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MOTION CONTROL PRODUCT CATALOG





Company Profile

Leetro Automation Co., Ltd (formally known as Step-servo Co., Ltd) is specializing in designing and manufacturing high-performance and cost-effective controllers, motors and drivers.

Since our establishment in 1997 as a professional motion control company, we have become an innovative domestic leader and are rapidly expanding into the international market as a fair-play and promising partner.

Leetro Automation is a highly successful manufacturer of motion controllers and other motion control products. Based on our home technology, we have designed the MPC series of motion controllers, which includes both PC-based and stand-alone, and DMD series stepping motor drivers. Together with our other products, they have been successfully applied in hundreds of applications, thousands of machines (especially in laser machines and dispensing robot system).

Our Mission is to be a global leading company in the motion control industry through the gradual efforts that providing excellent system solutions for customers based in the motion control technology.



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Laser-dedicated 3-axis,
MPC6575

MPC6575 is designed for the close-loop motion control system which is in the laser machine only. Based on DSP and FPGA technology, the advanced velocity look-ahead and trajectory blending algorithm ensure the velocity invariableness and transition smoothness between any two-trajectory segments during the high speed X-Y continuous trajectory motion. And therefore the perfect smoothness and precision of the machining can be easily achieved.

Applications

CO₂ or RF tube compatible laser machine exclusively, close-loop motion control system

Features

- Engraving speed up to 4000mm/s
- 2-3 axes linear interpolation and 2-axis circular interpolation
- High speed multi-axis continuous contouring
- Velocity look-ahead and trajectory blending
- Position comparison and trigger output
- Laser control is synchronized with laser head motion
- Advanced PWM laser power control
- Flying-optics compensation
- Individual laser power control for dual-head system
- Master/slave USB interface
- Embedded 128MB memory
- Advanced PID algorithm to minimize cutting inaccuracy
- Easy interface to any AC or DC motors with analogue command input
- All digital inputs and outputs are 2500Vrms isolated

Laser Control Functionality

Motion Control

- High precision interpolation, circular interpolation resolution under 0.5 pulse
- Engraving control resolution is in ONE pulse on the frequency of less than 2MHz

For CO₂ tube

- Laser ON, TTL compatible
- Laser power control: PWM, frequency or analog voltage (user select)

Power

- 24VDC, 2A

For RF tube

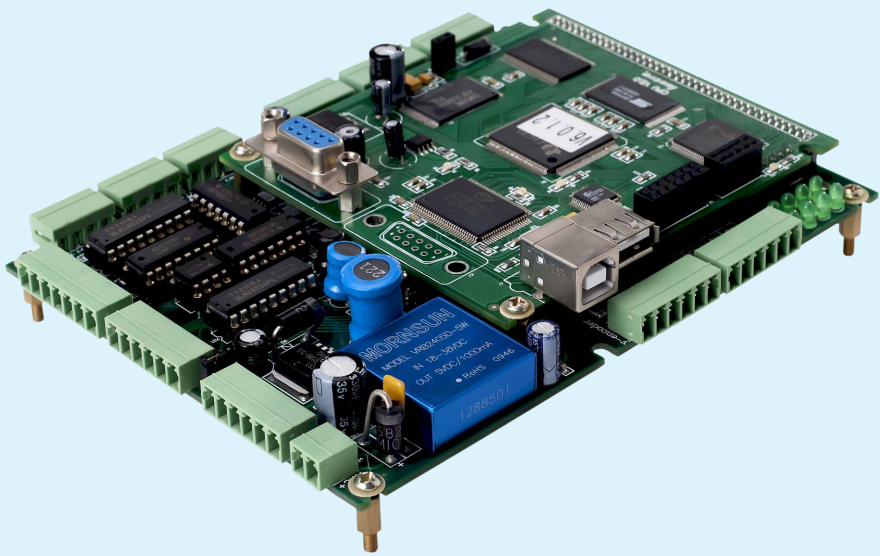
- Laser ON, TTL compatible
- Q pulse signal, programmable duty and frequency

Software Environment

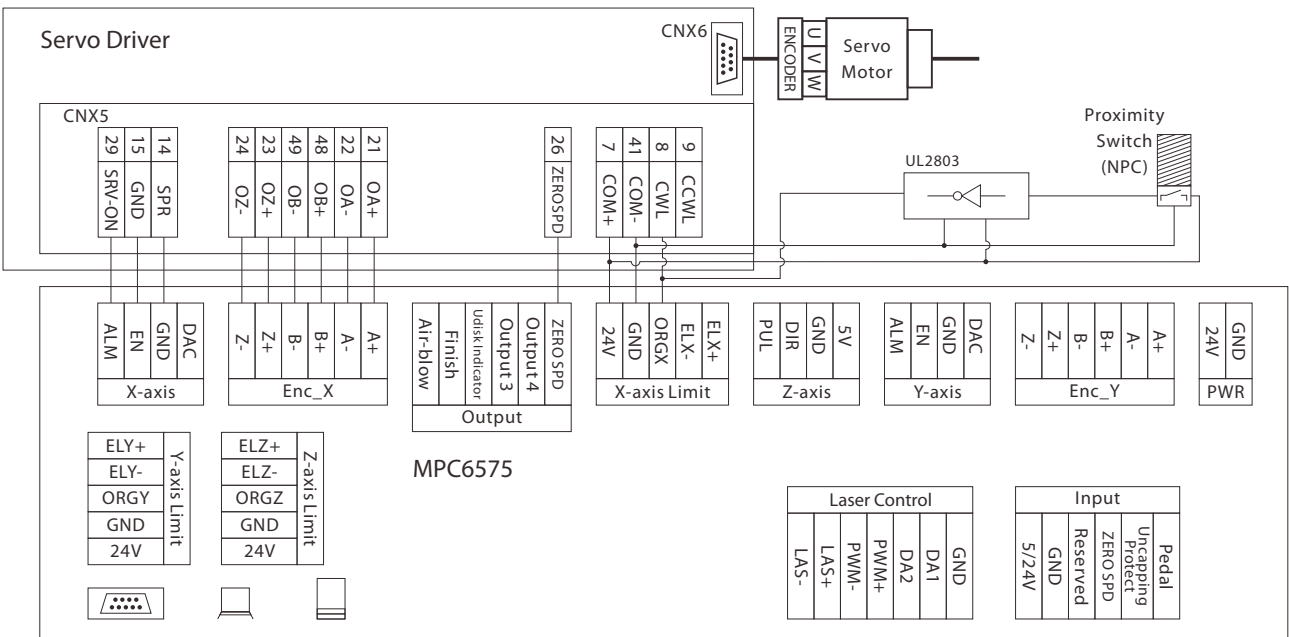
- Windows 2000/XP/Vista/7, supports 32 bit (X86) and 64 bit (AMD 64) Windows
- Bundled with LaserCut application software

Working Environment

- Temperature: 0-60°C
- Humidity: 5-90%, non condensing



A Typical Control System with MPC6575



Packing List

Model	Description	Quantity(pc)	PackSize (mm)*	Net Weight(Kg)	Type
MPC6575	Motion Control Board	1	155*117*27	0.22	Standard
PAD03-E	Operation Panel, English	1	175*115*55	0.21	Standard
C4-PAD03-1.5M	Cable connects MPC6575 and PAD03-E	1	Length 1500	0.13	Standard
USB-AB-3M	USB Cable	1	Length 3000	0.13	Standard
Udisk	USB Flash Drive	1	-	-	Standard
Dongle-WHITE	Software Key for LaserCut Software	1	55*18*8	0.01	Standard
HMI-TPC7062KS	7-inch TFT Touch HMI, English, 800x480 Res., 65K Color, CE/FCC	1	285*200*60	0.70	Optional
HMI-C9-3M	Cable connects MPC6575 and HMI-TPC7062KS	1	Length 3000	0.29	Optional
PAD03-TR	Operation Panel, Turkish	1	175*115*55	0.21	Optional

* Some products may not have dedicated packs.

Laser-dedicated 3-axis,
MPC6535

MPC6535 is designed for the open-loop motion control system which is in the laser machine only. Based on DSP and FPGA technology, the advanced velocity look-ahead and trajectory blending algorithm ensure the velocity invariableness and transition smoothness between any two-trajectory segments during the high speed X-Y continuous trajectory motion. And therefore the perfect smoothness and precision of the machining can be easily achieved.

Applications

CO₂ or RF tube compatible laser machine exclusively, open-loop motion control system



Features

- Stand-Alone motion controller
- Pulse frequency up to 7.5M Hz
- Compatible for stepper motors or digital servo motors
- RS232 ModBus Protocol
- Data transferred by USB cable or USB flash drive

- 1-CH laser power on/off control output
- 1-CH laser PWM control output
- Up to 2-CH independent power analog output
- PWM preheat control
- Uncapping protection
- Flying-optics compensation

Laser Control Functionality

Motion Control

- High precision interpolation, circular interpolation resolution under 0.5 pulse

For CO₂ tube

- Laser ON, TTL compatible
- Laser power control: PWM, frequency or analog voltage (user select)

Power

- 24VDC, 2A

For RF tube

- Laser ON, TTL compatible
- Q pulse signal, programmable duty and frequency

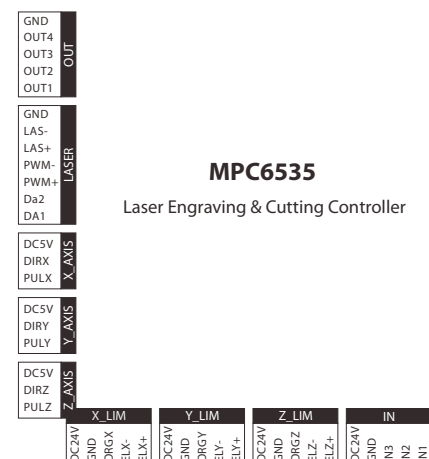
Software Environment

- Windows 2000/XP/VISTA/7, 32 bit (X86) and 64 bit (AMD 64) Windows
- Bundled with LaserCut application software

Working Environment

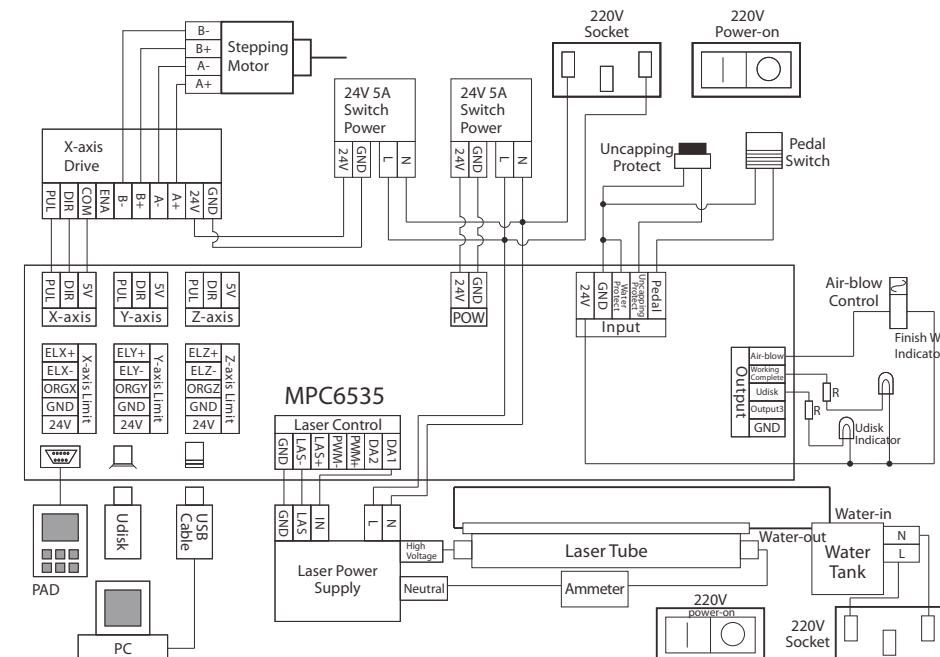
- Temperature: 0-60°C
- Humidity: 5-90%, non condensing

The Connection Pin Definition



Group	Pins						
	1	2	3	4	5	6	7
Pow	+24V	24V GND	-	-	-	-	-
IN	Pedal Switch	Uncapping Protection	Water Protect	24V GND	+24V	-	-
Z_LIM	Z-axis+Limit	Z-axis -Limit	Z-axis Home	24V GND	+24V	-	-
Y_LIM	Y-axis+Limit	Y-axis -Limit	Y-axis Home	24V GND	+24V	-	-
X_LIM	X-axis+Limit	X-axis -Limit	X-axis Home	24V GND	+24V	-	-
Z_AXIS	Z-axis Pulse	Z-axis Direction	+5V	-	-	-	-
Y_AXIS	Y-axis Pulse	Y-axis Direction	+5V	-	-	-	-
X_AXIS	X-axis Pulse	X-axis Direction	+5V	-	-	-	-
LASER	Analog1	Analog2	PWM+	PWM-	+Fire Laser	-Fire Laser	Laser Power Supply GND
OUT	Air-blow	Finish Work	Udisk Indicator	Reserved	24V GND	-	-

A Typical Control System with MPC6535



Packing List

Model	Description	Quantity(pc)	PackSize (mm)^*	Net Weight(Kg)	Type
MPC6535	Motion Control Board	1	240*145*50	0.71	Standard
PAD03-E	Operation Panel, English	1	175*115*55	0.21	Standard
C4-PAD03-1.5M	Cable connects MPC6575 and PAD03-E	1	Length 1500	0.13	Standard
USB-AB-3M	USB Cable	1	Length 3000	0.13	Standard
Udisk	USB Flash Drive	1	-	-	Standard
Dongle-WHITE	Software Key for LaserCut Software	1	55*18*8	0.01	Standard
HMI-TPC7062KS	7-inch TFT Touch HMI, English, 800x480 Res., 65K Color, CE/FCC	1	285*200*60	0.70	Optional
HMI-C9-3M	Cable connects MPC6575 and HMI-TPC7062KS	1	Length 3000	0.29	Optional
PAD03-TR	Operation Panel, Turkish	1	175*115*55	0.21	Optional

^ Some products may not have dedicated packs.

Laser-dedicated 3-axis,
MPC6515

MPC6515 is designed for the open-loop motion control system which is in the laser machine only. Based on DSP and FPGA technology, the advanced velocity look-ahead and trajectory blending algorithm ensure the velocity invariableness and transition smoothness between any two-trajectory segments during the high speed X-Y continuous trajectory motion. And therefore the perfect smoothness and precision of the machining can be easily achieved.

