Oriental motor



Tuning-Free AC Servo Motor Unit

NX Series

An AC servo motor unit that is capable of high accuracy control with easy operation. Smooth operation can be achieved in high inertia loads or belt drive applications without manual tuning.



Tuning-Free AC Servo Motor Unit

NX Series







Features

Easy Operation

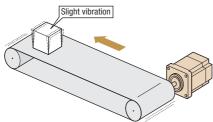
As with a stepping motor, stable operation can be achieved in high inertia drive and belt mechanism drive applications without gain adjustment. Also, adjusting the gain manually enables operation under even more stringent load conditions.

With automatic tuning, operation up to 50 times the rotor inertia is possible. With manual tuning, operation up to 100 times the rotor inertia is possible.

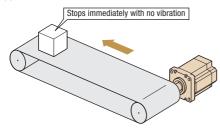
♦ Achieves Smooth Operation with Belt Mechanisms

Belt mechanisms can be operated with the same feel as a stepping motor. Operation without the occurrence of phenomena such as vibration before stopping is possible.

Conventional Models



• NX Series



Easy Handling

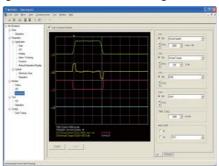
Basic settings and adjustments are made with switches and potentiometers on the front panel. This design allows for easy control without a computer and even saves the hassle of complicated UP and DOWN key operations.



Easy Setting and Easy Monitoring

By using the separately sold control module (**OPX-2A**) or data setting software (**MEXEO2**), it is possible to perform changing of parameters, function setting, and monitoring that is better suited to your system.

Operating Status Waveform Monitoring*



*Monitoring the operating status waveform requires the data setting software (MEXEO2), which is sold separately.

4 Control Modes

This servo unit can operate in 4 control modes. Also, with the separately sold control module (**OPX-2A**) or data setting software (**MEXEO2**), the functions of each control mode can be extended.

Extended functions → Page 32

♦ Position Control

The built-in high-resolution 20-bit absolute encoder enables highly accurate positioning.

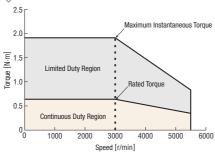
• High Speed and High Response

High-speed positioning can be performed utilizing the high-speed and high-response characteristics.

Maximum Speed 5500 r/min

Factory Settling Time $60 to 70 \, \text{ms}$

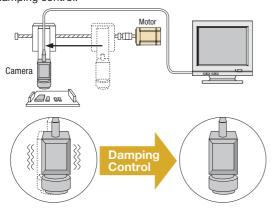
NX620AA- \Diamond



Damping Control

Eliminates load resonance by adjusting the potentiometer. This adjustment can be made easily and without any bothersome work such as searching for the resonance frequency.

<Application Example: Image inspection equipment>
Camera vibration during stopping can be suppressed by using the damping control.

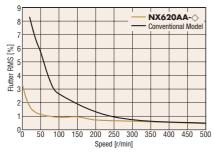


Absolute System

Use as an absolute system by attaching an optional battery (sold separately) is possible. The current position of the encoder can be stored, so resetting after a blackout or similar occurrence is easy.

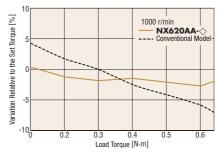
♦ Speed Control

The reduction of motor cogging torque and the use of a highresolution encoder have substantially reduced variation in rotation in the low-speed range (the flutter characteristic), resulting in smooth operation even at low speeds.



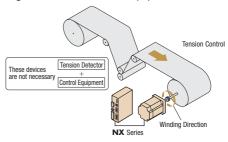
♦Torque Control

Variation of the generated torque relative to the set torque (torque accuracy) has been improved, resulting in highly accurate torque control.



♦Tension Control

Tension control such as winding films can be easily performed without using a detector or control equipment.



Degree of Protection IP65

These motors conform to IP65 and they are ideal for use in environments requiring dust resistance and water resistance to protect against cutting dust suspended in air, splashed water droplets, etc.

(Standard type, electromagnetic brake type, **P5** geared type: excluding installation surface and connector locations, **PJ** geared type: excluding connector locations)

Simple Connections with Included Cables

The **NX** Series comes with cables to connect the motor and driver. You can select from 1 m, 2 m, or 3 m cables. If you need cables longer than 3 m or cables offering superior flexibility, appropriate cables are available as accessories (sold separately).



Separate Main Power Supply and Control Power Supply

A control power supply terminal that is separate from the main power supply is provided. Even when the main power supply is cut off in the case of, for example, an emergency stop, operations such as position detection and alarm contents checking can be performed if 24 VDC power is supplied to the control power supply terminal. (Operation with only the main power supply is also possible.)

Conforms to Semiconductor Equipment and Materials International Standards "SEMI F47"

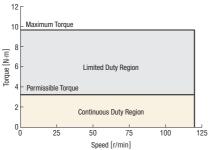
- Conforms to SEMI Standards regarding power supply voltage drop.
- Effective for use in semiconductor equipment.
 (Always evaluate the product with it mounted on actual equipment.)

High Performance Geared Motors

♦ High Permissible Torque and Wide Permissible Speed Range

Geared motors with high permissible torque that fully utilize the motor output torque.

NX65AA-PS25-



PS Geared Type

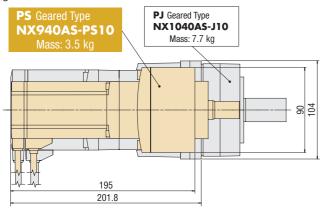
P5 geared motors with a new planetary gear mechanism are available.

♦ Low Backlash

The backlash is 15 arc minutes max. These motors can be used in wide-ranging applications.

♦ Compact and Lightweight Design

Compared to **PJ** geared types, these are compact, lightweight geared motors.



PJ Geared Type

♦ Non-Backlash

Geared motors that use high accuracy gears with an angular transmission accuracy of 4 arc minutes and backlash of 3 arc minutes.

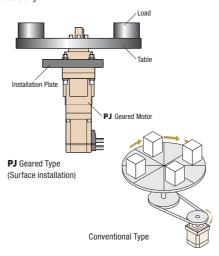
♦ Surface Installation is Possible

There are screw holes that permit installation of a load directly on the rotating surface integrated with the shaft. Since the load can be installed here directly (surface installation), the design is simple when using an index table.



Application Example with an Index Table

Parts that had been necessary, such as pulleys and belts, are no longer necessary.



Characteristics Comparison for Geared Motor

The motor and driver package comes in 4 geared motor frame sizes ranging from 60 to 104 mm. (\square 60: indicates a frame size of 60 mm.)

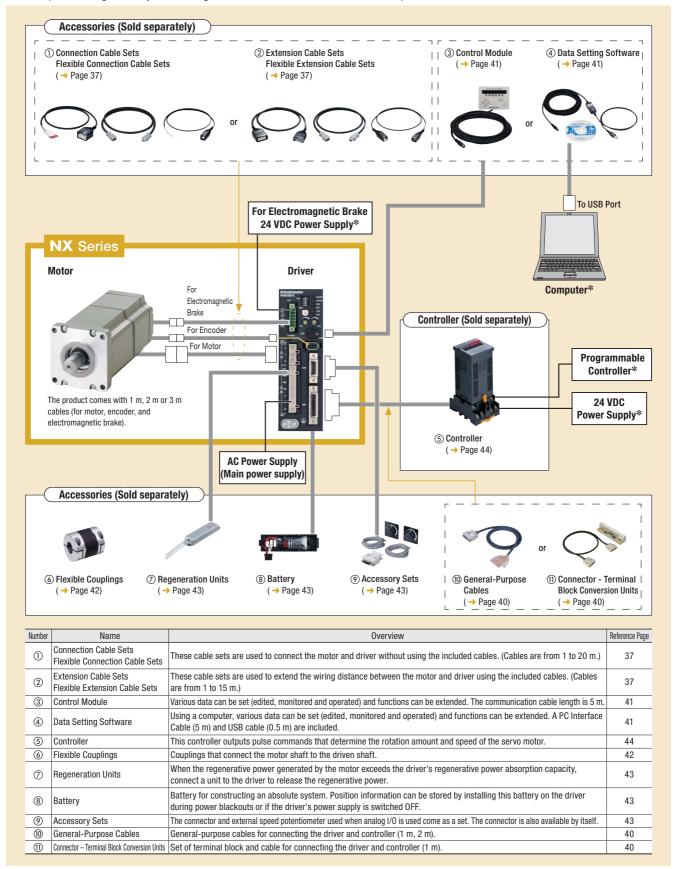
	Coared Type	Geared Type Features		Output Power				
	dealed Type	reatules	Power Supply Input	50 W	100 W	200 W	400 W	750 W
_	PS Geared Type (Planetary gear mechanism)		Single-Phase 100-115 VAC	□60	□60	□90		
Low Backlash			Single-Phase/Three-Phase 200-230 VAC	□60	□60	□90		
			Three-Phase 200-230 VAC				□90	
z	PJ Geared Type (Planetary gear mechanism)	· High Speed (Low gear ratio)	Single-Phase 100-115 VAC		□80	□80		
Non-Backlash		High Positioning Accuracy High Permissible Torque/Maximum Torque Center Shaft Surface installation is possible Gear Ratio Types 1:5, 1:10, 1:25	Single-Phase/Three-Phase 200-230 VAC		□80	□80		
			Three-Phase 200-230 VAC				□104	□104

System Configuration

Standard Type with Electromagnetic Brake

An example of a single axis system configuration with the **\$G8030J** controller in position control mode is shown below.

Not supplied



System Configuration Price Example

		Sold Separately						
NX Series	+	Controller	Flexible Coupling	Regeneration Unit	Battery	Accessory Set	Connector – Terminal Block Conversion Unit (1 m)	Data Setting Software
NX620MC-3		SG8030J-D	MCV300814	RGB100	BAT01A	AS-SV2	CC36T1	MEXE02

Product Number Code

NX 8 20 M A - J 25 - 1 8

1	Series Name	NX: NX Series
2	Motor Frame Size	4 : 42 mm 6 : 60 mm (60 mm) 8 : (80 mm) 9 : 85 mm (90 mm) 10 : (104 mm) () indicates the frame size for the gearhead
3	Output Power	5: 50 W 10: 100 W 20: 200 W 40: 400 W 75: 750 W
4	Configuration	A: Standard M: Electromagnetic Brake Type
(5)	Power-Supply Input	A: Single-Phase 100—115 VAC C: Single-Phase/Three-Phase 200—230 VAC S: Three-Phase 200—230 VAC
6	Gear Type	PS: PS Geared Type J: PJ Geared Type Blank: Standard Type
7	Gear Ratio	
8	Cable Length (Included)	1:1 m 2:2 m 3:3 m

Product Line

Standard Type

Power-Supply Input	Output Power	Product Name
	50 W	NX45AA-◇
Single-Phase 100-115 VAC	100 W	NX410AA- ◇
	200 W	NX620AA- \diamondsuit
O' - I - Di /Ti Di	50 W	NX45AC-♦
Single-Phase/Three-Phase 200-230 VAC	100 W	NX410AC-♦
200-230 VAO	200 W	NX620AC-♦
Three-Phase 200-230 VAC	400 W	NX640AS-♦
Tillee-Pilase 200-230 VAG	750 W	NX975AS- \Diamond

PS Geared Type

Power-Supply Input	Output Power	Product Name
		NX65AA-PS5- \diamondsuit
	50 W	NX65AA-PS10- \diamondsuit
		NX65AA-PS25- \diamondsuit
		NX610AA-PS5- \diamondsuit
Single-Phase 100-115 VAC	100 W	NX610AA-PS10- \diamondsuit
		NX610AA-PS25-
		NX920AA-PS5-♦
	200 W	NX920AA-PS10-
		NX920AA-PS25-�
		NX65AC-PS5-♦
	50 W	NX65AC-PS10-♦
		NX65AC-PS25-♦
O' - I - Di /Ti Di	100 W	NX610AC-PS5-♦
Single-Phase/Three-Phase 200-230 VAC		NX610AC-PS10-♦
200-230 VAG		NX610AC-PS25-♦
		NX920AC-PS5-♦
	200 W	NX920AC-PS10- \diamondsuit
		NX920AC-PS25-♦
		NX940AS-PS5-♦
Three-Phase 200-230 VAC	400 W	NX940AS-PS10-
		NX940AS-PS25-♦

PJ Geared Type

Power-Supply Input	Output Power	Product Name		
		NX810AA-J5- 		
	100 W	NX810AA-J10-<>		
Cinalo Dhoos 100 115 VAC		NX810AA-J25- \diamondsuit		
Single-Phase 100-115 VAC		NX820AA-J5- \diamondsuit		
	200 W	NX820AA-J10- \Diamond		
		NX820AA-J25-♦		
		NX810AC-J5-♦		
	100 W	NX810AC-J10-♦		
Single-Phase/Three-Phase		NX810AC-J25-♦		
200-230 VAC		NX820AC-J5-♦		
		NX820AC-J10- \diamondsuit		
		NX820AC-J25- \diamondsuit		
		NX1040AS-J5- \diamondsuit		
	400 W	NX1040AS-J10- \diamondsuit		
Th Div 000 000 1/40		NX1040AS-J25- \diamondsuit		
Three-Phase 200-230 VAC		NX1075AS-J5- \diamondsuit		
	750 W	NX1075AS-J10-♦		
		NX1075AS-J25- \diamondsuit		

Standard Type with Electromagnetic Brake

Power-Supply Input	Output Power	Product Name
	50 W	NX45MA- \diamondsuit
Single-Phase 100-115 VAC	100 W	NX410MA-♦
	200 W	NX620MA- \diamondsuit
Cinala Dhana/Thuan Dhana	50 W	NX45MC-♦
Single-Phase/Three-Phase 200-230 VAC	100 W	NX410MC-♦
200-230 VAO	200 W	NX620MC-♦
Three-Phase 200-230 VAC	400 W	NX640MS-♦
THEE-FHASE 200-230 VAG	750 W	NX975MS- \Diamond

PS Geared Type with Electromagnetic Brake

Power-Supply Input	Output Power	Product Name
		NX65MA-PS5- \diamondsuit
	50 W	NX65MA-PS10-♦
		NX65MA-PS25- \diamondsuit
		NX610MA-PS5-♦
Single-Phase 100-115 VAC	100 W	NX610MA-PS10- \diamondsuit
		NX610MA-PS25- \diamondsuit
		NX920MA-PS5- \diamondsuit
	200 W	NX920MA-PS10- \diamondsuit
		NX920MA-PS25- ◇
		NX65MC-PS5-♦
	50 W	NX65MC-PS10- \diamondsuit
		NX65MC-PS25-♦
Cinala Dhana/Thuan Dhana		NX610MC-PS5- \diamondsuit
Single-Phase/Three-Phase 200-230 VAC	100 W	NX610MC-PS10- \diamondsuit
200-230 VAO		NX610MC-PS25- \diamondsuit
		NX920MC-PS5-♦
	200 W	NX920MC-PS10-♦
		NX920MC-PS25-♦
		NX940MS-PS5-♦
Three-Phase 200-230 VAC	400 W	NX940MS-PS10-
		NX940MS-PS25-

PJ Geared Type with Electromagnetic Brake

Power-Supply Input	Output Power	Product Name
		NX810MA-J5-♦
	100 W	NX810MA-J10-♦
Cinala Dhana 100 115 VAO		NX810MA-J25-♦
Single-Phase 100-115 VAC		NX820MA-J5- \diamondsuit
	200 W	NX820MA-J10- \diamondsuit
		NX820MA-J25- \diamondsuit
		NX810MC-J5- \diamondsuit
	100 W	NX810MC-J10-♦
Single-Phase/Three-Phase		NX810MC-J25-♦
200-230 VAC	200 W	NX820MC-J5-♦
		NX820MC-J10-♦
		NX820MC-J25-♦
		NX1040MS-J5-♦
	400 W	NX1040MS-J10-♦
TI Pl 000 000 1/40		NX1040MS-J25-♦
Three-Phase 200-230 VAC		NX1075MS-J5-
	750 W	NX1075MS-J10-♦
		NX1075MS-J25- \diamondsuit

[■] A number indicating the desired length of 1 (1 m), 2 (2 m) or 3 (3 m) for the cables included with the product is entered where the box ♦ is located within the product name. Select a desired cable length from 1 m, 2 m and 3 m.

The following items are included in each product. -

Motor, Driver, Cable for Motor*, Cable for Encoder*, Cable for Electromagnetic Brake* (Electromagnetic brake type only), Connector for I/O Signal, Motor Connector, Connector for Regeneration Unit Input/Main Power Input Terminals, Connector for 24 VDC Power-Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Terminals, Connector Wiring Lever, Operating Manual *The product comes with 1 m, 2 m, or 3 m cables including a cable for motor, cable for encoder, and cable for electromagnetic brake (electromagnetic brake type only). If you need cables longer than 3 m or cables offering excellent flexibility, select appropriate cables from the accessories (sold separately). Refer to page 37 for details.

of If you need cables longer than 3 m or cables offering excellent flexibility, select appropriate cables from the accessories (sold separately). Refer to page 37 for details.

