MULTIPLEX

EVO 9 & EVO 12

FAQ

Forward

This FAQ was compiled by myself using public domain information available at RC Groups. The need for an EVO FAQ has been readily established since the current ongoing threads concerning the EVO at RC Groups is well in excess of 2,500 posts. Reading through all of those posts is now a daunting task. (Believe me, I've done it twice now.) Hopefully, this FAQ will become a quick one-stop depot offering a summation of pertinent topics that new or potentially new EVO pilots are in the process of learning about.

As more EVO pilots begin their foray into the world of Multiplex transmitters, the task of repeatedly answering common beginner questions often tires experienced EVO pilots and gives the false impression that there is a lack of EVO-Community support. This is prevalent in the computer forums since answers to some of beginner questions require lengthy replies in order to be properly clear and understanding.

Keep in mind that this FAQ is not considered a completed manuscript. While I consider that there are many additional EVO related topics that merit discussion that are not currently present in this FAQ, I will reserve these submissions to be offered by other EVO pilots and then added to this manuscript in the future.

The reader will also note that there is very little specific EVO programming information offered in this FAQ. I have intentionally endeavored to exclude this type of information since there is already an excellent resource called (appropriately so) the, **"MPX EVO Tutorial"** that is available to anyone interested in learning about the EVO radio. This PDF format manuscript can be downloaded free of charge from www.mpxusa.com and from www.modelspot.com **The MPX EVO Tutorial** offers a very detailed walkthrough showing how to program the EVO radio for an electric sailplane, a full house sailplane and also offers many scenarios that take advantage of the powerful capabilities of the EVO.

So with this in mind, I would like to present a general call of for assistance from fellow EVO pilots to step up to the plate and offer to populate some of the missing chapters in this FAQ. I also believe that I have overlooked some topics that should be included so thus, please be sure to send me a PM at RC Groups and let me know what additional items would be of benefit in this FAQ.

Fly Multiplex!

Joedy Drulia
Shenandoah Valley, Virginia
United States of America

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If there are any objections or concerns regarding the content of this FAQ, please contact Joedy Drulia through the PM facility at RC Groups and the appropriate measures will be taken to accommodate your request.

Table of Contents

CHAPTERS STILL NEEDED

Information for the following chapters are still needed. Please contact Joedy Drulia if you are willing to supply a short summary write-up for these topics.

- EVO Data manager software and firmware updating overview
- Guidelines for charging the EVO with other chargers
- "NO RF" messages and what can cause them
- Differences between the Xtal module and the synth modules
- Why the synth module should be removed when using computer simulators
- Modes available and the process for changing Modes
- Severe disadvantages of the EVO-7

IS THE EVO THE RADIO FOR ME?

By Joedy Drulia

Collectively and when measured as a percentage of the whole, there is by and large, more content EVO pilots than unhappy ones.

The EVO is **NOT** perfect. Even the EVO gurus concede this notion. But when held up against what is currently available from the other brands, the EVO is a very capable and able radio.

The best proof of this is within the EVO Tutorial Scenarios that readily demonstrate some of the more advanced programming capabilities of the EVO that may or simply, may *not* be possible with other brands.

Anyone considering an EVO would be wise to remember that the EVO, for all of its warts, is **NOT** considered or intended to be considered Multiplex's top of the line transmitter. It is instead, offered as their mid-line transmitter which has unexpected superior qualities than the mighty Profi 4000 and as expected with a mid-line transmitter, has some omissions in features.

I do grant that some of the omissions could have and **should have** been included in the final product, but what is done is done and what is offered is offered with the *possibility* of a free, future upgrade. There's no guarantee that this will happen, only the notion that it is possible. All of the other competing, mass market brands don't even offer this possibility. As the owner of one of these brands, if you want upgraded features - you will have to purchase a new radio.

I've received several hundred correspondences from EVO pilots around the world. I can recall 6 of them who returned their EVOs. All of them except two did so due to the lack of multiple EXPO rates, being heavily involved in pattern flying and one due to the limitations of heli options. Another one was dismayed with the defective parts after two repair attempts, but admittedly conceded that Hitec/MPX USA service was top notch in the endeavor to address these issues.

There is no answer to, "Is the EVO the right radio for me?" Each pilot has to decide this for themselves.

CONTROL DEVICES

By Mark Drela

The EVO has a total of 14 control devices, not counting the trims:

4 stick inputs
2 sliders
4 3-position switches
2 2-position switches
2 momentary pushbuttons.

By Joedy Drulia

In addition, the EVO also offers two 2-position expansion switches which can be installed by the pilot.

SIDE BUTTON WIDGETS

By Bill Glover

You can assign flight modes (phases) to any of the switches on the TX (including the stick-mounted ones). And the same physical switch can also do more than one thing, for example simultaneously activate a flight phase and switch on CAR mixing.

Yes there are 'touch' switches on each side of the case and you can even program how they work:
- one touch on, touch again for off (or vice-versa)
- on (or off) only while held down

Left-hand switch circled in green here.

SIDE BUTTON OPERATION

By Joedy Drulia

"Momentary" means PUSH-TO-MAKE. It only stays "ON" while you hold the button down. This symbol is shown in the EVO by the little "tophat" symbol.

"Rocker" means PUSH-ON-STAY-ON and PUSH-(again)-STAY-OFF. This symbol in the EVO looks something like an "S" shape with 90 degree angles.

Note:

You can use the momentary function of the side widgets not only to turn something "ON"... you can also use it to turn something "OFF" by programming a travel value (such as -100% or thereabouts) that effectively negates another function. In fact, this is essentially what the Throttle Cut control effects - immediate zero throttle from any pre-existing throttle position. The EVO offers a very wide array of programming tools. In fact, it is often more difficult to think up challenging scenarios than it is to figure out the programming solution!

BASIC TERMINOLOGY TERMS

By JoedyDrulia

One thing, though, that I would like to point out (especially after only recently having made the transition myself) is that the loose naming conventions used in our discussions can be **very** confusing to an established AR (Asian Radio) user.

I would recommend taking Mike Shellim's approach to reduce some of the confusion:

Widget(s)
Sticks, switches, buttons, sliders, knobs

Control(s)
What the widget does. Initially, a widget doesn't *do* anyting - you have to tell the EVO what the widget will command.

Channel(s)
Servo input signals. The RE9 has nine and the RE12 has twelve.

** IMPORTANT MULTIPLEX CONCEPT**
These items are **NOT** connected to one another until established by the user.

With Asian Radios, however, all of these items are glued together right out of the box. On an AR, the widget (the switch) that commands the flaps is already established to a control (activating the flap servo). This control is permanently connected to a channel which feeds a signal to the flap servo. Because the channel is wired in place all the way from the widget to the servo lead plug in on the receiver, none of the attributes can be changed (widget, control, or channel). The flap widget on an AR will **always** be a flap widget.

Of course with the EVO, none of this silliness applies: any widget can be established to any control; any channel can be set to signal any servo.

(I've purposefully omitted the topic of mixers since there really isn't any real comparable AR counterpart function. The Asian Radios do have a slaving function, but it's not mixing in a true sense. It's really one widget's control signal which is being duplicated and sent to another channel.)