Applications

CO₂ or RF tube compatible laser machine exclusively, open-loop motion control system

Features

- Stand-alone
- 2-3 axes linear interpolation and 2-axis circular interpolation
- High speed multi-axis continuous contouring
- Velocity look-ahead and trajectory blending
- Position comparison and trigger output
- Laser control is synchronized with laser head motion
- Advanced PWM laser power control
- Flying-optics compensation
- Individual laser power control for dual-head system
- Master/slave USB interface
- Embedded 128MB memory
- Advanced PID algorithm to minimize cutting inaccuracy
- Easy interface to any AC or DC motors with analogue command input
- All digital inputs and outputs are 2500Vrms isolated

Laser Control Functionality

Motion Control

- High precision interpolation, circular interpolation resolution under 0.5 pulse
- Engraving control resolution is in ONE pulse on the frequency of less than 2MHz

For CO₂ tube

- Laser ON, TTL compatible
- Laser power control: PWM, frequency or analog voltage (user select)

Power

- 24VDC, 2A

For RF tube

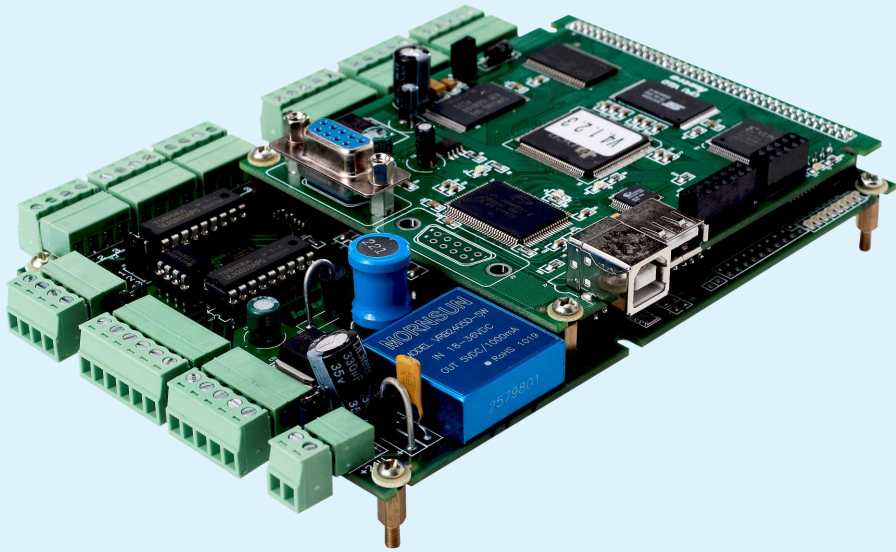
- Laser ON, TTL compatible
- Q pulse signal, programmable duty and frequency

Software Environment

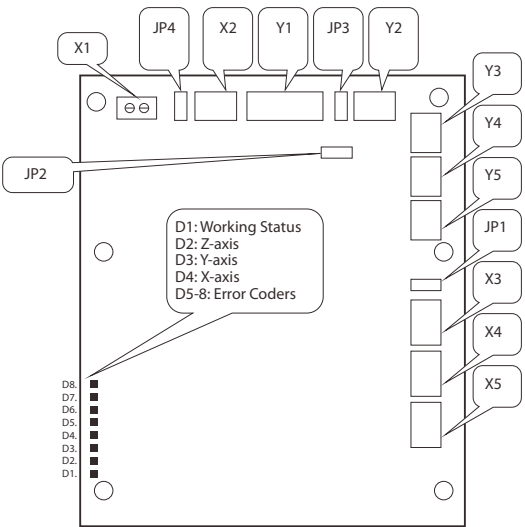
- Windows 2000/XP/VISTA/7, 32-bit (X86) and 64-bit (AMD 64) Windows
- Bundled with LaserCut application software

Working Environment

- Temperature: 0-60°C
- Humidity: 5-90%, non condensing



The Connection Pin Definition



Group	Pins					
	1	2	3	4	5	6
X1	24VDC, 2A	24V GND	-	-	-	-
X2	Pedal Switch	Uncapping Protection	Reserve	5V/24V GND	5V/24V	-
X3	Z-axis Forward Limit	Z-axis Reverse Limit	Z-axis Origin	5V/24V GND	5V/24V	-
X4	Y-axis Forward Limit	Y-axis Reverse Limit	Y-axis Origin	5V/24V GND	5V/24V	-
X5	X-axis Forward Limit	X-axis Reverse Limit	X-axis Origin	5V/24V GND	5V/24V	-
Y1	Blow-off	Processing Finished	Udisk Indicator	Reserve	5V/24V GND	5V/24V
Y2	Laser Power GND	Analog Output	Laser Power	Laser On/Off	-	-
Y3	Z-axis Pulse	Z-axis Direction	5V GND	5V	-	-
Y4	Y-axis Pulse	Y-axis Direction	5V GND	5V	-	-
Y5	X-axis Pulse	X-axis Direction	5V GND	5V	-	-

Packing List

Model	Description	Quantity(pc)	PackSize (mm)*	Net Weight(Kg)	Type
MPC6515	Motion Control Board	1	165*120*27	0.23	Standard
PAD03-E	Operation Panel, English	1	175*115*55	0.21	Standard
C4-PAD03-1.5M	Cable connects MPC6575 and PAD03-E	1	Length 1500	0.13	Standard
USB-AB-3M	USB Cable	1	Length 3000	0.13	Standard
Udisk	USB Flash Drive	1	-	-	Standard
Dongle-WHITE	Software Key for LaserCut Software	1	55*18*8	0.01	Standard
HMI-TPC7062KS	7-inch TFT Touch HMI, English, 800x480 Res., 65K Color, CE/FCC	1	285*200*60	0.70	Optional
HMI-C9-3M	Cable connects MPC6575 and HMI-TPC7062KS	1	Length 3000	0.29	Optional
STD01	Single Converter Module,Single-ended to Differential	1	80*70*12	0.05	Optional
PAD03-TR	Operation Panel, Turkish	1	175*115*55	0.21	Optional

* Some products may not have dedicated packs.

Laser-dedicated 3-axis,
MPC03-LH

MPC03-LH is designed for the open-loop motion control system which is in the laser machine only. This PC-based controller is developed based on DSP and FPGA technology. It is the consideration of the synchronization and coordination between the motor motion and the laser system, offering committed signals for the laser system.

Applications

CO₂ or RF tube compatible laser machine exclusively, open-loop motion control system

Features

- PC-based
- 32-bit PCI bus, plug & play
- 2-3 axes linear interpolation and 2-axis circular interpolation
- High speed 2-axis continuous contouring
- Velocity look-ahead and trajectory blending
- Position comparison and trigger output
- Laser control is synchronized with laser head motion
- Advanced PWM laser power control
- Flying-optics compensation
- Individual laser power control for dual-head system
- All digital inputs and outputs are 2500Vrms isolated

Laser Control Functionality

Motion Control

- High precision interpolation, circular interpolation resolution under 0.5 pulse
- Engraving control resolution is in ONE pulse on the frequency of less than 2MHz
- Real-time tracking simulation
- More efficient in the situation of “often input different file”

For CO₂ tube

- Laser ON, TTL compatible
- Laser power control: PWM, frequency or analog voltage (user select)

For RF tube

- Laser ON, TTL compatible

- Q pulse signal, programmable duty and frequency

Software Environment

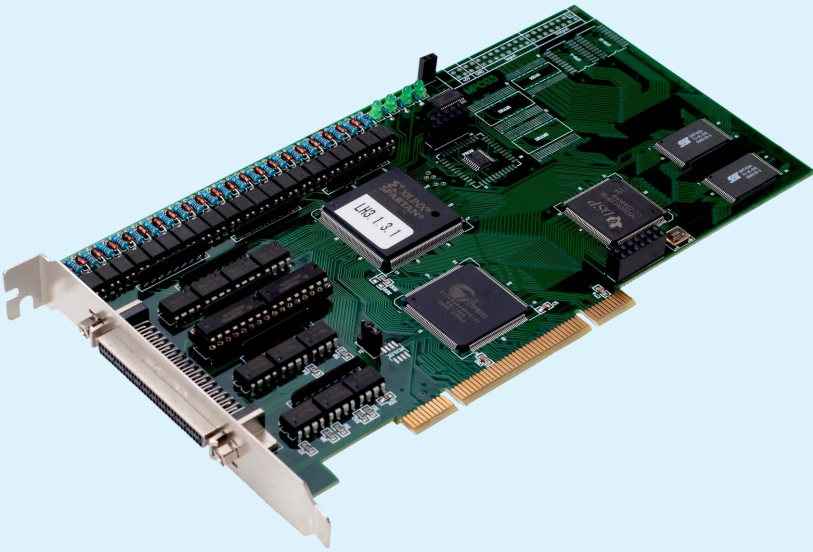
- Windows 2000/XP/Vista/7, 32-bit (X86) and 64-bit (AMD 64) Windows
- Bundled with LaserCut application software

Working Environment

- Temperature: 0-60°C
- Humidity: 5-90%, non condensing

Power

- 5VDC, 2A (for Motion Control)
- 24VDC, 2A (for I/O)



The pins definition of breakout board – P68

No.	Name	Definition	No.	Name	Definition	No.	Name	Definition	No.	Name	Definition
1	-	-	2	-	-	35	EA3+	5V Power Supply +	36	EA3-	Down
3	-	-	4	-	-	37	EB3+	5V Power Supply +	38	EB3-	Right
5	-	-	6	-	-	39	EZ3+	5V Power Supply +	40	EZ3-	Up
7	EA2+	5V Power Supply +	8	EA2-	Pause	41	EA4+	5V Power Supply +	42	EA4-	Framing
9	EB2+	5V Power Supply +	10	EB2-	Homing	43	EB4+	5V Power Supply +	44	EB4-	Start/Continue
11	EZ2+	5V Power Supply +	12	EZ2-	Instant Stop	45	EZ4+	5V Power Supply +	46	EZ4-	Left
13	-	-	14	GND5	Power Supply GND	47	-	-	48	-	-
15	LASER	Fire Laser	16	-	-	49	PUL3-	Pulse 3-	50	PUL3+	Pulse 3+
17	FRQ/PWM	Laser Power Adjust	18	-	-	51	DIR3-	Direction 3-	52	DIR3+	Direction 3+
19	PUL2-	Pulse 2-	20	PUL2+	Pulse 2+	53	PUL4-	Pulse 4-	54	PUL4+	Pulse 4+
21	DIR2-	Direction 2-	22	DIR2+	Direction 2+	55	DIR4-	Direction 4-	56	DIR4+	Direction 4+
23	-	-	24	DCV5	+5V Power Supply	57	DCV24	+24V Power Supply	58	ALM	External Alarming Input
25	-	-	26	ORG2	Original 2	59	ORG3	Original 3	60	ORG4	Original 4
27	-	-	28	EL2+	Forward Limit 2	61	EL3+	Forward Limit 3	62	EL4+	Forward Limit 4
29	-	-	30	EL2-	Reverse Limit 2	63	EL3-	Reverse Limit 3	64	EL4-	Reverse Limit 4
31	-	-	32	SD2+	Forward Deceleration 2	65	SD3+	Forward Deceleration 3	66	SD4+	Forward Deceleration 4
33	-	-	34	SD2-	Reverse Deceleration 2	67	SD3-	Reverse Deceleration 3	68	SD4-	Reverse Deceleration 4

Packing List

Model	Description	Quantity(pc)	PackSize (mm)*	Net Weight(Kg)	Type
MPC03-LH	Motion Control Board	1	215*128*22	0.14	Standard
C68-4M	Shield Cable connects MPC03-LH and P68	1	Length 4000	0.73	Standard
P68	Breakout Board	1	110*110*28	0.19	Standard
Dongle-WHITE	Software Key for LaserCut Software	1	55*18*8	0.01	Standard
Udisk	USB Flash Drive	1	-	-	Optional

* Some products may not have dedicated packs.

MPC03-LX

This is a PC-based dedicated motion controller which is applied in special laser vision control routing system. More details, please contact overseas@leetro.com.

General-purpose 4-axis,
MPC2810

MPC2810 is designed for the open-loop motion control applications that adopt continuous trajectory motion mode. The velocity transition smoothness between any two-trajectory segments during the continuous trajectory motion are its most remarkable advantages, and therefore the smoothness of the machining surface and machining precision and machining efficiency can be greatly improved.

Applications

- Plasma Cutting Machine
- Automated Channel Letter Fabrication Machine
- PCB Depaneling Machine
- LED-crystal-automatic Machine
- Wafer/Leather Cutting Machine
- Material Feeding Device
- Ultrasonic Welding Machine

Features

- 32-bit PCI bus, plug & play
- Pulse output rate up to 2MHz
- Pulse output options: PUL/DIR, CW/CCW
- 2-4 axes linear interpolation
- 2 axes circular interpolation
- High speed 2 axes continuous contouring
- Velocity look-ahead and trajectory blending
- Tangent motion
- Hardware position compare and trigger output

Specification

Motion Control

- Number of controllable axes per board: 4
- Max. number of board in one system: 4
- Pulse output rate up to 2M pps
- Pulse output modes: OUT/DIR or CW/CCW
- 32-bit up/down counter for encoder feedback
- Position range: (32-bit), -134217728 to 134217728 pulses

Motion Interface I/O signals

- Position latch input
- Position compare output
- 2-CH quadrature incremental auxiliary encoder input, counting rate up to 2M pps
- Encoder index input
- Hardware over-travel limit, ramp-down and home switch input
- Amplifier alarm input

Power

- 24VDC, 2A

- High speed position latch
- Trapezoidal or S-curve velocity profile, user-made profile
- Programmable interrupt source
- Command processing options: batch processing or immediate processing
- Hardware backlash compensation
- Electronic gear
- Software limit
- Compatible working with stepping motor and digital servo motor

General-Purpose I/O

- Input: 18-CH, optically isolated
- Output: 24-CH, max current 100mA, optically isolated, open collector transistor outputs

Safety

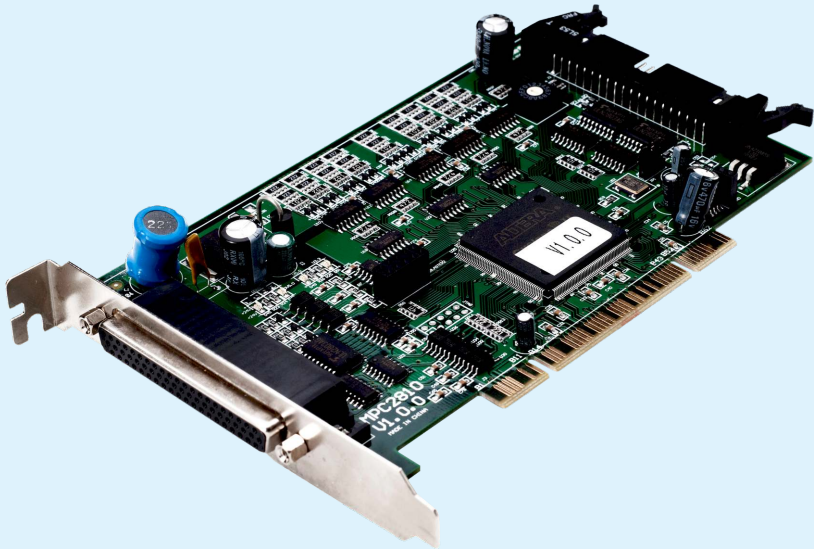
- Hardware over-travel limit
- Software over-travel limit
- Following error limit
- Watchdog timer
- Feedback position verification
- Amplifier alarm input

Software Environment

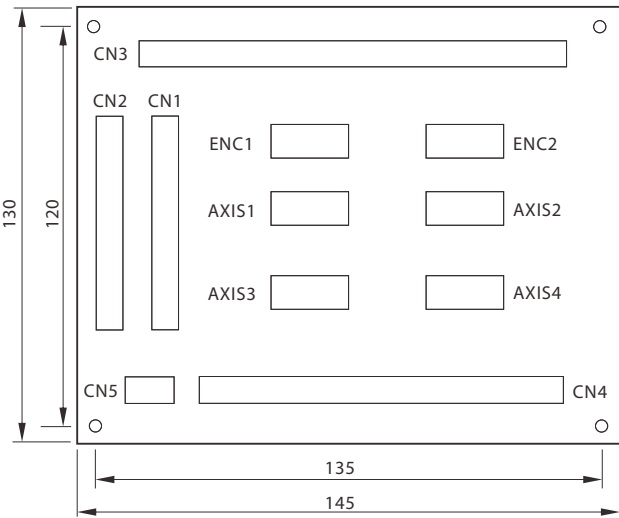
- Windows 2000/XP
- DLL function library
- VB/VC++/ C++ Builder/Delphi/Labview are recommended programming tools

