



# GEMAC MOTUS<sup>®</sup> Greenline

—

Flexible mounting variants for more  
Independence from existing hole patterns.

## The first Power-IMU for mobile Power-Machines

Our configurable sensor measurement unit GEMAC MOTUS® enables 6-axis motion detection on mobile power machines, such as construction machinery, agricultural machinery, forestry machinery, cranes and lifting technology, as well as ships.

GEMAC MOTUS® Greenline with its slim design puts the focus above all on flexibility and price. With the two standard housing variants available for 2- or 4-point mounting, the user gains more independence from the existing hole patterns on the mobile machine.

Customerspecific mounting variants are possible on request.

### Range of functions

- ✓ Automatic configuration of the mounting position
- ✓ Flexible zero point adjustment
- ✓ Convenient parameterization with sensor programming adapter
- ✓ Configuration of the sensor fusion
- ✓ Configuration of the output data with SAE J1939
- ✓ CANopen Autostart

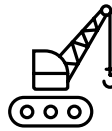
### Applications (typical)



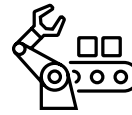
Forestry machinery



Agricultural machinery



Lifting technology



Automation

### Sensor Portfolio - General Overview

Performance Class	Accuracy	GEMAC MOTUS® Greenline	GEMAC MOTUS® Blackline	GEMAC MOTUS®
E economic	static	±0.1° to ±0.5°	-	-
	dynamic	±0.8°	-	-
B basic	static	-	±0.3°	±0.3°
	dynamic	-	±0.5°	±0.5°
C classic	static	-	±0.1°	±0.1°
	dynamic	-	±0.5°	±0.25°
X Inertial Measurement Unit		SE NE XE	SB SC NB NC XB XC	NB NC XB XC IB
N Inclination sensor dynamic				
S Inclination sensor static				

## Variants GEMAC MOTUS® Greenline

## Recording of inclination (static)

Variants	SE
General parameters	Inclination static
Measurement range	$\pm 90^\circ/\pm 180^\circ (360^\circ)^2 / \pm 5^\circ/\pm 180^\circ (360^\circ)^2$
Resolution	0.01° / 0.01° to 0.1°
Temperature coefficient	$\pm 0.02^\circ/\text{K}$
Static accuracy <sup>1</sup>	$\pm 0.1^\circ$ to $\pm 0.5^\circ$
Dynamic accuracy <sup>1</sup>	-
In run bias stability	-
Angle Random Walk (ARW)	-
Interface	CAN, CANopen, SAE J1939, Current, Voltage

## Recording of inclination (static and dynamic)

Variants	NE
General parameters	Inclination static and dynamic
Measurement range	$\pm 90^\circ/\pm 180^\circ (360^\circ)^2 / \pm 5^\circ/\pm 180^\circ (360^\circ)^2$
Resolution	0.01° / 0.01° to 0.1°
Temperature coefficient	$\pm 0.02^\circ/\text{K}$
Static accuracy <sup>1</sup>	$\pm 0.1^\circ$ to $\pm 0.5^\circ$
Dynamic accuracy <sup>1</sup>	$\pm 0.8^\circ$
In run bias stability	-
Angle Random Walk (ARW)	-
Interface	CAN, CANopen, SAE J1939, Current, Voltage

## Recording of inclination (static and dynamic), acceleration &amp; rotation rate

Variants	XE		
	Inclination	Accelerometer	Gyroscope
General parameters	Inclination	Accelerometer	Gyroscope
Measurement range	$\pm 90^\circ/\pm 180^\circ (360^\circ)^2$	$\pm 2 \text{ g}$	$\pm 250 \text{ }^\circ/\text{s}$
Resolution	0.01°	0.488 mg	0.035 °/s
Temperature coefficient	$\pm 0.02 \text{ }^\circ/\text{K}$	0.4 mg/K	0.02 °/s/K
Static accuracy <sup>1</sup>	$\pm 0.5^\circ$	-	-
Dynamic accuracy <sup>1</sup>	$\pm 0.8^\circ$	-	-
In run bias stability	-	-	10 °/h
Angle Random Walk (ARW)	-	-	0.4 °/√h
Interface	CAN, CANopen, SAE J1939		

<sup>1</sup> incl. compensated cross sensitivity <sup>2</sup> up to 2 measuring axes with configurable orientation

**Technical parameters**

- **Connector:** cable (0.2 m)  
with sensor connector M12 5-pole, A-coded
- **Degree of protection:** IP6K6K/IP6K7,  
Operating temperature: -40 °C to +80 °C
- **Dimensions and weight:**  
4: 62.0 × 32.3 × 18.7 mm, approx. 30 g (without cable)  
2: 43.5 × 76.3 × 18.7 mm, approx. 30 g (without cable)
- **Housing material:**  
plastic (PA)
- **Supply Voltage:**  
11 V to 36 V (in some cases from 7.5 V)
- **Current consumption at 24 V:**  
approx. 12 mA (digital), max. 70 mA (analog)

