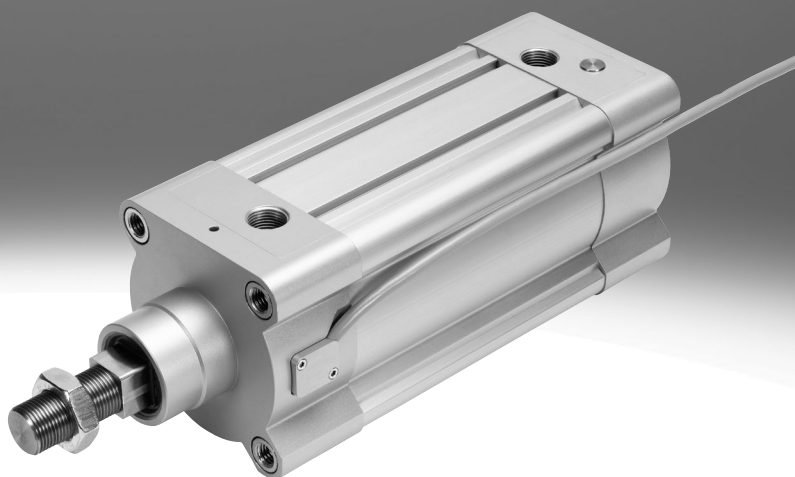


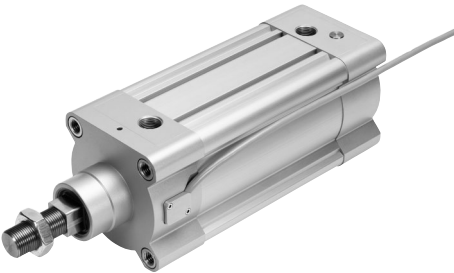
Standards-based cylinders DDPC, with measured-value transducer DADE

FESTO



Key features

Components for positioning and measuring with standards-based cylinder DDPC



Measuring
with measured-value transducer DADE

Measured-value transducer
DADE



Controller
e.g. CECC



Operator unit
e. g. CDPX



Positioning
with end-position controller SPC11 or controller module CPX-CMAX/-CMPX

