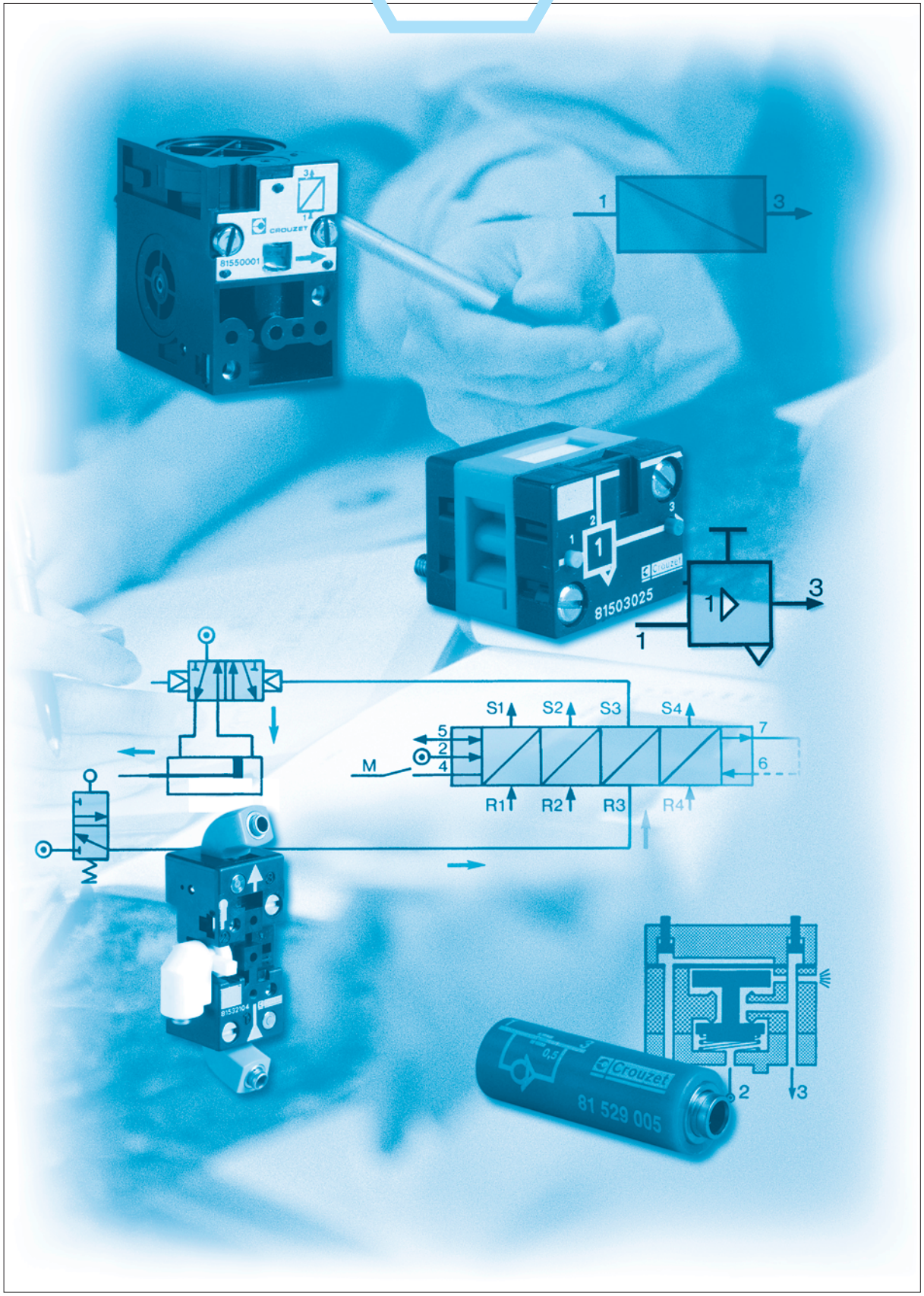
Pneumatic logic components



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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.

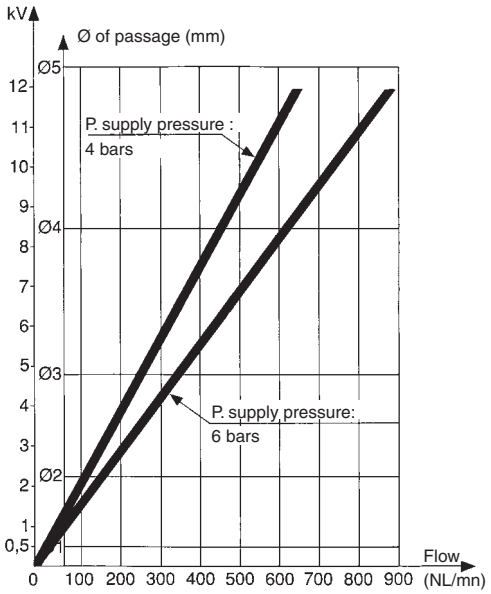
Mounting recommendations

- 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 > 10^7 operations.

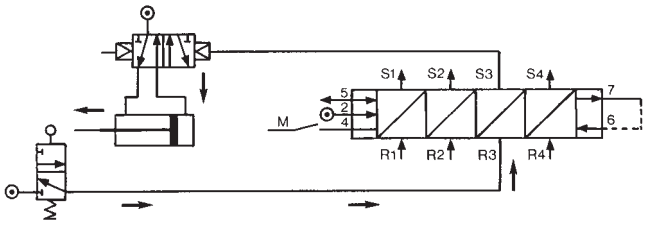
flow graphs



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.

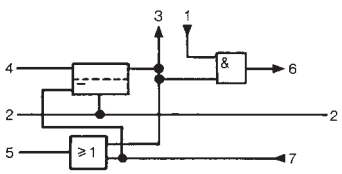
An indicator on each module allows the operator to monitor the progress of the cycle and identity quickly and easily any fault which may occur.



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

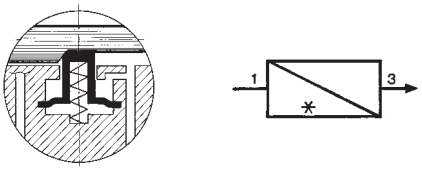


sequencer module with maintained reset

Brake

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

Module with auto reset



Brake

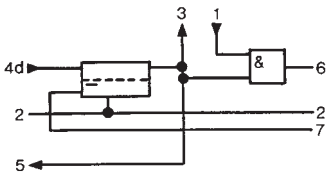
This returns the memory spool to the reset condition only when the supply is lost

Shift register

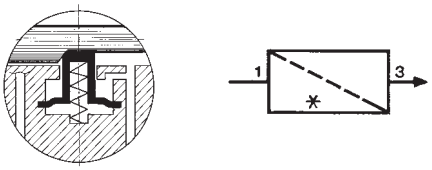
The general principle is to advance the sequencer step by command impulses to the inputs of the even steps, alternating with the command impulses to the inputs of the odd steps.

