MTL
MICROTECH LABORATORY INC.

Micro Direct Drive Motor

μDDMotor
Miniature AC servomotor
with high torque and high-resolution

MD series

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.

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)
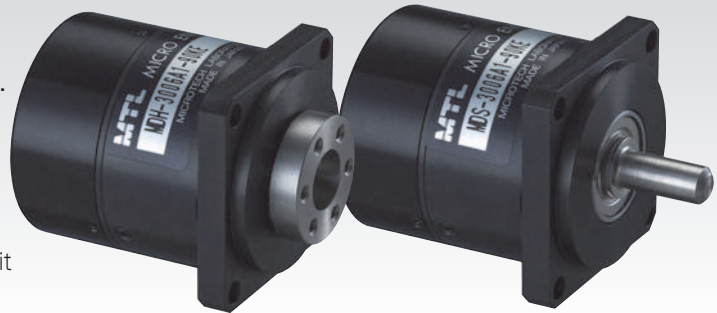
MDS／MDH−40 series

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)
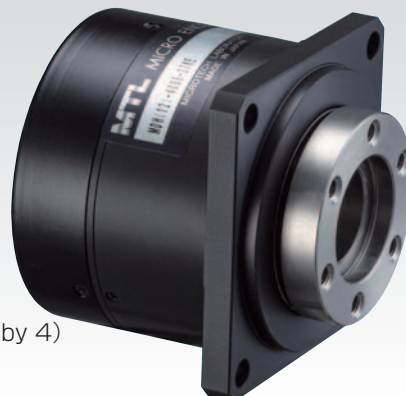
NEW MDH-60 series

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
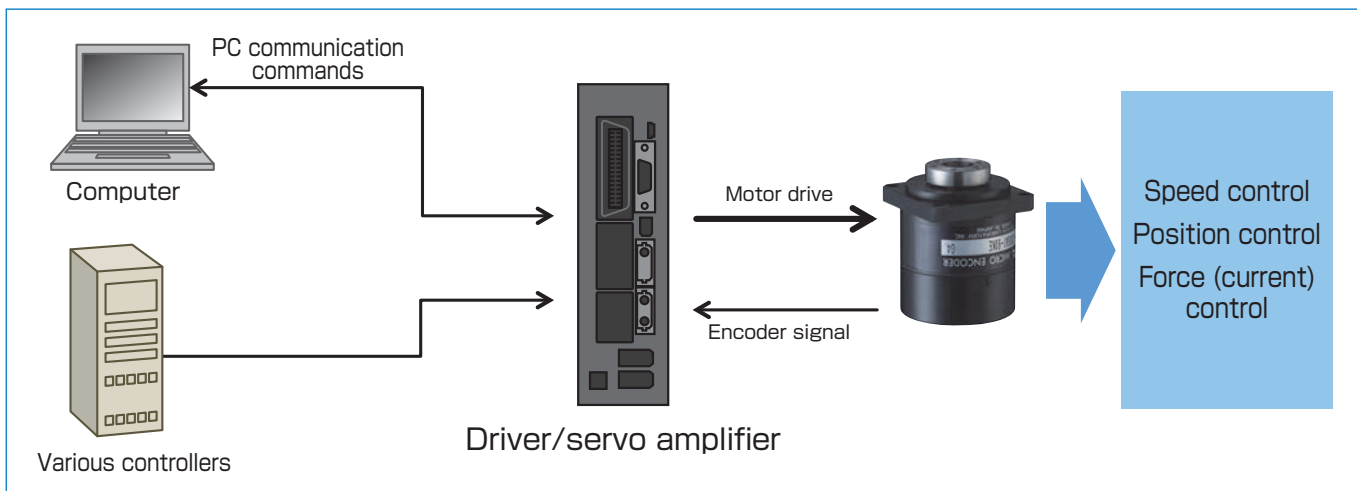 (Multiplied by 4), 20 bit
- Hollow diameter: ϕ20 mm
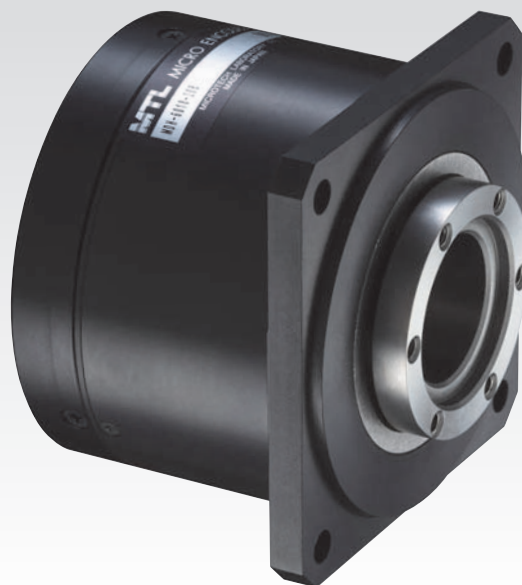
MDH-70 series

