

Dragonfly 5.x

Overview

We are releasing the first of at least 2 major updates to the Dragonfly firmware and software.

This first release is more centered on general capabilities of the system, while the next one will be a general improvement of the client software (panel and ASCOM etc).

Most of the new features are, either user requests, or multi-telescope environment functions (or both). There are also quite a few refinements (such a simple button-clicking firmware update).

We're also moving to a portable software architecture, so the same programs will be available not only on Windows but also on Mac OSX and hopefully some Linux, too.

Main new features:

- **internet connectivity testing**, being able to perform some actions in case of lack of connectivity (resetting the router is an option, but it's up to the user)
- **email sending** – it can now send an email in exceptional circumstances (please check the *limitations*)
- internal **clock** with time zone settings
- **access control, password based**, with 2 levels: administration and relay control
- macro (for lack of a better word) definition, for **autonomous operation**: now relatively complex operations can be easily defined, no programming involved.
- All the configuration (relay and sensor names and settings) is now **stored inside the Dragonfly**, and readily available from any device you use to connect to it (updated smartphone apps coming soon)

Examples of things that the Dragonfly can do now:

- send you an email if it detects the roof open and the CloudWatcher safety relay in unsafe position.
- reboot itself if no one contacts it for a given time
- switch on and off some devices (heater, dehumidifier) at given times of day
- switch the internet router on and off if there is no internet connectivity for a long period of time...

New features, for programmers / integrators:

- internal semaphore and mutex implementation to help sharing physical observatory devices, most notably the roof
- much more powerful macros are available if directly programming the device (if / and / or / then / else / elseif...)

To support all these new features, there are 2 new programs and a new firmware:

- a configurator (replaces and vastly extends the previous “Internal configuration” window)
- a new (slightly modified) control panel.

The day to day software, the control panel, remains basically the same with support for passwords. The major improvements in this area will come with the next version.

The configurator, however, adds support for most of the new features: from setting the passwords (administration and relay control), to specifying the time zone for several clock-based functions, and defining all actions that can be performed autonomously by the Dragonfly.

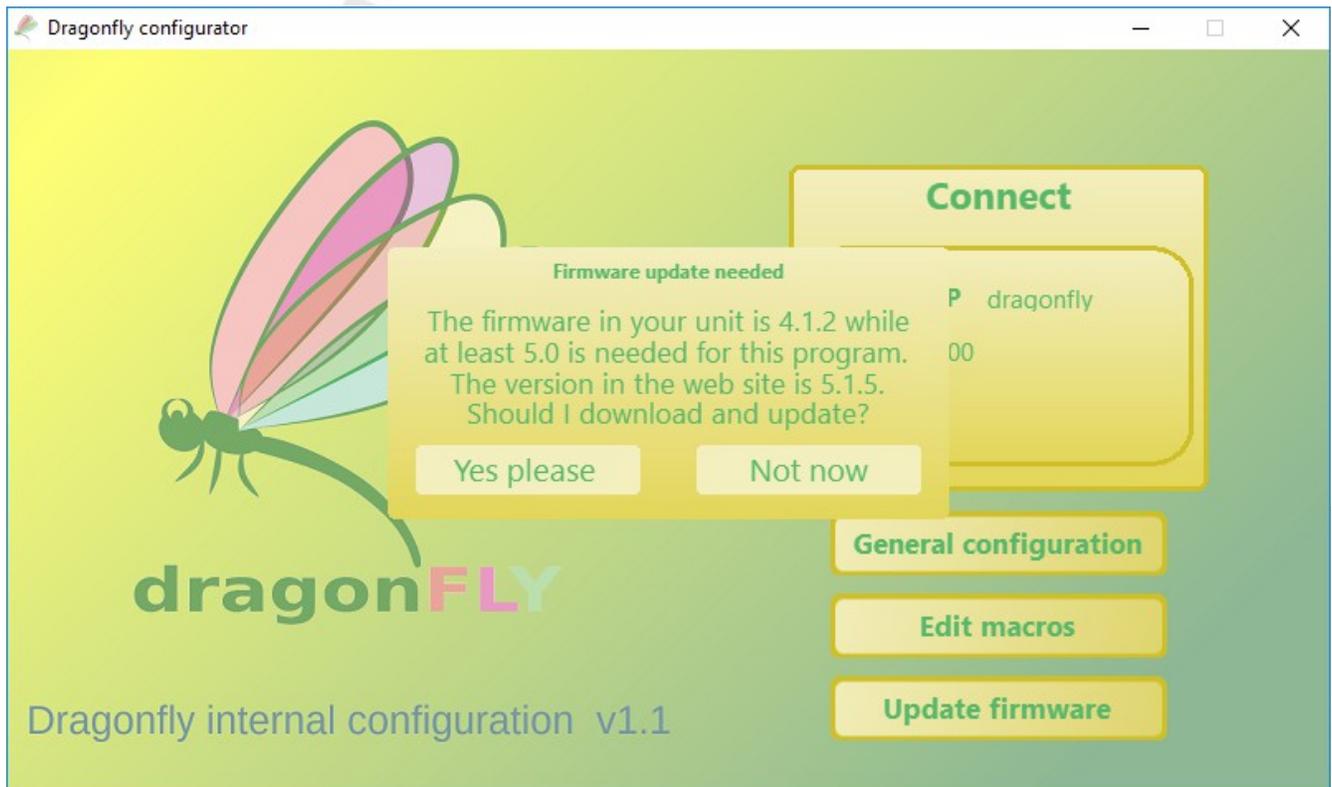
Important to understand: this configurator program changes **what is stored inside the Dragonfly**. It replaces the old “controller configuration” window in the normal windows program.