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



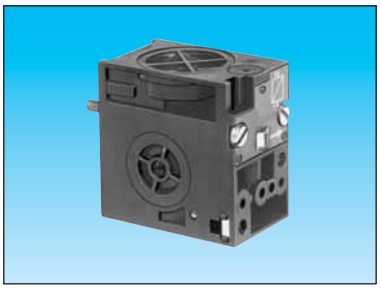
Auto reset sequencer module

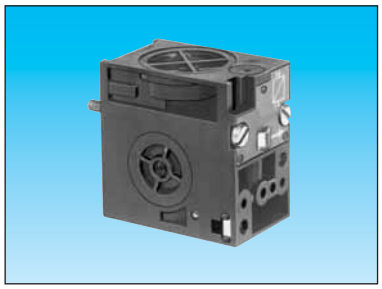


Sequencer modules

FILE No. C.PN.HOM.00009.FR
INERIS No. 18409/05

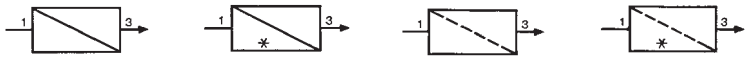
Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC





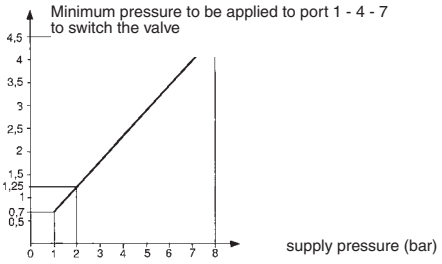
Versions		81 550 013	81 550 213	81 550 403	81 550 603
	sequencer	with 'maintain'	Reset to zero	—	—
	shift register	—	—	with 'maintain'	Reset to zero
Classification		CE Ex II 2 GD c IIB 65°C(T6) X			

Symbol



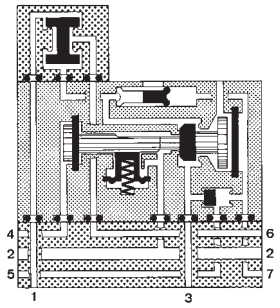
Characteristics

Operating pressure	bar	2 • 8	2 • 8	2 • 8	2 • 8
Orifice diameter	mm	2.7	2.7	2.7	2.7
Flow at 6 bars	Nl/min	150	150	150	150
Operating temperature	°C	-5 +50	-5 +50	-5 +50	-5 +50
Mechanical life 5 x 10^6 at 6 bars		●	●	●	●
Connection - Sub-base page 26		●	●	●	●
Weight	g	70	70	70	70



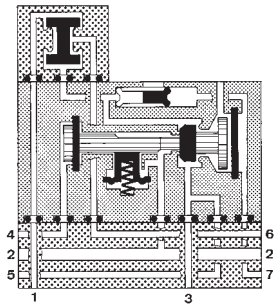
Principle of operation
(supplied without logic element. For choice of units see page 28-29)

Sequencer module with maintained reset



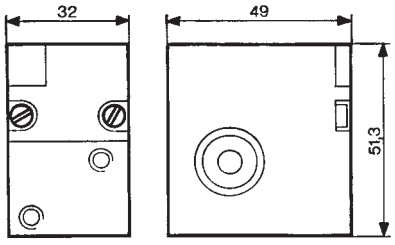
1 - Input signal
2 - Supply
3 - Output signal
4 - Start signal
5 - In cycle signal
6 - End of cycle signal
7 - Reset to zero signal

Shif register with maintained reset

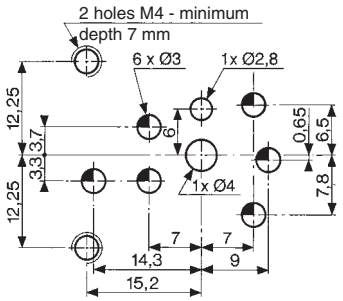


1 - Input signal
2 - Supply
3 - Output signal
4 - Start signal
5 - In cycle signal
6 - End of cycle signal
7 - Reset to zero signal

Dimensions



Mounting plan for sequencer



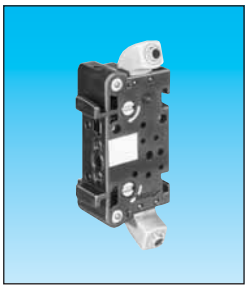
To order an Ex product, you must complete the form on page 53.

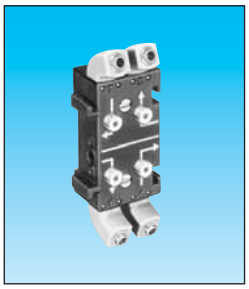
Crouzet

Sequencer sub-bases

FILE No. C.PN.HOM.00009.FR
INERIS No. 18409/05

Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC

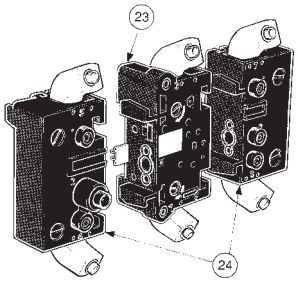


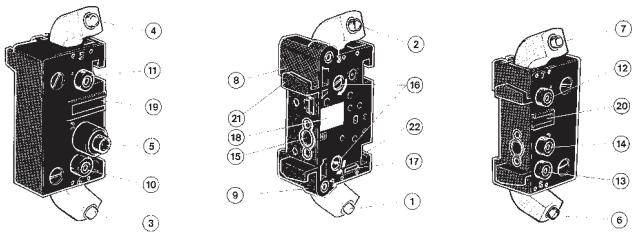


			81 551 104	81 552 105	81 552 605
Versions	Front connecting (DIN-omega)		Sub-base (DIN oméga)	End bases - one pair	Diversion base
	Rear connecting (with clips)		—	—	—
Classification			CE Ex II 2 GD c IIB T6 X		
Characteristics					
Sub-bases (fitted)	Rotatable connectors		●	●	●
	Pressure indicators		●	●	●
Operating temperature		°C	-5 +50	-5 +50	-5 +50
Weight		g	55	135	60