MULTIPLEX EMAIL FORUM

By Karlton Spindle

There is a very active Multiplex Radio Users Group on Topica.

List Name Club for Multiplex radio users (Profi / Royal)
Purpose: A club for users of the Multiplex R/C Radios!
List Type: Unmoderated discussion
Subscription: Does not require owner approval
Archive: Readable by subscribers only
To Join: Subscribe here, or send an email to clubprofi-subscribe@topica.com
To Post: Send mail to 'clubprofi@topica.com'
Stats: 273 subscribers / 3 messages per day

MPX-HITEC RELATIONSHIP

By Harry Curzon

Multiplex is not Hitec, it is not owned by Hitec. The person, Mr Chun Park, who owns Hitec also owns Multiplex and they are two totally separate companies.

The Evo is not a Hitec radio, or a Mr Park radio. It was on sale in Europe before Mr Park bought Multiplex and of course it was being developed for years before then.

Here in the UK I know people who have gone back to the model shop and traded in Futaba 9Cs and JRPCM10s for an Evo.

You see very little Multiplex in the USA which is why your friends laugh at it because they don't know about it, but in Europe it is a very common sight. At my club on a Sunday morning it is end to end green pizza boxes (Profi 3030 and 4000) with the occasional new Evo.

In serious gliding, no-one uses Futaba. The world championships are controlled by Multiplex and Graupner, even the Japanese team did not use Futaba or JR. In the UK and Europe at ordinary club level on the slopes or flat field it is end to end Multiplex. Look at the photos in the gliding columns of any UK magazine and 9 out 10 radios that you can see are the Multiplex green pizza boxes.

But it's not just a gliding radio. The former World Scale Champion Mick Reeves uses a Multiplex 4000. Duncan Hutson many times member of the UK World Scale Championship team uses a Multiplex 4000 and if you talk to him about it he wouldn't let a Futaba/JR near his models, he is even more evangelical about Multiplex than I am! Len Gardiner, another top UK scale modeler also swears by Multiplex, he uses a 4000.

What about helis? I have met people at my local shop who are there to trade in their JR10 for an Evo 9 because the wisdom now is that the Evo is so much better than the JR for helis. At the Vario heli factory in Germany they have ditched their Asian radios and put the entire factory demonstrator fleet onto one Evo12.

Let the uninformed people with their chromed hedgehog radios laugh. You have bought the top brand, as Highflight said the only better radio is another Multiplex, the 4000. Next time the people at your airfield scoff, inform them that the mighty Futaba 9Z uses an ancient operating system, licensed off Multiplex from 1984!

Ask them who was the first model radio brand to use FM? It was Multiplex.

Who was the first model radio brand to use PCM? It was Multiplex.

Who was the first model radio brand to have digital servos? Multiplex.

Who was the first to have programmable digital servos? Multiplex.

Who was first to use programmable radios? Yep, you guessed, it was Multiplex.

EVO CABLES

By Joedy Drulia

Ok, here's the lowdown about the EVO cables. As of the current moment, you have 4 options available to acquire an EVO cable.

1. Make one yourself using information readily available on RCGroups.com.
2. Purchase an official Multiplex "OEM" cable from overseas.
3. Wait for Multiplex-USA or the retailers to get them in stock and buy one from them.
4. Purchase a pre-assembled cable from a fellow RC pilot such as Patrick Swayze.

The EVO cable is the same physical cable as the "Cockpi Cable" as the "Profi Cable" as the "EVO Cable." MPX did not re-design the interface cable with the release of the EVO transmitter.

The EVO Cables are not standard cables. There are some electronics that must be soldered on a small board in order to work with the EVO (as well as the Cockpit and the Profi 3000 and 4000 series.)

It's a sore point, granted, that many new EVO pilots have with the notion of not receiving an upgrade cable with the new EVOs. Perhaps in the future, this will change (I know that some vendors are already doing this with EVOs that they sell.)

By Bill Glover

As the interface software is downloadable for nothing, the next question is "how do I make the PC to TX cable?" The answer is that it's not a simple DIY job, there's more to it than knowing which pins to connect .. the serial plug at the PC end contains a PCB. Also, having spent all that money on a nice new TX do you really want to risk frying it with a home-made cable?

Out of interest, here's a picture of the PC end of the cable.

Front

Back

CUSTOM EVO DATA CABLES

By Jeff Swayze

I realize that many of you know this, but for those who don't, I'm offering a compatible Multiplex—PC cable for sale. I took a little break from doing this but with the new software coming out (and hopefully new Evo owners as well) I decided to produce another run of cables. Components are being assembled as I write this, and I expect to have a small quantity available by the end of this week.

I'm inviting interested parties to drop me an e-mail to orders@fatsquid.com if they'd like to be on the waiting list. Once I have tested cables in my hands (I test them myself on my Evo 9) I will e-mail those on the waiting list.

Price is still $25 for the cable and $5 for shipping via Priority Mail, preferably payable through PayPal. The cable has a DIN-7 (transmitter) connector on one end an a DB9 9-pin serial connector on the other. It has been tested on both the Evo and the Profi line of transmitters. It is also compatible with USB-Serial converters (Belkin, Keyspan, etc.) if you have only USB on your PC.

Please drop me a line or visit my website if interested: http://store.fatsquid.com