Working Environment

- Temperature: 0-60°C
- Humidity: 5-90%, non condensing



The Interface of Breakout Board – P62-02



Connectors	Description
CN1	Connected to MPC2810's DB62 interface
CN2	Connected to C4037's DB37 interface
CN3	24-pin for general-purpose outputs
CN4	18-pin for general-purpose inputs and alarm input
CN5	24V power supply
ENC1	Encoder1
ENC2	Encoder2
AXIS1	Axis1 Control Interface (pulse, direction, origin, limits, Ramp-down)
AXIS2	Axis2 Control Interface (pulse, direction, origin, limits, Ramp-down)
AXIS3	Axis3 Control Interface (pulse, direction, origin, limits, Ramp-down)
AXIS4	Axis4 Control Interface (pulse, direction, origin, limits, Ramp-down)

Packing List

Model	Description	Quantity(pc)	PackSize (mm)*	Net Weight(Kg)	Type
MPC2810	Motion Control Board	1	185*122*27	0.14	Standard
P62-02	Breakout Board	1	145*130*18	0.24	Standard
C62-2M	Shielded Cable for P62-02	1	Length 2000	0.44	Standard
C4037-0.3M	Control Board Extension Cable	1	Length 300	0.06	Optional
C37-2M	Digital I/O Extension Cable, extra 16-input, 16-output	1	Length 2000	0.42	Optional
Udisk	USB Flash Drive	1	-	-	Optional
SmartMove-2810	Dedicated Software for Plasma Cutting System, with License	1	-	-	Optional

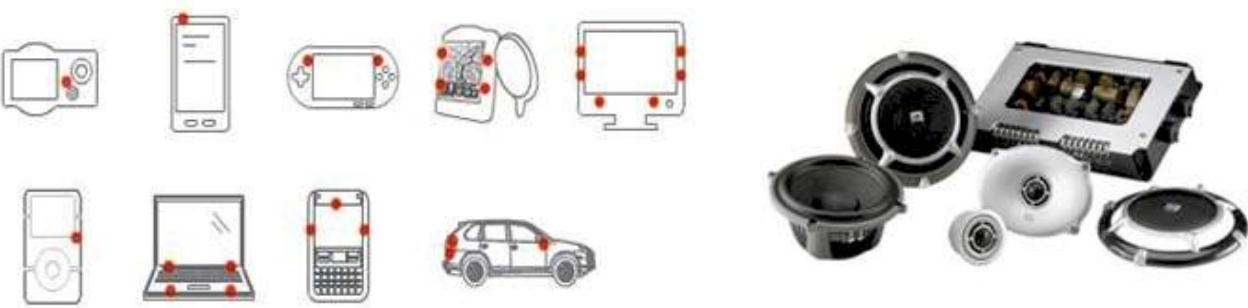
* Some products may not have dedicated packs.

Multi-purpose 4-axis,
MPC6536

MPC6536 is designed for the open-loop motion control system in which the dispensing robot, dripping (micro-injection) and soldering. Based on DSP and FPGA technology, the advanced velocity look-ahead and trajectory blending algorithm ensure the velocity invariableness and transition smoothness between any two-trajectory segments during the high speed X-Y-Z continuous trajectory motion. The supplementary software, LOGOSHOP offers powerful functions, such as 3D rotate, array and dynamic reading.

Applications

Dispensing, dripping (auto-injection) and soldering machines in the industries of audio, electronics and others, open-loop motion control system.

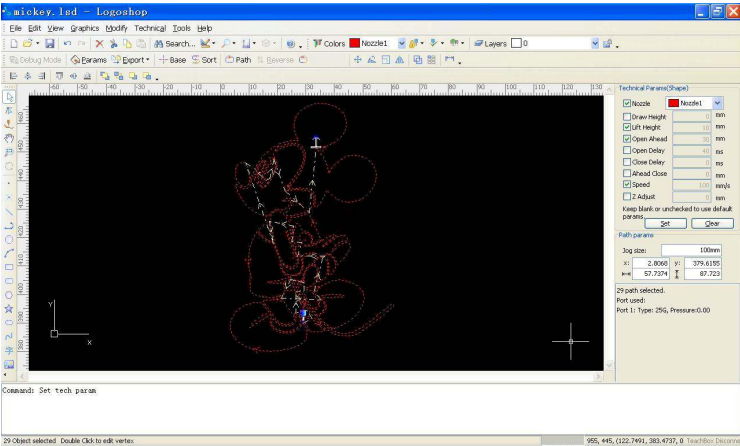


Features

- Stand-alone
- Stepping/servo motor compliance
- Max. pulse output frequency 7.5MHz
- High precision control, +/-0.5 pulse
- Max machining speed, 1000mm/s (depending on mechanical structure)
- Store up to 6536 dynamic files, max100K dots ineach file
- Embedded 4-CH input and 4-CH output, 8-CH input and 24-CH output by P37-05
- 3-axis circular interpolation
- Firmware updated by USB flash drive

Supplementary Software, LOGOSHOP

- Supports file format, NC, AI, DXF, JPG and BMP
- Synchronized tune, what you see is what you get



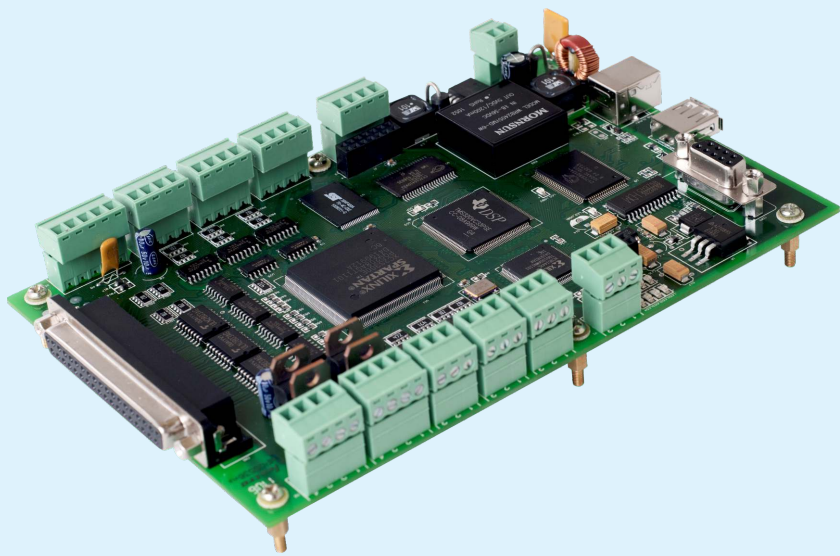
- 3D dynamic reading, rotating and arraying
- Read and transfer a over-10MB file
- Auto-path and user-define patch
- MPC6536 does not support connecting PC
- Soldering system(DSP5.2W) does not use LOGOSHOP
- LOGOSHOP is the supplementary in operation the system of DSP5.2A and DSP5.2M
- LOGOSHOP-saved job file transferred by flash memory disk to the teaching pendant

Working Environment

- Temperature: 0-60°C
- Humidity: 5-90%, non condensing

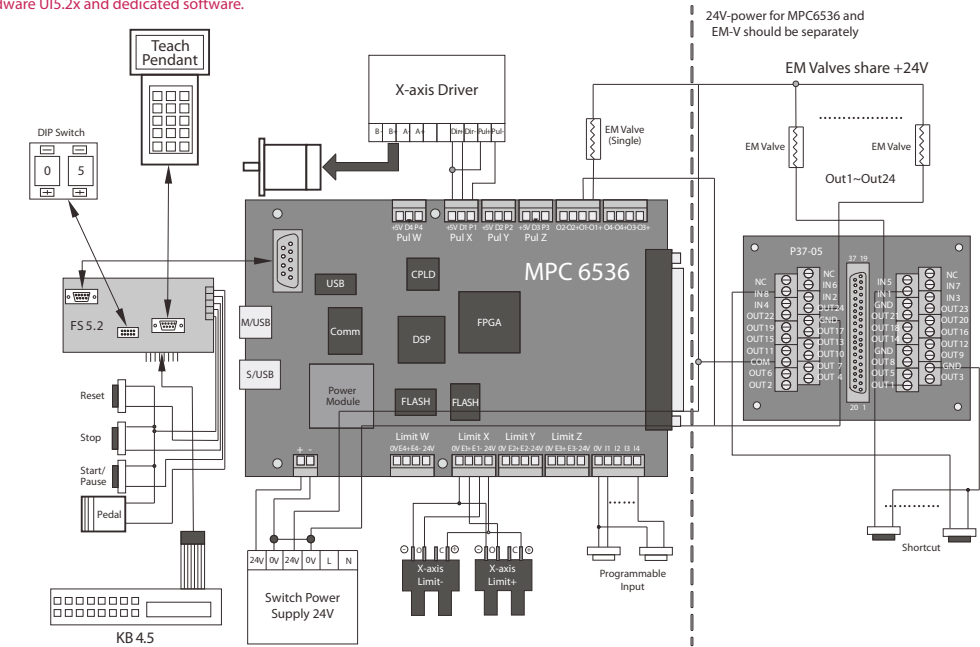
Power

- 24VDC, 2A



A Typical Control System with MPC6536 (DSP5.2A`)

* The DSP5.2x system includes hardware UI5.2x and dedicated software.



Packing List

Model	Description	Quantity(pc)	PackSize (mm)*	Net Weight(Kg)	Type
MPC6536	Stand-alone open-loop Dedicated Motion Controller, 4-in, 4-out, Must be coupled with UI5.2A, UI5.2M or UI5.2W	1	240*145*50	0.33	Standard
FS5.2	1st Breakout Board with LCD, 4-function-switch	1	97*43*40	0.09	Standard
C9MF-060	1st connects MPC6536 and FS5.2, 2nd connects FS5.2 to Machine Chassis	2	Length 600	0.02	Standard
C9MF-150	Cable connects UI5.2 to Machine Chassis (C9MF-060)	1	Length 1500	0.22	Standard
P37-05	2nd Breakout Board, 8-in, 24-out	1	92*82*28	0.12	Standard
C37-2M	Cable connects MPC6536 and P37-05	1	Length 2000	0.40	Standard
UI5.2A	Teaching Pendant Handset for 3-axis Dispensing System, with LOGOSHOP Software License	1	260*140*31	0.35	Optional
UI5.2M	Teaching Pendant Handset for 3-axis Dripping System (Micro-injection), with LOGOSHOP Software License	1	260*140*31	0.35	Optional
UI5.2W	Teaching Pendant Handset for 4-axis Soldering System	1	260*140*31	0.35	Optional
KB4.5	Mini Keyboard connecting to FS5.2 (Optional for UI5.2A and UI5.2W, not for UI4.5M)	1	-	0.02	Optional
Udisk	USB Flash Drive	1	-	-	Optional
USB-AB-3M	USB Connect Cable, (Standard for UI5.2M ONLY, Optional for UI5.2A and UI5.2W)	1	Length 3000	0.13	Optional

* Some products may not have dedicated packs.

CNC-router 3-axis,
MPC6610

MPC6610 is designed for the open-loop motion control system which is in the CNC routing machine only. Based on DSP and FPGA technology, the advanced velocity look-ahead and trajectory blending algorithm ensure the velocity invariableness and transition smoothness between any two-trajectory segments during the high speed X-Y continuous trajectory motion. The G code could be processed by the tools, such as ArtCam and Type3 and transferred to the controller for working.

Applications

CNC routing machine exclusively, open-loop motion control system. Typical machining materials are wood and plastic.

Features

- Stand-alone
- 3-axis linear interpolation
- Velocity look-ahead and trajectory blending
- Output frequency 7.5MHz
- Tool setting automatically
- S-profile acceleration and deceleration
- Embedded 256MB memory
- Support NC, mmg and U00 format files
- Max 6 coordinate system
- Embedded horizontal and vertical milling functions

Functionality

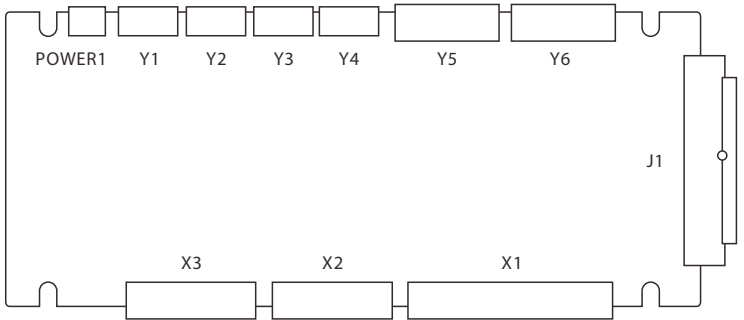
- Maser and slave USB ports enables machine working without PC
- 3-axis interpolation makes arc surface smoothly
- “pre-work-check” makes sure material size will not exceed the working table
- 3-axis leaner interpolation
- Power-off-point resume
- Max 6 breakpoints resume
- Max 8 transducer variant speed control
- Working resolution is subject to the driver in the stepping motor system

Working Environment

- Temperature: 0-60°C
- Humidity: 5-90%, non condensing



The Connection Pin Definition – P50



Group	Pins					
	1	2	3	4	5	6
POWER1	Input 24VDC+	GND	-	-	-	-
X1	X-axis Limit+	X-axis Limit-	Y-axis Limit+	Y-axis Limit-	Z-axis Limit+	Z-axis Limit-
X2	X-axis Home	Y-axis Home	Z-axis Home	U-axis Home	GND	Output 24VDC+
X3	IN1	IN2	IN3	IN4	GND	-
Y1	X-axis Pulse	X-axis Dir	Output 5VDC+	-	-	-
Y2	Y-axis Pulse	Y-axis Dir	Output 5VDC+	-	-	-
Y3	Z-axis Pulse	Z-axis Dir	Output 5VDC+	-	-	-
Y4	U-axis Pulse	U-axis Dir	Output 5VDC+	-	-	-
Y5	OUT1	OUT2	OUT3	OUT4	GND	-
Y6	SP0	SP1	SP2	SP+	GND	-
J1	50-pin cable connector					

Packing List

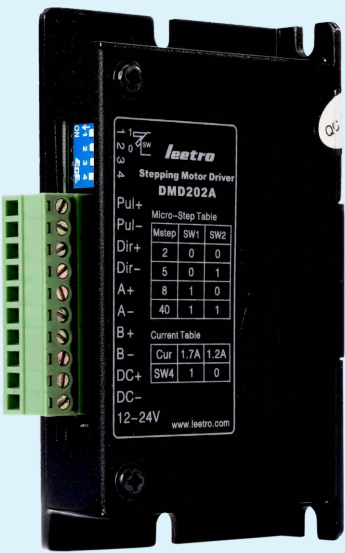
Model	Description	Quantity(pc)	PackSize (mm)*	Net Weight(Kg)	Type
MPC6610	Motion Control Board	1	110*202*35	0.38	Standard
P50	Breakout Board	1	190*100*20	0.17	Standard
C50-3M	Cable connects MPC6610 and P50	1	Length 3000	0.50	Standard
Udisk	USB Flash Drive	1	-	-	Optional

* Some products may not have dedicated packs.

DMD202A (2-phase)

Features

- Dual H-bridge, Pulse width modulated current control, chopping at 20 KHz
- TTL compatible and optically isolated input
- Max output current optionally 0.4/1.7A
- Micro-stepping 2, 5, 8 and 40
- Support PUL/DIR (default) and CW/CCW modes
- Automatic idle-current reduction
- CE compliant



Electrical Specifications

Tj=25℃

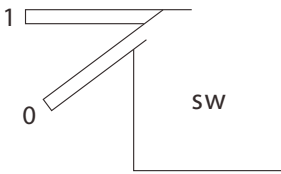
Parameters	Min.	Typical	Max.	Unit
Output Current	0.2	-	0.4/1.7	A
Power Supply	12	-	24	VDC
Logic Current	6	10	30	mA
Pulse Frequency	0	-	90	KHz
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.1	-	Kg

Operation Environment

Condition	Caution	Avoid dust and corrosive air/oil
	Temp.	0℃ ~+50℃
	Humidity	Under 90% RH
	Vibration	5.9m/s² Max
Storage Temperature		-20℃ ~+65℃

Micro-step Setting

It* is determined by switch1 and switch2. Standard setting is as below table.



