Servo Motors

Accessories

Cables

1 Connection Cable Sets RoHS
Flexible Connection Cable Sets RoHS

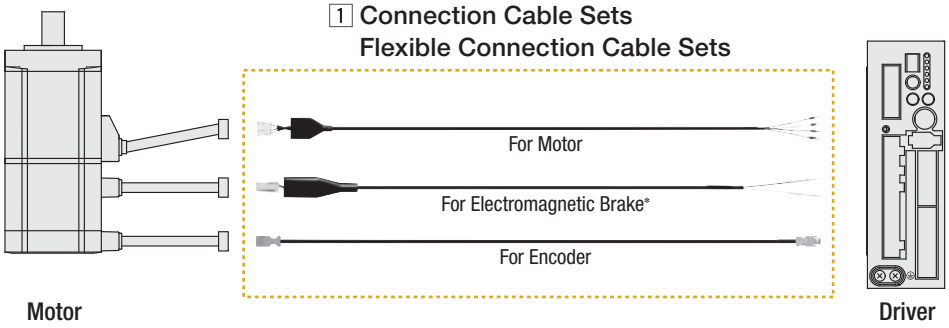
2 Extension Cable Sets RoHS
Flexible Extension Cable Sets RoHS

The **NX** Series comes with cables of 3 m (9.8 ft.) for the connection between the motor and driver.
When the distance between the motor and driver is extended longer than 3 m (9.8 ft.), 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

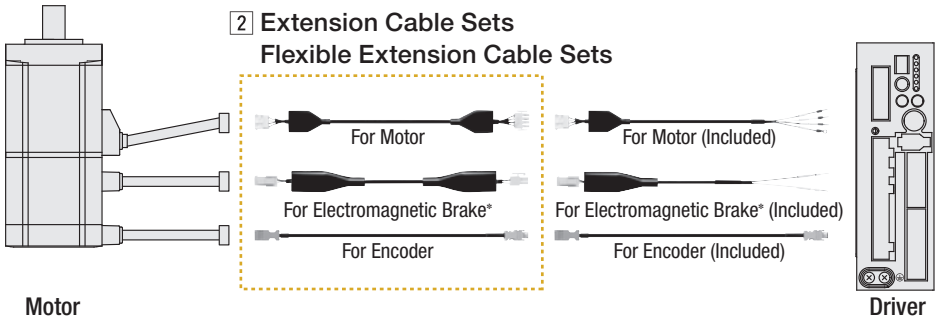
●When Connecting the Motor and Driver without Using the Included Cables

Use a connection cable set or 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, or use a flexible extension cable set added if the cables will be bent.



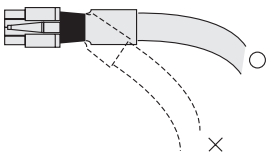
*Cables for electromagnetic brake are for use when using electromagnetic brake type motors.

Note

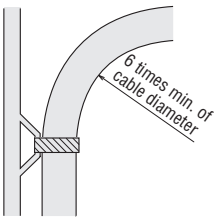
● Keep the overall cable length 20 m (65.6 ft.) max. when using an extension cable set or a flexible extension cable set to connect with cables included with the **NX** Series.

Note on Use of Flexible Cables

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

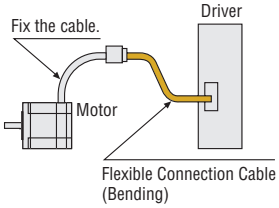


② For the bending radius, use 6 times min. of the cable diameter.

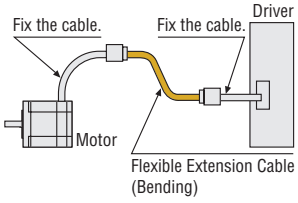


③ The connection cable is not for bending. If the cable is to be bent, bend it at the flexible connection cable.

