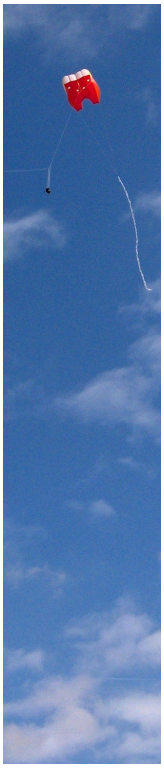
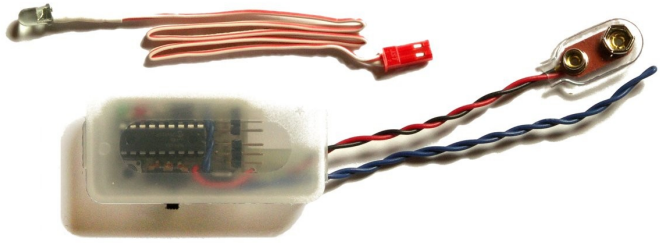


TUCIT – X

THE ULTIMATE CAMERA INTERVAL TIMER

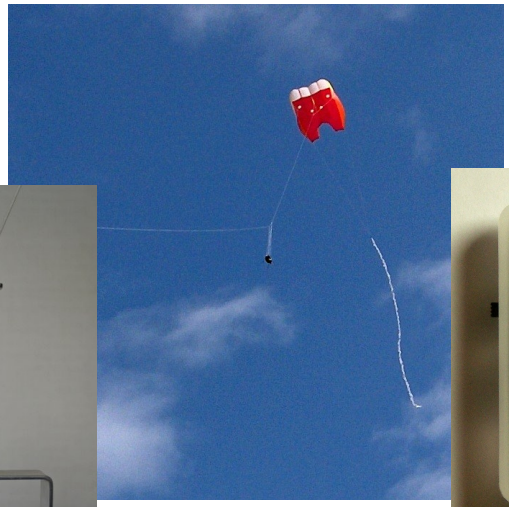
FOR AERIAL PHOTOGRAPHY



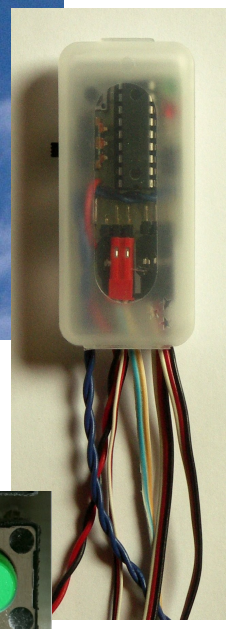
MANUAL

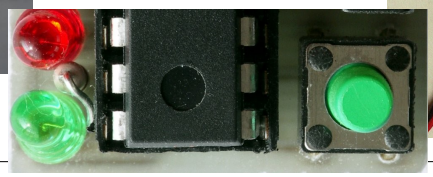
with
QUICKSTART GUIDE

SIMON SHERWIN
www.inEnglish.com/tucit



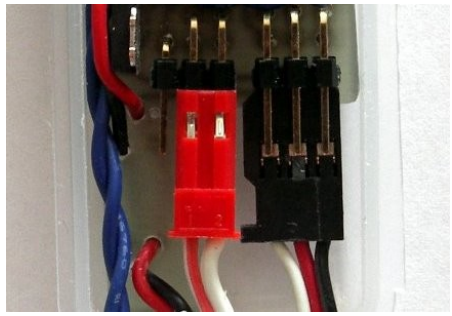
ONE TUCIT
FIVE VIEWS





Double Decker
(left hand side)

Over
Infra-red (show n)
Under
Finger Servo



Double Decker
(right hand side)

Over
Tilt Servo
Under
Pan Servo (show n)

Blue w ires are
Shutter Switch

All servos the same w ay round as show n
Orange infra-red plug has metal bits up

Red and black for
Battery

QUICKSTART GUIDE

KAP PICTURES IN 4 EASY STEPS

ONE – ATTACH A BATTERY

Attach any 9 volt battery.

TWO – DISCOVER HOW TO SWITCH ON

There are 2 ways !

1 Just switch on and after some *start-up* flashing watch the red *interval* seconds as they flash between each picture and servo activity.

2 Switch on, then immediately off, then on again. Now after the *start-up* flashing watch the green *countdown* seconds until the first picture and then the subsequent red *interval* seconds between. By default there are 60 countdown seconds so you don't need to watch them all.

3 Remember, red flashing = intervals and green flashing = countdown.

THREE – CONNECT TO YOUR CAMERA - AND TEST

1a **Infra-red**

Use the diagram on the previous page to connect the infra-red lead to the top of the left hand side double-decker socket as shown. See the table on page 7 for supported cameras. Set up your camera for infra-red remote control and position the lamp near your cameras infra-red receiver. The ir lamp is directional and the way you do this may effect your results.

b **Finger servo**

Connect your finger servo to the bottom of the same double-decker socket. If you need to reverse the finger servo see how to on page 12.

c **Shutter switch**

Not quite so fast. See *Blue Twisted Wires - Shutter Switch* on page 4.

2 With Tucit-X and your camera connected and both switched on they should take pictures every few seconds.

FOUR – ADD A PAN SERVO

1 Attach a 360 converted servo to the bottom of the right hand side double decker socket. It's called a socket but actually it's 3 gold plated pins sticking out.

2 Switch on and after each picture the servo will rotate a little.

3 Well not *every* pictures because by default Tucit-X will be doing *Pan+LookDown (M2-5)* with a frequency of 5 which means that after every 5 turns it will stop turning to tilt down.

4 If by any chance your pan servo makes a small sound but doesn't move at all jump to sections 7 and 8 of the *hardware* menu on page 11.

5 Next attach to a kite line and allow the kite to increase altitude.

AND NEXT ...

With the first 4 steps you will have already done enough for your camera rig to take hundreds of pictures rotating every few seconds. To add a tilt servo or for anything else you need to find some quiet place to read the following manual.

TUCIT – X THE MANUAL

INTRODUCTION

Inventory

1 Tucit - X comes with a plug-in infra-red lamp on a cable, a small piece of velcro, a 9 volt battery holder, a copy of this manual and 2 laminated menu summaries.
2 If your camera is to be controlled by an electrical switch you will need to acquire and attach an appropriate plug to Tucit's blue lead.

