

1 Introduction

1.1 Intended Use

P2.x ATEX (-H2/-O2) sample gas pumps are intended for installation in gas analysis systems for industrial applications to transport gaseous media only. They are not suitable for liquids. The sample gas pumps are not designed to be used outdoors without protection from weather effects.

ATEX versions are suitable for use in equipment group II, equipment category 2G, explosion group IIB+H2, temperature class T3 (some versions T4) and must not be used in dusty areas. The products must not be used in dusty areas or near charge-generating processes.

The complete designation of the P2.x ATEX (-H2/-O2) sample gas pump is:

P2.2 ATEX (-H2/-O2), P2.4 ATEX (-H2/-O2)

II 2 G Ex h IIB+H2 T3...T4 Gb X

P2.72 ATEX (-H2/-O2), P2.74 ATEX (-H2/-O2)

II 2 G Ex h IIB+H2 T3 Gb X

DANGER! Explosion hazard when used in explosive areas

The sample gas pumps must not be used in dusty areas or in areas other than the designated explosive area.

If the specifications in these operating instructions are observed, in particular the temperature parameters in the technical data, the P2.x ATEX (-H2/-O2) sample gas pumps can convey non-flammable and also flammable gaseous media, which can occasionally be explosive in normal operation.

The delivery of highly particle-laden, explosive gas mixtures can lead to a dangerous electrostatic charge in the bellows/pump body. Install particle filtration with the appropriate fineness upstream from the pump gas input. For the P2.x ATEX-O2 versions in particular, we recommend a filter fineness of <10 µm.

The maximum surface temperature varies according to the medium and ambient temperatures. Please refer to the technical data in the [Appendices](#) [> page 32] to see the correlation between media temperature, ambient temperature and the pump's temperature class.

The pump head and the drive motor on the P2.4 ATEX/P2.74 ATEX (-H2/-O2) sample gas pump are isolated for use in hot applications. The sample gas pump has a split adapter which can be mounted with one half inside a heated cabinet while the other half mounted on the outside supports the drive motor. In doing so, wall thicknesses of up to 30 mm can be bridged without additional modifications.

Applications where sample gas is still moist can result in condensation in the lines and the pump body. In these cases, the pump head must be suspended (see item Alteration of hanging pump bodies).

Sample gas pumps P2.x ATEX-O2 (item no.: 42.....-O2) are optimised especially for use with increased oxygen concentrations with regard to the parts in contact with the medium. Only BAM (Federal Institute for Materials Research) tested materials are used. Special cleaning of the components to minimise organic and inorganic contamination is mandatory. Manufacturing the products under controlled cleanliness conditions ensures compliance with the limit values in accordance with EIGA Doc 33/18.

Sample gas pumps P2.x ATEX-H2 (item no.: 42.....-H2) are specially refined using advanced manufacturing measures, in particular to prevent hydrogen-induced component damage. In addition, the parts in contact with the media are subjected to an additional visual inspection to remove any residual metallic contamination, such as chips and particles. Finally, a leak test is carried out as standard.

Please note the specifications in the [Appendices](#) [> page 32] to this manual on the specific intended use, existing material combinations, as well as pressure and temperature limits. In addition, please also note the specifications and markings on the nameplates.

1.2 Item number structures

This unit is available in various versions. Please refer to the type plate for the specific version.

In addition to the order number or ID number, the type plate also contains the item number with a code, where each character (x) represents specific equipment:

P2.2 ATEX, P2.4 ATEX

42	xx	x	x	x	x	x	9	0	0	0	Product characteristics
	61										Base model
											P2.2 ATEX 400 l/h (direct operation without intermediate flange)
	62										P2.4 ATEX 400 l/h (with intermediate flange)
											Motor voltage
											230 V 50/60 Hz; 0.78/0.86 A
											115 V 50/60 Hz; 1.56/1.72 A
											380–420 V 50 Hz; 0.46 A
											500 V 50 Hz; 0.36 A
											Pump head position
											Normal position vertical
											turned by 180° ¹⁾
											Pump body material
											PTFE
											Stainless steel 1.4571
											PTFE with bypass valve ¹⁾
											Stainless steel 1.4571 with bypass valve ¹⁾
											Valve material
											up to 100 °C; PTFE/PVDF ¹⁾
											up to 140 °C; PTFE/PEEK
											Screw-in connections (depending on pump body)
											PTFE pump body
											Stainless steel pump body
											DN 4/6 (standard)
											6 mm (standard)
											DN 6/8
											8 mm
											3/8"–1/4"
											3/8"
											1/4"–1/8"
											1/4"
											1/4"–1/6"
											Mounting accessories
											incl. mounting bracket and bumpers ¹⁾

¹⁾ not possible with P2.4 ATEX.

