

Motor units MTR-DCI, intelligent servo motors



- 7 - Type discontinued  
Available up until 2018

## Motor units MTR-DCI, intelligent servo motors

Key features

FESTO

### General information

The motor unit MTR-DCI is an innovative motor with integrated power electronics for positioning tasks.

#### Four components in one housing

Integrated in the MTR-DCI are the motor, gear unit, controller and power electronics. This means that there is no need for a control cabinet or extensive cabling.

#### Reliable

The integrated power electronics and controller removes the need for motor cables and improves the electromagnetic compatibility. Additional monitoring functions are integrated.

#### Uncomplicated

The complete commissioning process can be performed directly on the MTR-DCI via the optional LCD display or on a PC via the user-friendly menus in the FCT (Festo Configuration Tool). No matter which approach is used, all parameters are continuously controlled.

### At a glance

- Compact design
- Smooth profile prevents the ingress of dirt
- DC motor with planetary gear unit and encoder
- Gear unit ratio: 7:1; 14:1
- Protection class IP54

#### Positioning functionality

- 16 traversing records (including homing)
- Constant acceleration and braking
- Positioning control

#### Protective functions

- Temperature monitoring
- Current monitoring
- Voltage failure detection
- Following error monitoring
- Software end-position detection

#### Easy actuation via

- I/O interface
- Profibus
- CANopen
- DeviceNet



CANopen

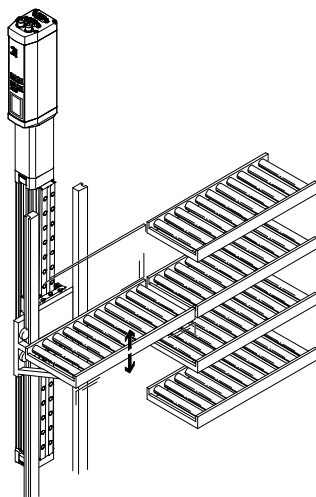
DeviceNet

- 1 Control panel with integrated display (optional)
- 2 Input for reference limit switches
- 3 RS232 interface
- 4 Operator interface: I/O interface
- 5 Power supply
- 6 Gear unit

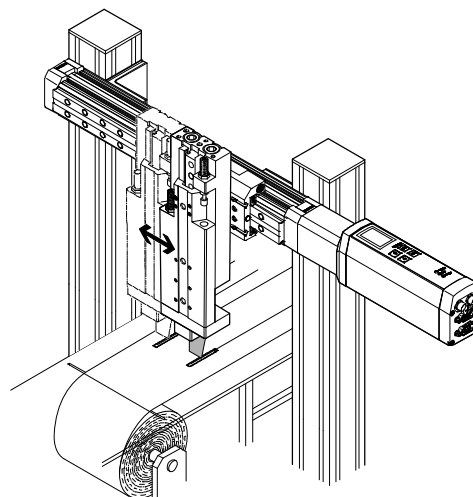


### Typical applications

Adjusting sorting conveyors



Programming formats for paper or foil cutting machines



PROFIBUS®, DeviceNet®, CANopen® is a registered trademark of its respective trademark holder in certain countries.

- 2 - Type discontinued  
Available up until 2018

FESTO

## Motor units MTR-DCI, intelligent servo motors

Type codes

		MTR	-	DCI	-	42		S	-	VC		SC	-	E		G7	-	H2		IO
<b>Type</b>																				
MTR	Motor																			
<b>Motor type</b>																				
<b>Size</b>																				
<b>Torque class</b>																				
S	Standard																			
<b>Nominal voltage</b>																				
VC	24 V DC																			
<b>Plug design</b>																				
SC	Straight plug outlet																			
<b>Measuring system</b>																				
E	Encoder																			
<b>Gear unit ratio</b>																				
G7	7:1																			
G14	14:1																			
<b>Parameterisation interface</b>																				
R2	RS232																			
H2	RS232 and control panel																			
<b>Electrical connection technology</b>																				
IO	I/O interface																			
CO	CANopen interface																			
PB	Profibus interface																			
DN	DeviceNet interface																			

