ZIKODRIVE 2
INSTRUCTION MANUAL

ZIKODRIVE 2 Brushless DC Motor Controller Quick Start Guide

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1. Introduction

This quick start guide provides an overview of how-to setup and operate the ZIKODRIVE 2 stepper motor controller. Please read this document carefully before setting up the controller and for any queries feel free to contact our customer service team via our website (www.zikodrive.com) and we will be happy to help.

NOTE: ENSURE THAT THE POWER AND VOLTAGE SETTINGS ARE ACCURATE. EXCEEDING THESE LIMITS WILL DAMAGE THE CONTROLLER PERMANENTLY AND VOID ANY WARRANTIES.

2. Product Specifications

Specification	Value
Maximum Power	1400 W
Rated Power	700 W
Drive Method	High Frequency Sensor less Trapezoidal
Minimum Voltage	8 V
Analogue Input	0-3.3 V
Operating Temperature	-20 to 85 Celsius
Weight (Without Casing)	95 g
Weight (With Casing)	300 g
Maximum Voltage	54 V
Running Current	15 A
Maximum Current	30 A
UL Rating	ULV94
ROHS Compliant	Yes
REACH Compliant	No
Country of Origin	UK
Overtemperature Protection	Yes
Header Pin Pitch	2.54 mm
2-way and 3-way Connectors Pitch	7.62 mm

3. Connections on the ZIKODRIVE 2

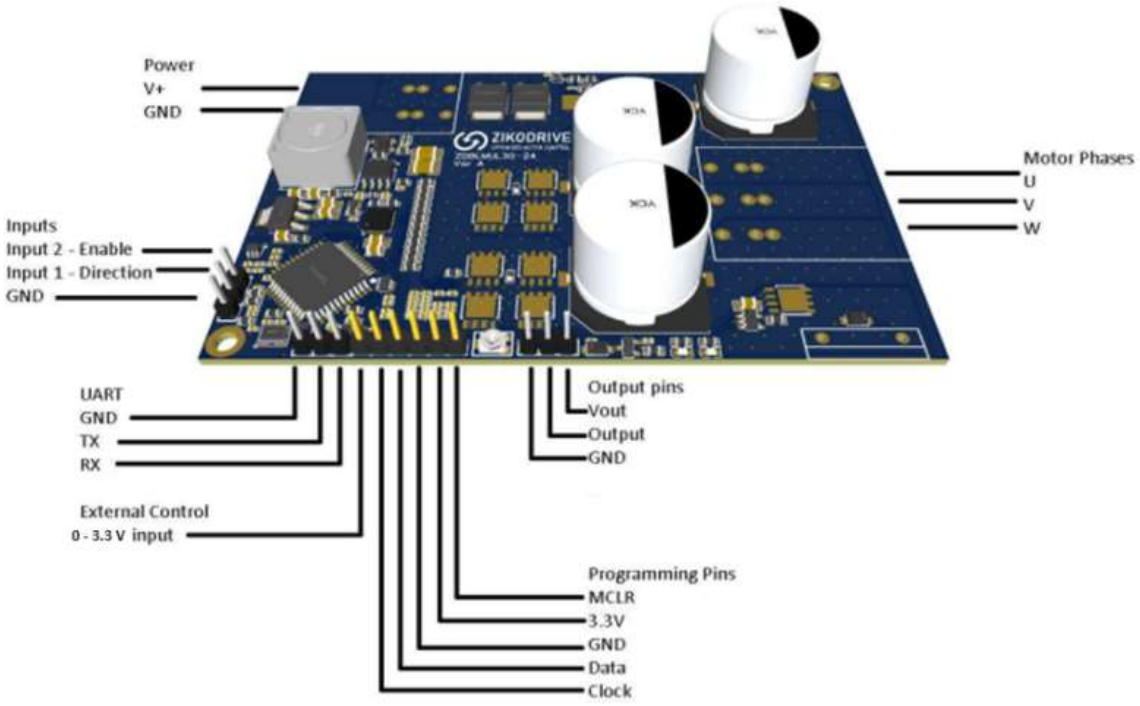

Figure 1: Connections on the ZikoDrive 2

4. Connecting to the ZikoSoft Software

4.1 Requirements

1. A computer or a laptop with a USB port.
2. The ZIKODRIVE 2 controller.
3. ZikoSoft software (the software can be downloaded from www.zikodrive.com)
4. A 3.3V FTDI cable (can be purchased from www.zikodrive.com)

