

# Quick start on the “Intelligent Plasma Ball” alias the “Telligent”

## **Telligent – ‘Setup=0’ \*\*\* First Initial Startup of the ‘Intelligent Plasma Ball’ \*\*\***

When the Intelligent Plasma Ball, here after referred to as ‘Telligent’ is first turned on, and regardless of switch settings, will start with a screen display as follows;

**Setup=0 Freq Rds=1  
F1=34922.00 D1=0.20  
F2=00007.83 D2=0.50**

The above is the factory set startup screen and can be easily changed by the user. The Telligent will always startup in the last configuration that was run. There are 6 setup screens and it is best to always run a protocol or frequency group from the ‘Setup=0’ screen.

‘Setup=0’ has two functions. 1<sup>st</sup>, it is where all program runs should be started and stopped from. 2<sup>nd</sup>, it allows reading any of the 1 through 50 memory groups stored in the Telligent’s memory. By pressing the RED push button, the cursor will toggle back and forth between the ‘Setup=0’ and the ‘Freq Rds=nn’, where ‘nn’ represents a frequency group number.

When the cursor is under a ‘Freq Rds=nn’ and the rotary dial is turned, a ‘frequency group’ can be selected to see what the two frequencies and duty cycles are set to for a particular ‘frequency group’. For example; the initial factory set frequencies and duty cycles for group 1 are as show at the top of this page.

If both toggle switches are in the down position and the rotary dial is pushed in, the Telligent will run those to two frequencies at the defined duty cycles. Yes, the rotary dial also has a push button feature allowing for starting and stopping a run sequence.

In the factory frequency group 1 setting, channel 1 is set to run at 34922.00 hertz with a 20% duty cycle and channel 2 will run at Schulman Resonance of 7.83 hertz at a 50% duty cycle. You can easily see the plasma flashing on and off at 7.83 hertz.

There are three types of program run modes. The Telligent comes from Aurorasky set to the 1<sup>st</sup> mode also call ‘SIMPLE’ mode. ‘SIMPLE’ mode will run just a single ‘Frequency Group’ for the defined ‘time settings’ which will be discussed latter in this write-up.

See the ‘Setup=1’ for how to change the frequency and duty cycle for the 50 ‘frequency groups’.

## Telligent – Setup=1

When the cursor is under the 'Setup=n', where 'n' equals the setup screen number, rotating the rotary dial will allow selection of any of the six setup screens. The initial Aurorasky 'Setup=1' look as follows;

**Setup=1 Freq Rds=1**

**F1=34922.00 D1=0.20**

**F2=00007.83 D2=0.50**

The cursor will now behave differently. Repeated presses of the RED push button will move the cursor through all the changeable numbers in the Setup=1 screen. Notice how there is now a 'Freq Set=nn' parameter, where 'nn' equals 1 of the 50 frequency groups being selected for change. The cursor has two move speeds. It will move one position for each pressing of the RED push button, or it will quickly move from position to position if the RED push button is held down.

You can change either or both frequencies and duty cycles to whatever you want within the limits of the Telligent's range. The frequency range and duty cycle ranges are listed below;

F1, Frequency 1, can range from 1 hertz to 50000 hertz

D1, Duty Cycle 1, can range from 1 to 25 percent

F2, Frequency 2, can range from .01 to 10000 hertz

D2, Duty Cycle 2, can range from 1 to 99 percent

Once the Frequency and Duty Cycle have been dialed in for either channel they will need to be recorded into the Telligent's memory. This is done by pressing the rotary dial once to set and then a second time to lock the changes into memory.

Now here is the part you will want to understand completely. If you move the cursor and select a new 'Freq Set=nn' number, you will not be reading that frequency group value because you are in the 'Freq Set=nn' function and NOT THE 'Freq Rds' function. This is convenient if the next change you want to make is similar to the last change you made. You would simply set the cursor forward to make changes to the selected frequency or duty cycle numbers. When satisfied with the new setting you would simply press the rotary dial once to Set and then a second time to lock the changes to the new memory location. HOWEVER, if want to see what was in the memory location intended to be change first, then you will have go to the 'Setup=0' screen to get into the 'Freq Rds=nn' function to read the frequency group. With a little practice this will become second nature so please read and understand this paragraph when you want to change values in the Telligent's memory.

See the 'Setup=2' for how to change the Run Mode function

## Telligent – Setup=2, Setup=3, Setup=4

When the cursor is under the 'Setup=n', where 'n' equals the setup screen number, rotating the rotary dial will allow selection of any of the six setup screens. The initial Aurorasky 'Setup=2' look as follows;

```
Setup=2      Modes=1
1=SIMPLE, 2=PROTOCOL
3=SWEEP
```

As can be seen there are three basic types of RUN Modes.

**Mode 1=SIMPLE** will simply run the select Frequency group for the defined time settings that can be set via the 'Setup=5' screen. See (Telligent – Setup=5) for timing control.

