

Transport Robot Solutions

The **BLV Series R Type** and **BLH Series** Brushless Motors
High Power, Smooth Movement, Compact Size



As more and more companies seek to introduce machines to perform simple tasks, efforts to automate and save labor on comparatively simple tasks such as moving goods, are accelerating. One solution to this challenge has been the introduction of transport robots (AGV/AMR/GTP*). With the ability to run on battery power, our **BLV Series R Type** and **BLH Series** brushless motors can be used as the drive axle for transport robots or embedded in other similar transport devices. These motors contribute to the handling of a wide variety of operating patterns and transport modes in various workplace environments.

* AGV: Automatic Guided Vehicle. AMR: Autonomous Mobile Robot. GTP: Goods To Person

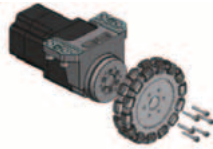


Low-Platform and Thin Design

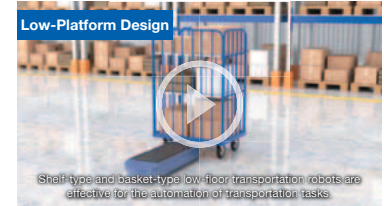
Automating Shelf or Basket-Type Carts Low-Platform Design

Low-floor transport robots can be used to lift (or “chuck”) shelf and basket-type carts, making them effective tools for the automation of transport tasks. Motors may be mounted to the top or side of a robot, allowing for greater freedom in low-floor designs.

Face surface mounting with the Flange Drive Adapter



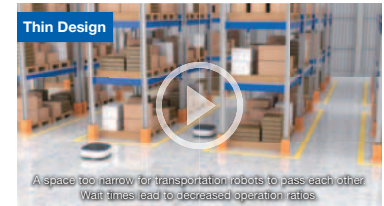
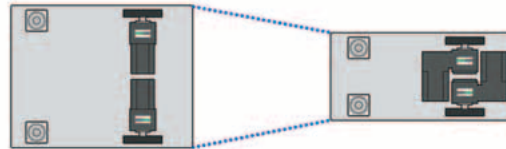
Side-mounting with the Hollow Shaft Flat Gearhead



<https://youtu.be/FKrz3W1lrps>

For Passing in Narrow Spaces Thin Design

The use of opposing hollow shaft flat gearheads reduces the distance between the wheels, allowing for a slim design that reduces the width of the device. This makes it possible to have multiple devices pass each other in narrow spaces, contributing to reduced transport robot wait times and increased operation rates.



<https://youtu.be/PAL8dlaufcl>

An Improved Low-Platform and Thin Design

● Compact and Lightweight Driver

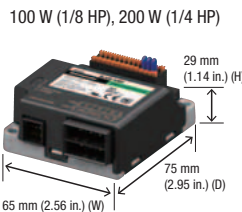
Thanks to their compact size, these drivers allow for improved freedom of layout for the location of batteries and control devices.

● Electric Brake*

The use of electric brakes to maintain stop positions makes mechanical (i.e. electromagnetic) brakes unnecessary. The reduction of the total length of the motor allows narrower device designs.

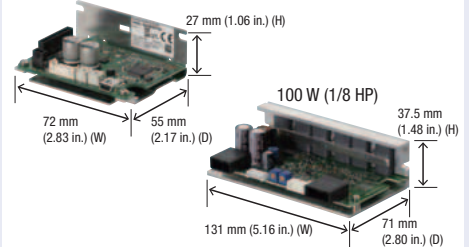
*Effective only when power is ON

BLV Series R Type



BLH Series

15 W (1/50 HP), 30 W (1/25 HP), 50 W (1/15 HP)



High Power

For Larger Loads and Use in Robots and Conveyors

A transport robot's load capacity is affected by its permissible radial load. When using a Flange Drive Adapter, it is 1500 N (153 kgf) [337 lbs (742 lbf)]. When using a hollow shaft flat gearhead, it reaches a maximum strength of 2040 N (208 kgf) [458 lb (1009 lbf)]. This supports such the requirements of increasing load size and installation in robots and conveyors.

