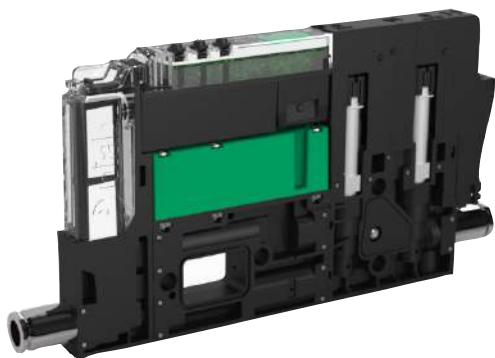


MANUAL

piCOMPACT®

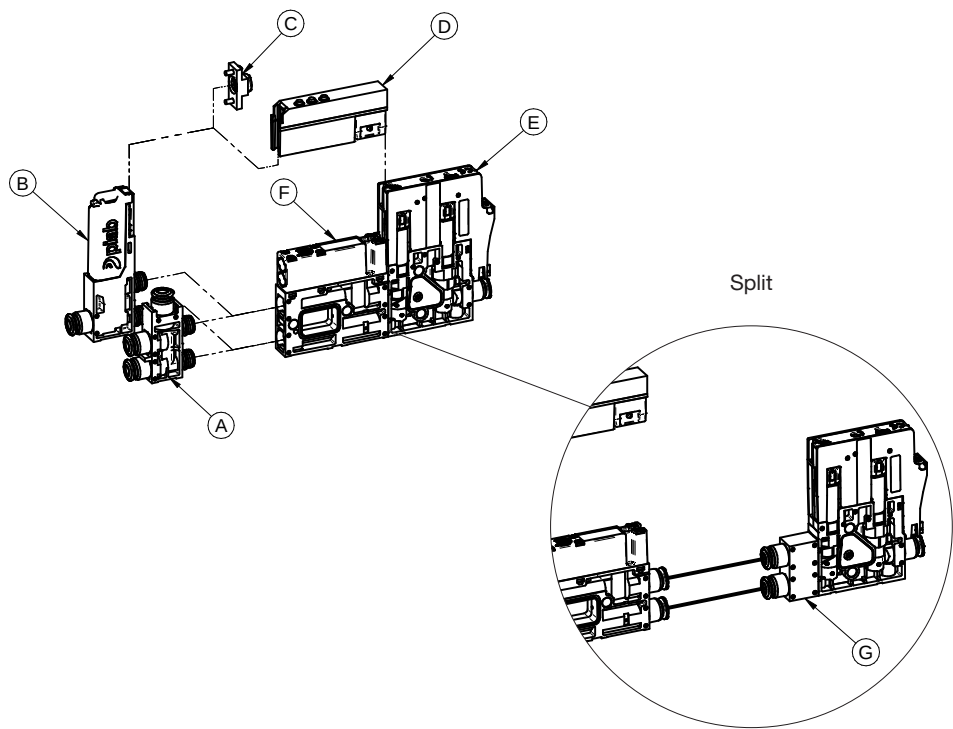


FEATURES

- ▶ Configurable vacuum ejector based on COAX technology with integrated controls
- ▶ Optimized design for high reliability and fast cycle times
- ▶ High Speed valves with adaptive PWM (Pulse Width Modulation) to reduce heat generation and further improve reliability
- ▶ Slim package (10mm width) and light weight thanks to high-performance plastic parts

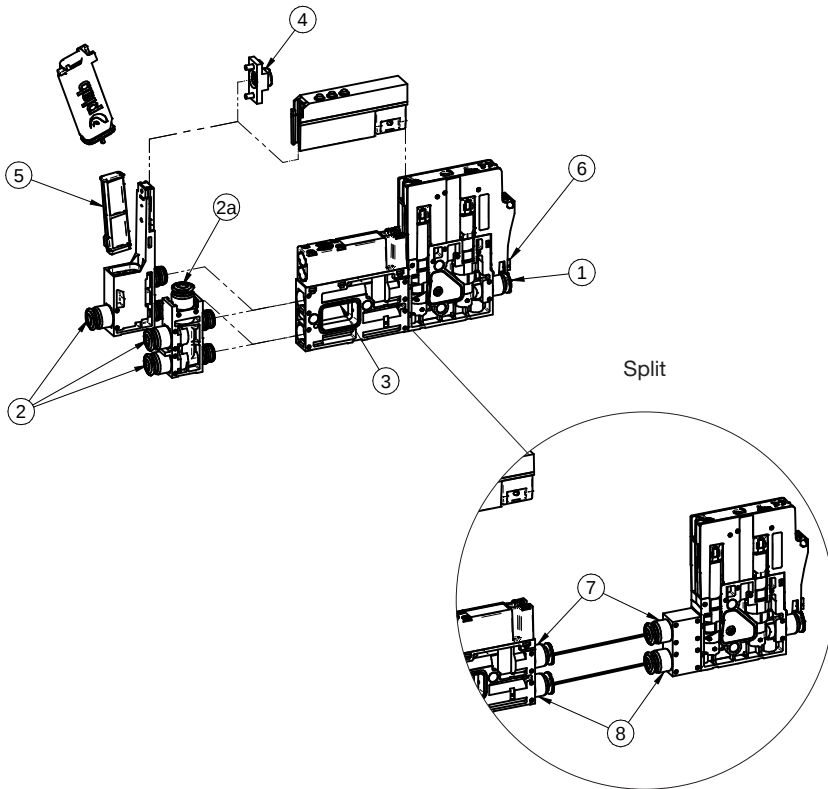
OVERVIEW

Singel units



Pos.	Description	Note
A	Vacuum connection block	
B	Vacuum filter	
C	Vacuum sensing port	
D	Sensor A2DP	
E	Valve module	
F	1x COAX® cartridge / 2x COAX® cartridge	
G	Connection block	Only for split