● Flexible Connection Cable



● Flexible Extension Cable



1 Connection Cable Sets RoHS
Flexible Connection Cable Sets RoHS

Product Line

Connection Cable Sets

◇For Standard Type Motor

Cable for Motor　Cable for Encoder

Model	Length L m (ft.)
CC010VNF	1 (3.3)
CC020VNF	2 (6.6)
CC030VNF	3 (9.8)
CC050VNF	5 (16.4)
CC070VNF	7 (23)
CC100VNF	10 (32.8)
CC150VNF	15 (49.2)
CC200VNF	20 (65.6)

◇For Electromagnetic Brake Type Motor

Cable for Motor　Cable for Encoder　Cable for Electromagnetic Brake

Model	Length L m (ft.)
CC010VNFB	1 (3.3)
CC020VNFB	2 (6.6)
CC030VNFB	3 (9.8)
CC050VNFB	5 (16.4)
CC070VNFB	7 (23)
CC100VNFB	10 (32.8)
CC150VNFB	15 (49.2)
CC200VNFB	20 (65.6)

Flexible Connection Cable Sets

◇For Standard Type Motor

Cable for Motor　Cable for Encoder

Model	Length L m (ft.)
CC010VNR	1 (3.3)
CC020VNR	2 (6.6)
CC030VNR	3 (9.8)
CC050VNR	5 (16.4)
CC070VNR	7 (23)
CC100VNR	10 (32.8)
CC150VNR	15 (49.2)
CC200VNR	20 (65.6)

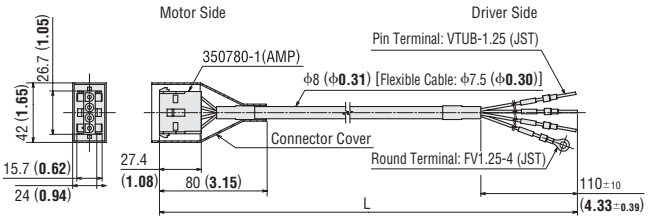
◇For Electromagnetic Brake Type Motor

Cable for Motor　Cable for Encoder　Cable for Electromagnetic Brake

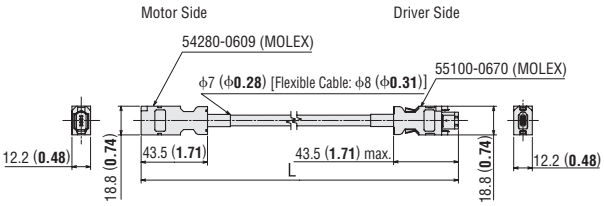
Model	Length L m (ft.)
CC010VNRB	1 (3.3)
CC020VNRB	2 (6.6)
CC030VNRB	3 (9.8)
CC050VNRB	5 (16.4)
CC070VNRB	7 (23)
CC100VNRB	10 (32.8)
CC150VNRB	15 (49.2)
CC200VNRB	20 (65.6)

Dimensions Unit = mm (in.)

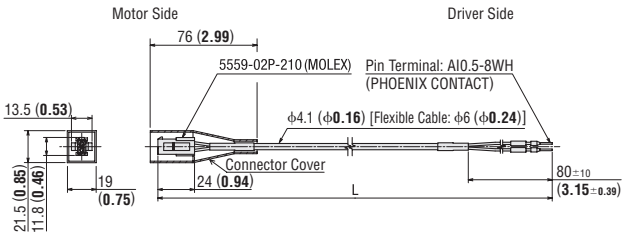
◇Cable for Motor



◇Cable for Encoder



◇Cable for Electromagnetic Brake

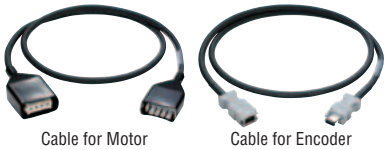


2 Extension Cable Sets RoHS
Flexible Extension Cable Sets RoHS

Product Line

●Extension Cable Sets

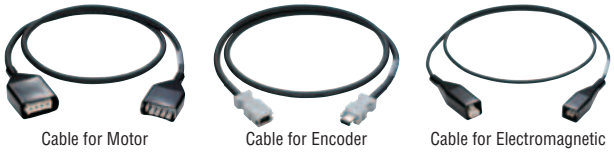
◇For Standard Type Motor



Cable for Motor　Cable for Encoder

Model	Length L m (ft.)
CC010VNFT	1 (3.3)
CC020VNFT	2 (6.6)
CC030VNFT	3 (9.8)
CC050VNFT	5 (16.4)
CC070VNFT	7 (23)
CC100VNFT	10 (32.8)
CC150VNFT	15 (49.2)

