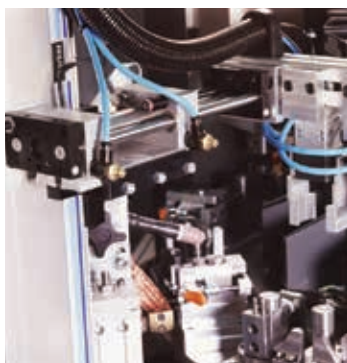




Parker Moduflex Valve System

Catalogue PDE2536TCUK



ENGINEERING YOUR SUCCESS.



WARNING

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS AND/OR SYSTEMS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyse all aspects of your application and review the information concerning the product or system in the current product catalogue. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the application are met. The products described herein, including without limitation, products features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.

SALE CONDITIONS

The items described in this document are available for sale by Parker Hannifin Corporation, its subsidiaries or its authorized distributors. Any sale contract entered into by Parker will be governed by the provisions stated in Parker's standard terms and conditions of sale (copy available upon request).

Summary	Page
Product Overview	4 - 7
Cylinder working speed charts	8 - 9
Technical characteristics	10 - 13
Ordering Guide	14 - 31
Basic modules order code	16 - 27
V Series - IO-Link	18 - 19
V Series - Industrial Ethernet	20 - 21
T Series, Lockable connector IP67 and Clip connector IP40	22 - 23
S Series, Lockable connector IP67 and Clip connector IP40	24 - 25
P Series	26 - 27
Complete modules order code	28 - 31
T Series, Lockable connector IP67 and Clip connector IP40 & V Series	29
S Series, Lockable connector IP67 and Clip connector IP40	30
P Series	31
Valve Island Head Module Port Sizing	32
Recommendations - Machines to U.S. Standard	33
Maintenance	34 - 35
Dimensions	36 - 42
V Series electrical and communication nodes - Connection and Configuration	43 - 45
Moduflex Valve Range Global Overview	46

Moduflex Valve System

The Moduflex Valve System redefines flexibility for pneumatic users. Whether configured from basic components or ordered as a pre-assembled and tested valve island, Moduflex flexibility is unmatched in the market place.



V Series



Multi wiring

V Series



Industrial Ethernet & IO-Link

T Series



Lockable Connector IP67

Clip Connector IP40

S Series



Lockable Connector IP67



Clip Connector IP40

P Series



Innovative

The 6 patents awarded to the Moduflex Valve System reflect that innovation is core to the Parker design process. Maintaining a clear understanding of our customer's expectations has defined the individuality of the Moduflex, and clearly differentiated it as a leading automation solution.

Adaptive

No other system can be adapted so simply once specified. Unique, captive fitting release system, quick release electrical connectors and single mechanical screw connection between manifolds offer the ultimate capability for late system design changes.

Multi-Functional

From stand-alone valves to communicant ready valve islands, from cylinder flow controls to vacuum generators with integrated blow-off, the Moduflex Valve System meets the requirements of the whole automation spectrum.

Light-weight

A communicant valve manifold with 8 pneumatic outputs weighs a mere 800grams, making the Moduflex Valve System the perfect choice for end of arm tooling application.