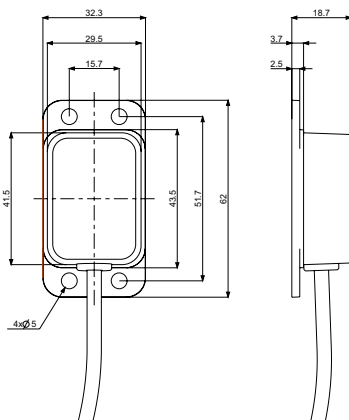
**Available interfaces:**

- digital:**
- CAN 2.0 A and B (11- and 29-Bit-ID) according ISO 11898-2
  - CANopen according CiA DS-301, Profile according CiA DSP-410
  - SAE J1939 configurable process data
- analog:**
- Current (4 ... 20 mA)
  - Voltage (0 ... 10V)

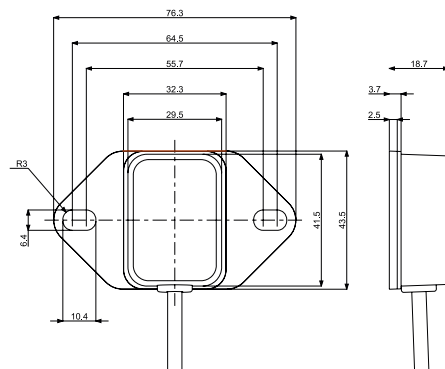
Sensor programming adapter incl. cable and PC software (PR-23999-10)

**Dimensional drawing**

4-hole



2-hole



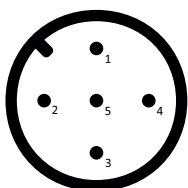
**Connector Pin Out**

M12 plug connector pin out digital

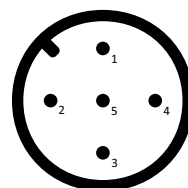
PIN	Signal	Allocation
1	CAN_SHLD	Shield
2	V+	Supply voltage (+24 V)
3	V-	GND / 0 V / V-
4	CAN_H	CAN_H bus line
5	CAN_L	CAN_L bus line

M12 plug connector pin out analog

PIN	Signal	Allocation
1	V+	Supply voltage (+24 V)
2	B-OUT	Sensor output B
3	V- / GND	Supply voltage ground / Sensor ground
4	A-OUT	Sensor output A
5	TEACH	Input for zero point adjustment



digital: plug connector - view from outside



analog: plug connector - view from outside

## Ordering Information

## Performance Class - E economic

S Inclination sensors static	Static accuracy	±0.1° to ±0.5°			
	Dynamic accuracy	-			
	Product line	GEMAC MOTUS® Greenline			
	Specification	4-hole-variant		2-hole-variant	
	Measurement range	+/- 90°	±180° (360°)	+/- 90°	±180° (360°)
	Axis	2D	1D	2D	1D
	CAN	PR-28038-00-00		PR-28028-00-00	
	CANopen	PR-28138-00-00		PR-28128-00-00	
	SAE J1939	PR-28738-00-00		PR-28728-00-00	
	Current	PR-28438-00-00	PR-28437-00-00	PR-28428-00-00	PR-28427-00-00
	Voltage	PR-28538-00-00	PR-28537-00-00	PR-28528-00-00	PR-28527-00-00
N Inclination sensors dynamic	Static accuracy	±0.1° to ±0.5°			
	Dynamic accuracy	±0.8°			
	Product line	GEMAC MOTUS® Greenline			
	Specification	4-hole-variant		2-hole-variant	
	Measurement range	+/- 90°	±180° (360°)	+/- 90°	±180° (360°)
	Axis	2D	1D	2D	1D
	CAN	PR-28034-00-00		PR-28024-00-00	
	CANopen	PR-28134-00-00		PR-28124-00-00	
	SAE J1939	PR-28734-00-00		PR-28724-00-00	
	Current	PR-28434-00-00	PR-28430-00-00	PR-28424-00-00	PR-28420-00-00
	Voltage	PR-28534-00-00	PR-28530-00-00	PR-28524-00-00	PR-28520-00-00
X/I Inertial measurement unit	Static accuracy	±0.5°			
	Dynamic accuracy	±0.8°			
	Product line	GEMAC MOTUS® Greenline			
	Specification	4-hole-variant		2-hole-variant	
	Measurement range	+/- 90°	±180° (360°)	+/- 90°	±180° (360°)
	Axis	6D		6D	
	CAN	PR-28036-00-00		PR-28026-00-00	
	CANopen	PR-28136-00-00		PR-28126-00-00	
	SAE J1939	PR-28736-00-00		PR-28726-00-00	