◇For Electromagnetic Brake Type Motor



Cable for Motor　Cable for Encoder　Cable for Electromagnetic Brake

Model	Length L m (ft.)
CC010VNFBT	1 (3.3)
CC020VNFBT	2 (6.6)
CC030VNFBT	3 (9.8)
CC050VNFBT	5 (16.4)
CC070VNFBT	7 (23)
CC100VNFBT	10 (32.8)
CC150VNFBT	15 (49.2)

●Flexible Extension Cable Sets

◇For Standard Type Motor

Cable for Motor　Cable for Encoder

Model	Length L m (ft.)
CC010VNRT	1 (3.3)
CC020VNRT	2 (6.6)
CC030VNRT	3 (9.8)
CC050VNRT	5 (16.4)
CC070VNRT	7 (23)
CC100VNRT	10 (32.8)
CC150VNRT	15 (49.2)

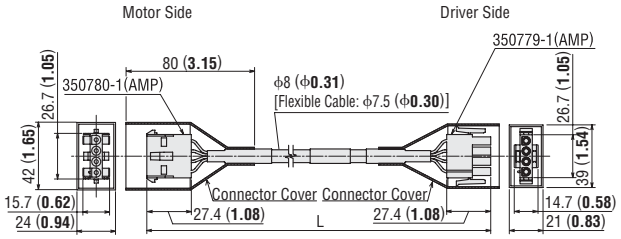
◇For Electromagnetic Brake Type Motor

Cable for Motor　Cable for Encoder　Cable for Electromagnetic Brake

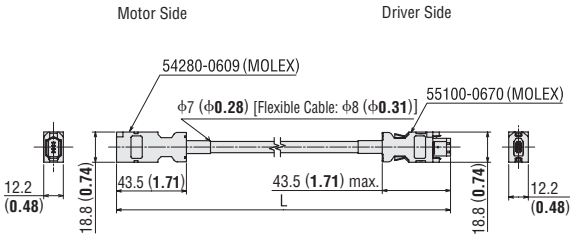
Model	Length L m (ft.)
CC010VNRBT	1 (3.3)
CC020VNRBT	2 (6.6)
CC030VNRBT	3 (9.8)
CC050VNRBT	5 (16.4)
CC070VNRBT	7 (23)
CC100VNRBT	10 (32.8)
CC150VNRBT	15 (49.2)

Dimensions Unit = mm (in.)

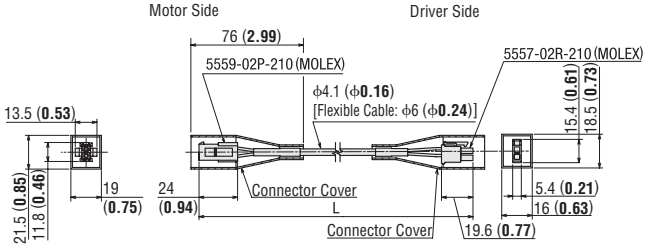
◇Cable for Motor



◇Cable for Encoder



◇Cable for Electromagnetic Brake



Driver Cables

General-Purpose Cables RoHS

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

Product Line

Model	Applicable	Length L m (ft.)
CC36D1-1	For CN7 (36 pins)	1 (3.3)
CC36D2-1		2 (6.6)
CC20D1-1	For CN6 (20 pins)	1 (3.3)
CC20D2-1		2 (6.6)

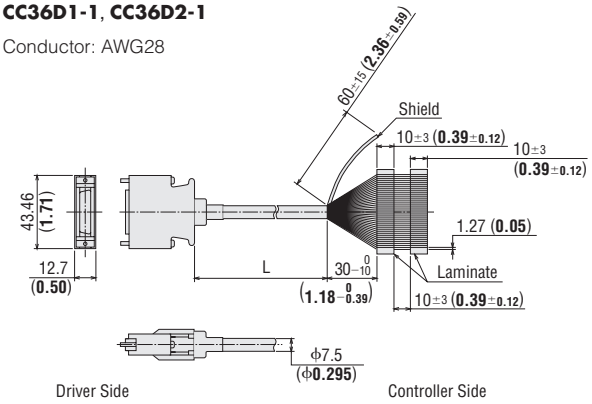
Notes

- 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.

Dimensions Unit = mm (in.)

