

Six-Channel Controller Improves Precision And Performance For Stepper Motors

[TRINAMIC Motion Control's](#) TCMC-6214 is a highly integrated module capable of driving up to six two-phase stepper motors, drawing up to 1.9 A rms each at supply voltages of up to +24 V. Thanks to its three integrated encoder inputs for incremental A/B/N encoders, it can support high-precision position feedback for three of its six motors, making it well suited for multi-axis applications in laboratory and factory automation, life science, robotics, test and measurement, and applications handling precious goods and liquids (see the figure).

“By monitoring the motor and relaying feedback back to the operator, our customers can closely track performance of their applications. Making it easy for our customers to use these features allows them to implement a wide variety of applications. The controller's position feedback capabilities, for example, can be used to implement predictive maintenance functions, which can dramatically reduce equipment downtime while increasing its overall lifespan,” states Michael Rand, founder and CEO of Trinamic.

The TCMC-6214's advanced features allow engineers to add an extra layer of reliability to their applications, while ensuring the best performance throughout its extended life span. The controller also incorporates Trinamic's industry-exclusive DcStep function that enables the stepper motor to mimic the characteristics of a dc motor by delivering higher torque at lower speeds. Similarly, Trinamic's unique SixPoint ramping profiles allow developers to create complex acceleration/deceleration profiles that are precisely tailored to their application's requirements.

To increase ease of integration, the TCMC-6214 is available in two versions. The first version supports Trinamic's TMCL motion control command language. Full remote control of the device with feedback is possible and the module's TMCL firmware can be updated via any of the serial interfaces. As an alternative to the TMCL version, the TCMC-6214 also comes with firmware that supports the industry standard CANopen communication protocol. The module supports CAN, RS485, RS232 and USB interfaces for communications.

Both versions of the controller module are equipped with six general-purpose digital inputs and two analog inputs. The modules also have eight protected general-purpose outputs that can be used for diagnostics. An integrated power supply switch is available together along with two hardware torque off inputs. The controllers' powerful, integrated processor helps minimize communication traffic by performing all time-critical operations, such as ramp calculation, on-board without the assistance of an external host.

Both versions of the TCMC-6214 are available through Trinamic's normal distribution channels. For more information, see the product [page](#) or the [data sheet](#).

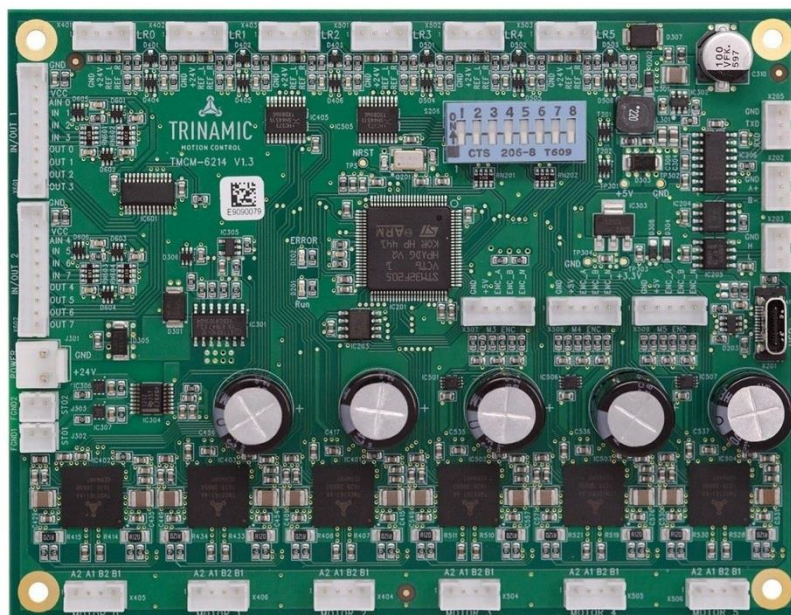


Figure. The TCMC-6214 is a six-axis motor controller/driver board for two-phase bipolar stepper motors with up-to 2-A rms motor current and a +24-V nom. supply.