Proportional directional control valve
MPYE



End-position controller
SPC11-INC



Proportional directional control valve
VPWP



Sensor interface
CASM



Controller module
CPX-CMAX, CPX-CMPX

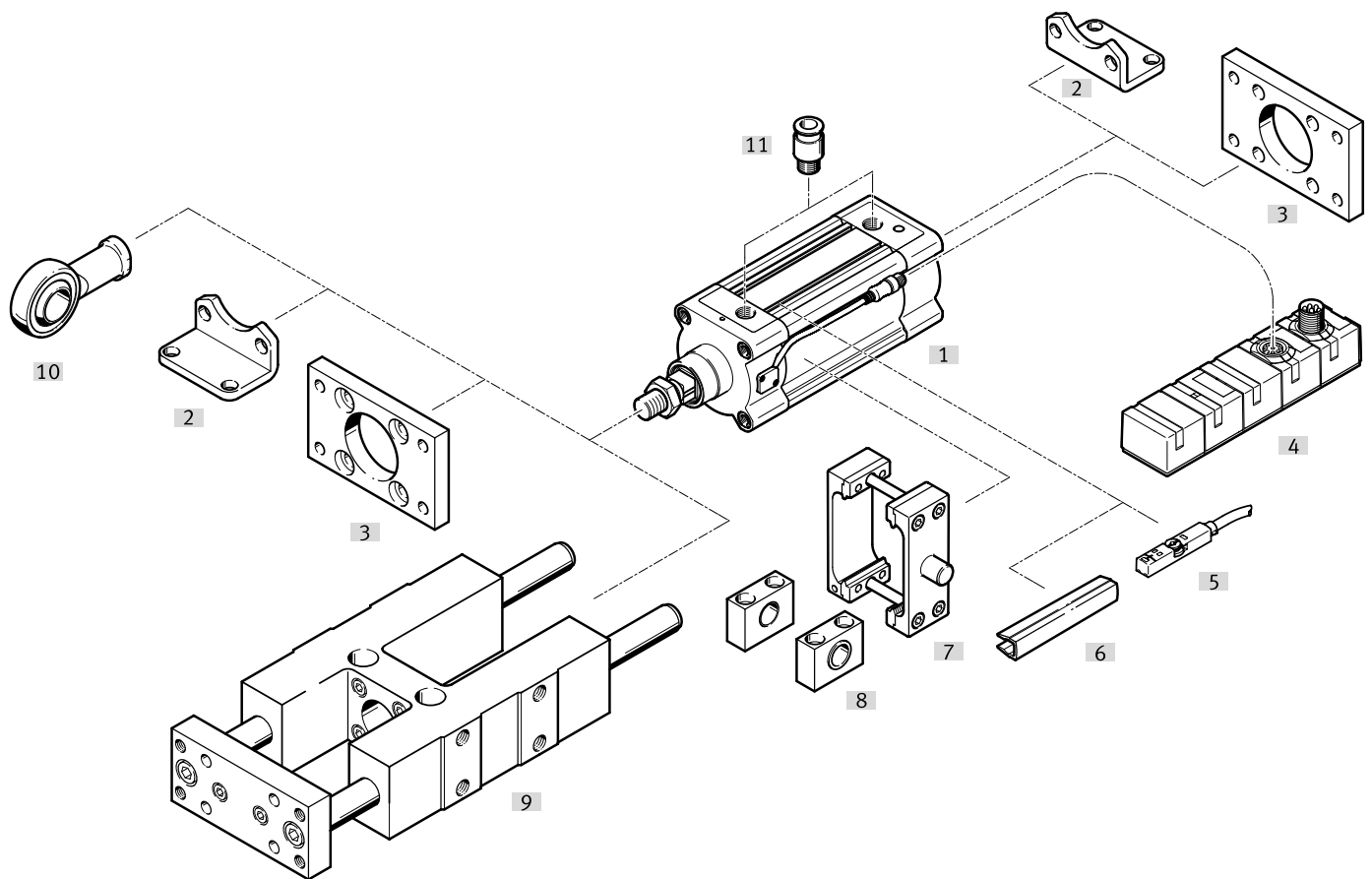


Type codes

001	Series	
DDPC	Standards-based cylinder, integrated displacement encoder	
002	Protection against rotation	
D	With guide unit	
Q	With protection against rotation	
003	Piston diameter	
80	80	
100	100	
004	Stroke	
...	10 ... 2000	
005	Clamping unit	
	None	
C	Attached	

006	Piston rod type	
	At one end	
T	Through piston rod	
007	Cushioning	
P	Elastic cushioning rings/plates on both sides	
008	Position sensing	
A	For proximity sensor	
009	Piston rod extension	
	None	
...E	1 ... 500 mm	

Peripherals overview



Note

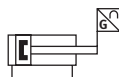
If the drive DDPC is used without an end-position controller CPX-CMPX, SPC11 or axis controller CPX-CMAX, e.g. as a measuring cylinder, then the standard accessories for the drive DNC can be used.

Peripherals overview

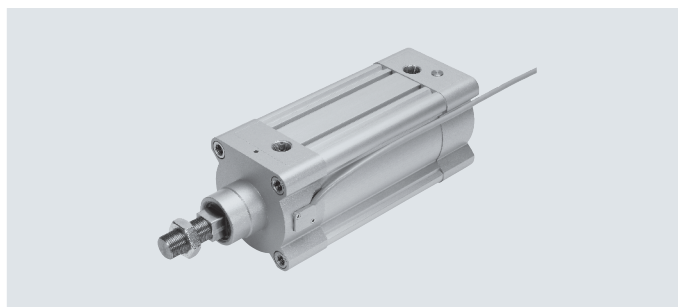
Accessories			
Type	Description		→ Page/Internet
[1] Standards-based cylinder DDPC			
[2] Foot mounting HNC	For mounting the drive on the bearing and end caps		ddpc
[3] Flange mounting FNC	For mounting the drive on the bearing and end caps		ddpc
[4] Measured-value transducer DADE	Converts the sensor signal of the cylinder to a voltage signal of 0 ... 10 V and/or a current signal of 4 ... 20 mA		14
[5] Proximity switch SME/SMT-8	For additional sensing of the piston position, can be ordered optionally, only in conjunction with the order code A in the drive's modular product system		ddpc
[6] Slot cover ABP-5-S	For protection against contamination		ddpc
[7] Trunnion flange kit DAMT	For swivel mounting of the drive		ddpc
[8] Trunnion support LNZG	For securing the trunnion flange kit DAMT		ddpc
[9] Guide unit ¹⁾ FENG-KF	To protect against rotation at high torques		12
[10] Rod eye SGS	With spherical bearing		ddpc
[11] Push-in fitting QS	For connecting tubing with standard O.D.		qs

