

Aspiring always to be an environmentally friendly and trustworthy company

TAMAGAWA NEWS

2020.9
Vol. 25



New ! High Precision FOG&MEMS Combined IMU/Introduction of New Employees

New

FOG & MEMS combined IMU

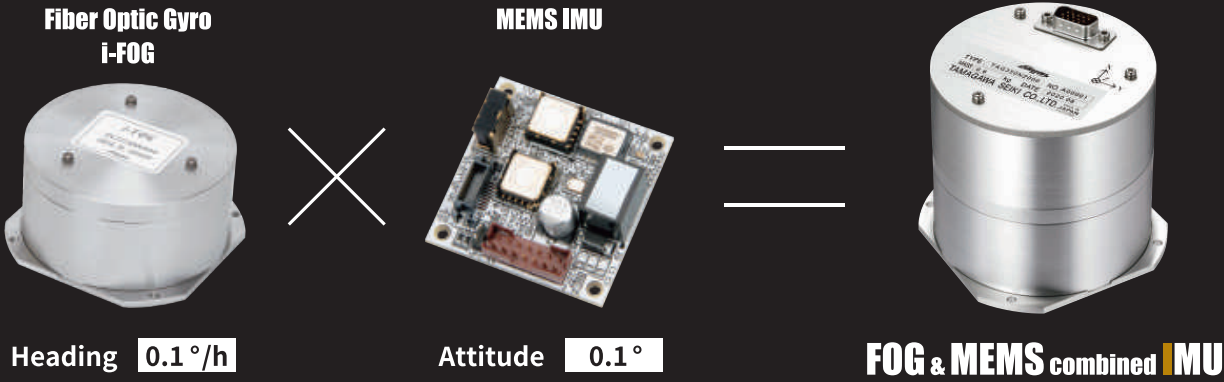
FOG & MEMS combined IMU incorporates 3 axis of gyroscopes and accelerometers, which measure angular velocity and acceleration. In addition, attitude (roll & pitch) and heading (yaw) is calculated. An external GNSS module is connected to IMU, which can be used as GNSS/INS/VS navigation. FOG & MEMS combined IMU realizes a high accuracy for full automation in driving.



New value

New Synergy created in combination with MEMS & FOG

The accuracy of Gyroscope is classified by principle of operation. The customer needs to choose the suitable gyroscope depending on its usage or environment. FOG & MEMS combined IMU incorporates FOG & MEMS, so it can narrow the huge gap between MEMS IMU and FOG IMU.



NEW PRODUCTS

PART NUMBER

FOG & MEMS combined IMU

TAG350N 2□□□

Calculation	Accelerometer	Custom
2 : GNSS / INS / VS combined Navigation	0 : Accelerometer±3G 1 : Accelerometer±6G	00 : Standard Others : Exclusive

PERFORMANCE

FOG & MEMS combined IMU

Item	Specifications	Remark
Dimension · Mass	85×85×78.5mm · 600g Max.	
Power supply voltage	9 ~ 28V DC	
Interface/ Baud rate	RS232C : 115.2 kbps (fixed) CAN : 500kbps (Initial setting)	
Output Cycle	RS232C : 50Hz CAN : 50Hz	
Gyro Range	± 200deg/sec	
Gyro Bias	Z axis : 0.1 deg/h rms X, Y axis : 0.2 deg/s rms	
Gyro Scale Factor Error	Z axis : 50ppm FS rms X, Y axis : 0.2% FS rms	SF : Scale Factor FS : Full Scale

Item	Specifications	Remark
Acceleration Range	± 3G / ± 6G	
Acceleration Bias	5mG rms	
Acceleration Scale Factor Error	0.2%FS rms	
Static Accuracy (Roll & Pitch)	0.1deg rms 0.2deg rms	Room temp. Ambient temp.
In-run Drift (Yaw)	0.0001deg/s rms	
Operation temp. range	-20~+60°C	
Vibration	29.4m/sec ² rms (5Hz ~ 2kHz) (3G rms)	Random vibration
Shock	20G 10ms	