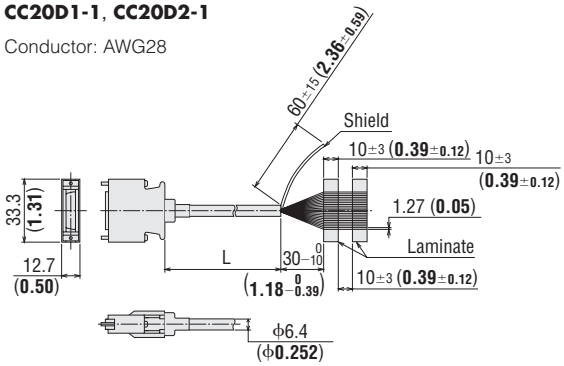
CC36D1-1, **CC36D2-1**

Conductor: AWG28



CC20D1-1, **CC20D2-1**

Conductor: AWG28



Connector – Terminal Block Conversion Units RoHS

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 (3.3 ft.)

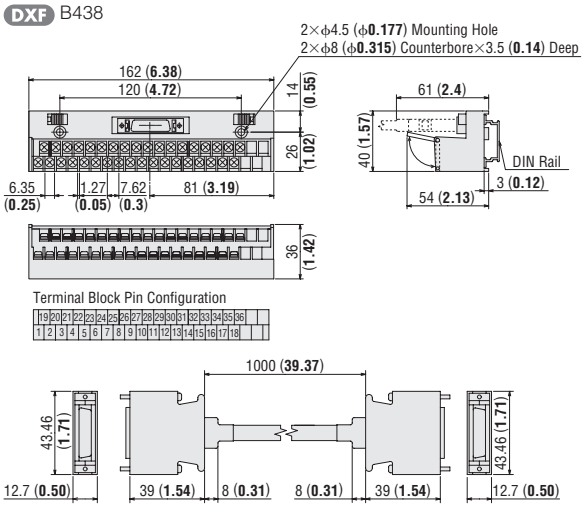
CC36T1

CC20T1

Dimensions Unit = mm (in.)

CC36T1

DXF B438

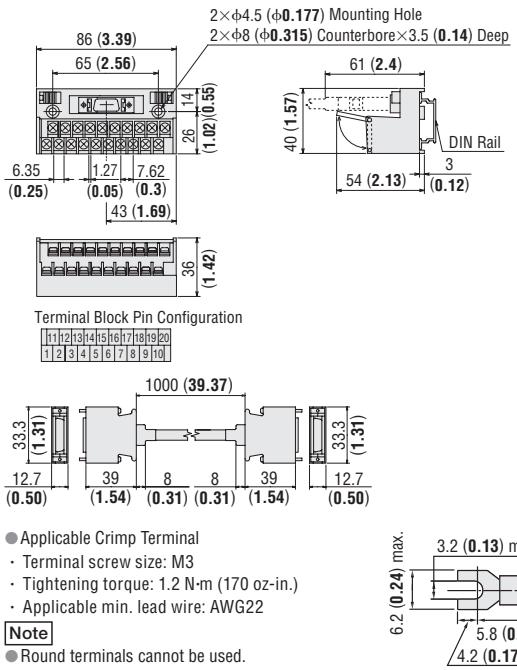


Product Line

Model	Applicable	Length L m (ft.)
CC36T1	For CN7 (36 pins)	1 (3.3)
CC20T1	For CN6 (20 pins)	

CC20T1

DXF B437



- Applicable Crimp Terminal
  - Terminal screw size: M3
  - Tightening torque: 1.2 N·m (170 oz-in.)
  - Applicable min. lead wire: AWG22

Note

- Round terminals cannot be used.

Flexible Couplings
MCV Couplings RoHS

Features

- Compatible with servo motors, which support low resonance and high gain
- Anti-vibration rubber absorbs vibration generated by the motor
- High response
- Non-backlash
- Electrical insulation

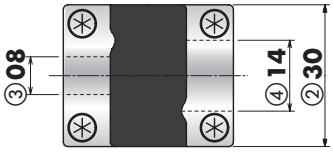
Product Number Code

MCV 30 08 14

① ② ③ ④

①	**MCV** Couping
②	Outer Diameter Dimension of Coupling
③	Inner Diameter d1 (Smaller inner diameter)
④	Inner Diameter d2 (Larger inner diameter)

- For inner diameter d1, the smaller of the motor shaft diameter or the driven shaft diameter is entered.
- For inner diameter d2, the larger of the motor shaft diameter or the driven shaft diameter is entered.



