Explosion Proof Proportional Pressure Control Valve, Reducing - Relieving, Direct-Acting

PVRMX3-103

M24 x 1.5 • Q\(_{\text{max}}\) 40 l/min (11 GPM) • P\(_{\text{max}}\) 90 bar (1300 PSI)

Technical Features

› Valve and solenoid design prevents a surface temperature capable of igniting
› Solenoid coil in acc. with directive ATEX 2014/34/EC for explosion-hazard zones
› Explosion protection for gas and dust
› Encapsulation enclosure solenoid version
› Excellent stability throughout flow range with rapid response to proportional current input change
› Low hysteresis, accurate pressure control and low pressure drop through CFD optimized flow paths
› Precise pressure control vs current and excellent repeatability
› Integrated relief function for protection against pressure peaks
› 12 or 24 V DC coils
› Coil interchangeability with all Argo-Hytos ATEX/IECEx product line
› In the standard version, the valve is zinc coated for 520 h protection acc. to ISO 9227

Technical Data

<table>
<thead>
<tr>
<th>Valve size / Cartridge cavity</th>
<th>M24 x 1.5 / QJ3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. operating pressure (port P)</td>
<td>bar (PSI)</td>
</tr>
<tr>
<td>Max. reduced pressure (port A)</td>
<td>bar (PSI)</td>
</tr>
<tr>
<td>Max. flow rate P-A</td>
<td>l/min (GPM)</td>
</tr>
<tr>
<td>Fluid temperature range</td>
<td>°C (°F)</td>
</tr>
<tr>
<td>Ambient temperature range</td>
<td>°C (°F)</td>
</tr>
<tr>
<td>Response time at 100 % signal</td>
<td>ms</td>
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</tbody>
</table>

Technical Data - Explosion proof solenoid

Available voltages | V | 12 DC | 24 DC
Available nominal power | W | 18
Supply voltage tolerance | % | ±10
Max. current | A | 1.56 | 0.74
Rated resistance at 20 °C (68 °F) | Ω | 7.7 | 32.3
Duty cycle | S1 (100 % ED) | 150
Optimal PWM frequency | Hz | 150
Enclosure type acc. to EN 60529** | IP 66/68
Ambient temperature range T4/18 W | °C (°F) | -30 ... +60 (-22 ... +140) |
Weight with coil | kg (lbs) | 1.5 (3.31) |

Characteristics measured at \(v = 32 \text{ mm}^3/\text{s} (156 \text{ SUS})\)

Reduced pressure in port A related to a control signal with zero flow through the valve (Q = 0 l/min)

Uc = 12 V, \(f = 150 \text{ Hz}\)

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<th>Pressure p [bar (PSI)]</th>
<th>Current I [mA]</th>
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Pressure level

1. 80 bar (1160 PSI) 90 bar (1300 PSI)
2. 30 bar (440 PSI) 50 bar (730 PSI)

Uc = 24 V, \(f = 150 \text{ Hz}\)

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Subject to change - PVRMX3-103_5184_3en_01/2020
**Characteristics** measured at \( v = 32 \text{ mm}^3/\text{s} \) (156 SUS)

**Pressure drop related to flow rate**

- **A-T**, Valve coil de-energized (relieving function)
- **P-A**, Valve coil energized (reducing function)

**Dimensions** in millimeters (inches)

**Ordering Code**

PVRMX3 - 103 / S - B4 - B

- **Explosion proof**
- **Proportional pressure control valve, reducing - relieving, direct-acting**
- **Valve cavity**
  - M24 x 1.5 / QJ3
- **Model**
  - screw-in cartridge
- **Max. reduced pressure**
  - 30 bar (440 PSI)
  - 80 bar (1160 PSI)
- **Supply voltage / max. current**
  - 12 V DC / 1.56 A
  - 24 V DC / 0.74 A

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**Surface treatment**
- zinc-coated (ZnNi), ISO 9227 (520 h)

