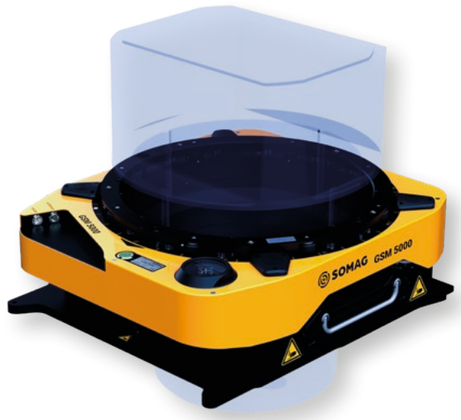
SOMAG

GYRO STABILIZATION MOUNTS

MARINE AIRBORNE LAND

SOMAG

CONTENTS

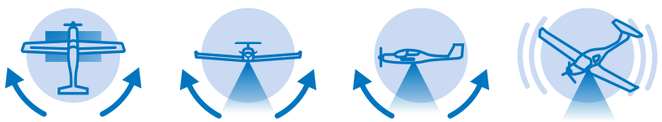


SOMAG

HOW **SOMAG AIRBORNE MOUNTS** WORK

Pitch, roll and yaw angles present a constant challenge for aerial photography, geospatial data acquisition and surveillance. The solution – Gyro Stabilization Mounts, which drastically reduce the movements of airborne sensor systems. Our three axes gimbals automatically compensate arbitrary vehicle movements and vibrations in all three axes. This technology ensures a high-resolution image quality and more flying time at lower costs. All SOMAG Mounts can be connected with the most popular Inertial Measurement Units (IMUs) and Flight Management Systems (FMS') to complete flight missions even more efficiently.

Movements stabilized by SOMAG Airborne Mounts:



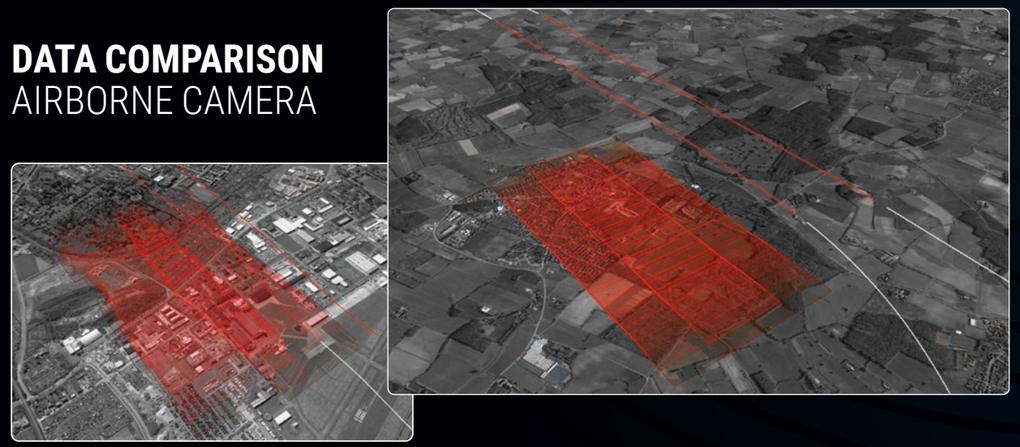
Yaw Roll Pitch Vibration

Compatible with:

- Aerial Cameras
- Hybrid Mapping Systems
- Multispectral Cameras
- Hyperspectral Cameras
- LiDAR Systems
- Radar Systems

AIRBORNE

DATA COMPARISON
AIRBORNE CAMERA



Without Stabilization

- Lack of adjacent overlap could cause missing data
- Large overlap to avoid missing data costs time and money, which results in an inefficient workflow
- The acquisition of blurred images causes more post-processing issues
- Ranging errors for LiDARs because of aircraft pitch movement

With Stabilization

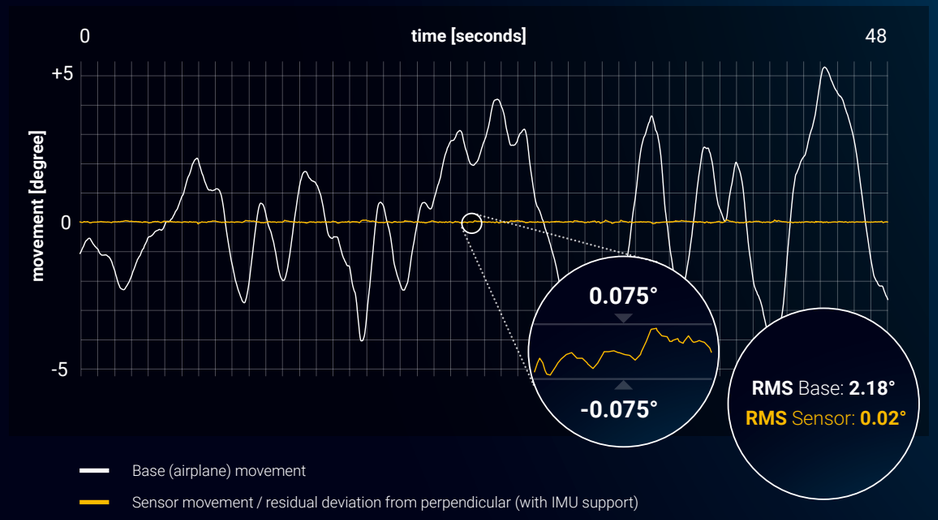
- Turbulences are stabilized & risk of data gaps is highly reduced
- Overlap can be highly reduced, which saves time, money and enables an efficient workflow
- Smearing of images is highly reduced
- Pitch compensation increases ranging accuracy of LiDARs

KEY FEATURES
AIRBORNE MOUNTS

- High stabilization accuracy: Using a SOMAG Airborne Mount reduces the existing movements at the sensor usually by 50 times[1]
- Highest compatibility on the market with existing airborne sensor systems
- Passive Vibration Isolation Rings for all Airborne Mounts
- User-friendly interface and easy handling
- Minimal weight and dimensions by maintaining maximum performance
- Usable with SOMAG Mount Control App

STABILIZATION ACCURACY SOMAG MOUNTS (ROLL AXIS)

The use of a SOMAG Airborne Mount reduced the existing movements in this mission data example[2] by ca. 110 times[3] for the sensor system



[1] The factor may vary depending on the base excitation and IMU accuracy
[2] Vehicle angular motion <10°/s with typical data acquisition profile frequency spectrum
[3] Ratio RMS base movement to RMS sensor movement

APPLICATION EXAMPLES

TECHNICAL SPECIFICATIONS

		GSM 5000	DSM 400	CSM 40
Angular Stabilization Ranges	Pitch at 0° Roll:	-10.1°...+10.1°	-10.5°...+10.5°	-15.0°...+15.0°
	Roll at 0° Pitch:	-8.1°...+8.1°	-10.5°...+10.5°	-15.0°...+15.0°
	Yaw (drift):	-30.0°...+30.0°[1]	-25.0°...+25.0°	-25.0°...+25.0°
Usable Diameter		Ø425 mm Ø16.7 in	Ø270 mm Ø10.6 in	Ø130 mm Ø5.1 in
Payload[2]		10...120 kg 22...265 lbs	5...35 kg 11...77 lbs	0...15 kg 0...33 lbs
Mass		28.5 kg 63 lbs	14 kg 31 lbs	5.2 kg 11 lbs
Dimensions	Length:	600 mm | 23.6 in	460 mm | 18.1 in	290 mm | 11.4 in
(Regular Leveling Positions)	Width:	530 mm | 20.9 in	430 mm | 16.9 in	275 mm | 10.8 in
	Average Height[3]:	198 mm | 7.8 in	165 mm | 6.5 in	121 mm | 4.8 in

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

[1] Activation of the extended drift movement range (-177.5°...+177.5°) is possible through an optional software feature
[2] Minimum payload is based on usage of Passive Vibration Isolation Ring
[3] Minimum/maximum height – see technical specification on product pages

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GSM 5000
GYRO STABILIZATION MOUNT

Developed for high-precision data acquisition, the GSM 5000 is SOMAG's most advanced airborne Gyro Stabilization Mount. As the successor to the proven GSM 4000, it is designed for next-generation sensors and LiDAR systems and introduces numerous innovations to improve performance and usability. It offers expanded motion ranges in roll, pitch and drift, including an optional 355° drift rotation for advanced mission modes. The pivot point has been moved to the base plate, enabling deeper sensor installation and a wider field of view of the sensor system.