4.2 Getting started.

a. Establish a connection between the controller and the PC or laptop using a 3.3V FTDI cable. The cable connections are as follows:
   - Receiver (Rx) – Orange
   - Transmitter (Tx) – Yellow
   - Ground (GND) – Black

b. Connect the power supply to controller and switch it on. Power to the controller will be established when a Green LED on the controller turns on.
c. Subsequently, launch the ZikoSoft software. Upon launch, you will be presented with a dialog box.

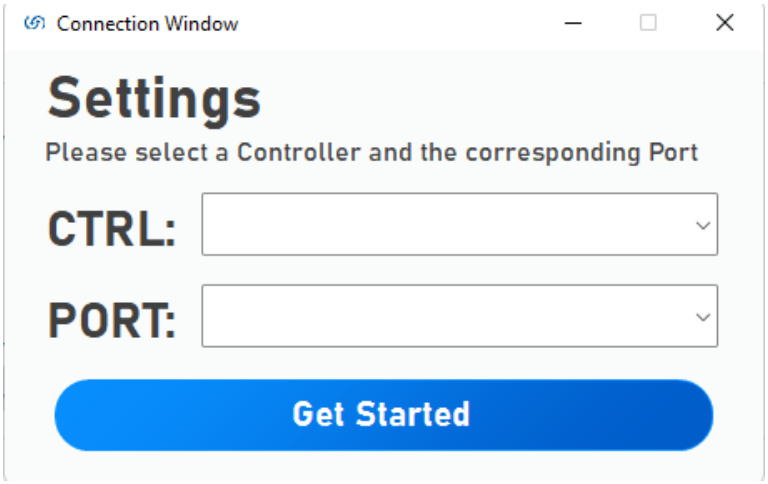

Figure 2: ZikoSoft Launch Window

d. Within the 'CTRL' (Controller) option, select the appropriate controller, and in the 'PORT' option, choose the correct communication port. Please note that only the correct port, identifiable by the cable name, will be displayed. All other ports will be labelled as 'unknown.'

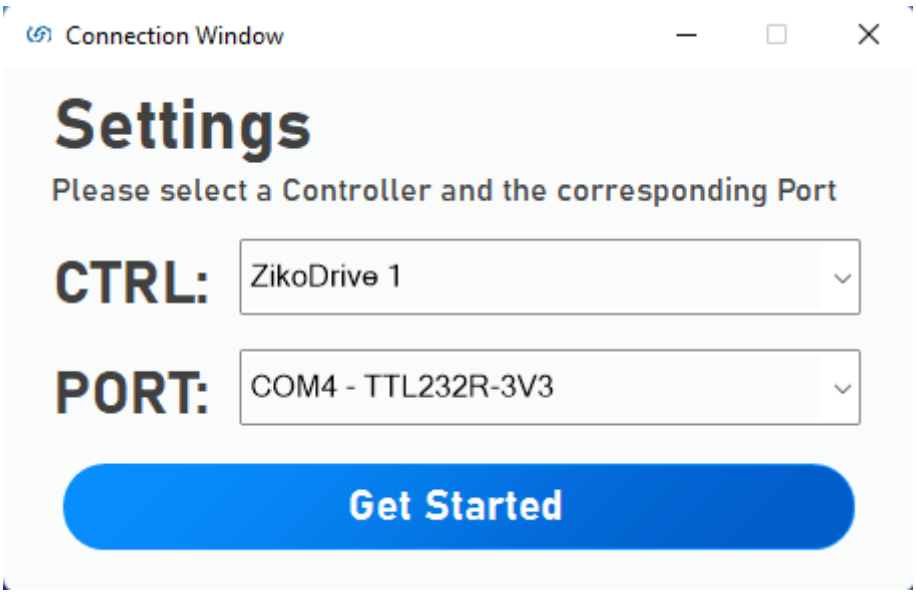

Figure 3: ZikoSoft Launch Window

e. Once these configuration options have been appropriately chosen, press the 'Get Started' button. This action will establish a connection between the controller and your PC or laptop.

