



KINOVA® Gen3 Ultra lightweight robot  
7 DoF Spherical

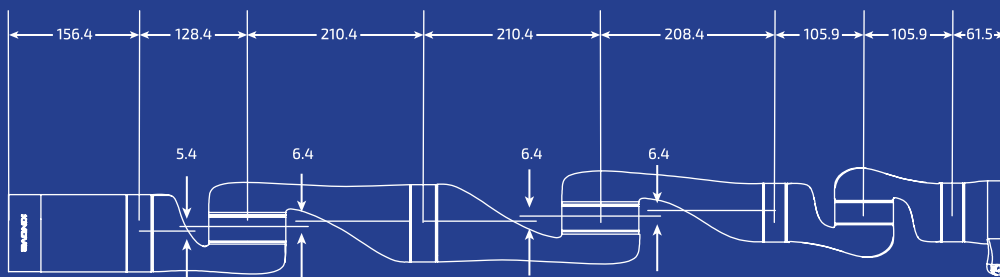
# Technical Specifications

**KINOVA**  
Achieve Extraordinary

# Technical Specifications

## GENERAL\*

Total Weight	8.2 kg (no gripper)
Payload	4 kg (mid-range continuous; no gripper)
	4.5 kg (full-reach peak/temporary; no gripper)
	1.1 kg (full-reach continuous; no gripper)
Actuator joint range after start-up (software limitation)	Infinite <sup>1</sup>
Maximum Cartesian translation speed	Low-level: 40 cm/s (recommended)
	High-level: 30 cm/s
Power supply voltage	18 to 31 VDC, 24 VDC nominal
Average power	36 W (25 W in standby)
Peak power	155 W
Water resistance	Arm: IP33
	Base / controller: IP33
Operating temperature	-30 °C to 35 °C
Materials	Carbon fiber
	Aluminium
Maximum reach	902 mm
Degrees of freedom	7 DoF
Actuator sensors	Torque, position, velocity, current (motor), voltage, temperature (motor)
Actuators	Large: joints #1, 2, 3, 4
	Small: joints #5, 6, 7



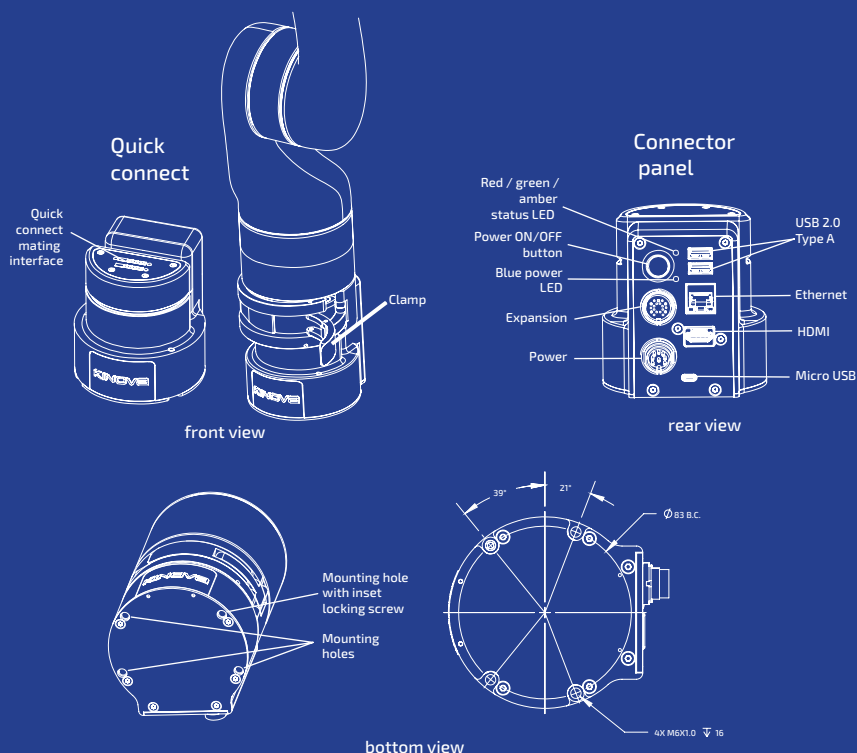
Dimensions in mm



# Technical Specifications

## BASE CONTROLLER

Software	KINOVA® KORTEX™	
Internal communications	2 x Fast Ethernet (100 Mbps)	
API compatibility	Windows 10, Linux Ubuntu 16.04, ROS Kinetic	
Programming languages	C++, Python, MATLAB <sup>2</sup>	
Supported web browser	Google Chrome 64+	
Controller interfaces	USB	Gamepad
	Ethernet (Web App + API)	1 Gbps
	HDMI	1.4a <sup>3</sup>
	Wi-Fi (Web App + API)	IEEE 802.11a/b/g/n
	Bluetooth 4.0 + LE <sup>3</sup>	
	Digital I/O <sup>3</sup>	
Control system frequency	1 kHz	
Servoing modes	High-level, low-level, low-level bypass	
Low-level control	Position, velocity, current <sup>3</sup> , torque <sup>3</sup>	
High-level control	Cartesian position/velocity, joint position/velocity, force <sup>3</sup> , torque <sup>3</sup>	
Controller sensors	Voltage, current, accelerometer, temperature and gyroscope	



# Technical Specifications

## INTERFACE MODULE

Interfaces	RS-485 <sup>3</sup>	
	Ethernet	100 Mbps
	GPIO <sup>3</sup>	
	I <sup>2</sup> C <sup>3</sup>	
	UART <sup>3</sup>	
	Power	24 V

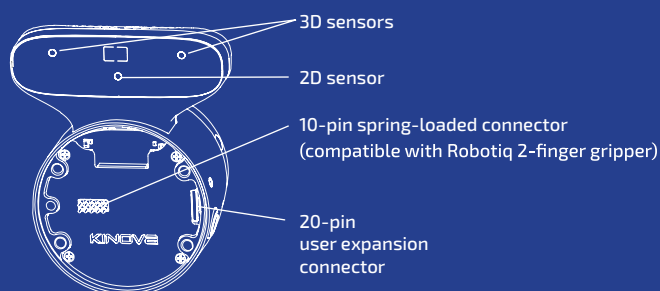
### Vision module

Color sensor	Resolution and frame rates: 1920 x 1080 @ 30, 15 fps (16:9) 1280 x 720 @ 30, 15 fps (16:9) 640 x 480 @ 30, 15 fps (4:3) 320 x 240 @ 30, 15 fps (4:3)	
	FOV	77° (diagonal)
	Focal length (range)	30 cm to ∞

Depth sensor (Intel® RealSense™)	Resolution and frame rates: 480 x 270 @ 30, 15, 6 fps (16:9) 424 x 240 @ 30, 15, 6 fps (16:9)	
	FOV	77° (diagonal)
	Focal length (range)	18 cm to ∞

Interface sensors	Accelerometer and gyroscope, voltage, temperature
-------------------	---

### Interface module with Vision module



\* Please be informed that the specifications provided in this document have been verified, but with further testing and improvement of the KINOVA® Gen3 Ultra lightweight robot some of the information provided may be revised.

<sup>1</sup> Physical and software limits on joints 2, 4, 6 to avoid shell self-collisions.

<sup>2</sup> Minimal API coverage; to be expanded in future release.

<sup>3</sup> Supported in future KINOVA® KORTEX™ release.