New features include internal logging, internal error diagnostics, and software-controlled hydraulic lowering. All components are positioned below the mounting plane, removing previous movement limitations. The GSM 5000 supports Ethernet and a RS232-COMBI interface for faster data transfer and easier integration. It stabilizes payloads up to 120 kg with a self-weight of just 28.5 kg and remains compatible with GSM 4000 power and interface cables.

Field of Application

AIRBORNE

Application Examples

Vexcel UltraCams

RIEGL LiDARs

Teledyne Optech LiDARs

IGI Mapping Systems

Phase One PAS 880i

TECHNICAL SPECIFICATIONS

Angular Stabilization Ranges	Pitch at 0° Roll:	-10.1°…+10.1°
	Roll at 0° Pitch:	-8.1°…+8.1°
	Yaw (Drift):	-30.0°…+30.0° | -177.5°…+177.5° (optional[1])
Residual Angular Rate[2]		≤0.2°/s rms
Residual Deviation[2]	without IMU support:	≤0.3° rms
	with IMU support[3]:	≤0.02° rms
Payload[4]		10…120 kg | 22…265 lbs
Mass		28.5 kg | 63 lbs
Dimensions (Regular Leveling Positions)	Length:	600 mm | 23.6 in
	Width:	530 mm | 20.9 in
	Height[5]:	198 mm | 7.8 in
Usable Diameter		Ø425 mm | Ø16.7 in
Operating Temperature		-15 °C…+55 °C | 5 °F…+131 °F
Storage Temperature		-55 °C…+85 °C | -67 °F…+185 °F
Communication Interfaces		Ethernet | RS 232
Internal Logging Capacity		32 GB
Operational Voltage		28 VDC (24…30 VDC)
Average Power Consumption at Operational Voltage		50 W
Peak Power Consumption at Operational Voltage		200 W
Applied Standards		RTCA DO-160-G, EUROCAE-14G, ISO 7137, 2006/42/EC Machinery

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

1 Activation of the extended drift movement range is possible through an optional software feature
2 Vehicle angular motion <7.5°/s and with typical data acquisition profile frequency spectrum
3 Deviation from perpendicular depends on accuracy of used IMU
4 Minimum payload is based on usage of Passive Vibration Isolation Ring
5 Minimum 167.5 mm (6.6 in) | Maximum 228.5 mm (9.0 in)

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DSM 400
DYNAMIC STABILIZATION MOUNT

The DSM 400 is a cost-efficient, medium-sized Gyro Stabilization Mount designed for a variety of medium format cameras and sensors. It features a field-proven electromechanical gimbal system that automatically compensates for movements across all three rotational axes—pitch, roll, and yaw—ensuring blur-free exposures during aerial data acquisition.

With a usable mounting space of 270 mm, the DSM 400 supports payloads ranging from 5 to 35 kg. Its lightweight design, weighing only 14 kg, makes it particularly suitable for ultralight aircraft and drones. The Mount is complemented by a Passive Vibration Isolation Ring (PaVIR), available in six different configurations, which effectively decouples high-frequency vibrations from the aircraft, enhancing image quality. The DSM 400 comes equipped with a simplified and redesigned control panel that includes both an RS-232 and a USB port, facilitating seamless integration with the SOMAG Mount Control App.

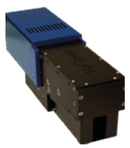
Field of Application

AIRBORNE

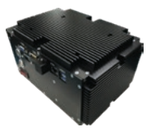
Application Examples

Phase One PAS 280i

RIEGL VUX Series



HySpex VNIR - 1800



ITRES VNIR
Hyperspectral Imager

DSM 400

TECHNICAL SPECIFICATIONS

Angular Stabilization Ranges	Pitch at 0° Roll: Roll at 0° Pitch: Yaw (Drift):	-10.5°...+10.5° -10.5°...+10.5° -25.0°...+25.0°
Residual Angular Rate[1]		≤0.5°/s rms
Residual Deviation[1]	without IMU support: with IMU support[2]:	≤0.3° rms ≤0.08° rms
Payload[3]		5...35 kg | 11...77 lbs
Mass		14 kg | 31 lbs
Dimensions (Regular Leveling Positions)	Length: Width: Height[4]:	460 mm | 18.1 in 430 mm | 16.9 in 165 mm | 6.5 in
Usable diameter		Ø270 mm | Ø10.6 in
Operating Temperature		-15 °C ... +55 °C | 5 °F ... +131 °F
Storage Temperature		-55 °C ... +85 °C | -67 °F ... +185 °F
Communication Interfaces		RS 232 | USB
Operational Voltage		28 VDC (24...30 VDC)
Average Power Consumption at Operational Voltage		30 W
Peak Power Consumption at Operational Voltage		120 W
Applied Standards		RTCA DO-160-G, EUROCAE-14G, ISO 7137, 2006/42/EC Machinery

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

[1] Vehicle angular motion <10°/s and with typical data acquisition profile frequency spectrum
[2] Deviation from perpendicular depends on accuracy of used IMU
[3] Minimum payload is based on usage of Passive Vibration Isolation Ring
[4] Minimum 131 mm (5.1 in) | Maximum 199 mm (7.8 in)

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CSM 40
COMPACT STABILIZATION MOUNT

The CSM 40 is a compact, lightweight, and cost-efficient Gyro Stabilization Mount designed for single medium format cameras and sensors. Weighing only 5.2 kg and featuring a minimal footprint, it is ideal for ultralight aircraft and UAV applications. The electromechanical gimbal system stabilizes movements on all three rotational axes—pitch, roll, and yaw—for high-quality, blur-free data capture.

With a payload capacity of up to 15 kg and the widest angular stabilization range in SOMAG's airborne Mount series, the CSM 40 combines compact design with excellent performance. It includes a user-friendly control panel and supports configuration via the SOMAG Mount Control App through USB.

An optional Passive Vibration Isolation Ring (PaVIR) is available to reduce high-frequency aircraft vibrations and can be customized based on the payload for optimal stabilization.

