

 DITOGEAR™  
DRAGONBRIDGE



USER'S MANUAL

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## 1. Getting started

Thank You very much for purchasing DitoGear™ DragonBridge and DitoGear™ motion control equipment. We hope that the devices will meet your expectations bringing a great value to your productions.

This manual includes hardware and software installation instructions for DitoGear™ DragonBridge. The device may be used to control DitoGear™ motion control devices from DZED Systems Dragonframe software.

Please ensure to carefully read the safety instructions and precautions contained in this manual prior to the first use of the device.

Should you need any assistance or support do not hesitate to contact us at [support@ditogear.com](mailto:support@ditogear.com).

### Product version information

This manual refers to DitoGear™ DragonBridge hardware and firmware version dated August 2015.

Latest product manuals can always be found at: [www.ditogear.com/user-manuals](http://www.ditogear.com/user-manuals)

## 2. The kit contents

DitoGear™ DragonBridge comes with an USB cable. RJ45 signal cables are included in DitoGear™ motion control devices kits or can be purchased separately at <http://ditogear.com/store>.

## 3. Getting to know DitoGear™ DragonBridge

### At a glance

DitoGear™ DragonBridge is an electronic interface between DitoGear™ motion control devices and DZED Systems Dragonframe software. It allows you to control up to 8 axes of motion control devices directly from Dragonframe software.

### Design

DitoGear™ DragonBridge runs on an Arduino Mega 2560 R3 boards and a software layer provided by DZED Systems for controlling external devices.

### Connectors Overview

DitoGear™ DragonBridge features eight RJ45 type connectors to DitoGear™ devices and a standard USB 2.0 port to connect it to your computer.

## 4. Power options

DitoGear™ DragonBridge is powered via USB bus or draws power from one of the axes of DitoGear™ motion control devices. No extra power source is needed. There are 2 labeled LEDs next to USB port showing the power status for the USB and signal ports.

## 5. Setting the system to work

The general process for setting up the system to work is as follows:

- 1 Install the DZED Systems Dragonframe software (needs to be purchased separately at [dragonframe.com](http://dragonframe.com) website).
- 2 Connect DitoGear™ DragonBridge to the computer and install its software drivers as described in this manual.
- 3 Connect DitoGear™ motion control devices to the DitoGear™ DragonBridge Interface and connect the power.
- 4 Configure the devices at Dragonframe software.
- 5 The system is ready to work.

## 6. Drivers Installation

### 6.1 System requirements

DitoGear™ DragonBridge is compatible with Apple OSX, Windows and Linux platforms.

For compatibility details check the Arduino website at: <http://arduino.cc/en/Main/Software>

### Downloading software

Prior to installation, go to Arduino website and download the latest software for your platform: <http://arduino.cc/en/Main/Software>

### 6.2 Installing drivers for the Arduino Mega 2560 with Windows7, Vista, or XP:

- 1 Plug in the DitoGear™ DragonBridge and wait for Windows to begin it's driver installation process. You'll probably see some notifications in the system tray. After a few moments, the process will fail or prompt you to install drivers.
- 2 Go to Control Panel and navigate to System and Security. Next, click on System then open Device Manager.
- 3 Look under Ports (COM & LPT) or Other Devices. Under ports you should see an open port named **Arduino Mega 2560 (COMxx)**. If the device showed up in Other Devices you'll see it as USB Device.
- 4 Right click on the device name and choose the **Update Driver** option.
- 5 When Windows prompts you for connecting to Windows Update to search for software, choose **No, not this time** and click Next.
- 6 Choose the **Search for the best drivers in these locations** option and select **Include this location in the search**.

- 7 Then, click **Browse** and navigate to the folder with downloaded Arduino software and select **Drivers** folder (not the **FTDI USB Drivers** sub-directory).
- 8 Windows will finish up the driver installation from there.
- 9 Go to Device manager again and find **Arduino Mega 2560** under Ports (COM & LPT) in the devices list. Currently used port number is listed in the parentheses next to the device name. Make sure it's lower than 19. Otherwise, change port assignment as described below.

#### To change port assignment

- 1 Right click the Arduino Mega 2560 name in the Device Manager devices list and select Properties from the context menu.
- 2 In the Properties dialog window select Port Settings tab and then click Advanced.
- 3 In the Advanced Settings window on the bottom you'll find a COM Port Number drop down list.
- 4 Select any available port from that list which is lower than 19 and click OK on this and subsequent windows.

