Pneumatic logic components





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 + 50° 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 ≥ at 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 cm/kg.

- maximum torque for element fixing screws: 10 cm/kg.

Characteristics common to all elements in the modular system

- The characteristics have been obtained with a supply pressure at 6 bars.
- The flow in NI/min is the number of litres of air at normal atmospheric pressure obtained with the output open to atmophere and the supply pressure at 4 bars
- The consumption in NI/min is the number of litres of free air necessary for the unit to function.
- kV = the flow coefficient of the equipment.
- Mechanical life > 10⁷ operations.

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 identity quickly and easily any fault which may occur.



Operation results from the combination of three functions (memory, AND and OR) which constitute each module.

The memory activates the output and gives priority to the reset signal. The AND element ensures the transition to the next module but only if an input signal is present.

The OR element ensures the resetting of all previously operated modules

Function diagram



sequencer module with maintained reset

Brake

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



Module with auto reset



Brake

This returns the memory spool to the reset condition only when the supply is lost

Shift register

The general principle is to advance the sequencer step by command impulses to the inputs of the even steps, alternating with the command impulses to the inputs of the odd steps.

Used for example on a transfer machine to shift the information "bad component" collected at a test-test "n" steps further along the machine to a reject station.

Function diagram

Crouzet



Auto reset sequencer module



Sequencer modules





Principle of operation

(supplied without logic element. For choice of units see pages 46/47)

51,3

Sequencer module with maintained reset



Dimensions





14 15.2



Sequencer sub-bases







81 552 60

Versions Front connecting (DIN-	omega)	Sub-base (DIN oméga)) End bases - one pair	Diversion base
Rear connecting (with a	clips)	—	_	_
Characteristics				
Sub-bases Rotatable connectors		•	•	•
(fitted) Pressure indicators		•	•	•
Operating temperature	O°	-5 → +50	-5 → +50	-5 → +50
Weight	g	55	135	60

81 551 101

Sequencer connections

4

(II)

19

(5)

10

3

8

21

18 15

9

94/9/EC Directive

 $\langle \Sigma \rangle$



2

(16)

22

17

1

Also available in ATEX version for use in poten-

tially explosive atmospheres in accordance with

- 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

81 552 101

- 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

Ø

12

20

-14

13

(6)

- 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







81 551 001	81 552 001
Sub-base (with clips)	End bases - one pair

 $\begin{array}{c} - \\ -5 \rightarrow +50 \\ 40 \end{array} \qquad \begin{array}{c} -5 \rightarrow +50 \\ 120 \end{array}$

Rear connecting



Rear connecting





Logic elements

 Performs "combined" Pr Easy to use Also available in ATEX ve tially explosive atmosphere 94/9/EC Directive 	ersion for use in poten-				
Functions OR AND YES NO Version		81 521 501	81 540 001 — — — — — — — — — — — — — — — — — —	81 540 005 — — — — Plug-in Ø 6	81 522 501
Symbol			$\frac{1}{2} \ge 1$		
-			$\frac{1}{2}$ $\geqslant 1$ $\xrightarrow{3}$		
Symbol Characteristics Push-in connection for semi-rigid tubing (NFE 49100) Colour Operating pressure Orifice diameter	Male/Female/Female Female/Female/Female bar mm	— — 2 → 8 2.7	$ \begin{array}{c} 1 \\ 2 \\ \hline 0 \\ 4 \\ \hline \\ Blue \\ 2 \\ 2 \\ \hline 3 \\ 2.7 \\ \hline \end{array} $		
Characteristics Push-in connection for semi-rigid tubing (NFE 49100) Colour Operating pressure	Female/Female/Female	2 → 8	Ø 4 mm 	Blue $2 \rightarrow 8$	$\frac{1}{2}$

P.p : Pilot pressure P.a : Supply pressure

Principle of operation



Dimensions

Cellule OR

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

28



29±0.1

14,5±0

Cellule AND

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







81 540 001 - 81 541 001



Other information

23

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





81 501 025 - 81 503 025

81 504 025 - 81 506 025



M4 28

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



S = NOT a AND b

 $S = \overline{a} \cdot b$

Memory element



Principle of operation

The function is that of a 4/2 valves. The appearence 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 of logic and memory elements



Viewed from above

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



81 523 201 - 81 523 601

Dimensions



Timers fixed timing



with positive output



Dimensions 81 503 540





Timers (with adjustable timing)



