Oriental motor

NEW PRODUCTS

Brushless Motor and Driver Package
DC Power Supply Input, High Power
BLV Series

Standard Type/Electromagnetic Brake Type

Introducing the new high power, DC input **BLV** Series brushless motor and driver with output options of 200 W (1/4 HP) to 400 W (1/2 HP).
Communication control through I/O or RS-485 is available to support a wide variety of applications.

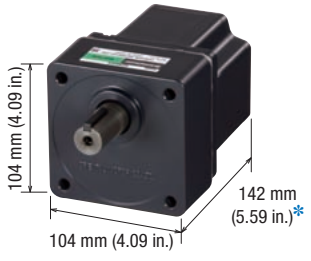
Features

DC Power Supply Input, High Power Output Options of 200 W (1/4 HP) to 400 W (1/2 HP), Compact Motor

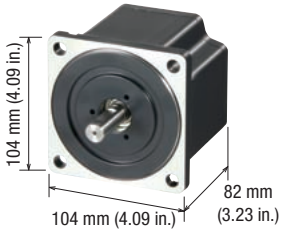
The **BLV** Series are compact, DC input brushless motors and drivers with output options of 200 W (1/4 HP) to 400 W (1/2 HP).
An extensive variety of motors lets you select the model that best suits your specific application.

Output Power		200 W (1/4 HP)	400 W (1/2 HP)
Frame Size		□104 mm (□4.09 in.)	□104 mm (□4.09 in.)
Power Supply Voltage		24 VDC	48 VDC
Motor Type	Standard Type	●	●
	Electromagnetic Brake Type	●	●

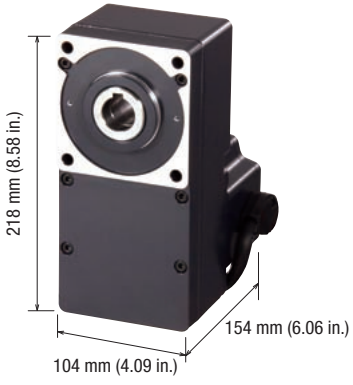
Three Types Available (Shown below are standard type models):



Combination Type – Parallel Shaft Gearhead



Round Shaft Type



Combination Type – Hollow Shaft Flat Gearhead

*For gear ratios 5 to 20.

Features of the Hollow Shaft Flat Gearhead

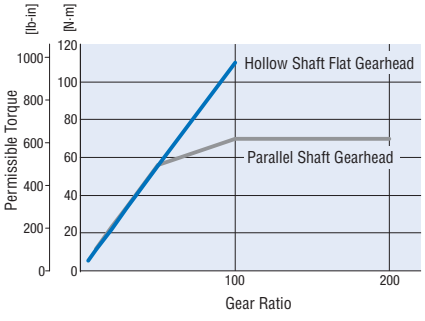
□104 mm (□4.09 in.), space-saving, hollow shaft flat gearhead has been added to the lineup.

Combination Motor Output	Gear Ratio	Rated Life
200 W (1/4 HP), 400 W (1/2 HP)	**5***, **10**, **15**, **20**, **30**, **50**, **100**	5000 hrs.

*Only compatible with the 400 W (1/2 HP) type.

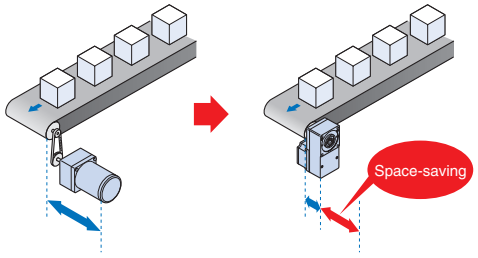
◇Permissible Torque without Saturation

The hollow shaft flat gearhead enables permissible torque without saturation so the motor torque can be fully utilized.



◇Space-saving

The output shaft can be coupled directly to a driven shaft without using a coupling, which allows you to reduce the size and installation space of your equipment.



[For Three-Phase Motor and Parallel Shaft Gearhead]

[For Brushless Motor and Hollow Shaft Flat Gearhead]

●Comes in an Electromagnetic Brake Type

The electromagnetic brake type is suitable for position holding during standstill or gravitational operation. Note that vertical drive (gravitational operation) requires motors of a specific power supply.

Drive System		Standard Type	Electromagnetic Brake Type
Horizontal Drive	Switching Power Supply	●*	●*
	Battery	●	●
Vertical Drive (Gravitational Operation)	Switching Power Supply	—	—
	Battery	—	●

*Power supply limits depend on use. Please contact the nearest Oriental Motor sales office for details.

●Equipped with Functions to Facilitate Battery Drive

- Capable of driving even if the battery voltage is low
- A warning output notifies when the battery voltage is low

●Extended Functions

Functions can be extended and settings shown on a digital display by using a separately sold control module (**OPX-2A**).
It can also be used in RS-485 communication mode.

Control Module
OPX-2A

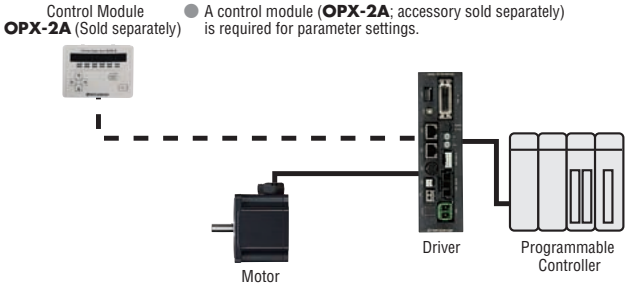
Item	Standard Model	Extended Function
Specifications	· Speed Control Range: 100～4000 r/min (speed range 40:1) · Speed Regulation: ±0.5%	· Speed Control Range: 80～4000 r/min (speed range 50:1) · Speed Regulation: ±0.2%
Function	· Speed setting (internal speed potentiometer, external analog setting) · Acceleration time, deceleration time · Torque limiting	Various Display Functions: Operating speed (setting of gear ratio and speed increasing ratio), conveyor transportation speed, load factor, alarm code, warning code, I/O monitor · Operating data digital settings (speed, torque limiting, acceleration time, deceleration time can be set up to 8 points) · I/O signal allocation, test operation · Data copy

●Selectable Dual Control Method

Control from a programmable controller can be I/O control or RS-485 communication control.

◇I/O Control System

Operation can be executed easily with I/O control.

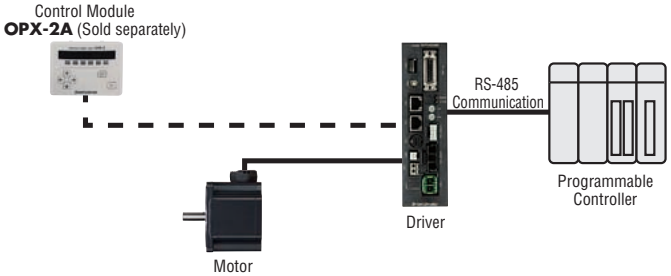


•Control Method for Data Settings and Operation Commands

Operating Data and Parameter Settings		Operation Commands (FWD, REV, etc.)
Operating Data	Driver potentiometer, control module (**OPX-2A**)	I/O
Parameters	Control module (**OPX-2A**)	

◇RS-485 Communication System

RS-485 communication lets you set operating data and parameters and enter operation commands. A single programmable controller connects up to 31 drivers and provides multi-axis synchronous starting.
The protocol of the RS-485 communication system supports Modbus RTU, allowing it to easily connect with programmable controllers, touch panels and other devices.



