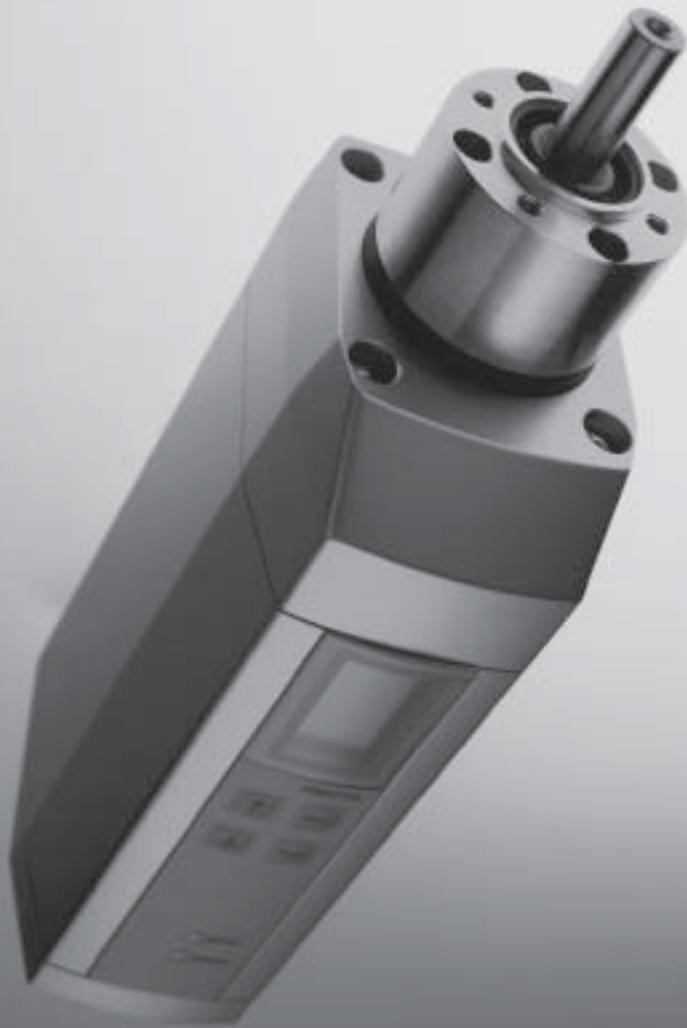


## Motor units MTR-DCI



- Motor with integrated gearing and positioning controller
- Compact design
- Actuation via I/O connection
- Protection class IP54



# Motor units MTR-DCI, intelligent control motors

Key features



## 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, gearing, 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 avoids motor cables and improves 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 using the user-friendly menus of the FCT (FESTO Configuration Tool). No matter which approach is used, all parameters are continuously controlled.

## At a glance

- Compact design
- Profile insensitive to the ingress of dirt thanks to smooth surfaces
- Direct current motor with planetary gearing and encoder
- Gear reduction 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
- Drag fault monitoring
- Software end-position detection

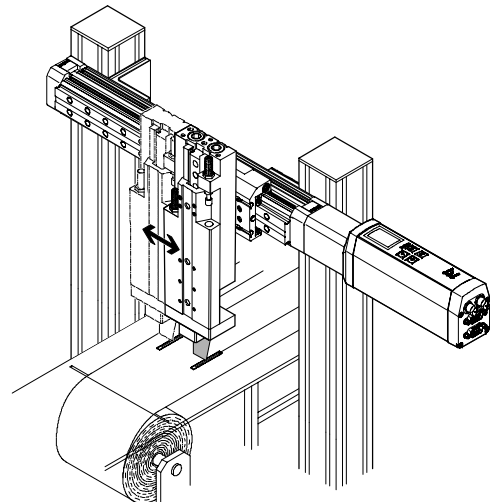
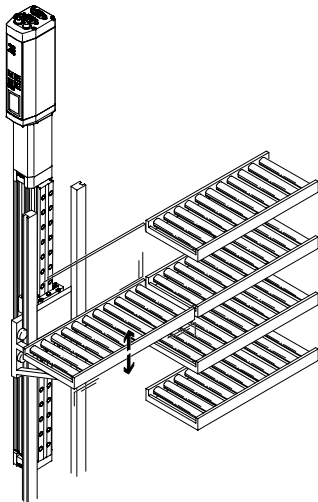
- 1 Control panel with integrated display (optional)
- 2 Input for reference end switches
- 3 RS232 interface
- 4 Operator interface: I/O interface
- 5 Power supply
- 6 Gearing



