

# Positioning drives

## DC motor, brushless

### Absolute multiturn position detection, Profibus-DP

#### MSIA 53 - Profibus



MSIA 53 without planetary gearbox connection axial

#### Features

- Positioning drive with/without planetary gears
- Profibus-DP
- Brushless DC motor
- Absolute multiturn position detection
- Nominal power output 26 W
- 4 inputs programmable
- Journey datasets programmable
- Separate communication and power supply

#### Optional

- Holding brake

#### Technical data - electrical ratings

Voltage supply	24 VDC $\pm 10\%$
Current consumption	$\leq 8$ A
Nominal current	1.7 A
Starting current	Charging current capacitor 1500 $\mu$ F
Operating current type	$\leq 100$ mA
Positioning resolution motor	0.02 $^\circ$
Positioning accuracy motor	$\pm 1$ $^\circ$
Repeat accuracy motor	0.3 $^\circ$
Number of turns	262144 / 18 bit
Commutation	Sine
Undervoltage interruption	$\leq 11.5$ V
Terminating resistor	External (see accessories)
Loop controller	Integrated position and speed regulator (4Q)
Sensing method	Magnetic
Number of pole pairs	2 = 4 poles
Reverse polarity protection	Bus electronics
Excess temperature protection	112 $^\circ$ C (final power output circuit)
Interference immunity	DIN EN 61000-6-2
Emitted interference	DIN EN 61000-6-4

#### Technical data - mechanical design

Dimensions (flange)	$\varnothing 53$ mm
Shaft	$\varnothing 8$ mm $\varnothing 12$ mm
Operating speed	$\leq 4250$ rpm
Nominal speed	4000 rpm
Nominal power output	26 W
Nominal torque	0.058 Nm
Starting torque	$\leq 0.35$ Nm
Service life	20000 h (without gear)
Protection DIN EN 60529	IP 54
Ambient temperature	-15...+40 $^\circ$ C
Isolation class	B (+130 $^\circ$ C, DIN EN 60034-1)
Rotor moment of inertia	100 gcm <sup>2</sup>
Connection	Connector
Number of stages	1...3
Resistance	DIN EN 60068-2-6 Vibration DIN EN 60068-2-27 shock
Shaft surface	Smooth and round (without gear transmission); key (with gear transmission)
Material	Housing: steel and aluminium
S1 continuous operation	DIN EN 60034-1
S3 intermittent operation	Power-on time 25 %, run time 1 min
Information	Nominal data at +40 $^\circ$ C ambient temperature for gearless motor. Service life at operating factor = 1.

# Positioning drives

## DC motor, brushless

### Absolute multiturn position detection, Profibus-DP

## MSIA 53 - Profibus

### Part number

MSIA 53P2P  -N52 C

Gear reducer  
 000 Without gear transmission  
 007 6.75 : 1  
 025 25.01 : 1  
 046 45.56 : 1  
 169 168.84 : 1  
 Gearing variant  
 K0 Without gear transmission  
 P5 Planetary gear transmission  
 Protection  
 C IP 54  
 Connecting direction  
 A11 Axial  
 R12 Radial

### Accessories

#### Connectors and cables

10164870	Female connector D-SUB, 9-pin, shielded, straight, cable 5 m, voltage supply / I/Os
10153493	Female connector D-SUB, 9-pin, straight, voltage supply and I/Os
10145023	Female connector D-SUB, 9-pin angled
10163483	Female connector D-SUB Kit, IP 65, 9-pin, straight
11002151	Cable, 10-wire, shielded, voltage supply and I/Os
10159389	Cable with male/female M12, Profibus, shielded, straight, B-coded, 0.3 m (stub line)
10157911	Cable with male/female M12, Profibus, shielded, angled, B-coded, 2 m
10157912	Cable with male/female M12, Profibus, shielded, angled, B-coded, 5 m
10157909	Cable with male/female M12, Profibus, shielded, straight, B-coded, 2 m
10157910	Cable with male/female M12, Profibus, shielded, straight, B-coded, 5 m
10153970	Female connector M12, 5-pin, straight
10156585	Female connector M12, 5-pin, angled
10153971	Cable connector M12, 5-pin, straight
10156555	Cable connector M12, 5-pin, angled
10153973	T-junction M12 Profibus (2 male/1 female)
10153975	Terminating resistor Profibus
10156807	Cable with connector D-SUB/mating M12, Profibus, straight, B-coded, 3 m