•Control Method for Data Settings and Operation Commands

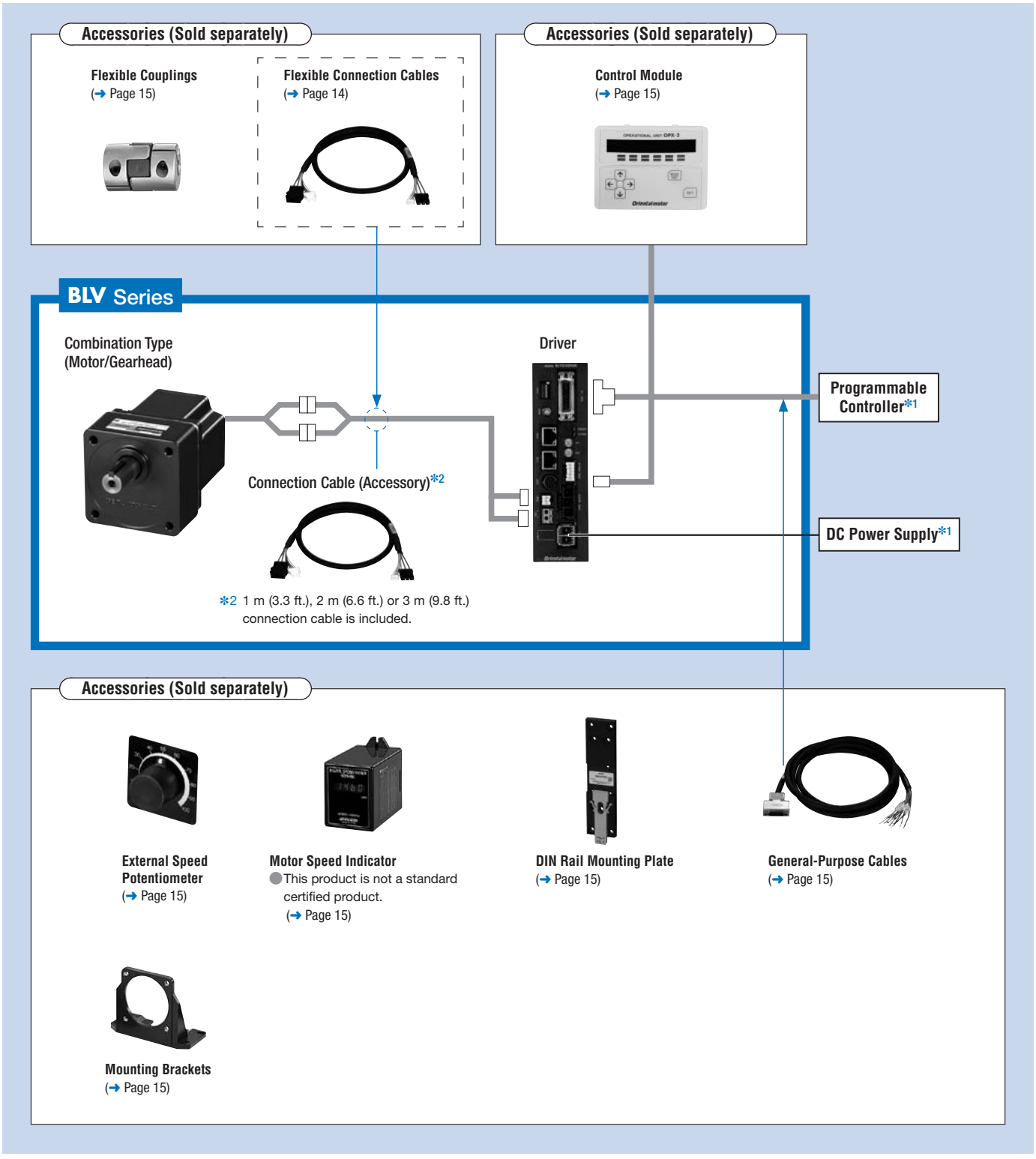
Operation Data and Parameter Setting	Operation Commands (FWD, REV, etc.)
RS-485 communication, control module (**OPX-2A**)	RS-485 communication, I/O

- FWD input, REV input and other operation commands can also be controlled from I/O.
- The test operation function is available with the control module (**OPX-2A**).
- The internal potentiometers for Speed, Acceleration/Deceleration and Torque Limiting are still active even when using either the control module (**OPX-2A**) or RS-485 comunication.

System Configuration

An example of a single-axis system configuration using I/O control is shown below.

*1 Parts sold separately.



● Examples of System Configuration

BLV Series Combination Type - Parallel Shaft		Sold Separately			
		External Speed Potentiometer	DIN Rail Mounting Plate	Mounting Brackets	Flexible Coupling
BLV620K30S-3	+	PAVR-20KZ	PADP03	SOL6M8	MCL652022

● The system configuration shown above is an example of the standard type. Other combinations are available.

Product Number Code

BLV 6 20 K M 200 S - 1

① ② ③ ④ ⑤ ⑥ ⑦ ⑧

①	Series	**BLV** : **BLV** Series
②	Motor Frame Size	**6**: 104 mm (4.09 in.) [Gearhead Frame Size: 110 mm (4.33 in.)]
③	Output Power (W)	**20**: 200 W (1/4 HP) **40**: 400 W (1/2 HP)
④	Power Supply Voltage	**K**: 24 VDC **N**: 48 VDC
⑤	**M**: Electromagnetic Brake Type	Blank: Standard Type
⑥	Gear Ratio/Shaft Type	Number: Parallel shaft gearhead type Gear ratio **5**~**200** Hollow shaft flat gearhead Gear ratio **5**~**100** **A**: Round Shaft Type
⑦	Gearhead Type (Combination type only)	**S**: Parallel Shaft Gearhead **F**: Hollow Shaft Flat Gearhead
⑧	Cable Length (Included)	**1**: 1 m (3.3 ft.) **2**: 2 m (6.6 ft.) **3**: 3 m (9.8 ft.)

Product Line

Combination Type The combination type comes with the motor and its dedicated gearhead pre-assembled simplifying installation in equipment. Motors and gearheads are also available separately to facilitate changes or repairs.

Standard Type

◇Combination Type – Parallel Shaft Gearhead

Output Power	Power Supply Voltage	Model	Gear Ratio
200 W (1/4 HP)	24 VDC	**BLV620K□S-◇**	**5**, **10**, **15**, **20**, **30**, **50**, **100**, **200**
400 W (1/2 HP)	48 VDC	**BLV640N□S-◇**	**5**, **10**, **15**, **20**, **30**, **50**, **100**, **200**

The following items are included in each product.
Motor, Driver, Gearhead, Connection Cable*, Power Connector, Mounting Screws, Parallel Key, Operating Manual
*A cable of 1 m (3.3 ft.), 2 m (6.6 ft.) or 3 m (9.8 ft.) long is included.

◇Round Shaft Type

Output Power	Power Supply Voltage	Model
200 W (1/4 HP)	24 VDC	**BLV620KA-◇**
400 W (1/2 HP)	48 VDC	**BLV640NA-◇**

The following items are included in each product.
Motor, Driver, Connection Cable*, Power Connector, Operating Manual
*A cable of 1 m (3.3 ft.), 2 m (6.6 ft.) or 3 m (9.8 ft.) long is included.

◇Combination Type – Hollow Shaft Flat Gearhead

Output Power	Power Supply Voltage	Model	Gear Ratio
200 W (1/4 HP)	24 VDC	**BLV620K□F-◇**	**10**, **15**, **20**, **30**, **50**, **100**
400 W (1/2 HP)	48 VDC	**BLV640N□F-◇**	**5**, **10**, **15**, **20**, **30**, **50**, **100**

The following items are included in each product.
Motor, Driver, Gearhead, Connection Cable*, Power Connector, Mounting Screws, Parallel Key, Safety Cover (with screws), Operating Manual
*A cable of 1 m (3.3 ft.), 2 m (6.6 ft.) or 3 m (9.8 ft.) long is included.

Electromagnetic Brake Type

◇Combination Type – Parallel Shaft Gearhead

Output Power	Power Supply Voltage	Model	Gear Ratio
200 W (1/4 HP)	24 VDC	**BLV620KM□S-◇**	**5**, **10**, **15**, **20**, **30**, **50**, **100**, **200**
400 W (1/2 HP)	48 VDC	**BLV640NM□S-◇**	**5**, **10**, **15**, **20**, **30**, **50**, **100**, **200**

The following items are included in each product.
Motor, Driver, Gearhead, Connection Cable*, Power Connector, Mounting Screws, Parallel Key, Operating Manual
*A cable of 1 m (3.3 ft.), 2 m (6.6 ft.) or 3 m (9.8 ft.) long is included.

◇Round Shaft Type

Output Power	Power Supply Voltage	Model
200 W (1/4 HP)	24 VDC	**BLV620KMA-◇**
400 W (1/2 HP)	48 VDC	**BLV640NMA-◇**

The following items are included in each product.
Motor, Driver, Connection Cable*, Power Connector, Operating Manual
*A cable of 1 m (3.3 ft.), 2 m (6.6 ft.) or 3 m (9.8 ft.) long is included.

◇Combination Type – Hollow Shaft Flat Gearhead

Output Power	Power Supply Voltage	Model	Gear Ratio
200 W (1/4 HP)	24 VDC	**BLV620KM□F-◇**	**10**, **15**, **20**, **30**, **50**, **100**
400 W (1/2 HP)	48 VDC	**BLV640NM□F-◇**	**5**, **10**, **15**, **20**, **30**, **50**, **100**

The following items are included in each product.
Motor, Driver, Gearhead, Connection Cable*, Power Connector, Mounting Screws, Parallel Key, Safety Cover (with screws), Operating Manual
*A cable of 1 m (3.3 ft.), 2 m (6.6 ft.) or 3 m (9.8 ft.) long is included.

●Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

Specifications

Standard Type

◇200 W (1/4 HP), 400 W (1/2 HP) RoHS

Model			BLV620K□S-◇	BLV640N□S-◇
	Combination Type – Parallel Shaft Gearhead			
	Combination Type – Hollow Shaft Flat Gearhead		BLV620K□F-◇	BLV640N□F-◇
	Round Shaft Type		BLV620KA-◇	BLV640NA-◇
Rated Output Power (Continuous)		W (HP)	200 (1/4)	400 (1/2)
Power Source	Rated Voltage	VDC	24	48
	Permissible Voltage Range		±10%	
	Rated Input Current	A	13	11
	Maximum Input Current	A	25	18
Rated Torque		N·m (oz-in)	0.65 (92)	1.3 (184)
Starting Torque*1		N·m (oz-in)	1.15 (163)	1.8 (250)
Rated Speed		r/min	3000	
Speed Control Range		r/min	100～4000 (Analog setting) 80～4000 (Digital setting: can be set in 1 r/min increments)*2	
Round Shaft Type Permissible Load Inertia J		$\times10^{-4}$ kg·m^2 (oz-in^2)	8.75 (48)	15 (82)
Rotor Inertia J		$\times10^{-4}$ kg·m^2 (oz-in^2)	0.61 (3.3)	0.66 (3.6)
Speed Regulation	Load		±0.5% (±0.2%)*2 max. (0～Rated torque, at rated speed, at rated voltage, at normal ambient temperature)	
	Voltage		±0.5% (±0.2%)*2 max. (Rated voltage ±10%, at rated speed, with no load, at normal ambient temperature)	
	Temperature		±0.5% (±0.2%)*2 max. [0～+40°C (+32～+104°F), at rated speed, with no load, at rated voltage]	

Electromagnetic Brake Type

◇200 W (1/4 HP), 400 W (1/2 HP) RoHS

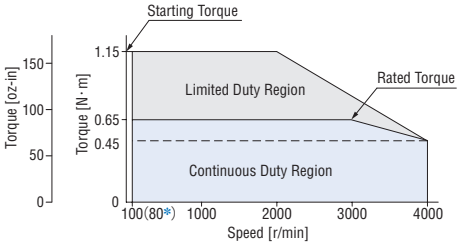
Model			BLV620KM□S-◇	BLV640NM□S-◇
	Combination Type – Parallel Shaft Gearhead			
	Combination Type – Hollow Shaft Flat Gearhead		BLV620KM□F-◇	BLV640NM□F-◇
	Round Shaft Type		BLV620KMA-◇	BLV640NMA-◇
Rated Output Power (Continuous)		W (HP)	200 (1/4)	400 (1/2)
Power Source	Rated Voltage	VDC	24	48
	Permissible Voltage Range		±10%	
	Rated Input Current	A	13	11
	Maximum Input Current	A	25	18
Rated Torque		N·m (oz-in)	0.65 (92)	1.3 (184)
Starting Torque*1		N·m (oz-in)	1.15 (163)	1.8 (250)
Rated Speed		r/min	3000	
Speed Control Range		r/min	100～4000 (Analog setting) 80～4000 (Digital setting: can be set in 1 r/min increments)*2	
Round Shaft Type Permissible Load Inertia J		$\times10^{-4}$ kg·m^2 (oz-in^2)	8.75 (48)	15 (82)
Rotor Inertia J		$\times10^{-4}$ kg·m^2 (oz-in^2)	0.61 (3.3)	0.66 (3.6)
Speed Regulation	Load		±0.5% (±0.2%)*2 max. (0～Rated torque, at rated speed, at rated voltage, at normal ambient temperature)	
	Voltage		±0.5% (±0.2%)*2 max. (Rated voltage ±10%, at rated speed, with no load, at normal ambient temperature)	
	Temperature		±0.5% (±0.2%)*2 max. [0～+40°C (+32～+104°F), at rated speed, with no load, at rated voltage]	
Electromagnetic Brake*3	Brake Type		Power off activated type, automatically controlled by the driver	
	Static Friction Torque	N·m (oz-in)	0.65 (92)	1.3 (184)

*1 The time during which the starting torque is effective is no more than five seconds.
*2 These specifications apply when a separately sold control module (**OPX-2A**) or communication is used.
*3 Do not start or stop the motor by turning on/off the power supply, as it will cause the electromagnetic brake to wear abnormally.
● The values for each specification apply to the motor only.

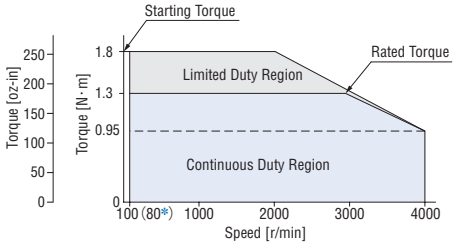
Speed – Torque Characteristics

Continuous Duty Region: Continuous operation is possible in this region.
Limited Duty Region : This region is used primarily when accelerating. When a load that exceeds the rated torque is applied continuously for approximately five seconds, overload protection is activated and the motor coasts to a stop.

BLV620K□S-◇/BLV620K□F-◇/BLV620KA-◇
BLV620KM□S-◇/BLV620KM□F-◇/BLV620KMA-◇



BLV640N□S-◇/BLV640N□F-◇/BLV640NA-◇
BLV640NM□S-◇/BLV640NM□F-◇/BLV640NMA-◇



*Values in parentheses indicate specifications that apply when a separately sold control module (**OPX-2A**) or communication is used.
● For the combination types, the values apply to the motor only.

● Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

Common Specifications

● Standard Model: These specifications apply when the basic motor/driver package is used.
● Extended Function: These specifications apply when a separately sold control module (**OPX-2A**) or communication is used.

Item		Standard Model	Extended Function*1
Speed Setting Method		Select one of the following methods: · Internal speed potentiometer (VR1) · External analog setting (External speed potentiometer or external DC voltage)	Select one of the following methods: · Control module (**OPX-2A**) · Communication setting · Internal speed potentiometer (VR1) · External analog setting (External speed potentiometer or external DC voltage)
Acceleration/ Deceleration Time		Acceleration and Deceleration time potentiometer (VR2): 0.2～15 seconds (3000 r/min with no load)	Select one of the following methods: · Control module (with **OPX-2A**) or communication setting: 0.2～15 seconds (time until setting speed is achieved) · Acceleration and Deceleration time potentiometer (VR2): 0.2～15 seconds (3000 r/min with no load)
Multi-Speed Setting Method		2 Speeds: 1 speed set by the internal speed potentiometer and 1 speed set by the external analog setting	Select one of the following methods: · 8 Speeds: Control module (with **OPX-2A**) or communication setting · 8 Speeds: 6 speeds set by control module (with **OPX-2A**) and 2 speeds set by analog setting*2 *2 1 speed set by the internal speed potentiometer (VR1), and 1 speed set by the external analog setting
Torque Limiting Function	Setting Method	Torque limiting potentiometer (VR3)	Select one of the following methods: · Control module (with **OPX-2A**) · Communication setting · Torque limiting potentiometer (VR3) · External analog setting (External torque potentiometer or external DC voltage)
	Setting Range	0～200% (Assuming that the rated torque of the motor is 100%) Factory Setting: 200%	0～200% (Assuming that the rated torque of the motor is 100%)*3 Factory Setting: 200% *3 Control Module (**OPX-2A**) or communication setting can be set in 1% increments.
Input Signals		Photocoupler input method Input resistance 3.3 kΩ Operated by internal power supply: 15 VDC±10% Connectable external DC power supply: 24 VDC−15～+20% Current 100 mA min. Sink logic/source logic: Switchable using a switch (factory setting: sink logic)	
		FWD, REV, STOP-MODE, M0, ALARM-RESET, MB-FREE	Arbitrary signal allocation to general-purpose input X0～X5 (6 points) is possible FWD [START/STOP], REV [RUN/BRAKE], STOP-MODE [FWD/REV], MB-FREE, EXT-ERROR, ALARM-RESET, HMI, M0, M1, M2 Names in [ ] apply in the 3-wire input mode.
Output Signals		Open-collector output External use condition Voltage control 200 W (1/4 HP): 30 VDC max., 400 W (1/2 HP): 53 VDC max. General-purpose output Y0, Y1: 100 mA max., SPEED-OUT: 10 mA max.	
		SPEED-OUT, ALARM-OUT1 (Y0), WNG (Y1)	SPEED-OUT Arbitrary signal allocation to general-purpose output Y0, Y1 (2 points) is possible ALARM-OUT1, WNG, MOVE, TLC, VA, ALARM-OUT2
Protective Functions		Overload, sensor abnormality, initial sensor abnormality, overvoltage, undervoltage, overspeed, overcurrent, EEPROM error, main circuit overheat, external stop, initial operation stop, communication switch setting error, main circuit output abnormality	
Warning		Main circuit overheat, undervoltage, overload, operation stop	
Maximum Cable Extension Distance		Motor/Driver Distance: 3.5 m (11.5 ft.)	
Time Rating		Continuous	

*1 The contents able to be set by the driver potentiometers (VR1, VR2, VR3) or external analog settings can be changed using parameters.

Note:

● The torque limiting value may cause an error up to a maximum of approximately ±20% (during rated torque and rated speed) between the setting value and generated torque due to the setting speed, power supply voltage and motor cable extension length.

General Specifications

Item		Motor	Driver
Insulation Resistance		100 MΩ or more when 500 VDC megger is applied between the windings and the case after continuous operation under normal ambient temperature and humidity.	100 MΩ or more when 500 VDC megger is applied between the power supply terminal and heat sink after continuous operation under normal ambient temperature and humidity.
Dielectric Voltage		Sufficient to withstand 0.5 kVAC at 50 Hz applied between the windings and the case for 1 minute after continuous operation under normal ambient temperature and humidity.	Sufficient to withstand 0.5 kVAC at 50 Hz applied between the power supply terminal and heat sink for 1 minute after continuous operation under normal ambient temperature and humidity.
Temperature Rise		60°C (108°F) or less in the windings, and 50°C (90°F) or less in the case*1, as measured by the thermocouple method after continuous operation under normal ambient temperature and humidity.	50°C (90°F) or less in the heat sink, as measured by the thermocouple method after continuous operation under normal ambient temperature and humidity.
Operating Environment	Ambient Temperature	0～+40°C (+32～+104°F)	
	Ambient Humidity	85% or less (non-condensing)	
	Altitude	Up to 1000 m (3300 ft.) above sea level	
	Atmosphere	No corrosive gases or dust. Cannot be used in a radioactive area, magnetic field, vacuum or other special environment	
	Vibration	Not subject to continuous vibration or excessive impact In compliance with JIS C 60068-2-6, "Sine-wave vibration test method" Frequency range: 10～55 Hz Pulsating amplitude: 0.15 mm (0.006 in.) Sweep direction: 3 directions (X, Y, Z) Number of sweeps: 20 times	
Storage Condition*2	Ambient Temperature	−25～+70°C (−13～+158°F) (non-freezing)	
	Ambient Humidity	85% or less (non-condensing)	
	Altitude	Up to 3000 m (10 000 ft.) above sea level	
Insulation Class		EN: Class E [120°C (248°F)]	–
Degree of Protection		IP40	IP20

*1 For round shaft types, please attach a heat radiation plate (material: aluminum) of the appropriate size listed below to maintain a maximum motor case temperature of 90°C (194°F):
200 W (1/4 HP): 200 × 200 mm (7.87 × 7.87 in.), 5 mm (0.20 in.) thick
400 W (1/2 HP): 250 × 250 mm (9.84 × 9.84 in.), 6 mm (0.24 in.) thick

*2 The storage condition applies to a short period such as the period during transportation.

