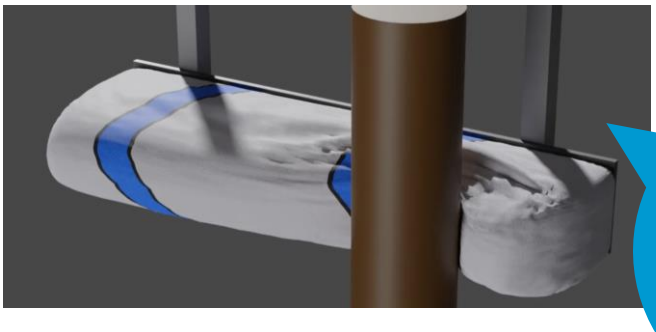
tactiBAR

Tactile sensor system for object and collision detection in mobile off-highway applications



Particularly suitable for off-highway robotics for object detection in biomass

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Summary

The tactile sensor system tactiBAR is based on an optical sensor body that reacts to pressure and deformation. The technology is ideal for use in mobile off-highway automation or in pre-mounted agricultural machinery attachments.

Off-highway robots can use sensor technology to navigate opaque processing areas and sense obstacles.

The sensors enable contact/collision detection and provide high-resolution feedback on contact location, contact surface, force and impact speed. The high, soft sensor body mechanically reduces the risk of injury in the event of collisions.

Application examples

Description

A major problem for intelligent machines in outdoor applications is safe operation in the presence of complex obstacles and when interacting with human operators. The machines work in areas with a wide variety of plants and may have to pass through tall grass, undergrowth, small branches, etc. that have grown into the path of movement.

Conventional optical sensors such as laser scanners reach their limits here, as plants in particular are recognised as solid and impassable obstacles and the vehicle is stopped immediately at very short distances.

The touch sensors enable robots to feel their way towards obstacles, recognise "soft" obstacles and drive through them. In the case of solid obstacles, alternative routes can be searched for more effectively as impact locations are localised with high resolution.

The sensor modules have CAN bus, RS485 and USB interfaces as well as two cascadable safety outputs for connection to safety controllers.

There is a ROS driver and PC software to display sensor data and make settings.

A 150 mm thick, medium-hard sensor body is fitted as standard, which can be customised in terms of shape, dimensions and hardness. A thickness of up to 250 mm can be realised.

Use cases:

- Obstacle detection in rows of trees/vineyards
- Detection of obstacles in crops and meadows (animals, objects, biomass, etc.)
- Generally in mobile off-highway robotics
- Agricultural implements in unclear biomass

Technical data

Item number	41.109.1.000
Dimensions (LxWxH)	Standard configuration: 200 ... 1000 x 140 x 150 mm (customisable)
Properties of the push-button element	Customisable hardness, customisable shape, influences resolution / pressure distribution
Ambient conditions	-30 °C ... +80 °C
Power supply (VIN)	7.5 ... 30 V_{DC}
Power consumption	Depending on the system configuration
Connections	USB, CAN FD, power supply and I/O
Protection class	IP65 ... IP67 (TBD)
Resolution	40x5 sensor areas with 800mm sensor length Resolution adjustable (TBD)
Acceleration sensor / IMU	Optional, 6-axis
Colour	Black / grey / blue; in consultation with the customer

Interfaces

CAN	1 – 2x (CAN FD, up to 5 Mbit/s)
RS485	Optional on request: 2 x (full duplex / half duplex switchable up to 18 Mbit/s, switchable termination)
USB	1 x (USB device, access to sensor data via virtual comports)
Safety switching outputs	2x loadable up to 1A, 5 ... 30 VDC, 2x separate supply input, cascadable, redundant, self-diagnosis / fault detection
GPIO	2 - 4x, optional - on request
Analogue inputs	2x, optional - on request
Wake-up / Sleep	CAN (via I/O on request)
Displays	Optional: Status LEDs (red / green / blue), internal only

Price / delivery options

Minimum purchase quantity	1 piece; 10 pieces for customised configuration | Price: on request
Delivery time	12-16 weeks depending on parts availability and stock levels
Scope of delivery	tactiBAR with connection cables and mounting accessories

Contact for further information

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