- 1 - Type discontinued  
Available up until 2018

## Motor units MTR-DCI, intelligent servo motors

Technical data

FESTO

Size  
32 ... 52 mm

Voltage  
24 V DC

Fieldbus interfaces



CANopen

DeviceNet



General technical data			
Size	32	42	52
Rotary position generator	Incremental encoder		
Rotary position encoder measuring principle	Optical		
No. of increments/revolution	300 (1200) <sup>1)</sup>	500 (2000) <sup>1)</sup>	
Controller operating mode	PWM MOSFET power amplifier		
Display resolution	128 x 64 pixels		
Type of mounting	Can be bolted on or clamped to gearing unit flange		
Gearing unit type	Planetary gearing		
Gear unit ratio	G7	6.75 (7:1); 1-stage	
	G14	13.73 (14:1); 2-stage	

1) Internal 4-fold evaluation

Electrical data – Motor			
Size	32	42	52
Nominal voltage [V DC]	24 ±10%		
Nominal current (motor) [A]	0.73	2	5
Peak current [A]	2.1	3.8	7.7
Motor constant [Ncm/A]	4.5	6.1	6.4
Nominal power (motor) [W]	17	48	122
Max. current (digital logic outputs) [mA]	200	60	
Parameterisation interface	RS232; 9600 baud		

Mechanical data – Motor						
Size	32		42		52	
Gear unit ratio	G7	G14	G7	G14	G7	G14
Gearing unit output speed [rpm]	481	237	444	218	444	218
Gearing unit torsional backlash [°]	≤ 1.9	≤ 1.55	≤ 1.3	≤ 0.95	≤ 1.1	≤ 0.75
Gearing unit output torque [Nm]	0.15	0.29	0.59	1.13	1.62	3.08
Gearing unit efficiency	0.75	0.7	0.8	0.75	0.8	0.75
Mass moment of inertia (rotor) [kg cm <sup>2</sup> ]	0.024		0.323		1.209	
Mass moment of inertia (gearing unit) [kg cm <sup>2</sup> ]	0.00089	0.00149	0.00235	0.00441	0.01132	0.01711
Radial shaft load [N]	40	70	160	230	200	320
Axial shaft load [N]	10	20	50	80	60	100
Product weight [kg]	0.72	0.74	1.72	1.83	3.1	3.3

- 2 - Type discontinued  
Available up until 2018

FESTO

## Motor units MTR-DCI, intelligent servo motors

Technical data

Operating and environmental conditions			
Size	32	42	52
Digital logic outputs	Not electrically isolated		Electrically isolated
Insulation protection class to VDE 60034	F		
Protection class	IP54		
Protective functions	I <sup>2</sup> T monitoring		
	Following error monitoring		
	Software end position detection		
	Voltage failure detection		
	Current monitoring		
	Temperature monitoring: Silicon absolute temperature sensor, switches off at temperatures >70 °C		
Ambient temperature [°C]	0 ... +50		
Storage temperature [°C]	-25 ... +60		
Relative air humidity [%]	0 ... 95 (non-condensing)		
CE mark (see declaration of conformity)	In accordance with EU EMC directive		
Certification	C-Tick		
Note on materials	Contains paint wetting impairment substances		

Materials	
Motor unit housing	Anodised aluminium
Motor unit cover	Aluminium, precision casting, coated

Technical data – I/O/fieldbus interface				
Type	MTR-DCI-...-IO	MTR-DCI-...-CO	MTR-DCI-...-PB	MTR-DCI-...-DN
Interface	I/O interface for 15 traversing records and homing	CANopen	Profibus DP	DeviceNet
Number of digital logic inputs	6	–	–	–
Number of digital logic outputs	2	–	–	–
Max. current of digital logic outputs (size)	32/42	200	–	–
	52	60	–	–
Bus terminating resistor <sup>1)</sup>	–	Not integrated in the device	Not integrated in the device	Not integrated in the device
Communication profile	–	DS301 / FHPP	DP-V0/V1 / FHPP	FHPP
	–	DS301; DSP402	Step7 functional modules	Device type 0C <sub>h</sub>
Max. fieldbus baud rate [kbps]	–	1000	12000	500

1) Details of bus terminating resistor → page 10

- 7 - Type discontinued  
Available up until 2018

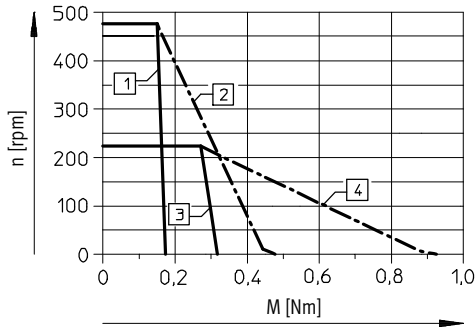
## Motor units MTR-DCI, intelligent servo motors

