

# DATA SHEET

## Linear Rotary Motors PR02-40

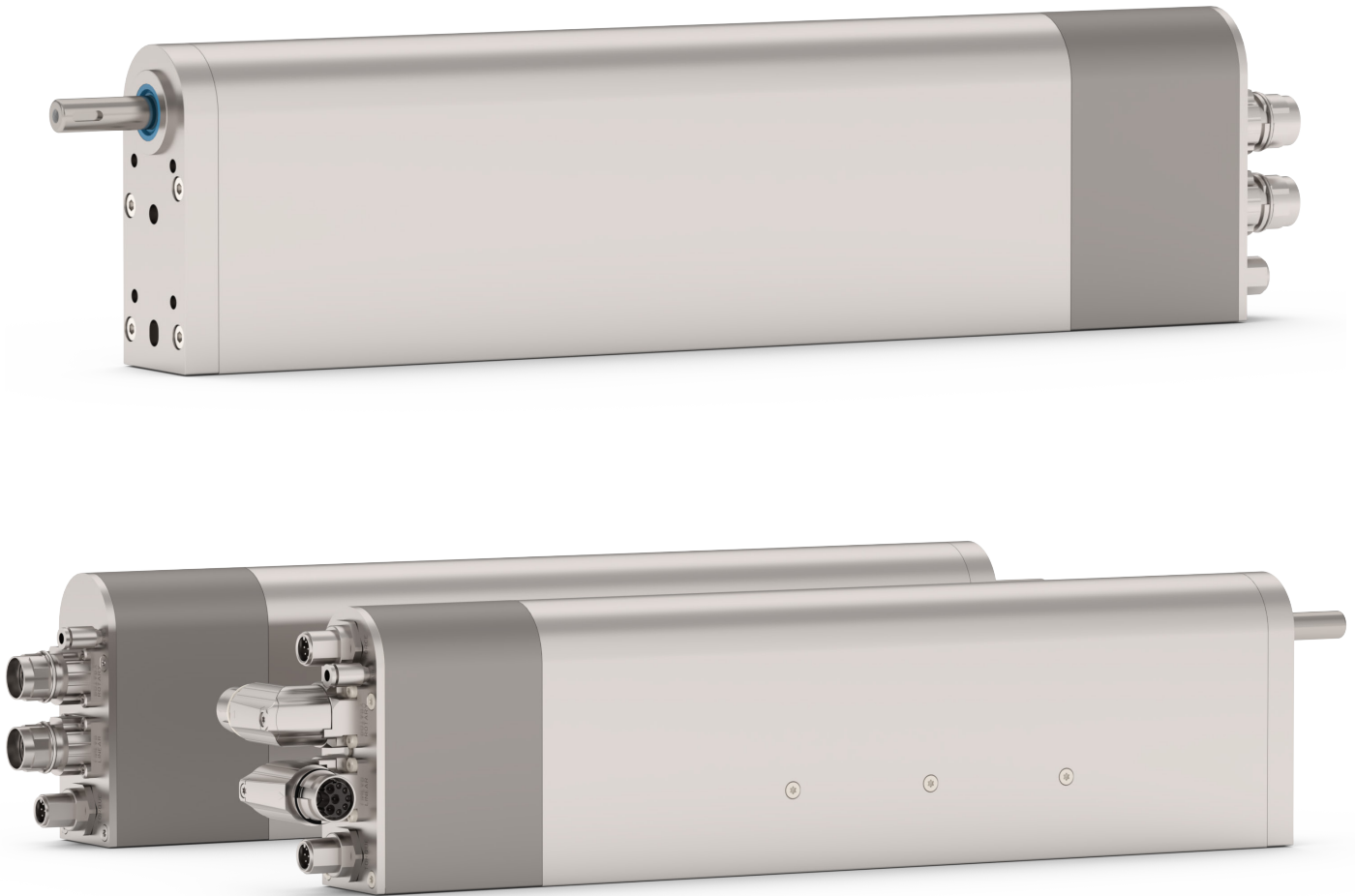


- ✓ Parallel design minimises installation length
- ✓ Option integrated MagSpring for load compensation
- ✓ Option Torque measuring shaft for high-precision  
Torque control and process data logging
- ✓ Independent linear and rotary movements

## Product Description

LinMot expands its product range of linear motors by a further type. The new PR02-40 motor series is characterised by a new design in which the motors, including additional components, are integrated in a slim housing. In addition to the linear motor and the torque motor, further options such as an air passage, a magnetic spring "MagSpring", a torque sensor or force sensor can be installed. With the aid of the air feed through the hollow slider, pneumatic grippers can be actuated or vacuum applications can be easily implemented, among other things.