Field of Application

AIRBORNE

Application Examples

Phase One Cameras

Telops Hyperspectral Camera

Specim AisaKESTREL

CSM 40

TECHNICAL SPECIFICATIONS

Angular Stabilization Ranges	Pitch at 0° Roll:	-15.0°...+15.0°
	Roll at 0° Pitch:	-15.0°...+15.0°
	Yaw (Drift):	-25.0°...+25.0°
Residual Angular Rate[1]		≤0.5°/s rms
Residual Deviation[1]	without IMU support:	≤0.3° rms
	with IMU support[2]:	≤0.08° rms
Payload		0...15 kg | 0...33 lbs
Mass		5.2 kg | 11 lbs
Dimensions (Regular Leveling Positions)	Length:	290 mm | 11.4 in
	Width:	275 mm | 10.8 in
	Height[3]:	121mm | 4.8 in
Usable Diameter		Ø130 mm | Ø5.1 in
Operating Temperature		-15 °C ... +55 °C | 5 °F...+131 °F
Storage Temperature		-55 °C ... +85 °C | -67 °F...+185 °F
Communication Interfaces		RS 232 | USB
Operational Voltage		28 VDC (24...30 VDC)
Average Power Consumption at Operational Voltage		15 W
Peak Power Consumption at Operational Voltage		60 W
Applied Standards		RTCA DO-160-G, EUROCAE-14G, ISO 7137, 2006/42/EC Machinery

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

[1] Vehicle angular motion <10°/s and with typical data acquisition profile frequency spectrum
[2] Deviation from perpendicular depends on accuracy of used IMU
[3] Payload installation level: 110 mm | Minimum: 86 mm | Maximum 134 mm

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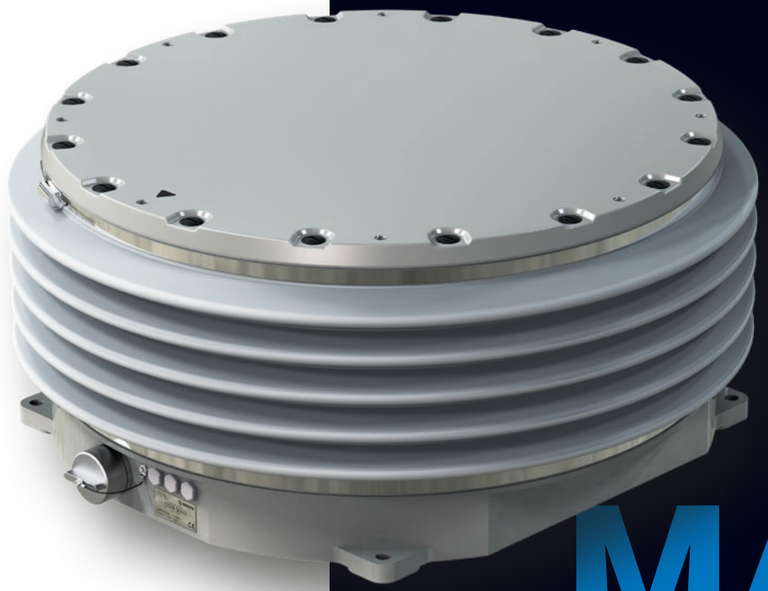
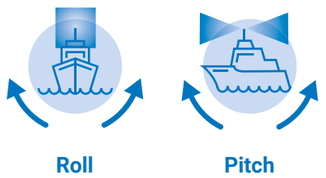
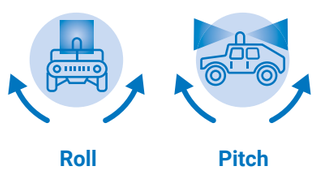


HOW **SOMAG MARINE & LAND** MOUNTS WORK

SOMAG AG Jena develops and manufactures a range of Gyro Stabilization Mounts specifically for marine and land applications to perfectly stabilize sensors in extremely harsh environments. The stabilizers have been designed to be dust-, salt- and splash-water resistant. High-quality materials and a robust design guarantee an effective use of these mounting systems. The gyro stabilizers compensate roll and pitch motions of boats, ships, Unmanned Surface Vessels (USVs) and floating platforms caused by swell. They also stabilize roll and pitch motions of any kind of vehicle caused by uneven terrain, providing a stabilized field of view of the panoramic environment.

Movements stabilized by SOMAG Marine & Land Mounts:





Possible Marine Application:

- Maritime Patrol and Coastal Surveillance
- Search and Rescue Missions
- Anti-Collision Systems on USVs
- Offshore Data Transmission
- Offshore Survey

Possible Land Application:

- Border and Force Protection
- Mobile Mapping and Scanning
- Agriculture
- Mining Vehicles
- Chemical Detection

MARINE & LAND

DATA COMPARISON MARITIME SURVEILLANCE SYSTEM

Without Stabilization

- Imaging system follows vessel motion caused by swell
- Unstable Field of View and decreased data quality
- Deterioration of detection, tracking and pointing capabilities of sensor systems

With Stabilization

- Pin-sharp images
- High quality video recording
- Perfectly stabilized Field of View
- Enhanced situational awareness
- Improved detection and tracking of moving objects even from a distance and in harsh environments

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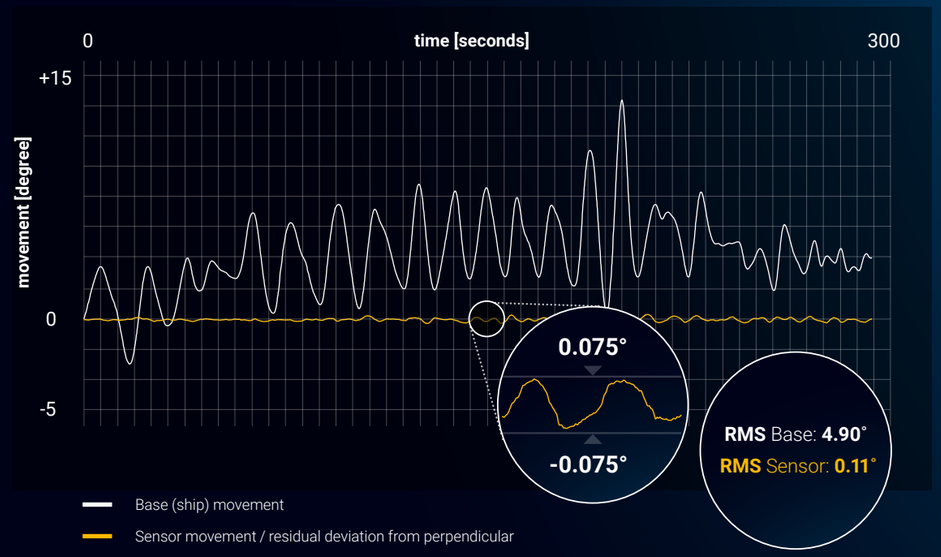
KEY FEATURES
MARINE AND LAND GYRO MOUNTS

- Ruggedized design for use in harsh off-road and offshore environments
- High stabilization accuracy: Using a SOMAG Marine & Land Mount reduces the existing movements at the sensor by ca. 45 times[1]
- IP-67 compliant (dust-, salt- and splash-water resistant)
- Innovative round shape enables compatibility with a wide range of payloads
- Operation down to -32 °C possible
- Import of external IMU data or NMEA frames possible
- Usable with SOMAG Mount Control App

STABILIZATION ACCURACY SOMAG MOUNTS (ROLL AXIS)

The use of a SOMAG Marine Mount reduced the existing movements in this mission data example[2] by ca. 45 times[3] for the sensor system



[1] The factor may vary depending on the base excitation
[2] Real ship motion data recorded from frigate at sea state 7
[3] Ratio RMS base movement to RMS sensor movement

