

# FLY-DREAM

## 2.4 GHz Transmitter Module & Receiver

by Bob Hickman

Those of you who read my Electric Flight column will know that I have been looking for some excellent budget-priced 2.4 GHz radio equipment for a while. With Fly-Dream, I think that I have found it.

This is quite a long review but I hope that you will find lots of useful information within it.



*Fly-Dream transmitter module.*



### Why 2.4GHz?

If you have had your head in the sand and haven't kept abreast with what's happening with radio equipment, let me summarize the reasons why you might chose to change to 2.4GHz radio gear rather than stick with the 36MHz equipment that we have been using for years.

On 36MHz you might need to take turns to fly at your club because others share "your" frequency. This isn't an issue on 2.4GHz. There are no separate channels assigned to transmitters and many 2.4GHz sets can be operated simultaneously without risk of anyone being "shot down" by somebody else turning on their transmitter on the same frequency. When park flying, this is particularly important as there is usually no formal frequency control.

2.4GHz equipment uses spread spectrum technology. The signal is not transmitted on a single frequency but distributed over many different frequencies within one or more bands in the rather wide 2.4GHz spectrum. If the equipment is well designed this means that the link between the transmitter and the receiver should be completely free from interference from other transmitters.

The 2.4GHz receiver antennas are extremely short and this makes the gear very easy to install, particularly in small models. A further advantage, particularly in electric models, is that 2.4 receivers should be immune to interference from the electrical noise generated by motors and ESCs.

### Why Buy A Transmitter Module?

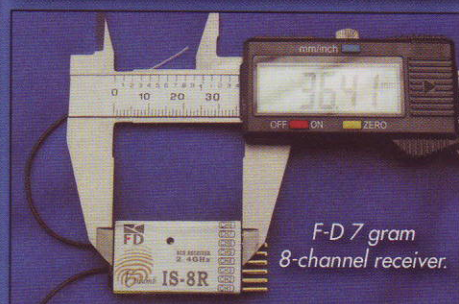
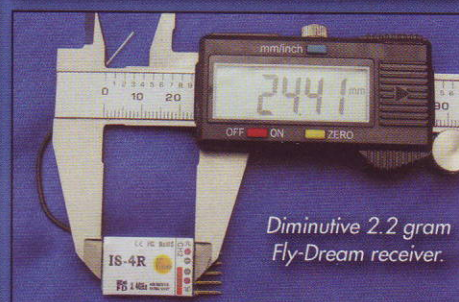
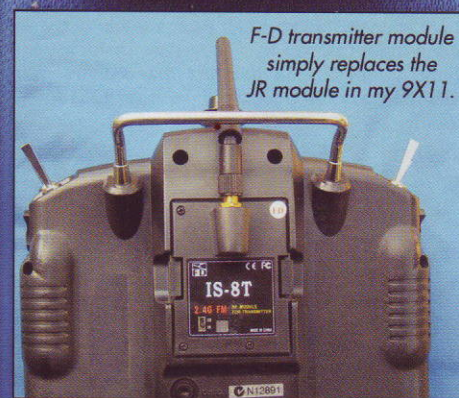
If you are going to be buying a new transmitter because you are new to the hobby or because you need an upgrade then you might consider buying a full set of 2.4GHz equipment. If you are like me and have one or more good transmitters then replacing the RF module in your transmitter is an excellent option.

### Budget 2.4GHz Radios

I have dozens of 36MHz receivers so the expense of replacing them with "big brand" 2.4GHz radio gear is a bit daunting. I've been waiting for some good, cheaper equipment to become available. There are now a number of brands of competitively priced 2.4GHz radios (all, I suspect of Chinese origin) now available. Unfortunately many are seriously flawed. Some of the cheapest 2.4 sets transmit on only one band so are not as interference free as could be achieved with better use of 2.4GHz technology. Others have "brown out" problems where a relatively small drop in voltage from the receiver battery or the BEC will cause the receiver to stop working. Some take quite a while to recover from brown-out. Many take a long time to establish or re-establish a link between the transmitter and the receiver.

### The Fly-Dream Transmitter Modules

Fly-Dream make transmitter modules to fit straight into a number RF module equipped transmitters including Futaba and JR. Of course, you need to buy the module that fits your brand of transmitter. To convert your transmitter to 2.4GHz just pull the 36MHz RF module out of the back and plug in the Fly-Dream 2.4GHz module. Screw in the Fly-Dream antenna and your transmitter conversion is complete. Non-module transmitters can also be converted to 2.4GHz by using the Fly-Dream DIY module. This apparently needs to be fitted internally and requires a little bit of soldering. The DIY module was not tested for this review. The Fly-Dream modules apparently transmit on three bands within the 2.4GHz spectrum. This should give excellent immunity from interference. The transmitter modules draw only 100 mA, so your transmitter will last a single charge than it did with its 36MHz RF module.



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## Compatibility

Pretty much all the different brands of 2.4 GHz radio gear use there own coding and transmission conventions, so one brand won't talk to another. You can only use Futaba receivers with Futaba transmitter modules, JR/Spectrum with JR/Spectrum etc. Similarly, the Fly Dream receivers will only respond to Fly Dream transmitter modules. If you want to use the very attractively priced Fly dream receivers you must fit a Fly Dream module to your transmitter.

## Binding

All 2.4GHz RC systems require that the transmitter and receiver be "bound". The binding procedure ensures that your receiver will respond only to your transmitter. Some brands require you to bind all of your receivers to your transmitter in the one binding session. While this is easily done with the Fly Dream equipment it is definitely not required. You can bind additional receivers to your transmitter whenever you like without undoing previous receiver bindings. Binding is achieved by moving a switch on the back of the Fly Dream Tx module from "use" to "code" and following a very simple procedure that involves a pressing a button on the 8-channel receiver. The 4-channel receiver is bound inserting and removing a special "code ring" plug. The processes are simple, take only a few seconds and only need to be done once.

