Sidus F1Q

Quick Guide

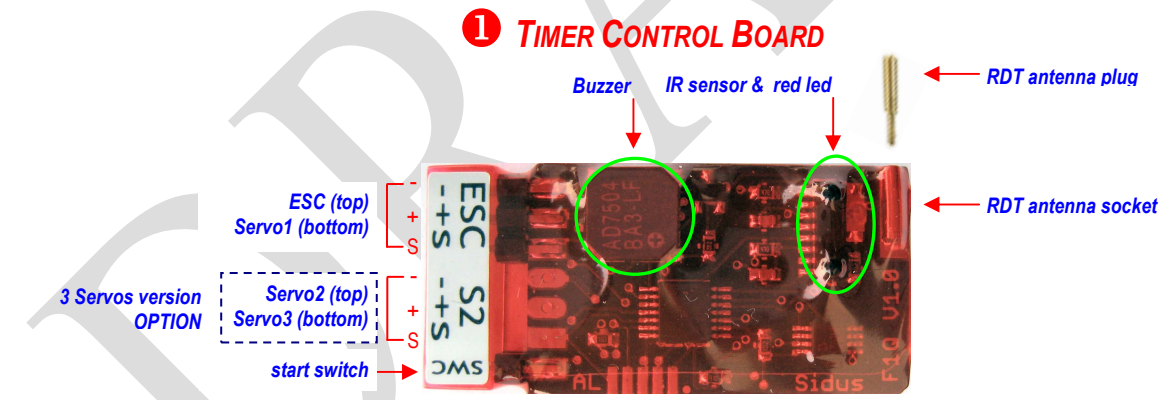
Revision 2.1 – February 2012 -
Draft: 3

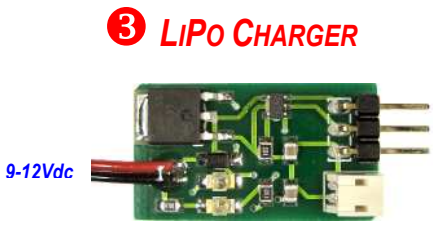
The **Sidus F1Q** e-Timer is made up of a control board to be installed on the model (*Timer* control board) and a handheld wireless device (*Programmer*). The *Timer* controls the electric motor through a standard ESC (electronic speed controller of type BEC from which it also draws power) and is capable to drive up to 3 separate servos. It may be used with a single servo (optional 5-function mechanical assembly releasing traditional arms), or with 1, 2 or 3 servos that directly move the surfaces. All the *Timer* functions are controlled by a single pushbutton. The *Timer* has on-board buzzer, led lamp, built-in radio DT and Radio motor cut-off. The *Timer* has 4 memories to store up to 4 different model settings.

Getting Started

Refer to the pictures below to locate the system components.

- Locate the connectors, the IR sensor, the red LED, the buzzer and the RDT antenna socie on the *Timer* control board ❶
- Connect according to the drawing the *Timer* control board ❶ to the ESC, the mechanical assembly servo (***Servo1***) or to the servos (***Servo1***, ***Servo2***, ***Servo3***), to the start switch
- Connect the ESC to the battery
- Switch ON the *Programmer* ❷ through the switch accessible after removing the small slide cover on the back of the device





Timer

Timing duration and resolution

The timing sequence (motor stop and remaining functions) duration is user programmable. The duration range and resolution depends on the timer class (F1B, F1Q, F1E) that is also user programmable. The DT function is programmable from 1 to 655 seconds. The motor function (F1Q only) is programmable from 0.1 to 20 seconds.

Using the Timer

The LED, the buzzer and the disc (or servos) position indicate the current *Timer* status.

Every time the battery is reconnected to the ESC the *Timer* gets discharged and brings the releasing disc (or the servos) to the final position (DT).

Starting from a discharged *Timer* the sequence is:

ARM THE TIMER*:* press the start switch to bring the disc (or the servos) to its (their) start position(s)

LAUNCH THE MODEL*:* press and hold the start switch. The LED stays ON and the buzzer beeps 3 times, then the motor is started (F1Q only), then the LED flashes fast and the buzzer beeps constantly: the model can be launched. The timing sequence will start as soon as the start switch is released.

