

## Group-1 ID Numbers And Frequencies

A Group-1 receiver can accept frequencies and ID numbers from a T5000E, T9000E or RF1300 wireless throttle. **Burst mode is supported for only the T5000E.**

Every throttle using a Group-1 frequency must have a unique ID number within the range of 1 to 8. You should record the ID number somewhere on the throttle for easy reference. The T5000E and the T9000E will show you their current ID number.

If a Group-1 receiver receives an incorrect ID on a Group-1 frequency, the receiver's red CD light will turn on and the GP light will be off. You must find the improperly set throttle and change it to stay within the ID range of 1 to 8.

Group 1		Scan Mode			Burst Mode		
Freq #	Freq MHz	T5000E	T9000E	RF1300	T5000E	T9000E	RF1300
0	903.37	Yes	Yes	Yes	Yes	No	No
1	906.37	Yes	Yes	Yes	Yes	No	No
2	907.87	Yes	Yes	Yes	Yes	No	No
3	909.37	Yes	Yes	Yes	Yes	No	No
4	912.37	Yes	Yes	Yes	Yes	No	No
5	915.37	Yes	Yes	Yes	Yes	No	No
6	919.87	Yes	Yes	Yes	Yes	No	No
7	921.37	Yes	Yes	Yes	Yes	No	No

## Group-2 ID Numbers And Frequencies - T5000E Only

The Group-2 receiver is usable only with the T5000E throttle (or later models). The Group-2 ID numbers are from 9 to 16.

The Group-2 frequencies are not usable with older T9000E, RF1300 or TX904 wireless throttles.

Every throttle must have a unique ID number within the range of 9 to 16.

If a Group-2 receiver receives an incorrect ID on a Group-2 frequency, the receiver's red CD light will turn on and the GP light will be off. You must find the improperly set throttle and change it to stay within the ID range of 9 to 16.

Group 2		Scan Mode	Burst Mode
Freq #	Freq MHz	T5000E ONLY	T5000E ONLY
8	904.87	Yes	Yes
9	910.87	Yes	Yes
10	913.62	Yes	Yes
11	916.87	Yes	Yes
12	918.12	Yes	Yes
13	923.12	Yes	Yes
14	924.62	Yes	Yes
15	926.12	Yes	Yes

## Replacement Parts

Whip antenna with UFL connector..... \$ 6.00

## RX904 Receiver To XF Upgrade Instructions

### First Things First - Compatibility

**Your Command Station must be using software version v6xx.**

#### RF1300, T9000E Wireless Throttles

These older throttles only work with the old RX904 wireless receiver using Group-1 software or a new XF-Series Group-1 wireless receiver in scan mode only.

#### XFG1 Group-1 Upgrade

Works with RF1300, T9000E and T5000E wireless throttles.

All wireless throttles must already be using software compatible with your v6xx Command Station.

#### TX900, TX904 Wireless Throttles

These are the oldest and first wireless throttles released by CVP more than 15 years ago. They are not compatible with the new XF-Series Receivers.

#### T5000E Wireless Throttle

This throttle works with the old RX904 wireless receiver using Group-1 software or the new XF-Series Group-1 or Group-2 wireless receiver.

#### XFG2 Group-2 Upgrade

Only works with T5000E wireless throttle with v22 software.

Group-2 is not compatible with throttles other than the T5000E.

#### New Scan Frequencies

The new Group-2 frequencies are usable only with a T5000E throttle or later model. They cannot be used with older wireless throttles.

#### RX904 Group-1/Group-2 Processor Chips Are The Same As XFG1 Group-1/Group-2

The RX904 Group-1 and Group-2 processor chips are the same as the XFG1 and XFG2 processor chips. The only difference between the RX904 and the XF-Series is the radio module.

#### Older RX904 Group-3 and Group-4 Receivers Are Not Compatible With XF-Series

The older RX904 Group-3 and Group-4 software cannot be used when upgrading to the XF-Series wireless receivers. Consider upgrading them to either Group-1 or Group-2 XF series to serve as "black-hole" fillers for better reception.

#### Kit Contents

- 1 RF Module - see invoice and back of module for the Group assignment.
  - 1 TBUS processor chip\*
  - 1 RF Processor chip\*
  - 1 Upgrade guide
  - 1 User guide
- \* May not be present if ordering an upgrade.

#### XFG1 Designations

##### Radio Module

Rear Label says Group-1

##### Processor Chips

RF4A and TBUS3A labels

#### XFG2 Designations

##### Radio Module

Rear Label says Group-2

##### Processor Chips

RF4B and TBUS3B labels

©2014 CVP Products P.O. Box 835772 Richardson, TX 75083

All Rights Reserved - May Not Be Duplicated Or Copied Without Permission

## RX904 Receiver Upgrade Procedure

Remove the metal rod antenna. It will no longer be needed and may be discarded. If your unit has a black wire antenna, just bend it down and out of the way.

**Remove the two screws from the bottom of the receiver.** Turn the RX904 chassis upside down. Remove the two screws holding the two chassis halves together. Turn the chassis right side up.

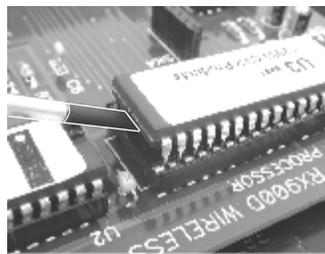
Gently lift off the top cover. The rear panel is not attached to the chassis so it may or may not come out. To make it easier to remove and plug in new chips, lift out the rear panel set it aside.

**Remove the top circuit board.** The top circuit board is held in place with plastic posts. Grasp the top board and pull upwards to disengage it from the plastic posts. It is not needed and may be discarded.

