FHKSC Arnite using fastening pin
with double isolation
Part number: 932-950x/Bxxx

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General Description

The FHKSC Flowmeter is a general-purpose device that has been specially designed for coffee machines that use vibratory pumps. The device is installed between the water container and the vibratory pump (on the suction side) and in this way prevents the measuring errors that arise during pulsating water flow caused by vibratory pumps.

Specific applications: Thanks to its closure system, the water outlet side can be assembled in four different positions. Central sprayed fastening pin Ø 2.8mm x 7.5mm. Recommended washer disk: Quicklock® Benzing Ø 3mm or Starlock P-6490 Ø 3mm. Doubled isolation (water/electronics) according to the standard IEC/EN 60335-1: 2001/2002 + A1: 04 + A2: 06 + A11: 04 + A12: 06.

Material:
- Housing: PBT 35%GF (Arsine)
- Bearing pin: Injection-moulded like the housing
- Nozzle: Injection-moulded like the housing
- O-ring: MVQ (Silikon)
- Turbine: PP (red dyed)
- Magnets: Keramik Sr Fe O (in contact with the medium)

Technical data:
- Flow rate: 0.033 - 3 l/min depending on the nozzle diameter
- Continuous operation: Turbine < 500 rpm
- Repetition: <+/- 0.25%
- Temperature range: -10°C to + 65°C
- Pressure range: -1 bar to 0.3 bar at 20°C
- Mounting position: Horizontal
- Nozzle size: Ø 1.0, 1.2, 1.8, 2.0, 2.7 mm

Electrical connection ratings:
- Power supply: + 3.8 to + 20 VDC
- Consumption: < 8 mA
- Signal connection: Open collector NPN
- Signal voltage: 0 VDC GND (saturation < 0.7 V)
- Signal load: max. 20 mA
- Leakage current: max. 10 μA
- Connections: PANCON MAS-CON 156 MLSS
- Signal: Square-wave output
- Duty Cycle: ~ 50%

Dimensions in mm:

**RESISTANCE**
Special regulations which must be complied with by the flowmeter manufacturer apply to each country, e.g. CE, NSF, FDA and SK. The various media flowing through the flowmeter differ from application to application. You are advised to enquire with the medium manufacturer as to whether the entire installation and the flowmeter are resistant to the medium itself (see Material)!

**ELECTRONIC**
DIGMESA electronic circuitry is always designed for operation with DIGMESA flowmeters. Please note the following if connecting to other electronic circuitry:
- The flowmeter does not supply an output voltage but switches the signal terminal to 0 V ground (actuated) or leaves it open (non-actuated)
- There must be a pull-up resistor between power supply + and signal depending on electronic circuitry!

We reserve the right to make modifications in the interests of technical progress.

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Interface Connection: Examples Open Collector

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**Simple Circuit**

- +3.8 to +20 VDC
- 0 VDC
- 100nF

**TTL Output**

- +5 VDC
- 1N4148
- open collector

**Optocoupler Interface**

- +3.8 to +20 VDC
- 0 VDC
- Rx=750Ω
- +5 VDC
- Rx=1kΩ
- 100nF
- +12 VDC
- Rx=4k7
- +20 VDC
- Rx=10k

We reserve the right to make modifications in the interests of technical progress.
Measurement guaranteed only if mounted horizontally.

Loop from silicone hose Ø 5mm x 1.5mm 60 Shore A.

Vacuum Pump

Tank
The values specified must be considered as approximate values. The number of pulses per litre may differ depending on medium and installation. We recommend to calibrate the number of pulses per litre in line with the complete installation.

**Measurement Curve FHKSC 1.00 mm 0° (#932-9505/B)**

<table>
<thead>
<tr>
<th>Nozzle size</th>
<th>Pulses/litre</th>
<th>g/pulse</th>
<th>min. flow rate in [litres/min] at linear start</th>
<th>max. flow rate in [litres/min]</th>
<th>Pressure loss in [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 1.00 mm</td>
<td>2382</td>
<td>0.41</td>
<td>0.033</td>
<td>0.40</td>
<td>0.48</td>
</tr>
</tbody>
</table>

**Measurement Tips**

- Ensure that there is no fast-pulsatory movement of the medium.
- Ensure that there are no reverse pressure surges.
- Ensure that there is no air in the system.
- Keep the pressure loss as small as possible.
- Note the mounting position of the flowmeter.
- Min/max flow should be in the linear range of the selected flowmeter.
- Clean the system at appropriate intervals.
- Avoid electrical current peaks.
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter.
- Do not mechanically load electrical contacts.
- Avoid moisture on the electrical contacts.
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads).
The values specified must be considered as approximate values.  
The number of pulses per litre may differ depending on medium and installation.  
We recommend to calibrate the number of pulses per litre in line with the complete installation.
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**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
- Don't mechanically load electrical contacts
- Avoid moisture on the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)
The values specified must be considered as approximate values.
The number of pulses per litre may differ depending on medium and installation.
We recommend to calibrate the number of pulses per litre in line with the complete installation.

**Measurement Curve FHKSC 1.00 mm 270° (#932-9505/B270)**

**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
- Do not mechanically load electrical contacts
- Avoid moisture on the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)
The values specified must be considered as approximate values. The number of pulses per litre may differ depending on medium and installation. We recommend to calibrate the number of pulses per litre in line with the complete installation.

### Measurement Curve FHKSC 1.20 mm 0° (#932-9501/B)

- **Nozzle size**: Ø 1.20 mm
- **Pulses/litre**: 1925
- **g/pulse**: 0.51
- **min. flow rate in [litres/min]** at linear start: 0.07
- **max. flow rate in [litres/min]**: 0.56
- **Pressure loss in [bar]**: 0.42

**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
- Do not mechanically load electrical contacts
- Avoid moisture on the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)
The values specified must be considered as approximate values. The number of pulses per litre may differ depending on medium and installation. We recommend to calibrate the number of pulses per litre in line with the complete installation.