Sequencer connections

Front connecting

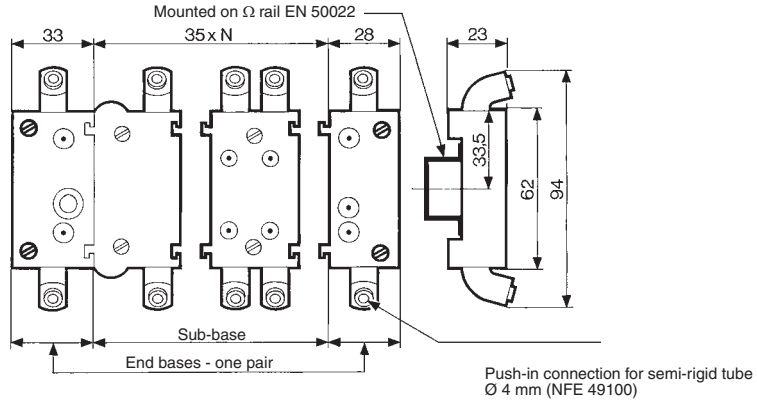




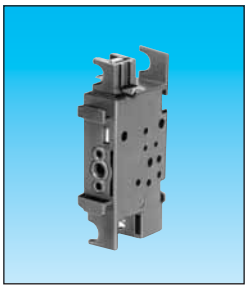
1 - Input port (green port 1) Ø 4
2 - Output port (red port 1) Ø 4
3 - Input port, cycle start (green port 1) Ø 4
4 - Output port, in-cycle signal (red port 1) Ø 4
5 - Output port, cycle end (red port 6) Ø 4
6 - Output port, cycle end (red port 6) Ø 4
7 - Input port, reset to zero (green port 7) Ø 4
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

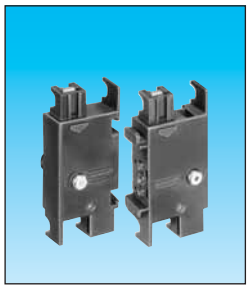
Dimensions

Front connecting



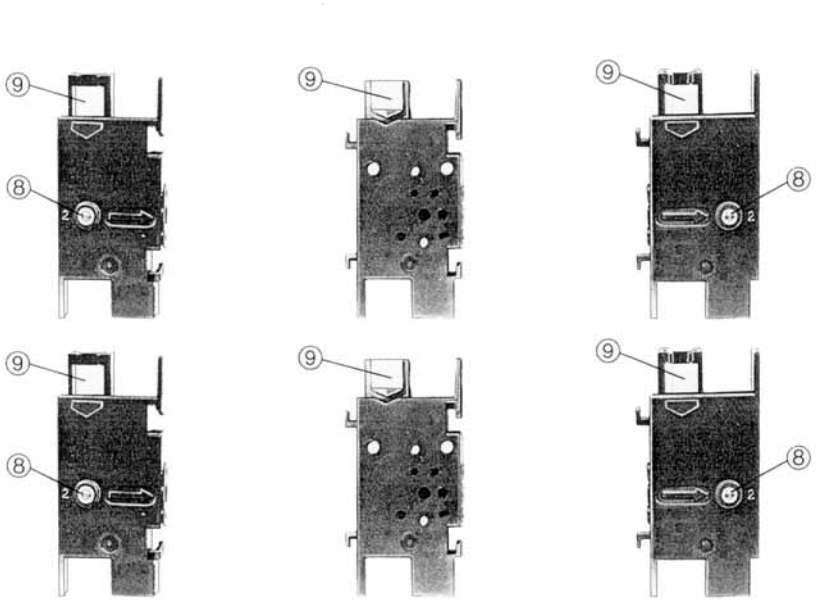
To order an Ex product, you must complete the form on page 53.





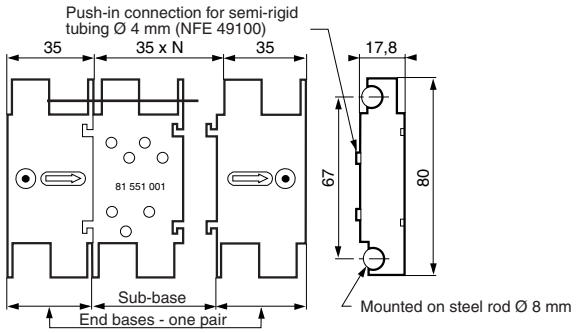
81 551 004	81 552 005
—	—
Sub-base (with clips)	End bases - one pair
CE Ex II 2 GD c IIB T6 X	
—	—
—	●
-5 +50	-5 +50
40	120

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

Rear connecting

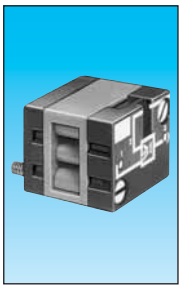


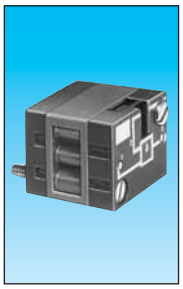
To order an Ex product, you must complete the form on page 53.

Logic elements

FILE No. C.PN.HOM.00007.FR
INERIS No. 18408/05

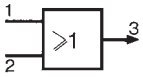
Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC

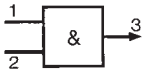




Functions	OR	81 521 508	81 540 015	81 540 017	81 522 505
	AND	—	—	—	—
	YES	—	—	—	—
	NO	—	—	—	—
Version		On Sub-base page 36-37	Plug-in Ø 4	Plug-in Ø 6	On Sub-base page 36-37
Classification		CE II 2 G D c IIB 65°C(T6) X			

Symbol





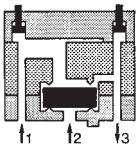
Characteristics

Push-in connection for semi-rigid tubing (NFE 49100)	Male/Female/Female		—	Ø 4 mm	—	—
	Female/Female/Female		—	—	Ø 6 mm	—
Colour			Blue	Blue	Blue	Green
Operating pressure		bar	2 • 8	2 • 8	2 • 8	2 • 8
Orifice diameter		mm	2.7	2.7	4	2.7
Flow at 6 bars		Nl/min	170	170	200	170
Pressure indicator			●	—	—	●
Switching time		ms	—	—	—	—
Operating temperature		°C	-5 +50	-5 +50	-5 +50	-5 +50
Mechanical life		operations	$>10^7$	$>10^7$	$>10^7$	$>10^7$
Weight		g	25	12	25	25

Pilot/pressure curves

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

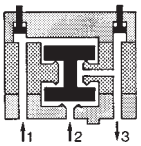
Principle of operation



Cellule OR

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

S = a OR b S = a + b



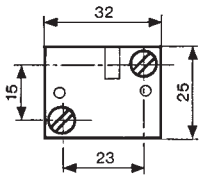
Cellule AND

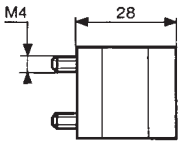
The output signal "S" is present only when signals "a" AND "b" are present simultaneously:

S = a AND b S = a . b

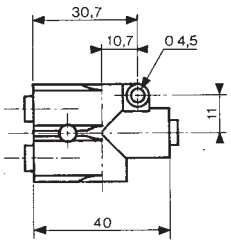
Dimensions

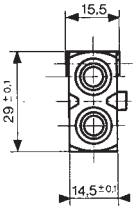
81 521 508 - 81 522 505



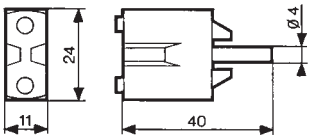


81 540 017 - 81 541 017



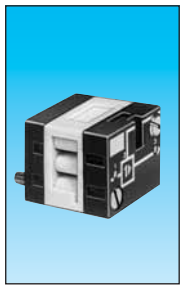
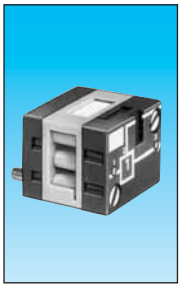
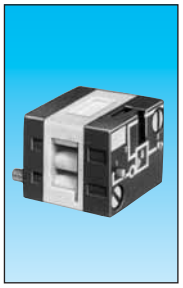
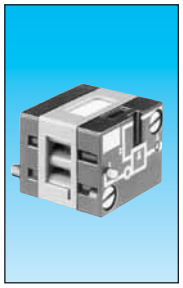


81 540 015 - 81 541 015



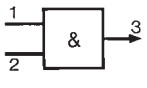
Other information
See page 36-37 for mounting plan for logic elements.

