

# LEGO® Education SPIKE™ Prime Technical Specifications

## Technic™ Large Angular Motor



<b>Hardware name</b>	Technic™ Large Angular Motor
<b>Description</b>	The motor is designed to function in models as both a motor and sensor. With the integrated advanced Rotation Sensor, the motor can report both speed and position. The motor can also sense direct user input if the output is rotated by hand.
<b>Key features</b>	<ul style="list-style-type: none"><li>• Speed Sensor (measures percentage of maximum design speed)</li><li>• Relative position in degrees</li><li>• Absolute position in degrees (-/+ 180 degrees)</li><li>• Crosshole output on one side, rotating disc with Crosshole and building interface on the other side</li><li>• The motor has a Technic build geometry that allows for versatile building and easy integration into models</li></ul>
<b>Connector type</b>	LEGO® Power Functions 2.0 (LPF2) for connection to LEGO Smarthubs
<b>Wire length</b>	250 mm
<b>Motor output</b>	Voltage range: <ul style="list-style-type: none"><li>• Min: 5V</li><li>• Max: 9V</li></ul> No load: <ul style="list-style-type: none"><li>• Torque: 0 Ncm</li><li>• Speed: 175 RPM +/- 15%</li><li>• Current consumption: 135 mA +/- 15%</li></ul> Maximum efficiency: <ul style="list-style-type: none"><li>• Torque: 8 Ncm</li><li>• Speed: 135 RPM +/- 15%</li><li>• Current consumption: 430 mA +/- 15%</li></ul> Stall: <ul style="list-style-type: none"><li>• Torque: 25 Ncm</li><li>• Speed: 0 RPM</li><li>• Current consumption: 1900 mA +/- 15%</li></ul>
<b>Sensor input</b>	All performance data is based on a 7.2V power supply. Rotation Sensor: <ul style="list-style-type: none"><li>• Resolution: 360 counts per revolution<ul style="list-style-type: none"><li>• <i>Resolution</i> is the number of counts the sensor makes for every full revolution (360 degrees) on the output axle</li></ul></li><li>• Accuracy: <math>\leq \pm 3</math> degrees<ul style="list-style-type: none"><li>• <i>Accuracy</i> is defined as the tolerances in the sensor combined with the gearbox slack</li></ul></li><li>• Update rate: 100 Hz<ul style="list-style-type: none"><li>• Update rate is defined as the frequency at which a new sensor reading, position, and speed are available</li></ul></li></ul>

The LEGO® Education SPIKE™ app may not support all hardware features and functionalities.

