

imc Accelerometers: imc AS series



The capacitive accelerometers are based on micro-electromechanical systems (MEMS technology) and allow static measurement of acceleration forces from 0 Hz upward. The scope of application possibilities includes the fields of vehicle dynamics, endurance strength testing, vehicle inspections, brake testing, driving comfort measurement, structure monitoring, or in general wherever reliable measurement of acceleration is needed.

The sensors feature especially low noise and excellent stability over a wide operating temperature range (-40°C to +100°C), so that even the smallest accelerations can be precisely measured. The sensors are enclosed in waterproof sealing and are available in a choice of either

low-weight anodized aluminum housings, or for extreme environmental conditions a stainless steel housing (IP68). Versions with different measurement ranges (± 2 g up to ± 400 g) can be ordered, where the upper cutoff frequency (bandwidth) is between 100 and 1000 Hz depending on the model. All types are available in uni-axial and tri-axial versions.

At a nominal measurement range, the active sensors output a ± 4 V signal at a differential output (\pm OUT) and are supplied with 8 to 30 V DC. They can be directly connected at any imc voltage amplifier having sensor power supply, as well as to any imc bridge amplifier - the supply power is provided via the amplifier. In conjunction with the integrated TEDS-chip, reliable and error-free "Plug'n'Play" operation is ensured.

Features

- very low signal noise (low-noise sensor elements)
- compact and light-weight
- TEDS comes standard
- direct connection to all imc bridge amplifiers or voltage amplifiers having sensor power supply
- LEMO terminal connectors with imc pinout optional
- any desired cable lengths

Overview of available variants

MEMS sensors uniaxial aluminum: imc AS1Axxx



SEN/ACC-AS1A002	accelerometers MEMS 2 g uniaxial	13900001
SEN/ACC-AS1A005	accelerometers MEMS 5 g uniaxial	13900002
SEN/ACC-AS1A010	accelerometers MEMS 10 g uniaxial	13900003
SEN/ACC-AS1A025	accelerometers MEMS 25 g uniaxial	13900004
SEN/ACC-AS1A050	accelerometers MEMS 50 g uniaxial	13900005
SEN/ACC-AS1A100	accelerometers MEMS 100 g uniaxial	13900006
SEN/ACC-AS1A200	accelerometers MEMS 200 g uniaxial	13900007
SEN/ACC-AS1A400	accelerometers MEMS 400 g uniaxial	13900008

Included accessories: including mounting plate (material: aluminum, dimensions: 30 x 25 x 7 mm) with M3 x 12 screws to apply the sensor on the plate, detailed calibration certificate

Options:

SEN/ACC-AS1A-1M	one meter cable	13940001
SEN/ACC-AS1A-LEMO	one LEMO plug in imc pinout	13940002
SEN/ACC-AS1A-BLOCK	triaxial mounting plate, material: aluminum, with M3 x 12 screws to apply up to 3 sensors on the plate, dimensions: 27 x 27 x 27 mm, for up to three SEN/ACC-AS1Axxx	13940003



MEMS sensors uniaxial stainless steel: imc AS1Exxx



SEN/ACC-AS1E002	accelerometers MEMS 2 g uniaxial	13900009
-----------------	----------------------------------	----------

MEMS sensors uniaxial stainless steel: imc AS1Exxx

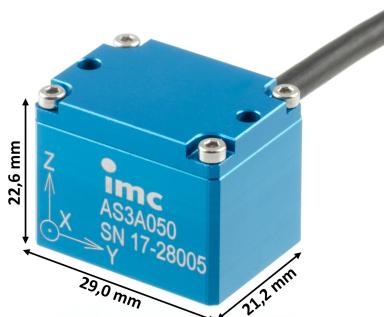
SEN/ACC-AS1E005	accelerometers MEMS 5 g uniaxial	13900010
SEN/ACC-AS1E010	accelerometers MEMS 10 g uniaxial	13900011
SEN/ACC-AS1E025	accelerometers MEMS 25 g uniaxial	13900012
SEN/ACC-AS1E050	accelerometers MEMS 50 g uniaxial	13900013
SEN/ACC-AS1E100	accelerometers MEMS 100 g uniaxial	13900014
SEN/ACC-AS1E200	accelerometers MEMS 200 g uniaxial	13900015
SEN/ACC-AS1E400	accelerometers MEMS 400 g uniaxial	13900016

MEMS sensors uniaxial stainless steel: imc AS1Exxx

Included accessories: including mounting plate (material: stainless steel, dimensions: 30 x 30 x 10 mm) with M3 x 22 screws to apply the sensor on the plate, detailed calibration certificate

Options:

SEN/ACC-AS1E-6M	six meter cable 4-pin comtronic socket, without plug	13940004
SEN/ACC-AS1E-1M	one meter cable	13940005
SEN/ACC-AS1E-LEMO	one LEMO plug in imc pinout	13940006

MEMS sensors triaxial aluminum: imc AS3Axxx


SEN/ACC-AS3A002	accelerometers MEMS 2 g triaxial	13900017
SEN/ACC-AS3A005	accelerometers MEMS 5 g triaxial	13900018
SEN/ACC-AS3A010	accelerometers MEMS 10 g triaxial	13900019
SEN/ACC-AS3A025	accelerometers MEMS 25 g triaxial	13900020
SEN/ACC-AS3A050	accelerometers MEMS 50 g triaxial	13900021
SEN/ACC-AS3A100	accelerometers MEMS 100 g triaxial	13900022
SEN/ACC-AS3A200	accelerometers MEMS 200 g triaxial	13900023
SEN/ACC-AS3A400	accelerometers MEMS 400 g triaxial	13900024

