Automation with function integration – the pneumatic and electrical modules of the valve terminal CPX/MPA

Fieldbus nodes and Industrial Ethernet

Type	CPX-FB11	CPX-FB13	CPX-FB14	CPX-M-FB21	CPX-FB23-24	CPX-FB36	CPX-FB37	CPX-M-FB39	CPX-M-FB40	CPX-FB43	CPX-M-FB44	CPX-M-FB45
Order code	F11	F13	F14	F21	F23/24	F36	F37	F44	F45	F43	F44	F45
Part no.	526172	195 740	526174	572221	526 176	1912451	2735960	8110370	8110371	8110369	8110370	8110371
Fieldbus protocol	DeviceNet®	PROFIBUS DP	CANopen	INTERBUS®	CC-LINK®	Modbus TPC / EtherNet/IP	EtherCAT®	SERCOS III	POWERLINK	PROFINET IO, MQTT functionality		
Fieldbus interface	Sub-D, 9-pin, pin M12, 5-pin, A-coded, screw terminal	Sub-D, 9-pin, pin M12, 5-pin, B-coded, socket and pin	Sub-D, 9-pin, pin M12, 5-pin, A-coded, screw terminal	Rugged Line fibre-optic cable	Sub-D, 9-pin, socket, screw terminal	M12, 5-pin, D-coded	M12, 5-pin, D-coded	M12, 5-pin, D-coded	M12, 5-pin, D-coded	M12, 5-pin, D-coded	AIDA[1] push-pull	AIDA[1] fibre-optic cable
Inputs	64 bytes	64 bytes	64 bytes	12 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes
Outputs	64 bytes	64 bytes	64 bytes	12 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes

1) AIDA = Automation Initiative of German Domestic Automobile Manufacturers

Control block: CODESYS embedded control with OPC-UA

Type	CPX-CEC-S1-V3	CPX-CEC-C1-V3	CPX-CEC-M1-V3
Order code	T32	T33	T34
Part no.	3472425	3473128	3472765
Programming, interface, connection	CODESYS controller with serial interface (Sub-D, RS232) for connecting PCs for programming as well as for operator units such as front-end display FED.	CODESYS controller with CANopen master for connecting additional field devices. Type M1 additionally with Soft-Motion library for 3D interpolation.	
Baud rate	Ethernet 10/100 BaseT (RJ45)		
Description	The optional front-end controllers CPX-CEC, as stand-alone controller or in parallel with a bus node, enable simultaneous access via Ethernet and an integrated web server, as well as autonomous preprocessing. Access via Modbus/TCP and EasyIP is also possible. Commissioning, programming and diagnostics using the Festo software tools or CODESYS provided by Festo.		

Diagnostic tools

Type	FAS	MFT	Adapter cable
Order code			NEFC-M12G5-0.3-U1G5
Part no.			547432
Description	Festo Maintenance Tool	Festo Automation Suite	USB to RS232 adapter cable
	Error location and error type (CPX error messages), plain-text error message, no programming required, saving of the hardware configuration, production of screenshots		

The capabilities of CPX/MPA

Virtually without limits – possible only with electrical peripherals CPX from Festo:
the numerous options for function integration on valve terminals and the CPX as remote I/O. Function integration reduces the costs along your entire value chain.

Applications of the CPX/MPA platform:
- Digital and analogue standard tasks
- Demanding I/O tasks with single-channel diagnostics and parameterisation
- Temperature, displacement and pressure measurement
- Electrical and pneumatic safety functions
- Integrated, comprehensive diagnostics and condition monitoring
- Subordinate, decentralised installation system

Combine these functions directly with the operating elements in the process
- Pilot or process valves
- Control valves for cylinders, grippers, vacuum
- Pressure regulators
- Servo-pneumatic positioning systems
- Electric drives and axes

Choice of control via fieldbus/Ethernet as remote I/O or the following front-end controllers:
- CPX-CEC (CODESYS controller with 32-bit processor, 800 MHz, CANopen master)
- CODESYS V3 and OPC-UA are building a bridge to Industry 4.0, also known as the Internet of Things (IoT)

Valve terminal MPA:
→ www.festo.com/catalogue/mpa

Electrical peripherals CPX:
→ www.festo.com/catalogue/cpx

Configurable products (modular systems)

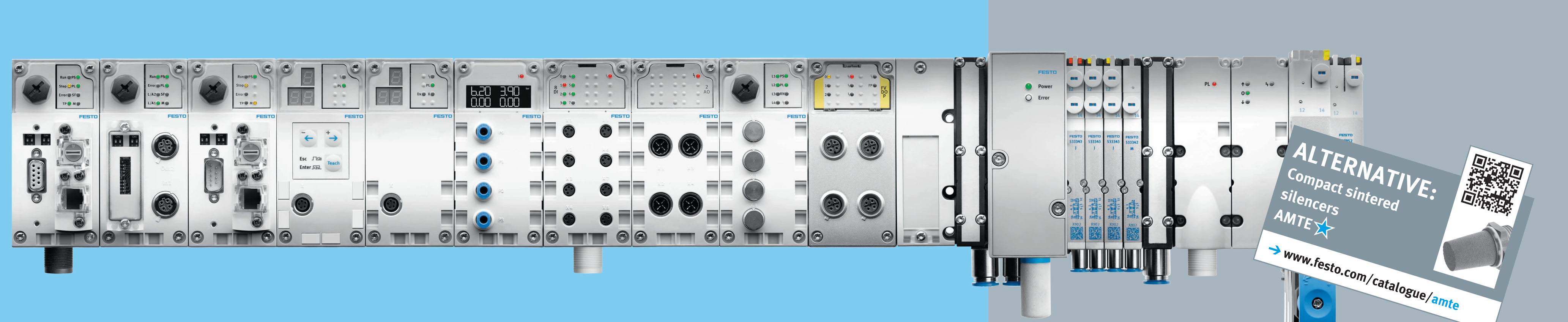
Type	Order code E	Module no.	Valve terminal
MPA-FB-VI	32P-...	530411	MPA with fieldbus
MPA-MPM-VI		539105	MPA with multi-pin plug
MPA-ASI-VI		546279	MPA with AS-Interface
MPA-CPI-VI		546280	MPA with CP interface (CPI system)
			Modular electrical terminal
CPX	50E	197330	CPX (without valve terminal)
	51E		CPX with metal interlinking block
	53E		CPX for control cabinet construction, IP20
	54E		CPX intrinsically safe IS modules possible

FESTO

Electronics modules

Type	CPX-8DE	CPX-4DE	CPX-8DE-D	CPX-8NDE	CPX-16DE	CPX-M-16DE-D	CPX-8DE-8DA	CPX-4DA	CPX-8DA	CPX-8DA-H	CPX-2AE-U-I	CPX-2AA-U-I	CPX-4AE-I
Order code	E	F	D	O	M	NM	Y	A	L	NL	U	P	I
Part no.	195750	195752	541480	543813	543815	550202	526257	195754	541482	550204	526168	526170	541484
Housing/screening													
Number of inputs	8	4	8	8	16	16	8	–	–	–	2	–	4
Number of outputs	–	–	–	–	–	–	8	4	8	8	–	2	–
Switching logic	PNP	PNP	PNP	NPN	PNP	PNP	PNP	PNP	PNP	PNP	12 bit	12 bit	12 bit
Signal range	–	–	–	–	–	–	–	–	–	–	0-10 V 0-20 mA 4-20 mA	0-10 V 0-20 mA 4-20 mA	0-20 mA 4-20 mA
Max. current supply per channel	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	1 A	0.5 A	2.1 A	0.7 A	2.8 A	0.7 A

Type	CPX-4AE-U-I	CPX-4AE-P-B2	CPX-4AE-P-D10	CPX-4AE-T	CPX-4AE-TC	CPX-L-16DE-16-KL-3POL	CPX-L-8DE-8DA-16-KL-3POL	CPX-FVDA-P2	CPX-F8DE-P	CPX-P-8-DE-N	CPX-P-8-DE-N-IS	CPX-2ZE2DA
Order code	NI	NV	NY	T	NT	NB	NC	NG	ND	BR	BW	T25
Part no.	573710	560361	560362	541486	553594	172606	572607	1 971599	2 597424	565933	565934	576046
Housing/screening								Metal screening and metal housing				
Number of inputs	4	4	4	4	4	16	8	3	8	8	8	2 high-speed inputs
Number of outputs	–	–	–	–	–	–	8	–	–	–	–	2 high-speed outputs
Switching logic	15 bit	10 bit	10 bit	12 bit	12 bit	PNP	PNP	PROFIsafe	PROFIsafe	NAMUR	NAMUR	PNP/PWM
Signal range	0-10 V, 0-20 mA, 4-20 mA, ±10 V, ±20 mA, ±5 V	-1...1 bar	0...10 bar	PT100, PT200, PT500, PT1000, NI100, NI120, NI500, NI1000, 2-, 3- or 4-wire technology	Type B, E, J, K, N, R, S, T, 2-wire technology	–	–	–	–	–	Intrinsically safe	Inputs up to 100 kHz/1 MHz at 24 V/5 V, outputs up to 20 kHz (PWM), controller for 24 V DC motor
Max. current supply per channel	0.7 A	–	–	–	–	0.25 A	0.25 A	1.5 A	0.5 A	–	–	–



ELECTRIC PNEUMATIC

ALTERNATIVE: Compact sintered silencers AMTE
→ www.festo.com/catalogue/amte

Reliable configuration

The quick way to your MPA
+ Reliable to configure
+ Easy to order
→ www.festo.com/catalogue/mpa

Easy-to-search Support Portal

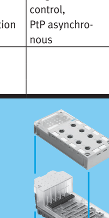
Online support
+ Product information
+ User documentation
+ Certificates
+ Software
→ www.festo.com/sp/mpa

Motion control technology modules – electric drives and servo-pneumatics

Type	CPX-CEC-C1-V3	CPX-CEC-M1-V3	CPX-CM-HPP
Order code	T33	T34	T31
Part no.	3473128	3472765	562214
Fieldbus protocol	CODESYS	CODESYS Soft-Motion 3D	FHPP
Description	Single-axis control, PtP asynchronous	Multi-axis control, 3D interpolation	Single-axis control, PtP asynchronous
	CANopen master for connecting additional field devices		

Type	CPX-CMPX-C-1-H1	CPX-CMIX-M1-1	CPX-CMAX-C1-1
Order code	T20	T23	T21
Part no.	548931	567417	548932
Moving mass	1...300 kg horizontal	–	1...300 kg horizontal
	1...100 kg vertical	–	1...100 kg vertical
Mid-positions	Up to 2 freely programmable mid-positions, including via the fieldbus	–	–
Positioning/repetition accuracy	Accuracy ± 0.25% of the displacement encoder length, but at least ± 2 mm	DGCI and DNCI: ±0.01 mm Stroke-dependent potentiometer: <360 mm = ±0.01 mm >360 mm = ±0.06 mm	≤ ±0.2 mm
Controlled force at 6 bar	–	–	30...2700 N
Travel speed	–	–	Max. 3 m/s
Acceleration	–	–	Max. 30 m/s²
Extension	Soft Stop electric end-position cushioning in combination with proportional directional control valve VPWP for strokes up to 2 m	Max. cable length between controller and drive: 30 m	–
Description	End-position controller CPX-CMPX Fast travel between the mechanical end stops of the cylinder, moving gently and without impact into the end position + 2 mid-positions	Measuring module CPX-CMIX Turns pneumatic cylinders into sensors. And is the only one of its kind in the world thanks to fully digital data acquisition* and data transfer. Repetition accuracy of ±0.01 mm with integration of digital transducers.	Servo-pneumatic position controller CPX-CMAX Position and force control for linear or rotary drives, directly actuated or selected from one of 64 configurable position sets.

*Depending on the measuring system



The connection technology for sensors and additional actuators offers a wide range of digital and analogue input and output modules and is freely selectable, as appropriate to your standard or application. Polymer or metal connection blocks can be combined as required:

Subordinate, decentralised installation systems

Type	CPX-CP-4-FB	CPX-CTEL-4-M12-5POL	CPX-CTEL-2-M12-5POL-LK
Order code	T11 to T18	T40 to T44	T45 to T48
Part no.	526705	1577012	2900543
Number of CP strings/connections	4 strings	4 connections	2 connections
String/cable length	Max. 10 m (string)	Max. 20 m	Max. 20 m
Number of modules per string/connection	Up to 4 strings with up to 4 modules each and up to 32 I/Os per string Power supply and bus interface via the same cable	One I-Port module per connection	One IO-Link® module per connection
Description	Installation system CPI Cost-optimised installation system for more than 5 subordinate stations such as valve terminals or I/O modules. Short tubing helps optimise cycle times and reduces installation costs.	Installation system CTEL Cost-optimised installation system for up to 4 Festo I-Port stations. Can be combined with a large I/O module portfolio such as CTSL input modules.	The CPX-CTEL-2-M12-5POL-LK module enables the connection of further IO-Link® devices. It has 2 ports and can be combined with the bus nodes for PROFINET and SERCOS III.

Pneumatic interface

Type	VMPA-FB-EPL-GU	VMPA-FB-EPL-EU	VMPA-FB-EPL-G	VMPA-FB-EPL-E	VMPA-FB-EPLMGU	VMPA-FB-EPLM-EU	VMPA-FB-EPLM-G	VMPA-FB-EPLM-E	VMPA1-MPM-EPL-GU	VMPA1-MPM-EPL-EU	VMPA1-MPM-EPL-G	VMPA1-MPM-EPL-E
Order code	S	T	V	X	S	T	V	X	S	T	V	X
Part no.	533372	533371	533370	533369	552288	552287	552286	552285	540896	540895	540894	540893
Connection/interface	Fieldbus								Multi-pin plug			
Pilot air	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External	Internal	External
Exhaust air	Flat plate silencer		Ducted		Flat plate silencer		Ducted		Flat plate silencer		Ducted	
Housing					CPX metal interlinking block							

Right-hand end plate

Type	VMPA-EPR	VMPA-EPR-G
Order code	–	–
Part no.	533373	8029133
		With exhausting for 82/84

Tie rod for polymer interlinking blocks

Type	CPX-ZA-1	CPX-ZA-2	CPX-ZA-3	CPX-ZA-4	CPX-ZA-5	CPX-ZA-6	CPX-ZA-7	CPX-ZA-8	CPX-ZA-9	CPX-ZA-10	CPX-ZA-1-E
Part no.	195718	195720	195722	195724	195726	195728	195730	195732	195734	195736	525418
Number of modules	1	2	3	4	5	6	7	8	9	10	Tie rod extension for 1 module

System linking
- Modules supplied with the various voltage values
- Serial communication between the modules

System supply
- M18 4-pin
- M12 L-coded
- 7/8", 4- or 5-pin
- AIDA push-pull

In addition to system linking
Power supply for the
- electronics and sensors (16 A)
- valves and actuators (16 A)

•

Note
Polymer interlinking block is connected using tie rods!

