V82 series - Redundant valve manifold systems - Compact
1oo2 “Safety”, 2oo2 “Availability” and 2oo3 “Safety and Availability”

> Compact design - Herion valves
> Exhaust guards as standard
> Optional electrical position indicators for valves
> Cable terminations inside coil housing
> Utilizing industry proven technology

Technical features
Medium:
Filtered, non-lubricated or dry compressed air, instrument air nitrogen and other nonflammable neutral dry fluids

Operation:
3/2 Direct solenoid operated poppet valves

Operating pressure:
1 ... 10 bar
2...8 bar (with 98025 Valves)

Flow:
Standard valves 170 ... 250 l/min
High flow valves 740 ... 1050 l/min
details see page 2

Additional filter:
Installation of an in-line filter is recommended (in the direction of flow from the actuator to the RVM).

Ambient/Media temperature:
Up to -40 ... +80°C, see option selector page 2
Depending on solenoid system
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (35°F).
For outdoor installations must be protected all connections against the penetration of moisture and a solenoid with IP66 protection must be used!

Port size:
G1/4, 1/4 NPT, G1/2, 1/2 NPT

Materials:
Manifold and valve body:
Anodized aluminium or stainless steel
Seal: NBR, VMQ
Internal parts: stainless steel, brass

Flow conversion:
Cv US Gallon/min (water) = l/min (air) x 0,001
Kv m³/h (water) = l/min (air) x 0,000906

1oo2 with exhaust guards

2oo2 with exhaust guards

2oo3 with exhaust guards *2)

Please have a look to instructions

*1) Details on data sheet en 5.8.300

V Solenoid actuated valves

*2) for 2oo3
V1 = channel 1
V2 & V3= channel 2
V4 = channel 3

*2) for 3004
V1 = channel 1
V2 = channel 2
V3 = channel 3
V4 = channel 4
V82 series - Redundant valve manifold systems - Compact
1002 “Safety”, 2002 “Availability” and 2003 “Safety and Availability”

Our policy is one of continued research and development. We therefore reserve the right to amend, without notice, the specifications given in this document. (2013 - 5176d) © 2015 Norgren GmbH

Option selector

<table>
<thead>
<tr>
<th>Valve function Substitute</th>
<th>1002 normally closed</th>
<th>2002 normally closed</th>
<th>2003 normally closed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Port sizes Substitute D1/4 (Standard flow, 24011/24010)</td>
<td>11</td>
<td>12</td>
<td>23</td>
</tr>
<tr>
<td>1/4 NPT (Standard flow, 24011/24010)</td>
<td>12</td>
<td>23</td>
<td>24</td>
</tr>
<tr>
<td>D1/2 (High flow, 98015/98025)</td>
<td>23</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

Valve function Substitute

| 1002 | 2 x 24011 | 2 x 98015 |
| 2002 | 2 x 24011 | 2 x 98015 |
| 2003 | 4 x 24011 | 4 x 98015 |

Flow direction (port to port) 1 x 2 [6] [l/min] 2 x 3 [7] [l/min]

Port size Substitute

| G1/4 | 1/4 NPT | 1/2 NPT |
| G1/2 | 1/2 NPT | 1/4 NPT |

Valve type Substitute

<table>
<thead>
<tr>
<th>Temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aluminium -40°C...+60°C</td>
</tr>
<tr>
<td>Stainless steel -40°C...+60°C</td>
</tr>
<tr>
<td>Aluminium with proximity sensor -25°C...+70°C</td>
</tr>
<tr>
<td>Stainless steel with proximity sensor -25°C...+70°C</td>
</tr>
<tr>
<td>Aluminium -25°C...+80°C</td>
</tr>
<tr>
<td>Stainless steel -25°C...+80°C</td>
</tr>
</tbody>
</table>

Flow rates and valve combinations

<table>
<thead>
<tr>
<th>Flow direction (port to port) 1 x 2 [6] [l/min] 2 x 3 [7] [l/min]</th>
<th>Standard flow systems (24011/24010)</th>
<th>High flow systems (98015/98025)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1002 2 x 24011 2 x 98015</td>
<td>170 750</td>
<td></td>
</tr>
<tr>
<td>2002 2 x 24011 2 x 98015</td>
<td>1000 3400</td>
<td></td>
</tr>
<tr>
<td>2003 4 x 24011 4 x 98015</td>
<td>250 1050</td>
<td></td>
</tr>
</tbody>
</table>

Flow characteristics conforms to ISO6358 from port 1 to port 2 (sub-base) [6 = 5 bar], see page 1
Flow characteristics conforms to ISO6358 from port 2 (sub-base) to port 3 (sub-base) [10 = 0 bar], see page 1

Standard

<table>
<thead>
<tr>
<th>Port size Valve type</th>
<th>Temperature °C</th>
<th>Materials</th>
<th>Weight (kg)</th>
<th>Drawing</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 NPT 240119 -25...+80°C Aluminium 3.7 kg</td>
<td>9801595 -25...+60°C Aluminium 4.4 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2 NPT 9801595 -25...+60°C Aluminium 4.4 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002 (SL 2) 1/4 NPT 240119 -25...+80°C Aluminium 3.7 kg</td>
<td>9801595 -25...+60°C Aluminium 4.4 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/2 NPT 9801595 -25...+60°C Aluminium 4.4 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003 (SL 3) 1/4 NPT 240119 -25...+80°C Aluminium 8.2 kg</td>
<td>9801595 -25...+60°C Aluminium 9.3 kg</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** Solenoid code

