DIRECT DRIVE HIGH TORQUE MOTORS



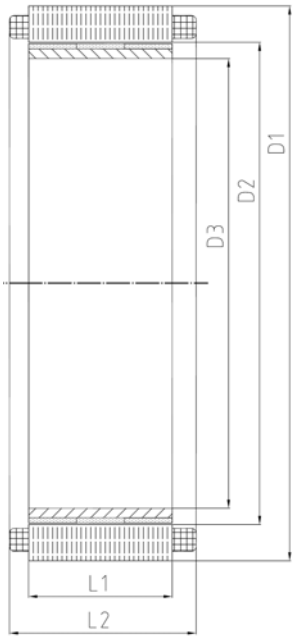
ICPE - TORQUE 1800



ICPE - TORQUE 3600

The synchronous permanent magnet torque motors created by ICPE consist of
- a stator wound with three phases coils
- a rotor with high energy permanent magnets fixed on a soft iron core

Features:
- direct drive
- brushless
- low speed
- frameless
- high torque density
- low torque ripple
- low cogging
- low mass
- high efficiency



Dimensions [mm]	D1	D2	D3	L1	L2	Torque [Nm]
ICPE TORQUE 1800	580	504	471	150	200	1800
ICPE TORQUE 3600	1092	1020	987	100	150	3600

Other configurations, torque, windings, diameter, length, speed can be developed at request.

Contact: tel/fax: +40 21/3467233, e-mail: servo@icpe.ro

Parameter	**ICPE-TORQUE 3600**	**ICPE-TORQUE 1800**
Peak torque (Nm)	6000	2600
Nominal torque (Nm)	3600	1800
Motor constant ($Nm/W^{1/2}$)	66.6	31.6
Electrical time constant (sec)	0.013	0.017
Power input, stalled at peak torque (W)	8100	6800
No load speed (rad/s)	3.4	3.4
Ripple torque % (average to peak)	<2	<2
Rotor moment of inertia ($kg\ m^2$)	15.8	1.6
Resistance (Ω)	3.1	2.65
Inductance (mH)	40	46
Amps at peak torque (A)	35	35
Amps at nominal torque (A)	22	24
Torque sensitivity (Nm/A)	170	74
Number of poles	142	64
Cogging torque (Nm)	<50	<15
Back EMF line-line (V_{rms}/ rad/s)	101	43
Bus voltage (DC)	600	300

Traditionally, servo drives use high speed rotary motors in combination with mechanical transmissions. These motors are designed to run efficiently at high speed where cogging, speed ripple, and torque ripple are not serious issues. Mechanical transmissions are used to transform the high speed motion of the motor into the low speed, high torque operation required by the application. The gearboxes are expensive, noisy, produce torque ripple and require additional maintenance. Replacing these systems with direct drives – torque motors, considerably increases performances of the systems, and also, maintenance and operating costs are considerable reduced when implementing direct drive motors. Torque motors eliminate the need for gearboxes, worm-gear drives, or other mechanical transmission elements and enable a direct coupling of the payload to the drive. This enables a drive with high dynamic response without hysteresis.

The most unique feature of a torque motor concerns the physical dimensions. They have a relatively large diameter to length ratio, and they also have a rather short axial length. Additionally, torque motor can simultaneously have both a very large outer diameter and inner diameter, resulting in a motor that is a thin ring.

One important outcome of this characteristic is that the mass is quite low as a function of the diameter. Also, the large diameter allows very high torque to be developed.

Applications:

- direct drive of telescope or radar stations
- rotary tables
- indexing tables
- pick and place robots
- grinding machines
- wind/hydro generators
- elevators