HELKO
Autonomous Truck Robot

SYSTEM PARTS

Helko	AMR self-driving truck
Server	Preconfigured NAVARCO server, or customer VM, or Edge Computing in 5G architecture
Wireless network	Network for Helko-server connection
Cart	Cargo transport by docking a cart on which the load rests
Joystick	Bluetooth
Charging	Automatic charging station

INTELLIGENT FEATURES

Point-to-point missions	Simple missions with a single destination chosen by the user
Multi-point missions	Missions with multiple loading/ unloading points
Cyclical missions	Mission repetition setting for n times
Queue and priority management	Server-side possibility to intervene on the priority of queued missions
Obstacle detection	Obstacle detection by laser scanner with adjustable stopping distance parameterisation
Autonomous cart handling	Autonomous navigation managed by the NAVARCO software platform
Manual cart handling	Manual handling in the absence of navigation; mechanical load releasing
Light signals	Predefined LED signals

COMPLIANCE

IP Protection	IP 40
Guidelines	2006/42/CE, 2014/35/UE, 2014/30/UE
Standard regulations	CEI EN 60204-1, UNI EN ISO 13849-1, CEI EN 62061, EN ISO 3691-4:2020

PHYSICAL PROPERTIES

Length	850 mm
Width	500 mm
Height	280 mm
Transportable load	Up to 250 Kg

DRIVE AND MOTION

Batteries	LiFePO4 24VDC
Capacity	Up to 120 Ah
Autonomy	10h (duty cycle 60%)
Battery lifetime	3 years (in standard conditions)
Full recharge	8 h
Motion dynamics	Bi-directional movement with preferential direction of travel; industrial cart with pivoting wheels
Maximum collaborative speed	0.3 m/s in collaborative mode at full load (250 kg)
Automatic cart hook/unhook	With possibility of manual cart release (mechanical action)
Sensors	2 x safety laser scanner with 360° perimeter coverage; 3D stereoscopic camera
Wheels	Double BLDC 500W electric drive wheel with encoder 2048 imp/rev.
Intended use	Indoor usage in areas shared with people (collaborative mode)

ENVIRONMENT

Noise	< 70 dB (A)
Humidity	< 80%
Temperature	> 5°C, < 45°C
Lifts and doors	Lift interface module for multi-floor maps
Floor	With depressions or steps <=10mm
Floor irregularities	<=15mm

HARDWARE

Components	High-quality commercial hardware
Laser scanner	Dual Safety Laser Scanner
Camera	3D stereoscopic camera
Motors	2 x brushless motors
Encoders	2 x incremental on drive wheels; 2 x hall on coupling system
Load transportation	Cart equipped with pivoting wheels
Cart coupling system	Sensor-controlled mechanical jacks
Emergency button	Mushroom-style emergency stop pushbutton (ref. ISO 13850)
Safety	Performance Level PL d
Light signals	LED RGB

SOFTWARE

Operating System	Linux Ubuntu
Middleware	ROS 2 - Robot Operating System
High Level Interface	Easy, through a user-friendly web interface
Mapping	Proprietary Map Editor
Mission and AMR fleet management	NAVARCO software platform Fleet Management System

INSTALLATION

Server	Preconfigured NAVARCO server, or customer VM, or Edge Computer in 5G architecture
Wireless network	Via pre-configured router, corporate wi-fi, or 5G/4G+ network
Mapping	Map Editor on a local PC
Navigation rules	Customisable via Map Editor functionalities
Mission management	Via Web Application
External interface	RESTful API
HELKO and NAVARCO can be integrated on-premise with existing higher-level systems	• WMS (Warehouse Management System) • MOM (Manufacturing Operations Management) • MES (Manufacturing Execution System) • ERP (Enterprise Resource Planning)

OPTIONAL PARTS

Charging	Manual recharging station
Workbench	Workbench transportable by Helko
Tablet HMI	To call missions from workstations (if not equipped with a PC)
Tablet holder	To position the tablet near loading/ unloading points
Custom HW	Hardware customisation and components for specific tasks
Custom SW	Software customisation; task-specific features and integration
Additional sensors	Sensors to optimise docking accuracy in special environments

AFTER-SALES SERVICES

Training	Staff training service
Support	Specialised technical assistance
Remote Control	Web/mobile interface for remote control with direct contact to technical support
Mission Report	Periodic performance reports
Alarm Report	Logging of unexpected events and problems
Fleet Lookout	Collection and analysis of data, telemetry, and mission results with simulation and analysis of missions performed

CONTACTS

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