Our policy is one of continued research and development. We therefore reserve the right to amend, without notice, the specifications given in this document. (2013 - 5176d) © 2015 Norgren GmbH

en 5.4.925.02
Standard and optional accessories

Accessories
Standard (Included in the scope of supply)

<table>
<thead>
<tr>
<th>Exhaust guard *2)</th>
<th>Page 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>0613422 (G 1/4, 1/4 NPT)</td>
<td></td>
</tr>
<tr>
<td>0613422 (G 1/4, 1/4 NPT)</td>
<td></td>
</tr>
</tbody>
</table>

*1) For indoors use
*2) For outdoors use, opening pressure ~ 0,2 bar

Can be ordered separately
Other silencers, connectors (for valve position sensor)

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>0014613 (G 1/4)</td>
<td>T40C2B00 (G 1/4)</td>
<td>M5/2 (G 1/4)</td>
<td>0613678 (1/4 NPT)</td>
<td>M5003A (1/4 NPT)</td>
<td>0014913 (G 1/2)</td>
</tr>
<tr>
<td>0613679 (1/2 NPT)</td>
<td>M5004A (1/2 NPT)</td>
<td>0613679 (1/2 NPT)</td>
<td>0523055 (without cable)</td>
<td>0523056 (90°, without cable)</td>
<td>0523057 (cable length 2 m)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Connector M12 x 1 (straight)</th>
<th>Page 25</th>
<th>M12 x 1 (90°)</th>
<th>Page 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>0523055 (without cable)</td>
<td>0523056 (90°, with cable)</td>
<td>0523057 (cable length 2 m)</td>
<td>0523058 (90°, cable length 2 m)</td>
</tr>
<tr>
<td>0523052 (cable length 5 m)</td>
<td>0523053 (90°, cable length 5 m)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cable glands (ordered separately)

<table>
<thead>
<tr>
<th>Cable gland</th>
<th>Protection class Ex e, Ex d (ATEX), Nickel plated brass/stainless steel</th>
<th>Page 25</th>
</tr>
</thead>
<tbody>
<tr>
<td>For solenoid</td>
<td>Thread</td>
<td>Cable Ø (mm)</td>
</tr>
<tr>
<td>42xx, 46xx</td>
<td>M 20x1,5</td>
<td>5.0...8.0</td>
</tr>
<tr>
<td>46xx</td>
<td>M 20x1,5</td>
<td>10...14</td>
</tr>
<tr>
<td>46xx</td>
<td>1/2-14-NPT</td>
<td>7.5...11.9</td>
</tr>
<tr>
<td>48xx</td>
<td>M 20x1,5</td>
<td>9.0...13</td>
</tr>
<tr>
<td>48xx</td>
<td>M 20x1,5</td>
<td>7.0...12</td>
</tr>
<tr>
<td>48xx</td>
<td>M 20x1,5</td>
<td>10...14</td>
</tr>
</tbody>
</table>

Alternative valves with position sensors

<table>
<thead>
<tr>
<th>Alternative valves with position sensors</th>
<th>Page 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: Valve position sensors are supplied complete with the valve. See pages 10, 15 &amp; 18 for valve part numbers</td>
<td></td>
</tr>
</tbody>
</table>

Optional - For use with valves fitted with position sensors

<table>
<thead>
<tr>
<th>Optional - For use with valves fitted with position sensors</th>
<th>Page 24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bracket, (stainless steel)</td>
<td></td>
</tr>
</tbody>
</table>

Our policy is one of continued research and development. We therefore reserve the right to amend, without notice, the specifications given in this document. (2013 - 5176d) © 2015 Norgren GmbH
1oo2 (standard flow)
Weight: 1.0 kg aluminium (2.8 kg stainless steel) sub-base only, valves and accessories
see refer pages 10 and 15

- Valve 24011 and 24010 series
- Outlet port G 1/4 or 1/4 NPT
- Exhaust guard (sub-base), ports G1/2 or 1/2 NPT
- Dependent on solenoid models (see solenoid drawing)
- Inlet port G1/4 or 1/4 NPT
- Through mounting holes
- Mounting threads as standard or alternative to fix the bracket
2002 (standard flow)

Weight: 1.00 kg aluminium (2.8 kg stainless steel) sub-base only, valves and accessories
see refer pages 10 and 15

- Valve 24011 and 24010 series
- Outlet port G 1/4 or 1/4 NPT
- Exhaust guard (sub-base), ports G1/2 or 1/2 NPT
- Dependent on solenoid models (see solenoid drawing)
- Inlet port G1/4 or 1/4 NPT
- Through mounting holes
- Mounting threads as standard or alternative to fix the bracket
2003 (standard flow)
Weight: 2.8 kg aluminium (8 kg stainless steel) sub-base only, valves and accessories
see refer pages 10 and 15

- Valve 24011 and 24010 series
- Outlet port G 1/4 or 1/4 NPT
- Exhaust guard (sub-base), ports G1/2 or 1/2 NPT
- Dependent on solenoid models (see solenoid drawing)
- Inlet port G1/4 or 1/4 NPT
- Through mounting holes
- Mounting threads as standard or alternative to fix the bracket
1oo2 (high flow)
Weight: 1.4 kg aluminium (4 kg stainless steel) sub-base only, valves and accessories see refer pages 18 and 22
2oo2 (high flow)

Weight: 1.4 kg aluminium (4 kg stainless steel) sub-base only, valves and accessories
see refer pages 18 and 22