(F1Q only) if the start switch is released before the LED flashes, the motor is stopped and the *Timer* remains armed and ready to start

TERMINATE THE TIMING SEQUENCE*:* while the timing sequence is in progress, it can be terminated by pressing and holding the start switch: the motor stops (F1Q only) and the disc (or the servos) jump to the DT position

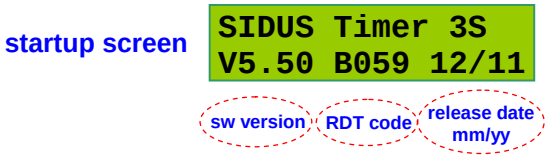
Motor safety start lock (F1Q only): after completing a timing sequence, the motor is prevented from a new start according to the FAI F1Q class safety rules. The motor start is re-enabled through the *Programmer* or by disconnecting and reconnecting the battery to the ESC

Automatic Timer sleep*:* the timer automatically “goes to sleep” if inactive for over 2 min. The status of the *Timer* and all the internal data are retained. The *Timer* is awakened by shortly pressing/releasing the start switch.

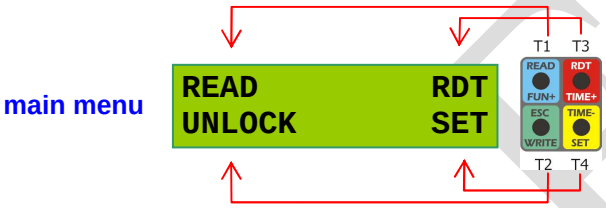
Programming the Timer

The *Programmer* is used to modify the timing sequence and dethermalize the model, and also allows to calibrate the servo positioning and change other settings.

Each time the *Programmer* is started, it briefly displays the startup screen



then it switches to the **main menu**



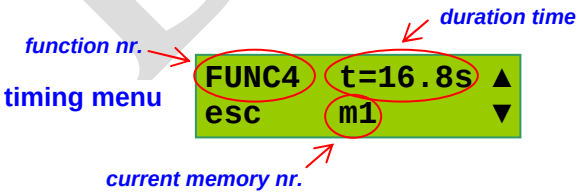
The possible options are displayed at the corners of the rectangular window of the display: an option is chosen by pressing the button located at the same corner as the rectangle made up of the four buttons (see drawing above).

A long (press and hold) or short (press and release) key pressure will be required to activate the chosen option according to the following rule: choices displayed in upper case (e.g. **READ**, **UNLOCK**,..) require a long pressure, choices displayed in lower case (e.g. **esc**, **servo**,..) require a short pressure

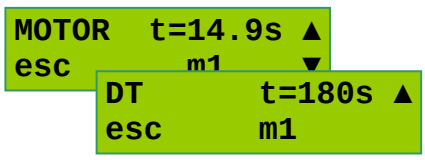
To allow the *Programmer* to communicate with the *Timer*, aim the *Programmer* at the *Timer* and keep them closer than 8-10 cm. and the IR sensors mutually visible. In case of communication failure, the message **"ERROR!"** is displayed

Timing visualization

For each function the *Programmer* displays the programmed time and the current memory:



For convenience, motor stop time and DT time are displayed absolute, i.e. referred to time zero



All the other functions are displayed relative i.e. the displayed time represents their duration

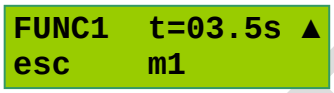
The order of the MOTOR stop function is user programmable and it is retained by the timer once programmed (see following)

Automatic Programmer switch off: the *Programmer* automatically goes to "sleep" to save power if inactive for about 2 min. and wakes up by pressing/releasing any key. The message **"Battery low!"** indicates that the internal battery needs to be recharged.

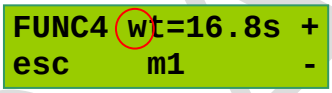
Timing sequence modification

Each function has its own activation time and a set of servo(s) positions. The motor is started at the beginning of the timing and it has a programmable stop time. During timing the servo positions related to the current function will be kept until the activation of the following function. Before modifying the timing sequence it must be read from the *Timer*

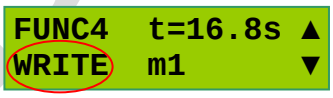
1. aim the ***Programmer*** at the ***Timer*** (make sure it is **ON**)
2. from the MAIN menu press and hold **READ** until seeing the screen for the first function (**FUNC1** in the example below)

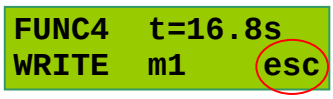


3. scroll the display with ▲ **or** ▼ to view the screens related to the other functions, motor stop time and DT time. Reach the function which time must be modified
4. press and hold the function number (**FUNC4** in the example) until '**w**' (write) appears close to the activation time



