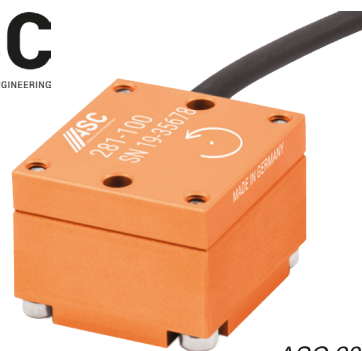




## ASC 281 (UNIAXIAL)

Angular Rate Sensors



ASC 281 (Uniaxial)

### SPECIFICATIONS

- Uniaxial
- Tactical Grade
- Analog Voltage Output
- Detachable Cable
- Aluminium Housing
- Made in Germany

### FEATURES

- Rotation Rate:  $\pm 100^\circ/s$  and  $\pm 200^\circ/s$
- Excellent Bias and Scale Factor Stability
- Very Low Bias Instability
- Excellent Angular Random Walk
- FOG-like Performance
- Protection Class IP 67

### OPTIONS

- Customised Cable Length
- Customised Connector

### APPLICATIONS

- Automated Guided Vehicles
- Autonomous Driving Systems
- Mid-Term Navigation
- Gyro-Compassing
- Ship Guidance and Control
- Platform Stabilisation
- AHRS, Flight Instruments
- AUV and ROV Guidance

### MEMS VIBRATING RING TECHNOLOGY

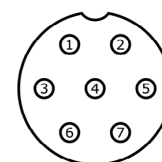
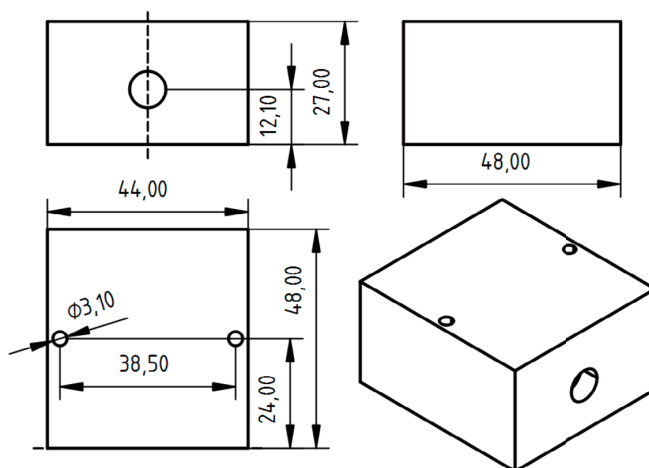
ASC's precision navigation and pointing gyroscopes are made of robust silicon MEMS vibrating ring elements. The gyro detects the magnitude and direction of angular velocity by using the coriolis force effect. As the gyro is rotated, coriolis forces acting on the silicon ring cause radial movement at the ring perimeter, the magnitude of which is proportional to the angular velocity of rotation. The gyro thus produces an analog voltage signal, which is linearly proportional to angular rate. The balanced ring design results in excellent shock and vibration insensitivity.

### DESCRIPTION

ASC's uniaxial tactical grade gyroscope ASC 281 can be powered by a DC power supply (+6V to +30V) where the output voltage is independent of the supply. The excellent long-term bias and scale factor repeatability with low noise allows accurate operation of the angular rate sensor. The MEMS vibrating ring gyroscopes are available with rate ranges of  $\pm 100^\circ/s$  and  $\pm 200^\circ/s$ . The gyroscope features also a very low bias instability of  $0.12^\circ/hr$  and an excellent angular random walk of  $0.017^\circ/\sqrt{hr}$  leading to a FOG-like performance. The gyroscope sensors are made of lightweight anodised aluminium housing and feature a 4-pin Comtronic connector and a detachable cable.

ASC's precision navigation and pointing gyros are available in two versions: 281 (uniaxial) and 283 (triaxial).

ASC 281 (Uniaxial)



#### Pin-Assignment

- 1: GND
- 2: VCC / Supply+
- 3: Signal
- 4: REF
- 5: Temperature



**TYPICAL SPECIFICATIONS**

**Model Number: ASC 281 (Uniaxial)**

**Type: Tactical Grade Gyros**

**DYNAMIC**

Measurement Range	°/s	±100	±200
Sensitivity	mV/°/s	20	10
Bandwidth (max.)	Hz	100	
Non-Linearity	%	typ. 0.02, max. ±0.05	
Bias Instability	°/hr	0.12	
Angular Random Walk	°/√hr	0.017 (Allan Deviation; τ=1s)	
Vibration Induced Noise	°/s/g <sup>2</sup>	0.01	
Shock Limit	g	Operating: 95g x 6ms half-sine    Powered Survival: 1000g x 1ms half-sine	
g-Sensitivity (Linear Acceleration)	°/s/g	0.02	

**ELECTRICAL**

Excitation Voltage	V DC	8 to 30	
Current Consumption	mA	75	
Bias (Signal-Ref)	mV	±10	
Isolation		Case Isolated	

**ENVIRONMENTAL**

Bias Variation with Temperature (referred to the value at +25°C)	°/s	typ. ±0.15, max. ±0.25	
Sensitivity Variation over Temperature % (referred to the value at +25°C)		typ. ±15, max. ±0.5	
Operating Temperature Range	°C	-40 to +85	
Storage Temperature Range	°C	-40 to +100	
Protection Class		IP67	

**PHYSICAL**

Sensing Element		MEMS Vibrating Ring	
Case Material		Anodised Aluminium	
Connector		7-pin Comtronic	
Mounting		M3 screws	
Weight (without cable)	gram	250	
Cable		Shielded PUR, AWG 30, Diameter: 3.0 ± 0.1 mm	

Note: All values are typical at +25°C, unless otherwise specified



## CALIBRATION

A factory calibration certificate is provided with each sensor. A DAkkS certified (Deutsche Akkreditierungsstelle, DAkkS, to DIN EN ISO / IEC 17025) calibration can be provided upon request.

## ORDERING INFORMATION

Model Number	Range	Cable Length	Connector & Pinout
ASC 281 (Uniaxial)	XXX	Y	A: open-ended cable (no connector at the DAQ end)
	100: $\pm 100^\circ/s^2$ : 2m (supplied with the sensor)		
	200: $\pm 200^\circ/s$		
ASC 283		4 : 4m 6 : 6m 10 : 10m	

Example: ASC 281-100-2-A

## QUALITY

- ASC GmbH is ISO 9001:2015 certified.
- The Deutsche Akkreditierungsstelle GmbH (DAkkS) has awarded to our calibration laboratory the DIN EN ISO/IEC 17025:2018 accreditation for calibrations and has confirmed our competence to perform calibrations in the field of mechanical acceleration measurements. The pictured DAkkS-ILAC logo refers exclusively to the accredited service.
- All ASC products are **CE**-compliant.