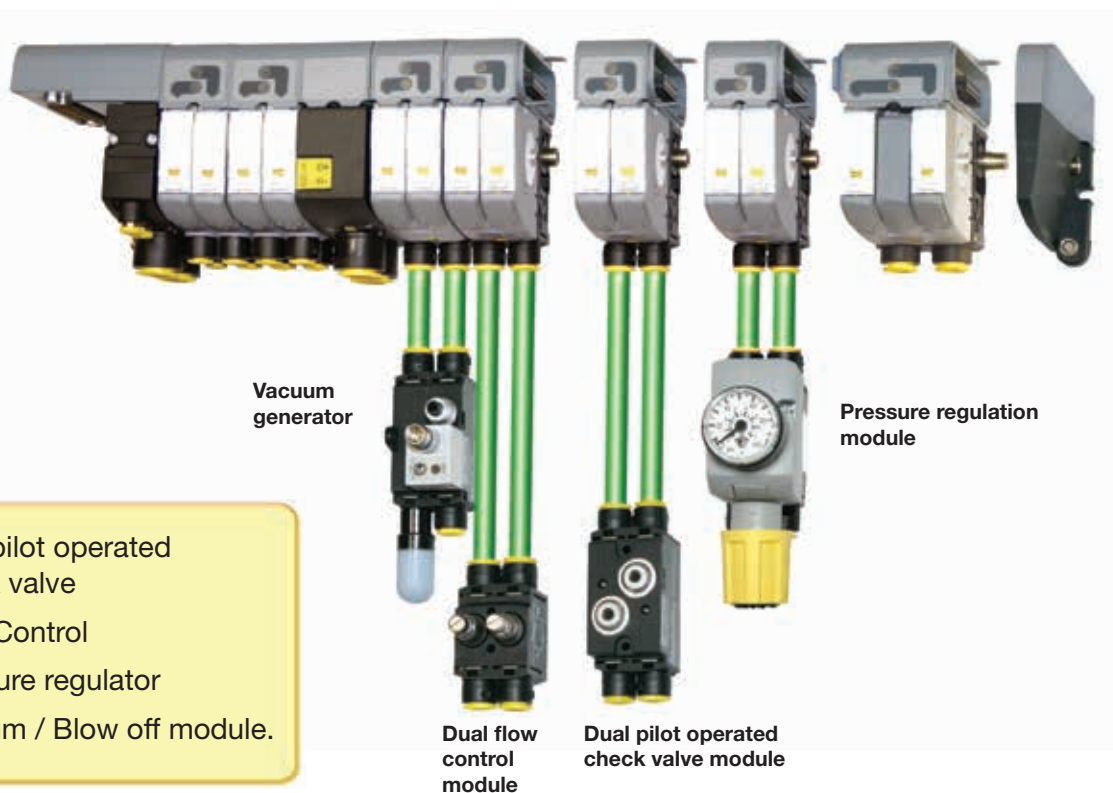
Moduflex Valve technology

Two technology platforms enable the compact design and high performance of the Moduflex Valve System. The compact dual 4/2 and 3/2 valves utilise well proven Parker seal technology. The standard 4/2 valves adopt the long life super durable ceramic switching technology.

Dual 4/2 valve**4/2 Valve**

Moduflex Complete Control

With the introduction of the dual 4/2 size 1 valves, Moduflex now offers unrivalled ability of matching valves to exact flow requirements, ensuring cost and space are minimised. In addition, Moduflex Valve System offers all the necessary control peripherals to provide a complete automation solution. Moduflex is the complete control package.



Moduflex Valve System - P2M

With high performance technology, Moduflex opens a new era in the field of electro-pneumatic automation. Valves are easily assembled into compact islands that conform to any application requirement.

Adaptive pneumatic

With the Moduflex Valve design, pneumatic automation is now totally flexible.

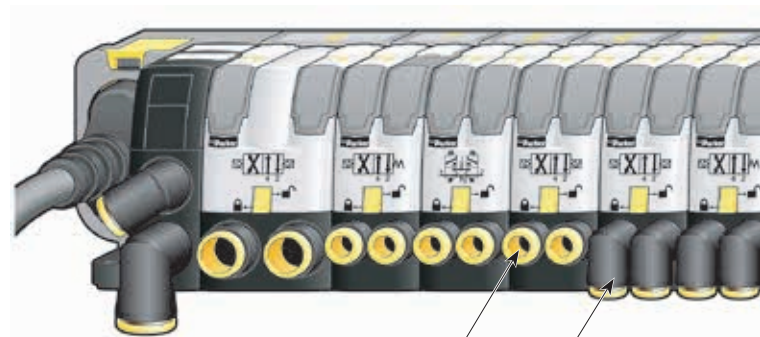
- Valves may be stand-alone or assembled into short or long islands, depending on application.
- IP 65-67 water and dust protection allows the valve to be installed near the cylinders for shorter response time and lower air consumption.
- The IP40 water and dust protection allows an optimised electrical connection for applications into cabinet or soft and none aggressive environments.
- Valve island electrical connections may be integrated.
- Push-in pneumatic connectors may be straight or elbow, for 4, 6, 8 or 10 mm OD tubes.
- A given island may incorporate different valve sizes in order to fulfill each cylinder flow requirement. A single island will accommodate all cylinders, up to 100 mm bore size.
- Island modifications are easy: add or remove a valve, change a valve function, change tubing size or change piloting in minutes.
- Manual overrides are also adaptive: locking for set up, non-locking for production.



