YOUR PARTNER FOR INTELLIGENT SENSOR SOLUTIONS

ACCELEROMETERS • TILT SENSORS • GYROS •
INERTIAL MEASUREMENT UNITS • R&D • ENGINEERING

KVALITEST
INDUSTRIAL

ASC
GERMAN SENSOR ENGINEERING

Dear Customer,

With innovative, proven, reliable and accurate accelerometers, tilt sensors, gyros and Inertial Measurement Units (IMUs), ASC sees its role as your competent and innovative partner for your future sensor applications.

As established specialists in high-quality sensor technology, we have both the ambition and the flexibility to serve our customers with customized solutions so that they can cope with their challenges and outdo even the hardest requirements. We are used to deliver low quantities up to small series.

In this brochure we are going to present several new products as digital and analog solutions.

In addition to a large variety of analog sensors, ASC is increasingly developing and manufacturing digital sensor solutions. We work in close cooperation with our customers and serve target industries such as rail technology, the automotive industry, the construction industry, the wind energy sector or the area of industrial applications.

ASC is participating in several research projects to develop intelligent digital sensor solutions for various condition monitoring solutions as well as predictive maintenance solutions for individual applications. In the course of digitization 4.0 we will push the development of digital sensor systems.

We are a competent and an innovative partner for you offering suitable solutions for your future challenges.

ASC – smart in motion!

Renate Bay
CEO

Applications & Markets

ASC – high-quality sensor engineering for many key industries and test applications.

As an owner-managed company a main value for us is the close co-operation with our customers. Following thus their success is very often built on our innovative sensor solutions.

ASC transforms analog sensor technology into intelligent digital sensor solutions. And yes, we are proud to call it **'German Sensor Engineering'**.

We can offer the probably world's most comprehensive range of capacitive accelerometers. Our valuable portfolio has been built on the trust of our customers in close partnership.

The product range is completed by piezoresistive and piezoelectric accelerometers, tilt sensors, gyros and Inertial Measurement Units (IMUs). High-quality sensors from our own production – made in Germany and deployed worldwide.

ASC sensors, analog or digital, are specially designed to meet the individual requirements of demanding applications.

ASC has valuable references in special measurement solutions tailored to meet the needs of key industries such as:

- **Automotive**
- **Rail Transportation**
- **Aerospace**
- **Agriculture**
- **Civil Engineering**
- **Renewable Energy**
- **Shipping**
- **Automation Engineering**
- **Structural Health Monitoring**
- **Condition Monitoring**

Of course, our sensors can be used in even more key industries than listed above. They are able to measure with high precision, reliable and with high quality.

Our development engineers are more than happy to develop special sensor solutions with our customers for their applications, even for small series.


Automotive


Rail Transportation

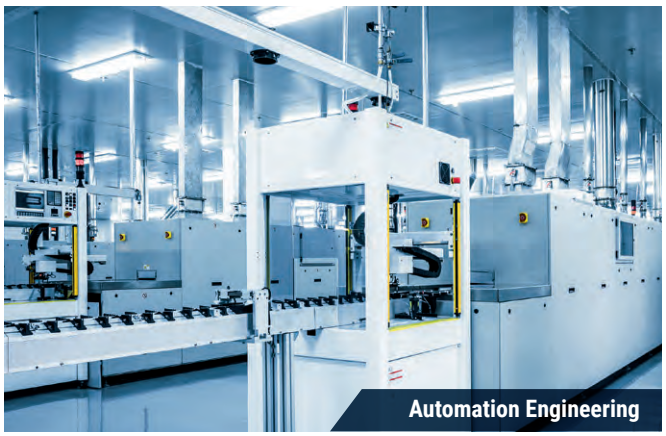

Aerospace


Agriculture


Civil Engineering


Renewable Energy


Shipping

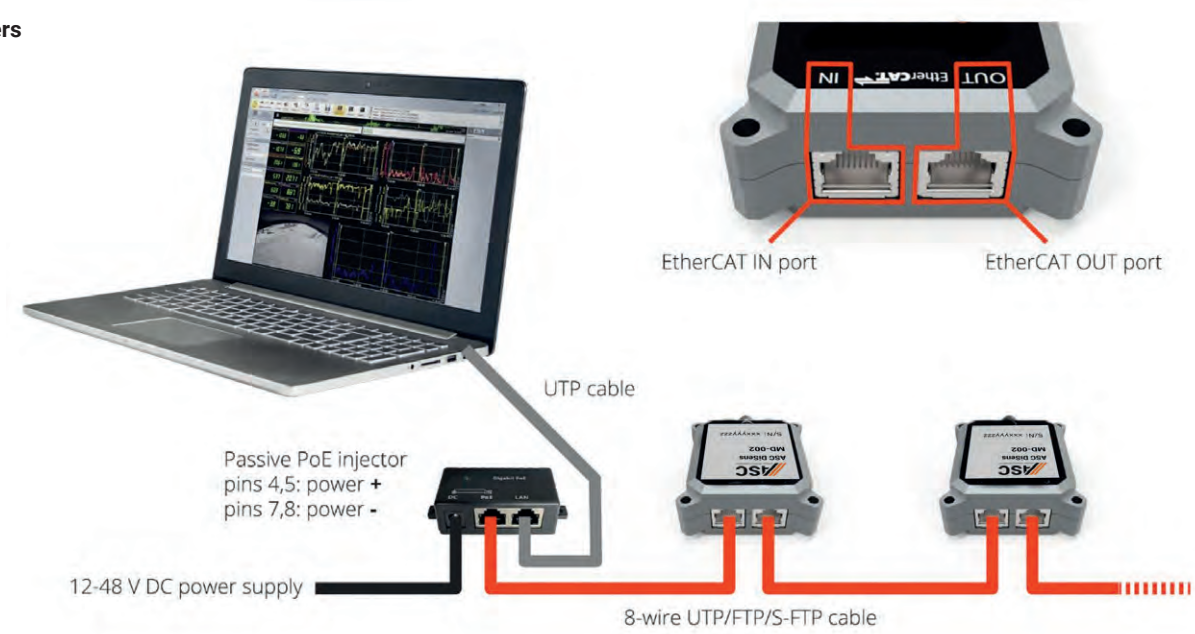

Automation Engineering


Structural Health Monitoring

Contents

Daisy Chaining for ASC DiSens MD series

Daisy Chaining offers the opportunity to connect several ASC DiSens MD sensors over long distances.



Power Supply Voltage	Cable Length (Device-To-Device)	Cable Size	Max. Number of Devices from a Single Power Supply
24V	1 m	AWG 24	8
24V	50 m	AWG 24	4
48V	1 m	AWG 24	12
48V	50 m	AWG 24	10

Digital Accelerometer

Triaxial

Technology
The ASC DiSens series is a novel ASC sensor solution with digital interfaces. It combines highquality sensors with an integrated data acquisition system, so that separate data acquisition is no longer necessary.

Due to the transmission of digital data, many interferences no longer play a role, which is particularly important for long cable lengths. The series begins with the new MD model, a triaxial digital accelerometer. The sensor has 2g, 4g and 8g measurement ranges, which are set via the integrated software. The acceleration values are transmitted as raw data via the EtherCAT protocol to a host system.

There they are processed by a separate analysis software. With an active power supply, up to 12 devices can be connected via daisy chaining.
The included DEWESoft X3 software package provides many advantages for the daily test and measurement work such as time savings and easy recording, analysis and reporting.

Applications
Structural Health Monitoring, Bridge Monitoring, Seismic Measurements, Mobile Network Antenna, Structural Monitoring, Vibration Monitoring on Construction Machines, Condition Monitoring on Machines and Equipment

Cable
Standard network cable (SFTP) Cat6e.

Digital Accelerometer Triaxial	Model	ASC DiSens MD
	Housing Material	Aluminium
	Weight	105g

Measurement Range (to be set via the integrated software) g		±2	±4	±8
-3 dB Bandwidth	Hz	typ. 1000		
Noise Density (±2g)	µg√Hz	typ. 25		
Offset Error	mg	min. -75 typ. ±25 max. +75		
Offset Temp. Drift (-40°C to +125°C)	mg/°C	min. -0.15 typ. ±0.02 max. +0.15		
Sensitivity Temp. Drift (-40°C to +125°C)	%/°C	typ. ±0.01		
Linearity Error (-1g to +1g)	%FS	typ. 0.1		
Sample Rate	kHz			max. 4
Operating Temperature	°C	-20 to +60		
Digital Interface		EtherCAT		
Protection Class		IP20		

Applications for Accelerometers

ASC accelerometers can be used in countless applications for measuring vibration, acceleration and shock.

ASC offers a very deep product portfolio on capacitive accelerometers.

Sensor type	Application example	Industry sector
ASC 4411LN	Analyse the vibration on the gondola by a test bench	Wind Energy
ASC 4321MF	Measurement of the acceleration on shaking tables	Industry
ASC 4415LN	Vibration Monitoring on cars	Automotive
ASC 4421MF **ASC OS-115LN** **ASC OS-125MF**	Vibration Monitoring on bogies	Railway
ASC 4425MF	Automotive impact tests in the interior area	Automotive
ASC 5411LN	Various measurements on machines, buildings, foundations etc. (mostly R & D research projects or measurements when problems with existing installations occur)	Industry
ASC 5411LN	Car Comfort Measuring	Automotive
ASC 5421MF	As part of a research project, the flow around a rotor blade of a wind turbine is investigated. For this purpose, the measuring equipment is mounted on the surface of the blade. In order to measure the stresses of the blade at the same time, the acceleration sensor is used to determine the local acceleration.	Renewable Energy
ASC 5421MF	Bench Testing	Automotive
ASC 5521MF	Harvester head monitoring for R & D purposes	Agriculture
ASC 5521MF	Vehicle tests for measurement of strain, force, vibration, temperature, etc. on field	Automotive
ASC 5521MF **ASC 4321MF**	Monitoring of the engine acceleration	Automotive
ASC OS-115LN	Bridge Monitoring	Civil Engineering
ASC CS-1611LN	Bridge Monitoring / HongKong - Zhuhai - Macao Bridge	Civil Engineering
ASC CS-1711LN	Used in the repair of special rail vehicles. Herewith, fixed traction devices are measured.	Railway
ASC CS-1511LN	Bridge Monitoring	Civil Engineering
ASC 61C1 **ASC 74C1**	For product development in case / shock test: The aim is to determine the "G-forces" that occur when a test object (approx. 2 kg) hits the ground vertically	Industry
ASC 62C1	All kinds of Crash Test Applications	Automotive
ASC 62C2	Crash sled, fall / shock test	Automotive
ASC P401A15 **ASC OS-115LN**	The sensors are installed in the locomotive to measure the forces of the axle bearings	Railway
ASC P311A15	Education and research activities in the Dynamics and Vibration Laboratory of the Faculty of Mechanical Engineering (vibration measurements of metallic parts) on a shaker	Railway
ASC P203A11	Modal analysis on traverses of a robot. The accelerations of the robot are in the range of ± 5g	Industry
ASC P203A12	Vibration generator is used in wall elements	Mechanical Engineering

MEMS Capacitive Accelerometers

Uniaxial

Technology
ASC's 3511LN accelerometers have the lowest spectral and broadband noise of the 35 series accelerometers. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.
ASC's 3532MF accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) accelerometers have excellent resistance against repetitive shocks as high as 6000g and can work, even with voltages as low as +5VDC.

The housing of the 3511LN and 3521MF have a PG-screw at the cable exit.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Automotive Ride Quality & Comfort, Flutter Test

Cables
ASC 3511LN and 3521MF have an integrated cable.

ASC 3511LN Cable
Art. Nr. 12300
- 3 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter

ASC 3521MF Cable
Art. Nr. 12244
- 3.1 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 13 gram/meter

Options
TEDS / Customised cable length / Customised connectors

Low Noise (LN)	Model	ASC 3511LN
	Housing Material	Aluminium
	Weight	22g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-20 to +100				–	-20 to +100			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP65								

Medium Frequency (MF)	Model	ASC 3521MF
	Housing Material	Aluminium
	Weight	22g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Frequency Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature	°C	-20 to +100			–	-20 to +100				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP65								

MEMS Capacitive Accelerometers

Uniaxial

Technology
ASC's 4111LN accelerometers have the lowest spectral and broadband noise of the 41 series accelerometers. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Automotive Ride Quality & Comfort, Flutter Test

Cables
ASC 4111LN has an integrated cable.

