

TAMAGAWA NEWS

Vol. **32**
2024. June

New products

Exhibition Information

iREX 2023

IMTEX FORMING 2024

Bharat Mobility Global Expo 2024

The Japan Society for Aeronautical and
Space Sciences Lecture



TBL-i6 α Series



MEMS IMU TAG310

Tamagawa

New products

AC Servo Motor

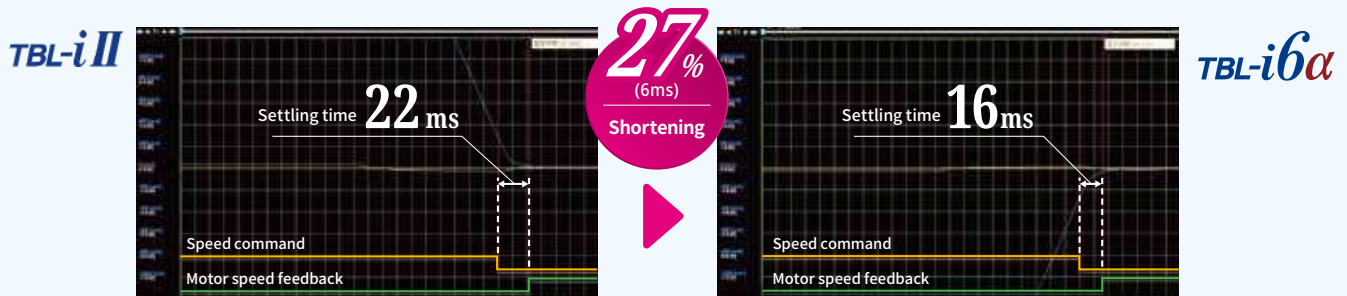


TBL-i6α Series Low Inertia Type

A new small sized low-inertia type AC servo motor with weight reduction, and significantly improved heat dissipation is now available. This motor series has good response performance and can move quickly, making it ideal for applications such as semiconductor manufacturing equipment and inspection equipment.

High Response Performance

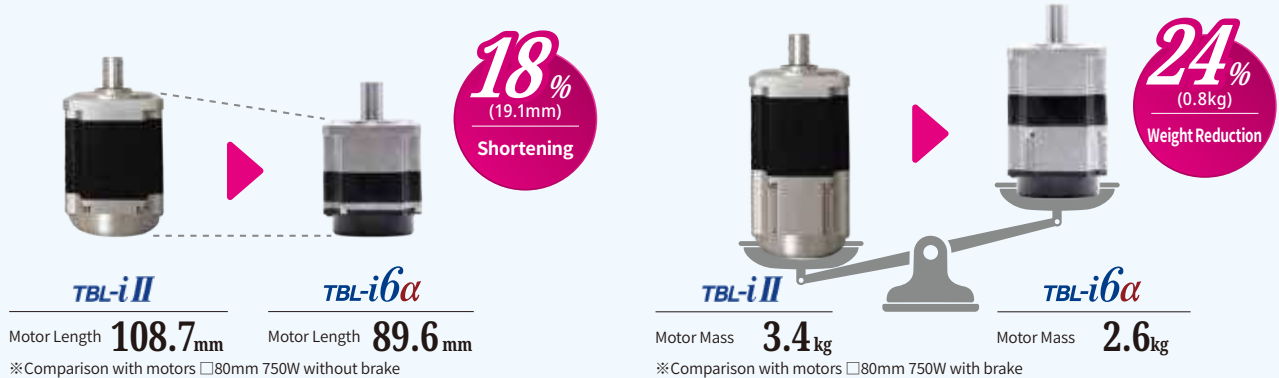
Achieved high gain by rigidity increase. Shorter settling time compared to conventional products.



※Combination with our driver ※Measurement under the same conditions, with 1,500 min⁻¹ reciprocating operation

Smaller Scale

Smaller scale and weight reduction than conventional products by reviewing the motor structure.