The Name

1 TUCIT stands for The Ultimate Camera Interval Timer. Pronounce it like 'bucket' and the X like 'ex'.

What Can Tucit - X Do?

1 Tucit - X is built for kite aerial photography (kap) and is also used in balloon aerial photography and various other applications.
2 Tucit provides you with 3 alternative ways to trigger your camera; infra-red 'wireless' controls or electrical contact switches or servos providing finger actions.
3 It provides control signals for model aeroplane servos to give you panning and tilting movements.
4 Tucit - X allows you to set virtually any interval between pictures and you can have countdown periods from 2 seconds upwards.
5 It can provide double *wake-up* signals for cameras which fall into sleep mode after long intervals. And, for example for film cameras, you can set a *limit* to the number of pictures taken each time.
6 A *rig moves* menu provides a number of movement options for camera rigs with either pan or pan and tilt servos. These include panning with occasional vertical *lookdowns* as well as three and four level panning.
7 There is a *batch mode* which lets you take pictures in groups - like panoramas with resting periods in between. And there's a *series mode* which may help your camera to take bracketed exposures – i.e. a series of 3 pictures between every move. Alternatively it can hold down (*delay*) finger shutters to take burst or bracketed shots.
8 There is also a *kap session* menu so that you can achieve multiple objectives whilst your camera is in the air. Or just use it to stop pictures and tilt upwards for landing.
9 Tucit – X can give you almost complete control of your servo actions. And setting is easy with live previews as you make your adjustments.
10 Tucit achieves all this through a very simple user interface. Just two leds and one push button deliver you a wide range of options. And that's before your own creativity steps in.

What The Flashing Lights Show

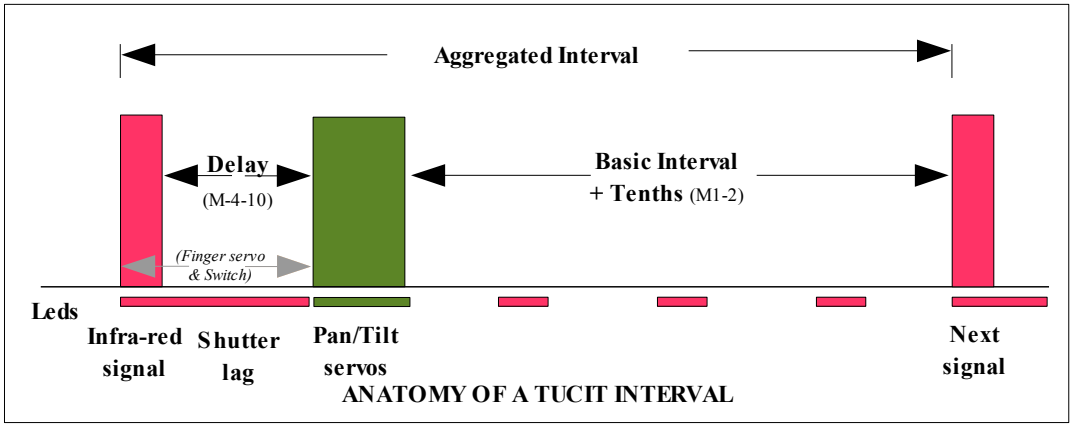
1 The red led flashes the interval seconds. And it also indicates with a different kind of flash every time picture taking takes place.
2 The green led flashes the countdown seconds and it also accompanies pan and tilt servo actions.
3 Both leds are also used to make settings. And if they flash excitedly they are telling you that something important has happened - inviting you to restart.

Tucit's Infra-Red Signals

1 Tucit - X mimics the following camera infra-red remote controls: Canon WL-DC100 & RC-1, Konika-Minolta RC-D1, Nikon ML-L3, Olympus RM1 & RM2 and Pentax E & F as well as the Aikon camera remote control.
2 Tucit cannot match the distance ranges of these dedicated devices and should not be positioned more than a meter from your camera. Note also that the infra-red lamp is fairly directional.
3 By default the different camera signals are sent one after another with short spaces in between. Occasionally cameras are confused by other signals and pictures can be lost. You can avoid this by using the *cameras* sub-menu (M1-6) to send just one type of camera signal.

Tucit & Time

1 Tucit does not attempt to offer quartz accuracy but once set the time periods are quite consistent.
2 The *interval* settings you make do **not** include
   i the camera triggering time which depends on the *cameras* setting you have made in M1-6. The default, *all cameras* , takes over 2 seconds, a single infra-red signal is about 0.13 seconds.
   ii the servo movement times themselves. During a single session panning and tilting times will be different and sometimes you will have both, one after the other.
   iii the adjustable *delay* which allows for your camera's particular reaction time so that the shutter is closed before movement starts. Set this in M4-10; the default is 10 (tenths of a second).
3 Use a stopwatch or exif data to find your aggregated times. A useful tool for checking these is the TimeStamp applet available at http://www.zenonic.demon.co.uk/TS.htm.
4 There are 5 places to adjust time periods; the basic *countdown* and *intervals,* and the sub-menus *Tenths*, *Countdown2* and *Delay*. In all cases count 1 = 0 (off) , 2 = 1, 3 = 2 etc.
5 The maximum sub-menu number is 255. The maximum basic *interval* and *countdown* periods is 18 hours.



ANATOMY OF A TUCIT INTERVAL

Batteries

Your Tucit – X has a connector to which you can directly attach any 9 volt battery. There is a 5 volt regulator so you can in fact use any batteries between 7 and 12 volts. For more information see www.inEnglish.com/tucit/batteries.html.