ASC 4111LN
Art. Nr. 12300
- 3 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter

Options
TEDS / Customised cable length / Customised connectors

Low Noise (LN)	Model	ASC 4111LN
	Housing Material	Aluminium
	Weight	3g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-20 to +80				–	-20 to +80			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP67								

MEMS Capacitive Accelerometers

Uniaxial

Technology
ASC's 4211LN accelerometers have the lowest spectral and broadband noise of the 42 series accelerometers. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

ASC's 4221MF accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) accelerometers have excellent resistance against repetitive shocks as high as 6000g and can work up to +80°C, even with voltages as low as +5VDC.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Automotive Ride Quality & Comfort, Flutter Test

Cables
ASC 4221LN and 4221MF have an integrated cable.

ASC 4211LN and 4221MF
Art. Nr. 12300
- 3 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter

Options
TEDS / Customised cable length / Customised connectors

Low Noise (LN)	Model	ASC 4211LN
	Housing Material	Aluminium
	Weight	3g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-20 to +80				–	-20 to +80			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP67								

Medium Frequency (MF)	Model	ASC 4221MF
	Housing Material	Aluminium
	Weight	3g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Frequency Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature	°C	-20 to +80			–	-20 to +80				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP67								

MEMS Capacitive Accelerometers

Uniaxial

Technology
ASC's 4311LN and 4315LN accelerometers have the lowest spectral and broadband noise of the 43 series accelerometers. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

ASC's 4321MF and 4325MF accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) accelerometers have excellent resistance against repetitive shocks as high as 6000g and can work up to +125°C, even with voltages as low as +5VDC.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Automotive Ride Quality & Comfort, Flutter Test, Seismic Monitoring, Tilt Measurements

Cables
ASC 4311LN, 4315LN, 4321MF and 4325MF have an integrated cable.

ASC 4311LN / 4315LN Cable
Art. Nr. 12300
- 3 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter

ASC 4321MF / 4325MF Cable
Art. Nr. 12244
- 3.1 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 13 gram/meter

Options
TEDS / Customised cable length / Customised connectors

Low Noise (LN)

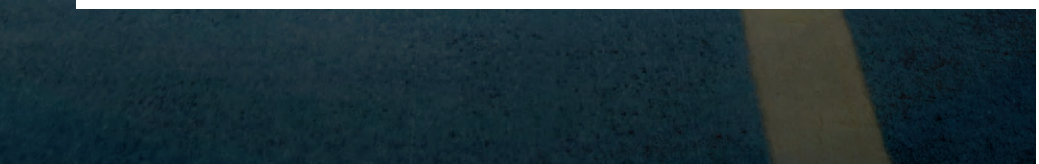
Model	ASC 4311LN	ASC 4315LN
Housing Material	Aluminium	Stainless Steel
Weight	7g	19g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-40 to +100				–	-40 to +100			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP65								

Medium Frequency (MF)

Model	ASC 4321MF	ASC 4325MF
Housing Material	Aluminium	Stainless Steel
Weight	7g	19g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Frequency Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature	°C	-55 to +125			–	-55 to +125				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP65								



MEMS Capacitive Accelerometers

Uniaxial

Technology
ASC's 4411LN and 4415LN accelerometers have the lowest spectral and broadband noise of the 44 series accelerometers.
ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

ASC's 4421MF and 4425MF accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) accelerometers have excellent resistance against repetitive shocks as high as 6000g and can work up to +125°C, even with voltages as low as +5VDC.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Automotive Ride Quality & Comfort, Flutter Test, Seismic Monitoring, Tilt Measurements

Cables
ASC 4411LN, 4415LN, 4421MF and 4425MF have an integrated cable.

ASC 4411LN / 4415LN Cable
Art. Nr. 12300
- 3 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter

ASC 4421MF / 4425MFCable
Art. Nr. 12244
- 3.1 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 13 gram/meter

Options
TEDS / Customised cable length / Customised connectors

Low Noise (LN)

Model	ASC 4411LN	ASC 4415LN
Housing Material	Aluminium	Stainless Steel
Weight	10g	22g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-40 to +100				–	-40 to +100			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP67								

Medium Frequency (MF)

Model	ASC 4421MF	ASC 4425MF
Housing Material	Aluminium	Stainless Steel
Weight	10g	22g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Frequency Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature	°C	-55 to +125			–	-55 to +125				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP67								

MEMS Capacitive Accelerometers

Triaxial

Technology
ASC's 5411LN and 5415LN accelerometers have the lowest spectral and broadband noise of the 54 series accelerometers. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

ASC's 5421MF and 5425MF accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) accelerometers have excellent resistance against repetitive shocks as high as 6000g and can work up to +125°C, even with voltages as low as +5VDC.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Automotive Ride Quality & Comfort, Flutter Test, Seismic Monitoring, Tilt Measurements

Cables
ASC 5411LN, 5415LN, 5421MF and 5425MF have an integrated cable.

ASC 5411LN / 5415LN Cable
Art. Nr. 12309
- 4.5 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 30 gram/meter

ASC 5421MF / 5425MF Cable
Art. Nr. 14077
- 4.5 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 27 gram/meter

Options
TEDS / Customised cable length / Customised connectors

Low Noise (LN)

Model	ASC 5411LN	ASC 5415LN
Housing Material	Aluminium	Stainless Steel
Weight	20g	40g

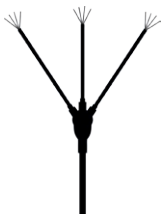
Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-40 to +100				–	-40 to +100			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP65								

Medium Frequency (MF)

Model	ASC 5421MF	ASC 5425MF
Housing Material	Aluminium	Stainless Steel
Weight	20g	40g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Amplitude Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature	°C	-55 to +125			–	-55 to +125				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP65								

Cable Configuration



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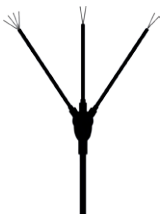
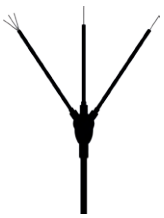
X-Y-Z-Axis
Supply +
Supply –
Signal +
Signal –



Order Code: 8L3

X-Axes	*Y-Z-Axis*
Supply +	
Supply –	
Signal +	Signal +
Signal –	Signal –



Order Code: 5L3 (Single Ended)

X-Axes	*Y-Z-Axis*
Supply +	
Supply/Signal –	
Signal +	Signal +

Order Code: 12L

X-Y-Z-Axis
Supply +
Supply –
Signal +
Signal –

Order Code: 8L

X-Axes	*Y-Z-Axis*
Supply +	
Supply –	
Signal +	Signal +
Signal –	Signal –

Order Code: 5L (Single Ended)

X-Axes	*Y-Z-Axis*
Supply +	
Supply/Signal –	
Signal +	Signal +

MEMS Capacitive Accelerometers

Triaxial

Technology
ASC's 5511LN and 5515LN accelerometers have the lowest spectral and broadband noise of the 55 series accelerometers. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

ASC's 5521MF and 5525MF accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) accelerometers have excellent resistance against repetitive shocks as high as 6000g and can work, even with voltages as low as +5VDC.

The housing of the ASC 55 series has a PG-screw at the cable exit.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Automotive Ride Quality & Comfort, Flutter Test, Seismic Monitoring, Tilt Measurements

Cables
ASC 5511LN, 5515LN, 5521MF and 5525MF have an integrated cable.

ASC 5511LN / 5515LN Cable
Art. Nr. 12309
- 4.5 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 30 gram/meter

ASC 5521MF / 5525MF Cable
Art. Nr. 14077
- 4.5 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 27 gram/meter

Options
TEDS / Customised cable length / Customised connectors

Low Noise (LN)

Model	ASC 5511LN	ASC 5515LN
Housing Material	Aluminium	Stainless Steel
Weight	22g	42g

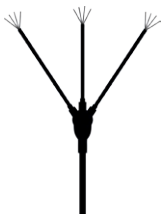
Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-20 to +100				–	-20 to +100			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP67								

Medium Frequency (MF)

Model	ASC 5521MF	ASC 5525MF
Housing Material	Aluminium	Stainless Steel
Weight	22g	42g

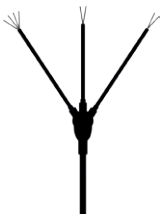
Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Frequency Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature	°C	-20 to +100			–	-20 to +100				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP67								

Cable Configuration



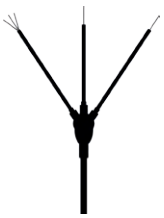
Order Code: 12L3

X-Y-Z-Axis
Supply +
Supply –
Signal +
Signal –



Order Code: 8L3

X-Axes	*Y-Z-Axis*
Supply +	
Supply –	
Signal +	Signal +
Signal –	Signal –



Order Code: 5L3 (Single Ended)

X-Axes	*Y-Z-Axis*
Supply +	
Supply/Signal –	
Signal +	Signal +

Order Code: 12L

X-Y-Z-Axis
Supply +
Supply –
Signal +
Signal –

Order Code: 8L

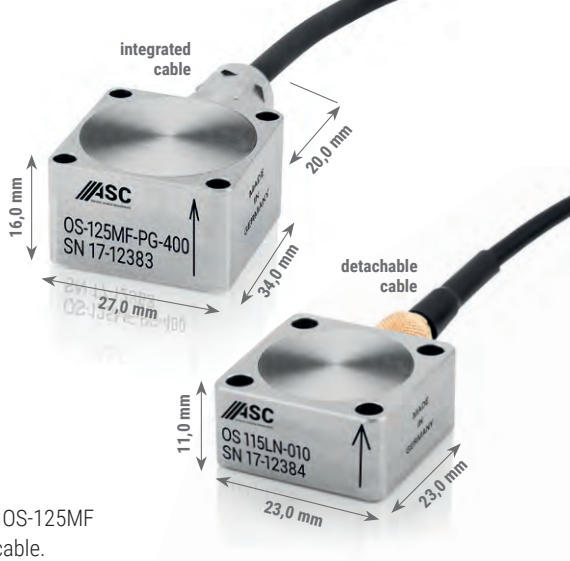
X-Axes	*Y-Z-Axis*
Supply +	
Supply –	
Signal +	Signal +
Signal –	Signal –

Order Code: 5L (Single Ended)

X-Axes	*Y-Z-Axis*
Supply +	
Supply/Signal –	
Signal +	Signal +

MEMS Capacitive Accelerometers

Uniaxial



Technology
ASC's OS-115LN and OS-115LN-PG accelerometers have the lowest spectral and broadband noise of the OS series accelerometers. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

ASC's OS-125MF and OS-125MF-PG accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) accelerometers have excellent resistance against repetitive shocks as high as 6000g and can work up to +125°C, even with voltages as low as +5VDC.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Ride Quality & Comfort

Cables
ASC OS-115LN and OS-125MF have a detachable cable.
ASC OS-115LN-PG and OS-125MF-PG have an integrated cable.

ASC Cable K1: Art. Nr. 12868
- 3.0 mm Diameter
- Polyurethane (PUR)
- AWG 30
- waterproof

ASC Cable K2: Art. Nr. 15342
- 2.75 mm Diameter
- Fluorethylenpropylen (FEP)
- AWG 30
- waterproof

Options TEDS / Titanium housing / Customised cable length / Customised connectors

Low Noise (LN)	Model	ASC OS-115LN	ASC OS-115LN-PG
	Housing Material	Stainless Steel	Stainless Steel
	Weight	31g	68g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature OS-115LN	°C	-15 to +70 (K1) / -55 to +125 (K2)				–	-15 to +70 (K1) / -55 to +125 (K2)			
Operating Temperature OS-115LN-PG	°C	-15 to +70 (K1) / -20 to +100 (K2)				–	-15 to +70 (K1) / -20 to +100 (K2)			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP68								

Medium Frequency (MF)	Model	ASC OS-125MF	ASC OS-125MF-PG
	Housing Material	Stainless Steel	Stainless Steel
	Weight	31g	68g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Frequency Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature OS-125MF	°C	-15 to +70 (K1) / -55 to +125 (K2)			–	-15 to +70 (K1) / -55 to +125 (K2)				–
Operating Temperature OS-125MF-PG	°C	-15 to +70 (K1) / -20 to +100 (K2)			–	-15 to +70 (K1) / -20 to +100 (K2)				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP68								

MEMS Capacitive Accelerometers

Biaxial & Triaxial

Technology
ASC's OS-215LN-PG biaxial and OS-315LN-PG triaxial accelerometers have the lowest spectral and broadband noise. ASC's LN (Low-Noise) accelerometers have an excellent signal-to-noise ratio, which is critical while performing demanding low-frequency, low-amplitude measurements.