Permissible Radial Load

| Gear Ratio | | [N (lbs)] | | | | | | | | |
|-------------------------------------|------------------|------------|------------|----|----|----|----|-----|------------|------------|
| | | 5 | 10 | 15 | 20 | 30 | 50 | 100 | 200 | |
| When Using a Flange Output Gearhead | 100 W (1/8 HP)*1 | 1500 (337) | | | | | | | | |
| | 200 W (1/4 HP)*2 | 1230 (276) | 1680 (377) | | | | | | | 2040 (458) |
| Hollow Shaft Flat Gearhead | 100 W (1/8 HP) | 900 (202) | 1300 (291) | | | | | | | 1500 (337) |
| | 50 W (1/15 HP) | 800 (179) | | | | | | | 1200 (269) | |
| | 30 W (1/25 HP) | 450 (101) | | | | | | | 500 (112) | |

*1: The motor shaft speed is at or below 300 r/min

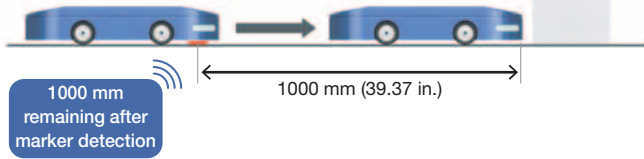
*2: The motor shaft speed is 100-3000 r/min



Stop Position Setting & Fine Adjustment

Setting the Remaining Distance from a Specified Position Position Control

With the ability to set travel distance, it is not only possible to travel a present distance on a guide, but also to perform partial positioning operations, such as setting the distance from the sensor input position to the target stop position during automated operation.



Fine-tuning Stop Positions Speed Control

Motor shaft speed can be set from 1 r/min. Based on a wheel diameter of 100 mm (3.34 in.), this results in a transport speed of approximately 0.3 m/min (11.8 in/min). Such extremely slow speeds reduce the risk of overrun and allow for minute adjustment of stop positions.



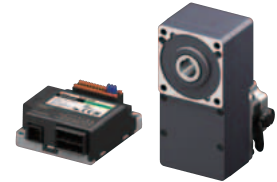
Fix Devices in Place to Stabilize Transport Tasks Electric Brake

The incorporation of both mechanical (i.e. electromagnetic) and electric brakes makes it possible to fix devices in place when they are stopped. This helps to maintain devices in position when transporting goods on flat or sloped ground, and can improve the stability of tasks.



Straight Travel, Evasion and Stopping

Transport robots must exhibit high-performance movement that considers various factors, such as different floor conditions and the need to quickly maneuver around obstacles. The ability to send feedback signals from the motor and issue commands to each shaft allows for the flexible adjustment of straight travel, evasion and stopping operations.



Equipped with High Resolution Sensors

The maximum sensor control resolution is 36000 P/R. This makes it possible to create a detailed understanding of a device's operational state and current position.

Direct Data Operation

Allows flexible operations that react to sensor information about sudden braking, speed recovery, etc.

ID Share Mode and Group Send Function

The ability to issue commands simultaneously to multiple axes helps to prevent meandering at the start of movement and facilitates sharp turns.

Useful Functions for Adjustment

● Setting via Networks

BLV Series R Type

CANopen Modbus(RTU)

BLH Series

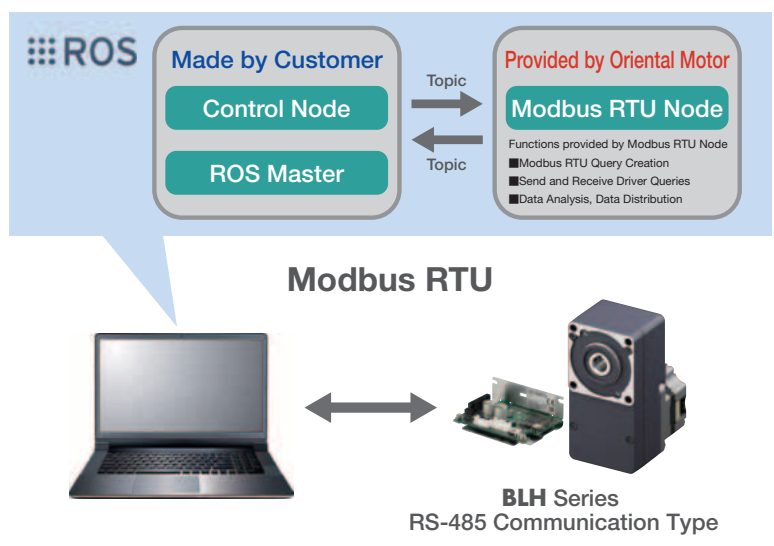
Modbus(RTU)

The **BLH Series** can be controlled by software created in ROS. Visit our website for free software download, www.orientalmotor.com

● Load-dependent Gain Adjustment

It is possible to carry out gain (response) adjustment to match the load. This contributes to stable operation.

