VA 520 - Inline flow meter

NEW: Modbus-RTU output
4...20 mA output for present flow
Pulse output for total flow (counter reading), galvanically isolated or M-Bus (optionally)
Measuring unit can be unscrewed: Removal of the entire measuring section not necessary, no by-pass necessary

Display head rotatable by 180° e.g. in case of reverse flow direction

Easy installation into the existing pipeline due to integrated measuring section and weld neck flange (according to EN 1092-1 PN 40)
High measuring accuracy due to defined measuring section (inlet and outlet section)

Display shows 2 values at the same time:
- Present flow in m³/h, l/min, ...
- Total consumption (counter reading) in m³, l
- Temperature measurement

Readout values in the display can be rotated by 180°, e.g. for overhead installation

Option:
Bi-directional measurement. Blue or green arrows in the display indicate the direction of flow.
A meter reading is available for each flow direction.

Application-technological features of the flow meters VA 520:

- Digital interfaces such as Modbus-RTU, Ethernet (PoE) and M-Bus enable connection to higher-level systems such as energy management systems, building management systems, PLC, ...
- Easy and affordable installation
- Units freely selectable via keys on the display m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
- Compressed air counter up to 1,999,999,999 m³ can be reset to “zero” via keypad
- Analog output 4...20 mA, pulse output (electrically isolated)
- High measuring accuracy even in the lower measuring range (ideal for leakage measurement)
- Negligibly small loss of pressure
- Calorimetric measuring principle, no additional pressure and temperature measurement necessary, no mechanically moved parts
- Comprehensive diagnostic functions can be read out on the display or remote access via Modbus-RTU such as exceeding max./min values °C, calibration cycle, error codes, serial number. All parameters can be read out and changed via Modbus
### Flow measuring ranges VA 520 (Max version 185 m/s) for compressed air (ISO 1217: 1000 mbar, 20°C)
Measuring ranges for other types of gas see pages 96 to 99

<table>
<thead>
<tr>
<th>Measuring section</th>
<th>Outer pipe mm</th>
<th>Inner pipe mm</th>
<th>Measuring range full scales m³/h (cfm)</th>
<th>L mm</th>
<th>L1 mm</th>
<th>H mm</th>
<th>H1 mm</th>
<th>ØD mm</th>
<th>ØK mm</th>
<th>n x ØL</th>
</tr>
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<tbody>
<tr>
<td>DN 15</td>
<td>21.3</td>
<td>16.1</td>
<td>90</td>
<td>50</td>
<td>300</td>
<td>210</td>
<td>213.2</td>
<td>165.7</td>
<td>95</td>
<td>65</td>
</tr>
<tr>
<td>DN 20</td>
<td>26.9</td>
<td>21.7</td>
<td>175</td>
<td>100</td>
<td>475</td>
<td>275</td>
<td>218.2</td>
<td>165.7</td>
<td>105</td>
<td>75</td>
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<td>27.3</td>
<td>290</td>
<td>170</td>
<td>475</td>
<td>275</td>
<td>223.2</td>
<td>165.7</td>
<td>115</td>
<td>85</td>
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<td>DN 32</td>
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<td>36.0</td>
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<td>310</td>
<td>475</td>
<td>275</td>
<td>235.7</td>
<td>165.7</td>
<td>140</td>
<td>100</td>
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<td>DN 40</td>
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<td>41.9</td>
<td>730</td>
<td>430</td>
<td>475*</td>
<td>275</td>
<td>240.7</td>
<td>165.7</td>
<td>150</td>
<td>110</td>
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<tr>
<td>DN 50</td>
<td>60.3</td>
<td>53.1</td>
<td>1195</td>
<td>700</td>
<td>475*</td>
<td>275</td>
<td>248.2</td>
<td>165.7</td>
<td>165</td>
<td>125</td>
</tr>
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<td>DN 65</td>
<td>76.1</td>
<td>68.9</td>
<td>2050</td>
<td>1205</td>
<td>475*</td>
<td>275</td>
<td>268.2</td>
<td>175.7</td>
<td>185</td>
<td>145</td>
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<tr>
<td>DN 80</td>
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<td>80.9</td>
<td>2840</td>
<td>1670</td>
<td>475*</td>
<td>275</td>
<td>275.7</td>
<td>175.7</td>
<td>200</td>
<td>160</td>
</tr>
</tbody>
</table>

*Attention: Shortened inlet section. Please observe the recommended minimum inlet section (length = 15 x inner diameter) on site.

### TECHNICAL DATA VA 520

- **Parameters:**
  - m³/h, l/min (1000 mbar, 20 °C) in case of compressed air or Nm³/h, Nl/ min (1013 mbar, 0 °C) in case of gases
  - Units adjustable via keys at display:
    - m³/h, m³/min, l/min, ft³/ min, cfm, m/s, kg/h, kg/ min, g/s, lb/min, lb/h
  - Sensor: Thermal mass flow sensor
  - Measured medium: Air, gases
  - Gas types are adjustable over CS service software or CS data logger:
    - Air, nitrogen, argon, CO2, oxygen
  - Measuring range:
    - See table above
  - Accuracy: ± 1.5% of m.v. ± 0.3% of f.s. on request:
    - ± 1% of m.v. ± 0.3% of f.s.
  - Operating temperature: -30 … 80 °C
  - Operating pressure: -10 to 16 bar optionally up to PN 40
  - Digital output: RS 485 interface, (Modbus-RTU), optional: Ethernet interface PoE), M-Bus
  - Analogue output: 4…20 mA for m³/h or l/min
  - Pulse output: 1 pulse per m³ or per litre electrically isolated. Pulse weight can be set on the display. Alternatively, the pulse output can be used as an alarm relay
  - Supply: 18…36 VDC, 5 W
  - Burden: < 500 Ω
  - Housing: Polycarbonate (IP 65)
  - Measuring section: Stainless steel, 1.4301 or 1.4571
  - Process connection: Flange (in acc. with DIN EN 1092-1 or ANSI 150 lbs or ANSI 300 lbs)
  - Mounting position: any