## Typical applications

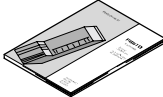


Adjusting sorting conveyors

Programming formats for paper or foil cutting machines

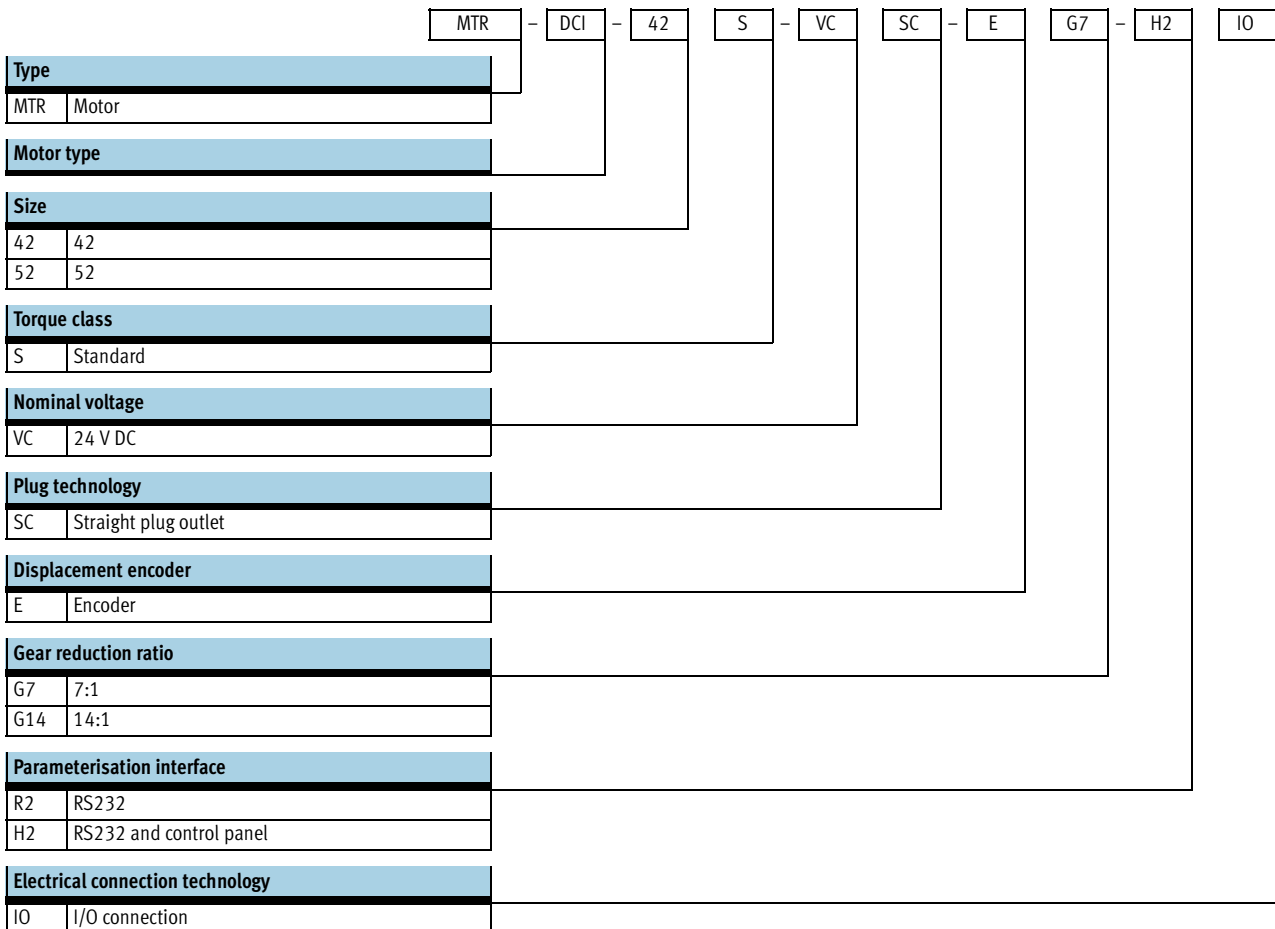


# Motor units MTR-DCI, intelligent control motors

Key features and type codes

Accessories		→ 5 / 2.2-9	
Cable		Description and configuration software	
<b>Supply cable</b>	Cable lengths: 2.5 ... 10 m Allocation → 5 / 2.2-6	<b>Description</b> 	User documentation in paper form, in the languages DE, GB, ES, FR, IT, SE, is not included in the scope of delivery.
<b>Control cable</b>	For I/O connection to any PLC controller Cable lengths: 2.5 ... 10 m Allocation → 5 / 2.2-6	<b>Documentation package</b> 	User documentation on CD-ROM, in the languages DE, GB, ES, FR, IT, SE, is included in the scope of delivery for the motor unit MTR-DCI.
<b>Programming cable</b>	Cable length: 2.5 m Allocation → 5 / 2.2-6	<b>Configuration package FCT</b> 	The configuration on CD-ROM is included in the scope of delivery for the motor unit MTR-DCI.

## Type codes



## Motor units MTR-DCI, intelligent control motors

Technical data



General technical data		
Size	MTR-DCI-...	
Rotary position generator	Optical encoder	
No. of increments/revolution	500	
Controller operating mode	PWM MOSFET power amplifier	
Temperature monitoring	Silicon absolute temperature sensor, switches off at temperatures > 70°C	
Display resolution	128 x 64 pixels	
Type of mounting	Can be screwed on or clamped to the gearing flange	
Gearing type	Planetary gearing	
Gear reduction ratio	G7	6.752 (7:1); single-stage
	G14	13.73 (14:1); dual-stage

Electrical data for MTR-DCI-42-...		
	G7	G14
Nominal voltage [V DC]	24 ±10%	
Nominal current (motor) [A]	2	