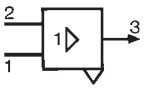
To order an CE product, you must complete the form on page 53.

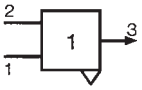





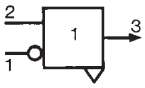
81 541 0015	81 541 017	81 501 031	81 503 028	81 504 035	81 506 027
Plug-in Ø 4	Plug-in Ø 6	On sub-base page 36-37	Threshold On sub-base page 36-37	Threshold On sub-base page 36-37	Threshold On sub-base page 36-37

CE II 2 G D c IIB 65°C(T6) X

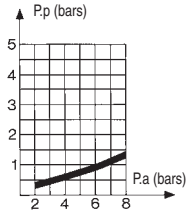


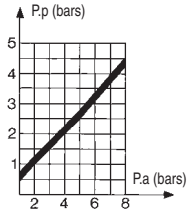


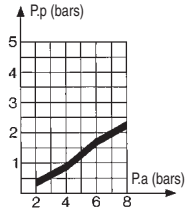


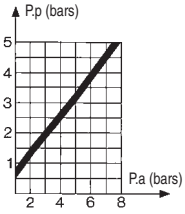


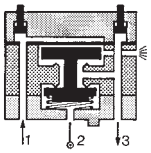
Ø 4 mm	—	—	—	—	—
—	Ø 6 mm	—	—	—	—
Green	Green	Yellow	Orange	Light grey	Dark grey
2 • 8	2 • 8	2 • 8	2 • 8	2 • 8	2 • 8
2.7	4	2.7	2.7	2.7	2.7
150	200	170	170	170	170
—	•	•	•	•	•
—	—	< 4	< 4	< 4	< 4
-5 +50	-5 +50	-5 +50	-5 +50	-5 +50	-5 +50
$>10^7$	$>10^7$	$>10^7$	$>10^7$	$>10^7$	$>10^7$
13	25	30	30	30	30







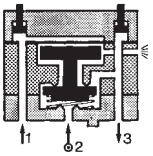




YES element

The output signal "S" is only present when the pilot is present "a" is present:

S = a YES b S = a



NOT element

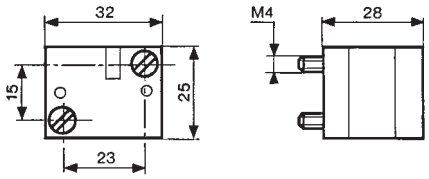
The output signal "s" is present only if the input signal "a" is NOT present. The output signal is therefore the inverse of the pilot signal:

S= NOT a S = $\overline{a}$

If the supply port is connected to a 2nd input "b", the function obtained is called inhibition:

S = NOT a AND b S = $\overline{a}$. b

81 501 031 - 81 503 028
81 504 035 - 81 506 027



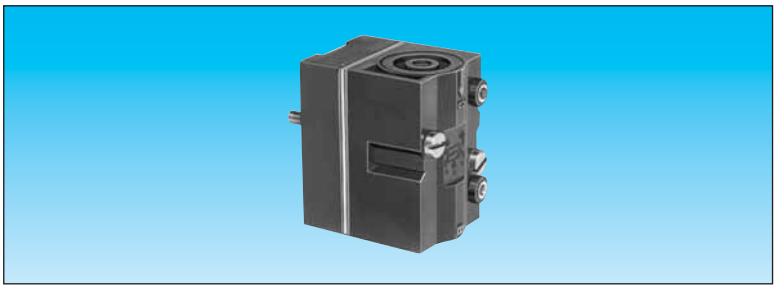
To order an Ex product, you must complete the form on page 53.

Crouzet

Memory element

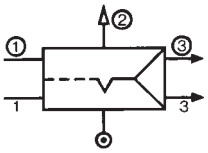
FILE No. C.PN.HOM.00004.FR
INERIS No. 17564/04

Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC



		81 523 205	81 523 608
Version		With pressure indicator	With pressure indicator and manual override
Classification		CE Ex II 2 G D c IIB 55°C(T6) X	

Symbol



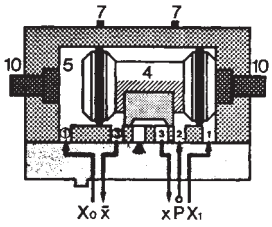
Characteristics

Colour		Black	Black
Operating pressure	bar	2 → 8	2 → 8
Orifice diameter	mm	2.7	2.7
Minimum memory pilot pressure	bar	2.5	2.5
Operating temperature	°C	-5 +50	-5 +50
Flow at 6 bars	Nl/min	200	200
Connection - On sub-base page 36-37		●	●
Weight	g	90	90

Principle of operation

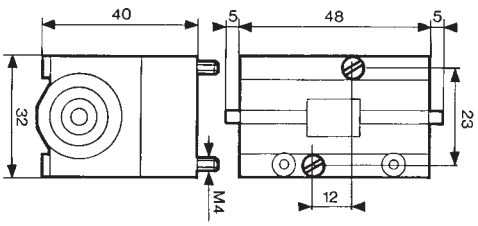
The function is that of a 4/2 valves. The appearence of signal "X1" causes the displacement of the slide valve. The output port "x" is then put under pressure. This state is remembered until the arrival of signal "X0". This signal reverses the slide valve, the output "x" is put under pressure. This state 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".