Standard Type Frame Size 42 mm, 60 mm, 85 mm

Specifications (RoHS)



Product Name		Standard	NX45A□-◇	NX410A□-◇	NX620A□-◇	NX640AS-♦	NX975AS-♦	
Produ	ict name	Electromagnetic Brake Type	NX45M□-◇	NX410M□-◇	NX620M□-◇	NX640MS-♦	NX975MS-♦	
Rated Output Power W			50	100	200	400	750	
Rated Speed		r/min			3000			
Maximum Speed		r/min			5500			
Rated Torque		N·m	0.159	0.318	0.637	1.27	2.39	
Maximum Instant	taneous Torque	N·m	0.478	0.955	1.91	3.82	7.16	
Rotor Inertia		J: kg⋅m²	0.0174×10 ⁻⁴ [0.0217×10 ⁻⁴]*1	0.0290×10 ⁻⁴ [0.0334×10 ⁻⁴]*1	0.162×10 ⁻⁴ [0.185×10 ⁻⁴]*1	0.291×10 ⁻⁴ [0.314×10 ⁻⁴]*1	0.948×10 ⁻⁴ [1.03×10 ⁻⁴]*1	
Permissible Load	Inertia*2	J: kg⋅m ²	1.74×10 ⁻⁴	2.90×10 ⁻⁴	16.2×10 ⁻⁴	29.1×10 ⁻⁴	94.8×10 ⁻⁴	
Resolution		P/R	100 to 100000 (Factory setting 1000)					
Detector			Absolute Encoder 1 rotation 20 bits, multiple rotations 16 bits					
	Voltage and Frequency	AC Main Power Supply	Single-Phase 100-115 VAC -15% to +10% 50/60 Hz Single-Phase 200-230 VAC -15% to +10% 50/60 Hz Three-Phase 200-230 VAC -15% to +10% 50/60 Hz					
Power-Supply Input		DC Control Power Supply						
прис	Data di cal	Single-Phase 100-115 VAC	1.9	2.9	4.6	-	_	
	Rated Input Current*3 A	Single-Phase 200-230 VAC	1.2	1.8	2.8	-	_	
	ourient A	Three-Phase 200-230 VAC	0.7	1	1.6	2.8	4.7	
		Туре	Power Off Activated Type					
		Power-Supply Input			24 VDC±10%			
Electromagnetic	Brake*4	Power Consumption W	6	.1	7	.2	8.5	
		Excitation Current A	0.	25	0	.3	0.35	
		Static Friction Torque N·m	0.159	0.318	0.637	1.27	2.39	

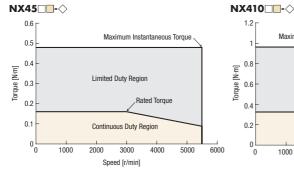
^{*1} The brackets [] indicate the specifications for the electromagnetic brake type.

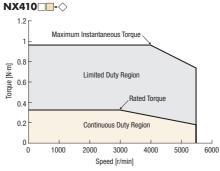
Note

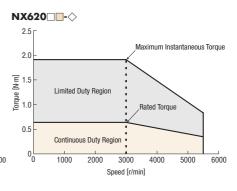
For continuous operation of the motor at the rated values, a heat sink with aluminum plate size dimensions that are equal to or higher than those shown below is required.

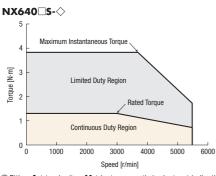
NX640 \square 5- \diamondsuit : 300×300 mm Thickness 10 mm **NX975** \square 5- \diamondsuit : 350×350 mm Thickness 10 mm

Speed – Torque Characteristics











Either A (standard) or M (electromagnetic brake type) indicating the motor shaft configuration is entered where the box □ is located within the product name.
 Either A (single-phase 100-115 VAC) or C (single-phase 200-230 VAC/three-phase 200-230 VAC) indicating the power supply voltage is entered where the box □ is located within the product name.
 A number indicating the desired length of 1 (1 m), 2 (2 m) or 3 (3 m) for the cables included with the product is entered where the box ○ is located within the product name.
 Depending on the operating conditions, a regeneration unit may be required. Regeneration Unit → Page 43

7

^{*2} With automatic tuning, operation up to 50 times the rotor inertia is possible; with manual tuning, operation up to 100 times the rotor inertia is possible.

^{*3} These values are for operation in the continuous duty region. For operation in the limited duty region, the maximum current is approximately 3 times the value shown.

^{*4} The electromagnetic brake is for holding the position when the power supply is OFF. The electromagnetic brake cannot be used to stop the motor. A separate power supply for the electromagnetic brake is also required.

PS Geared Type Frame Size 60 mm

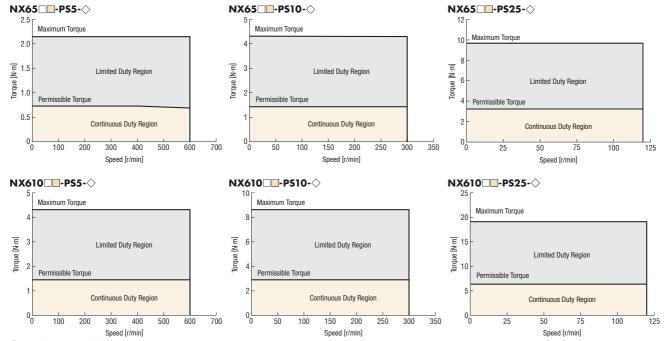
Specifications (RoHS)

(E

Product Name		Standard	NX65APS5-♦	NX65A-PS10-	NX65A-PS25-	NX610APS5-	NX610APS10-♦	NX610APS25-	
Produc	t Name	Electromagnetic Brake Type	NX65M-PS5-	NX65M-PS10-	NX65MPS25-	NX610MPS5-	NX610MPS10-♦	NX610MPS25-	
Rated Output Power W				50			100		
Motor Permissi	ble Speed	r/min			30	000			
Permissible Tor	que	N·m	0.716	1.43	3.22	1.43	2.86	6.44	
Maximum Torq	ue	N•m	2.15	4.29	9.66	4.29	8.59	19.3	
Permissible Sp	eed Range	r/min	0~600	0~300	0~120	0~600	0~300	0~120	
Rotor Inertia		J: kg⋅m²	0.01	74×10 ⁻⁴ [0.0217×1	0-4]*1	0.02	90×10 ⁻⁴ [0.0334×1	0-4]*1	
Gearhead Inter	nal Inertia*2	J: kg∙m²	0.0431×10 ⁻⁴	0.0433×10 ⁻⁴	0.0436×10 ⁻⁴	0.0431×10 ⁻⁴	0.0433×10 ⁻⁴	0.0436×10 ⁻⁴	
Permissible Loa	ad Inertia* ³	J: kg⋅m²	0.0022	0.0087	0.054	0.0036	0.0145	0.091	
Gear Ratio			5	10	25	5	10	25	
Resolution*4		P/R	100 to 100000 (Factory setting 1000)						
Detector				Absolute	Encoder 1 rotation 2	0 bits, multiple rotat	ions 16 bits		
Backlash		arc minutes (degrees)			1	15			
	Voltage and Frequency	AC Main Power Supply		Single-Phase 100-115 VAC -15 to +10% 50/60 Hz Single-Phase 200-230 VAC -15 to +10% 50/60 Hz Three-Phase 200-230 VAC -15 to +10% 50/60 Hz					
Power-Supply		DC Control Power Supply	24 VDC±10% 0.8 A						
Input	Data d Innut	Single-Phase 100-115 VAC		1.9			2.9	_	
	Rated Input Current*5 A	Single-Phase 200-230 VAC		1.2			1.8		
	ourrent A	Three-Phase 200-230 VAC		0.7			1.0	_	
		Туре	Power Off Activated Type						
		Power-Supply Input			24 VD0	C±10%			
Electromagneti	c Brake * 6	Power Consumption W			6	5.1			
		Excitation Current A			0.	25			
		Static Friction Torque N·m	0.716	1.43	3.22	1.43	2.86	6.44	

- *1 The brackets [] indicate the value for the electromagnetic brake type.
- *2 The gearhead internal inertia is the motor shaft converted value.
- *3 The value for 50 times the rotor inertia.
- *4 The resolution for the motor output shaft.
- \$5 These values are for operation in the continuous duty region. For operation in the limited duty region, the maximum current is approximately 3 times the value shown.
- *6 The electromagnetic brake is for holding the position when the power supply is OFF. The electromagnetic brake cannot be used to stop the motor. A separate power supply for the electromagnetic brake is also required.

Speed - Torque Characteristics



- Either **A** (standard) or **M** (electromagnetic brake type) indicating the motor shaft configuration is entered where the box ☐ is located within the product name.

 Either **A** (single-phase 100-115 VAC) or **C** (single-phase 200-230 VAC/three-phase 200-230 VAC) indicating the power supply voltage is entered where the box ☐ is located within the product name. A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cables included with the product is entered where the box ♦ is located within the product name.
- Depending on the operating conditions, a regeneration unit may be required. Regeneration Unit → Page 43

PS Geared Type Frame Size 90 mm

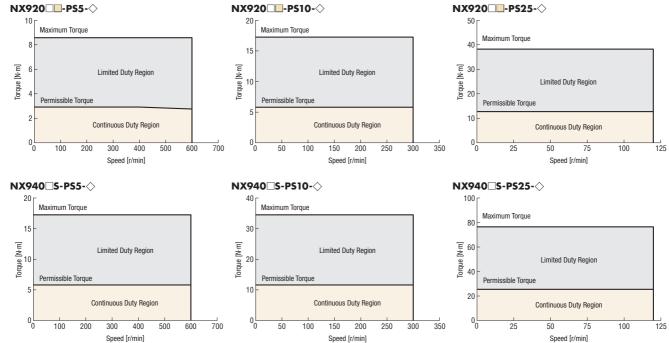
Specifications (RoHS)



Product Name		Standard	NX920A□-PS5-♦	NX920A□-PS10-♦	NX920A□-P\$25-♦	NX940AS-PS5-♦	NX940AS-PS10-♦	NX940AS-PS25-♦	
Produc	t wanne	Electromagnetic Brake Type	NX920MPS5-	NX920MPS10-♦	NX920MPS25-♦	NX940MS-PS5- \diamondsuit	NX940MS-PS10-♦	NX940MS-PS25-♦	
Rated Output Power W				200 400					
Motor Permissi	ble Speed	r/min			30	000			
Permissible Tor	que	N·m	2.87	5.73	12.9	5.72	11.4	25.7	
Maximum Torqi	ue	N·m	8.6	17.2	38.7	17.1	34.3	77.2	
Permissible Spe	eed Range	r/min	0~600	0~300	0~120	0~600	0~300	0~120	
Rotor Inertia		J: kg∙m²		62×10 ⁻⁴ [0.185×10	· ⁴]* ¹	0.2	91×10 ⁻⁴ [0.314×10	-4]*1	
Gearhead Interi	nal Inertia* ²	J: kg⋅m²		0.160×10 ⁻⁴	0.175×10 ⁻⁴	0.163×10 ⁻⁴	0.160×10 ⁻⁴	0.175×10 ⁻⁴	
Permissible Loa	ad Inertia*3	J: kg⋅m²	0.02	0.081	0.51	0.036	0.146	0.91	
Gear Ratio			5	10	25	5	10	25	
Resolution*4		P/R	100 to 100000 (Factory setting 1000)						
Detector			Absolute Encoder 1 rotation 20 bits, multiple rotations 16 bits						
Backlash		arc minutes (degrees)			1	15			
				100-115 VAC -15 to		Three-Phase 200-230 VAC -15% to +10% 50/60 Hz			
	Voltage and	AC Main Power Supply	3	200-230 VAC —15 to					
Power-Supply	Frequency	D0.0 - 1 - 1 D 0 1	Three-Phase 200-230 VAC -15 to +10% 50/60 Hz						
Input		DC Control Power Supply							
	Rated Input	Single-Phase 100-115 VAC		4.6		-			
	Current*5 A	Single-Phase 200-230 VAC		2.8		-			
		Three-Phase 200-230 VAC		1.6			2.8		
		Туре	Power Off Activated Type						
		Power-Supply Input			24 VD	C±10%			
Electromagneti	c Brake * 6	Power Consumption W			7	7.2			
		Excitation Current A		·	0	.3			
		Static Friction Torque N·m	2.87	5.73	12.9	5.72	11.4	25.7	

- *1 The brackets [] indicate the specifications for the electromagnetic brake type.
- *2 The gearhead internal inertia is the motor shaft converted value.
- *3 The value for 50 times the rotor inertia.
- *4 The resolution for the motor output shaft.
- *5 These values are for operation in the continuous duty region. For operation in the limited duty region, the maximum current is approximately 3 times the value shown.
- *6 The electromagnetic brake is for holding the position when the power supply is OFF. The electromagnetic brake cannot be used to stop the motor. A separate power supply for the electromagnetic brake is also required.
- *7 NX920 only

Speed – Torque Characteristics



- Either **A** (standard) or **M** (electromagnetic brake type) indicating the motor shaft configuration is entered where the box ☐ is located within the product name.

 Either **A** (single-phase 100-115 VAC) or **C** (single-phase 200-230 VAC/three-phase 200-230 VAC) indicating the power supply voltage is entered where the box ☐ is located within the product name. A number indicating the desired length of **1** (1 m), **2** (2 m) or **3** (3 m) for the cables included with the product is entered where the box ♦ is located within the product name.
- Depending on the operating conditions, a regeneration unit may be required. Regeneration Unit → Page 43

PJ Geared Type Frame Size 80 mm

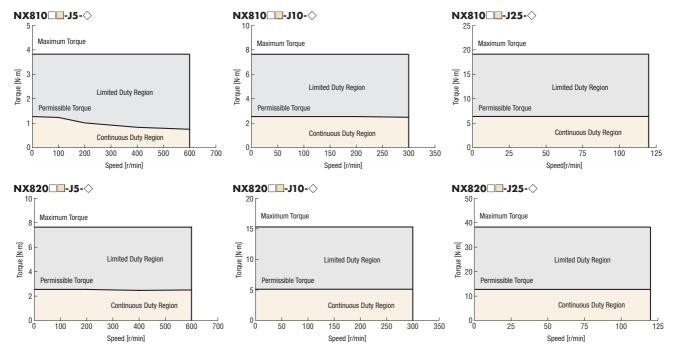
Specifications (RoHS)



Product Name		Standard	NX810A□-J5-◇	NX810A□-J10-◇	NX810AJ25-	NX820A□-J5-◇	NX820A□-J10-♦	NX820A□-J25-♦	
		Electromagnetic Brake Type	NX810MJ5-	NX810MJ10-	NX810MJ25-	NX820M□-J5-◇	NX820MJ10-	NX820M□-J25-♦	
Rated Output Power		W	100				200		
Motor Permissi	ble Speed	r/min			30	00			
Permissible Tor	que	N•m	1.27	2.54	6.36	2.54	5.1	12.7	
Maximum Torqi	ue	N•m	3.82	7.63	19.1	7.63	15.3	38.2	
Permissible Spe	eed Range	r/min	0~600	0~300	0~120	0~600	0~300	0~120	
Rotor Inertia		J: kg⋅m²	0.0	95×10 ⁻⁴ [0.118×10 ⁻	· ⁴]* ¹	0.1	60×10 ⁻⁴ [0.182×10 ⁻¹	4]*1	
Gearhead Intern	nal Inertia* ²	J: kg∙m²	0.481×10 ⁻⁴	0.363×10 ⁻⁴	0.351×10 ⁻⁴	0.481×10 ⁻⁴	0.363×10 ⁻⁴	0.351×10 ⁻⁴	
Permissible Loa	ad Inertia* ³	J: kg∙m²	0.012	0.0475	0.297	0.02	0.08	0.5	
Gear Ratio			5	10	25	5	10	25	
Resolution*4		P/R	100 to 100000 (Factory setting 1000)						
Detector			Absolute Encoder 1 rotation 20 bits, multiple rotations 16 bits						
Backlash		arc minutes (degrees)	3						
			Single-Phase 100-115 VAC -15 to +10% 50/60 Hz						
	Voltage and Frequency	AC Main Power Supply	Single-Phase 200 $-$ 230 VAC $$ $-$ 15 to $$ +10% 50/60 Hz Three-Phase 200 $-$ 230 VAC $$ $-$ 15 to $$ +10% 50/60 Hz						
Power-Supply		DC Control Power Supply	24 VDC±10% 0.8 A						
Input	Datad Innut	Single-Phase 100-115 VAC		2.8		4.6			
	Rated Input Current*5 A	Single-Phase 200-230 VAC		1.8		2.8			
	ourient A	Three-Phase 200-230 VAC		1		1.6			
		Туре	Power Off Activated Type						
		Power-Supply Input			24 VD0	C±10%			
Electromagneti	c Brake* ⁶	Power Consumption W			7	.2			
		Excitation Current A			0	0.3			
		Static Friction Torque N·m	1.27	2.54	6.36	2.54	5.1	12.7	

- *1 The brackets [] indicate the value for the electromagnetic brake type.
- $*3$ The value for 50 times the rotor inertia.
- *4 The resolution for the motor output shaft.
- *5 These values are for operation in the continuous duty region. For operation in the limited duty region, the maximum current is approximately 3 times the value shown.
- *6 The electromagnetic brake is for holding the position when the power supply is OFF. The electromagnetic brake cannot be used to stop the motor. A separate power supply for the electromagnetic brake is also required.

