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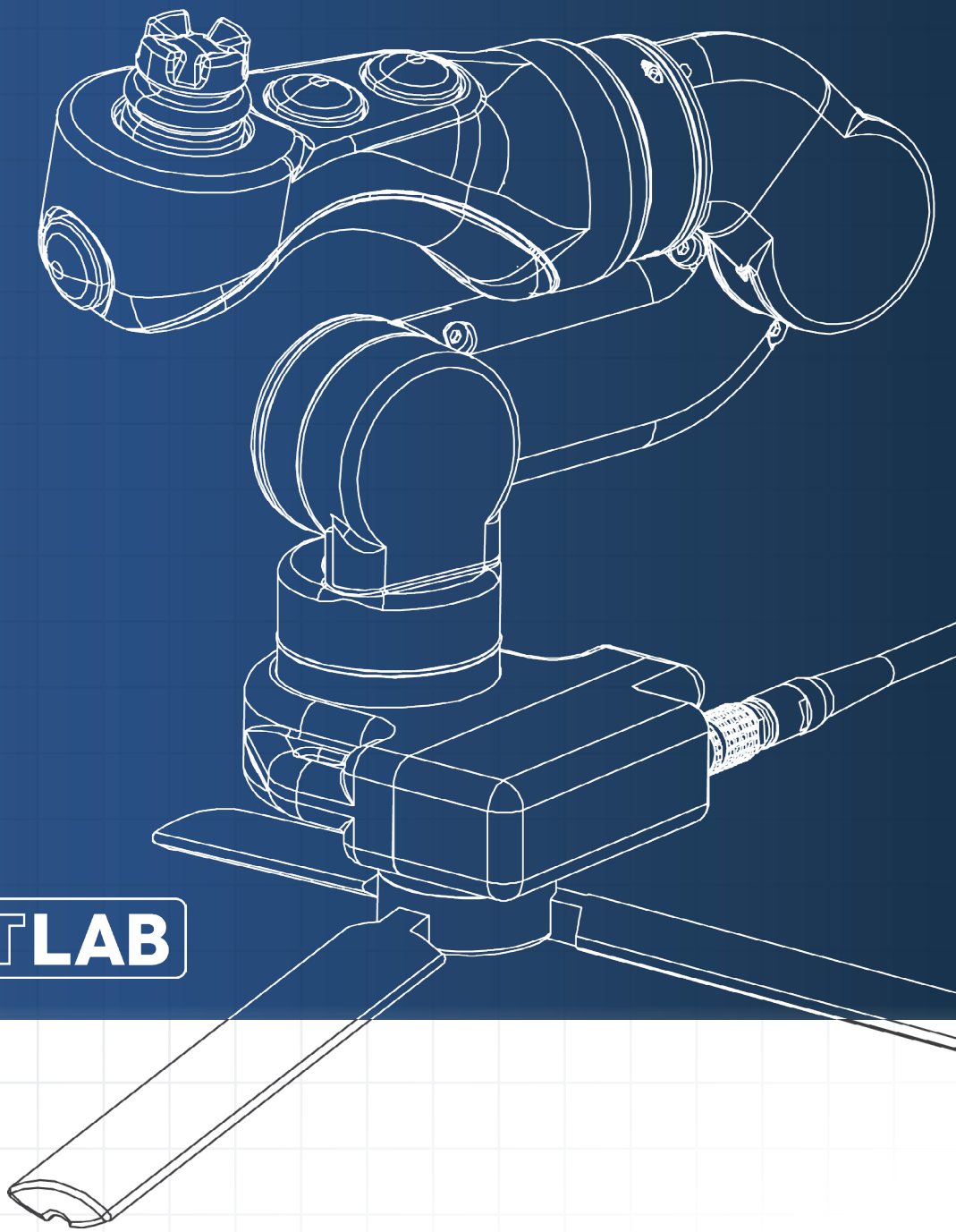

MASTER ARM

INTEGRATION MANUAL

VERSION 2.0

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Contents

1 Overview

The Reach System Master Arm is a one-to-one scale controller for the Reach System and Reach System Mini product range. Compared to alternative control solutions it offers the most intuitive way of remote operation where precise control is required. Connected to a Reach System manipulator, the velocity of the master arm directly sets the velocity of the manipulator allowing for the ability to control multiple axes simultaneously. It's a straight forward setup, and the following steps will get you up and running quickly.