M-step	SW1	SW2
2	0	0
5	0	1
8	1	0
40	1	1

* The customized setting is available under request.

Output Current Setting

It is determined by SW4. An example is below.

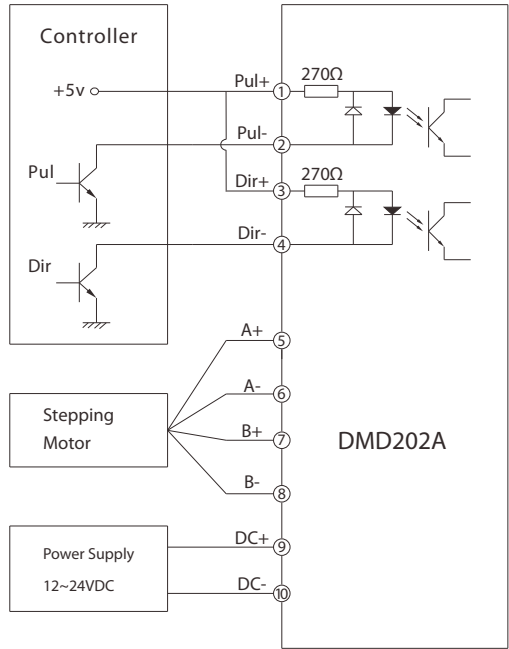
Cur	1.7A	1.2A
SW4	0	1

SW3 is reserved.

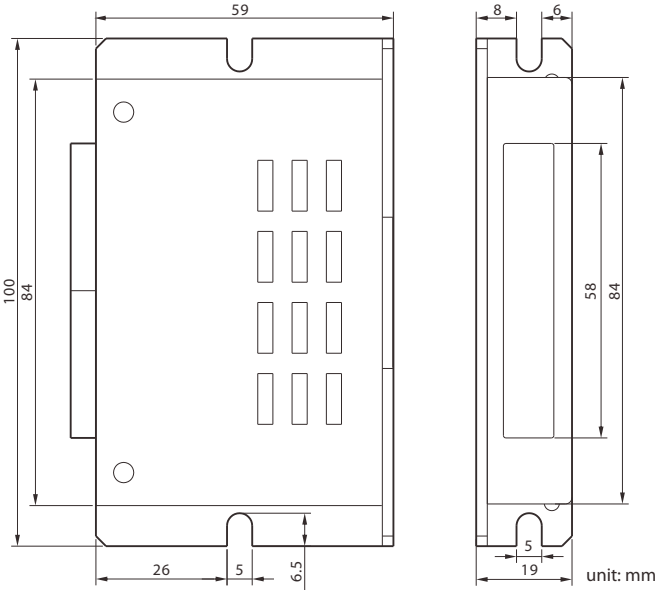
Pins

Pin	Description
Pul+	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
Pul-	
Dir+	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
Dir-	
A+	Motor Phase A
A-	
B+	Motor Phase B
B-	
DC+	Power Supply, +12~24VDC, including voltage fluctuation and EMF voltage.
DC-	Power Ground

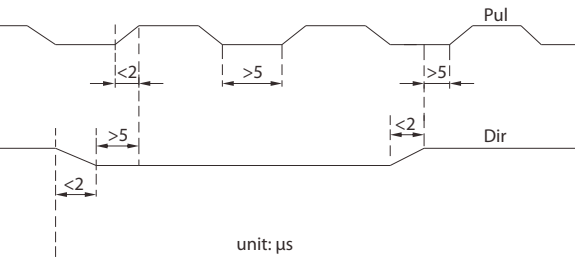
Typical System Connection



Mechanical Structure



Sequence Chart of Control System



DMD402A (2-phase)

Features

- Dual H-bridge, Pulse width modulated current control, chopping at 20 KHz
- TTL compatible and optically isolated input
- Max Step/rev. up to 51200
- Input Voltage 14-40 VDC
- Switch selectable motor current 0.25 – 2.0A/phase
- Over current protection
- CE compliant



Electrical Specifications

Tj=25°C

Parameters	Min.	Typical	Max.	Unit
Output Current	0.25	-	2.0	A
Power Supply	14	32	40	VDC
Logic Current	6	10	30	mA
Pulse Frequency	0	-	200	KHz
Pulse Active-low	5	-	-	µs
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.26	-	Kg

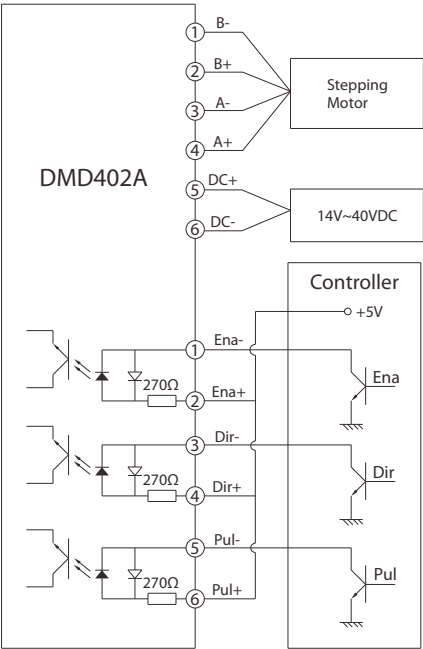
Operation Environment

Condition	Caution	Avoid dust and corrosive air/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s ² Max
Storage Temperature		-20°C ~+65°C

Pins

Pin	Description
B-	Motor Phase B
B+	
A-	Motor Phase A
A+	
DC+	Power Supply, +14~40VDC, including voltage fluctuation and EMF voltage.
DC-	Power Ground
Ena-	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through), Active-low for disabling the driver (optical-isolation is through).
Ena+	
Dir-	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
Dir+	
Pul-	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
Pul+	

Typical System Connection



Micro-step Setting

Micro-step	Step/rev. (1.8° Motor)	SW5	SW6	SW7	SW8
1	200	off	off	off	off
2	400	on	on	on	on
4	800	on	off	on	on
8	1600	on	on	off	on
16	3200	on	off	off	on
32	6400	on	on	on	off
64	12800	on	off	on	off
128	25600	on	on	off	off
256	51200	on	off	off	off
5	1000	off	on	on	on
10	2000	off	off	on	on
25	5000	off	on	off	on
50	10000	off	off	off	on
125	25000	off	on	on	off
250	50000	off	off	on	off

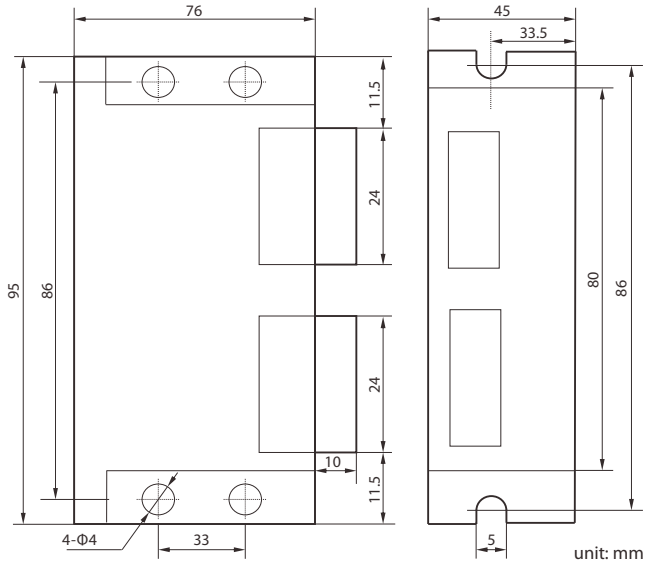
Output Current Setting

Dynamic Current	Peak Current (A)	SW1	SW2	SW3
0.25	on	on	on	on
0.5	off	on	on	on
0.75	on	off	on	on
1.0	off	off	on	on
1.25	on	on	off	on
1.5	off	on	off	on
1.75	on	off	off	on
2.0	off	off	off	on

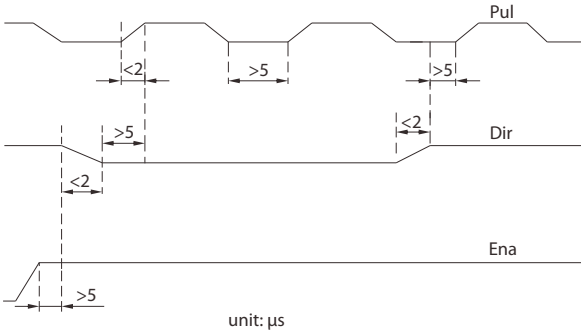
Standstill Current

- SW4 defines the standstill current.
- Status “off” is to set the standstill current as the half of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

Mechanical Structure



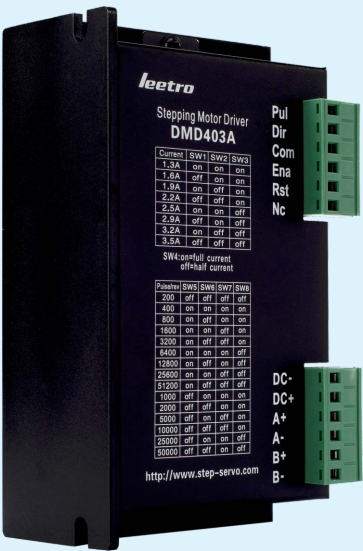
Sequence Chart of Control System



DMD403A (2-phase)

Features

- Dual H-bridge, inaudible PWM amplifier, Pulse width modulated current control, chopping at 20 KHz
- TTL compatible and optically isolated input
- Max Step/rev. up to 51200
- Input Voltage 24-40 VDC
- Switch selectable motor current 1.3 – 3.5A/phase
- Over current protection
- CE compliant



Electrical Specifications

Tj=25°C

Parameters	Min.	Typical	Max.	Unit
Output Current	1.3	-	3.5	A
Power Supply	24	32	40	VDC
Logical Current	6	10	30	mA
Pulse Frequency	0	-	200	KHz
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.37	-	Kg

Operation Environment

Condition	Caution	Avoid dust and corrosive air/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s² Max
Storage Temperature		-20°C ~+65°C

Micro-step Setting

Micro-step	Step/rev. (1.8° Motor)	SW5	SW6	SW7	SW8
1	200	off	off	off	off
2	400	on	on	on	on
4	800	on	off	on	on
8	1600	on	on	off	on
16	3200	on	off	off	on
32	6400	on	on	on	off
64	12800	on	off	on	off
128	25600	on	on	off	off
256	51200	on	off	off	off
5	1000	off	on	on	on
10	2000	off	off	on	on
25	5000	off	on	off	on
50	10000	off	off	off	on
125	25000	off	on	on	off
250	50000	off	off	on	off

Output Current Setting

Dynamic Current	Peak Current (A)	SW1	SW2	SW3
1.3	on	on	on	on
1.6	off	on	on	on
1.9	on	off	on	on
2.2	off	off	on	on
2.5	on	on	off	on
2.9	off	on	off	on
3.2	on	off	off	on
3.5	off	off	off	on

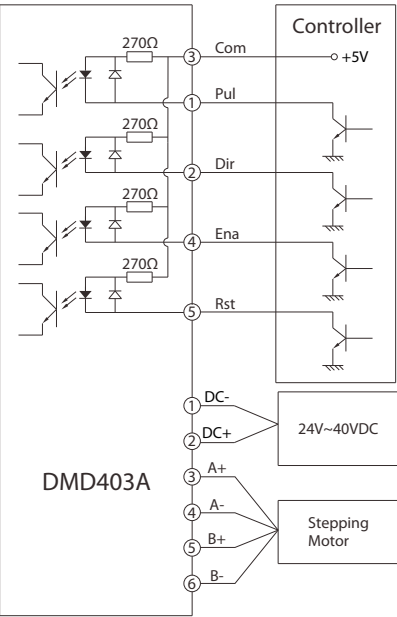
Standstill Current

- SW4 defines the standstill current.
- Status “off” is to set the standstill current as the half of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

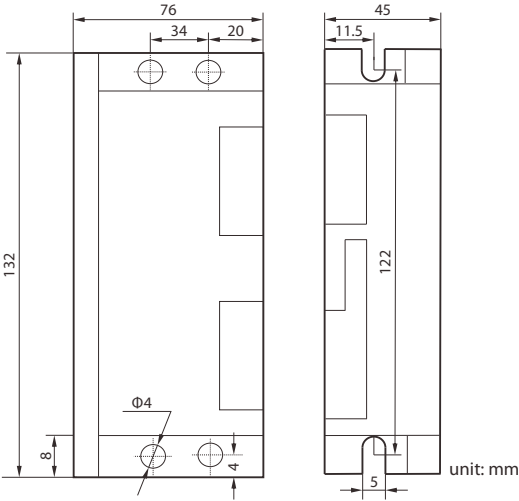
Pins

Pin	Description
Pul	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
Dir	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
Com	+5VDC for optical-isolation, max 15mA
Ena	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through). Active-low for disabling the driver (optical-isolation is through).
Rst	To reset the driver in initial status (Phase A on, Phase B off)
Nc	Not Available
DC-	Power Ground
DC+	Power Supply, +24~40VDC, including voltage fluctuation and EMF voltage.
A+	Motor Phase A
A-	
B+	Motor Phase B
B-	

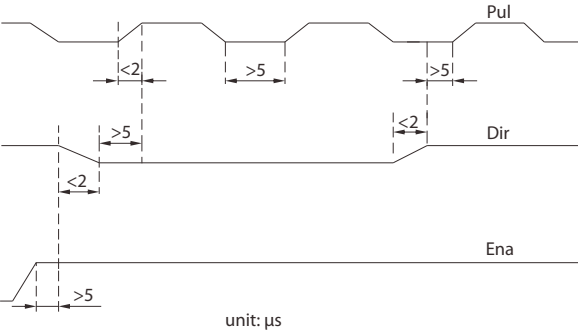
Typical System Connection



Mechanical Structure



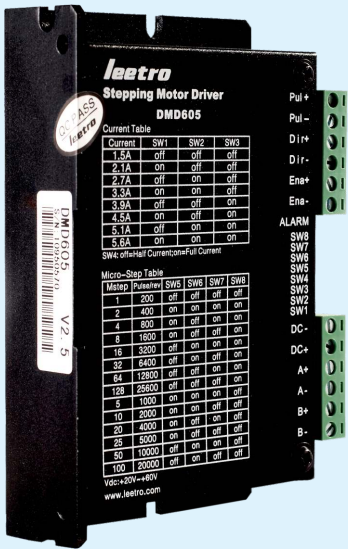
Sequence Chart of Control System



DMD605 (2-phase)

Features

- TTL compatible and optically isolated input, pulse frequency up to 360KHz
- Max Step/rev. up to 25600
- Input Voltage up to 60VDC
- Max output driving current 5.6A/phase
- Auto semi-current while in still status
- Over voltage/current protection
- CE compliant



Electrical Specifications

Tj=25°C

Parameters	Min.	Typical	Max.	Unit
Output Peak Current	1.5	-	5.6	A
Power Supply	20	36	60	VDC
Logical Current	6	10	30	mA
Pulse Frequency	0	-	360	KHz
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.22	-	Kg