The MagSpring ensures that the weight force of the moving load is passively compensated and also prevents the axle from lowering in the de-energized state. The torque sensor and the force sensor enable precise, reproducible and recordable capping processes, as required in the pharmaceutical industry, for example. With the new design, the user benefits from the shorter installation length of the entire unit and the hygienic design with easy-to-clean surfaces.

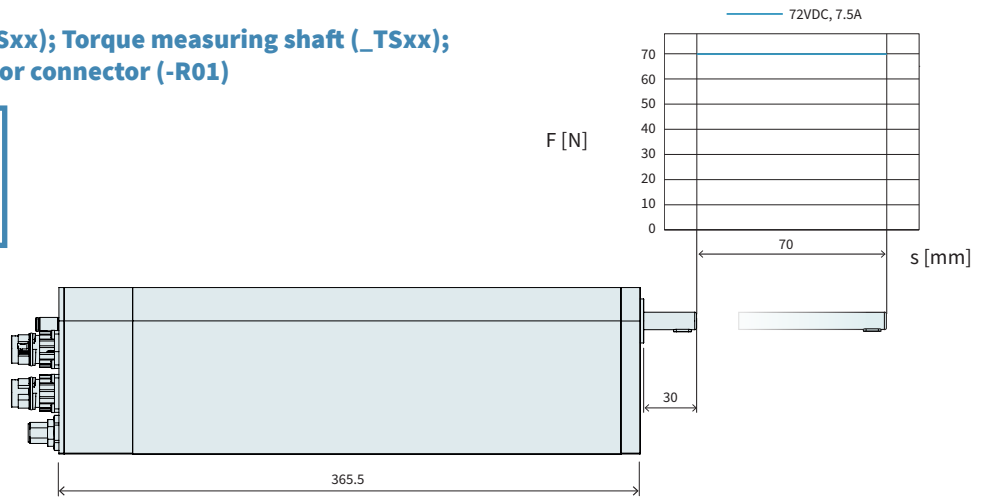


**PR02-40x51-R\_23x80F-HP-R-70(-L)\_MSxx\_TSxx\_FSxx\_PS1x(-R01)**

**Optional:**

**Hollow shaft (-L); MagSpring (\_MSxx); Torque measuring shaft (\_TSxx); Force sensor (\_FSxx); Angled motor connector (-R01)**