Also, a search of the discussion groups will yield information and experience of those who have already purchased the cable from me.
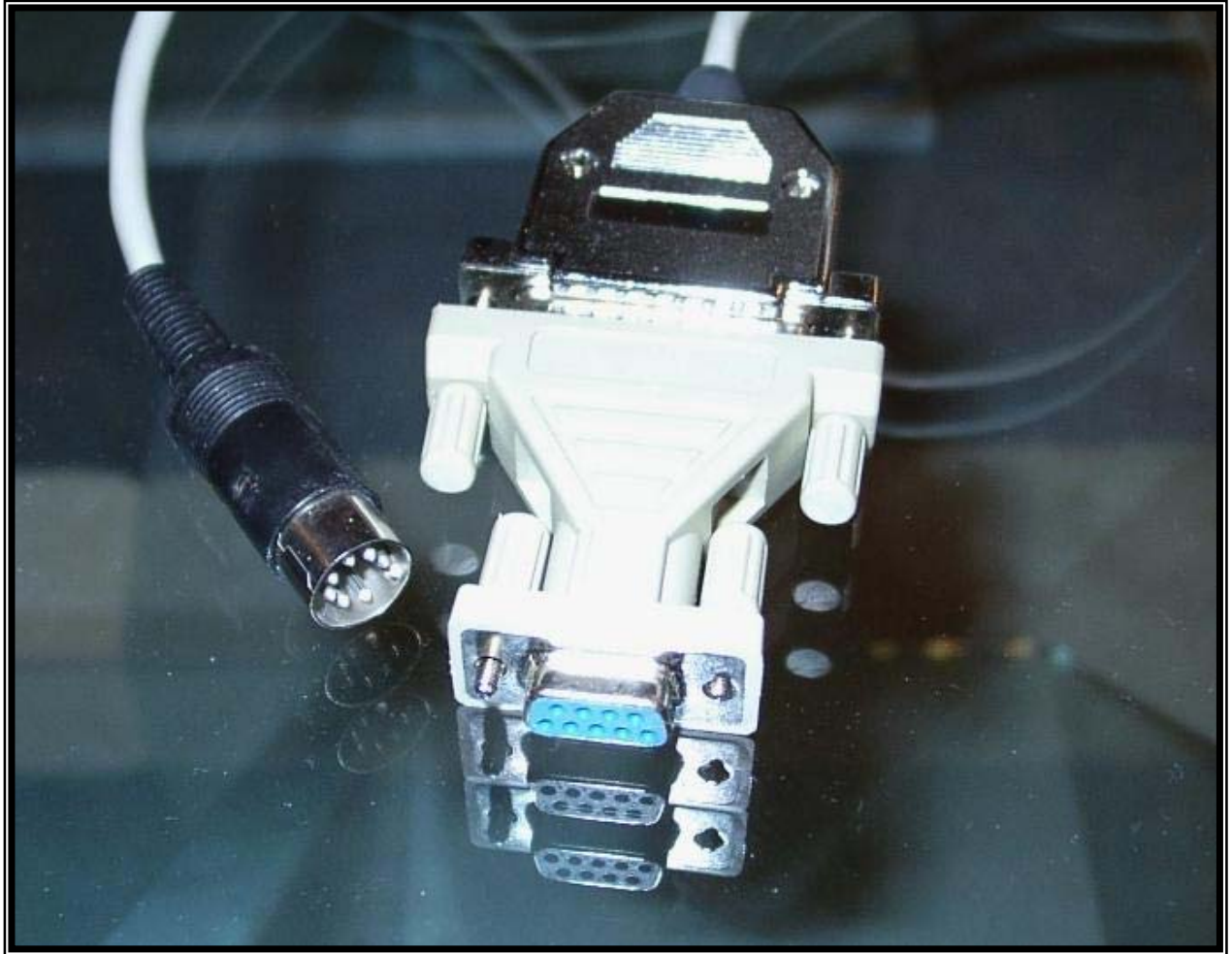
Thanks,

Jeff Swayze

EVO CABLE 9-PIN ADAPTER

By Patrick Plawner

STICKS INCLUDED WITH THE EVO

By Bill Glover

Just to add to this, you can also swivel the entire stick units in the case slightly ... so the up/down left/right axes of the sticks aren't parallel to the sides/bottom of the TX case. This is supposed to improve the ergonomics if you fly with thumbs on top of sticks (move your thumbs left/right and you'll see they usually follow a diagonal rather than a horizontal line).

I personally fly with a "finger & thumb" grip so haven't altered the alignment on mine. When I converted to the Evo I made a conscious decision to use the long 'sculpted' sticks, even though they felt very weird to start off with. 12 months later I'm glad I did ... I believe I get more precise control, and of course the long sticks have the neat control buttons on one of them.

Short, medium and (buttoned) long axis sticks as well as the fastening knurl nut.

Buttoned long axis stick installed

Buttoned long axis stick close-up
(Photo credited to Patrick Plawner)

EVO BATTERY MANAGEMENT

By Joedy Drulia

The EVO has the ability to track the amount of incoming (when charging) amps and the remaining mAh of the transmitter battery. The EVO also presents an estimated operating residual time value to give the pilot an idea of the total remaining hours and minutes of charge in the transmitter battery. In addition, the EVO also offers a standard electronic voltmeter.

Photo credited to Patrick Plawner

SERVO PULSE TIMING

By Harry Curzon

Don't forget that there is no such thing as a standard 1-2millisecond PPM pulse. There isn't a brand of radio on the market that uses that!

For various brands of radio, with the travel set at 100%:
JR uses 1.1. to 1.9ms
Futaba uses 1.07 to 1.93ms
Mpx uses 0.95 to 2.05ms. Yes, even in uni mode all it does is correct from the Mpx normal 1.6ms centre to a 1.5ms centre, it still sends out a much shorter or longer timing pulse.

From the point of view of an ESC, the Mpx throttle at idle with trim at neutral (the new model default) generates a 1.1ms pulse. Note how this is the same as a JR at idle throttle with trim back. So if your ESC is firing up, its not the EVO's idle signal that is at fault. It's your ESC, or as Bill suggests the handling of the throttle warning and arming the ESC. The Evo's throttle at stick back and trim fully back is generating 0.95ms, which is the same as JR throttle at 138% travel. and you don't have to do that on a JR Tx to get it to work with an ESC!

Your servo's are all based on a 1.1-1.9ms pulse, or the slightly different Futaba pulse. If you send them the Mpx pulse then it is like setting a JR to 138%. If you already have servos installed in a model and the travels have been set up using a non-MPx Tx, then you use your Evo, you are going to get much larger movements than before. This might come as a nasty surprise when you next fly the model. Check your surface movements before you next fly each model that you have converted to the Evo. Best solution is to move clevises in at the servo arm or out at the control horn. If that is not possible, set your Evo travels to 73% for an ex-JR Tx model, and 78% for an ex-Futaba Tx model. This is especially important where travel may be critical such as on throttles which do hit a physical end of the barrel's rotation and you don't want to stall the servo.

Does this mean that Mpx can overdrive a servo? No. You will notice that the max travel you can select in servo calibration is 110%. In a JR you can select 150%, and in Futaba 140%. Well, funnily enough all those brands timings multiplied by their max travel % come to the same value, 0.9 ms to 2.1ms, so at the extreme all 3 brands generate the same signal.

SYMMETRICAL CURVE TYPES

By Harry Curzon

Symmetrical curves just make it quicker to set up a symmetrical movement - there is just one value to adjust. For example in most cases the aileron is curve is symmetrical unless you need to compensate for different roll rates left and right. Many people will be happy with symmetrical rudder and elevator in many models

DOUBLE AILERON INPUTS

By HarryCurzon

The "bug" prevents other useful things. The problem is that when aileron is input twice into the mixer, both aileron servos move the same way instead of opposite, even if one of those aileron inputs is OFF, regardless of the switch. Rates and flight phases are symmetrical, but by using two or more aileron inputs with asymmetrical curves you can switch between different left and right roll rates to compensate for torque. At least you can on the Profi's, this odd behavior of the EVO is blocking it. Another one to report to MM to pass on Multiplex.

By Mark Drela

If you use "Ail -TR" as inputs into mixers, this situation will be avoided.

ADDING CUSTOM SWITCHES

By Chuck Robinett

After trying to use the Evo for the first time, (in gloved hands) I found that I and N switches are just a little difficult to reach or find while concentrating on your plane. As a result, I wanted to add the switches K and P since they were in an easier position to reach (and I did not want to wait for the supply problem to be resolved).

To add the switches you will need two On-On mini toggle switches and two Volz servo connector leads (the small connector on the servo end of the Volz lead fits the switch connector in the Evo). The following picture shows the switch and connector prior to installation.

I will not cover the physical installation of the switch as that is in the manual.

While all three leads are connected to the toggle switch, only two of the wires are used. The Evo uses the center and outside pins on the connector blocks for the switch functions. So looking at the back of the transmitter, the Evo (using the Volz servo small connector) will use the white and black leads for the left switch (K) and the red and black wires for the right (P).