Peak current [A]	3.8	
Motor constant [Ncm/A]	6.1	
Nominal power (motor) [W]	48	
Max. current (digital logic outputs) [mA]	200	
No. of digital logic inputs (with I/O connection) -	6	
No. of digital logic outputs (with I/O connection) -	2	
Parameterisation interface	RS232; 9,600 baud; optionally with control panel	

Mechanical data for MTR-DCI-42-...		
	G7	G14
Gearing output speed [rpm]	451	222
Gearing torsional backlash [°]	≤ 0.8	≤ 0.85
Gearing output torque [Nm]	0.594	1.133
Gearing efficiency -	0.8	0.75
Mass moment of inertia (rotor) [kg cm <sup>2</sup> ]	0.323	
Mass moment of inertia (gearing) [kg cm <sup>2</sup> ]	0.00235	0.00441
Radial shaft load [N]	160	230
Axial shaft load [N]	50	80
Product weight [kg]	1.715	1.824

## Motor units MTR-DCI, intelligent control motors

Technical data

Electrical data for MTR-DCI-52-...		
Gear reduction ratio		G7 (7:1)   G14 (14:1)
Nominal voltage	[V DC]	24 ±10%
Nominal current (motor)	[A]	5.1
Peak current	[A]	7.7
Motor constant	[Ncm/A]	6.4
Nominal power (motor)	[W]	122.4
Max. current (digital logic outputs)	[mA]	60
No. of digital logic inputs (with I/O connection)	-	6
No. of digital logic outputs (with I/O connection)	-	2
Parameterisation interface		RS232; 9,600 baud; optionally with control panel

Mechanical data for MTR-DCI-52-...		
Gear reduction ratio		G7 (7:1)   G14 (14:1)
Gearing output speed	[rpm]	444   218
Gearing torsional backlash	[°]	≤ 0.7   ≤ 0.75
Gearing output torque	[Nm]	1.62   3.089
Gearing efficiency	-	0.8   0.75
Mass moment of inertia (rotor)	[kg cm <sup>2</sup> ]	1.209
Mass moment of inertia (gearing)	[kg cm <sup>2</sup> ]	0.01132   0.01711
Radial shaft load	[N]	200   320
Axial shaft load	[N]	60   100
Product weight	[kg]	3.104   3.285