Servos For Tucit - X

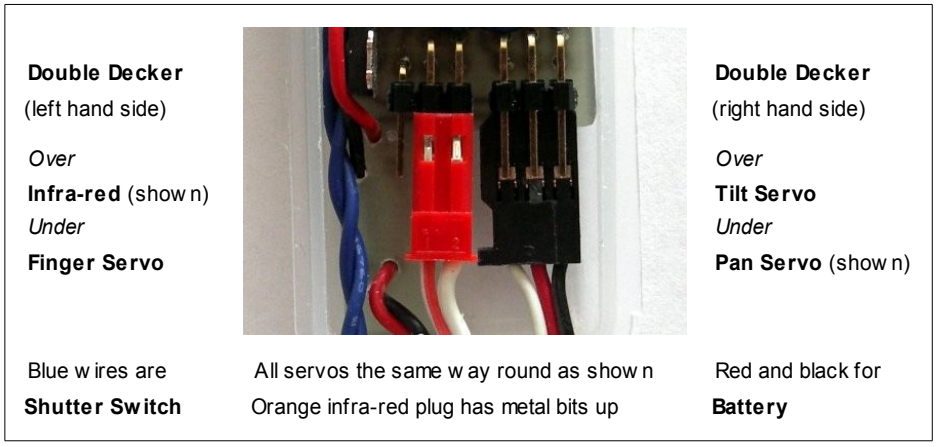
1 For panning movements Tucit - X is known to work successfully with Futaba S3003 servos adapted for 360° rotation. Details about this adaptation can be found at http://www.kaper.us/basics/Bas_360_4_R.html. Conrad servos which have already been converted can be bought from KapShop.com. Also Tucit is known to work with the Parallax CRS servo. Tucit is likely to work with most 5 volt servos on the market.
2 Additional external gears to slow down pan servos are not necessary with Tucit.
3 There are considerable variations in range of movement and even the direction of movement between different kinds of servos. Tucit - X accommodates these by allowing you to adjust the range and direction of movement of your servos. You can also control the speed of panning.

This Manual

1 This manual is written by Simon Sherwin for firmware TXF-1.4
2 I am grateful to Hans de Jong for assistance with this manual and for much other valuable support and advice.
3 The expression *factory reset* you will find in this document is not used literally. It should not be regarded as a description of the chaotic table up a ladder in the cramped attic from which your Tucit-X first blinked at the world.
4 The manual is subject to revision and downloads are available from www.inEnglish.com/tucit. All comments and suggestions are most welcome.

CONNECTING TO TUCIT - X

1 Tucit has outputs for pan, tilt and finger servos as well as a shutter switch and an infrared lamp. These outputs are available without special software settings. Just plug into whatever you want and you'll find it working – all at once if that's what you want !

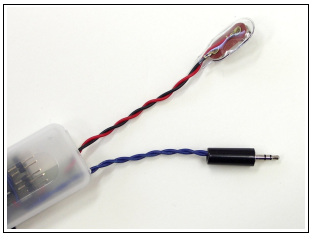


connector sockets with orange infra-red and black pan servo plugs attached

2 **Red and Black - Power**

The black and red cable is the power supply cable with a connector for 9 volts batteries (connector illustrated) Tucit-X uses a 5 volt regulator which can handle 7 to 12 volts.

3 **Blue Twisted Wires - Shutter Switch**



i The twisted blue wire is for use with cameras which have a socket for an electrical contact type remote control. Serial and USB connections are not supported.

ii To use it you need to attach a plug which is suitable for your camera. It provides a simple one pole on off switch which closes when a picture is to be taken. You will need expert advice on this from somebody who knows your camera.
If you are stuck email me. And if you think you will never need it you can simply cut it off

4 **Double Decker Socket – LHS Infra-red (over) Shutter Servo (under)**

The double decker on the left is for a 3 pin shutter servo underneath and the supplied 2 pin infra-red relay cable on top.

5 **Double Decker Socket – RHS Pan Servo (over) Pan Servo (under)**

The double decker on the right is for the pan relay, underneath, and the tilt servo on top.

6 **The Infra-red cable**

Note the orientation of the orange infra-red plug with the topside (metal showing). Disregard the colours of the leads as these may change.

7 **Servo Connectors**

i All servo plugs should be connected all the same way round as the Futaba pan servo plug illustrated above.

ii The white signal cable of the Futaba plug is on the left. But note that depending on the manufacturer signal wires can be either white or orange or brown or blue or yellow but plus (in the middle) is always red and negative (on the right) is usually black !

iii If you do manage to connect the servos the wrong way round you are unlikely to do any damage either to them or to Tucit.

STARTUP & THE BASIC INTERVALS AND COUNTDOWN SETTINGS

The Start-up Process

1 The purpose of the start-up process is to test your camera connection and to pre-position your rig.
2 When Tucit - X is first turned on a brief green flash indicates the tilt servo moving to its starting position. This is followed by a red flash which indicates that a camera signal is being sent.
3 These will occur even when you are starting with a countdown.
4 This *start-up* activity can be disabled in the *general settings* menu (M1).
5 In addition to these planned events most servos involuntarily twitch when powered on.

Starting With Intervals (red flashing – factory default 5 seconds)

After the *start-up* process Tucit - X will normally flash red interval seconds. By default every few seconds a picture will be taken and the rig will move. With servos attached Tucit will immediately provide you with endless *Pan Lookdown (M2-5)* at frequency 5 as this is the default *rig move*.

Countdown Start (green flashing – factory default 1 minute)

Switch on and immediately switch off. The next time you switch on the *start-up-process* will be followed by the flashing of 60 green countdown seconds.

Setting the Interval Time

1 Switch off and then hold down the button switch. (Tucit should not be set up for a countdown.)
2 Switch on and with the button switch down count the number of red flashing seconds you want.
3 Release the button and spectacular red-green flashing will confirm your setting.
4 Switch off and restart with the new interval settings.
5 To set the default interval delay start the above process but simply switch the power off *before* releasing the button.
6 1 flash means 0 seconds, 2 flashes means 1 second etc.
7 You can fine tune the interval time by adding tenths of a second with the *tenths* sub-menu (M1-2)

Setting the Countdown Time

1 First prepare for a countdown start by switching the unit on and immediately off.
2 Push the button down, switch on and count the number of green countdown seconds you require.
3 Lift your finger, enjoy the red-green flashing and power off.
4 To set the default countdown delay power off *before* releasing the button.
5 1 flash means 0 seconds, 2 flashes means 1 second etc.
6 The *countdown2* minutes sub-menu (M1-7) is for use with *batch mode* and *series mode* (M1-4). However outside those modes it also takes effect with its continuous green light preceding the regular countdown flashes. You can thus use it as a supplement or an alternative.

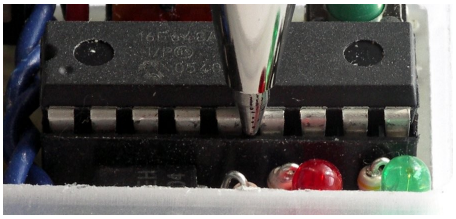
THE RESETS

Soft Reset

1 This resets Tucit with all the settings you have customised in the special *customise all defaults* sub-menu in M1-9. If you have not customised your settings it resets to all the factory defaults.
2 Turn Tucit on and then hold down the button switch. After the *menu double flash* the green light goes on. Keep holding down for about 8 seconds ignoring the warning flashes. When rapid red-green flashing confirms your reset you can restart.