ASC's OS-225MF-PG and OS-325MF-PG accelerometers have a wide frequency response from 0 Hz to 7 kHz (±3 dB typ.) and are best suited for low to medium frequency measurements. ASC's MF (Medium-Frequency) acce-lero-meters have excellent resistance against repetitive shocks as high as 6000g and can work up to +100°C, even with voltages as low as +5VDC.

Applications
Structural Monitoring and Testing, Endurance Testing, Brake Test, Vibration Monitoring, Modal Analysis, Vehicle Testing, Ride Quality & Comfort

Cables
The biaxial and triaxial ASC OS series have an integrated cable.

ASC Cable K3: Art. Nr. 12301
- 3.75 mm Diameter
- Polyurethane (PUR)
- AWG 30
- waterproof

ASC Cable K4: Art. Nr. 15344
- 3.75 mm Diameter
- Fluorethylenpropylen (FEP)
- AWG 30
- waterproof

Options
TEDS / Titanium housing / Customised cable length / Customised connectors

Low Noise (LN)	Model	ASC OS-215LN-PG	ASC OS-315LN-PG
	Housing Material	Stainless Steel	Stainless Steel
	Weight	68g	68g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Operating Temperature	°C	-15 to +70 (K3) / -20 to +100 (K4)				–	-15 to +70 (K3) / -20 to +100 (K4)			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	6 to 40				–	6 to 40			
Protection Class		IP68								

Medium Frequency (MF)	Model	ASC OS-225MF-PG	ASC OS-325MF-PG
	Housing Material	Stainless Steel	Stainless Steel
	Weight	68g	68g

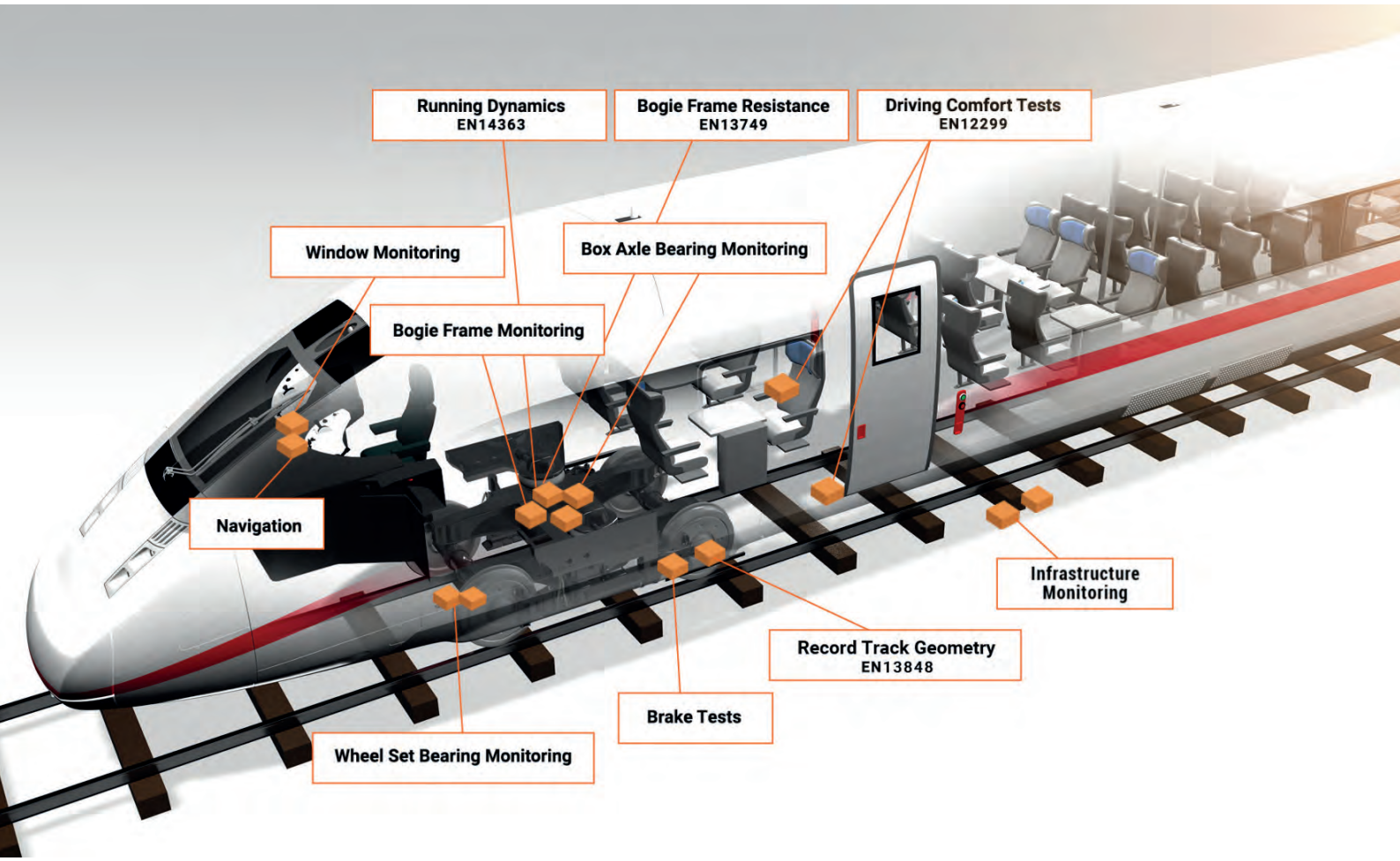
Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	1350	540	270	–	90	54	27	13.5	–
Frequency Response (±5%)	Hz	0 to 700		0 to 1400	–	0 to 1600	0 to 1800			–
Spectral Noise	µg/√Hz	10	20	35	–	100	170	340	680	–
Thermal Zero Shift	mg/°C	0.2	0.5	1	–	3	5	10	20	–
Thermal Sensitivity Shift	%/°C	0.012			–	0.012				–
Operating Temperature	°C	-15 to +70 (K3) / -20 to +100 (K4)			–	-15 to +70 (K3) / -20 to +100 (K4)				–
Shock Limit (sensitive axis)	g_{pk}	6000			–	6000				–
Excitation Voltage	V DC	5 to 40			–	5 to 40				–
Protection Class		IP68								

Applications for RAIL

ASC RAIL sensors may be used for measurements in many different applications.

Just to list a few examples.

Sensor type	Application example	Industry sector
ASC RAIL-115LN and ASC RAIL-315LN	**Running Dynamics according to EN14363** The EN14363 codifies testing and simulation for the acceptance of running characteristics of railway vehicles. Running behaviour and stationary tests.	Railway
	Bogie Frame Resistance according to EN13749 The EN13729 codifies static and fatique load assumptions, as well as calculations and test methods to varify the static and fatique resistance of the bogie frame.	Railway
	Ride Comfort Tests according to EN12299 EN12299 for measurement and evaluation of ride comfort for rail passengers.	Railway
	Recording the quality of the track geometry according to EN13848 Characterisation of track geometry.	Railway
	All applications in trains for vibration analysis in regular train operation.	Railway



MEMS Capacitive Accelerometers

Uniaxial

Technology
ASC's RAIL series accelerometers are based on the capacitive sensing technology and produce an analog voltage output proportional to the input acceleration. The accelerometers can measure both static (gravity) and dynamic accelerations. ASC's RAIL series can be used for very low to medium frequency vibration measurements from 0Hz to 1kHz.

The sensors can be supplied by a power supply (+10 VDC to +30 VDC) where the output voltage is independent of the supply. The sensors operate in a differential configuration with ±4V full-scale output. The differential configuration results in an improved signal-to-noise ratio with less noise and better performance.

ASC's RAIL series sensors can be used in a wide temperature range from -40°C to +85°C (according to EN 50155, OT5). The sensors demonstrate exceptional temperature stability, very low non-linearity (<0.5%) and can withstand shocks as high as 5000 g's (measurement range dependent).

ASC's RAIL series feature a rugged, corrosion-proof stainless-steel housing and are confirm to RoHS-directive and are compatible with EN45545.

ASC Rail series tested according to EN50155:2017:
- Test of electromagnetic compatibility EMC:
  Complete test EN50121-3-2:2016
- Partial test EN50155:2017-10
  – Storage at low temperature (-40°C)
  – Low temperature ramp-up
  – Dry Heat Test Cycle "C" (test temperature +85°C)
  – Vibration test on wheelset, test according category 3
  – Shock test according category 3 ("Wheelset")

Cables
ASC RAIL series has an integrated cable.

ASC Rail series
Art. Nr. 15630
- 8.1 mm Diameter
- RADOX Tenius TW 600V
- 12 x 0,5 mm²

Options
- Customised cable length
- Customised connectors

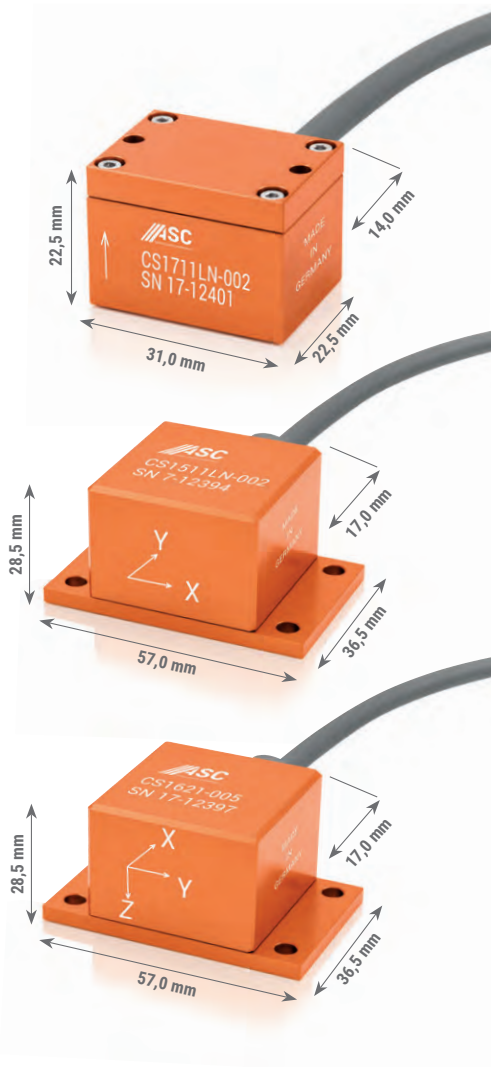
ASC Rail series tested according to EN50155

ASC Rail	Model	ASC Rail-115LN	ASC Rail-315LN
	Housing Material	Stainless Steel (V2A)	Stainless Steel (V2A)
	Weight	112g	112g

Measurement Range	(g)	±2	±5	±10	±25	±30	±50	±100	±200	±400
Sensitivity	mV/g	2000	800	400	160	–	80	40	20	10
Frequency Response (±5%)	Hz	0 to 100		0 to 300	0 to 500	–	0 to 650		0 to 1000	
Spectral Noise	µg/√Hz	7	12	18	25	–	50	100	200	400
Thermal Zero Shift	mg/°C	0.15	0.5	1	2.5	–	5	10	20	40
Thermal Sensitivity Shift	%/°C	0.02				–	0.02			
Temperature Range	°C	-40 to +85				–	-40 to +85			
Shock Limit (<0.1ms)	g_{pk}	2000		5000		–	5000			
Excitation Voltage	V DC	10 to 30				–	10 to 30			
Protection Class		IP68								
Mounting		4 x M3 screws + mounting plate								
Cable		12x0,5mm² Radox Tenius-TW 600V MM S; 130g/meter; Diameter 8.1±0.3mm								

MEMS Capacitive Accelerometers (Current Output)

Uniaxial, Biaxial & Triaxial



Technology
ASC's CS series is the 4-20 mA current output version of the MEMS capacitive accelerometers.

LN (Low-Noise) series of the CS type has an extremely low broadband noise, 0.2 µA typ.

ASC's CS series accelerometers are typically used in applications that demand usage of extremely long cables (>100m).
Due to their excellent immunity against EMI and loss-free signal transmission over long cables, the CS series is used for SHM applications such as bridge monitoring, among others.