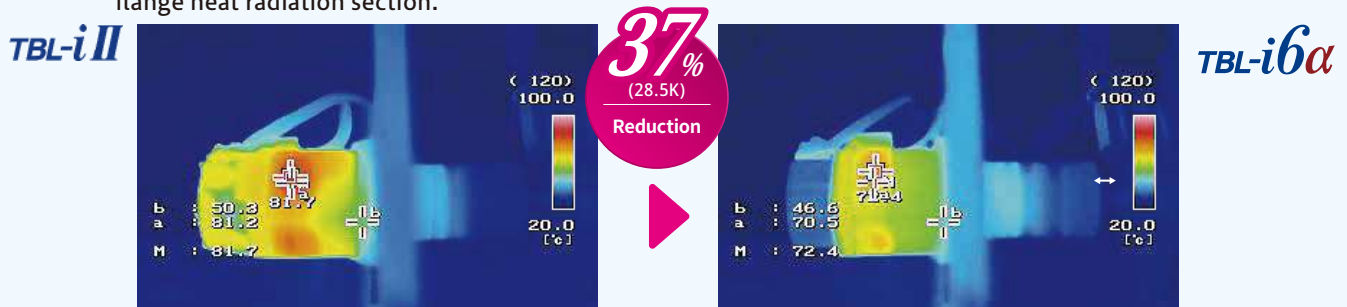


※Comparison with motors □80mm 750W without brake

※Comparison with motors □80mm 750W with brake

Improvement of Heat Radiation Performance

Achieved active heat radiation by reviewing the structure of the stator heat generation section and flange heat radiation section.



※Measurement by load test ※Comparison with motors □60mm 400W

[Other Features]

- Battery-less Encoder as Standard
- High Speed: 7,000 min⁻¹
- Low Vibration and Quietness
- IP67 · UL Standard Compatible
- Low Cogging

Model Designation



① Rated Output

No.	Spec.
4162	50W
4164	100W
4166	150W*
4261	100W
4262	200W
4264	400W
4266	600W
4361	200W
4362	400W
4363	600W
4364	750W
4366	1000W*

② Sensor Spec.

No.	Spec.	Brake	
		Without	With
23	23 bit ABS Encoder	●	
28	23 bit battery-less ABS Encoder	●	
30	Resolver (motor flange size □40)	●	
33	Resolver (motor flange size □60,80)	●	
73	23 bit ABS Encoder		●
78	23 bit battery-less ABS Encoder		●
80	Resolver (motor flange size □40)		●
83	Resolver (motor flange size □60,80)		●

③ Shaft end Spec.

No.	Spec.	Oil Seal	
		Without	With
00	Round Shaft	●	
02	Keyway Tapped Shaft	●	
05	Round Shaft		●
07	Keyway Tapped Shaft		●

④ Power source Spec.

No.	Spec.
2	AC200V

⑤ Rotation Spec.

No.	Spec.
00	Standard
50	High Speed*

※ Not for high speed rotation specifications.

Please refer to the catalog for details.

<https://www.tamagawa-seiki.com/downloads/pdf/>



Reduction of CO₂ Emissions



CO₂ emissions have been reduced compared to conventional products (TBL-i II series) by reducing the weight of raw materials that composes AC servo motor.

※ Comparison in □80mm 750W motors (with brakes)
 ※ Conversion of CO₂ emissions of raw materials is calculated and compared using the "Policy on Emissions Unit Values for Accounting of Greenhouse Gas Emissions, etc., by Organizations Throughout the Supply Chain (Ver. 3.3)".
 Source: Green Value Chain Platform (Ministry of the Environment / Ministry of Economy, Trade and Industry)

New products



IMU TAG310 Compact 3-axis Inertial Measurement Unit



A new compact, waterproof and low-cost model for attitude control of industrial machinery and AGV.

Features

- Smaller Scale
- Waterproof type IP67
- Low Price

Application Examples

Construction Machinery

For measuring the attitude of the cabin of construction machinery, boom arm angle

Agricultural Machinery

For posture measurement of agricultural machinery and implements, rollover prevention

Next-Generation Electric Mobility

For posture detection of various moving objects, straight-line assist, rollover prevention, and driving monitoring

Automated Guided Vehicles (AGVs)

Autonomous driving support for automated guided vehicles (AGVs), slope detection, and monitoring

Forklift

For forklift posture detection, straight-line assist, rollover prevention, and driving monitoring

Specification

Type	TAG310
Protective Structure	IP67 (Water and dust protect)
Operating Temperature	-40~+85°C
Power Supply Voltage	+8~+28VDC
Consumption Source	1 W以下
Interface/Baud rate	CAN Standard + Extensions
Output Cycle	1,000Hz Max.
Output Data	Angular Velocity (X,Y,Z), Acceleration (X,Y,Z) Roll, Pitch, Yaw
Angular Velocity Range	±200 °/s
Acceleration Range	±4G
Operation Mode	Leveling Calculation

New products

Reaction Wheel Attitude control of Small Satellites [100kg class]



Satellite constellations, which are systems that function in coordination of multiple satellites, are expected to be used in various fields such as defense, maritime, disaster prevention, and the environmental purpose. The new reaction wheel was developed as an attitude control device for satellites in the 100 to 150 kg class, which is the mainstream in satellite constellations. Equipped with 3 or 4 axes, it accelerates and decelerates the angular velocity of the wheel and controls the change in momentum in the attitude.