#### More detailed instructions

You can find a detailed step-by-step instructions with screenshots at:

<http://ditogear.com/controllers/dragon-bridge/video/>

In case of issues or questions check the Arduino software installation pages for details and most up-to-date information: <http://arduino.cc/en/Guide/HomePage>

#### 6.3 Installing drivers for the Arduino Mega 2560 under OSX.

The Arduino 2560 R3 board makes use of virtual port which will be named dev/cu.usbmodemfd121. No drivers need to be installed on a Mac.

- 1 Copy the Arduino application to Applications folder.
- 1 Plug in the DitoGear™ DragonBridge to your Apple computer.
- 2 Run Dragonframe and proceed with configuration as described later in this manual.

In case of issues or questions check the Arduino software installation pages for details and most up-to-date information: <http://arduino.cc/en/Guide/HomePage>

## 7. Configuring DitoGear™ motion control devices under Dragonframe software

In order to start using DitoGear™ motion control devices via DragonBridge you need to configure them in the Dragonframe software.

- 1 Open Dragonframe and create a new scene or load existing one.
- 2 Select **Scene » Connections** from the main menu.
- 3 Click Connect in ARC Moco #1 (or other channel of your choice).
- 4 If the drivers are installed properly and DitoGear™ DragonBridge is connected you should see an ARC MoCo dialog popping up and prompting you to choose one of the serial ports. Choose **dev/cu.usbmodemfd121** - probably it is the only option available there.
- 5 The Status should change to "Connected to DFMoco".
- 6 Close settings dialog and navigate to ARC Motion control workspace. In the workspace module in the top-right area of the Dragonframe software you'll find an icon for ARC Motion Control. Otherwise click the small triangle next to existing icons and turn on ARC Motion Control module.

- 7 Once you're in the ARC Motion Control screen select **add axis** from a context menu appearing when you click on the small list icon in the left-center area of the screen.
- 8 Choose **Arc Moco #1** from the Device drop-down list.
- 9 Select a channel you want to use for this axis from the Channel drop-down list. This should correspond to DitoGear™ connections to the DragonBridge interface.
- 10 Name this axis according to the device connected to currently configured channel/port (for example DitoGear™ OmniSlider).
- 11 Configure the Steps Per Unit, Max steps per second values basing on the table below.
- 12 You may want to configure also Backlash compensation and Limits.
- 13 Click OK.
- 14 Repeat this process for each of axes you want to use. Note you'll have double records for DitoGear™ OmniHead - Pan and Tilt axes need to be configured separately, but use the same values.
- 15 The system is ready to use.

## 7.1 Device Configuration Values

Use the following values in the configuration of the Dragonframe controlled device for each of axes to ensure proper operation.

Product	Steps per unit	Max steps per second	Backlash Compensationspeed
OmniSlider Stepper	84	35000	0
OmniSlider Servo	264	35000	0.2 - 0.75 mm
OmniHead (for both axes)	485	35000	0.32 deg
LensDrive	154	20000	1.6 deg

Backlash compensation may be overwritten by a value that you have measured for your system individually.

## 8. Conservation Guidelines

While not in use DitoGear™ DragonBridge should be stored in a dry and clean place, at ambient temperature around 10 - 25°C. All cables should be disconnected after use.

## 9. Using 3rd Party Power Adapters

DitoGear recommends using original DitoGear™ AC/DC power adapters and batteries.

While using a 3rd party adapter make sure it meets the requirements detailed in technical specifications table.

### **Caution!**

**DitoGear is not responsible for any damage or failures caused by the use of a 3rd party power supply adapter.**

## 10. Precautions for Safe Use of DitoGear™ Power Cables

Power cables cannot be looped during operation due to insufficient heat rejection that can cause melting of the cable insulation and ultimately its failure. Remember to disconnect all power cables after use, especially during transportation.

## 11. Using DitoGear™ Power Packs

DitoGear™ Power Pack 7Ah/14Ah and DitoGear™ PowerBox include gel type lead acid batteries, that have a low voltage operating limit. When you discharge the battery below that limit, the irreversible chemical processes occur and the recharging performance can be affected. It is recommended not to fully discharge the battery.

