Micro Direct Drive Motor

μDDMotor

Miniature AC servomotor with high torque and high-resolution

Features

■ Built-in high performance encoder that enables direct fine positioning from resolutions of 1 arc-sec.

■ Delivers high torque using high performance magnets and high density winding technology.

■ Delivers small size with the motor and encoder designed as a single unit.

■ Able to bear large loads directly through the use of a high stiffness bearing.

■ Able to support hollow shaft structures.

■ Customized designs are supported to suit our customer needs.

MC Driver

MD series

MICROTECH LABORATORY INC.

Delivering a lineup with a wide range of application options of compact high-performance next-generation servomotors with built in encoders.

MDS−13 series

The world's smallest direct drive motor.
Perfect for light work gripper such as electronic part.

- Body diameter: φ13 mm
  Body length: 26/32/38 mm
- Max torque: 7/15/25 mN·m
- Max speed: 3000 rpm
- Max resolution: 11 bit

MDS/MDH−20 series

The smallest through-shaft servomotor in the world.
Perfect for end effector (hand, gripper, Zθ unit) with through-shaft.
It could be used for small hand in combination with low slowdown rate gear.

- Body diameter: φ21 mm
  Body length: 32/38/44 mm
- Max torque: 40/90/130 mN·m
- Max speed: 3000 rpm
- Max resolution: 288,000 P/R(Multiplied by 4), 18 bit
- Hollow diameter: φ2.6 mm (MDH type)

MDS/MDH−30 series

Perfect for highly-precise dispenser and small gimbal driving.

- Body diameter: φ30 mm
  Body length: 32/38/44 mm
- Max torque: 140/280/420 mN·m
- Max speed: 1000 rpm
- Max resolution: 432,000 P/R(Multiplied by 4), 19 bit
- Hollow diameter: φ4 mm (MDH type)

MDS/MDH−40 series

Perfect for end effector (convey θ axis and for alignment purpose),
automation of production facility and robot (corresponds to wrest).
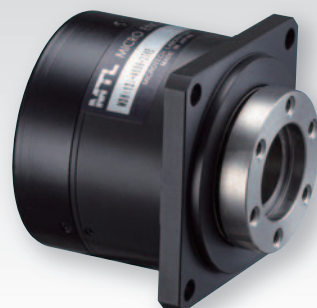
- Body diameter: φ40 mm
  Body length: 32/38/44 mm
- Max torque: 0.33/0.70/1.0 N·m
- Max speed: 450 rpm
- Max resolution: 1,296,000 P/R(Multiplied by 4), 20 bit
- Hollow diameter: φ6 mm (MDH type)

MDH(12)−40 series

Series of MDH-40 with larger internal diameter.
Internal diameter of φ12mm allows passing cable and laser etc.

- Body diameter: φ40 mm
  Body length: 32/38/44 mm
- Max torque: 0.33/0.70/1.0 N·m
- Max speed: 450 rpm
- Max resolution: 1,296,000 P/R(Multiplied by 4)
- Hollow diameter: φ12 mm (MDH type)

NEW MDH-60 series

Small-sized large bore hollow shaft.
Perfect for end effector and robot joint etc.

- Body diameter: φ60 mm
  Body length: 32/38/44 mm
- Max torque: 1.1/2.1/2.7 N·m
- Max speed: 300 rpm
- Max resolution: 2,000,000 P/R(Multiplied by 4), 20 bit
- Hollow diameter: φ20 mm

MDH-70 series

Small-sized large diameter hollow shaft. Perfect for index table,
replacement of rotary actuator, robot (corresponds to elbow and shoulder)

- Body diameter: φ70 mm
  Body length: 32/38/44 mm
- Max torque: 1.0/2.2/3.1 N·m
- Max speed: 200 rpm
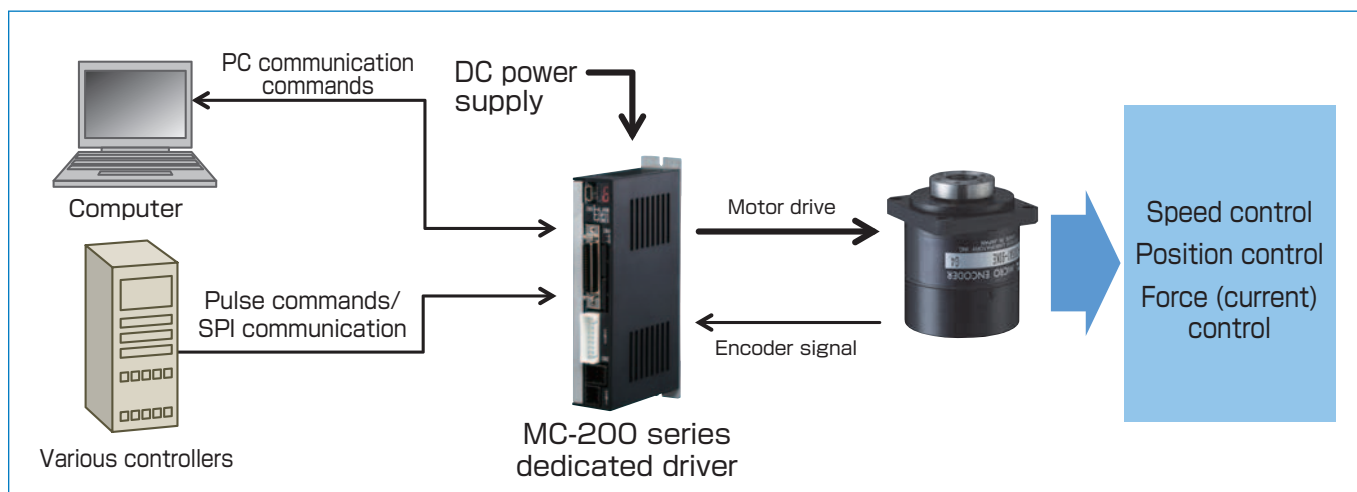- Max resolution: 2,592,000 P/R(Multiplied by 4), 21 bit
- Hollow diameter: φ25 mm