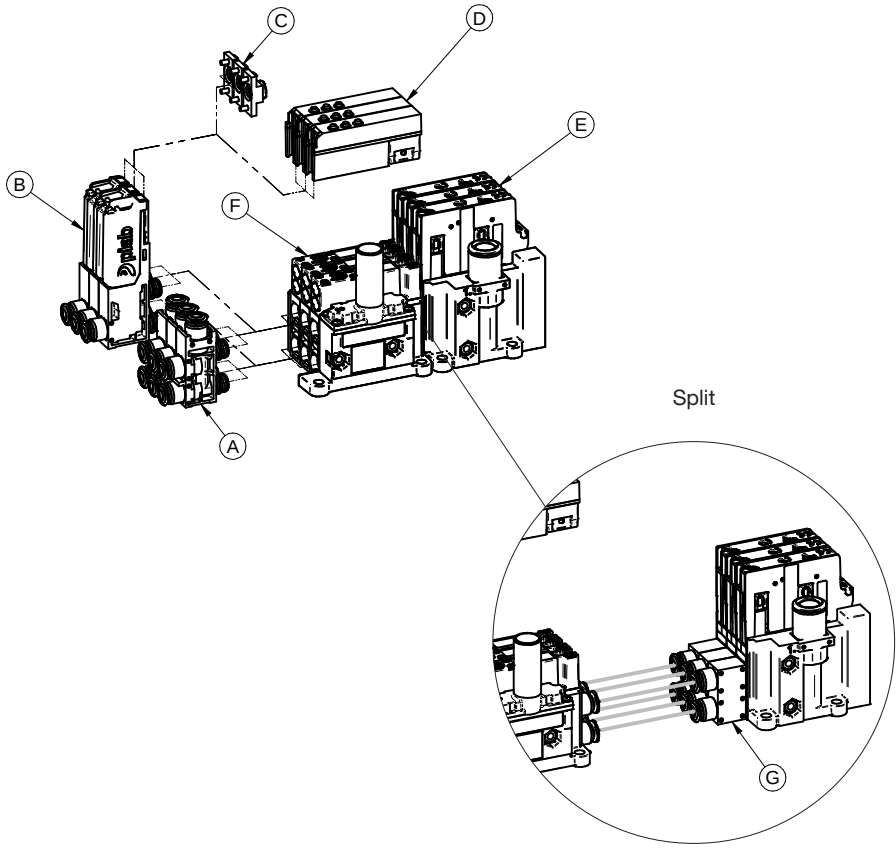
Connections



Pos.	Description	Size
1	Compressed air	Ø4 / Ø6 / Ø¼"
2	Vacuum port	Ø4 / Ø6 / Ø¼"
2a	Vacuum port / Sensing port	Ø4 / M5
3	Exhaust	-
4	Vacuum sensing port	M5
5	Filter / Filter filler	50 µm / 0 µm
6	Connector	6p
7*	Valve air connection split (vacuum)	Ø4 / Ø6 / Ø¼"
8*	Blow-off air connection split	Ø4 / Ø6 / Ø¼"

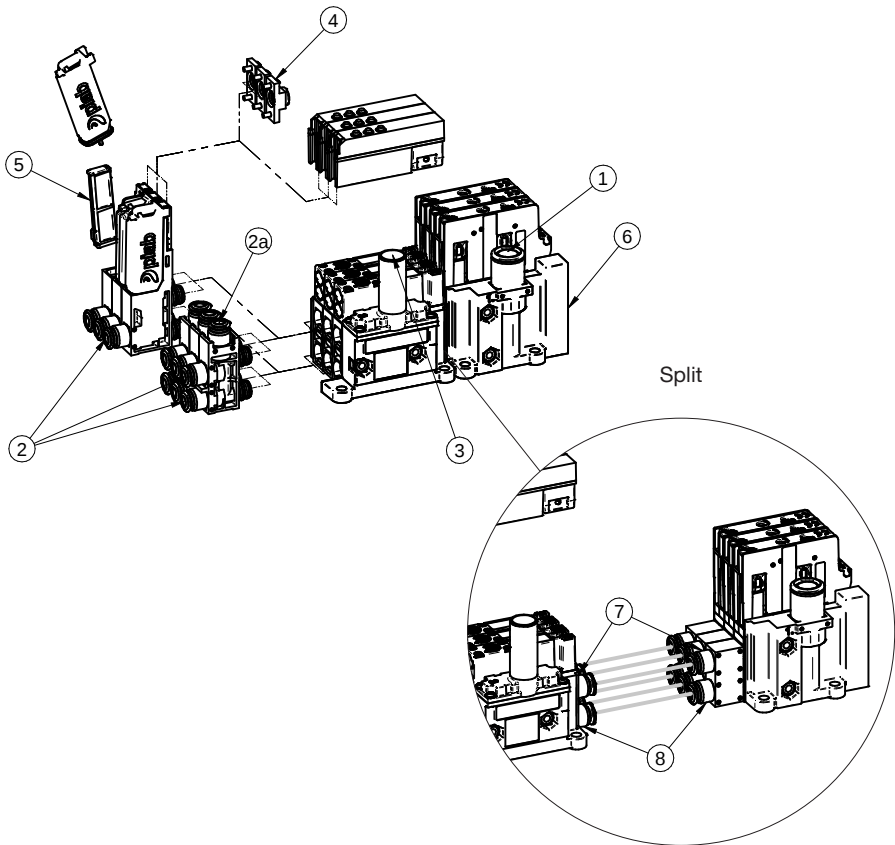
*Hose not included

2-3 units



Pos.	Description	Note
A	Vacuum connection block	
B	Vacuum filter	
C	Vacuum sensing port	
D	Sensor A2DP	
E	Valve module	
F	1x COAX® cartridge / 2x COAX® cartridge	
G	Connection block	Only for split

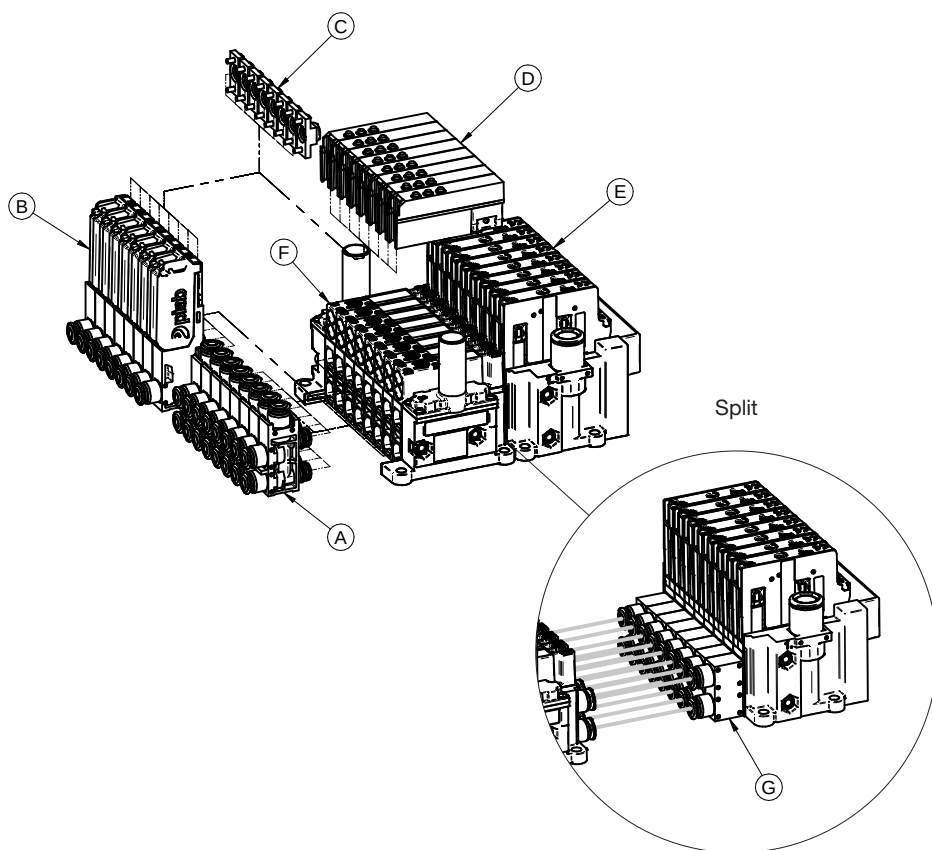
Connections



Pos.	Description	Size
1	Compressed air	Ø4 / Ø6 / Ø¼"
2	Vacuum port	Ø4 / Ø6 / Ø¼"
2a	Vacuum port / Sensing port	Ø4 / M5
3	Exhaust	Ø12
4	Vacuum sensing port	M5
5	Filter / Filter filler	50 µm / 0 µm
6	Connectors	6p
7*	Valve air connection split (vacuum)	Ø4 / Ø6 / Ø¼"
8*	Blow-off air connection split	Ø4 / Ø6 / Ø¼"