#### Programming accessories

10147362	CD-ROM with GSD-/EDS-/XML files and user manuals
10154326	USB-to-Profibus adaptor

### Motor-gearing-combination

Gear ratio	Torque nominal (Nm)		Rotational speed (rpm)		Admitted shaft load (N)		Weight (kg)	Length L (mm)	Positioning resolution (°)	Recordable revolutions	Max. transmission play (°)	Mmax gear (Nm)	Gear efficiency approx.
	S1	S3	S1	S3	axial	radial							
-	0.06	0.19	4050	3060	40	400	1.0	132	0.022	262144	-	-	-
6.75	0.32	1.02	600	453	60	200	1.2	188	$3.3 \times 10^{-3}$	38836	0.70	4.0	0.8
25.01	1.13	3.53	162	122	100	320	1.4	202	$8.8 \times 10^{-4}$	10482	0.75	12.0	0.75
45.56	2.05	6.42	88.9	67.2	100	320	1.4	202	$4.8 \times 10^{-4}$	5754	0.75	12.0	0.75
168.84	7.09	22.2	24.0	18.1	150	450	1.6	216	$1.3 \times 10^{-4}$	1553	0.80	25.0	0.70

Further motor - gear combinations upon request.

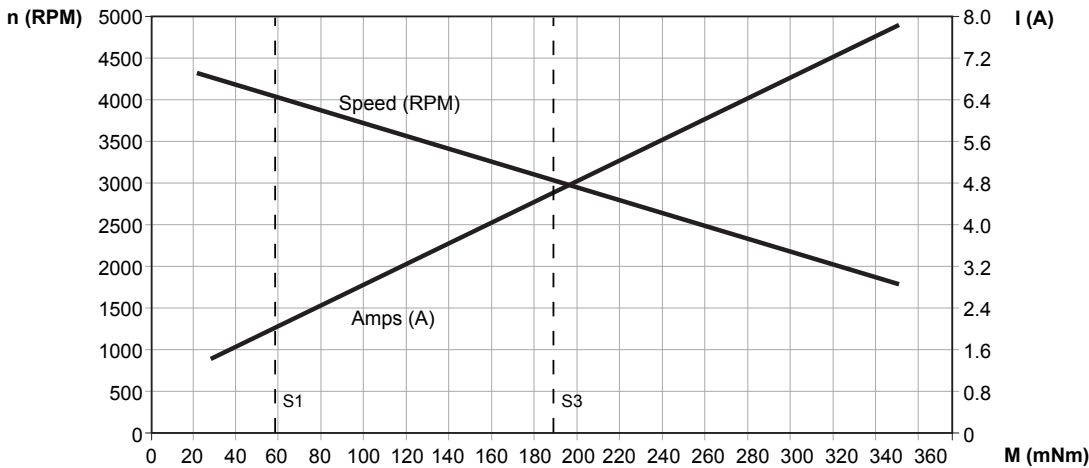
# Positioning drives

DC motor, brushless

Absolute multiturn position detection, Profibus-DP

## MSIA 53 - Profibus

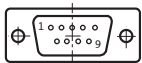
### Characteristic load curve motor without gears



### Terminal assignment

#### Connector – D-Sub, 9-pin

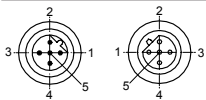
Connector	Signal	Description
Pin 1	+VsE	+24 VDC voltage supply electronic
Pin 2	Input 1	Input programmable
Pin 3	Input 2	Input programmable
Pin 4	Input 3	Input programmable
Pin 5	Input 4	Input programmable
Pin 6	0 VME	0 VDC voltage s. motor / electronic
Pin 7	0 VME	0 VDC voltage s. motor / electronic
Pin 8	+VsM	+24 VDC voltage supply motor
Pin 9	+VsM	+24 VDC voltage supply motor
	Shield	Housing



#### Connector male / female – M12, 5-pin, B-coded

Connector	Signal	Description
Pin 1	+VsDP	VP Profibus +5 VDC (female) <sup>1)</sup>
Pin 2	A line green	Cable green / Profibus-DP
Pin 3	0 VDP	DGND Profibus (female) <sup>1)</sup>
Pin 4	B line red	Cable red / Profibus-DP
Pin 5	n.c.	–
	Shield	Housing

