LEGO® Education SPIKE™ Essential Technical Specifications

LEGO® Technic™ Small Angular Motor

Hardware name LEGO® Technic™ Small Angular Motor

Description The motor is designed to function as both a motor and sensor. Using 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.

Key features
- Speed Sensor (measures percentage of maximum design speed)
- Measures relative position (in degrees)
- Measures absolute position (in degrees)
  - When programming in Scratch, the absolute position is 0–360 degrees
  - When programming in Python, the absolute position is +/– 180 degrees
- Rotating disc output with crosshole and building interface
- The motor has a Technic build geometry that allows for versatile building and easy integration into models

Connector type LEGO Power Functions 2.0 (LPF2) for connection to LEGO Smarthubs

Wire length 250 mm

Motor output

Voltage Range
- Min: 3.3 V
- Max: 6 V

No Load
- Torque: 0 Ncm
- Speed: 110 RPM +/– 15%
- Current consumption: 55 mA +/– 15%

Maximum Efficiency
- Torque: 1.8 Ncm
- Speed: 85 RPM +/– 15%
- Current consumption: 170 mA +/– 15%

Stall
- Torque: 5 Ncm
- Speed: 0 RPM
- Current consumption: 340 mA +/– 15%

All performance data is based on a 5 V power supply.

Sensor input

Rotation Sensor
- Resolution: 360 counts per revolution
  - Resolution is the number of counts the sensor makes for every full revolution (360 degrees) on the output axle
- Accuracy:
  - Sensor input accuracy is +/– 1 degree
  - Motor can be controlled with an accuracy of +/–3 degrees
- Update rate: 100 Hz
  - Update rate is defined as the frequency at which a new sensor reading, position, and speed are available

The LEGO® Education SPIKE™ App might not support all hardware features and functionalities.