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
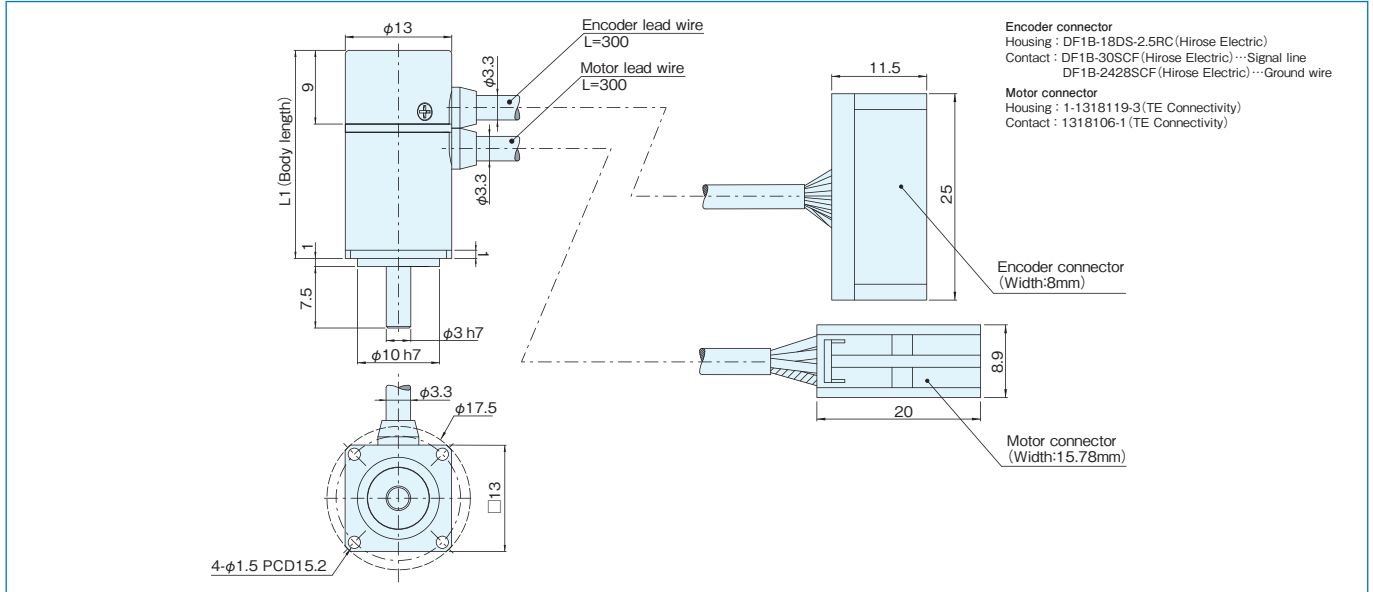 (Multiplied by 4), 21 bit
- Hollow diameter: ϕ25 mm

█ System structure

PC communication
commands

Computer

Various controllers

Driver/servo amplifier

Motor drive

Encoder signal

Speed control
Position control
Force (current)
control

MDS-13 series（Characteristic example）

MDS-13 Outer Dimensions

Encoder lead wire L=300
Motor lead wire L=300

φ13
φ3.3
9
L1 (Body length)
7.5
1
φ3 h7
φ10 h7
φ3.3
φ17.5
□13
4-φ1.5 PCD15.2

11.5
25
Encoder connector（Width:8mm）
8.9
20
Motor connector（Width:15.78mm）

Encoder connector
Housing : DF1B-18DS-2.5RC（Hirose Electric）
Contact : DF1B-30SCF（Hirose Electric）···Signal line
          DF1B-2428SCF（Hirose Electric）···Ground wire
Motor connector
Housing : 1-1318119-3（TE Connectivity）
Contact : 1318106-1（TE Connectivity）

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

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	
Standard heat sink		55×55×4 Aluminum		

Note: ＊The above specification is the value when operating with MC-200-7220.
(＊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°C.
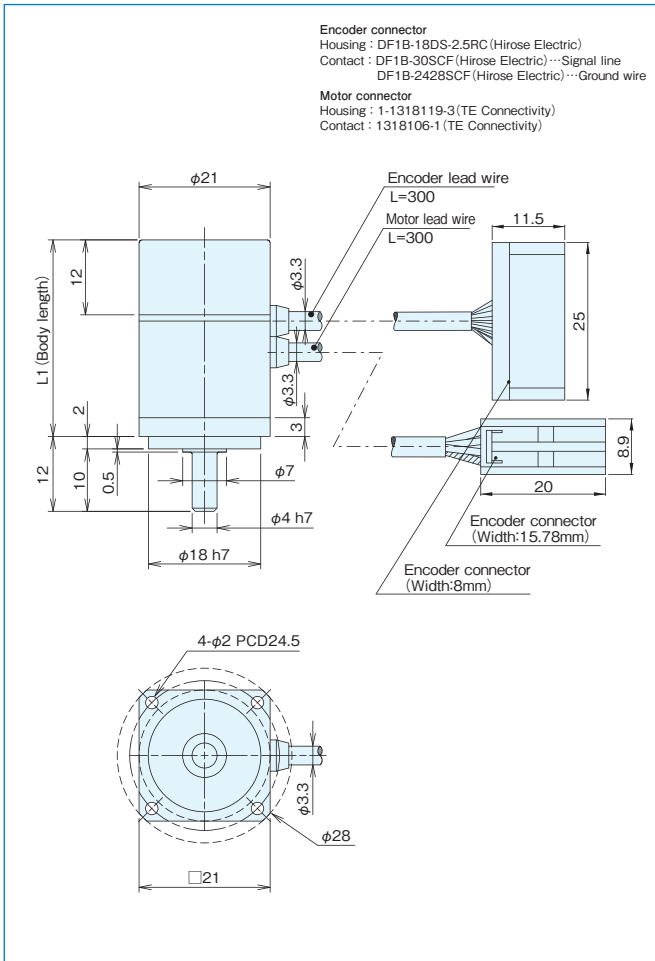(＊3) Please ask us if there is a particular resolution you prefer.

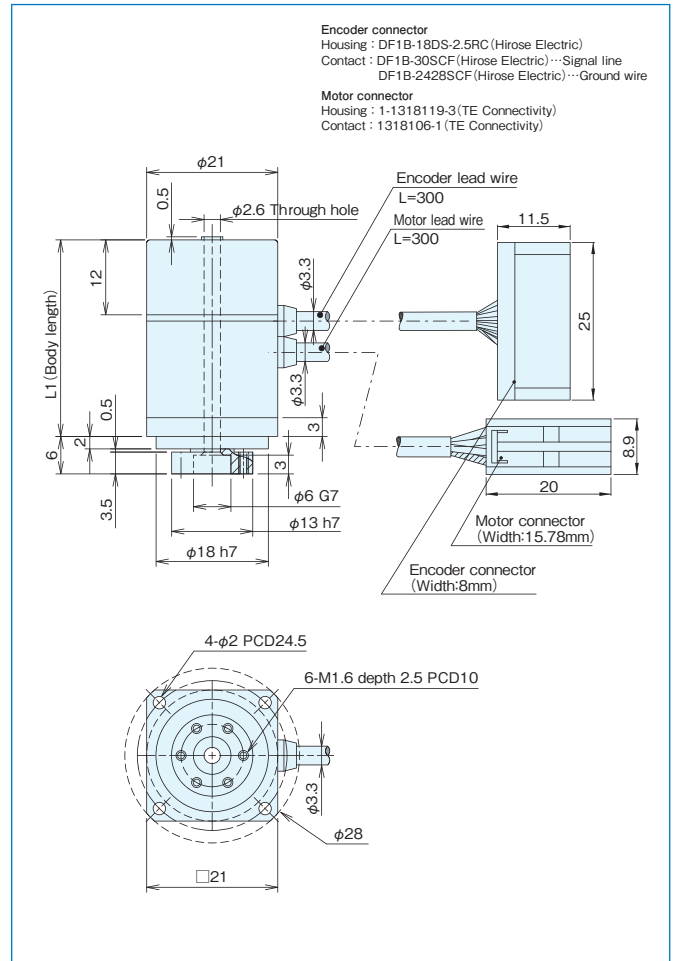## Explanation of motor characteristic terminology