**Mode 2=PROTOCOL** is much more sophisticated in that several frequency groups can be run together as a 'PROTOCOL'. There are 50 frequency group memory positions that can be organized in a protocol fashion. For example; by placing several frequency groups in a consecutive arrangement up to 25 protocols can be stored in the Arduino memory. This is based on the presumption that a "protocol" will have at least two consecutive Frequency groups set up. However if a "protocol" requires several frequency groups, let say 10 consecutive frequency groups, then with only 50 memory positions far fewer protocols can be preset into memory. The frequency groups being called out as a "protocol" are defined in the 'Setup=3' screen and looks like the following example;

```
Setup=3      Protocol
Range Starting = 2
Range Stopping = 3
```

The above will run frequency group 2 for a defined amount of time and then run frequency group 3 for a defined amount of time and then repeat the protocol until the program timer runs out. See (Telligent – Setup=5) for timing control.

**Mode 3=SWEEP** will perform a frequency sweep defined by any two frequency groups. It will automatically calculate the number of frequencies to generate base on the frequency run 'time' parameter that can be setup with the 'Setup=5' screen and the total program run 'time' parameter also setup with the 'Setup=5' screen. It can sweep up or down depending on which is the higher or lower first frequency taken from the two frequency groups used in the 'Sweep' mode. The Starting and Stopping frequency range are defined in the 'Setup=4' screen

```
Setup=4      Sweep
Range Starting = 10
Range Stopping = 11
```

## Telligent – Setup=5

The Telligent timing is controlled with the 'Setup=5' screen.

**Setup=5**

**Freq Time = 0180**

**Progm Time = 0015**

There are some important things to know about these time settings. The 'Freq Time = nnnn' is in seconds where 'nnnn' can be dialed from 1 to 9999 seconds. Those familiar with the Spooky will know that it defaults to 180 seconds which obviously translates to 3 minutes.

The 'Progm Time = nnnn' is in minutes. However when the minutes read '0000' there is an intentional change incorporated. '0000' does not mean zero minutes. It was internally set up in the software to translate to 30 seconds or ½ minute. This was done for two reasons. The 1<sup>st</sup> reason is that it would be silly to run a program run of zero (0000) minutes. Running a program for zero minutes is actually not running a program! The 2<sup>nd</sup> reason was for testing a complete run, it was beneficial to have an option to run the test for a shorter than 1 minute time frame. Hence 30 seconds was programmed into the software routine.

These two time settings are also used to compute the number of frequencies generated while running in 'Sweep' mode. For example if a 'Freq Time = 0001', which is 1 second, and a 'Progm Time = 0001', which is 1 minutes are dialed, then the software will calculate 60 frequencies to be generated during the sweep. These frequencies will be equally spaced between the computed value difference of the two frequency groups used to define the 'Sweep' mode.

## Telligent – Running Screen

The 'Running' screen is exemplified below;

**Running** T=917

Num=1 F1-34922.00

F2=7.83

**T=nnn** is the measured temperature of the driving MOSFET used to oscillate the plasma. It is a defined in a value that was derived from test to insure that the MOSFET does not get too hot. It ranges in value from typically in the 900s, to getting pretty hot at values in the lower 700s range. 900 and above is typical the ambient temperatures. At a value of 725 the Telligent will shut down to protect the MOSFET.

While running from the built in frequency generators, it is not likely that the MOSFET will ever get too hot. There are software checks to insure this does not happen. However, when running from an external function generator like the Spooky2 the software cannot control the duty cycle of the running frequency. If the duty cycle is too high the MOSFET will get too hot. This is why it is suggested to not run duty cycles higher than 10% when running frequency protocols from the Spooky.

**Running** simply means the Telligent is running in one of the three modes of operation.

**Num=n** is simply the frequency group running at the time.

**F1=nnnnn.nn** is the primary or frequency 1 that is running at the time

**F2=nnnnn.nn** is the secondary or frequency 2 that is running at the time

The display will state **"TOO HOT"** if the thermal cutoff of 725 is reached. Simply change the duty cycle in the frequency or protocol you are running to a lower value after letting things cool down for a few minutes.

## General things to know

The 'Intelligent Plasma Ball' also referred to as the 'Telligent' for brevity, is only accurate from 3 to 4 digits of the displayed frequency depending of frequency and which internal frequency generator is used. Although the frequencies generated are digital within the hardware and software functionality of the Arduino, it is an extremely low cost MPU (Micro Processing Unit). There is no guarantee that frequencies meet any kind of UL standards. Additionally, these Arduino MPU units are massed produced in China with sometimes little if any real quality control. So there is bound to be some variation between Telligent to Telligent units. However because they are so low cost, these MPU offer an opportunity to deliver an unbelievably powerful health modality tool for a price that does not reflect greed or price gouging!

Depending on where one sources the components the typical COG (Cost of Goods) should be around \$75. Although the research, engineering, and construction time are not even closely reflected in the present sell price, making small numbers of these units was a timely process and for the first 12 units built, took approximately 12 hours each to manufacture. It is expected that now that the hardware and software development is open source, these units could easily be massed produced for about \$50 each. Aurorasky would be interested in help to get these units out to the public. If there is any interest by either user or subscriber please make contact if you have ideas on how to viably accomplish this objective.