APPLICATION EXAMPLES

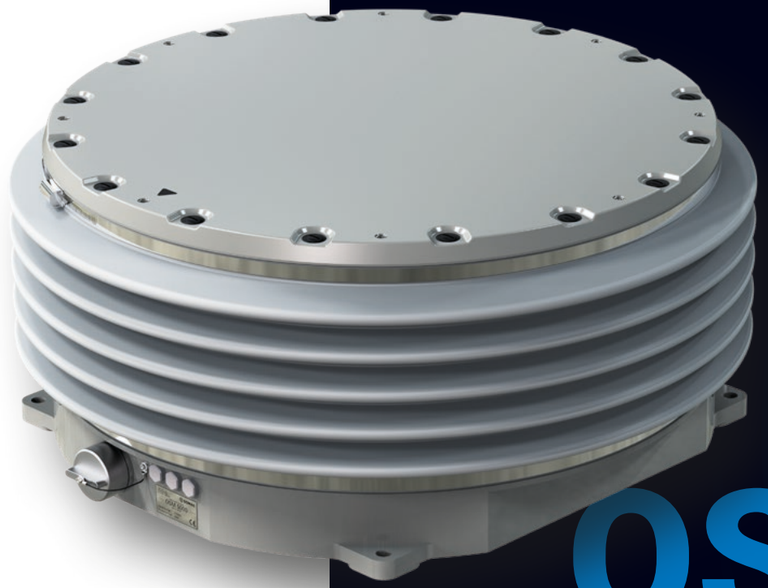
TECHNICAL SPECIFICATIONS

		OSM 5000	NSM 500	RSM 50
Angular Stabilization Ranges	Pitch at 0° Roll: Roll at 0° Pitch: Yaw (drift):	-12.2°...+12.2° -17.4°...+17.4° no drift correction	-20.0°...+20.0° -20.0°...+20.0° no drift correction	-20.0°...+20.0° -20.0°...+20.0° no drift correction
Payload[1]		300 kg | 250 kg | 200 kg 661 lbs | 551 lbs | 441 lbs	100 kg | 70 kg | 55 kg 220 lbs | 154 lbs | 121 lbs	40 kg | 25 kg | 12.5 kg 88 lbs |55 lbs | 28 lbs
Mass		54 kg | 119 lbs	33 kg | 73 lbs	11.5 kg | 25 lbs
Dimensions / Height		290 mm | 11.4 in	290 mm | 11.4 in	197.5 mm | 7.8 in
Dimensions / Diameter		Ø665 mm | Ø26.2 in	Ø486 mm | Ø19.1 in	Ø306 mm | Ø12.0 in

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

[1] Possible payload weight depends on lateral acceleration and CoG of payload – see technical specification on product pages

SOMAG



OSM 5000
OFFSHORE STABILIZATION MOUNT

The OSM 5000 is SOMAG's most powerful Gyro Stabilization Mount, developed for use in both marine and land-based environments. With a hydraulic gimbal system and high-torque motors, it reliably stabilizes payloads of up to 300 kg—even in rough sea states or over uneven terrain.

Designed for durability, the OSM 5000 features a weatherproof IP67 housing, making it ideal for use on vessels, buoys, rail platforms, or off-road vehicles. Its compact design with a 665 mm diameter provides ample space for large sensors, antennas, or custom payloads.

The Mount connects easily to existing systems via Ethernet and can be configured using the SOMAG Mount Control App, offering flexible setup and real-time monitoring. Whether used for coastal surveillance, offshore measurements, mobile mapping, or environmental monitoring, the OSM 5000 delivers precise stabilization across a wide range of challenging applications—on land and at sea.

Field of Application

MARINE LAND

Application Examples

Pan/Tilt Surveillance System

Radar System

OSM 5000

TECHNICAL SPECIFICATIONS

Angular Stabilization Ranges	Pitch at 0° Roll:	-12.2°...+12.2° | -14.1°...+14.1° (optional)
	Roll at 0° Pitch:	-17.4°...+17.4° | -14.1°...+14.1° (optional)
	Yaw (Drift):	no drift correction
Residual Deviation[1]		≤0.3° rms
Payload[2]		300 kg | 250 kg | 200 kg 661 lbs | 551 lbs | 441 lbs
Continuous Torque		275 Nm
Dynamic Peak Torque[3]		550 Nm
Mass		54 kg | 119 lbs
Dimensions	Height:	290 mm | 11.4 in
	Diameter:	Ø665 mm | Ø26.2 in
IP Class		IP 67
Operating Temperature		-32 °C ... +55 °C | -26 °F ... +131 °F
Storage Temperature		-55 °C ... +85 °C | -67 °F ... +185 °F
Communication Interfaces		Ethernet | RS422 | RS232
Internal Logging Capacity		32 GB
Operational Voltage		48 VDC (44...52 VDC)
Average Power Consumption[4] **at Operational Voltage**		100 W
Peak Power Consumption[4] **at Operational Voltage**		950 W
Applied Standards		IACS E10, DNV GL, 2006/42/EC Machinery

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

[1] Vehicle motion ≤± 12° / 12°/s / 10°/s² - small periodical lateral accelerations (≤ 0.5 g) acceptable, constant lateral accelerations for more than 1 minute reduce the performance of the Mount (can be compensated by external GPS input)
[2] Possible payload weight depends on lateral acceleration and CoG of payload / shown data is based on 0.5 g lateral acceleration and a CoG payload offset to the Mount surface of: 370 mm (14.6 in) | 450 mm (17.7 in) | 550 mm (21.7 in)
[3] Maximum duration 90 s at 55 °C surrounding temperature | longer if temperature inside the unit is < 55 °C
[4] Horizontal payload CoG offsets are not considered; without wind force and other possible external forces

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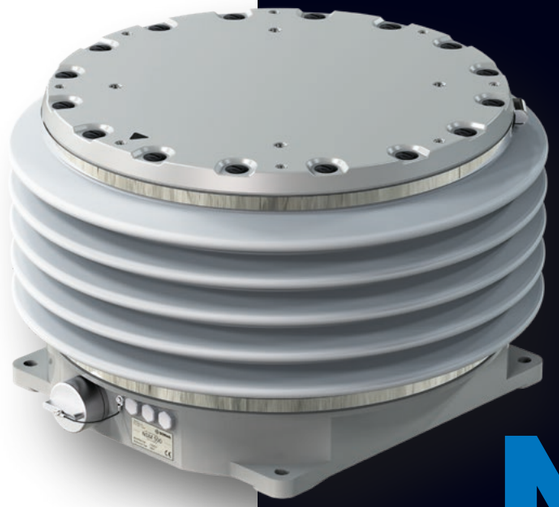

NSM 500
NAUTICAL STABILIZATION MOUNT

The NSM 500 is a robust Gyro Stabilization Mount designed for medium to large maritime vessels and land vehicles. With a peak torque of 250 Nm and a stabilization range of up to ±20° in roll and pitch, it ensures high-quality data even in rough seas or on uneven terrain.

Built for harsh environments, the IP67-rated housing protects against dust, water, and salt—making the Mount ideal for long-term use in challenging outdoor conditions. Whether navigating through high waves or operating on bumpy roads, the NSM 500 delivers reliable leveling and stabilization, and can additionally process external data such as NMEA frames or IMU inputs to further improve residual deviation performance in long-term applications.

Equipped with an Ethernet interface, it integrates easily into existing networks and can be used for various applications such as coastal surveillance, mobile mapping, or offshore monitoring.

