

TELEBEE GR701 GYRO



The Telebee GR701 gyro is a stick priority or constant angular velocity gyro capable of operating in either normal or heading hold mode.

Single mode: In single mode, there is no remote switching or remote gain control and the "receiver aux" input is not used. The gyro's gain is controlled by the pot located on the sensor box and the unit will never switch to heading hold.

Dual mode: In dual mode the gyro's gain and switching is controlled by the channel plugged into the "receiver aux" input. In this mode the gain pot located on the sensor box is ignored. Switching between normal and heading hold mode occurs around mid point. A throw range (Futaba ATV or JR Travel Adjust) of 50 to 150 percent in each direction controls the gain of the gyro.

If we are using the gyro select function of a transmitter then the ATV does not operate. What we do is select the output in each mode and the numbers usually are 0% to 100%. The problem in this mode is that the gyro can never be turned up to max gain as the input will never achieve the necessary 150% throw.

I would suggest an initial setting of 100% each side of center on a channel with ATV. For a

Limit control: The gyro has a throw limiter which limits the amount of servo throw regardless of the stick throw. This feature allow you to select an arm length which will give you maximum tail control without the problem of overthrow and binding.

When installing, select an arm length which will allow your tail pitch slider to move to its maximum in each direction without binding. Remember to leave a little for adjusting trim later. Although it will vary with each heli an arm length of 12mm should be a good start.

Rotational speed: In a standard gyro the stick input is passed through to the tail servo minus correction applied by the gyro. In the Telebee the stick input is used to signal the internal processor the rate of rotation that is desired and the processor will apply the correct amount of tail control to achieve and maintain the rate of rotation.

A range of 50 to 150 each side of center is specified. I would suggest an initial setting of 75. This would be increased or decreased after flying until the desired tail control is obtained.

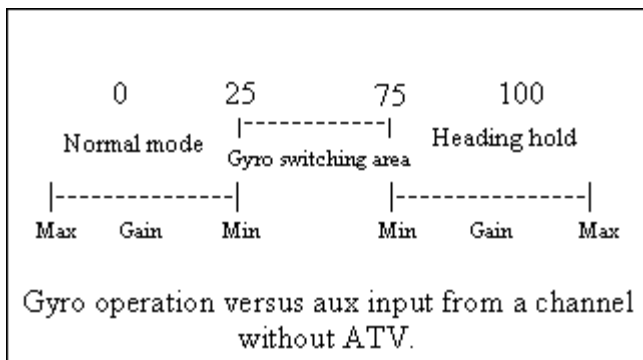
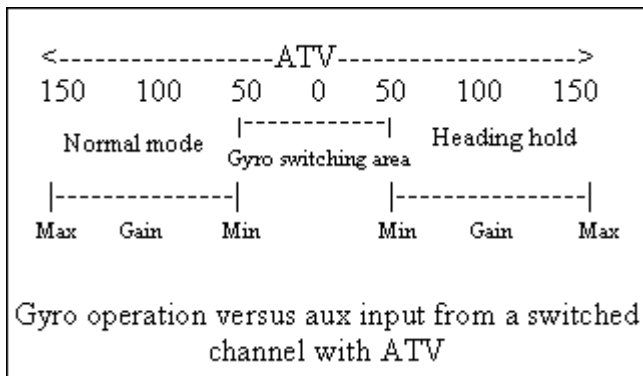
Processor interface: The telebee has a 3 pin Futaba type connector located on the gyro sensor. This is the interface connector to alter the internal programming. The internal programming may be altered using the CSM 3 software.

Rudder trim: Remember that for the Telebee, rudder trim is only used to set the stick center point to the processors neutral. This is done in heading hold mode by adjusting the trim, or sub trim, until the servo does not drift.

Note: This unit will drift when first taken to the

gyro switching feature not having ATV use the 0% and 100%. This would then be increased or decreased after flying until a maxim is obtained without tail oscillation.

This part seems to confuse many people. The diagrams below shows the gyro operation versus the input on the aux input



field. The instruction show a 5 min on cycle to stabilize before trimming. When making your initial bench setup, allow this warm-up before finalizing your sub trims or you will be doing it again.

Once stabilized and trimmed in heading hold any offset in the tail during normal mode must be corrected by mechanical trimming. This would be by adjusting the tail pushrod length.