Factory Reset

With Tucit switched on look at the microprocessor from the side of the leds. Counting from the left short together pins 5 and 6 with a small metal object such as a ball pen. Wait until red-green flashing confirms that Tucit is back to all its original factory settings. If you inadvertently touch the wrong pins Tucit won't be hurt - but you'll miss the flashing.



USING TUCIT'S MENU SYSTEM

Getting Started With The Menu System

1 The system of menus and sub-menus is just like that of any desktop computer. The main difference is that whilst you can read a computer menu you read Tucit's menu names off a sheet of paper and you navigate to them by counting button presses.
2 Start off by practising the factory reset. This is a basic tool so be prepared to use it frequently and without shame.
3 Set an interval of 2 or 3 seconds and first explore the *general settings* menu (M1) and its sub-menus. Watch how your settings affect the leds and any attached servos.
4 Now do the same with the *rig moves* menu (M2).
5 And keep resetting - that way you'll always know where you are.

On the Pressing of Button Switches

When menus are being set there are only 2 kinds of button press. Anything longer than a second is a *long push.* Anything shorter than a second is called a *short push* or a *tap.*

Selecting a Menu

1 With Tucit on hold the button switch down. As soon as the *menu double flash* welcomes you lift your finger and the green will stay on.
2 If you give the button switch short presses the red light will come on replacing the green each time.
3 Each flash which you *tap* represents a different menu. The first short flash you tap is M1, etc.
4 Hold down with a long push on the number of the menu you want. For example to select M3 give two taps and then a long push. (Think of yourself *pushing* into the menu.)
5 When the light changes to green you are in the menu and you can lift your finger.
6 (Note that if you try to tap your way beyond menu 4 there being no menu 5 Tucit will tactfully return you to the *menu double flash.)*

Setting a Menu Item

1 Follow the above process to get to a menu. The green light should be on.
2 Each time you press the button the red light will come on again. This time count up in red flashes the number of the menu item you want.
3 Give the number you want a long press.
4 If there is no sub menu for this menu item, your setting being made you will be welcomed back to the *menu double flash.*
5 You can either make another setting or switch off and restart.
6 If you tap beyond the end of any of the 4 main menus you 'fall off' the end and are taken helpfully back to the *menu double flash.*

Setting a Sub-Menu Item

1 Tapping your way along the menu give the number of the sub-menu you want a long press.
2 The red light will go out and the green light will come on.
3 You can now lift your finger, the green light will stay on and you are now in the sub-menu.
4 Now make your sub-menu setting just as if you were in any other menu.

Adjusting a Servo Position or Movement

1 All servo adjusting menus are accompanied by live previews.
2 If you keep holding the button for one second after the movement the green (servo) led goes off and you return to the sub-menu you were in so that you can to continue adjusting. If you release the button earlier you return to the menu double flash as you would normally.

Navigation tips

1 Tucit's menu is a grid. Starting at the top left you count your way across to the menu you want and then you tap your way down to the item you want.
2 If at any time you are not sure about where you are just *tap* your way to the end of the menu and fall off it. Tucit will immediately take you back to the start. Alternatively just switch off and start again
3 When lost or confused do either a *menu reset*, a *soft reset* or even a *hard reset*.

M1 - THE GENERAL SETTINGS MENU

MENU M 1 GENERAL SETTINGS		
1	Startup	on
2	Tenths *	0
3	Wake-Up	off
4	PL/ Batch/Series	off
	S Off>PL>Batch>Series	
5	PL/B/S No	S 6
6	Cameras	S all
7	Countdown2 *	S 0
8	Menu Reset	
9	Customise All Defaults	

Default Sub-menu

*In these menus position 1 = 0 (off), 2 = 1 etc. Defaults shown are the second number.

1 **Start Up Process** Default on
The purpose of the start-up-process is to confirm that the camera is working and to pre-position the rig. But if you don't want them turn them off here - or later back on again. (If you just want to eliminate pre-positioning try using M3 to set up just one *static* shot.)

2 **Sub-menu: Tenths** Default is 0 tenths of a second
Here you can add to the interval time in tenths of a second. As you tap along this sub-menu the first position is 0, the second is 1/10 the third is 2/10 etc.

3 **Double wake-up camera signal** Default off
This is for those cameras which go into sleep mode during long intervals. Between the two signals there is a one second gap.

4 **Sub-menu: Picture Limit / Batch Mode / Series Mode** (Default off)
- i *Picture Limit* is useful for film cameras. Tucit stops taking pictures after a fixed number which you set in the next menu. An alternative is to use *no pictures + up* (M3-5-9) which counts in multiples of 10.
- ii In both *Batch Mode* and *Series Mode* the *countdown* timer is used repeatedly to make longer secondary (green flashing) intervals between groups of shots . You use the next sub-menu to set the number of shots in the groups.
- iii In *Batch Mode* the camera moves after every shot and rests before the next groups of shots. Think “panoramas” where every group is a panorama.
- iv In *Series Mode* the camera moves after each group of shots. Think “exposure bracketed series” where each 3 pictures group is followed by a rig move.
- v With of all the above you have the added option of starting with a *countdown.* But as this is likely to be too short you you can augment it with *countdown2* to get your kite into the air.

4	PL/ Batch/Series	off
	S Off>PL>Batch>Series	
1	Off	✓
2	Picture Limit	
3	Batch Mode	
4	Series Mode	

5 **Sub-menu: Set Number of Picture Limit or Batch Mode or Series Mode Shots** Default is 6
Here you can replace the default of 6 with any number from 1 to 250.

6 **Cameras** Default All Cameras
Please read *Tucit's Infra-Red Signals* on page 2. Here you can select triggering for just one kind of camera. This will considerably shorten the overall interval time.