stand-alone valve



short valve island

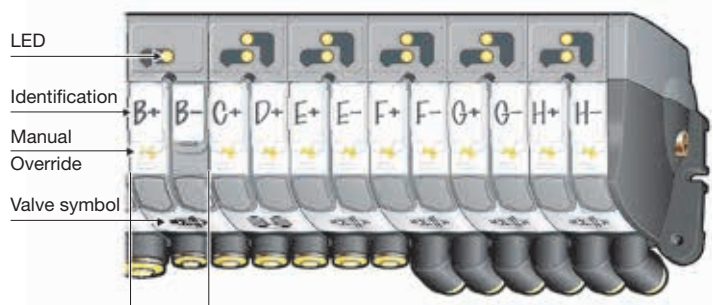


or long valve island

straight or elbow
pneumatics connectors

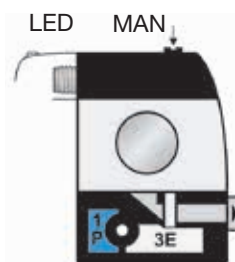
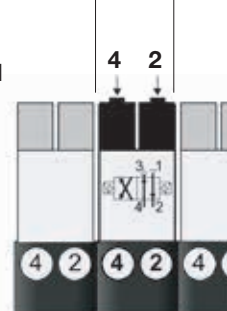
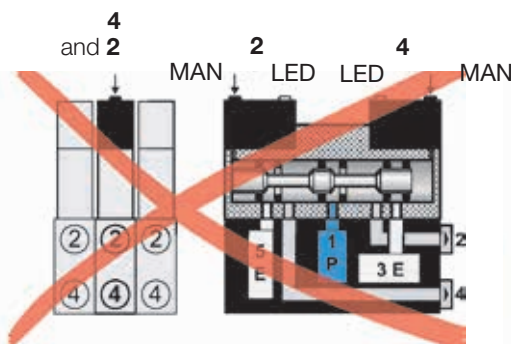
Easy man-machine dialog

- Moduflex incorporates LED indicators, manual overrides (MAN), in conjunction with valve symbols and identification.
- As compared to traditional 5/2 valve islands, Moduflex offers a more user friendly dialogue: each marking, LED and MAN are all lined up with the corresponding cylinder output.



Island with traditional 5/2 spool valves:
Before any action, LED and MAN have to be carefully related to the corresponding output.

Man-machine dialogue is difficult.



Island with Moduflex 4/2 slides valves:
Each marking, LED and MAN line up with the corresponding output.

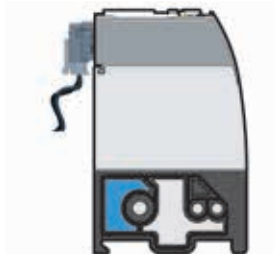
Man-machine dialogue is easy.

