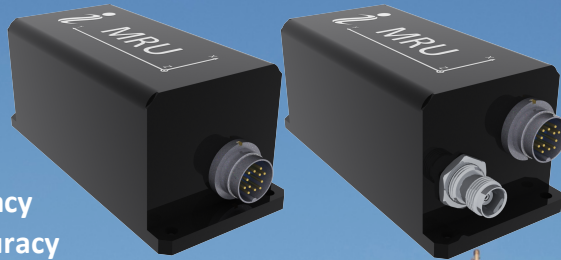


F.A.R.O. Motion Reference Units

- IP-67 sealed
- 5% / 5 cm Heave accuracy
- 0.03 m/sec Velocity accuracy
- 0.08 deg Pitch and Roll accuracy
- 0.005 m/sec² Acceleration accuracy
- 0.0002 deg/sec Angular rate accuracy
- NMEA 0183 and TSS1 output data format
- 60 cm real-time horizontal position accuracy
- 5 cm post processing horizontal position accuracy



MRU-B (Basic)
MRU-E (Enhanced)
MRU-P (Professional)



F.A.R.O.

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Measured Parameters	MRU-B Basic	MRU-E Enhanced	MRU-P Professional
Heave (% / cm)	+	+	+
Pitch & Roll (deg)	+	+	+
Heading (deg)		+	+
Velocity (meters/sec)			+
Positions (meters)			+

Parameter	Units	MRU-B Basic	MRU-E Enhanced	MRU-P Professional
Output signals		Heave, Pitch & Roll, Accelerations, Angular rates, Barometric data, Pulse Per Second (PPS)	Heave, Heading, Pitch & Roll, Accelerations, Angular rates, Barometric data, PPS	Heave, Heading, Pitch & Roll, Positions, Velocity, Accelerations, Angular rates, Barometric data, PPS
Update rate	Hz	1 ... 200 (user settable)	1 ... 200 (user settable)	1 ... 200 (user settable)
Start-up time	sec	<1	<1	<1
Full Accuracy Data (Warm-up Time)	sec	10	10	30
Heave	Units	MRU-B	MRU-E	MRU-P
Measurement range	meters	±300	±300	±300
Resolution	meters	0.01	0.01	0.01
Accuracy, RMS	% (meters)	5 (0.05)	5 (0.05)	5 (0.05)
Pitch and Roll	Units	MRU-B	MRU-E	MRU-P
Range: Pitch, Roll	deg	±90, ±180	±90, ±180	±90, ±180
Angular Resolution	deg	0.01	0.01	0.01
Static Accuracy in whole Temperature Range	deg	0.05	0.05	0.05
Dynamic Accuracy	deg RMS	0.08	0.08	0.08
Post processing accuracy ⁽¹⁾	deg RMS	0.03	0.03	0.03
Heading	Units	MRU-B	MRU-E	MRU-P
Range	deg	-	0 to 360	0 to 360
Angular Resolution	deg	-	0.01	0.01
Static Accuracy in whole Temperature Range	deg	-	0.3	0.2
Dynamic Accuracy	deg RMS	-	0.6	0.4
Post processing accuracy ⁽¹⁾	deg RMS	-	0.1	0.1
Positions, Velocity and Timestamps	Units	MRU-B	MRU-E	MRU-P
Horizontal position accuracy (DGPS), RMS	meters	-	-	0.4
Horizontal position accuracy (post processing) ⁽¹⁾	meters	-	-	0.05
Velocity accuracy, RMS	meters/sec	-	-	0.03
Timestamps accuracy	milliseconds	<5	<5	<5
Gyroscopes	Units	MRU-B	MRU-E	MRU-P
Measurement range	deg/sec	±450	±450	±450
Bias in-run stability (RMS, Allan Variance)	deg/hr	1	1	1
Noise density	deg/sec/Hz	0.004	0.004	0.004
Accelerometers	Units	MRU-B	MRU-E	MRU-P
Measurement range	g	±8	±8	±8
Bias in-run stability (RMS, Allan Variance)	mg	0.005	0.005	0.005
Noise density	mg/√Hz	0.015	0.015	0.015
Magnetometers	Units	MRU-B	MRU-E	MRU-P
Measurement range	Gauss	-	±1.6	±1.6
Bias in-run stability, RMS	nT	-	0.2	0.2
Noise density, PSD	nT/√Hz	-	0.3	0.3
Pressure	Units	MRU-B	MRU-E	MRU-P
Measurement range	hPa	300 – 1100	300 – 1100	300 – 1100
Bias in-run stability (RMS, Allan Variance)	Pa	2	2	2
Noise density	Pa/√Hz	0.8	0.8	0.8
Environment	Units	MRU-B	MRU-E	MRU-P
Operating temperature	deg C	-40 to +70	-40 to +70	-40 to +70
Storage temperature	deg C	-50 to +85	-50 to +85	-50 to +85
MTBF	hours	55,500	55,500	55,500
Electrical	Units	MRU-B	MRU-E	MRU-P
Supply voltage	V DC	9 to 36	9 to 36	9 to 36
Power consumption	Watts	1	1.4	2.6
Output Interface	-	RS-232, RS-422, RS-485	RS-232, RS-422, RS-485	RS-232, RS-422, RS-485
Output data format	-	Binary, TSS-1, NMEA 0183 ASCII characters	Binary, TSS-1, NMEA 0183 ASCII characters	Binary, TSS-1, NMEA 0183 ASCII characters
Physical	Units			
Size	mm	120 x 50 x 53	120 x 50 x 53	120 x 50 x 53
Weight	gram	220	280	320