## Super Magic 5.0 Supplement – version 2.1

This document describes the changes that are related to Super Magic 4.90-5.0.   This represents a significant change from previous versions. It includes some fixes and support for a new generation of timers. It will still support the older timers.  This version requires Palm OS 3.5 or later.

The last Super Magic of the old series was 4.47. It has columns for 3 servos. This version has columns for 4 servos.  The screen Icon for this version has an M on it with the image of the airplane.  It is possible to have both the old and new versions on a Palm Pilot at the same time.  They will work against the same timer database. The old version will not support and may damage those features that are only in the new version.

Note that the features that are in the new timers are only available in those timers and to use those features you need both Super Magic 5.0 and the new timers.

SPECIAL Warning

With earlier versions of Super Magic it was possible to exit the program just by bringing up the Palm menu or pushing some of the dedicated buttons such as calendar or address book. With the latest version this is not possible. The only way to leave the program is to use the exit command. This is to stop you leaving the program by mistake and losing work in progress. To do this tap on the pull down menu button [bottom left of those on the bottom of the screen] and get the file menu. Exit is on that.

## Main screen
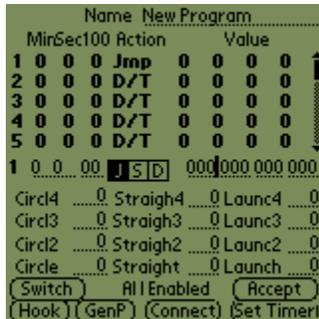


## General

There are 4 columns for servo values at each step once the timer has started. This is a scrolling list as there are 10 positions. In the lower part of the screen just above the Switch and Accept Buttons there can be up to 4 lines for the initial positions for the 4 servos. The number of lines that appear match the number of servos the timer can handle...

 Initial servo positions

These are the positions for the servo or servos before the flight starts. The use of the servos depend on the type of timer.

Glider timers
Circle is the position of the servos when the tow hook is back i.e. the model is circling
Straight is the position of the servos when the hook is forward, i.e. straight tow position
Launch is the position of the servo when model when launch is detected

Non-Glider Timer
Start is the position if the servo when the timer is powered up and at rest
Armed is the position of the servos when the start button is pushed
Launch is the position when the start button is release

Some F1A timers have servos on the tow hook. These servos are processed differently than flight servos that may be used to control flight surfaces. There is not a line for a hook servo on this screen.

## Hook

This button takes you to a screen that lets you mange the hook [glider timers] and start [non-glider] functions.

## GenP

This takes you to the general parameter screen that lets you manage other general parameters.

## *Hook or Start screen*
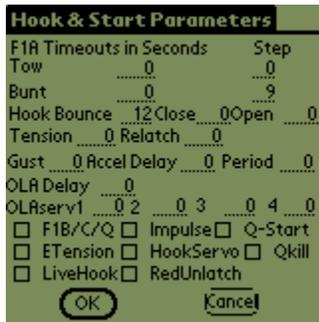


## *General*

This screen lets you manage features associated with the start of the flight. It has items for both glider and non-gliders. Gliders set up has man more options.  Non- glider items are marked with an asterisk *.   This screen supports 4 types of F1A, glider hook configurations.

### Standard Hook.
This is a Circle tow hook with a hook forward and an unlatch sensor. There is no servo on the hook.

### Mechanical relatch hook
This is a circle tow hook with a hook forward sensor and an unlatch/relatch tension switch sensor. There is a servo on the hook that is controlled by the timer. The unlatch tensions is controlled outside of the timer and the sensor indicates if that tension has been reach or not.

### Electronic Relatch Hook.
This is s circle tow hook with a hook forward sensor and a strain gage hook tension sensor on the hook. There is a servo on the hook. The unlatch tension is set in the timer. This includes a REN SA hook

### M&K Style Impulse Hook
This is an Impulse hook as made by M&K. It requires an extra input line from the hook and cannot be used with a hook with a servo.

### F1A Time outs - Tow

This is the time in seconds, known as the tow timeout and the step to go to if during the tow period the hook does not come forward in that time out period. For example if the timeout period is 120 seconds if the hook does not come forward in 120 seconds then the timer will go to the specified step. This generally means that the sportsman has dropped is towline and the model is fling away.

This applies to all types of F1A hooks.

### F1A Timeout – Bunt

For a Standard Hook this is a time in seconds measured between when the hook unlatches and then the hook swings back, i.e. is not sensed as forward.  A typical value is 2 or 3 sweconds

For a Relatchable Hook this is the delay time in tenths of a seconds before the hook relatches, once the relatch criteria is reached.  A typical value is 3 to 5 for .3 to .5 of a second.

