SERVO SYSTEM PARTNER

MITSUBISHI ELECTRIC

MITSUBISHI SERVO AMPLIFIERS & MOTORS

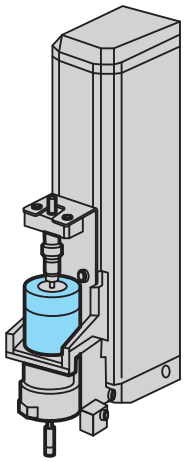
MELSERVO-J4

MTL

μDD Motor

Example of implementation

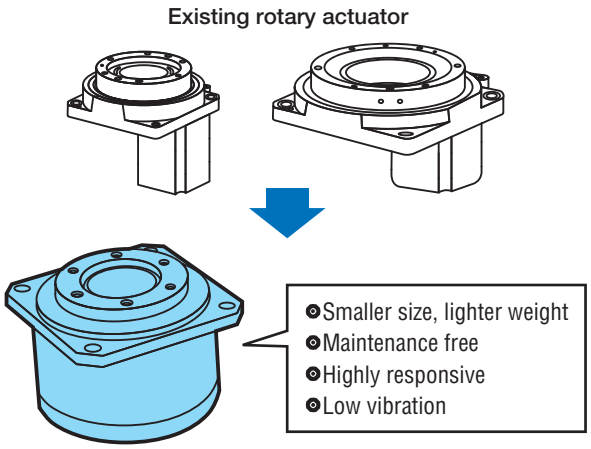
**Although we aim to improve takt time,
existing servomotor is too big**



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.

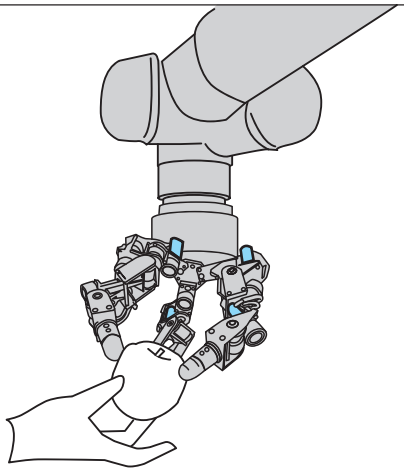
**Although hollow shaft is indispensable,
considering precision,
we don't want to increase machine elements**



Instead of rotary actuator

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

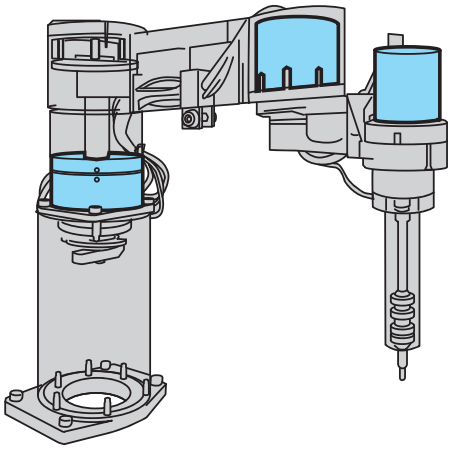
**Want to make robot hand that can
pick up various work**



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.

What's µDD motor?

Extremely small, high torque direct drive motor

- High torque realized with aperiodic compass and high density winding technology.
- Achieved both smaller size and lighter weight and precise positioning by comprehensive design of motor and high resolution encoder.
- Using high stiffness bearing that can bear direct heavy load.
- There is also a hollow shaft type.
- It could be customized depending on the needs of users.

MDS/MDH-20 series

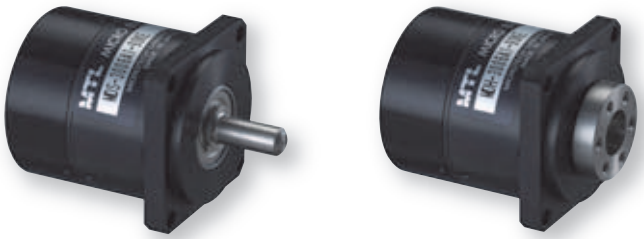
The smallest through-shaft servomotor in the world.
Perfect for end effector (hand, gripper, Zθ unit) with through-shaft.
It could be used for small hand in combination with low slowdown rate gear.