Additional supply
In addition to system linking for supplying power to the
- actuators (16 A per supply)
- valves (16 A per supply)

Extendibility
- Can be extended by an interlinking block with tie rod extension CPX-ZA-1-E

Extremely flexible connection technology

Type	CPX-AB-4-M12X2-5POL	CPX-AB-8-M8-3POL	CPX-AB-8-KL-4POL	CPX-AB-1-SUB-BU-25POL	CPX-AB-4-M12-8POL	CPX-AB-8-M8X2-4POL	CPX-AB-4-M12X2-5POL-R	CPX-AB-8-KL-4POL	AK-8KL	CPX-AB-4-M12X2-5POL	CPX-AB-S-4-M12	CPX-M-4-M12X2-5POL	CPX-M-8-M12X2-5POL	CPX-AB-8-M12X2-5POL	CPX-P-AB-2XKL-8POL	CPX-P-AB-4XM12-4POL	CPX-P-AB-2XKL-8POL-8DE-N-IS	CPX-P-AB-4XM12-4POL-8DE-N-IS
Order code	X	R	J	B	C	GQ	GW	KJ		W		KA	KB	KD	BJR	BXR	BJW	BXW
Part no.	195704	195706	195708	525676	526178	541256	541254	195708	538219	195704	526184	549367	549335	3606900	565704	565706	565703	565705
Connection	M12, 5-pin	M8, 3-pin	CageClamp, 4-pin	Sub-D, 25-pin	M12, 8-pin	M8, 4-pin	M12, 5-pin	CageClamp, 4-pin, with covering hood in IP65		M12, 5-pin		M12, 5-pin	M12, 5-pin	M12, 5-pin	Terminal	M12, 4-pin	Terminal	M12, 4-pin
Number of sockets	4	8	8	1	4	8	4	8		4		4	8	8	8	4	8	4
Degree of protection	IP65/IP67	IP65/IP67	IP20	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67		IP65/IP67		IP65/IP67	IP65/IP67	IP65/IP67	IP20	IP65/IP67	IP20	IP65/IP67
Housing/screening	Metal screening						Metal screening			Metal screening		Metal housing and metal screening				Metal screening		Metal screening
Combinations																		
CPX-8DE (E)	■	■	■	■			■	■		■		■						
CPX-4DE (F)	■	■	■	■			■	■		■		■						
CPX-8DE-D (D)	■	■	■	■			■	■		■		■						
CPX-8NDE (O)	■	■	■	■			■	■		■		■						
CPX-16DE (M)			■	■		■												
CPX-M-16DE-D (NM)													■	■				
CPX-8DE-8DA (Y)			■	■	■													
CPX-4DA (A)	■	■	■	■		■	■	■		■		■						
CPX-8DA (L)	■	■	■	■		■	■	■		■		■						
CPX-8DA-H (NL)		■	■	■		■	■	■		■		■						
CPX-2AE-U-I (U)	■	■	■	■			■	■		■		■						
CPX-2AA-U-I (P)	■	■	■	■			■	■		■		■						
CPX-4AE-I (I)	■	■	■	■			■	■		■		■						
CPX-4AE-U-I (NI)	■	■	■	■			■	■		■		■						
CPX-4AE-T (T)	■	■	■	■			■	■		■		■						
CPX-4AE-TC (NT)	■	■	■	■			■	■		■		■						
CPX-P8DE-N (BR)															■	■		
CPX-P8DE-N-IS (BW)																	■	■
CPX-FVDA-P2 (NG)								■				■						
CPX-F8DE-PND (ND)								■				■						

More state-of-the-art electrical connection technology:
You will find an extensive range of connecting cables, distributors and plugs online:

Connecting cables: **NEBU**
→ www.festo.com/catalogue/nebu

Distributor cables: **NEDY**
→ www.festo.com/catalogue/nedy

Sensor plugs: **NECU**
→ www.festo.com/catalogue/necu

Example:
Type: NEBU-M8G3-K-2.5-LE3
Part no.: 541333
M8, straight socket, 2.5 m, open end

Interlinking blocks

Type	CPX-GE-EV	CPX-GE-EV-S	CPX-GE-EV-Z	CPX-GE-EV-V	CPX-GE-EV-S-7/8-5POL	CPX-M-GE-EV	CPX-M-GE-EV-S-7/8-5POL	CPX-M-GE-EV-Z-7/8-5POL	CPX-M-GE-EV-S-PP-5-POL	CPX-M-GE-EV-Z-PP-5-POL	CPX-M-GE-EV-S-M12-5POL	CPX-M-GE-EV-W-M12-5POL	CPX-M-GE-EV-FVO
Design	Polymer version, connected to the end plate via tie rods, modular					Metal version, individually linked, screwed-in, modular							
Order code	–	QS	QZ	QV	QP	–	QP	QX	QW/QN	QT	QA	QB	QF
Part no.	195742	195746	195744	533577	541244	550206	550208	550210	563057	563058	8098392	8098391	567806
Connection	–	M18, 4-pin	M18, 4-pin	M18, 4-pin	7/8", 5-pin	–	7/8", 5-pin	7/8", 5-pin	AIDA, 5-pin	AIDA, 5-pin	M12-L, 5-pin	M12-L, 5-pin	–
Description	Basic linking module in polymer	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V common • FE	Supply for: • 24 V actuators • 0 V actuators • FE	Supply for: • 24 V valves • 0 V valves • FE	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Basic linking module in metal	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Supply for: • 24 V actuators • 0 V actuators • FE	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Supply for: • 24 V actuators • 0 V actuators • FE	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Voltage tap for subsequent valve terminals • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Interlinking block for PROFIsafe

QW: system supply/QN: voltage tap for subsequent valve terminals

End plates

Type	CPX-EPL-EV	CPX-EPR-EV	CPX-EPFE-EV	CPX-EPL-EV-S	CPX-M-EPL-EV	CPX-M-EPR-EV
Order code	–	Z	BE	QE	–	Z
Part no.	195716	195714	538892	576315	550212	550214
Description	Left-hand end plate	Right-hand end plate	Earthing component	Left-hand end plate with system supply, IP20	Left-hand end plate	Right-hand end plate

CPX extension

Type	CPX-EPR-EV-X	CPX-EPL-EV-X	CPX-M-EPR-EV-X	CPX-M-EPL-EV-X
Order code	ZR1/ZR2	ZR1	ZR3/ZR4	ZR2/ZR3/ZR4
Part no.	576313	576314	576316	576317
Description	Right-hand end plate for CPX extension	Left-hand end plate for CPX extension	Right-hand end plate for CPX extension	Left-hand end plate for CPX extension

Connecting cable for multi-pin plug connection

Designation		Type	Part no.
Hood without connecting cable for self-assembly		VMPA-KMS-H	533198
PVC connecting cable for 8 solenoid coils	2.5 m	VMPA-KMS1-8-2,5	533195
	5 m	VMPA-KMS1-8-5	533196
	10 m	VMPA-KMS1-8-10	533197
PVC connecting cable for 24 solenoid coils	2.5 m	VMPA-KMS1-24-2,5	533192
	5 m	VMPA-KMS1-24-5	533193
	10 m	VMPA-KMS1-24-10	533194
PUR connecting cable for 8 solenoid coils, suitable for energy chains	2.5 m	VMPA-KMS2-8-2,5-PUR	533504
	5 m	VMPA-KMS2-8-5-PUR	533505
	10 m	VMPA-KMS2-8-10-PUR	533506
PUR connecting cable for 24 solenoid coils, suitable for energy chains	2.5 m	VMPA-KMS2-24-2,5-PUR	533501
	5 m	VMPA-KMS2-24-5-PUR	533502
	10 m	VMPA-KMS2-24-10-PUR	533503

CONNECTION TECHNOLOGY

Connectors for fieldbus connection

Type	FBS-SUB-9-GS-DP-B	FBA-2-M12-5POL-RK	CPX-AB-2-M12-RK-DP	FBS-SUB-9-BU-IB-B	FBS-SUB-9-GS-IB-B	CPX-AB-2-M12-RK-IB	FBS-SUB-9-BU-2x5POL-B	FBA-2-M12-5POL	FBSD-GD-9-5POL	FBS-M12-5GS-PG9	FBA-1-SL-5POL	FBSD-KL-2x5POL	FBS-SUB-9-GS-2x4POL-B	FBA-1-KL-5POL
Order code	GE	GF	GO	GI	GI	GP	GD	GA	–	–	GB		GM	GL
Part no.	532216	533118	541519	532218	532217	534505	532219	525632	18324	175380	525634	525635	532220	197962
Description	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Fieldbus connection, 2x M12, B-coded	Fieldbus connection, 2x M12, B-coded	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, socket	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Fieldbus connection, 2x M12, B-coded	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, socket	Fieldbus connection, 2x M12, A-coded	Fieldbus socket, M12, 5-pin, socket, A-coded, incoming	Fieldbus plug, M12, 5-pin, pin, A-coded, outgoing	Fieldbus connection, 5-pin, pin header	Terminal strip, screw connection (open style)	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Fieldbus connection, 5-pin, screw terminal strip

Connecting cables for CPX extension

Type	NEBC-F12G8-KH-0.25-N-S-F12G8	NEBC-F12G8-KH-0.5-N-S-F12G8	NEBC-F12G8-KH-1-N-S-F12G8	NEBC-F12G8-KH-1.5-N-S-F12G8	NEBC-F12G8-KH-2-N-S-F12G8	NEBC-F12G8-KH-3-N-S-F12G8
Order code	VL1	VL2	VL3	VL4	VL5	VL6
Part no.	564189	564190	564191	564192	576015	576636
Description	Cable for CPX extension, 0.25 m	Cable for CPX extension, 0.5 m	Cable for CPX extension, 1 m	Cable for CPX extension, 1.5 m	Cable for CPX extension, 2 m	Cable for CPX extension, 3 m

Connectors for technology modules

Type	FBS-SUB-9-GS-1x9POL-B	FBS-RJ45-8-GS	NECU-M-S-B12G5-C2-PB	NECU-M-B12G5-C2-PB	CACR-S-B12G5-220-PB	NECU-M-S-D12G4-C2-ET	FBS-RJ45-PP-GS	FBS-SCRJ-PP-GS	CPX-M-AK-C
Order code	–	GH	GA	GB	GC	GZ	GJ	GK	BC
Part no.	534497	534494	106635 4	106790 5	107212 8	543109	552000	571017	548753
Description	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Ethernet plug, RJ45, IP65/IP67, 8-pin	Straight plug, outgoing M12x1, 5-pin, B-coded, screened	Straight socket, incoming M12x1, 5-pin, B-coded, screened	Terminating resistor	Straight plug/screw terminal M12x1, 4-pin, screened, D-coded, Industrial Ethernet	Plug, RJ45 (Ethernet, push-pull)	Plug, fibre-optic cable (Ethernet, push-pull)	Cover cap for push-pull
	CPX-CEC/CPX-FEC								

Connectors for power supply

Type	NTSD-GD-9	NTSD-GD-13,5	NTSD-WD-9	NTSD-WD-11	NECU-G78G5-C2	NEBU-G78-W5-K-2-N-LE5	NECU-L3G7-C1	NECU-M-PPG5-C1-PN
Order code	N	M	I	J	GS	GG	QE	GR
Part no.	18493	18526	18527	533119	543107	573855	576319	5195383
Description	Power supply socket, straight, PG9, 4x 1.5 mm², M18, 4-pin	Power supply socket, straight, PG13, 4x 2.5 mm², M18, 4-pin	Power supply socket, angled, PG9, 4x 1.5 mm², M18, 4-pin	Power supply socket, angled, PG11, 4x 2.5 mm², M18, 4-pin	Power supply socket, straight, 7/8", 5-pin	Power supply socket, angled, 2 m cable, 7/8", 5-pin	Terminal strip for system supply IP20	Power supply socket, straight, 5-pin, AIDA

Connectors for inputs and outputs

Type	SEA-GS-7	SEA-GS-9	SEA-4GS-7-2,5	SEA-M12-5GS-PG7	SEA-GS-11-DUO	SEA-5GS-11-DUO	SD-SUB-D-ST25	SD-SUB-D-ST25-5M	SD-SUB-D-ST25-10M	SEA-3GS-M8-S	SEA-GS-M8	NECU-S-M8G4-C2	ISK-M8	ISK-M12
Connection technology	M12						Sub-D			M8, 3-pin		M8, 4-pin	–	–
Order code	S	T	W	P	X	K	E	–	–	C	R	GD	BA	BA
Part no.	18666	18778	192008	175487	18779	192010	527522	543473	543474	192009	18696	1068198	177672	165592
Description	Straight sensor plug, M12, PG7, 4-pin, for cable Ø 4.0-6.0 mm	Straight sensor plug, M12, PG9, 4-pin, for cable Ø 6.0-8.0 mm	Straight sensor plug, M12, PG9, 4x1, 2.5 mm², for cable Ø 2.5-2.9 mm	Straight sensor plug, M12, PG7, 5-pin, for cable Ø 4.0-6.0 mm, metal thread	Straight sensor plug, M12, DUO, 4-pin	Straight sensor plug, M12, DUO, 5-pin	Sub-D plug, 25-pin	Cable, Sub-D, 25-pin, 5 m, open end	Cable, Sub-D, 25-pin, 10 m, open end	Straight sensor plug, M8, screw-in	Straight sensor plug, M8, solderable	Straight sensor plug, M8, 4-pin	Cover caps for M8	Cover caps for M12

Sub-bases

Type	VMPA1-FB-AP-4-1	VMPA1-FB-AP-4-1-T1	VMPA1-FB-AP-4-1-S1	VMPA14-FB-AP-4-1	VMPA14-FB-AP-4-T1	VMPA14-FB-AP-4-S1	VMPA2-FB-AP-2-1	VMPA2-FB-AP-2-1-TO	VMPA2-FB-AP-2-1-SO	VMPA-FB-AP-P1
Order code	A, C, QA	AI, CI	AIII, CIII	E, QE	EI	EIII	B, D	BI, DI	BIII, DIII	QX, QZ
Part no.	533352	538657	555901	8074666	8043928	8043929	538000	538677	555902	542223
Width [mm]	10			14			20			–
Size	1			14			2			–
Valve positions	4 (8/4)			4 (8/4)			2 (4/2)			1
Pneumatic connections										
Supply (1)	–									G1/4, QS8, QS10
Working ports (2, 4)	M7, QS4, QS6			G1/8, QS6, QS8			G1/4, QS6, QS8			G1/4, QS6, QS8
Duct separation in the sub-base										
Duct 1 (code I)	–	■	–	–	■	–	–	■	–	–
Duct 1, 3/5 (code III)	–	–	■	–	–	■	–	–	■	–
Description	For multi-pin plug/fieldbus, without electrical interlinking module									For proportional pressure regulator, without electrical interlinking module and without electronics module • External pressure regulation (code QX) • Pressure zone control (code QZ)

Pneumatic working ports (2, 4)

Type	QSM-M7-6-I	QSM-G1/8-8-I	QSM-G1/4-8-I	QSM-M7-4-I	QSM-G1/8-6-I	QSM-G1/4-6-I	None		
Order code	G			F			C		
Part no.	153321	186109	186110	153319	186107	186108			
For sub-base	MPA1	MPA2/14	–	MPA1	MPA2/14	–	MPA1	MPA2/14	–
For proportional pressure regulator VPPM	–	–	•	–	–	•	–	–	•
Connecting thread	M7	G1/8	G1/4	M7	G1/8	G1/4	M7	G1/8	G1/4
Push-in connector [mm]	6	8	8	4	6	6	–	–	–