This only makes a difference when you install the switch in the transmitter so you can determine the On position. For example, (again looking at the back of the radio) for the On position to be with the left toggle switch (K) pointing toward the top of the radio the white lead should be on the bottom of the switch.

The mini-toggle switches are just long enough to come through the top of the radio and are only about half as tall as the other Evo toggle switches. The Plastic blanks in the switch positions are glued in and are difficult to remove. Try cutting the glue on the inside with a #11 blade before pushing out with something like an Allen wrench.

I found the toggle switches at a local electronics shop ($4.50) and had the spare Volz servo leads. If you do not have the servo wiring, contact Gordy Stahl as he sells Volz equipment (the servo leads are something like $5 each).
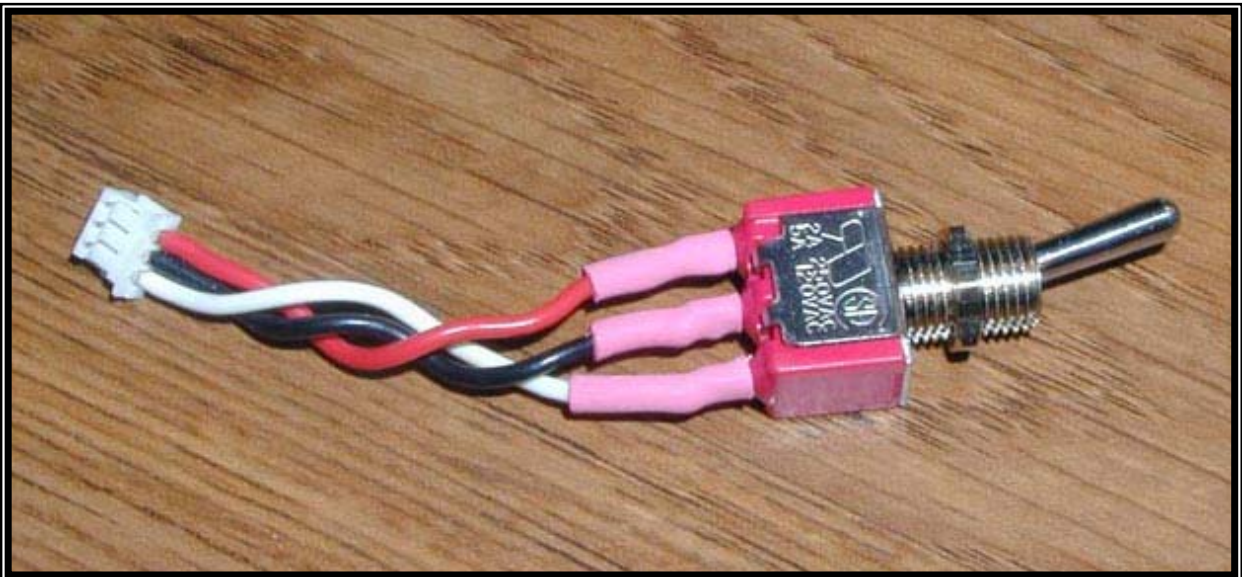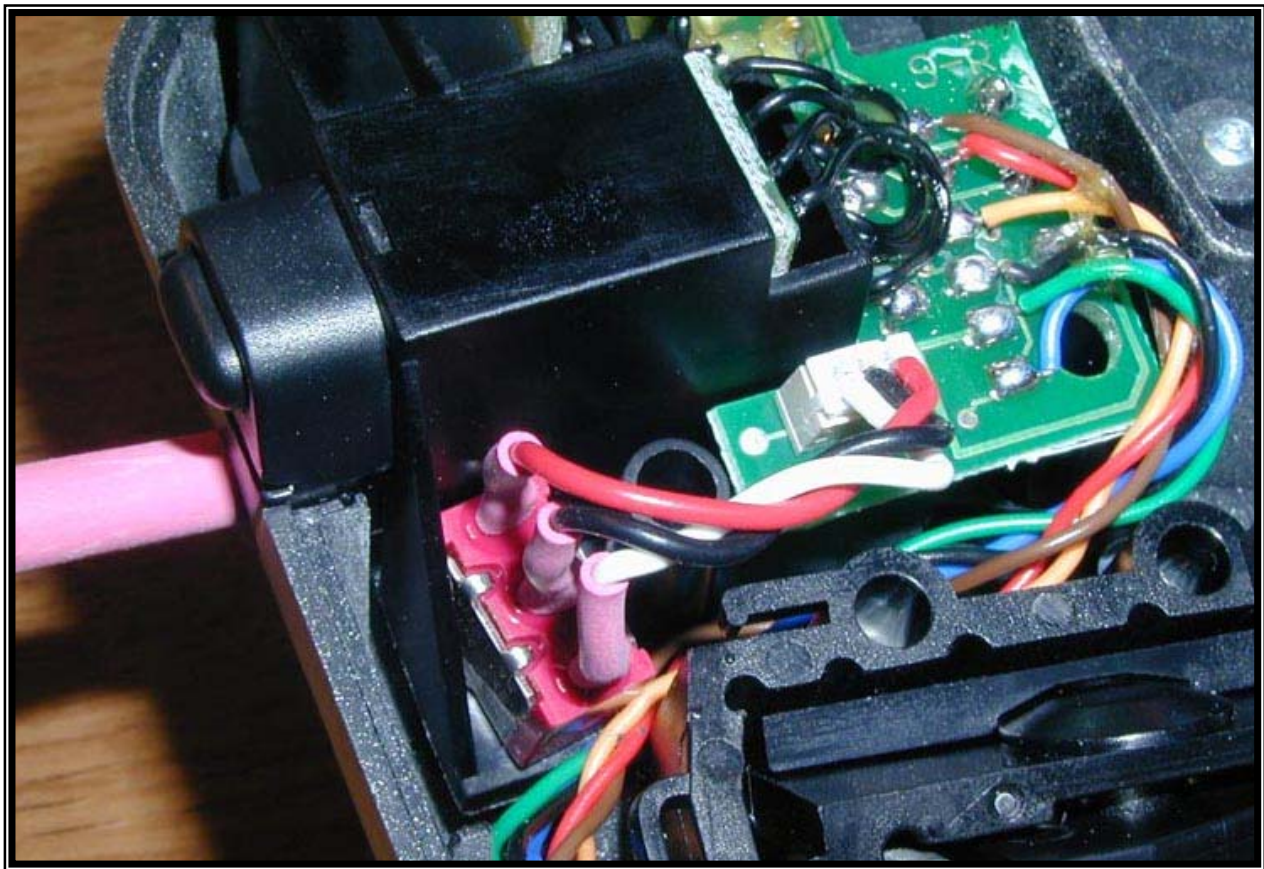
SHIFT SELECT SCREENSHOT

By Patrick Plawner

The shift select is in the Properties option, under the "Memory" Menu.

BECKER AERIAL PHOTOGRAPHS

By JoedyDrulia

While although guys like Harry Curzon and others will tell you that by using third party equipment with your EVO, you may invalidate your MPX warranty and could cause yourself to be in violation of the regulatory agencies, I received several inquiries about the Becker base loaded antennas which are considerably shorter than the MPX OEM telescoping antennas for use with the EVO.