FUNCTION

FOG & MEMS combined IMU

Item	Remark
Vehicle Speed (VS) Input I/F	RS232 / CAN / Pulse
Power Protection Circuit	✓
GNSS Input I/F	✓
CAN cable termination process	—

USER CONFIGURABLE COMMANDS

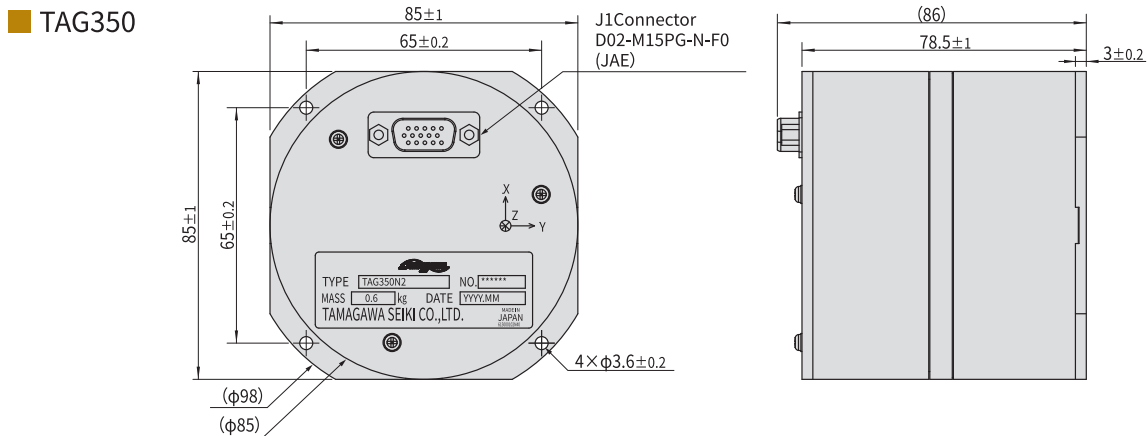
FOG & MEMS combined IMU

Function	Explanation
Alignment Compensation	If mounting surface is tilting, its attitude angle can be recognized as a zero (horizontal).
CAN Format, CAN ID allocation	CAN format (standard/extended) and CAN ID allocation can be changed.

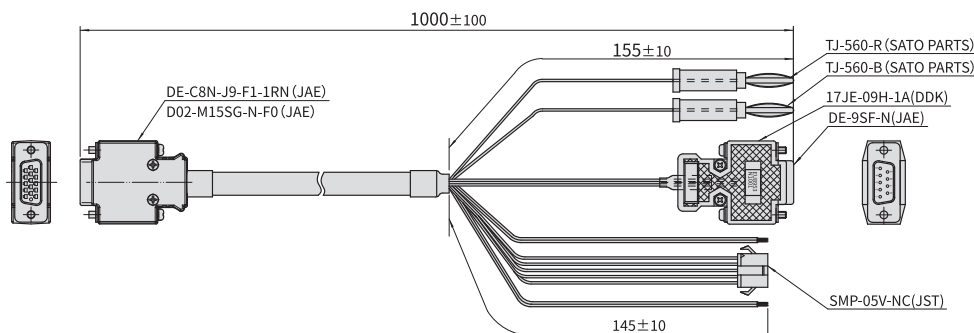
There are a lot of other commands except for the above-mentioned. The customer can change various settings. Please refer to the specification for the details.

OUTLINE DRAWING Dimension : mm

FOG & MEMS combined IMU



Interface Cable EU8953N1001 (sold separately)





Optical Level Gauging System New products

Optical Level Gauging system is an optical sensor measuring level of fluid system. This system uses optical refraction. In air, light coming out from illuminators goes back to receiver because of complete reflection of prism. In liquid, the light passes the prism and does not reach to receiver. Photocells including illuminator, receiver and prism are put vertically to generate signal depending on liquid level.