In order to activate and enjoy these new features, first step is to download the new software, from here:

[Dragonfly 5.9 software](#)

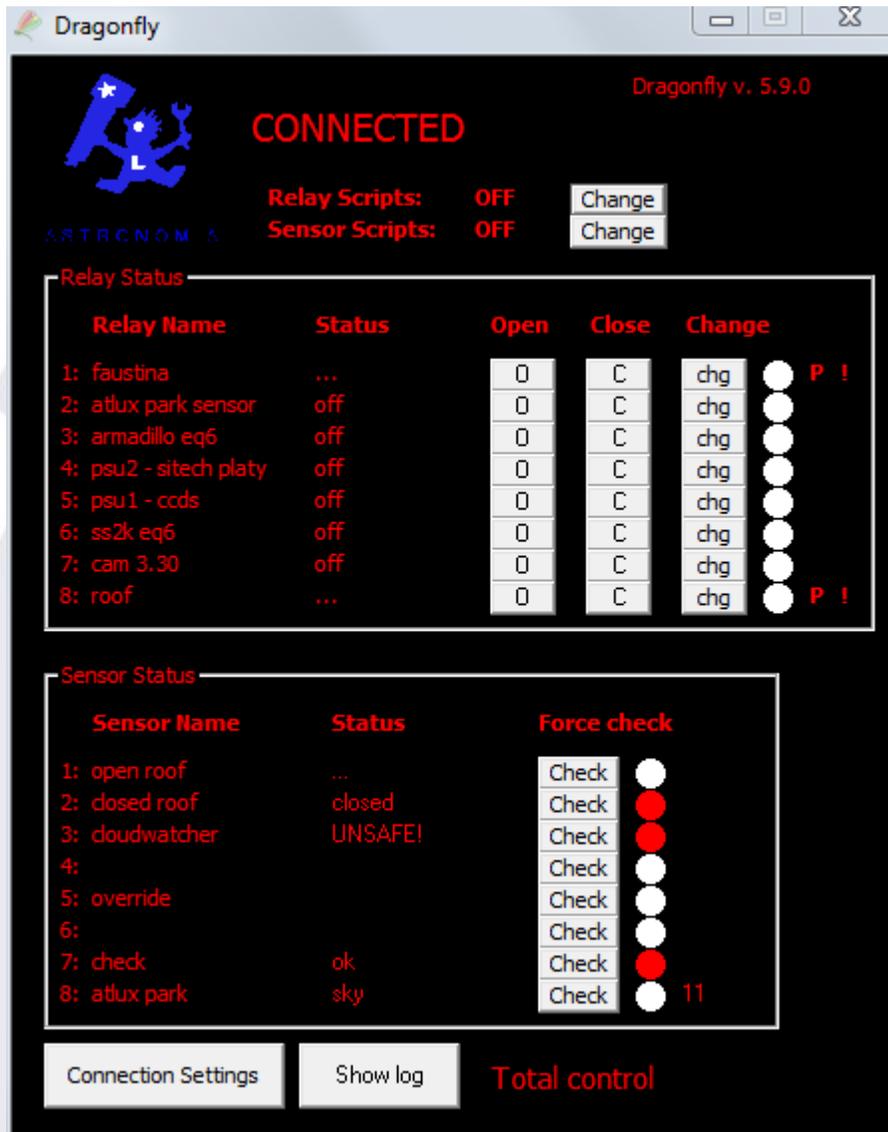
Close any older running Dragonfly program, install this new one, and launch the new configurator (DragonflyConfigurator).

