**Outline**

- **AU7684 Series: Substrate type**
- **TAG300 Series: Waterproof case type**

- **EU8937N1000 (AU7684 Evaluation cable, sold separately)**

- **EU8940N1000 (TAG300 Evaluation cable, sold separately)**
  - Contact us for details.

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**Safety Warning**

To ensure proper and safe use of our products, please read the "SAFETY PRECAUTIONS" carefully before using them.

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**Warranty**

Tamagawa Seiki warrants that this product is free from defects in material or workmanship under normal use and service for a period of one year from the date of shipment from its factory. This warranty, however, excludes incidental and consequential damages caused by careless use of the product by the user. Even after the warranty period, Tamagawa Seiki offers repair services, with the intent to maintain the quality of the product. While the MTBF (mean time between failures) of our product is quite long, the predicted failure rate is not zero. The user is advised, therefore, that multiple safety measures be incorporated into your system or product so as to prevent any consequential troubles resulting from the failure of our product.

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FAX: +49 731 98 33 89 57

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For MEMS IMU
https://mems.tamagawa.seiki.com/
For Motortronics
https://www.tamagawa.seiki.com/

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‘19.04
T171-1721 500
This catalogue is current as of 2019.04
All specifications are subject to change without notice.
The MEMS IMU (compact 3-axis inertia sensor unit) is mounted with a high accuracy MEMS gyro sensor and is built to be compact with high accuracy to meet the high-level needs of the next generation. The system is more cost-effective than conventional inertia measurement devices, so it can be applied to a variety of applications.

**Features**
- Compact, low cost
- Mounted with high accuracy MEMS sensor
- Posture angle accuracy of 0.1 degrees
- Waterproof dustproof case (IP65, TAG300)
- Built-in magnetic direction sensor
- Built-in power supply protection circuit
- Compatible with 1 kHz output cycle
- CAN_ID change function (extended CAN support)
- Initial posture alignment function
- Axis definition (coordinate axis) change function
- External GPS interface (under development)
- Extended Kalman filter + self-positioning estimation support (under development)

**HARDWARE**
- Reduction of warming-up time
- Initial azimuth (with built-in magnetic sensor)
- Lineup of standard vehicle detector IR
- Waterproof case specifications (TAG300)
- 0.5 sq. of wire diameter for installing M6 (TAG300)
- Power protection circuit
- Making in-vehicle µGAIA as standard equipment

**SOFTWARE**
- Enhanced angular accuracy in dynamic posture (high-precision MEMS sensor is installed)
- CAN ID setting changing function
- Function to change setting of various constants (constant at the time of leveling, compound navigation system parameter)
- Function to set measuring coordinate system