1) The guide unit FENG-KF must be connected to the piston rod without any backlash

Datasheet



Repair service
www.festo.com



- Ø - Diameter
80 and 100 mm
- l - Stroke length
10 ... 1250 mm

General technical data		
Piston Ø	80	100
Based on standard	ISO 15552	
Design	Piston	
	Piston rod	
	Profile barrel	
Operating mode	Double-acting	
Guide ¹⁾	Guide rod with yoke, ball bearing guided	
Protection against rotation	Square piston rod	
Mounting position	Any	
Type of mounting	With accessories	
Cushioning	Elastic cushioning rings/plates at both ends	
Position sensing	Integrated displacement encoder	
	Via proximity sensor ²⁾	
Measuring principle (displacement encoder)	Encoder, contactless and relative measuring	
Pneumatic connection	G3/8	G1/2
Stroke		
DDPC-... [mm]	10 ... 1250	
DDPC-...-D [mm]	100 ... 500	
Extended piston rod [mm]	1 ... 500	

1) Guide unit FENG-KF can be ordered via the modular product system (feature D) and is supplied attached. The maximum stroke is limited.

2) Not included in the scope of delivery, can be ordered as an option

Operating and environmental conditions		
Operating pressure [bar]	4 ... 12	
Operating pressure ¹⁾ [bar]	4 ... 8	
Operating medium ²⁾	Compressed air to ISO 8573-1:2010 [6:4:4]	
Note on the operating/pilot medium	Lubricated operation not possible	
	Pressure dew point 10 °C below ambient/medium temperature	
Ambient temperature ³⁾ [°C]	-20 ... +80	
Vibration resistance to DIN/IEC 68, Part 2-6	Severity level 2	
Continuous shock resistance to DIN/IEC 68, Part 2 - 82	Severity level 2	
CE marking (see declaration of conformity) ⁴⁾	To EU EMC Directive	
Corrosion resistance class CRC ⁵⁾	1	

1) Only applies to applications with end-position controller CPX-CMPX, SPC11 and axis controller CPX-CMAX

2) The proportional directional control valve VPWP, MPYE used requires these characteristic values

3) Note operating range of proximity switches

4) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

5) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, or parts that are covered in the application (e.g. drive trunnions).

Datasheet

Forces [N] and impact energy [Nm]		
Piston Ø	80	100
Theoretical force at 6 bar, advancing	3016	4712
Theoretical force at 6 bar, retracting	2721	4418
Impact energy in the end positions	1.8	2.5

Permissible impact velocity:

$$v = \sqrt{\frac{2 \cdot E}{m_1 + m_2}}$$

v Permissible impact speed

E Max. impact energy

m₁ Moving mass (drive)m₂ Moving payload

Maximum permissible mass:

$$m_2 = \frac{2 \cdot E}{v^2} - m_1$$

**Note**

These specifications represent the maximum values that can be achieved. The maximum permissible impact energy must be observed.

Electrical data – Displacement encoder		
Output signal	Analogue	
Linearity error		
Strokes up to 500 mm	[mm]	< ±0.08
Strokes up to 1000 mm	[mm]	< ±0.09
Strokes over 1000 mm	[mm]	< ±0.11
Resolution ¹⁾	[%]	≤ 0.025
Repetition accuracy		
≤ 400	[mm]	±0.1
≤ 500	[mm]	±0.13
≤ 750	[mm]	±0.19
≤ 1200	[mm]	±0.3
≤ 1250	[mm]	±0.4
Max. travel speed	[m/s]	1.5
Degree of protection	IP65	
CE marking (see declaration of conformity) ²⁾	To EU EMC Directive	
Max. permitted magnetic interference field ³⁾	[kA/m]	10
Electrical connection	Cable with 8-pin plug, round design M12	
Cable length	[m]	1.5

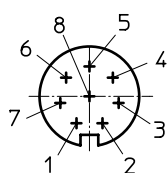
1) Always refers to max. stroke

2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/sp → Certificates.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Distance in 100 mm

Pin allocation for the plug



Pin	Function	Colour
1	5 V	Black
2	GND	Brown
3	sin+	Red
4	sin–	Orange
5	cos–	Green
6	cos+	Yellow
7	Shielding	Shielding
8	n.c.	–

