Excellence in Compliance Testing

Certification Exhibit

FCC ID: ONTJETIR5US
IC: 10491A-JETIR5US

FCC Rule Part: 15.247
IC Radio Standards Specification: RSS-210

ACS Project: 13-2001

Manufacturer: Esprit Model
Models: JETIR5LUS, JETIR5iUS, JETIR4LUS, JETIR4iUS

User Manual

The **JETI DUPLEX EX** series of receivers are designated to operate with the JETI **DUPLEX EX** transmitters using the 2.4GHz band. Thanks to the fully digital and bidirectional communication between the transmitter and receiver the Duplex EX system offers many new features and concepts for the remote control pilot.
An additional R5 auxiliary receiver can be used to complement the **R9, R11, R14** and **R18** receivers. The **DUPLEX EX** transmitters and receivers take advantage of the latest modern technologies, precise manufacturing and exhaustive test methods to provide a system that gives you maximum safety and reliability. The **DUPLEX EX** system provides extended capabilities by allowing the use of telemetry data transfer to give unparalleled insight into the actual conditions of your model during flight. The **JETIBOX PROFI** allows you to view telemetry data either in parallel to the Jeti Transmitters or as a stand-alone system when used with a Jeti receiver. You can use the **FlightMonitor** program to view and analyze your recorded telemetry data on your PC.
Except for the larger **R14** and **R18**, any of the US Jeti receivers can be used as auxiliary receivers to compliment any other US Duplex EX receivers. Output for the US receivers R5 through R11 can also be set to be either traditional servo output or single-line PPM output. This is useful when the receivers are used as auxiliary receivers or for use with other RC equipment where PPM input is desired.

Power Supply:
You can supply power (5-8.4V) to Duplex EX receivers through the use of NiCad batteries, stabilized voltage supplied by the BEC from your motor controller or by using Li-xx cells and a voltage regulator like the MAX BEC. Make sure that your selected power supply can supply enough current to power all of the servos and the receiver in your aircraft. If all servo connectors in your receiver are being used, you can use a Y- cable to supply power to your receiver. You can supply power to your receiver through any receiver port **EXCEPT** for the port marked “Ext”. This output is used only for telemetry sensors or expanders. The **EPC** (External Power Connector) R11, R14 and R18 receivers are equipped with a separate Multiplex power supply connector. We recommend that you use this connector for these receivers and your servo power supply because of its high current capability and reliability.

Operation:
Operation of the DUPLEX system is very similar to a traditional FM system. We recommend that you switch on the transmitter first and then the receiver. The transmitter confirms the on state of the receiver sounding a short beep. When switching off the system we recommend that you switch off the receiver first and then the transmitter.

Installation:
Wrap the receiver with soft foam and position it as far as possible away from potential interference sources (servos, electric motors, ESCs). Orient the active ends of the antennas 90° from each other and as far away as possible from each other. The minimum bending radius of the antenna cables should not be smaller than 1 cm (.39”). The active antenna parts must remain straight and should be kept as far as possible away from metal or carbon fiber parts. If your model’s fuselage contains large amounts of carbon fiber then the active antenna parts should be mounted through the fuselage observing the 90° orientation.

Binding:
Before you can use a new receiver with a transmitter or JetiBox Profi It must be bound to your transmitter or JetiBox Profi. Because the data stream between the receiver and your transmitter or JetiBox Profi is a fully digital communication, the receiver’s unique ID must be recorded into the device. To wirelessly bind a receiver to your transmitter simply insert the bind plug into the Ext slot, supply power to the receiver and then switch your transmitter on. Within a few seconds your transmitter will automatically “see” the new receiver and ask you to confirm its use.
Once the receiver is bound, remove the bind plug from the receiver and disconnect the power supply. Your transmitter will continue to beep as a warning if you forget to remove the bind plug once the receiver is bound. It is possible to bind any number of receivers to one transmitter. The receivers, however, can only be bound to one transmitter at a time.

