

I **THANK YOU**

... for purchasing this new advanced tool for your research, education and hobby projects – Drone Technology Laboratory (DRONTECHLAB).

We believe that this product will be a great helper in your educational activities, scientific research, as well as hobby development in the field of Unmanned Aerial Vehicles (UAV).

Please, adhere to this Quick Start Guide (QSG) and pay attention to our recommendations for proper initial setup of the DRONTECHLAB product and for its further use. More details are in Support section (Support sec.) of our web site:

www.prosystemy.sk/drontechlab/support/

II **OPEN-SOURCE**

DRONTECHLAB is open product based on open-source technologies. Our 3D models of all 3D printed parts are available as well for free upon request. Consequently, user is not limited by the manufacturer. He has a complete freedom in customization, software editing and hardware modification. DRONTECHLAB control system is based on DCU Control System Platform. The platform uses the following software:

- Linux / Windows / Mac OS (manual installation required) are supported as operating systems
- Java
- MySQL database, Apache web server, PHP- Scilab / MATLAB (requires manual on-measure setup) scientific computational platforms

III **SYSTEM REQUIREMENTS**

The minimum / recommended hardware requirements are as follows:

Processor: Pentium / i5

RAM Memory: 2GB / 16GB

Disc: 32GB SSD / 256GB SSD

IV **DECLAIMER**

Note that DRONTECHLAB is an experimental framework. Therefore any product or kit of DRONTECHLAB is designed so that it may be easily programmed, structurally modified, or adapt for diverse research and development or educational purposes. While every effort has been made to ensure the accuracy and completeness of all information in this document, PROSYSTEMY, s.r.o. assumes no liability to any party for any loss or damage caused by errors or omissions or by statements of any kind in this document, its updates, supplements, or special editions. PROSYSTEMY, s.r.o. further assumes no liability arising out of the application or use of any product or system described herein; nor any liability for incidental or consequential damages arising from the use of this document. PROSYSTEMY, s.r.o. disclaims all warranties regarding the information contained herein, whether expressed, implied or statutory, including implied warranties of merchantability or fitness for a particular purpose. PROSYSTEMY, s.r.o. reserves the right to make changes to this document or to the products described herein without further notice.

UNBOXING & ASSEMBLY

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A. Unbox all parts and accessories from the 'UAV' box.

* If you ordered an assembled UAV, then skip point 'B'.

B. Assemble the UAV according to the selected motors configuration. Check assembling photo tutorial and document on drone motor configuration in Support sec.

C. Unbox all parts and accessories from the 'STAND' box.

D. Assemble the UAV stand. Follow the photo tutorial available in Support sec.

* Photos 1A...1D are illustrative and their content may not correspond exactly to reality.

! Make sure that all components are properly assembled and connected correctly. Make sure that all screws and nuts are tight.
Connect the battery (in step 7) only after verifying all electrical connections of the UAV.