Moduflex Valve System - P2M

Adaptive design

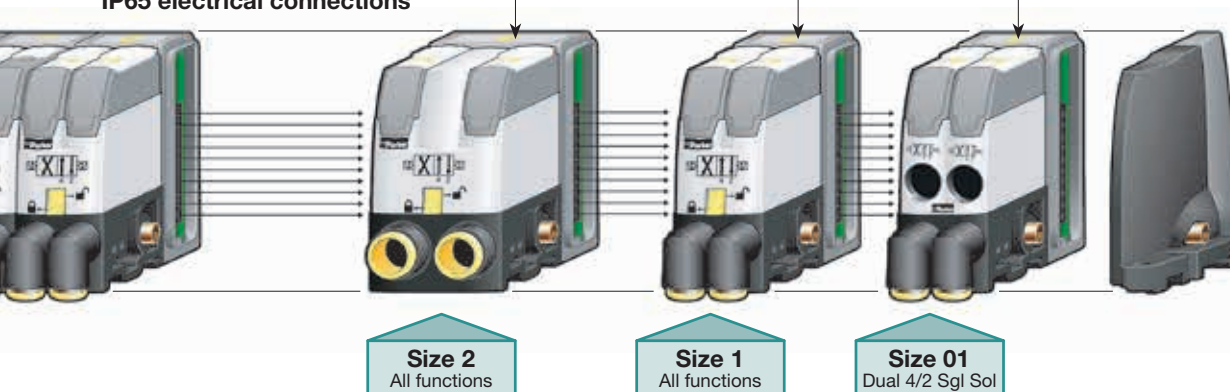
individual electrical connector

Lockable M8 Connector - IP67 or Clip Connector - IP40



or Valve Bank with integrated IP65 electrical connections

3 valves sizes in the same valve bank



Flows and tube connections



Optimal nominal section for a full flow with appropriate fitting

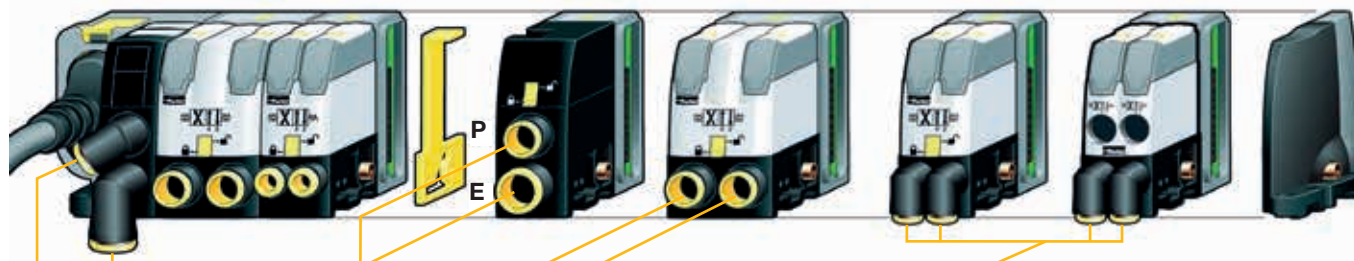
3 valve sizes lead to a global choice of tube sizes, thus covering all usual applications

Tube size to cylinder
Cylinder bore size

Size 2	
Nominal section 40 mm ²	
Qn 800 Nl/mn* Qmax 1340 Nl/mn*	
* For 3/2 functions Qn 450 Nl/mn Qmax 805 Nl/mn	
Ø Ext. 10 mm	Ø Ext. 8 mm
Ø 63 to Ø 100 mm	Ø 40 to Ø 63 mm

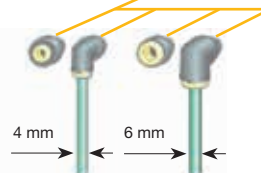
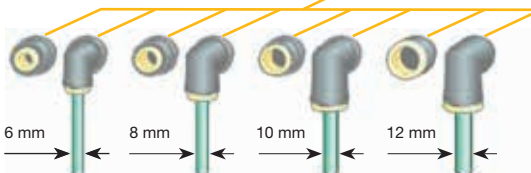
Size 1	
Nominal section 12 mm ²	
Qn 310 Nl/mn* Qmax 510 Nl/mn*	
* For 3/2 functions Qn 235 Nl/mn Qmax 415 Nl/mn	
Ø Ext. 6 mm	Ø Ext. 4 mm
Ø 25 to Ø 40 mm	Ø 6 to Ø 25 mm

Size 01	
Nominal section 4 mm ²	
Qn 165 Nl/mn* Qmax 275 Nl/mn*	
Ø Ext. 4 mm	
Ø 6 to Ø 25 mm	



Adaptive pneumatic connection

Valve outputs are equipped with clip-on push-in tube connectors with a choice of straight or elbow in different sizes



Typical cylinder speeds are shown on next pages. Module size, tube diameter and length, cylinder size, load and exhaust collection are taken into account.