MC-200 series

Small-sized servo driver that maximizes the performance of µDD motor

- Size: 132×62.7×25mm
- Rated power supply: DC48V (DC24~72V input is possible)
- Output current: Peak: 20Arms Rated 3.5Arms
- Drive system: Sine wave PWM (50kHz)
- Control method: Position control / speed control / current control
- External command method: USB, I/O (Pulse input / analog voltage input), SPI
- Specific application: MTL Param (can be downloaded at https://motor.mtl.co.jp/)
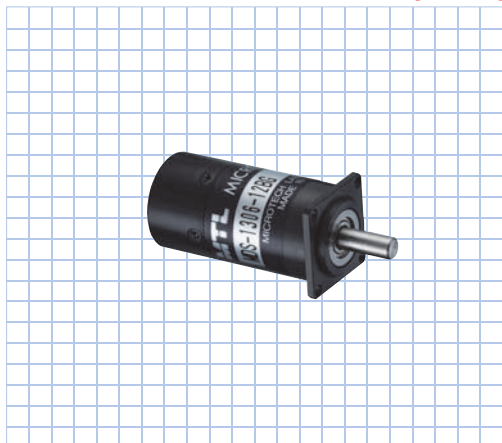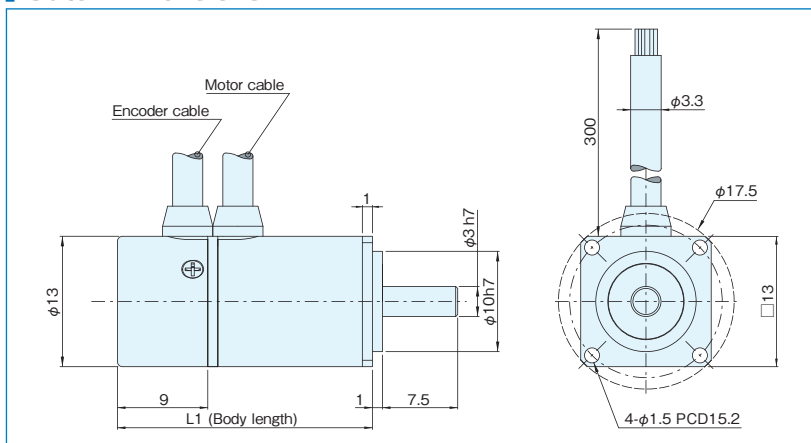
System structure

PC communication commands

DC power supply

Computer

Pulse commands/
SPI communication

Various controllers

Motor drive

Encoder signal

MC-200 series
dedicated driver

Speed control
Position control
Force (current)
control

MDS-13 series（Characteristic example）

MDS-13 [Full-scale]

Model	L1 dimension
MDS−1306	25.4
MDS−1312	31.4
MDS−1318	37.4

Outer Dimensions

Motor cable
Encoder cable

φ13
φ3 h7
φ10h7
9
1
1
7.5
L1 (Body length)

300
φ3.3
φ17.5
□13
4-φ1.5 PCD15.2

Standard models

MDS−13△−11B（Absolute）
△:Body length　06,12,18

Note: Only available with the MDS type.

MDS-13 series （Representative characteristics of standard models）

	Unit	MDS−1306	MDS−1312	MDS−1318
Input power（driver input）	DCV		24	
Maximum speed（＊1）	rpm		3000	
Rated speed	rpm		3000	
Peak torque at stall	mNm	7.0	15	25
Rated torque	mNm	3.0	5.5	8.0
Continuous rated torque	mNm	3.0	5.0	7.5
Peak power	W	2.0	4.0	8.0
Peak armature current	Arms	2.6	2.6	2.6
Rated armature current（＊2）	Arms	1.1	1.0	1.0
Voltage constant	V/krpm	0.28	0.61	1.0
Torque constant（at25℃）	Nm/Arms	2.7	5.8	9.6
Line armature resistance（at25℃）	Ω	1.1	1.8	2.5
Line armature inductance	mH	0.13	0.21	0.39
Rotor Poles	P		8	
Max encoder resolution（＊3）	P/R		Absolute:2,048（11bit）	
Moment of inertia J	g·cm^2	0.11	0.17	0.23
Permissible radial load Fr	N		20	
Permissible axial load Fa	N		10	
Allowable moment	Nm	0.4	0.5	0.6
Mass	kg	0.04	0.05	0.06
Repeated positioning accuracy at shuttling	Pulse		±1	
Applicable motor driver			MC−200−7220□	
Standard heat sink			55×55×4 Aluminum	

Note: (＊1) Please ask us if there is a speed you prefer.
　　　(＊2) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
　　　(＊3) Please ask us if there is a particular resolution you prefer.

Explanation of motor characteristic terminology

- **Peak armature current**·············· The maximum current that can flow through the motor momentarily, determined by the instantaneous heat capacity of the armature winding.
- **Rated armature current**·············· The maximum current that can flow through the motor continuously, determined from the degree of temperature increase of the motor.
- **Peak torque**··························· The maximum instantaneous torque that occurs at the peak armature current, which is the maximum torque that occurs instantaneously during acceleration and deceleration such as when starting or stopping the load.
- **Rated torque**·························· The maximum torque that occurs at the rated armature current when the motor is restrained.
- **Continuous rated torque**············ The maximum Ctorque that occurs at the rated armature current when the motor is at the rated speed.
- **Peak power**··························· The maximum power that can occur when driven by the designated dedicated driver.
- **Peak power rate**····················· The power increase rate when the motor alone is accelerating at the peak armature torque.
- **Moment of inertia〔J〕**·············· The moment of inertia is represented by J (=GD^2/4).
- **Load reference point distance L$_A$**··· The distance from the bearing start point to the load reference point. (S: Total shaft length/2　H: Flange end)
- **Load point distance L$_R$**·············· The distance from the point of application of radial load to the load reference point.
- **Relationship between tolerated·····
radial load and load point** 　$F_R[N] = \dfrac{L_a}{L_a+L_R} \times F_r$　　F_R: User load [N]　F_r: Tolerated radial load [N]
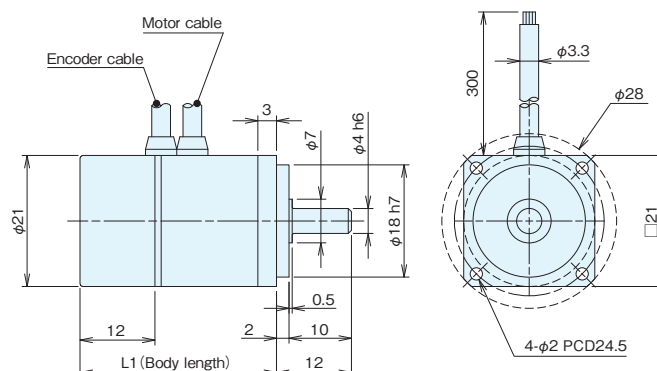
MDS/MDH-20 series（Characteristic example）

MTL

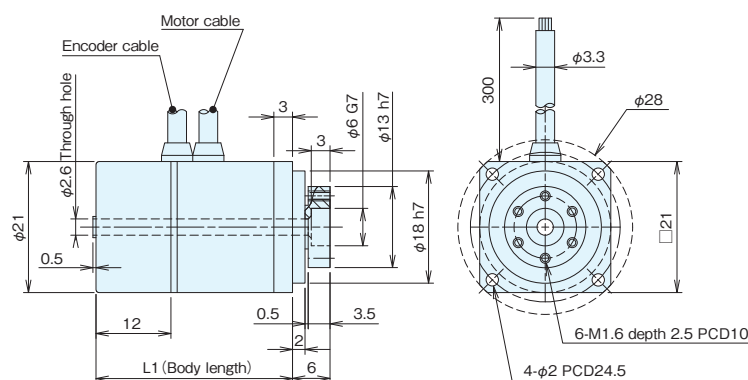## MDS-20 [Full-scale]