- **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 torque 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.
- **Moment of inertia〔J〕**··············· The moment of inertia is represented by J (=GD^2/4).

MDS/MDH-20 series (Characteristic example)

MDS-20 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC (Hirose Electric)
Contact : DF1B-30SCF (Hirose Electric)···Signal line
　　　　 DF1B-2428SCF (Hirose Electric)···Ground wire
Motor connector
Housing : 1-1318119-3 (TE Connectivity)
Contact : 1318106-1 (TE Connectivity)

Encoder lead wire L=300
Motor lead wire L=300
Encoder connector (Width:15.78mm)
Encoder connector (Width:8mm)

φ21
L1 (Body length)
φ3.3
11.5
25
8.9
20
φ7
φ4 h7
φ18 h7
4-φ2 PCD24.5
φ3.3
φ28
□21

MDH-20 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC (Hirose Electric)
Contact : DF1B-30SCF (Hirose Electric)···Signal line
　　　　 DF1B-2428SCF (Hirose Electric)···Ground wire
Motor connector
Housing : 1-1318119-3 (TE Connectivity)
Contact : 1318106-1 (TE Connectivity)

φ2.6 Through hole
Encoder lead wire L=300
Motor lead wire L=300
Motor connector (Width:15.78mm)
Encoder connector (Width:8mm)

φ21
L1 (Body length)
φ3.3
11.5
25
8.9
20
φ6 G7
φ13 h7
φ18 h7
4-φ2 PCD24.5
6-M1.6 depth 2.5 PCD10
φ3.3
φ28
□21

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

Standard models

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

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

Note: The MDH type of the absolute encoder is hollow on one side.

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					
Standard heat sink		100×100×5 Aluminum					

Note: ＊The above specification is the value when operating with MC-200-7220.
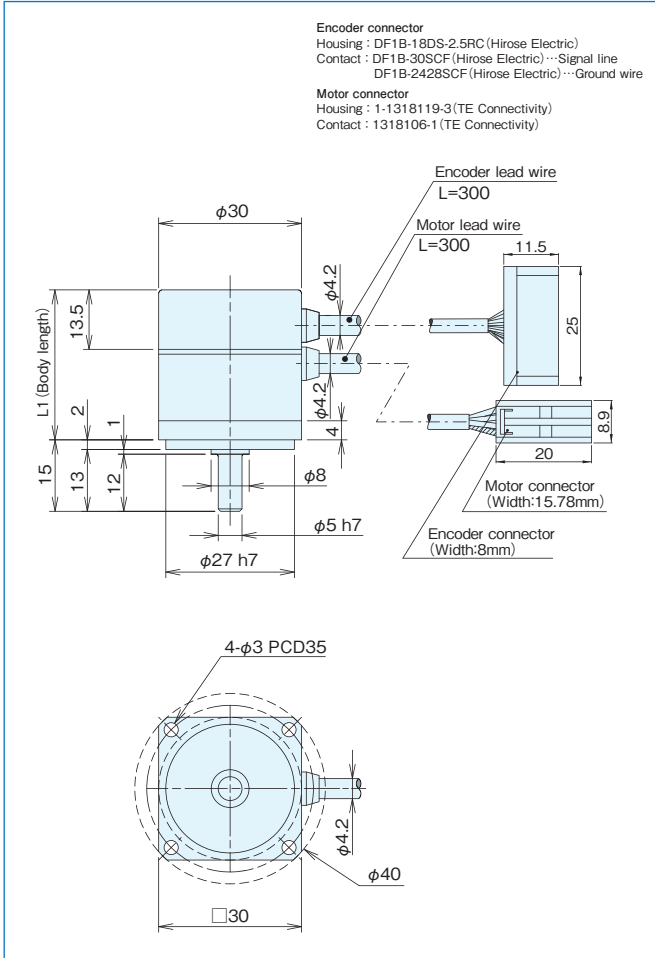　　　(＊1) Please ask us if there is a speed you prefer.
　　　(＊2) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
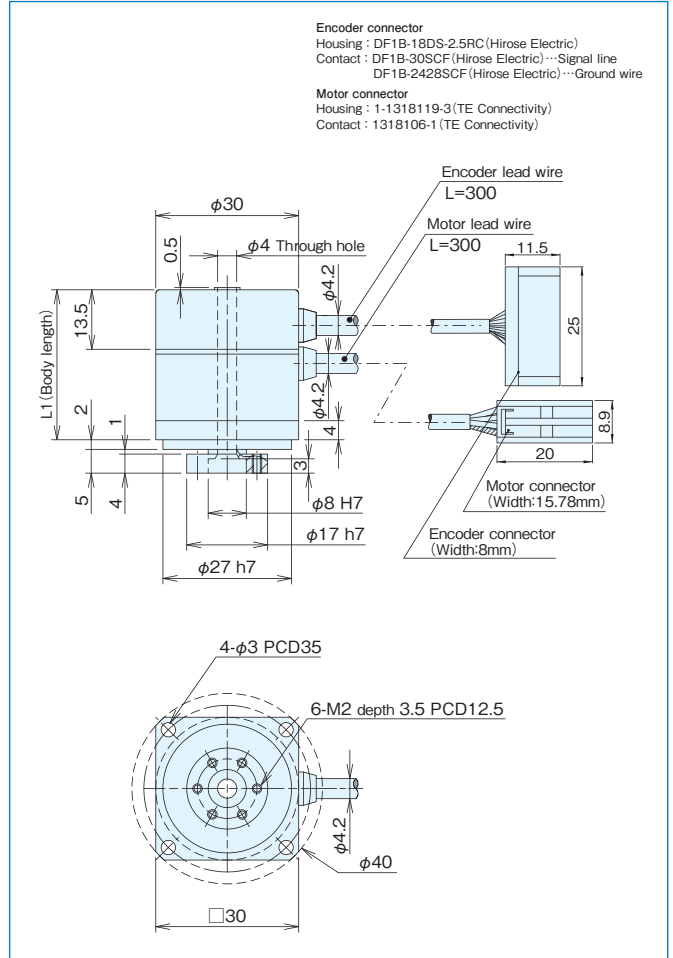　　　(＊3) Please ask us if there is a particular resolution you prefer.

