



QMS & CERTS
AS9100D

DIGS™ 100

Utility Downhole Inertial Guidance System
with Toolface Software

Cage Code: 47L11
Division of
LKD Aerospace
SAM Registered
JCP certified

Low Noise Inertial MEMS Rugged Low Cost Sensors & Systems

Automated Testing

Comprehensive ERP
Environmental Test Lab:

- Shock
- Vibration
- Temperature Calibration
- G-Sensitivity
- Axis Alignment
- Centrifuge
- GPS Simulation

Products:

Gyros
Accelerometers
IMU
VG
AHRS
VG/GPS
GPS/AHRS
INS/GPS

- Utility Downhole Orientation Module
- Rugged Environmentally Sealed Packaging Meets IP68
- 1" Diameter X 2.28" Length
- Yaw and Toolface Angles $0.5^\circ 1\sigma$
- Pitch and Roll Angles $0.1^\circ 1\sigma$
- In-Run Gyro Bias $5\%/hour 1\sigma$
- Low Gyro Noise $0.0028^\circ/sec/\sqrt{Hz}$
- Low Accel Noise $0.075mg/\sqrt{Hz}$
- Light Weight $\leq 43 grams$
- Compensated Misalignment $1mrad$ and g-Sensitivity $<0.01\%/sec/g 1\sigma$
- External Sync Input (1 kHz)
- Low Power $< 305 mW$ Maximum
- Low Voltage +5 V (single sided power)
- Data Rate 100 Hz or 200 Hz (AHRS mode)

Applications

Utility Directional
Drilling & Guidance
Vertical Wells

Export Classification:
Commerce
ECCN7A994 (NLR)

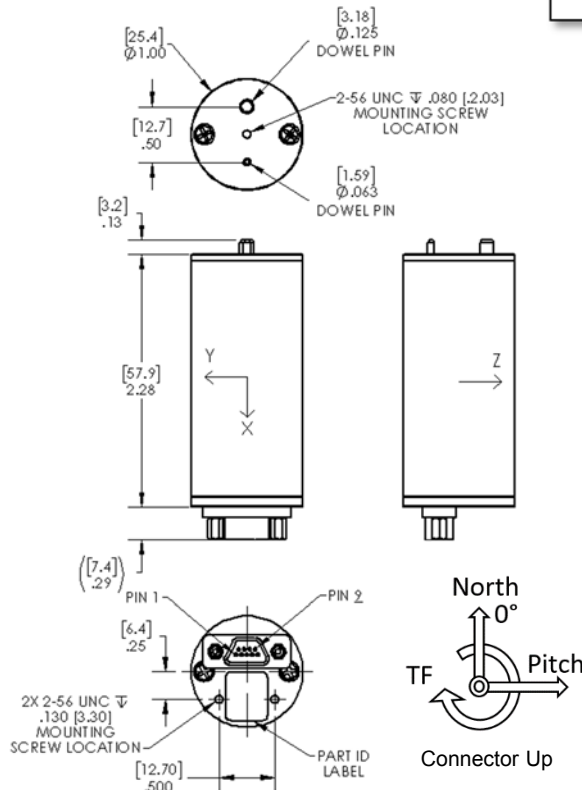


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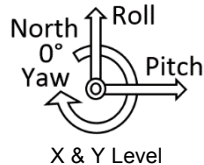


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DIGS™ 100



Axes (Top View)
Right Hand Rule



DIGS™ 100

P/N: DIGS100-490-15-100

Specification

PARAMETER	RATE AXES	ACCEL AXES
Range	±490°/sec	±15g's
Yaw & Toolface Angle (magnetic)	± 0.5° 1σ	
Pitch & Roll Angles	± 0.1° 1σ	
Bias (In Run Stability)	5°/hour 1σ	45μg 1σ
Angle Random Walk	0.0028° /sec/√Hz 1σ	0.075mg /√Hz 1σ
Bias (Over Temp.)	< 0.1°/sec 1σ	< 1mg 1σ
Scale Factor Error %	≤ 0.05% (over temperature) 1σ	
Scale Factor Non-Linearity % of Full Scale	0.1%	
Sensor Resolution	0.002°/sec	0.05mg
Alignment	1mrad 1σ	
G-Sensitivity	< 0.01°/sec/g 1σ	
Self Test On	NA	Δ 0.25 ±0.15g
Temp Range	Operating: Non-Operating:	-40°C to +105°C -55°C to +125°C
RS422/RS485 Data Rate	100 Hz or 200 Hz	
Temp Sensors	Internal Temperature Sensors	
Start-up Time	< 0.3 sec	
Input Power	+3.8 V to +5.5 V Max. Input (single sided)	
Power Consumption	< 255 mW at 3.3 V Typical < 305 mW at 3.3 V Maximum	
Size	U.S.: Metric:	1.0 ø x 2.28 = 1.79 in ³ 2.54 ø x 5.79 = 29.3 cm ³
Weight	≤ 43 grams	
Mounting	3ea No.2-56 Screws	
Shock	500g's ½ sine 1 msec powered	
Vibration	69 _{rms} (20 Hz to 2 kHz ~ 10g accelerometers)	
MTBF	124,334 hrs (per MIL-STD-217F, Notice 2 and ANSI/VITA 51.1-2008 with environment: ARW at 55°C Ambient)	

Pin No.	Assignment
1	RS-422/485 A (+)
2	RS-422/485 B (-)
3	Power Ground (Twist with Power)
4	Analog/Digital Input (0 V to 3.6 V)
5	+3.8 V to 5.5 V Max Input Power
6	External Sync Input (1 kHz 3.3 V logic)
7	Signal Ground
8	Self Test In (3.3 V Logic)
9	Case

Note: This symbol denotes a Twisted Pair

Note: Any unused inputs (Pins 4, 6, 9) must be connected to Signal Ground (Pin 7).

Outputs	Serial Sequence at 200 Hz
1, 2, 3	Gyros: Roll (X), Pitch (Y), Yaw (Z)
4, 5, 6	Accelerometers: (X), (Y), (Z)
7	IMU Temperature ± 0.5° C typical
8, 9, 10	Magnetometers: (X), (Y), (Z)
11,12,13,14	Angles: Roll, Pitch, Yaw, Toolface
15	Velocity (As Input if available)

Specification subject to change without notice



Rev. 17Nov28
SN: 300