Datasheet

Weight [g]		
Piston Ø	80	100
DDPC-...		
Basic weight with 0 mm stroke	3053	4330
Additional weight per 10 mm stroke	87	95
Moving mass with 0 mm stroke	804	994
Additional weight per 10 mm stroke	31	31
DDPC-...-T – Through piston rod		
Basic weight with 0 mm stroke	3537	5019
Additional weight per 10 mm stroke	127	134
Moving mass with 0 mm stroke	1247	1467
Additional weight per 10 mm stroke	70	70
DDPC-...-...E – Additional weight with piston rod extension		
Weight surcharge per 10 mm extension	31	31
DDPC-...-C – Additional weight with clamping unit		
Additional weight	2046	2829
DDPC-...-D – Additional weight with guide unit		
Basic weight with 0 mm stroke	10430	12990
Additional weight per 10 mm stroke	80	80
Materials		
Cover material	Wrought aluminium alloy	
Piston rod material	High-alloy steel	
Cylinder barrel material	Wrought aluminium alloy	
Sealing material	FPM NBR TPE-U(PU)	
Screw material	Steel	
Plug housing material	PBT	
Sensor cover material	Aluminium	
Cable sheath material	TPE-U(PUR)	
Sensor head material	POM	
Note on materials	RoHS-compliant	
LABS (PWIS) conformity	VDMA24364-B1/B2-L	

Datasheet

Torques and lateral forces

Max. torque for protection against rotation:

Dynamic $\leq 3 \text{ Nm}$

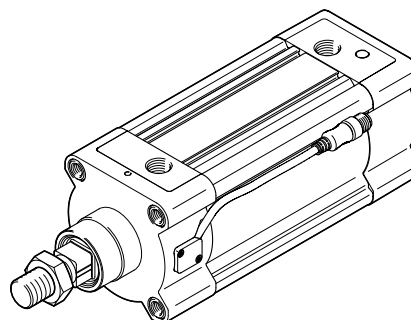
Static $\leq 5 \text{ Nm}$

An external guide unit FENG-KF is recommended with higher torque loads.

The guide unit is supplied fitted.

The permissible static and dynamic characteristic load values with and without attached guide

→ Internet: feng



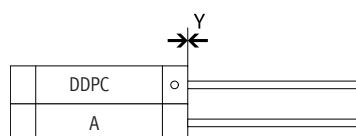
Installation conditions

When mounting a drive A with magnet (for position detection) next to a standards-based cylinder DDPC, the following conditions must be observed:

- X Minimum distance between the drives
- Y Offset between the drives on the bearing cap

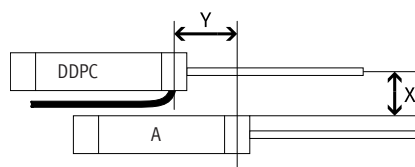
Parallel mounting

If the offset $Y = 0 \text{ mm}$, the drives can be mounted directly next to each other.



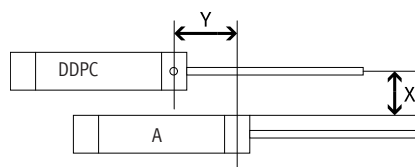
Offset mounting, cable outlet between the drives

If the offset is $Y > 0 \text{ mm}$ and the cable outlet is between the drives, a distance of $X > 70 \text{ mm}$ must be observed.



Offset mounting, cable outlet upwards or downwards

If the offset is $Y > 0 \text{ mm}$ and the cable outlet is up or down, a distance of $X > 60 \text{ mm}$ must be observed.