Field of Application

MARINE

LAND

Application Examples

Antenna System

Pan/Tilt Camera

NSM 500

TECHNICAL SPECIFICATIONS

Angular Stabilization Ranges	Pitch at 0° Roll:	-20.0°...+20.0°
	Roll at 0° Pitch:	-20.0°...+20.0°
	Yaw (Drift):	no drift correction
Residual Deviation[1]		≤0.3° rms
Payload[2]		100 kg | 70 kg | 55 kg 220 lbs | 154 lbs | 121 lbs
Continuous Torque		125 Nm
Dynamic Peak Torque[3]		250 Nm
Mass		33 kg | 73 lbs
Dimensions	Height:	290 mm | 11.4 in
	Diameter:	Ø486 mm | Ø19.1 in
IP Class		IP 67
Operating Temperature		-32 °C … +55 °C | -26 °F … +131 °F
Storage Temperature		-55 °C … +85 °C | -67 °F … +185 °F
Communication Interfaces		Ethernet | RS422 | RS232
Internal Logging Capacity		32 GB
Operational Voltage		24 VDC (24...30 VDC)
Average Power Consumption[4] **at Operational Voltage**		70 W
Peak Power Consumption[4] **at Operational Voltage**		450 W
Applied Standards		IACS E10, DNV GL, 2006/42/EC Machinery

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

[1] Vehicle motion ≤± 18° / 15°/s / 40°/s² - small periodical lateral accelerations (≤ 0.5 g) acceptable, constant lateral accelerations for more than 1 minute reduce the performance of the Mount (can be compensated by external GPS input)
[2] Possible payload weight depends on lateral acceleration and CoG of payload | shown data is based on 0.9 g lateral acceleration and a CoG payload offset to the Mount surface of: 250 mm (9.8 in) | 400 mm (15.7 in) | 500 mm (19.7 in)
[3] Maximum duration 90 s at 55 °C surrounding temperature | longer if temperature inside the unit is < 55 °C
[4] Horizontal payload CoG offsets are not considered; without wind force and other possible external forces

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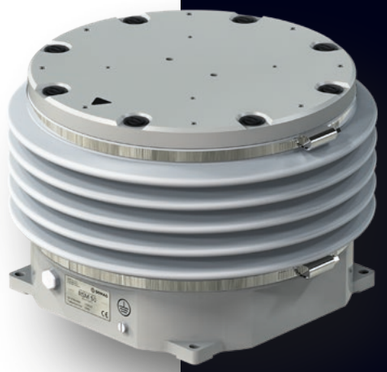

RSM 50
RUGGEDIZED STABILIZATION MOUNT

The RSM 50 is SOMAG's most compact and cost-effective Gyro Stabilization Mount for land and marine use. Designed for small and lightweight sensors, it ensures stable data collection on USVs, UGVs, buoys, and compact vehicles.

The rugged electromechanical gimbal compensates for roll and pitch movements up to ±20°, while the IP67-rated housing protects against dust, splash, and saltwater. With a payload capacity of up to 40 kg and flexible mounting options—including upside-down installation—the RSM 50 adapts easily to a wide range of missions, including unmanned operations.

An Ethernet interface enables seamless system integration and remote control. Whether for coastal monitoring, mobile mapping, or environmental surveys, the RSM 50 delivers reliable stabilization performance across land and sea.

Field of Application

MARINE

LAND

Application Examples

Antenna System

LiDAR System

RSM 50

TECHNICAL SPECIFICATIONS

Angular Stabilization Ranges	Pitch at 0° Roll:	-20.0°...+20.0°
	Roll at 0° Pitch:	-20.0°...+20.0°
	Yaw (Drift):	no drift correction
Residual Deviation[1]		≤0.3° rms
Payload[2]		40 kg | 25 kg | 12.5 kg 88 lbs | 55 lbs | 28 lbs
Continuous Torque		25 Nm
Dynamic Peak Torque[3]		50 Nm
Mass		11.5 kg | 25 lbs
Dimensions	Height:	197.5 mm | 7.8 in
	Diameter:	Ø306 mm | Ø12.0 in
IP Class		IP 67
Operating Temperature		-32 °C … +55 °C | -26 °F … +131 °F
Storage Temperature		-55 °C … +85 °C | -67 °F … +185 °F
Communication Interfaces		Ethernet | RS422 | RS232
Internal Logging Capacity		32 GB
Operational Voltage		24 VDC (24...30 VDC)
Average Power Consumption[4] **at Operational Voltage**		50 W
Peak Power Consumption[4] **at Operational Voltage**		250 W
Applied Standards		IACS E10, DNV GL, 2006/42/EC Machinery

Preliminary data, subject to change
The technical specifications in the metric system represent the binding reference values. The imperial units are rounded approximations and are provided for reference only.

[1] Vehicle angular motion ≤± 18° / 25°/s / 40°/s² - small periodical lateral accelerations (≤ 0.5 g) acceptable, constant lateral accelerations for more than 1 minute resulting from vehicle's turning maneuvers are compensated by internal or external GPS input. No GPS input could reduce the performance of the Mount during turning maneuvers.

[2] Possible payload weight depends on lateral acceleration and CoG of payload | shown data is based on 1.0 g lateral acceleration and a CoG payload offset to the Mount surface of: 125 mm (4.9 in) | 200 mm (7.9 in) | 400 mm (15.7 in)

[3] Maximum duration 90 s at 55 °C surrounding temperature | longer if temperature inside the unit is < 55 °C

[4] Horizontal payload CoG offsets are not considered; without wind force and other possible external forces

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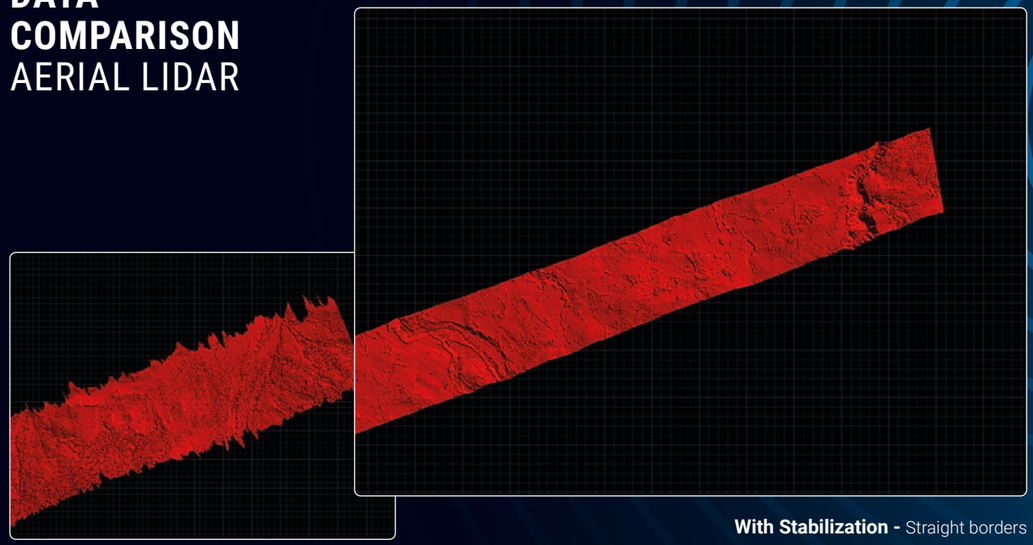
TECHNICAL BENEFITS OF AIRBORNE GYRO MOUNTS FOR **LIDAR SYSTEMS**