**Specifications**

**List of functions**

**User settings commands (example)**

**Model No.**
- TAG300 Series: Waterproof case type
- AU7684 Series: Substrate type

**Applications**
- Unmanned agriculture machine
  - Measurement of remote-controlled tractor attitude
- Unmanned lawn mower
- Construction machine
  - Measurement of inclination angle of unmanned construction machine
- Automobile
  - Measurement of vehicle motion and attitude
- Security robot
  - Unmanned forklift
  - Unmanned carrier
  - Unmanned drone
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### Features
- Compact, low cost
- Mounted with high accuracy MEMS sensor
- (Posture angle accuracy of 0.1 degrees)
- Waterproof dustproof case (IP65, TAG300)
- Built-in magnetic direction sensor
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- Compatible with 1 kHz output cycle
- CAN_ID change function (extended CAN support)
- Initial posture alignment function
- Axis definition (coordinate axis) change function
- External GPS interface (under development)
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### Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specification value</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>External dimension (WxHxD)</td>
<td>36x35x16.1 mm</td>
<td></td>
</tr>
<tr>
<td>External dimension (metric)</td>
<td>100x59.8x49.5 mm</td>
<td>W x H x D</td>
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<tr>
<td>Power supply voltage</td>
<td>5 to 24V DC</td>
<td></td>
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<tr>
<td>Output signal (RS422)</td>
<td>115,200 bps</td>
<td>User can change the CAN baud rate</td>
</tr>
<tr>
<td>Voltage range of G</td>
<td>±5V</td>
<td></td>
</tr>
<tr>
<td>Angular velocity bias</td>
<td>0.2 deg/15s</td>
<td>Maximum value in range of ±5V max (15s)</td>
</tr>
<tr>
<td>Angular accuracy in static</td>
<td>0.1 deg/15s (±5V)</td>
<td>Maximum value in range of ±5V max (15s)</td>
</tr>
<tr>
<td>Acceleration stability</td>
<td>0.2% ±5V/mm</td>
<td>Maximum value in range of ±5V max (15s)</td>
</tr>
<tr>
<td>Angular accuracy in static</td>
<td>0.1 deg/15s (±5V)</td>
<td>Maximum value in range of ±5V max (15s)</td>
</tr>
<tr>
<td>Acceleration drift</td>
<td>±0.01 deg/15s</td>
<td></td>
</tr>
<tr>
<td>Gyro temperature drift</td>
<td>-40 to +85°C</td>
<td>Random vibration</td>
</tr>
<tr>
<td>Impact resistance</td>
<td>35.4 m/s²/6g</td>
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</table>

### Model No.
- **TAG300 Series**: Waterproof case type
- **AU7684 Series**: Substrate type

### List of functions

<table>
<thead>
<tr>
<th>Item</th>
<th>Compatible</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Waterproof case</td>
<td>☑</td>
<td>TAG300</td>
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<tr>
<td>Magnetic direction sensor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Max. velocity (drift)</td>
<td>☑</td>
<td>TAG300</td>
</tr>
<tr>
<td>Max. velocity (drift)</td>
<td>☑</td>
<td>TAG300</td>
</tr>
<tr>
<td>Power supply protection circuit</td>
<td>☑</td>
<td>TAG300</td>
</tr>
<tr>
<td>CAN bus communication</td>
<td>☑</td>
<td>TAG300</td>
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### User settings commands (example)

<table>
<thead>
<tr>
<th>Command</th>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>S1</td>
<td>Scale factor (ST)</td>
<td>1.0000</td>
</tr>
<tr>
<td>S2</td>
<td>Scale factor (ST)</td>
<td>1.0000</td>
</tr>
<tr>
<td>A1</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
</tr>
<tr>
<td>A2</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
</tr>
<tr>
<td>A4</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
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<tr>
<td>A5</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
</tr>
<tr>
<td>A6</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
</tr>
<tr>
<td>A7</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
</tr>
<tr>
<td>A8</td>
<td>Add/change command (ADD/CHG)</td>
<td></td>
</tr>
<tr>
<td>A9</td>
<td>Add/change command (ADD/CHG)</td>
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</tr>
</tbody>
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### Hardware

- Lineup of standard vehicle detector RF
- Waterproof case specifications (TAG300)
- Power protection circuit
- 0.5 sq. of wire diameter for installing M6 (TAG300)
- Enhanced angular accuracy in static posture (high-precision MEMS sensor is installed)

### Software

- CANID setting changing function
- Function to change setting of various constants (constant at the time of leveling, compound navigation system parameter)
- Function to set measuring coordinate system
- Increased efficiency of offset cancel operation

### Applications

- **Unmanned agriculture machine**: Measurement of remote-controlled tractor attitude
- **Construction machine**: Measurement of inclination angle of unmanned construction machine
- **Unmanned lawn mower**: Tri-Axis Inertial Measurement Unit (IMU) sensor
- **Automobile**: Measurement of vehicle motion and attitude
- **Security robot**: MEMS gyroscope
- **Unmanned forklift**: TAG300
- **Unmanned carrier**: AU7684
- **Unmanned drone**: AU7684

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