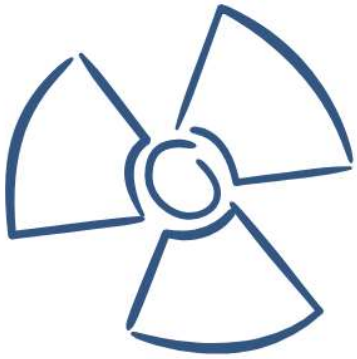
R3aktor Control Center User Manual



Playing With Fusion Inc.

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1 Introduction

The R3aktor Control Center desktop software is your functional, lightweight, and centralized solution for interacting with Playing With Fusion's *R3aktor* line of data acquisition products. With R3aktor Control Center, you can log and analyze data, as well as configure *R3aktor* hardware connected to your PC. R3aktor Control Center provides an easy and fast solution for acquiring data on the fly, with no headache.

Minimum Requirements

Operating System:	Windows 10 or higher
Storage:	About 30MB of disk space.
RAM:	4 GB of RAM*

Table 1: Desktop Software Minimum Requirements

**The R3aktor Control Center application itself uses roughly 200 MB of RAM nominally, but 4 GB is recommended for usability of your PC and R3aktor Control Center software.*

2 Compatible Products

Model Number	Description
FDQ-30001	R3aktor Core M0: 4-ch Thermocouple Logger
FDQ-30002	R3aktor Core M0: 4-ch RTD Logger

Table 2: Compatible Playing With Fusion products

3 Quick Start

This quick start will take you through the necessary steps to log and analyze data, as well as configure connected R3aktor hardware.

Installing R3aktor Control Center

In order to start using the *R3aktor Control Center* software, you must download and run the installer available at www.playingwithfusion.com. The direct link for this installer is linked here:

https://www.playingwithfusion.com/static/r3aktor_control_center.php

Run the installer on the machine you intend to use your R3aktor board with. After you installation has completed, run the R3aktor Control Center desktop software by clicking the shortcut on your desktop or in the start menu. The application may prompt you to install the .NET

desktop runtime. Follow the installer instructions and install the .NET desktop runtime before running R3aktor Control Center again.

Connect Your Hardware

Next, connect your hardware to your PC through the USB-C port present on compatible R3aktor products.

In R3aktor Control Center, select the “connect” icon at the top of the application to connect your hardware to the desktop app. Select the R3aktor which was just connected to your PC.

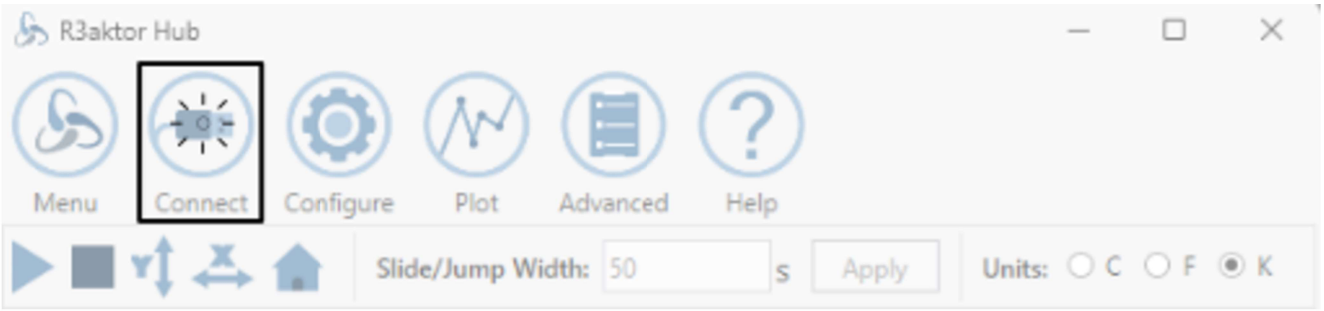

Figure 1: Opening the connection menu

Log Some Data

Upon a successful connection, the R3aktor should start plotting data in the live view, as shown below:

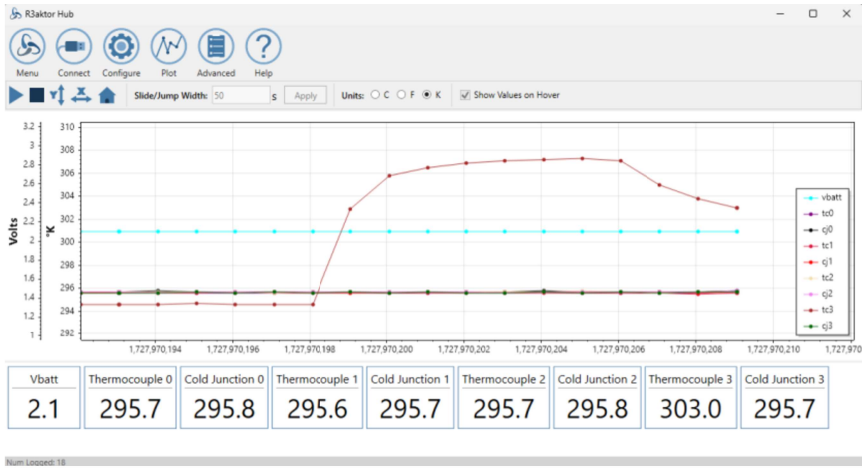

Figure 2: A connected R3aktor logging 4 channels of TC data and the VBatt

Analyze Data

After logging some data, select the "Stop" button (■). This will stop logging from the R3aktor, and you can now drag the graph around to adjust your view of the data.

You can also save your gathered data as a file, using the context menu at the top. Just select **Menu→Save Log** and your file will be saved to your disk for later use. **Analyze Logged Data**

You may want to view data that you previously logged, or collected from a R3aktor SD card. To do this, go to the main menu and select the "Open Log" menu option.

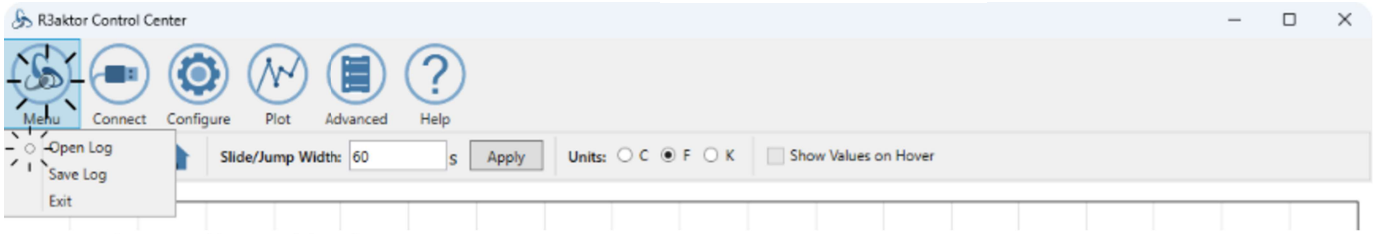

Figure 3: Opening a file to read data from

After clicking the menu, you will be presented with a file explorer screen. Navigate to the log file taken from this application, or a R3aktor board, and open it through the dialog. You should then be presented by data in the plot window.

Configure Your Hardware

With R3aktor Control Center, you can configure compatible Playing With Fusion products. While the R3aktor Control Center app is open, select the **configure** option in the top menu, and either connect your R3aktor or make your own configuration from scratch and save to a file.

