

ACE RC®

## ACE RC TG-6100M HEADING LOCK GYRO & E-CCPM MIXER INSTRUCTION MANUAL

Product no. #AQ0843



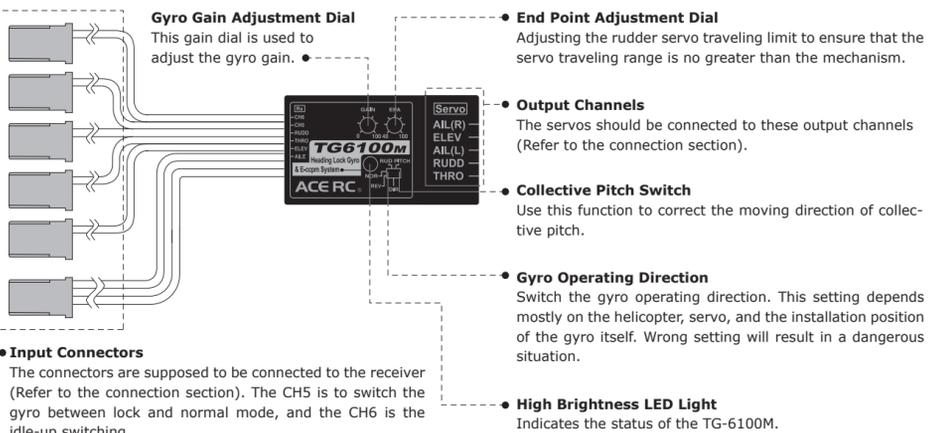
### INTRODUCTION

TG-6100M is specially designed for mini Titan E325. It is combined with a heading lock gyro and an E-CCPM mixer in the program. The heading lock gyro holds the tail perfectly, and the E-CCPM mixer makes it possible to fly the mini Titan E325 with a normal 4~6 channel radio. In addition, both the normal flying mode and the aerobatic flying mode are established in the TG-6100M program. The advanced aerobatic flying can be performed while using a basic 6 channel radio.

### FEATURES

- Heading lock mode and normal mode
- E-CCPM mixer for 4~6 channel radio
- Idle-up mode for basic aerobatic flying
- Idle-up mode operating protection
- Simple wire connection for easy installation
- Small and light weight
- Suitable for Futaba, JR, Hitec and TT radio system

### FUNCTION



#### Input Connectors

The connectors are supposed to be connected to the receiver (Refer to the connection section). The CH5 is to switch the gyro between lock and normal mode, and the CH6 is the idle-up switching.

PS. Leave the CH5 and CH6 unplugged if you are using a 4 channel radio, and you have only heading lock gyro mode and normal flying mode.

### SPECIFICATIONS

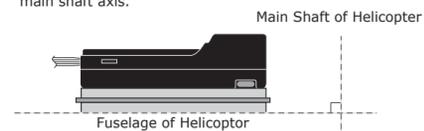
Item No.	AQ0843
Product Name	TG-6100M
Control	Digital Proportional Integration Control
Sensor	Piezoelectric Vibrating Gyroscope
Voltage	DC 4.8~6.0V
Operation Temperature	-5 ~ 50 °C
Dimension (mm)	41.2 × 21.6 × 11.7
Weight (g)	12

### CONTENTS

- TG-6100M × 1
- Mini plastic screwdriver (for adjustment) × 1
- Double-sided foam × 3
- Metal plate × 1

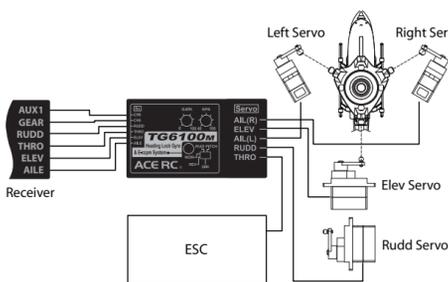
### INSTALLATION

- Before using the double-sided foam, be sure to clean the bottom of the gyro and the fuselage where the gyro will be attached.
- Attach the gyro, foam and the metal plate as shown. One piece of foam tape is between the gyro and the plate, and the other is under the plate.
- Install the gyro so that its bottom is perpendicular to the main shaft axis.