Technical data

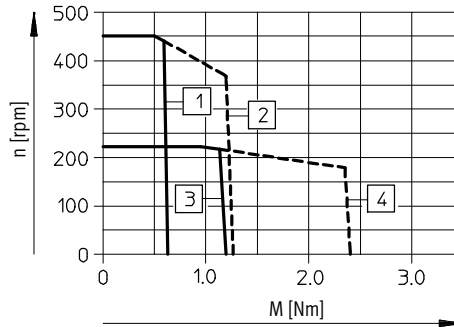
FESTO

### Torque M as a function of rotational speed n

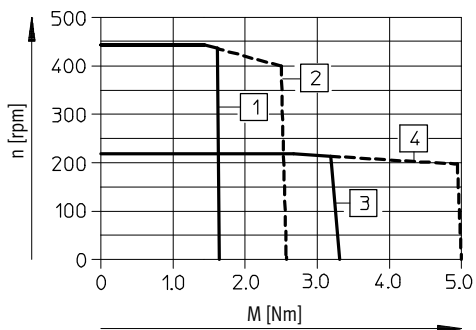
Size 32



Size 42



Size 52



Gear unit ratio 7:1

- 1 Torque, nom.
- 2 Torque, max.

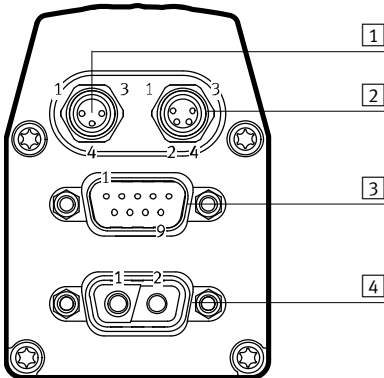
Gear unit ratio 14:1

- 3 Torque, nom.
- 4 Torque, max.

## Motor units MTR-DCI, intelligent servo motors

Technical data

### Pin allocation



#### 1 Reference switch, 3-pin M8 socket

Pin	Function
1	24 V
4	Reference input
3	0 V
-	

#### 2 RS 232 interface, 4-pin M8 socket

Pin	Function
1	0 V
2	Transmitted data (TxD)
3	Received data (RxD)
4	-

#### 3 I/O interface, 9-pin Sub-D plug

Pin	Function
1	Traversing record coding, bit 0
2	Traversing record coding, bit 1
3	Traversing record coding, bit 2
4	Traversing record coding, bit 3
5	Start bit
6	Enable bit
7	Ready signal output
8	MC signal output
9	0 V

#### 3 CANopen interface, 9-pin Sub-D plug

Pin	Function
1	-
2	CAN_L
3	CAN_GND
4	-
5	CAN_SHLD
6	CAN_V-
7	CAN_H
8	-
9	CAN_V+

#### 3 Profibus interface, 9-pin Sub-D socket


Pin	Function
1	-
2	Logic_GND
3	RxD/TxD-P
4	CNTR-P
5	DGND
6	VP
7	Logic_V (24 V DC)
8	RxD/TxD-N
9	-