- Shell diameter: ϕ21mm Shell length: 32/38/44mm
- Maximum speed: 3000rpm
- Maximum resolution: 144,000C/R
- Hollow diameter: ϕ2.6mm(MDH model)

MDS/MDH-30 series

Perfect for highly-precise dispenser and small gimbal driving.

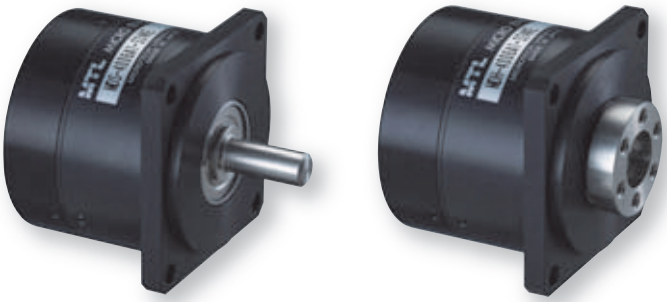
- Shell diameter: ϕ30mm Shell length: 32/38/44mm
- Maximum speed: 1000rpm
- Maximum resolution: 432,000C/R
- Hollow diameter: ϕ4mm(MDH model)



MDS/MDH-40 series

Perfect for end effector (convey θ axis and for alignment purpose), automation of production facility and robot (corresponds to wrest).

- Shell diameter: ϕ40mm Shell length: 32/38/44mm
- Maximum speed: 450rpm
- Maximum resolution: 1,296,000C/R
- Hollow diameter: ϕ6·12mm(MDH model)



MDH-70 series

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

- Shell diameter: ϕ70mm Shell length: 32/38/44mm
- Maximum speed: 200rpm
- Maximum resolution: 2,592,000C/R
- Hollow diameter: ϕ25mm(MDH model)

*Please refer to µDD motor catalogue for detail of full view.
*Currently, only incremental encoder is intended for collaboration.

Specification

MR-J4W2-0303B6-MX940J○○○

Series	Motor model	Amplifier supply voltage (DC24/48V)	Servo amplifier model MR-J4W2-0303B6-MX940○○○ (○○○ part)	Rated torque	Motor rated current	Peak torque	Motor peak current Peak current	Rated rotation rate	Maximum rotation rate
				N·m	Arms	N·m	Arms	rpm	rpm
MD-20	MDS-2006-36KE	DC24V	J183	0.014	1.100	0.033	2.600	1,500	3,000
	MDH-2006-36KE		J184	0.014	1.100	0.033	2.600	1,500	3,000
	MDS-2012-36KE		J185	0.026	1.200	0.090	4.300	1,500	3,000
	MDH-2012-36KE		J186	0.026	1.200	0.090	4.300	1,500	3,000
	MDS-2018-36KE		J187	0.030	1.400	0.120	5.600	1,500	3,000
	MDH-2018-36KE		J188	0.030	1.400	0.120	5.600	1,500	3,000
MD-30	MDS-3006-108KE	DC48V	J189	0.044	1.800	0.110	4.600	1,000	1,000
	MDH-3006-108KE		J190	0.044	1.800	0.110	4.600	1,000	1,000
	MDS-3012-108KE		J191	0.068	1.800	0.210	5.600	1,000	1,000
	MDH-3012-108KE		J192	0.068	1.800	0.210	5.600	1,000	1,000
	MDS-3018-108KE		J193	0.100	1.700	0.370	6.300	1,000	1,000
	MDH-3018-108KE		J194	0.100	1.700	0.370	6.300	1,000	1,000
MD-40	MDS-4006-324KE	DC48V	J195	0.100	1.600	0.330	6.300	450	450
	MDH-4006-324KE		J196	0.100	1.600	0.330	6.300	450	450
	MDS-4012-324KE		J197	0.160	1.700	0.700	7.500	450	450
	MDH-4012-324KE		J198	0.160	1.700	0.700	7.500	450	450
	MDS-4018-324KE		J199	0.230	2.300	1.000	10.000	450	450
	MDH-4018-324KE		J200	0.230	2.300	1.000	10.000	450	450
MDH (12)-40	MDH(12)-4006-324KE	DC48V	J214	0.100	1.600	0.330	6.300	450	450
	MDH(12)-4012-324KE		J215	0.160	1.700	0.700	7.500	450	450
	MDH(12)-4018-324KE		J216	0.230	2.300	1.000	10.000	450	450
MDH-70	MDH-7006-648KE	DC48V	J201	0.309	2.400	1.000	10.000	200	200
	MDH-7012-648KE		J202	0.528	2.400	2.200	10.000	200	200
	MDH-7018-648KE		J203	0.686	2.400	2.850	10.000	200	200