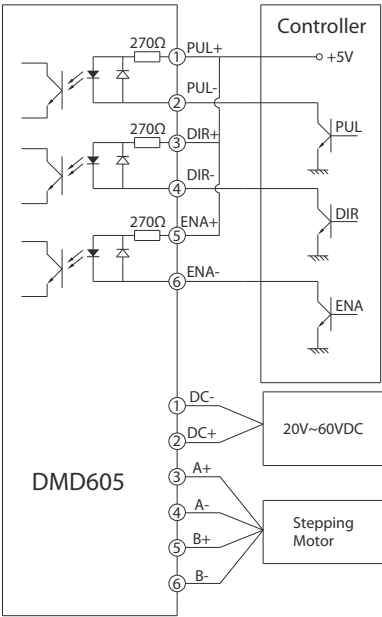
Operation Environment

Condition	Caution	Avoid dust and corrosive air/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s ² Max
Storage Temperature		-20°C ~+65°C

Pins

Pin	Description
Pul+	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
Pul-	
Dir+	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
Dir-	
Ena+	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through), Active-low for disabling the driver (optical-isolation is through).
Ena-	
DC-	Power Ground
DC+	Power Supply, +20~60VDC, including voltage fluctuation and EMF voltage.
A+	Motor Phase A
A-	
B+	Motor Phase B
B-	

Typical System Connection



Micro-step Setting

Micro-step	Step/rev. (1.8° Motor)	SW5	SW6	SW7	SW8
1	200	off	off	off	off
2	400	on	on	on	on
4	800	on	off	on	on
8	1600	on	off	off	on
16	3200	off	on	on	on
32	6400	off	on	off	on
64	12800	off	off	on	on
128	25600	off	off	off	on
5	1000	on	on	on	off
10	2000	on	on	off	off
20	4000	on	off	on	off
25	5000	on	off	off	off
50	10000	off	on	on	off
100	20000	off	on	off	off

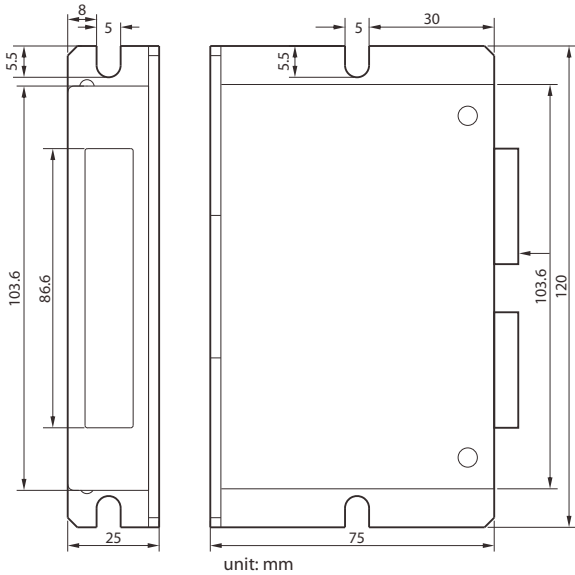
Output Current Setting

Dynamic Current	Peak Current (A)	SW1	SW2	SW3
1.5	off	off	off	off
2.1	on	off	off	off
2.7	off	on	off	off
3.3	on	on	off	off
3.9	off	off	off	on
4.5	on	off	off	on
5.1	off	on	on	on
5.6	on	on	on	on

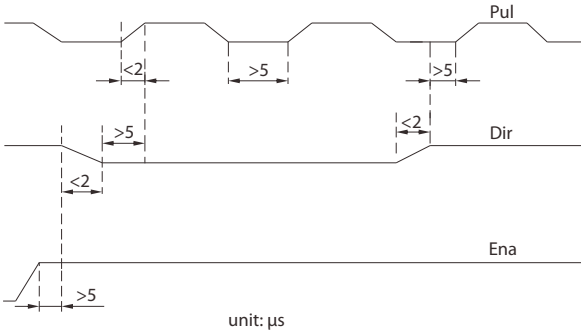
Standstill Current

- SW4 defines the standstill current.
- Status “off” is to set the standstill current as 60% of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

Mechanical Structure



Sequence Chart of Control System



DMD808A (2-phase)

Features

- Dual H-bridge, Pulse width modulated current control, chopping at 20 KHz
- TTL compatible and optically isolated input
- Max Step/rev. up to 51200
- Input Voltage 24-90 VDC
- Max output driving current 7.7A/phase
- Over current protection
- CE compliant



Electrical Specifications

Tj=25°C

Parameters	Min.	Typical	Max.	Unit
Output Current	2.8	-	7.7	A
Power Supply	24	68	90	VDC
Logical Current	6	10	30	mA
Pulse Frequency	0	-	200	KHz
Pulse Active-low	5	-	-	µs
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.46	-	Kg

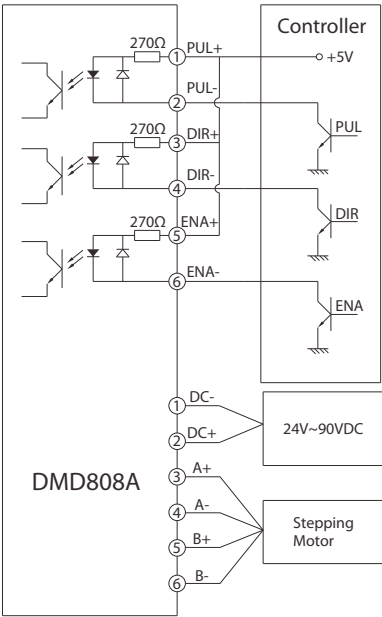
Operation Environment

Condition	Caution	Avoid dust and corrosive air/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s² Max
Storage Temperature		-20°C ~+65°C

Pins

Pin	Description
Pul+	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
Pul-	
Dir+	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
Dir-	
Ena+	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through), Active-low for disabling the driver (optical-isolation is through).
Ena-	
DC-	Power Ground
DC+	Power Supply, +24~90VDC, including voltage fluctuation and EMF voltage.
A+	Motor Phase A
A-	
B+	Motor Phase B
B-	

Typical System Connection



Micro-step Setting

Micro-step	Step/rev. (1.8° Motor)	SW5	SW6	SW7	SW8
1	200	off	off	off	off
2	400	on	on	on	on
4	800	on	off	on	on
8	1600	on	on	off	on
16	3200	on	off	off	on
32	6400	on	on	on	off
64	12800	on	off	on	off
128	25600	on	on	off	off
256	51200	on	off	off	off
5	1000	off	on	on	on
10	2000	off	off	on	on
25	5000	off	on	off	on
50	10000	off	off	off	on
125	25000	off	on	on	off
250	50000	off	off	on	off

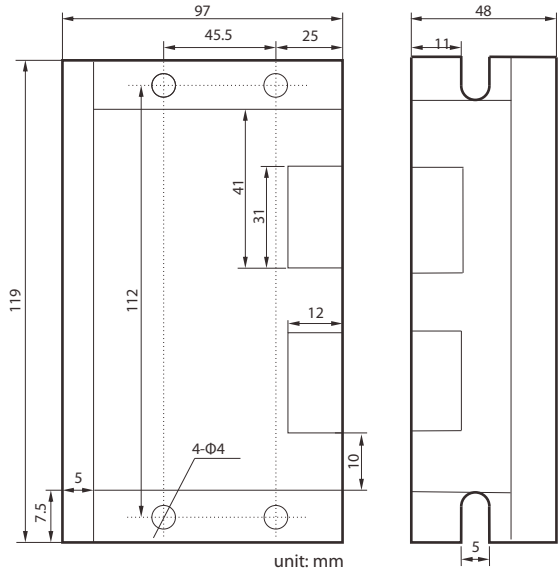
Output Current Setting

Peak Current (A)	SW1	SW2	SW3
2.8	on	on	on
3.5	off	on	on
4.2	on	off	on
4.9	off	off	on
5.7	on	on	off
6.4	off	on	off
7.0	on	off	off
7.7	off	off	off

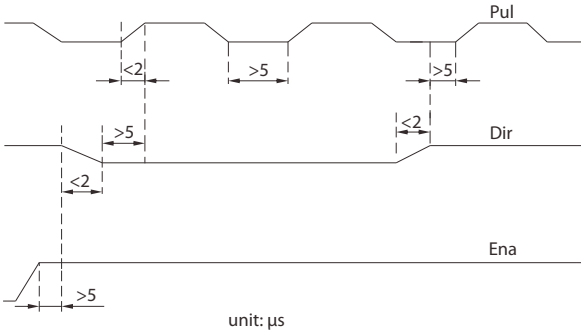
Standstill Current

- SW4 defines the standstill current.
- Status “off” is to set the standstill current as the half of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

Mechanical Structure



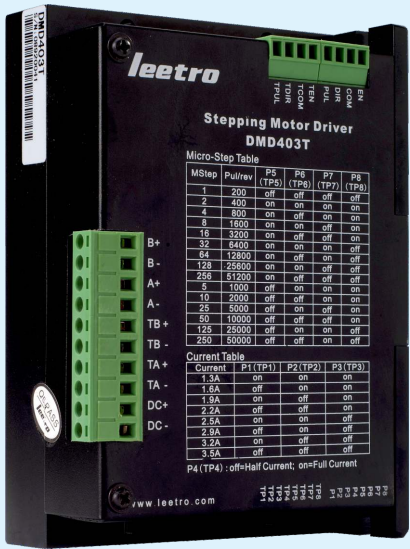
Sequence Chart of Control System



DMD403T (2-phase)

Features

- One drives two motors
- Dual H-bridge, Pulse width modulated current control, chopping at 20 KHz
- TTL compatible and optically isolated input
- Max Step/rev. up to 51200
- Input Voltage 24-40 VDC
- Switch selectable motor current 1.3 – 3.5A/phase
- Over current protection
- CE compliant



Electrical Specifications

Tj=25°C

Parameters	Min.	Typical	Max.	Unit
Output Current	1.3	-	3.5	A
Power Supply	24	32	40	VDC
Logical Current	6	10	30	mA
Pulse Frequency	0	-	200	KHz
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.52	-	Kg

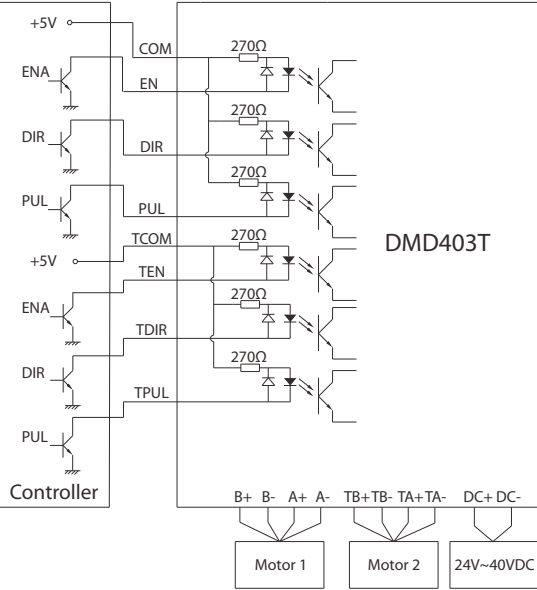
Operation Environment

Condition	Caution	Avoid dust and corrosive air/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s² Max
Storage Temperature		-20°C ~+65°C

Pins

Pin	Description
EN	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through), Active-low for disabling the driver (optical-isolation is through).
TEN	
COM	+5VDC for optical-isolation, max 15mA
TCOM	
DIR	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
TDIR	
PUL	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
TPUL	
B+	Motor-1 Phase B
B-	
A+	Motor-1 Phase A
A-	
TB+	Motor-2 Phase B
TB-	
TA+	Motor-2 Phase A
TA-	
DC+	Power Supply, +24~40VDC, including voltage fluctuation and EMF voltage.
DC-	Power Ground

Typical System Connection



Micro-step Setting

Micro-step	Step/rev. (1.8° Motor)	P5(TP5)	P6(TP6)	P7(TP7)	P8(TP8)
1	200	off	off	off	off
2	400	on	on	on	on
4	800	on	off	on	on
8	1600	on	on	off	on
16	3200	on	off	off	on
32	6400	on	on	on	off
64	12800	on	off	on	off
128	25600	on	on	off	off
256	51200	on	off	off	off
5	1000	off	on	on	on
10	2000	off	off	on	on
25	5000	off	on	off	on
50	10000	off	off	off	on
125	25000	off	on	on	off
250	50000	off	off	on	off

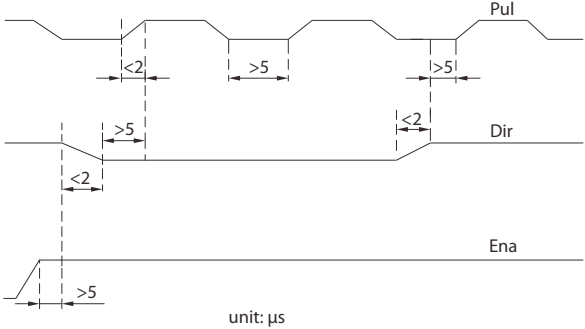
Output Current Setting

Dynamic Current	Peak Current (A)	P1(TP1)	P2(TP2)	P3(TP3)
1.3	on	on	on	on
1.6	off	on	on	on
1.9	on	off	on	on
2.2	off	off	on	on
2.5	on	on	off	on
2.9	off	on	off	on
3.2	on	off	off	on
3.5	off	off	off	on

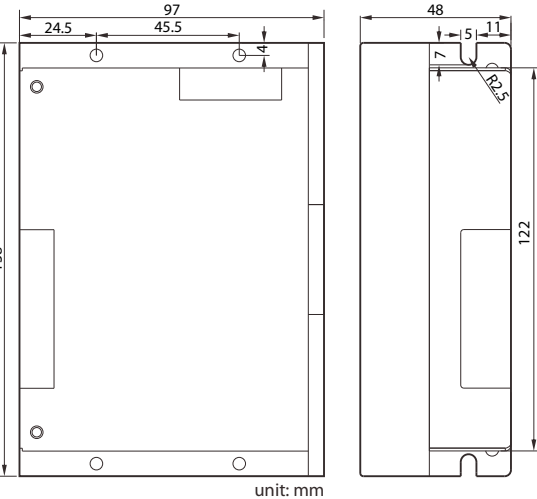
Standstill Current

- P4 (TP4) defines the standstill current.
- Status “off” is to set the standstill current as the half of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

Sequence Chart of Control System



Mechanical Structure



DMDT506 (3-phase)

Features

- Input power up to 50VDC
- Up to 200KHz Pulse response frequency
- TTL compatible and optically isolated input
- Micro-steps up to 10000-pulse per revolution
- Output current up to 5.8A/phase
- Over-voltage, over-current protections



Electrical Specifications

T_j=25°C

Parameters	Min.	Typical	Max.	Unit
Output Current (RMS)	1.8	-	5.8	A
Power Supply	12	36	50	VDC
Logical Current	6	10	30	mA
Pulse Frequency	0	-	200	KHz
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.35	-	Kg

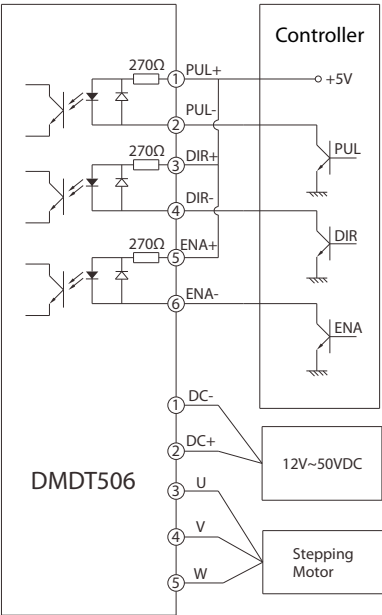
Operation Environment

Condition	Caution	Avoid dust and corrosive gas/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s ² Max
Storage Temperature		-20°C ~+70°C

Pins

Pin	Description
PUL+	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
PUL-	
DIR+	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
DIR-	
ENA+	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through), Active-low for disabling the driver (optical-isolation is through).
ENA-	
DC-	Power Ground
DC+	Power Supply, +12~50VDC, including voltage fluctuation and EMF voltage.
U	Motor Phase U
V	Motor Phase V
W	Motor Phase W