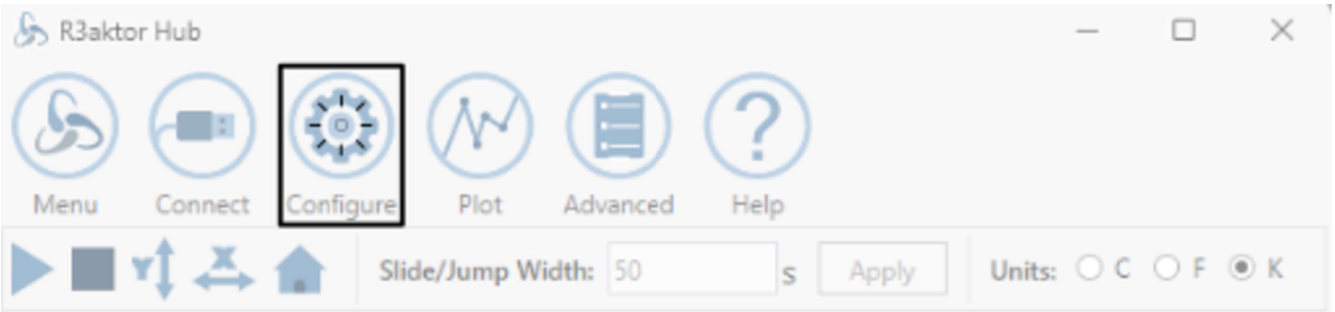

Figure 4: Opening the configuration menu

Configurations saved to a file must be loaded on to the SD card attached to your R3aktor product with the file name: "RCONF.txt". Other names will result in an error thrown by your hardware.

The configuration dialog will by default, populate the default configuration for the particular board that is selected in the drop down menu. Select the board you have connected to your PC, and select "Write Config" while leaving all other options as their defaults.

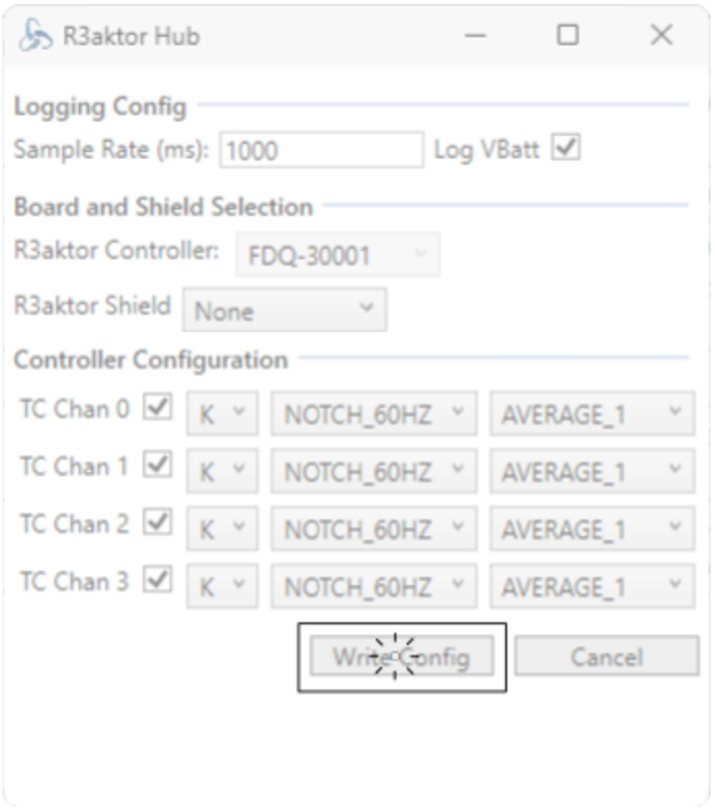

Figure 5: Writing configuration to connected R3aktor board

The dialog will also ask you to read configuration from a connected R3aktor if you have one connected. If you do not have a R3aktor board connected, just select "No."

At any time, you can right-click in the configuration menu and select "Read Config from Board" to read the configuration from a connected board.

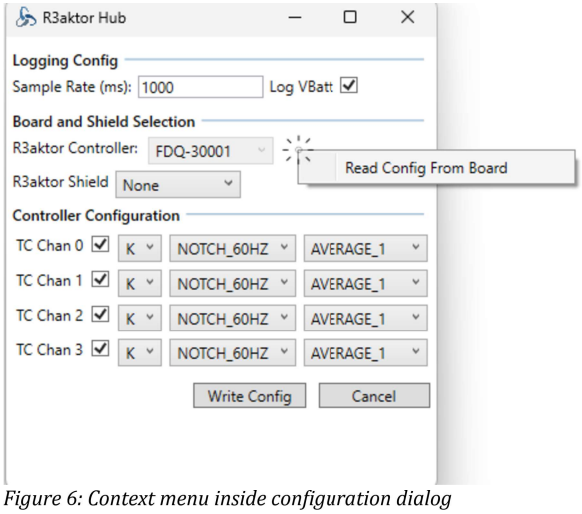

Figure 6: Context menu inside configuration dialog

4 Detailed Feature Descriptions

4.1 Installer Details

The R3aktor Control Center software package uses an installer to set up R3aktor Control Center on your device. The R3aktor Control Center installer makes the following changes to your system:

- Adds a “Playing-With-Fusion” directory to your Program Files folder
- Copies all necessary dependencies to the “Playing-With-Fusion” folder, along with the executable needed to run the R3aktor Control Center application.
- Adds shortcuts to both your desktop, and start menu for the R3aktor Control Center software.

4.2 Main Menu

of the R3aktor Control Center application is going to be the primary method of interaction with both the desktop software, and your hardware. The following sections will go into detail on each part of the top menu, and what features are available to you. The top menu is shown below:

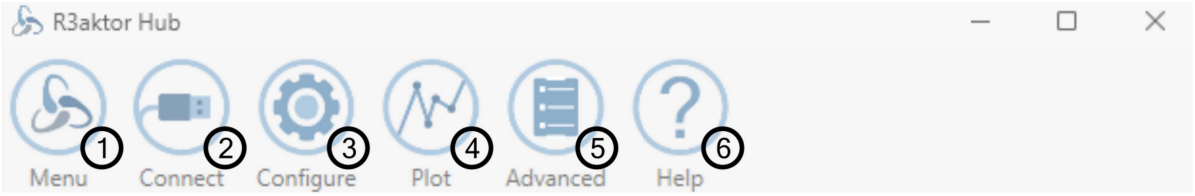

Figure 7: Main menu description

Number	Description
1	Main menu, where you can select a file to analyze, save data, and exit the application.
2	Connect to an attached compatible R3aktor device.
3	Start configuration for a R3aktor device. Depending on your choice, the configure menu will write to an attached device, or to a file that you can load on a R3aktor SD later.
4	Plot menu, where you can change the view mode of live data.
5	The advanced menu contains the option to re-flash the R3aktor board if you want to factory reset your software.
6	The help menu contains contact information, basic information about this application, and wiring diagrams for RTD connections.

Table 3: Top menu feature description

4.3 Live Data Menu

The live data menu provides controls for starting, stopping, and viewing live data collected from a compatible R3aktor device.

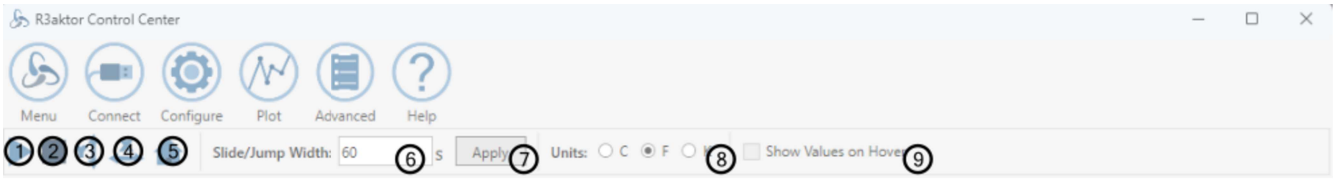

Figure 8: Plot menu buttons

Number	Description
1	Start button, which will prompt you to connect to a R3aktor board if you aren't already, and start logging the data it outputs over the USB cable to your computer.
2	Stop button, which will stop logging live data and allow you to start analyzing collected data.
3	Fit Y button, which will fit your data to your current Y axis height
4	Fit X button, which will fit your data to your current X axis width
5	Fit home button, which will fit both X and Y data to your current view. If you get lost, or your scaling becomes amiss, you can select this to go back to a "home" view.
6	Width of current view. Disabled in "full" view mode. Enable "slide" or "jump" modes to use.
7	Apply button for slide and jump width box. You **must** apply your changes for them to take effect.
8	Unit selection menu. You can view your data in Celsius, Fahrenheit, or Kelvin
9	Toggle for showing values under mouse cursor during analysis

Table 4: Plot control menu feature description

4.4 Data Plot

The data plot consists of the plot, axis, and live value displays that allow the user to visualize thermal data in real time, or while analyzing a previous log.