Note:

● Do not measure insulation resistance or perform the dielectric strength test while the motor and driver are connected.

Communication Specifications

Modbus Communication Specifications

Item	Specifications
Communication Protocol	Modbus protocol (Modbus RTU mode)
Electrical Characteristics	EIA-485-compliant For use of twisted-pair wire (TIA/EIA-568B CAT5e min. recommended), set the total extension length of the communication cable at max. 50 m (163.9 ft.).
Transmit/Receive Method	Half-duplex communication
Baud Rate	9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps
Physical Layer	Asynchronous method (Data: 8-bit, Stop-Bit: 1-bit/2-bit, Parity: Blank/Even No./Odd No.)
Number of Connection Units	31 units max.

Gearmotor – Torque Table of Combination Type

Combination Type – Parallel Shaft Gearhead

Unit = N•m (lb-in)

Model	Gear Ratio	5	10	15	20	30	50	100	200
	Motor Speed [r/min]								
	100 r/min	20	10	6.7	5	3.3	2	1	0.5
	3000 r/min	600	300	200	150	100	60	30	15
	4000 r/min	800	400	267	200	133	80	40	20
BLV620■□S-◇	100～3000 r/min	2.9 (25)	5.9 (52)	8.8 (77)	11.7 (103)	16.8 (148)	28.0 (240)	52.7 (460)	70 (610)
	4000 r/min	2.0 (17.7)	4.1 (36)	6.1 (53)	8.1 (71)	11.6 (102)	19.4 (171)	36.5 (320)	63 (550)
BLV640■□S-◇	100～3000 r/min	5.9 (52)	11.7 (103)	17.6 (155)	23.4 (200)	33.5 (290)	55.9 (490)	70 (610)	70 (610)
	4000 r/min	4.3 (38)	8.6 (76)	12.8 (113)	17.1 (151)	24.5 (210)	40.9 (360)	63 (550)	63 (550)

●A colored background ▭ indicates gear shaft rotation in the same direction as the motor shaft, while the others rotate in the opposite direction.

Combination Type – Hollow Shaft Flat Gearhead

Unit = N•m (lb-in)

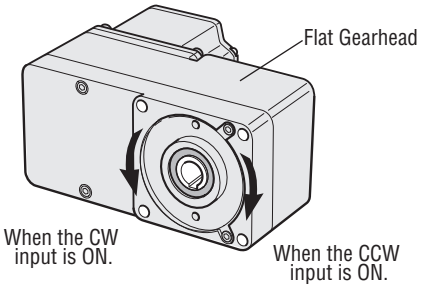
Model	Gear Ratio	5	10	15	20	30	50	100
	Motor Speed [r/min]							
	100 r/min	20	10	6.7	5	3.3	2	1
	3000 r/min	600	300	200	150	100	60	30
	4000 r/min	800	400	267	200	133	80	40
BLV620■□F-◇	100～3000 r/min	—	5.5 (48)	8.3 (73)	11.1 (98)	16.6 (146)	27.6 (240)	55.3 (480)
	4000 r/min	—	3.8 (33)	5.7 (50)	7.7 (68)	11.5 (101)	19.1 (169)	38.3 (330)
BLV640■□F-◇	100～3000 r/min	5.5 (48)	11.1 (98)	16.6 (146)	22.1 (195)	33.2 (290)	55.3 (480)	110 (970)
	4000 r/min	4.0 (35)	8.1 (71)	12.1 (107)	16.2 (143)	24.2 (210)	40.4 (350)	80.8 (710)

●The flat gearhead rotates in the opposite direction to the motor when viewed from the front of the gearhead. It rotates in the same direction as the motor when viewed from the rear (motor mounting surface) of the gearhead.

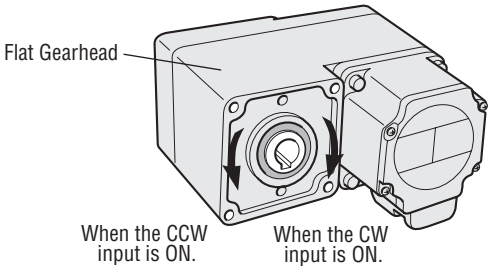
Rotation Direction of the Hollow Shaft Flat Gearhead

The hollow shaft flat gearhead of the combination type rotates in the direction as shown below, with respect to the direction input from the driver.

Front View



Rear View



●Enter the power supply voltage **K** or **N** (**KM** and **NM** for electromagnetic brake type) in the box (■) within the model name.
Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

Permissible Overhung Load and Permissible Thrust Load

Combination Type – Parallel Shaft Gearhead

Model	Gear Ratio		Permissible Overhung Load				Permissible Thrust Load	
			10 mm (0.39 in.) from shaft end		20 mm (0.79 in.) from shaft end			
			N	lb.	N	lb.	N	lb.
BLV620■□S-◇ **BLV640■□S-◇**	**5**, **10**, **15**, **20**	100~3000 r/min	550	123	800	180	200	45
		4000 r/min	500	112	700	157		
	30, **50**	100~3000 r/min	1000	220	1250	280	300	67
		4000 r/min	900	200	1100	240		
	100, **200**	100~3000 r/min	1400	310	1700	380	400	90
		4000 r/min	1200	270	1400	310		

Combination Type – Hollow Shaft Flat Gearhead

Model	Gear Ratio		Permissible Overhung Load				Permissible Thrust Load	
			10 mm (0.39 in.) from mounting surface of gearhead		20 mm (0.79 in.) from mounting surface of gearhead			
			N	lb.	N	lb.	N	lb.
BLV620■□F-◇ **BLV640■□F-◇**	**5**✻, **10**	100~3000 r/min	1230	270	1070	240	800	180
		4000 r/min	1130	250	990	220		
	15, **20**	100~3000 r/min	1680	370	1470	330		
		4000 r/min	1550	340	1360	300		
	30, **50**, **100**	100~3000 r/min	2040	450	1780	400		
		4000 r/min	1900	420	1660	370		

✻**BLV640■□F-◇** only.

Round Shaft Type

Model	Permissible Overhung Load				Permissible Thrust Load
	10 mm (0.39 in.) from shaft end		20 mm (0.79 in.) from shaft end		
	N	lb.	N	lb.	
BLV620■A-◇ **BLV640■A-◇**	197	44	221	49	The permissible thrust load should be no greater than half the motor mass.

Permissible Load Inertia J of Combination Type

Combination Type – Parallel Shaft Gearhead

Unit = $\times 10^{-4}$kg·m^2 (oz-in^2)

Model \ Gear Ratio		**5**	**10**	**15**	**20**	**30**	**50**	**100**	**200**
BLV620■□S-◇ **BLV640■□S-◇**		100 (550)	460 (2500)	1000 (5500)	1700 (9300)	3900 (21000)	9300 (51000)	18000 (98000)	37000 (200000)
	When instantaneous stop or instantaneous bi-directional operation is performed	37.5 (210)	150 (820)	338 (1850)	600 (3300)	1350 (7400)	3750 (21000)	3750 (21000)	3750 (21000)

Combination Type – Hollow Shaft Flat Gearhead

Unit = $\times 10^{-4}$kg·m^2 (oz-in^2)

Model \ Gear Ratio		**5**✻	**10**	**15**	**20**	**30**	**50**	**100**
BLV620■□F-◇ **BLV640■□F-◇**		100 (550)	460 (2500)	1000 (5500)	1700 (9300)	3900 (21000)	9300 (51000)	18000 (98000)
	When instantaneous stop or instantaneous bi-directional operation is performed	37.5 (210)	150 (820)	338 (1850)	600 (3300)	1350 (7400)	3750 (21000)	3750 (21000)

✻**BLV640■□F-◇** only.

●Enter the power supply voltage **K** or **N** (**KM** and **NM** for electromagnetic brake type) in the box (■) within the model name.
Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

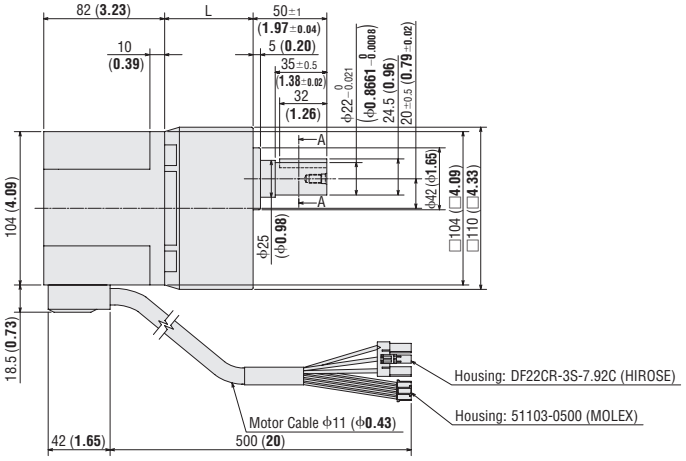
Dimensions Unit = mm (in.)