Outer Dimensions

Encoder cable / Motor cable
φ21, φ7, φ4 h6, φ18 h7
3, 0.5
12, 2, 10
L1 (Body length), 12
φ3.3, 300, φ28, □21
4-φ2 PCD24.5

MDH-20 [Full-scale]

Outer Dimensions

Encoder cable / Motor cable
φ2.6 Through hole
φ21, φ6 G7, φ13 h7, φ18 h7
3, 3, 0.5
12, 0.5, 3.5, 2, 6
L1 (Body length)
φ3.3, 300, φ28, □21
6-M1.6 depth 2.5 PCD10
4-φ2 PCD24.5

Model	L1 dimension
MD□−2006	31.5
MD□−2012	37.5
MD□−2018	43.5

Standard models

MD■−20△−36KE（Incremental）
MDS−20△−18B（Absolute）

■:Shaft shape S(solid shaft), H(Hollow shaft) △:Body length 06,12,18

Note: The absolute encoder is only available with the MDS type.

MDS/H-20 series (Representative characteristics of standard models)

|	Unit	MDS−2006	MDH−2006	MDS−2012	MDH−2012	MDS−2018	MDH−2018
Input power（Driver input）	DCV	24					
Maximum speed（*1）	rpm	3000					
Rated speed	rpm	1500					
Peak torque at stall	Nm	0.04		0.09		0.13	
Rated torque	Nm	0.017		0.030		0.040	
Continuous rated torque	Nm	0.014		0.026		0.030	
Peak power	W	5.0		10		17	
Peak armature current	Arms	2.6		4.3		5.6	
Rated armature current（*2）	Arms	1.1		1.2		1.4	
Voltage constant	V/krpm	1.6		2.5		2.4	
Torque constant（at25℃）	Nm/Arms	0.015		0.024		0.023	
Line armature resistance（at25℃）	Ω	3.5		2.2		1.9	
Line armature inductance	mH	1.1		0.79		0.82	
Rotor Poles	P	10					
Max encoder resolution（*3）	P/R	Incremental:288,000（Multiplied by 4）／Absolute:262,144（18bit）					
Moment of inertia J	g·cm²	0.78	1.5	1.2	2.0	1.7	2.4
Permissible radial load Fr	N	44					
Permissible axial load Fa	N	22					
Allowable moment	Nm	1.3	1.2	1.5	1.5	1.8	1.7
Mass	kg	0.088		0.10		0.12	
Repeated positioning accuracy at shuttling	Pulse	±1					
Applicable motor driver		MC−200−7220□					
Standard heat sink		100×100×5 Aluminum					

Note: (*1) Please ask us if there is a speed you prefer.
 (*2) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
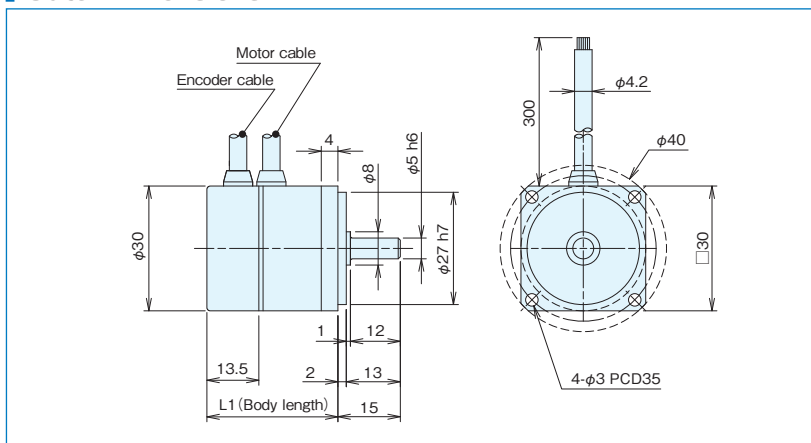 (*3) Please ask us if there is a particular resolution you prefer.

MDS/MDH-30 series（Characteristic example）
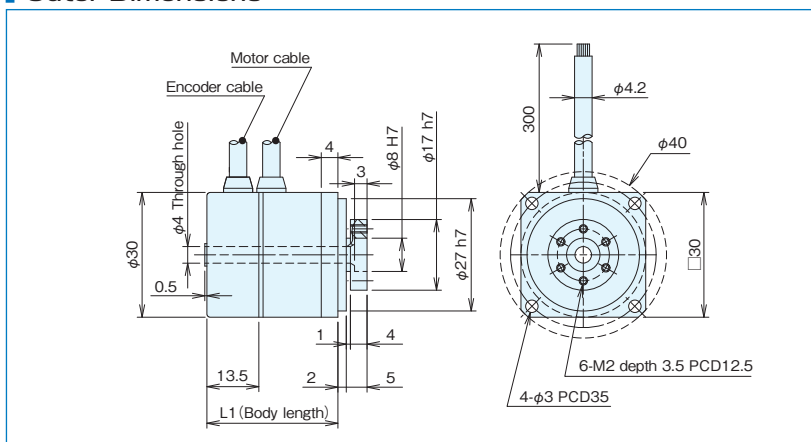
MDS-30　[Full-scale]
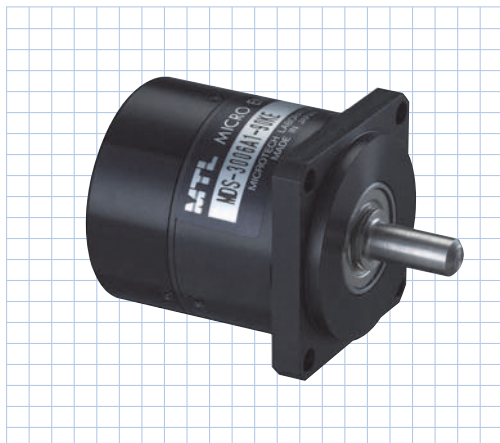
Outer Dimensions

MDH-30　[Full-scale]

Outer Dimensions

Model	L1 dimension
MD□-3006	31.5
MD□-3012	37.5
MD□-3018	43.5

Standard models

MD■-30△-108KE（Incremental）
MD■-30△-19B（Absolute）
　■:Shaft shape　S(solid shaft), H(Hollow shaft)　△:Body length　06,12,18

