
PD1-110 / PD2-110 / PD3-110 Stepper Motor with Integrated Controller

Short Guide (Version 1.00 / January 11, 2006)

Introduction

The PD1-110, PD2-110 and PD3-110 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-110 module is equipped with an RS232 interface.

The "Trinamic Motion Control Language" (TMCL) is used to control the module. This language provides powerful commands that make it easy to control the module from a PC. The PD-110 can also run stand-alone, as programs written in TMCL can be stored permanently in an EEPROM on the module that can store programs that may contain up to 2000 commands. Firmware upgrades are possible through RS232.

The PD-110 is equipped with a ATmega32 micro controller and a TMC428 motor controllers. 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-110 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

PDx-110 Manual	D:\PANdrives\PD-110-42\PD-110-42_manual.pdf
TMCL Manual	D:\modules\TMCL\TMCL_reference.pdf
TMCL IDE	D:\modules\TMCL\TMCL-IDE\TMCL.exe

Connecting the PD-110 Module

All connections of the module are described in detail within the PD-110 Manual that is available on the TechLibCD shipped with the module. The TMCL Manual is also available on the TechLibCD. Additional, there are some TMCL examples available on the TechLibCD.

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 to the RS232 interface using 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 optional 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

Run the TMCL integrated development environment (IDE) that is available on the TechLib-CD as a executable (TMCL.exe) for Windows and follow the instruction of the TMCL manual. The TMCL IDE is used to control and program the module.

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 TCM-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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