- Compensation of random vehicle motions which ensures an even point density across the entire data set
- Very homogeneous point distribution for LiDAR systems even at very high scan rates (e. g. 300 kHz)
- Regularly sampled and aligned data collection
- Improved collection efficiency (coverage)
- Predictable LiDAR point distribution (pitch variability in x-axis)
- Automatic drift setting and initializing
- Decoupling of high frequency vibrations (>15 Hz) because of Passive Vibration Isolation Ring
- No pixel mixing under strong vibrations for hyperspectral scanners
- Output of gimbal data at high data rates
- Angular motion compensation
- Remotely controlled operation via FMS
- Adaptable to sensor weight from 0 to 120 kg
- SOMAG Mount Control App for easy initial setup and diagnosis

STABILIZATION IS OF KEY IMPORTANCE

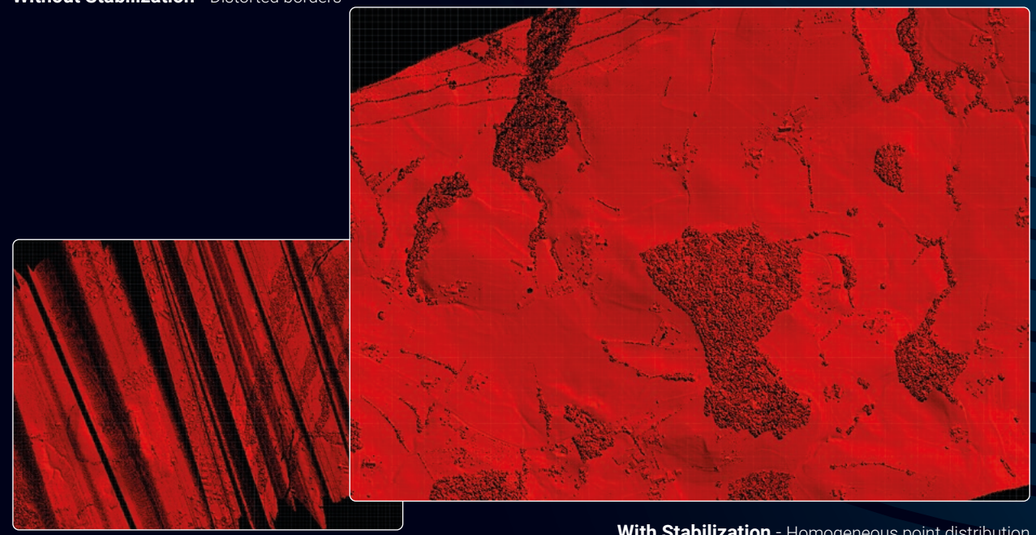
> The most important criteria in a LiDAR capture project is point density [...]. The big "advantage" of having the gimbal is that: Smaller margins are required to fulfill point density requirements, which **reduces flying time and project costs & the risk for data gaps is decreased substantially**, which reduces cost for re-flying.
>
> *Dragan Vogel, Swiss Flight Services SA*

DATA COMPARISON AERIAL LIDAR



With Stabilization - Straight borders

Without Stabilization - Distorted borders



With Stabilization - Homogeneous point distribution

Without Stabilization - Data gaps

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TECHNICAL BENEFITS OF AIRBORNE GYRO MOUNTS FOR **CAMERA SYSTEMS**

- Precise camera stabilization guarantees a high quality for orthogonal and oblique images
- Overlap can be highly reduced for an economic data acquisition process
- Risk of data gaps is highly minimized
- Output of gimbal data at high data rates
- Angular motion compensation prevents image smearing
- Remotely controlled operation via FMS
- Adaptable to sensor weight from 0 to 120 kg
- Automatic and independent operation
- SOMAG Mount Control App for easy initial setup and diagnosis
- Automatic drift setting and initializing
- Compensates not only aircraft movements like roll, pitch and yaw, but also vibrations
- Decoupling of high frequency vibrations (> 15 Hz) because of Passive Vibration Isolation Ring

DATA COMPARISON
AERIAL IMAGERY

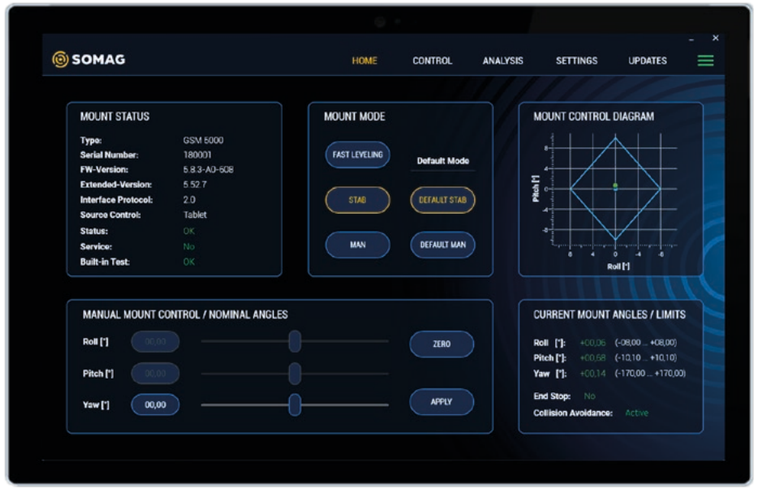
Without Stabilization **With Stabilization**

Without Stabilization **With Stabilization**

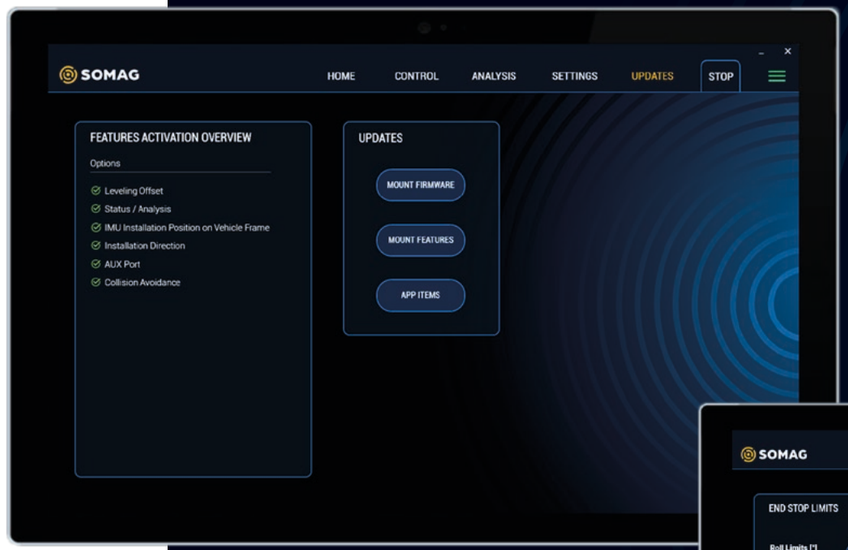
SOMAG
MOUNT CONTROL APP

For all Gyro Mounts SOMAG AG Jena provide its own developed SOMAG Mount Control App with numerous benefits:

- Quick Mount status overview
- Manual control of the Mount
- Setting of optional Software Features
- Real-time Mount feedback
- Self-test for quick status analysis
- Simple firmware update
- Access to all documents e.g. user manuals
- Input and reporting functions directly accessible



Home view example in SOMAG Mount Control App



Update view with feature activation overview

Software Feature configurations in Settings 1 view

OPTIONAL SOFTWARE FEATURES

SOMAG offers optional Software Features which allow you to customize your Mount individually to your mission requirements.