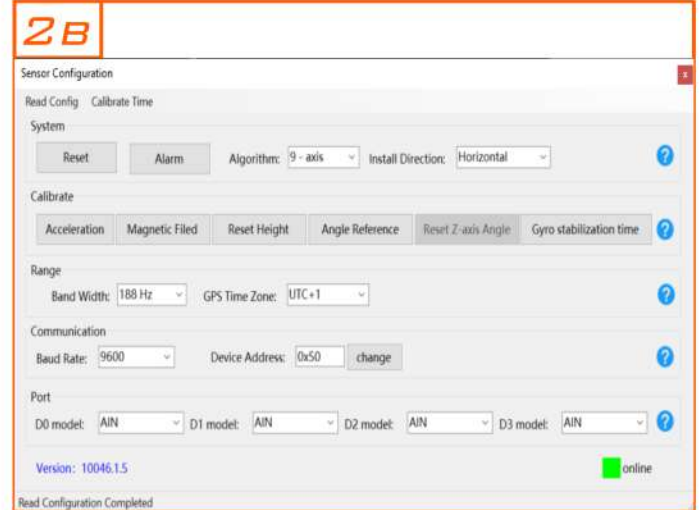
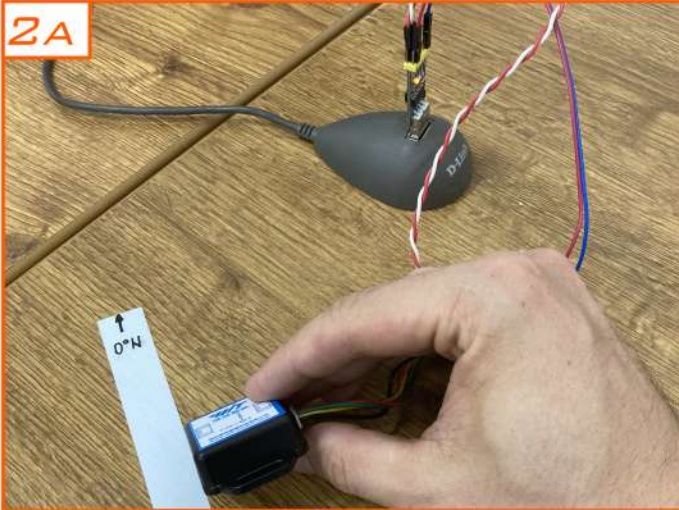


2 CALIBRATE & SET INCLINOMETER

A. Calibrate the inclinometer according to the manufacturer's instructions (see document in Support sec.).

* If you ordered an assembled UAV, skip the point 'B' and proceed to step 3.

B. Set the inclinometer parameters (follow our recommendations in the document from Support sec.).



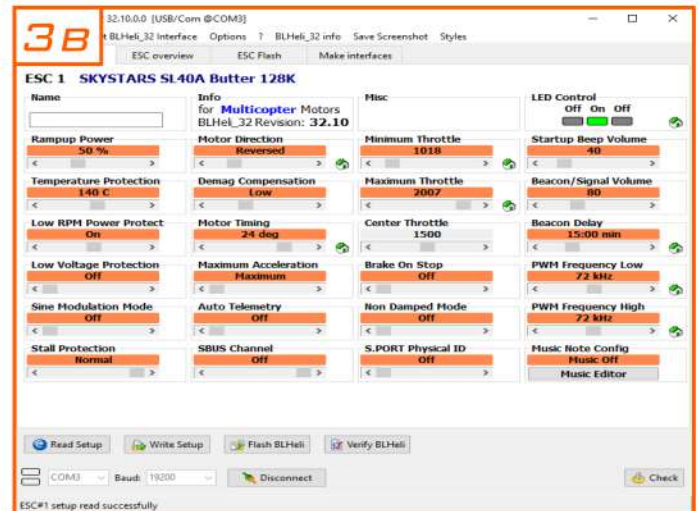
3 SET ELECTRONIC SPEED CONTROLLERS - ESCs

* If you ordered assembled UAV, then skip this step.

A. Connect ESCs to battery and connect USB programmer (can be performed even when ESC is mounted on UAV).

B. Set the ESC parameters (follow our recommendations in corresponding document in Support sec.)

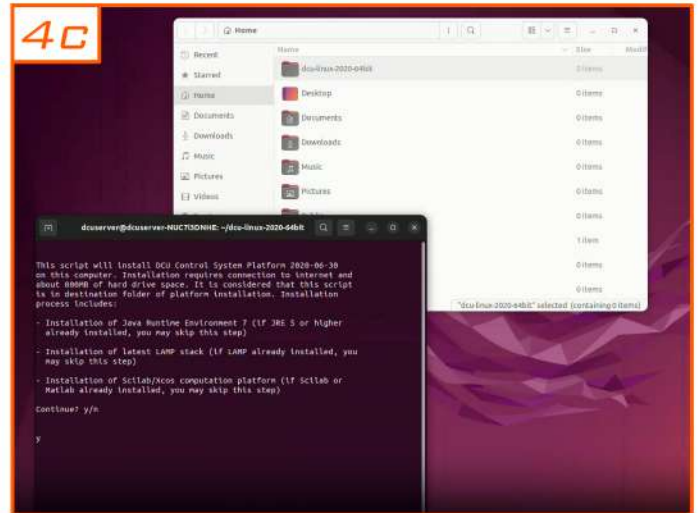
C. Repeat step 'A' and 'B' for each ESC on your UAV.