- Valve 98015 series
- Outlet port G1/2 or 1/2 NPT
- Exhaust guard (sub-base), ports G1/2 or 1/2 NPT
- Dependent on solenoid models (see solenoid drawing)
- Inlet port G1/2 or 1/2 NPT
- Through mounting holes
- Mounting threads as standard or alternative to fix the bracket
2003 (high flow)

Weight: 3.3 kg aluminium (9.3 kg stainless steel) sub-base only, valves and accessories
see refer pages 18 and 22

---

Dimensions in mm

- Valve 98015 series
- Outlet port G1/2 or 1/2 NPT
- Exhaust guard (sub-base), ports G1/2 or 1/2 NPT
- Dependent on solenoid models (see solenoid drawing)
- Inlet port G1/2 or 1/2 NPT
- Through mounting holes
- Mounting threads as standard or alternative to fix the bracket
24011 standard flow valve, 3/2
Direct solenoid actuated poppet valve

> Standard flow range
   (340 l/min)
> Main application:
   Single and double
   acting actuators
> TÜV-approval based
   on type examination
   DGRL 97/23/EC and
   IEC 61508, multichan-
   nel up to SIL 3 (12
   years)

> Optional valve position
   sensors
> Suited for outdoor use
   under critical
   environment
   conditions.
> Variable valve solenoid
   combination

Technical features

| Medium: | Compressed air, filtered, non-
| seat seal | lubricated and dry. Other gas and
| housing | liquid fluids on request. (Viscosity for
| sensor | gaseous or liquid fluids up to
| Weight | 40 mm²/s) |
| Material | Operation: Direct solenoid operated
| Test certificate | Operating pressure: 0 ... 10 bar (0 ... 145 psi)
| Dimension | Orifice: 5 mm |
| Symbol | Flow: Gaseous fluids: 340 l/min |
| Temperature (°C) | Port size: Flanged NAMUR Interface |
| Material | Flow direction: Optional |
| Test certificate | Ambient/Media temperature: |
| Position | NBR: -25 ... +80°C (-13 ... +176°F) |
| Weight | VMQ: -40 ... +60°C (-40 ... +140°F) |
| No. | Depending on solenoid system |
| Test certificate | Air supply must be dry enough |
| Test certificate | to avoid ice formation at |
| Test certificate | temperatures below +2°C (35°F).
| ambient temperature | For outdoor installations must |
| Pressure | be protected all connections against |
| Pressure | the penetration of moisture and |
| Viscosity | a solenoid with IP66 protection |
| Viscosity | must be used! |

Materials:

| Body: Aluminium anodized |
| or stainless steel 1.4404 (316 L) |
| Seal: NBR, VMQ |
| Inner parts: stainless steel, brass |

**Technical data**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Temperature (°C)</th>
<th>Material</th>
<th>Material seat seal</th>
<th>Material housing</th>
<th>Position sensor</th>
<th>Weight (kg)</th>
<th>Test certificate IEC 61508 *2)</th>
<th>Dimension No.</th>
<th>Model *1)</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 2</td>
<td>-40 ... +60</td>
<td>VMQ</td>
<td>aluminium</td>
<td>without</td>
<td>0,55</td>
<td>X</td>
<td>1</td>
<td>1025390</td>
<td>01</td>
<td></td>
</tr>
<tr>
<td>3 2</td>
<td>-40 ... +60</td>
<td>VMQ</td>
<td>stainless steel</td>
<td>without</td>
<td>1</td>
<td>X</td>
<td>1</td>
<td>1160007</td>
<td>02</td>
<td></td>
</tr>
<tr>
<td>3 2</td>
<td>-25 ... +70</td>
<td>NBR</td>
<td>aluminium</td>
<td>integrated</td>
<td>0,62</td>
<td>X</td>
<td>2</td>
<td>1025352</td>
<td>03</td>
<td></td>
</tr>
<tr>
<td>3 2</td>
<td>-25 ... +70</td>
<td>NBR</td>
<td>stainless steel</td>
<td>integrated</td>
<td>1,07</td>
<td>X</td>
<td>2</td>
<td>1160006</td>
<td>04</td>
<td></td>
</tr>
<tr>
<td>3 2</td>
<td>-25 ... +80</td>
<td>NBR</td>
<td>aluminium</td>
<td>without</td>
<td>0,55</td>
<td>X</td>
<td>1</td>
<td>2401103</td>
<td>05</td>
<td></td>
</tr>
<tr>
<td>3 2</td>
<td>-25 ... +80</td>
<td>NBR</td>
<td>stainless steel</td>
<td>without</td>
<td>1</td>
<td>X</td>
<td>1</td>
<td>1025212</td>
<td>06</td>
<td></td>
</tr>
</tbody>
</table>

*1) When ordering please indicate solenoid, voltage and current type (frequency).
*2) Particular for valves with TÜV approval and attachment in plants based on safety standards IEC 61508, taking into account to the operating and maintenance instructions document 7503444.
Solenoids operator, standard voltages