Setup problems: All radio setups shown in the instructions show removing all revo and mix from the transmitter for heading hold operation. This presents the problem that when the gyro is switched to normal mode, it will not maintain a straight tail at all throttle settings. Although all radios are different, what you need is to be able to switch the gyro from normal to heading hold and also to switch the revo and mix in and out at the same time. On some radio's this may be possible by setting revo and mix in normal and stunt 1 with no revo or mix in stunt 2 and switch to heading hold only in stunt 2. On my JR 10S this can all be programmed into the flight mode switch, but may require using 2 switches on other radio's. On some radio's, the revo/mix may have to be eliminated and satisfactory flight characteristics in normal may be lost.

For what it's worth--Al Coelho

PIEZO GYRO

GR801 3D System GR701 Tail Lock System



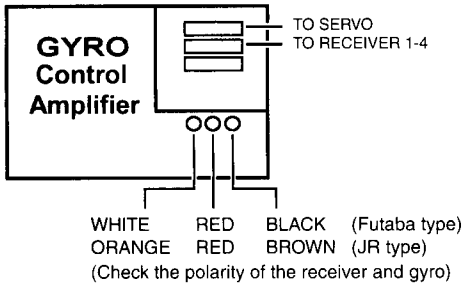
INSTALLING THE GYRO DETECTOR

1. Mount the Gyro Detector to the helicopter (or aircraft), make sure the arrow sign points to the direction of the axis of rotation, and parallel to the main shaft of the helicopter.
2. Attach the Gyro Detector to the helicopter (or aircraft) by using the double-sided self adhesive tapes.

CONNECTIONS - GYRO Control Amplifier

Simply connects the Gyro Control Amplifier in series between receiver and servo.

Single Mode Connections :



Dual Mode Connections :

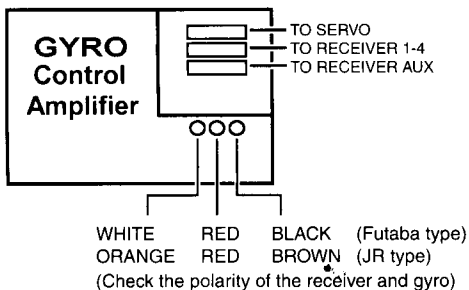
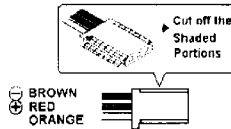


Table of Connections :

Radio Transmitter	RX 1-4 connect to receiver	AUX connect to receiver
JR PPM/SPCM	"RUDD"	"AUX 2" or "AUX 3"+**
Futaba PPM/PCM	Channel 4	Channel 5
JR ZPCM	"RUDD"	"AUX 2"+**

JR TYPE



SETTING UP

1. Switch on your transmitter.
2. Switch on your helicopter's receiver and DO NOT move the helicopter body until the LED lights up. (It takes few seconds to light up.)
3. Set up your transmitter

GR701 Tail Lock Dual Mode :

Set OFF the following functions (if there is any) of your transmitter:

- ATS (Automatic tail stabilization)
- Pilot authority mixing
- Throttle to rudder mixing
- Rudder to gyro mixing
- Pitch to rudder mixing
- Revolution mixing

GR801 3D Dual Mode :

Set ON the following functions (if there is any) of your transmitter :

- ATS (Automatic tail stabilization)
- Pilot authority mixing
- Throttle to rudder mixing
- Rudder to gyro mixing
- Pitch to rudder mixing
- Revolution mixing

GR701 and 801 Single Mode :

Set ON for the following functions (if there is any) of your transmitter:

- ATS (Automatic tail stabilization)
- Pilot authority mixing
- Throttle to rudder mixing
- Rudder to gyro mixing
- Pitch to rudder mixing
- Revolution mixing

4. Set the direction switch A ↔ B to make tail pitch move to the right compensation.

5. Gain Control

Single mode : Adjust the gain control+ ↔ - to obtain maximum performance.

Dual mode : Adjust the gain control on transmitter Gyro gain channel of ATV to obtain maximum performance.

TRIM ADJUSTMENT OF RUDDER BEFORE FLYING

(For Tail Lock mode setting only)

In order for the gyro to function properly, it is utmost importance to trim the gyro properly.

1. Set the rudder trim (and sub-trim if available) to neutral.
2. Identify the gyro gain switch position on your transmitter which gives the standard gain mode and the tail-lock mode. (This can be done by observing the rudder servo behavior by applying full rudder

command followed by release: in the standard gain mode, the rudder servo will return rapidly to the neutral position when the rudder stick is released, whereas in the tail lock mode, the rudder servo will tend to remain at its full travel limit).