Speed – Torque Characteristics



- Either A (standard) or M (electromagnetic brake type) indicating the motor shaft configuration is entered where the box □ is located within the product name.
 Either A (single-phase 100-115 VAC) or C (single-phase 200-230 VAC/three-phase 200-230 VAC) indicating the power supply voltage is entered where the box □ is located within the product name.
 A number indicating the desired length of 1 (1 m), 2 (2 m) or 3 (3 m) for the cables included with the product is entered where the box ♦ is located within the product name.
- Depending on the operating conditions, a regeneration unit may be required. Regeneration Unit → Page 43

PJ Geared Type Frame Size 104 mm

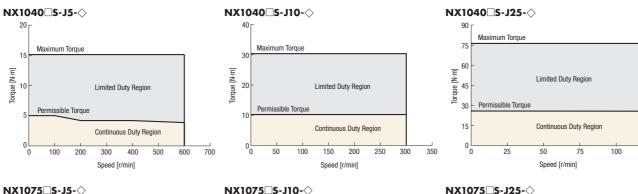
Specifications (RoHS)

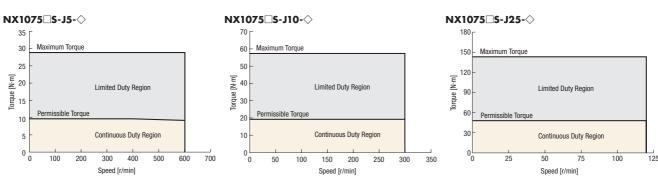
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Product Name		Standard	NX1040AS-J5-	NX1040AS-J10-	NX1040AS-J25- \diamondsuit	NX1075AS-J5- \diamondsuit	NX1075AS-J10- \diamondsuit	NX1075AS-J25- \diamondsuit	
		Electromagnetic Brake Type	magnetic Brake Type NX1040MS-J5- NX1040MS-J10		NX1040MS-J25-�	NX1075MS-J5-	NX1075MS-J10-<>	NX1075MS-J25-�	
Rated Output P	ower	W	400				750		
Motor Permissi	ble Speed	r/min		3000					
Permissible To	rque	N·m	5.08	10.2	25.4	9.56	19.1	47.8	
Maximum Torq	ue	N·m	15.2	30.5	76.2	28.7	57.3	143	
Permissible Sp	eed Range	r/min	0~600	0~300	0~120	0~600	0~300	0~120	
Rotor Inertia		J: kg⋅m ²	0.5	35×10 ⁻⁴ [0.617×10 ⁻¹	4]*1	0.9	941×10 ⁻⁴ [1.02×10 ⁻¹	4]*1	
Gearhead Internal Inertia* ²		J: kg⋅m²	1.31×10 ⁻⁴	0.888×10 ⁻⁴	0.832×10 ⁻⁴	1.31×10 ⁻⁴	0.888×10 ⁻⁴	0.832×10 ⁻⁴	
Permissible Load Inertia*3		J: kg⋅m²	669×10 ⁻⁴	2680×10 ⁻⁴	16700×10 ⁻⁴	1180×10 ⁻⁴	4710×10 ⁻⁴	29400×10 ⁻⁴	
Gear Ratio			5	10	25	5	10	25	
Resolution*4		P/R	100 to 100000 (Factory setting 1000)						
Detector			Absolute Encoder 1 rotation 20 bits, multiple rotations 16 bits						
Backlash		arc minutes (degrees)	3						
	Voltage and	AC Main Power Supply	Three-Phase 200-230 VAC -15% to +10% 50/60 Hz						
Power-Supply	Frequency	DC Control Power Supply			24 VDC±1	0% 0.8 A			
Input	Rated Input Current* ⁵ A	Three-Phase 200-230 VAC		2.9		4.7			
		Туре	Power Off Activated Typ						
Electromagnetic Brake ^{‡6}		Power-Supply Input	24 VDC±10%						
		Power Consumption W			8.	5			
		Excitation Current A			0.3	35			
		Static Friction Torque N·m	5.08	10.2	25.4	9.56	19.1	47.8	

- $\+1$ The brackets [] indicate the specifications for the electromagnetic brake type.
- *2 The gearhead internal inertia is the motor shaft converted value.
- *3 The value for 50 times the rotor inertia.
- *4 The resolution for the motor output shaft.
- *5 These values are for operation in the continuous duty region. For operation in the limited duty region, the maximum current is approximately 3 times the value shown.
- *6 The electromagnetic brake is for holding the position when the power supply is OFF. The electromagnetic brake cannot be used to stop the motor. A separate power supply for the electromagnetic brake is also required

Speed - Torque Characteristics





- Either A (standard) or M (electromagnetic brake type) indicating the motor shaft configuration is entered where the box ☐ is located within the product name.
 A number indicating the desired length of 1 (1 m), 2 (2 m) or 3 (3 m) for the cables included with the product is entered where the box ♦ is located within the product name.
- Depending on the driving conditions, a regeneration unit may be required. Regeneration Unit → Page 43

Driver Specifications

Interface	Pulse, Analog Speed Command Voltage, Analog Torque Command Voltage
Max. Input Pulse Frequency	Line driver output by programmable controller: 500 kHz (When the pulse duty is 50%)
wax. Input ruise riequency	Open collector output by programmable controller: 250 kHz (When the pulse duty is 50%)*
	When the following protective functions are activated, an alarm output signal is output and the motor is stopped.
Protective Function	Overflow, Overcurrent Protection, Overheat Protection, Overvoltage Protection, Main Power Supply Error, Undervoltage, Motor Overheat Protection, Sensor Error during Operation, Encoder Communication Error, Overload, Overspeed, Position Range Error, Absolute Position Loss, Command Pulse Error, EEPROM Error, Sensor Error during Initialization, Rotor Rotation during Initialization, Encoder EEPROM Error, Motor Combination Error, ABS Not Supported, No Battery, Regeneration Unit Overheat, Electronic Gear Setting Error
Input Signal	• Photocoupler Input, Input Resistance: $3 k\Omega$ Input Signal Voltage: 4.75 to 26.4VDC (S-ON, CLR/ALM-RST/P-CK, P-RE0/BRAKE, TL/W-RESET, M0, M1, P-PRESET/M2, FREE) • Photocoupler Input, Input Resistance: $2.7 k\Omega$ Input Voltage: $21.6 \text{to} 26.4 \text{VDC}$ (CW+24 V/PLS+24 V, CCW+24 V/DIR+24 V) • Photocoupler Input, Input Resistance: 200Ω Input Voltage: $3 \text{to} 5.25 \text{VDC}$ (CW/PLS, CCW/DIR) • Analog Input Set with Internal Potentiometer (VR1, VR2) Analog Input Voltage $\pm 10 \text{VDC}$ Input Impedance $15 k\Omega$ Set with External Potentiometer $20 k\Omega 1/4 \text{W}$
Output Signal	(V-REF, T-REF, P-VREF, P-TREF) • Photocoupler and Open Collector Output External use conditions: 30 VDC, 10 mA max. (ALM, WNG/MOVE/MBC, END/VA, READY/ALO/P-OUTR, TLC/VLC/AL1/P-OUT0, ZSG2/NEAR/ZV/AL2/P-OUT1) • Line Driver Output External use condition: Connect a terminating resistor of 100 Ω min. between the line receiver inputs. (ASG, BSG, ZSG1) • Analog Monitor Output Analog Output Voltage ±10 VDC Output Impedance 1 kΩ (V-MON, T-MON, SG)
Other Functions	Position Control, Speed Control, Torque Control, Tension Control Automatic Tuning, Damping Control Function (7 to 30 Hz), Position Preset Function, Current Position Output Function, Torque Limiting Function Pulse Input Mode (2-Pulse Input, 1-Pulse Input), Analog Monitor Output Function (Speed, Torque), Absolute System Enabled/Disabled Warning Output Function, (Overflow, Overheat, Overvoltage, Main Power Supply, Undervoltage, Battery Undervoltage, Overload, Overspeed, Absolute Position Loss, Electronic Gear Setting Error)
Extended Functions [When using the separately-sold control module (OPX-2A) or the data setting software (MEXEO2)]	For details on extended functions, refer to page 32.

^{*}The values when the separately-sold general-purpose cable (**CC36D1-1**) is used. General-Purpose Cable \rightarrow Page 40

Position Control Mode Specifications

Item	Factory Setting	When Using Extended Functions				
Command Mode	Pulse Input Mode Select one of the following. · 2-Pulse Input Mode (Factory setting) · 1-Pulse Input Mode	Pulse Input Mode Select one of the following. • 2-Pulse Input Mode • 1-Pulse Input Mode • Phase Difference Input Mode (Internal parameter setting)				
Max. Input Pulse Frequency		oller: 500 kHz (When the pulse duty is 50%) coller: 250 kHz (When the pulse duty is 50%)*1				
Resolution	1000 P/R	100 to 100000 P/R				
Encoder Output Resolution	1000 P/R	100 to 10000 P/R				
Damping Control Frequency	Disabled/7 to 30 Hz (Internal potentiometer VR1)	Can be set with ① and ② below with 1 analog type and 3 internal parameters for a total of 4 types or with 4 internal parameters. ①Internal Potentiometer VR1 1 Type ②Set with 3 or 4 Internal Parameters Disabled/7 to 30 Hz (Internal potentiometer VR1) Disabled/7 to 100 Hz (Internal parameter setting)				
Absolute System Position Control Range	-2,147,483,648 to 2,147,483,647 pulses					
Current Position Output	2-bit Ser	rial Output				
Tuning	Automatic tuning only <automatic> The rigidity setting (SW2) is selected from 16 levels. The load inertia is estimated and the gain is automatically adjusted according to the rigidity setting.</automatic>	Automatic tuning, semi-auto tuning, and manual tuning can be selected. <automatic> Select the rigidity setting (SW2 or internal parameter) from 16 levels. The load inertia is estimated and the gain is automatically adjusted according to the rigidity setting. <semi-auto> Select the rigidity setting (SW2 or internal parameter) from 16 levels. Input the load inertia ratio. <manual> Select the rigidity setting (SW2 or internal parameter) from 16 levels. Input the load inertia ratio. All gain can be set manually. 0 to 300% (The rated torque is 100%. Can be set in steps of 1% with an internal parameter.) Set with External Potentiometer* (T-REF), Internal Parameter</manual></semi-auto></automatic>				
Torque Limiting	0 to 300% (The rated torque is 100%.) External Potentiometer* ² (T-REF)					

Using extended functions requires the separately-sold control module (OPX-2A) or the data setting software (MEXEO2).
 ★1 The values when the separately-sold general-purpose cable (CC36D1-1) is used. General-Purpose Cable → Page 40

 $[\]bigstar 2\:$ Accessory sets are available (sold separately). Accessory Set \Longrightarrow Page 43

Speed Control Mode Specifications

Ite	em	Factory Setting	When Using Extended Functions		
Command Mode		2 speeds can be set with ① and ② below. ①Internal Potentiometer VR1 1 Speed ② External Potentiometer ** V-REF (Selected with potentiometer or external DC voltage) 1 Speed - Set with potentiometer: 20 k Ω 1/4 W - Set by external DC voltage: \pm 0 to 10 VDC Input impedance 15 k Ω	Can be set with $\textcircled{1}$, $\textcircled{2}$, and $\textcircled{3}$ below with 2 analog speeds and 6 speeds set with internal parameters for a total of 8 speeds or with 8 speeds set with internal parameters. $\textcircled{1}$ Internal Potentiometer VR1 1 Speed $\textcircled{2}$ External Potentiometer* V-REF (Selected with potentiometer or external DC voltage) 1 Speed $\textcircled{3}$ Speed $\textcircled{4}$ Set by external DC voltage: $\textcircled{4}$ 0 to 10 VDC Input impedance 15 k $\textcircled{2}$ Internal Parameter Settings 6 or 8 Speeds		
Speed Setting	Range	10 to 5500 r/min (Analog speed setting VR1, V-REF)	10 to 5500 r/min (Analog speed setting VR1, V-REF) 1 to 5500 r/min (Internal parameter setting)		
Acceleration/[Time Setting F		5 ms to 10 sec./(1000 r/min) (Acceleration and deceleration time per 1000 r/min) Internal Potentiometer (VR2)	5 ms to 10 sec./(1000 r/min) (Acceleration and deceleration time per 1000 r/min) The setting method can be selected: either an internal potentiometer (VR2) or internal parameter.		
	Load	$\pm 0.05\%$ max. (0 to rated torque, ra	ted speed, rated voltage, normal temperature)		
	Voltage	$\pm 0.05\%$ max. (Power-supply in	put voltage range, at 3000 r/min no load)		
Speed Regulation	Temperature	$\pm 0.5\%$ max. (With analog speed setting VR1, V-REF) Common Conditions Operating Ambient Temperature 0 to $+50^{\circ}\text{C}$, Rated Speed, No Load, Rated Voltage	$\pm 0.5\%$ max. (With analog speed setting VR1, V-REF) $\pm 0.05\%$ max. (When set with internal parameter) Common Conditions Operating Ambient Temperature 0 to $+50^{\circ}\text{C}$, Rated Speed, No Load, Rated Voltage		
Torque Limitin	ng	0 to 300% (100% is rated torque.) Set with External Potentiometer* (T-REF)	0 to 300% (100% is rated torque. Can be set in steps of 1% with an internal parameter.) Set with External Potentiometer* (T-REF), Internal Parameter		
Operation Who Stopped	en Motor is	_	The operation when the motor is stopped can be selected		
Tuning		Automatic tuning only <automatic> The rigidity setting (SW2) is selected from 16 levels. The load inertia is estimated and the gain is automatically adjusted according to the rigidity setting.</automatic>	Automatic tuning, semi-auto tuning, and manual tuning can be selected. When operation when the motor is stopped is set to "Position holding by servo control stopped", the position loop gain and speed feed-forward are set just like position control. <automatic> Select the rigidity setting (SW2 or internal parameter) from 16 levels. The load inertia is estimated and the gain is automatically adjusted according to the rigidity setting. <semi-auto> Select the rigidity setting (SW2 or internal parameter) from 16 levels. Input the load inertia ratio. <manual> Select the rigidity setting (SW2 or internal parameter) from 16 levels. Input the load inertia ratio. All gain can be set manually.</manual></semi-auto></automatic>		
		I .			

Using extended functions requires the separately-sold control module (OPX-2A) or the data setting software (MEXEO2).

■Torque Control Mode Specifications

Item	Factory Setting	When Using Extended Functions	
Command Mode	2 types can be set with $\textcircled{1}$ and $\textcircled{2}$ below. $\textcircled{1}$ Internal Potentiometer VR1 1 Type $\textcircled{2}$ External Potentiometer* T-REF (Selected with potentiometer or external DC voltage) 1 Type \cdot Set with potentiometer: 20 k Ω 1/4 W \cdot Set by external DC voltage: \pm 0 to 10 VDC Input impedance 15 k Ω	Can be set with \bigcirc , \bigcirc , and \bigcirc below with 2 analog types and 6 types set with internal parameters for a total of 8 types or with 8 internal parameters. \bigcirc Internal Potentiometer VR1 1 Type \bigcirc External Potentiometer* T-REF (Selected with potentiometer or external DC voltage) 1 Type \bigcirc Set with potentiometer: 20 k Ω 1/4 W \bigcirc Set by external DC voltage: \pm 0 to 10 VDC Input impedance 15 k Ω \bigcirc Set with 6 or 8 Internal Parameters	
Torque Control Range	0 to 300% (100% is rated torque.)	0 to 300% (100% is rated torque. Can be set in steps of 1% with an internal parameter.)	
Speed Limit	0 to 5500 r/min Set with internal potentiometer (VR2) or external potentiometer* (V-REF)	0 to 5500 r/min (Can be set in 1 r/min steps with an internal parameter.) Set with internal potentiometer (VR2) or external potentiometer* (V-REF), or with an internal parameter	
Encoder Output Resolution	1000 P/R	100 to 10000 P/R	

Using extended functions requires the separately-sold control module (OPX-2A) or the data setting software (MEXEO2).

^{*}Accessory sets are available (sold separately). Accessory Set → Page 43

^{*}Accessory sets are available (sold separately). Accessory Set ightharpoonup Page 43

Tension Control Mode Specifications

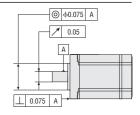
Item Command Mode		Factory Setting	When Using Extended Functions		
		2 types can be set with ① and ② below. ①Internal Potentiometer VR1 1 Type ② External Potentiometer* T-REF (Selected with potentiometer or external DC voltage) 1 Type \cdot Set with potentiometer: 20 k Ω 1/4 W \cdot Set by external DC voltage: ± 0 to 10 VDC Input impedance $15~k\Omega$	Can be set with ①, ②, and ③ below with 2 analog types and 6 types set with internal parameters for a total of 8 types or with 8 internal parameters. ①Internal Potentiometer VR1 1 Type ②External Potentiometer* T-REF (Selected with potentiometer or external DC voltage) 1 Type \cdot Set with potentiometer: 20 k Ω 1/4 W \cdot Set by external DC voltage: ± 0 to 10 VDC Input impedance 15 k Ω ③Set with 6 or 8 Internal Parameters		
	Simple Mode	The tension is controlled to be constant when the feed speed is constant.	The tension is controlled to be constant when the feed speed is constant.		
Control Method	High Function Mode I	_	The current winding (winding out) diameter is automatically calculated based on the initial diameter, the material thickness, and the final diameter. The tension is controlled to stay constant regardless of the operating speed.		
Wictiou	High Function Mode Ⅱ	_	In addition to the contents of high function I, the load inertia is calculated within the driver from the material inertia and the core inertia. The tension is controlled to stay constant even during acceleration/deceleration.		
Tension C	ontrol Range	0 to 100% (100% is rated torque.)	0 to 100% (100% is rated torque. Can be set in steps of 1%.)		
Speed Lin	nit	0 to 5500 r/min Set with internal potentiometer (VR2), external potentiometer* (V-REF)	0 to 5500 r/min (Can be set in 1 r/min steps.) Set with internal potentiometer (VR2) or external potentiometer* (V-REF), or with an internal parameter		
Minimum Speed		· ·	eed for simple mode can be selected with SW2. has 16 levels from 0 (10 r/min) to F (3000 r/min).		
Encoder O	utput Resolution	1000 P/R	100 to 10000 P/R		

■ Using extended functions requires the separately-sold control module (OPX-2A) or the data setting software (MEXEO2). *Accessory sets are available (sold separately). Accessory Set → Page 43

General Specifications

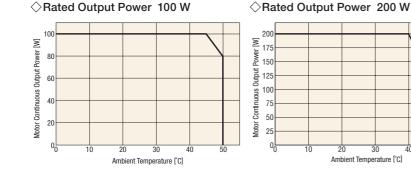
Specifi	ications	Motor	Driver		
Insulation Class		Class B (130°C)	-		
Insulation Resistance Dielectric Voltage		$\begin{array}{l} 100~\text{M}\Omega~\text{min. when measured with a 500 VDC megger between the} \\ \text{following locations:} \\ \cdot \text{Case} - \text{Motor Windings} \\ \cdot \text{Case} - \text{Electromagnetic Brake Windings} \end{array}$	 100 MΩ min. when measured with a 500 VDC megger between the following locations: PE terminal — AC Main Power Supply Connector, Motor Connector DC Control Power Supply Connector, I/O Connector, Encoder Connector, Control Module Connector, Battery Connector AC Main Power Supply Connector, Motor Connector 		
		No abnormality is judged with the following application for 1 minute: · Case — Motor Windings 1.5 kVAC 50 Hz or 60 Hz · Case — Electromagnetic Brake Windings 1.0 kVAC 50 Hz or 60 Hz	No abnormality is judged with the following application for 1 minute: • PE terminal — AC Main Power Supply Connector, Motor Connector 1.5 kVAC 50 Hz or 60 Hz • DC Control Power Supply Connector, I/O Connector, Encoder Connector, Control Module Connector, Battery Connector — AC Main Power Supply Connector, Motor Connector 1.8 kVAC 50 Hz or 60 Hz		
Operating	Ambient Temperature	0 to +40°C (Non-freezing)	0 to +50°C*2 (Non-freezing)		
(In	Ambient Humidity	85%	b max. (Non-condensing)		
operation)	Atmosphere	No corrosive gases. Must not be exposed to oil or other liquids.	No corrosive gases or dust. The product should not be exposed to water, oil or other liquids.		
Degree of Protection		IP65 (Standard type, electromagnetic brake type, PS geared type: excluding installation surface and connector locations. PJ geared type: excluding connector locations)	IP20		
Shaft Runout Concentricity of Installation Pilot to the Shaft		0.05 T. I. R. (mm)*1	-		
		0.075 T. I. R. (mm)*1	-		
Perpendiculari Surface to the	ty of Installation Shaft	0.075 T. I. R. (mm) ^{★1}	-		

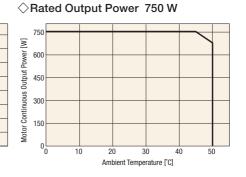
*1 T.I.R. (Total Indicator Reading): The total dial gauge reading when the measurement section is rotated 1 rotation centered on the reference axis. *2 If the driver's ambient temperature exceeds 40°C, hold the continuous motor output below the derating curve in the figure below.