MR-J4-○○△-RJJ001

Series	Motor model	Recommended servo amplifier model (*1)	Rated torque	Motor rated current	Peak torque	Motor peak current Peak current	Rated rotation rate	Maximum rotation rate
			N·m	Arms	N·m	Arms	rpm	rpm
MD-30	MDS-3006-108KE	MR-J4-40A-RJJ001/ MR-J4-40B-RJJ001	0.044	1.800	0.110	4.600	1,000	1,000
	MDH-3006-108KE		0.044	1.800	0.110	4.600	1,000	1,000
	MDS-3012-108KE		0.068	1.800	0.210	5.600	1,000	1,000
	MDH-3012-108KE		0.068	1.800	0.210	5.600	1,000	1,000
	MDS-3018-108KE	MR-J4-60A-RJJ001/ MR-J4-60B-RJJ001	0.100	1.700	0.370	6.300	1,000	1,000
	MDH-3018-108KE		0.100	1.700	0.370	6.300	1,000	1,000
MD-40	MDS-4006-324KE		0.100	1.600	0.330	6.300	450	450
	MDH-4006-324KE		0.100	1.600	0.330	6.300	450	450
	MDS-4012-324KE	MR-J4-70A-RJJ001/ MR-J4-70B-RJJ001	0.160	1.700	0.700	7.500	450	450
	MDH-4012-324KE		0.160	1.700	0.700	7.500	450	450
	MDS-4018-324KE		0.230	2.300	1.000	10.00	450	450
	MDH-4018-324KE		0.230	2.300	1.000	10.00	450	450
MDH (12)-40	MDH(12)-4006-324KE	MR-J4-60A-RJJ001/ MR-J4-60B-RJJ001	0.100	1.600	0.330	6.300	450	450
	MDH(12)-4012-324KE	MR-J4-70A-RJJ001/ MR-J4-70B-RJJ001	0.160	1.700	0.700	7.500	450	450
	MDH(12)-4018-324KE		0.203	2.300	1.000	10.00	450	450
MDH-70	MDH-7006-648KE		0.360	2.800	1.000	10.00	200	200
	MDH-7012-648KE		0.660	3.000	2.200	10.00	200	200
	MDH-7018-648KE		1.000	3.500	3.100	10.00	200	200

*1) It can be used at lower volume. Please contact MICROTECH LABORATORY INC. for the motor torque for such case.

