

## 5相ステッピングモータ用 ドライバー体型 モーションコントローラ Integrated Motion Controller and Driver for 5-phase stepper motor

# MD5130D / 5230D

MD5130D is 1-axis, MD5230D is 2-axis Integrated Motion Controller and Driver for 5-phase stepper motor with bipolar pentagon drive system. A built-in EEPROM is for reading and writing driving parameter values and the user program of up to 1000 steps. The software "MD51\_52 Operation Tool" is available which can edit and register configuration data and a user program.

### 【 Features 】

#### ●Integrated Motion controller and driver

MD5130D/MD5230D are the integrated motion controller with motion control function and microstep driver for 5-phase stepper motor. The user can easily set configuration and operations using the dedicated software.

#### ●User program

The user can register various driving parameters and the user program of up to 1000 steps by 27 kinds of commands for MD5130D, 36 kinds of commands for MD5230D. Thereby the complex operation can easily be performed by registering them in advance.

#### ●Various acceleration/deceleration mode

There is various acceleration/deceleration driving: constant speed, trapezoidal acceleration/deceleration (symmetry / non-symmetry) and S-curve acceleration/deceleration driving. In addition, a simple mode is available that does not require a start speed setting.

#### ●Step out detection

If the differential between real position and logical position by an encoder signal is more than a specified value, it detects a step out error.

#### ●Microstep

Microstep resolution is available 16 different resolutions, divided from 1 to 250.

#### ●Low vibration drive

Microstep driver with low vibration function achieves a smooth drive in low-speed driving.

#### ●Interpolation function [MD5230D]

MD5230D can execute linear and circular interpolation in XY orthogonal coordinates.

Continuous interpolation can also be executed that performs a series of interpolation processes such as linear interpolation → circular interpolation → linear interpolation → ...

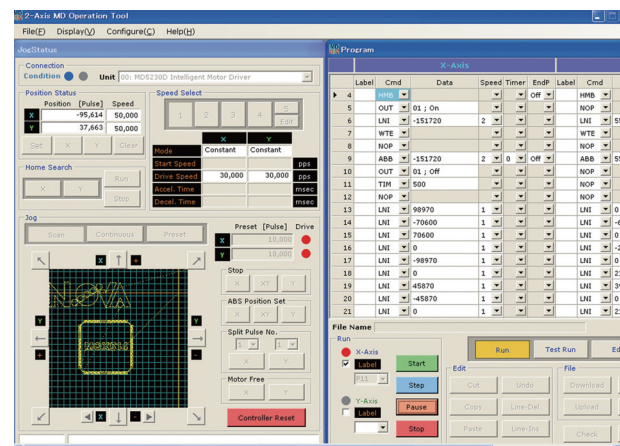
#### ●MD51\_52 operation tool

The dedicated software "MD51\_52 Operation Tool" to set and control from PC is available. Connect to PC with USB cable and the user can register configuration data and a user program, operate jog feed and perform a user program using "MD51\_52 Operation Tool"



