



# ORCA™ SERIES MOTOR

## QuickStart Guide

Version 1.0.3



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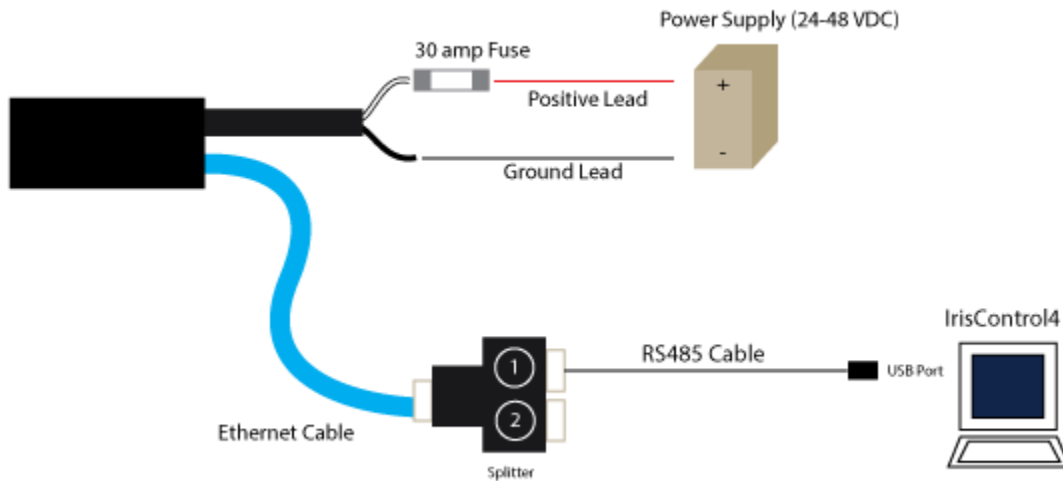


Figure 1: Setup to connect to Orca GUI via IrisControls4

Mount the chassis to a secure surface. The motor comes with T-Slots on the top and bottom faces for easy and secure mounting.

### IrisControls4™ Interface

The IrisControls4 Windows application is used by Iris Dynamics devices to generate a graphical user interface (GUI). The GUI generated by the Orca Series motor can be used to view motor details and configure settings. A device's serial number, sensor information, and error information can be found. The interface also provides an easy way to visually tune the PID position controller, set up motion profiles, and add performance restrictions. As well, IrisControls4 can be set up to capture and log information from the motor while connected.

Orca Series devices can connect to the IrisControls4 Windows application over a USB connection, using the included USB-to-RS485 cable, and RJ-splitter. IrisControls4 is available for free download at <https://github.com/IrisDynamics/IrisControls4>. The motor communicates to IrisControls4 using a baud rate of 460800, which is set as the default. Selecting the port corresponding to the RS485 comport from the drop down menu will allow the motor to connect and populate the GUI. (See the Orca Series Reference Manual for a complete guide of the Orca GUI).

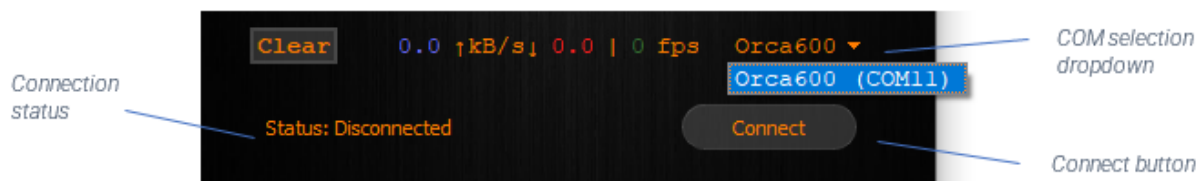


Figure 2: Selecting comport to connect to IrisControls GUI interface

## Accessories

The following accessories are included in the Orca Starter Pack.



Figure 3: USB to RS485 for Orca motor GUI and firmware upgrades

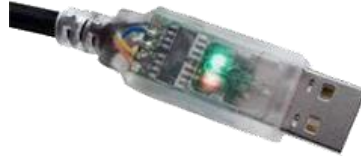


Figure 4: USB to RS422 MODBUS communications



Figure 5: RJ45 Splitter

## POWER SUPPLY

All Orca Series devices are powered by a DC voltage.

A 30-amp fast-blow fuse must be installed between the power supply and the motor. This fuse will be destroyed if negative voltage is applied to the motor.

In all cases, the black power lead is “Ground” and should be connected to the negative terminal of the power supply or battery.

As an important safety measure, the chassis of the motor must be securely connected to Earth. Proper grounding of the chassis is also important for proper operation of the motor.

## COMMUNICATION CABLE

Orca Series devices support two communication interfaces: a MODBUS serial connection capable of carrying out high throughput command and feedback, and an IrisControls4 graphical USB interface.

### RJ45 Communication Connector

Communication cables are terminated with an RJ45 connector by default. The 5V and GND lines on the connector can be used to power the motors logic so that communications and diagnosis can continue when the motors power source is switched off or disconnected.

### USB-to-RS485 cable

This cable converts USB Serial port data to the half-duplex RS485 industrial signals used by Orca Series devices to connect to IrisControls4 for access to the GUI, and for firmware upgrades.

### USB-to-RS422 cable

This cable converts USB Serial port data to the full-duplex RS422 industrial signals used by Orca Series devices to command forces, positions, and motions.

### RJ45 Splitter

Allows for two simultaneous communication streams (MODBUS and IrisControls4) to the motor.

Port 1 of the splitter is used for the motor’s graphical USB interface while port 2 is used for MODBUS communications (either using USB to RS422 cable to PC, or ethernet to Eagle™).

## MODBUS SERIAL INTERFACE

The MODBUS serial interface is used to command force output, positions targets, or set up and trigger smooth movements. This interface is simultaneously used to receive information from the motor such as sensed force, position, speed, temperature, and status.

The MODBUS interface can be connected to either a PC running a Iris Windows Virtual Device, an Eagle™, or a SuperEagle™.

A complete guide to the Orca MODBUS protocol is available for download at <https://www.irisdynamics.com/downloads/>.

There are software development kits (SDK) available which include examples, tutorials and libraries for implementing the Orca MODBUS protocol (OrcaAPI) and generating custom GUIs (IrisControlsAPI) in C++ for Windows ([https://github.com/IrisDynamics/IrisSDK\\_for\\_Windows](https://github.com/IrisDynamics/IrisSDK_for_Windows)) or for the Eagle™ ([https://github.com/IrisDynamics/EagleSDK\\_2.0](https://github.com/IrisDynamics/EagleSDK_2.0)).

## ADDITIONAL RESOURCES

Available for download at <https://www.irisdynamics.com/downloads/>

1. Orca Series Datasheet
2. Orca Series Reference Manual
3. Orca MODBUS User Guide

Public repositories found at <https://github.com/IrisDynamics>

IrisControlsAPI Overview

[https://wiki.irisdynamics.com/index.php?title=IrisControlsAPI4\\_Overview](https://wiki.irisdynamics.com/index.php?title=IrisControlsAPI4_Overview)

## REVISION HISTORY

Version	Date	Author	Reason
1.0.0	February, 2022	kh	Initial Draft
1.0.1	June 3, 2022	SW	Add links and diagrams
1.0.2	June 15, 2022	RM	Figure Labels, intro description, table of contents, format fix
1.0.3	January 3, 2023	RM	Clearer set up, remove detailed data pinout