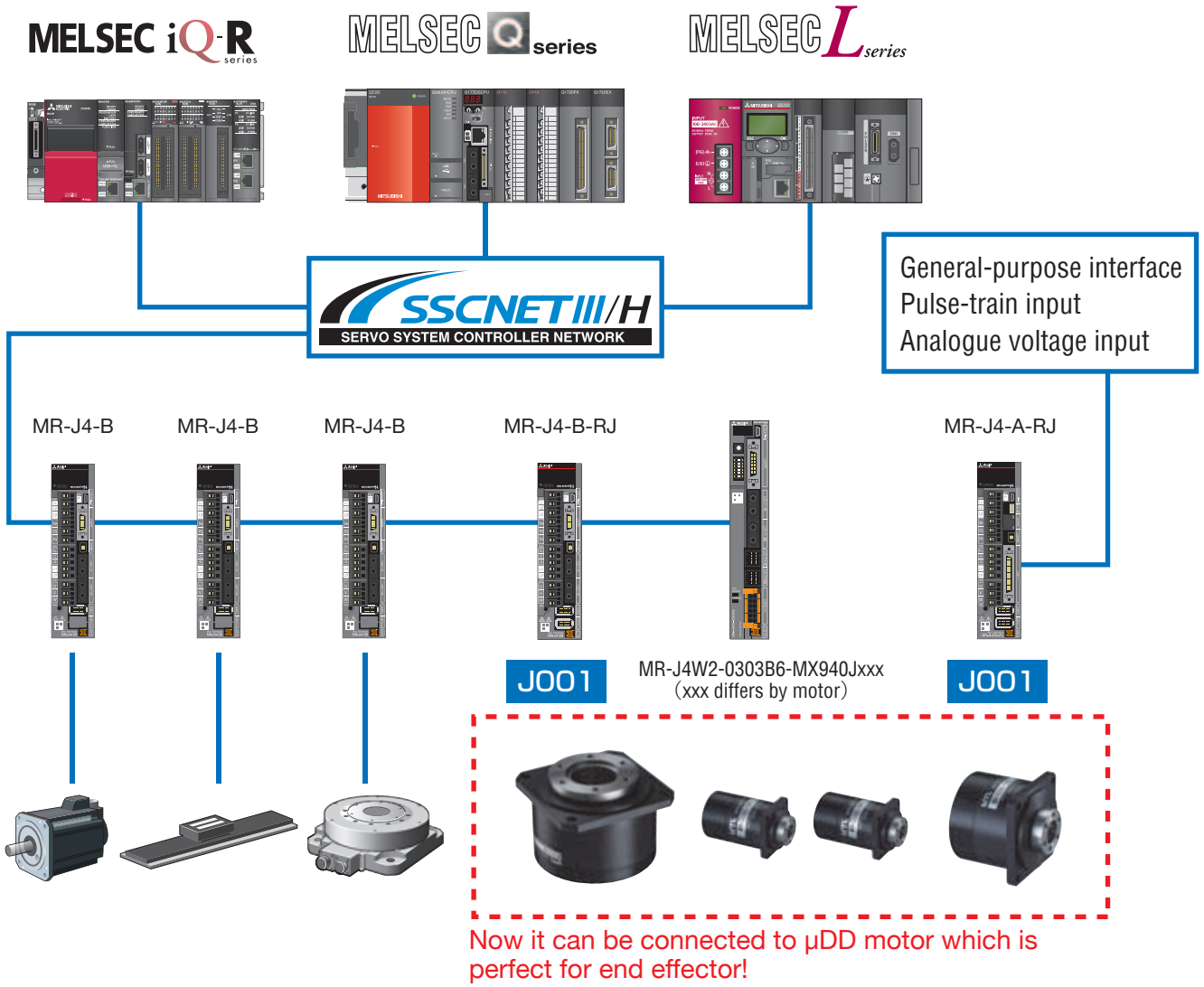
*Continuous rated current is the index measured at 40℃ ambient temperature with standard heat sink attached to motor.
For heat sink size, please refer to μDD motor catalogue.

*Due to pressure, MD-20 series can't be used in MR-J4-○○△-RJJ001.