MDS/MDH-30 series (Characteristic example)

MDS-30 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC (Hirose Electric)
Contact : DF1B-30SCF (Hirose Electric) ···Signal line
DF1B-2428SCF (Hirose Electric) ···Ground wire
Motor connector
Housing : 1-1318119-3 (TE Connectivity)
Contact : 1318106-1 (TE Connectivity)

MDH-30 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC (Hirose Electric)
Contact : DF1B-30SCF (Hirose Electric) ···Signal line
DF1B-2428SCF (Hirose Electric) ···Ground wire
Motor connector
Housing : 1-1318119-3 (TE Connectivity)
Contact : 1318106-1 (TE Connectivity)

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	MDH−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					
Standard heat sink		120×120×8 Aluminum					

Note: *The above specification is the value when operating with MC-200-7220.
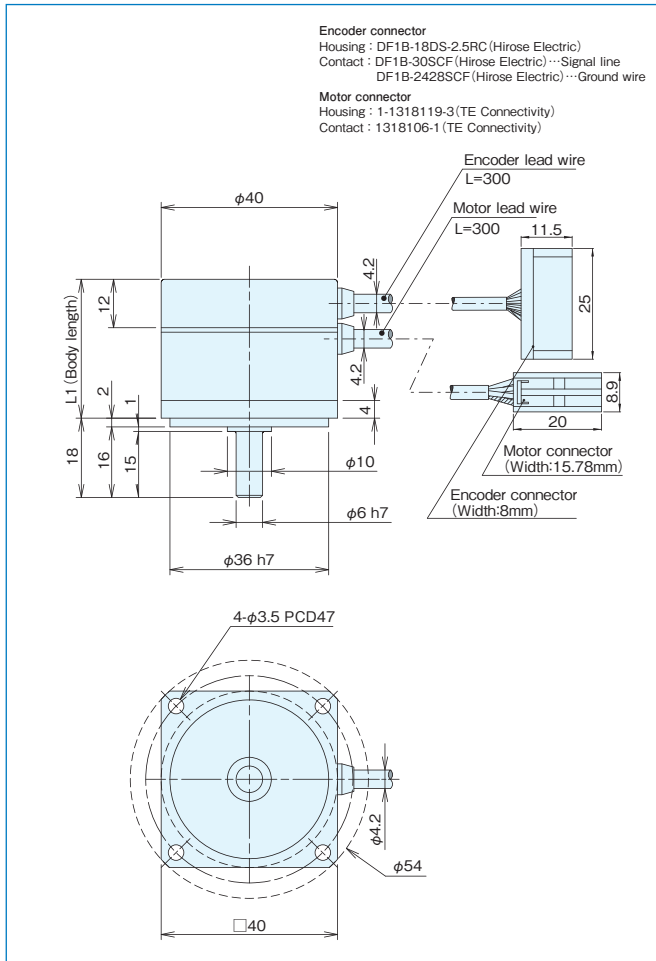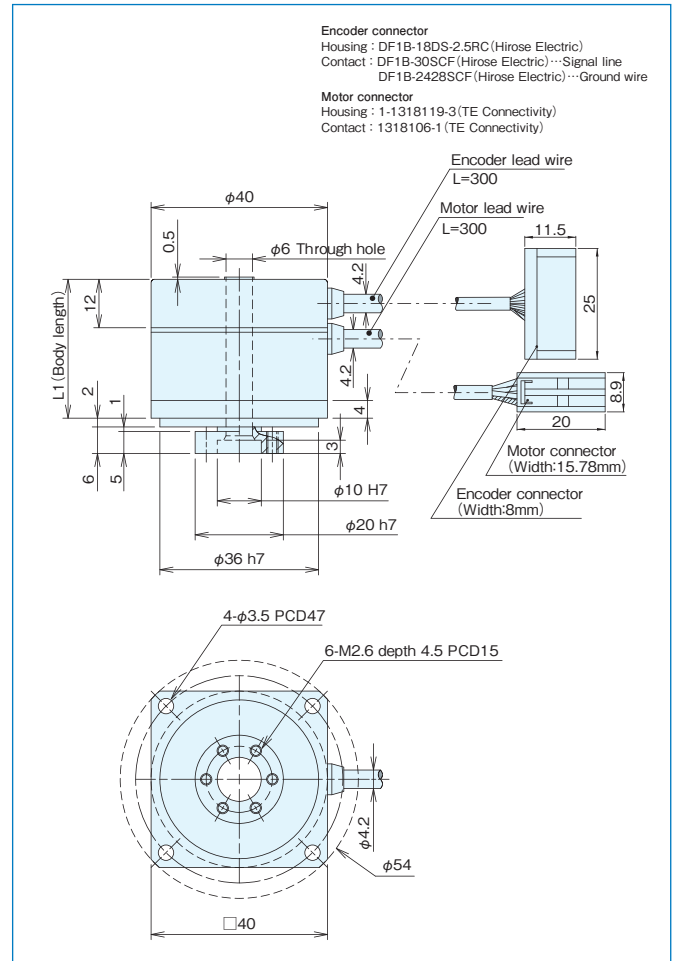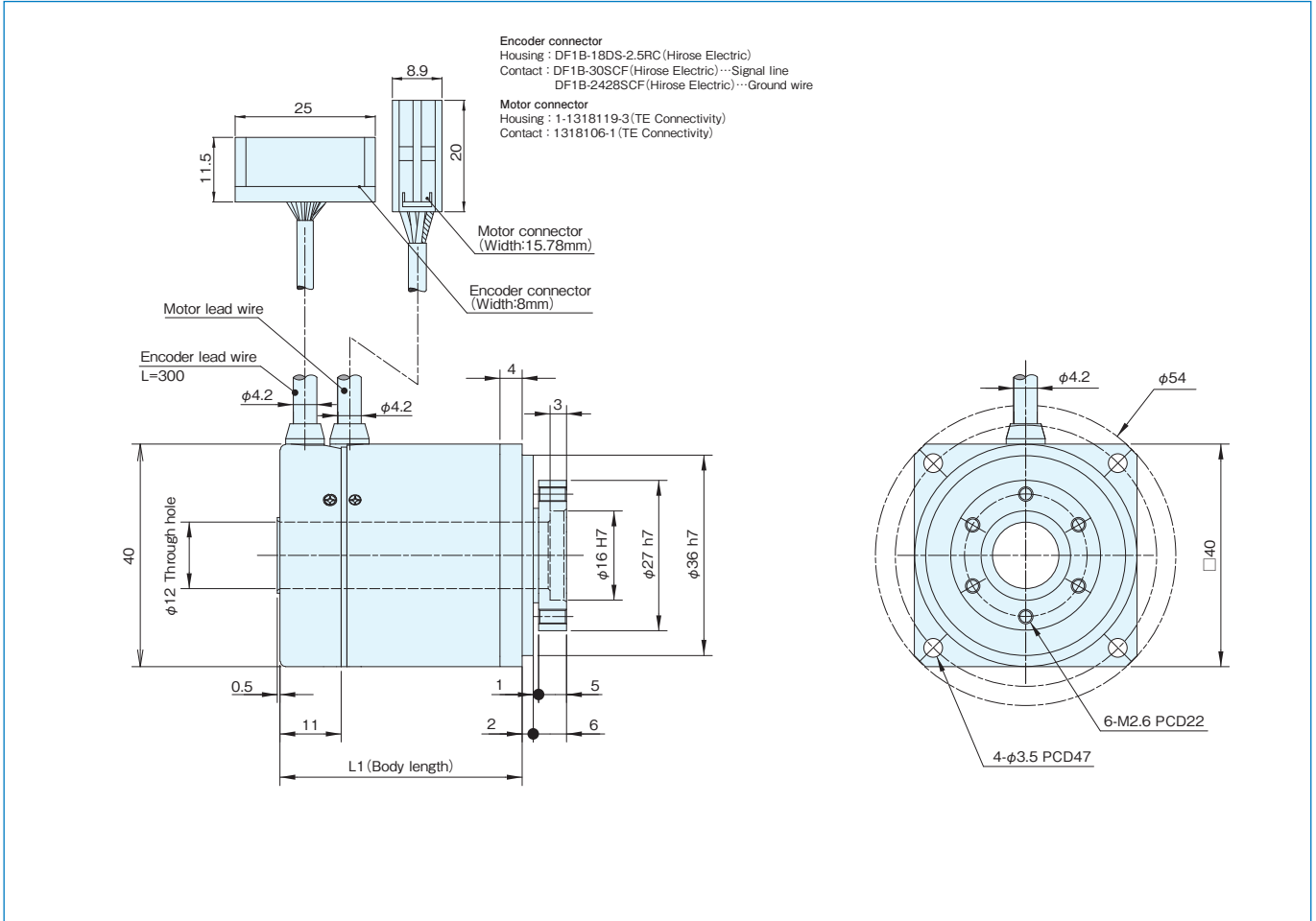(*1) In case you use with 24V, please contact us since peak torque would change. (*2) Please ask us if there is a speed you prefer.
(*3) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
(*4) Please ask us if there is a particular resolution you prefer.

MDS/MDH-40 series（Characteristic example）

MDS-40 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC（Hirose Electric）
Contact : DF1B-30SCF（Hirose Electric）···Signal line
　　　　　DF1B-2428SCF（Hirose Electric）···Ground wire
Motor connector
Housing : 1-1318119-3（TE Connectivity）
Contact : 1318106-1（TE Connectivity）

MDH-40 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC（Hirose Electric）
Contact : DF1B-30SCF（Hirose Electric）···Signal line
　　　　　DF1B-2428SCF（Hirose Electric）···Ground wire
Motor connector
Housing : 1-1318119-3（TE Connectivity）
Contact : 1318106-1（TE Connectivity）

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·cm²	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					
Standard heat sink		150×150×8 Aluminum					