The following features can be ordered optionally:

- Leveling Offset: adjustment of the Mount virtual horizon
- End Stop Limits incl. Block Axis: adjustment of the Mount movement range
- Collision Avoidance: adjustment of Mount movement range and working height, in case of narrow installation condition
- Status/Analysis: logging and analyzing functions in SOMAG Mount Control App
- IMU Installation Position on Vehicle Frame: adjustment of horizontal IMU position
- Installation Direction: adjustment of Mount horizontal installation direction
- AUX port: enables communication to 3rd party interface
- Extended Drift Movement Range: extends the drift motion range of the GSM 5000 to a total of 355°

SENSOR ADAPTERS

Every project is different and so are the system requirements. We support you in the mechanical integration of your cameras, scanners and other payloads with our Gyro Stabilization Mounts. Upon request, our highly experienced engineers will design an adapter frame tailored to your individual needs that will 100 % meet the application conditions. The design of the sensor mounting system can vary between adapter frames for single medium format cameras and larger pods for the integration of multiple sensors. Together we will find the right solution for your requirements. Please contact us for more information and an individual consultation.

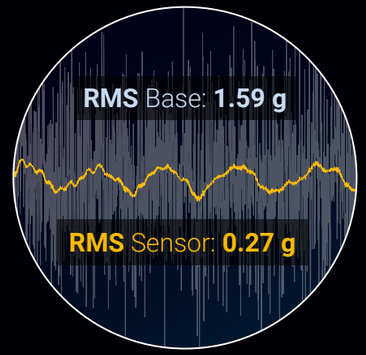
Adapter for multiple cameras mounted in oblique view

Airborne mapping system adapter

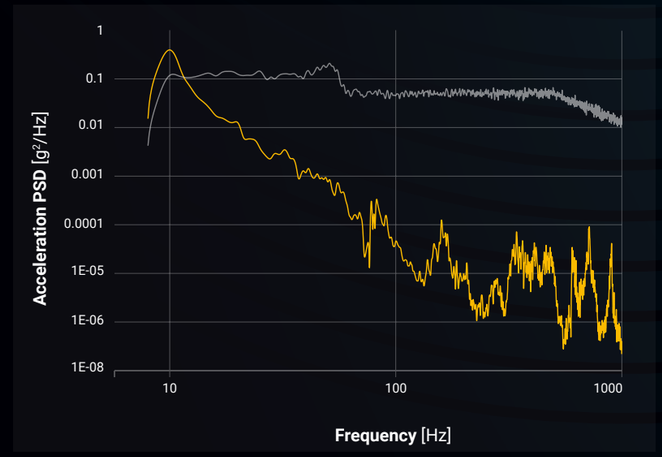
VIBRATION ISOLATION SYSTEMS

High-frequency vibrations of the aircraft floor can lead to severe damage to the sensitive sensor systems. By using a SOMAG Passive Vibration Isolation Ring (PaVIR), vibrations are drastically reduced which increases the data quality especially for scanners, LiDAR's and cameras. For the GSM 4000 and DSM 400, the PaVIR is part of the standard scope of delivery and adjusted accordingly to the weight of the payload. For the CSM, the ring can be ordered optionally. The rings are also available individually. Additionally, we offer PaVIR systems for our Gyro Stabilization Mount portfolio for mobile land applications to dampen vibrations that occur during driving. These are customized solutions tailored to individual customer requirements and can be requested as optional accessories to complement the Mount.

Using a SOMAG AG Jena **Passive Vibration Isolation Ring** reduces existing **vibrations** in an aircraft or other vehicles around **6 times** in all three axes.



Acceleration data recorded during a flight mission



Power Spectral Density analysis of the recorded data

Base (airplane) movement
Sensor

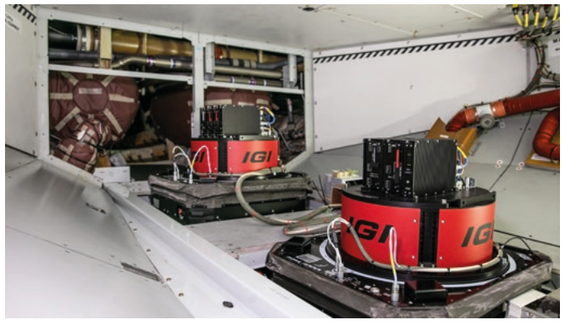
Base (airplane) movement
Sensor

SOMAG

CUSTOMIZATION SERVICES

It is highly important for us to process orders on a customer-specific basis. Depending on the project, SOMAG will assist your company from concept through development to delivery of the whole system. The great flexibility of our company ensures that special customer wishes and changes are guaranteed. Our solutions are always durable, easy to handle and contain innovative technologies. SOMAG offers different customization services including custom-made Mounts and OEM Branding Services.

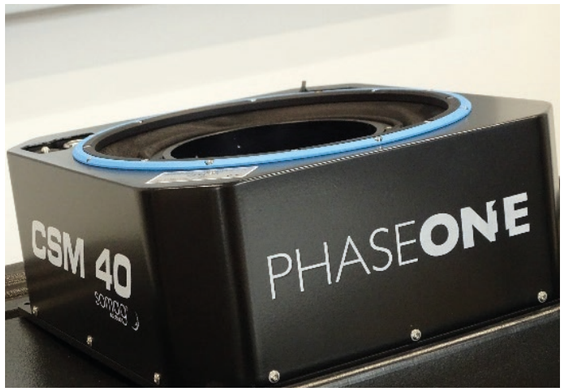
CUSTOM MADE MOUNTS



Our standard product portfolio does not reflect what you are looking for? Do you need a Mount that meets specific requirements? Then we are exactly the right partner for you! The design and manufacturing of Gyro Stabilization Mounts is our core business and therefore we can draw on many years of expertise when it comes to providing customized solutions. In the past years we have designed numerous Mounts in various configurations for our customers who approached us with special requests. A current example is the GSM 4000 Open Skies, which we manufactured on behalf of the German Federal Armed Forces. This Mount meets the special requirements of the aviation industry. We at SOMAG see each custom-made Mount as an engineering challenge that we gladly accept, as it contributes to our professional growth. Please get in touch with our experts about your project.

OEM BRANDING

SOMAG AG Jena has been working as an Original Equipment Manufacturer for numerous well-known camera, scanner and FMS manufacturers for several years. As an OEM partner, we offer our partner companies an individual product design. In this service we attach great importance to your company, your wishes and of course your end customers. When designing individual Gyro Stabilization Mounts, SOMAG follows your corporate design. Color design, logo and company name play a central role. These features make your brand unmistakable and directly trigger an association with your company among your customers, which has an immediate impact on their purchase decision. Benefit from the SOMAG OEM Branding Service and increase your brand awareness with unique Gyro Mounts matching your visual system.