The following photo shows the components of the Becker aerial.

The brass screw and washer goes **inside** of the EVO aerial tube from within the transmitter case. The machined brass plug enters the EVO tube in the top from **outside** of the transmitter case. A long screwdriver will be necessary to tighten down the screw into the brass plug. The Becker antenna itself has a female mating unit that screws into the brass plug onto the exposed screw.

I've discovered that the entire length of the screw is not needed to hold the plug firmly into place. If you have a **"Smiley"** Stylus antenna, you could cut down the length of the screw so that it does not protrude through the entire length of the threaded brass plug.

Also note that the EVO Becker and the Profi 3000 series Beckers are the same unit. This is why my Becker displays the "MC3000" text on the sticker. I can only presume that this Becker will fit onto a Profi 4000, but I don't know this for sure.

I purchased my Becker from Modelspot.com in the UK. Be sure to tell Gordon that you heard about the 72mHz Becker from Joedy.

Here is the brass plug with the screw in place and a view of the inside of the Becker aerial.

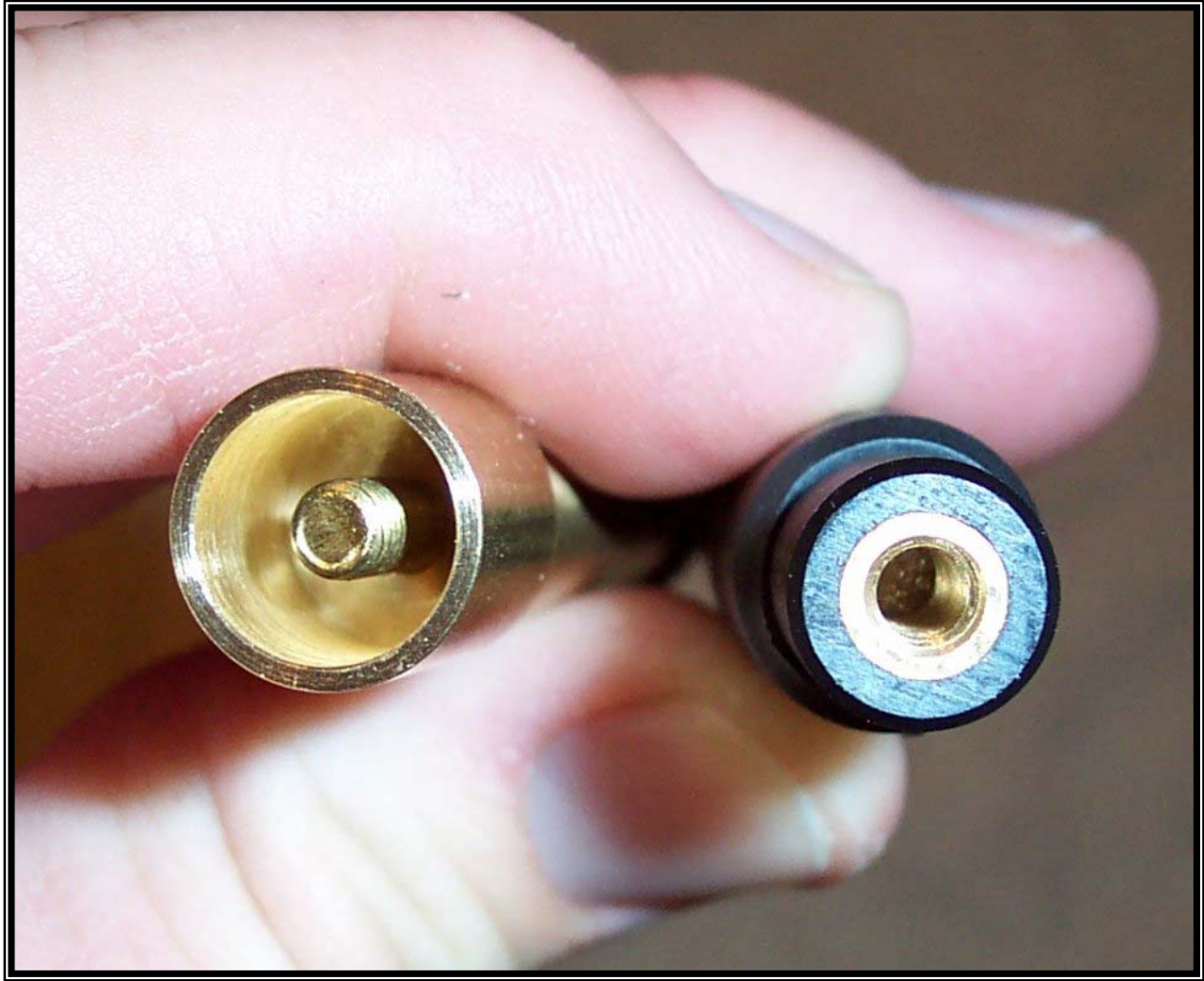Once the brass plug is installed, the Becker can be unscrewed so that the EVO will fit back into the carrying case.

By the way, I believe that the length of the extended Becker aerial is 550cm.

With the Becker installed, you are still able to swivel the aerial as you would with the MPX original antenna.

Here is the brass plug with the screw in place and a view of the inside of the Becker aerial.

KAVAN POWER STICK

By Joedy Drulia

With the Becker brass adapter installed on the EVO, you can use the Kavan Power Stick base loaded antenna. Be advised, though, that you will have reduced range, but you should have enough range for small yard flyers

EVO NEGATIVE ATTRIBUTES

By Joedy Drulia

Here are the things that I'm seeing as items that should be upgraded in the EVO firmware. There are other items, but these seem to be the biggest ones at the moment.

- **Lack of different EXPO per Flight Phase**
- **Unable to change existing names of Flight Phases**
- **Unable to offer individual model backups**
- **Incorrect default Flap fixed value already set**
- **Side buttons only work MOMENTARY when assigned as a control widget**
- **Unable to change Flight Phase slow transition**

Cell Phones and the EVO

From Multiplex-Germany

> Dear Sir,
>
> We strongly recommend not to operate cellular phones closer than 2 m to the radio.
>
> The safest way (for the model too) is to switch the phone completely off.
>
> Kind regards.
>
> MULTIPLEX Modellsport GmbH & Co. KG
> Customer Care
>
> Norbert Schneider
>

FIRMWARE 1.26 UPDATE

By Joedy Drulia

What I do know is that the shift-able beta version of 1.26 was never authorized by Multiplex-Germany to be released to the general public. It was however accidentally sent out on a few EVOs from Hitec. For a while it was also available for public download on the Hitec-USA site. It has been removed, but if there is someone out there that needs it, again, post to this thread for assistance. It was probably all the better that that 1.26b was not released; on the EVO12 version, they discovered a rather serious (potentially) software bug.

When Hitec sent a list of additional items that were requested to be repaired, added or modified to MPX-Germany, they sent information that has been gathered here on the RCGroups.com Hitec "EVO Public Feedback" thread, information that had been gathered in other list forums and information directly reported to Hitec via phone or email.