Moduflex Valve System - P2M

Cylinder working speed charts

The charts below give the cylinder working speeds at 6 bar, under different conditions:

- non loaded or 50 % loaded double acting cylinder;
- exhaust piped through 2 m. long tubing, or exhaust muffled.

cylinder working speeds, in cm/s

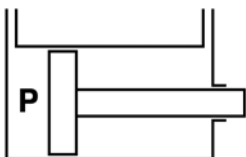
standard conditions:

- ¹ double acting cylinder
- ¹ working pressure:
P = 6 bar

specific conditions:

- exhaust piped through tube 2 m long, with next ID above ID tube from valve to cylinder.

- non loaded cylinder



valve module	tube ID	tube OD	tube length	Cylinder bore size						
				25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Size 1	2 x 4 mm	4 mm	1 m.	43 cm/s	28 cm/s					
			3 m.	27	17					
	2.7 x 4 mm	4 mm	1 m.	85	52	33 cm/s				
			3 m.	55	34	21				
	4 x 6 mm	6 mm	1 m.	167	100	62	41 cm/s	27 cm/s		
			2 m.	157	86	54	37	23		
			4 m.	125	73	46	31	19		
			8 m.	94	57	36	24	14		
Size 2	5.5 x 8 mm	8 mm	1 m.			146	102	67	40 cm/s	25 cm/s
			3 m.			122	84	54	32	20
	6 x 8 mm	8 mm	1 m.				125	78	46	30
			3 m.				105	65	39	25
	7 x 10 mm	10 mm	1 m.				135	88	53	33
			3 m.				120	77	47	30
	8 x 10 mm	10 mm	1 m.					94	57	40
			3 m.					85	53	37

cylinder working speeds, in cm/s

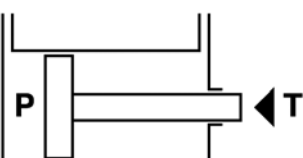
standard conditions:

- ¹ double acting cylinder
- ¹ working pressure:
P = 6 bar

specific conditions:

- exhaust piped through tube 2 m long, with next ID above ID tube from valve to cylinder.

- 50% loaded cylinder



valve module	tube ID	tube OD	tube length	Cylinder bore size						
				25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Size 1	2 x 4 mm	4 mm	1 m.	32 cm/s	20 cm/s					
			3 m.	21	13					
	2.7 x 4 mm	4 mm	1 m.	65	43	25 cm/s				
			3 m.	43	27	16				
	4 x 6 mm	6 mm	1 m.	100	85	53	36 cm/s	22 cm/s		
			2 m.	93	75	44	30	19		
			4 m.	83	62	36	24	15		
			8 m.	68	46	27	18	11		
Size 2	5.5 x 8 mm	8 mm	1 m.			83	67	44	27 cm/s	18 cm/s
			3 m.			79	54	35	21	15
	6 x 8 mm	8 mm	1 m.				77	51	32	21
			3 m.				69	43	26	17
	7 x 10 mm	10 mm	1 m.				88	59	37	24
			3 m.				81	51	30	21
	8 x 10 mm	10 mm	1 m.					63	39	27
			3 m.					58	35	25

Moduflex Valve System - P2M

Field of application :

- stand-alone valve modules **S** series
- valve island modules, **T** series and **V** series

Note : a complete machine cycle includes:

- the cylinder displacement times that can be deducted from the cylinder speeds given below
- the cylinders starting times that depend on the cylinder strokes and thus could not be included in the charts below.

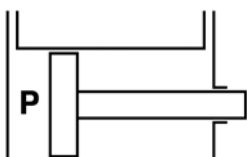
cylinder working speeds, in cm/s

standard conditions:

- ¹ double acting cylinder
- ¹ working pressure:
P = 6 bar

specific conditions:

- muffled exhaust (non collected)
- non loaded cylinder



valve module	tube ID	tube OD	tube length	Cylinder bore size						
				25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Size 1	2 x 4 mm	4 mm	1 m.	43 cm/s	27 cm/s					
			3 m.	27	17					
	2.7 x 4 mm	4 mm	1 m.	88	54	34 cm/s				
			3 m.	55	34	22				
	4 x 6 mm	6 mm	1 m.	170	98	62	42 cm/s	26 cm/s		
			2 m.	150	85	55	37	23		
			4 m.	125	70	45	31	19		
			8 m.	95	56	35	24	15		
	5.5 x 8 mm	8 mm	1 m.			181	126	80	48 cm/s	30 cm/s
			3 m.			134	91	58	35	22
Size 2	6 x 8 mm	8 mm	1 m.				139	89	54	34
			3 m.				112	70	43	27
	7 x 10 mm	10 mm	1 m.				148	94	57	37
			3 m.				125	81	49	31
	8 x 10 mm	10 mm	1 m.					102	60	42
			3 m.					90	55	38

