Vacuum handling components

- Sur le principe du Venturi
- Facilement raccordable

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

### Part numbers

<table>
<thead>
<tr>
<th>Vacuum generators</th>
<th>Vacuum generators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ø 4 mm</td>
<td>Ø 6 mm</td>
</tr>
<tr>
<td>Ø 8 mm</td>
<td>Ø 13 mm</td>
</tr>
<tr>
<td>2 - 8</td>
<td>2 - 8</td>
</tr>
</tbody>
</table>

Detection of the pressure decrease can be achieved by the use of manostats (see pages 38/39)

### Characteristics

<table>
<thead>
<tr>
<th>Push-in connectors for semi-rigid tubing</th>
<th>Male/Female/Female (MFF)</th>
<th>Ø 4 mm</th>
<th>Ø 6 mm</th>
<th>Operating pressure bar</th>
<th>2 - 8</th>
<th>2 - 8</th>
<th>2 - 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female/Female/Female (FFF)</td>
<td></td>
<td></td>
<td></td>
<td>2 - 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating pressure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supply pressure (bar)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vacuum (mb)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flow</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Dimensions

<table>
<thead>
<tr>
<th>81 535 001</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub-base mounting 81 531… and 81 532…</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>81 545 001</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 push-in connectors Ø 4 mm</td>
</tr>
</tbody>
</table>

### Vacuum handling components

ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
General characteristics

Operating fluid
- Compressed air or inert gas.

Conditions of use
- Operating pressure 2 at 8 bars (except for special conditions).
- Fluid: filtered air to 50 microns - non lubricated.
- Operating temperature from -5°C to +55°C (under +5°C the dew point must be below 10°C for the application).

For optimum performance, the elements should be inter-connected by air supply tubing with an internal diameter ≥ 2.5 mm.

Mounting recommendations
- The elements should be mounted and piped in a clean atmosphere in order to prevent any form of pollution entering the system.
- Minimum torque for element fixing screws: 5 cmkg.
- Maximum torque for element fixing screws: 10 cmkg.

Characteristics common to all elements in the modular system
- The characteristics have been obtained with a supply pressure at 6 bars.
- The flow in Nl/min is the number of litres of air at normal atmospheric pressure obtained with the output open to atmosphere and the supply pressure at 4 bars.
- The consumption in Nl/min is the number of litres of free air necessary for the unit to function.
- kV = the flow coefficient of the equipment.

Characteristics
- Minimum torque for element fixing screws:
- Mechanical life ≥ 5 x 10^6 at 6 bars
- Operating temperature °C
- Flow at 6 bars Nl/min
- Orifice diameter mm
- Operating pressure bar
- Characteristic
- Weight g

Sequencer modules

Operation results from the combination of a sequential cycle. A system comprises individual modules which are joined together by means of a sub-base. Each module has a memory which delivers an output signal and receives an input signal.

An indicator on each module allows the operator to monitor the progress of the cycle and identify quickly and easily any fault which may occur.

Sequencer module with maintained reset

Brake
This maintains the memory speed in position only when the supply is lost.

Function diagram

Module with auto reset

Brake
This returns the memory speed to the reset condition only when the supply is lost.

Function diagram

Sequencer modules

100 % pneumatic
Ideal for a simple pneumatic sequence

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

Versions sequencer

Sequencer module with maintained reset

Shif register with maintained reset

Symbol

Characteristics

Principle of operation
(Supplied without logic element. For choice of units see pages 46/47)

Sequencer module with maintained reset

Shif register with maintained reset

Dimensions

Mounting plan for sequencer

ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
Sequencer sub-bases

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

Specifications:
- Front connecting (DIN-omega)
- Rear connecting (with clips)

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Sub-base</th>
<th>End bases</th>
<th>Diversion base</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dwell time (s)</td>
<td>5 → +50</td>
<td>5 → +50</td>
<td>5 → +50</td>
</tr>
<tr>
<td>Pressure limit (bar)</td>
<td>50</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Weight (g)</td>
<td>135</td>
<td>60</td>
<td></td>
</tr>
</tbody>
</table>