3. Set the gyro gain switch to the tail-lock mode: you will find that the rudder servo will creep in one direction.
4. Set the rudder trim (or preferably the sub-trim) so that the creep in the rudder servo is minimized. You will find that there will still be some slow residual creeping which is normal. This slow residual creeping will take 10 to 20 seconds for the rudder serve to full travel.
5. Once this trim position has been found, no further adjustment should be needed. However, some slight adjustment of the tail control linkages may still be needed in order to reduce any offset effects in the standard gain mode. (This could only be done through flight trials).
6. Select the tail-lock mode and hover the helicopter.
7. Applying short stabs to the rudder control and see whether there is any tendency for the tail to oscillate. Reduce the gyro gain if oscillation is seen. Conversely, increase the gain if no oscillation is seen. (The aim of to use the highest possible gain without introducing oscillation)
8. Observe, any trim offset in the tail and correct with the rudder trim.
9. Select the standard gain mode and repeat the exercise. In this case, any offset effects should be corrected by adjusting the tail rotor linkages.

SPECIFICATIONS

- Small Size Piezoelectric Ceramic Gyro
- Dimension : 62mm x 37mm x 20mm
- Weight : 40g
- Voltage Used : 3V To 7V
- Power Consumption : Approx 33mA
- Operation temp : -5°C to +60°C
- Built-In Drift Cancel Circuit
- Temperature Compensation Circuit

Cautions :

This device is not a toy.

Safety is the top priority.

We do not assume any liability for consequential damages as result of the product use, and in any event, our liability shall not exceed the original price of the device unit.

* ALL BRAND NAMES AND TRADEMARKS ARE THE PROPERTY OF RESPECTIVE OWNERS.

* SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.

JRX388 /SX3810 /X8103(Helicopter Version)
FOR GR801 3D SYSTEM AND SINGLE RATE

SET INHIBIT SET ON GAIN CHANNEL GAIN SWITCH ATV VALUE (RUDDER CHANNEL) ATV VALUE (GYRO GAIN CHANNEL)	GYRO SENSE REVOLUTION (TAIL MIXING) AUX2 / RUDDER DUAL RATE AUX2 50-150% (BOTH DIRECTION) AUX2 0-100% (BOTH STANDARD AND 3D MODE) / /
RUDDER TRIM FAST SERVO RECOMMENDED	

JRPCM 10S/SX(Helicopter Version)
FOR GR701 TAIL LOCK SYSTEM

SET INHIBIT SET ON GAIN CHANNEL GAIN SWITCH ATV VALUE (RUDDER CHANNEL) ATV VALUE (GYRO GAIN CHANNEL)	CODE 44 GYRO SENSE CODE 47 REVOLUTION (TAIL MIXING) / AUX3 / RUDDER DUAL RATE AUX3 / RUDDER DUAL RATE 50-150% (BOTH DIRECTION) AUX3 CHANNEL 0-100% (BOTH STANDARD AND TAIL LOCK MODE) CODE 15 STM SUB-TRIM TRIM SERVO TO NEUTRAL POSITION JR2700G OR SUPER SERVO
RUDDER TRIM FAST SERVO RECOMMENDED	

JRPCM 10S/SX(Helicopter Version)
FOR GR801 3D SYSTEM AND SINGLE RATE

SET INHIBIT SET ON GAIN CHANNEL GAIN SWITCH ATV VALUE (RUDDER CHANNEL) ATV VALUE (GYRO GAIN CHANNEL)	CODE 44, GYRO SENSE CODE 47 REVOLUTION (TAIL MIXING) AUX3 / RUDDER DUAL RATE AUX3 / RUDDER DUAL RATE 50-150% (BOTH DIRECTION) AUX3 CHANNEL 0-100% (BOTH STANDARD AND 3D MODE) / /
RUDDER TRIM FAST SERVO RECOMMENDED	

FU9ZHP/ZAP(Helicopter Version)
FOR GR701 TAIL LOCK SYSTEM

SET INHIBIT SET ON GAIN CHANNEL ATV VALUE (RUDDER CHANNEL) ATV VALUE (GYRO GAIN CHANNEL)	GYRO SENSE MODE THROTTLE TO RUDDER MIXING RUDDER TO GYRO MIXING 'P->R' PITCH TO RUDDER MIXING / CHANNEL 5 50-140% (BOTH DIRECTION) CHANNEL 5 0-100% (BOTH STANDARD AND TAIL LOCK MODE) STM SUB-TRIM TRIM SERVO TO NEUTRAL POSITION FP9203 OR FP9205
RUDDER TRIM FAST SERVO RECOMMENDED	