<table>
<thead>
<tr>
<th>Power consumption 24 V d.c. (W)</th>
<th>Rated current 24 V d.c. (m A)</th>
<th>Protection class IP/NEMA</th>
<th>Ex-Protection (ATEX-Category)</th>
<th>Temperature Ambient/Media (°C)</th>
<th>Electrical connection</th>
<th>Weight (kg)</th>
<th>Drawing No.</th>
<th>Circuit diagram No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,9</td>
<td>369</td>
<td>NEMA 4, 6, 6P, 7, 9</td>
<td>XP/DIP, Div. 1 &amp; 2 Cl.II, Gr. E-G T3 (160°C)</td>
<td>-20 ... +60</td>
<td>Flying leads 450 mm</td>
<td>0,5</td>
<td>8</td>
<td>1</td>
<td>3824</td>
</tr>
<tr>
<td>9,5</td>
<td>41</td>
<td>NEMA 4, 6, 6P, 7, 9</td>
<td>XP/DIP, Div. 1 &amp; 2 Cl.II, Gr. E-G T3 (160°C)</td>
<td>-20 ... +60</td>
<td>Flying leads 450 mm</td>
<td>0,5</td>
<td>8</td>
<td>5</td>
<td>3825</td>
</tr>
<tr>
<td>13,6</td>
<td>567</td>
<td>NEMA 4, 6, 6P, 7, 9</td>
<td>XP/DIP, Div. 1 &amp; 2 Cl.II, Gr. E-G T3 (160°C)</td>
<td>-20 ... +60</td>
<td>Flying leads 450 mm</td>
<td>0,5</td>
<td>8</td>
<td>1</td>
<td>3826</td>
</tr>
<tr>
<td>15,7</td>
<td>68</td>
<td>NEMA 4, 6, 6P, 7, 9</td>
<td>XP/DIP, Div. 1 &amp; 2 Cl.II, Gr. E-G T3 (160°C)</td>
<td>-20 ... +60</td>
<td>Flying leads 450 mm</td>
<td>0,5</td>
<td>8</td>
<td>5</td>
<td>3827</td>
</tr>
</tbody>
</table>

Standard voltages (+10%) 24 V d.c., 230 V a.c., other voltages on request. Design according to VDE 0580, EN 50014/50028. 100% duty cycle.

Attention: The protection class for coil series 46xx and 48xx is determined by the choice of cable gland. Example: If an ATEX-certified cable gland is used that has Ex d type of protection, the solenoid will have the protection class Ex d mb; if a cable gland with Ex e type of protection is used, the solenoid will have protection class Ex e mb.

Approvals

<table>
<thead>
<tr>
<th>Model</th>
<th>Approvals ATEX</th>
<th>IECEx</th>
<th>FM</th>
<th>Datasheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>372x, 382x</td>
<td>——</td>
<td>——</td>
<td>CSA-LR 57643-6</td>
<td>N/en 7.1.575</td>
</tr>
<tr>
<td>42xx</td>
<td>NEMA 66 ATEX 4452 X</td>
<td>IECex KEM 09.0068X</td>
<td>——</td>
<td>N/en 7.1.580</td>
</tr>
<tr>
<td>46xx</td>
<td>PTB 02 ATEX 2085 X</td>
<td>IECex PTB 11.0094X</td>
<td>——</td>
<td>N/en 7.1.585</td>
</tr>
</tbody>
</table>
Solvents operator, standard voltages

<table>
<thead>
<tr>
<th>Power consumption</th>
<th>24 V d.c.</th>
<th>230 V a.c.</th>
<th>Rated current</th>
<th>24 V d.c.</th>
<th>230 V a.c.</th>
<th>Protection class</th>
<th>Ex-Protection (ATEX-Category)</th>
<th>Temperature Ambient/Media (°C)</th>
<th>Electrical connection</th>
<th>Weight (kg)</th>
<th>Drawing No.</th>
<th>Circuit diagram No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.9</td>
<td>369</td>
<td>—</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex d mb IIC T4/ T6 Gb</td>
<td>T4: -40 ... +70</td>
<td>1/2 NPT *1)</td>
<td>0.8</td>
<td>7</td>
<td>20</td>
<td>4670</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>10.0</td>
<td>—</td>
<td>43</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex d mb IIC T4/ T6 Gb</td>
<td>T4: -40 ... +70</td>
<td>1/2 NPT *1)</td>
<td>0.8</td>
<td>7</td>
<td>21</td>
<td>4671</td>
<td></td>
</tr>
<tr>
<td>8.9</td>
<td>369</td>
<td>—</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex d mb IIC T4/ T6 Gb</td>
<td>T4: -40 ... +70</td>
<td>M20 x 1,5 *1)</td>
<td>0.8</td>
<td>7</td>
<td>20</td>
<td>4672</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>10.0</td>
<td>—</td>
<td>43</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex d mb IIC T4/ T6 Gb</td>
<td>T4: -40 ... +70</td>
<td>M20 x 1,5 *1)</td>
<td>0.8</td>
<td>7</td>
<td>21</td>
<td>4673</td>
<td></td>
</tr>
<tr>
<td>8.9</td>
<td>369</td>
<td>—</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex d mb IIC T4/ T6 Gb</td>
<td>T4: -40 ... +70</td>
<td>M20 x 1,5 *1)</td>
<td>1.2</td>
<td>10</td>
<td>4</td>
<td>4872</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>—</td>
<td>10</td>
<td>—</td>
<td>43</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex d mb IIC T4/ T6 Gb</td>
<td>T4: -40 ... +70</td>
<td>M20 x 1,5 *1)</td>
<td>1.2</td>
<td>10</td>
<td>7</td>
<td>4873</td>
<td></td>
</tr>
</tbody>
</table>

Standard voltages (±10%) 24 V d.c., 230 V a.c., other voltages on request. Design according to VDE 0580, EN 50014/50028. 100% duty cycle.

*1) Connector/cable gland is not scope of delivery, see table »Accessories«

Attention: The protection class for coil series 46xx and 48xx is determined by the choice of cable gland.

Example: if an ATEX-certified cable gland is used that has Ex d type of protection, the solenoid will have the protection class Ex d mb; if a cable gland with Ex e type of protection is used, the solenoid will have protection class Ex e mb.