Supply port on the pneumatic interface

Type	QS-G1/4-10-I	QSM-M7-6-I	QS-G1/4-8-I		
Order code	L	L, K	K	D	
Part no.	186112	153321	186110	–	–
Supply air (1)	Yes	–	Yes	–	–
Pilot air (12/14, 82/84)	–	Yes	–	–	–
Thread	G1/4	M7	G1/4	G1/4	M7
Push-in connector [mm]	10	6	8	-	-

Auxiliary pilot air

Order code	S	T	V	X
Auxiliary pilot air	Internal Branched from 1 in the pneumatic interface	External Connected at port 12/14	Internal Branched from 1 in the pneumatic interface	External Connected at port 12/14
Pressure range [bar]	3 ... 8	-0.9 ... 10	3 ... 8	-0.9 ... 10
Exhausting	Silencer: Ports 3/5 and 82/84 exhaust via silencer on the pneumatic interface and supply plate		Ducted exhaust air: Port 3/5 on the pneumatic interface and supply plate, port 82/84 on mandatory right-hand supply plate	

Compressed air supply, exhausting and pressure zone creation

Type	VMPA1-...-SP...	VMPA1-...-SP...	VMPA1-...-SP...	VMPA1-FB-SPU	VMPA1-FB-SP	VMPA-APU	VMPA-AP	VMPA-AP-3/8	VMPA1-DPU
Designation	Supply plates					Flat plate silencer	Exhaust plate		Seals
Order code	U	V	W						–
Part no.				533353	533354	533374	533375	2598313	533 355
Separating seal	–	• Left-hand	• Right-hand						For operation with flat plate silencer
Description	No seal R, S or T selected	If seal R, S or T selected	If seal R, S or T selected	For flat plate silencer	For ducted exhaust air via exhaust plate		Ducted exhaust air, with 10 mm push-in connector	Ducted exhaust air, with 3/8" threaded connection	No duct separation Coding:

Type	VMPA1-DPU-P	VMPA1-DPU-PRS	VMPA1-DPU-RS	VMPA1-DP	VMPA1-DP-P	VMPA1-DP-PRS	VMPA1-DP-RS	VMPA1-DP-PRS-Y	VMPA1-DP-Y
Designation	Seals								
Order code	T	S	R	–	T	S	R	N	K
Part no.	533 356			533 359	533 363	533 365	533 364	8161481	8161482
Separating seal	For operation with flat plate silencer			For operation with ducted exhaust air				Separating seal for operation with flat plate silencer and ducted exhaust air	
Description	Separation of duct 1 Coding:	Separation of ducts 1, 3 and 5 Coding:	Separation of ducts 3 and 5 Coding:	No duct separation Coding:	Separation of duct 1 Coding:	Separation of ducts 1, 3 and 5 Coding:	Separation of ducts 3 and 5 Coding:	Separation of ducts 1, 3 and 5, 12/14 Coding:	Separation of ducts 12/14 Coding:

Sub-base valves
- All valves are pneumatically piloted
- Sub-base valves can be replaced quickly since the tubing connections remain on the sub-base
- Depending on the valve function, there are sub-base valves with one solenoid coil (monostable) or with two solenoid coils (bistable)
- Blanking plate without valve function for reserving valve positions on a valve terminal
- All valves are fitted with a piston spool and patented sealing principle for a long service life
- Polymer poppet valves are also available as an alternative

MPA1 MPA14 MPA2
Sub-base valve with one solenoid coil
Sub-base valve with two solenoid coils

Flow rates of the sub-base valves
MPA1: Up to 360 l/min
MPA14: Up to 570 l/min
MPA2: Up to 700 l/min

Note
A filter must be installed upstream of sub-base valves operated in vacuum mode.
This prevents any foreign matter in the intake air getting into the valve (e.g. when operating a suction cup).

Additional supply plates can be used for larger terminals or to create pressure zones.
If several valves are to be operated simultaneously at full flow rate, it is recommended that a supply plate be positioned after every 8 valves (MPA1) or 4 valves (MPA2). Supply plates can be configured at any point upstream or downstream of sub-bases. This applies to the following interfaces:
- MPA with CPX
- MPA with multi-pin plug connection
- MPA with AS-Interface connection
- MPA with CPI connection

MPA with ducted exhaust air
With ducted exhaust air, at least one supply plate is required via which the exhaust port 82/84 is exhausted. Supply plates contain ports for:
- Compressed air supply (1)
- Exhausting the pilot air supply (82/84) and pressure compensation
- Exhaust air (3/5)

Depending on your order, the exhaust ducts are either ducted or vented via the flat plate silencer.
The supply plate is configured using the code letter U if no directly adjoining separating seal is required. If a separating seal (S, T or R) is selected directly to the right or left of the supply plate, then the code letter V or W identifies the position of the left-hand or right-hand separating seal. The code for the separating seal (S, T or R) is placed in front of the code for the supply plate (V or W).

Pressure zones
MPA offers a number of options for creating pressure zones if different working pressures are required.
Depending on the electrical interface, up to 16 pressure zones are possible.
A pressure zone is created by isolating the internal supply ducts between the sub-bases using an appropriate separating seal or using a separator that is permanently integrated in the sub-base (code I or code III). Compressed air is supplied and exhausted via a supply plate.

The position of the supply plates and separating seals can be freely selected with the valve terminal MPA. Separating seals are integrated ex-works as per your order. Separating seals can be distinguished by their coding, even when the valve terminal is assembled.

Note
The following must be taken into account for expansion or conversions at a later date:
Different separating seals are required for operation with ducted exhaust air and operation with flat plate silencers.

Soft-start valve

Type	VABF-S6-1-P5A4S2YE-G12-1T5-PA	VABF-S6-1-P5A4S1YE-G12-1T5-PA	VABF-S6-1-P5A4S2S-G12-1T5-PA	VABF-S6-1-P5A4S1S-G12-1T5-PA	VABF-S6-1-P5A4S2YE-G12-1T1-PZ	VABF-S6-1-P5A4S1YE-G12-1T1-PZ	VABF-S6-1-P5A4S2S-G12-1T1-PZ	VABF-S6-1-P5A4S1S-G12-1T1-PZ
Order code	PU	PT	PS	PR	QU	QT	QS	QR
Part no.	8067405	8067407	8067409	8067411	8161608	8161609	8161610	8161611
Description	No pilot air supply, with internal pressure monitoring, detenting manual override, electrical self-reset	Pilot air supply, with internal pressure monitoring, detenting manual override, electrical self-reset	No pilot air supply, with internal pressure monitoring, covered manual override	Pilot air supply, with internal pressure monitoring, covered manual override	No pilot air supply, external pressure monitoring via M12 connection, detenting manual override, electrical self-reset	Pilot air supply, external pressure monitoring via M12 connection, detenting manual override, electrical self-reset	No pilot air supply, external pressure monitoring via M12 connection, covered manual override	Pilot air supply, external pressure monitoring via M12 connection, covered manual override

Electrical supply plate for additional valve positions

Type	VMPA-FB-SP-V	VMPA-FB-SP-7/8-V-5POL	VMPA-FB-SP-7/8-V-4POL
Designation	Electrical supply plate		
Part no.	541082	541083	541084
Electrical connection	M18, 3-pin	7/8", 5-pin	7/8", 4-pin
Thread	G1/4	M7	G1/4
Push-in connector [mm]	10	6	8

MPA with CPX
Additional electrical supply plates can be used for larger terminals. This enables up to 64 valve positions/128 solenoid coils to be supplied. Electrical supply plates can be configured at any point upstream or downstream of sub-bases. An electrical supply plate is required after 8 valve sub-bases.

Note
Please note that only the electronics modules with a separate circuit can be used to the right of the electrical supply plate. The electrical supply plate must not be installed directly to the left of a pneumatic supply plate (type VMPA1-FB-SP...).

Monitoring the pneumatic pressures of the valve terminal

Type	VMPA-FB-PS-1	VMPA-FB-PS-3/5	VMPA-FB-PS-P1
Designation	Pressure sensor		
Order code	PE	PF	PG
Part no.	541085	541086	541087
Description	Monitoring the operating pressure in duct 1	Monitoring the pressure in exhaust ducts 3 and 5 (monitoring the exhaust performance or monitoring the pressure for a reversibly operated valve terminal)	Monitoring an external process pressure
Thread	G1/4	M7	G1/4
Push-in connector [mm]	10	6	8

Three LEDs on the pressure sensor indicate whether the applied pressure exceeds, conforms to or falls below the setpoint value.
An additional LED indicates common errors (limit exceeded or fallen below).
The limits for pressure monitoring are set by means of parameterisation. The pressure sensor plate can be parameterised via the PLC or the Festo handheld unit (CPXMMI).
Alternatively, the pressure in the exhaust duct (3/5) and the process pressure (external) can be measured.
Pressure measurement in the exhaust duct is used for monitoring the operating pressure during reversible operation (supply to (3/5)).

Valve functions

Size		5/2-way valve, single solenoid			5/2-way valve, double solenoid	2x 3/2-way valve, single solenoid, normally open			2x 3/2-way valve, single solenoid, normally closed			2x 3/2-way valve, single solenoid, normal position - 1x closed - 1x open		
Type	1	VMPA1-M1H-M-PI	VMPA1-M1H-MU-PI	VMPA1-M1H-MS-PI	VMPA1-M1H-J-PI	VMPA1-M1H-N-PI	VMPA1-M1H-NS-PI	VMPA1-M1H-NU-PI	VMPA1-M1H-K-PI	VMPA1-M1H-KS-PI	VMPA1-M1H-KU-PI	VMPA1-M1H-H-PI	VMPA1-M1H-HS-PI	VMPA1-M1H-HU-PI
Part no.		533342	553113	571334	533343	533348	556839	553111	533347	556838	553110	533349	556840	553112
Type	14	VMPA14-M1H-M-PI	–	VMPA14-M1H-MS-PI	VMPA14-M1H-J-PI	VMPA14-M1H-N-PI	VMPA14-M1H-NS-PI	–	VMPA14-M1H-K-PI	VMPA14-M1H-KS-PI	–	VMPA14-M1H-H-PI	VMPA14-M1H-HS-PI	–
Part no.		573718	–	573974	573717	573725	575977	–	573724	575976	–	573726	575979	–
Type	2	VMPA2-M1H-M-PI	–	VMPA2-M1H-MS-PI	VMPA2-M1H-J-PI	VMPA2-M1H-N-PI	VMPA2-M1H-NS-PI	–	VMPA2-M1H-K-PI	VMPA2-M1H-KS-PI	–	VMPA2-M1H-H-PI	VMPA2-M1H-HS-PI	–
Part no.		537952	–	571333	537953	537958	568655	–	537957	568656	–	537959	568658	–
Order code		M	MU (polymer)	MS	J	N	NS	NU (polymer)	K	KS	KU (polymer)	H	HS	HU (polymer)
Description		Pneumatic spring return, reversible, suitable for vacuum	Mechanical spring return, reversible, suitable for vacuum	Mechanical spring return, suitable for vacuum	Reversible, suitable for vacuum	Pneumatic spring return, operating pressure at least 3 bar	Mechanical spring return NS: Operating pressure –0.9 ... +8 bar NU: Operating pressure –0.9 ... +10 bar		Pneumatic spring return, operating pressure at least 3 bar	Mechanical spring return KS: Operating pressure –0.9 ... +8 bar KU: Operating pressure –0.9 ... +10 bar		Pneumatic spring return, operating pressure at least 3 bar	Mechanical spring return HS: Operating pressure –0.9 ... +8 bar HU: Operating pressure –0.9 ... +10 bar	

Size		5/3-way valve, mid-position pressurised[1]	5/3-way valve, mid-position closed[1]	5/3-way valve, mid-position exhausted[1]	3/2-way pilot air switching valve, normally closed[22]		1x 3/2-way valve, single solenoid, normally closed	1x 3/2-way valve, single solenoid, normally open	2x 2/2-way valve, normally closed		2x 2/2-way valve, normal position - 1x closed - 1x closed, reversible	3/2-way pilot air switching valve, normally closed[22]		Cover plate for vacant valve position
Type	1	VMPA1-M1H-B-PI	VMPA1-M1H-G-PI	VMPA1-M1H-E-PI	VMPA1-M1H-ES-PI	VMPA1-M1H-EU-IC	VMPA1-M1H-X-PI	VMPA1-M1H-W-PI	VMPA1-M1H-D-PI	VMPA1-M1H-DS-PI	VMPA1-M1H-I-PI	VMPA1-M1H-IS-PI	VMPA1-M1H-IU-IC	VMPA1-RP
Part no.		533344	533345	533346	8126791	8126793	534415	540050	533350	556841	543605	8126790	8126792	533351
Type	14	VMPA14-M1H-B-PI	VMPA14-M1H-G-PI	VMPA14-M1H-E-PI	VMPA14-M1H-ES-PI	VMPA14-M1H-EU-IC	VMPA14-M1H-X-PI	VMPA14-M1H-W-PI	VMPA14-M1H-D-PI	VMPA14-M1H-DS-PI	VMPA14-M1H-I-PI	VMPA14-M1H-IS-PI	VMPA14-M1H-IU-IC	VMPA14-RP
Part no.		573719	573721	573720	8126786	8126788	573722	573723	573727	575978	573728	8126785	8126787	573729
Type	2	VMPA2-M1H-B-PI	VMPA2-M1H-G-PI	VMPA2-M1H-E-PI	–	–	VMPA2-M1H-X-PI	VMPA2-M1H-W-PI	VMPA2-M1H-D-PI	VMPA2-M1H-DS-PI	VMPA2-M1H-I-PI	–	–	VMPA2-RP
Part no.		537954	537955	537956	–	–	537961	540051	537960	568657	543703	–	–	537962
Order code		B	G	E	ES	EU	X	W	D	DS	I	IS	IU	L
Description		Mechanical spring return, reversible, suitable for vacuum			Mechanical spring return, external pilot air supply via duct 2, internal pressure monitoring	Mechanical spring return, external pilot air supply via duct 1, external pressure monitoring via M8 connection	External compressed air supply, pneumatic spring return, reversible, compressed air (–0.9 ... +8 bar) supplied at working port 4 can be switched with both internal and external pilot air supply.		Pneumatic spring return, operating pressure at least 3 bar	Mechanical spring return, operating pressure –0.9 ... +8 bar	Reversible, pneumatic spring return, operating pressure at least 3 bar, vacuum only at port 3/5	Pneumatic spring return, internal pilot air supply via duct 1, external pressure monitoring, operating pressure 3 to 8 bar	Mechanical spring return, internal pilot air supply via duct 1, external pressure monitoring via M8 connection, operating pressure 3 to 8 bar	

1) If neither solenoid coil is energised, the valve assumes its mid-position by means of spring force. If both coils are energised simultaneously, the valve remains in the previously assumed position.

22) The purpose of the **pilot air switching valve** is to open up or cut off the pilot air supply to the downstream valves in a pressure zone.
The pilot air switching valve can be used to implement the safety function "protection against unexpected start-up".