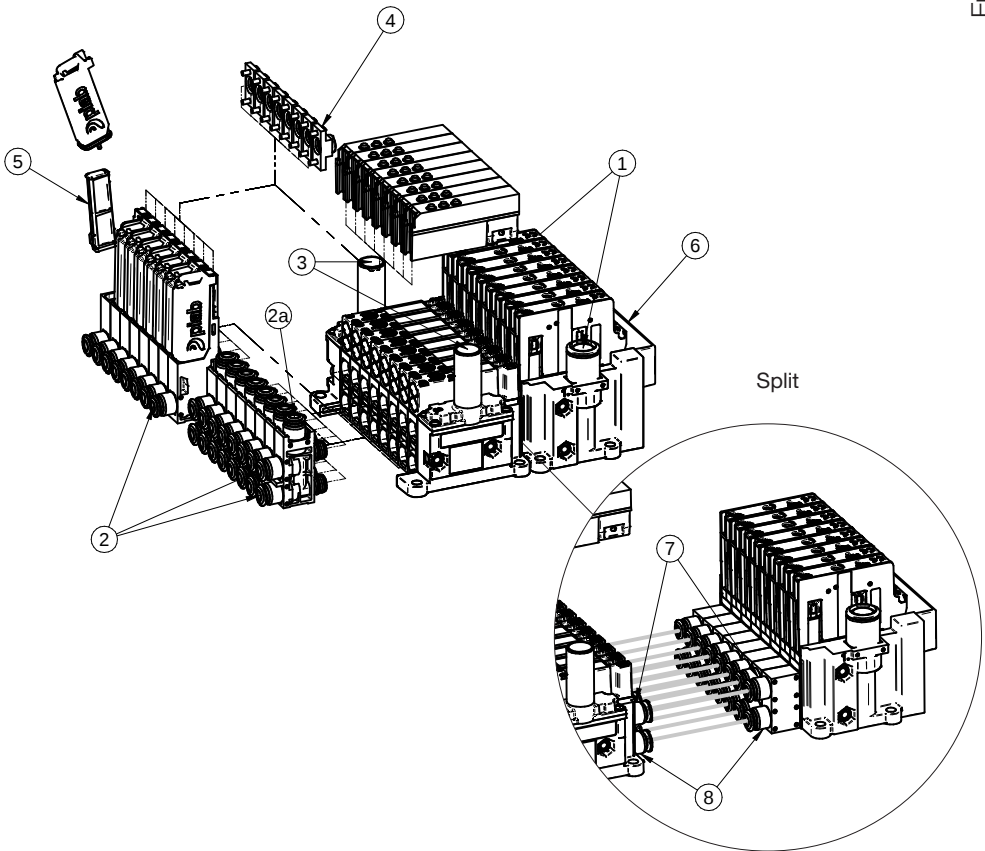
*Hose not included

4-8 units



Pos.	Description	Note
A	Vacuum connection block	
B	Vacuum filter	
C	Vacuum sensing port	
D	Sensor A2DP	
E	Valve module	
F	1x COAX® cartridge / 2x COAX® cartridge	
G	Connection block	Only for split

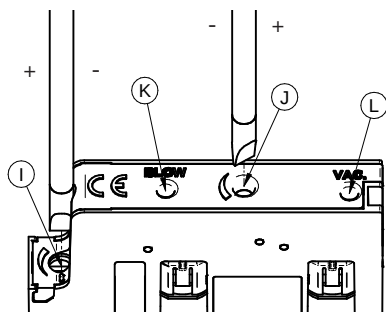
Connections



Pos.	Description	Size
1	Compressed air x2	Ø4 / Ø6 / Ø¼"
2	Vacuum port	Ø4 / Ø6 / Ø¼"
2a	Vacuum port / Sensing port	Ø4 / M5
3	Exhaust x2	Ø12
4	Vacuum sensing port	M5
5	Filter / Filter filler	50 µm / 0 µm
6	High density D-sub	26 pin / 44 pin
7*	Valve air connection split (vacuum)	Ø4 / Ø6 / Ø¼"
8*	Blow-off air connection split	Ø4 / Ø6 / Ø¼"

*Hose not included

Valve module



Pos.	Description	Note
I	Time setting, automatic blow off (optional)	$\varnothing_{\max} = 3,4 [0.133]$, default 0,5 sec
J	Flow setting, blow flow	$\varnothing_{\max} = 3,9 [0.153]$
K	Manual override, blow-off valve	$\varnothing_{\max} = 2,5 [0.098]$, push firm to activate
L	Manual override, vacuum valve	$\varnothing_{\max} = 2,5 [0.098]$, push firm to activate

PNEUMATIC INSTALLATION

piCOMPACT® can be installed in any orientation. Ensure that the exhaust from the ejector is not blocked. When connecting oil free compressed air and vacuum hoses to the unit, it is important to choose proper pipe dimensions to prevent pressure drops. Avoid restrictive inner diameters, long piping distances, sharp bends and small sized connections.

Pneumatic technical information (per channel)

	Unit	COAX®							
		Bi03-2		Xi2.5-2		Si02-2		Ti05-2	
		x1	x2	x1	x2	x1	x2	x1	x2
Feed pressure, pump at opt.	Mpa [psi]	0.22 [31.2]	0.24 [34.5]	0.51 [74.5]	0.53 [76.9]	0.60 [87.6]	0.62 [89.9]	0.43 [62.4]	0.50 [72.5]
Feed pressure, nozzle at opt.	Mpa [psi]	0.20 [29.0]		0.50 [72.5]		0.60 [87.0]		0.40 [58.0]	
Max vacuum at opt. pressure	-kPa [-inHg]	82 [24.2]		91 [26.9]		75 [22.1]		84 [24.8]	
Air consumption at opt. pressure	NI/s [scfm]	0.14 [0.297]	0.28 [0.593]	0.13 [0.275]	0.26 [0.551]	0.11 [0.233]	0.22 [0.466]	0.23 [0.487]	0.46 [0.974]
Max vacuum flow at opt. pressure	NI/s [scfm]	0.21 [0.445]	0.34 [0.720]	0.23 [0.487]	0.37 [0.784]	0.11 [0.233]	0.42 [0.890]	0.31 [0.657]	0.53 [1.12]

Min. recommended hose diameter, outer/inner diameter (mm)

Cartridge	Vacuum	Compressed air		
		1 unit	2-3 units	4-8 units*
Si, Bi, Xi	4/2 (6/4)**	4/2	6/4	6/4
Ti	6/4	4/2 (6/4)	6/4	8/6

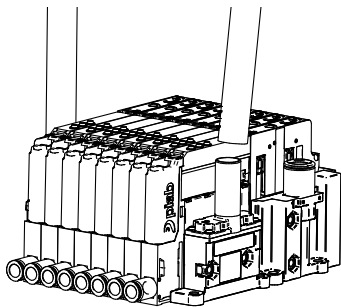
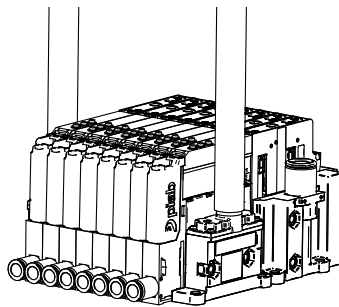
If 7-8 units are used in a manifold with a push-in, please use both compressed air supply ports for optimum performance.