**Approvals**

<table>
<thead>
<tr>
<th>Model</th>
<th>Approvals ATEX</th>
<th>IECEx</th>
<th>Datasheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>46xx</td>
<td>PTB 02 ATEX 2035 X</td>
<td>IECEx PTB 11.0034X</td>
<td>N/en 7.1.585</td>
</tr>
<tr>
<td>48xx</td>
<td>PTB 06 ATEX 2054 X</td>
<td>IECEx PTB 07.0039X</td>
<td>N/en 7.1.590</td>
</tr>
</tbody>
</table>
Drawings

Valves

1

Dimensions in mm
Projection/First angle

2

Solenoids optional
Locked with plug and sealing washer
3 mm deep
Position sensor

Position sensor

Supply voltage (Ub):
7.7 ... 9 V d.c.
Ripple:
15%
Frequency of operating cycles:
1000 Hz

Protection class:
IP68
Pressure-resistant:
500 bar
Ambient temperature:
-25 ... +70°C
24011 standard flow valve, 3/2
Direct solenoid actuated poppet valve

Solenoids

1. Connector can be indexed by 4 x 90°
2. Ø 16 or 13 (with spacer tube)
3. M20 x 1,5 or 1/2 NPT
4. Flying leads AWG 18 (450 mm long)
5. With cable gland, Pg 13.5

Circuit diagrams
Our policy is one of continued research and development. We therefore reserve the right to amend, without notice, the specifications given in this document. (2013 - 5176d) © 2015 Norgren GmbH

24010 standard flow valve, 3/2

Direct solenoid actuated poppet valve

- Standard flow range (340 l/min)
- Main application: Single acting actuators in intrinsically safe circuits
- TÜV-approval based on type examination IEC 61508, multichannel up to SIL 3
- Solenoid valve also suitable for use in low power non hazardous areas

Technical features

Medium:
Compressed air, filtered, non-lubricated and dry. Other gases and liquid fluids on request.  (Viscosity for gaseous or liquid fluids up to 40 mm²/s)

Operation:
Direct solenoid operated poppet valve

Flow:
Gaseous fluids: 340 l/min

Port size:
Flanged
NAMUR Interface

Flow direction:
Optional

Ambient/Media temperature:
-25 ... +80°C (-13 ... +176°F) Depending on solenoid system
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (35°F). For outdoor installations must be protected against the penetration of moisture and a solenoid with IP66 protection must be used!

Materials:
Body: Aluminium anodized or stainless steel 1.4404 (316 L)
Inner parts: stainless steel, brass
Solenoid housing: aluminium, anodized
Seals: NBR

Technical data

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Temperature (°C)</th>
<th>Material</th>
<th>Position</th>
<th>Weight (kg)</th>
<th>Test certificate</th>
<th>Dimension</th>
<th>Model *1)</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-25 ... +60</td>
<td>NBR</td>
<td>aluminium without 0,55 X 1</td>
<td>2401009.2003 21</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-25 ... +60</td>
<td>NBR</td>
<td>stainless steel without 1,00 X 1</td>
<td>2401097.2003 22</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-25 ... +60</td>
<td>NBR</td>
<td>aluminium integrated 0,62 X 2</td>
<td>1025353.2003 23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>-25 ... +60</td>
<td>NBR</td>
<td>stainless steel integrated 1,07 X 2</td>
<td>2401098.2003 24</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*1) Solenoid to be included in scope of supply
*2) Particular for valves with TÜV approval and attachment in plants based on safety standards IEC 61508, taking into account the operating and maintenance instructions document 7503444.
Solenoid parameters for use in non hazardous locations (25)

| Switch-on voltage | Allowed current | Holding current | Power consumption | Protection class IP | Ex-Protection (ATEX-Category) | Temperature Ambient/Fluid (°C) | Electrical connection | Weight (kg) | Operating sequence | Model
|-------------------|-----------------|-----------------|------------------|--------------------|-----------------------------|-------------------------------|----------------------|-------------|-------------------|--------
| (V)               | (mA)            | (mA)            | (W)              |        |                             |                               | M20 x 1,5 *(2)           | 0,85        | see below          | 2003    |
| 22 ... 26,4       | < 75            | > 40            | 1,8              | —      | IP66 (with cable gland)     | -40 ... +80                 | —                    | —           | —                 | —      |

Standard voltages (+10%), Design according to VDE 0580, EN 50014/50028. 100% duty cycle.
Pick-up delay typical: 0,3 ... 2 s, depending on intrinsic current supply
*2) Connector cable gland is in scope of delivery

Solenoid parameters for use in intrinsically safe circuits (25)

<table>
<thead>
<tr>
<th>Switch-on voltage</th>
<th>Holding current</th>
<th>Holding voltage</th>
<th>Pick-up delay typical *3)</th>
<th>Protection class IP</th>
<th>Ex-Protection (ATEX-Category)</th>
<th>Temperature Ambient/Fluid (°C)</th>
<th>Weight (kg)</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>(V)</td>
<td>(mA)</td>
<td>(V)</td>
<td>(s)</td>
<td></td>
<td></td>
<td></td>
<td>0,85</td>
<td>2003</td>
</tr>
<tr>
<td>22 ... 28</td>
<td>40</td>
<td>approx. 5</td>
<td>0,3 ... 5</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex ia IIC T5/T6 II 2 D Ex D IP66 T90°C</td>
<td>T5: -40 ... +70 T6: -40 ... +55 -40 ... +70</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

*3) depending on intrinsic current supply

Function of solenoid drive
To switch the direct operated valve, a certain energy is required. This energy is stored in a capacitor. The charging voltage is 22 V. The higher the supply voltage, the shorter the charging time. As soon as the charging voltage has been reached, the valve switches. The small current now flowing through the coil is sufficient to hold the valve in the open position. At least 40 mA are required for this.