f. A successful connection will be indicated when the topmost section of the dialog box turns green, and the message 'connected' will be displayed as shown in the image below.

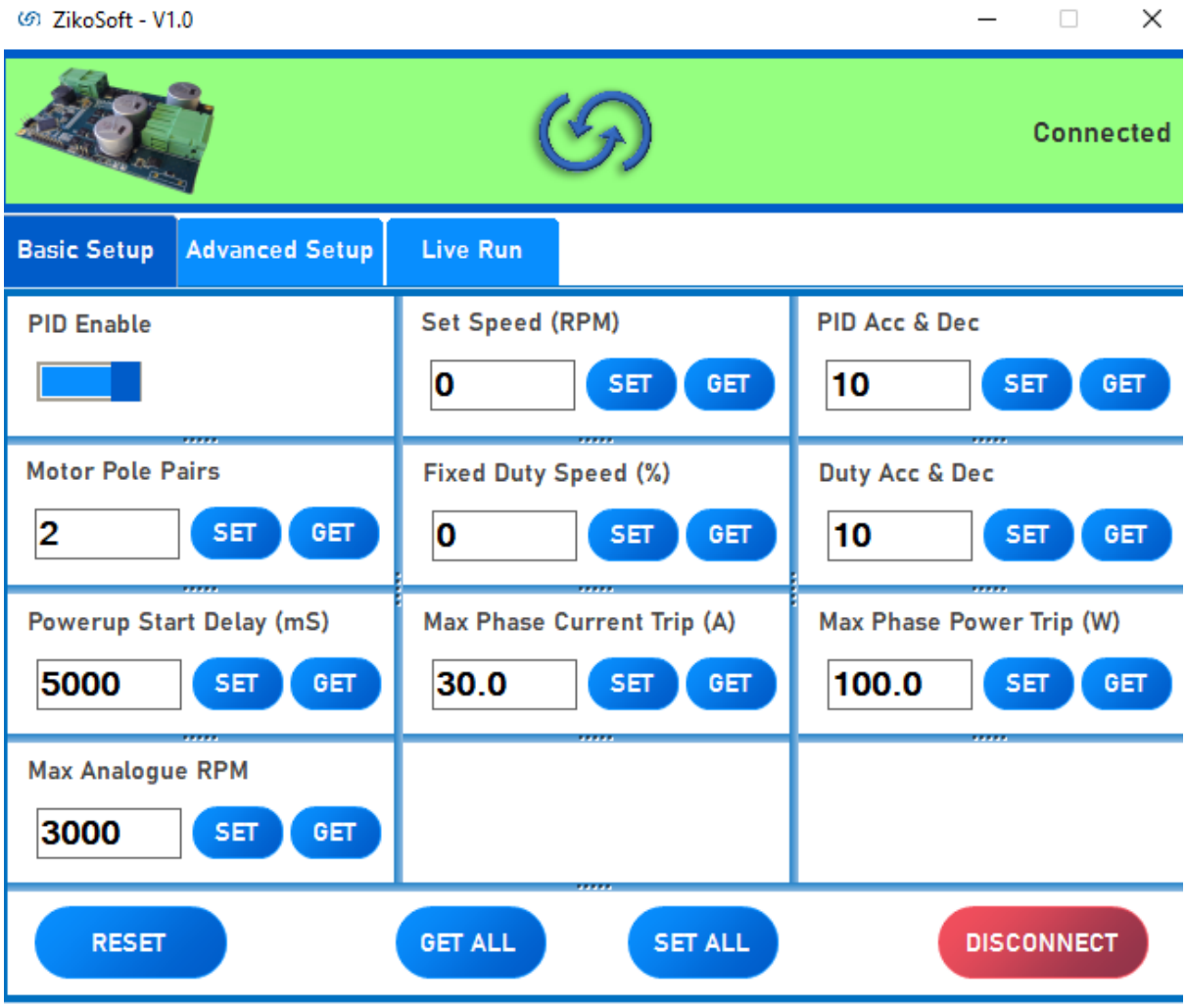

Figure 4: ZikoSoft Main Page

g. A disconnection will be indicated when the topmost section of the dialog box turns red, and the message 'disconnected' will be displayed as shown in the image below.