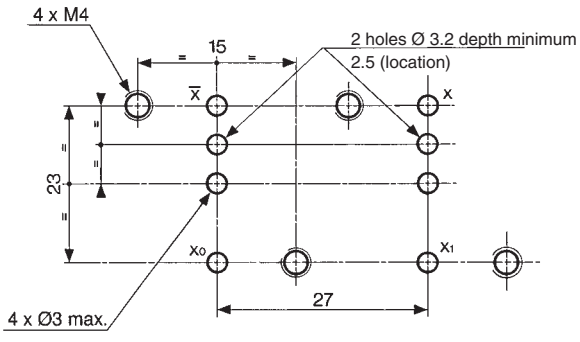


Dimensions

81 523 205 - 81 523 608



Dimensions of logic and memory elements



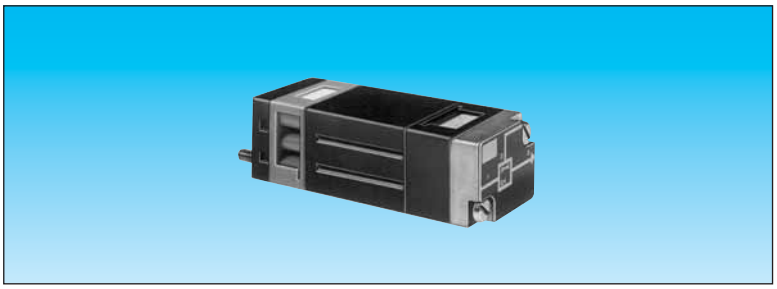
Viewed from above

To order an Ex product, you must complete the form on page 53.

Timers (with fixed timing)

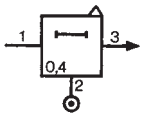
FILE No. C.PN.HOM.00008.FR
INERIS No. 18410/05

Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC



		81 503 543
Version		Positive output
Classification		CE Ex II 2 G D c IIB 60°C(T6) X

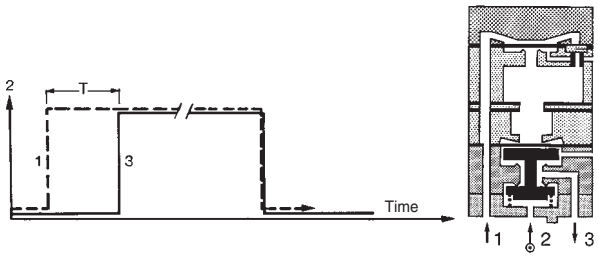
Symbol



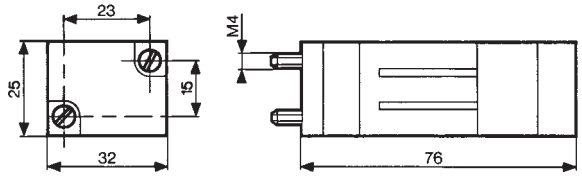
Characteristics

Timing	s	0.4
Operating pressure	bar	2 → 8
Flow at 6 bars	Nl/min	170
Orifice diameter	mm	2.7
Accuracy	%	± 5
Min. reset time	s	<0.1
Connection - On sub-base page 36-37		●
Operating temperature	°C	-5 +50
Mechanical life	operations	$>10^7$
Weight	g	106

Principle of operation
with positive output



Dimensions
81 503 543

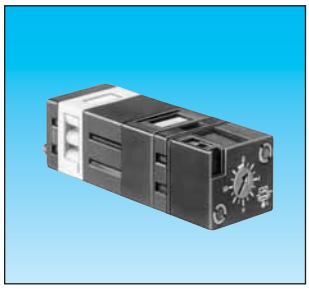
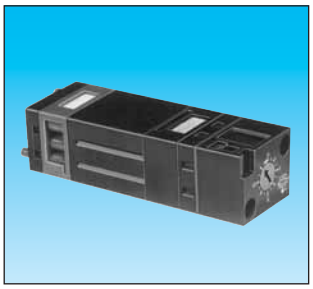
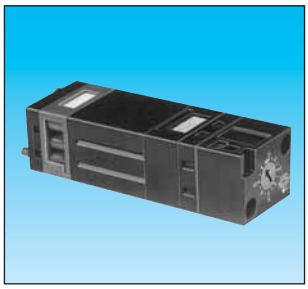


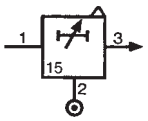
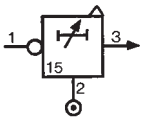
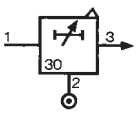
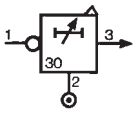
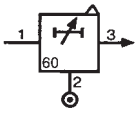
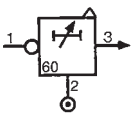
To order an Ex product, you must complete the form on page 53.

Timers (with adjustable timing)

FILE No. C.PN.HOM.00008.FR
INERIS No. 18410/05

Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC

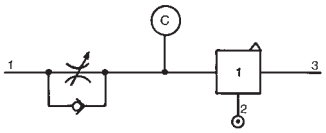




		81 503 728	81 506 714	81 503 729	81 506 721	81 503 731	81 506 727
Function	positive	●	—	●	—	●	—
	negative	—	●	—	●	—	●
Classification		CE Ex II 2 G D c IIB 60°C(T6) X					
Symbol							
Characteristics							
Timing	s	0.1 • 15	0.1 • 15	0.1 • 30	0.1 • 30	0.1 • 60	0.1 • 60
Operating pressure	bar	2 → 8	2 → 8	2 → 8	2 → 8	2 → 8	2 → 8
Flow at 6 bars	Nl/min	170	170	170	170	170	170
Orifice diameter	mm	2.7	2.7	2.7	2.7	2.7	2.7
Accuracy	%	± 5	± 5	± 5	± 5	± 5	± 5
Min. reset time	s	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Connection - On sub-base page 36-37		●	●	●	●	●	●
Operating temperature	°C	-5 +50	-5 +50	-5 +50	-5 +50	-5 +50	-5 +50
Mechanical life	operations	$>10^7$	$>10^7$	$>10^7$	$>10^7$	$>10^7$	$>10^7$
Weight	g	90	90	100	100	120	120
Accessories							
Panel mounting adaptator		**79 451 698**	**79 451 698**	**79 451 903**	—	—	—
Weight	g	53	53	53	—	—	—

Principle

The operation of these pneumatic timers is similar to that of electronic timers (circuit with capacitor/resistor)

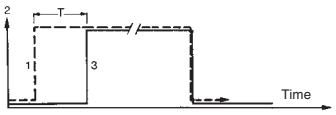
Timing by charging of reservoir

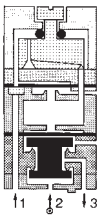


The reservoir fills via the flow restrictor until the switching point of the timer output is reached (positive or negative).
The non-return valve allows the reservoir to be emptied rapidly for the next timing.