MDS/H-30 series（Representative characteristics of standard models）

	Unit	MDS−3006		MDS−3012	MDH−3012	MDS−3018	MDH−3018
Input power（Driver input）	DCV	24(∗1)/48					
Maximum speed（∗2）	rpm	1000					
Rated speed	rpm	1000					
Peak torque at stall	Nm	0.14		0.28		0.42	
Rated torque	Nm	0.060		0.095		0.13	
Continuous rated torque	Nm	0.044		0.068		0.10	
Peak power	W	15		20		30	
Peak armature current	Arms	4.6		5.6		6.3	
Rated armature current（∗3）	Arms	1.8		1.8		1.7	
Voltage constant	V/krpm	2.8		4.5		6.8	
Torque constant（at25℃）	Nm/Arms	0.026		0.043		0.065	
Line armature resistance（at25℃）	Ω	2.1		2.3		2.5	
Line armature impedance	mH	1		1.3		1.5	
Rotor Poles	P	16					
Max encoder resolution（∗4）	P/R	Incremental:432,000（Multiplied by 4）/Absolute:524,288（19bit）					
Moment of inertia J	g·cm²	6.5	8.9	11.2	13.6	15.9	18.3
Permissible radial load Fr	N	94					
Permissible axial load Fa	N	47					
Allowable moment	Nm	2.9	2.7	3.4	3.3	4.0	3.8
Mass	kg	0.13		0.16		0.18	
Repeated positioning accuracy at shuttling	Pulse	±1					
Applicable motor driver		MC−200−7220□					
Standard heat sink		120×120×8 Aluminum					

Note: (∗1) In case you use with 24V, please contact us since peak torque would change.　(∗2) Please ask us if there is a speed you prefer.
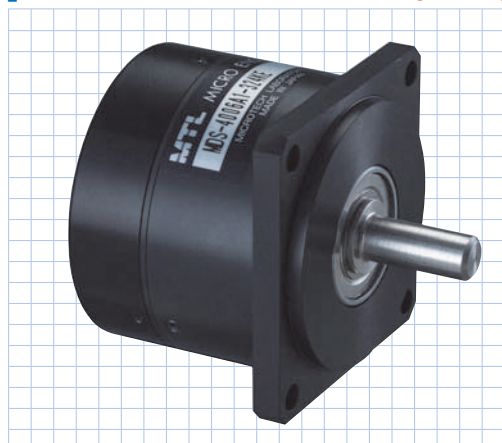　　　(∗3) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
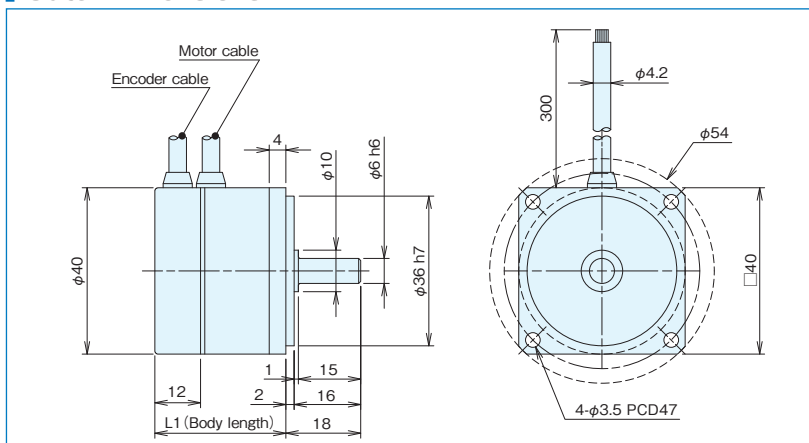　　　(∗4) Please ask us if there is a particular resolution you prefer.

MDS/MDH-40 series（Characteristic example）

MTL

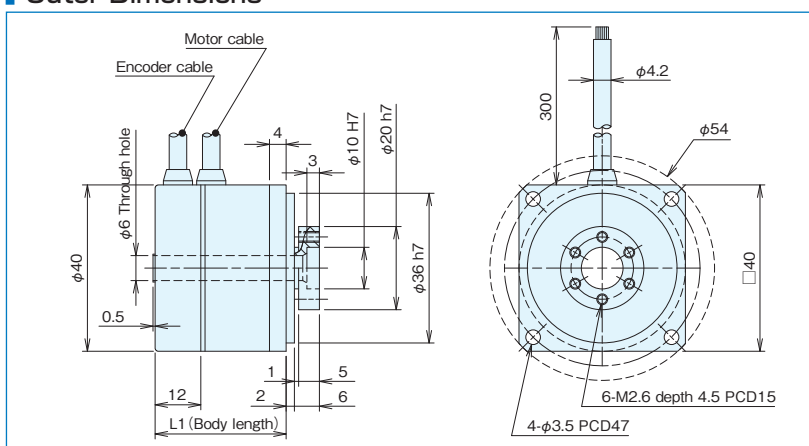## MDS-40　[Full-scale]

Outer Dimensions

Motor cable
Encoder cable

4
φ10
φ6 h6
φ40
φ36 h7
1　15
2　16
12
L1（Body length）
18

300
φ4.2
φ54
□40
4-φ3.5 PCD47

MDH-40　[Full-scale]

Outer Dimensions

Motor cable
Encoder cable

φ6 Through hole
φ40
4
3
φ10 H7
φ20 h7
φ36 h7
0.5
1　5
2　6
12
L1（Body length）

300
φ4.2
φ54
□40
6-M2.6 depth 4.5 PCD15
4-φ3.5 PCD47

Model	L1 dimension
MD□-4006	31.5
MD□-4012	37.5
MD□-4018	43.5

Standard models

MD■−40△−324KE（Incremental）
MD■−40△−20B（Absolute）

■:Shaft shape　S（solid shaft）, H（Hollow shaft）　△:Body length　06,12,18

MDS/H-40 series（Representative characteristics of standard models）

	Unit	MDS−4006	MDH−4006	MDS−4012	MDH−4012	MDS−4018	MDH−4018
Input power（Driver input）	DCV	24（∗1）/48					
Maximum speed（∗2）	rpm	450					
Rated speed	rpm	450					
Peak torque at stall	Nm	0.33		0.70		1.0	
Rated torque	Nm	0.12		0.20		0.28	
Continuous rated torque	Nm	0.10		0.16		0.23	
Peak power	W	14		27		40	
Peak armature current	Arms	6.3		7.5		10	
Rated armature current（∗3）	Arms	1.6		1.7		2.3	
Voltage constant	V/krpm	6.1		10		11	
Torque constant（at25℃）	Nm/Arms	0.058		0.096		0.10	
Line armature resistance（at25℃）	Ω	2.6		2.5		1.7	
Line armature inductance	mH	2.6		3.0		2.0	
Rotor Poles	P	16					
Max encoder resolution（∗4）	P/R	Incremental:1,296,000（Multiplied by 4）/Absolute:1,048,576（20bit）					
Moment of inertia J	g·cm^2	23.3	28.8	39.1	44.5	54.9	60.3
Permissible radial load Fr	N	140					
Permissible axial load Fa	N	70					
Allowable moment	Nm	5.1	4.8	5.9	5.5	6.6	6.3
Mass	kg	0.21		0.26		0.30	
Repeated positioning accuracy at shuttling	Pulse	±1					
Applicable motor driver		MC−200−7220□					
Standard heat sink		150×150×8 Aluminum					