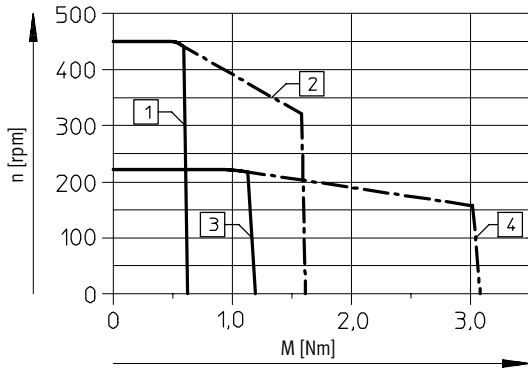
Operating and environmental conditions		
Size		MTR-DCI-42-...   MTR-DCI-52-...
Digital logic outputs		Not electrically isolated   Electrically isolated
Insulation protection class to VDE 60034		F
Protection class		IP54
Interference immunity		To EN 61000-6-2
Interference emission		To EN 61000-6-4 (industry)
CE symbol		89/336/EEC (EMC)
Ambient temperature	[°C]	0 ... +50
Storage temperature	[°C]	-25 ... +60
Relative air humidity (non-condensing)	[%]	0 ... 95

# Motor units MTR-DCI, intelligent control motors

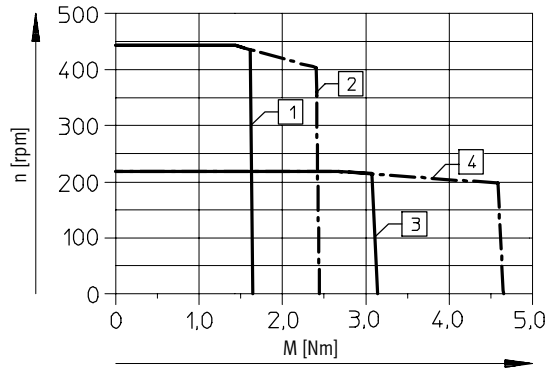
Technical data

## Torque M as a function of n (rpm)

MTR-DCI-42-...



MTR-DCI-52-...



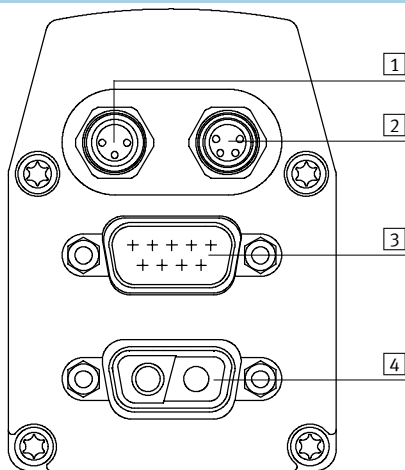
Gear reduction ratio 7:1

Gear reduction ratio 14:1

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

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

## Pin allocation



### Socket/plug

1	3-pin M8 socket
2	4-pin M8 socket
3	9-pin Sub-D plug
4	2-pin plug

### 1 Reference switch

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

### 2 RS232 interface

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

### 3 I/O interface

Pin	Function
1	Travel time coding, bit 0
2	Travel time coding, bit 1
3	Travel time coding, bit 2
4	Travel time coding, bit 3
5	Start bit
6	Enable bit
7	Error signal output
8	MC signal output
9	0 V

### 4 Power supply

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

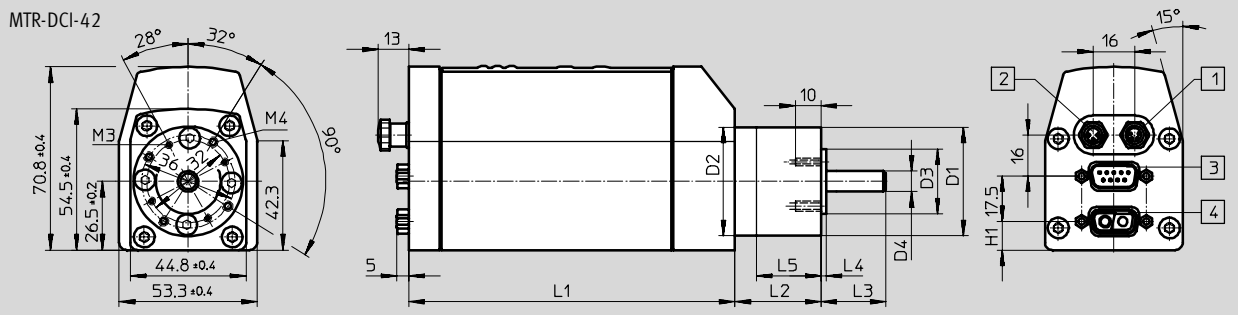
# Motor units MTR-DCI, intelligent control motors

Technical data

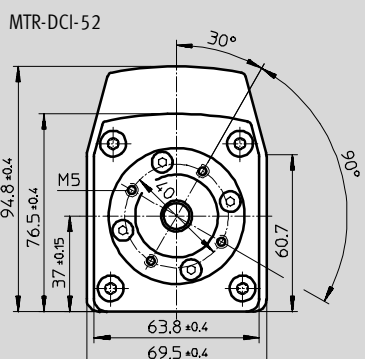
Dimensions Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

MTR-DCI-42-...