*) Min. recommended hose diameters are valid for hose lengths up to 2m (6 ft). For longer lengths, use larger hose diameters to avoid reduced vacuum flow performance and the risk for false vacuum signals from sensors/switches.

**) If 2x Si, Bi, Ti and Xi are used in each unit

Clean room installation (2-8 channels)

For clean room installation mount the hose on the exhaust with a hose clamp.

1**2**

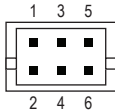
FUNCTION

Electrical connection 1-3 channel, pin configuration

6p 6p, DF11-6DP-2DSA

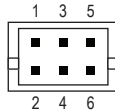
1 channel

Ch 1

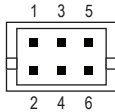


2 channels

Ch 1

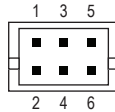


Ch 2

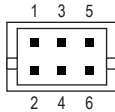


3 channels

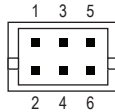
Ch 1



Ch 2



Ch 3



Pin No.	Name	Description
1	V _{sys}	Supply voltage, 24 VDC (V ⁺)
2	GND	Common, 0 VDC (V ⁻)
3	V1	Vacuum on, PNP / NPN
4	S1	Switch output, max 125 mA, PNP / NPN
5	A	Analog output, 1-5 VDC
6	V2	Blow off on, PNP / NPN

Electrical connection 1-3 channel, cable

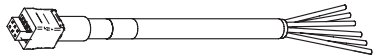
Use cable ties to avoid tension and damage to the cable

0201750 Cable L=0,3m, conn 6P/M12 7P male



Pin No.	
1	1
2	2
3	3
4	6
5	4
6	5

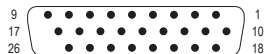
0201749 Cable L=2,5m, conn 6P



Pin No.	Wire color
1	Black
2	Brown
3	Red
4	Orange
5	Yellow
6	Green

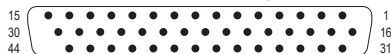
Electrical connection 4-6 channels, pin configuration

4-6 channels, HD D-Sub 26p



Pin No.				Name	Description
26p					
Ch1 Ch5	Ch2 Ch6	Ch3	Ch4		
12	15	16	18	V1	Vacuum on, PNP / NPN
20	22				
4	7	17	19	S1	Switch output, max 125 mA, PNP / NPN
21	23				
11	13	14	24	A	Analog output, 1-5 VDC
25	26				
3	5	6	8	V2	Blow off on, PNP / NPN
9	10				
		1		V _{sys}	Supply voltage, 24 VDC (V ⁺)
		2		GND	Common, 0 VDC (V ⁻)

7-8 channels, HD D-Sub 44p

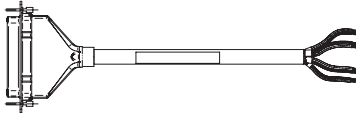


Pin No.				Name	Description
44p					
Ch1 Ch5	Ch2 Ch6	Ch3 Ch7	Ch4 Ch8		
18	21	22	24	V1	Vacuum on, PNP / NPN
25	27	32	34		
4	7	23	26	S1	Switch output, max 125 mA, PNP / NPN
31	33	35	39		
17	19	20	36	A	Analog output, 1-5 VDC
37	38	40	41		
3	5	6	8	V2	Blow off on, PNP / NPN
9	10	11	16		
1				V _{sys}	Supply voltage, 24 VDC (V ⁺)
2				GND	Common, 0 VDC (V ⁻)

Electrical connection 4-6 channel, cable

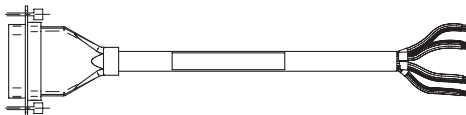
WH=white, BN=brown, GN=green, YE=yellow, GY=grey, PK=pink, BU=blue, RD=red, BK=black, VT=violet, OR=orange

0201751 Cable L=2,5m, HD D-Sub 26P



Ch1 Ch5	Ch2 Ch6	Ch3	Ch4	GRP
12 WH-BN 20 BN-BK	15 WH-YE 22 BN-OR	16 WH-GN	18 WH-VT	GY
4 OR 21 BN-RD	7 BU 23 BN-YE	17 WH-BU	19 WH-GY	YE
11 WH-BK 25 BN-BU	13 WH-RD 26 BN-VT	14 WH-OR	24 BN-GN	BU
3 RD 9 GY	5 YE 10 WH	6 GN	8 VT	BK
		1 BK		WH
		2 BN		BN

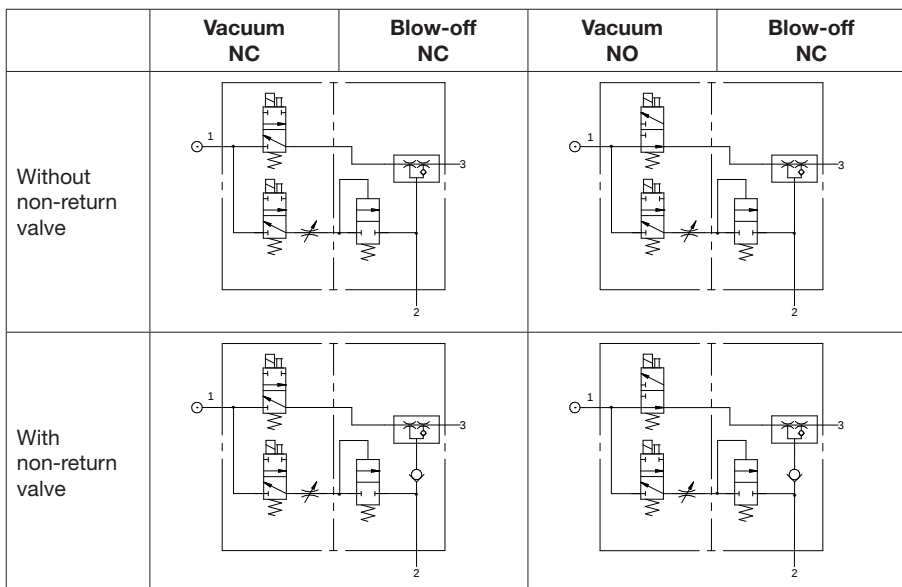
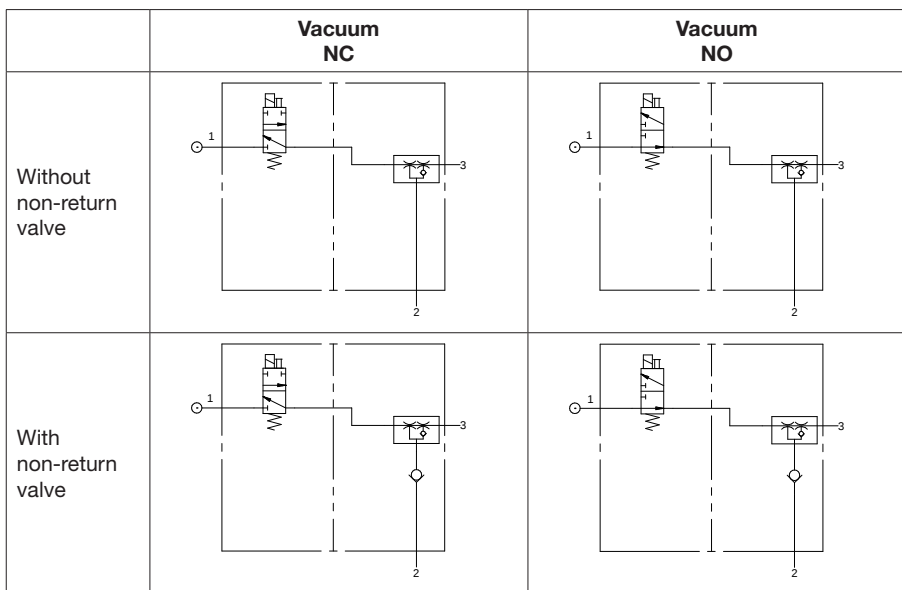
0201752 Cable L=2,5m, HD D-Sub 44P