Vertical stacking

	Size	Pressure regulator plate										Vertical pressure supply plate	Vertical pressure shut-off plate (hot swap)
Type	1	VMPA1-B8-R1C2-C-10	VMPA1-B8-R1C2-C-06	VMPA1-B8-R2C2-C-10	VMPA1-B8-R2C2-C-06	VMPA1-B8-R3C2-C-10	VMPA1-B8-R3C2-C-06	–	–	–	–	–	VMPA1-HS
Part no.		543339	549052	543340	549053	543349	549054	–	–	–	–		567 805
Type	14	VMPA14-B8-R1C2-C-10	VMPA14-B8-R1C2-C-06	VMPA14-B8-R2C2-C-10	VMPA14-B8-R2C2-C-06	VMPA14-B8-R3C2-C-10	VMPA14-B8-R3C2-C-06	–	–	–	–	VMPA14-VSP-0	VMPA14-HS
Part no.		8043339	8043342	8043340	8043343	8043341	8043344	–	–	–	–	8110621	8110429
Type	2	VMPA2-B8-R1C2-C-10	VMPA2-B8-R1C2-C-06	VMPA2-B8-R2C2-C-10	VMPA2-B8-R2C2-C-06	VMPA2-B8-R3C2-C-10	VMPA2-B8-R3C2-C-06	VMPA2-B8-R6C2-C-10	VMPA2-B8-R6C2-C-06	VMPA2-B8-R7C2-C-10	VMPA2-B8-R7C2-C-06	VMPA2-VSP-O	–
Part no.		543342	549055	543343	549056	543344	549057	543347	549113	543358	549114	8029486	–
Order code		PA	PF	PC	PH	PB	PG	PL	PN	PK	PM	PV	PS
Output pressure [bar]		10	6	10	6	10	6	10	6	10	6	–	
Description		Regulates the operating pressure in duct 1 upstream of the directional control valve		Regulates the operating pressure in duct 2 downstream of the directional control valve		Regulates the operating pressure in duct 4 downstream of the directional control valve		Reversible pressure regulator for port 2		Reversible pressure regulator for port 4		Additional supply of compressed air/vacuum	Manual disconnection of an individual valve from the compressed air supply for the valve terminal

An adjustable pressure regulator can be installed between the sub-base and the valve to control the force of the actuator. This pressure regulator maintains a constant output pressure (secondary side) independently of pressure fluctuations (primary side) and air consumption.
Standard version:
- For input pressure up to 6 bar or up to 10 bar
- Without pressure gauge (optional)
- Regulator knob with 3 positions (locked, reference position, free running)

This is equipped with a switch via which the compressed air supply can be shut off. A directional control valve or subsequent vertical stacking plate can thus be replaced without switching off the overall air supply (hot swap). If the control chain has a redundant connection, the cycle can continue in the case of a cyclical control system. After the shut-off has been activated, the exhaust air/return air from the cylinder is expelled via the M5 threaded connection.

Note
The operating pressure of the valve terminal must lie within the range of the required pilot pressure (i.e. min. 3 bar). When using an end plate with pilot air selector, only end plates with the code W and U can be used.

Connection: Standard O.D. tubing PUN
→ www.festo.com/catalogue/pun

Connection: Push-in fittings QS
→ www.festo.com/catalogue/qs

Proportional pressure regulators

Type	VPPM-6TA-L-1-F-0L2H	VPPM-6TA-L-1-F-0L6H	VPPM-6TA-L-1-F-0L10H	VPPM-6TA-L-1-F-0L2H-S1	VPPM-6TA-L-1-F-0L6H-S1	VPPM-6TA-L-1-F-0L10H-S1	VPPM-8TA-L-1-F-0L2H-C1	VPPM-8TA-L-1-F-0L6H-C1	VPPM-8TA-L-1-F-0L10H-C1	VPPM-8TA-L-1-F-0L2H-S1C1	VPPM-8TA-L-1-F-0L6H-S1C1	VPPM-8TA-L-1-F-0L10H-S1C1	VMPA-P-RP (cover plate)
Order code	QA	QB	QC	QD	QE	QF	QG	QH	QK	QL	QM	QN	L
Part no.	542220	542221	542222	542217	542218	542219	572410	572411	572412	572407	572408	572409	559638
Size/nominal width	6						8						6-8
Full-scale linearity error [%]	2			1			2			1			–
Pressure regulation range [bar]	0.02 ... 2	0.06 ... 6	0.1 ... 10	0.02 ... 2	0.06 ... 6	0.1 ... 10	0.02 ... 2	0.06 ... 6	0.1 ... 10	0.02 ... 2	0.06 ... 6	0.1 ... 10	–

The proportional pressure regulator VPPM-6TA-... is used to regulate pressure proportional to a specified setpoint value.
A built-in pressure sensor records the pressure at the working port and compares this value with the setpoint value. If there are deviations between the setpoint value and actual value, the valve regulates until the output pressure has reached the setpoint value.
For a constant pressure supply, which is required for high control quality, the proportional pressure regulator has an additional supply port.

Electronics modules

Type	VMPA2-FB-EMS-4	VMPA2-FB-EMS-D2-4	VMPA1-FB-EMS-8	VMPA1-FB-EMS-D2-8	VMPAS-14-FB-EMS-8	VMPAS-14-FB-EMG-8	VMPAS-14-FB-EMS-D2-8	VMPAS-14-FB-EMG-D2-8	VMPA2-FB-EMG-4	VMPA2-FB-EMG-D2-4	VMPA1-FB-EMG-8	VMPA1-FB-EMG-D2-8	VMPA1-S-FB-EMG-8-S
Order code	B	D2...B	A	D2...A	E	EH	D2...E	D2...EH	BH	D2...BH	AH	D2...AH	QAH
Part no.	537 983	543 332	533 360	543 331	8066764	8066765	8066766	8066767	537 984	543 334	533 361	543 333	8108543
Solenoid coils	4, MPA2	4, MPA2	8, MPA1	8, MPA1	8, MPA14[1]				4, MPA2	4, MPA2	8, MPA1	8, MPA1	7 coils and 1 pressure sensor signal, MPA1
Description	For fieldbus connection, without separate electrical circuit	For fieldbus connection, without separate electrical circuit, with extended diagnostic function	For fieldbus connection, without separate electrical circuit	For fieldbus connection, without separate electrical circuit, with extended diagnostic function	For fieldbus connection, without separate electrical circuit	For fieldbus connection, with separate electrical circuit	For fieldbus connection, without separate electrical circuit, with extended diagnostic function	For fieldbus connection, with separate electrical circuit, with extended diagnostic function	For fieldbus connection, with separate electrical circuit	For fieldbus connection, with separate electrical circuit, with extended diagnostic function	For fieldbus connection, with separate electrical circuit	For fieldbus connection, with separate electrical circuit, with extended diagnostic function	For fieldbus connection and pilot air switching valve at the first valve position, with separate electrical circuit

Type	VMPA1-S-FB-EMG-D2-8-S	VMPA14-S-FB-EMG-8-S	VMPA14-S-FB-EMG-D2-8-S	VMPA2-MPM-EMM-2	VMPA2-MPM-EMM-4	VMPA1-MPM-EMM-4	VMPA1-MPM-EMM-8	VMPAS-14-FB-EMM-4	VMPAS-14-FB-EMM-8	VMPA-FB-EMG-P1	VMPA-MPM-EMM-P5	VMPA-FB-EMG-P5
Order code	D2...QAH	QEH	D2...QEH	D	B	C	A	F	E	QX/QZ	QU, QT, QS, QR	PU, PT, PS, PR
Part no.	8108545	8108547	8108549	537 985	537 986	537 987	537 988	8066768	8066769	542 224	8111881	8111882
Solenoid coils		7 coils and 1 pressure sensor signal, MPA14		2, MPA2	4, MPA2	4, MPA1	8, MPA1	4, MPA14	8, MPA14	–	–	–
Description	For fieldbus connection and pilot air switching valve at the first valve position, with separate electrical circuit and extended diagnostic function	For fieldbus connection and pilot air switching valve at the first valve position, with separate electrical circuit	For fieldbus connection and pilot air switching valve at the first valve position, with separate electrical circuit and extended diagnostic function	For modular multi-pin plug connection (MPM)						For proportional pressure regulator • External pressure regulation (code QX) • Pressure zone control (code QZ)	For multi-pin plug/fieldbus connection and soft-start valve with external pressure monitoring via M12 plug	For fieldbus connection and soft-start valve with internal pressure monitoring

Electrical interlinking module

Type	VMPA2-MPM-EV-AB-2	VMPA1-MPM-EV-AB-4	VMPA1-MPM-EV-AB-8	VMPA2-MPM-EV-ABV-2	VMPA1-MPM-EV-ABV-4	VMPA1-MPM-EV-ABV-8	VMPA1-FB-EV-AB	VMPA1-FB-EV-V
Part no.	537989	537993	537994	537991	537995	537996	537998	537999
Solenoid coils	2, MPA2	4, MPA1, MPA2	8, MPA1	2, MPA2	4, MPA1, MPA2	8, MPA1	–	–
Description	For a sub-base, multi-pin plug			For a sub-base with pneumatic supply plate, multi-pin plug			For a sub-base MPA1 and MPA2, for sub-base of the proportional pressure regulator, fieldbus	For a pneumatic supply plate, fieldbus

ACCESSORIES

Manual override

Type	–	VMPA-HBT-B	VMPA-HBV-B	VAMC-L1-CD
Order code	R	N	V	Y
Part no.	–	540897	540898	8002234
Description	Non-detenting, detenting	Non-detenting	Covered	Detenting

Pressure gauge for pressure regulator plates

Type	PAGN-26-16-P10	PAGN-16-10-P10	MA-15-10-M5	MA-15-145-M5-PSI
Order code	T	U	VE	VD
Part no.	543487	543488	132340	132341
Operating pressure [bar]	0...16	0...10	0...10	0...145
Scale	Bar/psi		bar	psi
Display range	0...16 bar/0...232 psi	0...10 bar/0...145 psi	0...10 bar	0...145 psi

Adapters, blanking plugs, check valves

Type	QSP-10-G1/8	B-M5	QSK-M5-4
Order code	–	VB	VC
Part no.	565811	3843	153291
Description	Adapter for G/8 thread	Blanking plug, male thread M5	Push-in fitting with check valve

Mounting brackets

Type	VMPA-BG-RW	VMPA-BG
Order code	J	K
Part no.	534416	558844
Description	Mounting bracket for pneumatic supply plate	Mounting bracket for sub-base of proportional pressure regulator

Inscription label holders/inscription labels

Type	VMPA1-ST-1-4	VMPA1-ST-2-4	IBS-6x10
Order code	T	Z	–
Part no.	533362	544384	18576
Description	Inscription label holder for paper foil label	Inscription label holder for IBS-6x10	Inscription labels in frames, pack of 64

Fixed flow restrictor (set)

Type		VMPA1-FT-NW 0.3-1.7
Order code		V03, V05, V07, V10, V12, V15, V17 Q03, Q05, Q07, Q10, Q12, Q15, Q17
Part no. Size	1	572543
	14	–
	2	–
Description		For setting the flow for exhausting in duct 3 and 5. Contents: 2 of each size NW 0.3 and NW 1.7, 2 brackets, 1 assembly tool

Check valves (set)

Type		VMPA1-RV	VMPA14-RV	VMPA2-RV
Order code		VP	VP, QP	QP
Part no. Size	1	8039819	–	–
	14	–	8039820	–
	2	–	–	8039821
Description		The check valves prevent the air from being pushed back (back pressure) and are integrated into ducts 3 (VP) and 5 (OP) of the sub-bases designed specially for this		

Check valves
The check valves prevent the air from being pushed back (back air) from exhaust ducts 3 and 5 into the solenoid valve. This prevents the back air from disrupting the other connected actuators.
The check valves are integrated into ducts 3 and 5 of the sub-bases designed specifically for this.
Please note the corresponding assembly instructions:
→ www.festo.com/sp/mpa
Support/downloads

This function provides effective protection against back pressure effects for single-acting process valves.
It guarantees reliable switching operations with no back pressure, especially for high-speed switching operations.

Note
- Special sub-bases are available for using check valves.
- Standard sub-bases cannot be retrofitted with check valves.
- Fully assembled sub-bases with integrated check valves are available.
- Check valves and fixed flow restrictors cannot be used at the same time (in the same duct).

135229 en 2022/02 – Errors and omissions excepted

Automation with function integration – the pneumatic and electric modules of the valve terminal CPX/VTSA

Fieldbus nodes and Industrial Ethernet

Type	CPX-FB11	CPX-FB13	CPX-FB14	CPX-M-FB21	CPX-FB23-24	CPX-FB36	CPX-FB37	CPX-M-FB39	CPX-M-FB40	CPX-FB43	CPX-M-FB44	CPX-M-FB45
Order code	F11	F13	F14	F21	F23/24	F36	F37	F44	F45	F43	F44	F45
Part no.	526172	195 740	526174	572221	526 176	1912451	2735960	8110370	8110371	8110369	8110370	8110371
Fieldbus protocol	DeviceNet®	PROFIBUS DP	CANopen	INTERBUS®	CC-LINK®	Modbus TPC / EtherNet/IP	EtherCAT®	SERCOS III	POWERLINK	PROFINET IO, MQTT functionality		
Fieldbus interface	Sub-D, 9-pin, pin M12, 5-pin, A-coded, screw terminal	Sub-D, 9-pin, pin M12, 5-pin, B-coded, socket and pin	Sub-D, 9-pin, pin M12, 5-pin, A-coded, screw terminal	Rugged Line fibre-optic cable	Sub-D, 9-pin, socket, screw terminal	M12, 5-pin, D-coded	M12, 5-pin, D-coded	M12, 5-pin, D-coded	M12, 5-pin, D-coded	M12, 5-pin, D-coded	AIDA[1] push-pull	AIDA[1] fibre-optic cable
Inputs	64 bytes	64 bytes	64 bytes	12 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes
Outputs	64 bytes	64 bytes	64 bytes	12 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes	64 bytes

1) AIDA = Automation Initiative of German Domestic Automobile Manufacturers

Control block: CODESYS embedded control with OPC-UA

Type	CPX-CEC-S1-V3	CPX-CEC-C1-V3	CPX-CEC-M1-V3
Order code	T32	T33	T34
Part no.	3472425	3473128	3472765
Programming, interface, connection	CODESYS controller with serial interface (Sub-D, RS232) for connecting PCs for programming as well as for operator units such as front-end display FED.	CODESYS controller with CANopen master for connecting additional field devices. Type M1 additionally with SoftMotion library for 3D interpolation.	
Baud rate	Ethernet 10/100 BaseT (RJ45)		
Description	The optional front-end controllers CPX-CEC, as stand-alone controller or in parallel with a bus node, enable simultaneous access via Ethernet and an integrated web server, as well as autonomous preprocessing. Access via Modbus/TCP and EasyIP is also possible. Commissioning, programming and diagnostics using the Festo software tools or CODESYS provided by Festo.		

Diagnostic tools

Type	FAS	MFT	Adapter cable
Order code			NEFC-M12G5-0.3-U1G5
Part no.			547432
Description	Festo Maintenance Tool	Festo Automation Suite	USB to RS232 adapter cable
	Error location and error type (CPX error messages), plain-text error message, no programming required, saving of the hardware configuration, production of screenshots		

The capabilities of CPX/VTSA

Virtually without limits – possible only with electrical peripherals CPX from Festo: the numerous options for function integration on valve terminals and the CPX as remote I/O. Function integration reduces the costs along your entire value chain.

