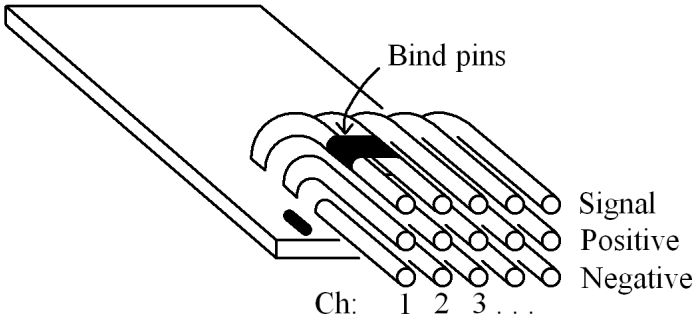
DT 2.4GHz RECEIVER INSTRUCTIONS
Rx22/27/71/72/73 (v2.6)



Receiver should be considered 'experimental' and used at own risk.
Protect from vibration e.g. with velcro or foam mounting.
Operating temperatures are 0 to 70°C.
Receivers with two aerials perform best when they are at 90° to each other.

A battery may be connected with correct orientation to any +/- pins (3.4-10v).
The receiver will work with DSM2-capable transmitters (surface and air).
Bind twice, once to create the link and again to save correct failsafe positions.
If throttle failsafe is set correctly, the Tx/Rx may be switched on/off in any order.

LED:
Led ON = perfect reception (real-time indicator).
Led OFF = not perfect (useful for range tests/interference indicator).
1 flash = scanning (~2sec between flashes; wrong model if never stops).
2 flash = brownout (receiver voltage went too low; check battery/servo load).
3 flash = timeouts (accumulation of short signal failures; should not see often).
4 flash = failsafe (signal lost for >1s eg: Tx switched off before Rx).
5 flash = watchdog (program recovery mechanism; should never happen).

FAILSAFE:
Servos go to failsafe positions on startup (except Ch1 to avoid confusing ESCs)
- Sequential PPM and Serial signals are not generated until a signal is acquired.
Servos 'hold' on short signal losses (<1s) (including Ch1 & SeqPPM/Serial).
Servos go to failsafe positions after 1s sustained signal loss (incl. Ch1 & SeqPPM).

BINDING (and memorising servo failsafe positions)
1. Put bind plug on bind pins (signal pins 1 & 2) and switch Rx on (=Bind mode)
   - fast Led flash
2. Hold Tx bind switch and switch Tx on
   - Led will go off (Tx bind switch may be released)
3. Bind is complete when Led stays On. Failsafe settings (stick positions) are memorised immediately before the Led comes on solid.
4. If Led does not come on within 20sec or continues flashing every 2sec (=scanning) the bind has failed. Switch Tx and Rx off, move them closer or further apart and retry. Binding is most reliable when no other RC 2.4 Tx's are on.

DT 2.4GHz RECEIVER INSTRUCTIONS (cont)

OUTPUTS WITH 'AIR' TRANSMITTERS
Ch1 Throttle, Ch2 Aileron, Ch3 Elevator, Ch4 Rudder, Ch5 Gear,
Ch6 Aux1, Ch7 Aux2.

OUTPUTS WITH 'SURFACE' TRANSMITTERS (DX3)
Ch1 and Ch4 are Throttle, Ch2 and Ch5 are Steering and Ch3 is Aux.
The receiver is intended to be used at 16.5ms frame length.

CONFIGURABLE OPTIONS:
1. Normal servo outputs on all pins
2. or Sequential PPM output on one pin
3. or Serial output on one pin
4. Normal output order (Tx-determined) or numeric (ch 1,2,3,4,5,6,7)

SEQUENTIAL PPM:
The SeqPPM option strings 7 channels together into a consolidated 'summed' PPM output on one pin. The output is normally High (logic 1) with 300us Low trigger pulses. Either the falling or rising edge may be used for triggering. The SeqPPM output appears on Pin5 on Rx22 and Pin6 on Rx71/72.

SERIAL:
This option produces a 16 byte RS-232 serial output at 115200 baud, 8 bit, no parity, 2 stop bits, LSB first. The first byte is a checksum, the second indicates signal quality and the rest servo position data. The Serial output appears on Pin5 on Rx22 and Pin6 on Rx71/72.

OUTPUT ORDER:
The channel order of the Sequential PPM output can either be determined by the Tx or sorted numerically. The numeric sort order is 1,2,3,4,5,6,7 (Throttle, Aileron, Elevator, Rudder, Gear, Aux1, Aux2).

LOGS
The Led is designed to reveal significant issues with error flashes described in the Led section above. In addition, the receiver is capable of recording performance in much more detail. To save reception stats, the Tx must be switched off before the Rx. This forces a failsafe event which in turn creates a log. Logs are accumulative and usually show the last few individual flights. To view logs, a Cypress MiniProg and Excel is required.

PROGRAMMING APPROACH:
Options are selected with the bind plug using the concept of 'high/low' selections.
Bind pin on pins 1&2='low', pins2&3='high' (signal pins).
The led flashes the option currently being set (eg: single-flash 1sec apart).
The Rx assigns a value to each option (Low=0; High=option number).
The Rx flashes the sum of all options once complete to confirm settings

PROGRAMMING PROCEDURE:
1. Place bind plug on signal pins 1&2 and switch Rx on; Rx will enter bind mode; led will flash rapidly
2. Remove bind plug to enter Programming mode; Led will repeat a single-flash for the first configurable option.
3. Place bind plug on pins 1&2=Low or pins 2&3=High to make a choice
4. Remove bind plug to move on to next option; led flashes will increase.
5. A choice has to be made for all seven options after which the Rx will save the changes and the led will flash the sum of new program settings. Switch Rx off when done. The Led will not flash if all options are set to Low as all score 0.
6. Switch Rx off at any time before completing all options to exit without saving changes.

PROGRAMMING OPTIONS:
1. L = Option disabled
   H = Normal servo outputs enabled
2. L = Option disabled
   H = Sequential PPM output on 1 pin
3. L = Option disabled
   H = Serial output on 1 pin
4. L = Tx-determined channel order
   H = Numeric channel order (1,2,3,4,5,6,7 for easier quadcopter setup)

PROGRAMMING EXAMPLES:

EXAMPLE 1:
Simplest configuration for normal use with servos
Option 1 High
Option 2-4 Low
Flashes after programming 1

EXAMPLE 2:
Sequential PPM on 1 pin with channels in numeric order (1,2,3,4,5,6,7)
Option 1 Low
Option 2 High (Seq PPM enabled)
Option 3 Low
Option 4 High (numeric sort order)
Flashes after programming 6

EXAMPLE 3:
Serial output on 1 pin
Option 1 Low
Option 2 Low
Option 3 High (Serial enabled)
Option 4 Low
Flashes after programming 3