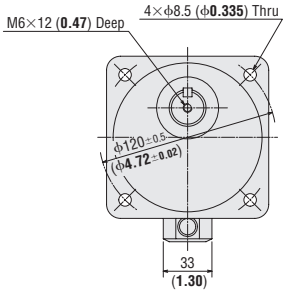
● Mounting screws are included with the combination type.

●Standard Type 200 W (1/4 HP), 400 W (1/2 HP)

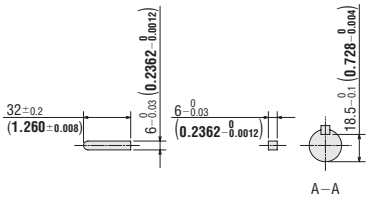
◇Motor/Parallel Shaft Gearhead

Model	Motor Model	Gearhead Model	Gear Ratio	L	Mass kg (lb.)	DXF
BLV620K□S-◇ **BLV640N□S-◇**	BLVM620K-GFS BLVM640N-GFS	GFS6G□	**5**～**20**	60 (2.36)	5.4 (11.9)	A1139A
			30, **50**	72 (2.83)		A1139B
			100, **200**	86 (3.39)		A1139C





◇ **Key and Key Slot**
(The key is included with the gearhead)



●At the time of shipment, a key is inserted on the gearhead's shaft.

◇Motor/Hollow Shaft Flat Gearhead

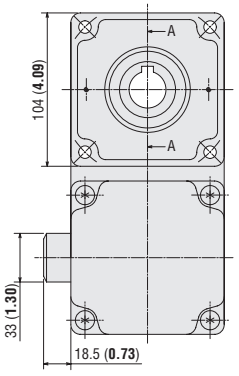
BLV620K□F-◇, BLV640N□F-◇

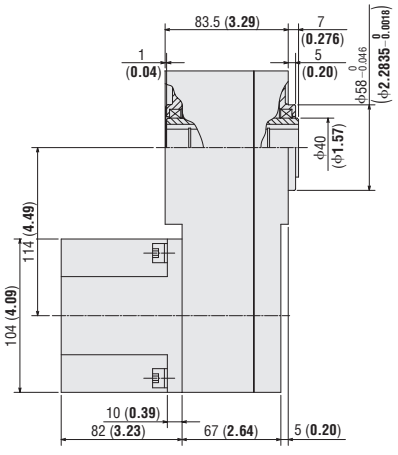
Motor: BLVM620K-GFS, BLVM640N-GFS

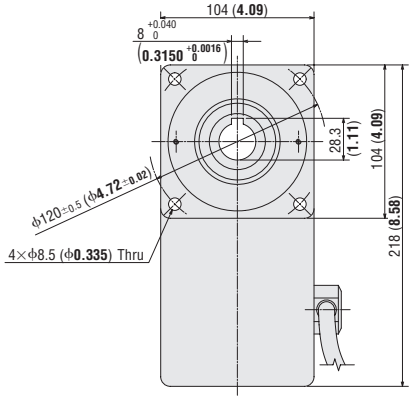
Gearhead: GFS6G□FR

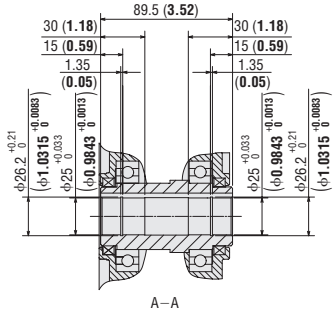
Mass: 7.2 kg (15.8 lb.) (Including gearhead)

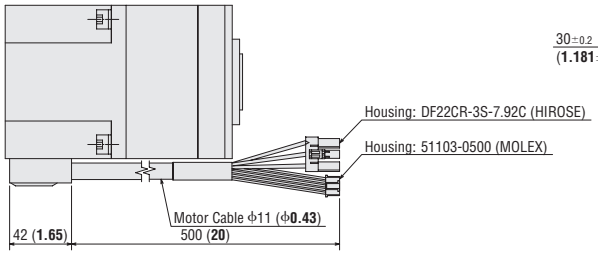
DXF A1140



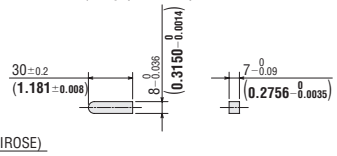








◇**Key (Included)**



●Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

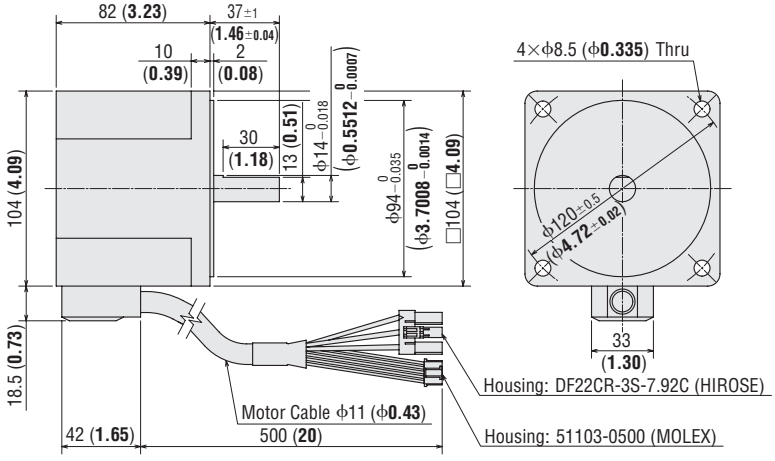
◇Round Shaft Type

BLV620KA-◇, BLV640NA-◇

Motor: BLVM620K-A, BLVM640N-A

Mass: 2.4 kg (5.3 lb.)

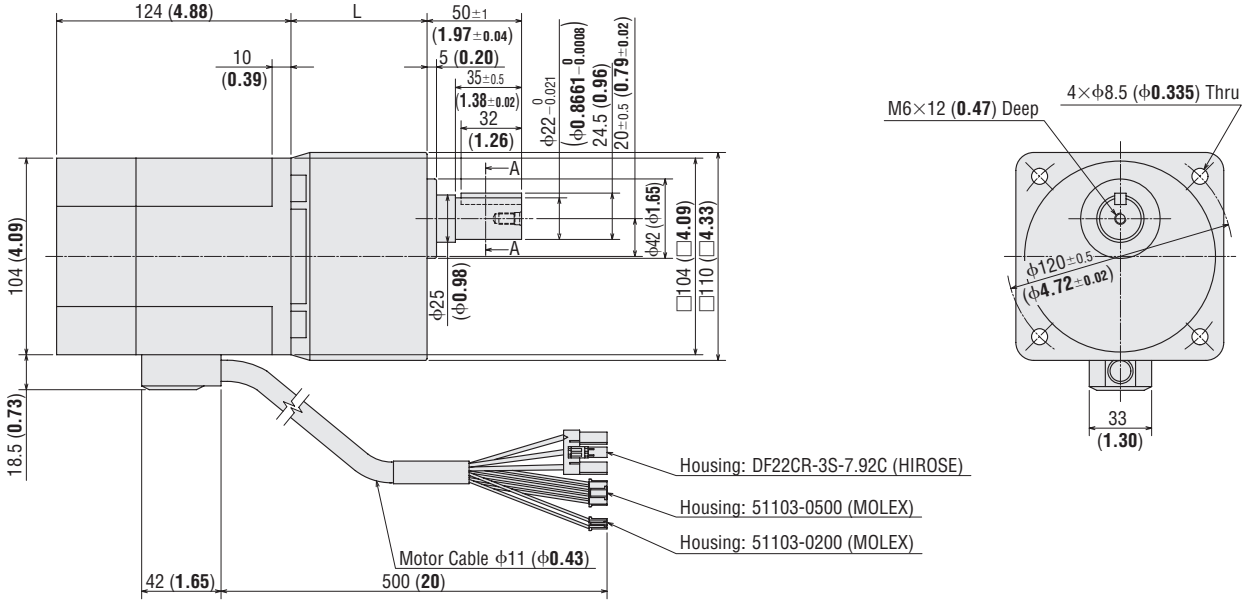
DXF A1141



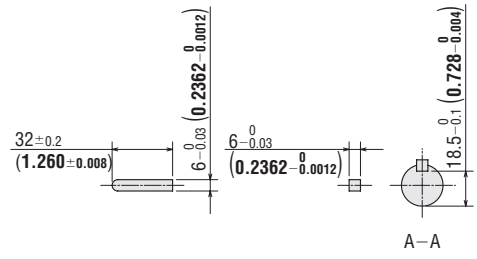
●Electromagnetic Brake Type 200 W (1/4 HP), 400 W (1/2 HP)

◇Motor/Parallel Shaft Gearhead

Model	Motor Model	Gearhead Model	Gear Ratio	L	Mass kg (lb.)	DXF
BLV620KM□S-◇ **BLV640NM□S-◇**	BLVM620KM-GFS BLVM640NM-GFS	GFS6G□	**5**~**20**	60 (2.36)	6.4 (14.1)	A1142A
			30, **50**	72 (2.83)		A1142B
			100, **200**	86 (3.39)		A1142C



◇Key and Key Slot (The key is included with the gearhead)



●At the time of shipment, the key is inserted on the gearhead's shaft.

●Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

◇Motor/Hollow Shaft Flat Gearhead

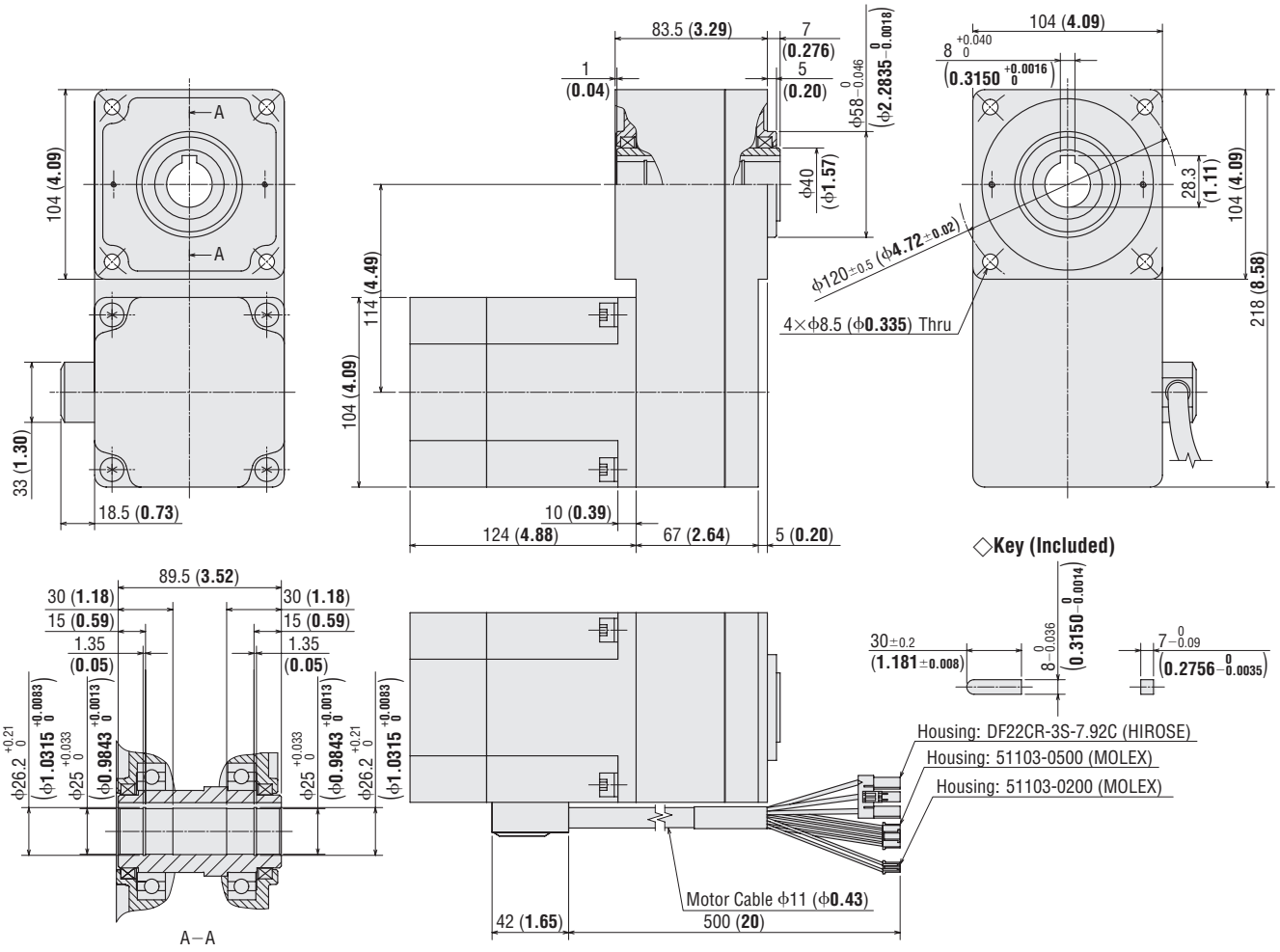
BLV620KM□F-◇, BLV640NM□F-◇

Motor: BLVM620KM-GFS, BLVM640NM-GFS

Gearhead: GFS6G□FR

Mass: 8.2 kg (18.0 lb.) (Including gearhead)

DXF A1143



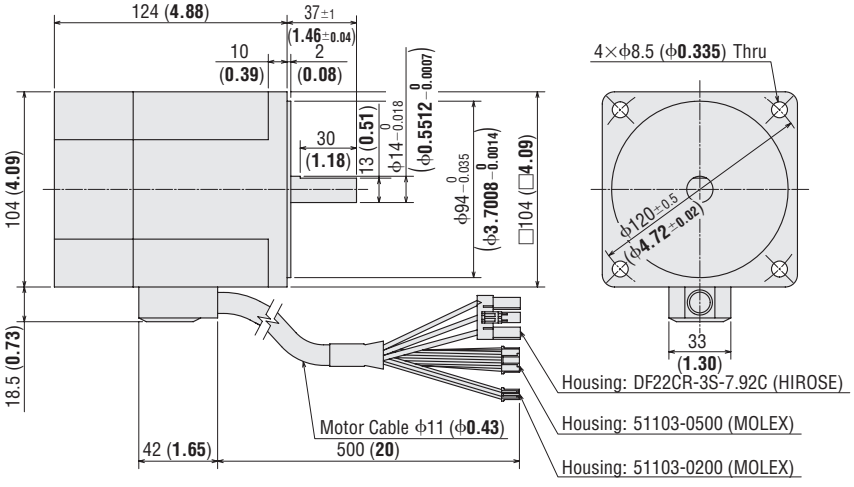
◇Round Shaft Type

BLV620KMA-◇, BLV640NMA-◇

Motor: BLVM620KM-A, BLVM640NM-A

Mass: 3.4 kg (7.5 lb.)

DXF A1144



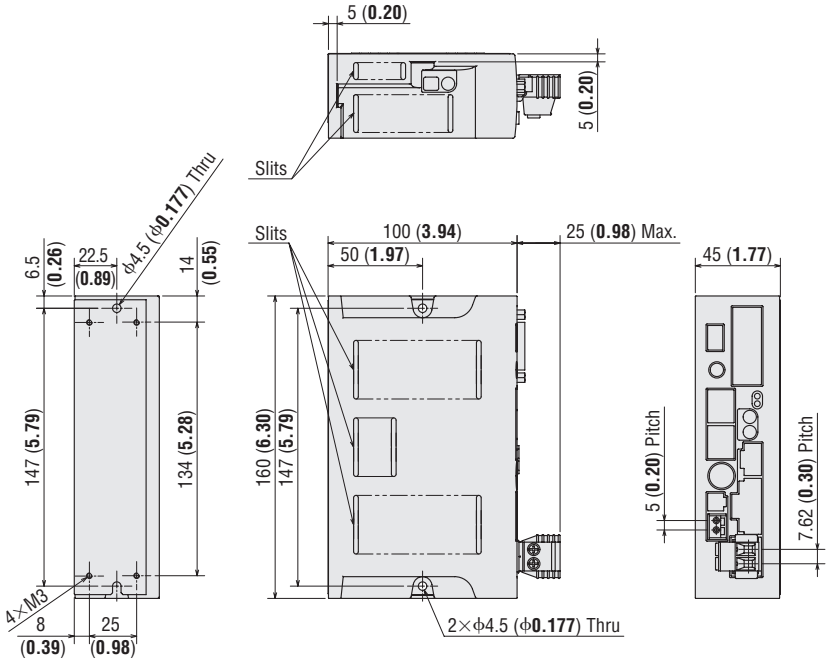
●Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

Driver

BLVD20KM, BLVD40NM

Mass: 0.6 kg (1.32 lb.)