Product Line

Model
MCV19□
MCV25□
MCV30□
MCV34□
MCV39□

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

Selecting a Coupling

The following examples explain the procedure for selecting a coupling by driven shaft diameter and motor and driver package name.

Example: Motor/Driver Package Name: **NX620AA-3** Driven shaft diameter: ϕ8 (ϕ0.3150 in.)

1. The coupling type that matches **NX620AA-3** from the coupling selection table is **MCV30**.
2. The inner diameter of the coupling according to the motor shaft diameter will be **14** [ϕ14 (ϕ0.5512 in.)], and will be **8** [ϕ8 (ϕ0.3150 in.)] according to the driven shaft diameter.
3. In the coupling product name, smaller inner diameters come before larger ones and thus the coupling product name will be **MCV300814**.

- When the inner diameter is ϕ6.35 (ϕ0.2500 in.), the number is **06A**.

Coupling Selection Table

Applicable Products			Type	Motor Shaft Diameter mm (in.)		Driven Shaft Diameter mm (in.)								
Type	Frame Size mm (in.)	Model				**05** ϕ5 (ϕ0.1969)	**06** ϕ6 (ϕ0.2362)	**06A** ϕ6.35 (ϕ0.2500)	**08** ϕ8 (ϕ0.3150)	**10** ϕ10 (ϕ0.3937)	**12** ϕ12 (ϕ0.4724)	**14** ϕ14 (ϕ0.5512)	**15** ϕ15 (ϕ0.5906)	**16** ϕ16 (ϕ0.6299)
Standard Type	42 (1.65)	**NX45 NX410**	**MCV19**	**8**	ϕ8 (ϕ0.3150)	●	●		●					
	60 (2.36)	**NX620 NX640**	**MCV30**	**14**	ϕ14 (ϕ0.5512)				●	●	●	●	●	
	85 (3.35)	**NX975**	**MCV39**	**16**	ϕ16 (ϕ0.6299)					●	●	●	●	●

- The applicable products are listed such that the series name can be determined.

Specifications

Model	Diamensions					Normal Torque	Maximum Torque*1	Mass	Inertia*2	Static Torsion Spring Constant	Permissible Eccentricity	Permissible Declination	Permissible Endplay
	Outer Diameter mm (in.)	Length mm (in.)	Shaft Hole Diameter d1 mm (in.)	Shaft Hole Diameter d2 mm (in.)	Screw Used	N·m (lb-in)	N·m (lb-in)	g (oz.)	kg·m^2 (lb-in^2)	N·m/rad (lb-in/rad)	mm (in.)	deg	mm (in.)
MCV190508	19 (0.75)	26 (1.02)	5 (0.1969)	8 (0.3150)	M2	2.1 (18.5)	4.2 (37)	14 (0.49)	8.4×10^{-7} (0.046)	88 (770)	0.15 (0.0059)	1.5	±0.2 (±0.0079)
MCV190608			6 (0.2362)	8 (0.3150)									
MCV190808			8 (0.3150)	8 (0.3150)									
MCV250508	25 (0.98)	32 (1.26)	5 (0.1969)	8 (0.3150)	M2.5	4.0 (35)	8.0 (70)	28 (0.98)	30×10^{-7} (0.164)	170 (1500)	0.15 (0.0059)	1.5	±0.2 (±0.0079)
MCV250608			6 (0.2362)	8 (0.3150)									
MCV250610			6 (0.2362)	10 (0.3937)									
MCV2506A08			6.35 (0.2500)	8 (0.3150)									
MCV2506A10			6.35 (0.2500)	10 (0.3937)									
MCV250808			8 (0.3150)	8 (0.3150)									
MCV250810			8 (0.3150)	10 (0.3937)									
MCV250812			8 (0.3150)	12 (0.4724)									
MCV251010			10 (0.3937)	10 (0.3937)									
MCV251012			10 (0.3937)	12 (0.4724)									
MCV300808	30 (1.18)	36 (1.42)	8 (0.3150)	8 (0.3150)	M3	6.3 (55)	12.6 (111)	45 (1.59)	69×10^{-7} (0.38)	220 (1940)	0.20 (0.0079)	1.5	±0.3 (±0.0118)
MCV300810			8 (0.3150)	10 (0.3937)									
MCV300812			8 (0.3150)	12 (0.4724)									
MCV300814			8 (0.3150)	14 (0.5512)									
MCV300815			8 (0.3150)	15 (0.5906)									
MCV301010			10 (0.3937)	10 (0.3937)									
MCV301012			10 (0.3937)	12 (0.4724)									
MCV301014			10 (0.3937)	14 (0.5512)									
MCV301015			10 (0.3937)	15 (0.5906)									
MCV301214			12 (0.4724)	14 (0.5512)									
MCV301414			14 (0.5512)	14 (0.5512)									
MCV301415			14 (0.5512)	15 (0.5906)									
MCV340814	34 (1.34)	38 (1.50)	8 (0.3150)	14 (0.5512)	M3	8.0 (70)	16.0 (141)	65 (2.2)	130×10^{-7} (0.71)	390 (3400)	0.20 (0.0079)	1.5	±0.3 (±0.0118)
MCV341014			10 (0.3937)	14 (0.5512)									
MCV341214			12 (0.4724)	14 (0.5512)									
MCV341414			14 (0.5512)	14 (0.5512)									
MCV341415			14 (0.5512)	15 (0.5906)									
MCV341416			14 (0.5512)	16 (0.6299)									
MCV391014	39 (1.54)	48 (1.89)	10 (0.3937)	14 (0.5512)	M4	13.5 (119)	27.0 (230)	98 (3.4)	270×10^{-7} (1.48)	520 (4600)	0.20 (0.0079)	1.5	±0.3 (±0.0118)
MCV391016			10 (0.3937)	16 (0.6299)									
MCV391214			12 (0.4724)	14 (0.5512)									
MCV391216			12 (0.4724)	16 (0.6299)									
MCV391414			14 (0.5512)	14 (0.5512)									
MCV391415			14 (0.5512)	15 (0.5906)									
MCV391416			14 (0.5512)	16 (0.6299)									
MCV391516			15 (0.5906)	16 (0.6299)									
MCV391616			16 (0.6299)	16 (0.6299)									