Typical System Connection



Micro-step Setting

Micro-step	Step/rev. (1.2° Motor)	SW5	SW6	SW7	SW8
1	200	on	on	on	on
2	400	off	on	on	on
2.5	500	on	off	on	on
3	600	off	off	on	on
4	800	on	on	off	on
5	1000	off	on	off	on
6	1200	on	off	off	on
8	1600	off	off	off	on
10	2000	on	on	on	off
12.5	2500	off	on	on	off
15	3000	on	off	on	off
20	4000	off	off	on	off
25	5000	on	on	off	off
30	6000	off	on	off	off
40	8000	on	off	off	off
50	10000	off	off	off	off

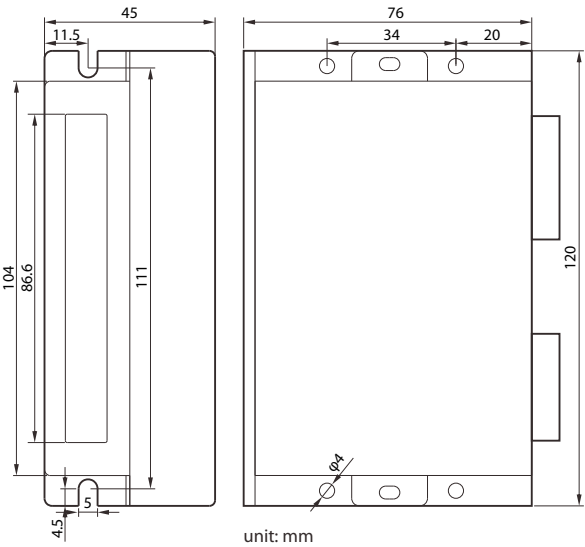
Output Current Setting

RMS Current (A)	SW1	SW2	SW3
1.8	off	off	off
2.4	on	off	off
2.9	off	on	off
3.5	on	on	off
4.0	off	off	on
4.6	on	off	on
5.2	off	on	on
5.8	on	on	on

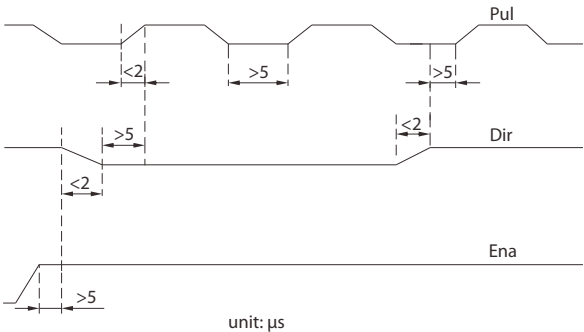
Standstill Current

- SW4 defines the standstill current.
- Status “off” is to set the standstill current as 60% of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

Mechanical Structure



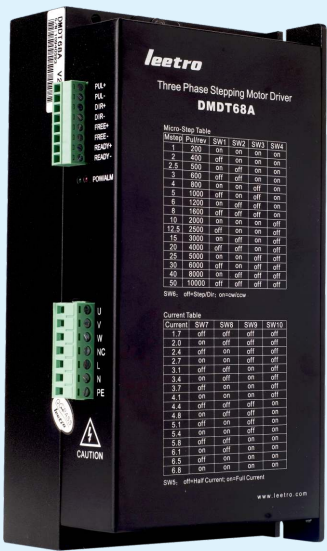
Sequence Chart of Control System



DMDT68A (3-phase)

Features

- PWM Constant wave chopper
- Up to 400KHz Pulse response frequency
- TTL compatible and optically isolated input
- 16-level currents, Max current 6.8A/phase (RMS)
- 16-level Micro-steps, up to 10000-pulse per revolution
- Auto semi-current while in still status
- Over-current protections
- Support PUL/DIR (default) and CW/CCW modes
- AC160-245V power supply



Electrical Specifications

Tj=25°C

Parameters	Min.	Typical	Max.	Unit
Output Current (RMS)	1.7	-	6.8	A
Power Supply	160	220	245	VAC
Logical Current	6	10	30	mA
Pulse Frequency	0	-	400	KHz
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	1.4	-	Kg

Operation Environment

Condition	Caution	Avoid dust and corrosive gas/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s² Max
Storage Temperature		-20°C ~+65°C

Output Current Setting

Dynamic Current

Peak Current (A)	RMS Current (A)	SW7	SW8	SW9	SW10
2.4	1.7	off	off	off	off
2.8	2.0	on	off	off	off
3.4	2.4	off	on	off	off
3.8	2.7	on	on	off	off
4.4	3.1	off	off	on	off
4.8	3.4	on	off	on	off
5.2	3.7	off	on	on	off
5.8	4.1	on	on	on	off
6.2	4.4	off	off	off	on
6.7	4.8	on	off	off	on
7.1	5.1	off	on	off	on
7.6	5.4	on	on	off	on
8.2	5.8	off	off	on	on
8.6	6.1	on	off	on	on
9.1	6.5	off	on	on	on
9.6	6.8	on	on	on	on

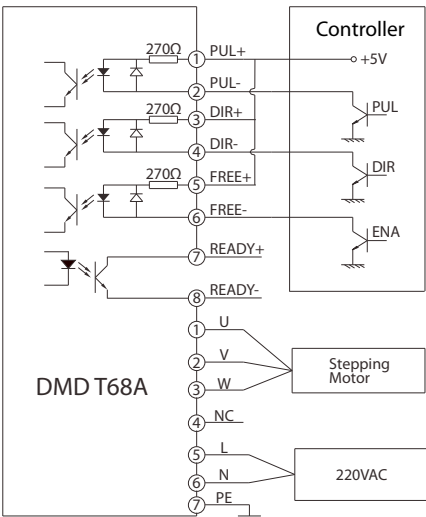
Standstill Current

- SW5 defines the standstill current.
- Status “off” is to set the standstill current as the half of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

Pins

Pin	Description
PUL+	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
PUL-	
DIR+	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
DIR-	
FREE+	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through), Active-low for disabling the driver (optical-isolation is through).
FREE-	
READY+	Input Ready +, to controller, Max 30VDC, 20mA
READY-	Output Ready -
U	Motor Phase U
V	Motor Phase V
W	Motor Phase W
NC	Not Available
L	Power Supply, +160~245VAC, including voltage fluctuation and EMF voltage.
N	
PE	Protecting Earthing

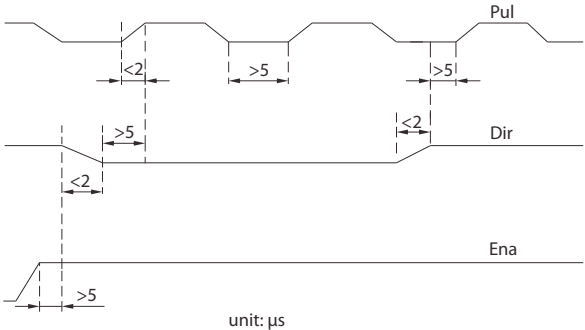
Typical System Connection



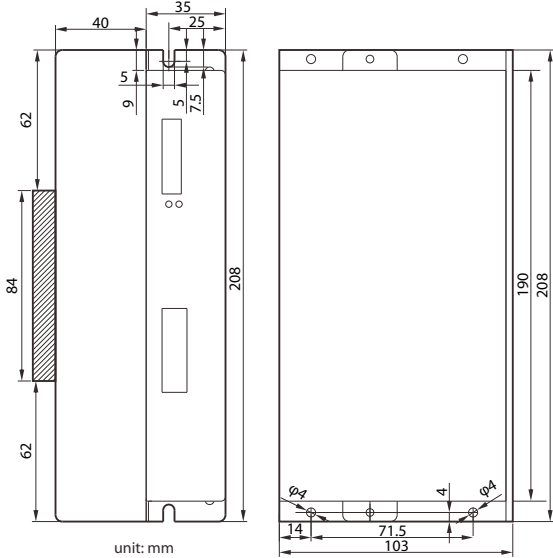
Micro-step Setting

Micro-step	Step/rev. (1.2° Motor)	SW1	SW2	SW3	SW4
1	200	on	on	on	on
2	400	off	on	on	on
2.5	500	on	off	on	on
3	600	off	off	on	on
4	800	off	off	off	on
5	1000	off	on	off	on
6	1200	on	off	off	on
8	1600	off	off	off	on
10	2000	on	on	on	off
12.5	2500	off	on	on	off
15	3000	on	off	on	off
20	4000	off	off	on	off
25	5000	on	on	off	off
30	6000	off	on	off	off
40	8000	on	off	off	off
50	10000	off	off	off	off

Sequence Chart of Control System



Mechanical Structure



DMDT506T (3-phase)

Features

- One driver fits two motors
- Input power up to 50VDC
- Up to 200KHz Pulse response frequency
- TTL compatible and optically isolated input
- Micro-steps up to 10000-pulse per revolution
- Outputting current up to 5.8A/phase
- Over-voltage, over-current protections



Electrical Specifications

Tj=25°C

Parameters	Min.	Typical	Max.	Unit
Output Current (RMS)	1.8	-	5.8	A
Power Supply	12	36	50	VDC
Logical Current	6	10	30	mA
Pulse Frequency	0	-	200	KHz
Isolation Resistance	500	-	-	MΩ
Approx. Net Weight	-	0.67	-	Kg

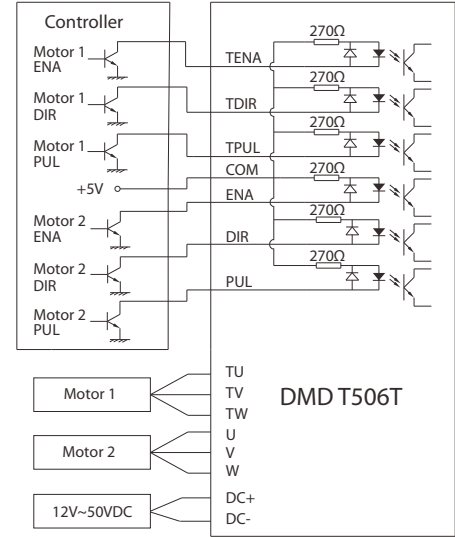
Operation Environment

Condition	Caution	Avoid dust and corrosive gas/oil
	Temp.	0°C ~+50°C
	Humidity	Under 90% RH
	Vibration	5.9m/s² Max
Storage Temperature		-20°C ~+70°C

Pins

Pin	Description
TENA	This signal is used for enabling/disabling the driver. Active-high for enabling the driver (optical-isolation is not through), Active-low for disabling the driver (optical-isolation is through).
ENA	
TDIR	This Active-high/low signal is used for determining the rotate direction of motor. Please note that rotation direction is also related to the connection of motor wires.
DIR	
TPUL	One step ahead when the pulse rising edge is active. Step distance is subject to the micro-step.
PUL	
COM	+5VDC for optical-isolation, max 15mA
TU	Motor-1 Phase U
TV	Motor-1 Phase V
TW	Motor-1 Phase W
U	Motor-2 Phase U
V	Motor-2 Phase V
W	Motor-2 Phase W
DC+	Power Supply, +12~50VDC, including voltage fluctuation and EMF voltage.
DC-	Power Ground

Typical System Connection



Micro-step Setting

Micro-step	Step/rev. (1.2° Motor)	SW5 (TSW5)	SW6 (TSW6)	SW7 (TSW7)	SW8 (TSW8)
1	200	on	on	on	on
2	400	off	on	on	on
2.5	500	on	off	on	on
3	600	off	off	on	on
4	800	on	on	off	on
5	1000	off	on	off	on
6	1200	on	off	off	on
8	1600	off	off	off	on
10	2000	on	on	on	off
12.5	2500	off	on	on	off
15	3000	on	off	on	off
20	4000	off	off	on	off
25	5000	on	on	off	off
30	6000	off	on	off	off
40	8000	on	off	off	off
50	10000	off	off	off	off

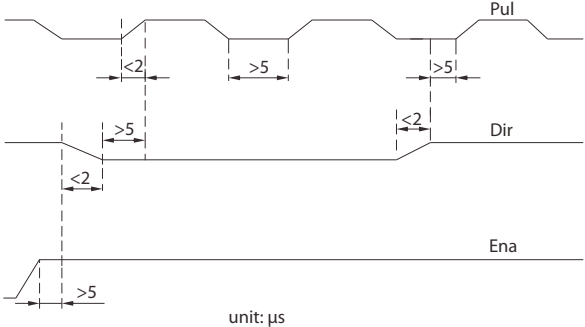
Output Current Setting

RMS Current (A)	SW1 (TSW1)	SW2 (TSW2)	SW3 (TSW3)
1.8	off	off	off
2.4	on	off	off
2.9	off	on	off
3.5	on	on	off
4.0	off	off	on
4.6	on	off	on
5.2	off	on	on
5.8	on	on	on

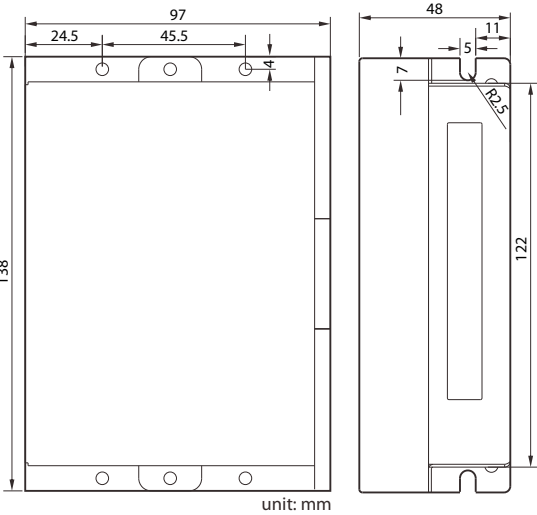
Standstill Current

- SW4 (TSW4) defines the standstill current.
- Status “off” is to set the standstill current as 60% of dynamic current.
- Status “on” is to set the standstill current as same as the dynamic current.