For further accessories refer to pages 88 to 92
VA 520 - Inline flow meter

NEW: Modbus-RTU output

4...20 mA output for present flow
Pulse output for total flow (counter reading), galvanically isolated or M-Bus (optionally)

Measuring unit can be unscrewed:
Removal of the entire measuring section not necessary, no by-pass necessary

Easy installation into the existing pipe due to integrated measuring section (1/4" to 2")
High measuring accuracy due to defined measuring section (inlet and outlet section)

Display head rotatable by 180 ° e.g. in case of reverse flow direction

Display shows 2 values at the same time:
• Present flow in m³/h, l/min, ...
• Total consumption (counter reading) in m³, l
• Temperature measurement

Readout values in the display can be rotated by 180°, e.g. for overhead installation

With a key stroke:
• Reset counter reading
• Select units
• Zero-point adjustment, leak flow volume suppression

Option:
Bi-directional measurement. Blue or green arrows in the display indicate the direction of flow.
A meter reading is available for each flow direction.

Application-technological features of the flow meters VA 520:
• Digital interfaces such as Modbus-RTU, Ethernet (PoE) and M-Bus enable connection to higher-level systems such as energy management systems, building management systems, PLC,...
• Easy and affordable installation
• Units freely selectable via keys on the display m³/h, m³/min, l/min, l/s, kg/h, kg/min, kg/s, cfm
• Compressed air counter up to 1,999,999,999 m³ can be reset to “zero” via keypad
• Analog output 4...20 mA, pulse output (electrically isolated)
• High measuring accuracy even in the lower measuring range (ideal for leakage measurement)
• Negligibly small loss of pressure
• Calorimetric measuring principle, no additional pressure and temperature measurement necessary, no mechanically moved parts
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Flow measuring ranges VA 520 (max version 185 m/s) for compressed air (ISO 1217: 1000 mbar, 20 °C)
Measuring range for other gases see pages 96 to 99

<table>
<thead>
<tr>
<th>Connection thread</th>
<th>Outer pipe mm</th>
<th>Inner pipe mm</th>
<th>Measuring range full scales m³/h cfm</th>
<th>L mm</th>
<th>L1 mm</th>
<th>H mm</th>
<th>H1 mm</th>
<th>A mm</th>
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<tbody>
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<td>8.9</td>
<td>105 l/min 3.6</td>
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<td>137</td>
<td>174.7</td>
<td>165.7</td>
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</tr>
<tr>
<td>R 1/2&quot;</td>
<td>21.3</td>
<td>16.1</td>
<td>90 50</td>
<td>300</td>
<td>210</td>
<td>176.4</td>
<td>165.7</td>
<td>20</td>
</tr>
<tr>
<td>R 3/4&quot;</td>
<td>26.9</td>
<td>21.7</td>
<td>175 100</td>
<td>475</td>
<td>275</td>
<td>179.2</td>
<td>165.7</td>
<td>20</td>
</tr>
<tr>
<td>R 1&quot;</td>
<td>33.7</td>
<td>27.3</td>
<td>290 170</td>
<td>475</td>
<td>275</td>
<td>182.6</td>
<td>165.7</td>
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<tr>
<td>R 1 1/4&quot;</td>
<td>42.4</td>
<td>36.0</td>
<td>310</td>
<td>475</td>
<td>275</td>
<td>186.9</td>
<td>165.7</td>
<td>25</td>
</tr>
<tr>
<td>R 1 1/2&quot;</td>
<td>48.3</td>
<td>41.9</td>
<td>430</td>
<td>475*</td>
<td>275</td>
<td>186.9</td>
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<tr>
<td>R 2&quot;</td>
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<td>700</td>
<td>475*</td>
<td>195.9</td>
<td>165.7</td>
<td>30</td>
</tr>
</tbody>
</table>

*Attention: Shortened inlet section. Please observe the recommended minimum inlet section (length = 15 x inner diameter) on site!

TECHNICAL DATA VA 520

Parameters:
- m³/h, l/min (1000 mbar, 20 °C) in case of compressed air or Nm³/h, NL/min (1013 mbar, 0 °C) in case of gases
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  - Sensor: Thermal mass flow sensor
  - Measured medium: Air, gases, gas mixture: Air, nitrogen, argon, CO2, oxygen
  - Gas types are adjustable over CS service software or CS data logger:
  - Accuracy: ± 1.5% of m.v. ± 0.3 % of f.s. (on request: ± 1% of m.v. ± 0.3% of f.s.)
  - Operating temperature: -30…80 °C
  - Operating pressure: 18…36 VDC, 5 W
  - Power: -1 to 16 bar optionally up to PN 40
  - Digital output: RS 485 interface, (Modbus-RTU), optional: Ethernet interface PoE, M-Bus
  - Analogue output: 4…20 mA for m³/h or l/min, Pulse output: 1 pulse per m³ or per litre electrically isolated. Pulse weight can be set on the display. Alternatively, the pulse output can be used as an alarm relay
  - Supply: 18…36 VDC, 5 W
  - Burden: < 500 Ω
  - Housing: Polycarbonate (IP 65)
  - Measuring section: Stainless steel, 1.4301 or 1.4571
  - Connection thread of measuring sections: R 1/4" or R 2" (BSP British Standard Piping) or 1/2" to 2" NPT thread
  - Mounting position: any

For further accessories refer to pages 88 to 92