*1 Take the maximum torque into consideration when the limited duty region of the AC servo motor is being used.
*2 The inertia is the value at the maximum shaft hole diameter.

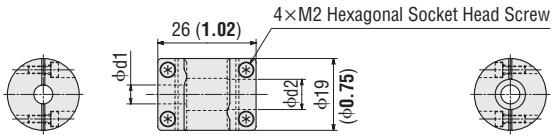
Temperature Correction Factor

Operating Ambient Temperature	−20 to +30°C (−4 to +86°F)	+30 to +40°C (+86 to +104°F)	+40 to +50°C (+104 to +122°F)
Temperature Correction Factor	1.00	0.80	0.70

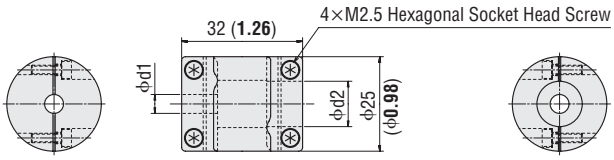
● If the operating ambient temperature exceeds 30°C (86°F), correct the maximum torque with the temperature correction factor.

Dimensions Unit = mm (in.)

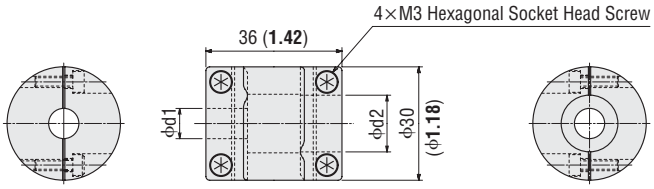
MCV19
Mass: 14 g (0.49 oz.)
DXF B550



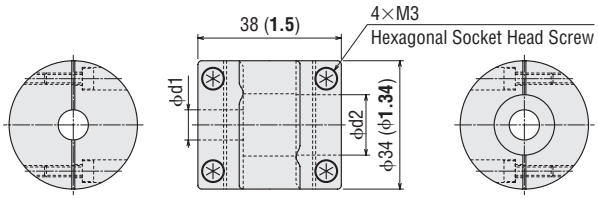
MCV25
Mass: 28 g (0.98 oz.)
DXF B551



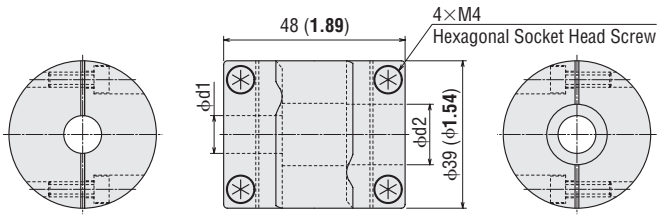
MCV30
Mass: 45 g (1.59 oz.)
DXF B552



MCV34
Mass: 65 g (2.2 oz.)
DXF B553



MCV39
Mass: 98 g (3.4 oz.)
DXF B554



Control Module RoHS

For use with the **NX** Series extended functions. Makes it possible to change parameters, add functions, etc.

