

GENERAL FEATURES

Height

120 - 150 cm

Weight

96 kg

Footprint

50 x 72 cm

Max Autonomy

8 - 10h

Speed

1.5 m/s

Arm DoF

2x 7

TIAGo Pro

Next Generation of Mobile Manipulators

Achieve accuracy and compliance with the enhanced manipulation capabilities of the series elastic actuator arms. Tackle complex tasks with ease thanks to the user-friendly interface. Experience the power of seamless interaction, optimal arm mounting, and increased reach in a compact and modular design. Engage in Human-Robot Interaction thanks to the new design with LEDs, screen, and RGB-D camera.



CONFIGURATION

Omnidirectional drive	✓
Navigation laser	2x 10m LIDAR (25m optional) Front and back for 360° FoV
Lifting torso	✓
Pan-tilt head	✓
End-effectors	2x Parallel Grippers
Arm Joint Brakes	✓
Actuation	Series Elastic Actuators



TECHNICAL SPECIFICATIONS

UPPER BODY	Arm payload	3kg	
	Arm reach	96 cm	
	Torso lift	35 cm	
	Arm Mounting flange	ISO 9409-1	
MOBILE BASE	Omnidirectional Drive	4x Meccanum Wheels	
	Max speed	1.5 m/s <i>All directions</i>	
	Operational environment	Indoor	
CONNECTIVITY	Ethercat Bus	1 KHz	
	Wifi	802.11ax Wi-Fi 6	
	Bluetooth	Smart 4.0	
ELECTRICAL FEATURES	Battery 36V 20Ah	1 battery / 2 batteries	
	Battery autonomy	4-5 h / 8-10 h	
SENSORS	Base	2x 10m LIDAR (25m optional) <i>Front and back for 360° FoV</i>	
	Encoders	Input & output in all joints	
	Head	RGB-D camera	
AUDIO	Speakers	8W Stereo	
	Microphone	4x Microphone array	
COMPUTER	CPU	Intel i5 / i7	
	RAM	8 GB / 16 GB	
	SSD	250 GB / 500 GB	
SOFTWARE	OS	Ubuntu LTS 64-bits, RT Preempt	
	Open source middleware	ROS LTS	
	Arm joint control	Position / Velocity / Current / Impedance	
INTEGRATED	Laptop tray	✓	
	Upper body motions	10 pre-programmed	
	Joystick teleoperations	✓	
	Interactive face for HRI	Speakers	
		Microphones	
		Programmable LEDs	
		Emotion personalisation <i>Face screen</i>	
	User panel	On/Off Button & Battery Indicator	
	Ports	1x GbE / 2x USB 3 / 1x HDMI	
	Power supply	12V / 5A	
Emergency button	✓		
OPTIONALS	GPU	NVIDIA Jetson PC	

CORE SOFTWARE

Operating system Ubuntu LTS 64-bit
RT Preempt RT framework

Middleware Robot Operating System (ROS2) LTS

USER INTERFACES

Web Commander Diagnosis of software, actuators and sensors
Text-to-speech triggering
Execution of pre-recorded motions
Execution of demonstrations

Joystick teleoperation Mobile base control
Head control
Torso lift control
Execution of pre-recorded motions

NAVIGATION

Core Navigation package Laser based self-localization and mapping (SLAM)
Navigation to a point of a map
Obstacle avoidance using laser sensors
Available RViZ Plugin to navigation to a point in a map

HUMAN-ROBOT INTERACTION

Text-to-speech TTS software with one language and one voice
Triggered via Web-Based robot interface

Robot Sensor visualization Available RViZ Plugins for camera and lasers

CONTROL

ros2_control

Full ros_control compatibility
Hardware-agnostic controller written as ros_control plugins
Point level control in position, velocity and effort
Supported hardware interfaces: position and effort

ros2_controllers

Joint trajectory controller (default):

Command joint-wise trajectories to groups of joints
(arm, head and torso)

Default stack of controllers

Command individual joints
Available QT-based GUI

Gravity compensation controller:

Arm position maintained compensating gravity
Compliant behaviour of the arm

Omnidirectional drive controller:

Velocity-based controller for the mobile base
Available RVIZ Plugin to navigation to a point in a map

Upper body motions

play_motion

Pre-recorded motions handling
Allows execution with planning and self-collision avoidance

play_motion_builder

Generation of pre-recorded motions
Available QT-based GUI

Movelt2

Fully integration that works off-the-shelf
Motion generation with path planning and self-collision avoidance

Available RViz Plugins