Note: (∗1) In case you use with 24V, please contact us since peak torque would change.　(∗2) Please ask us if there is a speed you prefer.
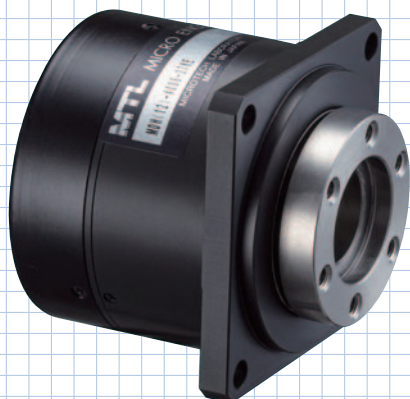　　　(∗3) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
　　　(∗4) Please ask us if there is a particular resolution you prefer.
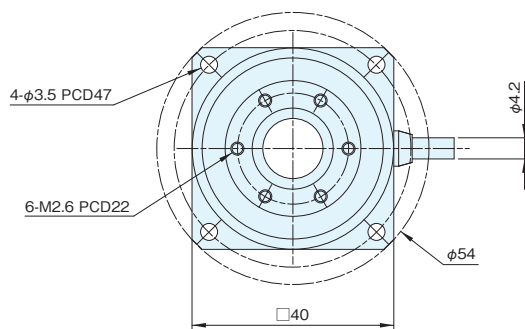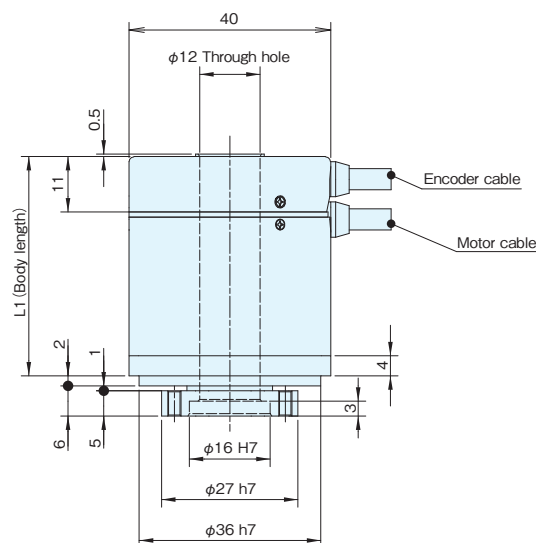
MDH(12)-40 series (Characteristic example)

MDH(12)-40 [Full-scale]

Standard models

MDH(12)−40△−324KE(Incremental)
△: Body length　06,12,18

Model	L1 dimension
MDH(12)−4006	31.5
MDH(12)−4012	37.5
MDH(12)−4018	43.5

Outer Dimensions

MDH(12)-40 series (Representative characteristics of standard models)

	Unit	MDH(12)−4006	MDH(12)−4012	MDH(12)−4018
Input power (Driver input)	DCV	24(＊1)/48		
Maximum speed (＊2)	rpm	450		
Rated speed	rpm	450		
Peak torque at stall	Nm	0.33	0.70	1.0
Rated torque	Nm	0.12	0.20	0.28
Continuous rated torque	Nm	0.10	0.16	0.23
Peak power	W	14	27	40
Peak armature current	Arms	6.3	7.5	10
Rated armature current (＊3)	Arms	1.6	1.7	2.3
Voltage constant	V/krpm	6.1	10	11
Torque constant (at25℃)	Nm/Arms	0.058	0.096	0.10
Line armature resistance (at25℃)	Ω	2.6	2.5	1.7
Line armature inductance	mH	2.6	3.0	2.0
Rotor Poles	P	16		
Max encoder resolution (＊4)	P/R	Incremental: 1,296,000 (Multiplied by 4)		
Moment of inertia J	g·cm^2	49.8	64.6	79.4
Permissible radial load Fr	N	140		
Permissible axial load Fa	N	70		
Allowable moment	Nm	4.8	5.5	6.3
Mass	kg	0.21	0.26	0.30
Repeated positioning accuracy at shuttling	Pulse	±1		
Applicable motor driver		MC−200−7220□		
Standard heat sink		150×150×8 Aluminum		