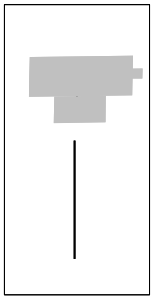
6	Cameras sub-menu	
1	All Cameras	✓
2	Canon WL-DC 100	
3	Canon RC-1	
4	Konika Minolta RC-D1	
5	Nikon ML-L3	
6	Olympus RM1 & RM2	
7	Pentax E & F	
8	Aikon	
9	Finger Servo & Switch	

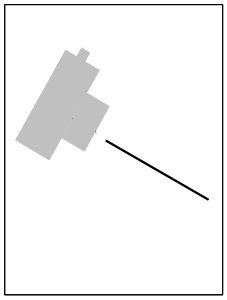
7 **Countdown2** Default is 0 minutes
- i Used when the regular *countdown* is committed to *Batch Mode* or *Serial Mode* above or as an alternative to *countdown*.
- ii It is activated together with the normal *countdown* with the on-off-on switch sequence. *Countdown2*'s solid green led is followed by the green flashes of the normal *countdown.*
- iii When setting 1 = 0 (off), 2 = 1 minute, etc.

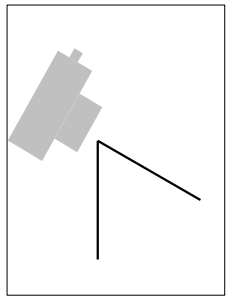
8 **Menu Reset**
Here the menu and its sub-menus are reset to their defaults. The reset is confirmed by red-green flashing and you are immediately returned to the welcoming *menu double flash* where you can either switch off and restart or continue with another setting.

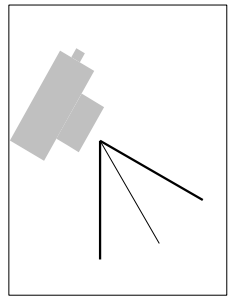
9 **Customise All Defaults**
- i This simply records ALL the settings you have at the time you push the button. When you next do a *menu reset* or a *soft reset* you will recall them.
- ii Hold down for 8 seconds ignoring the warning flashes until rapid flashing confirms that your Tucit has been customised. Switch off and restart.
- iii This way of recording or saving your carefully made settings is a good thing to do before setting out for the kite-field.

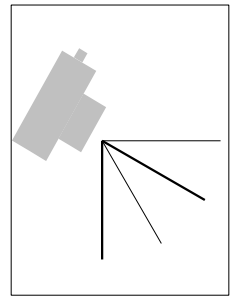
M2 - THE RIG MOVES MENU


Down
M2 M3


Pan
M4


Pan + Lookdown
M5 M6


3 Level Panning
M7


4 Level Panning
M8

1 **No Movements**
Tucit will take pictures but there is no servo activity and of course no *delay* from M4-10 either.

2 **Just Down**
The tilt servo keeps the camera pointing straight down but there is no activity from the pan servo.

3 **Down + Pan**
The camera points straight down and the pan servo rotates between pictures.

4 **Basic Pan**
The rig remains in the *up* position and rotates after each picture.

5 **Pan LookDown 1** Default frequency = 5 **Default** &
6 **Pan LookDown 2** Default frequency = 1

i Both these *pan lookdown* menu items have the same characteristics. There are 2 copies of the same move so that you can have 2 contrasting pre-sets immediately available.
ii The rig rotates as if taking a panorama in the *up* position. From time to time it takes a vertical *down* shot. The *lookdown frequency* which can be varied is the number of *up* pictures before each *down* picture.
iii In menu item 5 the default frequency is 5 and the camera takes one *down* picture after every 5 *up* pictures.
iv This is the default setting for Tucit. When you first switch on this is what it will do.
v In menu item 6 the frequency is 1 and the camera takes pictures *up* then *down* alternately whilst rotating prior to moving down each time.
vi These default *lookdown* frequencies can be changed with the two sub-menus below.

MENU M 2		
RIG MOVES		
1 No movements		
2 Just down		
3 Down + Pan		
4 Basic Pan		
5 Pan Lookdown 1 (f5)		✓
6 Pan Lookdown 2 (f1)		
7 3 Level Panning		
8 4 Level Panning		
9 PL 1 Frequency	S	5
10 PL 2 Frequency	S	1
11 Menu Reset		

Default
Sub-menu

7 **Three Level Panning**
Arguably a misnomer as the rig provides two levels of panning plus straight down shots.

i With three level panning the camera rig takes vertical slices cutting down and up as it moves gradually round.
ii The rig takes a first picture *up*, then one *mid*, then one *down*. It tilts and pans before the next *mid* picture then goes to up for the next then pans and repeats this pattern endlessly as shown.

up	1	5	6	10	etc.	
mid	2	4	7	9		
down	3		8			

iii In each of these segments it takes 2 *up* shots, 2 *mid* shots and only 1 *down* shot. If the pan angle was 30° it would take 12 *up* shots, 12 *mid* shots and 6 *down* - a total of 30, in each full rotation.

8 **Four Level Panning**

This is the same as three level panning except that there is an extra level called *high*. If the pan angle is 30° there are 3 x 12 + 6 = 42 pictures taken in each rotation like this.

high	1	7	8	14	etc.
up	2	6	9	13	
mid	3	5	10	12	
down	4		11		

9 **Sub-menu for item 5 – Set Frequency for Pan LookDown 1** Default 5 &
10 **Sub-menu for item 6 – Set Frequency for Pan LookDown 2** Default 1

i These are where you can set your own frequencies for the 2 *Pan LookDown* items.
ii You can set any frequency from 1 to 250.

11 **Menu Reset**

Here the menu and its sub-menus are reset to their defaults. After red-green flashing you are returned to the *menu double flash.*

A SPEED TIP

If you want fast intervals you must set the shortest possible Delay in M4-10. But if you make it too short the servo will start moving before the shutter is closed !

It all depends on your shutter lag which is likely to be between 0.1 and 0.9 seconds for most digital cameras. There are several factors which effect it, particularly whether you use automatic or manual focus. For kap you should normally choose manual focus.