Product Line

Model
OPX-2A

Specifications

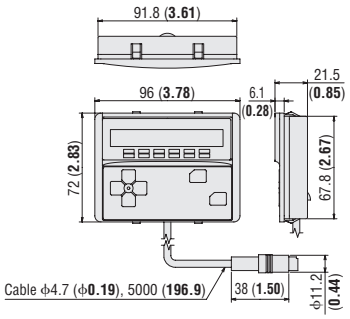
Indication	LED
Cable Length	5 m (16.4 ft.)
Operating Ambient Temperature	0 to +40°C (+32 to +104°F) (non-freezing)

Dimensions Unit = mm (in.)

Control Module

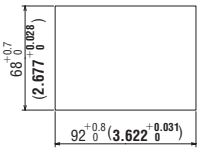
Mass: 0.25 kg (8.8 oz.)

DXF B453



Panel Cut-Out for Control Module

[Thickness of the mounting plate: 1~3 mm (0.04~0.12 in.)]



Data Setting Software RoHS

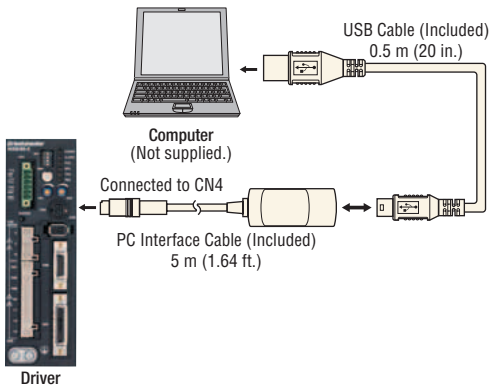
For use with the **NX** Series extended functions. Allows to change parameters, add functions, use waveform monitoring to confirm the operation etc. with a computer.

Product Line

Model
MEXE02

● 5 m (1.64 ft.) PC interface cable, 0.5 m (20 in.) USB cable included

Connection between Computer and Driver



Operating Environment

Operating Systems	The OS supports 32-bit (x86) and 64-bit (x64) versions only. Windows® 2000 Professional Service Pack 4 or later*1 Windows® XP Home Edition Service Pack 3 or later Windows® XP Professional Service Pack 2 Windows® XP Professional Service Pack 3*2 or later Windows® Vista Home Basic Service Pack 2 or later Windows® Vista Home Premium Service Pack 2 or later Windows® Vista Business Service Pack 2 or later Windows® Vista Ultimate Service Pack 2 or later Windows® Vista Enterprise Service Pack 2 or later Windows® 7 Starter Service Pack 1 or later Windows® 7 Home Premium Service Pack 1 or later Windows® 7 Professional Service Pack 1 or later Windows® 7 Ultimate Service Pack 1 or later Windows® 7 Enterprise Service Pack 1 or later
CPU*3	Intel Core Processor 2 GHz or more (The OS must be supported.)
Memory *3	32-bit (x86) version: 1 GB or more 64-bit (x64) version: 2 GB or more
Hard Disk*4	Available disk space of 30 MB or more
Disk Device	CD-ROM drive
Serial Interface	USB 1.1 1 port

*1 Rollup 1 must be applied.
*2 Service Pack 3 supports 32-bit (x86) version only.
*3 The OS operating conditions must be satisfied.
*4 Microsoft NET framework 2.0 Service Pack 2 is required to use **MEXE02**. If it is not already installed, it will be installed automatically, in which case up to 500 MB in additional space is required.

● Windows and Windows Vista are registered trademark of Microsoft Corporation in the United States and other countries. Pentium is a trademark of Intel Corporation.