Applications
Bridge Monitoring, Seismic Applications, Geology, Wind Energy, Industrial Process Control & Predictive Maintenance

Cables
ASC's CS series accelerometers feature an integrated cable and have a PG-screw at the cable exit.

Cable for ASC CS-1711LN (uniaxial)
Art. Nr. 13758
- 4.65 mm Diameter
- Polyvinylchlorid (PVC)
- 37 gram/meter

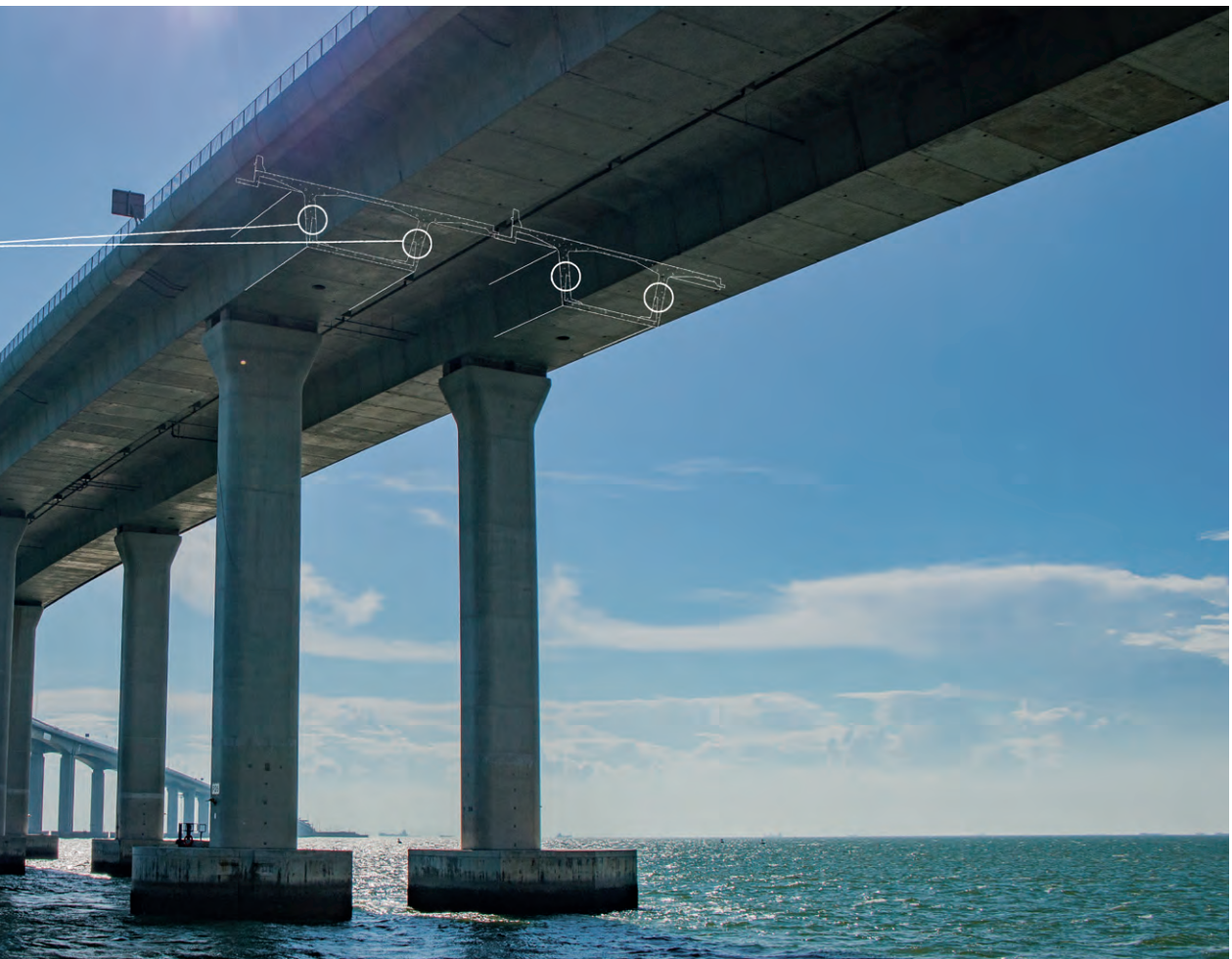
Cable for ASC CS-1511LN (biaxial)
Art. Nr. 12851
- 5.7 mm Diameter
- Polyvinylchlorid (PVC)
- 62 gram/meter

Cable for ASC CS-1611LN (triaxial)
Art. Nr. 13757
- 4.8 mm Diameter
- Polyurethane (PUR)
- 35.3 gram/meter

Options
- TEDS
- Customised cable length
- Customised connectors

		LN (Low Noise)
Uniaxial	**Model**	**ASC CS-1711LN**
	Housing Material	**Aluminium**
	Weight	**27g**
Biaxial	**Model**	**ASC CS-1511LN**
	Housing Material	**Aluminium**
	Weight	**35g**
Triaxial	**Model**	**ASC CS-1611LN**
	Housing Material	**Aluminium**
	Weight	**65g**

Measurement Range	**(g)**	**±2**	**±5**	**±10**	**±50**
Sensitivity	mA/g	4	1.6	0.8	0.16
Output Swing (Zero acceleration output)	mA	4 to 20 (12)			
Typ. ±5% Frequency Response	Hz	0 to 100	0 to 100	0 to 300	0 to 650
Typ. Spectral Noise (Ex. ±5g range)	µg/√Hz	10	15	20	100
Shock Limit	g_{pk}	2000		5000	
Excitation Voltage	V DC	8 to 30			
Temperature Range	°C	-20 to +70			
Protection Class		IP67			



ASC CS series is used to monitor the world's largest sea bridge: Hongkong-Macau

Applications for Tilt Sensors

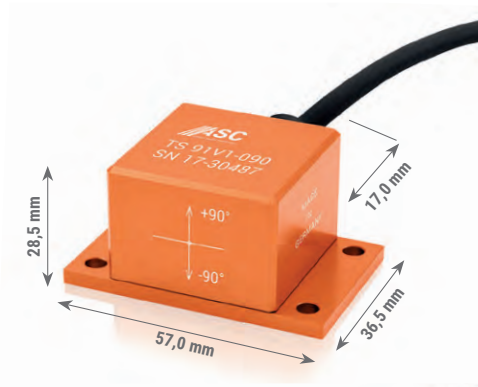
ASC tilt sensors may be used for static measurements in many different applications.

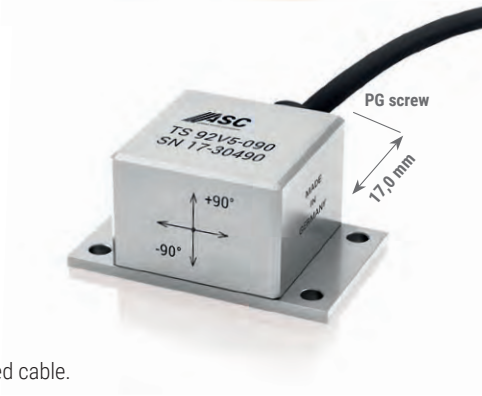
Just to list a few examples.

Sensor type	Application example	Industry sector
Uniaxial		
ASC TS-91V1	Train postioning systems	Railways
ASC TS-91V1	Platform levelling by antennas	Military
Biaxial		
ASC TS-92C1	Monitoring of platform movements of offshore facilities	Wind Energy
ASC TS-92C5	Condition and structure monitoring to stabilize oil platforms	Civil Engineering
ASC TS- 92C5	Structural monitoring to detection the inlinometer on the bridge	Civil Engineering
ASC TS-92V1	Equipment condition monitoring on loading and unloading containership	Shipping
ASC TS-92V1	Research and Development: For measuring the ship's position in roll and pitch direction for model ships	Marine
ASC TS- 92V1	Geotechnical monitoring of critical locations	Geotechnical
ASC TS-92V1	Modal analysis on the structural dynamics area to monitor the bearing structure	Civil Engineering
ASC TS-92V5	Structural Health Monitoring on the tower crane to detect the properties of the system	Civil Engineering

MEMS Tilt Sensors (Inclinometers)

Uniaxial & Biaxial





Technology
ASC's Tilt Sensors measure the static acceleration where the earth's gravity is the acceleration being measured. The sensor is based on a MEMS capacitive accelerometer sensing element. The change in degrees of tilt corresponds to a change in acceleration due to a changing component of gravity that acts on the accelerometer.

The accelerometer experiences acceleration from ±1g by full scale output of ± 2V. The low-g accelerometer with high sensitivity results in the highest degree of resolution of a tilt measurement.
The analog voltage output from the tilt sensor can be converted to the degree of tilt.

The tilt sensors have an excellent long-term bias stability (0.1°) with a high resolution of (0.005°). The low temperature coefficient of bias is perfect on test results. The wide temperature range, -25°C to +100°C, with a high shock limit enables best work.
In addition the stainless steel housing with its IP68 rating is qualified for harsh applications.

Applications
Structural Health Monitoring and Survey, Bridge Monitoring, Geotechnical monitoring of critical locations in-place of inclinometers, Solar Array Tracking Systems, Positioning Systems

Cables
ASC TS series has an integrated cable.

ASC TS-91V1 and TS-92V1
Art. Nr. 14077
- 4.5 mm Diameter
- Polyurethane (PUR)
- AWG 30

ASC TS-91V5 and TS-92V5
Art. Nr. 15344
- 3.75 mm Diameter
- Fluorethylenpropylen (FEP)
- AWG 30
- waterproof

Options
- TEDS
- Customised cable length
- Customised connectors
- 4-20mA Current Output

Tilt Sensors (TS)	Model	ASC TS-91V1	ASC TS-91V5	ASC TS-92V1	ASC TS-92V5
	Housing Material	Aluminium	Stainless Steel	Aluminium	Stainless Steel
	Weight	78g	192g	78g	192g

Axis		1		2	
Measurement Range	°	±15; ±90		±15; ±90	
Resolution	°	0.005		0.005	
Long-term Bias Stability (one year)	°	0.1		0.1	
Spectal Noise	µg/√ Hz	0.001		0.001	
Temperature Coefficient of Bias	°/°C	0.02		0.02	
Temperature Coefficient of Sensitivity	%/°C	0.03		0.03	
Operating Temperature	°C	-25 to +100	-35 to +120	-25 to +100	-35 to +120
Shock Limit	g_{pk}	5000		5000	
Excitation Voltage	VDC	6 to 40		6 to 40	
Protection Class		IP67	IP68	IP67	IP68

Applications for Digital Fluidic Tilt Sensor

ASC TSF-360-CAN may be used for static measurements in many different applications.

Just to list a few examples.

Sensor type	Application example	Industry sector
ASC TSF-360-CAN	Train positioning systems	Railways
	Platform levelling by antennas	Military
	Monitoring of platform movements of offshore facilities	Wind Energy
	Condition and structure monitoring to stabilize oil platforms	Civil Engineering
	Structural monitoring to detection the inlinometer on the bridge	Civil Engineering
	Equipment condition monitoring on loading and unloading containership	Shipping
	Research and Development: For measuring the ship's position in roll and pitch direction for model ships	Marine
	Geotechnical monitoring of critical locations	Geotechnical
	Modal analysis on the structural dynamics area to monitor the bearing structure	Civil Engineering
	Structural Health Monitoring on the tower crane to detect the properties of the system	Civil Engineering
	Levelling of construction machinery	Civil Engineering

Digital Fluidic Tilt Sensor

Uniaxial

Technology
The new sensor ASC TSF-360 uses the physical effect that the surface of liquids is always aligned exactly horizontally due to gravity. By means of a suitable electrode arrangement, the angle between the sensors and the horizontal is capacitively measured with a dielectric liquid.

The analog measurements are digitized, calculated and output as angles via a digital interface (CAN/CANopen). Therefore the user doesn't need a separate data acquisition system anymore.

In contrast to the MEMS-based tilt sensors, the ASC TSF-360 has a very low transverse tilt sensitivity due to the liquid-based measuring principle.

Compared to conventional tilt sensors, this sensor can be used as a 360° version. The sensor with internal temperature compensation operates with a high accuracy of < ±0.1° over the entire measuring range. The sensor can be used anywhere on earth because the measured value is independent of the magnitude of the acceleration due to gravity at the measuring point.