Sequencer connections

Front connecting
1 - Input port (green port 1) Ø 4
2 - Output port (red port 1) Ø 4
3 - Input port, cycle start (green port 1) Ø 4
4 - Output port, in-cycle signal (red port 1) Ø 4
5 - Output port, cycle end (red port 6) Ø 4
6 - Output port, cycle end (red port 6) Ø 4
7 - Input port, reset to zero (green port 7) Ø 4
8 - Output indicator (red)
9 - Input indicator (green)
10 - Cycle start indicator at port 4 (green)
11 - In-cycle indicator at port 5 (red)
12 - Input indicator at port 7 (green)
13 - End of cycle indicator at port 6 (red)
14 - Supply indicator at port 2 (yellow)
15 - Interconnecting ports
16 - Fixing screws
17 - Engraved arrow to indicate direction of sequence
18 - Marking tag
19 - Marking tag position
20 - Marking tag position
21 - Mounting tongue
22 - Mounting groove
23 - Sub-base
24 - End bases

Rear connecting
1 - Input port (marked port 1)
2 - Supply port (Port 2)
3 - Output port (Port 3)
4 - Cycle start signal port (Port 4)
5 - In-cycle signal port (Port 5)
6 - End of cycle signal port (Port 6)
7 - Reset to zero signal port (Port 7)
8 - Indicator at supply port
9 - Marking area

Dimensions

Front connecting
- Mounted on Ø 4 mm push-in connection
- Sub-base
- End bases - one pair

Rear connecting
- Push-in connection for semi-rigid tubing Ø 4 mm (NFE 49100)
- End bases - one pair

ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
Logic elements

- Performs "combined" Pneumatic
- Easy to use

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

<table>
<thead>
<tr>
<th>Functions</th>
<th>OR</th>
<th>AND</th>
<th>NU</th>
</tr>
</thead>
</table>

Symbol

Characteristics

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Male/Male/Female</th>
<th>Ø 4 mm</th>
<th>Ø 6 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape</td>
<td>Male/Female/Female</td>
<td>81 540 005</td>
<td>81 622 005</td>
</tr>
<tr>
<td>Color</td>
<td>Blue</td>
<td>Blue</td>
<td>Blue</td>
</tr>
<tr>
<td>P.D. (bar)</td>
<td>1 bar</td>
<td>1 bar</td>
<td>1 bar</td>
</tr>
<tr>
<td>P.D. (bar)</td>
<td>170</td>
<td>170</td>
<td>170</td>
</tr>
<tr>
<td>P.D. (bar)</td>
<td>8</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>P.D. (bar)</td>
<td>2.7</td>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>Mechanical life (operations)</td>
<td>10^9</td>
<td>10^9</td>
<td>10^9</td>
</tr>
<tr>
<td>Weight (g)</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

Pilot pressure curves

<table>
<thead>
<tr>
<th>Pressure (bar)</th>
<th>P.D. (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>2.7</td>
<td>2.7</td>
</tr>
<tr>
<td>2.7</td>
<td>2.7</td>
</tr>
</tbody>
</table>

Principle of operation

Cellule OR

The output signal "S" is present when a signal at "a" OR "b" is present: S = a OR b

Cellule AND

The output signal "S" is present only when signals "a" AND "b" are present simultaneously: S = a AND b

Other information

See pages 54/55 for mounting plan for logic elements.

ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
### Memory element

- 100 % pneumatic
- Bistable pneumatic

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Colour: Black, Operating pressure: 2 bar, Orifice diameter: 2.7 mm, Maximum memory pilot pressure: 2.5 bar, Operating temperature: -5°C to +50°C, Flow at 6 bars: 200 l/min, Weight: 90 g.</td>
</tr>
</tbody>
</table>

#### Principle of operation

The function is that of a 4/2 valves. The appearance of signal "X1" causes the displacement of the slide valve. The output port "x" is then put under pressure. This state is remembered until the arrival of signal "X0". This signal reverses the slide valve, the output "x" is put under pressure. This state is likewise remembered. The output:
- "x" under pressure indicates that the information in the MEMORY is "X1",
- "x" under pressure indicates that the information in the MEMORY is "X0".