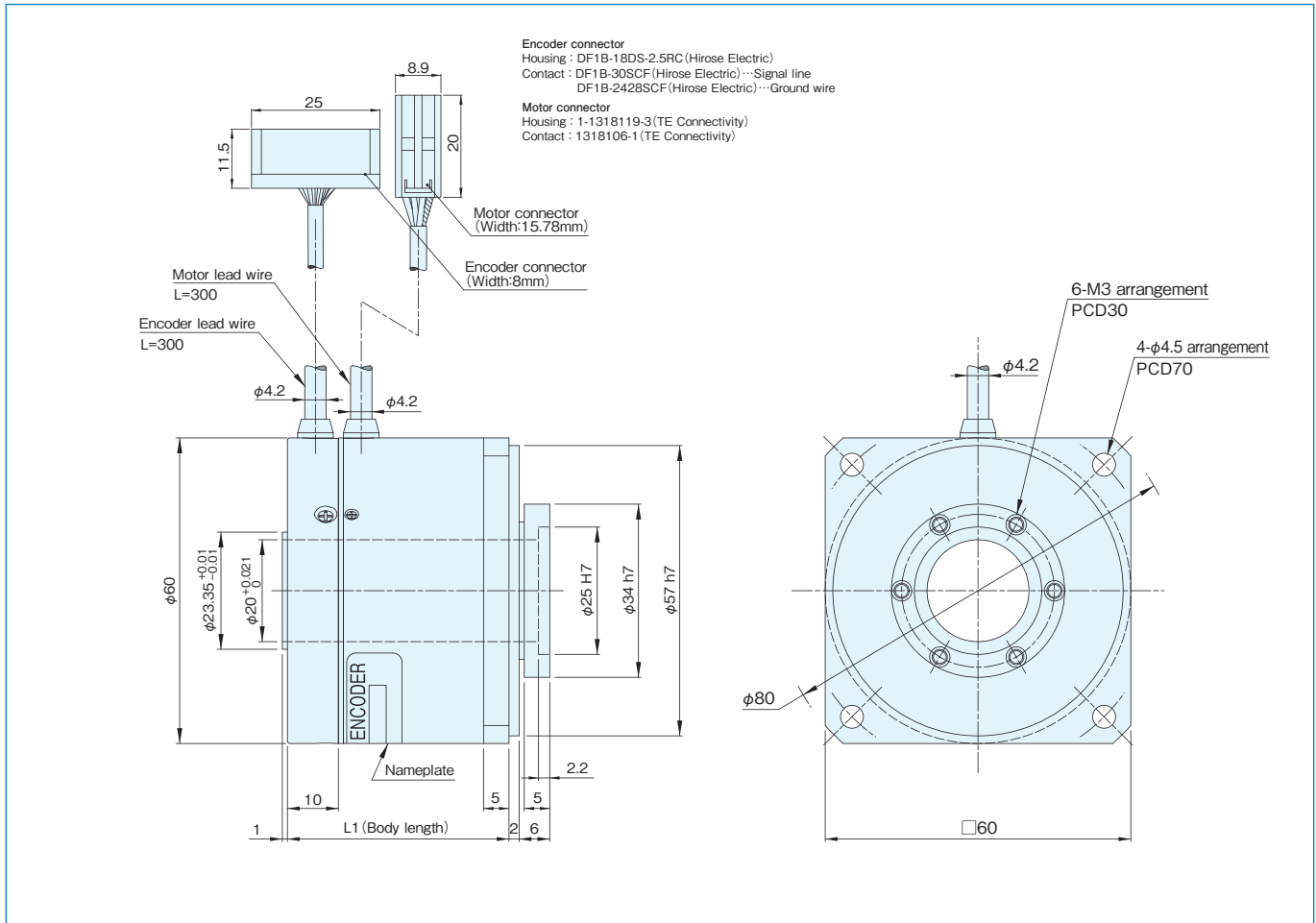Note: *The above specification is the value when operating with MC-200-7220.
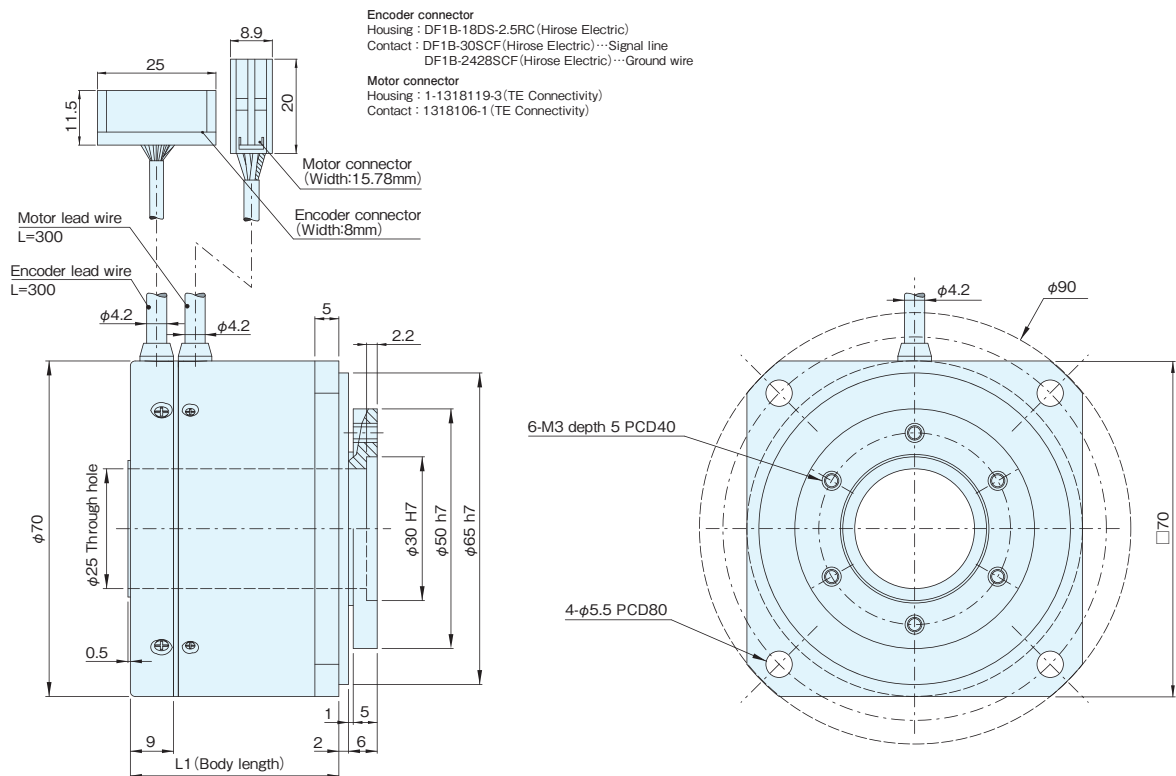　　　（*1) In case you use with 24V, please contact us since peak torque would change. （*2) Please ask us if there is a speed you prefer.
　　　（*3) Rated armature current is the value measured with the standard heat sink attached to the motor at an ambient temperature of 40℃.
　　　（*4) Please ask us if there is a particular resolution you prefer.

