24V Brushless motor – with a difference.

This example of a 24V brushless DC motor is fitted with a planetary gearhead, DC holding brake and optical encoder.

Normally you would say there is nothing unusual about a brushless motor and encoder assembly, or even a brushless motor and brake assembly. But it is not that common to see all four components, motor, gearhead, encoder and brake assembled together as a complete servo drive assembly. The brushless DC motor pictured is the 40mm 170W maxon EC (BLDC). From the motors relatively small dimensions there is a surprising amount of performance. It can produce 9840rpm at no load and slows down only a tiny amount to 9120rpm at full load. This is measured on the motors data sheet by the speed torque gradient and this is a very ‘real world’ method to evaluate a motors true performance. Manufacturers often quote peak torque figures and speed independently with no correlation to one another and this is something to be on the lookout for. The motor body is stainless steel that is laser welded to the end flanges for a very robust construction. The construction of the motor in this fashion is also a critical feature when using a dc holding brake as the engagement of a solenoid activated component will apply sharp axial forces to the housing. The AB32 holding brake is housed in an IP rated alloy enclosure which when combined with the gearhead ratio gives a holding capacity starting at 1.72Nm and going up to 518Nm. The brake housing doubles as a mount for the 500cpto optical encoder. The planetary gearhead ratio can be configured to suit the applications required speed or torque.

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