Current supply units:
Intrinsically safe power supply units can be chosen in a list of compatibility in www.norgren.com. When selecting an intrinsically safe power supply, it is important to observe the maximum permissible values acc. to the EC-Type-Examination Certificate PTB 04 ATEX 2010 respectively IECEx PTB 05.0020 Ui 28 V, li 110 mA, Pi 1,5 W. The effective internal capacities Ci and inductivities li of the solenoid are negligibly low.
Our policy is one of continued research and development. We therefore reserve the right to amend, without notice, the specifications given in this document. (2013 - 5176d) © 2015 Norgren GmbH

### Drawings

**Drawings**

**Valves**

---

**Position sensor**

Supply voltage (U<sub>b</sub>):

7.7 ... 9 V d.c.

Ripple:

15%

Frequency of operating cycles:

1000 Hz

Protection class:

IP68

Pressure-resistant:

500 bar

Ambient temperature:

-25 ... +70°C

---

**Circuit diagram**

- Solenoid
- Locked with plug and sealing washer
- 3 mm deep
- Position sensor
- Cable gland included in scope of supply

---

Dimensions in mm

Projection/First angle

---

24010 standard flow valve, 3/2

Direct solenoid actuated poppet valve
98015 high flow valve, 3/2
Direct solenoid actuated poppet valve

> High flow range (950 l/min)
> Main application: Single acting actuators
> TÜV-approval based on type examination DGRL 97/23/EG and IEC 61 508, multichannel up to SIL 3
> Optional valve position sensors
> Suited for outdoor use under critical environment conditions
> Variable valve solenoid combination

Technical features
Medium:
Filtered, non-lubricated and dried compressed air, instrument air, nitrogen and other non-flammable neutral, dry fluids
Operation:
Direct solenoid operated poppet valve
Operating pressure:
0 ... 10 bar (0 ... 145 psi)
Orifice:
8 mm
Flow:
Gaseous fluids: 950 l/min
Port size:
Flanged
Flow direction:
Optional
Ambient/Media temperature:
-40 ... +60°C (-40 ... +140°F)
-25 ... +60°C (-13 ... +140°F)
(SIL version)
Depending on solenoid system
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (35°F). For outdoor installations must be protected all connections against the penetration of moisture and a solenoid with IP66 protection must be used.
Materials:
Body: Aluminium anodized or stainless steel 1.4404 (316 L)
Seals: NBR

Technical data

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Temperature (°C)</th>
<th>Material seal seal</th>
<th>Inductive limit sensor</th>
<th>Weight (kg)</th>
<th>Test certificate IEC 61 508 *2</th>
<th>Dimension No.</th>
<th>Model *1</th>
<th>Substitute</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-40 ... +60</td>
<td>NBR</td>
<td>without</td>
<td>0.65</td>
<td>X</td>
<td>9801595</td>
<td>07</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-40 ... +60</td>
<td>NBR</td>
<td>without</td>
<td>1.50</td>
<td>X</td>
<td>9801795</td>
<td>08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-25 ... +60</td>
<td>NBR</td>
<td>integrated</td>
<td>0.72</td>
<td>X</td>
<td>9801594</td>
<td>09</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-25 ... +60</td>
<td>NBR</td>
<td>integrated</td>
<td>1.57</td>
<td>X</td>
<td>9801794</td>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

*1) When ordering please indicate solenoid, voltage and current type (frequency).
*2) For operation in plants according to IEC 61511/61508 (-25 ... +60°C)
## Solenoids

<table>
<thead>
<tr>
<th>Power consumption 24 V d.c. (W)</th>
<th>Rated current 24 V d.c. (mA)</th>
<th>Protection class IP/NEMA</th>
<th>Ex-Protection (ATEX-Category)</th>
<th>Temperature Ambient/ Media (°C)</th>
<th>Electrical connection</th>
<th>Weight (kg)</th>
<th>Drawing No.</th>
<th>Circuit diagram No.</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>8,9</td>
<td>369</td>
<td>NEMA 4, 4X, 6, 6P, 7, 9</td>
<td>XP/DP, Div. 1 &amp; 2 Cl. I, Gr. A-D Cl. II/III, Gr. E-G T3 (160°C)</td>
<td>-20 ... +60</td>
<td>Flying leads 450 mm</td>
<td>0,5</td>
<td>8</td>
<td>1</td>
<td>3824</td>
</tr>
<tr>
<td>8,9</td>
<td>369</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex e mb IIC T4a/ T5 Gb II 2 D Ex to IIC T130°C Db IP66</td>
<td>T4: -40 ... +65</td>
<td>T5: -40 ... +55</td>
<td>0,5</td>
<td>6</td>
<td>4</td>
<td>4270</td>
</tr>
<tr>
<td>8,9</td>
<td>369</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex e mb IIC T4a/ T5 Gb II 2 D Ex to IIC T130°C Db IP66</td>
<td>T4: -40 ... +65</td>
<td>T5: -40 ... +55</td>
<td>0,5</td>
<td>6</td>
<td>7</td>
<td>4721</td>
</tr>
<tr>
<td>8,9</td>
<td>369</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex e mb IIC T4a/ T6 Gb II 2 G Ex e mb IIC T4a/ T6 Gb II 2 D Ex to IIC T130°C Db</td>
<td>T4: -40 ... +70</td>
<td>T6: -40 ... +40</td>
<td>0,8</td>
<td>7</td>
<td>20</td>
<td>4670</td>
</tr>
<tr>
<td>8,9</td>
<td>369</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex e mb IIC T4a/ T6 Gb II 2 G Ex e mb IIC T4a/ T6 Gb II 2 D Ex to IIC T130°C Db</td>
<td>T4: -40 ... +70</td>
<td>T6: -40 ... +40</td>
<td>0,8</td>
<td>7</td>
<td>20</td>
<td>4672</td>
</tr>
<tr>
<td>8,9</td>
<td>369</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex e mb IIC T4a/ T6 Gb II 2 G Ex e mb IIC T4a/ T6 Gb II 2 D Ex to IIC T130°C Db</td>
<td>T4: -40 ... +70</td>
<td>T6: -40 ... +40</td>
<td>0,8</td>
<td>7</td>
<td>21</td>
<td>4673</td>
</tr>
<tr>
<td>8,9</td>
<td>369</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex e mb d IIC T4/T6 II 2 G Ex mb e IIC T4/T6</td>
<td>T4: -40 ... +50</td>
<td>T6: -40 ... +40</td>
<td>1,2</td>
<td>10</td>
<td>4</td>
<td>4872</td>
</tr>
<tr>
<td>8,9</td>
<td>369</td>
<td>IP66 (with cable gland)</td>
<td>II 2 G Ex e mb d IIC T4/T6 II 2 G Ex mb e IIC T4/T6</td>
<td>T4: -40 ... +50</td>
<td>T6: -40 ... +40</td>
<td>1,2</td>
<td>10</td>
<td>7</td>
<td>4873</td>
</tr>
</tbody>
</table>