MDH(12)-40 series (Characteristic example)

MDH(12)-40 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC (Hirose Electric)
Contact : DF1B-30SCF (Hirose Electric)···Signal line
DF1B-2428SCF (Hirose Electric)···Ground wire
Motor connector
Housing : 1-1318119-3 (TE Connectivity)
Contact : 1318106-1 (TE Connectivity)

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

Standard models

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

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·cm²	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		
Standard heat sink		150×150×8 Aluminum		

Note: *The above specification is the value when operating with MC-200-7220.
(*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 series（Characteristic example）

MDH-60 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC (Hirose Electric)
Contact : DF1B-30SCF (Hirose Electric)···Signal line
　　　　 DF1B-2428SCF (Hirose Electric)···Ground wire
Motor connector
Housing : 1-1318119-3 (TE Connectivity)
Contact : 1318106-1 (TE Connectivity)

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

Standard models

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

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	2.5
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	10	10	10
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·cm²	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		
Standard heat sink		200×200×10 Aluminum（A5052）		

Note: ＊The above specification is the value when operating with MC-200-7220.
　　　（＊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 Outer Dimensions

Encoder connector
Housing : DF1B-18DS-2.5RC（Hirose Electric）
Contact : DF1B-30SCF（Hirose Electric）···Signal line
DF1B-2428SCF（Hirose Electric）···Ground wire
Motor connector
Housing : 1-1318119-3（TE Connectivity）
Contact : 1318106-1（TE Connectivity）

Motor connector（Width:15.78mm）
Encoder connector（Width:8mm）
Motor lead wire L=300
Encoder lead wire L=300

6-M3 depth 5 PCD40
4-ϕ5.5 PCD80
ϕ25 Through hole
ϕ70

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

Standard models

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

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	10	10	10
Rated armature current（*3）	Arms	2.8	3.0	3.5
Voltage constant	V/krpm	13	23	31
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·cm²	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	
Standard heat sink			225×225×10 Aluminum	

Note: *The above specification is the value when operating with MC-200-7220.
(*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-1306
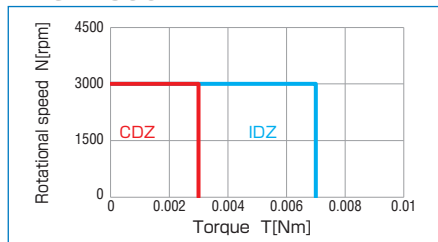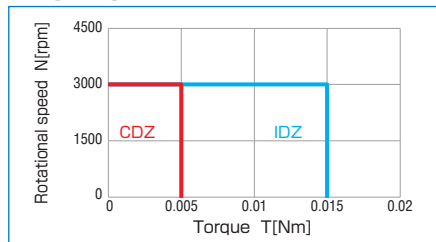
MDS-1312

MDS-1318
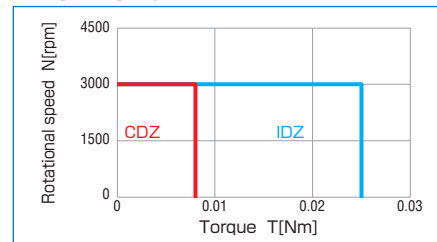
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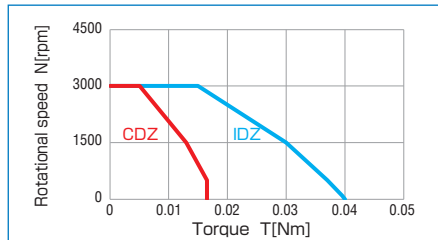
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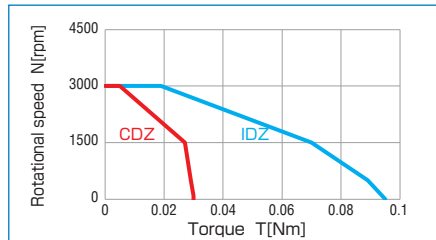
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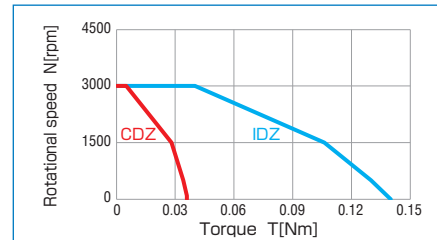
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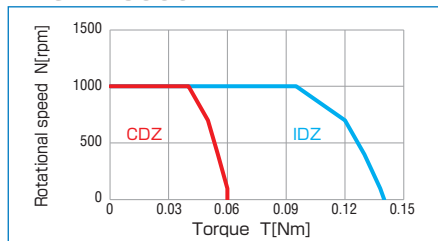
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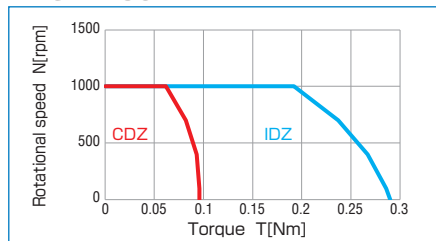
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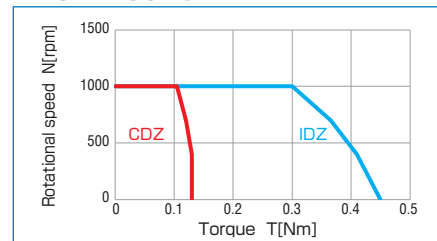
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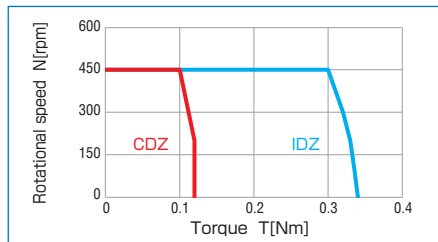
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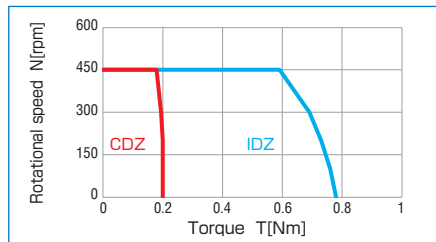
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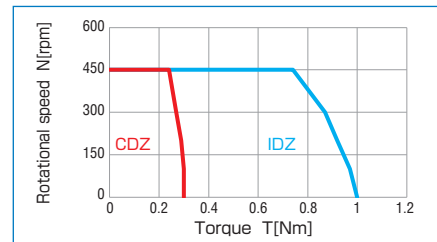
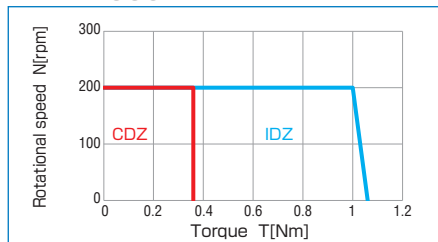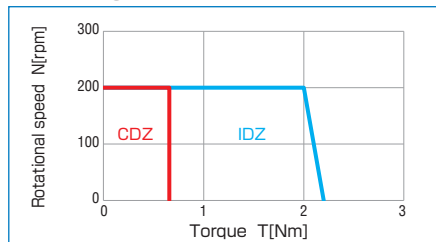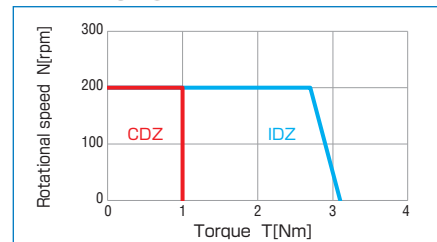## MDH-6006
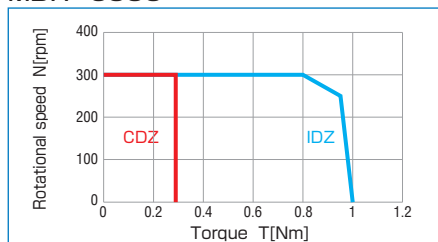
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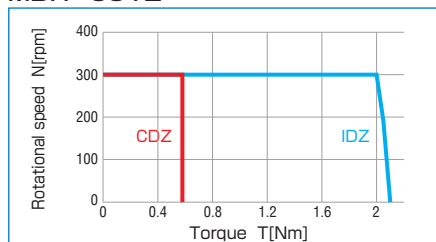
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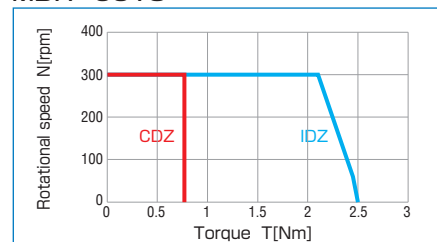
MDH-7006