Note: (＊1) In case you use with 24V, please contact us since peak torque would change.　(＊2) Please ask us if there is a speed you prefer.
(＊3) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
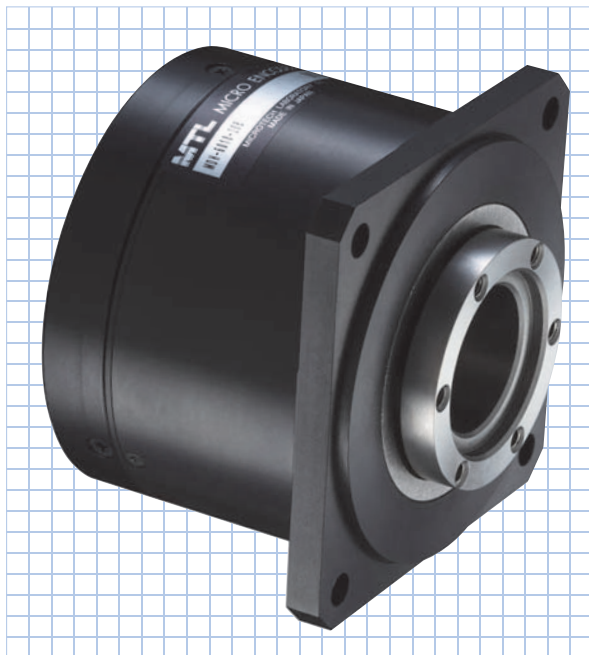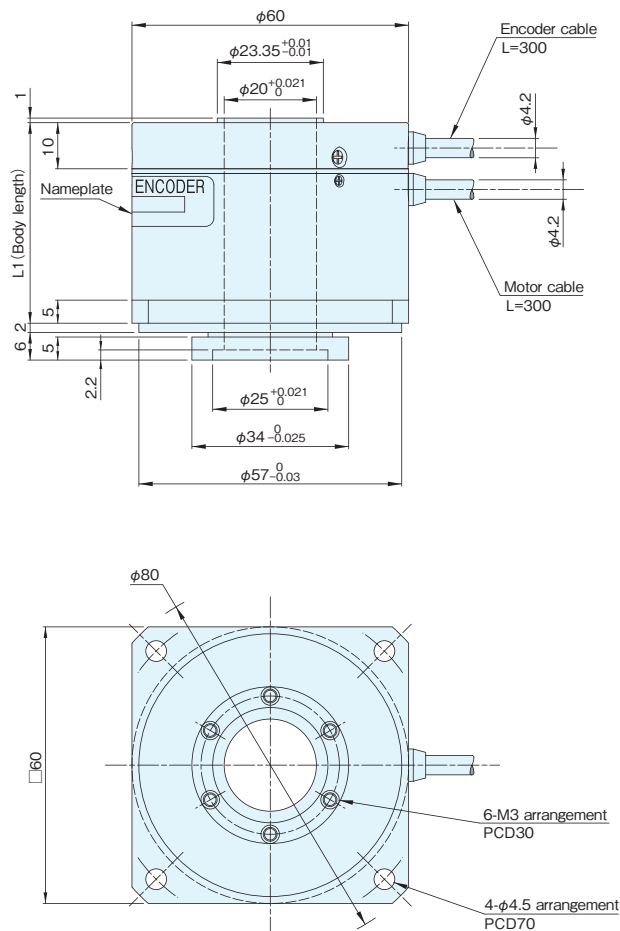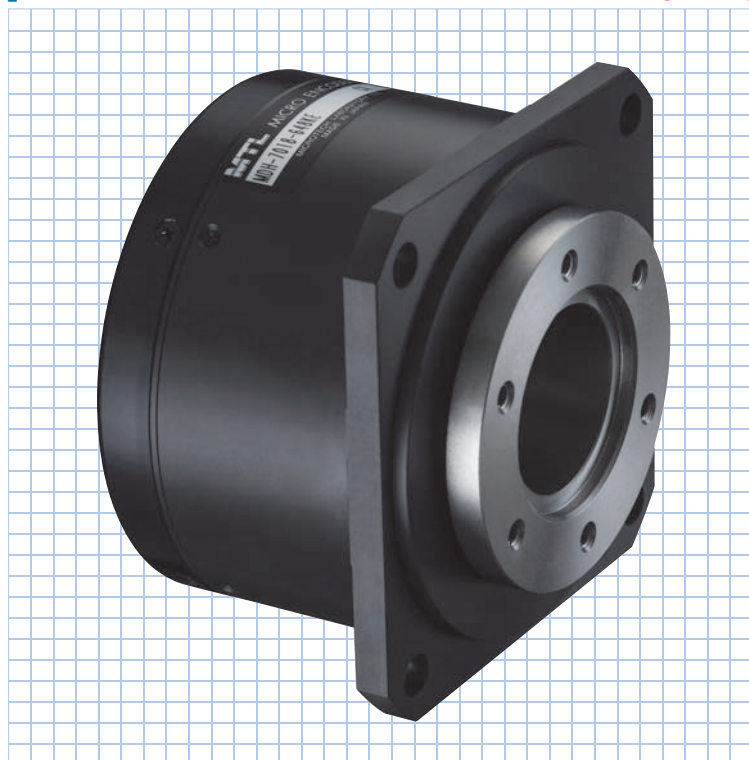(＊4) Please ask us if there is a particular resolution you prefer.

MDH-60 [Full-scale]

Outer Dimensions

φ60
φ23.35 $^{+0.01}_{-0.01}$
φ20 $^{+0.021}_{0}$
Encoder cable L=300
φ4.2
φ4.2
L1 (Body length)
1
10
Nameplate
ENCODER
5
6 2
5
2.2
Motor cable L=300
φ25 $^{+0.021}_{0}$
φ34 $^{0}_{-0.025}$
φ57 $^{0}_{-0.03}$

φ80
□60
6-M3 arrangement PCD30
4-φ4.5 arrangement PCD70

Standard models

MDH−60△−500KE（Incremental）[Under development]
MDH−60△−20B（Absolute）
△: Body length 06,12, 18

Model	L1 dimension
MDH−6006	31.5
MDH−6012	37.5
MDH−6018	43.5

MDH-60 series（Representative characteristics of standard models）

	Unit	MDH−6006	MDH−6012	MDH−6018
Input power（Driver input）	DCV	24（*1）/48		
Maximum speed（*2）	rpm	300		
Rated speed	rpm	300		
Peak torque at stall	Nm	1.1	2.1	2.7
Rated torque	Nm	0.29	0.58	0.77
Continuous rated torque	Nm	0.29	0.58	0.77
Peak power	W	25	51	77
Peak armature current	Arms	11.1	13.7	16.6
Rated armature current（*3）	Arms	3.0	2.9	3.2
Voltage constant	V/krpm	11	19	26
Torque constant（at25℃）	Nm/Arms	0.1	0.2	0.24
Line armature resistance（at25℃）	Ω	1.0	1.5	1.3
Line armature inductance	mH	0.9	1.1	1.1
Rotor Poles	P	16		
Max encoder resolution（*4）	P/R	Incremental:2,000,000（Multiplied by 4）/Absolute:1,048,576（20bit）		
Moment of inertia J	kg·cm^2	0.31	0.42	0.53
Permissible radial load Fr	N	320		
Permissible axial load Fa	N	160		
Allowable moment	Nm	8.3	10.1	11.9
Mass	kg	0.37	0.46	0.55
Repeated positioning accuracy at shuttling	Pulse	±1		
Applicable motor driver		MC−200−7220□		
Standard heat sink		200×200×10 Aluminum（A5052）		

Note: (*1) In case you use with 24V, please contact us since peak torque would change. (*2) Please ask us if there is a speed you prefer.
(*3) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
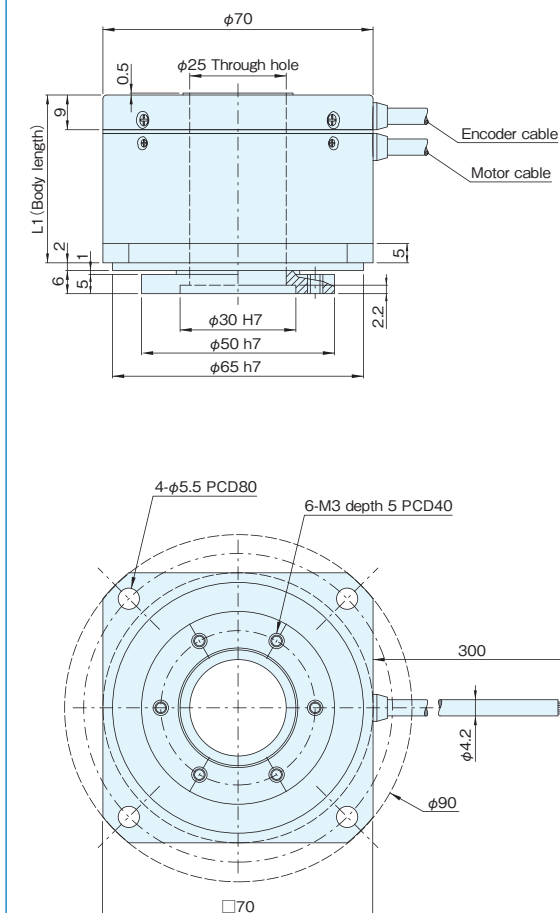(*4) Please ask us if there is a particular resolution you prefer.