### Hook [and Start*] Bounce -

This is an arbitrary number between 1 and 15. It applies to all hook and start switches [sensors]. 12 is a good number.

### Close and Open

This is a servo position number [0 to 255] and is the position of the hook servo when the hook is closed and open.  The hook servo uses  servo base point and servo multiplier of the first servo and is  found on the servo screen.

This applies to all timers with a hook servo

### Tension and Relatch

This specifies the unlatch and relatch hook tensions. It is a number between 0 and 1200. Typically around 50 is a good number. The relatch value should be lower than the unlatch. This applies only to electronic relatch timers.

## Gust Bounce

This is a number in tenths of a second and it is the delay once the unlatch tension is reach before the hook starts to open.  So if the number was 3 for three tenths then the unlatch tension would have to be applied for 3 tenths of a second before it was considered to be 'good' and the hook would open. If it dropped back below the unlatch tension during that time the unlatch point would not consider to have been attained and the hook will not unlatch.  Note that 0 is a valid number; this effectively turns this feature off.

This applies to all timers with a hook servo.

## Accel delay and period

This applies to some F1A timers.  Normally when the unlatch point has been attained on a F1A timer the servos move to the launch position.  The delays the move of servo 1, usually the stabilizer servo. The delay number is the time in tenths of a second for the servo to start moving. So if it was 4, them 4 tenths of a second after unlatch the stabilizer servo will start moving.  Note that if there was a gust bounce it comes into affect after the gust bounce.  Given the above two examples the timer would wait 3 tenths for the gust bounce to pass. This is the unlatch point. The timer would then wait another 4 tenths before moving the stabilizer servo.

The period is the time in tenths of a second for the servo to attain the maximum launch deflection. So if this was 5 then after the servo started moving it would take 5 tenths of a second to attain maximum defection.

Zero is a valid number for either or both parameters. Setting it to zero effectively turns this feature off

## F1B/C*

Checking this box turns off the hook management features and makes the timer a F1B, C or Q type of timer. This applies to Universal timers only.

### E-tension Hook

This must be used in conjunction wit the Hook Servo and indicates that the timer is one with a hook servo and strain gage sensor on the hook.

### Hook Servo

This applies to a F1A timer and means that the timer has hook servo.

### Live Hook*

This means that the D/T time can be adjusted from the tow hook or start switch. Pull the hook forward or push the start button and power the timer up. When a continuous noise sounds the d/t length can be set.

### Red Unlatch

This applies to glider timers only. The normal mode for the unlatch sensor is switch closed indicated to the timer that unlatch has been attained. Checking this box reversed the sense of this, meaning that open indicates that unlatch has been attained.

### Impulse

This means that the hook is an Impulse style hook

### Qstart*

This enables the F1Q start features; this applies to all non-glider timers.

This requires the start button to be held for 1 second, rather than .3 second before the timer is armed.

### Qkill*

This enables the F1Q motor stop features; this applies to all non-glider timers.

This re-enables the start button and pushing it after the 'flight' has been started will cause an action similar to RDT to stop the motor.

## OLA

These features apply to impulse hooks only

### OLA Delay

This is the delay in tenths of a second after the Impulse signal is received and before the servos are moved.

### OLA Serv1 2 3 4

This is the position that servos 1, 2, 3 and 4 are moved to after the Impulse signal is received and the OLA Delay passed

## General Parameters screen
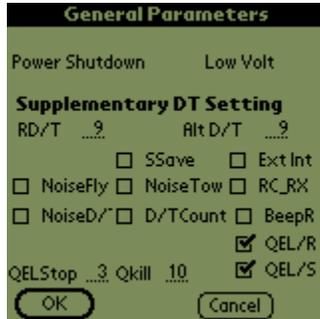


## Power Shutdown

This specifies how long the timer can be turned on for before starting the flight. If this time is reached the timer turns itself off. It is a number in minutes. This feature is only available on timers with a soft switch.

## Low Voltage.

This is a low detection capability. Details to be supplied later.

## RD/T

This specifies what step number is executed if a radio d/t or similar device connected to the timer is activated.

## Alternate D/T

This is the D/T step that will be used if the alternate D/T switch is on.

## PTest

Not used

### SSave

When checked this turns on the servo power saver feature. This turns off power to the servo after one second before the start of the flight and two seconds afterwards. Before the flight includes while on tow. The servo is not turned off during the launch processing on an F1A and at any time if the step servo function is active.

The mechanical design must be such that the control surface will not move if the servo is not powered.

This should not be used on a F1Q Timer.

### Ext Int

For timers where there is a choice between alternate D/T and External Interrupt i.e. radio D/T checking this activates the radio D/T feature. The timer does not include the radio receiver but this means that it will accept input from one.