P2.72 ATEX, P2.74 ATEX

42	xx	x	x	x	x	x	9	0	0	0	Product characteristics
											Base model
65											P2.72 ATEX 700 l/h (direct operation without intermediate flange)
66											P2.74 ATEX 700 l/h (with intermediate flange)
											Motor voltage
7											230 V 50/60 Hz; 0.78/0.86 A
8											115 V 50/60 Hz; 1.56/1.72 A
9											380–420 V 50 Hz; 0.46 A
0											500 V 50 Hz; 0.36 A
											Pump head position
1											Normal position vertical
2											turned by 180° ¹⁾
											Pump body material
2											Stainless steel 1.4571
4											Stainless steel 1.4571 with bypass valve ¹⁾
											Valve material
2											up to 140 °C; PTFE/PEEK
											Screw-in connections
9											6 mm (standard)
1											8 mm
2											3/8"
4											1/4"
											Mounting accessories
9											incl. mounting bracket and bumpers ¹⁾

¹⁾ not possible with P2.74 ATEX.

P2.2 ATEX-H2/-O2, P2.72 ATEX-H2/-O2, P2.4 ATEX-H2/-O2, P2.74 ATEX-H2/-O2

42	xx	x	x	x	2	x	9	0	0	0	x	Product characteristics
												Base model
61												P2.2 ATEX 400 l/h (direct operation without intermediate flange)
62												P2.4 ATEX 400 l/h (with intermediate flange)
65												P2.72 ATEX 700 l/h (direct operation without intermediate flange)
66												P2.74 ATEX 700 l/h (with intermediate flange)
												Motor voltage
7												230 V 50/60 Hz; 0.78/0.86 A
8												115 V 50/60 Hz; 1.56/1.72 A
												Pump head position
1												Normal position vertical
2												turned by 180° ¹⁾
												Pump body material
2												Stainless steel 1.4571
4												Stainless steel 1.4571 with bypass valve ^{1) 2)}
												Valve material
2												PTFE/PEEK ²⁾
												Screw-in connections (varies by application)
												For -H₂ (stainless steel)
												For -O₂ (stainless steel) ³⁾
0												N/A
9												no screw-in connection
1												6 mm
4												8 mm
												8 mm
												1/4"
												1/4"
												Mounting accessories
9												incl. mounting bracket and bumpers ¹⁾
												Area of application
												-H2 optimised for high-purity hydrogen
												-O2 optimised for high-purity oxygen

¹⁾ not possible with P2.4 ATEX-H2/-O2 or P2.74 ATEX-H2/-O2.

²⁾ For O₂ version: BAM-tested materials.

³⁾ With the O₂ version, cleaned fittings are enclosed in a separate bag. BAM-tested PTFE sealing tape required [see accessories].

Any special features applicable to a pump model are described separately in the operating manual.

When connecting, please note the specific values of the pump, and the correct version when ordering spare parts (e.g.: valve).

1.3 Type plate

Example:

Manufacturer and address	→	Bühler Technologies GmbH Harkortstr. 29 40880 Ratingen	
Model designation	→	P2.74 ATEX	
Serial no., Item no.	→	[ID number] [part number]	
Supply voltage	→	230V 50/60Hz; 0.78/0.86A	
IECEX certificate no.	→	IECEX IBE 24.0022 X	
Explosion protection marking	→	II 2G Ex h IIB+H2 T3 ... T4 Gb X	
Temperature classes	→	T3: -20°C<Ta<+50°C; -20°C<Th<+100°C T4: -20°C<Ta<+50°C; -20°C<Th<+90°C	
EAC Ex certificate number	→	EAC Ex: RU C-DE.xxxx.xxxx	
Materials in contact with media	→	PTFE/PVDF/1.4571/1.4401/FFKM	
Year of manufacture	→	[MM/YYYY]	
Operating instructions document number	→		

1.4 Scope of delivery

P2.2 ATEX/P2.72 ATEX (-H2/-O2)	P2.4 ATEX/P2.74 ATEX (-H2/-O2)
1 x Sample gas pump with motor	1 x Pump head with intermediate flange
4 x Rubber-metal bumpers	1 x Motor
1 x Mounting bracket	1 x Coupling flange
Product documentation	1 x Coupling
	1 x Mounting ring
	Product documentation