Motor Continuous Output Derating Curve

If the driver's operating ambient temperature exceeds 40° C, hold the continuous motor output below the derating curve in the figure below. There is no need for derating for the types with rated output power of 50 W or 400 W.





Do not perform the insulation resistance test or dielectric voltage withstand test while the motor and driver are connected.

Also, do not conduct these tests on the motor encoder section.

Standard and CE Marking

Product	Applicable Standards	Certification Body	Standards File Number	CE Marking	
	UL 1004*1 CSA C22.2 No. 100*1	UL	E336472		
Motor	EN 60034-1*1	TÜV	R 50124202		
	EN 60034-5	Component Conformi	Low Voltage Directive		
	EN 60664-1	Component Comornii			
Driver	UL 508C*2 CSA C22.2 No. 14*2	UL	E171462	LINIO DITECTIVE	
Dilvei	EN 50178	Component Conformi	ng to Safety Standards		
	EN 61800-5-1*2	TÜV	R 50124205		

^{\$1} NXM620, NXM810, NXM820, NXM920 only.

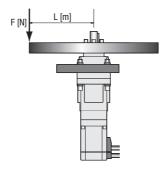
Permissible Overhung Load, Permissible Thrust Load and Permissible Moment Load

Туре	Type Frame Size Type			Permissible Overhung Load [N]						Permissible Thrust Load [N]	Permissible Moment Load [N·m]		
		11V 4 F		0	5	10	15	20	25	30	33	[IV]	[iviii]
	42 mm	NX45 NX410		81	88	95	104	_	_	_	_	59	_
Standard Type	60 mm	NX620 NX640	_	230	245	262	281	304	_	_	_	98	_
	85 mm	NX975]	376	392	408	426	446	467	491	-	147	_
		NX65 NX610	5	200	220	250	280	320	-	_	-		
	60 mm		10	250	270	300	340	390	-	-	-	100	_
PS Geared Type			25	330	360	400	450	520	-	_	-		
	90 mm	NX920 5, 10 NX940 25	480	540	600	680	790	_	_	_	300		
	90 111111		25	850	940	1050	1190	1380	_	_	_	300	_
		NIVOIO	5	300	330	350	380	400	430	460	500	300	16
	80 mm	NX810 NX820	10	450	480	510	540	570	610	650	700	400	33
DI Coored Type		NA62U	25	680	710	750	780	840	900	950	1000	600	60
PJ Geared Type			5	650	700	730	750	800	830	880	920	500	30
	104 mm	NX1040 NX1075	10	900	950	1000	1050	1100	1180	1230	1300	650	66
		NX10/5	25	1350	1400	1480	1550	1600	1650	1750	1850	1000	120

■PJ Geared Type Permissible Moment Load

When installing an arm or table on the flange face, if an eccentric load is applied, calculate the moment load with the following formula.

Moment load: $M [N \cdot m] = F [N] \times L [m]$



^{*2} Excluding NXD75-S.

 $^{\ \ \, \ \ \,}$ The UL Standard (UL508C) stipulates a maximum surrounding air temperature of 50°C.

[•] When connecting a 24 VDC power supply, use a Class 2 (UL Standards) power supply (24 VDC CLASS2).

The UL short circuit test is performed at an effective current value of 5000 A and 240 VDC.

[■] The EMC value changes according to the wiring and layout. Therefore, the final check must be done with the product incorporated in the user's device.

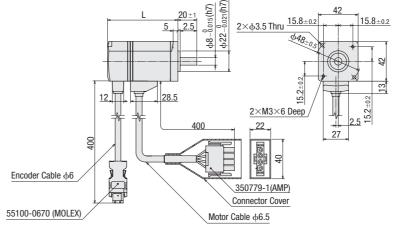
Dimensions (Unit = mm)

Motor

♦ Standard Type

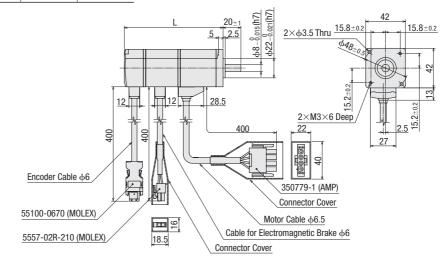
Frame Size 42 mm

Product Name	Motor Product Name	L	Mass kg	CAD	
NX45A□- ◇	NXM45A	74.5	0.5	C210	
NX410A□-◇	NXM410A	88.8	0.6	C211	



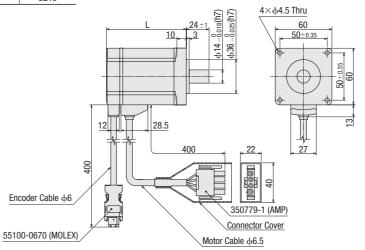
Frame Size 42 mm Electromagnetic Brake Type

Product Name	Motor Product Name	L	Mass kg	CAD	
NX45M□- ◇	NXM45M	110.5	0.7	C212	
NX410M>	NXM410M	124.8	0.8	C213	



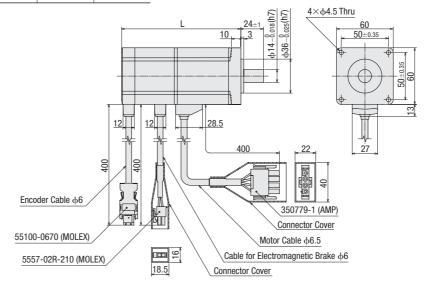
Frame Size 60 mm

Product Name	Motor Product Name	L	Mass kg	CAD
NX620A□-◇	NXM620A	84.5	1	C203
NX640AS-	NXM640A	114 8	1.5	C216



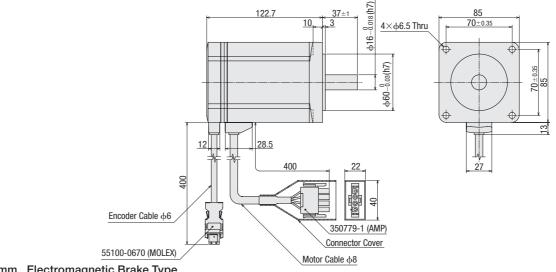
Frame Size 60 mm Electromagnetic Brake Type

Product Name	Motor Product Name	L	Mass kg	CAD
NX620M□-◇	NXM620M	126.3	1.5	C204
NX640MS-♦	NXM640M	156.6	2	C217



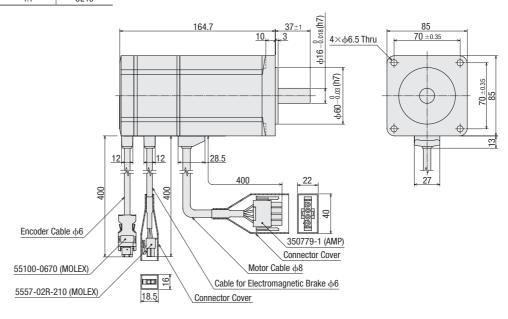
Frame Size 85 mm

Product Name	Motor Product Name	Mass kg	CAD
NX975AS-♦	NXM975A	3.1	C218



Frame Size 85 mm Electromagnetic Brake Type

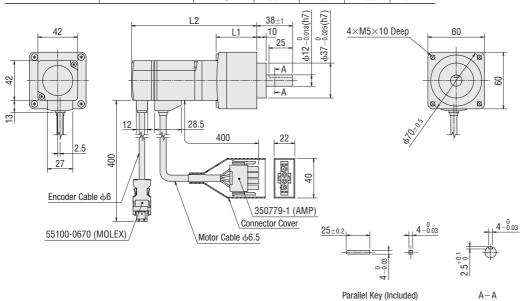
Product Name	Motor Product Name	Mass kg	CAD
NX975MS-	NXM975M	41	C219



◇PS Geared Type

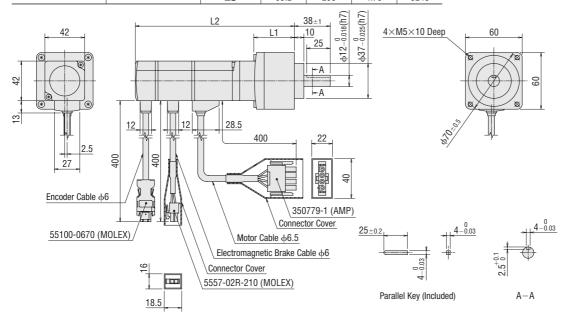
Frame Size 60 mm

Product Name	Motor Product Name	Gear Ratio	L1	L2	Mass kg	CAD
NX65A□-PS□-◇	NXM65A-PS□	5, 10	43	132.5	1.15	C241
NAOJA - PJ - V		25	63.2	153	1.45	C242
NV410A - DC - A	NXM610A-PS□	5, 10	43	147	1.25	C243
INVOINA		25	63.2	167	1.55	C244



Frame Size 60 mm Electromagnetic Brake Type

	Product Name	Motor Product Name	Gear Ratio	L1	L2	Mass kg	CAD
	NV4EMIL-DCII-A	NXM65M-PS□	5, 10	43	168.5	1.35	C245
	NVO2WF-L2F-		25	63.2	189	1.65	C246
NI.	NV410M DC A	NXM610M-PS□	5, 10	43	183	1.45	C247
•	NXOIUM PS		25	63.2	203	1.75	C248



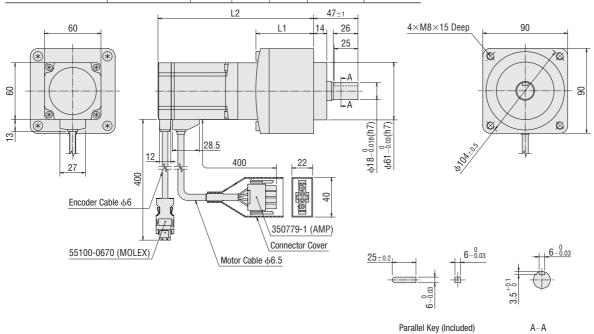
[■] Either A (single-phase 100-115 VAC) or C (single-phase 200-230 VAC/three-phase 200-230 VAC) indicating the power supply voltage is entered where the box 🔲 is located within the product name. A number indicating the gear ratio is entered where the box \square is located within the product name.

A number indicating the desired length of 1 (1 m), 2 (2 m) or 3 (3 m) for the cables included with the product is entered where the box \triangleleft is located within the product name.

◇PS Geared Type

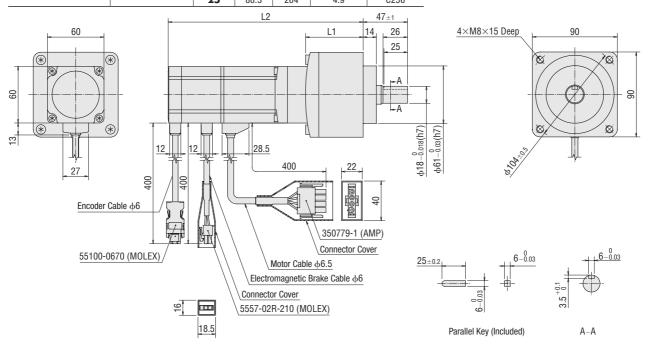
Frame Size 90 mm

Product Name	Motor Product Name	Gear Ratio	L1	L2	Mass kg	CAD
NX920A□-PS□-⇔	NXM920A-PS	5, 10	61	164.5	3	C249
INATZUALI-F3LI-V	INAMI ZOA-I 3	25	88.3	192	3.9	C250
NX940AS-PS□-⇔	NXM940A-PS□	5, 10	61	195	3.5	C251
NA940A3-P3		25	88.3	222	4.4	C252



Frame Size 90 mm Electromagnetic Brake Type

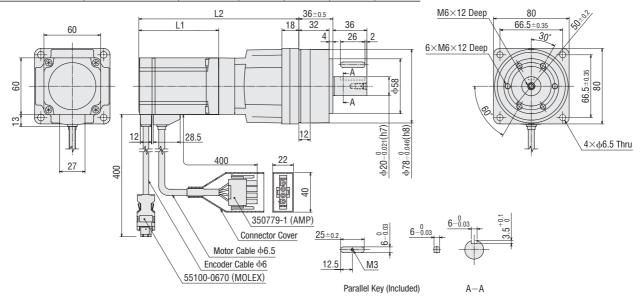
Product Name	Motor Product Name	Gear Ratio	L1	L2	Mass kg	CAD
NX920M□-PS□-◇	NXM920M-PS□	5, 10	61	206.5	3.5	C253
NX420WP-52		25	88.3	233.5	4.4	C254
NX940MS-PS□-◇	NXM940M-PS□	5, 10	61	236.5	4	C255
MX940M3-P3□-\		25	00.2	264	4.0	C256



○PJ Geared Type

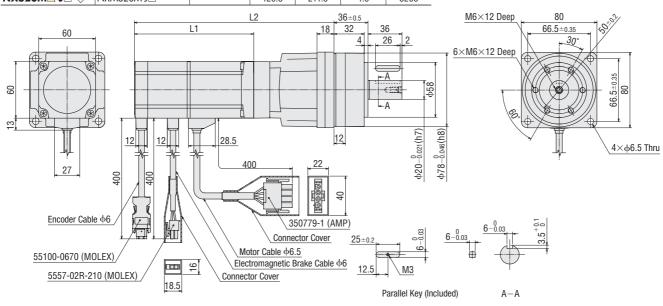
Frame Size 80 mm

Product Name	Motor Product Name	Gear Ratio	L1	L2	Mass kg	CAD
NX810A□-J□-◇	NXM810A-J□	5. 10. 25	71.2	156.2	3.6	C205
NX820A□-J□-◇	NXM820A-J□	3, 10, 23	84.5	169.5	3.8	C206



Frame Size 80 mm Electromagnetic Brake Type

	Product Name	Motor Product Name	Gear Ratio	L1	L2	Mass kg	CAD
1	VX810M□-J□-◇	NXM810M-J□	E 10 0E	113	198	4.1	C207
ī	NX820M□-J□-◇	NXM820M-J	5, 10, 25	126.3	211.3	4.3	C208

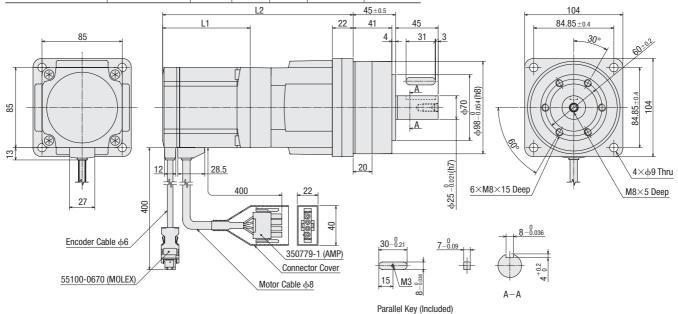


[■] Either **A** (single-phase 100-115 VAC) or **C** (single-phase 200-230 VAC/three-phase 200-230 VAC) indicating the power supply voltage is entered where the box 🗔 is located within the product name. A number indicating the gear ratio is entered where the box 🗔 is located within the product name.