Telemetry Data Transfer in Real Time:
All of the receivers will automatically transfer the actual system voltage supplied to the receiver without any additional telemetry sensors. You can either connect a single telemetry sensor directly to the receiver’s Ext port or you can connect several sensors by using

one or more of the E4 EX expanders connected to the receiver Ext port.

Bidirectional Signal Loss Alert:
An alarm will sound if you lose the bidirectional telemetry data communication between your transmitter and receiver. This alarm simply means that at the given instant there is no data available from the telemetry sensors or other equipment connected to the receiver input (Ext. port). **Note:** In this situation you still have full control of your model as the control signal is stronger than the telemetry signal. If this alarm sounds, you should reduce your aircraft's distance from the transmitter.

Communication with the DUPLEX Receiver with aid of the JETIBOX:
The JETIBOX can be connected to the receiver in two ways:
1. Direct connection between the JETIBOX and the receiver
Plug one end of the servo type connector from the interconnecting cable (enclosed in the JETIBOX package) into the receptacle marked Impuls + - (found on the right side of the JETIBOX) and plug the other end into the receiver port marked "Ext." Next, connect a power supply to the receiver (see power supply) or connect a power supply port of the JETIBOX.
NOTE: DO NOT CONNECT POWER TO BOTH DEVICES AT THE SAME TIME.

2. Wireless connection between either the JETIBOX Profi or JETIBOX emulator in your Jeti transmitter and the receiver
To communicate with the JETIBOX emulator in your transmitter, simply turn on the transmitter and receiver then go to: **Menu >System >Jetibox**.
The wireless connection with a receiver is only possible when the receiver is in Normal mode. If you change the receiver from Normal mode to Clone mode, the receiver can no longer be "seen" wirelessly and all wireless communication will stop. The receiver must be connected directly (wired connection) to a JETIBOX in order to be changed back to normal mode.
It is possible to check or change any receiver parameters at any time, even while your model is in operation, so you must do so very carefully so that you do not accidentally make a change which results in a crash. As always, it is advised to remove the propeller or rotor blades during any setup changes as added protection against any damage or injury which could be caused by an unintended motor start.

Overview of Receiver Data Items

Once in the Jetibox emulator the Tx screen is displayed, press the right arrow button to go to the Rx info screen. Then press the down arrow button to go the Rx introductory screen. The introductory screen displays the type of receiver. By pushing the right arrow button, more detailed receiver and transmitter data of can be displayed.

Add Profi info

Direct connection to a Jetibox will display the introductory screen.

Pairing (binding): pressing the up arrow button starts the pairing (binding) of the receiver with the transmitter. This is simply a legacy JETIBOX function. This option is not valid for wireless communication. Pairing of the receiver with this method can only be performed when a JETIBOX is directly connected to the receiver.

RX/TX: The Item RX item shows the unit production number of the receiver. The TX item shows the unit production number of the transmitter, to which the receiver has been paired.

Rx Firmware: This screen shows the firmware version of the bound receiver.

Rx Diag: Item A1 or A2 shows which antenna the receiver is using at the moment. Item Kx displays the number of transmitted channels (this number depends on the transmitter's capabilities).

By pressing the arrow down button you arrive at the D line of basic mode selections, here is where you may select to display the measured values (Measure) or the setup of the receiver (Main setting, Channel set, Out Pin Set, Auto Set).

Measure: selects the display for the measured data showing the maximum, minimum and actual receiver voltages.

-U Min / UAct / UMax : the receiver monitors its supply voltage and indicates limit values and extremes which occurred during operation; at the same time it also shows the actual receiver voltage. For receivers directly connected to a Jetibox: Without switching on the paired transmitter, the values MAX and MIN will not change; only the value of the actual voltage "Uact" will be updated. To delete the MAX and MIN values, press the left arrow button and the right arrow button simultaneously.