MDH-70 series (Characteristic example)

MDH-70 [Full-scale]

Outer Dimensions

φ70
φ25 Through hole
0.5
9
L1 (Body length)
2
1
6
5
5
2.2
φ30 H7
φ50 h7
φ65 h7
Encoder cable
Motor cable

4-φ5.5 PCD80
6-M3 depth 5 PCD40
300
φ4.2
φ90
□70

Standard models

MDH−70△−648KE(Incremental)
MDH−70△−21B(Absolute)
△:Body length 06,12,18

Model	L1 dimension
MDH−7006	31.5
MDH−7012	37.5
MDH−7018	43.5

MDH-70 series (Representative characteristics of standard models)

	Unit	MDH−7006	MDH−7012	MDH−7018
Input power (Driver input)	DCV	24(*1)/48		
Maximum speed (*2)	rpm	200		
Rated speed	rpm	200		
Peak torque at stall	Nm	1.0	2.2	3.1
Rated torque	Nm	0.36	0.66	1.0
Continuous rated torque	Nm	0.36	0.66	1.0
Peak power	W	30	60	90
Peak armature current	Arms	13	16	19
Rated armature current (*3)	Arms	2.8	3.0	3.5
Voltage constant	V/krpm	0.013	0.023	0.031
Torque constant (at25℃)	Nm/Arms	0.13	0.22	0.30
Line armature resistance (at25℃)	Ω	2.1	1.9	1.8
Line armature inductance	mH	2.6	3.1	3.3
Rotor Poles	P	20		
Max encoder resolution (*4)	P/R	Incremental:2,592,000(Multiplied by 4)/Absolute:2,097,152(21bit)		
Moment of inertia J	kg·cm^2	0.65	0.82	0.99
Permissible radial load Fr	N	500		
Permissible axial load Fa	N	250		
Allowable moment	Nm	13.1	16.0	18.7
Mass	kg	0.53	0.65	0.77
Repeated positioning accuracy at shuttling	Pulse	±1		
Applicable motor driver		MC−200−7220□		
Standard heat sink		225×225×10 Aluminum		

Note: (*1) In case you use with 24V, please contact us since peak torque would change. (*2) Please ask us if there is a speed you prefer.
(*3) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
(*4) Please ask us if there is a particular resolution you prefer.
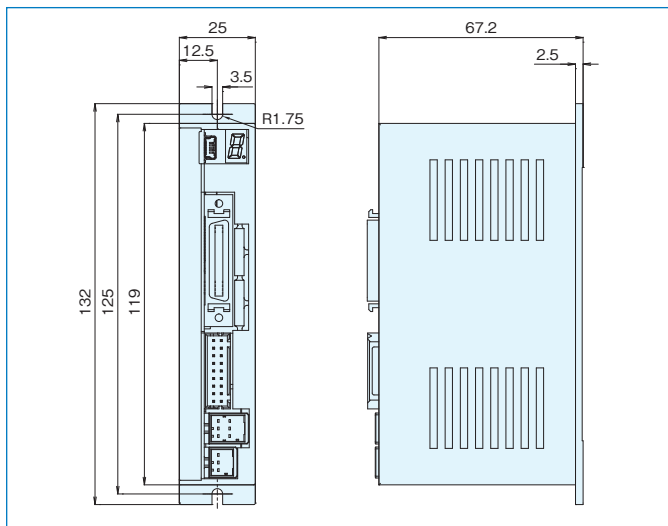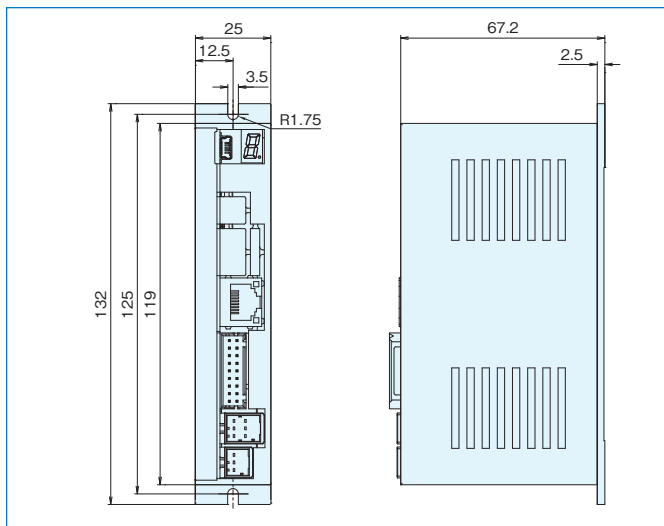
Dedicated driver unit MC-200 series

MTL

MC-200-7220

MC-200-7220 Outer Dimensions
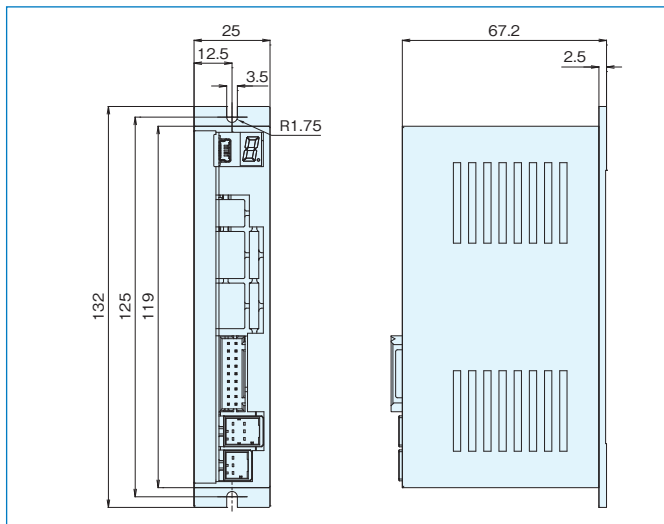
MC-200-7220A Outer Dimensions

