Butterfly valve control system

Series 61.2

Main applications
Downstream pressure control valve for SEMI, FPD, PV, SOLAR and industrial processes
Optimal for fast and demanding processes, e.g. CVD

Ordering information
Valve with stepper motor and integrated pressure controller

<table>
<thead>
<tr>
<th>DN</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>inch</td>
<td>ISO-KF</td>
<td>ISO-F</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>61228-KA x y</td>
<td>61228-KE x y</td>
</tr>
<tr>
<td>40</td>
<td>1½</td>
<td>61232-KA x y</td>
<td>61232-KE x y</td>
</tr>
<tr>
<td>50</td>
<td>2</td>
<td>61234-KA x y</td>
<td>61234-KE x y</td>
</tr>
<tr>
<td>63</td>
<td>2½</td>
<td>61236-PA x y</td>
<td>61236-PE x y</td>
</tr>
<tr>
<td>80</td>
<td>3</td>
<td>61238-PA x y</td>
<td>61238-PE x y</td>
</tr>
<tr>
<td>100</td>
<td>4</td>
<td>61240-PA x y</td>
<td>61240-PE x y</td>
</tr>
<tr>
<td>160</td>
<td>6</td>
<td>61244-PA x y</td>
<td>61244-PE x y</td>
</tr>
<tr>
<td>200</td>
<td>8</td>
<td>61246-PA x y</td>
<td>61246-PE x y</td>
</tr>
<tr>
<td>250</td>
<td>10</td>
<td>61248-PA x y</td>
<td>61248-PE x y</td>
</tr>
</tbody>
</table>

Controller configurations:
- G = basic version
- A = with SPS
- H = with PFO
- C = with SPS and PFO
- T = basic version with VC master
- V = with SPS and VC master
- U = with PFO and VC master
- W = with SPS, PFO and VC master

SPS = Sensor Power Supply
(±15 VDC power supply for sensor)

PFO = Power Failure Option
(valve closes/opens automatically at power failure)

VC = Valve Cluster
(for operating several valves synchronously)

Example: 61240-PAGG
= Aluminum valve with ISO-F DN 100 flanges, RS232 interface, for 1 sensor

Pressure controller: see pages 146–149
Features

Body material: aluminum or stainless steel
Compact design
Fast operation
Integrated pressure controller
Extremely short control response times
Automatic service signal (contamination)
Position indication
Service port for connecting a computer or a service box
Excellent resistance to contaminating processes
Easy maintenance

The plate acts as a throttling element and varies the conductance of the valve opening. The pressure controller calculates the required plate position to achieve the setpoint pressure. See also principle drawing on page 280. Actuation is performed by a stepper motor. An encoder monitors the position. This principle ensures fast and accurate process pressure control even in very contaminating processes.

Technical data

Leak rate 1): valve body, valve seat $1 \cdot 10^{-9}$ mbar ls$^{-1}$
Pressure range 1) $1 \cdot 10^{-8}$ mbar to 1.2 bar (abs)
Cycles until first service 2) 2 million
Temperature 2):
  - Valve body $\leq 150$ °C
  - Ambient $\leq 50$ °C
Material
  - Valve body, plate
    - aluminum EN AW-6082 (3.2315)
    - stainless steel AISI 316L (1.4404 or 1.4435)
  - Shaft AISI 316L (1.4404 or 1.4435)
  - Other parts iglidur®X, AISI 316L (1.4404 or 1.4435)
Seal: feedthrough FKM (Viton®)
Feedthrough rotary feedthrough
Mounting position any

1) Unheated on delivery
2) Maximum values: depending on operating conditions and sealing materials
Butterfly valve control system