The sensor's aluminium housing complies with protection class IP67 and is therefore also suitable for use in harsh environments.

Applications
Automotive, Special Vehicle Construction, Mechanical Engineering, Civil Engineering, Aviation Technology, Marine Engineering, Environmental Engineering, Solar Technology

Cable
Standard CAN cable with connector CAN M12-5pin.

Digital Fluidic Tilt Sensors (TSF)	Model	ASC TSF-360-CAN
	Housing Material	Aluminium
	Weight	80g

Measurement Range	°		360
Resolution	°		0.01
Accuracy (+10°C to +40°C)	°		0.1
Other Temperature Ranges	°		0.15
Measurement Rate	ms		< 180
Excitation Voltage	V DC		+9 to +36
Data Transfer Rate	kbit/s		250
Temperature Coefficient			internally compensated
Operating Temperature	°C		-40 to +85
Storage Temperature	°C		-40 to +85
Protection Class			IP67

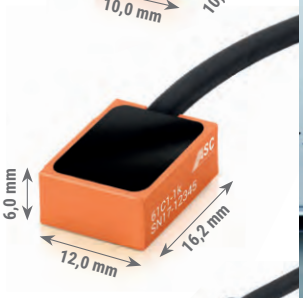
MEMS Piezoresistive Accelerometers

Uniaxial

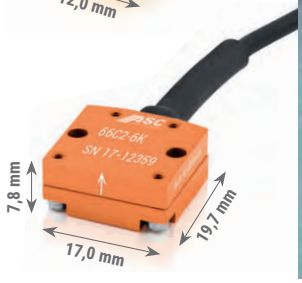
Technology
ASC´s uniaxial piezoresistive accelerometers are made of advanced piezo-resistive MEMS sensing elements that offer exceptional dynamic range and stability. The units feature a full Wheatstone bridge output configuration and an operating temperature range from -20°C to +80°C or -40°C to +100°C. Minimal internal gas damping provides an excellent non-linearity (±1%), outstanding shock survivability (up to 5000g and 10000g) and ±5% frequency response from DC to 2.5 kHz as well as 4000 Hz.
The ASC 66C2 is excellent for higher performance of temperature, shock and frequency response.

Applications
Crash testing, Shock testing, Package testing

Cables
ASC's uniaxial piezoresistive accelerometers feature an integrated cable.



Cable for ASC 61C1, 62C1, 66C1 and 66C2
Art. Nr. 12300
- 3.1 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter



Options
- Dallas ID
- customised cable length
- customised connector

Uniaxial	Model	ASC 61C1	ASC 62C1	ASC 66C1	ASC 66C2
	Housing Material	Aluminium	Aluminium	Aluminium	Aluminium
	Weight	3g	3g	5g	5g

Measurement Range	g		±500 ±1000 ±2000		±6000
Typ. Sensitivity*	mV/g		0.4 0.15 0.13		0.10
Typ. ±5% Frequency Response	Hz		0 to 2500		0 to 4000
Temperature Range	°C		-20 to +80		-40 to +100
Excitation Voltage	V DC		3 to 10		3 to 10
Shock Limit	g_{pk}		5000		10000
Protection Class			IP67	IP65	IP65

*calibrated at 10VDC

MEMS Piezoresistive Accelerometers

Triaxial

Technology
ASC's triaxial piezoresistive accelerometers are made of advanced Piezoresistive MEMS sensing elements that offer exceptional dynamic range and stability. The units feature a full Wheatstone bridge output configuration and an operating temperature range from -20°C to +80°C. Minimal internal gas damping provides an excellent non-linearity (±1%), outstanding shock survivability (up to 5000g) and ±5% frequency response from DC to 2.5 kHz.

Applications
Crash Testing, Shock testing, Package testing

Cables
ASC's triaxial Piezoresistive accelerometers feature an integrated cable.

Cable for ASC 74C1, 75C1 and 76C1
Art. Nr. 12309
- 4.4 mm Diameter
- Polyurethane (PUR)
- AWG 30

Options
- Dallas ID
- customised cable length
- customised connector

Triaxial	Model	ASC 74C1	ASC 75C1	ASC 76C1
	Housing Material	Aluminium	Aluminium	Aluminium
	Weight	16g	13g	12g

Measurement Range	g		±500 ±1000 ±2000
Typ. Sensitivity*	mV/g		0.4 0.15 0.13
Typ. ±5% Frequency Response	Hz		0 to 2500
Temperature Range	°C		-20 to +80
Excitation Voltage	V DC		3 to 10
Shock Limit	g_{pk}		5000
Protection Class			IP65

*calibrated at 10VDC

Piezoelectric IEPE Accelerometers

Uniaxial

Technology
ASC's Piezoelectric IEPE accelerometers are made of PZT ceramics. The sensors feature a built-in charge to voltage converter and a pre-amplifier that outputs low-impedance voltage signal. ASC's uniaxial IEPE accelerometers require a constant current excitation to operate.

ASC offers uniaxial IEPE sensors for Test & Measurement and Industrial applications. The high-frequency IEPE sensors are robust, high shock resistant, hermetic and operate over a wide temperature range.

Applications
General Purpose Vibration & Shock Monitoring, Test & Measurement Applications, Modal Applications, High-Frequency Applications

Cables
ASC's P101 and P401 series feature a detachable cable, KPU-xxx
- 10-32 UNF to BNC
- PFA Jacket; Insulated AWG30 Conductors
- Operating temperature: -55°C bis +200°C
- 12 gram/meter

ASC's P311 series feature a detachable cable, KPI-x-yyy
- 2-pin MIL to open-ended
  Options:
- PUR: -40°C to +90°C; IP68; Oil resistant
- Braided ETFE: -65°C to +150°C; IP65; Durable
- Silicon: -50°C to +150°C; IP68; High flexibility and temperature resistance

IEPE uniaxial	Model side connector top connector	ASC P101A15 ASC P101A25	ASC P401A15	ASC P311A15 ASC P311A25
	Housing Material	Stainless Steel	Stainless Steel	Stainless Steel
	Weight	8.6g / 7.3g	11g	185g / 125g

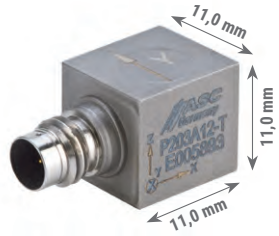
Measurement Range	g		±50 ±100 ±500 ±1000	±50 ±100 ±500	±32 ±80 ±160
Sensitivity	mV/g		100 50 10 5	100 50 10	250 100 50
Typ. ±1 dB Frequency Response*	Hz		0.3 to 10000	0.5 to 15000	0.5 to 6000
Constant Current Excitation	mA		2 to 10	2 to 20	0.5 to 8
Temperature Range	°C		-55 to +125	-55 to +150	-55 to +140
Shock Limit	g_{pk}		5000		
Protection Class			Hermetic (IP68)		
TEDS			yes	yes	no

* depends on the measurement range

Piezoelectric IEPE Accelerometers

Triaxial

Technology
ASC's triaxial Piezoelectric IEPE accelerometers are made of PZT ceramics. The sensors feature built-in charge to voltage converters and pre-amplifiers that outputs low-impedance voltage signals. ASC's triaxial IEPE accelerometers require a constant current excitation to operate wherein all three axes work independently, enabling single axial supply. This option provides the flexibility to power only one or two axes during uniaxial or biaxial measurements



ASC offers triaxial IEPE sensors for Test & Measurement applications. The high-frequency IEPE sensors are light-weight, robust, high shock resistant, hermetic and operate over a wide temperature range.

ASC's triaxial Piezoelectric IEPE accelerometers feature a detachable cable.

Applications
General Purpose Vibration & Shock Monitoring, Test & Measurement Applications, Modal Applications, High-Frequency Applications

Cables
ASC's P203A11 and P203A12 feature a detachable cable, KPT-xxx
- 4-Pin Microtech to 3x BNC connector
- TPE Jacket; Insulated AWG28 Conductors
- Operating temperature: -55°C to +125°C

IEPE triaxial	Model	ASC P203A11	ASC P203A12
	Housing Material	Anodised Aluminium	Titanium
	Weight	7.3g	6g

Measurement Range g		±50 ±100 ±500 ±2000	
Sensitivity mV/g		100 50 10 2.5	
Typ. ±1 dB Frequency Response* Hz		1 to 9000	
Constant Current Excitation mA		2 to 10	
Temperature Range °C		-55 to +125	
Shock Limit g_{pk}		5000	
Isolation		Case isolated	Case grounded
Protection Class		Hermetic (IP68)	
TEDS		yes	

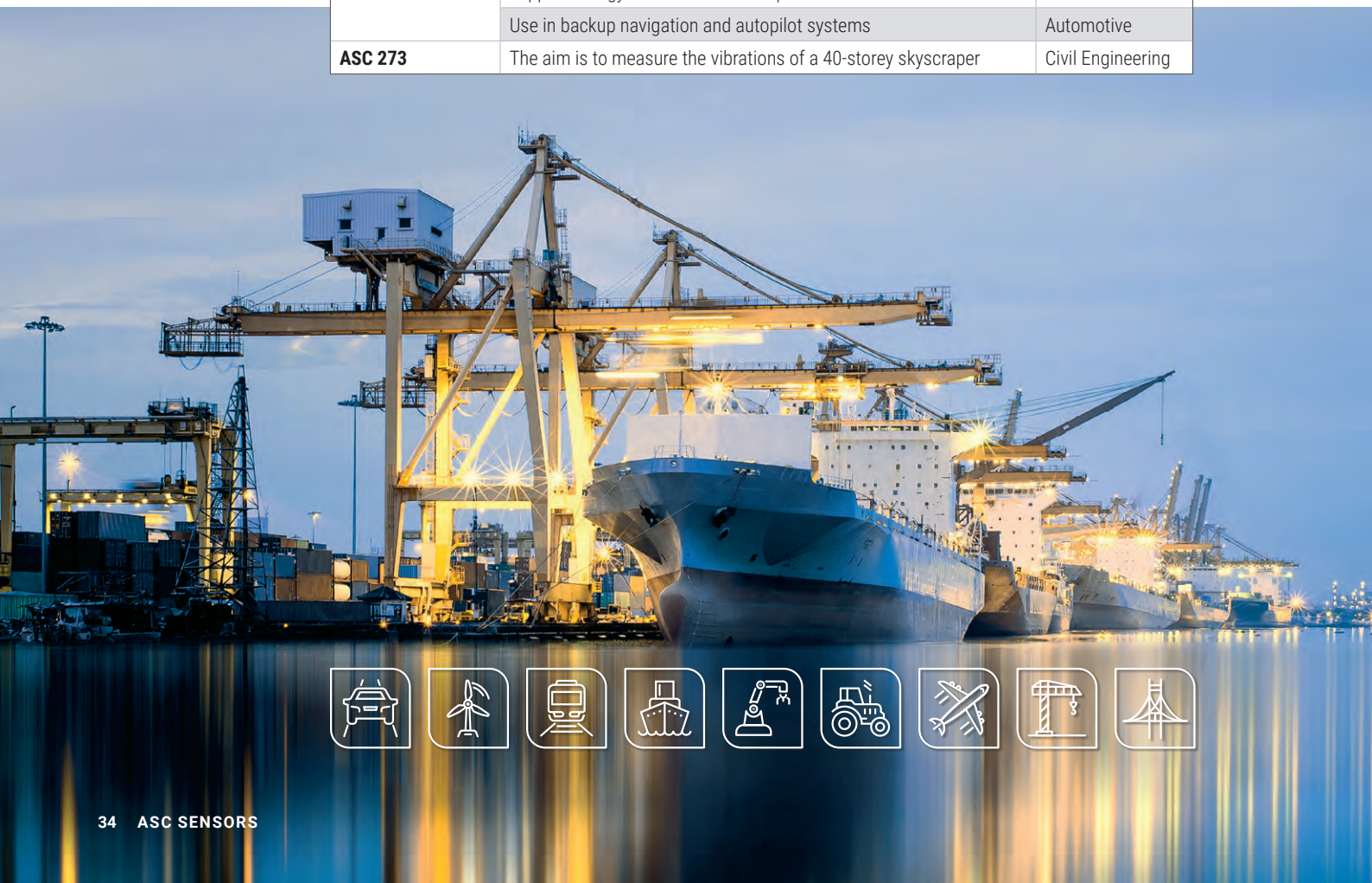
* depends on the measurement range

Applications for Gyros (Industrial Grade)

Gyros sense the rate of turn (angular velocity) of an object.