**Seals**
- NBR

**Cable length**
- without cable
  - 3000 mm
- 8000 mm

**Temperature class - solenoid nominal power**
- Class T4 - 18 W
### Marking Example

**Group I (Mining)**

- **ATEX mark of conformity to the 2014/34/EC directive and to the applicable technical norms**
- **I** Group I for mines
- **M2** High protection - equipment category
- **Ex e mb** Type of protection: e - increased safety, mb - encapsulated
- **I** Gas group (methane)
- **Mb** Equipment protection level - high level protection for explosive atmosphere

**Group II**

- ATEX mark of conformity to the 2014/34/EC directive and to the applicable technical norms
- **II 2G** Solenoid for surface plants with gas and vapors environment for zones 1 and 2
- **II 2D** Solenoid for surface plants with dust environment for zones 21 and 22
- **Ex e mb** Type of protection: e - increased safety, mb - encapsulated
- **Ex tb** Type of protection: tb - protection by enclosure
- **IIC** Equipment suitable for substances (gas) of all group
- **IIIC** Equipment suitable for all kinds of dust
- **T4** Temperature class (maximum solenoid surface temperature)
- **T135** Maximum solenoid surface temperature
- **Gb** Equipment protection level - high level protection for explosive gas atmosphere
- **Db** Equipment protection level - high level protection for explosive dust atmosphere

**Solenoid Marking**

<table>
<thead>
<tr>
<th>Model</th>
<th>Voltage</th>
<th>Current</th>
<th>Resistance</th>
<th>Temperature Range</th>
<th>Protection Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>74 EX 18 046B A012</td>
<td>12V DC</td>
<td>1.37A</td>
<td>7.7Ω</td>
<td>-40 °C ≤ Tamb ≤ +60 °C</td>
<td>IIC T4 Gb</td>
</tr>
<tr>
<td>74 EX 18 048B A024</td>
<td>24V DC</td>
<td>0.65A</td>
<td>32.32Ω</td>
<td>-40 °C ≤ Tamb ≤ +60 °C</td>
<td>IIIC T135 Db</td>
</tr>
</tbody>
</table>

Made in Czech Republic

Subject to change · PVRMX3-103_5184_3en_01/2020

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Customer Information

Initial installation
› The ambient temperature range shall not exceed the temperatures given in chapter 2. The maximum temperature of the medium (generally hydraulic fluid) shall not exceed 60 °C (140 °F).
› It is the user's duty to ensure free and unhindered heat emission during operation. This means that the solenoid shall neither be covered nor stored immediately adjacent to heat sources (e.g. fan heaters) during operation.
› The solenoid shall not be subjected to direct sunlight during operation.

Installation notice - installation, mounting, demounting
› Using the V DC type for temperature class T4 requires a cable with an operating temperature limit of at least +105 °C (221 °F), e.g. LAPP FD Robust. The fastening torque on the cable gland depends of the used cable and is to be determined by the installing user.
› When installing the V DC solenoid, the fastening torque of the screws shall be 4 Nm (2.95 lbf.ft) and for the BARTEC connection box 0.4 Nm (0.30 lbf.ft).
› When installing the V DC solenoid, an appropriate cable shoe of size M3 with a cross-sectional area of 0.75 mm² with an operating temperature limit of at least +105 °C (221 °F) is to be used.
› The user has to safeguard each solenoid with a fuse: \( I_n \leq 3 \times I_G \), with trigger characteristic “slow blow”. \( I_G \) values see Operating Instructions HA 4090 - Table 2). The breaking capacity of the fuse link has to be stronger than the maximum short circuit current at the user's operating area.
› EX-secured components must be used during mounting in case the fuse and/or the interface are within the EX-range.

Safety notice - Please read carefully
› In case the solenoid shows any signs of a defect, malfunctioning or external damage (including corrosion), the device must immediately be taken out of operation.
› Any deposits on the surface of the device shall not obstruct heat emission.
› To maintain legibility of the data plate, the solenoid must not be coated.

Caution
› Always disconnect the solenoid from the power supply before any maintenance or other work on it.
› Always exchange the complete solenoid. Do not try to repair the solenoid.
› Under no circumstances shall any changes be made to the solenoid or the connecting cable.
› Never operate the solenoid when disconnected from the valve body.
› Demount the solenoid only in secure areas (not in EX-areas). If this is not possible, the solenoid must cool off for at least 10 minutes.