Applications of the CPX/MPA platform:
- Digital and analogue standard tasks
- Demanding I/O tasks with single-channel diagnostics and parameterisation
- Temperature, displacement and pressure measurement
- Electrical and pneumatic safety functions
- Integrated, comprehensive diagnostics and condition monitoring
- Subordinate, decentralised installation system

Combine these functions directly with the operating elements in the process
- Pilot or process valves
- Control valves for cylinders, grippers, vacuum
- Pressure regulators
- Servo-pneumatic positioning systems
- Electric drives and axes

Choice of control via fieldbus/Ethernet as remote I/O or the following front-end controllers:
- CPX-CEC (CODESYS controller with 32-bit processor, 800 MHz, CANopen master)
- CODESYS V3 and OPC-UA are building a bridge to Industry 4.0, also known as the Internet of Things (IoT)

Valve terminal VTSA:
→ www.festo.com/catalogue/vtsa

Electrical peripherals CPX:
→ www.festo.com/catalogue/cpx

Safety@Festo: VTSA protects!

An important application of VTSA is in safety pneumatics.
Machine manufacturers have a great need for VTSA with safety functions, particularly two-channel VTSA valve blocks to simplify previously separate valve installations.
- Protection against unexpected start-up
- Reversing the cylinder movement

Additional protective measures:
Appropriate protection for workers in hazard zones, e.g. manual inserting stations.
Other applications require special emergency-off behaviour, e.g.
- Manual clamping device: switching to unpowered with self-locking
- Lifting/rotary cylinder: stopping, holding, blocking a movement
- Soft-start valve with quick exhaust
- Switchable pilot air supply: protects against unexpected system restarts up to max. PL d according to EN 13849-1
- Optional check valves, which likewise are controlled by the pilot air valve, make pneumatic stops possible in 2 channels.

Associated products and features:
- Control block VOFA with safety function
- Soft-start valve
- Pilot air switching valve

Configurable variants of the valve terminal VTSA and modular electrical peripherals CPX

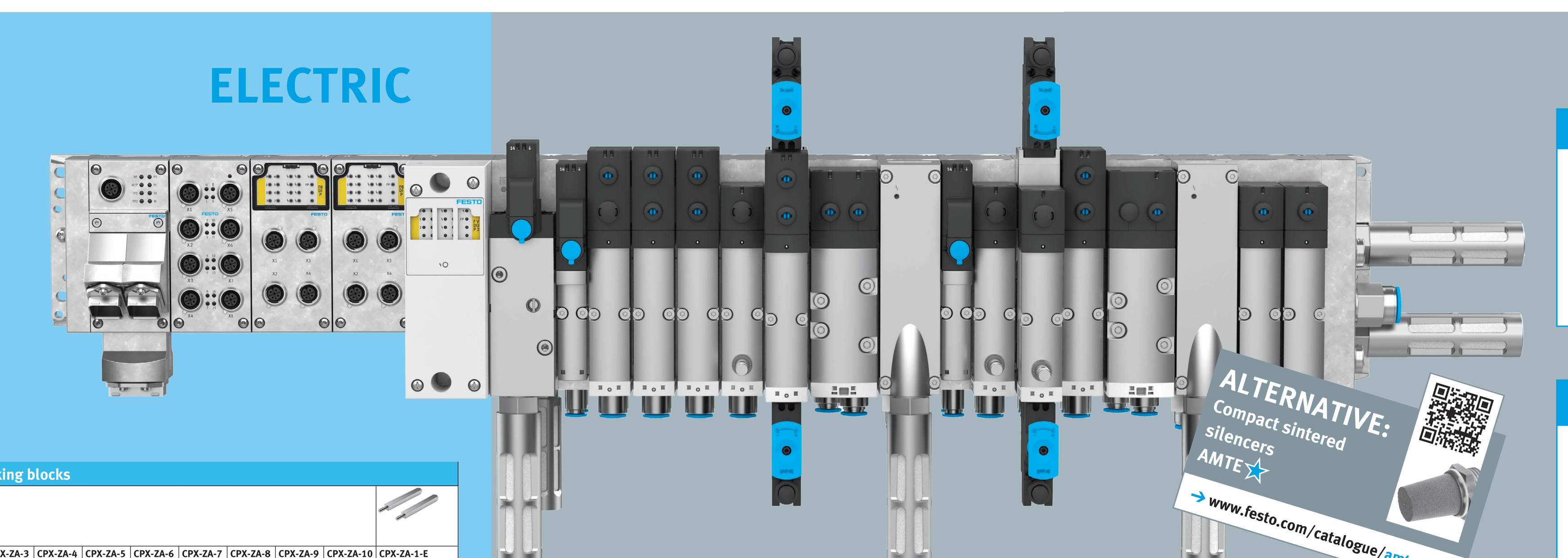
Type	Order code E	Order code P	Module no.	Valve terminals
VTSA-MP	44E-…	44P-…	539215	VTSA with multi-pin plug
VTSA-MP-NPT	44E-…	44PN-…	539216	VTSA with multi-pin plug, pneumatic connections via NPT thread
VTSA-FB	50E/51E-…	44P-…	539217	VTSA with fieldbus
VTSA-FB-NPT	50E/51E-…	44PN-…	539218	VTSA with fieldbus, pneumatic connections via NPT thread
VTSA-F-MP	45E-…	45P-…	547963	VTSA-F with multi-pin plug, high flow rate
VTSA-F-MP-NPT	45E-…	45PN-…	547964	VTSA-F with multi-pin plug, high flow rate, pneumatic connections via NPT thread
VTSA-F-FB	50E/51E-…	45P-…	547965	VTSA-F with fieldbus, high flow rate
VTSA-F-FB-NPT	50E/51E-…	45PN-…	547966	VTSA-F with fieldbus, high flow rate, pneumatic connections via NPT thread
VTSA-ASI	52E-…	44P-…	555564	VTSA with AS-Interface
VTSA-ASI-NPT	52E-…	44PN-…	555565	VTSA with AS-Interface, pneumatic connections via NPT thread
VTSA-F-ASI	52E-…	45P-…	555566	VTSA with AS-Interface
VTSA-F-ASI-NPT	52E-…	45PN-…	555567	VTSA with AS-Interface, pneumatic connections via NPT thread
VTSA-F-CB	50E/51E-…	46P-…	8073100	VTSA-F, high flow rate, with C-Bus
				Modular electrical peripherals CPX
CPX	50E		197330	CPX (without valve terminal)
	51E			CPX with metal interlinking block
	53E			CPX for control cabinet construction, IP20
	54E			CPX intrinsically safe IS modules possible

FESTO

Electronics modules

Type	CPX-8DE	CPX-4DE	CPX-8DE-D	CPX-8NDE	CPX-16DE	CPX-M-16DE-D	CPX-8DE-8DA	CPX-4DA	CPX-8DA	CPX-8DA-H	CPX-2AE-U-I	CPX-2AA-U-I	CPX-4AE-I	CPX-4AE-U-I	CPX-4AE-P-B2	CPX-4AE-P-D10	CPX-4AE-T	CPX-4AE-TC	CPX-L-16DE-16-KL-3POL	CPX-L-8DE-8DA-16-KL-3POL	CPX-FVDA-P2	CPX-F8DE-P	CPX-P-8-DE-N	CPX-P-8-DE-N-IS	CPX-2ZE2DA
Order code	E	F	D	O	M	NM	Y	A	L	NL	U	P	I	NI	NV	NY	T	NT	NB	NC	NG	ND	BR	BW	T25
Part no.	195750	195752	541480	543813	543815	550202	526257	195754	541482	550204	526168	526170	541484	573710	560361	560362	541486	553594	172606	572607	1 971599	2 597424	565933	565934	576046
Housing/screening																					Metal screening and metal housing				
Number of inputs	8	4	8	8	16	16	8	–	–	–	2	–	4	4	4	4	4	4	16	8	3	8	8	8	2 high-speed inputs
Number of outputs	–	–	–	–	–	–	8	4	8	8	–	2	–	–	–	–	–	–	–	8	–	–	–	–	2 high-speed outputs
Switching logic	PNP	PNP	PNP	NPN	PNP	PNP	PNP	PNP	PNP	PNP	12 bit	12 bit	12 bit	15 bit	10 bit	10 bit	12 bit	12 bit	PNP	PNP	PROFIsafe	PROFIsafe	NAMUR	NAMUR	PNP/PWM
Signal range	–	–	–	–	–	–	–	–	–	–	0-10 V 0-20 mA 4-20 mA	0-10 V 0-20 mA 4-20 mA	0-20 mA 4-20 mA	0-10 V, 0-20 mA 4-20 mA, ±10 V, ±20 mA, ±5 V	-1…1 bar	0…10 bar	PT100, PT200, PT500, PT1000, NI100, NI120, NI500, NI1000, 2-, 3- or 4-wire technology	Type B, E, J, K, N, R, S, T, 2-wire technology	–	–	–	–	–	Intrinsically safe	Inputs up to 100 kHz/1 MHz at 24 V/5 V, outputs up to 20 kHz (PWM), controller for 24 V DC motor
Max. current supply per channel	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	0.5 A	1 A	0.5 A	2.1 A	0.7 A	2.8 A	0.7 A	0.7 A	–	–	–	–	0.25 A	0.25 A	1.5 A	0.5 A	–	–	–

ELECTRIC



PNEUMATIC

Reliable configuration

The quick way to your VTSA
+ Reliable to configure
+ Easy to order
→ www.festo.com/catalogue/vtsa

Easy-to-search Support Portal

Online support
+ Product information
+ User documentation
+ Certificates
+ Software

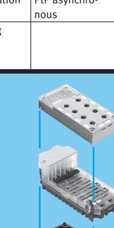
→ www.festo.com/sp/vtsa

Motion control technology modules – electric drives and servo-pneumatics

Type	CPX-CEC-C1-V3	CPX-CEC-M1-V3	CPX-CM-HPP
Order code	T33	T34	T31
Part no.	3473128	3472765	562214
Fieldbus protocol	CODESYS	CODESYS SoftMotion 3D	FHPP
Description	Single-axis control, PtP asynchronous	Multi-axis control, 3D interpolation	Single-axis control, PtP asynchronous
	CANopen master for connecting additional field devices		

Type	CPX-CMPX-C-1-H1	CPX-CMIX-M1-1	CPX-CMAX-C1-1
Order code	T20	T23	T21
Part no.	548931	567417	548932
Moving mass	1…300 kg horizontal	–	1…300 kg horizontal
	1…100 kg vertical	–	1…100 kg vertical
Mid-positions	Up to 2 freely programmable mid-positions, including via the fieldbus	–	–
Positioning/repetition accuracy	Accuracy ± 0.25% of the displacement encoder length, but at least ± 2 mm	DGCI and DNCI: ±0.01 mm Stroke-dependent potentiometer: <360 mm = ±0.01 mm >360 mm = ±0.06 mm	≤ ±0.2 mm
Controlled force at 6 bar	–	–	30…2700 N
Travel speed	–	–	Max. 3 m/s
Acceleration	–	–	Max. 30 m/s²
Extension	Soft Stop electric end-position cushioning in combination with proportional directional control valve VPWP for strokes up to 2 m	Max. cable length between controller and drive: 30 m	–
Description	End-position controller CPX-CMPX Fast travel between the mechanical end stops of the cylinder, moving gently and without impact into the end position + 2 mid-positions	Measuring module CPX-CMIX Turns pneumatic cylinders into sensors. And is the only one of its kind in the world thanks to fully digital data acquisition* and data transfer. Repetition accuracy of ±0.01 mm with integration of digital transducers.	Servo-pneumatic position controller CPX-CMAX Position and force control for linear or rotary drives, directly actuated or selected from one of 64 configurable position sets.

*Depending on the measuring system



The connection technology for sensors and additional actuators offers a wide range of digital and analogue input and output modules and is freely selectable, as appropriate to your standard or application. Polymer or metal connection blocks can be combined as required.

Subordinate, decentralised installation systems

Type	CPX-CP-4-FB	CPX-CTEL-4-M12-5POL	CPX-CTEL-2-M12-5POL-LK
Order code	T11 to T18	T40 to T44	T45 to T48
Part no.	526705	1577012	2900543
Number of CP strings/connections	4 strings	4 connections	2 connections
String/cable length	Max. 10 m (string)	Max. 20 m	Max. 20 m
Number of modules per string/connection	Up to 4 strings with up to 4 modules each and up to 32 I/Os per string Power supply and bus interface via the same cable	One I-Port module per connection	One IO-Link® module per connection
Description	Installation system CPI Cost-optimised installation system for more than 5 subordinate stations such as valve terminals or I/O modules. Short tubing helps optimise cycle times and reduces installation costs.	Installation system CTEL Cost-optimised installation system for up to 4 Festo I-Port stations. Can be combined with a large I/O module portfolio such as CTSL input modules.	The CPX-CTEL-2-M12-5POL-LK module enables the connection of further IO-Link® devices. It has 2 ports and can be combined with the bus nodes for PROFINET and SERCOS III.

Pneumatic interfaces

Type	VABA-S6-1-X1	VABA-S6-1-X2	VABA-S6-1-X1-CB	VABA-S6-1-X2-CB	VABA-S6-1-X2-F1-CB	VABA-S6-1-X2-F2-CB	VABA-S6-1-X1-3V-CB	VABA-S6-1-X2-3V-CB	VABA-S6-1-X2-3V-CB-AL	VABA-S6-1-X2-F1-CB-AL	VABA-S6-1-X2-F2-CB-AL	VABA-S6-1-X2-F1-CB2-AL	VABA-S6-1-X2-F2-CB2-AL	VABE-S6-1LF-C-M1-C36M	VABE-S6-1LT-C-M1-S37	VABE-S6-1LF-C-M1-R19
Order code	–	–	RA/50E	RA/51E	RC/51E	RD/51E	RB/50E	RB/51E	XB/51E	XC/51E	XD/51E	PC/51E	PD/51E	T	MP1	MP4
Part no.	543416	550663	8082877	8082876	8068240	8068241	8082879	8082878	8152438	8152437	8152436	8152435	8152434	543412	543414	543415
Description	For electrical terminal CPX		Without zones, without PROFIsafe		PROFIsafe	1 safe output, PROFIsafe	With zones, 3x M12, without PROFIsafe		3x M12	PROFIsafe	1 safe output, PROFIsafe	PROFIsafe	1 safe output, PROFIsafe	Terminal strip, 36-pin	Sub-D plug, 37-pin	Round plug, 19-pin
Additional power supply	–						3 external			–		1 additional		–		
Extension of safe internal zones	–				3	2	–			3	2	3	2	–		
Adapter plate	–						Left-hand							–		
Version	Polymer	Metal	Polymer	Metal	Metal		Polymer	Metal						–		

Tie rod for polymer interlinking blocks

Type	CPX-ZA-1	CPX-ZA-2	CPX-ZA-3	CPX-ZA-4	CPX-ZA-5	CPX-ZA-6	CPX-ZA-7	CPX-ZA-8	CPX-ZA-9	CPX-ZA-10	CPX-ZA-1-E
Part no.	195718	195720	195722	195724	195726	195728	195730	195732	195734	195736	525418
Number of modules	1	2	3	4	5	6	7	8	9	10	Tie rod extension for 1 module