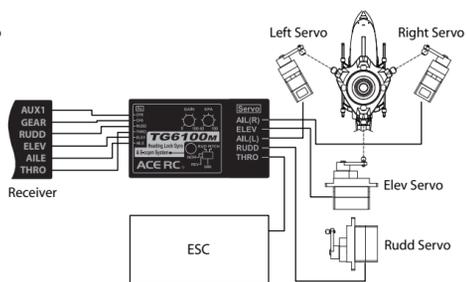


### CONNECTION

#### For Futaba, Hitec and TT radio system :



#### For JR radio system :



PS. While plugging the servos to the TG-6100M, please be aware of that the black/brown wires are supposed to be on the top.

### SERVO SELECTION

- **For rudder servo:**  
TG-6100M is suitable for analog rudder servo only. ACE RC micro rudder servo #8131/C0915 is recommended.
- **For control surface servos:**  
ACE RC #8117/C1016 micro servos are recommended. If other brands of servos are chosen, the moving direction may be different. Please use the collective pitch switch and reverse function of the radio to achieve correct direction.

### SETTING AND ADJUSTMENT

**1. Servo direction setting**  
First of all, make sure that the direction of the throttle is correct. If the throttle direction is reversed, use the reverse function of the transmitter to correct it.

### 2. For control surface

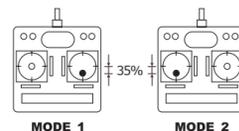
For 4~5 channel radio, you only have normal flying mode. If using a 6 channel basic radio, you can have the pre-programmed aerobatic flying mode. So here are the different calibrating process for 4~5 channel radio as well as the 6 channel basic radio. Please do the following process with the motor un-plugged so that the mechanism can match the program of TG-6100M.

#### 4~5 channel radio

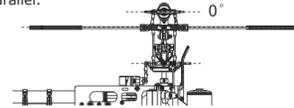
1. Set the "trim" and "sub trim" of aileron and elevator at neutral position, but the "trim" of throttle is supposed to be at the lowest position.
2. Turn on the transmitter and the receiver, fit the servo arms to the servos temporarily. It will make it easier to tell the moving direction of the servos. Check the moving direction of collective and cyclic pitch. Adjust the direction

of collective pitch by the pitch switch on the TG-6100M. Adjust the cyclic pitch direction by the reverse function of the transmitter.

3. Place the throttle stick at **35%** position, and fit the servo arms so that they are parallel.



4. If the length of the control linkage rods of your mini Titan E325 are properly set based on its manual, the main blades are supposed to be at 0 degree when the servo arms are parallel.

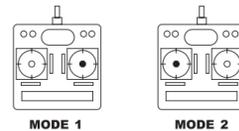


5. If you can't set the servo arms completely parallel, it is recommended to use another servo arm or to use the "trim" function of throttle, aileron and elevator to find tune. Please make sure that the swashplate and the servo arms are all parallel.
6. At last, please check the range of collective pitch. The main blades should be about +12 degree with full throttle, +4 degree at middle, and -6 at idle.

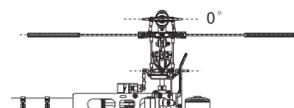
#### 6 channel radio

1. Set the "trim" and "sub trim" of aileron and elevator at neutral position, but the "trim" of throttle is supposed to be at the lowest position.
2. Turn on the transmitter and the receiver, fit the servo arms to the servos temporarily. It will make it easier to tell the moving direction of the servos. Check the moving direction of collective and cyclic pitch. Adjust the direction of collective pitch by the pitch switch on the TG-6100M. Adjust the cyclic pitch direction by the reverse function of the transmitter.
3. Enter idle-up mode. Please be aware of that TG-6100M has a protection program that you can't enter idle-up mode if the throttle stick is below 35%. So you have to raise the throttle and then enter idle-up mode. Please do this with the motor un-plugged.

4. After entering idle-up mode, place the throttle stick at **middle** position.



5. Fit the servo arms so that they are all parallel. If the parallel position can't be achieved, use another servo arm or adjust the "trim" of throttle, aileron and elevator.
6. While the servo arms are parallel, the pitch angle of main blades should be at 0 degree. Please make sure that the swashplate and the servo arms are all parallel.



7. At last, please check the range of collective pitch. The main blades should be about +12 degree with full throttle, 0 degree at middle, and -12 degree at the lowest position at aerobatic flying mode.

8. Go back to the normal flying mode, and do the range check. The main blades should be about +12 degree with full throttle, +4 degree at middle, and -6 at idle.

#### Note

Because the throttle and pitch settings are pre-programmed, the processes above are to ensure the correct setting corresponding to the program.