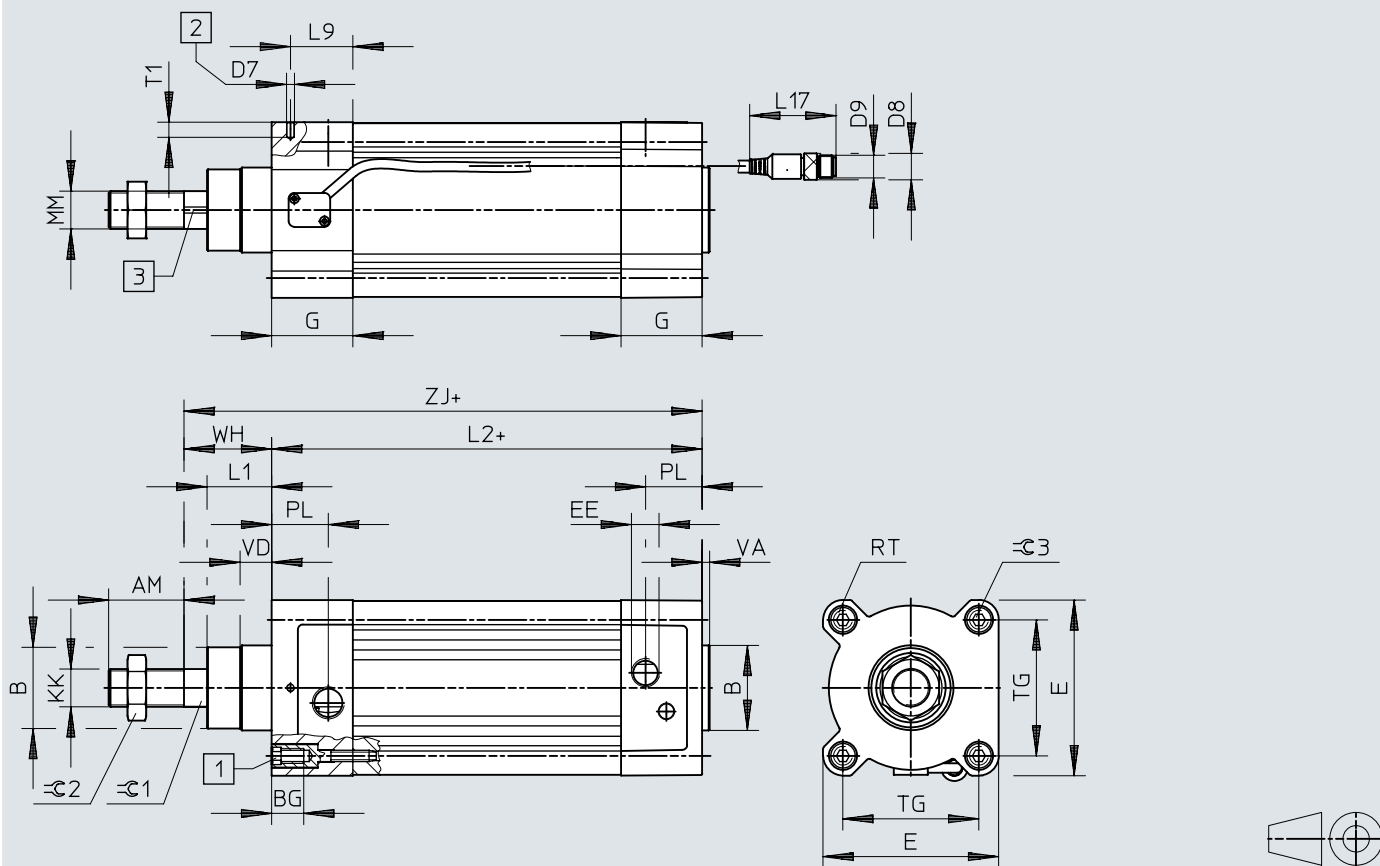


Datasheet

Dimensions

Download CAD data → www.festo.com

DDPC...



- [1] Socket head screw with female thread for mounting components
 [2] Hole for securing the earthing for self-tapping M4 screw to DIN 7500

- [3] Magnetic measuring band
 + = plus stroke length

∅	AM	B ∅ d11	BG	D7 ∅	D8 ∅	D9	E	EE	G
[mm]									
80	40	45	17	3.7	14	M12	93	G3/8	43
100	40	55	17	3.7	14	M12	110	G1/2	48

∅	KK	L1	L2	L9	L17	MM ∅	PL	RT	T1
[mm]									
80	M20x1.5	34.2	128	20	45.7	20	30	M10	8
100	M20x1.5	38	138	21.5	45.7	20	31.5	M10	8

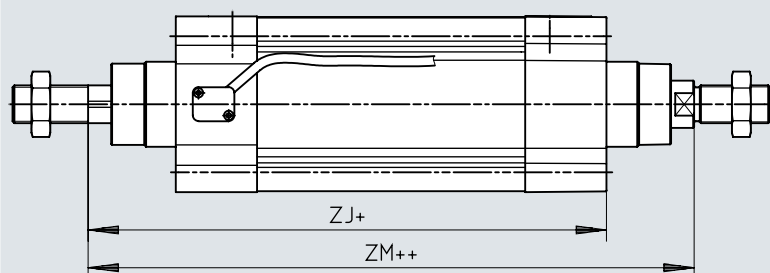
∅	TG	VA	VD	WH	ZJ	⌀ 1	⌀ 2	⌀ 3
[mm]								
80	72	4	16.7	46	174	22	30	6
100	89	4	20.5	51	189	22	30	6