Strong Points

1 Low Installation Cost

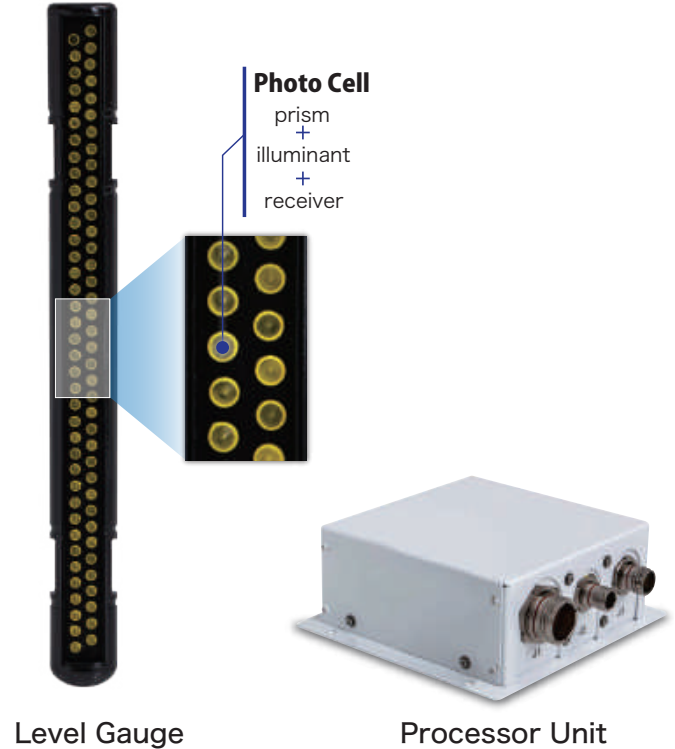
Installation of a Compensator is not required for the "Optical Level Gauge".

2 Easy Calibration

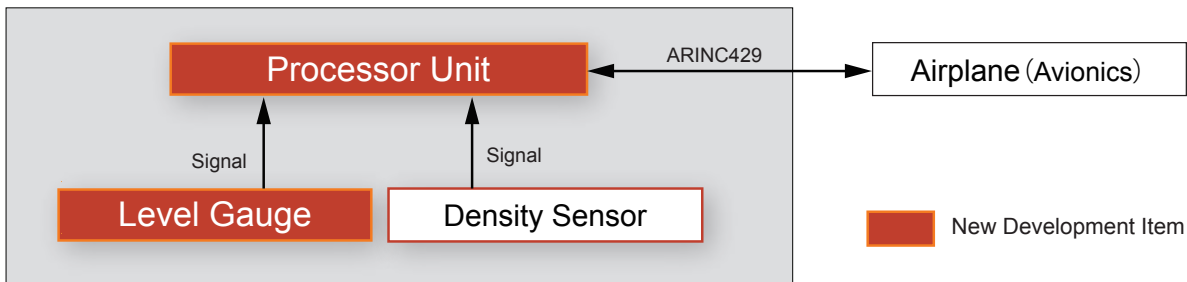
The "Optical Level Gauge" does not require temperature calibration required for capacitance type.

3 Easy Maintenance

- (1) Since the "Optical Level Gauge" measure the liquid level itself, there is no temperature dependence, and there is no change in measured value over time, therefore no need to calibrate.
- (2) The digital built-in-test can quickly identify the location of any faulty cable or sensor. This reduces the cost of maintenance and support associated with troubleshooting and replacing failed sensor.



Optical Level Gauging System



Specifications

Item	Specifications
Sensing Length	846 mm (Customizing)
Temperature	Level Gauge 、 Processor Unit Operational / Storage : -54°C to 71°C
System Accuracy	± 1 % at full scale
Input Power	28 VDC 0.2A /1probe (Including processor Unit)
Connection Number	Max. 10 Level Gauges / Processor Unit
Mass	Level Gauge:1.5kg max Processor Unit:1.0kg max
Applicable Fluids	MIL-DTL-5624 Grade JP-4, MIL-DTL-83133E Grade JP-8, MIL-DTL-5624 Grade JP-5, ASTM D-1655 JET-A/JET-A1, Applicable for kerosene, light oil, gasoline and water
MTBF	Level Gauge : 100,000Hr min Processor Unit : 50,000Hr min
Qualifications	TSO C55a, DO-160, DO-178 (preliminary review)



Introducing the new facility, S-BIRD, in a four-part series.