### Dimensions

- 81 523 201 - 81 523 601

### Dimensions of logic and memory elements

- 81 503 540

### Timers fixed timing

- Fixed 0.4 s

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Timing: 0.4 s, Operating pressure: 2 bar, Orifice diameter: 2.7 mm, Maximum memory pilot pressure: 2.5 bar, Operating temperature: -5°C to +50°C, Flow at 6 bars: 200 l/min, Weight: 90 g.</td>
</tr>
</tbody>
</table>

#### Principle of operation with positive output

- Positive output version
- Fixed 0.4 s

### Dimensions

- 81 503 540

### Dimensions

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ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
Timers (with adjustable timing)

- 60 s adjustable (60 s max.)

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

<table>
<thead>
<tr>
<th>Function</th>
<th>Symbol</th>
<th>Characteristics</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td>positive</td>
<td><img src="image" alt="Symbol" /></td>
<td>Timing s: 0.1 → 15</td>
<td>Panel mounting adaptor: 79 451 53</td>
</tr>
<tr>
<td>negative</td>
<td><img src="image" alt="Symbol" /></td>
<td>Operating pressure bar: 2 → 8</td>
<td>Weight: 53</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Operating temperature °C: -5 → +50</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mechanical life operations: &gt; 106</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Frequency Hz: 0.4</td>
<td></td>
</tr>
</tbody>
</table>

The principle of operation is similar to that of electronic timers (circuit with capacitor/resistor) with positive output.

Timing by changing of reservoir

The reservoir fills via the flow restrictor until the switching point of the timer output is reached (positive or negative). The non-return valve allows the reservoir to be emptied rapidly for the next timing.

Dimensions

- For panel mounting, a pre-drilled hole Ø 10.5 mm si required

Timers

- Fixed and adjustable

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Characteristics</th>
<th>Accessories</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Timing s: 0 → 30</td>
<td>Panel mounting adaptor: 79 451 53</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Frequency Hz: 0.1 → 30</td>
<td>Weight: 53</td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Operating pressure bar: 2 → 8</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Operating temperature °C: -5 → +50</td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Symbol" /></td>
<td>Mechanical life operations: &gt; 106</td>
<td></td>
</tr>
</tbody>
</table>

ATEx version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com

Tim ing Accessories

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

One-way in-line fixed flow restrictors

<table>
<thead>
<tr>
<th>Flow at 4 bars Nm/h</th>
<th>Ø orifice (mm)</th>
<th>Part number</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.18 → 0.30 0.3 white</td>
<td>81 526 003</td>
<td>—</td>
</tr>
<tr>
<td>0.35 → 0.50 0.4 yellow</td>
<td>81 529 004</td>
<td>—</td>
</tr>
<tr>
<td>0.58 → 0.77 0.5 red</td>
<td>81 526 002</td>
<td>—</td>
</tr>
<tr>
<td>0.80 → 1.06 0.6 green</td>
<td>81 526 004</td>
<td>—</td>
</tr>
<tr>
<td>1.10 → 1.39 0.7 blue</td>
<td>81 526 002</td>
<td>—</td>
</tr>
<tr>
<td>1.45 → 1.65 0.8 grey</td>
<td>81 526 004</td>
<td>—</td>
</tr>
<tr>
<td>2.30 → 2.50 1 black</td>
<td>81 526 002</td>
<td>—</td>
</tr>
<tr>
<td>3.08 → 3.25 0.25 white</td>
<td>81 526 004</td>
<td>—</td>
</tr>
</tbody>
</table>

One-way adjustable flow restrictors

| Capacity for timing 10 → 80 s | — |
| 81 526 003 | — |

Symbol

Characteristics

Free flow Nm/h

<table>
<thead>
<tr>
<th>Orifice diameter mm</th>
<th>Operating pressure bars</th>
<th>Timing s</th>
<th>Capacity cm³</th>
</tr>
</thead>
<tbody>
<tr>
<td>38</td>
<td>0.1 → 0.5</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>200</td>
<td>0.5 → 1.7</td>
<td>10 to 60</td>
<td>—</td>
</tr>
</tbody>
</table>

