

KIT R&D ROS 2

Compatible with AgileX, Clearpath & Husarion

Budget

A ready-to-use package to help you save time

This kit offers a **ready-to-develop** robotic solution, created **to save assembly time**.

- ✓ **Mechanics:** integration of components into the mobile base
- ✓ **Electrical:** connecting all equipment together
- ✓ **Software:** installation of component ROS packages

Our goal

Upon receipt of the mobile robot equipped with its ROS R&D kit, our customers can immediately develop their programmes and applications without having to design the entire system architecture beforehand.

Software expertise: OS installation, ROS, and VNC

In addition to electronic and mechanical integration, our engineers handled the software side, installing the OS on the PCs via **Linux Ubuntu**.

This procedure includes the integration of **ROS** (Robot Operating System) and the various packages of essential components.

Alongside ROS, we also deploy an indispensable tool, **VNC** (Virtual Network Computing), which offers a dedicated page for connecting to the on-board computer's desktop.

This makes it possible to check the computer's status at any time, as well as to receive feedback from the sensors integrated into the kit.

Specifications

KIT

DIMENSIONS

Length: 580 mm
Width: 400 mm
Height (without LiDAR): 220 mm
Weight: ~ 10 kg

INCLUDED IN THE KIT

- ✓ Airy Robosense LiDAR
- ✓ RealSense Depth Camera D435
- ✓ 5G industrial router
- ✓ Asus NUC 15 Pro PC

OTHERS

Materials: aluminum and plastic
Black powder-coated finish
Compatible with most AgileX, Clearpath, and Husarion robots
Resistant to light rain
Ventilated

SYSTEM INTEGRATION

Operating system (OS): Ubuntu 20.04 or 24.04
Version: ROS 1 (Noetic) or ROS 2 (Humble)

DEVELOPMENT TOOL

ARDUSIMPLE RTK2B

Chip: ZED-F9P

Precision:

- < 1 cm with a base station up to 35 km
- < 1 cm with NTRIP up to 35 km
- < 4 cm with SSR corrections
- < 1.5 m in standalone mode
- < 0.9 m in standalone mode with SBAS coverage

Startup Time:

First Fix Position: 25 seconds (cold start), 2 seconds (hot start) First RTK
Correction: 35 seconds (cold start)

INTEGRATION

MECHANICAL INTEGRATION

Designing the casing, placing all components inside the box, and attaching the box to the robot.

ELECTRICAL INTEGRATION

Connection of all sensors, the PC and the network.

IT INTEGRATION

PC and network installation
Installation of all ROS drivers
Creation of the URDF and a launch file that initialises all components when the PC starts up.

LIDAR

Airy Robosense

- Hemispheric field of view: $360^\circ \times 90^\circ$
- Accuracy: ± 1 cm
- Resolution: 96 beams
- Size: $\phi 60 \times H 63$ mm
- Weight: < 240g
- Range: up to 30 m at 10% reflectivity
- Maximum range: 60 m
- Protection rating: IP67, IP6K9K
- Angular resolution (H x V): $0.4^\circ \times 0.47^\circ$

CAMÉRA

RealSense D435

Depth frame rate: up to 90 fps
Minimum depth: 10.5 cm
Depth output resolution: up to 1280 x 720
Sensor resolution: up to 1920 x 1080
Connectors: USB-C 3.1 Gen 1
Dimensions: 90 x 25 x 25 mm

MAIN COMPUTER

Asus NUC 15 Pro

- Dimensions: $117 \times 112 \times 37$ mm
- Processor: Intel Core Ultra
- Memory (RAM): 16 GB DDR5
- Storage: 500 GB NVMe SSD
- USB ports: up to 7 USB ports including 2 Thunderbolt 4
- Network: 1×2.5 GbE Ethernet
- Wi-Fi: Wi-Fi 7
- Bluetooth: 5.4
- Power supply: 19 V / 120 W adapt

SPATIAL PHIDGET

GENERAL INFORMATION

Sampling interval: 1 s/sample to 4 ms/sample
Operating temperature : - 40°C to 85°C

ACCELEROMETER

Max. acceleration measurement : $\pm 2,5$ g
Acceleration measurement resolution: 10 μ g

GYROSCOPE

Max. gyro speed (X axis, Y axis): $\pm 125^\circ/\text{s}$
Gyroscope resolution (X axis, Y axis): $1\text{E-}05^\circ/\text{s}$

MAGNETOMETER

Max. magnetic field : $\pm 49,2\text{G}$
Magnetometer resolution: 1.5 mg

KIT R&D ROS 2

Compatible with AgileX, Clearpath & Husarion

Efficient

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LIDAR

Robosense Fairy

Vertical resolution: 48 or 96 lines
Accuracy: ± 0.5 cm
Dimensions: $\varnothing 97.5 \times 100$ mm
Weight: < 350 g
Range: 80 m @ 10% reflectivity
Maximum range: 150 m
Protection rating: IP67 / IP6K9K
Angular resolution (H $\times$ V): $0.25^\circ \times 0.33^\circ$

CAMÉRA

RealSense D435

Depth frame rate: up to 90 fps
Min. depth 10.5 cm
Depth output resolution: up to 1280 x 720
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Performance / Performance +

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- ✓ RealSense D435 Depth Camera
- ✓ 5G industrial router
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- ✓ Nvidia Orin AGX 64 Go

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LIDAR

Ouster OS1 32 or OS1 128

Max. range: 170 m
Min. range: 0.5 m
Vertical field of view: $42.4^\circ \pm 1.0^\circ$
Horizontal field of view: 360°
Vertical angular resolution: 0.35°
Horizontal resolution: 512, 1024 or 2048
Accuracy: ± 0.5 cm to ± 5 cm
Rotation rate: 10 or 20 Hz
Protection rating: IP68, IP69K
Power consumption: 14–20 W
Weight: 522 g

CAMERA

RealSense D435

Depth frame rate: up to 90 fps
Min. depth 10.5 cm
Depth output resolution: up to 1280×720
Sensor resolution: up to 1920×1080
Connectors: USB-C 3.1 Gen 1
Dimensions: $90 \times 25 \times 25$ mm

DEVELOPMENT KIT

Nvidia Orin AGX 64 Go

GPU: NVIDIA Ampere, 2048 CUDA cores + 64 Tensor Cores
AI performance: up to 275 TOPS
Maximum GPU frequency: ≈ 1.3 GHz
CPU: 12-core 64-bit ARM Cortex-A78AE

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