DYNAMIXEL.COM

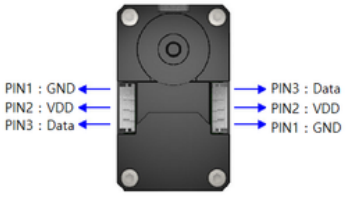
Daisy Chaining QuickStart Guide

Thank you for your purchase of ROBOTIS' DYNAMIXEL smart servos.

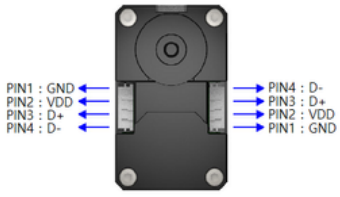
To learn more about your DYNAMIXELs please visit:

http://www.dynamixel.com/whatisdxl.php

To use your DYNAMIXEL servos all you need to do insert the included cables into the DYNAMIXEL ports on the servos and your controller to link them together, and ensure that proper power is supplied to the servos. Then you are ready to send commands over the DYNAMIXEL network to control your servos. DYNAMIXEL servos utilize multi-drop, half-duplex serial connections in either the TTL (for models ending in -T) or RS-485 (for models ending in -R).

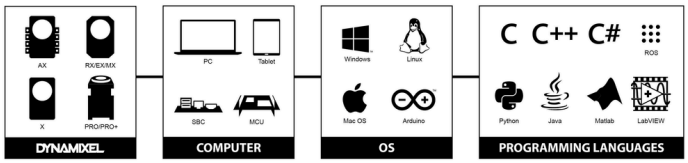


TTL (Three Pin)



RS-485 (Four Pin)

DYNAMIXEL servos can be controlled using any computer or robot controller capable of communicating using any supported serial communications protocol. ROBOTIS also provides an official SDK with support for a wide variety of popular programming languages.



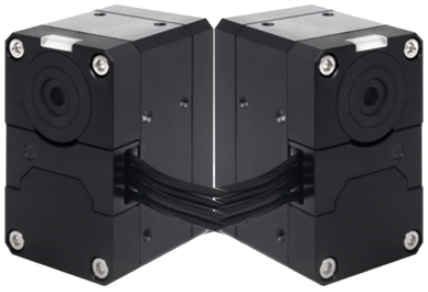
Safety Information

1. Always comply with all product specifications
2. Do not insert sharp objects into the product during operation.
3. Do not dissasemble or modify the product.
4. Do not drop the product or subject it to strong impact.
5. Always verify correct voltage and polarity before supplying power to the product.

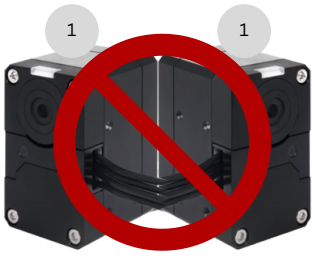
Getting Started with Daisy Chaining

One of the features that sets DYNAMIXEL actuators apart from their competition is the ability to connect multiple actuators together using the multiple DYNAMIXEL ports available on each servo, known as "Daisy Chaining". This document will walk you through first time configuration of your DYNAMIXELs for daisy chain operation with a U2D2 controller, as well as inform you of the best practices to get the most out of your DYNAMIXEL Daisy Chain.

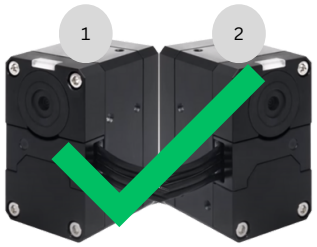
Example Daisy Chain



Before controlling your connected servos, you will need to assign unique IDs to each DYNAMIXEL. Unique ID numbers are required for reliable DYNAMIXEL communication, but the default configuration of DYNAMIXEL actuators sets all ID values to 1.



Matching ID



Unique ID

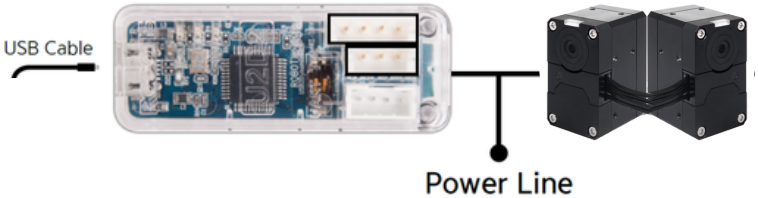
ID Inspector

The ID inspection feature of the DYNAMIXEL Wizard 2.0 configuration software is the simplest way to assign new ID numbers to your DYNAMIXEL actuators.

DYNAMIXEL Wizard 2.0 is available on our website:

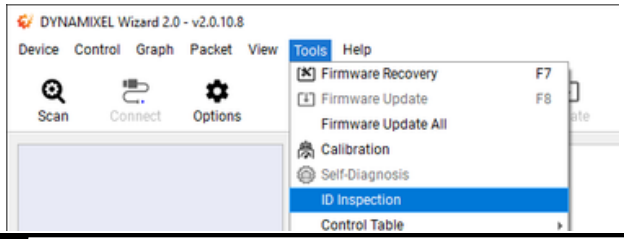
https://en.robotis.com/service/downloadpage.php?ca_id=10

After downloading and installing the DYNAMIXEL Wizard 2.0 software, connect your DYNAMIXELs to your assembled U2D2 unit and supply power to your assembled system.