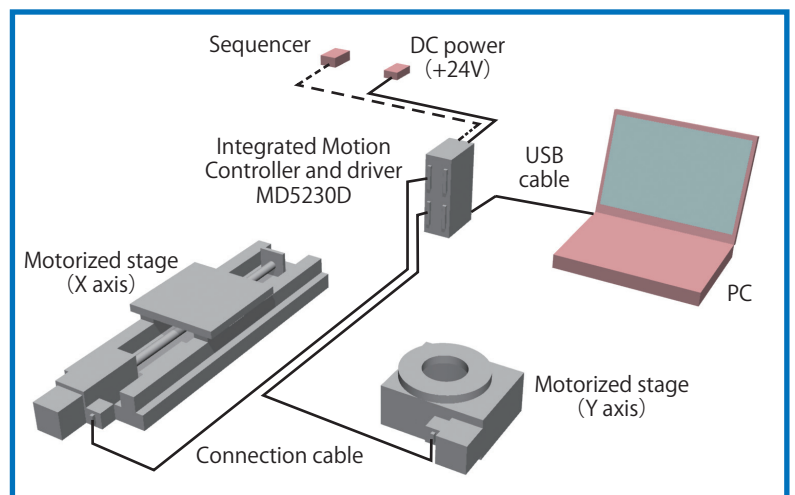
MD5230D  
for 2-axis

MD5130D  
for 1-axis



MD operation tool  
Main window

### System Configuration Example of MD5230D and Motorized stage



## MD5130D / MD5230D Specifications

Specifications	MD5130D	MD5230D
<b>■ Drive functions</b>		
Control axis	1 axis	2 axes
Drivable Motor	5-phase stepper motor with 5 leads or 10 leads	
Driving Current	0.35 to 1.4A/phase (selectable from 16 kinds)	
Driving System	Bipolar pentagon drive system, Microstep Resolutions	
Microstep Resolutions	1, 2, 4, 5, 8, 10, 16, 20, 25, 40, 50, 80, 100, 125, 200, 250(16 kinds)	
Auto Current Reduction	It sets rest current to run current by percentage, selectable from 16 kinds, 25% to 100%	
<b>■ Control Function</b>		
Speed Setting	<ul style="list-style-type: none"> <li>• Speed setting number: 4/each axis (Mode, Start speed, Drive speed, Acceleration Time, Deceleration Time)</li> <li>• Mode: Constant, linear acceleration/deceleration (Trapezoid) (with/without Start speed), non-symmetry linear acceleration/deceleration, S-curve acceleration/deceleration (with/without Start speed)</li> <li>• Drive speed, Start speed: Setting range 1 pps to 500 kpps</li> <li>• Acceleration Time, Deceleration Time: Setting range 1 to 10000 msec</li> </ul>	
Driving Mode	Automatic home search/Scan driving/Continuous driving/Preset driving/Program driving	
Automatic Home Search	<ul style="list-style-type: none"> <li>• Automatically executes High-speed home search (Step 1) → Low-speed home search (Step 2) → Low-speed encoder Z-phase search (Step 3) → High-speed offset drive (Step 4)</li> <li>• Each step of search direction and enable/disable can be specified.</li> </ul>	
Program Function	<ul style="list-style-type: none"> <li>• Memory media EEPROM</li> <li>• Steps 1000</li> <li>• Commands 27 Commands</li> <li>• Power On Program Start Function</li> </ul>	<ul style="list-style-type: none"> <li>• Memory media EEPROM</li> <li>• Steps 1000/each axis</li> <li>• Commands 36 Commands</li> <li>• Power On Program Start Function</li> </ul>
Communication commands	Communication commands that controls a unit with USB cable from the program on PC created by VB and VC.	
Interpolation	-	<ul style="list-style-type: none"> <li>• Linear interpolation</li> <li>• Circular interpolation</li> <li>• Continuous interpolation</li> </ul>
Step Out Detection Function	<ul style="list-style-type: none"> <li>• Monitors the difference between the logical and real positions, and if detects the abnormal difference, motor rotation stops.</li> <li>• Step Out Differential can be set.</li> </ul>	
Encoder Scaling Function	• Function to set the scale in order to match the count value of logical and real positions for motor rotation.	
Pulse Scaling Function	• Function to set the scale in order to input and display the specified position and logical position according to the actual moving distance (mm).	
Hardware Limit	<ul style="list-style-type: none"> <li>• Number of input signals 2 (each 1 for + and - direction)</li> <li>• Stop mode Instant/Slow is selectable.</li> </ul>	• Stop signal active level can be set.
Software Limit	• Stop mode Instant/Slow is selectable.	• Each axis +direction, -direction
Input Signal	<p>【Axis sensor signal】(Each axis) Encoder A/B phase input, Encoder Z phase input, Home, Limit signal (1point each +,-direction), Emergency stop, General input 2points</p> <p>【Parallel control signal】 External reset signal input, Automatic home search start input, Program driving start input, Motor stop input, Program designation 0 to 5 input, Driving mode designation 0, 1 input, Axis assignment (MD5230D)</p>	
Output Signal(Each axis)	ESplit pulse output, general output, General output 2 signals, Output during driving/End pulse, Error output, Open collector output, DC30V or less and 60mA or less	
Control Interface	<ul style="list-style-type: none"> <li>• Parallel control I/F</li> <li>• USB (USB standard V2.0 compliant) The maximum of 16 units can be connected to one PC with USB cable.</li> </ul>	
<b>■ Others</b>		
Input power	DC 24V (3A MAX.)	DC 24V (6A MAX.)
Ambient Temperature	0 - 40°	
Ambient Humidity	0 to 85%RH (No Condensation)	
Weight	245g	429g
Package Dimensions	108mm (Height) × 34mm (Width) × 95mm (Depth) (except projecting part)	130mm (Height) × 46.5mm (Width) × 98.5mm(Depth) (except projecting part)
Accessory	<ul style="list-style-type: none"> <li>• CN1(Power connector): XW4B-03B1-H1 (Omron) or equivalent x1</li> <li>• CN3(Parallel connector): 20P MIL standard connector x1</li> <li>• USB cable (1.5m) x1</li> </ul>	
System requirements for the Software	Windows 8.1 (32/64bit) 、 Windows 7 (32/64bit) 、 Vista (32/64bit) 、 XP (32/64bit)	

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