<b>Max. Stroke:</b>	70 mm
<b>Max. Force:</b>	67 N
<b>Max. Torque:</b>	1.2 Nm



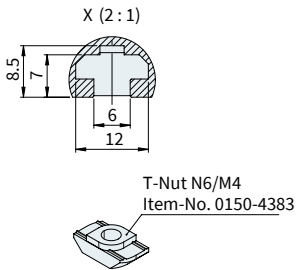
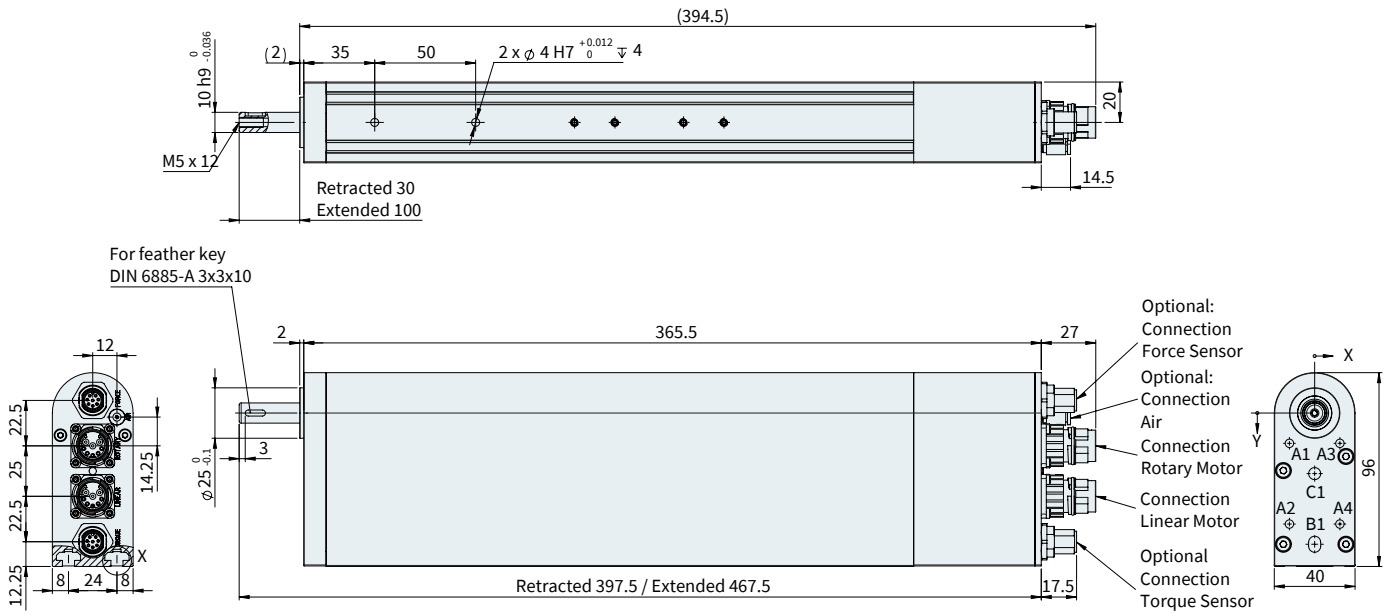
Dimensions in mm

Motor Data			
<b>Linear Motion</b>			
Max. Stroke	mm (in)	70	(2.76)
Peak Force E12x0 - UC (± 10%)	N (lbf)	67.1	(15.1)
Constant Force @25°C <sup>1)</sup>	N (lbf)	24.4	(5.50)
Force Constant	N/A <sub>pk</sub> (lbf/A <sub>pk</sub> )	8.95	(2.01)
Max. Current @ 72VDC	A <sub>pk</sub>	7.5	
Max. Velocity @ 72VDC	m/s (in/s)	7.3	(289.9)
Position Repeatability	mm (in)	±0.05	(±0.0020)
Linearity	%	±0.10	
<b>Rotary Motion</b>			
Peak Torque (± 10%)	Nm (lbf·in)	1.2	(10.6)
Constant Torque (Halt) @25°C <sup>1)</sup>	Nm (lbf·in)	0.25	(2.25)
Max. Number of revolutions	rpm	1500	
Torque Constant 1	Nm/A <sub>rpm</sub> (lbf·in/A <sub>rpm</sub> )	0.07	(0.62)
Torque Constant 2	Nm/A <sub>rms</sub> (lbf·in/A <sub>rms</sub> )	0.1	(0.89)
Max. Current @ 72VDC	A <sub>pk</sub> / A <sub>rms</sub>	17 / 12	
Position Repeatability	°	±0.1	
<b>Mechanical Data</b>			
Width	mm (in)	40	(1.57)
Height	mm (in)	96	(3.78)
Length	mm (in)	394.5 / 403.7	(15.53 / 15.89)
Mass [without MagSpring / with MagSpring]	g (lb)	2430 / 2630	(5.36 / 5.80)
Linear moving mass [without MagSpring]	g (lb)	425	(0.94)
Linear moving mass [with MagSpring MS11 / MS12 / MS13]	g (lb)	517	(1.14)
Rotary Torque of Inertia	kgcm <sup>2</sup> (lbf·in <sup>2</sup> )	0.038	(0.000091)
Weight Compensation Pull [Option MS11 / MS12 / MS13] <sup>2)</sup>	N (lbf)	11 / 17 / 22	(2.48 / 3.83 / 4.95)
Weight Compensation Push [Option MS61 / MS62 / MS63] <sup>2)</sup>	N (lbf)	-11 / -17 / -22	(-2.48 / -3.83 / -4.95)
Axle Diameter	mm (in)	10h9	(0.39)
Through bore-hole	Option-L: Hole diameter 2.5 mm Connection (front) M5; (back) Connector M5		
Protection Class	IP64		
		<b>Torque Sensor (Optional)</b>	<b>Force Sensor (Optional)</b>
Supply Voltage	VDC	24	24
Measuring Range	Nm (lbf·in)   N (lbf)	±1.2 (±10.62)	±50 (±11.24)
Boundary Frequency -3dB	kHz	1	1
Output Signal	VDC	±10	±10
Current Consumption	mA	<160	<160
Zero Offset	mV	<±100	<±200
Mechanical Overload	%	200	300
Resolution (C1200)	Bit	12	12
Linearity	Nm (lbf·in)   N (lbf)	±0.012 (±0.1062)	±1 (±0.2248)

