

# TransducerM

## 9 Degree-of-Freedom attitude and heading reference system (AHRS)

**SYD Dynamics** provides a complete solution of motion sensing technologies, allowing for orientation reading in 3D.

### ■ Key features

- Rugged Design, IP67 Enclosure
- Compact package ( 34 x 34 x 23 mm )
- Wide operation range (up to 2000 degree/s)
- Low Power Consumption (50mA at 5.0V Typ.)

- 9 axes in the same package
- Fully Calibrated
- Integrated sensor fusion processor
- Immune to magnetic disturbance
- Low Noise
- Low bias drift
- High dynamic performance, output rate 300 Hz

### ■ Data output

- Multiple output options:
- Calibrated raw sensor data
  - Linear acceleration
  - Rotation rate
  - Magnetic field
  - Roll, Pitch and Yaw (Heading)
  - Quaternion
  - Gravity

- Digital Interface:
- UART (Serial Port)
  - CANBus

### ■ Modular Design

We provide platform independent C / C++ library for communication with the TransducerM.

### ■ Easy Access

Arduino Compatible Library and ROS example project available for rapid setup and evaluation.

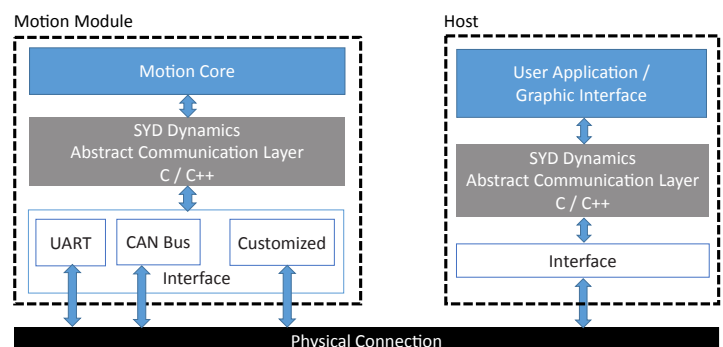
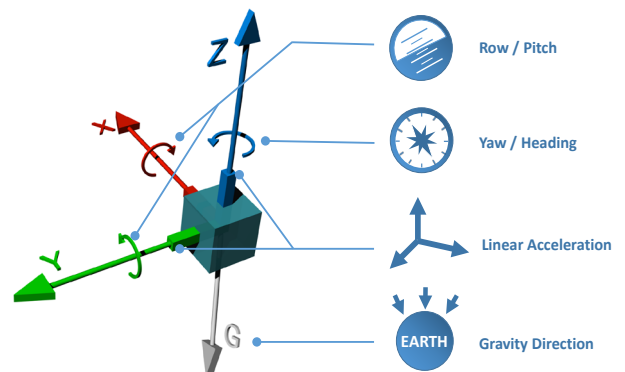


### ■ Performance

Orientation	Accuracy(TYP)	Resolution	Unit
Roll	0.5	0.01	deg
Pitch	0.5	0.01	deg
Yaw	1.0	0.01	deg

### ■ Reliability

Shock Resistant and Active Magnetic Field Compensation: The module is resistant to temporary shock or vibration of up to  $\pm 8g$ , and features intelligent self-adapting filter for improved heading accuracy, taking advantages of our patent pending technology.



## ■ Applications

Aviation & Marine:

- UAV, aircraft, aerostat
- UUV, under-water drones
- Camera and antenna stabilization
- VTOL, vehicle attitude control

Robotics:

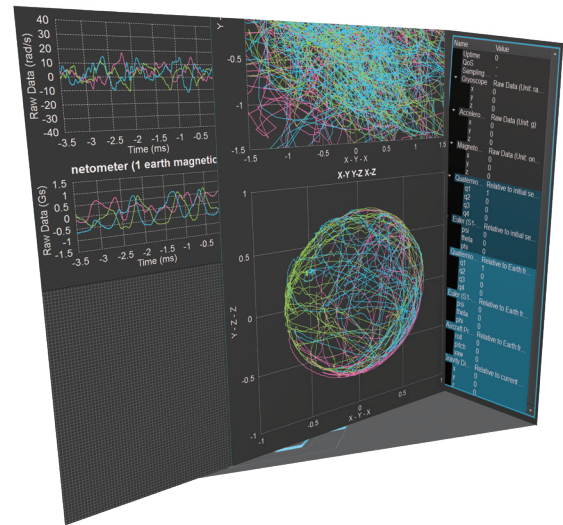
- Manned & Unmanned ground vehicle
- self-balancing robot, humanoid
- Motion sensing, teleoperation

Machinery Monitoring:

- Production machine
- Agriculture automation
- Heavy vehicle, lifter and truck

## ■ Development kit

- TransducerM
- USB adaptor
- User Instruction
- Communication code library
- GUI configuration software
- Technical support.



\*Supported platforms:  
Windows (7, 8, 8.1,10),  
Linux (Ubuntu 16.04)  
(MAC version will also be available in the future)  
\*The actual software is mostly 2D design,  
for maximizing compatibility.

<i>Module output</i>				
PARAMETER	MIN	TYP	MAX	UNIT
Update rate	340	360	430	Hz
Output rate (depending on configurations)	Example	Configuration	UART: 921600 bps Output: Roll Pitch Yaw and Quaternion	Hz
		Output rate	300	
Output format	Roll/Pitch/Yaw (heading), Quaternion, Gravity direction, Calibrated raw sensor data			
Other features	FEATURE NAME		HIGHLIGHTS	
	Self-adapting filter		Improved heading accuracy	
	Sensor networking		Multiple sensors on the CAN Bus	
PERFORMANCE	ROLL	PITCH	YAW	
Resolution	0.01°	0.01°	0.01°	
Angle range	0° - 360°	±90°	±180°	
Static accuracy	<0.5°	<0.5°	<1.0°	Average <sup>1</sup>
Dynamic accuracy (inertial)	<2.0°	<2.0°	<4.6°	Average <sup>1, 2</sup>
Repeatability (inertial)	<0.04°	< 0.04°	<0.28°	Absolute maximum <sup>1</sup>
Positional drift (inertial)	< 0.09 °/h	< 0.09 °/h	1.05 °/h	Static condition <sup>1</sup>
Turn-on bias	< 0.4°	< 0.4°	< 0.4°	

1. According to test results in laboratory environment.

2. Including error introduced by communication latency at 115200 bps.

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