### Noise Fly

When checked there is a beep every second when the flight has started. This means after launch for a F1A timer.

### Noise Tow

When checked this causes a beep every seconds while the model is circling under tow. The noise stops when the hook is forward and the model is in 'straight tow' mode.

Note that always there is a continuous tone when the hook is unlatched on a F1A model timer. There is also a continuous tone when the start button is depressed and before it is released on a F1B mode timer.

### Noise D/T

When checked the buzzer will beep after D/T. The noise can be stopped when the model is retrieved by pushing the start button or hook forward.

### D/T Count

When checked this means the timer will "beep out" the D/T time. This uses 2 different tones. Whole minutes are beeped in one tone then the remaining seconds in 15 second increments using a high/lower pitched tone.

### QELStop

This feature applies to F1Q timers only. The value is step to go to if the Energy Limiter indicates that the motor is about to be cut.

### QKill

The value is the step that the timer goes to if the Qkill feature is used. That is the start button is pushed again after the timer is started.

### QEL/R

This enables Energy limiter input on the RDT pin. In this case the pin is shared by both inputs. An input pulse of less than 5 ms or greater than 150 is considered to be RDT input.

This feature and the following are only available on 4 servo or more timers. For the 3 servo F1Q timer the RDT input is only on a separate pin. For the 4 servo and above timers – either or both may be specified.

### QEL/S

This specifies that the Energy Limiter input for F1Q is on a separate [from the Radio D/T] pin.

### BeepR

This enables the Beep on Command Feature. See Tech Note 22.

## Servo

Set Servo Parameters

| | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Base Point | 18 | 18 | 18 | 18 |
| Multiplier | 510 | 510 | 510 | 510 |
| | x.XX | xXX | xXX | |
| Speed | 1 | 1 | 1 | 1 |
| Reverse | ☐ | ☐ | ☐ | ☐ |
| Park | 0 | 0 | 0 | 0 |
| Screen label | S | R | W | F |
| Screen Enabled | | | | |

OK    Cancel

## Base Point

This sets the 0 end of the servo's travel. Typical number is 18.  20 is the value to generate a 1 ms pulse

## Multiplier

This sets the physical position of high end of the servo's travel equivalent to a value of 255.  It can be a single digit for the basic Universal timers or a 3 digit number 450 with an implied decimal point = 4.50 for the more advanced timers. The values should be 4 or 5. A value of 4 will generate an upper end pulse width of 2 ms.

## Speed

This controls the servo PWM cycle time. It should be 1 or 2.

## Reverse

This will cause the servo to rotate the other way around. **

## Park

This is where the servo will go after D/T.  A value from 1 to 255. **

## Screen Label

This is custom screen label that will replace the digit in the default label.  For example if the first servo was the Stabilizer then putting and S would cause it to be displayed as ServS rather than Serv1.  The letter is also used a column heading.  Note that this value is stored in the timer flight program. It is not supported by some older timers. If not supported the value set in the options screen will be used. **


** Not on all timers.

# Options
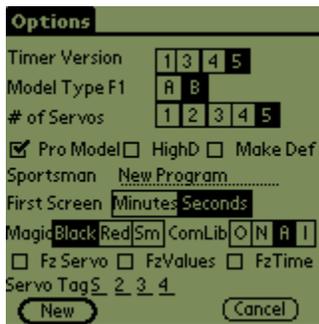


This screen defines the default options used when creating a new program. Most times these options are dependant on the actual timer so it is best to read in the program that is already in the timer and use it as a basis for the new program.

## Timer version

This determines the basic capabilities of the timer to be supported.

## Model Type

For universal timers this will configure the timer as F1A type with hook management or F1BC or Q without hook management. It ill not change the characteristics of a timer that is a universal timer from the outset.

## # of servos

This parameter determines the default number of servo to put on the screen.

## First screen

This sets the first screen to be the one with the times in time for segment that shows minutes, seconds and hundredth or the one that shows the total elapsed time in just seconds and hundredths.

## Magic

Black id the standard defaults and Red and Smart set option for OEN versions of the Magic Timers as used by Victor Stamov


## Comm Lib

This permits the manual selection of the communications library in the Palm Pilot. It should be left on A for automatic unless advised otherwise by Magic tech support.

## Fz Servo Values Time

This permits the freezing of the servo parameters on the Servo screen or the Values and Time on the main careen to prevent them from being changed by accident or by someone who is unsure of what they are doing.

## Servo Tag

This sets the default values for the servo labels as mention on the servo screen. It is used in the creation of as new flight program or when the timer does not support stored servo labels.