Explore the Area

A base for industrial development and human resource development

S-BIRD

Address: 3349-1, Zakoji Iida City, Nagano

(Foundation) Minami-Shinshu Iida Industry Center

Industrial Technology Test and Research Laboratory

Industry-Government Collaboration unique to Iida

Many test equipment which are unique domestically in the field of aerospace, were introduced at S-Bird. Southern Nagano has been involved in close industry-government collaboration such as "Iida Aerospace Project" which started in 2006 and this collaboration effort has realized the establishment of the unique test base here in Iida City.

Tamagawa has been participating in the working group formed in preparation for the facilities and the operation of the base since 2016 and has been heavily involved in the "Temperature / Altitude / Humidity Weatherability Icing Test Tank" which will be introduced in this news letter.

Temperature / Altitude / Humidity Weather ability Icing Test Tank

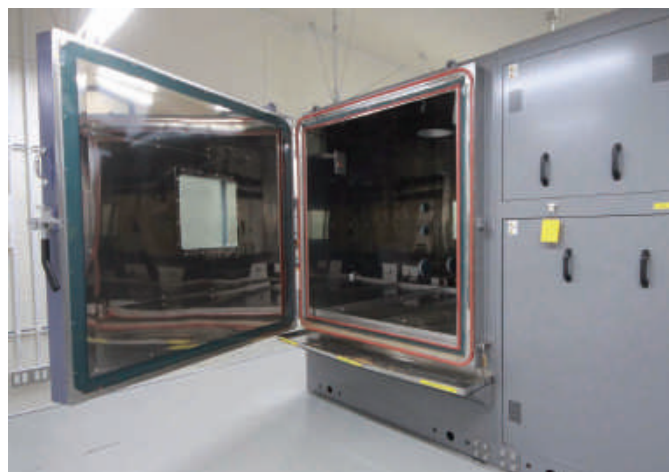
Reproduction of 16,000 meter altitude

This test tank is capable of reproducing the barometric pressure, temperature and humidity of an aircraft from take-off through landing and can evaluate the safety and the reliability of the equipment installed in the aircraft. It is like a huge refrigerator capable of adjusting barometric pressure. The explosion-proof test evaluation system introduced in the last news letter sprayed fuel in the tank, but the new tank can reproduce the low temperature environment and the humidity change without the fuel spray.

It is capable of reproducing an environment at 52,000 feet altitude (16,000 meters), and can change the barometric pressure in the range of 101.3 ~ 10.7 kPa, the temperature in the range of 100 ~ -70°C, and the humidity in the range of 20 ~ 90%RH.

Conform to RTCA/DO-160

Test standard conforms to the Aircraft Installed Product Environment Test Standard (RTCA/DO-160G Sec.24) of the American Aviation Radio Technology Committee, and to the Aircraft Installed Product Standard (JIS W0812) in Japan. Icing test does not conform to DO-160G at this time, but is equipped with the basic specification and is capable of testing when the optional function required such as spraying is added.



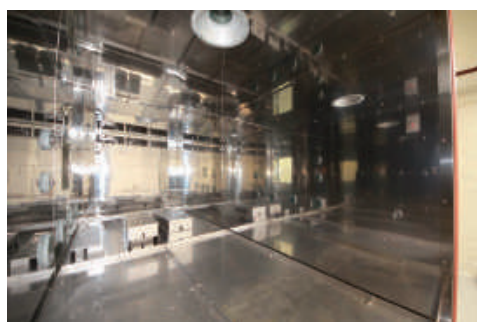
Equipment is about the size of a mid-size truck and weighs about 10t. Inside dimensions of the test tank are 1.5m (width and height) and 4m (depth). It has thermocouple terminal, material temperature detection end and observation windows with anti-fog heater at the front and on the left side.