Figure 9: Plot layout

Number	Description
1	On the left side of the plot, the y-axis indicates the units and scale for each type of signal plotted. In the case of this screenshot, that is temperature in Kelvin, as well as voltage of the on-board LiPo battery charger.
2	Under the plot, the x-axis shows the relative time of logged data, in seconds. If data was logged from a PC using “R3aktor Control Center” the data will be relative to the Unix epoch. If data was logged on a R3aktor board, it will be relative to the R3aktors power on time.
3	The legend displays what signals are currently being plotted, and the corresponding color.
4	Below the plot are live data values, which hold the last value of each signal currently being sampled by the R3aktor Control Center software. This view is not present when analyzing log files, but only during live logging.

Table 5: Plot layout featire description

4.5 Log File Naming

Depending on if a log file is created by your computer, or a R3aktor product, a file will have two different naming conventions.

For the case of R3aktor Control Center (created using the "Save to .CSV" option), it will automatically name all log files saved as per the following diagram, unless the user changes the name during save:

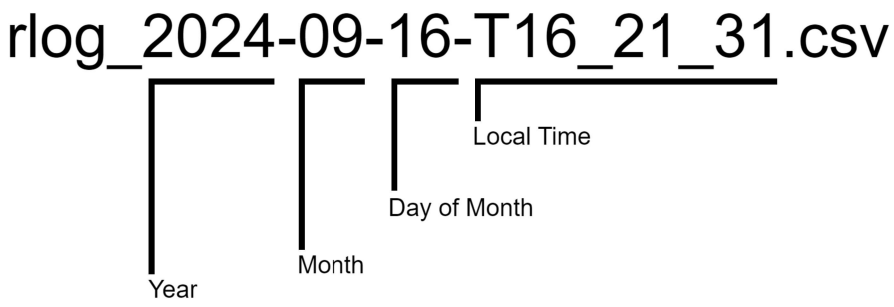

Figure 10: R3aktor Control Center Log File Format

For the case of R3aktor hardware, log files are saved and named numerically, incremented once every time a new log is created. For instance, the first two logs on a R3aktor SD card may be RLG1.CSV, RLG2.CSV, etc. The format is as shown below:

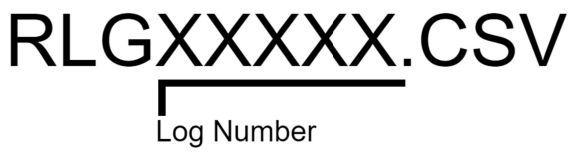

Figure 11: R3aktor Core Log File Naming Format

4.6 Configuration File

Every R3aktor stores its configuration on a text file on the attached SD card, and loads this configuration every time the R3aktor boots. The configuration file present **MUST** have the name "RCONF.TXT" to work. If your R3aktor does not have a configuration file present, or it is misspelled, the R3aktor will throw an error and start blinking.

It is highly recommended to use the provided R3aktor Control Center desktop app to alter R3aktor configuration. Users should not edit the configuration file.

5 Related Documentation

Playing With Fusion Inc. Website:

www.playingwithfusion.com

MAX31856 Library:

www.github.com/PlayingWithFusion/PWFusion_MAX31856

R3aktor Product Landing Page:

https://www.playingwithfusion.com/static/r3aktor.php

6 Revision History

Date	Revision	Author	Description
2024-11-27	0	Jacob Simeone	Initial release
2025-01-10	1	Jacob Simeone	Update Screenshots & Formatting

7 Contact

Please contact us with any questions or concerns related to Playing With Fusion Inc. products or software. You can reach us at our support e-mail listed below, and we will get back to you as soon as possible.

Email us at: technicalsupport@playingwithfusion.com