Included accessories: including mounting plate (material: aluminum, dimensions: 28,5 x 30,5 x 7 mm) with M3 x 25 screws to apply the sensor on the plate, detailed calibration certificate

Options:

SEN/ACC-AS1A-1M	one meter cable	13940008
SEN/ACC-AS1A-LEMO	one LEMO plug in imc pinout	13940009

Technical Specs - imc AS series

Sensor types

Type designation ¹		ASxy002	ASxy005	ASxy010	ASxy025	ASxy050	ASxy100	ASxy200	ASxy400
Measurement range	$\pm g$	2	5	10	25	50	100	200	400
Sensitivity	mV/g	2000	800	400	160	80	40	20	10
Analog bandwidth ²	Hz	100	100	300	500	650	650	1000	1000
Destruction limit	$\pm g$	2000	2000	4000	4000	4000	4000	4000	4000
Non-linearity	% FSO					<1			
Transverse sensitivity	%					3			
Settling time	ms					<1			
Power supply ³	V DC					8...30			
Current demand	mA					10			
Output signal (nom. range) ⁴	V					± 4			
Output impedance	Ω					100			
Zero offset ⁵	$\pm mV$	150	150	80	80	80	80	80	80
Spectral noise density	$\mu g/VHz$	5	7	10	25	50	100	200	400
Inherent noise/Broadband noise ⁶	μV	100	60	70	90	100	100	125	125
Zero drift	$mg/^\circ C$	0.15	0.4	0.75	2	4	7.5	15	30
Temperature coefficient ⁷	$%/^\circ C$					0,015			
Operating temperature	$^\circ C$					-40°C ... +100°C			
Storage temperature	$^\circ C$					-55°C ... +125°C			
Sensor element						MEMS capacitive			
TEDS						yes			
Isolation to ground						yes			

Remarks

- 1 x = axes (1/3), y = housing (A/E)
- 2 Linear frequency range ($\pm 5\%$)
- 3 Compatible with imc measurement amplifiers with sensor supply
- 4 Differential output signal $\pm OUT$
- 5 Compensated at the amplifier by taring
- 6 Over full bandwidth
- 7 Sensitivity drift

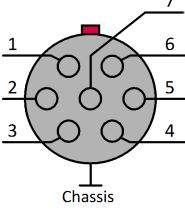
All stated specifications are typical values.

Housing types

Type	Uni-axial aluminum	Tri-axial aluminum	Uni-axial stainless
Code (xy)	1A	3A	1E
Sealing	epoxy resin	epoxy resin	IP68
Housing material	aluminum	aluminum	stainless
Cable length	3 m, open end	6 m, open end	30 cm, MicroCom-plug-in connector
Cable type	AWG 30, polyurethane, Ø 3 mm, 12 grams/m	AWG 30, polyurethane, Ø 4,4 mm, 30 grams/m	AWG 30, polyurethane, Ø 3 mm, 12 grams/m
Plug-in connector	optional	optional	optional LEMO configured in imc pinout
Mounting holes	2 x	2 x	4 x
Weight	10 g	20 g	68 g
Included accessories	mounting plate with four screws	mounting plate with two screws	mounting plate with four screws
Optional accessories	triaxial mounting cube (no screws), additional cable length n x 1 m, LEMO configured in imc pinout	additional cable length n x 1 m, LEMO configured in imc pinout	extension cable n x 1 m with MicroCom-plug-in connector and open end, LEMO configured in imc pinout

Pin configuration

Sensor	AS1Axxx	AS3Axxx			AS1Exxx
Signal		x-axis:	y-axis:	z-axis:	
+Supply	red	red/violet	red/grey	red	red
-Supply	black	black/violet	black/grey	black	black
+Signal	green	green/violet	green/grey	green	green
-Signal	white	white/violet	white/grey	white	white
TEDS	yellow	yellow/violet	yellow/grey	yellow	yellow

LEMO in imc pinout ²	Pin	Signal	Remarks
	1	+IN	measurement signal (voltage +OUT, ±4 V differential)
	2	-IN	measurement signal (voltage -OUT, ±4 V differential)
	3	+SUPPLY	bridge supply (+VB) or sensor supply (+SUPPLY): adjustable from 10 V to 24 V
	4	GND	reference of sensor supply (-VB / -SUPPLY) and TEDS_GND
	5	TEDS	TEDS (OneWire sensor PROM)
	6 and 7	n.c.	

1 The dimensions of the mounting plates differ between one another, see "[overview](#)"², apply the flat surface of the mounting plate on your test object.

2 a different pinout is available upon request

Contact imc

Address

imc Test & Measurement GmbH

Voltastr. 5

13355 Berlin

Phone: (Germany): +49 30 467090-0

E-Mail: info@imc-tm.de

Internet: <https://www.imc-tm.com>

Tech support

If you have problems or questions, please contact our tech support:

Phone: (Germany): +49 30 467090-26

E-Mail: hotline@imc-tm.de

Internet: <https://www.imc-tm.com/service-training/>

imc ACADEMY - Training center

The safe handling of measurement devices requires a good knowledge of the system. At our training center, experienced specialists are here to share their knowledge.

E-Mail: schulung@imc-tm.de

Internet: <https://www.imc-tm.com/service-training/imc-academy>

International partners

You will find the contact person responsible for you in our overview list of imc partners:

Internet: <https://www.imc-tm.com/imc-worldwide/>

imc @ Social Media

<https://www.facebook.com/imcTestMeasurement>

<https://www.youtube.com/c/imcTestMeasurementGmbH>

https://twitter.com/imc_de

<https://www.linkedin.com/company/imc-test-&-measurement-gmbh>