Select “firmware update”



... and the software will guide you from there. *Be patient*, it will take a few seconds for the controller to start receiving the new firmware.

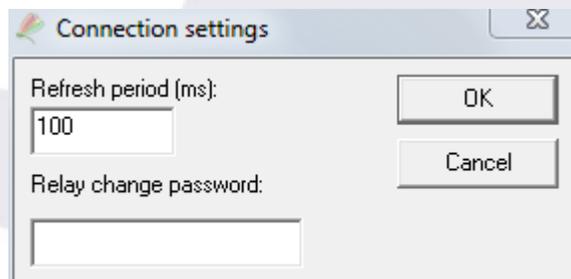
After it's done, we can take a look at the new configuration window:



It is very much your familiar program. Important to note, though, is that now, once first run, the sensor and relay names and settings have been saved **inside** the Dragonfly.

The only difference is the “Total control” message (bottom right) that informs us of the access level.

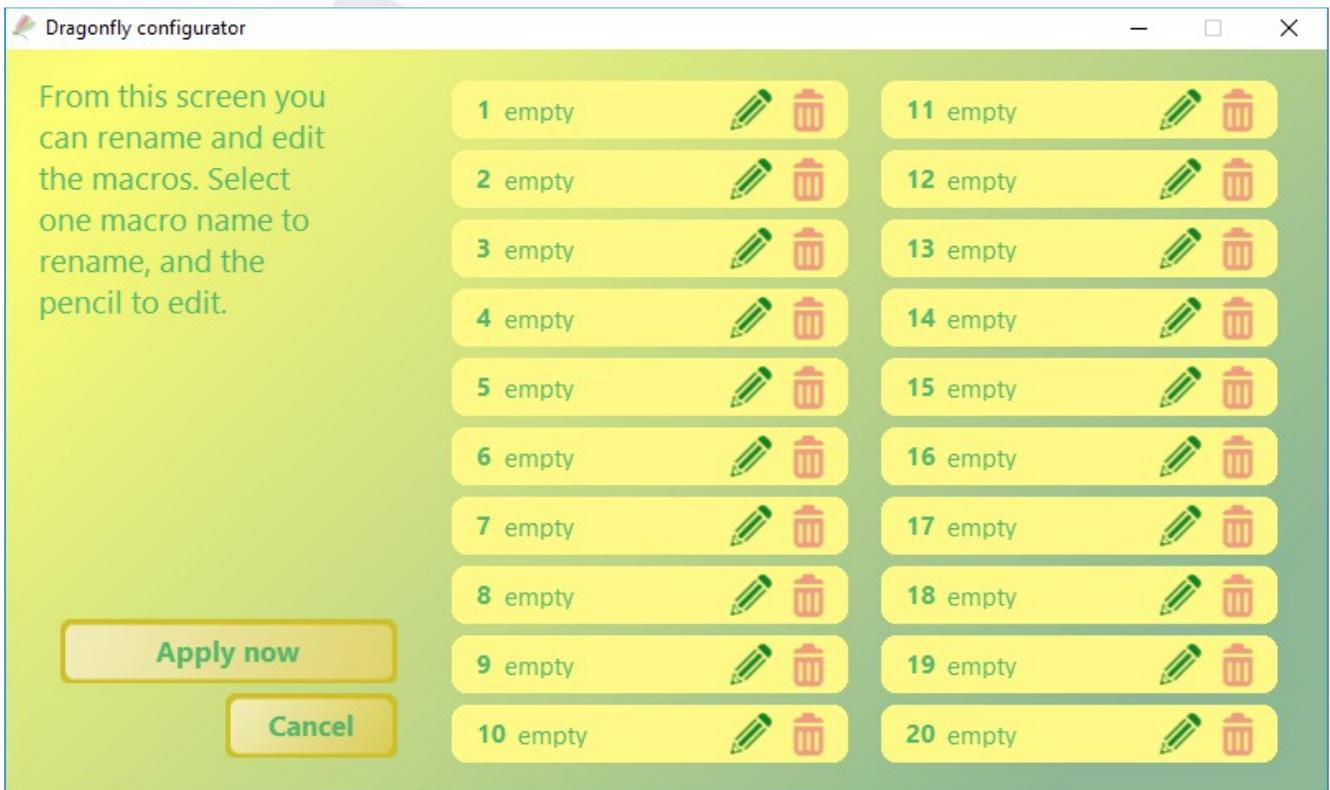
Let's just check the connection settings to see the password field is now available:



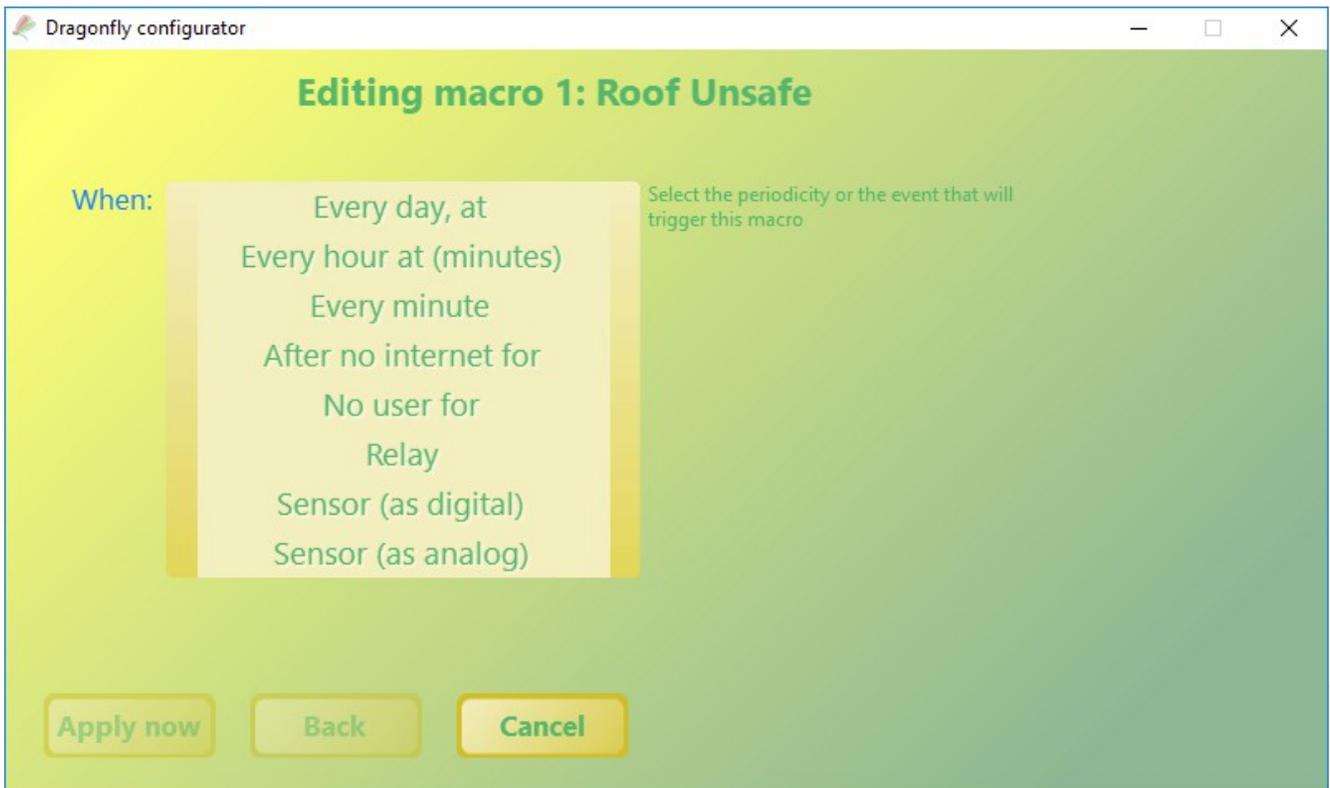
Of course the administration password will also allow relay changes.