Extremely flexible connection technology

Type		CPX-AB-4-M12X2-5POL	CPX-AB-8-M8-3POL	CPX-AB-8-KL-4POL	CPX-AB-1-SUB-BU-25POL	CPX-AB-4-M12-8POL	CPX-AB-8-M8X2-4POL	CPX-AB-4-M12X2-5POL-R	CPX-AB-8-KL-4POL	AK-8KL	CPX-AB-4-M12X2-5POL	CPX-AB-S-4-M12	CPX-M-4-M12X2-5POL	CPX-M-8-M12X2-5POL	CPX-AB-8-M12X2-5POL	CPX-P-AB-2XKL-8POL	CPX-P-AB-4XM12-4POL	CPX-P-AB-2XKL-8POL-8DE-N-IS	CPX-P-AB-4XM12-4POL-8DE-N-IS
Order code		X	R	J	B	C	GQ	GW	KJ		W		KA	KB	KD	BJR	BXR	BJW	BXW
Part no.		195704	195706	195708	525676	526178	541256	541254	195708	538219	195704	526184	549367	549335	3606900	565704	565706	565703	565705
Connection		M12, 5-pin	M8, 3-pin	CageClamp, 4-pin	Sub-D, 25-pin	M12, 8-pin	M8, 4-pin	M12, 5-pin	CageClamp, 4-pin, with covering hood in IP65		M12, 5-pin		M12, 5-pin	M12, 5-pin	M12, 5-pin	Terminal	M12, 4-pin	Terminal	M12, 4-pin
Number of sockets		4	8	8	1	4	8	4	8		4		4	8	8	8	4	8	4
Degree of protection		IP65/IP67	IP65/IP67	IP20	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67	IP65/IP67		IP65/IP67		IP65/IP67	IP65/IP67	IP65/IP67	IP20	IP65/IP67	IP20	IP65/IP67
Housing/screening		Metal screening						Metal screening			Metal screening		Metal housing and metal screening				Metal screening		Metal screening
Combinations																			
CPX-8DE	E	■	■	■	■			■	■		■		■						
CPX-4DE	F	■	■	■	■			■	■		■		■						
CPX-8DE-D	D	■	■	■	■			■	■		■		■						
CPX-8NDE	O	■	■	■	■			■	■		■		■						
CPX-16DE	M			■	■		■												
CPX-M-16DE-D	NM													■	■				
CPX-8DE-8DA	Y			■	■	■													
CPX-4DA	A	■	■	■	■		■	■	■		■		■						
CPX-8DA	L	■	■	■	■		■	■	■		■		■						
CPX-8DA-H	NL		■	■	■		■	■	■		■		■						
CPX-2AE-U-I	U	■	■	■	■			■	■		■		■						
CPX-2AA-U-I	P	■	■	■	■			■	■		■		■						
CPX-4AE-I	I	■	■	■	■			■	■		■		■						
CPX-4AE-U-I	NI	■	■	■	■			■	■		■		■						
CPX-4AE-T	T	■	■	■	■			■	■		■		■						
CPX-4AE-TC	NT	■	■	■	■			■	■		■		■						
CPX-P8DE-N	BR															■	■		
CPX-P8DE-N-IS	BW																	■	■
CPX-FVDA-P2	NG								■				■						
CPX-F8DE-PND	ND								■				■						

System linking
- Modules supplied with the various voltage values
- Serial communication between the modules

System supply
- M18 4-pin
- M12 L-coded
- 7/8", 4- or 5-pin
- AIDA push-pull

In addition to system linking
Power supply for the
- electronics and sensors (16 A)
- valves and actuators (16 A)

Additional supply
In addition to system linking for supplying power to the
- actuators (16 A per supply)
- valves (16 A per supply)

Extendibility
- Can be extended by an interlinking block with tie rod extension CPX-ZA-1-E

Note
Polymer interlinking block is connected using tie rods.

More state-of-the-art electrical connection technology:
You will find an extensive range of connecting cables, distributors and plugs online:

Connecting cables: **NEBU**
→ www.festo.com/catalogue/nebu

Distributor cables: **NEDY**
→ www.festo.com/catalogue/nedy

Sensor plugs: **NECU**
→ www.festo.com/catalogue/necu

Example:
Type: NEBU-M8G3-K-2.5-LE3
Part no.: 541333
M8, straight socket, 2.5 m, open end

Interlinking blocks

Type	CPX-GE-EV	CPX-GE-EV-S	CPX-GE-EV-Z	CPX-GE-EV-V	CPX-GE-EV-S-7/8-5POL	CPX-M-GE-EV	CPX-M-GE-EV-S-7/8-5POL	CPX-M-GE-EV-Z-7/8-5POL	CPX-M-GE-EV-S-PP-5-POL	CPX-M-GE-EV-Z-PP-5-POL	CPX-M-GE-EV-S-M12-5POL	CPX-M-GE-EV-W-M12-5POL	CPX-M-GE-EV-FVO
Design	Polymer version, connected to the end plate via tie rods, modular					Metal version, individually linked, screwed-in, modular							
Order code	–	QS	QZ	QV	QP	–	QP	QX	QW/QN	QT	QA	QB	QF
Part no.	195742	195746	195744	533577	541244	550206	550208	550210	563057	563058	8098392	8098391	567806
Connection	–	M18, 4-pin	M18, 4-pin	M18, 4-pin	7/8", 5-pin	–	7/8", 5-pin	7/8", 5-pin	AIDA, 5-pin	AIDA, 5-pin	M12-L, 5-pin	M12-L, 5-pin	–
Description	Basic linking module in polymer	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V common • FE	Supply for: • 24 V actuators • 0 V actuators • FE	Supply for: • 24 V valves • 0 V valves • FE	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Basic linking module in metal	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Supply for: • 24 V actuators • 0 V actuators • FE	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Supply for: • 24 V actuators • 0 V actuators • FE	Supply for: • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Voltage tap for subsequent valve terminals • 24 V sensors and electronics • 24 V actuators and valves • 0 V sensors and electronics • 0 V actuators and valves • FE	Interlinking block for PROFIsafe

QW: system supply/QN: voltage tap for subsequent valve terminals

Connecting cable for multi-pin plug connection

Solenoid coils, wires		Code	Type	Part no.
Sub-D plug, TPE-U(PUR), IP65				
8, 10	2.5 m	GA	NEBV-S1W37-E-2,5-LE10	539240
	5 m	GB	NEBV-S1W37-E-5-LE10	539241
	10 m	GC	NEBV-S1W37-E-10-LE10	539242
22, 26	2.5 m	GD	NEBV-S1W37-E-2,5-LE26	539243
	5 m	GE	NEBV-S1W37-E-5-LE26	539244
	10 m	GF	NEBV-S1W37-E-10-LE26	539245
32, 37	2.5 m	GG	NEBV-S1W37-K-2,5-LE37	539246
	5 m	GH	NEBV-S1W37-K-5-LE37	539247
	10 m	GI	NEBV-S1W37-K-10-LE37	539248
Sub-D plug, PVC, IP65				
8, 10	2.5 m	GK	NEBV-S1W37-KM-2,5-LE10	543271
	5 m	GL	NEBV-S1W37-KM-5-LE10	543272
	10 m	GM	NEBV-S1W37-KM-10-LE10	543273
22, 27	2.5 m	GN	NEBV-S1W37-KM-2,5-LE27	543274
	5 m	GO	NEBV-S1W37-KM-5-LE27	543275
	10 m	GP	NEBV-S1W37-KM-10-LE27	543276
32, 37	2.5 m	GQ	NEBV-S1W37-KM-2,5-LE37	543277
	5 m	GR	NEBV-S1W37-KM-5-LE37	543278
	10 m	GS	NEBV-S1W37-KM-10-LE37	543279

End plates

Type	CPX-EPL-EV	CPX-EPR-EV	CPX-EPFE-EV	CPX-EPL-EV-S	CPX-M-EPL-EV	CPX-M-EPR-EV
Order code	–	Z	BE	QE	–	Z
Part no.	195716	195714	538892	576315	550212	550214
Description	Left-hand end plate	Right-hand end plate	Earthing component	Left-hand end plate with system supply, IP20	Left-hand end plate	Right-hand end plate

CPX extension

Type	CPX-EPR-EV-X	CPX-EPL-EV-X	CPX-M-EPR-EV-X	CPX-M-EPL-EV-X
Order code	ZR1/ZR2	ZR1	ZR3/ZR4	ZR2/ZR3/ZR4
Part no.	576313	576314	576316	576317
Description	Right-hand end plate for CPX extension	Left-hand end plate for CPX extension	Right-hand end plate for CPX extension	Left-hand end plate for CPX extension

CONNECTION TECHNOLOGY

Connectors for fieldbus connection

Type	FBS-SUB-9-GS-DP-B	FBA-2-M12-5POL-RK	CPX-AB-2-M12-RK-DP	FBS-SUB-9-BU-IB-B	FBS-SUB-9-GS-IB-B	CPX-AB-2-M12-RK-IB	FBS-SUB-9-BU-2x5POL-B	FBA-2-M12-5POL	FBSD-GD-9-5POL	FBS-M12-5GS-PG9	FBA-1-SL-5POL	FBSD-KL-2x5POL	FBS-SUB-9-GS-2x4POL-B	FBA-1-KL-5POL
Order code	GE	GF	GO	GI	GI	GP	GD	GA	–	–	GB		GM	GL
Part no.	532216	533118	541519	532218	532217	534505	532219	525632	18324	175380	525634	525635	532220	197962
Description	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Fieldbus connection, 2x M12, B-coded	Fieldbus connection, 2x M12, B-coded	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, socket	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Fieldbus connection, 2x M12, B-coded	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, socket	Fieldbus connection, 2x M12, A-coded	Fieldbus socket, M12, 5-pin, socket, A-coded, incoming	Fieldbus plug, M12, 5-pin, pin, A-coded, outgoing	Fieldbus connection, 5-pin, pin header	Terminal strip, screw connection (open style)	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Fieldbus connection, 5-pin, screw terminal strip

Connecting cables for CPX extension

Type	NEBC-F12G8-KH-0.25-N-S-F12G8	NEBC-F12G8-KH-0.5-N-S-F12G8	NEBC-F12G8-KH-1-N-S-F12G8	NEBC-F12G8-KH-1.5-N-S-F12G8	NEBC-F12G8-KH-2-N-S-F12G8	NEBC-F12G8-KH-3-N-S-F12G8
Order code	VL1	VL2	VL3	VL4	VL5	VL6
Part no.	564189	564190	564191	564192	576015	576636
Description	Cable for CPX extension, 0.25 m	Cable for CPX extension, 0.5 m	Cable for CPX extension, 1 m	Cable for CPX extension, 1.5 m	Cable for CPX extension, 2 m	Cable for CPX extension, 3 m

Connectors for technology modules

Type	FBS-SUB-9-GS-1x9POL-B	FBS-RJ45-8-GS	NECU-M-S-B12G5-C2-PB	NECU-M-B12G5-C2-PB	CACR-S-B12G5-220-PB	NECU-M-S-D12G4-C2-ET	FBS-RJ45-PP-GS	FBS-SCRJ-PP-GS	CPX-M-AK-C
Order code	–	GH	GA	GB	GC	GZ	GJ	GK	BC
Part no.	534497	534494	106635 4	106790 5	107212 8	543109	552000	571017	548753
Description	Fieldbus plug, Sub-D, IP65/IP67, 9-pin, pin	Ethernet plug, RJ45, IP65/IP67, 8-pin	Straight plug, outgoing M12x1, 5-pin, B-coded, screened	Straight socket, incoming M12x1, 5-pin, B-coded, screened	Terminating resistor	Straight plug/screw terminal M12x1, 4-pin, screened, D-coded, Industrial Ethernet	Plug, RJ45 (Ethernet, push-pull)	Plug, fibre-optic cable (Ethernet, push-pull)	Cover cap for push-pull
	CPX-CEC/CPX-FEC								

Connectors for power supply

Type	NTSD-GD-9	NTSD-GD-13,5	NTSD-WD-9	NTSD-WD-11	NECU-G78G5-C2	NEBU-G78-W5-K-2-N-LE5	NECU-L3G7-C1	NECU-M-PPG5-C1-PN
Order code	N	M	I	J	GS	GG	QE	GR
Part no.	18493	18526	18527	533119	543107	573855	576319	5195383
Description	Power supply socket, straight, PG9, 4x 1.5 mm², M18, 4-pin	Power supply socket, straight, PG13, 4x 2.5 mm², M18, 4-pin	Power supply socket, angled, PG9, 4x 1.5 mm², M18, 4-pin	Power supply socket, angled, PG11, 4x 2.5 mm², M18, 4-pin	Power supply socket, straight, 7/8", 5-pin	Power supply socket, angled, 2 m cable, 7/8", 5-pin	Terminal strip for system supply IP20	Power supply socket, straight, 5-pin, AIDA

Connectors for inputs and outputs

Type	SEA-GS-7	SEA-GS-9	SEA-4GS-7-2,5	SEA-M12-5GS-PG7	SEA-GS-11-DUO	SEA-5GS-11-DUO	SD-SUB-D-ST25	SD-SUB-D-ST25-5M	SD-SUB-D-ST25-10M	SEA-3GS-M8-S	SEA-GS-M8	NECU-S-M8G4-C2	ISK-M8	ISK-M12
Connection technology	M12						Sub-D			M8, 3-pin		M8, 4-pin	–	–
Order code	S	T	W	P	X	K	E	–	–	C	R	GD	BA	BA
Part no.	18666	18778	192008	175487	18779	192010	527522	543473	543474	192009	18696	1068198	177672	165592
Description	Straight sensor plug, M12, PG7, 4-pin, for cable Ø 4.0-6.0 mm	Straight sensor plug, M12, PG9, 4-pin, for cable Ø 6.0-8.0 mm	Straight sensor plug, M12, PG9, 4-pin, 2.5 mm², for cable Ø 2.5-2.9 mm	Straight sensor plug, M12, PG7, 5-pin, for cable Ø 4.0-6.0 mm, metal thread	Straight sensor plug, M12, DUO, 4-pin	Straight sensor plug, M12, DUO, 5-pin	Sub-D plug, 25-pin	Cable, Sub-D, 25-pin, 5 m, open end	Cable, Sub-D, 25-pin, 10 m, open end	Straight sensor plug, M8, screw-in	Straight sensor plug, M8, solderable	Straight sensor plug, M8, 4-pin	Cover caps for M8	Cover caps for M12