Here are just a few examples in which applications and markets ASC gyros can be used.

Sensor type	Application example	Industry sector
ASC 271	Measuring the orientation of driverless container transporters in ports	Shipping
	Test on telescope platform	Automotive
	The sensor is used for driving tests in vehicles and in particular for determining the yaw rate of trailers and motorcycles. Accordingly, moderate vibrations and shocks can occur	Automotive
	The sensors are used on the route Halle – Leipzig – Hannover. The sensors are mounted on the axle box and measure e.g. in a curve, the rotation around the vertical axis and the rotation around the axis in the direction of travel	Railway
	The gyroscope is mounted on the excavator. When the excavator rotates, parts in the machine are controlled. So that there only become active when the excavator comes to a standstill	Civil Engineering
	A manufacturer of car seats uses the ASC gyro to measure the angular speed of back- and arm-rests when folding up / down	Automotive
ASC 271 or ASC 273	Applied to measure the angle or rotation on-board a train (tram) while driving. The ASC gyros measure how much the passenger compartments tilt and swing while driving	Railway
	Detection of unwanted turning of an electro hydraulic grab. The gyro is used on a grab for automatic handling of waist. Sometimes there are long items like fire hoses and tarpaulin fixed in the waist and then the grab turns and twists the wire ropes and the cables. If this happens the gyro detects it and stops hoist movement	Civil Engineering
	Use in backup navigation and autopilot systems	Automotive
ASC 273	The aim is to measure the vibrations of a 40-storey skyscraper	Civil Engineering



MEMS Gyroscopes (Industrial Grade)

Uniaxial & Triaxial

Technology
ASC's precision navigation and pointing gyroscopes are made of robust silicon MEMS vibrating ring elements. 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 the angular rate. The balanced ring design results in excellent shock and vibration insensitivity.

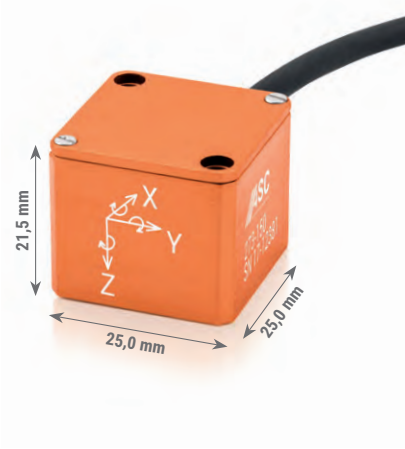
ASC's Industrial-grade MEMS gyros have excellent bias instability and very low noise density , angle random walk and sensitivity to linear accelerations.

Applications
Precision Navigation and Pointing, Automotive in-car Navigation – Precision GPS Vehicle and Personal Navigation Aiding (Dead Reckoning Navigation), Vehicle Yaw, Pitch and Roll Rate Sensing, Gesture Sensing, Motion Tracking, Precision Agriculture, Camera/Antenna/Plattform Stabilisation, Industrial and Robotics

Cables
ASC 271 and 273 series gyros feature an integrated cable.

Cable for ASC 271 (uniaxial)
Art. Nr. 12300
- 3 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter

Cable for ASC 273 (triaxial)
Art. Nr. 12309
- 4.4 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 30 gram/meter



Gyroscopes	Model	ASC 271 (uniaxial)	ASC 273 (triaxial)
	Housing Material	Aluminium	Aluminium
	Weight	10g	35g

Measurement Range	°/s	±75	±150	±300	±900
Sensitivity	mV/°/s	13.2	6.6	3.3	1.1
Bias (Offset)	V DC	1.65			
Rate Noise Density	°/s/√Hz	0.02			
Bias Stability	°/hr	9			
Angle Random Walk	°/√hr	0.2			
g-Sensitivity	°/s/g	0.1			
Max. Shock, Operational	g_{pk}	500			
Excitation Voltage	V DC	5 to 40			
Operating Temperature	°C	-40 to +85			
Bias Variation with Temperature (w.r.t. value at +25°C)	°/s	±3			
Sensitivity Variation over Temperature (w.r.t. value at +25°C)	%	±1.5			
Protection Class		IP65 (ASC 271), IP67 (ASC 273)			

Applications for Gyros (Tactical Grade)

Gyros sense the rate of turn (angular velocity) of an object.

Here are just a few examples in which applications and markets ASC gyros can be used.

Sensor type	Application example	Industry sector
ASC 281	Measuring the orientation of driverless container transporters in ports	Shipping
	The sensor is used for driving tests in vehicles and in particular for determining the yaw rate of trailers and motorcycles. Accordingly, moderate vibrations and shocks can occur	Automotive
	Continuous Track Monitoring for Improvements in Railway Infra-structure	Railway
	Usage in an Automated Guided Vehicle (AGV). An AGV is an overhead conveyor with its own travel drive that is automatically controlled and guided without contact. Driverless transport vehicles are used for material transport, i.e. for pulling or carrying goods with active or passive load handling devices	Logistic
	Autonomous Navigation: An autonomous mobile robot is very similar to that of an AGV but offer a high degree of agility. Autonomous mobile robots navigate independently	Logistic
ASC 281 or ASC 283	Applied to measure the angle or rotation on-board a train (tram) while driving. The ASC gyros measure how much the passenger compartments tilt and swing while driving	Railway
ASC 283	Platform stabilisation for cameras (e.g. thermal imaging cameras) in UAV	Unmanned Aviation

MEMS Gyroscopes (Tactical Grade)

Uniaxial & Triaxial

Technology
The excellent long term bias and scale factor repeatability with low in-run bias and low noise allows accurate working with the angular rate sensor. The MEMS vibrating ring gyros are obtainable with rate ranges of ±100°/s and ±200°/s. The gyro features also a low bias instability and excellent angular random walk with low noise. The ASC 281 / ASC 283 can be powered by a DC power supply (+6V to +30V) where the output voltage is independent of the supply. The gyroscope sensors are made of lightweight anodised aluminium housing and features a 4-pin rsp. 12-pin comtronic connector and a detachable cable.

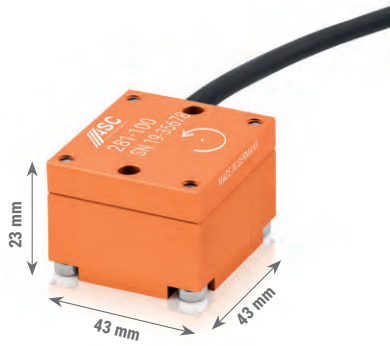
ASC's precision navigation and pointing gyroscopes are made of robust silicon MEMS vibrating ring elements. The gyro detects the magnitude and direction of angular velocity by using the coriolis force effect. As the gyro is rotated, coriolis forces acting on the silicon ring cause radial movement at 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 the angular rate. The balanced ring design results in excellent shock and vibration rejection.

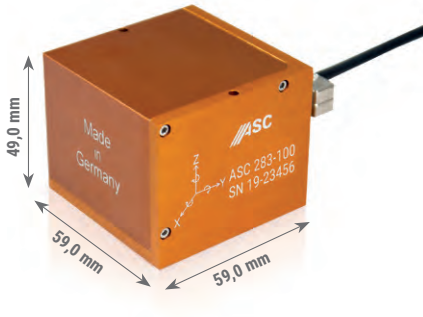
Cables
ASC 281 and ASC 283 have a detachable cable.

Cable for ASC 281 (uniaxial)
Art. Nr. 12300
- 3 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 12 gram/meter

Cable for ASC 283 (triaxial)
Art. Nr. 12309
- 4.5 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 30 gram/meter

Options
- TEDS
- Customized Connectors
- Customized Cable Length





Gyroscopes	Model	ASC 281 (uniaxial)	ASC 283 (triaxial)
	Housing Material	Aluminium	Aluminium

Measurement Range	°/s	100	200
Sensitivity	mV/°/s	20	10
Bias (Offset)	V DC	2.4	
Bias Stability	°/hr	0.12	
Angle Random Walk	°/√hr	0.017 (Allan Deviation; τ=1s)	
g-Sensitivity	°/s/g	0.02	
Max. Shock, Operational	g_{pk}	95g x 6ms (operating) 1000g x 1ms (powered survival)	
Excitation Voltage	V DC	8 to 30	
Operating Temperature	°C	-40 to +85	
Bias Variation with Temperature (w.r.t. value at +25°C)	°/s	typ. ±0.1, max. ±0.2	typ. ±0.15, max. ±0.25
Sensitivity Variation over Temperature (w.r.t. value at +25°C)	%	typ. ±0.3, max. ±0.5	
Protection Class		IP65	

Applications for Inertial Measurement Units

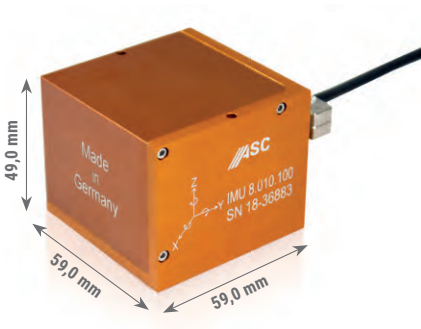
MEMS IMUs improve accuracy over alternative non-inertial sensing technologies. The analogue ASC IMU 7 and ASC IMU 8 can be used in many different applications and markets.

This list is just a short run-down of all possible uses.

Sensor type	Application example	Industry sector
ASC IMU 8	Bridging Navigation	Autonomous Vehicles
	High-precision drilling position estimation	Oil & Gas, Mining, Tunnel Construction
	High-precision position estimation	Autonomous Vehicles, Railway, Robotics
ASC IMU 7	Driving comfort measurements on tractors	Agriculture
	Field Data Measurement for vehicles	Automotive
	Driving test measurements inside the vehicle	Automotive
	The ASC IMU is placed on the vehicle engine to measure engine motion for relative motion analysis	Automotive
	The ASC IMU measures the longitudinal acceleration as well as the on motorcycles	Automotive
	The IMU is used for the development of trucks and tractors to measure the roll of the cabins	Automotive
	Measuring the driving signals on vehicle parts in a car while driving or on a swinging table	Automotive
	The ASC IMUs are positioned at different locations within the cabin of a plane during a flight test. It locally measures the inertial quantities with a certain temporal resolution. The sensors are also used for different tests on components and structures, e.g. for Natural Vibration Tests	Aviation
	It is measured how vibrations and angle changes affect electronic / mechanical units in vehicles	Defense
	Use for validation and support of machine models (machine tools, robots), which means, that values are measured that are calculated and tested simultaneously. The calculated values are to be improved with the sensor	Experiments in Research and Teaching
	Measurement of the movement of test robots (industrial robots)	Industry
	ASC IMU 7 is mounted on carriers to measure small perturbations of a carrier under motion (vibaration, shock, etc.) and feed those measurements into a mechanical system that then corrects and stabilizes the carrier; without the ASC IMU, communication can be degraded or lost	Aviation

MEMS Inertial Measurement Unit (IMU)

6-DOF Inertial Sensor – Tactical Grade



Technology

An Inertial Measurement Unit (IMU) is a 6-DOF system that measures linear and angular motion using a combination of accelerometers and gyroscopes. MEMS based IMUs include a range of precision inertial sensors, including a triaxial acceleration sensor and a triaxial gyroscope. The IMU thus outputs acceleration and rotation rate signals in the form of an analog raw signal. Due to the excellent long-term stability and the low noise (bias, scale factor, noise, angular random walk) of the sensors used, it is possible to reliably obtain position changes in all 6 DOFs with high accuracy and repeatability by integrating the analog sensor signals twice. This results in new fields of application in the area of autonomous transport and unmanned flying.

ASC IMU 8.X.Y features the performance of the tactical grade measurements. The capacitive MEMS accelerometer is obtainable with acceleration ranges from ±2g to ±30g. The excellent long term bias and scale factor repeatability with low in-run bias and low noise allows accurate working with the angular rate sensor. The MEMS vibrating ring gyros are obtainable with rate ranges of ±100°/s and ±200°/s. The gyro features also a low bias instability, excellent angular random walk with low noise. ASC IMU 8.X.Y can be powered by a DC power supply (+8V to +30V) where the output voltage is independent of the supply. The IMU is made of lightweight anodised aluminium housing and features a 15-pin comtronic connector and a detachable cable.