4 INSTALL DCU CONTROL SYSTEM PLATFORM

* If you ordered DRONTECHLAB product with a server, you may skip this step and work on server.

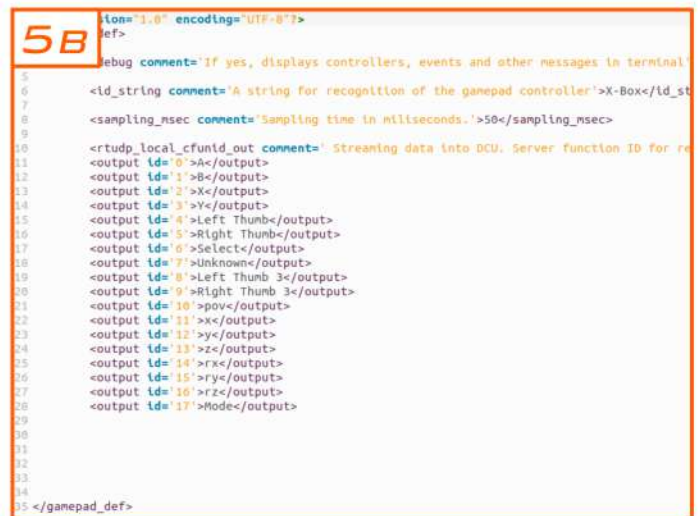
- A. Prepare your PC or laptop and connect your PC/laptop to internet.
- B. Download DCU Control System Platform Installer available at www.prosystemy.sk in Download section.
- C. Run installation on your PC/laptop with Linux/Windows (follow the video tutorial on our website). For Mac OS no installer is prepared and each component of the platform must be installed manually, check Quick Start Guide of DCU Control System Platform in Download section.



5 PLUG & CONFIGURE GAMEPAD

- A. Plug the gamepad into the PC's/laptop's USB port and restart the User Command Center (UCC) service.
- B. Configure the gamepad using the initialization file. The gamepad is configured by default according to the document in Support sec.

* If you are not using a gamepad to control the UAV but another controller, use the configuration file as a template.

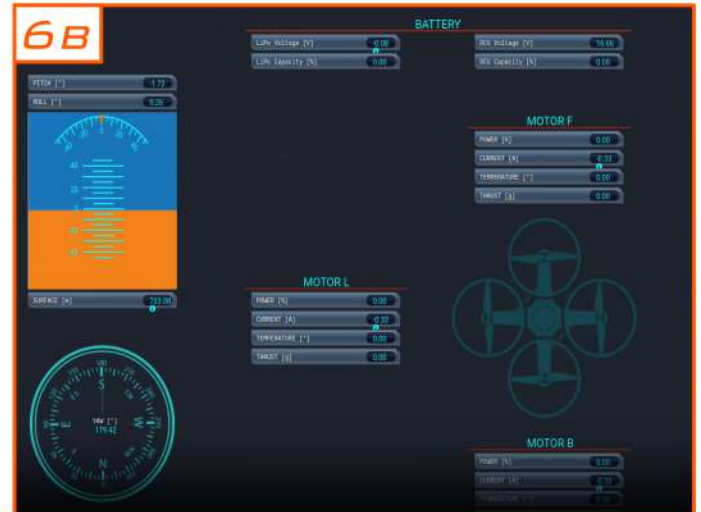
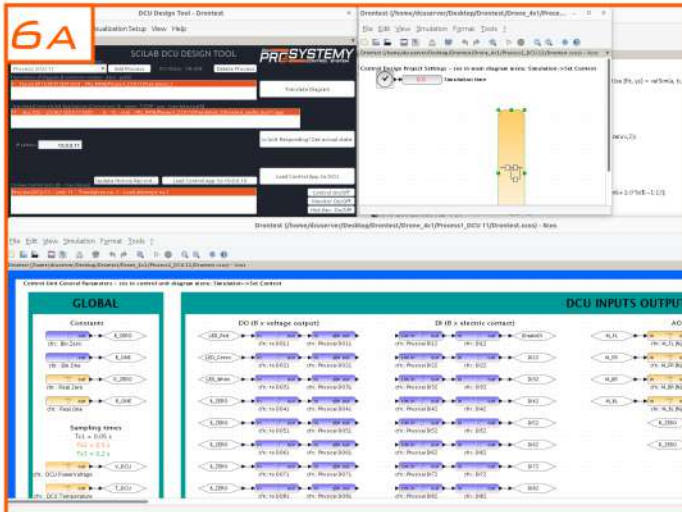