5. shortly press **+ or -** to increase/decrease the time of one count, or press and hold **+ or -** to have faster increments/decrements until reaching the wished value
6. shortly press **esc** once and repeat the previous steps to modify the time of another function, or shortly press **esc** again to end the modifications and return to the **MAIN menu**
7. if one or more time values have been altered, they must be written onto the *Timer* for permanent storing. Press and hold **WRITE** until the message **"Writing…"** is displayed. Should the writing fail, it may be repeated with **WRITE** or aborted with **esc**. To abort the modifications without updating the *Timer* just make the writing fail by aiming the *Programmer* away of the *Timer* , then choose **esc**





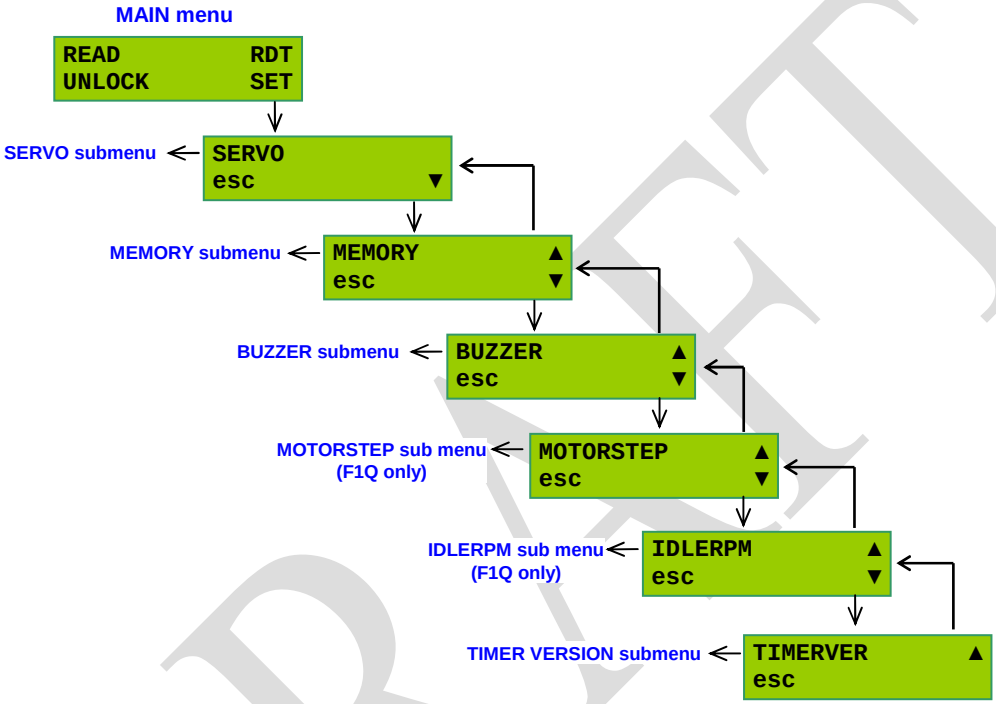
Motor start unlocking (F1Q only)

After the completion of a timing sequence, re-enable a new motor start by aiming the *Programmer* at the *Timer* (make sure it is **ON**), then press and hold **UNLOCK** until the message **"Unlocking…"** is displayed.

SETTINGS

From the **MAIN MENU** access the list of the available submenus by pressing and holding **SET** for over 3 seconds. The list of submenus can be scrolled through ▲ or ▼.

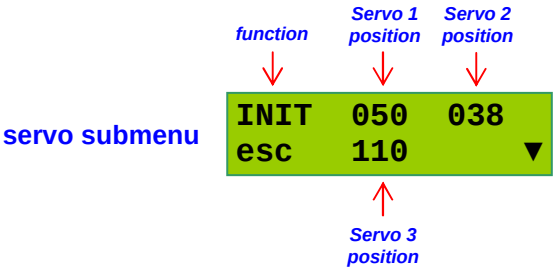
Each submenu is accessed by pressing and holding the key corresponding to its name (e.g. **SERVO**, **MEMORY**,…)



SERVO submenu – modify the servo positioning

To access this submenu just scroll the settings submenus and press and hold the **SERVO** key.