If you look at the software revisions that have historically occured on the EVO revisions, you will not find minor patches that address only one small issue. Instead, you will find that each software version contained new features that would have required a significant amount of program coding (even if these improvements don't seem like big features.)

The receiver shift selection is a "problem" only here in the U.S.A. We could start an empirical debate... Futuba started it... Hitec mimicked it... other brands stayed positive shift, but the whole point is that everywhere else in the world does not have this issue to contend with - all of the receivers are the same shift.

While I agree that it would have been a savvy marketing maneuver to release a quick patch to address the US market's concerns about shift selectibility, this to date has not happened. I agree that it's distressing to have spent a sizeable about of money (and waiting time) to obtain an EVO, only to find out that some or all of your fleet is grounded. Someone offered a suggestion to Hitec-USA to offer discounted positive shift receivers in the meantime. I cannot say that this has or has not happened. I do know, however, that Hitec-USA's customer service is top notch and they go above the call of duty to keep their customers loyal and happy.

Some other issues such as the glaringly omitted selectable/multiple EXPO rates would undoubtedly require more programming and testing time. If MPX-Germany implements half of the suggestions that were gathered, the next version will be well worth the wait.

So, the question becomes, "Is it vaporware?" No. I do not think so. If you look at the current products that MPX is developing (the synth receiver, for example), you can imagine that with only a small R&D budget as well as a small staff, some things are just going to take some time. I have heard directly that the synth receiver should be in full production by June, by the way.

Now, what is the conversion rate between "Multiplex Time" and all standard time-keeping systems? It's an unknown, unless you know someone directly on the MPX-Germany team.

MPX AILERON SEQUENCING RULE

By Joedy Drulia

The **only** time that any sort of sequencing is mandated is when the aileron servos are assigned... they must fall in a L-R-L-R pattern in order to allow differential to work properly.

This is because we don't make specific "left aileron" or "right aileron" mixers. Aileron mixers are generic - they can be applied to any aileron servo, but how does the EVO know which is mixer is for the left or right aileron servo? It does this through the sequencing rule.

By Harry Curzon

You could have:

left ailevator
rudder
right aileron
throttle
left aileron
right ailevator

As long as when you read down the assignment list the words "left" and "right" alternate then it will work. It can start with the word "left" or with the word "right", although the manual says left-right only that is a hang-over from the profi3030 that did not have reversible aileron differential.

There are three catch-outs to beware of.
1. If you have made a rudder mixer with ail as an input, it won't be called left or right rudder! So you have to think through its position in the sequence.

2. If you have made a rudder mixer with ail as an input, the Evo counts it as next in the sequence. Since you now have made an odd number for the sequence then the rudder mixer must go last or first in the sequence, or if you have it somewhere in the sequnce then the sequence after it reverses.

For example
left ail
right tail
rudder (the Evo counts it as a left so the next item in the sequence will be a right)
right ail
left tail

3. Just because you are not using the ail input in a mixer in a particular model doesn't mean it doesn't count! Suppose you make an ailevator mixer or add ailerons into the existing elevator+ mixer. For your next model you assign the ele servos to that mixer but you don't want taileron effect so you leave the aileron input switched off, its values at zero. The Evo doesn't care what values it has, it sees the word aileron in the mixer and counts it. If you haven't taken account of that in your assigning, you may be very puzzled by why the flaperons can't be made to work properly!

SCANNER UNIT CLOSEUP

By Capgains

Ok so I was wrong, the scanner is actually bigger than a quarter, but not by much. The first one is the scanner module with the quarter, the second is the scanner mounted to the synth module... it's the one on the bottom, and this is how it sits when mounted on the main board.
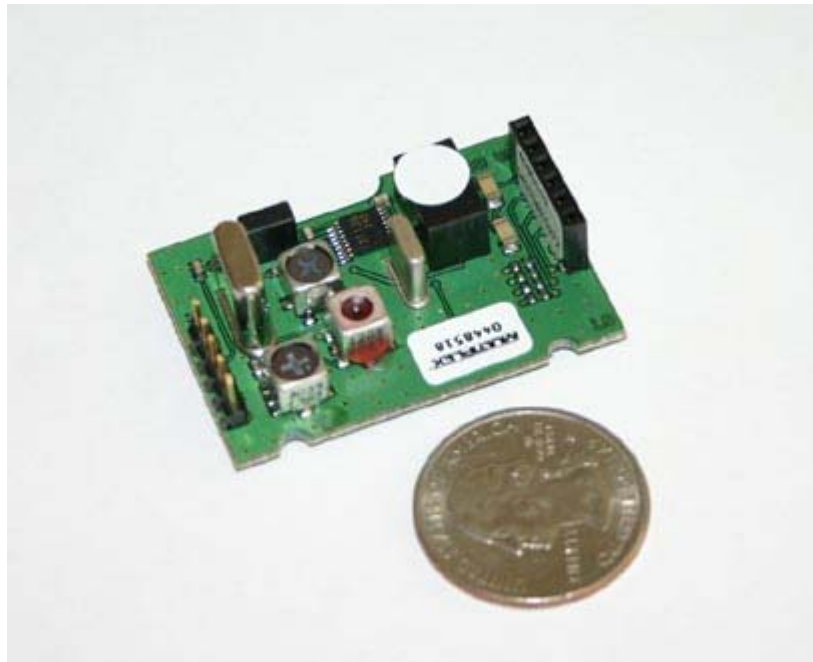
SCANNER MODULE USAGE

By Joedy Drulia

Here are some screenshots showing the EVO Scanner in action.

The Scanner module will work in either automatic mode or manual mode. In manual mode, it scans your chosen channel and the adjacent ones. In automatic mode, it continually scans all of the channels and places a bar graph to indicate working signals. The higher the bar (generally) means the greater the signal strength.

My chosen channel was 50. I turned on my Profi 4000 on with channel 27 broadcasting. The transmitters were about 30 feet apart with full aerials entended.

One screen shows a frequency scan.

Another shows my EVO turn on with channel 50 selected previously.

Another screen shows the result of changing the EVO to channel 27 (which was in conflict with the still broadcasting Profi 4000) and attempting to turn on the EVO.

With the scanner module installed, channel check is ALWAYS performed when turning on the EVO. In fact, the only way to "disable" the channel check feature is to remove the scanner module.

All in all, the EVO Scanner module is well worth the average 100 dollars retail price. If you can prevent yourself from just one shoot-down, it is money well spent.

You cannot use the scanner while in active flight. The scanner program is started by holding down the bottom digi-key button and powering on. Once scanning has been completed, you turn the EVO off and the back on normally.
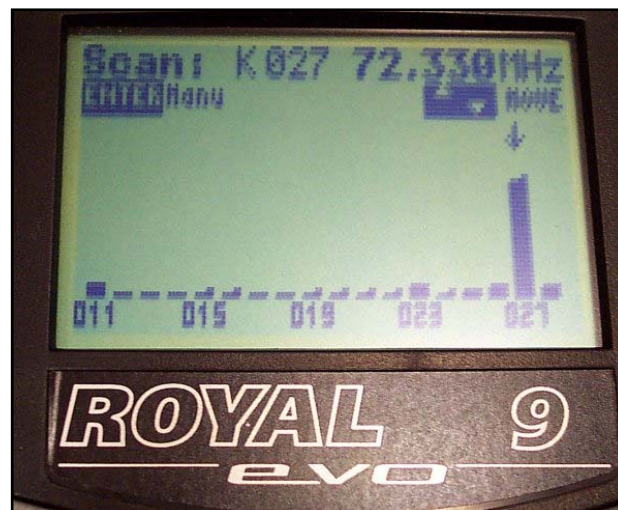
The scanner indicates that channel 27 is in use.
The scanner is currently in manual mode ("Manu").