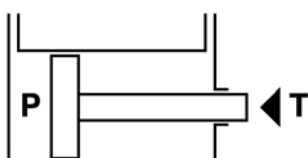
cylinder working speeds, in cm/s

standard conditions:

- ¹ double acting cylinder
- ¹ working pressure:
P = 6 bar

specific conditions:

- muffled exhaust (non collected)
- 50% loaded cylinder



valve module	tube ID	tube OD	tube length	Cylinder bore size						
				25 mm	32 mm	40 mm	50 mm	63 mm	80 mm	100 mm
Size 1	2 x 4 mm	4 mm	1 m.	35 cm/s	22 cm/s					
			3 m.	23	14					
	2.7 x 4 mm	4 mm	1 m.	67	44	27 cm/s				
			3 m.	44	28	17				
	4 x 6 mm	6 mm	1 m.	100	87	56	38 cm/s	23 cm/s		
			2 m.	93	77	46	31	19		
			4 m.	83	63	37	25	16		
			8 m.	69	46	28	18	12		
	5.5 x 8 mm	8 mm	1 m.			102	85	54	33 cm/s	22 cm/s
			3 m.			87	61	40	24	16
Size 2	6 x 8 mm	8 mm	1 m.				91	59	37	25
			3 m.				77	46	29	19
	7 x 10 mm	10 mm	1 m.				98	63	40	26
			3 m.				87	54	33	22
	8 x 10 mm	10 mm	1 m.					68	43	30
			3 m.					61	38	27

Moduflex Valve System - P2M

Two technology platforms

The well proven Parker seal technology



For 3/2 and dual 4/2 functions



Ceramic switching technology

For single 4/2 functions

Configurable manual override

For locking, non-locking or condemned manual override

24 V DC solenoid valve

Pneumatic symbol

Locking system for clip-on fittings

Straight or elbow clip-on push-in fittings

For size 1: 4 or 6 mm OD tubing
For size 2: from 6 to 12 mm OD tubing

Pneumatic valve body

Visualisation LED's

For easy man-machine dialog

Clip connector - IP40

Economic connection for traditional wiring

M8 - 3 pins for lockable connector - IP67

For traditional wiring

4 mm orientable push-in fitting

For pneumatic remote pilot

Internal connection

Up to 19 solenoids

Associating tie-rod

For easy module assembly

Auxiliary channels

Independent pilot pressure and exhaust

Material Specification

Plastics:	Polyamide reinforced fibreglass
Screws:	Zinc plated steel
Seals:	Nitrile rubber
Valve mechanism:	Aluminium alloy
Plate:	Ceramic

Certification

EMC / CE mark:	According to EN 61 000-6-2
Dust & water protection:	According to EN 60529 - NEMA 4
- S & T series:	M8 connector: IP67 Clip connector: IP40
- V series:	IP65*

* For 25 Pins D-Sub connection: IP40 or IP65 depending on the cable

Moduflex specifications answer most industries automation requirements.

Applications run from clean room electronic manufacturing to process industries in aggressive environments.