Features

Angular Momentum

High Rotation Speed (Max 9,000 min⁻¹)

Low Price

Equipped with a radiation hard control board that has been proven in orbit

Specification

Type	TA6688
Angular Momentum	1.0Nms @6,000min ⁻¹
Max. Rotation Speed	9,000min ⁻¹
Nominal Torque	0.016Nm @100rpm/s
Dimensions	Φ120×H60mm Max.
Mass	1.7kg Max.
Voltage	28VDC(Drive) 5VDC(Control)
Operating Temperature	-10~+50°C

Smart Lander for Investigating Moon "SLIM" Equipped with Our Step Motors

Smart Lander for Investigating Moon "SLIM" equipped with our step motors landed on the lunar surface and succeeded in photographing the lunar surface and transmitting data. Four of these step motors are mounted on SLIM's multi-band spectroscopic camera (MBC) for observing rocks and regolith (lunar soil) around the lunar landing site.

Due to their high reliability and long-life design, our step motors have been installed in various probes, including the lunar orbiter "KAGUYA" (SELENE) and the asteroid explorer "Hayabusa 2".



▲Step motor on SLIM



▲Image of the Smart Lander for Investigating Moon "SLIM"

The 67th Japan Society for Aeronautical and Space Sciences Lecture

The 67th Japan Society for Aeronautical and Space Sciences Lecture, which brings together domestic space-related organizations, companies, and universities, was held on the largest scale ever.

At the exhibition, we exhibited our new Reaction Wheel (angular momentum: 1.0 Nms), i-FOG, 3-axis FOG unit/IRU, Step Motor for space, Resolver, etc.

This year the Acquisition, Technology & Logistics Agency also exhibited for the first time. Based on the small satellite constellation, corporation between related organizations become more active through the exhibition.

In addition, Tsunehiko Imamura, Director of our Space-robotics Research Institute, gave a lecture titled "In-orbit



Demonstration and Future Prospects of Closed-Loop Interferometric Optical Fiber Gyro," in which he announced that our optical fiber gyro (i-FOG) has cleared the evaluation criteria for functions and performance and can be used in space applications during the 17-month in-orbit operation of the Innovative Satellite Technology Demonstration No. 2.

One of the world's largest robot trade shows Exhibited at the 2023 International Robot Exhibition



▲Our booth crowded with many customers

From November 29 to December 2, we exhibited a lot of new products at the "2023 International Robot Exhibition" held at Tokyo Big Sight for the first time in four years. The TBL-i6 α series as low-inertia type of AC servo motor was promoted through demonstrations

and videos. This type is ideal for devices that require agile operation, such as semiconductor manufacturing equipment, with features such as miniaturization, weight reduction, and improved heat dissipation. In addition, we received a good reaction from many customers about the torque sensor that can measure the torque of the arm of a collaborative robot. The exhibition attracted more than 148,000 visitors, making it a very lively exhibition, and it was a fulfilling four days with direct customer feedback and specific inquiries. We will continue to follow up with our visitors.



▲New AC Servo Motor "TBL-i6 α Series"



▲Torque Sensors

India Exhibitions

IMTEX FORMING 2024 (Bangalore)

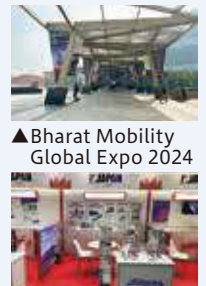
Bharat Mobility Global Expo 2024 (New Delhi)

IMTEX FORMING 2024 held in Bangalore, South India, from January 19 to 23, hosted by the Indian Machine Tool Manufacturers Association of India (IMTMA). Approximately 520 companies and organizations, related to metal forming and machine tools, exhibited. We exhibited AC servo motors, step motors, torque sensors and rotary encoders.

Bharat Mobility Global Expo 2024 held in New Delhi on February 1 to 3. The exhibition was the largest automotive technology exhibition in India, and we exhibited the Singlsyn brushless resolver used in EVs and HEVs, as well as AC servo motors. We promoted the need for electrification of motorcycles and two- and three-wheeled vehicles such as tuk-tuks, which are often running in urban areas in India.