If there is no RF detected on the chosen channel,
this message is displayed.

The scanner has detected RF present on the chosen channel
and asks If the pilots wants to utilize the scanner module.

LED CHARGING CABLE

By Raytor

Several times now my EVO12 charger was plugged in to the Tx all night only to find the battery still nearly run down in the AM because the charger plug was not plugged in fully to the back of the TX even though it felt tight. A little misalignment and that is what happens. The wall wart charger for the EVO needs an indicator light.

So I made one up I cut the + lead, the one with the white stripe, and stuck in series a 15 ohm 1/2 watt resistor. In parallel to that I put an small LED and covered with heat shrink. Now the light comes on when the charger plug is properly seated. If not, the light stays off. The voltage drop is insignificant and I get a fully charger pack every time now.

I guess Radio Shack still carries them - look for something with 20ma forward current avg, 100ma max - get a small one - it doesn't need to glow very brightly, just enough to let you know it's plugged in. Just about any should do though. If the LED doesn't light when plugged in, turn the LED around in the circuit.
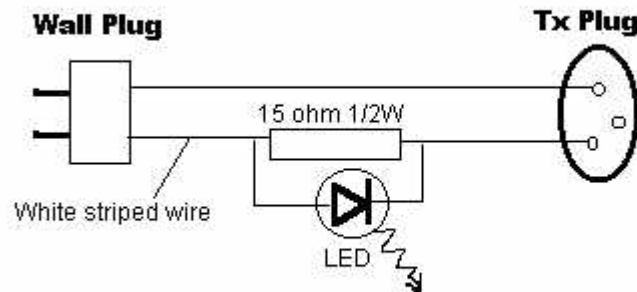
By Bick

I picked up a 15 ohm resistor and a green LED from my local Radio Shack. Resistors come in a pack of 5 for 99 cents and the LED was from a pack of two for 99 cents. I wired it as per Raytor's diagram, spliced it into the white wire on the wall wart, taped all to the side of the wall wart. And it works a treat. My little green led glows to confirm that it is charging. Couldn't slow charge before because I never knew if it was working but now--- great.

The LED was RS part #276-022 5 mm Green LED

Evo Charger indicator LED (per Raytor's post)

LED

Flat on LED

White Striped Wire

15 Ohm 1/2 watt Resistor

<To Charger

To Tx Chg Plug>
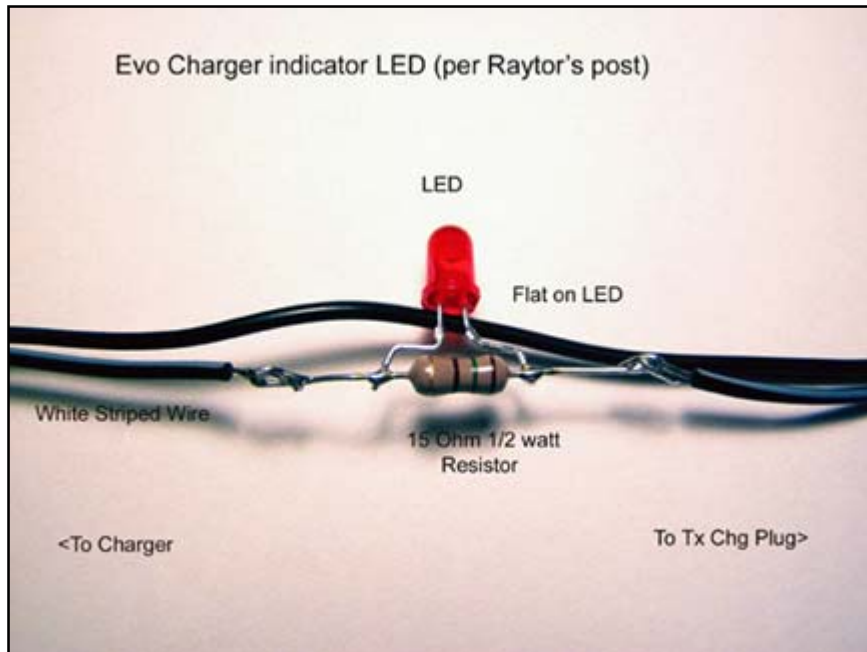
EVO TEMPLATE CONCEPT

By Joedy Drulia

Let's put the concept of templates into perspective by comparing it with the "Universal" base type in the Profi 4000. (The Profi does not have "templates". It has something called "base types" which are essentially the same thing as the EVO "templates".)

When programming the 4000 using the UNIVERSAL base type, the user has to enter just about every minute detail and step. Servomixes (akin to custom, user-created EVO mixers) must be set, servo assignments must be established, each widget action must be set, servo travel values must be adjusted... Initally programming a 4000 using the UNIVERSAL approach is a very labor intensive endeavor (bear with me here, HarryC) when compared with the EVO. (Note, there are techniques to speed this process up on the 4000, however.)

Multiplex recognized that a majority of their users really **don't** want all of the extra efforts associated with programming a plane from *complete* scratch. In fact, most of us really would just rather pick a plane type and then tweak the initial MPX settings to our preferences.

However, when MPX designed the EVO, they did not make a facility for programming a plane from the ground up with absolutely NO initial starting values (like the 4000's UNIVERSAL base type offers.) Instead, they offered a list of 6 fixed-wing and 2 heli predesigned templates that must be picked from in order to start programming on the EVO.

This is not really a limitation (as you have noted) since any of the parameters of the initial template settings can and should be changed. MPX advises us about templates in their cryptic manual on page 78 when it says:
Quote:

 The values defined by the template serve as starting points, and have to be adjusted to suit your model. All the settings and definitions can be altered at any time and changed in any way you wish.

Keep in mind that templates are not assignment lists. In fact when you see the phrase "assignment list", you should insert the phrase "WIDGET assignment list" in your ears! You can *assign* a servo, you can *assign* a template and you can *assign* values, but although the word "assign" is being used, a "WIDGET assignment list" is something very different.

While you can (and should) change the initial settings of any chosen template when programming your ship, you cannot save these changes permanently to the EVO in the form of a "TEMPLATE" file. You can try this : program a plane using the ACRO template, make some changes and then program another plane using the same ACRO template. All of the initial changes that you made on the first plane do not regress to the ACRO template settings and thus, the second plane starts out with the same initial configuration that the first plane did.

WIDGET assignment lists are different entities. There are five of them that you have access to. The first three are made for you courtesy of Multiplex. Their values can be changed, but the changes will be global and will affect all models already programmed using that specific WIDGET assignment list.