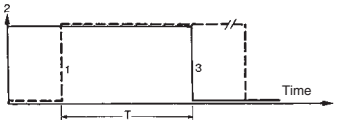
Principle of operation

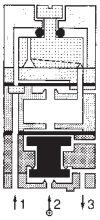
with positive output



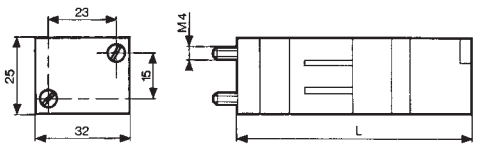


with negative output



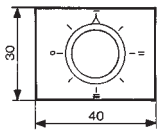


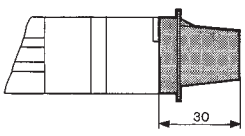
Dimensions

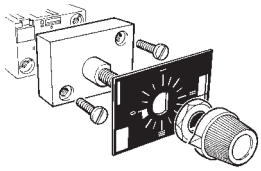


	L (mm)
81 503 728 - 81 506 714	78
81 503 729 - 81 506 721	92
81 503 731 - 81 506 727	125

Adaptator 79 451 . . .







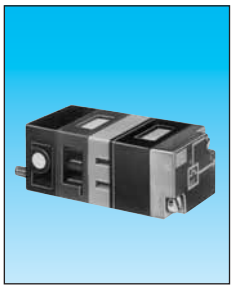
For panel mounting, a pre-drilled hole Ø 10.5 mm si required

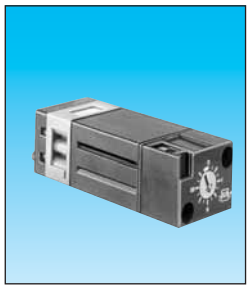
To order an Ex product, you must complete the form on page 53.

Timers

FILE No. C.PN.HOM.00008.FR
INERIS No. 18410/05

Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC





Single impulse generator	Fixed	81 507 543	—	—
	Adjustable	—	81 507 724	—
Adjustable frequency generator		—	—	81 506 945
Classification		CE Ex II 2 G D c IIB 60°C(T6) X		

Symbol

Characteristics

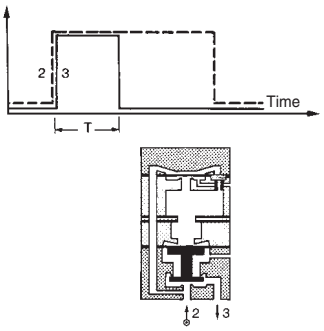
Timing	s	0.4	0.1 → 30	—
Frequency	Hz	—	—	0.02 → 8
Operating pressure	bar	2 → 8	2 → 8	2 → 8
Flow at 6 bars	Nl/min	170	170	170
Orifice diameter	mm	2.7	2.7	2.7
Accuracy	%	± 5	± 5	± 5
Min. reset time	s	<0.1	<0.1	<0.1
Connection - On sub-base page 36-37		●	●	●
Operating temperature	°C	-5 +50	-5 +50	-5 +50
Mechanical life	operations	$>10^7$	$>10^7$	$>10^7$
Weight	g	106	180	85

Accessories

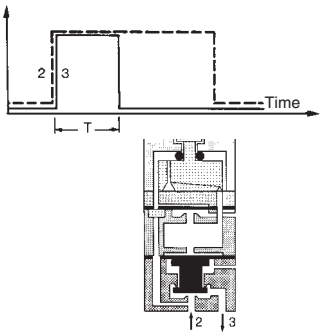
Panel mounting adaptators	—	**79 451 904**	**79 451 905**
Weight (g)	—	53	53

Principle of operation

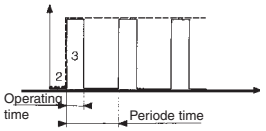
Single impulse generator

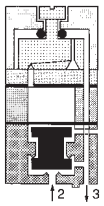


Adjustable impulse generator

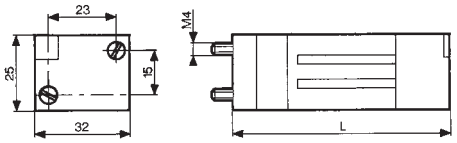


Frequency generator

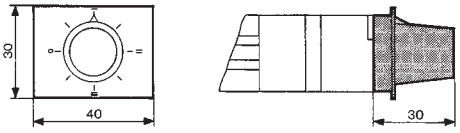




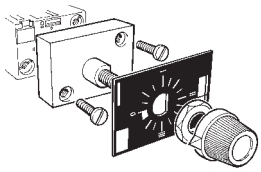
Dimensions



79 451



Part numbers	L (mm)
81 507 543	73
81 507 724	99
81 506 945	72



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

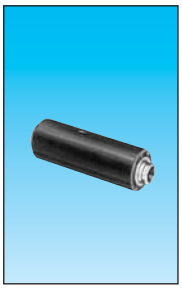
To order an Ex product, you must complete the form on page 53.

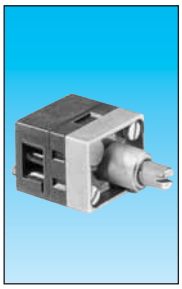
Crouzet

Timers components

FILE No. C.PN.HOM.00008.FR
INERIS No. 18410/05

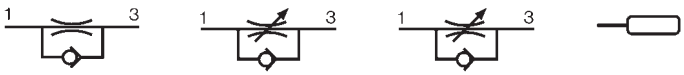
Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC





One-way in-line fixed flow restritors	Flow at 4 bars Nm^3/h	Ø orifice (mm)					
	0.18 → 0.30	0.3	white	81 529 013	—	—	—
	0.35 → 0.50	0.4	yellow	81 529 014	—	—	—
	0.58 → 0.77	0.5	red	81 529 015	—	—	—
	0.80 → 1.06	0.6	green	81 529 016	—	—	—
	1.10 → 1.39	0.7	blue	81 529 017	—	—	—
	1.45 → 1.65	0.8	grey	81 529 018	—	—	—
	2.30 → 2.80	1	black	81 529 020	—	—	—
	0.08 → 0.12	0.25	white	81 529 026	—	—	—
One-way adjustable flow restritor				—	81 525 106	81 526 006	—
Capacity for timing	10 • 60 s			—	—	—	70 458 018
Classification				CE Ex II 2 G D c IIB 60°C(T6) X			CE Ex II 2 G D c IIB 90°C(T5) X

Symbol



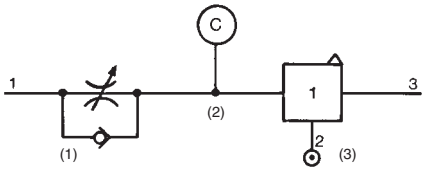
Characteristics

Free flow		Nl/min	Depending on orifice	30	200	—
Orifice diameter		mm	Depending on orifice	0 → 0.5	0 → 1.7	—
Operating pressure		bars	1 → 8	1 → 8	2 → 8	—
Timing		s	—	—	—	10 → 60
Capacity		cm^3	—	—	—	30
Connection	Sub-base page 36-37		—	•	•	—
	Push-in connection for semi-rigid tubing (NFE 49100)	mm	Ø 4	—	—	Ø 4
Operating temperature		°C	-5 +50	-5 +50	-5 +50	-5 +50
Weight		g	8	60	70	40