<sup>1)</sup> option: external terminating resistor



### Technical data - communication

Interface	Profibus-DPV0
Output circuit	Profibus Insulated RS485 Interface
Profile conformity	Profidrive no. 3 Version 2.0
PPO	Type 2
Cyclic data transfer	Communication according to DPV0
Transmission rate	9.6...12000 kbit/s
Galvanic insulation bus	Yes
Inputs	4 digitally programmable
Switching frequency	<500 Hz
Inputs	
Setting switch	Manual setting of bus address
Potential equalization	Separate screw connection
Status indicator	DUO-LED integrated in housing
Operating modes	Position-controlled operation, Speed-controlled operation, Referencing, External targets, Journey datasets
Diagnostic functions	Temperature control Parameter error Multiturn sensing Self-diagnosis
Programming software	Yes
Default settings	Node ID 3

# Positioning drives

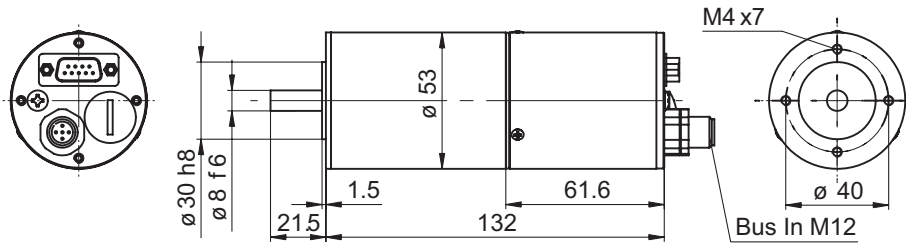
## DC motor, brushless

### Absolute multiturn position detection, Profibus-DP

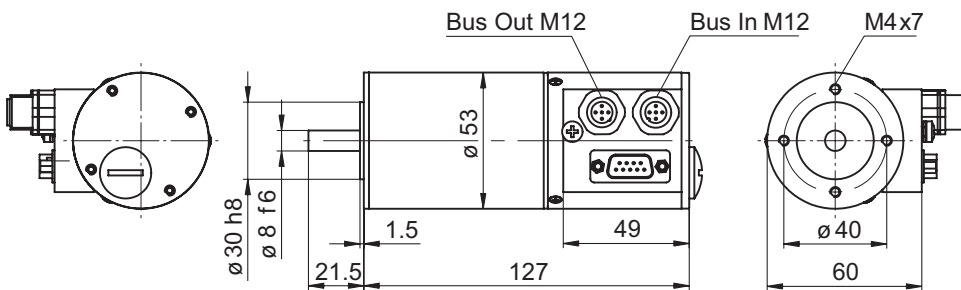
## MSIA 53 - Profibus

### Dimensions

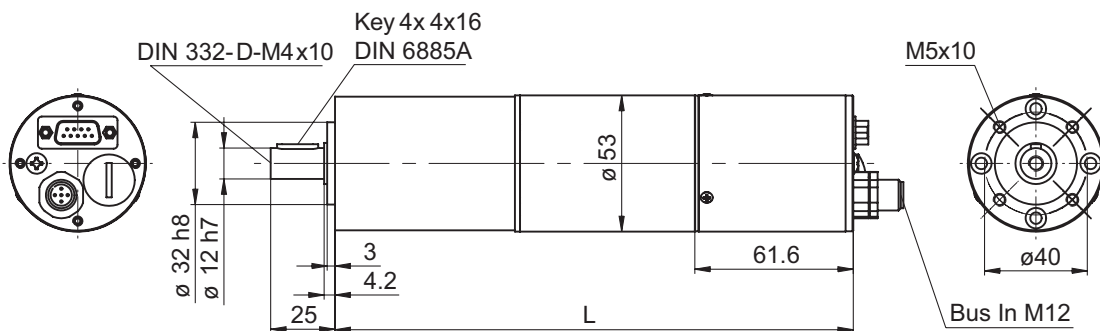
#### MSIA 53 without gearbox connection axial



#### MSIA 53 without gearbox connection radial



#### MSIA 53 planetary gearbox connection axial



#### MSIA 53 planetary gearbox connection radial

