

CARMA 2 DATA SHEET

CONTINUOUS AUTONOMOUS RADIOMETRIC MONITORING ASSISTANT

This document aims to provide the specification for the CARMA platform prototype (TRL6). The information provides the operator with the limitations and capabilities of this platform for any given operation. please contact:

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<http://uomrobotics.com/nuclear/roboticplatforms/autonomous%20exploration/carma%202.html>

CARMA 2 - INFORMATION

CARMA 2 is the next generation in the research CARMA platform series of autonomous monitoring robotic systems designed for the nuclear industry. Primarily envisioned to continuously inspect a map of the ground for radioactive contamination from fixed or migrating sources.

CARMA 2 uses the latest robust robotic platform, integrating the Clearpath Jackal combined with a series of off-the-shelf components. The on-board 3D mapping uses ROS architecture, in combination with;

- 2x 20m LIDARs from Hokuyo,
- 1x depth Orbec cameras
- 2x Thermo Fisher Scientific DP6 & Radeye SX

The table to the right shows the key point of the platform for any given operations. Some key points will now be covered in more detail for further understanding;

Speed range – This is the maximum speed the Jackal robot can travel both forwards, backwards.

Turning speed range – This is the maximum turning speed of the Jackal robot can turn in either direction (note both speeds ranged can work together at the same time).

Mapping range – This is the total distance of both the 2D LIDAR sensors can detect in 360° (radius) all around the robot

Battery life – this defines the “continuous use” time on average, this will be more or less depending on how often and/or fast the robot is moving in a given time period

Output map resolution – This is the smallest area each square represents on the 2D maps.

Weight – This is current full weight of the CARMA platform including the sensor box

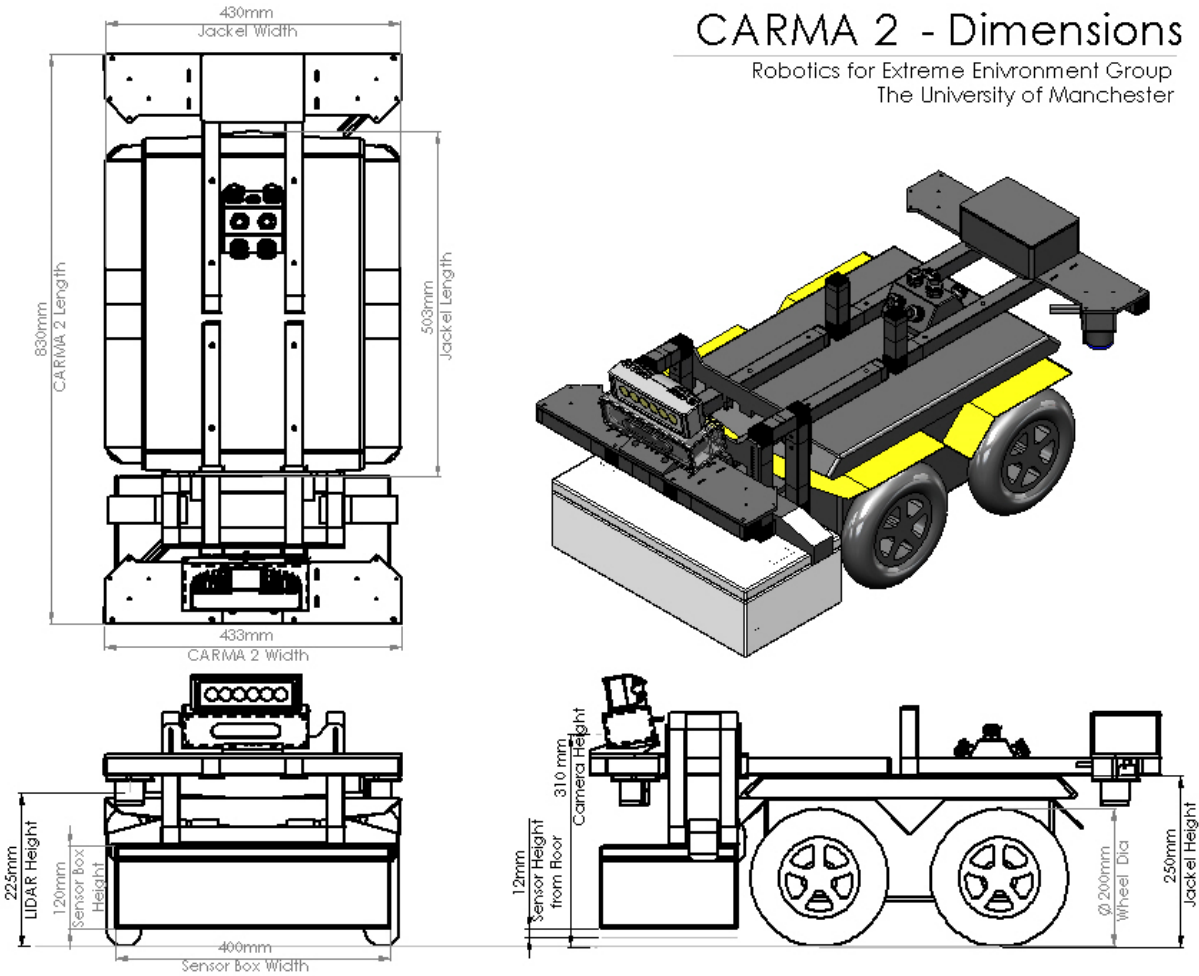
Wi-Fi Encryption – This is the most secure option for commercially available Wi-Fi. It uses WPA2, the latest Wi-Fi encryption standard, and the latest AES encryption protocol