Continued Technical data

<table>
<thead>
<tr>
<th>DN (nominal I.D.)</th>
<th>Conductance (molecular flow)</th>
<th>Minimum controllable conductance (molecular flow)</th>
<th>Max. differential pressure on the plate</th>
<th>Typical closing or opening time</th>
<th>Weight</th>
<th>Stainless steel valve</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>inch</td>
<td>ls⁻¹</td>
<td>ls⁻¹</td>
<td>mbar</td>
<td>s</td>
<td>kg</td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>22</td>
<td>0.15</td>
<td>1000</td>
<td>0.3</td>
<td>2</td>
</tr>
<tr>
<td>40</td>
<td>1½</td>
<td>80</td>
<td>0.25</td>
<td>1000</td>
<td>0.3</td>
<td>2.1</td>
</tr>
<tr>
<td>63</td>
<td>2½</td>
<td>360</td>
<td>0.45</td>
<td>1000</td>
<td>0.3</td>
<td>2.4</td>
</tr>
<tr>
<td>80</td>
<td>3</td>
<td>850</td>
<td>0.65</td>
<td>1000</td>
<td>0.3</td>
<td>2.8</td>
</tr>
<tr>
<td>100</td>
<td>4</td>
<td>1400</td>
<td>0.85</td>
<td>800</td>
<td>0.3</td>
<td>3</td>
</tr>
<tr>
<td>160</td>
<td>6</td>
<td>3800</td>
<td>1.70</td>
<td>300</td>
<td>0.3</td>
<td>4.2</td>
</tr>
<tr>
<td>200</td>
<td>8</td>
<td>7800</td>
<td>2.80</td>
<td>150</td>
<td>0.3</td>
<td>4.7</td>
</tr>
<tr>
<td>250</td>
<td>10</td>
<td>15000</td>
<td>5</td>
<td>100</td>
<td>0.3</td>
<td>5.7</td>
</tr>
</tbody>
</table>

Technical data for pressure controller: see pages 146 – 149

Options

Certain options are not available for some nominal diameters or cannot be combined. Moreover, options can affect the general technical data.

Actuator
- Ultra fast actuator (0.1 s)
- Output for control of isolation valve
- Controller with configurable PID parameters (adaptive, upstream, downstream, soft-pump)
- RS232 interface with 2 analog outputs

Valve
- Other sizes, e.g. DN 10, 320
- Other flanges, e.g. JIS, ASA-LP, CF-F
- Customer specified flanges
- Surface treatment, e.g. aluminum, hard anodized or nickel-plated
- Other sealing materials
- Heater with insulation (picture) for valve temperatures up to 150 °C (for temperatures up to 200 °C on request)
- Industrial version up to DN 160 for harsh conditions, e.g. differential pressure up to 1 bar, heavy contamination
- «Combo» body to combine a series 61.2 control valve with an isolation valve: see series 95, pages 144 – 145

Ordering information for options:
Ordering No. of valve-X (e.g. 61236-PEGG-X, X = valve with heater for 150 °C)

Spare parts
- Seals
  on request (specify fabrication number of valve)

Accessories
- Flange connections
  for installation of the valve: see series 31 and 32
### Dimensions

**Valve with stepper motor and integrated pressure controller**  
DN 25–50 (1”–2”) ISO-KF

![Diagram of Valve with stepper motor and integrated pressure controller](image)