MC-200-7220D Outer Dimensions

MC-200 series specifications

	MC－200－7220□ □ : External command method　Blank: USB　A: I/O　D: SPI
Compatible motor	PM type three-phase AC servomotor
Supply power	定格 DC48V（DC20V－5%～DC72V+5%）
Rated output current	3.5Arms
Peak output current	20Arms（28A Peak）
Drive type	Sine wave PWM drive（50 kHz）
Drive method	Position / speed / current control
Protection functions	Overcurrent, overload, overvoltage, undervoltage, heat, encoder error, damage prevention by fuse
Communication functions	USB2.0 mini-B parameter settings, status monitoring, command control
Speed position commands	driver: Maximum 2.5MHz (multiplied by 1) forward-reverse pulse train method, pulse / direction method, two-phase pulse method
Torque commands	Voltage command（－5 to +5V）（Resolution 12bit）
Auxiliary signal inputs	Servo on, alarm reset, Gain switch, zero point return, other general-purpose inputs
Signal outputs	Positioning completed, alarm, encoder（INC:ABZ、ABS:RS422 Position output）, analog monitor output（current/speed/position difference）
Encoder signal output	In case motor mounted encoder is incremental: Line driver method ABZ-phase　　In case of absolute: RS-422 method (ASCII code / binary code)
USB Communication specifications	9600, 19200, 38400, 57600, data bits: 8, no parity, stop bits: 1, no flow control
Command method	Planned to handle I/O, SPI, USB and others soon
External dimensions	132×67.2×25mm
Mass	Non: 160g　A, D: 170g
Dedicated application	MTL Param（Download the MC-200 software package from the software download page at https://motor.mtl.co.jp/）

Various cables

Model	Type	Cable specifications	Length
CN1 cable（4.2）1M-TE	Power cable	2-pin straight	1m
CN5 cable	USB2.0 cable	With ferrite core	1m

Model	Type	Applicable connector
CN4＊	MC-200-7220A	10136-3000PE（3M）
	MC-200-7220D	RJ-45 plug

＊Please prepare the CN4 connector.

Model	Type	Cable specifications	Length
CN2 bent cable（4.2）0.7M	Motor extension cable	Flexible shield Cable	0.7m
2.7M			2.7m
4.7M			4.7m
CN3 bent cable（4.2）0.7M	Encoder extension cable	Flexible shield Cable	0.7m
2.7M			2.7m
4.7M			4.7m

Example specifications/Example of custom

Example of implementation

### Although we aim to improve takt time, existing servomotor is too big
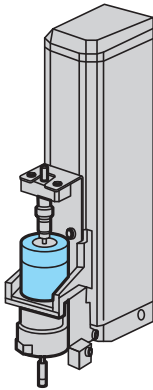
θ drive shaft

By using μDD motor to the θ drive shaft of the end effector, it is possible to realize smaller size and lighter weight. It can also contribute to picking up workpieces by passing air tube in hollow shaft and the highly-precise, gear-less positioning.

Although hollow shaft is indispensable, considering precision, we don't want to increase machine elements
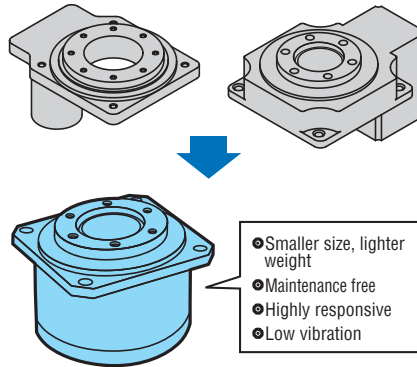
Instead of rotary actuator

By using μDD it is possible to consist hollow shaft only with motor.

- ❶ Smaller size, lighter weight
- ❷ Maintenance free
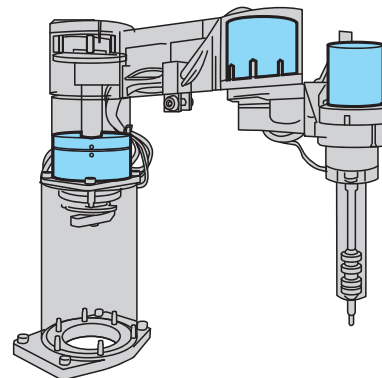- ❸ Highly responsive
- ❹ Low vibration

Want to make robot hand that can pick up various work
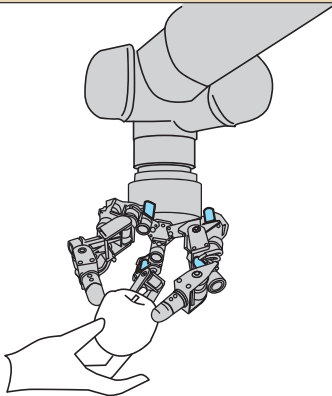
Sensor-less torque control

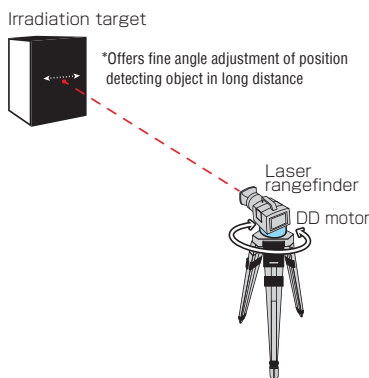It can realize small / high backdrivability robot hand. It provides highly responsive torque control.

Less human resource for production facility Want to develop automation robot

Scalar development

By using μDD motor, it can develop easy-to-use, essentially safe, small scalar. It is possible to consist elements required for cobot such as direct teaching, external force detection, quiet operation only with motor.

Want to accurately follow up the object in long distance…

Irradiation target

*Offers fine angle adjustment of position detecting object in long distance

Laser rangefinder

DD motor

High accuracy gimbal development

High resolution rotary encoder built into μDD Motor enables direct and highly accurate positioning. For example, we have a past results of following up the object in 16m distance at 100 pulse (4mm increment). It will be very useful in long-distance laser and development of highly accurate positioning gimbal.

Although we've selected large motor along with the size of work, we want to reduce the device size…
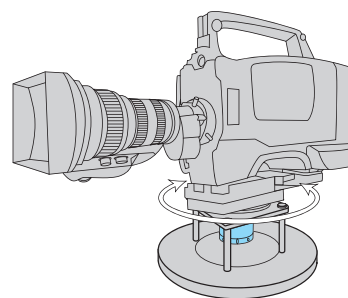
High inertia ratio drive

μDD motor enabled high torque density with high performance magnet and high-density winding technique.
Also, it can tolerate high load by using angular contact bearing so the work can be directly set up.

Example of custom

- ■ Change encoder resolution
- ■ Enlarge hollow shaft
- ■ Motor case flangeless structure
- ■ Hollow shaft tapping
- ■ Change cable length / connector
- ■ Low dust emission
- ■ Change output axe structure (Make into pinion gear / add positioning pin / knurling / anodize aluminum etc.)

■ Product specification and design may be changed without prior notice for improvement etc.

■ For inquiries about this product, please contact us from the address below.

https://motor.mtl.co.jp/contact.html

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https://motor.mtl.co.jp/

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