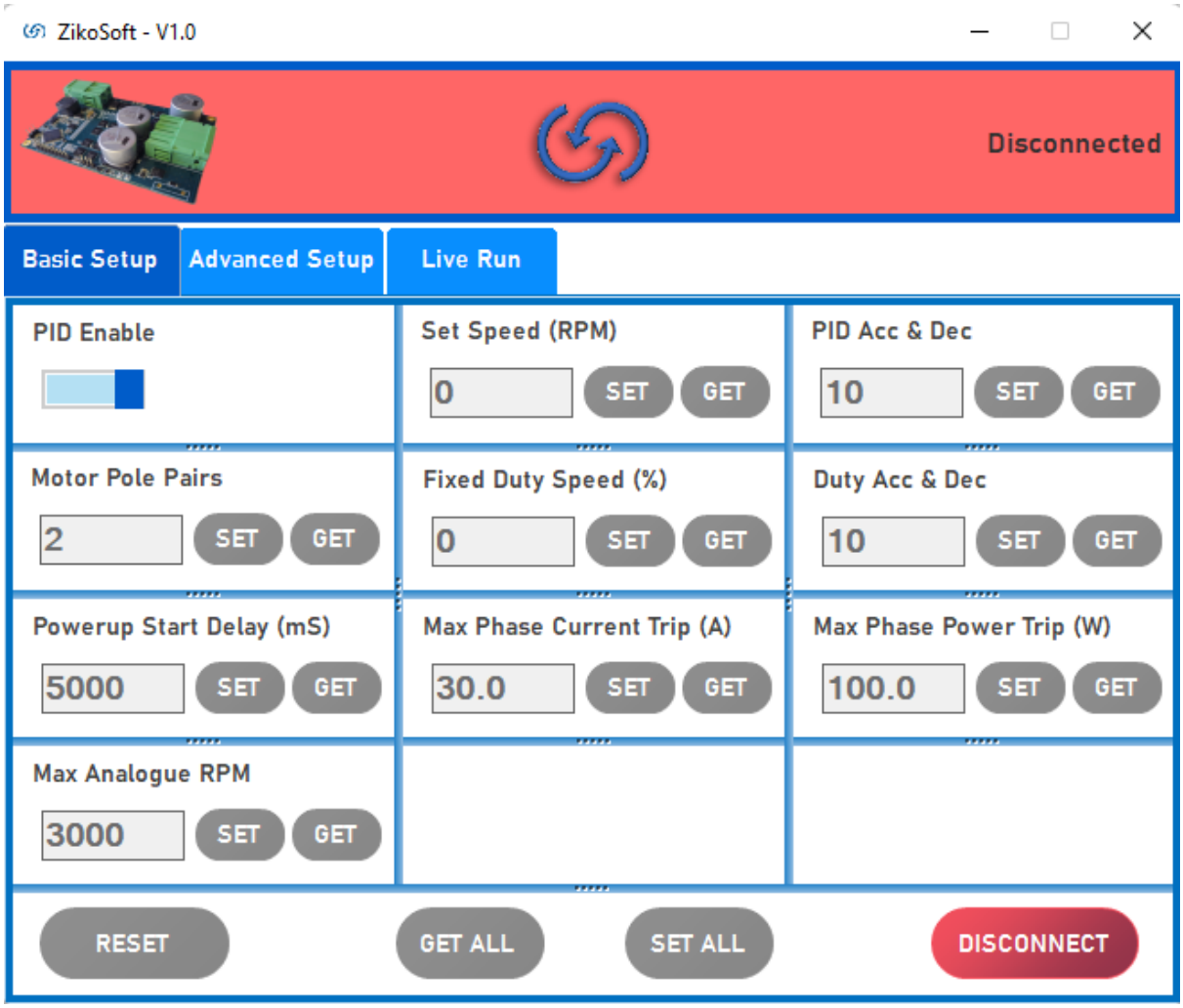

Figure 5 : ZikoSoft Main Page

h. These steps ensure a secure and verified connection between the controller and your computer, facilitating proper communication and operation.

5. Setting key parameters using the ZikoSoft software

- The parameters on the software have a G (Get) and an "S" (Set) function and some of them have a dropdown menu to choose the exact value to set for the parameter.
- To retrieve information about a particular variable while the motor is operational, initiate a "G" command. The software will then transmit a request to the controller to obtain the information and subsequently display it within the designated window.
- Conversely, to input or modify the value of a variable, input the desired value, and employ the "S" command. This action will transmit the specified value to the controller, effectively setting the variable to the value entered.
- For parameters with the dropdown option, simply select one of the values in the dropdown menu and it will be set as the value for that parameter.
- Please note that each parameter has its preset limits. If a value exceeding those limits is entered, the software will give an error warning as shown in the image below which will stop the user from entering a value outside the preset limits for the parameter.
- In the software, the parameters are divided into three tabs viz. Basic Setup, Advanced Setup and Live Run.

5.1 Basic Setup Tab

The following are the Key Parameters in the setup tab:

a. PID Enable Toggle

This toggle allows the user to enable or disable the PID as required.

b. Set Speed (RPM)

This parameter allows the user to set the motor speed.

c. PID Acceleration & Deceleration

This setting allows the user to control the acceleration and deceleration rates of the motor when the PID is enabled.

d. Motor Pole Pairs

This is an input where the user needs to input the number of poles the motor has.