Manifold sub-base VTSA, port pattern to ISO 15407-2 and ISO 5599-2

Order code		A		YA	B		C		D		E		F		G		H	
VTSA/VTSA-F	Type	VABV-S4-2S-G18-2T2	–	–	VABV-S4-1S-G14-2T2	–	VABV-S2-1S-G38-T2	–	VABV-S2-2S-G12-T2	–	VABV-S4-2S-G18-2T1	–	VABV-S4-1S-G14-2T1	–	VABV-S2-1S-G38-T1	–	VABV-S2-2S-G12-T1	–
	Part no.	539224	–	–	539220	–	542458	–	560841	–	539226	–	539222	–	542459	–	560842	–
VTSA-F-CB	Type	–	VABV-S4-2HS-G18-CB-2T2	VABV-S4-12HS-G-CB-2T2	–	VABV-S4-1HS-G14-CB-2T2	–	VABV-S2-1HS-G38-CB-T2	–	VABV-S2-2S-G12-CB-T2	–	VABV-S4-2HS-G18-CB-2T1	–	VABV-S4-1HS-G14-CB-2T1	–	VABV-S2-1HS-G38-CB-T1	–	VABV-S2-2S-G12-CB-T1
	Part no.	–	8067932	8068911	–	8067940	–	8068154	–	8068146	–	8067934	–	8067942	–	8068156	–	8068148
Width [mm]		18/18 mm		18/26 mm	26/26 mm		42		52		18/18		26/26		42		52	
Valve positions		2			2		1		1		2		2		1		1	
Addresses		4, for double solenoid valves			4, for double solenoid valves		2, for double solenoid valves		2, for double solenoid valves		2, for single solenoid valves		2, for single solenoid valves		1, for single solenoid valves		1, for single solenoid valves	
Connecting thread		G1/8		Valve position 1/2: G1/8 / G1/4	G1/4		G3/8		G1/2		G1/8		G1/4		G3/8		G1/2	
Large QS fitting		QS-G1/8-8			QS-G1/4-10		QS-G3/8-12		QS-G1/2-16		QS-G1/8-8		QS-G1/4-10		QS-G3/8-12		QS-G1/2-16	
Small QS fitting		QS-G1/8-6			QS-G1/4-8		QS-G3/8-10		QS-G1/2-12		QS-G1/8-6		QS-G1/4-8		QS-G3/8-10		QS-G1/2-12	
Large QS fitting, with metal releasing ring		NPQM-D-G18-Q8-P10			NPQM-D-G14-Q10-P10		NPQM-D-G38-Q12-P10		NPQM-D-G12-Q16-P10		NPQM-D-G18-Q8-P10		NPQM-D-G14-Q10-P10		NPQM-D-G38-Q12-P10		NPQM-D-G12-Q16-P10	
Small QS fitting, with metal releasing ring		NPQM-D-G18-Q6-P10			NPQM-D-G14-Q8-P10		NPQM-D-G38-Q10-P10		NPQM-D-G12-Q12-P10		NPQM-D-G18-Q6-P10		NPQM-D-G14-Q8-P10		NPQM-D-G38-Q10-P10		NPQM-D-G12-Q12-P10	

Compressed air supply, exhausting, pressure zone creation and electrical voltage zones

Type	VABF-S6-10-P1A7-G12	VABF-S6-10-P1A6-G12	VABF-S6-1-P1A6-G12-CB	VABF-S6-1-P1A7-G12-CB	VABF-S6-1-P8A6-G12-CB	VABF-S6-1-P8A7-G12-CB	VABF-S6-1-P8A6-G12-CB1	VABF-S6-1-P8A7-G12-CB1	VABF-S6-1-E3C16-C-R3	VABD-S6-1-P3-C	VABD-S6-1-P1-C	VABD-S6-1-P2-C	VABD-S6-1-P6-C	VABD-S6-1-P7-C	VABD-S6-1-P8-C
Designation	Supply/exhaust plates				Extension modules				Separation of electrical zones	Duct separations					
Order code VTSA/VTSA-F	U/W/L	U/W/K	UYK	UYL	UWYK	UWYL	USWYK	USWYL	V	S	T	R	–	–	–
Order code VTSA-F-CB	–	–	–	–	–	–	–	–	V	S	T	R	K	L	TL
Part no.	539231	539230	8092502	8092506	8104041	8104042	8104043	8104044	569126	539228	539227	539229	8034612	573191	8060483
For VTSA/VTSA-F	•	•	–	–	–	–	–	–	–	•	•	•	•	•	•
For VTSA-F-CB	–	–	•	•	•	•	•	•	–	•	•	•	•	•	•
Description	U: Supply plate including exhaust W: Only exhaust plate		Supply plate	Supply plate	Extension module for 24 addresses, internal power supply from Uval, supply plate		Extension module for 24 addresses, new voltage zone, internal power supply from S2, supply plate		–	Separation of ducts 1, 3 and 5	Separation of duct 1	Separation of ducts 3 and 5	Separation of ducts 1, 3, 5 and 14	Separation of duct 14	Separation of ducts 1 and 14
	L: Supply plate, ducts 3 and 5 exhausted together	K: Supply plate, ducts 3 and 5 exhausted separately	Ducts 3 and 5 exhausted separately	Ducts 3 and 5 exhausted together	Ducts 3 and 5 exhausted separately	Ducts 3 and 5 exhausted together	Ducts 3 and 5 exhausted separately	Ducts 3 and 5 exhausted together							

The valve terminal VTSA/VTSA-F offers a number of options for creating pressure zones if different working pressures are required. Pressure zones are created by isolating the internal supply ducts between the manifold sub-bases using appropriate duct separation. Compressed air is supplied and exhausted via a supply plate.
The position of the supply plates and duct separations can be freely selected for the VTSA/VTSA-F.
Duct separations are integrated ex-works as per your order. Duct separations can be distinguished by their coding, even when the valve terminal is assembled.

Manifold sub-bases for pilot air and soft-start valves, for VTSA-F-CB

Type	VABV-S4-2HS-G18-CB-2T5	VABV-S4-12HS-G-CB-2T5	VABV-S6-1Q-G38-CB1-T5	VABV-S6-1Q-G38-CB-T5
Order code	YB	YC	PV	PS
Part no.	8068913	8068912	8068609	8068610
Width	18 mm		40 mm	
Description	Size 18/18 mm	Size 18/26 mm	Dedicated voltage zone, 41 mm	Same voltage zone, 41 mm
	For pilot air switching valve with pressure switch, via C-Bus		For soft-start valve with pressure switch, via C-Bus	
Addresses	2 valve positions, 0 addresses	2 valve positions, 0 addresses		

Pilot air switching valves, width 18 mm, for VTSA-F-CB

Type	VSVA-BT-M32CS2-MYE-A2-1T5L-PA	VSVA-BT-M32CS2-MYE-A2-1T1L-PZ	VSVA-BT-M32CS1-MYE-A2-1T5L-PA	VSVA-BT-M32CS1-MYE-A2-1T1L-PZ	VSVA-BT-M32CS2-MS-A2-1T5L-PA	VSVA-BT-M32CS2-MS-A2-1T1L-PZ	VSVA-BT-M32CS1-MS-A2-1T5L-PA	VSVA-BT-M32CS1-MS-A2-1T1L-PZ
Order code	CT	CTY	CS	CSY	CTZZ	CTZZY	CSZZ	CSZZY
Part no.	8066573	8066572	8066569	8066568	8066575	8066574	8066571	8066570
Description	Actuation via C-Bus, switchable pilot air **not** from duct 1, pressure switch via C-Bus, self-resetting MO	Actuation via plug-in, switchable pilot air **not** from duct 1, external pressure switch via M12, self-resetting MO	Actuation via C-Bus, switchable pilot air from duct 1, pressure switch via C-Bus, self-resetting MO	Actuation via plug-in, switchable pilot air from duct 1, external pressure switch via M12, self-resetting MO	Actuation via C-Bus, switchable pilot air **not** from duct 1, pressure switch via C-Bus, covered MO	Actuation via plug-in, switchable pilot air **not** from duct 1, external pressure switch via M12, covered MO	Actuation via C-Bus, switchable pilot air from duct 1, pressure switch via C-Bus, covered MO	Actuation via plug-in, switchable pilot air from duct 1, external pressure switch via M12, covered MO

MO: Manual override

Soft-start valves / ...matching manifold sub-bases

Order code		PQ/PN	PP/PM	PN/ZQZ	PM/ZQZ	PN/ZQX	PM/ZQX	–	PV	PS
VTSA/VTSA-F, width 43 mm	Type	VABF-S6-1-P5A4-G12-4-1	VABF-S6-1-P5A4-G12-4-1-P	–	–	–	–	VABV-S6-1Q-G12	–	–
	Part no.	558230	557377	–	–	–	–	556989	–	–
VTSA-F-CB, width 40 mm	Type	–	–	VABF-S6-1-P5A4S2YE-G12-1T5-PA	VABF-S6-1-P5A4S1YE-G12-1T5-PA	VABF-S6-1-P5A4S2S-G12-1T5-PA	VABF-S6-1-P5A4S1S-G12-1T5-PA	–	VABV-S6-1Q-G38-CB1-T5	VABV-S6-1Q-G38-CB-T5
	Part no.	–	–	8067405	8067407	8067409	8067411	–	8068609	8068610
Description		Without sensor output, pneumatic connection G1/2	With sensor output PNP, pneumatic connection G1/2	Actuation via C-Bus, pilot pressure build-up not from duct 1, pressure switch via C-Bus, self-resetting MO	Actuation via C-Bus, pilot pressure build-up from duct 1, pressure switch via C-Bus, self-resetting MO	Actuation via C-Bus, pilot pressure build-up not from duct 1, pressure switch via C-Bus, covered MO	Actuation via C-Bus, pilot pressure build-up from duct 1, pressure switch via C-Bus, covered MO	Prepared to hold a soft-start valve (connections for duct 2 and 4 are combined), pneumatic connection G1/2	With C-Bus loop-through in new voltage zone, plug-in pressure sensor, internal sensor evaluation (connections of duct 2 and 4 are combined), pneumatic connection G3/8, M5	With C-Bus loop-through in same voltage zone, plug-in pressure sensor, internal sensor evaluation (connections of duct 2 and 4 are combined), pneumatic connection G3/8, M5

MO: Manual override

The soft-start valve is separately electrically actuated, independently of the multi-pin plug, AS-Interface connection or fieldbus connection, via a 4-pin plug to ISO 15407-1 or optionally via an M12 adapter. The valve can optionally be ordered with a sensor that monitors switching of the soft-start valve. The pressure build-up for each pressure zone is optimised for the application directly at the valve terminal by setting the switch-over pressure and the filling time.
A maximum of 5 soft-start valves can thus be integrated on one valve terminal.

Right-hand end plate / Right-hand end plate, with pilot air selector

Type	VABE-S6-1R-G12	VABE-S6-2R-G34	VABE-S6-1RZ-G12	VABE-S6-2RZ-G34	VABE-S6-1RZ-G-B1			
Order code VTSA/VTSA-F	V	V1	X	X1	Y	U	Z	W
...VTSA-F-CB	NS	MS	NZ	MZ	YS	–	YZ	–
Part no.	539234	560837	539236	560839	539238			
Working air/exhaust air	■	■	■	■	–			
Pilot air supply	Internal		External		Internal		External	
Description	Connection G1/2	Connection G3/4	Connection G1/2	Connection G3/4		Ducted pilot exhaust air		Ducted pilot exhaust air

Vacuum generator, for VTSA-F-CB

Type	VABF-S4-2-V2B1-G38-CB-VH-14-A	VABF-S4-2-V2B1-G38-CB-VL-14-A	VABF-S4-2-V2B1-G38-CB-VH-20-A	VABF-S4-2-V2B1-G38-CB-VL-20-A	VABF-S4-2-V2B1-G38-CB-VH-30-A	VABF-S4-2-V2B1-G38-CB-VH-14-AP	VABF-S4-2-V2B1-G38-CB-VL-14-AP	VABF-S4-2-V2B1-G38-CB-VH-20-AP	VABF-S4-2-V2B1-G38-CB-VL-20-AP	VABF-S4-2-V2B1-G38-CB-VH-30-AP	OASC-V1-P
Designation	Vacuum generator with integrated sensor/C-Bus, with 18 mm valve										Blanking plug
Order code	QI	QII	QIII	QIV	QV	QIPH	QIIPH	QIIIPH	QIVPH	QVPH	—
Part no.	8088778	8088779	8067140	8067141	8067142	8088780	8088781	8067143	8067144	8067145	8068144
Laval nozzle [mm]	1.4		2		3	1.4		2		3	
Description	High vacuum	High suction rate	High vacuum	High suction rate	High vacuum	High vacuum, with power ejector pulse	High suction rate, with power ejector pulse	High vacuum, with power ejector pulse	High suction rate, with power ejector pulse	High vacuum, with power ejector pulse	For deactivating/closing one (of two) nozzles VN for VABF-S4-2-V2B1-G38-CB-...

Valve functions – and their part numbers

Manual override MO	Width	2x 2/2-way valve, single solenoid, normally closed		2x 3/2-way valve, single solenoid, normally open	2x 3/2-way valve, single solenoid, normally closed	2x 3/2-way valve, single solenoid, normal position - 1x closed - 1x open	2x 3/2-way valve, single solenoid, normally open	2x 3/2-way valve, single solenoid, normally closed	2x 3/2-way valve, single solenoid, normal position - 1x closed - 1x open	5/2-way valve, single solenoid		5/2-way valve, double solenoid		5/3-way valve, mid-position pressurised[1]	5/3-way valve, mid-position closed[1]	5/3-way valve, mid-position exhausted[1]	5/3-way valve, with extended function, mid-position exhausted	5/3-way valve, with extended function, mid-position: port - 2 pressurised - 4 exhausted		5/3-way valve, with extended function, mid-position exhausted	5/3-way valve, with extended function, mid-position: port 2 pressurised	5/2-way valve, single solenoid		Blanking plate for vacant position
	Order code	VC	VV	N	K	H	P	Q	R	M	O	J	D	B	G	E	SA	SB	SD	SE	VG	SQ	SS	L
Non-detenting/detenting (D)	18 mm	561155	561159	539178	539176	539180	539179	539177	539181	539184	539185	539182	539183	539186	539188	539187	8031814	8031815	8031817	8031818	–	573203	573201	539213
	26 mm	561149	561153	539152	539150	539154	539153	539151	539155	539158	539159	539156	539157	539160	539162	539161	560727	560728	8031816	8026638	–	560743	570850	539212
	42 mm	561340	561344	543692	543690	543694	543693	543691	543695	543698	543699	543696	543697	543700	543702	543701	–	–	–	–	8000464	–	–	543186
	52 mm	560831	–	560827	560825	560829	560828	560826	560830	560820	560821	560818	560819	560822	560824	560823	–	–	–	–	8000465	–	–	560845
Non-detenting/heavy-duty (TR)	18 mm	8033457	8033458	8033446	8033444	8033448	8033447	8033445	8033449	8033452	8033453	8033450	8033451	8033454	8033456	8033455	8039181	8039184	8040110	8039190	–	8033461	8033459	–
	26 mm	8033032	8033033	8033015	8033013	8033017	8033016	8033014	8033018	8033021	8033022	8033019	8033020	8033023	8033025	8033024	8033028	8033029	8039187	8033035	–	8033031	8033034	–
	42 mm	8034781	8034782	8034770	8034768	8034772	8034771	8034769	8034773	8034776	8034777	8034774	8034775	8034778	8034780	8034779	–	–	–	–	8034783	–	–	–
	52 mm	8034967	–	8034963	8034961	8034965	8034964	8034962	8034966	8034956	8034957	8034954	8034955	8034958	8034960	8034959	–	–	–	–	8034968	–	–	–
Non-detenting (H)	18 mm	8033475	8033476	8033464	8033462	8033466	8033465	8033463	8033467	8033470	8033471	8033468	8033469	8033472	8033474	8033473	8039182	8039185	8040111	8039191	–	8033479	8033477	–
	26 mm	8033055	8033056	8033038	8033036	8033040	8033039	8033037	8033041	8033044	8033045	8033042	8033043	8033046	8033048	8033047	8033051	8033052	8039188	8033058	–	8033054	8033057	–
	42 mm	8034812	8034813	8034801	8034799	8034803	8034802	8034800	8034804	8034807	8034808	8034805	8034806	8034809	8034811	8034810	–	–	–	—	8034814	–	–	–
	52 mm	560831	–	560827	560825	560829	560828	560826	560830	560820	560821	560818	560819	560822	560824	560823	–	–	–	—	8000465	–	–	–
Covered	18 mm	8033493	8033494	8033482	8033480	8033484	8033483	8033481	8033485	8033488	8033489	8033486	8033487	8033490	8033492	8033491	8039183	8039186	8040112	8039192	–	8033497	8033495	–
	26 mm	8033078	8033079	8033061	8033059	8033063	8033062	8033060	8033064	8033067	8033068	8033065	8033066	8033069	8033071	8033070	8033074	8033075	8039189	8033081	–	8033077	8033080	–
	42 mm	8034843	8034844	8034832	8034830	8034834	8034833	8034831	8034835	8034838	8034839	8034836	8034837	8034840	8034842	8034841	–	–	–	–	8034845	–	–	–
	52 mm	8034997	–	8034993	8034991	8034995	8034994	8034992	8034996	8034986	8034987	8034984	8034985	8034988	8034990	8034989	–	–	–	–	8034998	–	–	–
Description		Pneumatic spring return	Pneumatic spring return, vacuum operation possible at 3 and 5	Pneumatic spring return, operating pressure > 3 bar			Pneumatic spring return, reverse operation, **VTSA/VTSA-F only**			Pneumatic spring return	Mechanical spring return		For activation on both sides, port 14 dominates	Mechanical spring return	Mechanical spring return	Mechanical spring return	Switching position 14 is retained, mechanical spring return, pressureless switching, self-holding, pneumatic operation	Switching position 14 is retained, mechanical spring return, holding, blocking a movement (mechanically)		Switching position 12 is retained, mechanical spring return, pressureless switching, self-holding, pneumatic operation	Port 4 closed	Mechanical spring return, proximity sensor for piston position sensing (NPN output), M8 plug	Mechanical spring return, proximity switch for piston position sensing, connecting cable with M12 plug	

All part numbers refer to the 24 V DC version - 1) If neither solenoid coil is energised, the valve is moved to its mid-position by a mechanical spring. If the two coils are permanently energised one after the other, the valve remains in the switching position of the coil that was activated first.