The lead acid battery will self-discharge slowly over time. Leaving the battery for more than 3 months without recharging may result in damage. Remember to recharge the battery at least every 3 months.

## 12. Obtaining Support

In case of any technical issues that can't be solved by carefully reading the manuals do not hesitate to contact us at [support@ditogear.com](mailto:support@ditogear.com)

## 13. Limited Warranty

DitoGear One (1) Year Limited Warranty  
For DitoGear Products Only

### Consumer rights and restrictions.

For consumers, who are covered by consumer protection laws or regulations in their country of purchase or, if different, their country of residence, the benefits conferred by this warranty are in addition to all rights and remedies conveyed by such consumer protection laws and regulations. This warranty does not exclude, limit or suspend any rights of consumers arising out of non-conformity with a sales contract. However, as described below, DitoGear disclaims statutory and implied warranties to the extent permitted by law, and in so far as such warranties cannot be disclaimed, all such warranties shall to the extent permitted by law be limited in duration to the duration of the express warranty described below and to the repair or replacement service as determined by DitoGear in its sole discretion. Some states (countries and provinces) do not allow limitations on how long an implied warranty or condition may last, so the limitations described above may not apply to you. This warranty gives you specific legal rights, and you may also have other rights that vary from state to state (or by country or province). This limited warranty is governed by and construed under the laws of the country in which the product purchase took place. DitoGear, the warrantor, under this limited warranty stands for DitoGear™ Robert Paluch, ul.Krańcowa 30, 62-002 Suchy Las, Poland.

### Warranty.

DitoGear's warranty obligations for this hardware product are limited to the terms set forth herein. DitoGear warrants this DitoGear-branded hardware product against defects in materials and workmanship under normal use for a period of one (1) year from the date of retail purchase by the original end-user purchaser ("Warranty Period"). If a hardware defect arises and a valid claim is received within the Warranty Period, at its option and to the extent permitted by law, DitoGear will either (1) repair the hardware defect at no charge, using new or refurbished parts that are equivalent to new in performance and reliability, (2) exchange the product with a product that is new or refurbished that is equivalent to new in performance and reliability and is at least functionally equivalent to the original product, or (3) refund the purchase price of the product. DitoGear may request that you replace defective parts with user-installable new or refurbished parts that DitoGear provides in fulfillment of its warranty obligation.

A replacement product or part, including a user-installable part that has been installed in accordance with instructions provided by DitoGear, assumes the remaining warranty of the original product or ninety (90) days from the date of replacement or repair, whichever provides longer coverage for you.

When a product or part is exchanged, any replacement item becomes your property and the replaced item becomes DitoGear's property. Parts provided by DitoGear in fulfillment of its warranty obligation must be used in products for which warranty service is claimed. When a refund is given, the product for which the refund is provided must be returned to DitoGear and becomes DitoGear's property.

### Exclusions and limitations.

To the extent permitted by law, this warranty and the remedies set forth above are exclusive and in lieu of all other warranties, remedies and conditions, whether oral, written, statutory, express or implied. As permitted by applicable law, DitoGear specifically disclaims any and all statutory or implied warranties, including, without limitation, warranties of merchantability and fitness for a particular purpose and warranties against hidden or latent defects. If DitoGear cannot lawfully disclaim statutory or implied warranties then to the extent permitted by law, all such warranties shall be limited in duration to the duration of the express warranty and to the repair or replacement service as determined by DitoGear in its sole discretion. Some states (countries and provinces) do not allow limitations on how long an implied warranty or condition may last, so the limitations described above may not apply to you. No DitoGear reseller, agent, or employee is authorized to make any modification, extension, or addition to this warranty. If any term is held to be illegal or unenforceable, the legality or enforceability of the remaining terms shall not be affected or impaired.

This Limited Warranty applies only to hardware products manufactured by or for DitoGear. The Limited Warranty does not apply to any non-DitoGear hardware products even if packaged or sold with DitoGear hardware. Manufacturers or suppliers, other than DitoGear, may provide their own warranties to the end user purchaser, but DitoGear, in so far as permitted by law, provides their products "as is".

DitoGear does not warrant that the operation of the product will be uninterrupted or error-free. DitoGear is not responsible for damage arising from failure to follow instructions relating to the product's use.