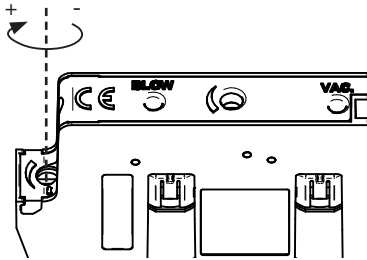
Ch1 Ch5	Ch2 Ch6	Ch3 Ch7	Ch4 Ch8	GRP
18 WH-OR 25 BN-RD	21 WH-BU 27 BN-YE	22 WH-VT 32 BN-BU	24 BN-BK 34 BN-GY	GY
4 OR 31 BN-GN	7 BU 33 BN-VT	23 WH-GY 35 BN-WH	26 BN-OR 39 GN-OR	YE
17 WH-RD 37 GN-BN	19 WH-YE 38 GN-RD	20 WH-GN 40 GN-BU	36 GN-BK 41 GN-VT	BU
3 RD 9 GY	5 YE 10 WH	6 GN 11 WH-BK	8 VT 16 WH-BN	BK
		1 BK		WH
		2 BN		BN

Pneumatic diagram

1. Compressed air, 2. Vacuum, 3. Exhaust



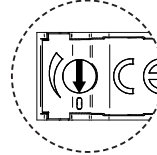
OPERATIONAL



Time setting, automatic blow-off (Optional only for ES units)

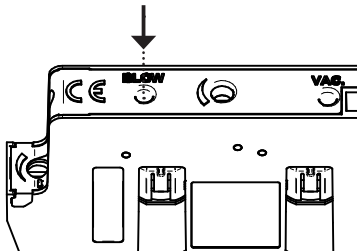
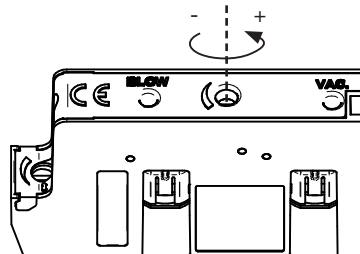
Automatic blow-off time increasing when turning the screw clockwise. For decreases time, turn it counter clockwise.

To deactivate turn the screw to zero position



Flow setting, blow-off flow

Blow-off flow decreases when turning the screw clockwise. For increasing flow, turn it counter clockwise

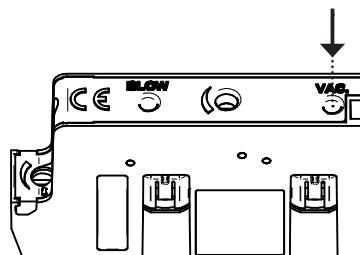


Blow-off valve manually override

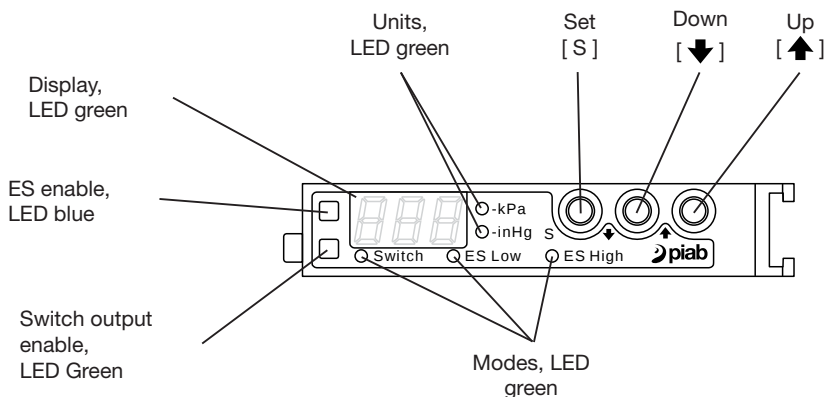
Push firm to manually activate the blow-off valve

Vacuum valve manually override

Push firm to manually activate the vacuum valve



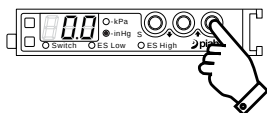
Interface



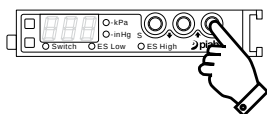
Setting the pressure unit

Changing the pressure unit to -kPa

1. Press and hold [↑]



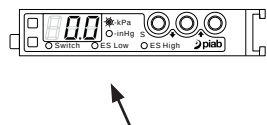
2. Display turned off.



3. Wait 3 sec.

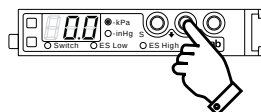
4. Release [↑].

5. Unit showing -kPa

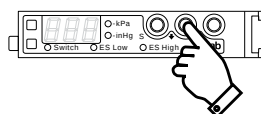


Changing the pressure unit to -inHg

1. Press and hold [↓]



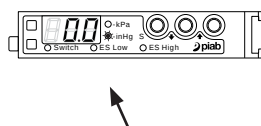
2. Display will be turned off.



3. Wait 3 sec.

4. Release [↓].

5. Unit showing -inHg

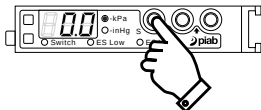


Setting the switch, ES low and ES high value

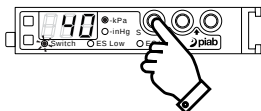
Optional only for ES units

Changing switch value

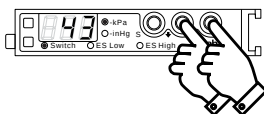
1. Press and hold [S]



2. Wait 3 sec.
3. Release [S]
4. Press [S] to select switch mode



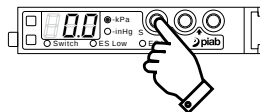
5. Press [↓] or [↑] to set the switch value