2 Interfacing

2.1 Mechanical

The Master Arm features a standard ¼-20 UNC camera tripod thread to allow for the adoption of the wide range of standard camera accessories available.

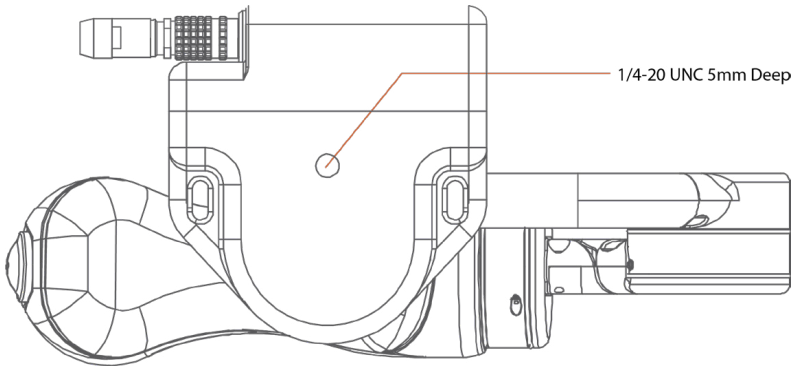


Figure 1 Mounting Dimensions

2.2 Electrical

The Master Arm connects to the host computer via a standard USB 2.0 connection. The supplied cable is a USB A to 4 pin Lemo 0T Connector.

Electrical Specifications	
Voltage	5V
Current	400mAh

2.3 Software

The entire RS1 range transmit and receive data over a Serial connection with the following specifications:

Serial Specifications	
Baud	115200 bits/s
Word Length	8 bits (including parity)
Parity	None
Stop Bits	1

3 Operation

3.1 4DOF Master Arm (Product Code RM-5201) Mapping

The 4DOF Master Arm is designed to control a 4 DOF slave manipulator such as the Reach 5 Mini ("R5M" RS1-5001) or Reach 5 ("R5" RS2-5001). The default mapping is as shown in Figure 2.

> ***Note:*** *The rotate function of the handle is used for ergonomic reasons only and does not provide control input to the slave manipulator.*

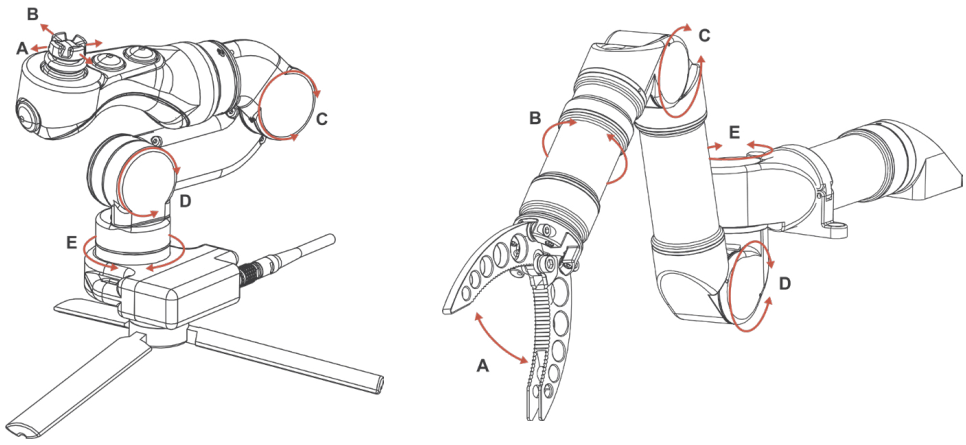


Figure 2 - Default Joint Mapping for 4DOF Master Arm and R5M

3.2 5DOF Master Arm (Product Code RM-5202) Mapping

The 5DOF Master Arm is designed to control a 5 DOF version of the Reach 5 Mini (Probe Version) (RS1-5002). In this arrangement the joystick is not used by default.

