diwoBOT autonomy package
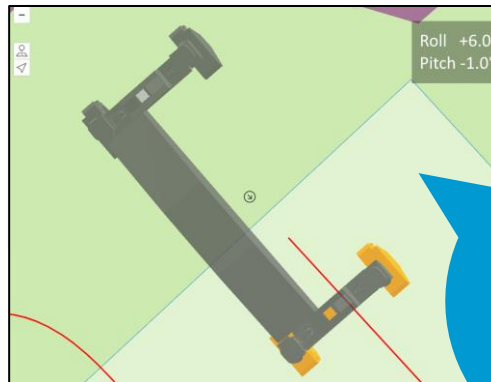
Complete system for the automation of off-highway machines

Leading agricultural and construction maufacturers are relying on our developments for the automation of their products

Summary

The diwoBOT autonomy package is a complete system for the autonomous control of off-highway vehicles that enables manufacturers of machines and attachments to easily enter the field of intelligent machines. The software of the autonomy package can be adapted to a wide range of vehicle types, steering types and attachments.

The autonomy package can be installed as an additional control system, parallel to existing technology. This is made possible by the support of common BUS systems such as Ethernet and CANopen, which minimises the development and adaptation effort required for the integration of the autonomy package.
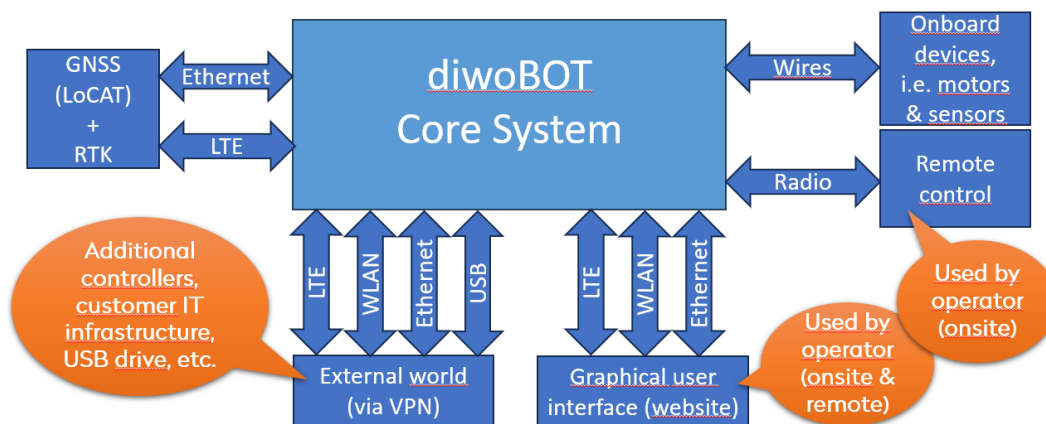
The autonomous system is controlled via a web interface, which can be accessed via WiFi, LTE or a touch display on the device. We also offer an optional radio remote control.

Description

The diwoBOT autonomy package can handle different drive types (hydraulic & electric), regardless of whether the vehicle is driven by wheels or tracks. Various types of steering are supported, such as four-wheel steering, crab steering and Ackermann steering. Armoured steering and articulated steering are also supported.

In combination with the LoCAT GNSS multiband receiver with RTK correction, which was developed by digital workbench and can be retrofitted, and by incorporating other available sensor data, position and orientation can be determined precisely, which is a prerequisite for a successful autonomy solution.

Our system uses the open source industry standard ROS 2 as its software platform.

III digital workbench

Technical data / system properties

Item number	51.001.1.000
Components	Control computer, mobile radio gateway, GNSS receiver, IMU
Operating system	Linux
Required installation space	Volume of approx. 9 litres
Ambient conditions	0 °C — +70 °C
Power supply	9 - 36 V_{DC} (Battery or external supply)
Power consumption	Operation up to 5 A, idle up to 1 00 µA
Connections	CAN, Ethernet, IOs
Protection class	IP69K
GNSS	Multiband (GPS/QZSS: L1 / L2, Galileo: E1 / E5, GLONASS: L1 / L2, Beidou: B1 / B2)
GNSS accuracy	RTK: 1 cm + 1 ppm CEP, SBAS: 1 m CEP
Control types	• **Manually** via a remote control • **Fully autonomous** via pre-planned missions • **Assisted driving**, i.e. autonomous driving with manual intervention
Operation	• diwoBOT web user interface for tablet, mobile phone & PC (on-site & remote access) • diwoBOT radio remote control (optional)
Display (optional)	Bright HD touch display

Interfaces

Primary bus	CANopen on CAN 3, additionally CAN-Isobus
IOs	Analogue & digital IOs, PWM support, number according to customer requirements
RS232	1200 - 460800 baud (configurable), switchable via CAN
Ethernet	4xRJ45 10/100 Mbit/s
Wireless modem	4G (LTE) up to 100 Mbit/s, 3G bis 42 Mbit/s, WLAN bis 300 Mbit/s
Software interfaces	ROS2, OPC UA, DDS, TCP/IP, UDP, SAE J1939

Price / delivery options

Minimum purchase quantity	Upon request
Delivery time	Upon request
Scope of delivery	Hardware package with diwoBOT autonomy package installed

Contact for further information:

digital workbench gmbh
St. Gangolf-Str. 2
85139 Wettstetten
Germany

Josef Schmidt
E   josef.schmidt@digital-workbench.de
T   +49 841 98 18 99-00
M   +49 151 156 317 51

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