Main setting: Basic setup, here you may adjust the general properties of your receiver which are common to all output channels.

- Signal Fault Delay: specifies the deadline after which the receiver outputs change due to signal loss to
preadjusted positions of the particular outputs or after which they become switched off (due to setup of Signal Fault
in the menu Out Pin Set).
- Volt act/alarm: the first item shows the actual receiver supply voltage, the second value serves for the setup of
the alert decision threshold. As soon as during operation the actual voltage decreases below the set threshold, the
transmitter will announce this situation by an acoustic tone.
- Output Period: setup of the output signal period (standard setup 20ms), analog servos respond faster with lower
values (shorter response time) and consume more current. If the value is set too low some servos may chatter. The
output period may also be synchronized with the transmitter - Output Period - By Transmitter.
-RX mode: this setup switches the receiver to monitoring mode (Clone). This mode should only be used in
applications with two or more receivers, working simultaneously in a model in connection with a single transmitter
module. One receiver should work as master receiver (Normal) and the others in monitoring mode (Clone). The mode
change (Normal / Clone) must be carried out only with the JETIBOX connected directly to the receiver.Telemetric
sensors can be operated with a receiver in Normal mode only.
-PPM Output mode (applicable to RSat receivers only) Setup of the satellite receiver mode
-Computed: the signals received from the transmitter can be processed furtheron in the receiver and
its menus Channel setand Out Pin Set(mixers, programmable channel outputs a.s.o.)
-Direct: signals received from the transmitter are notfurtheron processed in the receiver, they are
generated without any change at the output of the sallite receiver in form of PPM signals
-Number of PPM Output Pulses: (valid for RSat and RMK) Setup of PPM pulse number at the Rsat receiver. If there
are transmitted less channels than the set number of PPM pulses at the receiver, then the remaining pulses will be
replaced by one pulse with a length corresponding to the pulse length adjusted in the FailSafe menu of the given
channel. In the reverse case the number of output pulses will be reduced to the default setting number.

Receivers EN

-Signal fault: (valid for RSat and RMK) behaviour setup of the satellite receiver in case of signal loss.
- Individual set: the behaviour of the output in case of a signal loss will be conducted by the setup of particulat
channels in the menu Measurement/Setup – Setup of the output, where the behaviour of particular output channels
in case of signal loss may be set – to repeating of the last deviation or to FailSafe.
in case of signal loss, - Output switching off: after the elapse of the set time in the menu FailSafe Retard there
will exist no more PPM pulse generation at the receiver output.
- Menu display: allows menu setup in full or reduced shape. In the reduced menu display are for the sake of setup
simplification some of the selected items not shown. But all receiver setups are taken into account, even the given
item is not shown in the reduced menu.
Channel set: parameter setup of (received) individual input channels CH
-Set Input Channel: selection of the input channel which has to be set up, value A represents the actual throw of
the selected input channel.
-Set Center: neutral position setup of the input channel, this parameter is important for further processing of
mixers, reverse, gain etc.
-Mix CHa and CHb: makes mixing of the selected channel with another channel feasible.
-Mix Relation: setup of the mixing ratio, the mixed channel always features a ratio of
50 %. For instance, mixing of CHa and CHb with a ratio of 100% = 50% CHa and 50% CHb, a ratio of 50% = 50% CHa
and 25% CHb, a ratio of 200% = 50% CHa and 100% CHb.
-Mix Sign: the first sign of the mixed channel specifies whether the channels are subtracted or added
Out Pin Set: Relation of functions to individual output channels (pins) Y of the receiver.
-Set Output Pin: Selection of the output channel whose setup you want to show or change.
It is possible to add to a R10, R12, R14, R18 Duplex receiver two satellite receivers or further R10, R12, R14, R18
receivers. In case of the Duplex R18 (R12) receiver it is possible to switch output Y17 (Y12) to the function Sat2 and
output Y18 to Sat1. The output channel marked Sat 2 may be set to receiving mode or to generation of PPM signals.