Connections

Sub-base page 4/14-4/15

Operating temperature °C

| Weight g | 2 → 8  | — |
| 150       | 2 → 8  | — |

Dimensions

81 529 901

Principle of operation

One-way with fixed flow

Regulator accessories

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

Part numbers

Mini-détenteur 81 527 001 — —

Plug element — 81 522 601 — 81 522 901

Symbol

Characteristics

Operating pressure bars 2 → 8

Adjustable output pressure bar 0.1 → 8

Connection Push-in connection for semi-rigid tubing (NFE 49100) mm Ø 4

Weight g 70 70

Dimensions

81 529 901

Sub-base page 4/14-4/15

Connections

For timing circuit

- One-way flow resistor 81 525 1 - 81 529 0 (1)
- Reservoir 79 458 108 (2)
- Relay element 81 503 0 - 81 506 0 (3) page 4/6-4/7

Sub-base page 4/14-4/15

Principle of operation

One-way with adjustable flow

Dimensions

81 529 101

ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
Sub-bases for logic elements

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive

Two-hand start module
- 81 532 104
- 81 532 102

Manostats - vacuostats
- 1

Leak sensor and amplifier relays
- 1

Logic elements AND Timers
- 1

Regulator accessories
- 1

Memory element
- 1

Operating temperature °C
- -5 to +50

Electro-pneumatic miniature solenoid
- 1

Push-in connection for semi-rigid tubing Ø 4 mm (NFE 49100)

Caractéristiques

Finition connection for semi-rigid tubing Ø 4 mm (NFE 49100)
- rotatable

Position
- DIN rail 35 mm

Weight g
- 55

Connections elements and relays

Front connecting

- A - Single sub-base or end base
- B - Associative sub-base
- 1 - Input port (green port 1)
- 2 - Output port (red port 3)
- 3 - Input port (yellow port 2) Ø 4
- 4 - Input port integral to sub-base
- 5 - Input indicator (green)
- 6 - Output indicator (red)
- 7 - 1/4 turn screws
- 8 - Marking tag
- 9 - Arrow indicating flow direction
- 10 - Mounting tongue
- 11 - Mounting groove
- 12 - Selector

Dimensions

81 532 104

3 x 81532102

Caractéristiques

Push-in connection for semi-rigid tubing Ø 4 mm (NFE 49100)
- rotatable

Position
- DIN rail 35 mm

Weight g
- 95

Memory element sub-base, front and rear connecting

Rear connection

- 1 - Input signal
- 2 - Signal port for passive logic elements, air supply for active logic elements.
- 3 - Output signal

ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com
### Mounting accessories

<table>
<thead>
<tr>
<th>Mounting equipment</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hole domino</td>
<td>81 533 001</td>
</tr>
<tr>
<td>Clip domino</td>
<td>81 533 001</td>
</tr>
<tr>
<td>Bar clips Ø 8</td>
<td>99 450 600</td>
</tr>
</tbody>
</table>

### Characteristics

<table>
<thead>
<tr>
<th>Weight (g)</th>
<th>For mounting all over the end of a zinc-coated mild steel rod Ø 8 mm on an asymmetrical DIN rail</th>
<th>For adjustable mounting on a zinc-coated mild steel rod Ø 8 mm on an asymmetrical DIN rail</th>
<th>Packet of 100 pieces</th>
<th>Operating temperature °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>-5 ➞ +70</td>
<td>-5 ➞ +70</td>
<td>80</td>
<td>-5 ➞ +70</td>
</tr>
</tbody>
</table>

### Dimensions

81 536 804

---

**Other information**

Use Weidmüller plastic labels for marking components part number FW 4734-6.

ATEX version products are available in the following catalogues: Pneumatic products for explosive atmospheres or on our website www.crouzet.com