Pneumatic specifications

General Specification

Fluid		Air or Inert gas, Filtered 40µ (class 5 according to ISO 8573-1) Dry (class 4 according to ISO 8573-1) or Lubricated (with lubricated air, we recommend external pilot supply with non lubricated air)			
Operating Pressure		-0,9 to 8,0 bar			
Piloting Pressure for operating pressures below, use external pilot by configuring the head module accordingly (function available on standard head module)	3/2 N.C. or N.O.	3,5 to 8,0 bar			
	4/2 single solenoid	3,0 to 8,0 bar			
	4/2 double solenoid	3,0 to 8,0 bar			
Pilot supply	S Series	Internal			
	T & V Series	Mixed internal/external (configurable on the standard head module)			
Exhaust collection		All collectable (including pilot solenoid valve exhaust)			
Life cycle (all sizes)	3/2 N.C. or N.O.	60 million operations (with dry air, 2 Hz, 20°C, 6 bar)			
	Single and Dual 4/2	100 million operations (with dry air, 2 Hz, 20°C, 6 bar)			
Operating temperatures	Clip connector	-15°C to 60°C			
	Lockable connector				
	Multiwiring connector				
	Industrial Communication	0°C to 55°C			
Stocking temperatures		-40°C to 70°C			
Vibration resistance		2G - From 2 to 150 Hz (According to IEC 68 - 2 - 6)			
Impact resistance		15G - 11 ms (According to IEC 68 - 2 - 27)			
Flow specifications		Dual 4/2	Dual 3/2	Single 3/2	Single 4/2
Size 1	Q max. (NI/mn)	275	415	415	510
	Qn (NI/mn)	165	235	235	310
Size 2	Q max. (NI/mn)	-	805	805	1340
	Qn (NI/mn)	-	450	440	800

Moduflex Valve System - P2M

Electrical specifications

Pilot solenoid Specifications			
Electric Connector		M8	Clip connector
Rated Voltage		24 Vdc	
Electric Connection		Not polarized	Polarized
Allowable voltage fluctuation		-15% to +10% (at 20°C)	+/- 10% (at 20°C)
Coil insulation type		Class B	Class F
Power consumption		Without lockable connector: 1W	1W
		With lockable connector: 1,2W	
Visualisation and surge protection		Included into lockable connector	Included on pilot solenoid
Manual override		Configurable: Locking or non-locking, isolated if required	
Response Time of the complete valve (with connector)	3/2 N.C. or N.O.	Actuating: 10 ms Return: 15 ms	
	4/2 single solenoid		
	4/2 double solenoid	10 ms	
Duty factor		ED 100%	
Dust and Water protection	S & T Series	IP67 (with lockable connector)	IP40 (with clip connector)
	V Series	Guillotine connector of fieldbus: IP65 Sub-D 25: IP40 or IP65 (depending on the cable)	

Communication module specifications

Ethernet Protocols		Profinet IO	EtherNet/IP	Modbus/TCP	EtherCAT	PowerLink	CC-Link IE
Ethernet specifications		According to protocol specifications					
Speed communication		10/100 Mb - Half / Full duplex					1 Gb
Service Web Page		YES			N/A		
Logic power supply		24 Vdc - According to protocol specifications					
Topology (Internal 2 port switch)		Line / Ring			Line		
Aux. power	Voltage	20,4 Vdc to 26,4 Vdc					
	OSSD compability	Yes (Test Pulsed supported)					
	Galvanic isolation	2,5 kV (Logic and auxiliary power)					
Max. current limit	Total	2 A					
	Per channel	150 mA					
	Protection	Polarity inversion & short circuit					
IO-Link 		Standard Version			-SPC Version		
IO-Link specifications		According to IO-Link V1.1.2					
Speed communication		Com2 - 38 kBd					
Logic power supply		Module powered by IO-Link master according to IO-Link V1.1.2					
Aux. power	Voltage	20,4 Vdc to 26,4 Vdc					
	OSSD compability	No			Yes (Test Pulsed supported)		
	Galvanic isolation	Yes					
Max. current limit	Total	4A			2A		
	Per channel	150 mA					
	Protection	Polarity inversion & short circuit					
All Protocols		EMC/CE mark		According to EN 61000-6-2 & EN 50081-2			

Technical characteristics

Vacuum module

Fluid

Compressed air or inert gas, filtered 40µ mini., not lubricated

Working pressure

1 to 8 bar

Working temperature

-15°C to +60°C

Materials

Body: Polyamide 6,6 reinforced fibreglass

Poppet: Nitrile

Nozzle: Brass

Clip connector: Treated steel

Pressure sensor

Fluid

Air or inert gas, filtered 40µ mini., not lubricated

Working temperature

0°C to +50°C

Supply

10,8 to 30 V DC

Digital output

PNP 125 mA

Materials

Body: Polycarbonate

Connection drawing