This function is of use in case of a bidirectional connection of several receivers or satellite receivers. The output channel
marked Sat 1 can be set to PPM signal mode only.
-Set mode SAT: on the Duplex receivers R9,R10, R11EPC, R12EPC, R14, R18 the outputs SAT1 and SAT2 can be
affiliated with following functions
- PPM Off: the particular output is neither generating nor receiving a PPM signal
- PPM Input: the particular input is expecting a PPM signal of the connected receiver
- PPM Output: the receiver will generate PPM signals on output SAT2
-Set mode SAT: on the Duplex receivers R11, R12, R18 the outputs SAT1 and SAT2 can be affiliated with following
functions
- CH xx: the PPM signal on the particular output will neither be generated nor received. The output has the same
function like the outputs Y1-Y16.
- PPM Input: the particular input is expecting a PPM signal of the connected receiver
- PPM Output: the receiver will generate PPM signals on the output SAT2

Receivers EN

- PPM Alarm Code: if one of the outputs SAT1/2 is set to PPM input mode, an acoustic signal can be set up which
reports absence of the connected signal. By means of loading a morsealphabet character tones are set, which
acoustically announce the absence of the PPM signal at the particular receiver input. These acoustic signals are
generated by the transmitter module.
function -Set Input Channel: affiliation to particular outputs, any input channel or its mixing product which
may be specified in the menu Channel Set can be set up.
-Reverse A: makes throw reverse at the output in the half plane A possible, the half planes are subdivided
according to the neutral position setup (Channel set - Set Center)
-Reverse B: makes throw reverse at the output in the half plane B possible
-Gain A: Amplification of the output throw in half plane A (100% - without changes)
-Gain B: Amplification of the output throw in half plane B (100% - without changes)
-Signal Fault: setup of the receiver behaviour in case of signal loss, repeat- repetition of the last valid throw

positions, out off – output switched off, FailSafe – transition to preset throw positions of individual outputs which
may be set up in the FailSafe menu.
-FailSafe: throw setup of a selected output in case of signal loss
-Delay: delay of servo speed (at the output) in case of a change at the input, the entry time corresponds with
the transit time within the output range between 1ms to 2ms which, for instance, may be suitable for
retracting a landing gear
-Curve: Setup of a channel output curve
-ATV High Limit: restriction (reduction) of the maximum throw of a particular output (half plane B)
-ATV Low Limit: restriction (reduction) of the maximum throw of a particular output (half plane A)
-Output Group: setup of a particular output for a selected group of output pulses, which are generated by the
receiver at the same time . See page 56.
Auto Set: complete receiver preset for predefined functions. After selection of the desired function the receiver
setup is executed by simultaneous pressing of the left and right JETIBOX keys for about 3 seconds.
-Normal: basic setup, mixers switched off, individual input channels are affiliated to corresponding outputs, i. e.
input CH1 is affiliated to output Y1 etc.
-MixCH1&CH2 Elevon: affiliates the mix of the received CH1 and CH2 to the output channels Y1 and Y2
-MixCH2&CH4 V-Tail: affiliates the mix of the received CH2 and CH4 to the output channels Y2 and Y4

For receivers we grant a warranty of 24 months from the day of purchase under the assumption
that they have been operated in conformity with these instructions at recommended voltages
and that they were not damaged mechanically. Warranty and post warranty service is provided
by the manufacturer.

“This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body. This transmitter must not

be co-located or operating in conjunction with any other antenna or transmitter."

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS.
(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE, AND (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED, INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

Warning: Changes or modifications to this device not expressly approved by Esprit Model/Jeti USA could void the user's authority to operate the equipment.

"NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- **Consult the dealer or an experienced radio/TV technician for help."**

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

We wish you successful flying with the products of:
JETI model s.r.o. Příbor, www.jetimodel.com