**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
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- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)
The values specified must be considered as approximate values. The number of pulses per litre may differ depending on medium and installation. We recommend to calibrate the number of pulses per litre in line with the complete installation.

### Measurement Curve FHKSC 1.20 mm 180° (#932-9501/B180)

#### MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
- Do not mechanically load electrical contacts
- Avoid moisture on the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

<table>
<thead>
<tr>
<th>Nozzle size</th>
<th>Pulses/litre</th>
<th>g/pulse</th>
<th>min. flow rate in [litres/min] at linear start</th>
<th>max. flow rate in [litres/min]</th>
<th>Pressure loss in [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 1.20 mm</td>
<td>2016</td>
<td>0.49</td>
<td>0.10</td>
<td>0.57</td>
<td>0.43</td>
</tr>
</tbody>
</table>
The values specified must be considered as approximate values.
The number of pulses per litre may differ depending on medium and installation.
We recommend to calibrate the number of pulses per litre in line with the complete installation.

**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
- Do not mechanically load electrical contacts
- Avoid moisture on the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)
The values specified must be considered as approximate values.
The number of pulses per litre may differ depending on medium and installation.
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### MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
- Do not mechanically load electrical contacts
- Avoid moisture on the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

### Measurement Curve FHKSC 1.80 mm 90° (#932-9502/B90)

<table>
<thead>
<tr>
<th>Nozzle size</th>
<th>Pulses/litre</th>
<th>g/pulse</th>
<th>min. flow rate in [litres/min]</th>
<th>max. flow rate in [litres/min]</th>
<th>Pressure loss in [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 1.80 mm</td>
<td>1300</td>
<td>0.76</td>
<td>0.09</td>
<td>0.90</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Medium: Water / max. Pressure: 1 bar
The values specified must be considered as approximate values. The number of pulses per litre may differ depending on medium and installation. We recommend to calibrate the number of pulses per litre in line with the complete installation.

<table>
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<tr>
<th>Nozzle size</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Ø 1.80 mm</td>
<td>1360</td>
<td>0.73</td>
<td>0.11</td>
<td>0.89</td>
<td>0.26</td>
</tr>
</tbody>
</table>

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
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- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)
The values specified must be considered as approximate values. The number of pulses per litre may differ depending on medium and installation. We recommend to calibrate the number of pulses per litre in line with the complete installation.

### Measurement Curve FHKSC 1.80 mm 270° (#932-9502/B270)

**Measurement Tips**

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
- Clean the system at appropriate intervals
- Avoid electrical current peaks
- Incorrect cabling of power supply +, signal and ground will destroy the flowmeter
- Do not mechanically load electrical contacts
- Avoid moisture on the electrical contacts
- Avoid stray pick-up via the cable (Do not lay cables in parallel with high current loads)

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<th>Pressure loss in [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 1.80 mm</td>
<td>1352</td>
<td>0.73</td>
<td>0.08</td>
<td>0.89</td>
<td>0.26</td>
</tr>
</tbody>
</table>

Medium: Water / max. Pressure: 1 bar
The values specified must be considered as approximate values. The number of pulses per litre may differ depending on medium and installation. We recommend to calibrate the number of pulses per litre in line with the complete installation.
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**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the media
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<th>Pressure loss in [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 2.00 mm</td>
<td>1280</td>
<td>0.78</td>
<td>0.17</td>
<td>0.91</td>
<td>0.22</td>
</tr>
</tbody>
</table>

**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the medium
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
- Min/max flow should be in the linear range of the selected flowmeter
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The values specified must be considered as approximate values. 
The number of pulses per litre may differ depending on medium and installation. 
We recommend to calibrate the number of pulses per litre in line with the complete installation.
**Measurement Curve FHKSC 2.70 mm 0° (#932-9509/B)**

The values specified must be considered as approximate values.
The number of pulses per litre may differ depending on medium and installation.
We recommend to calibrate the number of pulses per litre in line with the complete installation.

<table>
<thead>
<tr>
<th>Nozzle size</th>
<th>Pulses/litre</th>
<th>g/pulse</th>
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<th>max. flow rate in [litres/min]</th>
<th>Pressure loss in [bar]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 2.70 mm</td>
<td>924</td>
<td>1.08</td>
<td>0.33</td>
<td>3.13</td>
<td>1.0</td>
</tr>
</tbody>
</table>

**MEASUREMENT TIPS**

- Ensure that there is no fast-pulsatory movement of the media
- Ensure that there are no reverse pressure surges
- Ensure that there is no air in the system
- Keep the pressure loss as small as possible
- Note the mounting position of the flowmeter
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**Nozzle size** | **Pulses/litre** | **g/pulse** | **min. flow rate in [litres/min] at linear start** | **max. flow rate in [litres/min]** | **Pressure loss in [bar]**
---|---|---|---|---|---
Ø 2.70 mm | 940 | 1.06 | 0.38 | 3.23 | 1.0

Medium: Water / max. Pressure: 3.3 bar
The values specified must be considered as approximate values.
The number of pulses per litre may differ depending on medium and installation.
We recommend to calibrate the number of pulses per litre in line with the complete installation.

<table>
<thead>
<tr>
<th>Nozzle size</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Ø 2.70 mm</td>
<td>939</td>
<td>1.06</td>
<td>0.36</td>
<td>3.19</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Medium: Water / max. Pressure: 3.3 bar

MEASUREMENT TIPS

- Ensure that there is no fast-pulsatory movement of the medium
- Ensure that there are no reverse pressure surges
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