INERTIAL MEASUREMENT UNIT (IMU)

DynaLabs

DYN-I-9000 SERIES

DynaLabs IMUs are based on triaxial accelerometers and triaxial gyroscopes, integrated within a single housing to detect the smallest linear accelerations and angular rates.

Dynalabs IMUs enable separate analog voltage outputs for all 6 degrees of freedom (DOF). IMUs enable power supply voltage from 6 to 35 VDC. Dynalabs IMUs feature a lightweight, reliable aluminum housing with protection class IP68 and have cable with configurable length and connectors.

Features

- Accurate 6 DOF DC measurement
- Voltage output signal
- Proven and robust silicon MEMS
- High shock and vibration rejection
- Class-leading bias and noise over temperature
- Low cost – high resolution

Applications

- Automotive in-car navigation
- Vehicle and personal navigation aiding
- Vehicle yaw, pitch and roll rate sensing
- Antenna stabilization
- Motion control
- Railway engineering

* Any combination of gyroscopes and accelerometers is possible.

GYROSCOPES

Full-scale angular velocity	(°/s)	± 75	± 150	± 300	± 900
Frequency range	(Hz)	0-150	0-150	0-150	0-150
Non-linearity (full scale)	(%)	0.06	0.06	0.06	0.06
Noise (in band)	(°/s/√Hz)	0.0075	0.0075	0.0075	0.0075
Scale factor (nominal)	(V/°/s)	0.012	0.006	0.003	0.001
Scale factor var. over temp.	(%)	0.5	0.5	0.5	0.5
Bias variation with temp.	(°/s)	± 1	± 2	± 3	± 4

ACCELEROMETERS

Full-scale Acceleration	(°/s)	±2	±4	±8	±10	±20	±40	±50	±100	±200	±500
Frequency range (±3dB)	(Hz)	1,500	1,500	1,500	1,500	1,500	1,500	3,000	3,000	3,000	3,000
Non-linearity (full scale)	(%)	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Noise (in band)	(µg/√Hz)	25	25	25	80	75	110	35	50	80	170
Scale factor (nominal)	(mV/g)	1,600	800	400	320	160	80	80	40	20	8

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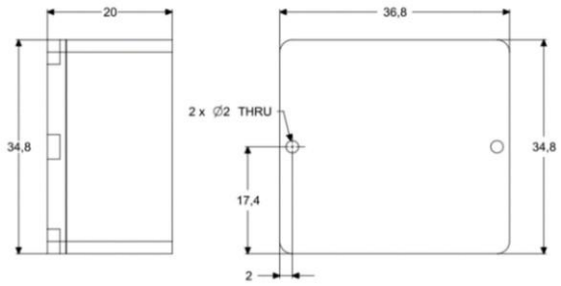

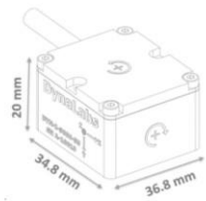

OPTIONS:

- Custom Cable Length (5m standard cable)
- Custom Housing Material
- Custom Connector

Standard length of the integrated cable is 5 meters. But, based on request customized cable lengths are possible. Standard version has no connector at the cable end. However, it is possible to assemble connector during production.

CABLE CODE/PIN CONFIGURATION:

• Red	: V+	Supply voltage
• Black	: Ground	Power GND
• X-Axis : Yellow	: Signal(+)	Positive, analog output voltage signal for differential mode
Purple	: Signal(-)	Negative, analog output voltage signal for differential mode
• Y-Axis : Blue	: Signal(+)	Positive, analog output voltage signal for differential mode
Green	: Signal(-)	Negative, analog output voltage signal for differential mode
• Z-Axis : White	: Signal(+)	Positive, analog output voltage signal for differential mode
Orange	: Signal(-)	Negative, analog output voltage signal for differential mode

• Red	: V+	Supply voltage 6V to 35V
• Black	: Ground	Power GND
• RX : Brown	: Signal	X-Axis: Analog output voltage signal for single-ended mode
• RY : Grey	: Signal	Y-Axis: Analog output voltage signal for single-ended mode
• RZ : Pink	: Gyro Signal	Z-Axis: Analog output voltage signal for single-ended mode
• White - Brown	: nc	Not connected

Cable: 12x #28 AWG Conductors PFA Insulated, Braided Shield, TPE Jacket

Protection Level	Operating Voltage	Operating Temperature	Weight (without cable)	Housing Material
IP 68	6V - 35V	-40 °C to +100	27.5 g (aluminum) 69.5 g (steel)	Aluminum or Steel

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