○PJ Geared Type

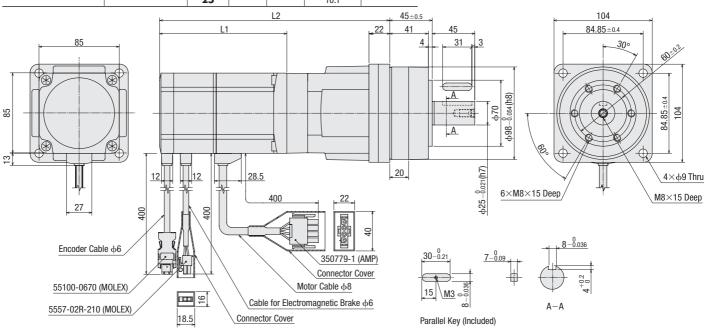
Frame Size 104 mm

Product Name	Motor Product Name	Gear Ratio	L1	L2	Mass kg	CAD
NX1040AS-J□-◇	NXM1040A-J	5, 10	92.8	201.8	7.7	C220
INTIOTOMS-JU-V	INAMII040A-J	25			8.2	
NX1075AS-J□-◇	\S-J □-♦ NXM1075A-J□	5, 10	122.7	231.7	8.6	C221
NX10/3A3-J		25			9.1	



Frame Size 104 mm Electromagnetic Brake Type

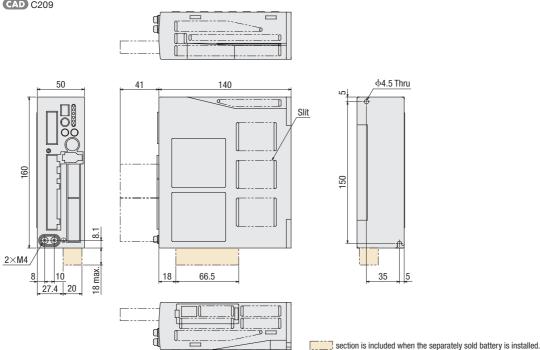
Product Name	Motor Product Name	Gear Ratio	11 12 Mass kn		CAD		
NX1040MS-J□-◇	NXM1040M-J	5, 10	134.8	243.8	8.6	C222	
NATO40M3-J	INAMIO40M5	25	134.0	243.0	9.1	0222	
NX1075MS-J□-◇	NXM1075M-J	5, 10	164.7	273.7	9.6	C223	
MX10/3M3-3	INVWIO\2W-1	25	104.7	2/3./	10.1	0223	





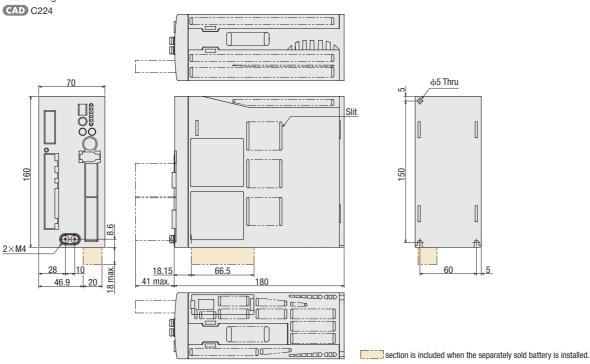
Product names: NXD20-A, NXD20-C





Product name: NXD75-S

Mass: 1.6 kg



I/O Signal Connector (CN7) Case: 54331-1361 (MOLEX)

Connector: 54306-3619 (MOLEX)

Connector for Regeneration Unit Input/Main Power Input Terminals (CN3)

Connector: 54928-0770 (MOLEX)

Connector for 24 VDC Power-Supply Input/Regeneration Unit Thermal Input/Electromagnetic Brake Terminals (CN1)

Connector: MC1,5/6-STF-3,5 (PHOENIX CONTACT Inc.)

Motor Connector (CN2)

Connector: 54928-0370 (MOLEX)

Cables for Motor (Included), Cables for Encoder (Included), Cables for Electromagnetic Brake (Included)

Motor Side

• Cables for Motor

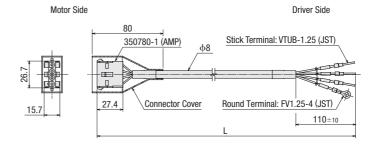
Cable Type	Length L (m)
Cable for Motor 1 m	1
Cable for Motor 2 m	2
Cable for Motor 3 m	3

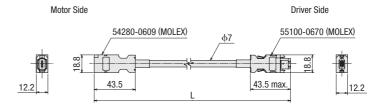
• Cables for Encoder

Cable Type	Length L (m)
Cable for Encoder 1 m	1
Cable for Encoder 2 m	2
Cable for Encoder 3 m	3

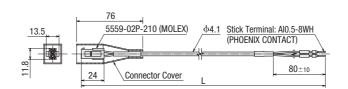
• Cables for Electromagnetic Brake (Electromagnetic brake type only)

Cable Type	Length L (m)
Cable for Electromagnetic Brake 1 m	1
Cable for Electromagnetic Brake 2 m	2
Cable for Electromagnetic Brake 3 m	3



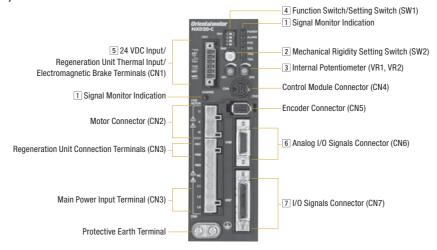


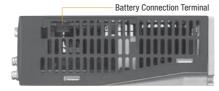
Driver Side



Connection and Operation

 Names and Functions of Driver Parts (Common to position control, speed control, torque control, tension control modes)





1 Signal Monitor Indication

♦LED Indicator

Indication	Color	Function	Lighting Condition
POWER	Green	Power Supply Indication	When the main power supply or 24 VDC power supply is input
ALARM	Red	Alarm Indication	When a protective function is activated (blinking)
POS	Green	Control Mode Indication	For Position Control Mode
SPD	Green	Control Mode Indication	For Speed Control Mode
TRQ	Green	Control Mode Indication	For Torque Control Mode
TEN	Green	Control Mode Indication	For Tension Control Mode
CHARGE	Red	Power Supply Indication	When the main power supply is on

♦ Alarm Contents

Blink Count	Function	Operating Condition		
	Overheat Protection	When the temperature inside the driver exceeds 85°C		
	Motor Overheat Protection	When the motor temperature reaches 85°C		
	Overload Protection	When a load exceeding the rated torque is applied for longer than the permissible time		
2	Overspeed	When the motor output shaft speed exceeds 6000 r/min		
	Command Pulse Error*	When a command pulse frequency that exceeds the maximum speed has been input with the motor output shaft speed		
	Regeneration Unit Overheat	When the signal thermal protector for the regeneration unit has been activated		
	Overvoltage Protection	When the primary voltage of the driver's inverter exceeds the upper limit value		
3	Main Power Supply Error	When the main power supply has been cut off while an operation command is being input to the driver		
	Undervoltage	When the primary voltage of the driver's inverter has fallen below the lower limit		
4	Overflow*	When the positioning deviation has exceeded the overflow rotation amount (Initial value: 10 rotations)		
5	Overcurrent Protection	An excessive current has flowed through the inverter power component inside the driver		
	Position Range Error*	When the command position has exceeded the absolute control coordinates while the absolute functions are enabled (control coordinates: -2,147,483,648 to 2,147,483,647)		
	Absolute Position Loss*	When the absolute position is lost while the absolute functions are enabled		
7	ABS Not Supported*	When the battery is connected while the absolute functions are disabled		
	No Battery*	When the battery is not connected or the battery cable is disconnected while the absolute functions are enabled		
	Electronic Gear Setting Error	When the resolution set by the electronic gear is outside the range of the specifications		
	Sensor Error during Operation	When an abnormality has occurred in a sensor while the motor is rotating		
	Encoder Communication Error	When an abnormality has occurred in communications between the driver and encoder		
8	Sensor Error during Initialization	When the main power supply or control power supply was turned on before the motor cable was connected to the driver		
	Rotor Rotation during Initialization	The main power supply or control power supply was turned on while the motor was rotating		
	Encoder EEPROM Error	The saved data for the encoder communications circuit was damaged		
	Motor Combination	A motor that cannot be combined with the other		
	Error	components was connected		
9	EEPROM Error	A motor control parameter is damaged		

2 Mechanical Rigidity Setting Switch (SW2)

Indication	Switch Name		Function
	Machanian	Position Control Mode Speed Control Mode	Sets the mechanical rigidity and the corresponding gain adjustment level with automatic tuning and semi-auto tuning. Factory setting: "6"
	Rigidity Setting	Torque Control Mode	Not used.
	Switch	Tension Control Mode	Sets the minimum speed in simple control mode. (Not used in high function mode I and high function mode IL.) Factory setting: "6"

3 Internal Potentiometer (VR1, VR2)

Indication	Switch Name	Function	
		Position Control Mode	VR1: Sets the vibration suppression frequency. VR2: Not used.
VR1	Internal	Speed Control Mode	VR1: Sets the speed command value. VR2: Sets the acceleration/deceleration time.
VR2	Potentiometer	Torque Control Mode	VR1: Sets the torque command value. VR2: Sets the speed limit.
	Tension Control Mode	VR1: Sets the tension command value. VR2: Sets the speed limit.	

4 Function Switch/Setting Switch (SW1)

Indication	Switch Name	Function		
1	Control Mode	Selects the control mode. 1 "OFF" 2 "OFF"→Position Control Mode [Factory setting] 1 "ON" 2 "OFF"→Speed Control Mode		
2	Setting Switch	1 "OFF" 2 "ON" → Torque Control Mode 1 "ON" 2 "ON" → Tension Control Mode		
3	Absolute System Setting Switch	Set when the accessory battery (sold separately) is installed to use the absolute functions. (This is effective in position control mode.) ON: Absolute Functions Enabled OFF: Absolute Functions Disabled [Factory setting]		
4	Pulse Input Mode Select Switch	Switches the pulse input mode between 1-pulse input mode and 2-pulse input mode. ON: 1-Pulse Input Mode OFF: 2-Pulse Input Mode [Factory setting]		

5 24 VDC Input/Regeneration Unit Thermal Input/ Electromagnetic Brake Terminals (CN1)

Indication	1/0	Terminal Name	Content	
24V+		24 VDC Power Input Terminal +	To separate the main power supply and control power supply, connect the power supplies here. The control power	
24V-	Input	24 VDC Power Input Terminal —	supply is not mandatory. When using an electromagnetic brake type motor, connect it as the power supply for the electromagnetic brake.	
TH1	·	Regeneration Unit Thermal Input Terminal	Connect the RGB100 or RGB200 regeneration unit which are sold separately.	
TH2		Regeneration Unit Thermal Input Terminal	When not connecting a regeneration unit, short these 2 terminals to each other.	
MB1	Output	Electromagnetic Brake Terminal —	For an electromagnetic brake type notor, connect the electromagnetic	
MB2	output	Electromagnetic Brake Terminal +	brake line here.	

6 Analog I/O Signals Connector (CN6)

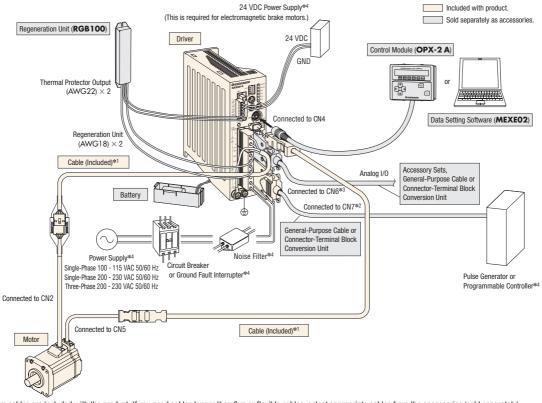
Indication	1/0	Pin Number	Code	Signal Name
	Input	1	V-REF	Analog Speed (Command/limit) Input
	GND	2	SG	Signal Ground
	Output	3	P-VREF	Reference Output Voltage for Analog Speed (Command/limit) Input
		4	P-TREF	Analog Torque (Command/limit) Input
	Input	5	T-REF	Analog Torque (Command/limit) Input
	GND	6	SG	Signal Ground
	Output	7	V-MON	Analog Speed Monitor Output
	GND	8	SG	Signal Ground
CN6	Output	9	T-MON	Analog Torque Monitor Output
	GND	10	SG	Signal Ground
		11		
		12		
		13		
		14		
	_	15	_	_
		16		
		17		
		18		
		19		
		20		

7 I/O Signals Connector (CN7)

- Position control mode → Page 29
- Speed control mode → Page 29
- Torque control mode → Page 30
- Tension control mode → Page 30

Connection Diagram (Common to position control, speed control, torque control, and tension control modes) ♦ Connections with Peripheral Equipment

• For **NX620AC-**♦



- *1 1 m, 2 m or 3 m cables are included with the product. If you need cables longer than 3 m or flexible cables, select appropriate cables from the accessories (sold separately).
- *2 The control I/O connector (CN7) is included with the product, but you can also purchase an accessory general-purpose cable or connector terminal block conversion unit (sold separately). Choose one or the other
- *3 The Analog I/O Signals Connector (CN6) is not included with the product. You can also purchase an accessory set, general-purpose cable or connector terminal block conversion unit (sold separately). Choose one that suits your needs
- *4 Not supplied.

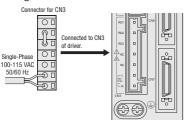
○Connecting the Main Power Supply

Prepare the following cable for the power supply lines.

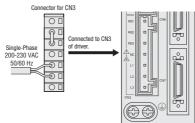
Single-Phase 100-115 VAC: Three-Core Cable [AWG16 to 14 (1.25 to 2.0 mm²)] Single-Phase 200-230 VAC: Three-Core Cable [AWG16 to 14 (1.25 to 2.0 mm²)]

Three-Phase 200-230 VAC: Four-Core Cable [AWG16 to 14 (1.25 to 2.0 mm²)]

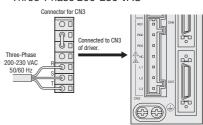
• Single-Phase 100-115 VAC



• Single-Phase 200-230 VAC



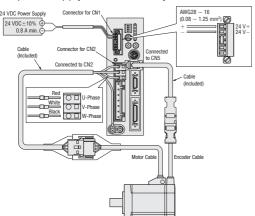
• Three-Phase 200-230 VAC



♦ Connecting the Control Power Supply

To separate the main power supply and control power supply, connect 24 VDC.

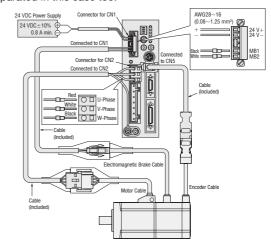
The control power supply is not mandatory.



♦ Connecting the Electromagnetic Brake

Connect 24 VDC.

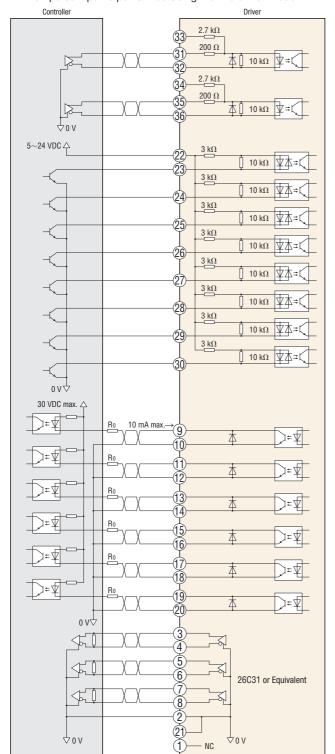
The main power supply and control power supply are separated in this case too.



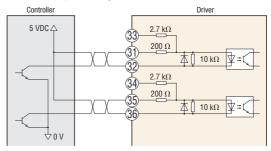
♦ Connection to Programmable Controller

 Connection Diagram for Connection with Current Sink Output Circuit

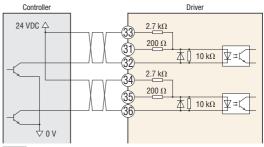
When pulse input is performed using the line driver mode



When the input voltage is 5 VDC



When the input voltage is 24 VDC



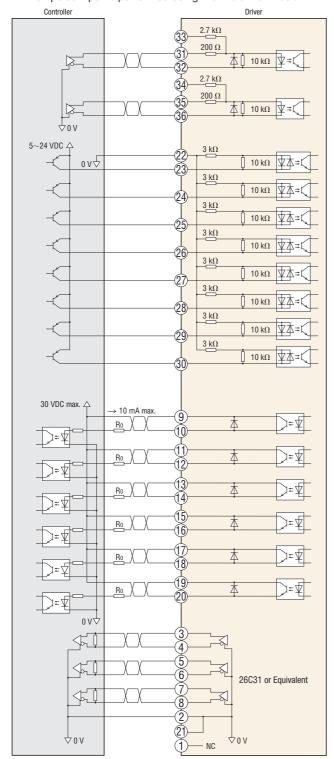
Note

- Use output signals of 30 VDC max. When the current value exceeds 10 mA, connect the external resistor R₀.
- \blacksquare Connect a terminating resistor of 100 Ω min. between the line receiver inputs.
- For the control I/O signal lines (CN7), use a multi-core shielded twisted-pair wire [AWG28 to 26 (0.08 to 0.14 mm²)] and keep the wiring length as short as possible (no more than 2 m).
- Note that as the length of the pulse line increases, the maximum frequency decreases.
- Provide a distance of 200 mm min. between the control I/O signal lines and power lines (power supply lines, motor lines and other large-current circuits).

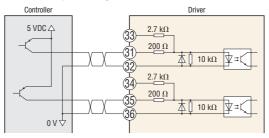
♦ Connection to Programmable Controller

 Connection Diagram for Connection with Current Source Output Circuit

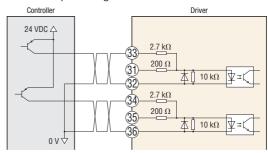
When pulse input is performed using the line driver mode



When the input voltage is 5 VDC



When the input voltage is 24 VDC



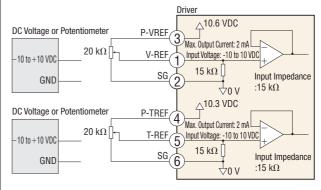
Note

- Use output signals of 30 VDC max. When the current value exceeds 10 mA, connect the external resistor Ro.
- \blacksquare Connect a terminating resistor of 100 Ω min. between the line receiver inputs.
- For the control I/O signal lines (CN7), use a multi-core shielded twisted-pair wire [AWG28 to 26 (0.08 to 0.14 mm²)] and keep the wiring length as short as possible (no more than 2 m).
- Note that as the length of the pulse line increases, the maximum frequency decreases.
- Provide a distance of 200 mm min. between the control I/O signal lines and power lines (power supply lines, motor lines and other large-current circuits).

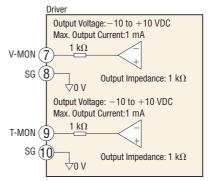
When using analog I/O, the accessory set is required (sold separately).

Accessory Set → Page 43

• Input Circuit



Output Circuit



Description of Position Control Mode I/O Signals

Position Control Mode

In position control mode, the following functions are enabled.