Sub-base valve:
All valves are fitted with a piston spool and patented sealing system, which ensures efficient sealing, a broad operating pressure range and long service life.
Sub-base valves can be quickly replaced since the tubing connections remain on the sub-base.

Irrespective of the valve function, there are sub-base valves with one solenoid coil (monostable) or with two solenoid coils for double solenoid or double valve functions.

Reverse/vacuum operation
Select reverse operation (code Z) if you wish to operate an actuator (cylinder) with different pressures for the forward and return stroke. Please note that the valves must then be operated via a separate pressure zone.
The reversible 3/2-way valves are also suitable for vacuum operation.

Vertical stacking – pressure regulator plates, flow control plates, vertical pressure shut-off plates, vertical supply plates

Designation		Pressure regulator plate for port 1 (P regulator)				Pressure regulator plate for port 2 (B regulator)				Pressure regulator plate for port 4 (A regulator)		Pressure regulator plate for ports 2 and 4 (AB regulator)				Pressure regulator plate for port 2, reversible (B regulator)				Pressure regulator plate for port 4, reversible (A regulator)		Pressure regulator plate for ports 2 and 4, reversible (AB regulator)			
Type		VABF-S…-R1C2-C-10	VABF-S…-R1C2-C-10-E	VABF-S…-R1C2-C-6	VABF-S…-R1C2-C-6-E	VABF-S…-R2C2-C-10	VABF-S…-R2C2-C-10-E	VABF-S…-R2C2-C-6	VABF-S…-R2C2-C-6-E	VABF-S…-R3C2-C-10	VABF-S…-R3C2-C-6	VABF-S…-R4C2-C-10	VABF-S…-R4C2-C-10-E	VABF-S…-R4C2-C-6	VABF-S…-R4C2-C-6-E	VABF-S…-R6C2-C-10	VABF-S…-R6C2-C-10-E	VABF-S…-R6C2-C-6	VABF-S…-R6C2-C-6-E	VABF-S…-R7C2-C-10	VABF-S…-R7C2-C-6	VABF-S…-R5C2-C-10	VABF-S…-R5C2-C-10-E	VABF-S…-R5C2-C-6	VABF-S…-R5C2-C-6-E
Order code		ZA	ZAY1)	ZF	ZFY1)	ZC	ZCY1)	ZH	ZHY1)	ZB1)	ZG1)	ZD	ZDY1)	ZI	ZIY1)	ZL	ZLY1)	ZN	ZNY1)	ZK1)	ZM1)	ZE	ZEY1)	ZJ	ZJY1)
Width (Part no.)	18 mm	540153	560756	540151	560758	540161	560763	540159	560765	540157	540155	540165	560767	540163	560769	546252	560775	546248	560777	546254	546250	540169	560771	540167	560773
	26 mm	540154	560757	540152	549876	540162	560764	540160	560766	540158	540156	540166	560768	540164	560770	546251	560776	546247	560778	546253	546249	540170	560772	540168	560774
	42 mm	546084	547058	546083	547058	546088	547058	546087	547058	546086	546085	540166	560768	540164	560770	546832	547058	546831	547058	546834	546833	546092	547058	546091	547058
	52 mm	555772	–	555771	–	555774	–	555773	–	555776	555775	555778	–	555777	–	555782	–	555781	–	555784	555783	555780	–	555779	–
Input pressure	6 bar	–	–	■	■	–	–	■	■	–	■	–	–	■	■	–	–	■	■	–	■				
	10 bar	■	■	–	–	■	■	–	–	■	–	■	■	–	-	■	■	–	–	■	–				
Description		Regulates the operating pressure in duct 1 upstream of the directional control valve				Regulates the operating pressure in duct 2 downstream of the directional control valve				Regulates the operating pressure in duct 4 downstream of the directional control valve		Regulates the working pressure in ducts 2 and 4 downstream of the directional control valve **Note** These pressure regulator plates cannot be combined with reversible 2x 3/2-way valves (code P, Q, R)				Reversible pressure regulator for port 2				Reversible pressure regulator for port 4		Pressure regulator for ports 2 and 4, pressure regulation upstream of the directional control valve, routes the operating pressure from duct 1 to ducts 3 and 5 Routes the exhaust air from duct 1 to ducts 3 and 5 **Note** These pressure regulator plates cannot be combined with standard 2x 3/2-way valves (code N, K, H). Reversible 2x 3/2-way valves (code P, Q, R) must not be operated in a separate pressure zone in combination with these pressure regulators			

1) Also suitable for symmetrical valves

Vertical stacking – pressure regulator plates, flow control plates, vertical pressure shut-off plates, vertical supply plates

	Vertical stacking – vertical supply plate								Vertical stacking – flow control plate				Vertical stacking – vertical pressure shut-off plate					
Type	VABF-S4-2-P1A3-G18	VABF-S4-1-P1A3-G14	VABF-S2-1-P1A3-G38	VABF-S2-2-P1A3-G12	VABF-S4-2-P1A14-G18	VABF-S4-1-P1A14-G14	VABF-S2-1-P1A14-G38	VABF-S2-2-P1A14-G12	VABF-S4-2-F1B1-C	VABF-S4-1-F1B1-C	VABF-S2-1-F1B1-C	VABF-S2-2-F1B1-C	VABF-S4-2-L1D1-C	VABF-S4-1-L1D1-C	VABF-S2-1-L1D1-C	VABF-S2-2-L1D1-C	VABF-S4-2-L1D2-C	VABF-S4-1-L1D2-C
Order code	ZU				ZY				X				ZT				ZS	
Part no.	540173	540171	546093	555786	8 000693	8000689	8000536	8000549	540176	540175	546095	555789	542884	542885	546096	555791	8 001178	8 001179
Width [mm]	18	26	42	52	18	26	42	52	18	26	42	52	18	26	42	52	18	26
Connecting thread	G1/8	G1/4	G3/8	G1/2	G1/8	G1/4	G3/8	G1/2										
Description	For supplying port 1				For supplying ports 1 and 14				Controls the flow of exhaust air downstream of the valve in ducts 3 and 5				2/2-way valve for shutting off the operating pressure at the valve position				Pressure separation can be shut off on the valve assembly using a key	
	With this plate a valve can be supplied with individual operating pressure independently of the operating pressure of the valve terminal.																	

Vertical stacking – pressure regulator plates
An adjustable pressure regulator can be installed between the sub-base and the valve to control the force of the actuator. This pressure regulator maintains a constant output pressure (secondary side) independently of pressure fluctuations (primary side) and air consumption. Also suitable for symmetrical valves.

Benefits:
Higher exhaust rate, because regulation occurs upstream of the valve. The pressure regulator can always be adjusted, since the input pressure is always present. By always having compressed air at the pressure regulator, service life is increased. Different pressures for the advance and return strokes normally saves compressed air.

Application examples:
- An equal working pressure is required at working ports 2 and 4.
- The working pressure (e.g. 3 bar) needs to be lower than the operating pressure at the valve terminal (e.g. 8 bar).

Standard version:
Standard port pattern to ISO 15407-2 or ISO 5599-2, for input pressure up to 6 bar or up to 10 bar, without pressure gauge (optional), regulator knob with 3 positions (locked, reference position, free running)

Note
With the A, B and AB pressure regulators VABF-S…-1-…, the control pressure should not be under 2 bar. Use the reversible A, B or AB pressure regulators for control pressures under 2 bar.
Please note for repeat orders: Certain versions of pressure regulator plates can only be ordered via type codes.
The part number imprinted on the regulator plate installed on the VTSA/VTSA-F valve terminal will not match the equipment version in these cases. You should therefore always use the VABF configurator for repeat orders.

Vertical stacking – vertical supply plate
With this plate a valve can be supplied with individual operating pressure independently of the operating pressure of the valve terminal.

Vertical stacking – flow control plate
Equipped with two flow control valves at which the exhaust air flow rate at exhaust ports 3 or 5 can be adjusted. This enables the movement of the drive to be initiated and the desired speed to be set on the valve terminal using the manual override. Ducts 3 and 5 can be adjusted independently of each other.

Note
On reversible valve terminals, the air flow is controlled in ducts 3 and 5 upstream of the valve.

Vertical stacking – vertical pressure shut-off plate
This is equipped with a switch via which the compressed air supply can be shut off. A directional control valve or subsequent vertical stacking plate can thus be replaced without switching off the overall air supply. If the control chain has a redundant connection, the cycle can continue in the case of a cyclical control system. After the shut-off has been activated, the exhaust air/return air from the cylinder is expelled via the M5 threaded connection.

Note
The operating pressure of the valve terminal must lie within the range of the required pilot pressure (i.e. min. 3 bar). When using an end plate with pilot air selector, only end plates with the code W and U can be used.

ACCESSORIES

Connection: Standard O.D. tubing PUN
→ www.festo.com/catalogue/pun

Connection: Push-in fittings QS
→ www.festo.com/catalogue/qs

Pressure gauge with cartridge connection for regulator

Type	PAGN-26-16-P10		PAGN-40-16-P10	
Order code	ST			
Part no.	543487		548010	
Pressure range [bar]	10			
Scale	Bar/psi			
Display range	0…16 bar/0…240 psi			
Regulator plates	ZA, ZB, ZC, ZD, ZE, ZK, ZL			
Width [mm]	18	26	42	52

Type	PAGN-26-10-P10		PAGN-40-10-P10	
Order code	U			
Part no.	543488		548009	
Pressure range [bar]	6			
Scale	Bar/psi			
Display range	0…10 bar/0…145 psi			
Regulator plates	ZF, ZG, ZH, ZI, ZJ, ZM, ZN			
Width [mm]	18	26	42	52

Type	PAGN-26-1,6M-P10		PAGN-40-1,6M-P10	
Order code	SKT			
Part no.	563735		563737	
Pressure range [bar]	10			
Scale	Bar/MPa			
Display range	0…16 bar/0…16 MPa			
Regulator plates	ZA, ZB, ZC, ZD, ZE, ZK, ZL			
Width [mm]	18	26	42	52

Type	PAGN-26-1M-P10		PAGN-40-1M-P10	
Order code	SKU			
Part no.	563736		563738	
Pressure range [bar]	6			
Scale	Bar/MPa			
Display range	0…10 bar/0…10 MPa			
Regulator plates	ZF, ZG, ZH, ZI, ZJ, ZM, ZN			
Width [mm]	18	26	42	52

Type	PAGN-26-232-P10		PAGN-40-232-P10	
Order code	IT			
Part no.	563731		563733	
Pressure range [bar]	10			
Scale	Bar/psi			
Display range	0…16 bar/0…232 psi			
Regulator plates	ZA, ZB, ZC, ZD, ZE, ZK, ZL			
Width [mm]	18	26	42	52

Type	PAGN-26-145-P10		PAGN-40-145-P10	
Order code	IU			
Part no.	563732		563734	
Pressure range [bar]	6			
Scale	Bar/psi			
Display range	0…10 bar/0…145 psi			
Regulator plates	ZF, ZG, ZH, ZI, ZJ, ZM, ZN			
Width [mm]	18	26	42	52

For pneumatic connection of the pressure gauges:
Push-in fitting and adapter

Cartridge	QSP10-4	172972
Adapter	QSP10-G1/8	565811

Pressure gauge

Type	PAGN-26-10-P12-RG		MA-27-10-M5
Order code	SRG		--
Part no.	8090378		526323
Description	10 bar indication range, red/green gauge		0 … 10 bar, pneumatic connection M5
Width [mm]	18	26	–

Covers for manual override and electrical connection

Type	VAMC-S6-CH	VAMC-S6-CS	VAMC-B-S6-CTR	VABD-S4-E-C	VABD-S2-1-S-C
Designation	Non-detenting	Covered	Non-detenting, sturdy **For the detent function:** Coded key AHB-MEB-B (part no. 1662543)	Cover for electrical connection (with individual connection)	
Size	–	–	–	18 and 26 mm	42 and 52 mm
Order code	N	V	A/B	—	—
Part no.	541010	541011	4105147	547713	571343
Packaging unit, quantity	10	10	1	10	2

Don't forget:
Coded key AHB-MEB-B (part no. 1662543) for actuating the sturdy cover cap for detenting position on VAMC-B-S6-CTR

Wall mounting

Type	VAME-S6-10-W	VAME-S6-W-M46
Designation	Mounting bracket	
Order code	H	—
Part no.	539214	567038
Packaging unit	5	1

H-rail mounting

Type	CPX-CPA-BG-NRH	CPA-BG-NRH
Designation	H-rail mounting for VTSA and VTSA-F	H-rail mounting for VTSA with multi-pin plug
Order code	H	
Part no.	526032	173498
Packaging unit	3	2

Inscription label holders/inscription labels

Type	ASCF-T-S6	ASCF-M-S6	ASCF-M-S2-2	IBS-9x20
Designation	Clip-on inscription label holder for valve cap	Inscription label holder for manifold blocks	Inscription label holder for manifold blocks, size 52 mm	Inscription label
Order code	B	T	TD	—
Part no.	540888	540889	562577	18182
Packaging unit	5	5	5	20 labels in frames

135229 en 2022/02 – Errors and omissions excepted