- Modbus is a registered trademark of Schneider Automation Inc.
- CIA® and CANopen® are registered trademarks of CAN in Automation e.V..



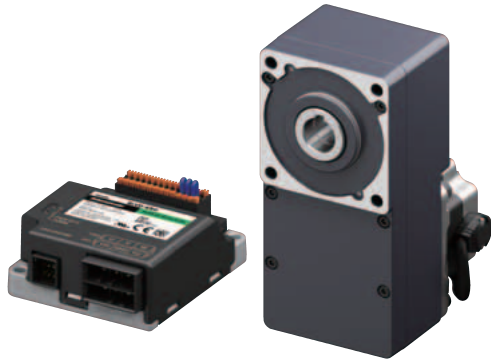
● Status Monitoring

The support software's monitoring function allows for the detection of equipment status.

The **BLV Series R Type** is equipped with a trace monitoring function that allows for a maximum of 24-hour continuous measurement. This aids in the investigation of the cause of problems when they occur.

Product Specifications

BLV Series R Type

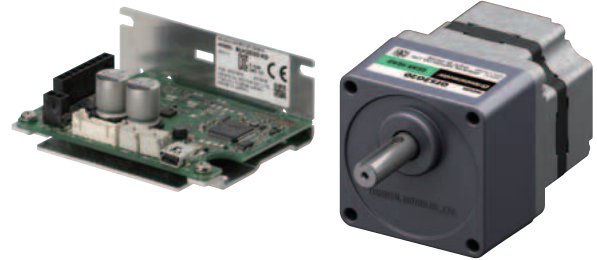


Modular Automation Products

The **BLV** Series is a selection of brushless DC motors which have been made more compact and lightweight. The ability to operate on battery power supports the development of more compact devices. The **BLV** Series supports Modbus (RTU) and CANopen communication protocols.

- Output Power: 100 W, 200 W
- DC Voltage range: 24-48 VDC
- Output Shaft Type: Parallel shaft gearhead, hollow shaft flat gearhead, round shaft
- Electromagnetic Brake Available

BLH Series



The **BLH** Series is equipped with a compact 24 VDC board-type driver, and is available in three driver types: Analog, Digital and RS-485 Communication.

- Output Power: 15 W, 30 W, 50 W, 100 W
- DC Voltage range: 24 VDC
- Output Shaft Type: Parallel shaft gearhead, CS gearhead, hollow shaft flat gearhead, round shaft
- Electromagnetic Brake Available

What Are Modular Automation Products?

Modular Automation Products are a group of products that share the common features of being battery-powered, compact and lightweight. Optimized for use with self-propelled devices and mobile equipment, they contribute to the realization of flexible automation lines and modular automation.

● BLV Series R Type

● BLH Series Analog Type

● BLH Series Digital Type and RS-485 Communication Type

| Product Features | | | Output Power | | | | |
|--|--------------------------------|----------------------------|----------------|----------------|----------------|----------------|----------------|
| | | | 15 W (1/50 HP) | 30 W (1/25 HP) | 50 W (1/15 HP) | 100 W (1/8 HP) | 200 W (1/4 HP) |
| Low-Platform and Slim Design High Power | Output Shaft | Hollow Shaft Flat Gearhead | | ●● | ●● | ●● | ● |
| | | Flange Output Head | | | | ●● | ● |
| | Compact and Lightweight Driver | | ●● | ●● | ●● | ●● | ● |
| | Electromagnetic Brake | | | ●● | ●● | ●● | ● |
| Electric Brake | Load Hold | S-ON | ● | ● | ● | | |
| | | | | | ● | ● | |
| Stop Position Setting & Fine Adjustment | Position Control | | | | | ● | ● |
| | Speed Control | 1-4000 r/min | | | | ● | ● |
| | | 80-3000 r/min | ● | ● | ● | | |
| | 100-3000 r/min | ● | ● | ● | ● | | |
| Straight movement Evasion Stopping | High Resolution Sensor | | | | | ● | ● |
| | Direct Data Transfer | | | | | ● | ● |
| | Data Transfer | ID Share Mode | | | | ● | ● |
| | | Group Transfer | ●* | ●* | ●* | ● | ● |
| | Compatible Network | Modbus (RTU) | ●* | ●* | ●* | ● | ● |
| | | CANopen | | | | ● | ● |
| Gain Adjustment | | | | | ● | ● | |
| Support Software | | ● | ● | ● | ● | ● | |

*: RS-485 Communication Type Only