Datasheet

Dimensions

Download CAD data → www.festo.com

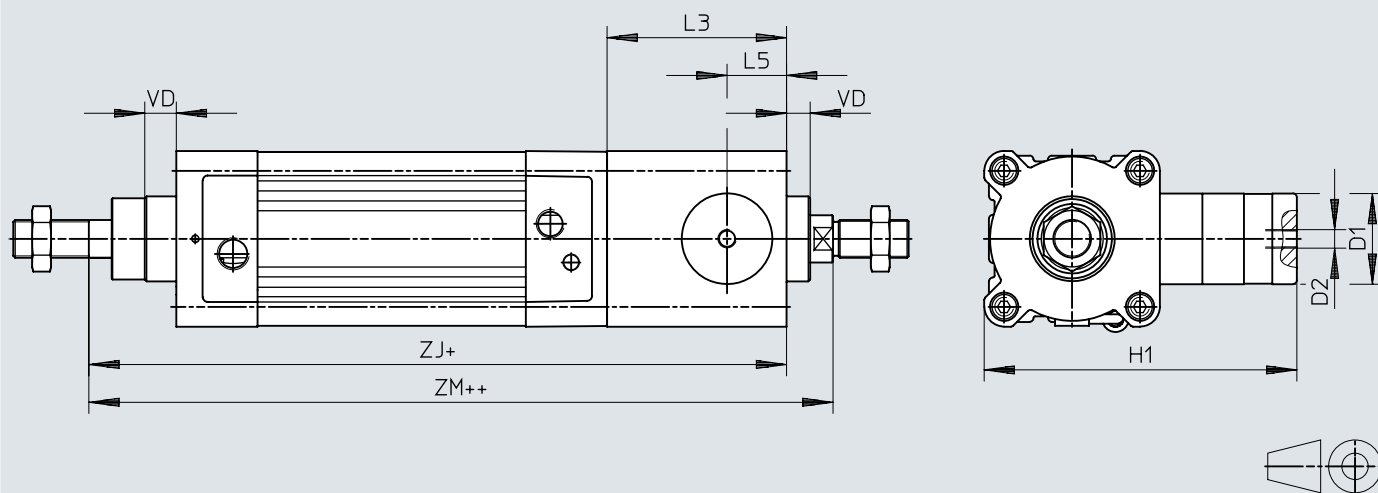
DDPC-...-T – Through piston rod



+ = plus stroke length

++ = plus 2x stroke length

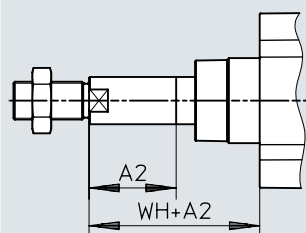
DDPC-...-CT – Through piston rod with clamping unit