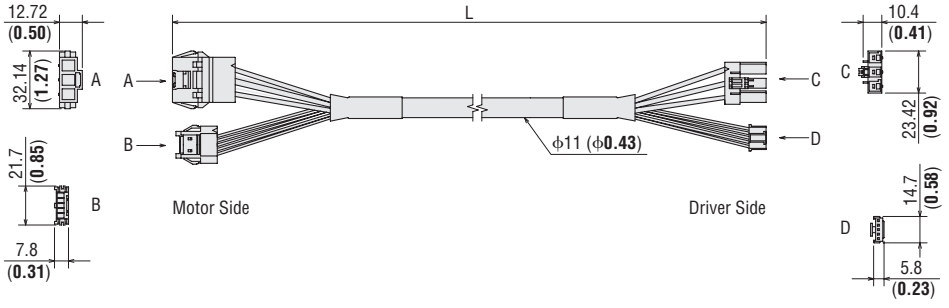
DXF A1138



Connection Cable (Included)

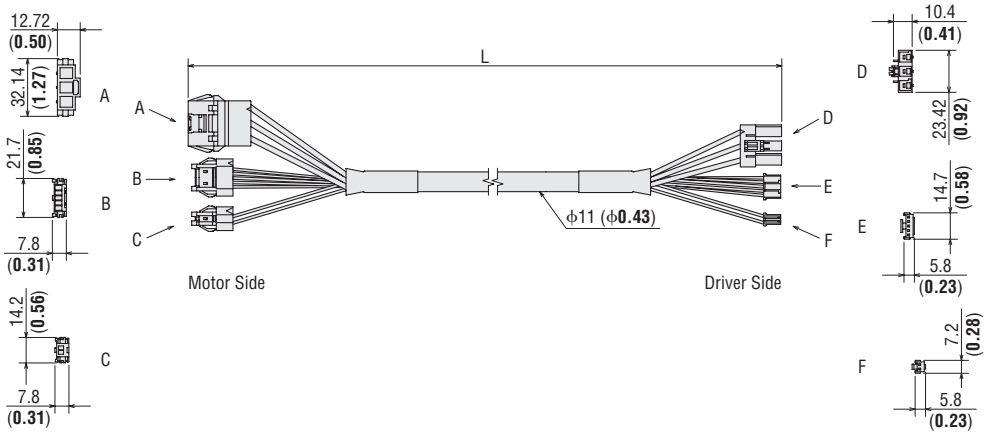
Cable Type	Length L [m (ft.)]
Connection Cable 1 m (3.3 ft.)	1 (3.3)
Connection Cable 2 m (6.6 ft.)	2 (6.6)
Connection Cable 3 m (9.8 ft.)	3 (9.8)

◇Standard Type



Code	Housing Product Name	Manufacturer
A	DF22R-3EP-7.92C	HIROSE
B	51198-0500	MOLEX
C	DF22CR-3S-7.92C	HIROSE
D	51103-0500	MOLEX

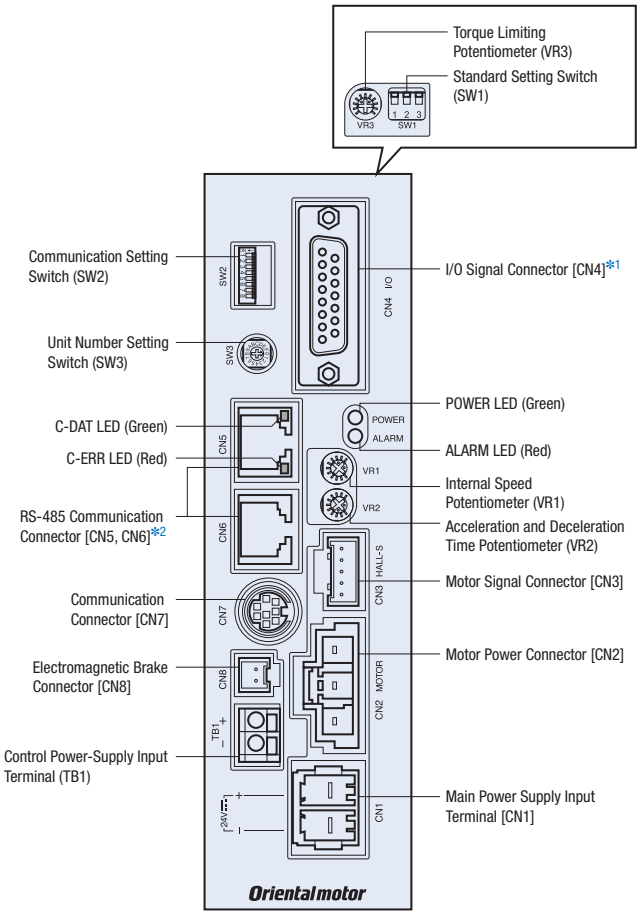
◇Electromagnetic Brake Type



Code	Housing Product Name	Manufacturer
A	DF22R-3EP-7.92C	HIROSE
B	51198-0500	MOLEX
C	51198-0200	MOLEX
D	DF22CR-3S-7.92C	HIROSE
E	51103-0500	MOLEX
F	51103-0200	MOLEX

Connection and Operation

Names and Functions of Driver Parts



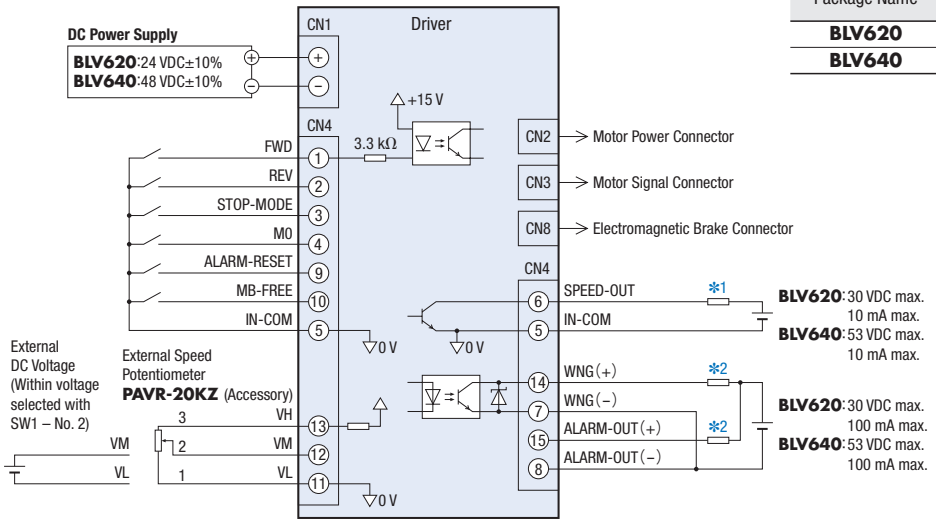
Name	Description
POWER LED (Green)	Lights when main or logic power supply is on.
ALARM LED (Red)	Blinks while an alarm (protective function) occurs. The type of alarm can be confirmed by the blink count.
Internal Speed Potentiometer (VR1)	Sets the motor's speed.
Acceleration and Deceleration Time Potentiometer (VR2)	Sets the motor's starting and stopping times.
Torque Limiting Potentiometer (VR3)	Sets the motor's torque limiting value.
Main Power Supply Input Terminal [CN1]	Connects the main power supply. **BLV620**: +24V, **BLV640**: +48V
Motor Power Connector [CN2]	Connects the motor power connector.
Motor Signal Connector [CN3]	Connects the motor signal connector.
Electromagnetic Brake Connector [CN8]	Connects the motor electromagnetic brake connector.
I/O Signal Connector [CN4]	Used when an external control device is used or an operation command is entered.
Standard Setting Switch (SW1)	Switches the speed response, sink logic/ source logic, and the external DC voltage.
Communication Connector [CN7]	Connects to control module **OPX-2A**.
Control Power-Supply Input Terminal (TB1)*2	Connects the driver's power supply for signal control.
RS-485 Communication Connector [CN5, CN6]*2	Connects the RS-485 communication cable.
C-DAT LED (Green)*2	Lights when communications are normal with the master station via RS-485 communication.
C-ERR LED (Red)*2	Lights when a communication abnormality occurs with the master station via RS-485 communication.
Communication Setting Switch (SW2)*2	Sets the baud rate, communication protocol and terminating resistor of the RS-485 communication.
Unit Number Setting Switch (SW3)*2	Sets the unit number of the RS-485 communication.

*1 The following items are needed for the connector that connects the I/O signals:
- D-sub connector (15-pin), hood (screw: No. 4-40UNC)
- General-purpose cable is available as an accessory. ➜Page 15

*2 Used with RS-485 communications.
An RS-485 communication cable is available as an accessory.
➜Page 15

Connection Diagrams

A connection example for sink logic.



*1 To prevent the current value from exceeding 10 mA, connect a limiting resistor appropriate for the power supply voltage that will be used.
*2 To prevent the current value from exceeding 100 mA, connect a limiting resistor appropriate for the power supply voltage that will be used.

Recommended Power Supply Capacity

Package Name	Input Power Supply Voltage	Power Supply Capacity
BLV620	24 VDC±10%	800 W min.
BLV640	48 VDC±10%	1 kW min.