MDH-7012

MDH-7018

This graph shows the usable range of the combination of MD series and Servo driver MC-200 series.

CDZ (Continuous Driver Zone): This indicates the range of "Torque vs. Rotation speed" in which continuous operation is possible. The effective load torque must always be within this range.

IDZ (Instantaneous Driver Zone): This indicates the area of "Torque vs. Rotation speed" in which instantaneous operation is possible. Use this range during acceleration and deceleration.

Extension cables

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

Model	Type	Cable specifications	Length
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
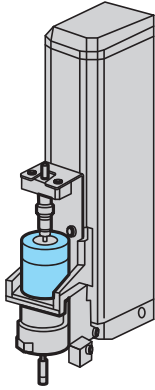
θ drive shaft

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
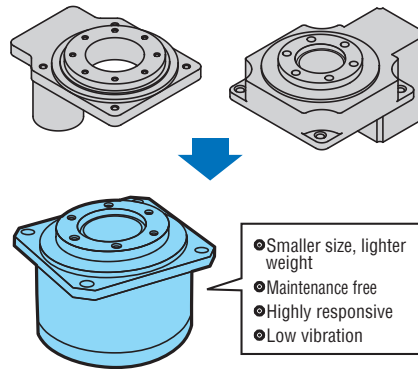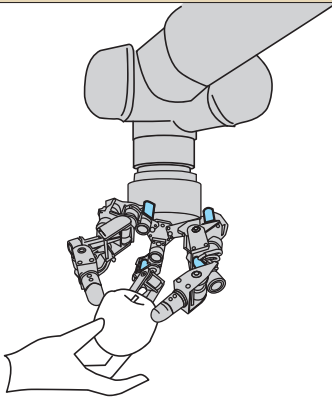
Instead of rotary actuator

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

- Smaller size, lighter weight
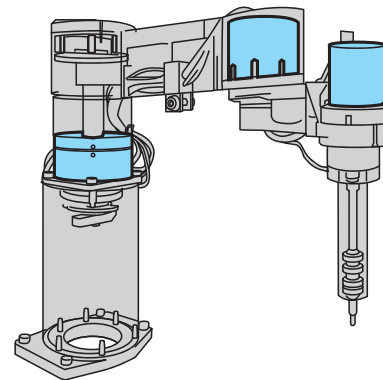- Maintenance free
- Highly responsive
- Low vibration

Want to make robot hand that can pick up various work

Sensor-less torque control

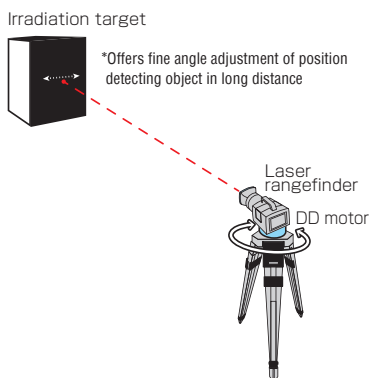It can realize small / high backdrivability robot hand. It provides highly responsive torque control.

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…
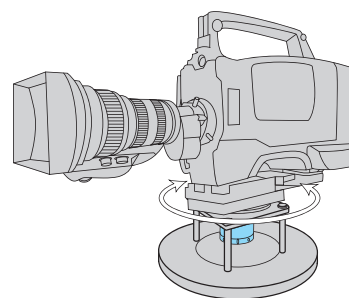
High inertia ratio drive

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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