- External positioning operation using pulse input
- Torque limiting
- Absolute system
- Current position output
- Tuning
- Damping control

I/O Signals (CN7, 36 pins)

Indication	1/0	Pin Number	Code	Signal Name
	-	1	_	_
	GND	2	GND	Ground Connection
		3	ASG+	A-Phase Pulse Line Driver
		4	ASG-	Output
		5	BSG+	B-Phase Pulse Line Driver
		6	BSG-	Output
		7	ZSG1+	Z-Phase Pulse Line Driver
		8	ZSG1-	Output
		9	ALM+	Alarm Output
		10	ALM-	Alarm Output
		11	WNG+/MOVE+*/MBC+*	Warning Output/ Motor Moving Output*/
		12	WNG-/MOVE-*/MBC-*	Electromagnetic Brake Control Signal Output*
	Output	13	END+	Positioning Completion
		14	END-	Output
		15	READY+/AL0+*/P-OUTR+	Operation Ready Output/ Alarm Code Output Bit 0*/
		16	READY—/ALO—* / P-OUTR—	Position Data Output Ready Output
		17	TLC+/AL1+*/P-0UT0+	Torque Limiting Output/Alarm
		18	TLC-/AL1-*/P-0UT0-	Code Output Bit 1*/Position Data Output Bit 0
CN7		19	ZSG2+/NEAR+*/AL2+*/ P-0UT1+	Z-Phase Pulse Open Collector Output/Positioning Near Output*/Alarm Code Output
		20	ZSG2-/NEAR-*/AL2-*/ P-0UT1-	Bit 2*/Position Data Output Bit 1
	GND	21	GND	Ground Connection
		22	IN-COM	Input Common
		23	S-ON	Position Holding Input by Servo Control
		24	CLR/ALM-RST/P-CK	Deviation Clear Input/Alarm Reset Input/Position Data Transmission Clock Input
		25	P-REQ	Position Data Request Input
		26	TL	Torque Limit Enable Input
		27	M0	Data Selection Input
	Input	28	M1	Data Obioction Input
	put	29	P-PRESET	Position Preset Input
		30	FREE	Shaft Free Input
		31	CW+/PLS+	CW Pulse Input/Pulse Input
		32	CW-/PLS-	·
		33	CW+24 V/PLS+24 V	CW Pulse Input/Pulse Input for 24 VDC
		34	CCW+24 V/DIR+24 V	CCW Pulse Input/Rotation Direction Input for 24 VDC
		35	CCW+/DIR+	CCW Pulse Input/Rotation
		36	CCW-/DIR-	Direction Input

^{*}Enabled when the settings are changed with the separately-sold control module (**OPX-2A**) or data setting software (**MEXEO2**).

Description of Speed Control Mode I/O Signals

Speed Control Mode

In speed control mode, the following functions are enabled.

- •Speed control operation
- Torque limiting
- Tuning

●I/O Signals (CN7, 36 pins)

Indication	1/0	Pin Number	Code	Signal Name
	_	1	_	_
	GND	2	GND	Ground Connection
		3	ASG+	A-Phase Pulse Line Driver
		4	ASG-	Output
		5	BSG+	B-Phase Pulse Line Driver
		6	BSG-	Output
		7	ZSG1+	Z-Phase Pulse Line Driver
		8	ZSG1-	Output
		9	ALM+	
		10	ALM-	Alarm Output
		11	WNG+/MOVE+*/MBC+*	Warning Output/ Motor Moving Output*/
	Output	12	WNG-/MOVE-*/MBC-*	Electromagnetic Brake Control Signal Output*
		13	VA+	Speed Attainment Output
		14	VA-	Speed Attainment Output
		15	READY+/AL0+*	Operation Ready Output/
		16	READY-/ALO-*	Alarm Code Output Bit 0*
		17	TLC+/AL1+*	Torque Limiting Output/Aları
		18	TLC-/AL1-*	Code Output Bit 1*
CN7		19	ZSG2+/ZV+*/AL2+*	Z-Phase Pulse Open Collecto Output/Motor Zero Speed
		20	ZSG2-/ZV-*/AL2-*	Output*/Alarm Code Output Bit 2*
	GND	21	GND	Ground Connection
		22	IN-COM	Input Common
		23	S-ON	Position Holding Input by Servo Control
		24	ALM-RST	Alarm Reset Input
		25	BRAKE	Instantaneous Stop Input
		26	TL	Torque Limit Enable Input
		27	M0	
	l	28	M1	Data Selection Input
	Input	29	M2	
		30	FREE	Shaft Free Input
		31	CW+	OWland
		32	CW-	- CW Input
		33	CW+24 V	CW Input for 24 VDC
		34	CCW+24 V	CCW Input for 24 VDC
		35	CCW+	·
		36	CCW-	CCW Input

^{*}Enabled when the settings are changed with the separately-sold control module (OPX-2A) or data setting software (MEXEO2).

Description of Torque Control Mode I/O Signals

Torque Control Mode

In torque control mode, the following functions are enabled.

- Torque control operation
- Speed limit

I/O Signals (CN7, 36 pins)

Indication	1/0	Pin Number	Code	Signal Name
	_	1	_	_
	GND	2	GND	Ground Connection
		3	ASG+	A-Phase Pulse Line Driver
		4	ASG-	Output
		5	BSG+	B-Phase Pulse Line Driver
		6	BSG-	Output
		7	ZSG1+	Z-Phase Pulse Line Driver
		8	ZSG1-	Output
		9	ALM+	Alarm Output
		10	ALM-	Alaim Output
		11	WNG+/MOVE+*/MBC+*	Warning Output/ Motor Moving Output [*] /
	Output	12	WNG-/MOVE-*/MBC-*	Electromagnetic Brake Control Signal Output*
		13	_	_
		14	_	_
		15	READY+/AL0+*	Operation Ready Output/
		16	READY-/ALO-*	Alarm Code Output Bit 0*
		17	VLC+/AL1+*	Speed Limit Output/Alarm
CN7		18	VLC-/AL1-*	Code Output Bit 1*
ONT		19	ZSG2+/ZV+*/AL2+*	Z-Phase Pulse Open Collector Output/Motor Zero Speed
		20	ZSG2-/ZV-*/AL2-*	Output*/Alarm Code Output Bit 2*
	GND	21	GND	Ground Connection
		22	IN-COM	Input Common
		23	_	_
		24	ALM-RST	Alarm Reset Input
		25	_	_
		26	_	_
		27	MO	
		28	M1	Data Selection Input
	Input	29	M2	
		30	FREE	Shaft Free Input
		31	CW+	CW Input
		32	CW-	Ow input
		33	CW+24 V	CW Input for 24 VDC
		34	CCW+24 V	CCW Input for 24 VDC
		35	CCW+	CCW Input
		36	CCW-	OOW IIIPUL

^{*}Enabled when the settings are changed with the separately-sold control module (**OPX-2A**) or data setting software (**MEXEO2**).

Description of Tension Control Mode I/O Signals

Tension Control Mode

When winding a roll of film, paper or the like, the diameter of the material is different at the start of the winding and at the end of the winding. Accordingly, control is required to vary the torque with the diameter in order to hold the tension constant. In tension control mode, such control is enabled.

In tension control mode, there are 3 operating modes. The operating mode can be selected and the operating data is set with the separately-sold control module (**OPX-2A**) or data setting software (**MEXEO2**).

Operating Mode	Content
Simple Mode	The tension is controlled to be constant when the feed speed is constant such as during winding operation. The motor speed and the torque are inversely proportional.
High Function Mode I	The current winding (winding out) diameter is automatically calculated based on the initial diameter, the material thickness, and the final diameter. The tension is controlled to stay constant regardless of the operating speed.
High Function Mode ∏	In addition to the contents of high function I, the load inertia is calculated within the driver from the material inertia and the core inertia. The tension is controlled to stay constant even during acceleration/deceleration.

Setting Item	Operating Mode			
Setting item	Simple Mode	High Function Mode I	High Function Mode II	
Tension Command Value	0	0	0	
Material Thickness	_	0	0	
Initial Diameter	_	0	0	
Final Diameter	_	0	0	
Material Inertia	_	_	0	
Core Inertia	_	_	0	
Taper Setting	_	0	0	
Speed Limit	0	0	0	

I/O Signals (CN7, 36 pins)

Indication	1/0	Pin Number	Code	Signal Name		
	_	1	-	_		
	GND	2	GND	Ground Connection		
		3	ASG+	A-Phase Pulse Line Driver		
		4	ASG-	Output		
		5	BSG+	B-Phase Pulse Line Driver		
		6	BSG-	Output		
		7	ZSG1+	Z-Phase Pulse Line Driver		
		8	ZSG1-	Output		
		9	ALM+	Alarm Output		
		10	ALM-	Alailli Output		
		11	WNG+/MOVE+*/MBC+*	Warning Output/ Motor Moving Output*/		
	Output	12	WNG-/MOVE-*/MBC-*	Electromagnetic Brake Control Signal Output*		
		13	_			
		14	_			
		15	READY+/AL0+*	Operation Ready Output/		
		16	READY-/ALO-*	Alarm Code Output Bit 0*		
		17	VLC+/AL1+*	Speed Limit Output/Alarm		
CN7		18	VLC-/AL1-*	Code Output Bit 1*		
ON		19	ZSG2+/ZV+*/AL2+*	Z-Phase Pulse Open Collector Output/Motor Zero Speed		
		20	ZSG2-/ZV-*/AL2-*	Output*/Alarm Code Output Bit 2*		
	GND	21	GND	Ground Connection		
		22	IN-COM	Input Common		
		23	_	_		
		24	ALM-RST	Alarm Reset Input		
		25	_	_		
		26	W-RESET	Winding Diameter Reset Input		
		27	MO			
		28	M1	Data Selection Input		
	Input	29	M2			
		30	FREE	Shaft Free Input		
		31	CW+	CW Input		
		32	CW-	OW IIIput		
		33	CW+24 V	CW Input for 24 VDC		
		34	CCW+24 V	CCW Input for 24 VDC		
		35	CCW+	CCW Input		
		36	CCW-	OOW IIIPUL		
*Enabled w	*Enabled when the settings are changed with the separately-sold control module (OPX-2A)					

^{*}Enabled when the settings are changed with the separately-sold control module (OPX-2A) or data setting software (MEXEO2).

Motor and Driver Combinations

Product names for motor and driver combinations are shown below.

Standard Type

Power-Supply Input	Output Power	Product Name	Motor Product Name	Driver Product Name
Cinala Dhana	50 W	NX45AA-◇	NXM45A	
Single-Phase 100-115 VAC	100 W	NX410AA- ◇	NXM410A	NXD20-A
100-113 VAO	200 W	NX620AA-♦	NXM620A	
Single-Phase/	50 W	NX45AC-♦	NXM45A	
Three-Phase	100 W	NX410AC-♦	NXM410A	NXD20-C
200-230 VAC	200 W	NX620AC-♦	NXM620A	
Three-Phase 200-230 VAC	400 W	NX640AS-♦	NXM640A	NXD75-S
	750 W	NX975AS- ◇	NXM975A	NAD/3-3

Standard Type with Electromagnetic Brake

Power-Supply Input	Output Power	Product Name	Motor Product Name	Driver Product Name
Cinala Dhana	50 W	NX45MA-♦	NXM45M	
Single-Phase 100-115 VAC	100 W	NX410MA-♦	NXM410M	NXD20-A
100-113 VAC	200 W	NX620MA-♦	NXM620M]
Single-Phase/	50 W	NX45MC-♦	NXM45M	
Three-Phase	100 W	NX410MC-♦	NXM410M	NXD20-C
200-230 VAC	200 W	NX620MC-♦	NXM620M	
Three-Phase 200-230 VAC	400 W	NX640MS-♦	NXM640M	NXD75-S
	750 W	NX975MS-♦	NXM975M	111111111111111111111111111111111111111

PS Geared Type

P3 Geared Type					
Power-Supply Input	Output Power	Product Name	Motor Product Name	Driver Product Name	
		NX65AA-PS5- \diamondsuit	NXM65A-PS5		
	50 W	NX65AA-PS10- \diamondsuit	NXM65A-PS10		
		NX65AA-PS25- \diamondsuit	NXM65A-PS25		
Cinala Dhaca		NX610AA-PS5- \diamondsuit	NXM610A-PS5		
Single-Phase 100-115 VAC	100 W	NX610AA-PS10- <	NXM610A-PS10	NXD20-A	
100-113 VAO		NX610AA-PS25- \diamondsuit	NXM610A-PS25		
	200 W	NX920AA-PS5- \diamondsuit	NXM920A-PS5		
		NX920AA-PS10- 	NXM920A-PS10		
		NX920AA-PS25- ◇	NXM920A-PS25		
	50 W	NX65AC-PS5-♦	NXM65A-PS5		
		NX65AC-PS10- \diamondsuit	NXM65A-PS10		
		NX65AC-PS25-♦	NXM65A-PS25		
Single-Phase/	100 W	NX610AC-PS5- \diamondsuit	NXM610A-PS5		
Three-Phase		NX610AC-PS10-♦	NXM610A-PS10	NXD20-C	
200-230 VAC		NX610AC-PS25-♦	NXM610A-PS25		
		NX920AC-PS5-♦	NXM920A-PS5		
	200 W	NX920AC-PS10- \diamondsuit	NXM920A-PS10		
		NX920AC-PS25-♦	NXM920A-PS25		
		NX940AS-PS5-♦	NXM940A-PS5		
Three-Phase	400 W	NX940AS-PS10- 	NXM940A-PS10	NXD75-S	
200-230 VAC		NX940AS-PS25- 	NXM940A-PS25		

●P\$ Geared Type with Electromagnetic Brake

Power-Supply Input	Output Power	Product Name	Motor Product Name	Driver Product Name
		NX65MA-PS5-♦	NXM65M-PS5	
	50 W	NX65MA-PS10- \diamondsuit	NXM65M-PS10	
		NX65MA-PS25- \diamondsuit	NXM65M-PS25	
Cinala Dhana		NX610MA-PS5-♦	NXM610M-PS5	
Single-Phase 100-115 VAC	100 W	NX610MA-PS10-♦	NXM610M-PS10	NXD20-A
100-113 VAC		NX610MA-PS25- \diamondsuit	NXM610M-PS25	
		NX920MA-PS5- \diamondsuit	NXM920M-PS5	
	200 W	NX920MA-PS10- \Diamond	NXM920M-PS10	
		NX920MA-PS25-♦	NXM920M-PS25	
	50 W	NX65MC-PS5-♦	NXM65M-PS5	
		NX65MC-PS10- \diamondsuit	NXM65M-PS10	
		NX65MC-PS25-	NXM65M-PS25	
Single-Phase/	100 W	NX610MC-PS5-♦	NXM610M-PS5	
Three-Phase		NX610MC-PS10- \diamondsuit	NXM610M-PS10	NXD20-C
200-230 VAC		NX610MC-PS25-♦	NXM610M-PS25	
		NX920MC-PS5- \diamondsuit	NXM920M-PS5	
	200 W	NX920MC-PS10-♦	NXM920M-PS10	
		NX920MC-PS25-♦	NXM920M-PS25	1
Three-Phase 200-230 VAC		NX940MS-PS5-♦	NXM940M-PS5	
	400 W	NX940MS-PS10-	NXM940M-PS10	NXD75-S
		NX940MS-PS25-♦	NXM940M-PS25	1

PJ Geared Type

Power-Supply Input	Output Power	Product Name	Motor Product Name	Driver Product Name
		NX810AA-J5- 	NXM810A-J5	
	100 W	NX810AA-J10- 	NXM810A-J10	
Single-Phase		NX810AA-J25- \diamondsuit	NXM810A-J25	NXD20-A
100-115 VAC		NX820AA-J5- \diamondsuit	NXM820A-J5	INADZU-A
	200 W	NX820AA-J10-♦	NXM820A-J10	
		NX820AA-J25-♦	NXM820A-J25	
	100 W	NX810AC-J5-♦	NXM810A-J5	NXD20-C
		NX810AC-J10-♦	NXM810A-J10	
Single-Phase/ Three-Phase		NX810AC-J25- \diamondsuit	NXM810A-J25	
200-230 VAC	200 W	NX820AC-J5- \diamondsuit	NXM820A-J5	NADZU-C
200-230 VAO		NX820AC-J10-♦	NXM820A-J10	
		NX820AC-J25-♦	NXM820A-J25	
		NX1040AS-J5- \diamondsuit	NXM1040A-J5	
	400 W	NX1040AS-J10- \diamondsuit	NXM1040A-J10	
Three-Phase 200-230 VAC		NX1040AS-J25-	NXM1040A-J25	NXD75-S
		NX1075AS-J5-�	NXM1075A-J5	פ-כ/טאוו
	750 W	NX1075AS-J10-�	NXM1075A-J10	1
		NX1075AS-J25- \diamondsuit	NXM1075A-J25	1

●PJ Geared Type with Electromagnetic Brake

PJ Geared Type with Electromagnetic Brake				
Power-Supply Input	Output Power	Product Name	Motor Product Name	Driver Product Name
		NX810MA-J5- \diamondsuit	NXM810M-J5	
	100 W	NX810MA-J10- \diamondsuit	NXM810M-J10	
Single-Phase		NX810MA-J25- \diamondsuit	NXM810M-J25	NXD20-A
100-115 VAC		NX820MA-J5- \diamondsuit	NXM820M-J5	INADZU-A
	200 W	NX820MA-J10- \diamondsuit	NXM820M-J10	
		NX820MA-J25-♦	NXM820M-J25	
	100 W	NX810MC-J5- \diamondsuit	NXM810M-J5	
0: 1 5: 1		NX810MC-J10- \diamondsuit	NXM810M-J10	
Single-Phase/ Three-Phase		NX810MC-J25- \diamondsuit	NXM810M-J25	NXD20-C
200-230 VAC	200 W	NX820MC-J5- \diamondsuit	NXM820M-J5	INADZU-C
200 200 VAO		NX820MC-J10-♦	NXM820M-J10	
		NX820MC-J25- \diamondsuit	NXM820M-J25	
		NX1040MS-J5- \diamondsuit	NXM1040M-J5	
	400 W	NX1040MS-J10- \diamondsuit	NXM1040M-J10	
Three-Phase 200-230 VAC		NX1040MS-J25- \diamondsuit	NXM1040M-J25	NXD75-S
		NX1075MS-J5-�	NXM1075M-J5	נ-נ/עאון
	750 W	NX1075MS-J10- \diamondsuit	NXM1075M-J10	
		NX1075MS-J25- \diamondsuit	NXM1075M-J25	

[●] A number indicating the desired length of 1 (1 m), 2 (2 m) or 3 (3 m) for the cables included with the product is entered where the box ♦ is located within the product name.

Extended Functions

With the separately-sold control module (**OPX-2A**) or data editing software (**MEXEO2**), the parameters, operating data, resolution, etc. can be set to suit your equipment. The settings that can be set with extended functions depend on the mode used.



