TACTICAL GYRO MODULE

FEATURES

- Miniature in size
- Low Bias Instability
- Low Angle Random Walk
- Continuous Self-Diagnosis
- High Mechanical Shock Survivability, up to 1500 g
- RS422 Interface
- Ingress Protection, IP65
- MIL-STD-810G, MIL-STD-461F, MIL-STD-883, and JSS-55555 Compliant

APPLICATIONS

- Guidance, Navigation and Control
- Drone Navigation and Control
- Unmanned Ground Vehicle
- Flight Control Systems
- Robotics
- Guided Projectiles

DESCRIPTION

The CASTOR series model, CSTR-GYR1200 is a high-end tactical class gyro module consisting of high-performance triaxial Gyroscope sensor based on latest MEMS technology. This is equipped with a high-speed processor that runs the digital signal processing algorithms delivering control grade inertial measurement data. The gyro module output is available over the RS422 interface. Its rugged and modular design makes it suitable for integration with control computers and other application hardware.

The sensing elements of each axis are factory-calibrated for bias, mis-alignment and are compensated for temperature effects to be usable across the entire operating temperature range. The miniature gyro module, CSTR-GYR1200 offers 0.6°/hr bias instability performance and is suitable for inertial guidance and control applications where size is the constraint.

TECHNICAL SPECIFICATIONS

Parameter Name	Parameter Value			Unit	Remarks
Gyro	**Min**	**Typical**	**Max**		
Bias Instability[1]	-	0.6	-	°/hr	At 25°C
ARW	-	0.1	-	°/√hr	262 Hz LPF, at 25°C
Range		±480		°/s	-
Bias Range	-250	+2	+250	°/hr	-
Bandwidth		262		Hz	-3dB (262 Hz LPF)
Noise Density	-	0.002	-	°/s/√Hz	-
Resolution		24		bits	-
Scale Factor Accuracy	-	≤500	-	ppm	at 25°C for ±450°/s
Non-Linearity[3]	-	10	-	ppm	from -250°/s to +250°/s
	-	20	-		from -400°/s to +400°/s
Bias Repeatability	-	3	-	°/hr	-
Misalignment	-	1	-	mrad	-
Bias Error Over Temperature[9]	-	50	-	°/hr	-
Bias Error Over Temperature Gradient[10]	-	70	-	°/hr	-
Electrical					
Input Voltage[5,6]		4.5 to 5.5		VDC	-
Power Consumption		1.2		W	Tolerance: ±0.5 W
Diagnostics		Continuous onboard temperature, voltages, sensor health monitoring		-	-
Update Rate		Up to 2000		Hz	-
VSUP to GND		-0.5 to +7		VDC	Absolute maximum rating
ExtTrig to GND		-0.3 to +7			
TOV to GND		-0.3 to +7			
NRST to GND		-0.3 to +7			
RxD+ or RxD- to GND		-0.3 to +7			
RxD+ to RxD-		-4 to +4			with 120Ω, Line Termination = ON
TxD+ or TxD- to GND		-8 to +8			
Communication Interface					
Hardware		RS422, External Trigger Input, Time of Validity (TOV)		-	-
Software		Binary		-	-
Baud rate		374400 to 1843200		bits/s	-
RS422 Line Termination					
Input Resistance[8]	-	120	-	Ω	Line Termination = ON
	300	-	-	kΩ	Line Termination = OFF

TECHNICAL SPECIFICATIONS

Parameter Name	Parameter Value			Unit	Remarks
	Min	Typical	Max		
Reset (NRST PIN)					
Logic Levels[8]	2.6	-	-	VDC	High
	-	-	1.6		Low
Minimum Hold Time for Reset		1		µs	-
Pull-Up Resistor	-	100	-	kΩ	-
Timing					
Time to transmit after power ON		0.27		sec	-
Time to transmit after Reset		0.26		sec	-
Time to first valid data		0.275		sec	-
Physical					
Dimensions		37.6 (L) x 43.8 (W) x 19 (H)		mm	Tolerance: ±0.3 mm
Weight		60		gm	Tolerance: ±4 gm
Connector		Micro-D Connector Pin: MDA215SFSP4		-	Device Connector
		Micro-D Connector-Socket: MDA215P4L150S		-	Mating Connector
Fixation Bolts		M4		metric	Or similar bolts can be used to strap down
Recommended Torque[8]		3		Nm	-
Environmental					
Operating Temperature[7]		-40 to +85		°C	-
Storage Temperature		-55 to +90		°C	-
Mechanical Shock[2]		1500/ 0.5 ms half-sine		g	-
Ingress Protection		IP65		-	-