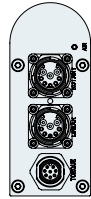
1) Value depends on 2nd motor (see LinMot Designer)

2) Effective load compensation dependent on module-specific friction and moving net mass & load mass.

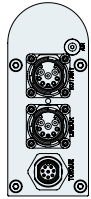
**DIMENSIONS PR02-40x51-R\_23x80F-HP-R-70 (Straight connector)**



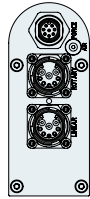
Connector image with torque sensor



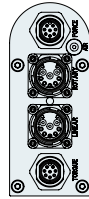
Connector image with torque sensor and air connection



Connector image with force sensor and air connection



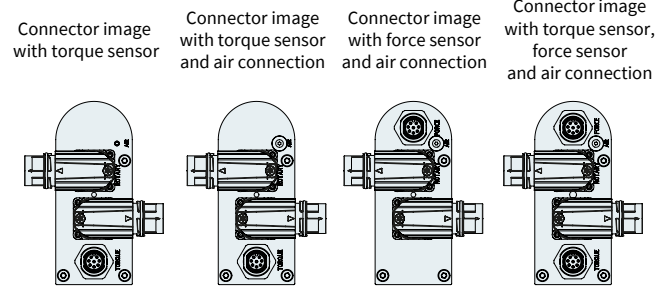
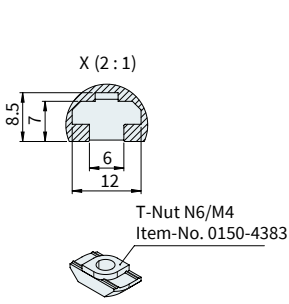
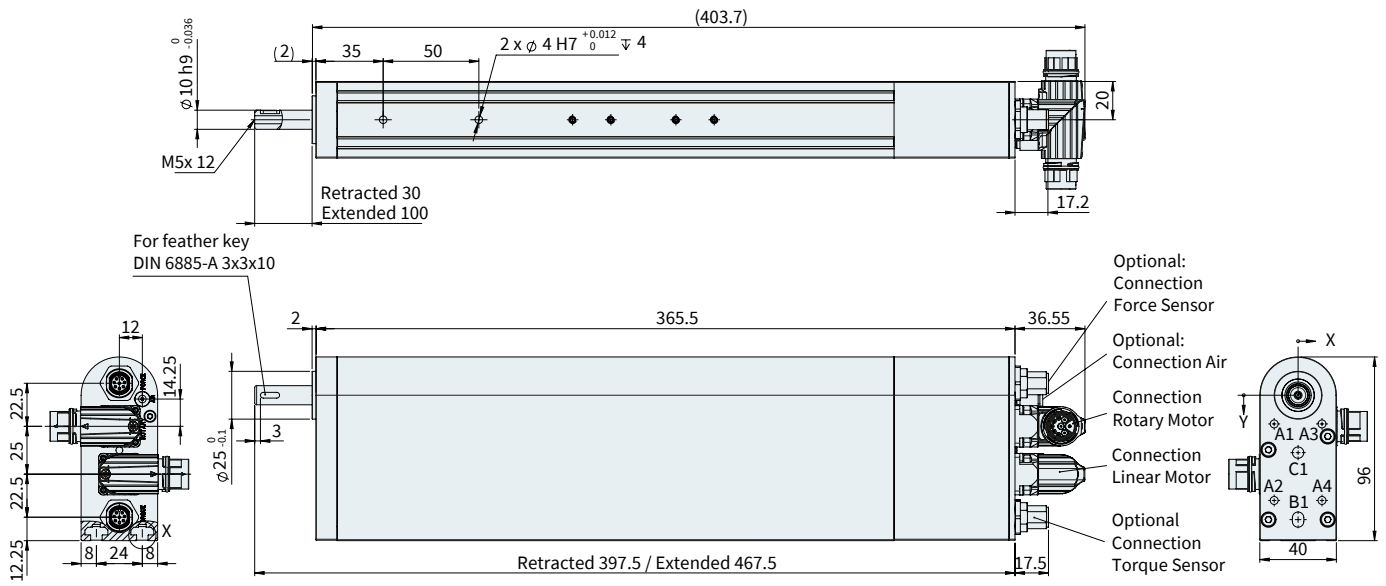
Connector image with torque sensor, force sensor and air connection