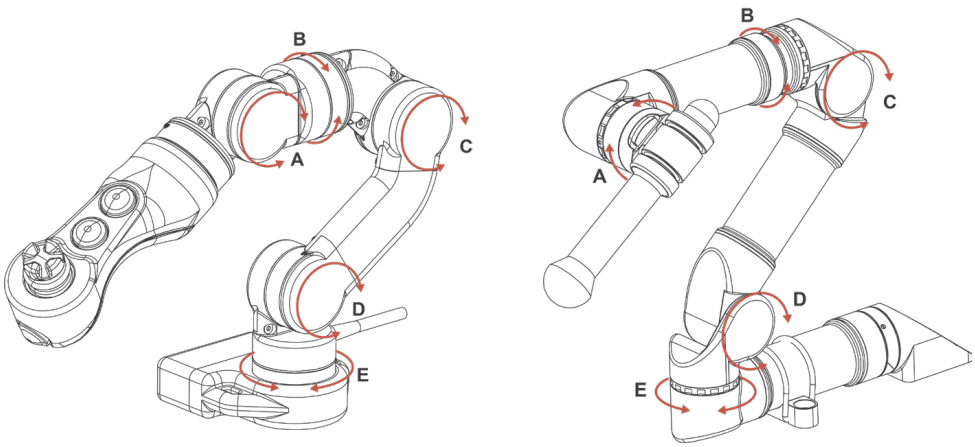
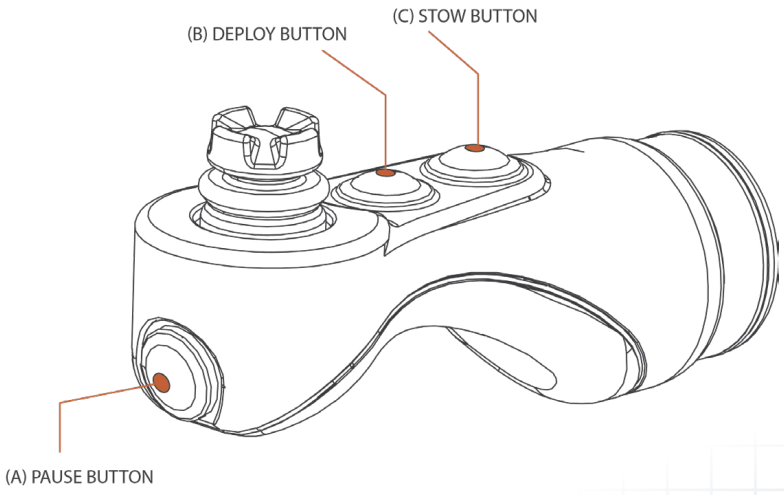


Figure 3 – Default Joint Mapping for 5DOF Master Arm and R5M-Probe

3.3 Button Operation

The buttons on the hand of the Master Arm are used for pausing, stowing, and deploying the slave manipulator according to the diagram below:

Button Functions	(A) Pause	(B) Deploy	(C) Stow
Release	Starts Output	Stops Deploying	Stops Stowing
Hold	Pauses Output	Starts Deploying	Starts Stowing
Double Press	Stops Output	Moves to Deploy Pos	Moves to Stow Pos
Hold + Pause (A)	-	Sets Deploy Pos	Sets Stow Pos



4 Notes

When unplugging the LEMO connector from the Master Arm, simply pull the connector outwards (ensuring that the red lines are aligned). Do not twist the connector during this motion