1) *But it's your show. Decide whatever camera setting you want with Tucit. Pick up your camera and make them.*
2) *Set up Tucit to trigger just your kind of camera with M1-6 and a Delay of 0 with M4-10.*
3) *Set M4-6 for at least 80 pulses, more is better. Sorry but you need this so that the green led stays on a long time.*
4) *Put Tucit on the table in front of you with the infra-red lamp pointing towards you and the lid raised. Switch on.*
5) *Point your camera at the red and green leds and allow Tucit to take a picture of them automatically.*
6) *Review the image. You will see that you have caught a picture of the green led on. But of course! Your delay, being 0, was clearly too short, the servo would have moved too early and the green led is your proof.*
7) *Lengthen the delay and try again. When you manage to take a picture of the red led on you can be sure that at least that picture would have been taken before the servo moved.*

PS There's a useful shutter lag tester available at http://www.shooting-digital.com/columns/schwartz/shutter_release_test/default.asp

M3 - THE KAP SESSION MENU

MENU M 3 KAP SESSION		
1 **Main Session Only**		✓
2 **Static + Main**		
3 **Main + Stage2**		
4 **Static + Main + Stage2**		
5 **Stage2 Moves** Copy of M2 items 1-8 9 = no pictures + high	**S**	**3**
6 **Total of Static Shots**	**S**	**6**
7 **Total of Main Shots** shots **if** stage2. Units of 10. ie 12 x 10 = 120	**S**	**12**
8 **Menu Reset**		

Default

Sub-menu

a You may well never want to use this menu. If so you can completely ignore it. Or perhaps just skip it at first and come back later.

b **An example**
In the same session and without having to pull your kite down to reset the rig you could have a session with the following stages.

i A *Countdown Delay* Stage with the countdown timer
Allowing your kite to gain height before picture taking starts.

ii A *Static Shots* Stage
Allowing you to manually set the camera towards a target before the rig goes up. This could be a castle or you and your friends at the bottom of the line. You can set the number of pictures to be taken before the servos begin moving the rig.

iii The *Main* Stage
This is just the M2 activity you normally set.

iv A *Second* Stage (*stage2)*
This allows you a second lot of rig moves. For example if your *main stage* is a high altitude omni-directional landscape panorama using *three level panning*. You might set a total of 120 pictures for this to give yourself several full revolutions. Then your rig could begin its *second stage* taking pictures *down+pan* in order to take low-level shots straight down over people or down chimneys, etc. Or simply stop and point up for a safe landing.

1 **Main Session Only**
This is the default. Tucit - X behaves conveniently as if this menu never existed.

2 **Static Shots then Main Moves Shots**
You get unlimited shots from *rig moves* menu (M2). But before that you get a number of static shots with absolutely no servo activity (except for the start-up twitch). This enables you before your rig is lofted to direct the camera towards a predetermined target. The number of these static shots by default is 6 but can be changed in the sub-menu below.

3 **Main Moves Shots then Stage2 Moves Shots**
You have a total which by default is 120 shots from *rig moves* menu (M2). Then your rig changes to *Stage2* and endlessly provides whatever has been set in the *stage2-moves* menu (M3-5). You can change the default number of 120 Main shots in sub-menu M3-7.

4 **Static Shots then Main Moves Shots then Stage2 Moves Shots**
Here you get the lot. You start with static shots, then you get a pre-set number of shots from *rig moves* menu (M2) and finish with all the remaining shots from *stage2 moves* menu (M3-5).

5 **Sub-menu: Stage2 Moves** (Copy of M2 items 1 – 8 + also 9)

1 This is where you set the movements your rig will make whenever you set it to perform a second stage.

2 It is an exact copy of the *rig moves* menu M2, except

i It has no sub-menus as it uses the *lookdown* frequencies you have set in M2.

ii The default setting is M3-5-3 *Down+Pan*.

iii With the additional item 9 *No pictures + high* your camera will stop and point upwards to protect your lens for landing.

5 **Stage2 Moves**	**S**	**3**
Copy of M2 items 1-8 9 = no pictures + high		

1 **No movements**	
2 **Just down**	
3 **Down + Pan**	✓
4 **Basic Pan**	
5 **Pan Lookdown 1 (f5)**	
6 **Pan Lookdown 2 (f1)**	
7 **3 Level Panning**	
8 **4 Level Panning**	
9 **No pictures + high**	

6 **Sub-menu: Set number of Initial Static Shots** (default 6)
The pre-set number of fixed, static shots is 6 but here you can change it from 1 to 250.

7 **Sub-menu: Set number of Main Moves Shots before Stage 2 (in 10's)**
This sets the number of *main moves* you will have if you gave a *stage2*. The number you count up in red flashes is multiplied by 10. So if you count up 12 red flashes you will get 120 shots from *rig moves* menu (M2) before you go to your second stage.

8 **Menu Reset**
Here the whole menu and its sub-menus are reset to their defaults. The reset is confirmed by red-green flashing.

M4 – THE HARDWARE MENU

MENU M 4 HARDWARE			
1	Down Raise	S	0
2	Down Lower	S	0
3	Tilt Up Raise	S	0
4	Tilt Up Lower	S	0
5	Reverse Tilt		off
6	Pan Pulse No	S	4
7	P P Length -	S	0
8	P P Length +	S	0
9	Reverse Finger		off
10	Delay *	S	10
11	Auxiliary		
12	Menu Reset		

Default

Sub-menu

READ THIS FIRST

1 Having made these hardware adjustments it's good to use the *general settings* menu item (M1-9) *Customise All Defaults* to preserve them.
2 All values 'overflow' if they go beyond 255 and return to 0.

Live Previews

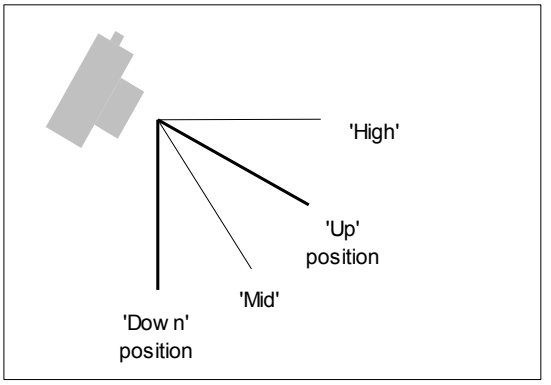
3 Servo adjustment menus show you *live* positions as you change them.
4 Keep holding the button down after the servo moves (until the green led goes back on again) in order to stay in the menu and make additional adjustments. If you release the button switch less than one second after the movement you will be taken back back to the menu double flash from where you can select another menu.

