



Fact Sheet Elastic Actuator 120Nm

Motor type	ILM 70x18
Gear Type	CPL-25-2A
Mechanics	
Rated Speed (rpm)	15
Rated Torque¹ (Nm)	113
Repetitive Peak Torque (Nm)	167
Collision Torque (Nm)	304
Max. Speed (rpm)	18
Stiff ness (Nm/rad)	1914
Gear reduction	120
Weight² (kg)	4.3
Electrical	
Power (W)	370
Nominal Voltage (V)	48
Nominal Current (A)	7
Control Logic	
Supply Voltage³ (V)	12
Nominal Current (A)	2.5W/U
Communication Protocol⁴	NDLCom, LVDS
Number of PCBs	4

¹ The rated torque is determined by rated motor torque*gear ratio*efficiency. The efficiency is specified at 20°, for lubrication using fat and at rated velocity.

² It is the overall weight including all mechanical parts, brake, electronics and the wiring.

³ The supply voltage of FPGA is converted and fed by the electronics.

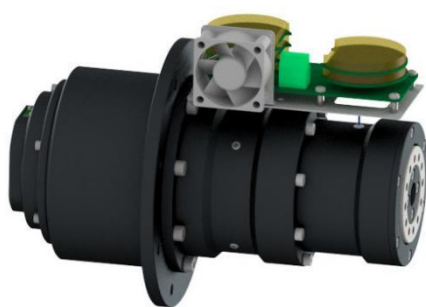
⁴ NDLCom refers to Node-Level Data Link Communication Protocol, which is developed by RIC DFKI. It composes frames and handles packet transmission between multiple nodes.



Position Sensors	
Quantity	3
Resolution (deg)	19 bit
Mechanical Brake	
Manufacturer	Mayr
Supply /Activation voltage (V)	10 / 12
On / Off a disconnection	on
Motor current measurements	
Phase currents (yes / no)	yes
Line currents (yes / no)	yes

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The 120Nm model of the FourByThree family of compliant actuators is characterized by a torsion bar going thru the hollow shaft of the actuator. In this case, the hollow shaft is not available anymore for cabling, but the use of that space for the spring allows a highly-compact design.



- Lightweight BLDC-motor TQ-Systems (1.25 Nm, 370 W, 48 V)
- HarmonicDrive Gear ratio 120:1
- Three absolute position encoders, 19 bit resolution
- Max. 5 degree deflection
- Mechanical safety brake
- Overall weight 4300 g
- Stiffness 1914 Nm/rad

Just for experimental usage (research). No warranty.