If we now go back to the configurator, we can explore the rest of the new features, the macros.

Click “*edit macros*”:



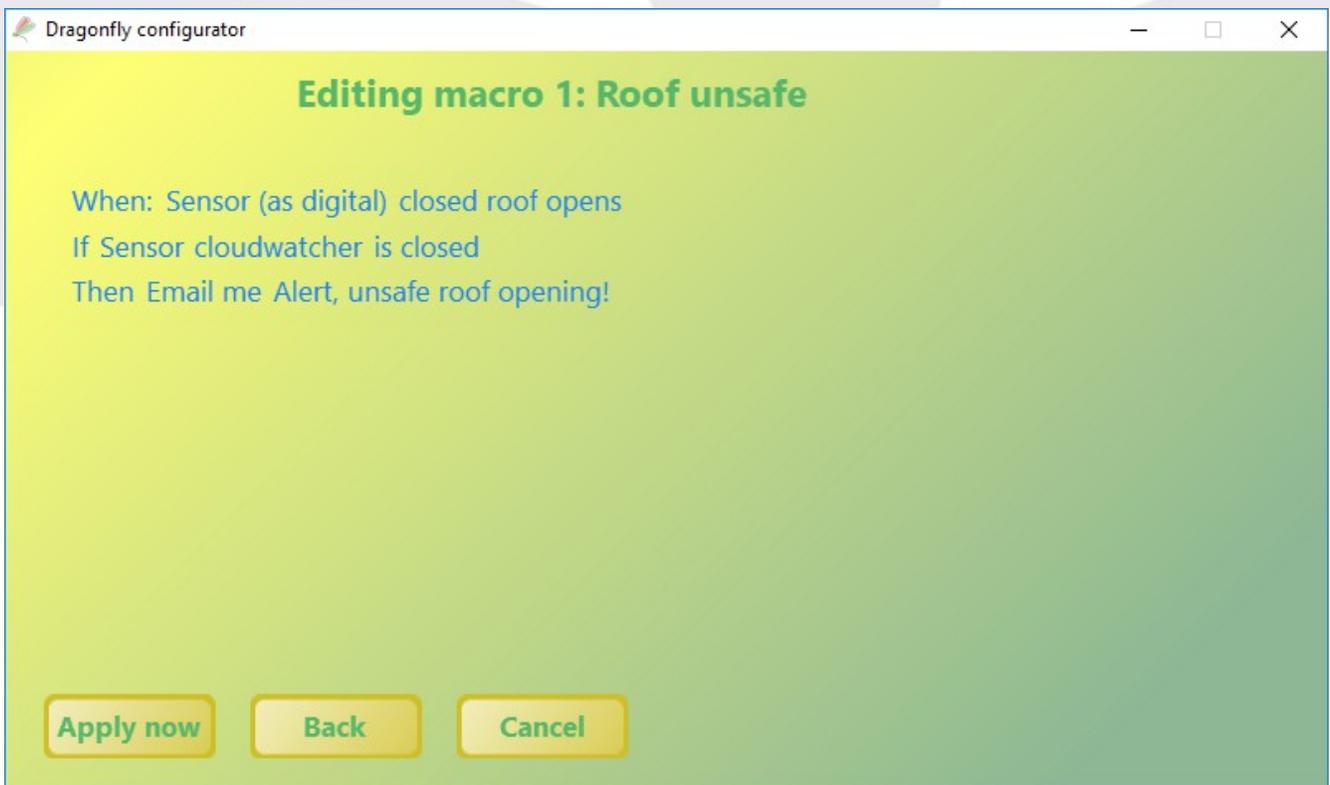
You can define up to 20 macros. Let start with macro 1, click over “empty” to give it a name, let's say “Roof unsafe”, and then click the pencil icon, you'll get to this:



You'll be presented with a series of options, allowing the definition of quite complex and useful actions.

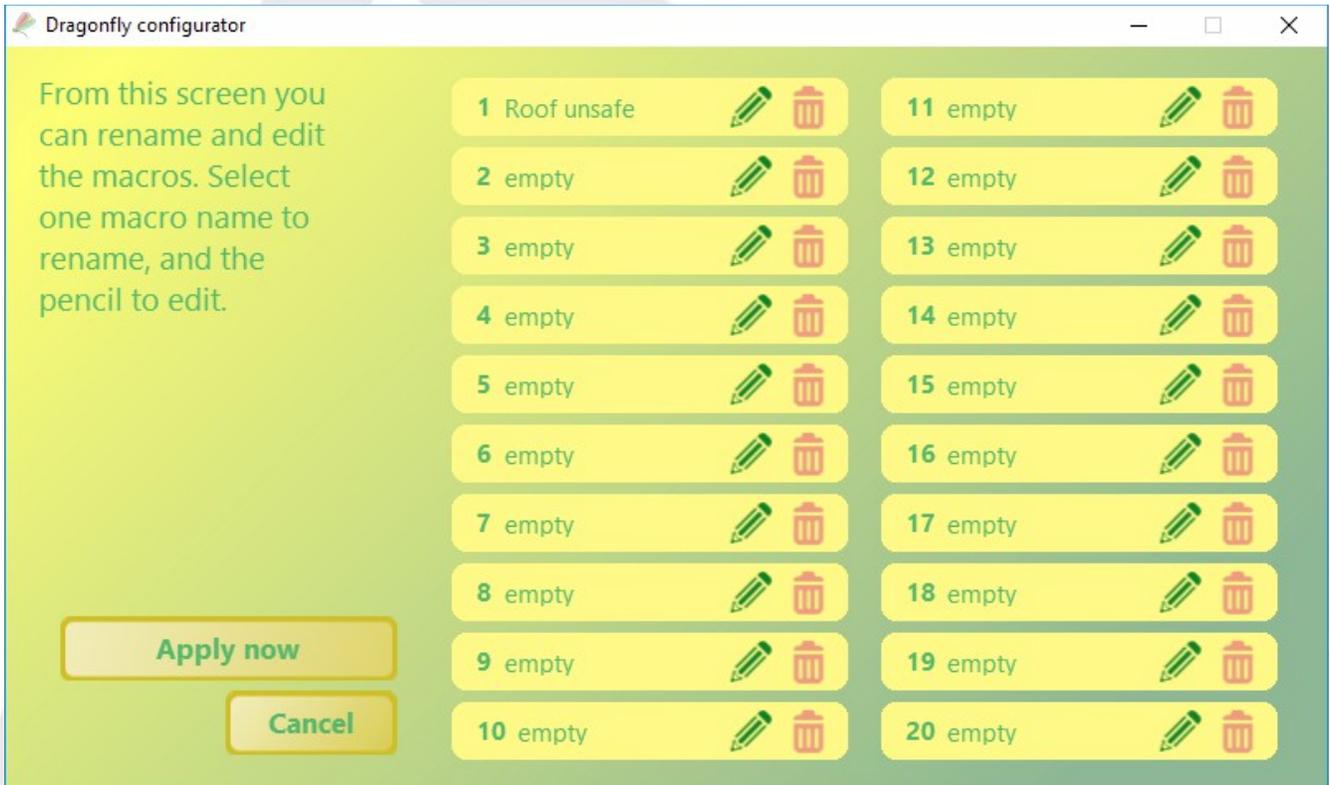
For every macro, you can (have to) define a firing condition (many options), optionally another condition (sensor / relay status based), and the action to be performed.

