

## SYSTEM DESCRIPTION

### Power source

TX: DC 6V (supplied from 1.5V\*4cell "AA" alkaline battery)

RX: DC 6V (supplied from 1.5V\*4cell "AA" alkaline battery)

### System

The 5chTX consists of two systems: RF system, a single-chip 2.4GHz radio modem including an integrated microcontroller, and power amplifier, and RX system, the same single-chip as RF system, and connector for servo motor.

The RF system microcontroller forms data packets and controls all aspects of the RF ASIC, including frequency selection and error detection / correction encoding.

This RF system uses the high-precision crystal oscillator connected to the radio ASIC to generate precise packet timing at approximate 41 packets per second.

The RF system has associated with it a unique 32-bit ID number, or GUID, assigned at manufacturing. This ID number is used in the frequency selection algorithm and to initialize various fields in the data packets to allow a receiver to identify the desired transmitter.

The associated receiver uses the same RF ASIC along with a microcontroller to receive control packet from the transmitter and generate PWM pulses to the connected servos.

The receiver stores the GUID of the desired transmitter, and will only connect to this transmitter. The user can clear this stored GUID using the button on the receiver.

The receiver will then connect to the first available transmitter it hears, storing the transmitter's GUID in non-volatile memory. A transmitter is only available for new connections for several seconds after the button pressed, to reduce the chances of connecting to another, undesired transmitter operating in the same area. This process is termed binding.

Once bound, the receiver will scan for the saved transmitter GUID each time it is powered up, or any time no packets have been received for an extended period of time.

As the link is strictly one-way, the transmitter always behaves in the same fashion, sending control data approximate 41 times per second with link-establishment information included on a subset of the channels. For the several seconds of binding operation the link establishment data indicates that an unbound may connect.