On page 90 of (again) the cryptic English EVO manual :

```
┌─────────────────────────────────────────────────────┐
│                                                     │
│        ! Note: Predefined WIDGET assignment lists   │
│                                                     │
│        3 of the 5 [WIDGET] assignment lists contain default │
│      assignment data. This can be changed at any time to suit │
│       your own requirements. However, please note that we    │
│        cannot guarantee that the template will work 100%     │
│          correctly if you change the standard mixers and     │
│         subsequently create a new model using a model        │
│      template which includes the assigned [user MODIFIED]    │
│                    "standard mixers".                        │
│                                                     │
└─────────────────────────────────────────────────────┘
```

This also applies to changes to the first three WIDGET assignment lists.

Basically, you can modify the first three WIDGET assignment list as you want and you can even modify the included default mixers made by MPX, but if you modify these settings, the manual will no longer reflect the changes that you may make and thus, your EVO will not resemble the manual as it is printed.

This is not a big deal if you understand the EVO well enough, but to an unsuspecting EVO pilot attempting to program their second plane, having modified either the first three WIDGET assignment lists or any of the pre-defined MPX mixers - suddenly the EVO manual isn't going to reflect their EVO screens and isn't going to help a whole lot.

So, the bottom line is:

- You **MUST** pick a template when programming your plane. There's no way around this.
- You can change the existing WIDGET assignment lists, but you are better served by using one of the two spare WIDGET assignment list, "4..." and "5..." if you want to experiment.
- Make new mixers if you think that you want to do some experimenting and leave the original MPX mixers alone until you are confident in your understanding of the EVO programming.

EVO ASSIGNMENT LISTS

By Joedy Drulia

Let's suppose for the sake of clarification, that the EVO only had the ability to configure the widgets in one way

So, you sit down and program all of the widgets to fly your parkflyers in a way that best suits your flying style and preferences.

Now since this is a hypothetical situation, suppose that you are wealthy enough to purchase several additional EVO radios.

Since in this scenario, each EVO can only be configured in one way, the second EVO will be configured to fly your sailplanes.

The third EVO will be configured to fly your pattern planes.

The fourth EVO will be configured to fly your helicopters.

The fifth EVO will be configured to fly your electric RES gliders.

Ok, here we are.... five different EVOs (hopefully, wisely labeled as to which EVO is configured for which plane type) are in front of you.

If you pick up a sailplane and grab the sailplane-configured EVO and go out to fly in your custom airfield (remember, you're rich in this scenario), there won't be a problem; all of the widgets will operate as you anticipate and expect them to.

But suppose that you accidentally take the wrong EVO. Suppose that you accidentally take the parkflyer-configured EVO when you go out again to fly your sailplane.

The parkflyer-configured EVO surely would have been configured with a throttle widget and perhaps a throttle-cut function as well. It may or may not have been configured with brake widget and it may or may not have been configured with a landing gear widget - this all depends on what choices you have made when you were programming the parkflyer-configured EVO.

Nevertheless, when you attempt to use the parkflyer-configured EVO with the sailplane, what happens when you engage the throttle widget? The sailplane doesn't even have a motor, so while the EVO is sending out invisible commands instructing the throttle to engage, nothing appears to move on the sailplane. Some unexpected things could occur when you attempt to use the parkflyer-configured EVO with the sailplane, however. Perhaps widget "N" (which is supposed to enable the flight phase change on the parkflyer plane) suddenly causes the little sailplane pilot figurine to be violently propelled into the air as a result of enabling his miniature cockpit ejection seat? (Remember, we're rich - we can afford to "save" our pilot in such an extravagant fashion.)

The whole point to this farcical narrative is that EVO assignment lists are an analogy to those five separate, specially-configured EVO radios. While you can make modifications to the widgets of any one of these example radios, any and all changes that you make **may** affect other planes when you go to use a specific customized, configured EVO radio for an incorrect plane type. Some of the effects may not be of significance (such as enabling the throttle widget on the sailplane) and other

effects may be very significant (ejecting our poor sailplane pilot who, incidentally, got sucked up into a thermal and has not been found since.)

Remember, changes to these five radios did not occur within the plane programming setups. They occurred when the radios were configured. In a sense, because each of our five hypothetical EVOs in this scenario could only be configured in one way, it wasn't a fault of the plane when an incorrectly configured EVO was utilized for the wrong plane type; it was the fault of the pilot.

So, in a sense, programming these hypothetical EVOs is something of a "Global" endeavor. You can program these EVOs any way that you want, but the anticipated response of a plane may or may not be the expected result depending on the specific EVO configuration and the plane chosen for flight.

Now, here's the great news! You don't need to purchase 5 different EVOs in order to take advantage of the possibility of offering 5 different sets of widget configurations - just use assignment lists! Wow, five specially configured EVO radios for the price of one and, you only have to carry around one transmitter! Just think of all of the extra work that you will save your butler. He will surely relish your wise choice of R/C transmitter.

Hopefully, this analogy will help with the concept of EVO assignment lists.

Multiplex EVO Spacebox - A mini review

By Joedy Drulia

It took a while, but my new EVO Spacebox finally arrived. I had also ordered the weather shield that snaps onto the Spacebox.

The photos are self-explanatory so I will offer some points that may not appear so readily in the photos.

The Spacebox is made of plastic, but has a faux carbon-fiber pattern. From a short distance, it does, in fact, look strikingly like real carbon fiber.

The palm rests fold up and can be pressed down into the Spacebox cavity if you want full and open access to the storage compartments. In one of the photos, one of the palm rest is open and the other is closed.

Unlike the EVO insert-style tray, the Spacebox allows the EVO to lock firmly in place. You can turn the Spacebox upside down and the EVO will not come out.

With the EVO inserted and locked into place, access to the charging/pupil jack on the back is easily made.

Access to the side widgets is easy; there are wells along the side that allow for this.

The weather shield snaps into place. It takes about 15 seconds to install or remove. The elongated buttons around the side of the weather shield actually spin around to facilitate unsnapping from the Spacebox tray. Since the weather shield is plastic, I imagine that there is some type of lifecycle for the parts, but I cannot imagine it failing for several years with proper installing and removal.

Access to the side buttons is easy although it may not appear so from the photographs.

The EVO Spacebox (unlike the Profi Spacebox) can be easily folded down without the need of any tools. The EVO Spacebox once assembled, can be broken down and even stored back in the retail box that it arrives in.

The weather shield is easily installed without tools and snaps into place. The antenna seal in the front of the weather shield can rotate to accommodate the various antenna swivel possibilities while still maintaining a tight water seal.

Balance feels a little "downward", but is not a hindrance.

My understanding is that the EVO Spaceboxes will still be considered a special order by Hitec-USA, but if there is sufficient demand for them, Hitec-USA will order them in sufficient quantity to be considered a stock item.

Personally, I really like the Spacebox. If you're a finger-tip flying, you might still be able to use the tray. For cold-weather soaring on the slope in the winter, the Spacebox will definitely make this type of flying more comfortable.

EVO installed and left palm rest cover opened.

Bottom access to the trainer cable port.

Weather shield installed using the side snap buttons.

The Spacebox will fold down flat without the need for any tools.