<table>
<thead>
<tr>
<th>DN (mm)</th>
<th>25</th>
<th>40</th>
<th>50</th>
<th>63</th>
<th>80</th>
<th>100</th>
<th>160</th>
<th>200</th>
<th>250</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>1</td>
<td>1/4</td>
<td>1/2</td>
<td>3</td>
<td>4</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>A (mm)</td>
<td>50</td>
<td>57</td>
<td>57</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>1.97</td>
<td>2.24</td>
<td>2.24</td>
<td>1.18</td>
<td>1.18</td>
<td>1.18</td>
<td>1.18</td>
<td>1.18</td>
<td>1.18</td>
</tr>
<tr>
<td>B (mm)</td>
<td>65</td>
<td>80</td>
<td>90</td>
<td>130</td>
<td>145</td>
<td>165</td>
<td>225</td>
<td>285</td>
<td>335</td>
</tr>
<tr>
<td></td>
<td>2.56</td>
<td>3.15</td>
<td>3.54</td>
<td>5.12</td>
<td>5.71</td>
<td>6.50</td>
<td>8.86</td>
<td>11.22</td>
<td>13.19</td>
</tr>
<tr>
<td>B1 (mm)</td>
<td>39.90</td>
<td>54.90</td>
<td>74.90</td>
<td>2.95</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>C (mm)</td>
<td>–</td>
<td>–</td>
<td>110</td>
<td>125</td>
<td>145</td>
<td>200</td>
<td>260</td>
<td>310</td>
<td>12.20</td>
</tr>
<tr>
<td></td>
<td>–</td>
<td>–</td>
<td>4.92</td>
<td>5.71</td>
<td>6.50</td>
<td>8.86</td>
<td>10.24</td>
<td>12.20</td>
<td>9.84</td>
</tr>
<tr>
<td>D (mm)</td>
<td>25</td>
<td>40</td>
<td>50</td>
<td>63</td>
<td>80</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td></td>
<td>0.98</td>
<td>1.57</td>
<td>1.97</td>
<td>2.48</td>
<td>3.15</td>
<td>3.94</td>
<td>5.91</td>
<td>7.87</td>
<td>9.84</td>
</tr>
<tr>
<td>E × F (mm)</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>4×9</td>
<td>8×9</td>
<td>8×9</td>
<td>8×9</td>
<td>8×9</td>
<td>8×9</td>
</tr>
<tr>
<td></td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>4×0.35</td>
<td>8×0.35</td>
<td>8×0.35</td>
<td>8×0.35</td>
<td>8×0.43</td>
<td>12×0.43</td>
</tr>
<tr>
<td>H (mm)</td>
<td>26.30</td>
<td>41.30</td>
<td>52.30</td>
<td>70</td>
<td>83</td>
<td>102</td>
<td>153</td>
<td>213</td>
<td>261</td>
</tr>
<tr>
<td></td>
<td>1.04</td>
<td>1.63</td>
<td>2.06</td>
<td>2.76</td>
<td>3.27</td>
<td>4.02</td>
<td>6.02</td>
<td>8.39</td>
<td>10.28</td>
</tr>
<tr>
<td>I (mm)</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
<td>4.50</td>
</tr>
<tr>
<td></td>
<td>0.12</td>
<td>0.12</td>
<td>0.12</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
<td>0.18</td>
</tr>
<tr>
<td>K (mm)</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>27</td>
<td>1.06</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>1.06</td>
<td>1.06</td>
<td>1.06</td>
<td>1.06</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>N (mm)</td>
<td>49.50</td>
<td>57</td>
<td>92</td>
<td>77.50</td>
<td>90.50</td>
<td>98.50</td>
<td>123.50</td>
<td>157</td>
<td>182</td>
</tr>
<tr>
<td></td>
<td>1.95</td>
<td>2.24</td>
<td>3.62</td>
<td>3.05</td>
<td>3.56</td>
<td>3.88</td>
<td>4.86</td>
<td>6.18</td>
<td>7.17</td>
</tr>
<tr>
<td>O (mm)</td>
<td>208.50</td>
<td>216</td>
<td>251</td>
<td>236.50</td>
<td>249.50</td>
<td>257.50</td>
<td>282.50</td>
<td>316</td>
<td>341</td>
</tr>
<tr>
<td>P (mm)</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>124</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td>4.88</td>
<td>4.88</td>
<td>4.88</td>
<td>4.88</td>
<td>4.88</td>
<td>4.88</td>
<td>4.88</td>
<td>4.88</td>
<td>4.88</td>
</tr>
<tr>
<td>R (mm)</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td></td>
<td>2.76</td>
<td>2.76</td>
<td>2.76</td>
<td>2.76</td>
<td>2.76</td>
<td>2.76</td>
<td>2.76</td>
<td>2.76</td>
<td>2.76</td>
</tr>
<tr>
<td>S (mm)</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
<td>3.54</td>
</tr>
</tbody>
</table>