▲Bharat Mobility Global Expo 2024
Our booth



▲IMTEX FORMING 2024
Our booth

Exhibited at Minami Shinshu Environmental Messe

On October 28 to 29, the "Minami Shinshu Environmental Messe 2023" was held at S-Bird in Iida City. This event was organized by Iida City and other organizations as a trade fair for promoting zero-carbon activities aiming for net-zero carbon dioxide emissions, and was attended by about 1,800 people.

We exhibited products that contribute to zero carbon, such as automotive resolvers and aircraft electrical components, and got good reviews from visitors to our booth by operating actual throttle levers for commercial aircraft.



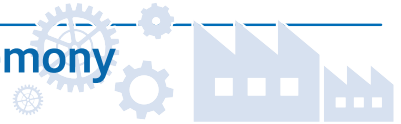
▲Exhibition at our booth



**Notice of Executive Officer of
TAMAGAWA SEIKI CO., LTD.**

We would like to inform you that the Executive Officer appointed at the Annual General Meeting of Shareholders as follows.

Director : Yuji Takeno



01

Tamagawa Vietnam Holds Signing Ceremony for Acquisition of Factory Land

On November 17, a signing ceremony was held for the acquisition of land for a plant to be built in Song Khoai Industrial Park (Amata City Ha Long) in Quang Ninh Province in northern Vietnam.

The signing ceremony was held at the government building of Quang Yen Town, where the industrial park is located. Amata City Ha Long Co., Ltd. and Tamagawa Seiki signed the contract in the presence of Mayor Quang Yen Town.

The plant will cover an area of 6.3 hectares. As the first phase, one factory building with one-hectare will be constructed, which is scheduled to start operations from the beginning of 2025, with plans to expand to three buildings in the future. The number of employees in the first phase will be 220 including 3 Japanese representatives.



▲Signing ceremony for the acquisition of land for the plant

02

Tamagawa Seiki Cooperation Celebration Party



On January 12, the Tamagawa Seiki Cooperation Association Celebration Party was held at Belaks Matsukawa in Iida City, Nagano Prefecture for the first time in five years since January 2019. It was a large-scale event attended by a total of 154 people, including guests from 85 companies. Chairman Hagimoto, President Matsuo, and another 16 members were invited from us as participant. At the beginning of the party, a moment of silence was held for the Noto Peninsula earthquake at the beginning of the year and the aircraft collision that occurred at Haneda Airport. After that, the organizer of the meeting, Mr. Sodenaga (Kodenshi Co., Ltd.), gave a greeting. As a representative the guests, Mr. Hagimoto reported on the status of the company and its future prospects, and asked for further support for the member companies of the cooperative association. Interaction was actively held member companies, our executives, and member companies was actively held, and it was also an opportunity to reaffirm the importance of face-to-face exchanges. Through the activities of the cooperative association, we hope to deepen our relationship with our member companies and strengthen our supply chain.



▲The Kagami Biraki

03

Employee Trip for the First Time in 5 years ~ Iida Area, Hachinohe Area, Sales Office ~



Due to the transition to Class 5 of the new coronavirus, a company trip was held for the first time in five years since 2018. About 200 people as total participated in the event including Iida and Hachinohe districts, as well as four sales offices.

About 120 people from the Iida area participated in the event on Friday, October 6, and went to the Chita Peninsula in Aichi Prefecture. We enjoyed a seafood barbecue and bought shrimp crackers. The Hachinohe district was also held on the same day, with about 30 participants. In addition to a social gathering on a houseboat at Hachinohe Port, we visited a sake brewery near the port. During the employee trips held in the Kanto, Chubu, Osaka, and Fukuoka regions, there were bowling, night scenery tour, Self-Defense Force ship tour, and social gatherings, and friendships were deepened during employee trip after a long time.



▲Employee trip of Iida area: Chita Peninsula.



▲Employee trip of Hachinohe area: Social gathering on a houseboat

04

Bamboo Forest Maintenance Work



▲The road, which was covered with bamboo and dimly lit, now has better visibility



▲Shelves made of felled bamboo

In Oyasumi district of Iida City, Nagano Prefecture, where the head office is located, river dysfunction and road traffic obstructions have been issue due to neglected bamboo forests in the nearby Engosawa basin. "Someday, someone has to do it," the residents, led by the district's youth association, stood up and planned a large-scale bamboo forest maintenance in the basin.