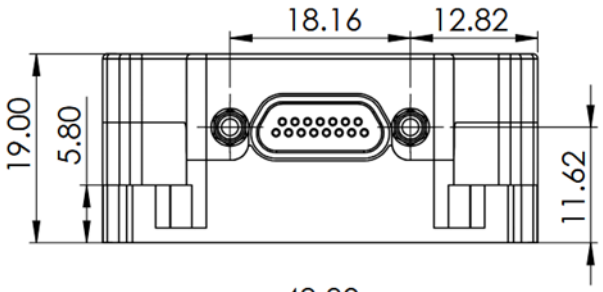
Note:

1. Bias Stability > 1°/Hr when measured in a 1g environment over a period of one month and with respect to a fixed calibration value.
2. As per MIL-STD-883F Method 2002.4 Test Condition B.
3. Largest deviation from the BSL (Best Straight Line) over the range specified.
4. The parameter has been tested for short term duration.
5. At supply voltages above 6.5 V (nominal value) an internal voltage protection circuit will cut power and the unit will go into reset until the voltage is back within operating conditions.
6. At supply voltages below 3.7 V (nominal value) the unit will go into reset until the voltage is back within operating conditions.
7. Extended exposure to temperatures that are lower than -40°C or higher than +85°C can adversely affect the accuracy of the factory calibration.
8. Tolerance ±5%.
9. RMS value calculated on the residuals at static temperature over the operating temperature range.
10. RMS value calculated on the residual over one temperature cycle.

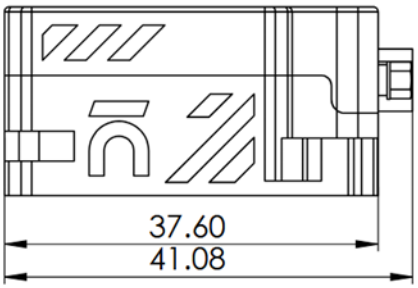
MECHANICAL DIMENSIONS

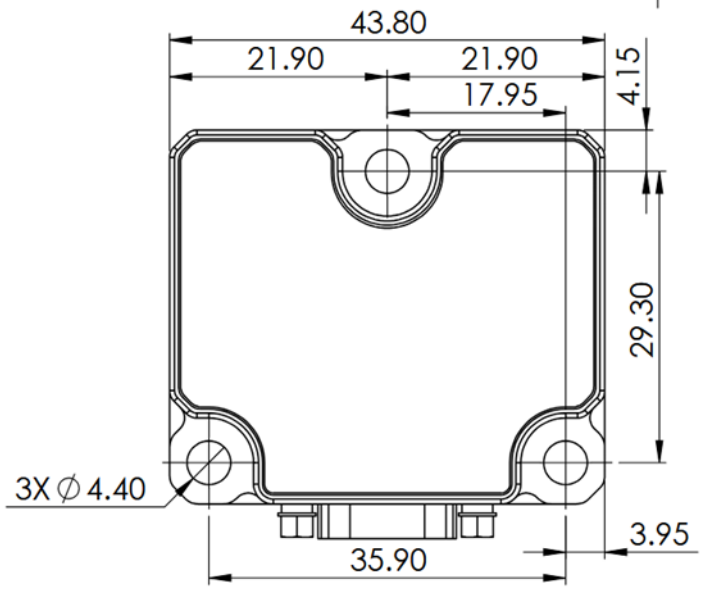
All dimensions are in mm, unless specified.

FRONT VIEW



LHS VIEW





TOP VIEW

ISOMETRIC VIEW

ORDERING INFORMATION

Device:

CSTR-GYR1200 (Product Code: 26012)

Accessories:

Mating Connector (Product Code: 06501)