FU9ZHP/ZAP(Helicopter Version)
FOR GR801 3D SYSTEM AND SINGLE RATE

SET INHIBIT SET ON GAIN CHANNEL ATV VALUE (RUDDER CHANNEL) ATV VALUE (GYRO GAIN CHANNEL)	GYRO SENSE MODE THROTTLE TO RUDDER MIXING RUDDER TO GYRO MIXING 'P->R' PITCH TO RUDDER MIXING CHANNEL 5 50-140% (BOTH DIRECTION) CHANNEL 5 0-100% (BOTH STANDARD AND 3D MODE) / /
RUDDER TRIM FAST SERVO RECOMMENDED	

RECOMMENDED COMPUTER SETTINGS FOR THE FOLLOWING POPULAR TRANSMITTERS

FF8 SUPER (Helicopter Version) FOR GR701 TAIL LOCK SYSTEM

SET INHIBIT	GYRO SENSE/ REVOLUTION
SET ON	/
GAIN CHANNEL	CHANNEL 5
GAIN SWITCH	CHANNEL 5
ATV VALUE (RUDDER CHANNEL)	50-120% (BOTH DIRECTION)
ATV VALUE (GYRO GAIN CHANNEL)	CHANNEL 5 0-100%
	(BOTH STANDARD AND TAIL LOCK MODE)
RUDDER TRIM	SUB - TRIM
	TRIM SERVO TO NEUTRAL POSITION
FAST SERVO RECOMMENDED	FP-9203 OR FP-9205

FF8 SUPER (Helicopter Version) FOR GR801 3D SYSTEM AND SINGLE RATE

SET INHIBIT	GYRO SENSE
SET ON	REVOLUTION
GAIN CHANNEL	CHANNEL 5
GAIN SWITCH	CHANNEL 5
ATV VALUE (RUDDER CHANNEL)	50-120% (BOTH DIRECTION)
ATV VALUE (GYRO GAIN CHANNEL)	CHANNEL 5 0-100%
	(BOTH STANDARD AND 3D MODE)
RUDDER TRIM	/
FAST SERVO RECOMMENDED	/

FF7 AND FF8 (Helicopter Version) FOR GR701 TAIL LOCK SYSTEM

SET INHIBIT	REVOLUTION
SET ON	/
GAIN CHANNEL	CHANNEL 5
GAIN SWITCH	CHANNEL 5
ATV VALUE (RUDDER CHANNEL)	50-120% (BOTH DIRECTION)
ATV VALUE (GYRO GAIN CHANNEL)	CHANNEL 5 0-100%
	(BOTH STANDARD AND TAIL LOCK MODE)
RUDDER TRIM	SUB - TRIM
	TRIM SERVO TO NEUTRAL POSITION
FAST SERVO RECOMMENDED	FP-9203 OR FP-9205

FF7 AND FF8 (Helicopter Version) FOR GR801 3D SYSTEM AND SINGLE RATE

SET INHIBIT	/
SET ON	REVOLUTION
GAIN CHANNEL	CHANNEL 5
GAIN SWITCH	CHANNEL 5
ATV VALUE (RUDDER CHANNEL)	50-120% (BOTH DIRECTION)
ATV VALUE (GYRO GAIN CHANNEL)	CHANNEL 5 0-100%
	(BOTH STANDARD AND 3D MODE)
RUDDER TRIM	/
FAST SERVO RECOMMENDED	/

JRX388 /SX3810 /X8103 (Helicopter Version) FOR GR701 TAIL LOCK SYSTEM

SET INHIBIT	GYRO SENSE/ REVOLUTION (TAIL MIXING)
SET ON	/
GAIN CHANNEL	AUX2/ RUDDER DUAL RATE
GAIN SWITCH	AUX2
ATV VALUE (RUDDER CHANNEL)	50-150% (BOTH DIRECTION)
ATV VALUE (GYRO GAIN CHANNEL)	AUX2 0-100%
	(BOTH STANDARD AND TAIL LOCK MODE)
RUDDER TRIM	SUB-TRIM
	TRIM SERVO TO NEUTRAL POSITION
FAST SERVO RECOMMENDED	JR2700G OR SUPER SERVO