## Failsafe

Yes, the Fly Dream receivers have a failsafe system. It will enable you to program the controls to take up any position that you choose in the unlikely event of a loss of signal. This is a major safety feature that is missing from many competitors' radios. Naturally, you will want to program the receiver to pull the throttle back to minimize the danger that the out of control aircraft might pose. I like to set the other controls for a spin. This ensures that the aircraft does not fly off to crash in some distant and potentially dangerous location. If the loss of signal is only temporary, control will be returned when a signal is detected again. The Fly Dream failsafe is quick and easy to set and works brilliantly.

## Testing, Testing

OK, it's time for the mandatory cautioning. Don't try these tests at home (or at your flying field)! When I am in reviewing mode I do some extremely silly things. Actually, my wife tells me that it's not just when I'm reviewing.

## Brownout

Brown-out is not a problem with the Fly Dream receivers. Both the receivers worked at voltages below 2.3 volts. Using a variable supply, I steadily reduced the voltage. The servos (HXT 900s) stopped working at about 3.0 volts long before the receivers eventually dropped out (at somewhere around 2.2 volts). When the voltage was restored, recovery of control took about one second. Don't worry about the receiver stopping at low voltages. You won't know because the servos will have already failed.

There is an additional "voltage protector" capacitor provided that can be plugged into a

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## Range

The claimed ground range for the 4-channel receiver is greater than 450m and the 8-channel is credited with 1200m. I tested the 4 channel receiver to over 400m with no indication of signal loss. This was as far as I could walk before going over the brow of a hill. With the transmitter antenna completely removed the 4-channel and 8-channel receivers gave ranges of 45m and 110m respectively. This means that the 1200m ground range claimed for the 8-channel receiver seems entirely believable. In-air range will, of course, be much greater. Incidentally, many transmitters don't like running without an antenna and can be damaged by doing this for very long. I wouldn't recommend running the module for more than a few minutes without an antenna. In the interest of testing its ruggedness, I did run it for half and hour continuously without an antenna. It survived just fine. I don't recommend that you try this yourself.

## Servo Resolution

Unlike with some other brands of radio, the servos connected to the Fly Dream receivers moved smoothly and precisely with no evidence of discrete "stepping". Apparently there are actually 1024 steps, so it's not surprising that they are undetectable.

## Acquisition Time

After the transmitter and then the receiver are turned on there is a delay of about one second while the receiver acquires the transmitter. This compares very favorably with other radios. My Corona receivers take about 8 seconds to establish a link with their transmitter module. If signal is lost the receiver holds the last servo position for about one second then goes into failsafe. When a good signal is present again the receiver takes about half a second to reacquire the transmitter. This is all excellent. Incidentally, for this purpose, loss of signal cannot be simulated by turning the transmitter off and on. See my Electric Flight column in this edition for more explanation.

## In The Air

This is where it really counts. I conducted flight trials at the Electric Flight Secret Test Site, trying both receivers in a 1.4 m boxy electric cabin model that I use in scramble competitions and for radio testing. The receivers worked perfectly in every respect. With the shorter range 4-channel receiver installed, I climbed the model to great altitude a little upwind and then turned the transmitter off. After a second the failsafe kicked in. The motor cut and the model entered its pre-programmed spin, rapidly losing height and drifting back towards the centre of the field as it came down. After the transmitter was turned on again control was quickly re-established.

Emboldened by the successful failsafe test, I attempted to climb the model out of range. Again I flew a little upwind so that the model would spin back down towards me when failsafe kicked in as it flew it out of range. You won't try this in a public place will you? I found it impossible to fly the model out of range. Even with the model looking remarkable small perfect control was maintained. This was with the shorter range, 4-channel receiver installed. The tests were repeated with the 8-channel receiver which also performed flawlessly.

I have subsequently flown both receivers with many other 2.4GHz and 36MHz sets in

operation. The equipment has performed flawlessly at all times and in all the different situations in which I have been able to fly it.

## Accreditation

The importer assures me that he is working to obtain, where required, ACMA c-tick accreditation is attained for this new 2.4GHz radio equipment. At the time of writing he is consulting with the MAAA to ensure that you are covered by their insurance if you fly with Fly Dream equipment.

## Conclusion

I'm really impressed with the Fly Dream transmitter module and receivers. I would have liked the transmitter module to have a range reducing switch for range-testing but removing the antenna seems to work fine. The equipment has performed perfectly in spite of my deliberate abuse. I have never tried reversing the battery plug to see if I could destroy the receiver. I couldn't. The instructions are written in clear English and easy to follow. I can't vouch that you will never experience interference with this equipment but I certainly haven't been able to detect any in a variety of situations, even when I ran an unsupported brushed motor next to the receiver antennas. This would have driven my best 36MHz gear wild. Best of all, the Fly Dream equipment is very reasonably priced. I like it. It has become my preferred 2.4GHz equipment and I will purchase more.

The Fly Dream transmitter module and receivers were supplied by FLY-RC Australia [www.fly-rc.com.au](http://www.fly-rc.com.au).



## Update to 2.4GHz ...without breaking the bank

### FlyDream 2.4GHz Radio Gear

Transmitter modules - C-Tick compliant  
User set Failsafe on all receivers  
Small, light 4, 6, 8 channel receivers  
4 Channel receiver weighs just 2.2g!

### Affordable (Price inc GST)

#### Transmitter modules

JR/Futaba \$40.00

#### Receivers

IS8R 8 Channel \$40.00

IS6R 6 Channel \$38.00

IS4R 4 Channel \$36.00

## FLY-RC Australia

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