Tolerance  $\pm 0.1$  for all holes on the face, which are drawn starting from the zero position.

	X-POS.	Y-POS.	SIZE
A1	-12.50	15	$\varnothing 4.2 \pm 9.5$ $M5 - 6H \pm 8$
A2	-12.50	55	
A3	12.50	15	
A4	12.50	55	
B1	0	65	$6 H7 0 \pm 8$ $X 8 \pm 8$
C1	0	30	$\varnothing 6 H7 0 \pm 8$

**DIMENSIONS PR02-40x51-R\_23x80F-HP-R-70 (R01 Angled connector)**



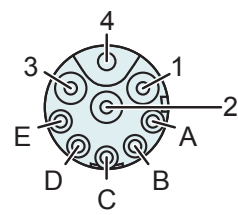
Tolerance  $\pm 0.1$  for all holes on the face, which are drawn starting from the zero position.

	X-POS.	Y-POS.	SIZE
A1	-12.50	15	$\phi 4.2 \pm 9.5$ $M5 - 6H \pm 8$
A2	-12.50	55	
A3	12.50	15	
A4	12.50	55	
B1	0	65	$6 H7 0$ $X 8 \pm 8$
C1	0	30	$6 H7 0$ $X 8 \pm 8$

**CONNECTORS**

Motor Connector Wiring	Linear Unit: R-Connector	Rotary Unit: R-Connector	Wire Color Motor Cable
Ph 1+ / Ph A	1	1	red
Ph 1- / Ph B	2	2	pink
Ph 2+ / Ph C	3	3	blue
Ph 2- / (-)	4	4 (not connected)	grey
+5VDC	A	A	white
GND	B	B	inner shield
Sin	C	C	yellow
Cos	D	D	green
Temp.	E	E	black
Shield	Housing	Housing	outer shield

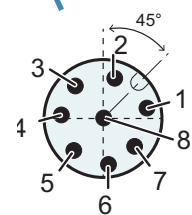
**R-Connector**



View: Motor connector, plug on

Connector Wiring	Torque Sensor M12 Connector	Wire Color Motor Cable
Supply GND	1	white
Supply 24V (approx. 80 mA @ 24VDC)	2	brown
Do not connect	3	green
Torque -	4	yellow
Torque +	5	grey
Do not connect	6	pink
Do not connect	7	blue
Do not connect	8	red