Sequence Chart of Control System

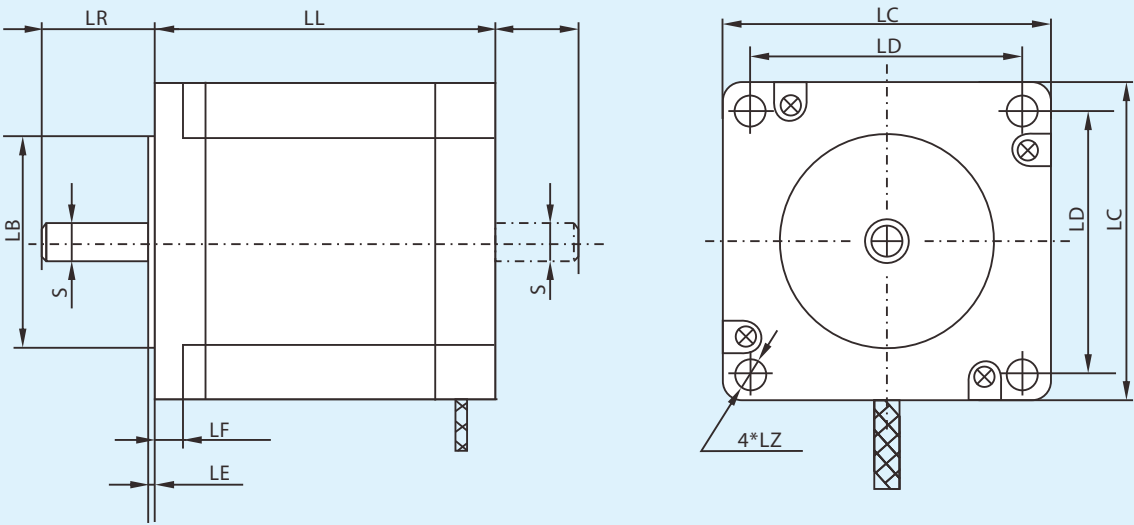
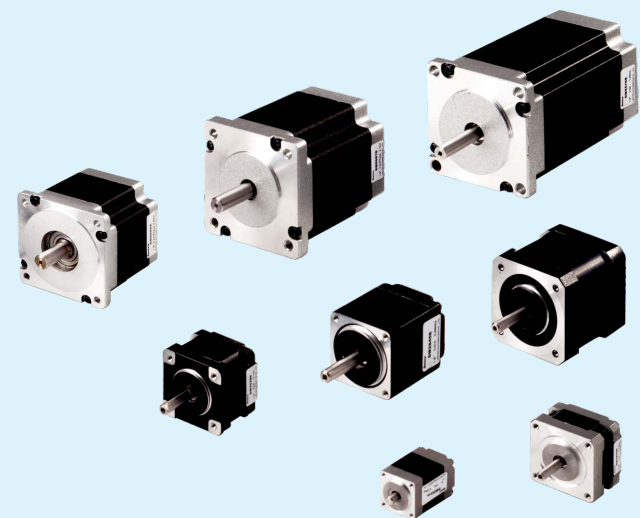


Mechanical Structure



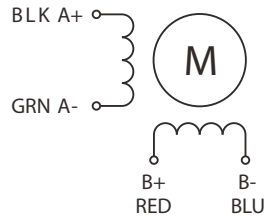
2-phase Hybrid Stepping Motor

Step Angle	1.8°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80°C Max. (rated current, 2 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	100MΩMin., 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	0.02Max. (450 g-load)
Shaft Axial Play	0.08Max. (450 g-load)
Max. Radial Force	20N~220N (20mm from the flange)
Max. Axial Force	2N~60N

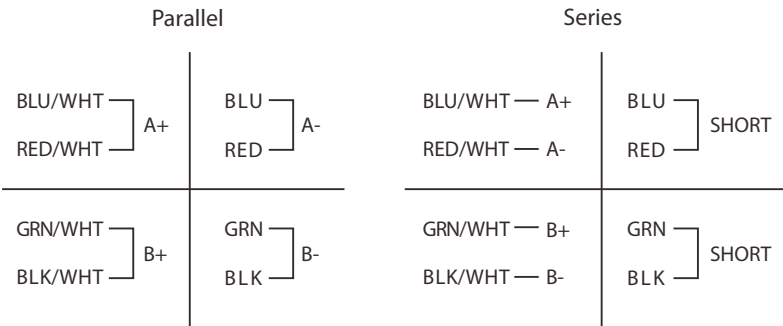
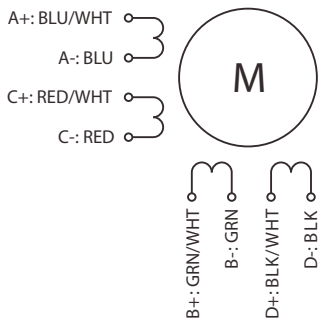


Wiring

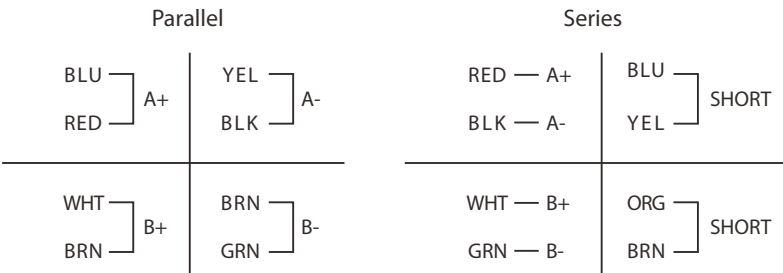
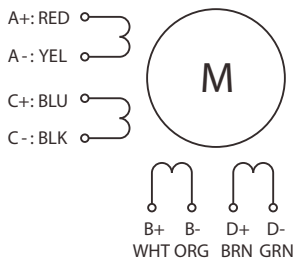
DM20xxE, DM28xxE, DM35xxE, DM39xxE, DM42xxE and DM56xxE Series



DM60xxE Series



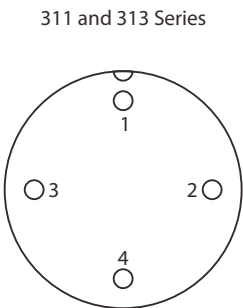
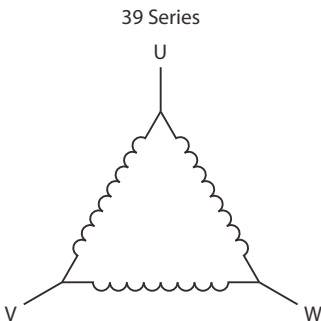
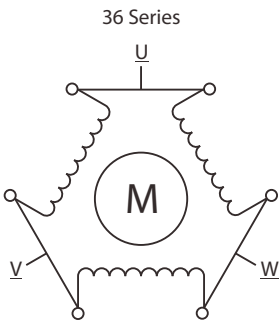
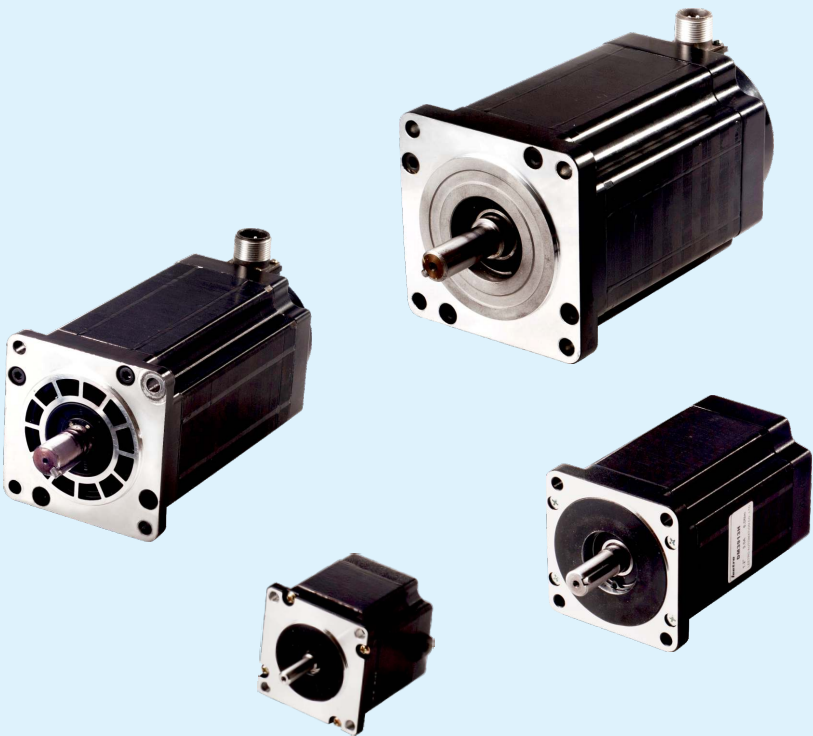
DM86xxE Series



Model		Electrical												Mechanical											
		Holding Torque (Nm)	Detent Torque (Nm)	Rated Voltage(V)		Current/Phase (A)		Resistance/Phase (Ω)		Inductance/Phase (mH)		Rotor Inertia (g-cm ²)	# of Leads	LL (mm)	LR (mm)	LF (mm)	LE (mm)	LB (mm)	S (mm)	LC (mm)	LD (mm)	LZ (mm)	Key (mm)	Weight (Kg)	Driver
				Parallel	Series	Parallel	Series	Parallel	Series	Parallel	Series														
20 Series	DM2033E	0.018	N/A	3.9		0.6		6.5		1.7		2.0	4	33	6.5	N/A	1.5	15.0	4.0	20.2	16.0	2	N/A	0.06	DMD202A/402A
	DM2042E	0.03	N/A	4.32		0.8		5.4		1.5		3.6	4	42	15	N/A	1.5	15.0	4.0	20.2	16.0	2	N/A	0.08	DMD202A/402A
28 Series	DM2832E	0.06	N/A	3.8		0.67		5.6		3.4		9	4	31.5	20	N/A	2.0	22.0	5.0	28.2	23	2.5	N/A	0.11	DMD202A/402A
	DM2845E	0.095	N/A	4.56		0.67		6.8		4.9		12	4	44.5	20	N/A	2.0	22.0	5.0	28.2	23	2.5	N/A	0.14	DMD202A/402A
35 Series	DM3528E	0.10	N/A	10		0.5		20		18		11	4	28	21	N/A	2.0	22.0	5.0	35.2	26	3	N/A	0.14	DMD202A/402A
	DM3536E	0.14	N/A	2.7		1.0		2.7		4.3		14	4	36	21	N/A	2.0	22.0	5.0	35.2	26	3	N/A	0.18	DMD202A/402A
39 Series	DM3934E	0.21	0.012	12		0.4		30		32		20	4	34	24	N/A	2.0	22.0	5.0	39.3	31	3	N/A	0.18	DMD202A/402A
	DM3938E	0.29	0.018	12		0.5		24		45		24	4	38	24	N/A	2.0	22.0	5.0	39.3	31	3	N/A	0.20	DMD202A/402A
42 Series	DM4234E	0.22	0.012	2.8		0.4		24		15		35	4	34	24	N/A	2.0	22.0	5.0	42.3	31	3	N/A	0.22	DMD202A/402A
	DM4240E	0.32	0.016	5.8		0.8		6.8		17.6		35	4	40	24	N/A	2.0	22.0	5.0	42.3	31	3	N/A	0.22	DMD202A/402A
	DM4250E	0.45	0.025	5.2		1.2		4.33		6.5		68	4	48	24	N/A	1.6	22.0	5.0	42.3	31	3	N/A	0.35	DMD202A/402A
56 Series	DM5641E	0.55	0.021	2		2.8		0.7		1.4		120	4	41	20.6	5	1.6	38.1	6.35	56.4	47.14	5	N/A	0.45	DMD403A/605
	DM5651E	1.01	0.036	2.3		2.8		0.83		2.2		275	4	51	20.6	5	1.6	38.1	6.35	56.4	47.14	5	N/A	0.65	DMD403A/605
	DM5656E	1.26	0.04	2.5		2.8		0.90		2.5		300	4	56	20.6	5	1.6	38.1	6.35	56.4	47.14	5	N/A	0.70	DMD403A/605
	DM5676E	1.89	0.068	3.2		2.8		1.13		3.6		480	4	76	20.6	5	1.6	38.1	6.35	56.4	47.14	5	N/A	1.00	DMD403A/605
60 Series	DM6047E	1.10	N/A	1.4	2.1	4.2	2.8	0.75	3.0	2	8	275	8	47	24	5	1.6	38.1	8	60	47.14	4.5	N/A	0.60	DMD403A/605
	DM6056E	1.65	N/A	1.4	2.52	5.04	2.8	0.9	3.6	3.6	14.4	300	8	56	24	5	1.6	38.1	8	60	47.14	4.5	N/A	0.77	DMD403A/605
	DM6067E	2.10	N/A	1.4	3.36	6.72	2.8	1.2	4.8	4.6	18.4	570	8	67	24	5	1.6	38.1	8	60	47.14	4.5	N/A	1.20	DMD403A/605
	DM6088E	3.10	N/A	1.4	4.17	8.4	2.8	1.5	6.0	6.8	27.2	840	8	88	24	5	1.6	38.1	8	60	47.14	4.5	N/A	1.40	DMD403A/605
86 Series	DM8665E	3.4	N/A	1.40	2.1	4.00	2.80	0.7	2.8	1.95	7.8	1000	8	65	31.75	8.38	1.52	73.02	12	85.85	69.5	5.5	5*25	1.70	DMD605/808A
	DM8680E	4.6	N/A	2.12	2.1	6.00	4.24	0.375	1.5	1.7	6.8	1400	8	80	31.75	8.38	1.52	73.02	12	85.85	69.5	5.5	5*25	2.30	DMD605/808A
	DM86118E	8.7	N/A	2.10	2.1	6.00	4.20	0.45	1.8	3.0	12.0	2700	8	118	31.75	8.38	1.52	73.02	12	85.85	69.5	5.5	5*25	3.80	DMD605/808A

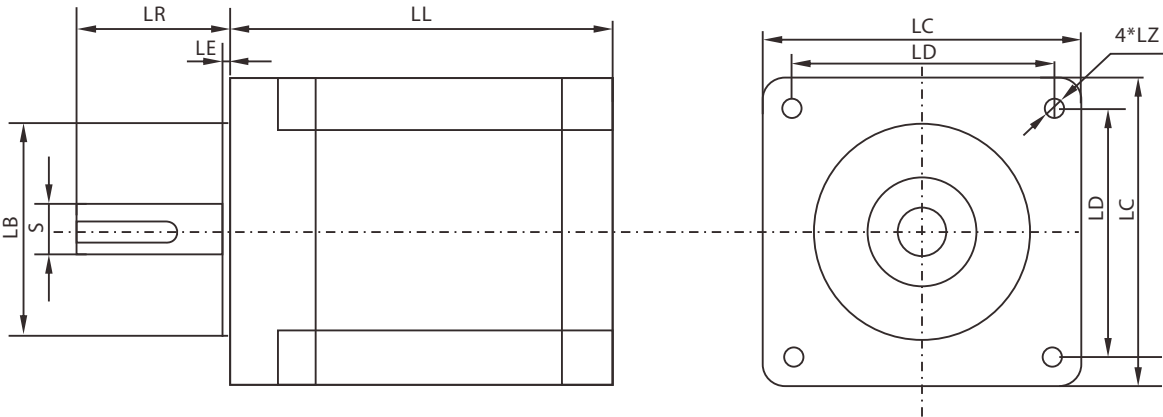
3-phase Hybrid Stepping Motor

Step Angle	1.2°
Step Angle Accuracy	±5% (full step, no load)
Resistance Accuracy	±10%
Inductance Accuracy	±20%
Temperature Rise	80°C Max. (rated current, 3 phase on)
Ambient Temperature	-20°C~+50°C
Insulation Resistance	100MΩMin., 500VDC
Dielectric Strength	500VAC for one minute
Shaft Radial Play	0.02Max. (450 g-load)
Shaft Axial Play	0.08Max. (450 g-load)
Max. Radial Force	75N~220N (20mm from the flange)
Max. Axial Force	15N~60N