Standard voltages (±10%) 24 V d.c., 230 V a.c., other voltages on request. Design according to VDE 0580, EN 50014/50028. 100% duty cycle.

*1) Connector/cable gland is not scope of delivery, see table »Accessories«

Attention: The protection class for coil series 46xx and 48xx is determined by the choice of cable gland.

Example: if an ATEX-certified cable gland is used that has Ex d type of protection, the solenoid will have the protection class Ex d mb; if a cable gland with Ex e type of protection is used, the solenoid will have protection class Ex e mb.

### Approvals

<table>
<thead>
<tr>
<th>Model</th>
<th>Approvals ATEX</th>
<th>IECEx</th>
<th>FM</th>
<th>Datasheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>372x, 382x</td>
<td>CSA-LR 57843-6</td>
<td>N/en 7.1.575</td>
<td></td>
<td></td>
</tr>
<tr>
<td>42xx</td>
<td>NEMA 98 ATEX 4452 X</td>
<td>IECEx KEM 09.0068X</td>
<td>N/en 7.1.580</td>
<td></td>
</tr>
<tr>
<td>46xx</td>
<td>PTB 02 ATEX 20185 X</td>
<td>IECEx PTB 11.0094X</td>
<td>N/en 7.1.585</td>
<td></td>
</tr>
<tr>
<td>48xx</td>
<td>PTB 06 ATEX 2054 X</td>
<td>IECEx PTB 07.0039X</td>
<td>N/en 7.1.590</td>
<td></td>
</tr>
</tbody>
</table>
Position sensor

Supply voltage (Ub):
7.7 ... 9 V d.c.

Ripple:
15%

Frequency of operating cycles:
1000 Hz

Protection class:
IP68

Pressure-resistant:
500 bar

Ambient temperature:
-25 ... +70°C
Our policy is one of continued research and development. We therefore reserve the right to amend, without notice, the specifications given in this document. (2013 - 5176d) © 2015 Norgren GmbH

**98015 high flow valve, 3/2**

**Direct solenoid actuated poppet valve**

---

**98015 high flow valve, 3/2**

**Direct solenoid actuated poppet valve**

---

**Solenoids**

1. Connector can be indexed by 4x90°
2. Ø 16 or 13 (with spacer tube)
3. M20 x 1.5 or 1/2 NPT
4. Flying leads AWG 18 (450 mm long)
5. With cable gland, Pg 13,5

---

**Circuit diagrams**

1. [Diagram 1]
2. [Diagram 2]
3. [Diagram 3]
4. [Diagram 4]
5. [Diagram 5]
98025 high flow valve, 3/2
Indirect solenoid actuated poppet valve

> High flow range
   (950 l/min)

> Main application:
   Single acting actuators

> TÜV-approval based
   on type examination
   DGRL 97/23/EG and
   IEC 61 508,
   multichannel up to
   SIL 3

> Suited for outdoor use
   under critical
   environment conditions

Technical features

**Medium:**
Filtered, non-lubricated and dried compressed air, instrument air, nitrogen and other non-flammable neutral, dry fluids

**Operation:**
Indirect solenoid operated poppet valve.

**Flow:**
Gaseous fluids: 950 l/min

**Orifice:**
8 mm

**Port size:**
Flanged

**Flow direction:**
Fixed

**Ambient/Media temperature:**
-40 ... +60°C (-40 ... +140°F)
-25 ... +60°C (-13 ... +140°F)
(SIL version)
Depending on solenoid system
Air supply must be dry enough to avoid ice formation at temperatures below +2°C (35°F).
For outdoor installations must be protected all connections against the penetration of moisture and a solenoid with IP66 protection must be used!