Connections

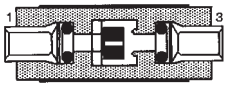
For timing circuit
- One-way flow restrictor 81 525 1 - 81 529 0 (1)
- Reservoir 79 458 018 (2)
- Relay element 81 503 0 - 81 506 0 (3) page 28-29

Sub-base page 36-37

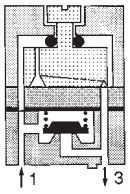


Principle of operation

One-way with fixed flow

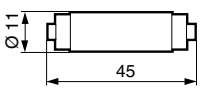


One-way with adjustable flow

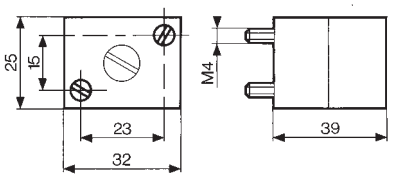


Dimensions

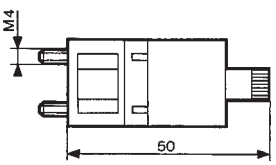
81 529



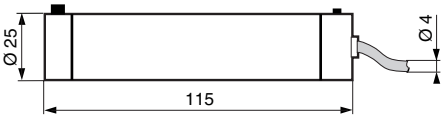
81 525 106



81 526 006



70 458 018

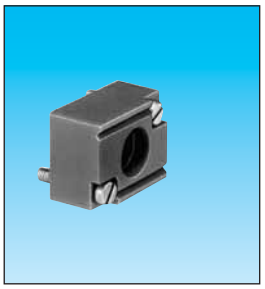


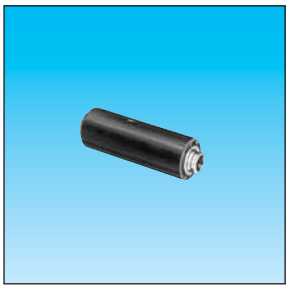
To order an Ex product, you must complete the form on page 53.

Regulator accessories

FILE No. C.PN.HOM.00008.FR
INERIS No. 18410/05

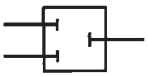
Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC





Plug element		81 520 602	—
In-line non-return		—	81 529 907
Classification		CE Ex II 2 G D c IIB T6 X	CE Ex II 2 G D c IIB 60°C(T6) X

Symbol

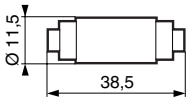


Characteristics

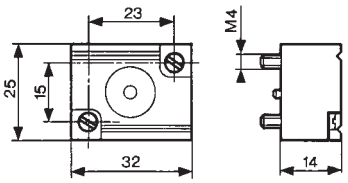
Operating pressure		bars	—	2 → 8
Flow at 6 bars		Nl/min	—	200
Adjustable output pressure		bar	—	—
Connection	Sub-base page 36-37		●	
	Push-in connection for semi-rigid tubing (NFE 49100)	mm		Ø 4
Operating temperature		°C	-5 +50	-5 +50
Weight		g		

Dimensions

81 529 907



81 520 602

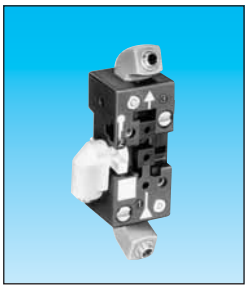


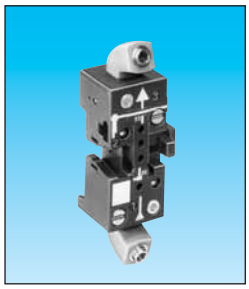
To order an Ex product, you must complete the form on page 53.

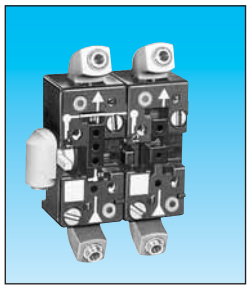
Sub-bases for logic elements and relays

FILE No. C.PN.HOM.00007.FR
INERIS No. 18408/05
for 81 532 111, 81 532 109
and 81 532 009

FILE No. C.PN.HOM.00004.FR
INERIS No. 17564/04
for 81 542 004







Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC

	81 532 111	81 532 109	81 542 004
Two-hand start module (page 12)	● 1	● 1	—
Manostats - vacuostats (page 18-19)	● 1	● 1	—
Leak sensor and amplifier relays (page 20-21)	● 1	● 1	—
Logic elements AND Timers (page 29-31-32-33-34)	● 1	● 1	—
Regulator accessories (page 35)	● 1	● 1	—
Memory element (page 30)	—	—	● 1
Operating temperature °C	-5 +50	-5 +50	-5 +50
Electro-pneumatic miniature solenoid (page 43)	● 1	● 1	—

NB: The number indicates the number of components mounted on the sub-base

Classification		CE Ex II 2 G D c IIB T6 X	CE Ex II 2 G D c IIB T6 X

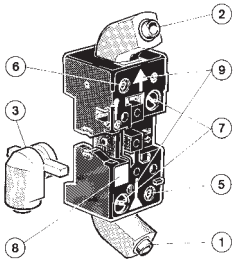
Characteristics

Push-in connection for semi-rigid tubing Ø 4 mm (NFE 49100)		rotatable	rotatable	rotatable
Fixation		DIN rail 35 mm EN 50022	DIN rail 35 mm EN 50022	DIN rail 35 mm EN 50022
Weight	g	56	52	95

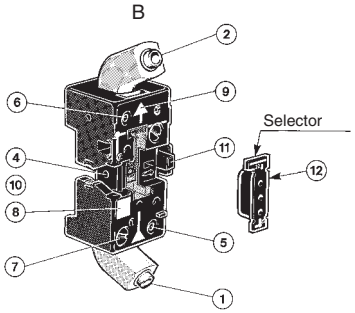
Connections elements and relays

Front connecting

A



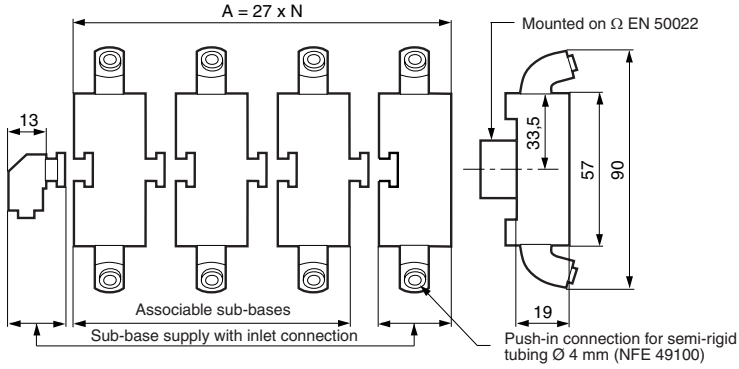
B



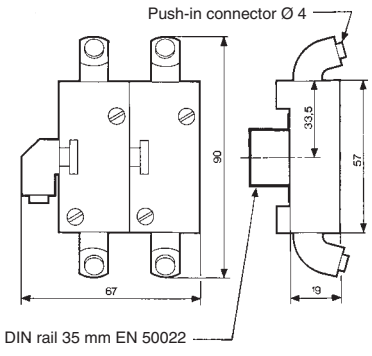
A - Single sub-base or end base
B - Associable sub-base
1 - Input port (green port 1)
2 - Output port (red port 3)
3 - Input/supply port (yellow port 2) Ø 4
4 - Input port integral to sub-base
5 - Input indicator (green)
6 - Output indicator (red)
7 - 1/4 turn screws
8 - Marking tag
9 - Arrow indicating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