Remove the 4 plastic posts by wiggling them back and forth until they snap out. They will no longer be needed and may be discarded.

**Remove both of the old processor chips.** The processor chips are in 40 pin sockets. Slip a small flat blade screwdriver between the processor and its socket. Gently pry the chip out of its socket. Before prying, check for proper placement of the screwdriver. You do not want to accidentally pry the socket off the board. Doing so will ruin the board and it is not repairable if this occurs.

**Install new processor chips.** Each chip is labeled with its designator, U2 or U3. On the circuit board, near the socket is the matching designator.



*Warning: there are two sets of 20 pins on the sides of a processor chip. All 40 pins must be inserted into the socket. There must not be any bent pins or pins on the outside of the socket.*

To make it easier to plug in the chips, gently roll them on their side to gently bend the pins towards the chip's center. When bent properly, the pins will be directly in line with the socket openings.

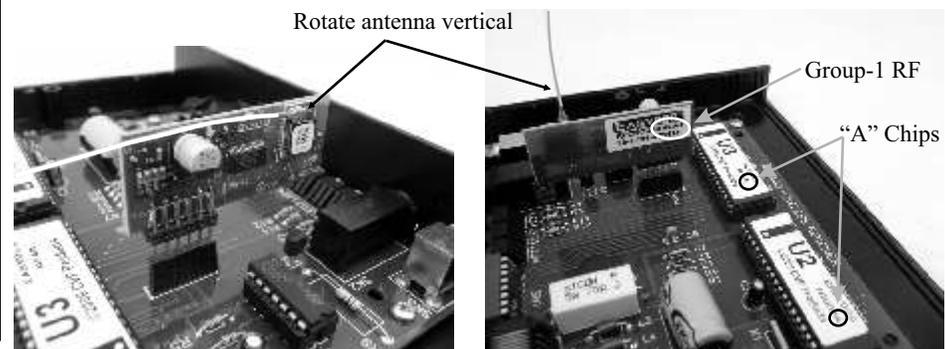


Orient the chips so the label is right side up when the front panel is facing you. Put each chip into its socket and push down firmly. There will be very little space between the chip body and the socket when the chips are plugged in correctly.

The TBUS processor chip is labeled U2 TBUS3x where x is the group designator. Group-1 is A, Group-2 is B. The RF processor chip is labeled U3 RF4x where x is the group designator. Make sure the group designator matches the radio module.

**Plug in the radio module.** The radio module plugs into the 6 pin header with the flexible antenna towards the front panel. Plug the module into the header.

**Double check** for pins in sockets and double check the part numbers. Group-1 module only works with the "A" processors. The Group-2 module only works with the "B" processors.



## RX904 Receiver Checkout

Your RF module comes with a small flexible antenna. It is shipped rotated parallel to the module. Use your fingers to rotate the small gold connector attached to the small clear plastic covered antenna so that it is vertical. Take care not to kink or bend the antenna. It must be vertical for best performance.

Note: the antenna connector snaps onto the module. If it has come off, just snap it back on.

The top cover cannot be reattached with the RF module plugged into the header. If you wish to reuse the cover, see the next section.

Set the front panel switches for scan mode and for the desired connection to your system. If you are not sure how to set the switches, refer to the accompanying XF-Series User Guide.

Turn on the receiver. Turn on a throttle suitable for use with the receiver. Set the throttle frequency and the throttle ID number to match the XF receiver. The receiver indicator lights will indicate when everything is set properly as described in the User Guide.

The RF module includes a separate red GP indicator. The red GP LED flashes when one or more throttles are being received. The red LED's flash rate depends on the how many throttles are being received at the same time. It does not respond to correct or incorrect ID numbers, just throttles within the proper frequency range.

If the XF receiver is receiving one of its frequencies, but the throttle ID number is not within the approved group, the receiver's front panel red CD indicator will turn on and the receivers green GP LED will be off. When the ID is correct, the red CD LED will turn off and the green GP LED will begin flashing.

This concludes the checkout. See the User Guide for receiver placement suggestions.

## Optional: Removing Header To Use Top Cover

In order to allow the top cover to be used with the new RF module, the old header must be removed and the RF module soldered directly to the bottom circuit board. You must know how to solder and clear out clogged holes in solder pads. If you are not comfortable doing this, we recommend using the receiver without its cover.

**Remove the circuit board from the chassis.** Remove the 4 screws that hold the board to the chassis. Lift out the faceplate and board. Slide the faceplate off the board and set aside.

**Remove the RF module** from the header if still plugged in.

**Unsolder the 6-pin header.** Use a solder removal tool to remove the solder from the bottom side of the circuit board where the 6 pin header mounts. It is OK to cut the header to simplify its removal. Solder-wick can be used to help clear out the holes. A wooden toothpick is another handy tool to open up holes. When removing the pins, be very careful not to damage the internal plating of the circuit board's pads. If the plating is damaged, the receiver will not work.

**Verify the holes are cleared out** by test fitting the RF module. The module must fit flush to the circuit board when properly installed.

**Solder the RF module to the bottom circuit board.** Its orientation will be obvious since it fits the space in only one way. Trim the pins flush to the top of the solder joint.

**Slide the front panel onto the circuit board and mount it to the bottom half of the chassis** with the 4 mounting screws.

**Drill a new antenna hole in the top cover** using the measurements below. The dimensions are only approximate and the hole size is big enough to allow the antenna to fit through the hole without binding.

**Rotate the antenna vertical**, and straighten out any kinks before closing up the box.

**Reattach the top cover using the two screws.**