#### 3 DeviceNet interface, 9-pin Sub-D plug

Pin	Function
1	-
2	CAN_L
3	CAN_GND
4	-
5	CAN_SHLD
6	CAN_V-
7	CAN_H
8	-
9	CAN_V+

#### 4 Power supply, 2-pin plug

Pin	Function
1	24 V DC
2	0 V
-	
-	
-	
-	
-	
-	
-	

-  - Type discontinued  
Available up until 2018

## Motor units MTR-DCI, intelligent servo motors

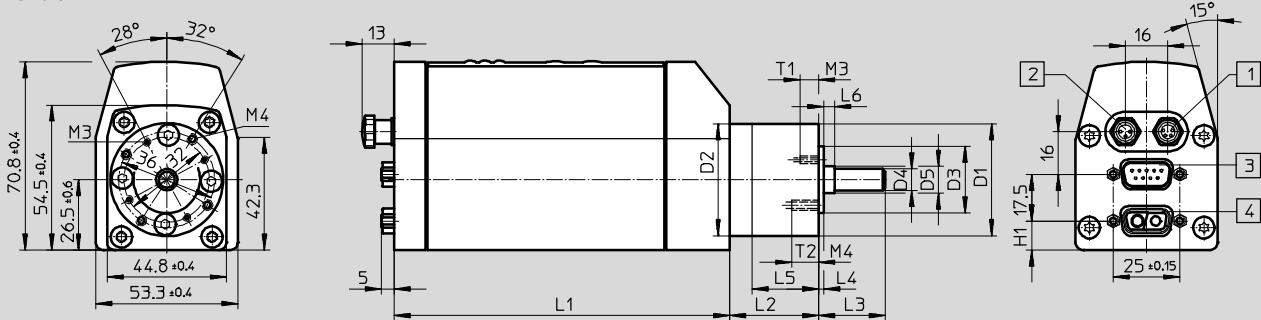
Technical data

FESTO

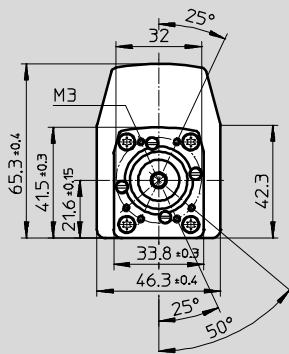
### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

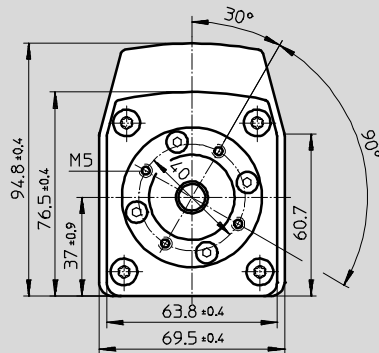
#### Size 42



#### Size 32



#### Size 52



- 1 M8x1, 4-pin
- 2 M8x1, 3-pin

- 3 Sub-D, 9-pin
- 4 Sub-D, 2-pin

Type	D1 ∅ g10	D2 ∅ ±0.1	D3 ∅ h8	D4 ∅ h7	H1	L1 ±1	L2 ±1	L3	L4	L5	T1	T2 +2
MTR-DCI-32S....-G7	-	-	21.5	6	13±0.2	175.5	-	18.7±0.6	2.5±0.3	-	6	-
MTR-DCI-32S....-G14	-	-	21.5	6	13±0.2	175.5	-	18.7±0.6	2.5±0.3	-	6	-
MTR-DCI-42S....-G7	42	42	25	8	11	176	33.3	25±1	2±0.1	25	7 <sub>+2</sub>	10
MTR-DCI-42S....-G14	42	42	25	8	11	176	46.3	25±1	2±0.1	25	7 <sub>+2</sub>	10
MTR-DCI-52S....-G7	52	52	32	12	17.3	194	39	33±1	3±0.3	31	10	-
MTR-DCI-52S....-G14	52	52	32	12	17.3	194	53	33±1	3±0.3	31	10	-



- 2 - Type discontinued  
Available up until 2018

## Motor units MTR-DCI, intelligent servo motors

FESTO

Ordering data – Modular products

M Mandatory data										
Module No.	Motor unit		Flange/size		Nominal voltage		Measuring system		Parameterisation interface	
	Motor type		Torque class		Plug design		Gearing unit		Electrical connection technology	
533736	MTR	DCI	32	S	VC	SC	E	G7	R2	IO
533742			42					G14	H2	CO
533748			52							PB DN
<b>Order example</b>										
<b>533742</b>	<b>MTR</b>	<b>- DCI</b>	<b>- 42</b>	<b>S</b>	<b>- VC</b>	<b>SC</b>	<b>- E</b>	<b>G7</b>	<b>- R2</b>	<b>IO</b>

Ordering table							
Size	32	42	52	Condi- tions	Code	Enter code	
M	Module No.	533736	533742	533748			
	Motor unit	Motor unit				MTR	MTR
	Motor type	DC servo motor with integrated position controller				-DCI	-DCI
	Flange/size	32	42	52		-...	
	Torque class	Standard torque class				S	S
	Nominal voltage [V]	24 DC				-VC	
	Plug design	Straight plug				SC	SC
	Measuring system	Encoder				-E	-E
	Gearing unit	Integrated planetary gearing i = 6.75				G7	
		Integrated planetary gearing i = 13.73				G14	
	Parameterisation interface	RS232 interface				-R2	
		RS232 interface + control panel				-H2	
	Electrical connection technology	I/O interface				IO	
		CANopen				CO	
		Profibus DP				PB	
		DeviceNet				DN	

### Transfer order code

MTR -  DCI  S  SC -  E  -  -

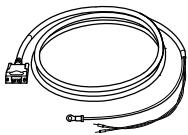

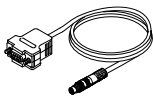
PROFIBUS®, DeviceNet®, CANopen® is a registered trademark of its respective trademark holder in certain countries.