Applications

Rail Track Monitoring, Avionics, UAV, Robotics, Automated Guided Vehicles, Platform Stabilisation, GPS Aided Guidance, Ship Navigation and Control, Mobile Mapping, Drilling Equipment and Guidance, Weapon Launch Systems

Cables

ASC IMU 8.x.y features a 15-pin connector and a detachable cable.

Cable for ASC IMU 8.x.y
Art. Nr. 12517

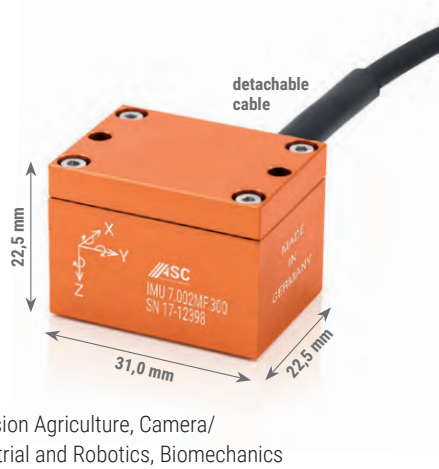
- 4.35 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 36 gram/meter

IMU 8	Model	ASC IMU 8.X.Y
	Housing Material	Aluminium
	Weight	260g

Measurement Range (Accelerometer)	g	±2	±5	±10	±30
In-Run Bias Stability (Accelerometer)	µg	3	7.5	15	45
Measurement Range (Gyroscope)	°/s	±100 ±200			
Bias Stability (Gyroscope)	°/hr	0.12			
Angular Random Walk (Gyroscope)	°/√hr	0.017 (Allan Deviation; τ=1s)			
Shock Limit	g_{pk}	95g x 6ms (operating) 1000g x 1ms (powered survival)			
Excitation Voltage	V DC	8 to 30			
Current Consumption	mA	200			
Isolation		Case Isolated			
Operating Temperature	°C	-40 to +85			
Storage Temperature	°C	-40 to +100			
Connector		15-pin Comtronic			
Mounting		M3 screws			
Cable		18-wire PUR, Li12YD11Y 18*0.06mm² (AWG 30) 36 gram/meter, Diameter: 4.35±0.15mm			
Protection Class		IP65			

MEMS Inertial Measurement Unit (IMU)

6-DOF Inertial Sensor – Industrial Grade



Technology
ASC's Inertial Measurement Unit (IMU) is a 6-axis system that measures linear and angular motion using a combination of gyroscopes and accelerometers. ASC MEMS IMU 7.x.y incorporates an assortment of precision inertial sensors, including a 3-axis accelerometer and a 3-axis gyroscope. The IMU thus outputs raw acceleration and rotation rate signals, which could be integrated to obtain the actual position and orientation.

ASC IMU 7.x.y incorporates either the ASC LN series (Low-Noise) accelerometers or the ASC MF series (Medium-Frequency) accelerometers, featuring an acceleration range from ±2g to ±50g. IMU 7.x.y features MEMS vibrating ring gyros with a rate range from ±75°/s to ±900°/s.

The user can configure the IMU choosing from a wide range of acceleration and rotation rate ranges.

The IMU is light-weight, has a low power consumption and a wide temperature range.

Applications
Indoor Navigation and Pointing, Precision Agriculture, Camera/ Antenna/Platform Stabilisation, Industrial and Robotics, Biomechanics (Motion tracking; Gesture Sensing), Marine (Yacht Stabilisation; Tests on Ship Models), Automotive in-car Navigation, Precision GPS Vehicle and Personal Navigation Aiding (Dead Reckoning Navigation)

Cables
ASC IMU 7.x.y features a 12-pin connector and a detachable cable.

Cable for ASC IMU 7.x.y
Art. Nr. 12309
- 4.4 mm Diameter
- Polyurethane (PUR)
- AWG 30
- 30 gram/meter

			Low Noise	Medium Frequency
IMU 7	**Model**		**ASC IMU 7-LN**	**ASC IMU 7-MF**
	Housing Material		**Aluminium**	**Aluminium**
	Weight		**26g**	**26g**
Measurement Range (Accelerometer)	**g**		**±2 ±5 ±10 ±25 ±50**	**±2 ±5 ±10 ±30 ±50**
Measurement Range (Gyroscope)	°/s		±75 ±150 ±300 ±900	
Shock Limit	g_{pk}		500 (operating) 2000 (unpowered)	
Excitation Voltage	V DC		6 to 40	5 to 40
Current Consumption	mA		30	21
Isolation			Case Isolated	
Operating Temperature	°C		-40 to +85	
Storage Temperature	°C		-40 to +100	
Bias Stability	°/hr		9.0	
Angular Random Walk	°/√hr		0.2	
Connector			12-pin Comtronic	
Mounting			Screw (2x M3)	
Cable			12-wire PUR	
Protection Class			IP65	

Cable Configurations ASC IMU 7

Order Code: 11L

X-Y-Z-Axis

	Accelerometer	***Gyroscope***
Supply +	Signal +	Signal +
GND	Signal –	

Order Code: 11L2

X-Axes	***Y-Z-Axis***	***X-Y-Z-Axis***
Accelerometer	***Accelerometer***	***Gyroscope***
Supply +	Signal +	Signal +
GND	Signal –	
Signal +		
Signal –		

Order Code: 14L2

X-Axes	***Y-Z-Axis***	***X-Y-Z-Axis***
Accelerometer	***Accelerometer***	***Gyroscope***
Supply +	Signal +	Signal +
GND	Signal –	GND
Signal +		
Signal –		

Order Code: 14L3 – BNC-Banana

X-Y-Z-Axis

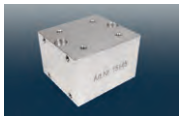
	Accelerometer	***Gyroscope***
Supply +	Signal +	Signal +
GND	Signal –	GND
Shield		

Sensors Overview

Series	Sensor	Page
ASC DiSens series	ASC DiSens MD	8
ASC 35 series	ASC 3511LN	9
	ASC 3521 MF	9
ASC 41 series	ASC 4111LN	10
ASC 42 series	ASC 4211LN	11
	ASC 4221MF	11
ASC 43 series	ASC 4311LN / 4315LN	12-13
	ASC 4321MF / 4325MF	12-13
ASC 44 series	ASC 4411LN / 4415LN	14-15
	ASC 4421MF / 4425MF	14-15
ASC 54 series	ASC 5411LN / 5415LN	16-17
	ASC 5421MF / 5425MF	16-17
ASC 55 series	ASC 5511LN / 5515LN	18-19
	ASC 5521MF / 5525MF	18-19
ASC OS series	ASC OS-115LN / OS-115LN-PG	20
	ASC OS-125MF / OS-125MF-PG	20
	ASC OS-215LN-PG / OS-315LN-PG	21
	ASC OS-225MF-PG / OS-325MF-PG	21
ASC Rail series	ASC Rail-115LN / ASC Rail-315LN	23
ASC CS series	ASC CS-1711LN	24-25
	ASC CS-1511LN	24-25
	ASC CS-1611LN	24-25
ASC TS series	ASC TS-91V1 / TS-91V5	27
	ASC TS-92V1 / TS-92V5	27
ASC TSF series	ASC TSF-360-CAN	29
ASC 6C series	ASC 61C1	30
	ASC 62C1	30
	ASC 66C1	30
	ASC 66C2	30
ASC 7C series	ASC 74C1	31
	ASC 75C1	31
	ASC 76C1	31
ASC P series	ASC P101A15	32
	ASC P101A25	32
	ASC P401A15	32
	ASC P311A15	32
	ASC P311A25	32
	ASC P203A11	33
	ASC P203A12	33
ASC Gyro	ASC 271 / ASC 273	35
	ASC 281 / ASC 283	37
ASC IMU 8	ASC IMU 8.X.Y	39
ASC IMU 7	ASC IMU 7.X.Y	40

Mounting Plates and Blocks

Mounting Plates	Compatible with	Description	Material	Art. Nr.	L x W x H in mm
	ASC 44 series ASC IMU series	ASC Mounting Plate 44/IMU	Aluminium	10499	30 x 25 x 7
	ASC 54 series ASC 55 series ASC 43 series	ASC Mounting Plate 54/55/43	Aluminium	10491	25 x 23 x 7
	ASC 54 series ASC 55 series	ASC Mounting Plate 54/55	POM	13354	25 x 17 x 7
	ASC 75 series	ASC Mounting Plate 75	Aluminium	12483	22 x 15 x 7
	ASC OS series	ASC Mounting Plate 115PG/125PG/215/315	Stainless steel	13422	30 x 30 x 10
	ASC OS series	ASC Mounting Plate 115/125	Stainless steel	14749	25 x 25 x 7

Mounting Blocks	Compatible with	Description	Material	Art. Nr.	L x W x H in mm
	ASC 44 series	ASC Mounting Block 44, triaxial	Aluminium	10604	27 x 27 x 27
	ASC 43 series	ASC Mounting Block 43, triaxial	Aluminium	10508	23 x 23 x 25
	ASC OS series	ASC Mounting Block for ASC OS series incl. 12 strews M3x20	Aluminium	15145	37 x 41 x 27

Cables

ASC Cables	Description Art. Nr.	Characteristics	Sensors: ASC 3511LN	ASC 3521MF	ASC 4111LN	ASC 4211LN	ASC 4221MF	ASC 4311LN / 4315LN	ASC 4321MF / 4325MF	ASC 4411LN / 4415LN	ASC 4421MF / 4425MF	ASC 5411LN / 5415LN	ASC 5421MF / 5425MF	ASC 5511LN / 5515LN	ASC 5521MF / 5525MF
	ASC Cable 10 wire triaxial **Art. Nr. 13757**	• 4.8 mm Diameter • Polyurethane (PUR)													
	ASC Cable 12 wire triaxial **Art. Nr. 12309**	• 4.5 mm Diameter • Polyurethane (PUR)								X		X			
	ASC Cable 12 wire triaxial **Art. Nr. 14077**	• 4.5 mm Diameter • Polyurethane (PUR)									X		X		
	ASC Cable 3 wire uniaxial **Art. Nr. 13758**	• 4.65 mm Diameter • Polyvinylchlorid (PVC)													
	ASC Cable 4 wire uniaxial **Art. Nr. 12868**	• 3.0 mm Diameter • Polyurethane (PUR) • waterproof													
	ASC Cable 5 wire uniaxial **Art. Nr. 12300**	• 3.0 mm Diameter • Polyurethane (PUR)	X		X	X	X	X		X					
	ASC Cable 5 wire uniaxial **Art. Nr. 12244**	• 3.1 mm Diameter • Polyurethane (PUR)		X					X		X				
	ASC Cable 8 wire bi/triaxial **Art. Nr. 12301**	• 3.6 mm Diameter • Polyurethane (PUR) • waterproof													
	ASC Cable 6 wire triaxial **Art. Nr. 12851**	• 5.7 mm Diameter • Polyvinylchlorid (PVC)													
	ASC Cable 5 wire bi/triaxial **Art. Nr. 15342**	• 2.75 mm Diameter • Fluorethylenpropylen (FEP) • waterproof													
	ASC Cable 12 wire bi/triaxial **Art. Nr. 15344**	• 3.75 mm Diameter • Fluorethylenpropylen (FEP) • waterproof													
	ASC Cable 18 wire IMU **Art. Nr. 12517**	• 4.35 mm Diameter • Polyurethane (PUR)													
	RADOX Tenius TW 600V 12 x 0,5 mm² **Art. Nr. 15630**	• 8.1 mm													