Accessory Sets RoHS

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

Product Line

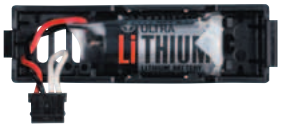
Model	Applicable
AS-SV2	20-Pin Connector for CN6 × 1 Set, External Potentiometers × 2 Sets (Potentiometer × 2, Scale plate × 2, Insulation sheet × 2, Knob × 2, Shielded cable × 2)
AS-SD1	20-Pin Connector for CN6 × 1 set

AS-SV2

AS-SD1

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

Model
BAT01A

Specifications

Battery Type	Thionyl Chloride Lithium Battery
Nominal Voltage	3.6 V
Rated Capacity	1700 mAh
Mass	25 g (0.88 oz.)
Expected Life	About 4 years*
Data Retention Period	2 years*
Operating Ambient Temperature	0 to +50°C (+32 to +122°F) (non-freezing)
Operating Ambient Humidity	85% or less (non-condensing)
Storage Temperature/ Transportation Temperature	+5 to +35°C (+41 to +95°F) (non-freezing)
Storage Humidity/ Transportation Humidity	70% or less (non-condensing)

*When the ambient temperature is 20°C (68°F)

Regeneration Units RoHS

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

Specifications

Model	RGB100	RGB200
Continuous Power	50 W (1/15 HP)	200 W (1/4 HP)
Resistance Value	150 Ω	50 Ω
Thermal Protector Operating Temperature	Open: 150±7°C (302±13°F) Close: 145±12°C (293±22°F) (Normally closed)	Open: 175±5°C (347±9°F) Close: 115±15°C (239±27°F) (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

● Install the regeneration unit in a location that has the same heat radiation capability as the heat sink [Material: aluminum, 350×350 mm (13.78×13.78 in.), 3 mm (0.12 in.) thick].

Product Line

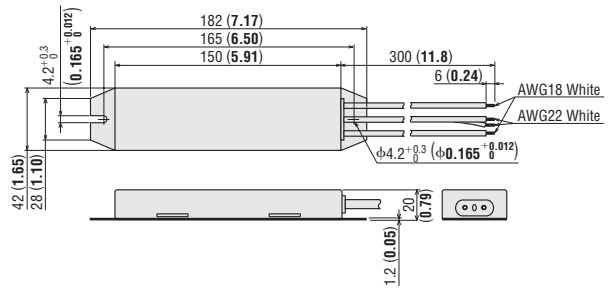
Model	Applicable Product Name
RGB100	**NX45, NX410, NX65, NX610, NX620, NX920**
RGB200	**NX640, NX940, NX975, NX1075**

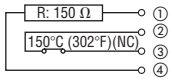
● The applicable products are listed such that the product name can be determined.

Dimensions Unit = mm (in.)

●RGB100

Mass: 0.25 kg (8.8 oz.)
DXF C194

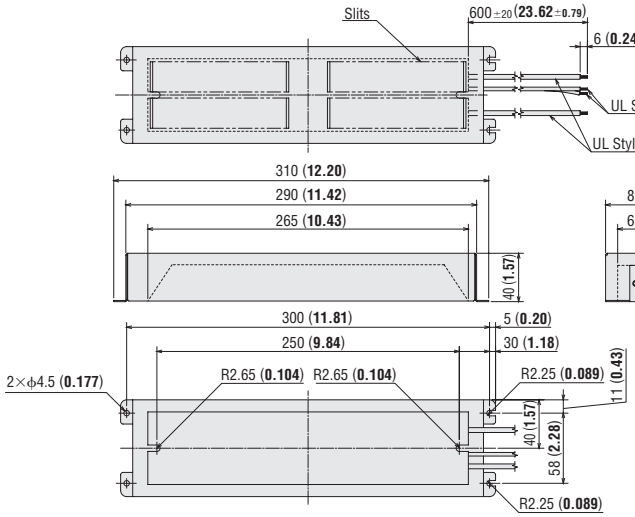


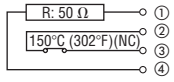


①−④ : AWG18×2
For regeneration current
Connect to RG Terminal
②−③ : AWG22×2
This is the thermostat output.
When an abnormality has been detected, cut off the power supply side with the thermostat contact.

●RGB200

Mass: 1.1 kg (2.42 lb.)
DXF C225





①−④ : AWG18×2
For regeneration current
Connect to RG Terminal
②−③ : AWG20×2
This is the thermostat output.
When an abnormality has been detected, cut off the power supply side with the thermostat contact.