This submenu allows to adjust the position that the servo(s) assume during each function. When this submenu is entered the servo(s) automatically will move to the start position (**INIT**)



1. browse the current servo positions for each available function (**INIT**, **POS1**, **POS2**,…., **DT**) with ▲ or ▼: the servos will move to the current positions, that will be also displayed with a value between 000 and 130. Reach the wished position (e.g. **POS2** in the example below)
2. press and release **POS2** key multiple times to have an asterisk **"*"** close to the servo position to be changed (press **POS2** once for **Servo1** in the example below)
3. Press and hold **POS2** until the asterisk turns to '**w**' (write)

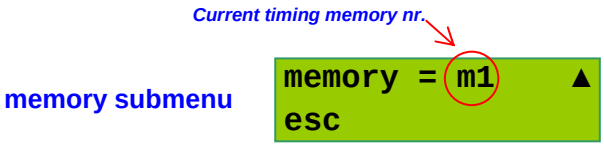
Press and release **+** or **-** to change the servo position: the servo arm will follow with fine movements accordingly. Holding **+ or -** pressed will produce wider movements. The new position will be permanently modified with no need to be transmitted to the *Timer*.

Press and release **esc** to go up to the **SERVO** menu to browse other functions and modify other positions or press **esc** again to go back to the **main menu**.

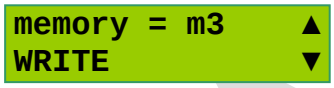
MEMORY submenu – Select m1 to m4 memory

To access this submenu just scroll the settings submenus and press and hold the **MEMORY** key.

The *Timer* is capable to store 4 separate complete settings (timing and servo(s) positioning) named m1 to m4. When this submenu is entered the current memory setting is displayed.



1. press and release ▲ **or** ▼ to choose a new memory number (m1 to m4) or recall a previously used memory number
2. press **esc** when finished. If the current memory number has been altered, it will have to be written onto the ***Timer*** for permanent storing



3. Press and hold **WRITE** until the message **"Writing…"** is displayed. Should the writing fail, it may be repeated with **WRITE** or aborted with **esc**. To abort the modifications without updating the *Timer* just make the writing fail by aiming the *Programmer* away of the *Timer*, then choose **esc**.

BUZZER submenu - enable or disable the built-in Programmer buzzer

To access this submenu just scroll the settings submenus and press and hold the **BUZZER** key. When this submenu is entered the current buzzer status is displayed.

buzz submenu

1. Press and release ▲ **or** ▼ to enable/disable the buzzer. This setting will be permanently stored until next modification
2. Press and release **esc** to exit

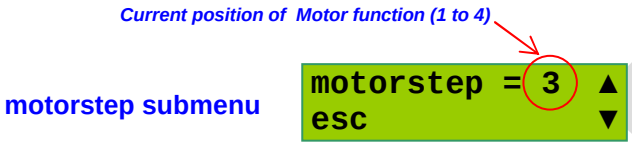
MOTORSTEP submenu – select the order of the motor stop function

To access this submenu just scroll the settings submenus and press and hold the **MOTORSTEP** key.

The motor stop function occurs in a fixed order (1st to 4th function) that can be set here. For example, if **MOTORSTEP** is set to 3 the motor stop will be the 3rd function, i.e. it will occur after **FUNC2** and before **FUNC3**.

Note: every time the order of the motor stop function is changed the timing is reset to its default values.

When this submenu is entered the current motor stop function order is displayed.



4. press and release ▲ **or** ▼ to increment/decrement the motor stop order to the wished value (1 to 4)
5. press **esc** when finished. If the current motor stop order has been altered, it will have to be written onto the ***Timer*** for permanent storing

6. Press and hold **WRITE** until the message **"Writing…"** is displayed. Should the writing fail, it may be repeated with **WRITE** or aborted with **esc**. To abort the modifications without updating the *Timer* just make the writing fail by aiming the *Programmer* away of the *Timer*, then choose **esc**.

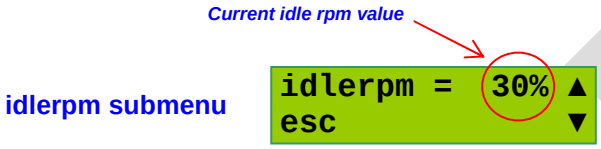
IDLERPM submenu – select the motor rpm before releasing the model

To access this submenu just scroll the settings submenus and press and hold the **IDLERPM** key.