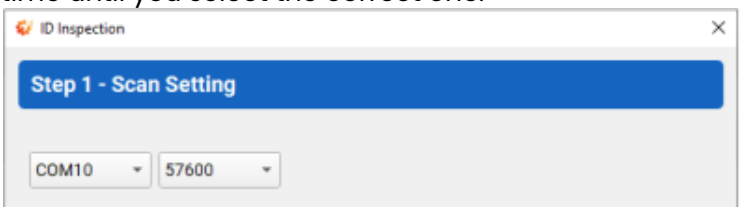
1 Open ID Inspector

Open the "**Tools**" dropdown from the toolbar and select "**ID Inspection**"



2 Select Baudrate

Select the correct port and baud rate for your DYNAMIXEL daisy chain, then click **Scan**. The default baud rate for DYNAMIXEL servos is 5700. If you have more than one available serial port, try them one at a time until you select the correct one.

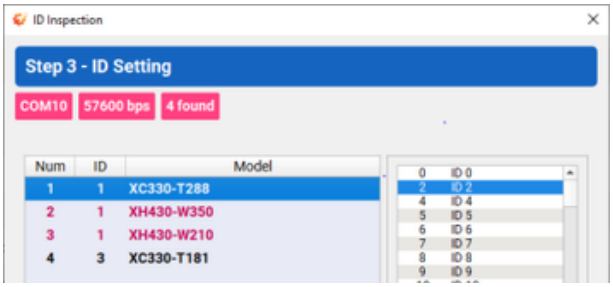


3 Scan

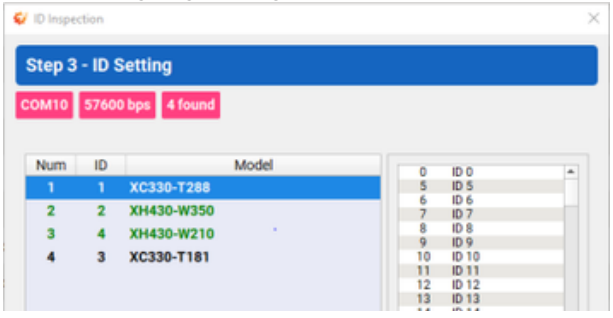
DYNAMIXEL Wizard will scan the selected port and baudrate to detect any available DYNAMIXEL servos. Once the scan has been completed, press **Next** to continue.

4 Assign IDs

This menu allows you to assign new IDs to your connected DYNAMIXEL actuators. DYNAMIXELs with conflicting IDs are shown highlighted in red. Select a servo from the list to assign it a new ID using the window on the left.



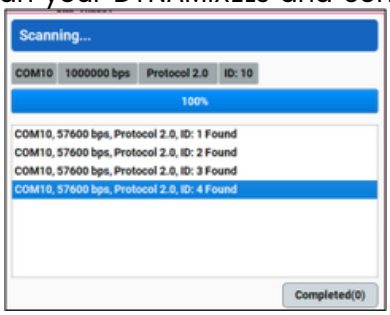
After selecting a unique ID number for a servo, the name will be highlighted green.



Once you have assigned unique IDs to all actuators, click "**Apply**" to complete ID inspection.

5 Scan to Confirm

After exiting the ID Inspector, click the scan icon in the toolbar to scan your DYNAMIXELs and confirm the new ID numbers.



Advanced Daisy Chaining

DYNAMIXEL actuators support some more advanced options for more flexible daisy chaining setups.

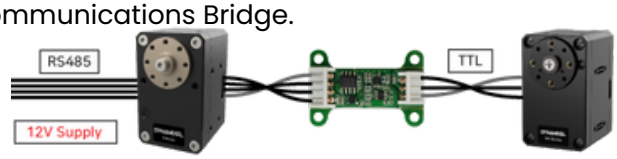
A Additional Power

Longer daisy chains may require the addition of extra power inputs to provide reliable current through the entire chain. This can be accomplished by using an SMPS2DYNAMIXEL adapter, or by creating a custom power cable.

SMPS or Custom Power Input

B Mixed Communications Protocols

DYNAMIXELs with mixed serial communications protocols can be mixed through the use of a DYNAMIXEL Communications Bridge.



C Mixed Operating Voltages

DYNAMIXELs with mixed operating voltages can be used together by cutting the +V and Ground wires to separate the two sections of the DYNAMIXEL network, allowing each section to be powered by a different voltage source. However, it is essential to ensure that both voltage segments share a common ground connection—this is critical for proper communication and to prevent potential damage to the devices.

Separate 5v and 12v Power Circuits