+ = plus stroke length

++ = plus 2x stroke length

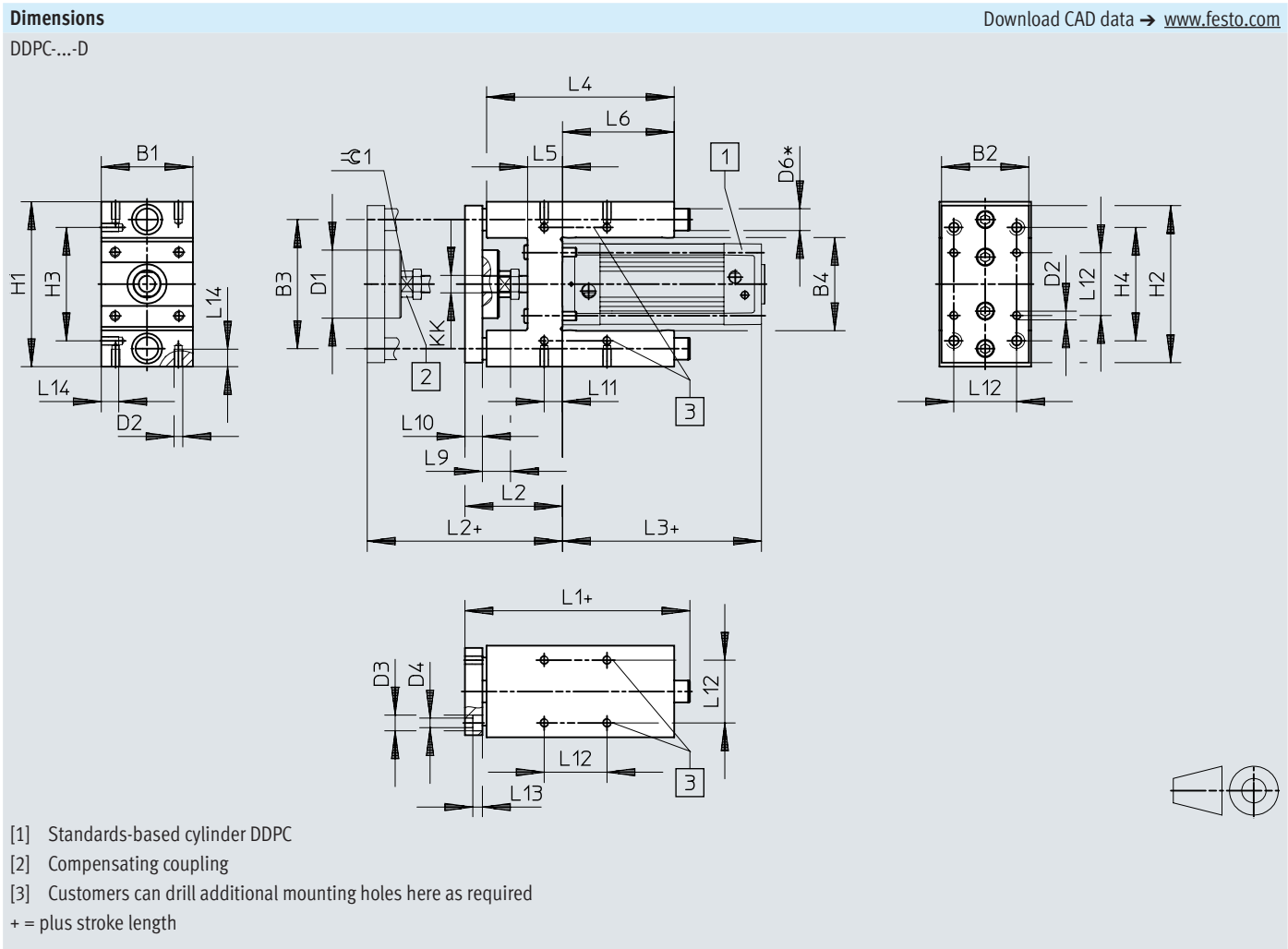
DDPC-...-E – Extended piston rod



ø	A2	D1	D2	H1	L3	L5
[mm]	max.	ø f9				
80	500	48	G1/8	165.5	95	31.5
100	500	48	G1/8	174	98	31

ø	VD	WH	ZJ	ZM
[mm]			DDPC-...-T	DDPC-...-CT
80	16.7	46	174	269
100	20.5	51	189	287

Datasheet



∅	B1	B2	B3	B4	D1 ∅	D2	D3 ∅	D4 ∅	D6 ∅ h6
[mm]	-0.3		±0.2	±0.6					
80	105	100	148	106	78	M10	18	11	25
100	130	120	172	131	78	M10	18	11	25

∅	H1	H2	H3	H4	KK	L1	L2	L3	L4
[mm]	-0.5		±0.2	±0.2			+10		
80	189	180	130	130	M20x1,5	258	111	194	215
100	213	200	150	150	M20x1,5	263	116	138	220

∅	L5	L6	L9	L10	L11	L12	L13	L14	≈ 1
[mm]						±0.2			
80	40	128	32	20	21	72	11	20	27
100	40	128	32	20	24,5	89	11	20	27

Ordering data – Modular product system

Ordering table					
Piston Ø	80	100	Conditions	Code	Enter code
Module no.	1677705	1691433			
Function	Standard cylinder with integrated displacement encoder			DDPC	DDPC
Protection against rotation	With protection against rotation			-Q	-Q
Piston Ø [mm]	80	100		-...	
Stroke [mm]	10 ... 1250			-...	
Guide unit	None				
	Attached			-D	
Clamping unit	None				
	Attached		[1]	-C	
Piston rod type	At one end				
	Through piston rod			T	
Cushioning	Elastic cushioning rings/plates at both ends			-P	-P
Position sensing	Via proximity switch			A	A
Piston rod extension	None				
	[mm]	1 ... 500		-...E	