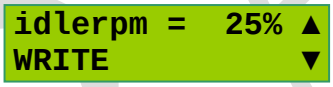
The motor rpm (20% to 100%) after it is started and before the model is released can be assigned here. This is useful to save energy if the model is held for some time between starting the motor and launching the model. Whatever the programmed **IDLERPM** the motor will instantly take 100% at start switch releasing on model launching.

Note: every time the order of the motor stop function is changed the timing is reset to its default values.

When this submenu is entered the current idle rpm value is displayed:



1. press and release ▲ or ▼ to increment/decrement the idle rpm value to the wished value 20% to 100%)
2. press **esc** when finished. If the current idle rpm value is changed, it will have to be written onto the ***Timer*** for permanent storing



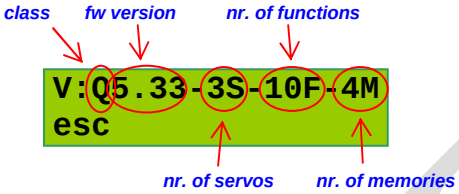
3. Press and hold **WRITE** until the message **"Writing…"** is displayed. Should the writing fail, it may be repeated with **WRITE** or aborted with **esc**. To abort the modifications without updating the ***Timer*** just make the writing fail by aiming the *Programmer* away of the *Timer*, then choose **esc**.

TIMERVER submenu

To access this submenu just scroll the settings submenus and press and hold the **TIMERVER** key.

When this submenu is entered the current the lcd will display the following information about the timer control board:

timerver submenu



Press and release **esc** to exit.

Radio motor cutoff and radio DT

On the *Programmer* press and hold **T3** (**RDT**) (> 1 sec) while the timing is in progress to instantly stop the motor (**RMC**) and/or dethermalize the model (**RDT**).
The message **"RDT/RMC Transmitting…"** will be displayed.

The effect of the command depends on the function that is currently in progress:

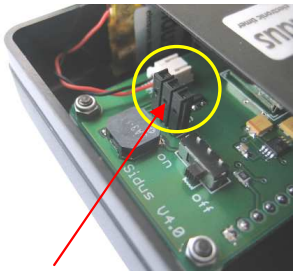
- if the motor is **ON**, the command produces its immediate stop and the *Timer* "jumps" to the next function. Pressing and holding again **T3** (**RDT**) the *Timer* dethermalizes the model. The programmed DT time remains unchanged
- if the motor is OFF, the command produces immediate model dethermalization

Recharging the Programmer battery

Use only the original LiPo charger. Connect the RED/BLACK cable to a 9-12Vdc power source (e.g. to the car cigar lighter through a proper adapter). Full battery charge will take about 2 hours.

Discard the LiPo battery if it has bulges or scratches. The charge must take place in a safe place, far from flammable materials

RECHARGE: connect the 3-pin charger connector to the 3-pin *Programmer* socket accessible after removing the slide cover on the bottom of its case. The internal battery must remain connected.



3-pin recharge socket

WARNING: all the 3 charger pins must be inserted in the socket. By inserting only 2 pins the charger will get damaged

Status of the charger leds

- 9-12Vdc power connected, battery not connected → **Green ON**, **Red ON**
- Charge in progress → **Red ON**, **Green OFF**
- Charge complete → **Red OFF**, **Green ON**

Recommendations

Control board

lay the control board in the fuselage with the optics (IR sensor and led) close to a side wall, so that they are visible from outside through a small transparent window. Do not expose under direct sunlight.

Programmer and LiPo Battery

The *Programmer* battery ensures about 200 DT activations and power for programming activities of months. If the system is not going to be used for long

time, switch the *Programmer* **OFF** through the internal switch.

RDT Antenna

The RDT antenna (plastic covered twisted or plain steel wire about 175 mm. long) must run vertical out of the fuselage and be electrically isolated from carbon. Solder the antenna to the plug that will be inserted in the socket along the edge of the control board (see picture at pag. 2). Failure to follow the above will decrease the maximum range of the whole RDT system.

Installing the Timer on multiple models

One additional *Timer* control board (plus LiPo and mechanical gear) with the same RDT code is required to provide another model with the ***Sidus*** electronic timer. The RDT code is unique for each modeller to allow all his *Timer* control boards to be used with a single *Programmer*. In addition it makes it possible to use the ***Sidus*** system simultaneously with other modellers having the same or other systems.

Wirings

the START SWITCH plug has
no polarity and can be reversed

Observe polarities for the
SERVO and ESC plugs!!!