This warranty does not apply: (a) to consumable parts, such as batteries, unless damage has occurred due to a defect in the materials or workmanship; (b) to cosmetic damage, including but not limited to scratches, dents and broken elements on ports; (c) to damage caused by use with non-DitoGear products; (d) to damage caused by accident, abuse, misuse, liquid contact, fire, earthquake or other external causes; (e) to damage caused by operating the product outside the permitted or intended uses described by DitoGear; (f) to damage caused by service (including upgrades and expansions) performed by anyone who is not a representative of DitoGear; (g) to a product or part that has been modified to alter functionality or capability without the written permission of DitoGear; (h) to defects caused by normal wear and tear or otherwise due to the normal aging of the product.

Except as provided in this warranty and to the extent permitted by law, DitoGear is not responsible for direct, special, incidental or consequential damages resulting from any breach of warranty or condition, or under any other legal theory, including but not limited to loss of use; loss of revenue; loss of actual or anticipated profits (including loss of profits on contracts); loss of the use of money; loss of anticipated savings; loss of business; loss of Opportunity; loss of goodwill; loss of reputation; loss of, damage to or any indirect or consequential loss or damage howsoever caused including the replacement of equipment and property. The foregoing limitation shall not apply to death or personal injury claims, or any statutory liability for intentional and gross negligent acts and/or omissions. Some states (countries and provinces) do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

### Obtaining warranty service.

DitoGear will provide warranty service either (i) at an DitoGear Retail or DitoGear Authorized Service Provider (“ASP”) location, where service is performed at the location, or the DitoGear Retail or ASP may send the product to an DitoGear repair service location for service, (ii) by sending you prepaid way bills (and if you no longer have the original packaging, DitoGear may send you packaging material) to enable you to ship the product to DitoGear’s repair service location for service, or (iii) by sending you customer installable new or refurbished replacement product or parts to enable you to service or exchange your own product (“DIY Service”). Upon receipt of the replacement product or part, the original product or part becomes the property of DitoGear and you agree to follow instructions, including, if required, arranging the return of original product or part to DitoGear in a timely manner. When providing DIY Service requiring the return of the original product or part, DitoGear may require a credit card authorization as security for the retail price of the replacement product or part and applicable shipping costs. If you follow instructions, DitoGear will cancel the credit card authorization, so you will not be charged for the product or part and shipping costs.

If you fail to return the replaced product or part as instructed or the replaced product or part is not eligible for warranty service, DitoGear will charge the credit card for the authorized amount.

Please access and review the online help resources at the DitoGear website ([www.ditogear.com](http://www.ditogear.com)) and contained in the product manual before requesting warranty service. If the product is still not functioning properly after making use of these resources, please contact DitoGear at [support@ditogear.com](mailto:support@ditogear.com).

Service options, parts availability and response times may vary according to the country in which service is requested. Service options are subject to change at any time. You may be responsible for shipping and handling charges if the product cannot be serviced in the country in which service is requested. If you seek service in a country that is not the country of purchase, you will comply with all applicable import and export laws and regulations and be responsible for all custom duties, VAT, and other associated taxes and charges. For international service, DitoGear may repair or exchange defective products and parts with comparable products and parts that comply with local standards. In accordance with applicable law, DitoGear may require that you furnish proof of purchase details before receiving warranty service.

## 14. Privacy

DitoGear will maintain and use customer information in accordance with the DitoGear Customer Privacy Policy available at [ditogear.com/legal/privacy-policy/](http://ditogear.com/legal/privacy-policy/).

## 15. Miscellaneous

### Trademarks and copyrights

DitoGear™, DitoGear™ OmniController, DitoGear™ Evolution, DitoGear™ Trito , DitoGear™ OmniSlider, DitoGear™ OmniHead and DitoGear™ LensDrive, DitoGear™ Modulo are trademarks of Dito Gear Robert Paluch ul.Krańcowa 30, 62-002 Suchy Las, Poland. Unauthorised use is strictly prohibited. All other trademarks referenced in this manual are used only for informative purposes and are property of their respective owners.

### Disposal and recycling information

The device and all batteries included with it must be disposed of properly according to local laws and regulations. The product must be disposed of separately from the household waste. When your product reaches its end of life, contact DitoGear or your local authorities to learn about recycling options.





[WWW.DITOGEAR.COM](http://WWW.DITOGEAR.COM)