#### 3. Throttle Calibration

Since the "trim" of throttle/collective pitch could be adjusted in order to match the default setting of TG-6100M, the throttle and the ESC need to be calibrated. Please keep the throttle trim at where it is and refer to the manual of your speed control and proceed with the calibrating process. Set the ESC properly and do this with the motor pinion apart from the main gear.

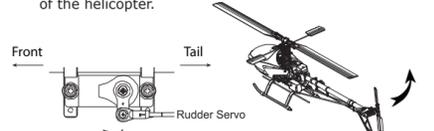
#### 4. For rudder

1. Set the transmitter first. The "trim" and "sub trim" of rudder should be at neutral position. Then check if the switches on the gyro are at correct position.
2. Suppose the green connector is connected to the CH5 of the receiver, it is used to switch the gyro between heading lock mode and normal mode.
3. Turn on the transmitter then turn on the power of gyro (shared with the receiver), do not move the helicopter at this moment.
4. The rudder servo will be set in the neutral position and the red LED will light up indicating the heading lock mode.

5. The gyro is at normal mode if the green LED lights instead of the red one. Please reverse the CH5 and repeat the step3 and step4 again. **(Be sure to turn on the gyro in heading lock mode)**

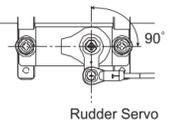
6. Fit the servo arm temporarily, check the gyro and servo direction:

- a. While giving the right rudder control, the servo arm should move toward the nose of the helicopter.
- b. While rotating the helicopter with your hand counterclockwise, the servo arm should move toward the nose of the helicopter.

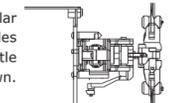


PS. Take mini Titan E325 for example. It may differ from heli to heli.

7. Reset the power and remain the helicopter still, fit the servo arm as shown. The servo arm should be perpendicular to the tail control linkage rod. If can't be, it is recommended to try another servo arm instead of adjusting the "trim" or "sub trim".

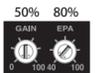


8. While the servo arm is perpendicular to the tail control rod, the tail blades pitch should be at 0 degree or a little offset to the right rudder as shown. (with clockwise rotation rotor)



9. Move the rudder stick to the left and right, adjust and check the linkage. Make sure there is no binding on both sides.

10. With the C0915 micro rudder servo, it is recommended to use a servo arm of around 9mm in length. And the Gain should be at 50%, the EPA should be at 80% as the initial setting.



### FLIGHT ADJUSTMENT

#### Gyro Gain

If the steps above are correctly executed, the gyro will be in charge of the tail control under heading lock mode. Even in crosswind situation, the tail will remain the position. The gyro gain differs. The higher speed the rudder servo is, the higher gyro gain will be. Set the gyro gain via the dial at about 50% as the initial setting. Increase the gyro gain before the tail begins to hunt. It will reduce the life of the servo if the gain is too high.

#### Pirouette Adjustment

The pirouetting rate is fixed by the mixer unless the ATV (or D/R) function is included in the transmitter. Adjust the pirouetting rate by ATV (or D/R) function if they are established in the transmitter.

#### Vibration Elimination

TG-6100M uses the sensor with very high sensitivity. If there is certain amount of vibration during flight, it will diminish the performance of the gyro. So please take this issue very seriously and take the following suggestion into consideration.

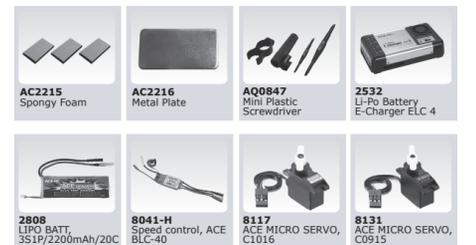
1. Use the provided foam only and make it very spongy to be the damping.
2. Be sure to use the metal plate between the gyro and the helicopter.
3. Eliminate the source of vibration from the helicopter.

### CAUTION

The TG-6100M is designed for basic 4~6 channel airplane radio. If using a high end radio such as JR PCM 9X II or Futaba FF9 Super, please adopt the airplane mode instead of the helicopter mode.

- Always use the provided foam to install the gyro.
- Never use the gyro on an engine helicopter.
- Mount the gyro so that there is no object will touch it.
- Turn on the gyro under heading lock mode and never move the helicopter until the red LED stops flashing.
- Don't use the "trim" and "sub trim" of rudder.
- Avoid sudden changes of temperature.
- Disable the tail compensation (revolution mixing) function when using the heading lock mode.

### OPTIONAL PARTS



Manufactured by  
**THUNDER TIGER CORP.**  
http://www.thundertiger.com

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