Keys Points

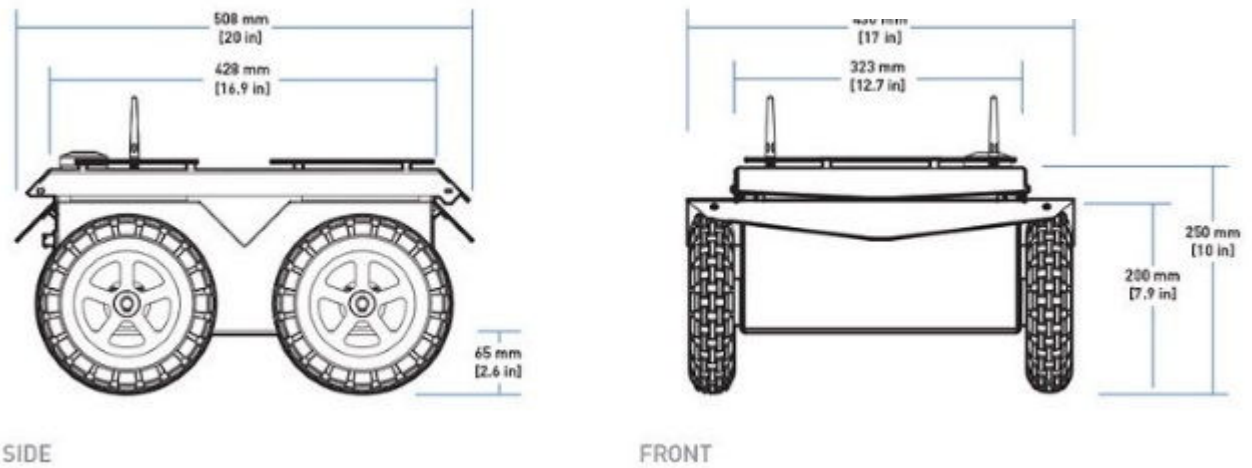
Max velocity Speed	+/- 2.0 m/s
Max turning speed	+/- 0.5 m/s
Limited velocity speed	+/- 0.1 m/s
Limited turning speed	+/- 0.2 m/s
Mapping range	20 m
Battery life	1 h
Maximum payload	15 kg
Output map resolution	10 x 10 cm
External dimensions (L x W x H)	51 x 43 x 35 cm
Weight	25 kg
Ground clearance	6.5 cm
Wi-Fi Encryption	WPA2-PSK (AES)

CARMA 2 - Dimensions

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Clearpath base "Jackal" Robot Dimensions



CARMA 2 – IMAGES