Socket for 311 and 313 Series

Number	1	2	3	4
Phase Sequence	U	V	W	GND



Model		Electrical								Mechanical										
		Holding Torque (Nm)	Detent Torque (Nm)	Rated Voltage (V)	Current/Phase (A)	Resistance/Phase (Ω)	Inductance/Phase (mH)	Rotor Inertia (g·cm ²)	# of Leads	LL (mm)	LR (mm)	LE (mm)	LB (mm)	S (mm)	LC (mm)	LD (mm)	LZ (mm)	Key (mm)	Weight (Kg)	Driver
36 Series	DM364	0.45	0.021	6.76	5.2	1.3	1.4	110.0	6	42	20.6	1.6	38.1	6.35	56.4	47.14	5	N/A	0.45	DMDT506
	DM366	0.9	0.04	4.0	5.6	0.7	1.7	300.0	6	56	20.6	1.6	38.1	6.35	56.4	47.14	5	N/A	0.75	DMDT506
	DM368	1.5	0.068	6.0	5.8	1.05	2.4	480.0	6	79	20.6	1.6	38.1	8	56.4	47.14	5	N/A	1.10	DMDT506
39 Series	DM397H	2.0	N/A	325	1.75	N/A	N/A	1320	3	69	30	2	73	12	85	69.5	6.6	4*20	2.0	DMDT68A
	DM397L	2.0	N/A	40	5.8	N/A	N/A	1320	3	69	30	2	73	12	85	69.5	6.6	4*20	2.0	DMDT506
	DM3910H	4.0	N/A	325	2.0	N/A	N/A	2400	3	97	30	2	73	12	85	69.5	6.6	4*20	3.0	DMDT68A
	DM3910L	4.0	N/A	40	5.8	N/A	N/A	2400	3	97	30	2	73	12	85	69.5	6.6	4*20	3.0	DMDT506
	DM3913H	6.0	N/A	325	2.25	N/A	N/A	3800	3	125	30	2	73	14	85	69.5	6.6	4*20	4.0	DMDT68A
	DM3913L	6.0	N/A	40	5.8	N/A	N/A	3480	3	125	30	2	73	14	85	69.5	6.6	4*20	4.0	DMDT506
311 Series	DM31112	8.0	N/A	120~310	4.3	N/A	N/A	6000	4	124.5	40	4	85	19	110	93.3	9	6*30	5.0	DMDT68A
	DM31115	12.0	N/A	120~310	6.0	N/A	N/A	9720	4	148	40	4	85	19	110	93.3	9	6*30	6.6	DMDT68A
	DM31118	16.0	N/A	120~310	6.4	N/A	N/A	13560	4	182	40	4	85	19	110	93.3	9	6*30	9.0	DMDT68A
	DM31122	20.0	N/A	120~310	6.9	N/A	N/A	17400	4	216	40	4	85	19	110	93.3	9	6*30	11.1	DMDT68A
313 Series	DM31318	20.0	N/A	120~310	4.0	N/A	N/A	26700	4	183	50	3	110	24	132	109.6	10.5	8*30	14.1	DMDT68A
	DM31322	28.0	N/A	120~310	4.0	N/A	N/A	33970	4	215	50	3	110	24	132	109.6	10.5	8*30	17.2	DMDT68A
	DM31325	35.0	N/A	120~310	4.0	N/A	N/A	41240	4	247	50	3	110	24	132	109.6	10.5	8*30	19.8	DMDT68A

Laser Power Supply, BJ-801



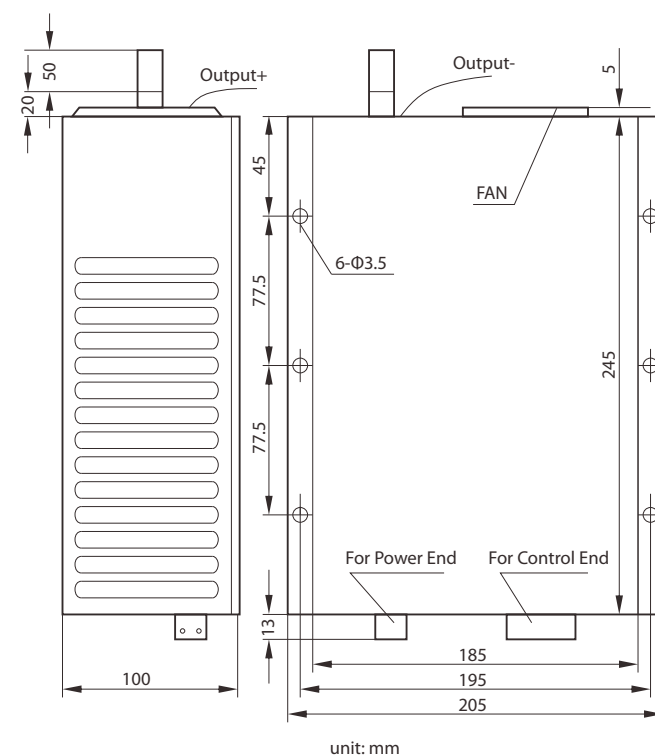
- This power supply is exclusively designed for CO₂ glass laser tube. The output current can be set by user.

Electrical Specifications

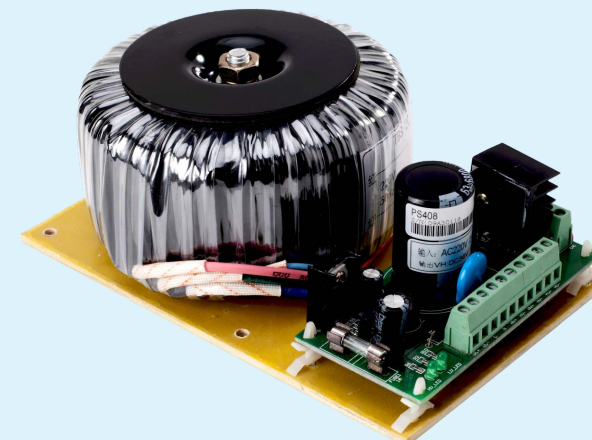
Working Environment Condition	Temperature	-10 ~+40°C
	Moisture	≤85%
Output	Voltage	Max DC35KV
	Current	DC (0~28) mA
Input	L, N and PE Wires, 50Hz 220V±10%	
Accuracy	2%	
Efficiency	95%	
Protected Current	28±1mA	
Response Time	0.2 ms	
Switch	0 and 1, TTL	
Power	80W (60W compatible)	
Power Adjustment	0~5V analog or PWM signal	
Size	245*185*100 mm	
Approx. Weight	Net 3.1 Kg, Gross 3.5Kg	

The Pin Definition

Pin	Definition
5V	Internal +5V
IN	Power Control, 0~5V analog or PWM
G	Working Ground
P	Water Protection Switch
L	Active-low
H	Active-high
AC/L	Live Wire
AC/N	Working Neutral wire
FG	Grounding for Safety



Linear Power Supply, PS408



Features

- Simple Structure, more reliable
- Supports 1-4 axes power supply, more cost-effective
- With Accessory Power Supply (+5 or +12VDC)
- Power-off with replaceable fuse in case of short circuit

Specifications

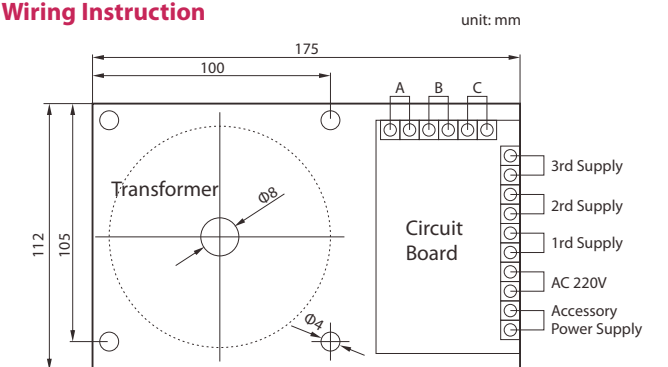
Output Voltage/Current	Accessory Voltage/Current	Power	Compatible Driver Model	Size (mm)	Net Weight
Default DC36V/8A Max.DC40V/8A	DC 5V/1A or DC 12V/1A	300W	DMD403A/T, DMD402A DMDT506/T506T DMD605	175*112*70	3.5Kg

Accessory Power Supply

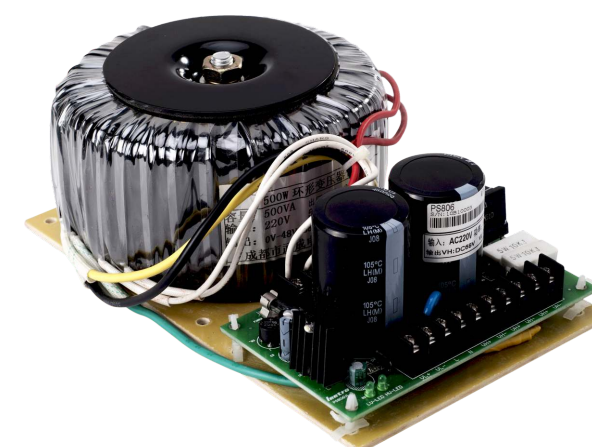
Voltage	JP1 Jumper
5V	Connected
12V	Disconnected

A: AC12V, yellow-yellow
B: AC26-29V, black-0V, white-26V (default), blue-29V
C: AC220V, red-red

Wiring Instruction



Linear Power Supply, PS806



Wiring Method

L, N	Input AC 220V
VH+, VH+, VH+	3-way, DC Output +
VH-, VH-, VH-	3-way, DC Output -
VL+	Accessory Power Supply +
VL-	Accessory Power Supply -

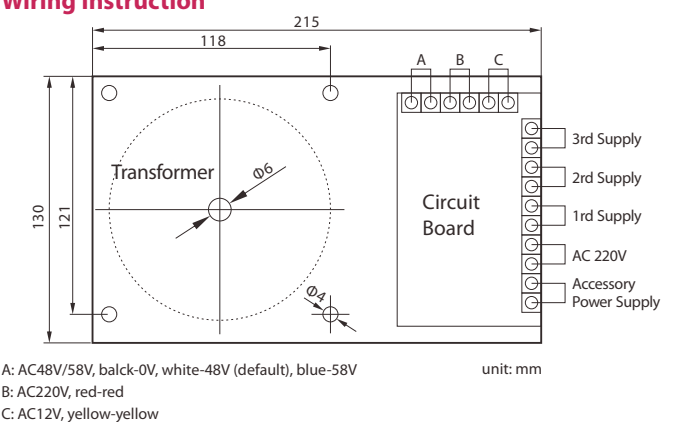
Features

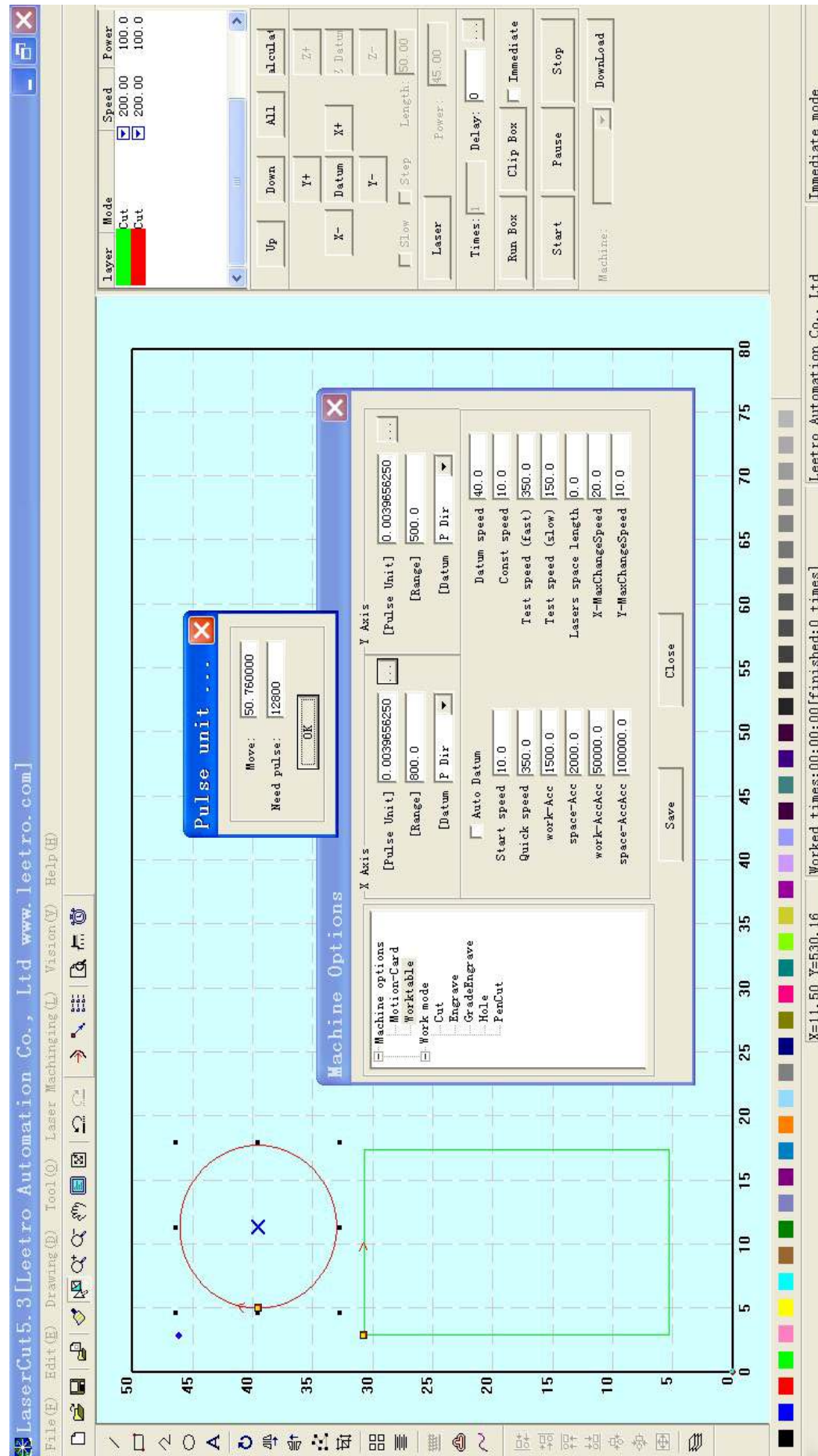
- Simple Structure, more reliable
- Supports 1-4 axes power supply, more cost-effective
- With Accessory Power Supply (+5 VDC)
- Power-off with replaceable fuse in case of short circuit

Specifications

Output Voltage/Current	Accessory Voltage/Current	Power	Compatible Driver Model	Size (mm)	Net Weight
Default DC68V/6A Max. DC80V/6A	DC 5V/1A	500W	DMD808A	215*130*70	5.0Kg

Wiring Instruction





Software Features Description

This Software is for Leetro's laser-dedicated controllers exclusively

LaserCut software developed by Leetro Automation Co., Ltd. It is applied to laser engraving and cutting system based on MPC03 and MPC65x5 series.

Features:

- Seamless connection with CorelDraw and AutoCAD makes the operation much easier.
- Supports data formats such as AI, BMP, PLT, DXF, DST (Tajima Software).
- After graphics & image data being called in, the system will carry out simple makeup and edit (such as zooming, rotating, reproducing)
- The software can hierarchically output data and easily set the output power, output speed and output mode (engrave, cut) and automatically save the defined parameters of every layer.
- The software can engrave the image, scribe, cut and engrave the vector diagram and set engraving precision.
- The software supports array output and can automatically distribute the array to the entire workbench. The software can also display output effect through analog output. The origin location can be defined at random to facilitate processing.
- Pause and Continue are available during output and all output control operations.
- The software provides frame-tracing function during output so as to easily find the discharge location.
- Engraving speed can reach 1500mm/s, curve cutting speed can reach 500mm/s and engraving precision can reach 0.1mm.
- 360 degree grade engraving. The grade can be freely set and there is no limitation of speed (subject to the laser processing depth).
- Various path optimization options are available.
- Unique breakpoint processing function ensures that no rejected job will be produced even when power is suddenly cut.

Outstanding features compared with laser engraving:

- Advanced Position Compare Output Iron out the deviation problem in speedy engraving. The engraving speed is 90m/min, leading the like products.
- Distinct Look-Ahead Algorithm And Track-Fit Algorithm highly enhance the operating efficiency. Speed for cutting circles reaches 30 m/min.
- Advanced Synchronous Tracking Control Ensure the synchronous changes of the laser power and the speed of laser head's moving.
- Advanced PWM (Pulse-Width Modulated) Control Implement 360 degree grade engraving easily, increase the real-time capability in adjusting the laser power.
- No distortion in speedy cutting roundlet.

The image shows a full-page view of a notebook or worksheet. At the top, there is a solid red horizontal bar. Inside this bar, the word "Notes" is written in a white, bold, sans-serif font, positioned towards the left side. Below the red bar, the rest of the page is covered by a light gray grid pattern. The grid consists of small, uniform squares, typical of graph paper. There are no margins, text, or other markings on the page.

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