**M12-Connector (A-coded)**



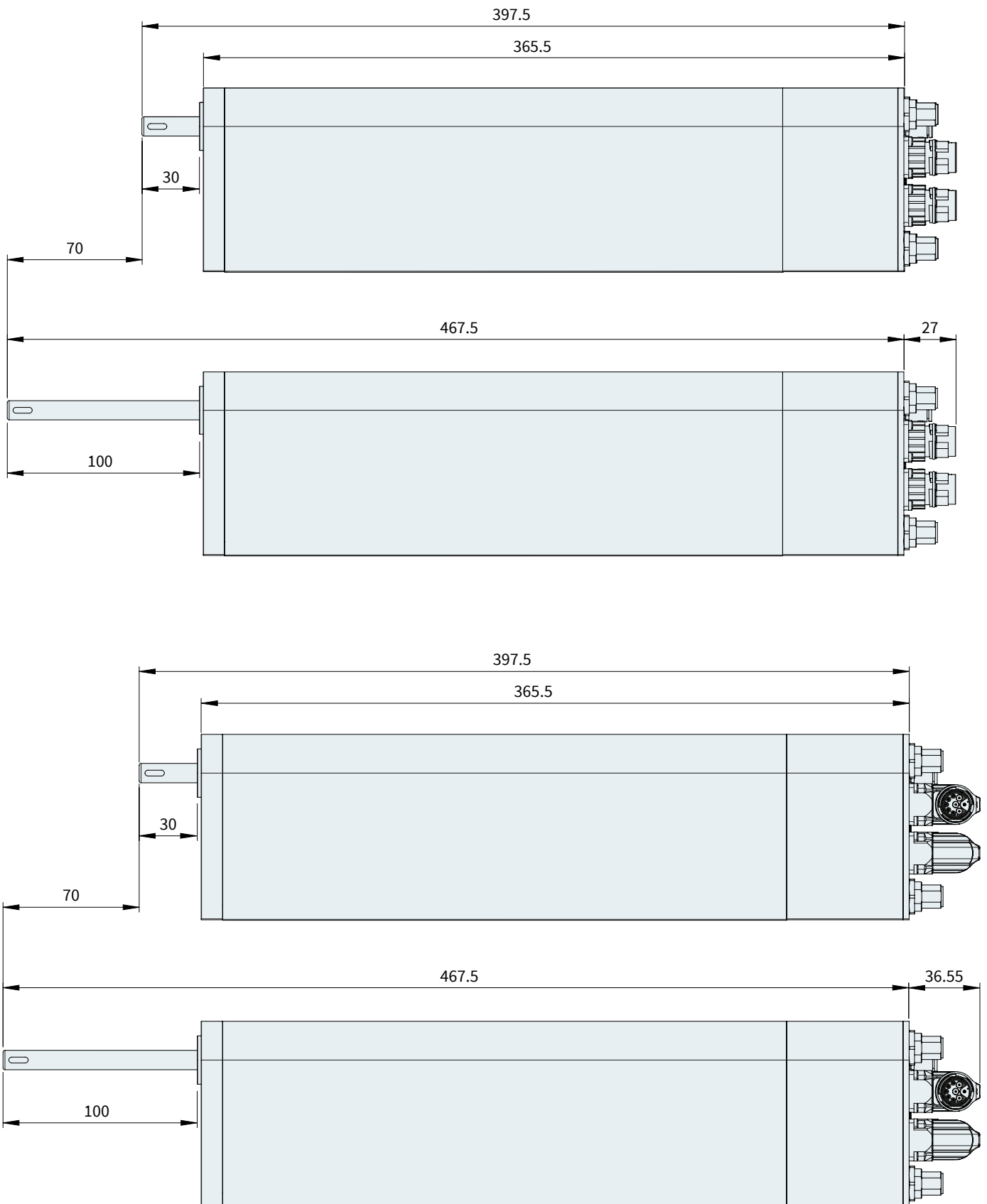
View: Motor connector, plug on

PIN 4 (torque -) and PIN 1 (ground supply) are internally galvanically isolated, bridging at the power source (not at the transducer) if required.

**External EMC circuitry**

A ceramic capacitor 100nF / 50V can be soldered between pins 4 - 5 on the evaluation to avoid wire-bound interference.

**MAX. STROKE**



## BESTELLINFORMATIONEN

LINEAR ROTARY MOTORS PR02-40 (STRAIGHT CONNECTOR)		
Item	Description	Item-No.
PR02-40x51-R_23x80F-HP-R-70_MS00_TS03_PS10	Linear Rotary Motor, Torque Sensor	<a href="#">0150-6476</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS00_TS03_PS10	Linear Rotary Motor, Hollow Shaft, Torque Sensor	<a href="#">0150-6479</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS00_TS00_FS03_PS10	Linear Rotary Motor, Hollow Shaft, Force Sensor	<a href="#">0150-6483</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS00_TS03_FS03_PS10	Linear Rotary Motor, Hollow Shaft, Torque Sensor, Force Sensor	<a href="#">0150-6486</a>
PR02-40x51-R_23x80F-HP-R-70_MS11_TS03_PS10	Linear Rotary Motor, MagSpring 11N, Torque Sensor	<a href="#">0150-6468</a>
PR02-40x51-R_23x80F-HP-R-70_MS12_TS03_PS10	Linear Rotary Motor, MagSpring 17N, Torque Sensor	<a href="#">0150-6477</a>
PR02-40x51-R_23x80F-HP-R-70_MS13_TS03_PS10	Linear Rotary Motor, MagSpring 22N, Torque Sensor	<a href="#">0150-6478</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS11_TS00_FS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 11N, Force Sensor	<a href="#">0150-6473</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS12_TS00_FS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 17N, Force Sensor	<a href="#">0150-6484</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS13_TS00_FS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 22N, Force Sensor	<a href="#">0150-6485</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS11_TS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 11N, Torque Sensor	<a href="#">0150-6480</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS12_TS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 17N, Torque Sensor	<a href="#">0150-6481</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS13_TS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 22N, Torque Sensor	<a href="#">0150-6482</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS11_TS03_FS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 11N, Torque Sensor, Force Sensor	<a href="#">0150-6469</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS12_TS03_FS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 17N, Torque Sensor, Force Sensor	<a href="#">0150-6487</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS13_TS03_FS03_PS10	Linear Rotary Motor, Hollow Shaft, MagSpring 22N, Torque Sensor, Force Sensor	<a href="#">0150-6488</a>