e. Fixed Duty Speed (%)

This allows the user to set the PWM Duty Cycle when the PID is disabled.

f. Duty Acc and Dec

This setting is used to set the acceleration and deceleration rates when the PID is not used.

g. Powerup Start Delay (ms)

This setting is used to set a time between the controller powering up and the motor starting.

h. Max Phase Current Trip (A)

This setting allows the user to set a limit on the Phase Current.

i. Max Phase Power Trip (W)

This setting allows the user to set the Power Limit for the phases in watts.

j. Max Analogue RPM

This setting allows the user to set the Maximum RPM for the motor when running the controller in Analogue Mode.

NOTE!!: Make sure that the Fixed Speed Duty (%) parameter is set to zero when running the controller in Analogue Mode.

5.2 Advanced Setup Tab

a. BEMF Self Calibration

This setting is used to either enable or disable the BEMF sum self-calibration algorithm.

b. BEMF Sum

This is a read only parameter which displays the BEMF sum value when the motor is operational.

c. Start PWM (%)

The user can use this setting to set the PWM Duty Cycle when starting the motor.

d. PWM Frequency (kHz)

This setting sets the PWM Frequency for the motor.

e. Output Pin

This setting allows the user to configure the output pin as required.

Output Values:

OUTPUT VALUE	OUTPUT
0	Always off (low)
1	High on Fault
2	High on commutation
3	High every electric Frequency
4	Motor running

f. Motor Brake Toggle

This setting can be used to toggle the motor breaking algorithm on the controller.

5.3 Live Run Tab

a. Start/Stop Toggle

This toggle is used to turn on or turn off the motor.

b. Change Direction

This toggle is used to change the direction of rotation of the motor.

c. Fault Code and Fault Data

This is a read only parameter which displays the fault code and fault data when the controller faults. The following are the fault codes and fault data for this controller.