In this case, let's select "Sensor (as digital)", then the closed roof sensor (you'll see your sensor names are now available here!), etc, as in:



You can use the *back button* to navigate backwards, and select apply once finished.

For everything to be saved to the controller, you have to click the big “*apply now*” button in the macro list, as below:



We've worked hard in making the system *easy to understand*, so we hope this does not need further explanations.

Limitations

I have mentioned in the past that some features of the ZeroConf system (specifically, the relayed sessions, and now the email capabilities) have a recurrent cost.

For these features, and any similar future ones to be maintained for free as they are today, **responsible usage is requested:**

- use the **email system sparsely**. It is ok to send an email as warning of every unexpected condition, it is not ok to send several emails per session, every session.
- **relayed sessions** (these are those in which the communication cannot be directly established between your computer / phone / table and the Dragonfly, and our server “sits in the middle” sending messages back and forth), are **not appropriate for full-session monitoring**.

They are ok for checking the status, operating the roof, starting or closing the session... short sessions, amounting to a few minutes in total.

If you need to keep full-session monitoring and are unable to setup a direct connection, check our web site or just write for help. Opening a port in your router is all that's required for the sessions to be practically free of cost (as opposed to quite expensive).

The new software (this one!) will be required to continue using the ZeroConf system in a few months.

Other notes and quirks

- ✓ The clock is synchronized with our servers, every 3 hours, provided internet connection is available. If it is not, the accuracy of the clock will degrade. Do not use the clock feature if your Dragonfly is not usually connected to the internet.
- ✓ The internet tests are performed every 5 minutes; if a macro is launched because of this (internet failure), it will relaunch itself if the internet does not come back (same periodicity as first launch)
- ✓ The power LED will become orange / red if power supply voltage drops below a safe value of approx 11.3V. While in this state, the relays will be protected against any change. Of course, if the voltage keeps dropping all the relays will eventually open
- ✓ The activity LED will become orange / red if the system detects a faulty condition. You can check the condition from the internal web (<http://dragonfly>) - please notify us.
- ✓ The actions and triggers in "initcmds.ini" and "endcmds.ini" **will not get launched**. These should not be needed now, if you need something not covered by the new macros, please contact us.
- ✓ Password protection will not work for web sessions. You may disable the web server from the configurator. Also, a password change will not affect current sessions.

In case of problems the software will generate an *error log*, please [send it to lunático for analysis](#).

Features left for the next release

There are still quite a few things I want to add to the system before entering a "*mature product*" life status, left for the next update, namely:

- support for controlling several Dragonflies from the same software
 - internal checks before changing any relay (that is, for instance, avoid opening relay X if sensor Y is ...)
 - making the ASCOM scripts optional (covering most cases with a interface similar to the one already present in the configurator for defining the macros).
 - Similarly, allow the user to define some actions and have them available a button click away
 - record all log messages into a file, automatically
 - execute a local script if the communication fails
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