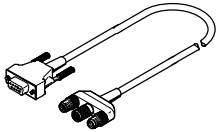
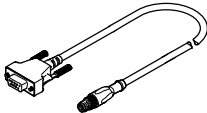
- 7 - Type discontinued  
Available up until 2018

## Motor units MTR-DCI, intelligent servo motors

Accessories

FESTO

Ordering data – Cables				
	Brief description	Cable length	Part No.	Type
	Supply cable Allocation → page 7	2.5 m	537931	KPWR-MC-1-SUB-9HC-2,5
		5 m	537932	KPWR-MC-1-SUB-9HC-5
		10 m	537933	KPWR-MC-1-SUB-9HC-10
	Control cable for I/O connection to any PLC controller Allocation → page 7	2.5 m	537923	KES-MC-1-SUB-9-2,5
		5 m	537924	KES-MC-1-SUB-9-5
		10 m	537925	KES-MC-1-SUB-9-10
	Programming cable For parameterisation and commissioning via the RS232 interface using FCT software Allocation → page 7	2.5 m	537926	KDI-MC-M8-SUB-9-2,5


Ordering data – Plugs				
	Brief description	Part No.	Type	
Fieldbus adapter for Profibus				
	<ul style="list-style-type: none"> <li>– 9-pin Sub-D plug to 5-pin round M12 plug/socket, plus round M12 plug for logic voltage supply</li> <li>– Bus terminating resistor must be connected externally</li> </ul>	537934	FBA-PB-SUB-9-3XM12	
Fieldbus adapter for CANopen and DeviceNet				
	<ul style="list-style-type: none"> <li>– 9-pin Sub-D plug to 5-pin round M12 plug</li> <li>– Bus terminating resistor must be connected externally</li> </ul>	540324	FBA-CO-SUB-9-M12	


- 2 - Type discontinued  
Available up until 2018

FESTO

## Motor units MTR-DCI, intelligent servo motors

Accessories

Ordering data – Software			
	Brief description	Part No.	Type
	Operator package contains: – CD-ROM – with user documentation for MTR-DCI, in the languages de, en, es, fr, it – with FCT (Festo Configuration Tool) configuration software – Brief description This package is included in the scope of delivery.	550905	P.BP-MTR-DCI

Ordering data – Documentation <sup>1)</sup>						
	Language	Part No.   Type		Part No.   Type		
		For I/O interface		For Profibus interface		
	DE	539615	P.BE-MTR-DCI-IO-DE	539623	P.BE-MTR-DCI-PB-DE	
	EN	539616	P.BE-MTR-DCI-IO-EN	539624	P.BE-MTR-DCI-PB-EN	
	ES	539617	P.BE-MTR-DCI-IO-ES	539625	P.BE-MTR-DCI-PB-ES	
	FR	539618	P.BE-MTR-DCI-IO-FR	539626	P.BE-MTR-DCI-PB-FR	
	IT	539619	P.BE-MTR-DCI-IO-IT	539627	P.BE-MTR-DCI-PB-IT	
			For CANopen interface		For DeviceNet interface	
	DE	539629	P.BE-MTR-DCI-CO-DE	553530	P.BE-MTR-DCI-DN-DE	
	EN	539630	P.BE-MTR-DCI-CO-EN	553531	P.BE-MTR-DCI-DN-EN	
	ES	539631	P.BE-MTR-DCI-CO-ES	553532	P.BE-MTR-DCI-DN-ES	
	FR	539632	P.BE-MTR-DCI-CO-FR	553533	P.BE-MTR-DCI-DN-FR	
IT	539633	P.BE-MTR-DCI-CO-IT	553534	P.BE-MTR-DCI-DN-IT		

1) User documentation in paper form is not included in the scope of delivery