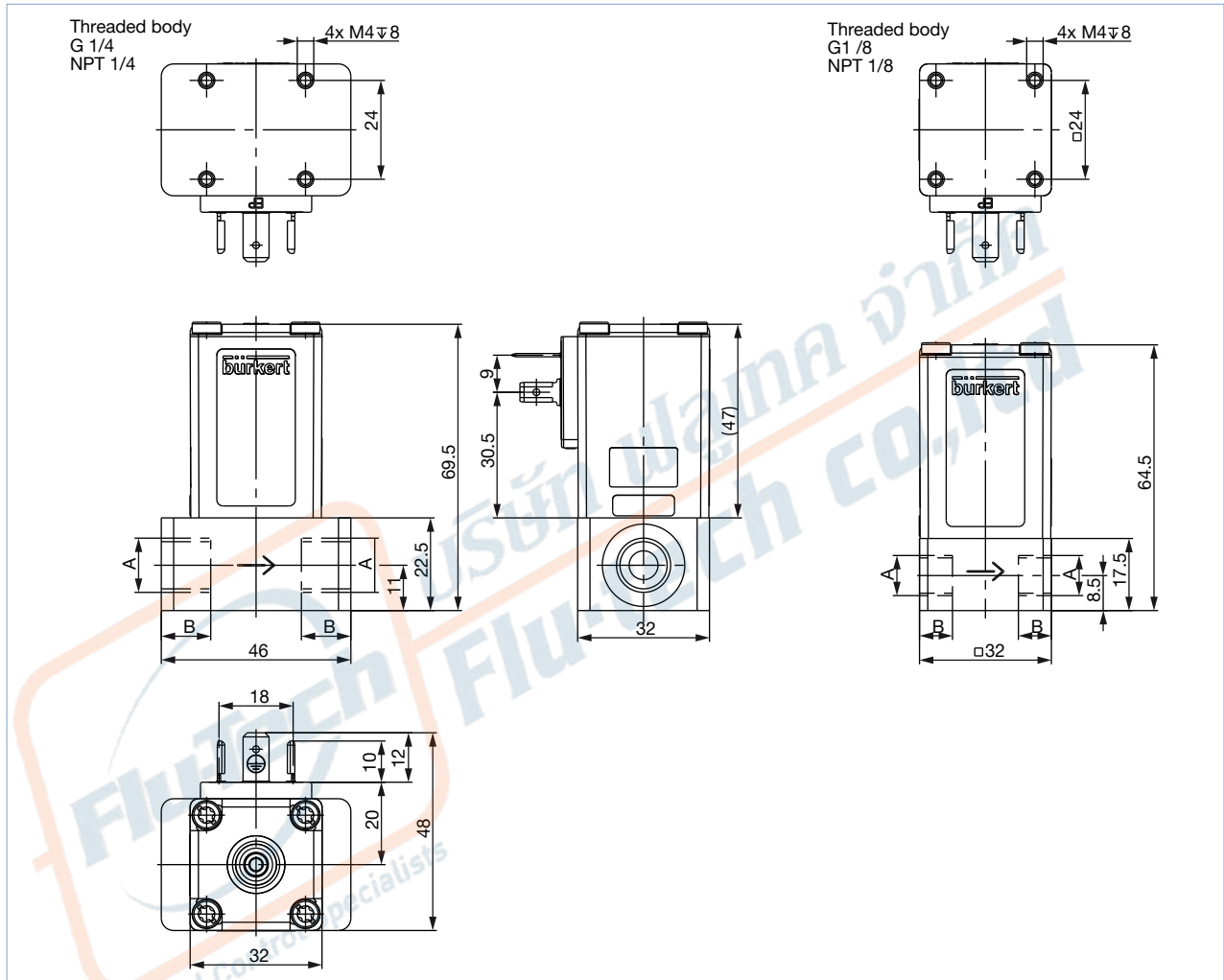
[Start Chemical Resistance Check](#)