Refer to the operating manual for detailed information and notes about this product. Please download the operating manual from our website or contact your nearest Oriental Motor sales office.
http://www.orientalmotor.com/

List of Motor and Driver Combinations

Standard Type

◇Combination Type – Parallel Shaft Gearhead

Output Power	Model	Motor Model	Gearhead Model	Driver Model
200 W (1/4 HP)	**BLV620K□S-◇**	BLVM620K-GFS	GFS6G□	BLVD20KM
400 W (1/2 HP)	**BLV640N□S-◇**	BLVM640N-GFS		BLVD40NM

◇Combination Type – Hollow Shaft Flat Gearhead

Output Power	Model	Motor Model	Gearhead Model	Driver Model
200 W (1/4 HP)	**BLV620K□F-◇**	BLVM620K-GFS	GFS6G□FR	BLVD20KM
400 W (1/2 HP)	**BLV640N□F-◇**	BLVM640N-GFS		BLVD40NM

◇Round Shaft Type

Output Power	Model	Motor Model	Driver Model
200 W (1/4 HP)	**BLV620KA-◇**	BLVM620K-A	BLVD20KM
400 W (1/2 HP)	**BLV640NA-◇**	BLVM640N-A	BLVD40NM

Electromagnetic Brake Type

◇Combination Type – Parallel Shaft Gearhead

Output Power	Model	Motor Model	Gearhead Model	Driver Model
200 W (1/4 HP)	**BLV620KM□S-◇**	BLVM620KM-GFS	GFS6G□	BLVD20KM
400 W (1/2 HP)	**BLV640NM□S-◇**	BLVM640NM-GFS		BLVD40NM

◇Combination Type – Hollow Shaft Flat Gearhead

Output Power	Model	Motor Model	Gearhead Model	Driver Model
200 W (1/4 HP)	**BLV620KM□F-◇**	BLVM620KM-GFS	GFS6G□FR	BLVD20KM
400 W (1/2 HP)	**BLV640NM□F-◇**	BLVM640NM-GFS		BLVD40NM

◇Round Shaft Type

Output Power	Model	Motor Model	Driver Model
200 W (1/4 HP)	**BLV620KMA-◇**	BLVM620KM-A	BLVD20KM
400 W (1/2 HP)	**BLV640NMA-◇**	BLVM640NM-A	BLVD40NM

●Enter the gear ratio in the box (□) within the model name.
Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

Accessories (Sold separately)

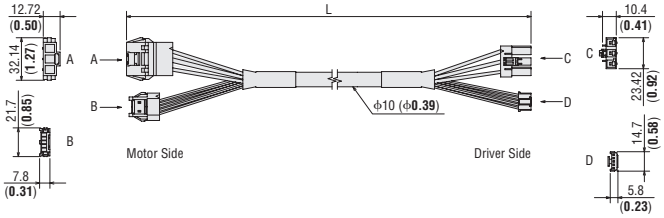
Flexible Connection Cables RoHS

Use of flexible connection cables is recommended in applications where the cable will be bent and stretched repeatedly.
The maximum extension length is 3.5 m (11.5 ft.).

Standard Type

Model	Length L [m (ft.)]
CC01BLV2R	1 (3.3)
CC02BLV2R	2 (6.6)
CC03BLV2R	3 (9.8)

◇Dimensions Unit = mm (in.)

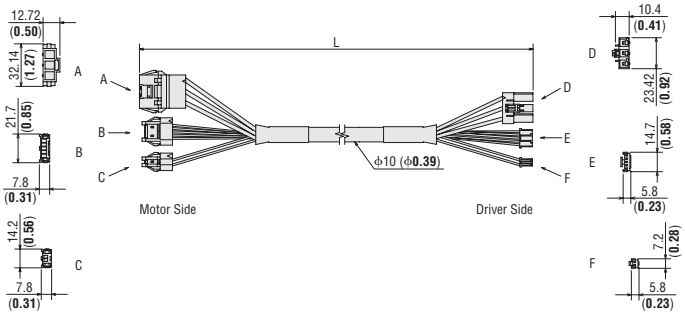


Code	Housing Product Name	Manufacturer
A	DF22R-3EP-7.92C	HIROSE
B	51198-0500	MOLEX
C	DF22CR-3S-7.92C	HIROSE
D	51103-0500	MOLEX

Electromagnetic Brake Type

Model	Length L [m (ft.)]
CC01BLV2MR	1 (3.3)
CC02BLV2MR	2 (6.6)
CC03BLV2MR	3 (9.8)

◇Dimensions Unit = mm (in.)



Code	Housing Product Name	Manufacturer
A	DF22R-3EP-7.92C	HIROSE
B	51198-0500	MOLEX
C	51198-0200	MOLEX
D	DF22CR-3S-7.92C	HIROSE
E	51103-0500	MOLEX
F	51103-0200	MOLEX

Control Module RoHS

Allows for setting of various parameters and confirmation of the setting data. It is used by connecting to the driver communication connector (CN7).

Model
OPX-2A

External Speed Potentiometer RoHS

Used to set and adjust the speed of motor.

Model
PAVR-20KZ

Motor Speed Indicator RoHS

Indicates speed of the motor.

Model
SDM496

Motor and Gearhead Mounting Brackets RoHS

Dedicated mounting brackets for mounting a motor and gearhead.

Applicable Product	Model
BLV620■□S-◇ **BLV640■□S-◇** **BLV620■A-◇** **BLV640■A-◇**	**SOL6M8**

Note:

●This mounting bracket cannot be used with the hollow shaft flat gearhead.

Flexible Couplings RoHS

A clamp type coupling for connecting the motor/gearhead shaft with the driven shaft. Once the motor or gearhead are chosen, the coupling can be selected.

Applicable Product	Shaft Diameter [mm (in.)]	Coupling Type
BLV620■□S-◇ **BLV640■□S-◇**	ϕ22 (ϕ0.8661)	**MCL65** Type
BLV620■A-◇ **BLV640■A-◇**	ϕ14 (ϕ0.5512)	**MCL40** Type

DIN Rail Mounting Plate RoHS

Use this plate when installing the driver to a DIN rail.

Model
PADP03

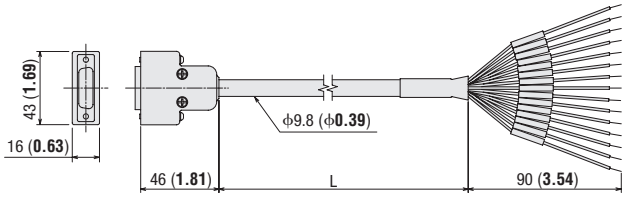
Driver Cable

General-Purpose Cables RoHS

Dedicated 15-conductor cables for connecting the I/O signal connector and programmable controller. They are high-quality, noise-blocking, double-shielded cables.

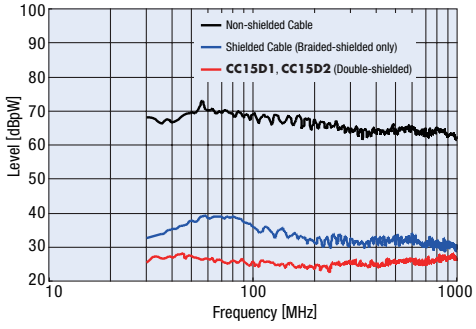
Model	Length L [m (ft.)]
CC15D1	1 (3.3)
CC15D2	2 (6.6)

◇Dimensions Unit = mm (in.)



◇Noise-Blocking Property

The figure below shows the noise effects on a signal line. As you can see, the noise-blocking effect is high with signal lines that have a low level value. Oriental Motor driver cables come with double-shielding that includes aluminum foil-shielding and braided-shielding, which provides excellent noise-blocking characteristics.

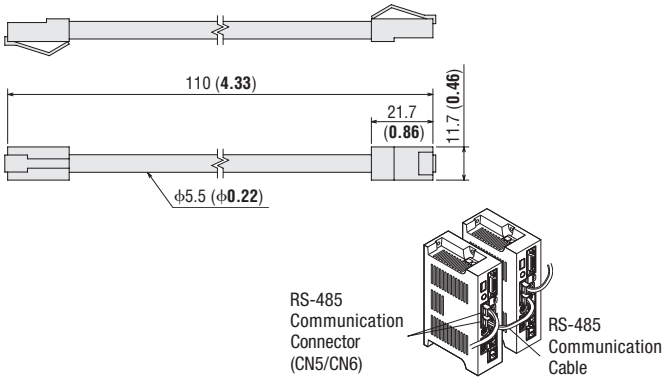


RS-485 Communication Cable RoHS

This cable with connector assemblies are available to connected drivers for multi axis operation.

Model
CC001-RS4

◇Dimensions Unit = mm (in.)



●Enter the power supply voltage **K** or **N** (**KM** and **NM** for electromagnetic brake type) in the box (■) within the model name.

●Enter the gear ratio in the box (□) within the model name.

Enter the length of the connection cable (included) as **1** [1 m (3.3 ft.)], **2** [2 m (6.6 ft.)] or **3** [3 m (9.8 ft.)] in the diamond (◇) within the model name.

Oriental Motor Brushless Motor and Driver Packages

These brushless motors provide both excellent speed stability and a wide speed control range (low to high speeds).
These highly efficient, slim, high-torque motors contribute to energy and space savings.

High Performance, Functionality

Brushless Motor and Driver Package

BX Series

The BX Series are brushless motors that offer high performance and high function. The control module makes position control and torque limiting possible.

- Output: 30 W (1/25 HP) to 400 W (1/2 HP)
- Speed Control Range: 30 (3*) to 3000 r/min (*When using the control module sold separately)
- Speed Regulation: ±0.05% or less (Load)

Control Module

Digital Setting, Display

Brushless Motor and Driver Package

BLF Series

The digital operator built in the driver allows for easy setting and display of operating data.

- Output: 30 W (1/25 HP) to 400 W (1/2 HP)
- Speed Control Range: 80 to 4000 r/min
- Speed Regulation: ±0.2% or less (Load)

Easy Wiring, Easy Operation

Brushless Motor and Driver Package

BLU Series

The BLU Series brushless motor offers ease of wiring and operation and face plate mounting type packages.

- Output: 20 W (1/38 HP) to 90 W (1/8 HP)
- Speed Control Range: 100 to 2000 r/min
- Speed Regulation: ±0.5% or less (Load)

24 VDC Input

Brushless Motor and Driver Package

BLH Series

This series combines an optimum 24 VDC board type driver with a brushless motor to meet your space-saving equipment needs.

- Output: 15 W (1/50 HP) to 100 W (1/8 HP)
- Speed Control Range: 100 to 3000 r/min
- Speed Regulation: ±0.5% or less (Load)

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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