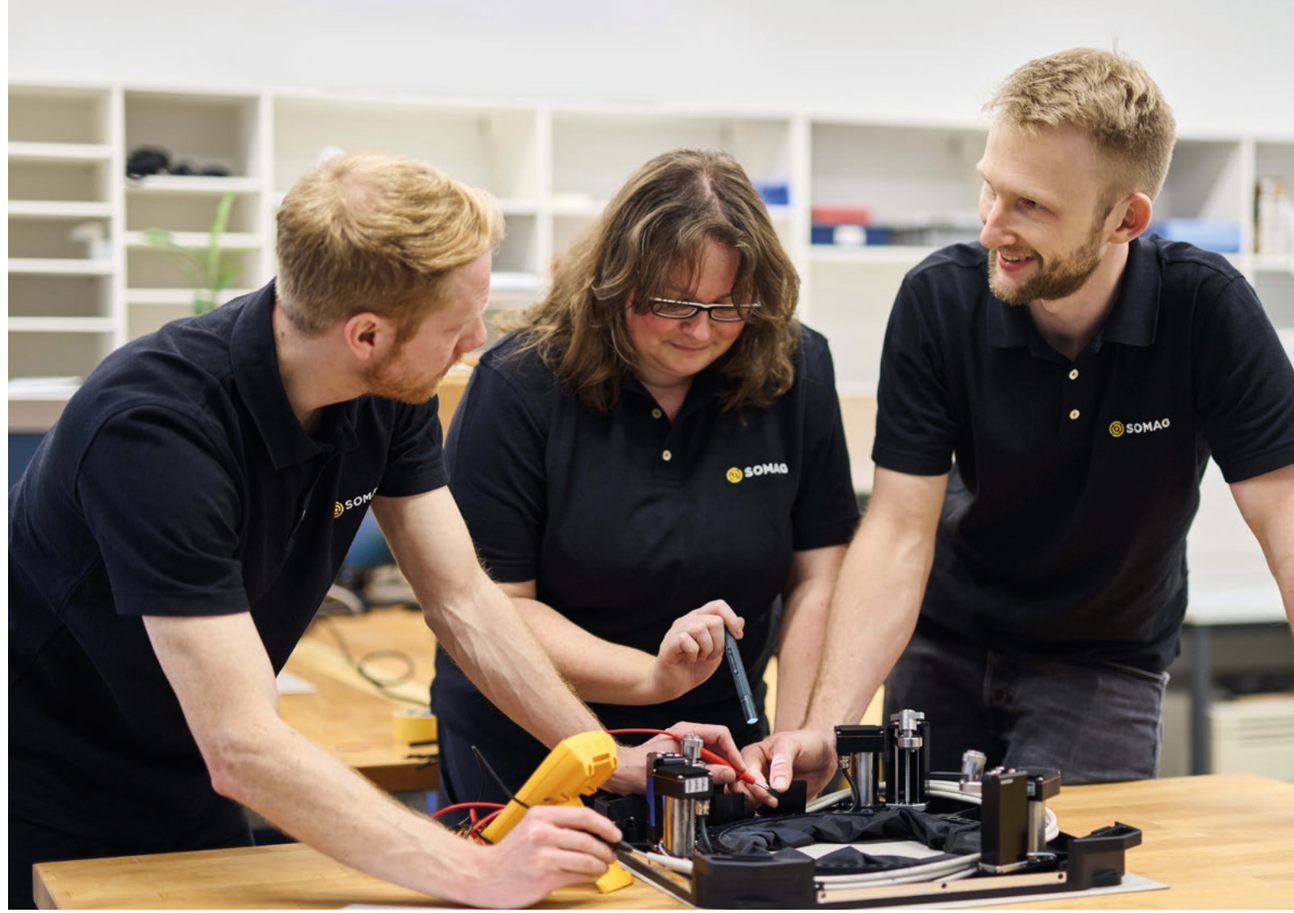


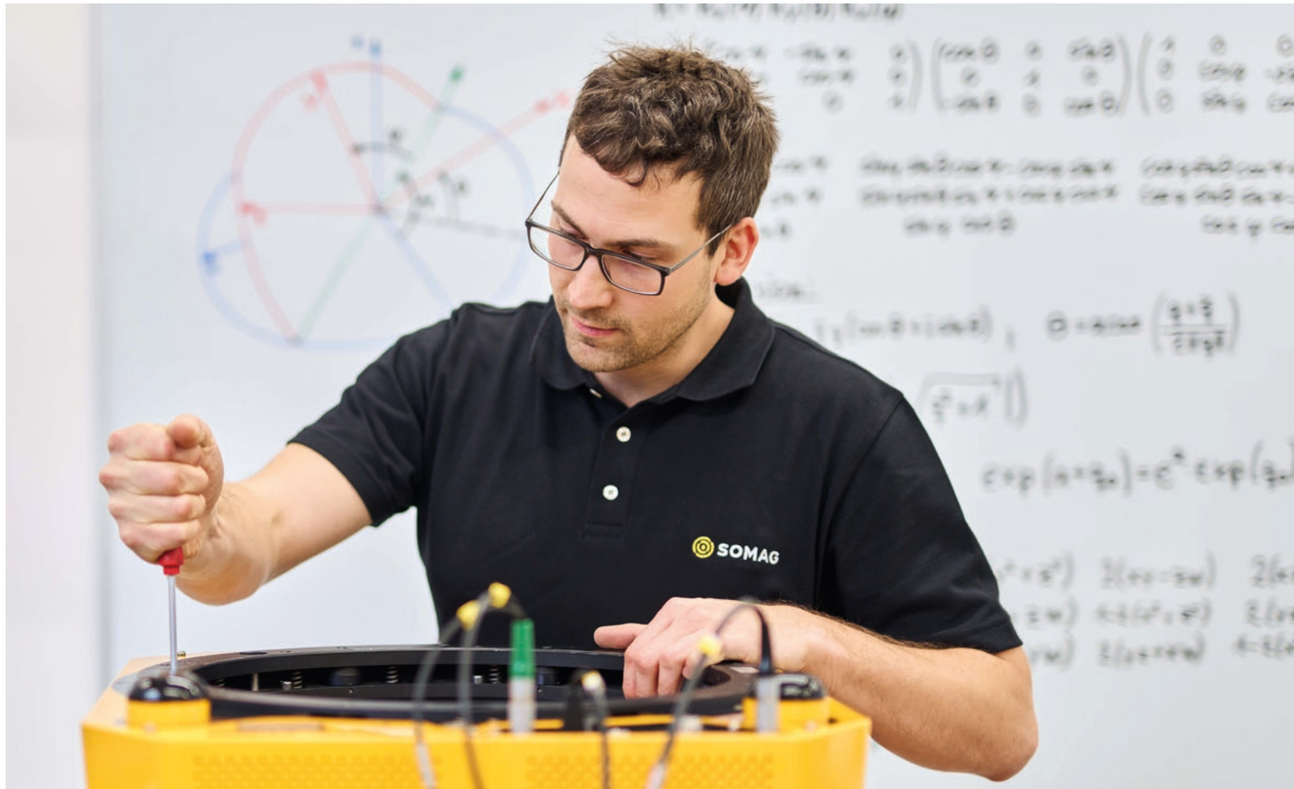
ABOUT
SOMAG AG JENA

SOMAG AG Jena is a worldwide operating specialist for high-precision gimbal systems. The company, consisting of hand-picked experts in the fields of electronics, mechanics and software, focuses since 2004 on the development of Gyro Stabilization Mounts for data acquisition and surveillance applications. SOMAG is an ISO 9001 certified company and maintains a strict quality control system. All products are assembled and tested with highest precision at the headquarters in Jena, Germany and at independent test facilities.

The gimbal specialist works as an OEM partner of well-known camera and lidar manufacturers but has always maintained its status as an independent supplier in the market. SOMAG clients include commercial, governmental and defense organizations as well as research institutions.

The uniqueness of their customer projects and the multitude of different applications drives the SOMAG team to provide customized solutions and to improve performance with each newly developed device. This is why SOMAG Mounts set the pace for gyro stabilization devices worldwide.





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