Control Module (**OPX-2A**) → Page 41 Data setting software (**MEXE02**)

→ Page 41

Position Control Mode

○Operating Data

Item	Content
Torque Limiting	Sets the torque limiting value.
Vibration Suppression Frequency	Sets the damping control frequency.

♦ System Parameters

V Oystem i arameters				
Item	Content			
Electronic Gear A	Sets the electronic gear denominator.			
Electronic Gear B	Sets the electronic gear numerator.			
Encoder Output Electronic Gear A	Sets the electronic gear denominator for encoder output.			
Encoder Output Electronic Gear B	Sets the electronic gear numerator for encoder output.			
Pulse Input Mode	Selects the pulse input mode.			
Operation after Absolute Position Loss Alarm Reset	Selects the operation mode for after the absolute position loss alarm is reset.			
Analog Input Signal	Enables/disables analog input signals.			
Motor Rotation Direction	Selects the motor rotation direction.			
Control Module Initial Display	Selects the initial display for when communications start between the control module and the driver. If an item is selected that is not displayed in position control mode, the monitor mode top screen becomes the initial display.			

V 1-1-			
Item	Content		
Gain Tuning Mode Selection	Selects the gain tuning mode.		
Load Inertia Ratio	Sets the ratio of the load inertia and motor inertia.		
Mechanical Rigidity Setting	Selects the rigidity of automatic tuning, semi-auto tuning, and manual tuning.		
Position Loop Gain	Sets the position loop gain. The larger this value, the higher the responsiveness.		
Speed Loop Gain	Sets the speed loop gain. The larger this value, the higher the responsiveness.		
Speed Loop Integration Time Constant	Sets the speed loop integration time constant. The smaller this value, the higher the responsiveness.		
Speed Feed-Forward Ratio	Sets the speed feed-forward ratio. The larger this value, the higher the responsiveness.		
S-ON Signal Logic	Switches the S-ON input logic.		
Output Signal Selection 1	Selects the output signal.		
Output Signal Selection 2	Selects the output signal.		
Positioning Completion Output Range	Sets the END output conditions.		
Positioning Near Output Range	Sets the NEAR output conditions.		
MOVE Signal Min. ON Time	Sets the min. duration that MOVE output is ON.		
Preset Value	Sets the preset position.		
Alarm Code Output	Enables/disables alarm code output.		
Analog Torque Limit Gain	Sets the torque limiting for 1 V of analog input voltage.		
Analog Torque Limiting Offset Voltage	Sets the offset voltage for analog torque limiting input.		
Analog Input Signal Automatic Offset	Enables/disables analog input signal automatic offset.		
Analog Speed Monitor Max. Value	Sets the max. value for the analog speed monitor. The slope for the analog speed monitor output is decided.		
Analog Speed Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog speed monitor.		
Analog Speed Monitor Offset Voltage	Sets the offset voltage for the analog speed monitor.		
Analog Torque Monitor Max. Value	Sets the max. value for the analog torque monitor. The slope for the analog torque monitor output is decided.		
Analog Torque Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog torque monitor.		
Analog Torque Monitor Offset Voltage	Sets the offset voltage for analog torque monitor.		
Mechanical Rigidity Setting Switch	Enables/disables the driver's mechanical rigidity setting switch (SW2).		
Command Filter	Sets the command filter time constant.		
Damping Control	Enables/disables damping control.		
Overflow Alarm	Sets the condition for an overflow alarm with a motor shaft rotation amount.		
Overflow Warning	Sets the condition for an overflow warning with a motor shaft rotation amount.		
Overvoltage Warning	Sets the voltage at which an overvoltage warning is issued.		
Undervoltage Warning	Sets the voltage at which a undervoltage warning is issued.		
Overheat Warning	Sets the temperature at which an overheat warning is issued.		
Overload Warning	Sets the condition for which an overload warning is issued.		
Overspeed Warning	Sets the speed at which an overspeed warning is issued.		
Gear Ratio for Speed Monitor	Sets the geared motor gear ratio for speed monitor.		

Speed Control Mode

○Operating Data

Item	Content	
Operating Speed	Sets the operating speed.	
Torque Limiting	Sets the torque limiting value.	
Acceleration Time	Sets the acceleration time per 1000 r/min.	
Deceleration Time	Sets the deceleration time per 1000 r/min.	

\Diamond System Parameters

Item	Content	
Encoder Output Electronic Gear A	Sets the electronic gear denominator for encoder output.	
Encoder Output Electronic Gear B	Sets the electronic gear numerator for encoder output.	
Operation Selection during Speed Control Mode Stop	Sets the operation during speed control mode is stopped.	
Analog Input Signal	Enables/disables analog input signals.	
Motor Rotation Direction	Selects the motor rotation direction.	
Control Module Initial Display	Selects the initial display for when communications start between the control module and the driver. If an item is selected that is not displayed in speed control mode, the monitor mode top screen becomes the initial display.	

♦ Application Parameters

Item	Content		
Gain Tuning Mode Selection	Selects the gain tuning mode.		
Load Inertia Ratio	Sets the ratio of the load inertia and motor inertia.		
Mechanical Rigidity Setting	Selects the rigidity of automatic tuning, semi-auto tuning, and manual tuning.		
Position Loop Gain*	Sets the position loop gain. The larger this value, the higher the responsiveness.		
Speed Loop Gain*	Sets the speed loop gain. The larger this value, the higher the responsiveness.		
Speed Loop Integration Time Constant*	Sets the speed loop integration time constant. The smaller this value, the higher the responsiveness.		
Speed Feed-Forward Ratio*	Sets the speed feed-forward ratio. The larger this value, the higher the responsiveness.		
S-ON Signal Logic	Switches the S-ON input logic.		
BRAKE Signal Logic	Switches the BRAKE input logic.		
Output Signal Selection 1	Selects the output signal.		
Output Signal Selection 2	Selects the output signal.		
Zero Speed Output Range	Sets the ZV output conditions.		
Speed Attainment Output Range	Sets the VA output conditions.		
MOVE Signal Min. ON Time	Sets the min. duration that MOVE output is ON.		
Alarm Code Output	Enables/disables alarm code output.		
Analog Speed Command Gain	Sets the speed command for 1 V of analog input voltage.		
Analog Speed Command Clamp	Sets the speed at which the analog speed command is clamped to zero.		
Analog Speed Command Offset Voltage	Sets the offset voltage for analog speed command input.		
Analog Torque Limit Gain	Sets the torque limiting for 1 V of analog input voltage.		
Analog Torque Limiting Offset Voltage	Sets the offset voltage for analog torque limiting input.		
Analog Input Signal Automatic Offset	Enables/disables analog input signal automatic offset.		
Analog Speed Monitor Max. Value	Sets the max. value for the analog speed monitor. The slope for the analog speed monitor output is decided.		
Analog Speed Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog speed monitor.		
Analog Speed Monitor Offset Voltage	Sets the offset voltage for the analog speed monitor.		
Analog Torque Monitor Max. Value	Sets the max. value for the analog torque monitor. The slope for the analog torque monitor output is decided.		
Analog Torque Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog torque monitor.		
Analog Torque Monitor Offset Voltage	Sets the offset voltage for analog torque monitor.		
Mechanical Rigidity Setting Switch	Enables/disables the driver's mechanical rigidity setting switch (SW2).		
Overvoltage Warning	Sets the voltage at which an overvoltage warning is issued		
Undervoltage Warning	Sets the voltage at which a undervoltage warning is issued		
Overheat Warning	Sets the temperature at which an overheat warning is issued.		
Overload Warning	Sets the condition for which an overload warning is issued.		
Overload Warning Overspeed Warning	Sets the condition for which an overload warning is issued. Sets the speed at which an overspeed warning is issued.		

 $[\]mbox{\ensuremath{\$}}\mbox{\ensuremath{When}}$ the parameter for selecting operation when the speed control mode is stopped is set to "servo lock".

■Torque Control Mode ◇Operating Data

Item	Content	
Torque Command	Sets the torque command value. 100% is the rated torque.	
Speed Limit Sets the speed limiting value.		

♦ System Parameters

Item	Content	
Encoder Output Electronic Gear A	Sets the electronic gear denominator for encoder output.	
Encoder Output Electronic Gear B	Sets the electronic gear numerator for encoder output.	
Analog Input Signal	Enables/disables analog input signals.	
Motor Rotation Direction	Sets the torque direction.	
Control Module Initial Display	Selects the initial display for when communications start between the control module and the driver. If an item is selected that is not displayed in torque control mode, the monitor mode top screen becomes the initial display.	

♦ Application Parameters

	anieteis		
Item	Content		
Output Signal Selection 1	Selects the output signal.		
Output Signal Selection 2	Selects the output signal.		
Zero Speed Output Range	Sets the ZV output conditions.		
MOVE Signal Min. ON Time	Sets the min. duration that MOVE output is ON.		
Alarm Code Output	Enables/disables alarm code output.		
Analog Speed Limiting Gain	Sets the speed limit for 1 V of analog input voltage.		
Analog Speed Limit Clamp	Sets the speed at which the analog speed limit is clamped to zero.		
Analog Speed Limit Offset Voltage	Sets the offset voltage for analog speed limit input.		
Analog Torque Command Gain	Sets the torque command for 1 V of analog input voltage.		
Analog Torque Command Offset Voltage	Sets the offset voltage for analog torque command input.		
Analog Input Signal Automatic Offset	Enables/disables analog input signal automatic offset.		
Analog Speed Monitor Max. Value	Sets the max. value for the analog speed monitor. The slope for the analog speed monitor output is decided.		
Analog Speed Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog speed monitor.		
Analog Speed Monitor Offset Voltage	Sets the offset voltage for the analog speed monitor.		
Analog Torque Monitor Max. Value	Sets the max. value for the analog torque monitor. The slope for the analog torque monitor output is decided.		
Analog Torque Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog torque monitor.		
Analog Torque Monitor Offset Voltage	Sets the offset voltage for analog torque monitor.		
Overvoltage Warning	Sets the voltage at which an overvoltage warning is issued.		
Undervoltage Warning	Sets the voltage at which a undervoltage warning is issued.		
Overheat Warning	Sets the temperature at which an overheat warning is issued.		
Overload Warning	Sets the condition for which an overload warning is issued.		
Overspeed Warning	Sets the speed at which an overspeed warning is issued.		
Gear Ratio for Speed Monitor	Sets the geared motor gear ratio for speed monitor.		

Tension Control Mode

○Operating Data

Item	Content	
Tension Command	Sets the tension command. 100% is the rated torque.	
Material Thickness*1*2	Sets the material thickness.	
Initial Diameter*1*2	Sets the initial diameter for winding or winding out.	
Final Diameter*1*2	Sets the final diameter for winding or winding out.	
Taper Setting*1*2	This function prevents winding drawing. As the winding diameter increases, the tension is adjusted lower. When it is 100%, the tension becomes constant.	
Core Inertia*2	Sets the core inertial moment.	
Material Inertia*2	Sets the material inertial moment for the max. material diameter.	
Speed Limit	Sets the speed limiting value.	

- *1 Set in high function mode I .
 *2 Set in high function mode II .

\Diamond System Parameters

Item	Content	
Encoder Output Electronic Gear A	Sets the electronic gear denominator for encoder output.	
Encoder Output Electronic Gear B	Sets the electronic gear numerator for encoder output.	
Tension Control Mode Selection	Sets the operating mode.	
Tension Control Gear Ratio	Sets the gear ratio from the motor shaft to the winding shaft.	
Analog Input Signal	Enables/disables analog input signals.	
Motor Rotation Direction	Sets the torque direction.	
Control Module Initial Display	Selects the initial display for when communications start between the control module and the driver. If an item is selected that is not displayed in tension control mode, the monitor mode top screen becomes the initial display.	

♦ Application Parameters

Item	Content		
Output Signal Selection 1	Selects the output signal.		
Output Signal Selection 2	Selects the output signal.		
Zero Speed Output Range	Sets the ZV output conditions.		
MOVE Signal Min. ON Time	Sets the min. duration that MOVE output is ON.		
Alarm Code Output	Enables/disables output.		
Analog Speed Limiting Gain	Sets the speed limit for 1 V of analog input voltage.		
Analog Speed Limit Clamp	Sets the speed at which the analog speed limit is clamped to zero.		
Analog Speed Limit Offset Voltage	Sets the offset voltage for analog speed limit input.		
Analog Tension Command Gain	Sets the tension command for 1 V of analog input voltage.		
Analog Tension Command Offset Voltage	Sets the offset voltage for analog tension command input.		
Analog Input Signal Automatic Offset	Enables/disables analog input signal automatic offset.		
Analog Speed Monitor Max. Value	Sets the max. value for the analog speed monitor. The slope for the analog speed monitor output is decided.		
Analog Speed Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog speed monitor.		
Analog Speed Monitor Offset Voltage	Sets the offset voltage for the analog speed monitor.		
Analog Torque Monitor Max. Value	Sets the max. value for the analog torque monitor. The slope for the analog torque monitor output is decided.		
Analog Torque Monitor Max. Voltage	Sets the monitor output voltage for the max. value of the analog torque monitor.		
Analog Torque Monitor Offset Voltage	Sets the offset voltage for analog torque monitor.		
Acceleration/Deceleration Correction Filter*2	Sets the acceleration/deceleration correction filter time constant. If the winding operation vibrates during acceleration/deceleration, set this value larger.		
Friction Torque Correction*1*2	Sets the friction torque correction. Corrects the torque load for the friction in the mechanism. The value of the torque detected during idling.		
Overvoltage Warning	Sets the voltage at which an overvoltage warning is issued		
Undervoltage Warning	Sets the voltage at which a undervoltage warning is issued		
Overheat Warning	Sets the temperature at which an overheat warning is issued.		
Overload Warning	Sets the condition for which an overload warning is issued		
Overspeed Warning	Sets the speed at which an overspeed warning is issued.		
Gear Ratio for Speed Monitor	Sets the geared motor gear ratio for speed monitor.		

- *1 Set in high function mode I. *2 Set in high function mode II.

How to Read Specifications Tables

Product	Nome	Standard	NX45A□-◇	NX810AJ5-
Product	Name	Electromagnetic Brake Type	NX45M□-◇	NX810MJ5-
Rated 0	utput Power	W	50	100
Rated S	peed	r/min	3000	-
→ Maximu	m Speed	r/min	5500	-
Motor P	ermissible Speed	r/min	-	3000
Rated To	orque	N-m	0.159	-
Maximu	m Instantaneous Torque	N-m	0.478	-
Permiss	ible Torque	N-m	=	1.27
→ Maximu	m Torque	N-m	=	3.82
Permiss	ible Speed Range	r/min	-	0 to 600
Rotor In	ertia	J: kg⋅m²	0.0174×10 ⁻⁴ [0.0217×10 ⁻⁴]	0.095×10 ⁻⁴ [0.118×10 ⁻⁴]
- Gearhea	d Internal Inertia	J: kg•m²	-	0.481×10 ⁻⁴
- Permiss	ible Load Inertia	J: kg·m ²	1.74×10 ⁻⁴	0.012
Gear Ra	tio		-	5
- Resoluti	on	P/R	100 to 100000 (Factory setting 1000)	
Detecto	Detector		Absolute Encoder 1 rotation 20 bits, multiple rotations 16 bits	
- Backlas	h	arc minutes (degrees)	-	3
Power-	Voltage and Frequency	AC Main Power Supply	Single-Phase 200-230 VA	C -15%~+10% 50/60 Hz C -15%~+10% 50/60 Hz C -15%~+10% 50/60 Hz
Supply		DC Control Power Supply	24 VDC±	10% 0.8 A
Input		Single-Phase 100-115 VAC	1.9	2.8
		Single-Phase 200-230 VAC	1.2	1.8
	Three-Phase 200-230 VAC	0.7	1.0	
		Туре	Power Off Activated Type	
		Power-Supply Input	24 VD	C±10%
Electron	nagnetic Brake	Power Consumption W	6.1	7.2
LIECTION	iagiiciic brakt	Excitation Current A	0.25	0.3
		Static Friction Torque N·m	0.159	1.27

1 Rated Output Power

The range in which the temperature rise does not exceed the permissible value when operating continuously at the motor's rated speed and rated torque.

2 Rated Speed

The speed when the motor is operating at the rated output power.

③ Maximum Speed

The max. speed at which the motor can rotate.

4 Motor Permissible Speed

The max. speed at which the geared type motor can rotate.

⑤ Rated Torque

The torque output when the motor is operating at the rated output power and rated speed.

6 Maximum Instantaneous Torque

The maximum torque that can be used instantaneously (for a short period of time).

During acceleration and deceleration, the motor can be used up to a max. of this torque.

7 Permissible Torque

The permissible torque represents the max. value limited by the mechanical strength of the output gear shaft when operated at a constant speed.

(8) Maximum Torque

This is the max. torque value that can be applied to the output gear shaft during acceleration/deceleration such as when an inertial load is started and stopped.

Permissible Speed Range

This is the range for rotation on the output gear shaft.

(10) Rotor Inertia

This refers to the inertia of the rotor inside the motor.

This is necessary when the required torque (acceleration torque) for the motor is calculated.

(11) Gearhead Internal Inertia

The inertia inside the gearhead.

This is necessary when the required torque (acceleration torque) for the motor is calculated.

(2) Permissible Load Inertia

The load inertia at which the motor is stable and can be controlled.

If a load exceeding this value is applied, control becomes unstable, and speed regulation variance, protective circuit activation, vibration, and other problems occur.

(13) Gear Ratio

This is the ratio in rotation speed between the input speed from the motor and the speed of the output gear shaft. For example, a gear ratio of 10 indicates that when the input speed from the motor is 10 r/min, the output gear shaft speed is 1 r/min.

(4) Resolution

This shows the angle that the motor rotates for 1 pulse.

The motor positioning accuracy is determined by the resolution.

(5) Backlash

This is the play of the output gear shaft when the motor shaft is fixed. When positioning in bi-direction, the positioning accuracy is affected.

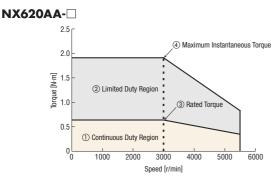
(6) Rated Input Current

This is the input current value for the main power supply required when the motor is used in the continuous duty region.