LINEAR ROTARY MOTORS PR02-40 (R01 ANGLED CONNECTOR)		
Item	Description	Item-No.
PR02-40x51-R_23x80F-HP-R-70_MS11_TS03_PS10-R01	Linear Rotary Motor, MagSpring 11N, Torque Sensor, Angled Con.	<a href="#">0150-6652</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS11_TS03_PS10-R01	Linear Rotary Motor, Hollow Shaft, MagSpring 11N, Torque Sensor, Angled Con.	<a href="#">0150-6647</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS11_TS00_FS03_PS10-R01	Linear Rotary Motor, Hollow Shaft, MagSpring 11N, Force Sensor, Angled Con.	<a href="#">0150-6654</a>
PR02-40x51-R_23x80F-HP-R-70-L_MS11_TS03_FS03_PS10-R01	Linear Rotary Motor, Hollow Shaft, MagSpring 11N, Torque Sens., Force Sens., Angled Con.	<a href="#">0150-6650</a>
PR02-40x51-R_23x80F-HP-R-70_MS13_TS03_PS10-R01	Linear Rotary Motor, MagSpring 22N, Torque Sensor, Angled Con.	<a href="#">0150-6659</a>

ACCESSORIES		
Item	Description	Item-No.
K05-Y/R-2	Motor Cable Y/R, 2 m	<a href="#">0150-2421</a>
K05-Y/R-4	Motor Cable Y/R, 4 m	<a href="#">0150-2422</a>
K05-Y/R-6	Motor Cable Y/R, 6 m	<a href="#">0150-2423</a>
K05-Y/R-8	Motor Cable Y/R, 8 m	<a href="#">0150-2424</a>
K05-Y-Fe/R-	Motor Cable K05-Y-Fe/R, Custom length	<a href="#">0150-3501</a>
KS05-Y/R-4	Trailing Chain Cable Y/R, 4 m	<a href="#">0150-2433</a>
KS05-Y/R-6	Trailing Chain Cable Y/R, 6 m	<a href="#">0150-2434</a>
KS05-Y/R-8	Trailing Chain Cable Y/R, 8 m	<a href="#">0150-2435</a>
KS05-Y-Fe/R-	Trailing Chain Cable KS05-Y-Fe/R, Custom length	<a href="#">0150-3507</a>
KR05-Y-Fe/R-	Robot Cable KR05-Y-Fe/R, Custom length	<a href="#">0150-3512</a>
KSS02-08-./M12A8-10	Sensor cable for PR02, 10m, open cable end	<a href="#">0150-2959</a>
RS01-SS10x20	Shaft-hub clamping for 10mm shaft	<a href="#">0150-4531</a>
Hammer Nut N6/M4	Hammer Nut N6 / M4	<a href="#">0150-4383</a>

# ALL LINEAR MOTION FROM A SINGLE SOURCE

## LinMot Europe

**NTI AG - LinMot & MagSpring**  
Bodenaeckerstrasse 2  
CH-8957 Spreitenbach  
Switzerland

☎ +41 (0)56 419 91 91  
📠 +41 (0)56 419 91 92

✉ [office@linmot.com](mailto:office@linmot.com)  
🏠 [www.linmot.com](http://www.linmot.com)

## LinMot USA

**LinMot USA, Inc.**  
N1922 State Road 120, Unit 1  
Lake Geneva, WI 53147  
United States

☎ 262-743-2555

✉ [usasales@linmot.com](mailto:usasales@linmot.com)  
🏠 [www.linmot.com](http://www.linmot.com)