**Materials:**
Body: Aluminium anodized (suitable for high humidity, sulphuric, sodium chloride or ammonia environments), stainless steel 1.4404 (316 L)
Seal: NBR
Inner parts: stainless steel

Technical data

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Temperature (°C)</th>
<th>Material seat seal</th>
<th>Material housing</th>
<th>Inductive limit sensor</th>
<th>Weight (kg)</th>
<th>Test certificate IEC 61 508 *2</th>
<th>Dimension No.</th>
<th>Model *1)</th>
<th>Subsitute</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-40 ... +60</td>
<td>NBR</td>
<td>aluminium</td>
<td>without</td>
<td>0.75</td>
<td>X</td>
<td>1</td>
<td>9802595</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>-40 ... +60</td>
<td>NBR</td>
<td>stainless steel</td>
<td>without</td>
<td>1.70</td>
<td>X</td>
<td>1</td>
<td>9802795</td>
<td>32</td>
</tr>
</tbody>
</table>

In order to ensure full flow and proper function make sure that sufficient pressure supply with feed pipe diameters according to the port size is available.
(Minimum pressure: 3 bar)

*1) When ordering please indicate solenoid, voltage and current type (frequency).

*2) For operation in plants according to IEC 61511/61508 (-25 ... +60°C)
### Solenoid actuators for intrinsically-safe circuits

<table>
<thead>
<tr>
<th>Nominal resistance RN coil (Ω)</th>
<th>Min. required switching current (mA)</th>
<th>Resistance Rw 60 coil (Ω)</th>
<th>Required voltage at terminal Rw 60 (V)</th>
<th>IP Protection class</th>
<th>Ex-Protection (ATEX-Category)</th>
<th>Temperature Ambient/Media (°C)</th>
<th>Weight (kg)</th>
<th>Circuit diagram</th>
<th>Model No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>200</td>
<td>33</td>
<td>240</td>
<td>8</td>
<td>IP66</td>
<td>II 2 G Ex ia IIC T4/ T6 Db</td>
<td>T4: -40 ... +80 T6: -40 ... +60</td>
<td>0,85</td>
<td>10</td>
<td>2050</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 G Ex ia IIC T80°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 G Ex ia IIC T100°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T4/ T6 Db</td>
<td>T4: -40 ... +80 T6: -40 ... +60</td>
<td>0,85</td>
<td>10</td>
<td>2051</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T80°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T100°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>736</td>
<td>17</td>
<td>880</td>
<td>15</td>
<td>IP66</td>
<td>II 2 G Ex ia IIC T4/ T6 Db</td>
<td>T4: -40 ... +80 T6: -40 ... +60</td>
<td>0,85</td>
<td>10</td>
<td>2052</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 G Ex ia IIC T80°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 G Ex ia IIC T100°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T4/ T6 Db</td>
<td>T4: -40 ... +80 T6: -40 ... +60</td>
<td>0,85</td>
<td>10</td>
<td>2053</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T80°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T100°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1220</td>
<td>13</td>
<td>1460</td>
<td>19</td>
<td>IP66</td>
<td>II 2 G Ex ia IIC T4/ T6 Db</td>
<td>T4: -40 ... +80 T6: -40 ... +60</td>
<td>0,85</td>
<td>10</td>
<td>2053</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 G Ex ia IIC T80°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 G Ex ia IIC T100°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T4/ T6 Db</td>
<td>T4: -40 ... +80 T6: -40 ... +60</td>
<td>0,85</td>
<td>10</td>
<td>2053</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T80°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>II 2 D Ex ia IIC T100°C Db</td>
<td>-40 ... +60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Cable gland (cable Ø 5 ... 10 mm) is in scope of delivery.

When selecting an intrinsically safe power supply, the permissible maximum values according to the Certificate of Conformity should be taken into account.

- \( U_i = 45 \, \text{V}, I_i = 500 \, \text{mA} \) according to Tab. A. 1, EN 60079-11
- \( P_i = 2,0 \, \text{W}, L_i \) and \( C_i \) can be ignored.

### Approvals

<table>
<thead>
<tr>
<th>Model</th>
<th>Approvals</th>
<th>Datasheet</th>
</tr>
</thead>
<tbody>
<tr>
<td>205x</td>
<td>ATEX PTB 07 ATEX 2019</td>
<td>IECEx PTB 07.0017 / N/en 7.1.535</td>
</tr>
</tbody>
</table>

### Circuit diagrams

![Circuit Diagrams](image_url)
V82 series - Redundant valve manifold systems - Compact
1002 “Safety”, 2002 “Availability” and 2003 “Safety and Availability”

Accessories
Exhaust guard (plastic) - standard option

Silencer

Silencer (brass or stainless steel)

Cable gland

Bracket
Model: A165-95
Weight: 0.61 kg
Connector - valve position sensor

90°, 4 pin, with cable

90°, 4 pin, without cable

straight, 4 pin, with cable

straight, 4 pin, without cable

### Warning

These products are intended for use in industrial compressed air and fluid systems only. Do not use these products where pressures and temperatures can exceed those listed under "Technical features/data". Before using these products with fluids other than those specified, for non-industrial applications, life-support systems, or other applications not within published specifications, consult IMI NORGREN.

Through misuse, age, or malfunction, components used in fluid power systems can fail in various modes. The system designer is warned to consider the failure modes of all component parts used in fluid power systems and to provide adequate safeguards to prevent personal injury or damage to equipment in the event of such failure.

System designers must provide a warning to end users in the system instructional manual if protection against a failure mode cannot be adequately provided.

System designers and end users are cautioned to review specific warnings found in instruction sheets packed and shipped with these products.

Functional safety (SIL):
Suitable for certain applications can only be evaluated through examination of each safety-related overall system with regard to the requirements of IEC 61508/61511.