4





For pa hole Q

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



Timers

Fixed and adjustable			
Also available in ATEX version for use in poten- tially explosive atmospheres in accordance with 94/9/EC Directive			
Single impulse generator Fixed Adjustable	81 507 540	81 507 720	
Adjustable frequency generator			81 506 940
Symbol		² JTL³→	_2 л/Г. 3→
Characteristics			
Timing s	0.4	0.1 → 30	_
Frequency Hz			0.02 → 8
Operating pressure bar	2 → 8	2 → 8	$2 \rightarrow 8$
Flow at 6 bars NI/min	170	170	170
Orifice diameter mm	2.7	2.7	2.7
Accuracy %	± 5	± 5	± 5
Min. reset time s	<0.1	<0.1	<0.1
Connection - On sub-base page 4/14-4/15	•	•	•
Operating temperature °C	-5 → +50	-5 → +50	-5 → +50
Mechanical life operations	>10 ⁷	>107	>10 ⁷
Weight g	106	180	85
Accessories			
Panel mounting adaptators		79 451 904	79 451 905
Weight (g)		53	53
Principle of operation			
		_	
Single impulse generator Adjustable impuls	se generator	Frequency generator	
4 4		*	
<u>F</u> -	j		
2 3 2 3		3	
	_	2	_
	Time	Operating time Periode time	-
		time	
Dimensions			
			30
Part numbers L (mm) 81 507 540 73 81 507 720 99 81 506 940 72		For panel hole Ø 10	mounting, a pre-drilled .5 mm si required

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



4

Timing Accessories





Regulator accessories

tially e	available in ATEX version for use explosive atmospheres in accord EC Directive				
Part numb					
Mini-détenteu	r		81 527 001		
Plug element In-line non-ret	lurn			81 520 601	81 529 901
<u>oymbol</u>					¢
Characteri	stics				
Operating pre		bars	2 → 8	_	<u>2 → 8</u>
Flow at 6 bars		NI/min	200		200
Adjustable ou	tput pressure	bar	0,1 → 8	· · · · · ·	
Connection	Sub-base Push-in connection for semi- rigid tubing (NFE 49100)	mm	•	•	Ø 4
Weight		q	150	70	70

Dimensions 81 529 901







4



Sub-bases for logic elements

Also available in ATEX version for use in potentially explosive atmospheres in accordance with 94/9/EC Directive			
	81 532 104	81 532 102	
Two-hand start module	• 1	• 1	
Manostats - vacuostats	• 1	• 1	
Leak sensor and amplifier relays	• 1	• 1	
Logic elements AND Timers	• 1	• 1	
Regulator accessories	• 1	• 1	
Memory element		—	
Operating temperature °C	-5 → +50	-5 → +50	
Electro-pneumatic miniature solenoid	• 1	• 1	

Characteristics			
Push-in connection for semi-rigid tubing Ø 4 mm (NFE 49100)	rotatable	rotatable	
Fixation	DIN rail 35 mm	DIN rail 35 mm	
Weight g	56	52	

Connections elements and relays

Front connecting Δ



Dimensions 81 532 104



- A Single sub-base or end base
- B Associable sub-base
 1 Input port (green port 1)
 2 Output port (red port 3)
- 3 Input/supply 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 tag9 Arrow indicating flow direction
- 10 Mounting tongue
- 11 Mounting groove
- 12 Selector



3 x 81532102



	81 542 002	81 532 001	81 531 001
		• 1	• 2
		• 1	• 2
relays		• 1	• 2
rs	—	• 1	• 2
		• 1	• 2
	• 1		• 1
°C	-5 → +50	-5 → +50	-5 → +50

	OT OTE ODE	01 002 001
Two-hand start module	—	
Manostats - vacuostats		
Leak sensor and amplifier relays	—	
Logic elements AND Timers	—	
Regulator accessories	_	
Memory element	• 1	
Operating temperature °C	-5 → +50	-5 → +50
Electro-pneumatic miniature solenoid	—	

Caractéristiques				
Push-in connection for semi-rigid tubing Ø 4 mm (NFE 49100)		rotatable	rear	rear
Fixation		DIN rail 35 mm	2 M4 screws	Clips for rails Ø 8 mm
Weight	g	95	10	35





Rear connection



The modular system elements are fixed with two screws on the sub-base.

• 2

A locating device on each logic element pre-vents incorrect assembly.

The logic element is connected via the sub-base. This sub-base has 3 instant connections for connecting semi-rigid tubes with outer $\ensuremath{\mathcal{Q}}$ 4.

1 - Input signal

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

• 1

81 542 002 (for memory 81523201/601)

81 531 001

81 532 001









Mounting accessories



	the end of a zinc-coated mild steel rod Ø 8 mm on an asymmetrical DIN rail	or adjustable mounting on a zinc-coated mild steel rod Ø 8 mm on an asymmetrical DIN rail	pieces		
Operating temperature °	C -5 → +50	-5 → +50	-5 → +50	-5 → +50	

Dimensions

81 536 804



Other information

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

