

PAL

# TIAGo Pro Arm

MANIPULATION, MADE EASY

**Height**  
105 cm

**Weight**  
9.5 kg

**Footprint**  
15 x 15 cm

**Total Workspace**  
1.85 m<sup>3</sup>

**Total DoF**  
7 DoF



# TIAGo Pro Arm

## TECHNICAL SPECIFICATIONS

|             |                        |                                                                                                                                                                |
|-------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PERFORMANCE | Torque Sensing         | On Each Arm Actuator                                                                                                                                           |
|             | Safety Brakes          | 6x at Joint Level                                                                                                                                              |
|             | Communication Bus      | 1 kHz EtherCAT                                                                                                                                                 |
|             | Payload                |                                                                                                                                                                |
|             | Max Peak Payload       | 7 kg                                                                                                                                                           |
|             | Max Continuous Payload | 6 kg                                                                                                                                                           |
|             | Joint Range of Motion  | Joint 1, 3, 5: $\pm\infty$<br>Joint 2, 4: $-139.8^{\circ} + 63.03^{\circ}$<br>Joint 6: $-98.0^{\circ} + 172.0^{\circ}$<br>Joint 7 (wrist): $\pm 140.0^{\circ}$ |
|             | Repeatability          | 0.3 mm                                                                                                                                                         |
|             | Speed                  | 1.1 m/s                                                                                                                                                        |
|             | Operation Cycle        | ~ 24 h                                                                                                                                                         |
|             | Power Supply           | 36V 160W 4.4A                                                                                                                                                  |

|                        |                               |                                                         |
|------------------------|-------------------------------|---------------------------------------------------------|
| SOFTWARE & DEVELOPMENT | OS                            | Ubuntu LTS 64-bits<br>PREEMPT-RT Framework              |
|                        | Middleware                    | ROS 2 LTS                                               |
|                        | Controllers                   | ros2_controller<br>PAL Proprietary Controllers          |
|                        | Web Commander                 | PAL Web GUI                                             |
|                        | Custom Controller Development | ✓                                                       |
|                        | Control Spaces                | Joint space   Cartesian space                           |
|                        | Actuator Control Modes        | Position   Velocity<br>Effort   Torque                  |
|                        | Included Software Packages    |                                                         |
|                        | Motion Library                | ✓                                                       |
|                        | Integrations                  | Movelt2<br>ros2_control                                 |
| COMPUTING              | Development Tools             | Docker Image with PAL SDK<br>RViz Plugins<br>URDF Model |
|                        | Compatible Simulators         | MuJoCo<br>Gazebo Dynamic Simulation                     |
|                        | Control PC                    | Ultra-compact Controller                                |
| COMPUTING              | VPN Connection                | Wireguard                                               |
|                        | Connectivity                  | WiFi                                                    |

|           |                  |                     |
|-----------|------------------|---------------------|
| WORKSPACE | Horizontal Reach | 75 cm               |
|           | Total Workspace  | 1.85 m <sup>3</sup> |
|           | Top View         | Side View           |
|           |                  |                     |
|           |                  |                     |
|           |                  |                     |
|           |                  |                     |
|           |                  |                     |
|           |                  |                     |
|           |                  |                     |

|            |           |            |
|------------|-----------|------------|
| DIMENSIONS | Height    | 105 cm     |
|            | Weight    | 9.5 kg     |
|            | Footprint | 15 x 15 cm |
|            | Total DoF | 7          |
| USER PANEL |           |            |
|            |           |            |
|            |           |            |
|            |           |            |

|              |                               |                          |
|--------------|-------------------------------|--------------------------|
| END-EFFECTOR | Quick tool changer            | ✓                        |
|              | Flange mounting points        | ✓                        |
|              | Communication bus             | 1KHz EtherCAT            |
|              | Joint Status Indicator        | ✓                        |
|              | Control Mode Switch           | ✓                        |
|              | End-Effector (Intergangeable) | PAL Pro Parallel Gripper |

|                          |                                                 |                                   |
|--------------------------|-------------------------------------------------|-----------------------------------|
| UPGRADES AND ACCESSORIES | GPU                                             | NVIDIA Jetson PC                  |
|                          | Force/Torque Sensors                            | Wrist 6-axis F/T Sensor           |
|                          | Easy Transport Flightcase                       |                                   |
|                          | End-Effectors                                   |                                   |
|                          | Seed Robotics RH8D Hand                         | 5 Fingers, 7 DoF, Tactile Sensors |
|                          | Inspire Robots RH56F1 RH56E2                    | 5 Fingers, 6 DoF, Tactile Sensors |
|                          | Allegro Hand                                    | 4 Fingers, 16 DoF                 |
|                          | Xela fingertip tactile sensors for Allegro Hand | 4x (one per fingertip)            |
|                          | End-Effector Adapter Flange                     |                                   |
|                          | Maintenance and Support Plans                   |                                   |

