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

Performance

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

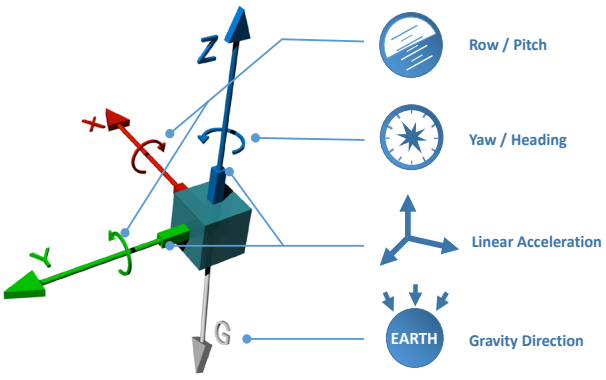
Data output

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

Reliability

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

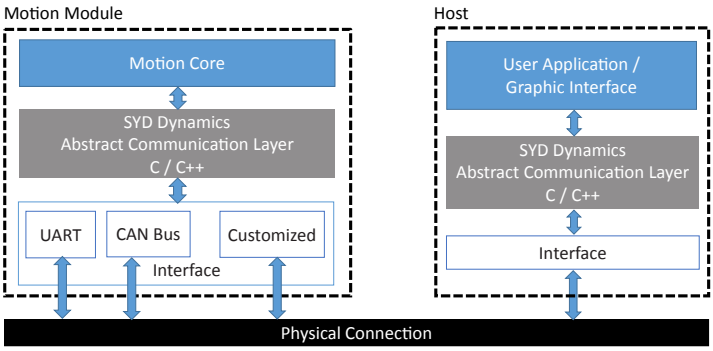


Modular Design

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

Easy Access

Arduino compatible library and example project available for rapid setup and evaluation.



Applications

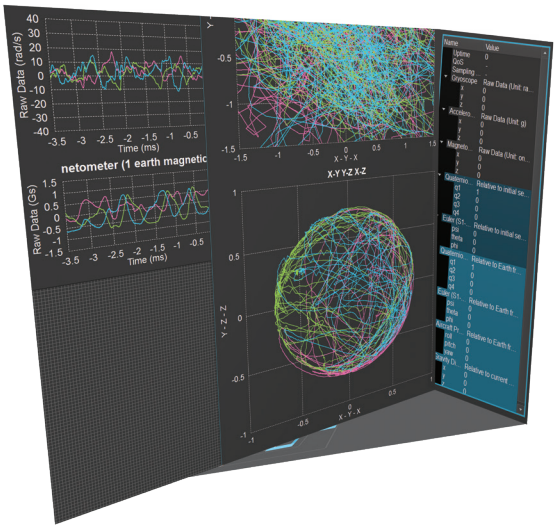
Avaiation & Marine:
- UAV, aircraft, aerostat
- UUV, under-water drones
- Camera and antenna stabilization
- VTOL, vehicle attitude control

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 64-bit)
(MAC version will also be available in the future)
*The actual software is mostly 2D design,
for maximizing compatibility.

Module output

PARAMETER	MIN	TYP	MAX	UNIT
Update rate	300	360	430	Hz
Output rate (depending on configurations)	Example: Configuration	UART: 921600 bps Output: Roll Pitch Yaw and Quaternion		Hz
	Example: 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[1]
Dynamic accuracy (inertial)	<2.0°	<2.0°	<4.6°	Average[1, 2]
Repeatability (inertial)	<0.04°	< 0.04°	<0.28°	Absolute maximum[1]
Positional drift (inertial)	< 0.09 °/h	< 0.09 °/h	1.05 °/h	Static condition[1]
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.