MTR-DCI-42



MTR-DCI-52



1 M8x1, 4-pin  
 2 M8x1, 3-pin  
 3 Sub-D, 9-pin  
 4 Sub-D, 2-pin

Type	D1	D2	D3	D4	H1	L1	L2	L3	L4	L5
	∅ g10	∅ ±0.1	∅ h8	∅ h7		±1	±1	±1		
MTR-DCI-42-...-G7	42	42	25	8	11	176	33.3	25	2±0.2	25
MTR-DCI-42-...-G14	42	42	25	8	11	176	46.3	25	2±0.2	25
MTR-DCI-52-...-G7	52	52	32	12	17.3	197	39	33	3±0.3	31
MTR-DCI-52-...-G14	52	52	32	12	17.3	197	53	33	3±0.3	31

## Motor units MTR-DCI, intelligent control motors

Ordering data – Modular products

**M** **Mandatory data**

Module No.	Motor unit	Motor type	Flange/size	Torque class	Nominal voltage	Plug technology	Displacement encoder	Gearing	Parameterisation interface	Electrical connection technology
533 742	MTR	DCI	42	S	VC	SC	E	G7	R2	IO
533 748			52					G14		
<b>Ordering example</b>										
<b>533 742</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>

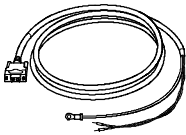

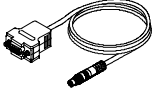
**Ordering table**

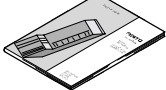


Size	42	52	Condi- tions	Code	Enter code
<b>M</b> Module No.	<b>533 742</b>	<b>533 748</b>			
Motor unit	Motor unit			<b>MTR</b>	MTR
Motor type	DC servo motor with integrated position controller			<b>-DCI</b>	-DCI
Flange/size	42	52		<b>-...</b>	
Torque class	Standard torque class			<b>S</b>	S
Nominal voltage	[V] 24 DC			<b>-VC</b>	-VC
Plug technology	Straight plug			<b>SC</b>	SC
Displacement encoder	Encoder			<b>-E</b>	-E
Gearing	Integrated planetary gearing i = 6.75			<b>G7</b>	
	Integrated planetary gearing i = 13.73			<b>G14</b>	
Parameterisation interface	RS232 interface			<b>-R2</b>	
	RS232 interface + control panel			<b>-H2</b>	
Electrical connection technology	I/O connection			<b>IO</b>	IO



## Motor units MTR-DCI, intelligent control motors

Accessories

Ordering data – Cables				
	Brief description	Cable length	Part No.	Type
	Supply cable	2.5 m	537 931	KPWR-MC-1-SUB-9HC-2,5
		5 m	537 932	KPWR-MC-1-SUB-9HC-5
		10 m	537 933	KPWR-MC-1-SUB-9HC-10
	Control cable for I/O connection to any PLC controller	2.5 m	537 923	KES-MC-1-SUB-9-2,5
		5 m	537 924	KES-MC-1-SUB-9-5
		10 m	537 925	KES-MC-1-SUB-9-10
	Programming cable	2.5 m	537 926	KDI-MC-M8-SUB-9-2,5

Ordering data – Documentation and software				
	Brief description		Part No.	Type
	User documentation in paper form is not included in the scope of delivery.	DE	539 615	P.BE-MTR-DCI-IO-DE
		EN	539 616	P.BE-MTR-DCI-IO-EN
		ES	539 617	P.BE-MTR-DCI-IO-ES
		FR	539 618	P.BE-MTR-DCI-IO-FR
		IT	539 619	P.BE-MTR-DCI-IO-IT
		SV	539 620	P.BE-MTR-DCI-IO-SV
	User documentation on CD-ROM, in the languages DE, GB, ES, FR, IT, SE, is included in the scope of delivery for the motor unit MTR-DCI.		539 621	P.BE-MTR-DCI-UDOK
	The configuration package FCT (Festo Configuration Tool) on CD-ROM is included in the scope of delivery for the motor unit MTR-DCI.		539 622	P.SW-FCT