**Valve with stepper motor and integrated pressure controller**  
DN 63–250 (2½”–10”) ISO-F

<table>
<thead>
<tr>
<th>Dimensions required for dismantling</th>
</tr>
</thead>
</table>

* Required for dismantling
Series 61.2

Features
Integrated or external pressure controller, depending on valve type
Automatic learning of system parameters
Extremely short control response times
Fast and accurate pressure control
Valve position control
Remote control or local operation
Input for pressure sensor
Information display

Function
By operating the LEARN function – needs to be done only once at start-up – the system parameters are automatically determined. Due to the adaptive algorithm the controller continuously adapts to the process conditions (species of gas, gas flow) and thus ensures optimum pressure control at any time.

In position control mode the valve plate can be moved to any position. Status and position are displayed by means of 4 digits.

The valve can be controlled by a computer via Logic, RS232, RS485, DeviceNet®, Ethernet, Profibus, CC-Link or EtherCAT interface.

The RS232 interface and the field busses also have digital inputs to close and open the valve. In addition, digital outputs are available for «open» and/or «closed».

Control via Logic interface performs via digital and analog inputs and outputs.

Electrical connections

<table>
<thead>
<tr>
<th>Connection</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>POWER</td>
<td>Power input</td>
</tr>
<tr>
<td>SENSOR</td>
<td>Sensor input, Sensor power supply</td>
</tr>
<tr>
<td>INTERFACE</td>
<td>Logic, RS232, RS485</td>
</tr>
<tr>
<td></td>
<td>Ethernet</td>
</tr>
<tr>
<td></td>
<td>DeviceNet® with Logic I/O</td>
</tr>
<tr>
<td></td>
<td>Profibus with Logic I/O</td>
</tr>
<tr>
<td></td>
<td>CC-Link with Logic I/O</td>
</tr>
<tr>
<td></td>
<td>EtherCAT with Logic I/O</td>
</tr>
<tr>
<td></td>
<td>Logic I/O</td>
</tr>
</tbody>
</table>

Accessories

- **CPA software** (see «Operation»)
- **Service box, control panel** (see «Operation»)
- **Connector kits** for the various interfaces
- **AC power supply unit** (input: 100 – 240 VAC, output: 24 VDC/4A)

www.vatvalve.com
Operation

Remote control via computer

Control via computer by using the CPA software developed by VAT offers comfortable functions such as

- Setup
- Operation
- Monitoring
- Diagnostics
- Graphical illustration of the pressure behavior
- Programming and recording of sequences
- Several possibilities for data analysis and process optimization


For connecting the computer to the valve, a special cable designed by VAT is required. The diagram for the cable is available on our website: [www.vatvalve.com/Customer Service/Information and downloads/Cable description](http://www.vatvalve.com/Customer Service/Information and downloads/Cable description). The cable and the software "Control Performance Analyzer (CPA)" can also be ordered from VAT.

Local operation by means of a service box or control panel

Options

- **Sensor Power Supply (SPS)**
  ±15 VDC power supply for the sensor/sensors

- **Power Failure Option (PFO)**
  Valve closes/opens automatically at power failure

- **Valve Cluster (VC)**
  For operating several valves synchronously by means of a master valve and one or more slave valves.
Integrated controller: Series 61.2

Available interfaces:
- Logic
- RS232
- RS485
- DeviceNet®
- Ethernet
- Profibus
- CC-Link
- EtherCAT

Power consumption
- Controller + motor max. +24 V DC (±10%) @ 0.5 V pk-pk
- Power failure option (PFO) max. 38 W
- Sensor power supply (SPS) max. 36 W

Sensor supply 24 V DC or ±15 V DC

Sensor input
- Signal voltage 0 – 10 V DC linear with pressure
- Input resistance Ri = 100 kΩ
- Resolution 0.23 mV
- Sampling rate 10 ms

Control accuracy 5 mV or 0.1% of setpoint ¹)

Position resolution ≥20000 (depending on valve type)

Protective system IP 30

¹) The higher value applies