[1] Only available with T

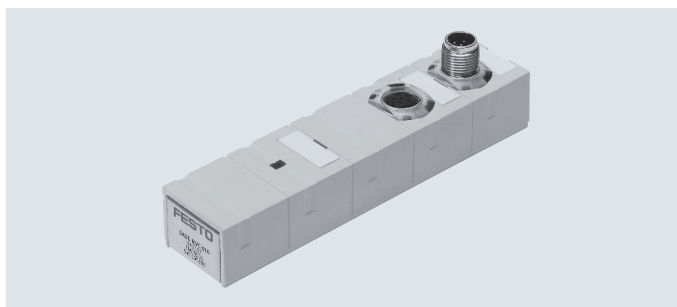
Datasheet

Measured-value transducer

DADE-MVC-010

DADE-MVC-420

The measured-value transducer converts sensor signals of the standards-based cylinder DDPC into a voltage signal of 0 ... 10 V and/or a current signal of 4 ... 20 mA. These signals can be evaluated by a PLC with an appropriate signal input.



General technical data

Type of mounting	With through-hole
Mounting position	Any
Short circuit current rating	Yes
Reverse polarity protection	Yes
Diagnostic function	Indication via LED

General electrical data

Analogue output	[V]	0 ... 10 (according to EN 61131-2)
	[mA]	4 ... 20 (according to EN 61131-2)
Nominal operating voltage	[V DC]	24 ± 25%
Residual ripple	[%]	4 (at 50 Hz)
Current consumption at nominal operating voltage	[mA]	20 ... 30
Switching logic at outputs		PNP
Switching logic at inputs		PNP
Debounce time at inputs	[ms]	3
Linearity error FS		0.2%

Operating and environmental conditions

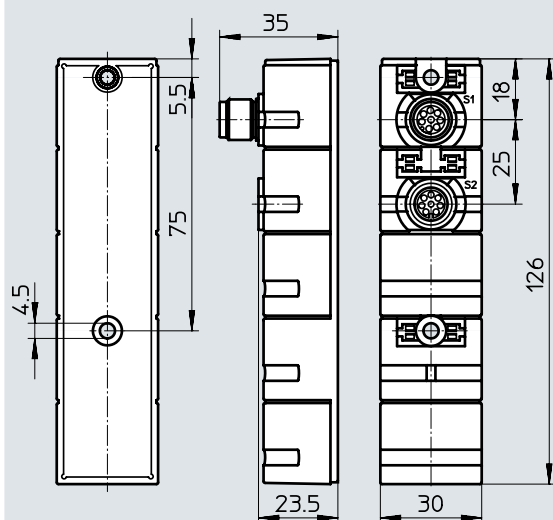
Ambient temperature	[°C]	0 ... 55
Degree of protection		IP65
Relative humidity		95% non-condensing
CE marking (see declaration of conformity)		To EU EMC Directive
		To EU RoHS Directive
KC marking		KC EMC
Corrosion resistance class CRC ¹⁾		1
Product weight	[g]	128
Note on materials : Housing		Polybutylene terephthalate

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, or parts that are covered in the application (e.g. drive trunnions).

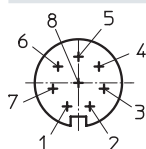
Datasheet

Dimensions

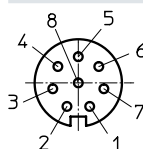
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Pin assignment

PLC interface



Measurement system interface



Pin	Function	Cable colour
1	24 V	White
2	Analogue measurement signal	Brown
3	Reference output	Green
4	0 V measurement signal	Yellow
5	Reference input	Grey
6	Calibration input	Pink
7	Ready output	Blue
8	0 V power supply for inputs/outputs	Red

Pin	Function
1	Ub
2	0 V
3	Sine signal +
4	Sine signal -
5	Cosine signal -
6	Cosine signal +
7	Shielding/earth
8	-

Ordering data

		Description	Part no.	Type
Measured-value transducer				
	With voltage signal	0 ... 10 V	542117	DADE-MVC-010
	With current signal	4 ... 20 mA	542118	DADE-MVC-420
Accessories				
		Datasheets → Internet: sim		
	Connecting cable	Connection cable to PLC (length 2 m)	525616	SIM-M12-8GD-2-PU
		Connection cable to PLC (length 5 m)	525618	SIM-M12-8GD-5-PU