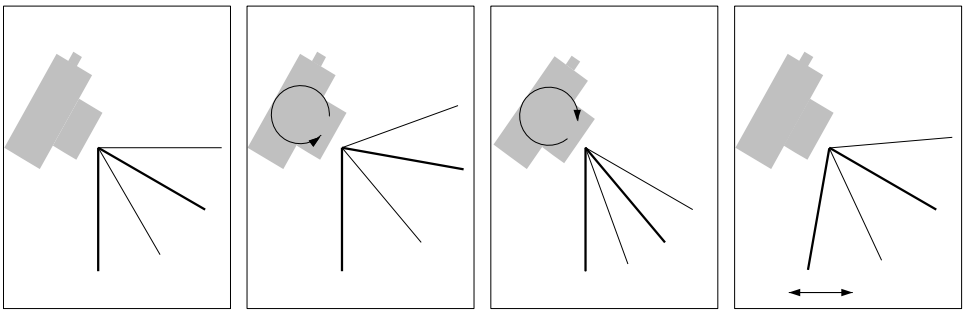
Fitting The Tilt Servo

1 Fit the servo to the bracket supporting your camera and switch on with the *rig moves* menu set to the default M2-5 *pan lookdown* frequency 5 and watch.
2 The camera should tip down after every 5 pictures. If it does the opposite reverse the tilt direction with M4-5 and check.
3 Next set the rig moves menu to M2-2 *just down*. Wait for several picture signals to make sure the position has been achieved. Now refit the bracket to the servo so that the camera is pointing down. After checking tighten the screw which secures them.
4 You can use M4-1 and M4-2 to fine tune this *down* position.
5 When the *down* position is secured set M2-4 basic pan to check the *up* position. Use M4-3 and M4-4 to make adjustments.

The Meaning of Up - and Tilt Angles

1 Tucit - X's main tilt positions are the fixed straight-*down* position and the *up* position.
2 For a standard camera lens the *up* position may be an angle of declination of about 30°.
3 But don't get trapped by a number. *Up* means simply the angle *you* find best with *your* camera for general aerial landscapes. Depending on your lens, and your kite's altitude it could be anywhere between horizontal and 45.
4 Additional positions called 'high' and 'mid' are used for 3 and 4 level panning.
5 As you adjust the *up* or *down* positions the *mid* and *high* positions will change proportionally so that the angles between the 4 positions are always the same.





Basic Position *M4-3 Tilt Up Raise* *M4-4 Tilt Up Lower* *Down M4-1 & M4-2*

TILT SERVO SETTINGS

1 & 2 **Sub-menus: Tilt Down Angle Raise and Lower**

3 & 4 **Sub-menus: Tilt Up Angle Raise and Lower**

i These menus act cumulatively and with live previews.

ii Every red flash you count up or down will change the angle angle by very approximately 2°.

5 **Reverse Tilt Direction (Default off)**

Sometimes you can turn your camera or its platform around but here is where you can reverse it with software.

MENU M 4 HARDWARE			
1	Down Raise	S	0
2	Down Lower	S	0
3	Tilt Up Raise	S	0
4	Tilt Up Lower	S	0
5	Reverse Tilt		off
6	Pan Pulse No	S	4
7	P P Length -	S	0
8	P P Length +	S	0
9	Reverse Finger		off
10	Delay *	S	10
11	Auxiliary		
12	Menu Reset		

Default

Sub-menu

PAN SERVO SETTINGS

6 **Sub-menu: Number of Pan Pulses Default 4 pulses**

i The pan pulse *number* menu is very different to the two pan pulse *length* menus. They are cumulative so with them you just add or subtract to what is already there. But the pan pulse *number* menu is not like that, every time you use it you must count up from one again. Why? Because this is the menu where always knowing what the actual number is is essential.

ii The number of pan pulses determine how long the panning movement lasts. Therefore for any one pulse *length* the angle your rig turns is directly proportional to the number of pulses.

7 & 8 **Sub-menu: Pan Pulse Length Decrease and Increase**

i These adjust the pulse *length* for panning. The pulse *length* will determine the pan speed and direction so that for certain 'mid' values (around 1.5 ms) the servo won't move. When this happens you may hear a small noise from it.

ii With both these menus you make adjustments cumulatively.

ABOUT PAN SETTINGS

i By default Tucit sends 4 pulses of about 1.8 ms to your 360° modified servo. Different makes of servos and different kinds of conversion produce very varied responses to Tucit's default signal. Occasionally the conversion of a servo to 360° results in its resting state (ideally 1.5 ms) being actually on Tucit's default value.

ii By reducing the pulse *length* with sub-menu 7 you can reverse the direction of rotation.

iii Each count = 10 µs so for example about 30 taps of sub-menu 7 gets you from 1.8 to 1.5 ms.

iv Pulse *length* determines the speed and direction of movements. Its effects are exponential and hard to estimate.

v The number of pulses determines how long the movement lasts. So at any pulse *length* the angle of rotation is directly proportional to the number of pulses.

PAN ADJUSTMENT METHOD 1 The Quick Way To Adjust Your Panning Angle

i If your pan servo is moving and you want to change the amount you only need to adjust the number of pulses sent. Sub-menu 6 should allow you to make the changes you want from 1 upwards. For example doubling the default *number* doubles the default angle.

PAN ADJUSTMENT METHOD 2 How To Pan Accurately & Avoid Jerking Movements

i First increase the default number of pan *pulses* from 4 to something large like 20 or even more. If your rig races round that's fine.

ii Next adjust the pulse *length* - usually decreasing it, sometimes increasing it. Get the movement as close to where you want as possible whilst keeping the pulse *length* a high constant.

iii Having adjusted the pulse *length* to get as close to the angle you want you can then decrease the number of *pulses* to make an accurate proportional adjustment of the panning angle.

9 **Reverse Finger Direction** (Default off)

This simply toggles the direction of the finger action.

10 **Delay Default** (position 11) is 10 tenths of a second

i This menu is for shutter lag and sets the delay between the shutter firing signal and the servo movement in tenths of a second. Position 1 = 0, 2 = 1/10, 3 = 2/10 of a second etc.

ii This delay is accompanied by an extension of the finger shutter pressing time and also the electrical contact closed time. This may be helpful for non infra-red cameras which need an extended shutter push for any reason. If you use an extended finger servo push you should check both Tucit and the servo in case they show signs of overheating.

11 **Auxiliary**

Maybe you can send me some suggestions for this ?

12 **Menu Reset**

By now you should know what this does.