6. Leave it for 5 sec.

Changing ES low & high value

1. Press and hold [S]



2. Wait 3 sec.
3. Release [S]
4. Press [S] to select ES low/high mode

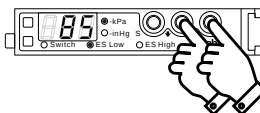
ES low



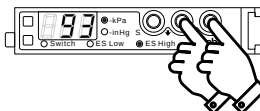
ES high

5. Press [↓] or [↑] to set the ES low/high value

ES low

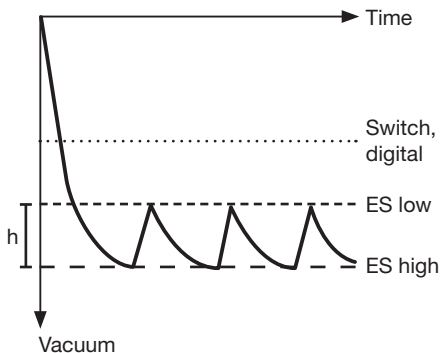


ES high



6. Leave it for 5 sec.

Vacuum chart



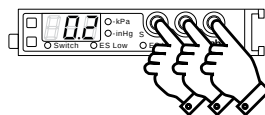
$h = \text{hysteresis}$

Switch < ES low < ES high
Order cannot be changed

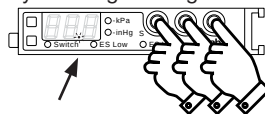
Zero resetting

Setting the display value to zero

1. Press and hold [S]+[↓]+[↑]



2. Display showing flashing dot.



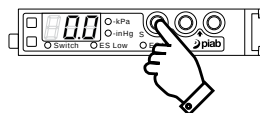
3. Wait 5 sec.

4. Release [S]+[↓]+[↑]

5. Display showing **0Ad**



6. Press [S] to set value to zero



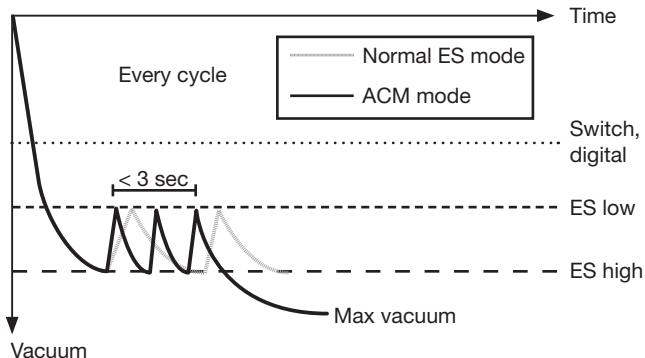
7. Leave it for 5 sec.

It is possible only with an atmospheric pressure equivalent to $\pm 3\%$ or less of F.S.(Full Scale)

ACM (Automatic “ES” Condition monitoring)

Optional only for ES units

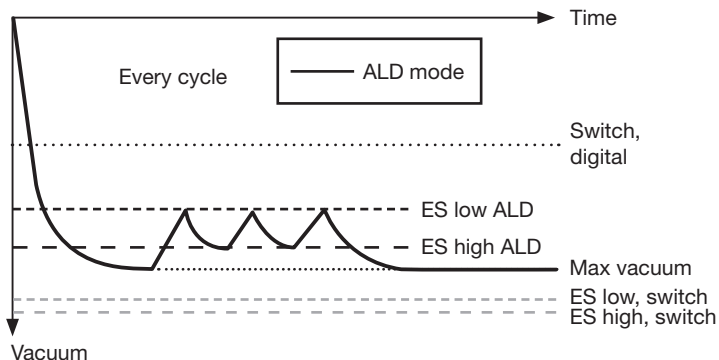
To protect the life span of the valves, an automatic override function is implemented. If the supply valve is restarted 2 times within 3 sec, the ES function is deactivated for the rest of the cycle. A nice feature if leakage occasionally can occur. The feature can also be used to monitor the wear of the suction cups. When ES is off, it may be time to change suction cups.



ALD (Automatic “ES” Level Determination)

Optional only for ES units

The unit will measure max achievable vacuum on the object every cycle and automatically set an optimized ES level and hysteresis- The calculation is re-calculated every cycle to give the most reliable condition every time a new object is handled. The calculation is based on set part present signal level and max achievable vacuum measured by an analog sensor.

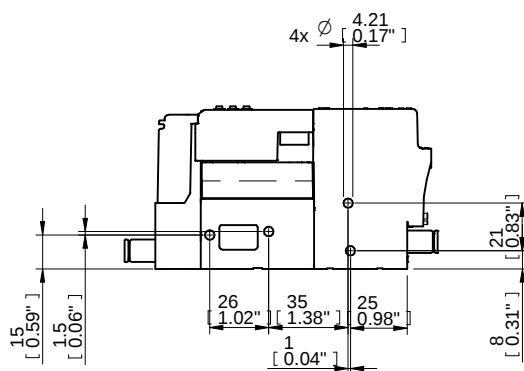


ALD are default activated with following settings: ES low/high maximum value 98 / 99 -kPa

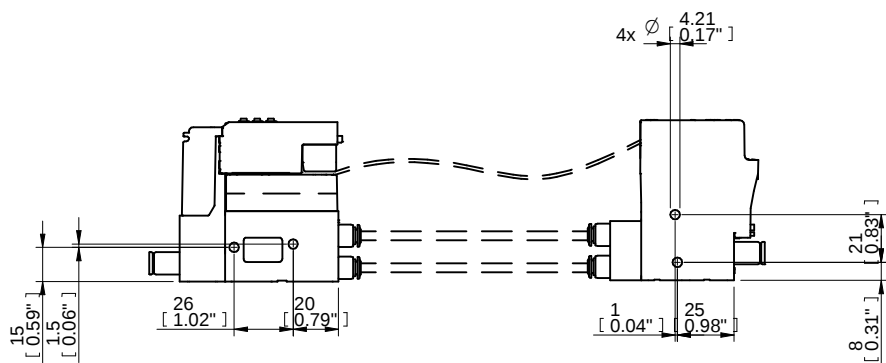
If manually change ES low and ES high it will deactivate ALD function. To reactivate ALD return ES low and ES high to default value.