Static Friction Torque

This is an electromagnetic brake specification. This is the max. holding torque (holding force) at which the electromagnetic brake can hold the position.

How to Read Speed - Torque Characteristics



① Continuous Duty Region

This refers to the region where a motor can be operated at the continuous ratings. The effective load torque must always be kept in this region.

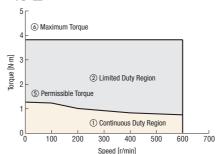
2 Limited Duty Region

This region is used when accelerating/decelerating.

3 Rated Torque

The torque output when the motor is operating at the rated output power and rated speed.

NX810AA-J5-□



4 Maximum Instantaneous Torque

The maximum torque that can be used instantaneously (for a short period of time). During acceleration and deceleration, the motor can be used up to a max. of this torque.

5 Permissible Torque

The permissible torque represents the max. value limited by the mechanical strength of the output gear shaft when operated at a constant speed.

6 Maximum Torque

This is the max. torque value that can be applied to the output gear shaft during acceleration/deceleration such as when an inertial load is started and stopped.

Accessories (Sold separately)

1 Connection Cable Sets [®] Flexible Connection Cable Sets [®] HS

2 Extension Cable Sets RoHS Flexible Extension Cable Sets RoHS

The **NX** Series comes with cables of 1 m, 2 m or 3 m for the connection between the motor and driver. When the distance between the motor and driver is extended to 3 m or longer, a connection cable set or extension cable set must be used.

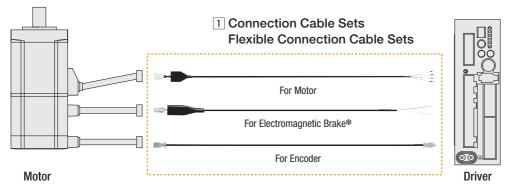
Use a flexible extension cable if the cable will be bent repeatedly.

Cable System Configuration

When Connecting the Motor and Driver without Using the Included Cables

Use a connection cable set.

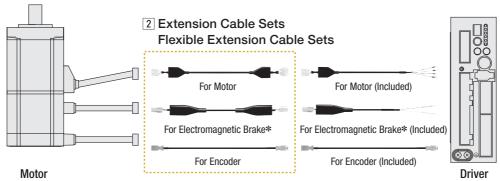
Use a flexible connection cable set if the cables will be bent.



When Extending the Distance between the Motor and the Driver Using Included Cables

Use an extension cable set and connect it to the included cables.

Use a flexible extension cable set added if the cables will be bent.



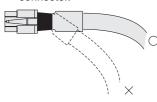
*Cables for electromagnetic brake are for use when using electromagnetic brake type motors.

Note

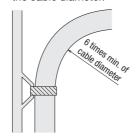
Keep the overall cable length 20 m max. when using an extension cable set or a flexible extension cable set to connect with cables included with the NX Series.

Note on Use of Flexible Cables

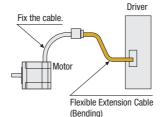
① Do not allow the cable to bend at the cable connector.



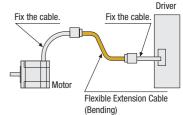
② For the bending radius, use at 6 times min. of the cable diameter.



- ③ The cable from the motor and the included cable are not for bending. If the motor cable is to be bent, bend it at the flexible cable.
- Flexible Connection Cable



• Flexible Extension Cable



1 Connection Cable Sets RoHS Flexible Connection Cable Sets ®

Product Line

Connection Cable Sets





Product Name	Length L (m)
CC050VNF	5
CC070VNF	7
CC100VNF	10
CC150VNF	15
CC200VNF	20

Flexible Connection Cable Sets

♦ For Standard Type Motor



Cable for motor	ouble for Endodo.
Product Name	Length L (m)
CC010VNR	1
CC020VNR	2
CC030VNR	3
CC050VNR	5
CC070VNR	7
CC100VNR	10
CC150VNR	15
CC200VNR	20

♦ For Electromagnetic Brake Type Motor







Cable for Electromagnetic Brake

Product Name	Length L (m)
CC050VNFB	5
CC070VNFB	7
CC100VNFB	10
CC150VNFB	15
CC200VNFB	20

♦ For Electromagnetic Brake Type Motor

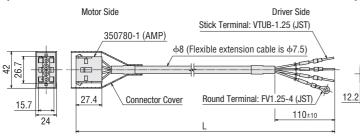


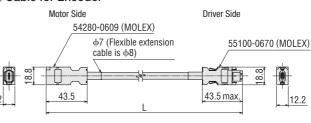


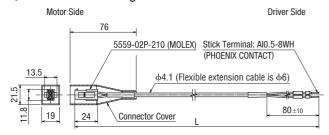
Cable for Electromagnetic Brake

ouble for Motor	Odbio for Enougo
Product Name	Length L (m)
CC010VNRB	1
CC020VNRB	2
CC030VNRB	3
CC050VNRB	5
CC070VNRB	7
CC100VNRB	10
CC150VNRB	15
CC200VNRB	20

Dimensions (Unit = mm)







2 Extension Cable Sets (ROHS) Flexible Extension Cable Sets (ROHS)

Product Line

Extension Cable Sets ♦ For Standard Type Motor



Cable for Motor	Cable for Encoder
Product Name	Length L (m)
CC010VNFT	1
CC020VNFT	2
CC030VNFT	3
CC050VNFT	5
CC070VNFT	7
CC100VNFT	10
CC1EOVAIET	15

Flexible Extension Cable Sets



ouble for motor	oable for Effection
Product Name	Length L (m)
CC010VNRT	1
CC020VNRT	2
CC030VNRT	3
CC050VNRT	5
CC070VNRT	7
CC100VNRT	10
CC150VNRT	15

♦ For Electromagnetic Brake Type Motor





Cable for Electromagnetic Brake

oable for motor	Cable for Effector
Product Name	Length L (m)
CC010VNFBT	1
CC020VNFBT	2
CC030VNFBT	3
CC050VNFBT	5
CC070VNFBT	7
CC100VNFBT	10
CC150VNFBT	15







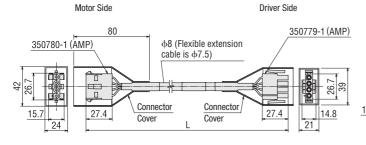
Cable for Encoder Cable for Electromagnetic Brake

Driver Side

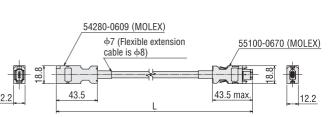
Product Name	Length L (m)
CC010VNRBT	1
CC020VNRBT	2
CC030VNRBT	3
CC050VNRBT	5
CC070VNRBT	7
CC100VNRBT	10
CC150VNRBT	15

Dimensions (Unit = mm)

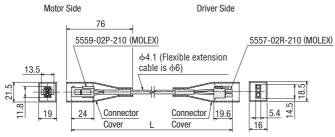




Motor Side



♦ Cable for Electromagnetic Brake



Driver Cables

General-Purpose Cables ®HS



These shielded cables have a half-pitch connector at one end of the cable for easy connecting to the driver.

Note

- Note that as the length of the pulse line between the driver and controller increases, the maximum frequency decreases.
- Install a connector that matches the controller you are using to the other end of the cable.

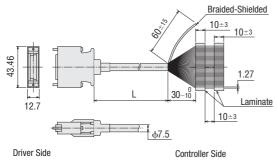
Product Line

Product Name	Applicable	Length L (m)
CC36D1-1	For CN7 (2C nine)	1
CC36D2-1	For CN7 (36 pins)	2
CC20D1-1	For CNG (20 pipe)	1
CC20D2-1	For CN6 (20 pins)	2

Dimensions (Unit = mm)

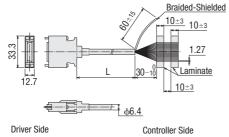
CC36D1-1, CC36D2-1

Conductor: AWG28 (0.08 mm²)



CC20D1-1, CC20D2-1

Conductor: AWG28 (0.08 mm²)



Connector – Terminal Block Conversion Units ® HS

These are conversion units that connect a driver to a programmable controller using a terminal block.

- Include a signal name plate for easy, one-glance identification of driver signal names
- DIN rail installable
- Cable length: 1 m



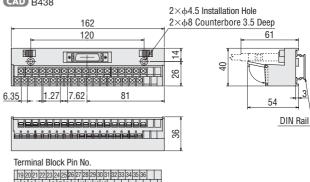
Product Line

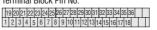
Product Name	Applicable	Length L (m)
CC36T1	For CN7 (36 pins)	-1
CC20T1	For CN6 (20 pins)	'

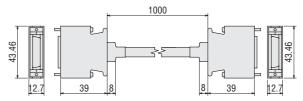
Dimensions (Unit = mm)

CC36T1

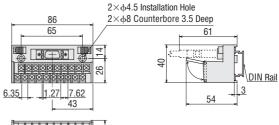




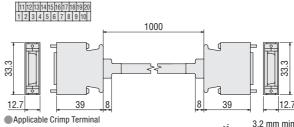




CC20T1 **CAD** B437



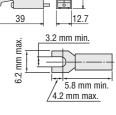




- · Terminal screw size: M3
- · Tightening torque: 1.2 N·m
- · Applicable min. lead wire: AWG22 (0.3 mm²)

Note

Round terminals cannot be used.



Control Module ®HS

Allows you to use the **NX** Series extended functions. Makes it possible for you to change parameters, add functions, etc.

Product Line

Product Name
OPX-2A



Control Module Mass: 0.25 kg GAD B453 91.8 91.8 92.5 Gable \$4.7 5000 mm 38 The state of the control of

Data Setting Software ®

Allows you to use the **NX** Series extended functions. Allows you to change parameters, add functions, use waveform monitoring to confirm the operation etc. with a computer.

Product Line

Product Name	
MEXE02	

(5 m PC interface cable, 0.5 m USB cable included)

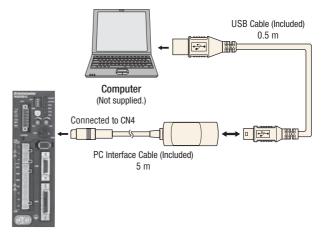
Operating Environment

	For the operating system, only 32-bit (x86) editions can be used. Windows 2000 Professional Service Pack 4 or later**1		
	Windows XP Home Edition Service Pack 2 or later		
Operation	Windows XP Professional Service Pack 2 or later		
System	Windows Vista Home Basic Service Pack 1 or later		
	Windows Vista Home Premium Service Pack 1 or later		
	Windows Vista Business Service Pack 1 or later		
Windows Vista Ultimate Service Pack 1 or later		or later	
CPU	Pentium III 800 MHz min.*2 (must be c	ompatible with OS)	
	Windows 2000 Professional	: 448 MB min. is recommended	
Windows XP Home Edition, Professional		: 512 MB min. is recommended	
Memory*2	Windows Vista Home Basic	: 896 MB min. is recommended	
Memory	Windows Vista Home Premium	: 1.4 GB min. is recommended	
	Windows Vista Business	: 1.4 GB min. is recommended	
	Windows Vista Ultimate	: 1.4 GB min. is recommended	
Hard Disk	Free disk space of 30 MB min.*3*4		
Disk Device	CD-ROM Drive		
Serial Interface	USB 1.1 1 port		

- *1 Application of Rollup 1 is required.
- *2 The operating conditions of the OS must be satisfied.
- *4 Using MEXEO2 requires Microsoft .NET Framework 2.0 Service Pack 1. If it is not installed, it will be installed automatically. An additional max. of 500 MB of free space may be required.
- Windows and Windows Vista are registered trademarks of the Microsoft Corporation in the United States and other countries. Pentium is a registered trademark of Intel Corporation.



Connection between Computer and Driver



Flexible Couplings

MCV Couplings RoHS

A flexible coupling ideal for your servo motor is available. Once you have decided on a servo motor type and/or motor applications, you can easily select a coupling of the recommended size.

Features

- Absorbs vibration
- High response
- Zero backlash
- Same characteristics for CW and CCW rotations
- RoHS Directive-compliant

Product Line

Product Name	Applicable Product
MCV19□□	NX45
MCV25□□	NX410
MCV30□□	NX620
MCV34□□	NX640
MCV39□□	NX975

■ A number indicating the coupling inner diameter is entered where the box
is located within the product name.

Product Number Code

MCV 30 08 14

(1)





1	MCV Coupling	
2	Outer Diameter Dimension of Coupling	19 : φ19 mm to 39 : φ39 mm
3	Inner Diameter d1 (Smaller inner diameter)	03 : φ3 mm to 16 : φ16 mm
(4)	Inner Diameter d2 (Larger inner diameter)	04 : φ4 mm to 16 : φ16 mm

Specifications

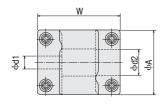
Product Name	Normal Torque N∙m	Maximum Torque N·m	Maximum Number of Rotations r/min	Inertia kg∙m ²	Static Torsion Spring Constant N·m/rad	Permissible Eccentricity mm	Permissible Declination deg.	Permissible End Play mm	Mass g
MCV19	2.1	4.2	33000	8.4×10 ⁻⁷	88	0.15		±0.2	14
MCV25	4.0	8.0	25000	30×10 ⁻⁷	170	0.15		±0.2	28
MCV30	6.3	12.6	21000	69×10 ⁻⁷	220	0.20	1.5	±0.3	45
MCV34	8.0	16.0	18000	130×10 ⁻⁷	390	0.20		±0.3	65
MCV39	13.5	27.0	16000	270×10 ⁻⁷	520	0.20		±0.3	98

If the operating ambient temperature exceeds 30°C, correct the normal torque and the maximum torque with the temperature correction coefficient shown in the table.

The inertia is the value with the max. shaft hole diameter.

Operating Ambient Temperature (°C)	-20~+30	+30~+40	+40~+50
Temperature Correction Coefficient	1.00	0.80	0.70

Dimensions (Unit = mm)







Shaft Hole Lineup

			-				
Product	Shaft Diameter		Shaft Diameter d2 [mm] (Dimensional tolerance H8)				
Name	d1 mm	4	5	6	8	10	12
	5						
MCV19	6						
	8						
	5			•	•		
	6				•	•	
MCV25	6.35					•	
	8				•	•	•
	10						

	10						
Product	Shaft Diameter	Shaft Diameter d2 [mm] (Dimensional tolerance H8)					
Name	d1 mm	8	10	12	14	15	16
	8						
MCV30	10						
MCV30	12						
	14				•		
	8				•		
MCV34	10				•		
MCV34	12				•		
	14				•	•	•
	10				•		•
	12				•		•
MCV39	14				•	•	•
	15						•
	16						

The recommended dimensional tolerance of the applied shaft hole is h6 or h7.

Product				
Name	Outer Diameter φA	Length W	Screw Used M	CAD
MCV19	19	26	M2	B550
MCV25	25	32	M2.5	B551
MCV30	30	36	M3	B552
MCV34	34	38	M3	B553
MCV39	39	48	M4	B554

Accessory Sets ®

When using analog I/O, please purchase an accessory set.





Battery RoHS

This battery is for constructing an absolute system.

Position information can be stored during power blackouts or if the driver's power supply is switched OFF.





With the battery installed on an NX Series driver

Product Line

Applicable
20-Pin Connector for CN6 \times 1 Set, External Potentiometers \times 2 Sets (Potentiometer \times 2, Scale plate \times 2, Insulation sheet \times 2, Knob \times 2, Shielded cable \times 2)
Applicable
20-Pin Connector for CN6 × 1 set

Product Line

Product Name	
BAT01A	

Regeneration Units ® B

Sometimes the regenerative power generated by the motor exceeds the driver's regenerative power absorption capacity. In such a case, a regeneration unit is connected to the driver to release the regenerative power.

- <Conditions under which a regeneration unit may be required>
- When using for vertical operation
- During acceleration and deceleration time when an inertial load is installed

Product Line

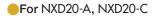
Product Name	Applicable Driver Product Names	
RGB100	NXD20-A, NXD20-C	
RGB200	NXD75-S	
	•	

Specifications

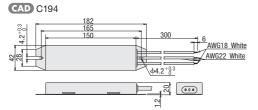
Product Name	RGB100	RGB200
Continuous Regenerative Power	100 W*1	200 W
Resistance Value	150 Ω	50 Ω
Thermal Protector Operating Temperature	Open: 150±7°C Reset: 145±12°C (Normally closed)	Open: 175±5°C Reset: 115±15°C (Normally closed)
Thermal Protector Rated Electricity	120 VAC 4 A 30 VDC 4 A (Min. current 5 mA)	227 VAC 8 A 115 VAC 22 A

^{*1} For **NX** Series, 50 W.

Dimensions (Unit = mm)

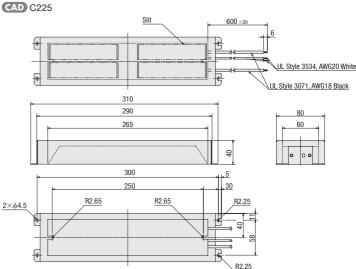


Mass: 0.25 kg



For NXD75-S

Mass: 1.1 kg



Install the regeneration unit in a location that has the same heat radiation capability as the heat sink (Material: aluminum, 350×350 mm, 3 mm thick).

Controller (Sold separately)

SG8030J (ROHS)

Features

All operations including data setting, etc. can easily be performed using the 4 touch pads on the front panel. In addition, the number of signal lines is reduced to a minimum for easy operation and connection.

- Jerk Limiting Control Function for Suppressing Vibration of the Motor
- Sequential Positioning Operation and External Signal Operation Possible
- Maximum Oscillation Frequency 200 kHz
- 1-Pulse Output Signal/2-Pulse Output Signal Mode Selection Possible



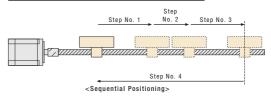




Recessed Installation Model

Product Line

Туре	Product name
DIN Rail Installation Model	SG8030JY-D
Recessed Installation Model	SG8030JY-U



This product is manufactured at a plant certified with the international standards ISO 9001 (for quality assurance) and ISO 14001 (for systems of environmental management).

Specifications are subject to change without notice.

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Oriental motor

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