Tamagawa to advise on specification, etc. at the WG

Espec Corporation in Osaka who is a major environmental equipment manufacturer, is in charge of the production. In the WG to discuss the specification, Tamagawa provided support actively as the main adviser. Among the 3 testing equipment introduced in this series, the earliest installation was at the Minami Shinshu Iida Industrial Center in 2017, and Tamagawa is also utilizing the equipment on a frequent basis.

Japan Aerospace Exploration Agency (JAXA) also has a similar testing chamber, but the equipment installed at S-Bird is the largest in the country for the use of private enterprises.

In Japan, weather and climate changes a lot and the needs for weatherability testing equipment come not only from the aerospace industry but also from a wide range of industries such as automobile and transportation infrastructure.



Main Specifications

- Model Number : MZH-35S-H
- Test Standard : RTCA-DO160G Sec.24 Category B
- Barometric Pressure Range : 101.3~10.7kPa (Atmospheric Pressure / Altitude 52,000ft equivalent)
- Temperature Range : -70~100°C (Atmospheric Pressure), -60~100°C (10.7kPa~Atmospheric Pressure)
- Humidity Range : 20~95%RH
- Inside Dimensions of the Test Tank : W1,500 x H1,500 x D4,000mm
- Outside Dimensions of the Test Tank : W3,380 x H2,835 x D5,100mm
- Remarks : Sky droll Resistant, comes with Sample Slide Color Control

Information

01

Tenryu River Monitoring Camera
ATLAS-eyeseries (Ptype)
**Commencement of
Live Video Transmission**

ATLAS-eye series were delivered to the Ministry of Land, Infrastructure and Transport (Tenryu River Upstream Office) and were installed along the Tenryu riverbed in Nagano Prefecture. Live video transmission commenced as from April this year and can be viewed on Tenryu River Upstream Office website.

There are no street lamps where the 2 ATLAS-eye products are installed, but the infrared illuminator built into the products is effective in the dark environment.

In addition, 3 ATLAS-eye products were installed in 2016 intended for river monitoring in the Mabuchi River area in Nanbu Town in Aomori Prefecture where our Fukuchi Factory is located. The live video can be viewed on Nanbu Town website.



Live video from the camera

Information

02

**Measures for preventing the
expansion of the Coronavirus**

As from the end of February when the Coronavirus started to spread, Tamagawa launched an internal website in order to centrally manage the information pertaining to the market, factories, etc. Furthermore, we established a Corona Crisis Room in April, and we are taking measures to prevent the diffusion of the virus and to come up with contingency plans for our factories and for our corporation.

At our sales branches, we are trying out a shift system where our employees are only required to come to the office every other day. (Work at home every other day.) Our sales staff may not be able to visit customers as frequently as before, but we would like to do our best to compensate by utilizing WEB meeting, etc.



Introduction of New Employees

Following 2 members joined Tamagawa Trading Company this year. Please welcome them on board.

Domestic Sales Department, Fukuoka Sales Office

Yuta Hiramitsu (Left side of the photo)

Covering Kyushu (except Nagasaki) and Okinawa area. He will fully utilize the WEB meeting and other tools until the Corona virus converges and is allowed to visit his customers in person.

Development Sales Department, Section 2

Kaho Matsubara (Right side of the photo)

Window person for incoming mails and phone calls. Acquired endurance and power through swimming during her school days. Will take good care of customers from the standpoint of a new employee fresh on board.



The cover of this edition



Sea cat “Karakuri”

By Minoru Takahashi

This artwork was set up at the Sanriku Revival National Park Tanesashi Coast in Hachinohe City, Aomori Prefecture in 2014. Kabushima close by is famous for sea cats' breeding ground. Wooden artwork is expressing the flapping of the wings.

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