Partner collaboration

MITSUBISHI SERVO AMPLIFIERS & MOTORS
MELSERVO-J4

Partner driving device

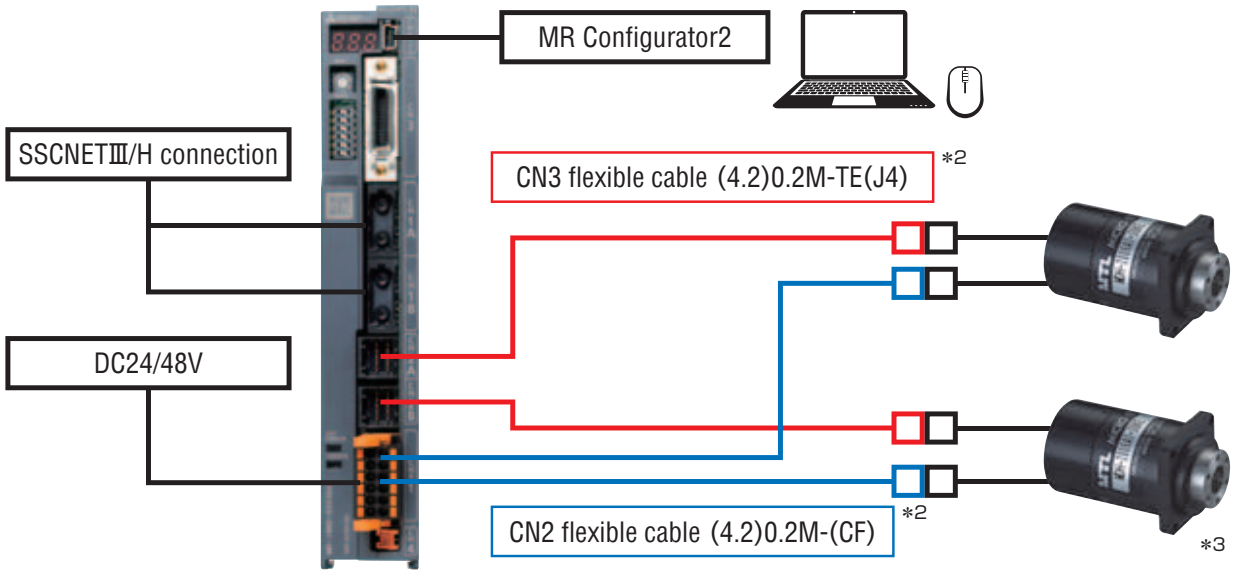


Implementation advantage

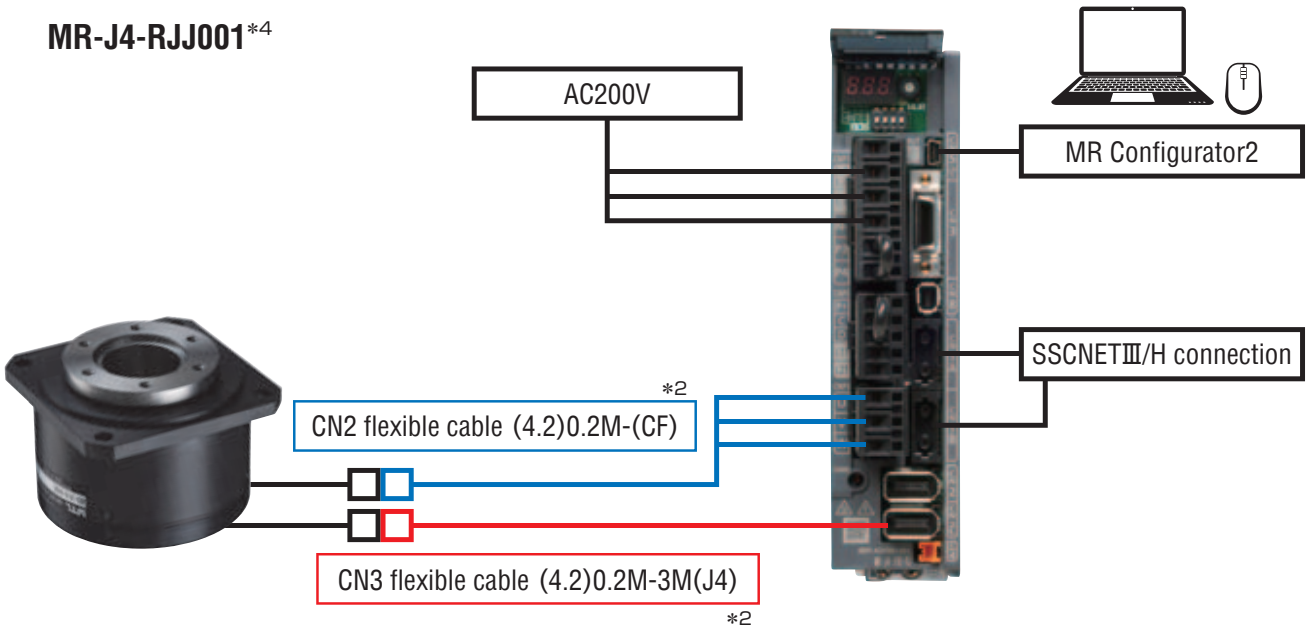
- Hollow shaft
  (Can pass through cable, air tube, laser, ball screw, splined shaft)
- Smaller size, lighter weight
- Highly-precise positioning, highly-precise position･torque measure
- Compliance control, high backdrivability
- Low speed high torque drive, lower speed ripple
- More silent driving

Connection example*1

MR-J4W2-0303B6-MX940Jxxx (xxx differs by motor)



MR-J4-RJJ001*4



*1: above is a connecting example. For actual connection, please refer to product specification.

*2: For exchange cable, please contact MICROTECH LABORATORY.

*3: The driving motor of MR-J4W2-0303B6-MX940Jxxx (xxx differs by motor) is 2-axis integrated model. In case you want to have different type for each axis, please contact us.

*4: Photo with display cover open.

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