	ASC OS-115LN	ASC OS-115LN-PG	ASC OS-125MF	ASC OS-125MF-PG	ASC OS-215LN / OS-315LN	ASC OS-225MF / OS-325MF	ASC Rail-115LN / Rail-315LN	ASC CS-1711LN	ASC CS-1511LN	ASC CS-1611LN	ASC TS-91V1 / TS-92V1	ASC TS-91V5 / TS-92V5	ASC 61C1	ASC 62C1	ASC 66C1	ASC 66C2	ASC 74C1	ASC 75C1	ASC 76C1	ASC 271 (Gyro)	ASC 273 (Gyro)	ASC IMU 8.X.Y	ASC IMU 7.X.Y
								X															
															X	X	X		X		X		X
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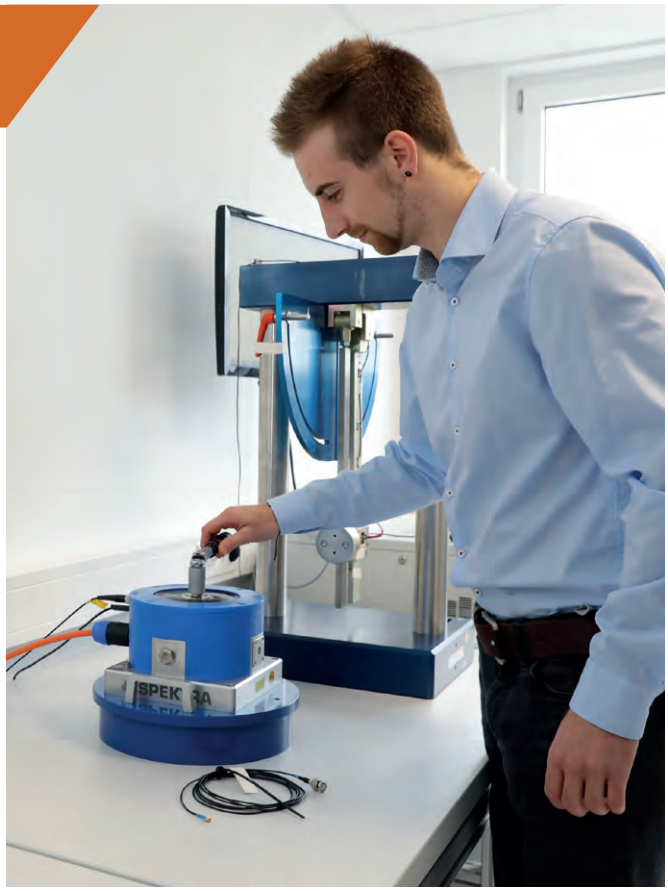
Calibration Service



ASC Calibration Service

Regardless of the degree of quality, sensors have to be recalibrated.

We at ASC offer our customers the service of recalibrating accelerometers to ensure they are ready for their dedicated measurement tasks. Incidentally, we also offer this service for accelerometers from other manufacturers.

We make the process even smoother, by issuing reminders to you, to send your sensors for calibration promptly before the calibration interval expires.

The Deutsche Akkreditierungsstelle GmbH (DAkkS) has awarded to our calibration laboratory the DIN EN ISO/IEC 17025:2005 certification for calibrations and has confirmed our competence to perform calibrations in the field of mechanical acceleration measurements. Certificate registration number: D-K-18110-01-00.

ISO 17025-compliant calibration is offered in our laboratory by:

- **A calibration certificate based on standards from organisations such as PTB, NIST, DPLA, NPL**
- **Back-to-back calibration according to ISO 16063 with recognised measurement standards**
- **Internationally recognised calibration results**
- **An accredited calibration certificate with frequency response and indication of measurement uncertainty**

The service scope is based on the valid list of the calibration services offered in the back-to-back process according to DIN ISO 16063-21: 2004-01 for vibration and vibration speed sensors, and includes a calibration certificate according to ISO 17025 which documents the compliance with national standards.

The following calibrations are offered to ensure measurement accuracy by our company directly in-house.

- **Low Frequency calibration from 0.4 Hz to 160 Hz**
- **Middle Frequency calibration from 5 Hz to 10 kHz**
- **Pendulum calibration from 300m/s² to 2000 m/s²**

ilac-MRA

DAkkS
Deutsche
Akkreditierungsstelle
D-K-18110-01-00

Digital Calibration Certificate / DCC
ASC is at the cutting edge of the future of calibration certificates. Together with the PTB and other companies we are working on the Digital Calibration Certificate. The most important advantage is, that the DCC will completely replace the former calibration certificate. Through the use of qualified electronic signatures the certainty of document's origin and integrity will be ensured and internationally mutual recognized across borders.
It has many advantages over the calibration certificate on paper (just to mention some of them):

- **Free of media discontinuity**
  - In the calibration laboratory
  - On transmission
  - In the factory
- **Unambiguousness**
- **Clear and error-free data**
- **Globally unique and clear**
- **Important industry 4.0 – component**
- **Higher process efficiency**

We also team up with our partners to offer calibration of angular rate sensors or any other sensors. Contact us. We will organise all your requested calibrations. We call it service!
For any questions about our calibration service or the request for an offer, please contact our calibration laboratory directly:

calibration@asc-sensors.de
+49 8441 786547-43
or your trusted customer advisor.

Repair Service & Quality

ASC Repair Service

The experts in our production facility are able to repair ASC sensors which have suffered damage due to any incidence.

Our repair service includes:

- **Replacement of defective cables**
- **Replacement of damaged plug connectors**
- **Attaching new sensors to old cables**

The repair service starts with a detailed failure analysis. The customer decides on the basis of the detailed prior repair quotation whether the repair shall be carried out.

Please contact our repair service team directly if you would like to receive a quotation or have any questions about our repair service:

repair@asc-sensors.de
+49 8441 786547-44

ASC Quality

ASC attaches great importance to a high quality standard. The development, production, sales and repair of our sensors are certified according to **9001:2015**.

ASC sensors are CE-compliant
As part of the CE-marking, we have had successfully tested all our capacitive acceleration sensors, gyroscopes, tilt sensors and IMUs for compliance with the following standards:

EMC-Directive	Electromagnetic compatibility
DIN EN 61326-1	Electrical measuring, control and laboratory equipment
DIN EN 61000-6-2	Interference immunity for industrial applications
DIN EN 610006-3	Emission standard for residential, commercial and light-industrial environments

Quality Management ISO 9001
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MADE IN GERMANY

Consulting, Engineering, R&D

**Dr. Robert Diemer,
Technical Director
at ASC GmbH**

ASC Consulting

Future-oriented thinking and innovation strategies are just as important for product conception as agile processes, agile cooperation and a holistic view of the system.

Step by step, ASC accompanies customer projects right from the start. Together with the customer, the problem is discussed and the requirements for the system solution are derived. This means that ASC's expert knowledge is incorporated into the project concept and planning right from the start.

By understanding both the mechanical properties to be measured (vibration, acceleration, rotation rate, etc.) as well as the electronic and information technology knowledge and the necessary signal processing, ASC supports its customers in concept development and the implementation of development projects in all phases.

ASC also offers training courses on various topics in the field of sensor technology, in particular accelerometers. In addition to special sensor properties, topics such as sensor coupling or the Internet of Things are also covered.

Engineering and R&D

Microelectronics and microsystems technology continue to develop at a rapid pace, and ASC is committed to always being at the cutting edge of technological progress.

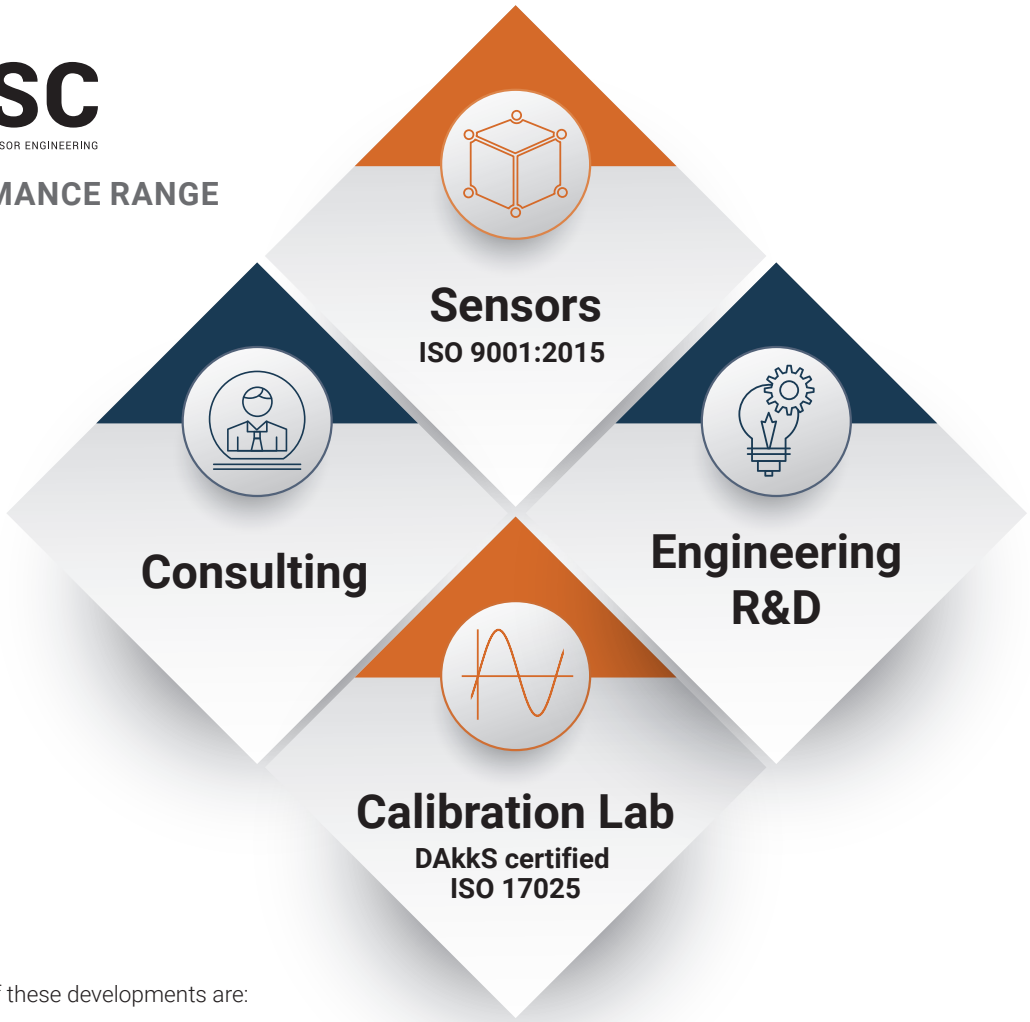
Thanks to many years of engineering experience in the field of measurement technology, ASC is able to respond to individual customer requests and flexibly adapt and produce sensors to special requirements.

In addition to classical engineering, ASC is also increasingly dedicated to researching and developing new, innovative applications and sensor solutions using the latest technologies.

For this reason, ASC is a partner in several research projects together with universities and research institutes in order to expand the horizon of high-performance measurement sensor technology to include complete sensor solutions in modern applications such as condition monitoring and predictive maintenance. Especially the extension of analog sensors to digital, embedded systems enables a multitude of new applications, for example in the fields of robotics, automation technology, autonomous driving or flying.

ASC
GERMAN SENSOR ENGINEERING

PERFORMANCE RANGE



Advantages of these developments are:

- **The sensor signal becomes information**
  - Reduced effort for signal acquisition on the part of the customer
  - Digital data transmission
  - Less susceptibility to faults
- **Intelligent sensors**
  - Sensor networks possible, combined data evaluation
  - Sensor interaction with the environment
  - Easy integration of the sensors into existing systems

ASC expands its experience in sensor technology with expertise in the areas of µcontroller systems and communication interfaces. Especially in the field of communication interfaces, work is being done on both wired and wireless solutions. ASC's modular system enables the company to respond to customer requirements and to put together the right combination for every application. This relieves the customer during the solution development and offers application-specific behavior of the sensor systems as well as easy integration and application.

Contact & Sales partners

Contact

Nothing is more important for us than dialog with people interested in our measurement solutions and company. Test us. We will be delighted to hear from you.

Please contact our customer service representative if you have any questions concerning our products and solutions:
sales@asc-sensors.de
+49 8441 786547-49

Please contact our HR manager if you have any questions about working for ASC.
bewerbung@asc-sensors.de
+49 8441 786547-40

The company's management team will happily answer any questions about the company and possible partnerships.
management@asc-sensors.de
+49 8441 786547-42

If you are a journalist and require information or material, please contact:
press@asc-sensors.de
+49 8441 786547-40

Sales partners

The ASC accelerometers, gyros, tilt sensors and IMUs are manufactured in Pfaffenhofen, Germany, and used worldwide.

Orders from Germany and Switzerland are handled directly at our headquarter in Pfaffenhofen, Germany.

If you are ordering from another country, please contact one of our sales partners in your region. We have chosen our partners with great care.

Concept & Design: Werbeagentur Ursula Borsche GmbH, Munich

Do you need any support?
Please contact ASC or your authorized distributor.

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GERMAN SENSOR ENGINEERING

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