## 5. Dimensions

### 5.1. Threaded body

**Note:**

Dimensions in mm



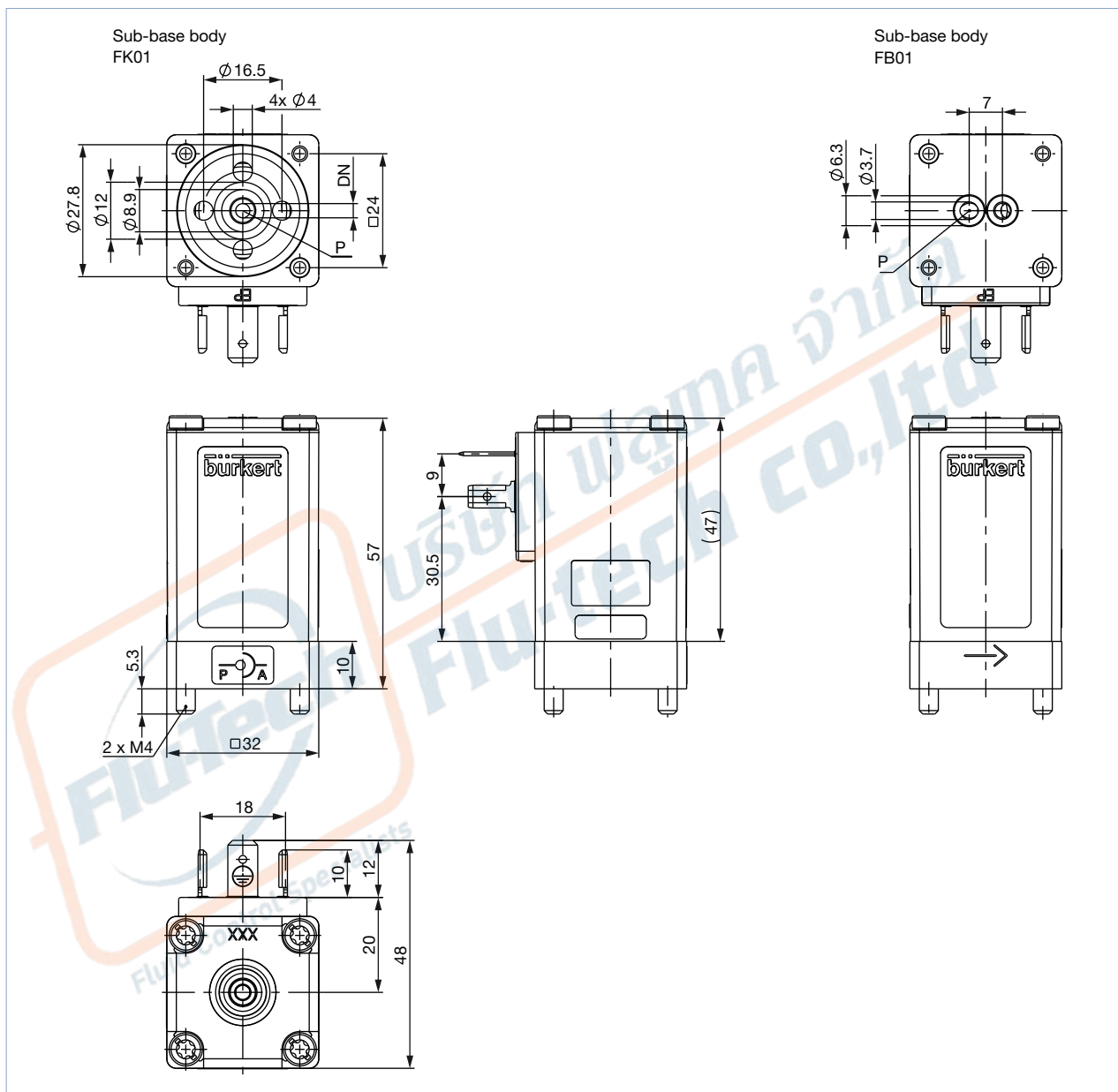
Body version	Threaded body			
A	G 1/4	NPT 1/4	G 1/8	NPT 1/8
B	12	10	8	7

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5.2. Sub-base body

Note:

Dimensions in mm



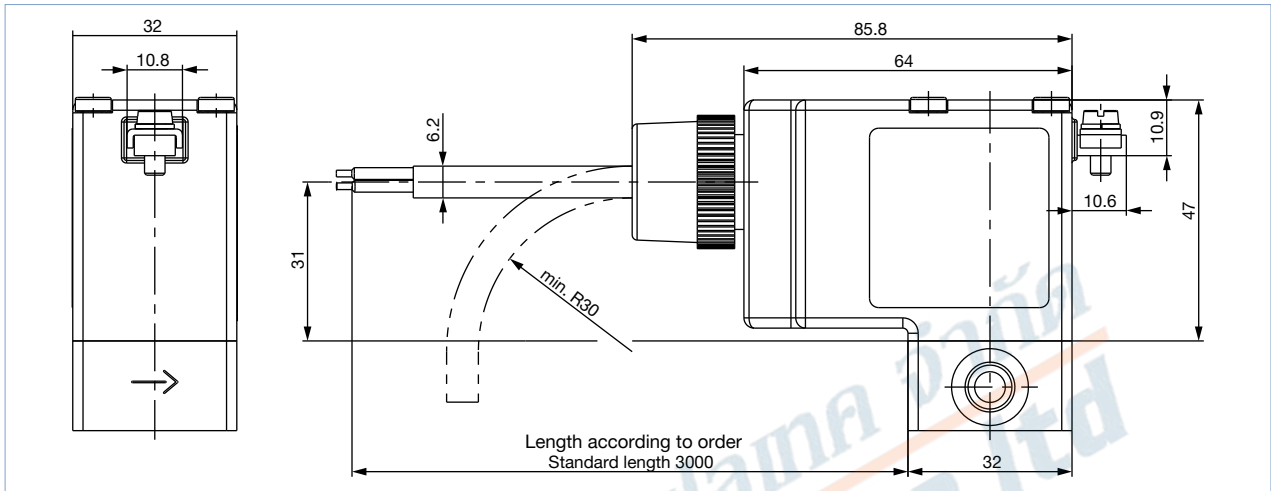
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5.3. ATEX version

Note:

Dimensions in mm



6. Performance specifications

6.1. Flow characteristic

Determination of the  $K_v$  value

Pressure drop	$K_v$ value for liquids [m <sup>3</sup> /h]	$K_v$ value for gases [m <sup>3</sup> /h]
<b>Sub-critical</b> $p_2 > \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{514} \sqrt{\frac{T_1 \rho_N}{p_2 \Delta p}}$
<b>Supercritical</b> $p_2 < \frac{p_1}{2}$	$= Q \sqrt{\frac{\rho}{1000 \Delta p}}$	$= \frac{Q_N}{257 p_1} \sqrt{T_1 \rho_N}$

- $K_v$  Flow coefficient [m<sup>3</sup>/h]<sup>1)</sup>
- $Q_N$  Standard flow rate [m<sup>3</sup>/h]<sup>2)</sup>
- $p_1$  Inlet pressure [bar]<sup>3)</sup>
- $p_2$  Outlet pressure [bar]<sup>3)</sup>
- $\Delta p$  Differential pressure  $p_1 \dots p_2$  [bar]
- $\rho$  Density [kg/m<sup>3</sup>]
- $\rho_N$  Standard density [kg/m<sup>3</sup>]
- $T_1$  Medium temperature [(273+t)K]

- 1.) Measured for water,  $\Delta p = 1$  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:

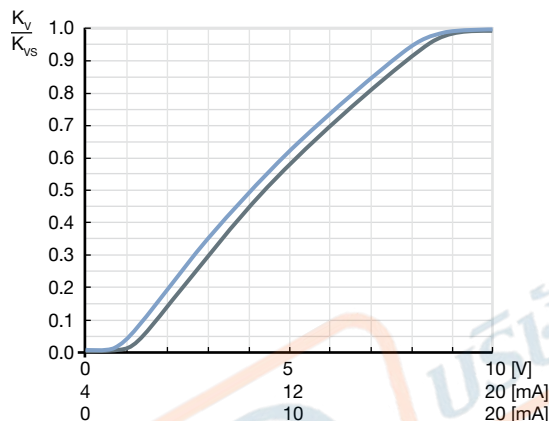
In continuous flow applications, the choice of an appropriate valve size is much more important than with on/off valves. The optimum size should be selected such that the resulting flow in the system is not unnecessarily reduced by the valve. However, a sufficient part of the pressure drop should be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

Recommended value:  $\Delta p_{\text{valve}} > 25\%$  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.



## 8. Ordering information

### 8.1. Bürkert eShop – Easy ordering and quick delivery



#### Bürkert eShop – Easy ordering and fast delivery

You want to find your desired Bürkert product or spare part quickly and order directly? Our online shop is available for you 24/7. Sign up and enjoy all the benefits.

[Order online now](#)

### 8.2. Recommendation regarding product selection

#### Note:

- Please use the “[Product Inquiry Form](#)” at the end of this data sheet for the specifications of the device configuration and send us a copy of the inquiry with information about the application.
- Please note the chapter “[6.2. Exemplary characteristic curve of a proportional valve](#)” on [page 8](#) on product selection.

### 8.3. Bürkert product filter



#### Bürkert product filter – Get quickly to the right product

You want to select products comfortably based on your technical requirements? Use the Bürkert product filter and find suitable articles for your application quickly and easily.

