Off-road Platform VIONA

Vehicle for **I**ntelligent **O**ff-road **NA**vigation

The robot VIONA (Vehicle for Intelligent Outdoor Navigation) was specifically designed for the use in rough terrain. Besides the robust mechanics, a four-wheel drive with powerful electric motors was developed. For improved agility in narrow spaces, the front and rear axles are separately steerable. Therefore, VIONA is able to carry out special manoeuvres like double ackerman and crab steering.

For the development of a robust and lightweight chassis, a common aluminium profile system was used (compatible to Bosch, Norcan, Minitec, and many more). Critical components and connection points for the wheel suspension, steering and the driving system are made of high-quality machinery steel and a corrosion resistant protection layer.

VIONA is very flexible and comes with various options some of which are listed below.

Technical Data

width	1400 mm (broadest part: bumper bar)
length	2425 mm
height	850 mm
weight	approx. 650 kg
payload	approx. 200 kg
wheel track	1100 mm
wheel base	1200 mm
wheel diameter	770 mm (off-road tires on 16" light alloy rims)
ground clearance	~ 250 mm
spring travel	115 mm (-45 mm to +70 mm)
on-board Voltage	48 V
energy source	8 deep cycle batteries with 12 V and 55 Ah each (total: 5280 Wh)
control interface	ROS (http://ros.org) Finroc (http://finroc.org)

- 4x4 singlewheel drive with 0.9 kW per wheel
- integrated incremental encoder and holding brake
- offroad gear (max. 7km/h)
  (other gear reductions for higher velocities are possible)
- front / rear axis are steered separately (DoubleAckermann)
- chassis with Minitec profiles; sealing related to IP 65
- springmounted industrial safety bumpers (front and rear side)
- mounting option for Sick planar laser scanners
- mounting option for Laser Ranger 3D (Robot Makers GmbH)
- software packages for perception, navigation, and simulation
- integration kit for Applanix POS LV localisation system
  (http://applanix.com)

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