

MAKING SENSE OUT OF MOTION

ECV-INU eCompass Series

The Jewell ECV-IMU eCompass offers high accuracy in a small package. This low-cost, low power device provides stable azimuth, pitch, and roll measurements in dynamic conditions. This sensor consists of the following: 3-axis angular rate gyros, 3-axis accelerometer, 3-axis magnetometer and 2-axis electrolytic tilt sensor.

FEATURES:

- Exceptional dynamic performance
- High accuracy
- · Precise factory calibration
- Wide operating range
- RS-485 output
- · Fast response
- Low power





Dimensions: in [mm]

PIN OUT:

A	POWER (7V-45V)	D	Rx-
В	GROUND	Ε	Tx+
С	Rx+	F	Tx-





APPLICATIONS:

- Unmanned vehicles
- Robotics
- Platform stabilization
- Excavation machinery
- Rail



PERFORMANCE SPECIFICATIONS: ECV-IMU

PERFORMANCE

SENSOR	3-axis Accelerometer	3-axis Gyro	3-axis Magnetometer
INPUT RANGE	±2g	±250°/sec	±2G
IN-RUN BIAS STABILITY		<0.2°/sec	
NOISE DENSITY	<45 µg√Hz	<0.005°/sec√Hz	<29nV/√Hz
AXIS MISALIGNMENT	2%		±3% FS
RESOLUTION	<0.06 mg	<0.01°/sec	<27µG
BANDWIDTH		>30 Hz	

ELECTRICAL

SUPPLY VOLTAGE	+7.0 Vdc to +45 Vdc		
ELECTRICAL ISOLATION	1500 Vrms		
	Standby	5mA	
POWER CONSUMPTION	ldle	15mA	
	Operating	40mA	

BUILT-IN TESTS

TEMPERATURE SENSOR	Yes		
DIGITAL OUTPUT INTERFACE	RS-485 (Continuous streaming)		
	Acceleration (X, Y, & Z axis)	Rate Angular Speed (X, Y, & Z axis)	
ICD (DASIC FIELDS REFORTED)	50 Hz sampling speed	Compass Direction (X, Y, & Z axis)	

(See Data Packet on pg. 3)

MECHANICAL

WEIGHT	7.1 oz (201.4 g)	
DIMENSIONS	5.43" (138mm) x 2.38" (60.5mm) x 1.22" (31mm)	
HOUSING & BASE MATERIAL	Anodized and Alodine Aluminum	
CONNECTOR	6 Pos Circular Female Connector	



ENVIRONMENTAL

OPERATING TEMPERATURE	-40°C to +70°C	
STORAGE TEMPERATURE	-55°C to +85°C	
INGRESS PROTECTION	IP67	
FLAMABILITY	UL94 V-0	
FIRE PROTECTION	EN 45545 Hazard Level 3 (HL3)	
ALTITUDE	0 to 2500m above sea level	
ROHS COMPLIANT	Yes	

RELIABILITY

MILSTD 217 GM @ +25°C	147,200 hours
MILSTD 217 GM @ +45°C	76,300 hours

DATA PACKET

WORD INDEX	TRANSPORT LAYER NAME	NAME	DESCRIPTION	VALUE
1	Header	NA	Packet header	0x55AA
2	Length	NA	Packet length in bytes (from header to CS)	30
3	Data 1	Cmd	Command	0x0212
4	Data 2	Cnte	Packet counter	0-65535
5	Data 3	AccX	Accelerometer X-axis	0-65535
6	Data 4	AccY	Accelerometer Y-axis	0-65535
7	Data 5	AccZ	Accelerometer Z-axis	0-65535
8	Data 6	MagX	Magnetometer X-axis	0-65535
9	Data 7	MagY	Magnetometer Y-axis	0-65535
10	Data 8	MagZ	Magnetometer Z-axis	0-65535
11	Data 9	GyroX	Gyroscope X-axis	0-65535
12	Data 10	GyroY	Gyroscope Y-axis	0-65535
13	Data 11	GyroZ	Gyroscope Z-axis	0-65535
14	Data 12	Temp	Temperature	0-65535
15	CS	NA	Checksum (Sum from header to Data 12)	0-65535

Acc = acceleration signed fixed point 0.0625 = 1g Mag = magnetic North signed fixed point 0.0625 = 0.5 Gauss Gyro = angular speed signed fixed point $\pi/5760 = 1$ dps Temp = temperature signed fixed point T°C = 96.4*Temp+33

MATING CONNECTOR AND CABLE ASSEMBLIES

RS-485 TO DB9 & POWER CABLE



OTHER ACCESSORIES

110-240VAC TO 12VDC TRANSFORMER

USB TO RS-485 CONVERTER





ORDERING INFORMATION



850 Perimeter Road Manchester, NH 03103 USA