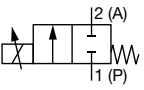
[Try out our product filter](#)

### 8.4. Ordering chart

#### Standard version

#### Note:

- All valves with FKM seal
- Please note that the cable plug must be ordered separately, see “[Cable plug Type 2518, Form A according to DIN EN 175301-803](#)” on [page 10](#) or separate data sheet for [Type 2518](#) ▶.

Circuit function	Orifice	Port connection <sup>1.)</sup>	K <sub>vs</sub> value water <sup>2.)</sup> [m <sup>3</sup> /h]	Nominal pressure <sup>3.)</sup> [bar]	Article no. brass body	Article no. stainless steel body
	[mm]					
<b>A, proportional control valve</b> 2/2 way Direct-acting Normally closed 	0.8	G 1/8	0.018	16	275060	275063
	1.2	G 1/8	0.040	12	249140	275064
	1.5	G 1/8	0.060	10	249141	275065
	2.0	G 1/8	0.100	8	254182	275066
			0.100	8	255699	276517
	2.5	G 1/4	0.150	5	275061	275067
	3.0	G 1/4	0.220	3.5	275062	275068
	4.0	G 1/4	0.320	2	251831	255700

1.) NPT and Sub-base on request

2.) Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.

3.) Pressure data: Overpressure with respect to atmospheric pressure.

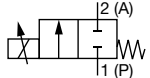
Visit product website ▶

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**ATEX/IECEX version**

**Note:**

- All valves with FKM seal and ATEX version with 3 m connection cable.
- For detailed information regarding ATEX and IECEx approvals see **“3. Approvals” on page 4**
- Please use the **“Product Inquiry Form”** at the end of this data sheet for the specifications of the device configuration and send us a copy of the inquiry with information about the application.

Circuit function	Orifice	Port connection <sup>1.)</sup>	K <sub>vs</sub> value water <sup>2.)</sup>	Nominal pressure <sup>3.)</sup>	Article no. brass body	Article no. stainless steel body
	[mm]		[m <sup>3</sup> /h]	[bar]		
<b>A, proportional control valve</b> 2/2 way Direct-acting Normally closed 	0.8	G 1/8	0.018	8	343042	On request
	1.2	G 1/8	0.040	6	343044	On request
	1.5	G 1/8	0.060	6	337721	On request
	2.0	G 1/8	0.100	6	310840	On request
	2.5	G 1/4	0.150	2.5	343045	On request
	3.0	G 1/4	0.220	2	343047	On request
	4.0	G 1/4	0.320	1	343049	On request

1.) NPT and Sub-base on request

2.) Flow rate value for water, measured at +20 °C and 1 bar pressure differential over a fully opened valve.

3.) Pressure data: Overpressure with respect to atmospheric pressure.


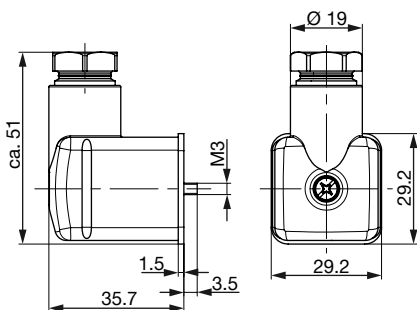
Further versions on request	
<b>Material</b> Other seal materials	<b>Analytical</b> Oxygen version, Parts oil-, fat- and silicon free
<b>Approval</b> ATEX / IECEx	<b>Orifice</b> Special valve orifice
<b>Coil</b> Other coil power Specific, power setting for lower pressure Other operating voltages	

**8.5. Ordering chart accessories**

**Cable plug Type 2518, Form A according to DIN EN 175301 - 803**

**Note:**

Further versions see data sheet **Type 2518** ▶.

Cable plug	Dimensions	Version	Voltage	Article no.
		Without circuitry (AC/DC)	0...250 V AC/DC	314802

Visit product website ▶



Control unit Type 8605

**Note:**

Further versions see data sheet **Type 8605** ▶.

	Version	Max. coil current range [mA]	Type 2863	Type 2863	Article no.
			24 V DC	12 V DC	
	Cable plug with PG cable gland	200...1000	x	x	316530
	Cable plug with M12 connection	200...1000	x	x	316528
	Cable plug with PG cable gland	500...2000	-	x	316529
	Cable plug with M12 connection	500...2000	-	x	316526
	Cable plug with PG cable gland without operating element	200...1000	x	x	316521
	Cable plug with M12 connection without operating element	200...1000	x	x	316522
	Cable plug with PG cable gland without operating element	500...2000	-	x	316523
	Cable plug with M12 connection without operating element	500...2000	-	x	316525
	Standard rail	200...1000	x	x	316532
	Standard rail	500...2000	-	x	316533

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