MOUNTING

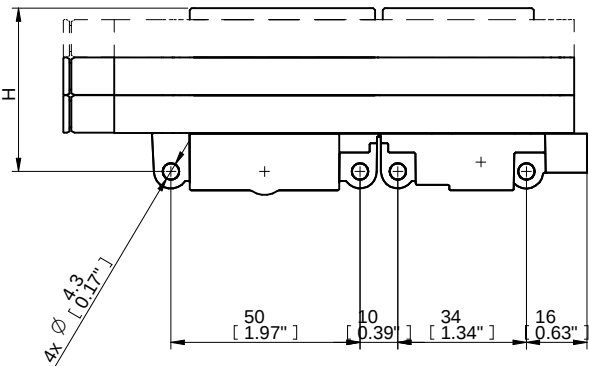
Singel units



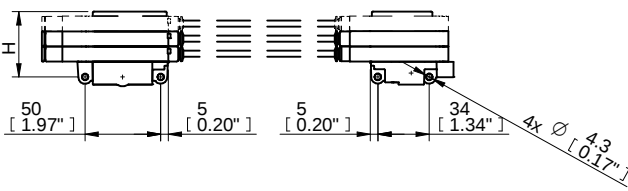
Split



2-3 units

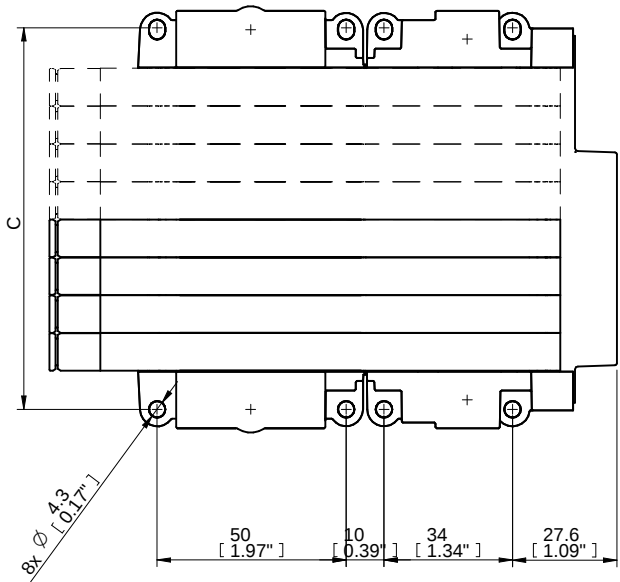


Split

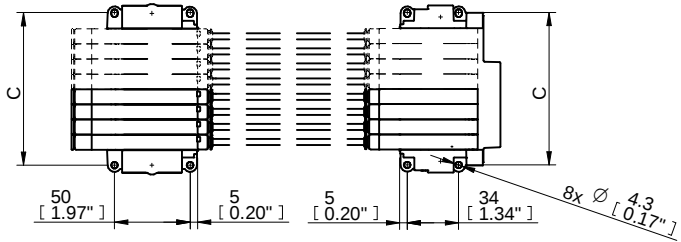


	Unit	2 units	3 units
H	mm [in]	43.2 [1.72"]	33.2 [1.33"]

4-8 units



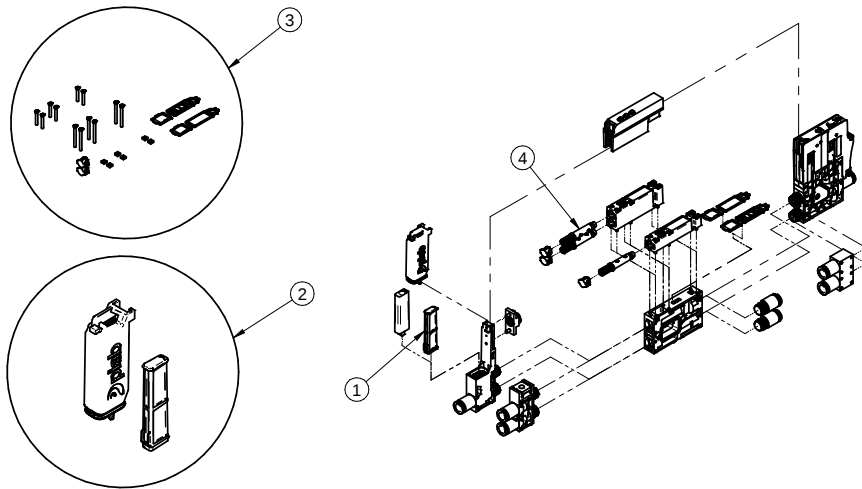
Split



	Unit	4 units	5 units	6 units	7 units	8 units
C	mm [in]	60.9 [2.40"]	70.9 [2.79"]	80.9 [3.19"]	90.9 [3.58"]	100.9 [3.97"]

MAINTENANCE

Exploded view



Spare parts

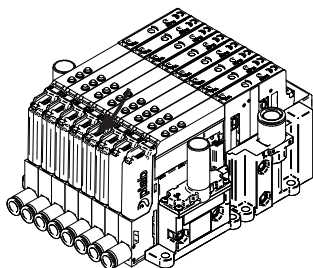
Pos	Art. No	Description
1	0201747	Filter element FM10-50, 5 pcs-piCOMPACT®
2	0201748	Filter holder kit FM10-50
3	0201737	Spare Part Kit piCOMPACT® MICRO
4	0106966	COAX® cartridge MICRO Bi03-2
4	0113591	COAX® cartridge MICRO Si02-2
4	0123098	COAX® cartridge MICRO Ti05-2
4	0120297	COAX® cartridge MICRO Xi2.5-2

Accessories

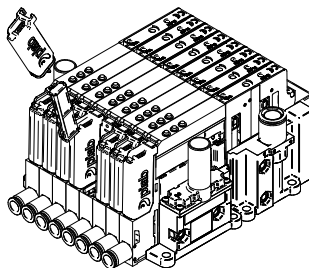
Art. No	Description
0201749	Cable L=2,5m, conn 6P
0201750	Cable L=0,3m, conn 6P/M12 7P male
0201751	Cable L=2,5m, HD D-Sub 26P
0201752	Cable L=2,5m, HD D-Sub 44P

Replacements for vacuum sensor, COAX® cartridge, filter and non-return valve

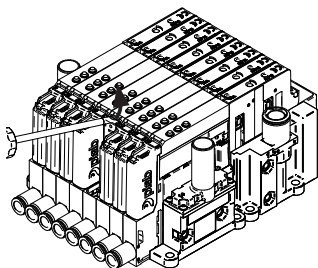
1. Push spring to release filter holder



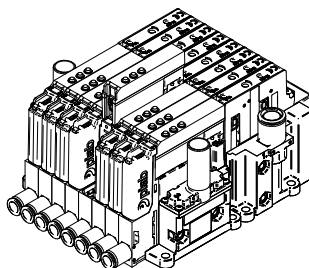
2. Remove filter holder



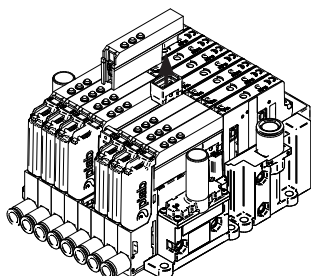
3. Use the slot to release the switch



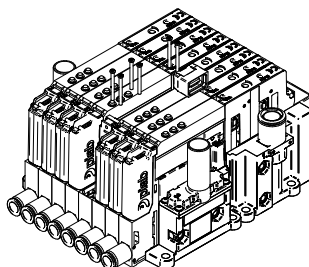
4. Gently release the switch



5. Unplug the switch



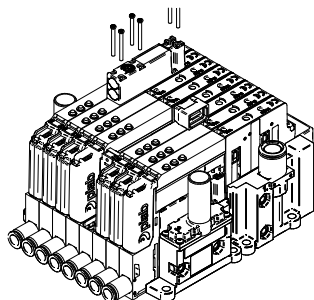
6. Unscrew the torx



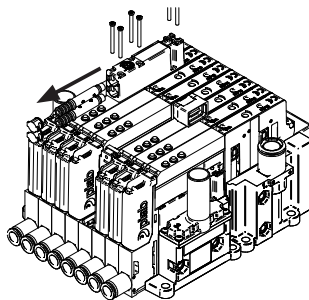
Max

10 cNm
[14 in oz]

7. Remove the COAX® cartridge house



8. Remove the COAX® cartridge



Cleaning instructions

For COAX® cartridge, filter and non-return valve

Rinse in water or use compressed air to blow off. Let dry before reinstalling.