We also participated in the maintenance work held on Sunday, November 19 as part of our community contribution, and worked hard for one day, from logging trees to transporting them out and making shelves. The road, which was covered with bamboo and dimly lit, became unrecognizably bright after the maintenance and the interfere with traffic was resolved.



On April 1, we held an initiation ceremony for 13 new employees. President Matsuo gave a message saying, "Our company is based on our corporate philosophy of being a 'Technology development-oriented company' and a 'Community-based company,'" and "Let's continue to take on challenges proactively as a member of our company and create the future together, while being grateful to seniors and colleagues." We would like to introduce two people who have been assigned to the sales department.



▲Initiation Ceremony



Special Equipment Sales Dept./Nagoya Office
Ayumu Yamada

I am confident in my physical strength, which I developed through soccer and running during my school days. I would like to run to our customers so that our products can be widely distributed in Japan and around the world.



Domestic Sales Dept./Nishi-kanto Office
Mikiya Ito

I studied business administration at university. I would like to make use of my experience as a student and contribute without forgetting my original intentions.

Shimojo Village
下條村
Tour Minami Shinshu
vol. 6

Introducing the food and culture of local areas around Tamagawa Seiki

Shimojo Village is located in the center of Minami-Shinshu and is located between the steep mountains, so it has a good view, and it is a village rich in nature where you can fully enjoy the outdoors such as camping, fishing, golf, and parks.



01. Paradise Pass Panorama Park



Photo by Tetsuo Hosoda

It is located at the top of the Shimojo Mountains (altitude 1283m) and is on the border with Achi Village, and is a mountain pass with a superb view overlooking the Ina Basin. Birch and beech forests grow in the vicinity, and it has been selected as one of the 100 best natural areas in Nagano Prefecture, making it ideal for walking.

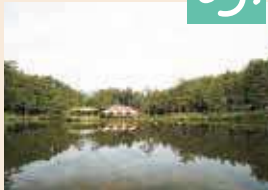
02. Refresh Park Shimojo



It is a relaxing place that spreads out in the wilderness overlooking the Southern and Central Alps and Ina Valley. It is a sports park that can be enjoyed by the family all day long, with a famous 110-meter-long jumbo slide, putter golf course, mallet golf course, and various playground equipment.

Lake Ogute

Lake Ogute in the Oyada Highlands is a place where you can enjoy outdoor activities such as lure and fly fishing such as trout and black bass, camping on the lakeside and in the forest, and barbecue.



03.

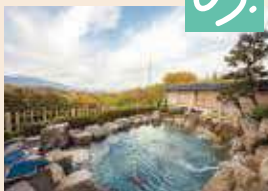
04. Roadside Station Shinanoji Shimojo "Soba (noodles) Castle"



The Tenshu towers over the "Soba Castle". There is also a direct sales shop of Shimojo Village's specialties "Umai Monokan" next door. The combination of fresh and delicious soba noodles and "Oyada spicy radish", which is characterized by its addictive spiciness, is an exquisite match. Please give it a try when you visit next time.

Shimojo Onsen "Cosmos no Yu (Hot spring)" 05.

From the open-air bath and the large public bath, you can see the majestic mountains of the Southern and Central Alps, as well as the Ina Valley and the Tenryu River. At night, you can also see the night view of Iida City. The quality of the hot spring is simple sulfur, and it can be expected to have a skin-beautifying effect. Why don't you relax in the hot spring of Cosmos?



My recommendation

International Marketing Sales Department /
Tetsuo Hosoda

In Shimojo Village, there are two observation parks overlooking Iida City. This time, I would like to introduce one of them, "Paradise Pass Panorama Park". It features a wide view of Mt. Ontake to the west, the Central Alps to the north, and the Southern Alps to the east. Between the Central and Southern Alps, you can also see the Ina Valley (big valley). Also, depending on the season such as autumn, you can also enjoy the sea of clouds. It may be a rare park as a sea of clouds spot where you can go to the site by car.



Cover
of this
issue

Humayun's Tomb

Located in Delhi, the capital of the Republic of India. It is the tomb of Humayun, as the second emperor of the Mughal Empire, and built in 1565. The perimeter of the tomb is a quarter garden, which is said to be a masterpiece of the early Mughal style, and was registered as a World Heritage Site in 1993. Nestled in a symmetrical garden, the mausoleum was shrouded in silence in contrast to the hustle and bustle of the city. It was unfortunate that the air pollutant PM2.5 in Delhi was high and the weather was hazy.



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