Compact stepper driver board

Unleash the full potential of your high-res and high-speed 3D printer

Bring smoother surface finish and faster printing to open-source RAMPS 3D print platforms

The RAMPS (RepRap Arduino Mega Pololu Shield) based modular platform is making Fused Filament Fabrication (FFF) 3D printing accessible to makers, small businesses and home users for fast prototyping, replacement parts making or education. The Arduino Mega 2560, or Arduino DUE, mother board provides microcontroller functionalities ready for users to plug-in their own motor driver to control X, Y & Z directions and up to 2 extruders simultaneously.

Based on the STSPIN820, the world's smallest 45 V and 256 microsteps motor driver, EVALSP820-XS plug-and-play expansion board can drive open-source 3D printers at an unprecedented speed for greatly increased throughput ensuring superior smoothness with its high microstepping resolution.

KEY FEATURES AND BENEFITS

- **Extreme surface finishing and motion smoothness** thanks to 256 microsteps capability and embedded PWM current control
- **Plug & play solution** compatible with RAMPS open-source 3D print platforms
- **Very high speed** thanks to its high-speed inputs and embedded PWM current control
- **Maximum flexibility** with dynamic microstepping selection
- **Compact end application design** thanks to its miniaturized QFN (4 x 4 mm) package
- **Economically viable end application** thanks to unequalled performance-cost trade-off
- **Wide application range** thanks to its wide 7 to 45 V operating range

IDEAL FOR

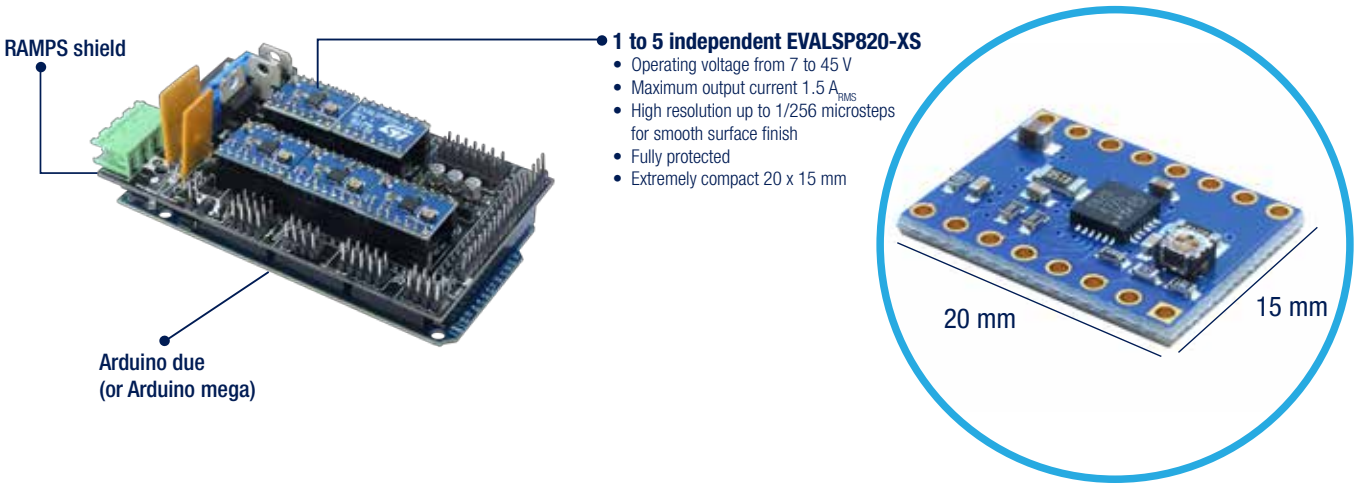
Fused Filament Fabrication (FFF) 3D printers

UNPRECEDENTED SMOOTH SURFACE FINISH

The key to this giant leap in 3D-printing performance is ST's advanced STSPIN820 motor driver IC. Embedding high-speed motor-control input circuitry and algorithms developed for industrial applications, it also integrates a powerful 1.5 A_{RMS} output stage in the ultra-compact (4 x 4 mm) QFN package.

The STSPIN820 features a dynamically settable microstepping resolution that, inside the RAMPS platform, can be easily set to one of eight available values through jumpers M1, M2 and M3: full-step, 1/2, 1/4, 1/8, 1/16, 1/32, 1/128 and 1/256 of a step.
It is simply controlled through high-speed step-clock and direction ports and embeds PWM current control algorithm with selectable decay mode (mixed or slow) and an adjustable reference voltage level that in the RAMPS platform is settable through an embedded potentiometer.
Industrial ruggedness is ensured with comprehensive built-in protections including under-voltage lockout, over-current/short-circuit protection, and thermal shutdown.
With its 7 to 45 V operating-voltage range and simple host interface including step-clock and direction inputs, the STSPIN820 is versatile and can be used in many industrial applications besides 3D printers.

GET STARTED WITH EVALSP820-XS OPEN SOURCE SOLUTION FOR FUSED FILAMENT FABRICATION 3D PRINTER PLATFORMS



PRODUCT TABLE

Part number	Max number of microsteps	Operating Voltage Range (V)	Maximum Output Current
EVALSP820-XS	256	7 to 45	1.5 A_{RMS}