MENU AND USER INTERFACE SUMMARIES FOR TUCIT-X

MENU M 1 GENERAL SETTINGS				MENU M 2 RIG MOVES				MENU M 3 KAP SESSION				MENU M 4 HARDWARE			
1	Startup		on	1	No movements			1	Main Session Only		✓	1	Down Raise	S	0
2	Tenths *		0	2	Just down			2	Static + Main			2	Down Lower	S	0
3	Wake-Up		off	3	Down + Pan			3	Main + Stage2			3	Tilt Up Raise	S	0
4	PL/ Batch/Series		off	4	Basic Pan			4	Static + Main + Stage2			4	Tilt Up Lower	S	0
	S Off>PL>Batch>Series			5	Pan Lookdown 1 (f5)		✓	5	Stage2 Moves	S	3	5	Reverse Tilt		off
5	PL/B/S No	S	6	6	Pan Lookdown 2 (f1)				Copy of M2 items 1-8			6	Pan Pulse No	S	4
6	Cameras	S	all	7	3 Level Panning				9 = no pictures + high			7	P P Length -	S	0
7	Countdown2 *	S	0	8	4 Level Panning			6	Total of Static Shots	S	6	8	P P Length +	S	0
8	Menu Reset			9	PL 1 Frequency	S	5	7	Total of Main Shots	S	12	9	Reverse Finger		off
9	Customise			10	PL 2 Frequency	S	1		shots if stage2. Units			10	Delay *	S	10
	All Defaults			11	Menu Reset				of 10. ie 12 x 10 = 120			11	Auxiliary		
								8	Menu Reset			12	Menu Reset		

Sub-menu **Default** Intervals 5 secs Countdown 60 secs

Cameras sub-menu: 1 All Cameras, 2 Canon WL-DC 100, 3 Canon RC-1, 4 Konika Minolta RC-D1, 5 Nikon ML-L3 6 Olympus RM1 & RM2, 7 Pentax E & F, 8 Aikon, 9 Finger Shutter or Electrical Switch

* With all time settings 1 = 0, 2 = 1 etc. The defaults shown here are the second of these numbers.

Starting with Intervals or with a Countdown

If you just switch Tucit on it will start with intervals. If you switch on then immediately off you set it up for a countdown. The next time you switch on it will start with a countdown before the intervals.

Setting the Interval Time

Switch off. Hold the button switch down. Switch on and count the number of red flashing interval seconds. 1 flash = 0 seconds, 2 flashes = 1 second etc. Release the button switch at the number you want and power off. If you switch off before you release the button you will restore the default.. In addition tenths of seconds can be set in menu M1-2.

Setting the Countdown Time

Switch on then immediately off to set up for a countdown. Then hold the button switch down, switch on and count the number of green countdown seconds. Release the button switch at the number you want and power off. If you switch off before you release the button you will restore the default.

To Select a Menu or Sub-Menu

After switching on push the button switch down and the *menu double flash* will welcome you. Lift your finger, green is on. Tapping down with red flashes as you go there hold down on the number of the menu you want. When the lights go green, you are in the menu and you can lift your finger. You can now use the same method to select a sub-menu.

To Set a Menu or Sub-Menu Item

Select a menu as above. Your finger is up and the light is green. Tap your way again in red flashes and give a long press on the number you want. Your setting being made the *menu double flash* will welcome you back to continue with another setting or to restart with your new setting.

Adjusting a Servo Position or Movement

Servo adjusting menus are accompanied by live previews. Keep holding the button for one second after the movement has finished in order to stay in the same menu for additional adjustments.

Resets Both methods are confirmed by red-green flashing.

1 **Factory Reset**. Resets everything to the factory defaults.
Switch on. Looking from the side of the leds, counting from the left short together pins 5 and 6.

2 **Soft Reset.** Resets all menus and timer settings to the defaults which you have customised with M1-9. Switch on. Hold down the button switch for about 8 seconds and ignore the warning flashes.

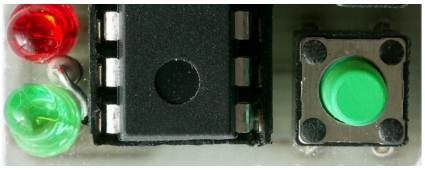
TUCIT – X

MENU M 1 GENERAL SETTINGS				MENU M 2 RIG MOVES				MENU M 3 KAP SESSION				MENU M 4 HARDWARE			
1	**Startup**		**on**	1	**No movements**			1	**Main Session Only**		✓	1	**Down Raise**	**S**	**0**
2	**Tenths ***		**0**	2	**Just down**			2	**Static + Main**			2	**Down Lower**	**S**	**0**
3	**Wake-Up**		**off**	3	**Down + Pan**			3	**Main + Stage2**			3	**Tilt Up Raise**	**S**	**0**
4	**PL/ Batch/Series**		**off**	4	**Basic Pan**			4	**Static + Main + Stage2**			4	**Tilt Up Lower**	**S**	**0**
	S Off>PL>Batch>Series			5	**Pan Lookdown 1 (f5)**		✓	5	**Stage2 Moves**	**S**	**3**	5	**Reverse Tilt**		**off**
5	**PL/B/S No**	**S**	**6**	6	**Pan Lookdown 2 (f1)**				Copy of M2 items 1-8			6	**Pan Pulse No**	**S**	**4**
6	**Cameras**	**S**	**all**	7	**3 Level Panning**				9 = no pictures + high			7	**P P Length -**	**S**	**0**
7	**Countdown2 ***	**S**	**0**	8	**4 Level Panning**			6	**Total of Static Shots**	**S**	**6**	8	**P P Length +**	**S**	**0**
8	**Menu Reset**			9	**PL 1 Frequency**	**S**	**5**	7	**Total of Main Shots**	**S**	**12**	9	**Reverse Finger**		**off**
9	**Customise**			10	**PL 2 Frequency**	**S**	**1**		shots **if** stage2. Units			10	**Delay ***	**S**	**10**
	All Defaults			11	**Menu Reset**				of 10. ie 12 x 10 = 120			11	**Auxiliary**		
								8	**Menu Reset**			12	**Menu Reset**		

Sub-menu **Default** Intervals 5 secs Countdown 60 secs

Cameras sub-menu: 1 All Cameras, 2 Canon WL-DC 100, 3 Canon RC-1, 4 Konika Minolta RC-D1, 5 Nikon ML-L3 6 Olympus RM1 & RM2, 7 Pentax E & F, 8 Aikon, 9 Finger Shutter or Electrical Switch

* With all time settings 1 = 0, 2 = 1 etc. The defaults shown here are the second of these numbers.



For firmware TXF 1.4
Manual revised 12 Jan 2007

Tucit-1 and Tucit - X are made by Simon Sherwin.
simon@inEnglish.com www.inEnglish.com/tucit