PD1-013 / PD2-013 / PD3-013
Stepper Motor with Integrated Controller

Short Guide (Version 1.00 / January 11, 2006)

Introduction

The PD1-013, PD2-013 and PD3-013 modules are bipolar two-phase stepper motors with an integrated controller and driver module with a peak coil current of up to 1.5A for each coil. These modules provide a complete motion control systems. Each PDx-013 module is equipped with a step/direction interface and an RS485 interface.
The RS485 interface can be used for easy parametrization and for simple motion commands. Firmware upgrades are also possible through the RS485 interface.
The PD-013 is equipped with an ATmega32 micro controller. A TMC246 chip is used as the stepper motor driver. Its very low heat dissipation guarantees that the module can operate with no need for additional cooling. With the PD-013 the sensorless stall detection StallGuard feature can also be used.

Detailed Technical Documentation on TechLibCD-ROM

Detailed technical documentation is available on the TRINAMIC TechLibCD ROM. The CD-ROM assumed to be associated with driver letter D: you find

PD-013 Manual   `D:\PANdrives\PD-013-42\PD-013-42_Manual.pdf`

Connecting the PD-013 Module

All connections of the module are described in detail in the PD-013 Manual that is available on the TechLibCD shipped with the module.

Never connect or disconnect the motor from the controller while the module is powered. This damages or destroys stepper motor drivers and might also damage other parts of the module.

For communication with the PC, the module has to be connected using an RS485 converter and the cable set shipped with the module.

The module has to be connected to a power supply of a DC voltage within the range of 7V to 28V. Be sure of the correct polarity before connecting the power supply, as wrong polarity might damage the module or the power supply. The module is not protected against wrong polarity or too high voltage!

Digital general purpose digital IOs as well as analog IOs can be used optionally to build more advanced applications. Digital reference switch are available to be processed by the module. To get started running a motor, these additional IOs might be ignored at first.

Initial Operation

The easiest way to operate the module is to use the Step/Direction interface. Simple motion commands can also be sent to the module through the RS485 interface. This is described in detail in the manual.

Technical Data

DC Supply Voltage Range	7V ... 28V
Supported Motor Type	bipolar, two-phase stepper motor
Maximum Peak Coil Current	1.5A (adjustable by software in 255 steps)
Interfaces	RS232 (default 9600 bps, max. 115200 bps)
	one general purpose output (5V, max. 20mA)
	one general purpose input (TTL level), usable as digital or as analog input (max. 5V)
	two stop switch inputs for every motor (TTL level)
Operating Temperature Range	0°C ... 70°C
Dimensions	42 mm x 42 mm

ESD Sensitive Module

The TMCM-310 module is intended to be integrated as a part of a system with a housing. Running it without housing, one has to take into account that the module is a ESD (electrostatic discharge) sensitive unit and one has to avoid ESD voltages above 1000V according to HBM (Human Body Model, model of electrostatic discharge via human body). The module withstands at least 1000V HBM.

Environmental Protection Hint

Depollute the unit at the end of its life cycle according to existing law.

Life Support Policy

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