6 CONTROL SYSTEM SOFTWARE PROJECT & VISUALIZATION

A. Create a new project and/or feel free to use our developed control system project (DronTest) including control application diagram. The project DronTest includes all the basic features to control and monitor the UAV with a gamepad.

B. Create a new visualization for your application and feel free to use our designs of primary flight display and other process panels in your project.

* See video tutorials as examples of control application modification and visualization editing in Support sec.



7 COMMISSIONING & ESC INPUT CALIBRATION FOR MOTOR POWER

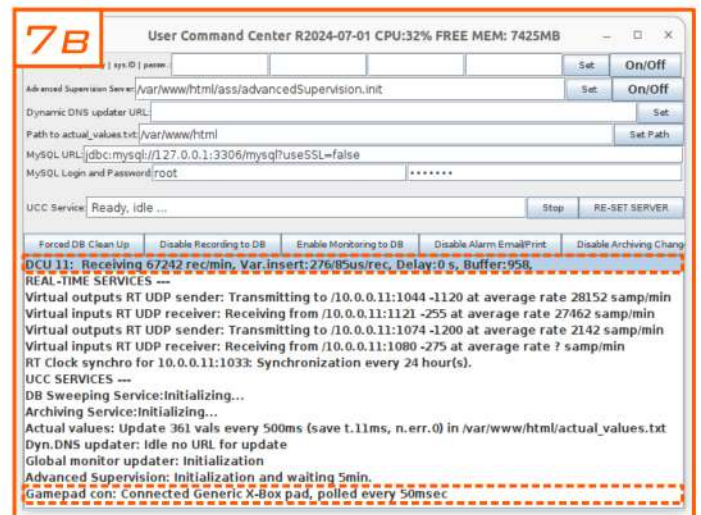
* If you ordered assembled UAV, then skip this step.

A. Make sure that all electrical connections are correct and that all screws and nuts are tight.

B. Plug in the control system power supply battery and wait for communication with the server to be established (see DCU and gamepad status lines in UCC service).

C. Set ESC input for power on motors to maximum value by setting DCU analog outputs for motors to 5V.

D. Plug in the connector to power up motors and immediately after motors beeping set ESC input to minimum by setting DCU analog outputs for motors to 0V (for more details on ESC settings, check the manufacturer manual).





8 **MOUNT THE UAV ON THE STAND**

- A. Mount the UAV on the stand in the direction of your choice. Tight the nuts of turning joints according to desired stiffness. Note that more stiff turning joints are more stable and more easily to control.
- B. Plug in the control system battery and wait for communication with the server to start (see step 7B).
- C. Plug in the connector to power up motors.
- D. Test the UAV functionality.



V **ENJOY YOUR EXPERIMENTS**

... with DRONTECHLAB framework.

We believe that this product will create attractive, inventive, and pleasant laboratory environment for your R&D and educational activities and that it will put a smile on your face, your colleagues or students.

When working with this product, please remember safety at work and all our recommendations!