FAULT CODE	FAULT	FAULT DATA
0	No Fault	NA
1	Maximum Motor Current	300 = 30 A
2	Maximum Power	1400 = 1400 W
3	Minimum Supply Voltage	80 = 8 V
4	Maximum Supply Voltage	540 = 54 V
5	Maximum Controller Temperature	85 = 85˚C
6	Motor Failed Start	5 = Five failed start attempts
7	Motor Stalled	100 = 100 ms between seeing valid commutation point

d. Reset Fault

This setting allows the user to reset the controller when a fault occurs.

e. Read Speed (RPM)

This parameter displays the speed of the motor in RPM.

f. Motor Phase Current (A)

This parameter displays the Motor Phase Current in Ampere.

g. Motor Phase Power (W)

This parameter displays the Power on the phases of the motor in Watts.

h. Supply Voltage

This parameter displays the supply voltage in Volts.

i. Controller Temperature

This parameter is used to read the controller temperature.

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All Zikodrive Motor Controllers are designed to be a component incorporated within equipment manufactured by our customers and are not suitable for use by an end-user. As such, none of our motor controllers are CE marked. It is entirely the buyer's responsibility to ensure that all Zikodrive Motor Controllers and other related products meet the required specification and safety requirements for applications in which they are used.

The use of Zikodrive products in safety critical applications is entirely at the buyer's risk, and the buyer agrees to defend, indemnify, and hold harmless Round Bank Engineering ltd from all damages, claims, suits, or expenses resulting from such use. Round Bank Engineering ltd. is not responsible for injury or damage of any kind, including but not limited to, injury, death, damage, property damage/loss or any other type of loss which may arise in whole or in part from the use of Zikodrive Motor Controllers.

RETURNS

Subject to the terms provided herein, all returns for exchange, refund or credit must be made within fourteen (14) days from the date of delivery All questions or comments relating to returns should be sent directly to enquiries@zikodrive.com or by calling us direct on +44 (0) 1422 647177.

To qualify for an exchange, refund or credit, the product must be in re-sellable condition, which shall be determined at Zikodrive Motor Controller's sole discretion. Factors affecting the resalable condition of a controller/motor/accessory include but are not limited to obvious signs of use or abuse; customer negligence; excessive wear and tear and/or damaged/missing product or parts.

Where it is determined, at Zikodrive Motor Controller's sole discretion, that the controller/accessory is, in fact, re-sellable, Customer will be given a full refund or credit for the product, less the cost of shipping. Customer should expect a refund within 30 business days of Zikodrive Motor Controller's receipt of the controller/accessory.

CUSTOM PARTS AND PRODUCTS DO NOT QUALIFY FOR REFUND OR CREDIT.

WARRANTY

Zikodrive Motor Controllers warrants to the original purchaser that any part of its controller/accessory purchased will be free of defects in workmanship and parts for a period of twelve (12) months from the date of delivery (hereinafter "Warranty Period"). During the Warranty Period, Zikodrive Motor Controllers will, at its option: (1) provide replacement parts

necessary to repair the product; (2) replace the product with a comparable product; or (3) refund the amount Customer paid for the product upon its return.

Replacement parts or products will be new or serviceably used, comparable in function and performance to the original part or product and warranted for the longer of thirty days for the US or the remainder of the warranty period. Any additional purchases or upgrades will not extend this warranty. This product warranty covers normal use only.

This product warranty does not cover damage caused during shipment and any damage caused by: actions that are beyond Zikodrive Motor Controller's control, including (but not limited to) impacts, fluids, fire, flood, wind, earthquake, lightning or similar disaster, war, lockout, epidemic, destruction of production facilities, riot, insurrection, or material unavailability; unauthorized modifications, attachments or peripherals; improper use, environment, installation or electrical supply; improper maintenance; any other misuse, abuse or mishandling.

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