Technical data (per channel)

Pneumatic technical information

	Unit	COAX®							
		Bi03-2		Xi2.5-2		Si02-2		Ti05-2	
		x1	x2	x1	x2	x1	x2	x1	x2
Opt. feed pressure, pump	MPa [psi]	0.22 [31.2]	0.24 [34.5]	0.51 [74.5]	0.53 [76.9]	0.60 [87.6]	0.62 [89.9]	0.43 [62.4]	0.50 [72.5]
Opt. feed pressure, nozzle	MPa [psi]	0.20 [29.0]		0.50 [72.5]		0.60 [87.0]		0.40 [58.0]	
Max vacuum at opt. pressure	-kPa [-inHg]	82 [24.2]		91 [26.9]		75 [22.1]		84 [24.8]	
Air consumption at opt. pressure	NI/s [scfm]	0.14 [0.297]	0.28 [0.593]	0.13 [0.275]	0.26 [0.551]	0.11 [0.233]	0.22 [0.466]	0.23 [0.487]	0.46 [0.974]
Max vacuum flow at opt. pressure	NI/s [scfm]	0.21 [0.445]	0.34 [0.720]	0.23 [0.487]	0.37 [0.784]	0.11 [0.233]	0.42 [0.890]	0.31 [0.657]	0.53 [1.12]

General electric characteristics

Supply voltage	24 ±10% V
Current consumption	100/63 mA (Valve pull/hold at 24V _{sys})

Valve module

Function on/off	Normally closed (NC/NC 2) or normally open (NO)
Function blow-off	Normaly closed (NC)
Air consumption blow-off/release	0-1.01 NI/s at 6 bar [0-2.14 scfm at 87 psi]
Manual override	Yes, non-locking push style

Other data

Temperature range	-10 - 50°C [14-122°F]
Materials	PA, NBR, SS, POM, TPE, PVC



Technical data sensor A2DP

Description	Unit	Value
Overpressure, max.	MPa [psi]	0.4 [58.0]
Material	-	PC, LCP, TPE, PA
Temperature range	°C [F]	-10 - 50 [32-122]
Signal range	-kPa [-inHg]	0-101 [29.9]
Hysteresis	kPa [inHg]	ES _{high} - ES _{low} =settable
Safety classification	-	IP54
Max output load S1, digital output	V	0.08
Analog output	V	1-5
Humidity	%RH	35-85
Response time	ms	<1
Accuracy	-	±3% of F.S. (Full Scale)
Current consumption (V _{sys} =24V)	mA	20
Ripple (Supply voltage)	VP	10%
Vibration resistant	Hz	10-55
Shock resistant	G	10
Display	-	3 digit num LED display

Default setting

Description	Default value
Unit	-kPa
Switch value	40 -kPa
ES low value*	98 -kPa
ES high value*	99 -kPa
Filtering (analog switch)	0 ms

* ALD (Automatic Level determination) activated with default values.

For more information see www.piab.com/support/manuals/man_0201555_piCOMPACT®_master.pdf

Error code

Code	Cause	Solution
E1	Electric overload detection for SW / Short-circuit protection for SW	Check sensor A2DP output wiring for S1 / S2
E2	Pressure not within adjustable range	Only possible if atmospheric pressure equivalent to ±3% or less of F.S. (Full Scale).
E3	Internal error	Unplug power from piCOMPACT®, then plug it back in.



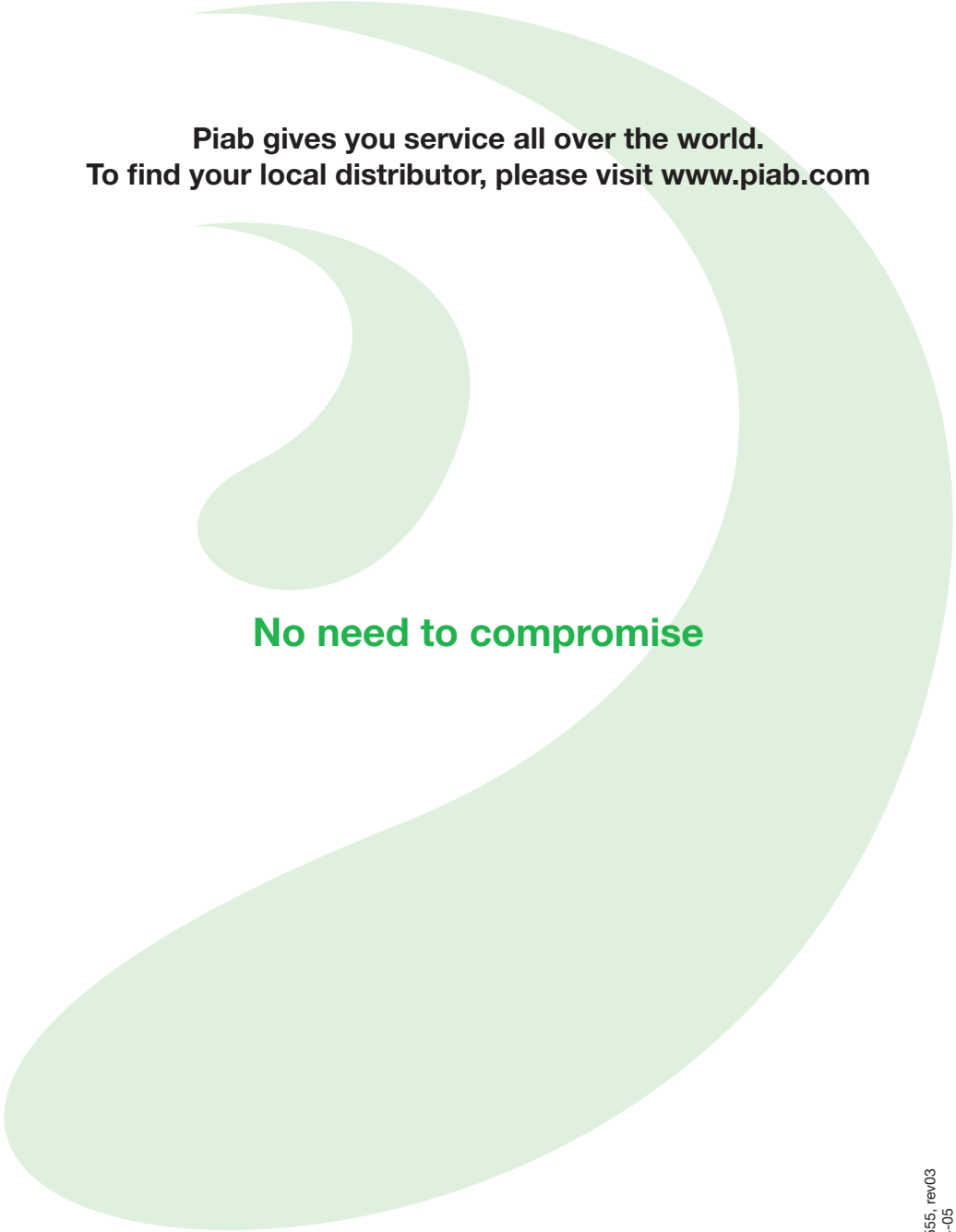
(GB) Safety
(DK) Advarselsymboler
(DE) Warnsymbole
(ES) Señales de advertencia



(FR) Sécurité
(IT) Segnali di avvertenza
(NL) Waarschuwingsymbolen



(NO) Sikkerhet
(PT) Sinais Avisadores
(SE) Säkerhet
(FI) Varoituserkit



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