Dimensions

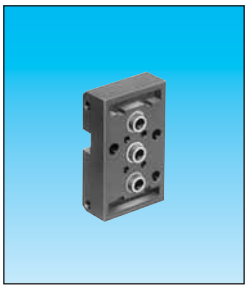
81 532 109 - 81 532 111

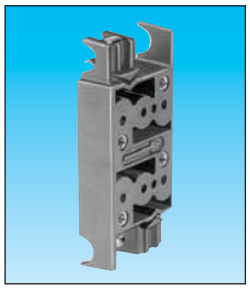


81 542 004



To order an Ex product, you must complete the form on page 53.

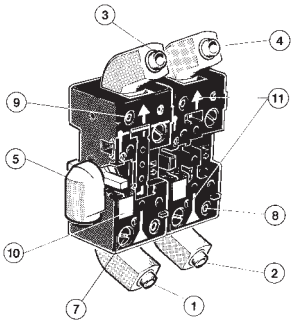




81 532 009	81 531 008
● 1	● 2
● 1	● 2
● 1	● 2
● 1	● 2
● 1	● 2
—	● 1
-5 +50	-5 +50
● 1	● 2

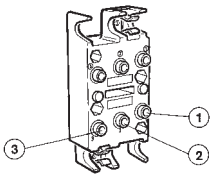
CE Ex II 2 G D c IIB T6 X	CE Ex II 2 G D c IIB T6 X
rear	rear
2 M4 screws	Clips for rails Ø 8 mm
10	35

Memory element sub-base, front and rear connecting



1 - Input port X1 (green port 1)
2 - Input port X0 (green port 1)
3 - Output port X (red port 3)
4 - Output port X (red port 3)
5 - Supply port (brass port 2)
7 - 1/4 turn screws
8 - Input indicator
9 - Output indicator
10 - Marking tag
11 - Arrow indicating the flow direction

Rear connection



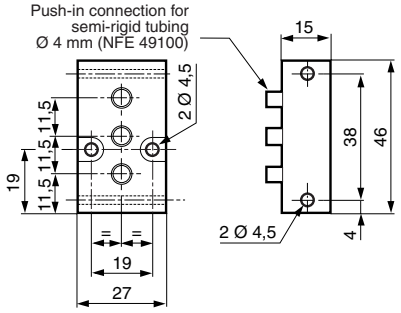
The modular system elements are fixed with two screws on the sub-base.

A locating device on each logic element prevents incorrect assembly.

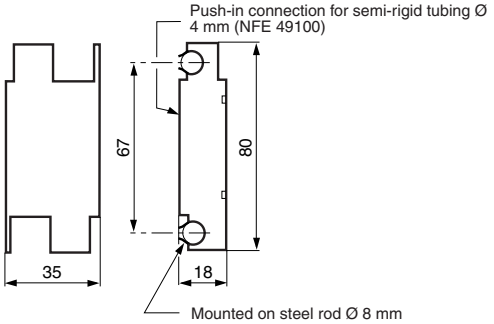
The logic element is connected via the sub-base. This sub-base has 3 instant connections for connecting semi-rigid tubes with outer Ø 4.

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

81 532 009



81 531 008



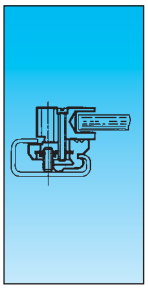
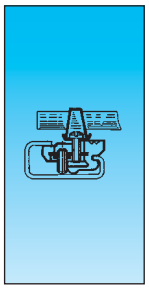
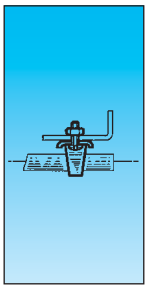
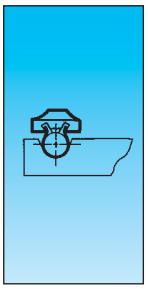
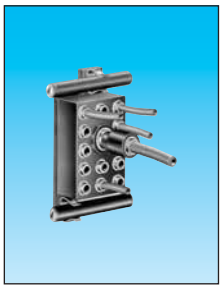
To order an Ex product, you must complete the form on page 53.

Crouzet

Mounting accessories

FILE No. C.PN.HOM.00007.FR
INERIS No. 18408/05

Equipment intended for use in potentially explosive atmospheres conforming to Directive 94/9/EC

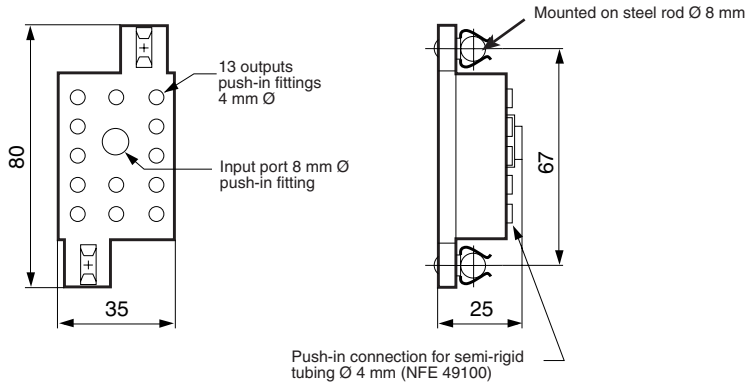






Mounting equipment	81 533 501 Hole domino	81 533 001 Clip domino	79 450 609 Bar clips Ø 8	79 450 618 Looking clip	— —
Supply manifold 13 outputs	—	—	—	—	81 536 804
Classification					CE Ex II 2 G D c IIB T6 X

Characteristics

Weight (g)	8	4	80	40	80
	For mounting on the end of a zinc-coated mild steel rod Ø 8 mm on an asymmetrical DIN rail	For adjustable mounting on a zinc-coated mild steel rod Ø 8 mm on an asymmetrical DIN rail	Packet of 100 pieces	Packet of 100 pieces	
Operating temperature °C	-5 +50	-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.

To order an Ex product, you must complete the form on page 53.

LifeElectronics
Живое партнерство

ООО «ЛайфЭлектроникс» **“LifeElectronics” LLC**

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

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С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

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- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

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