

Fact Sheet Elastic Actuator 28Nm

Motor type	ILM 50x08
Gear Type	CPL-14-2A
Mechanics	
Rated Speed (rpm)	10
Rated Torque ¹ (Nm)	23
Repetitive Peak Torque (Nm)	28
Collision Torque (Nm)	54
Max. Speed (rpm)	55
Stiffness (Nm/rad)	50 to 175
Gear reduction	100
Weight ² (kg)	0.85
Electrical	
Power (W)	140
Nominal Voltage (V)	48
Nominal Current (A)	4.8
Control Logic	
Supply Voltage ³ (V)	12
Nominal Current (A)	2.5W/U
Communication Protocol ⁴	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)	no
Line currents (yes / no)	yes

Elastic Actuator 28Nm

The 28Nm model of the FourByThree family of compliant actuators is characterized by its very compact size and low weight, since usually these smaller joints will be used as wrist of a robotic manipulator or last joints of a robotic leg. In order to keep the size under such compact size, a series of disc springs are used as elastic elements. By choosing the combination and quantity of discs, the stiffness of the joint can be easily modified. This actuator has a hollow shaft, allowing easy cabling of the system to be built.



-] Lightweight BLDC-motor TQ-Systems (0.28 Nm, 130 W, 48 V)
-] HarmonicDrive Gear ratio 100:1
-] Three absolute position encoders, 19 bit resolution
-] Max. 5 degree deflection
-] Mechanical safety brake
-] Overall weight 900 g
-] Variable springs sets (stiffness 175 Nm/rad)
-] 38 rpm, peak torque ~50 Nm

Just for experimental usage (research). No warranty.