



PG-800

MEMS AVCS GYRO



Preface

You can enjoy the highest standards of performance from your helicopter with the high specification gyro PG-800. It provides you greatly consistent yaw rates that avoid outside variables like the helicopter's rotor head speed, rotor disc loading, flight speed, wind, etc. with the aids of a premium quality sensor and a powerful controller. This significant feature is a necessity for doing complex pirouetting 3D maneuvers. The PG-800 will enable you to enjoy a high performance by its excellent location capability and precision. The PG-800 offers two operating modes: Normal mode and AVCS mode.

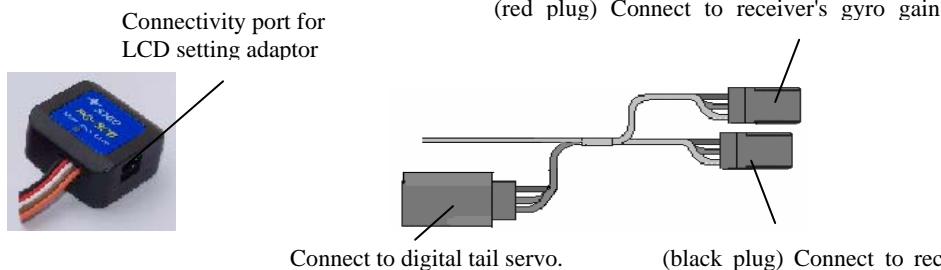
Introduction

Thank you for your purchase of PG-800 MEMS headlock Gyro . You can now enjoy the optimal performance of your helicopter with the most advanced gyro PG-800 . It provide you consistent yaw rate and compensate any drift due to dramatically change of variables, such as helicopter's rotor head speed, rotor disc loading, flight speed, wind, etc. With utilizing premium quality of sensor and powerful controller, this feature is essential for performing complex pirouetting and 3D maneuvers. The compact size and light weight of gyro will enable you to install the gyro in any helicopter whatever the size it is, without compromising the performance and precision. The PG-800 offers two operating modes: Normal mode and AVCS mode.

Specefication and spare parts

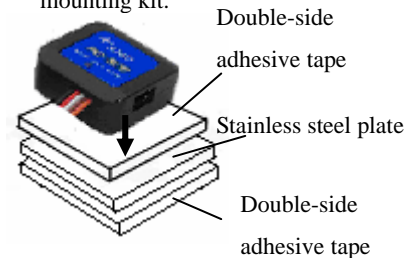
- Operating voltage: 4-10 Volts, current < 60mA
- Overall dimensions: 29.5mm×28mm×12.7mm
- Weight: 17.5 grams
- Operating conditions:-10 to 45 deg C
- Servo compatibility: 1520uSec and 760uSec digital servos at 333Hz and 250Hz.
- Spare parts: Double-side self-adhesive foam tape and Stainless steel plate.

Interconnections



Installation

When mounting the PG-800, ensure that The bottom plane of the gyro is perpendicular to the main shaft of the helicopter using double-side adhesive tape in the mounting kit.



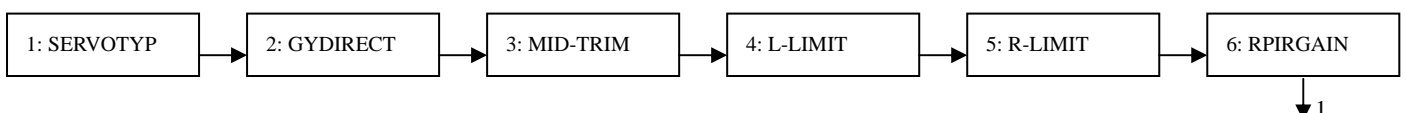
Operating instructions

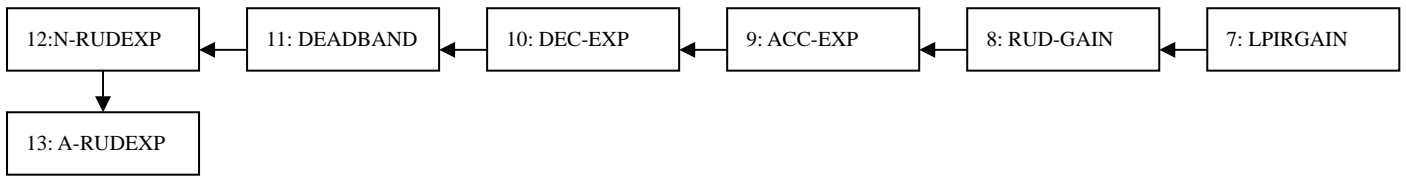
It is necessary for you to follow the sequential steps to successfully install your new PG-800.

- Connect PG-800 to the receiver. Do not connect the servo to the PG-800 at this time.
- Assign gyro gain to a 2 position switch to facilitate switching between Normal and ACVS.
- Ensure that the transmitter trims and sub-trims are set to zero and that collective pitch to tail pitch mixing is disabled. Power on the PG-800 and check that the LED responds when toggling the gain switch. When the LED is on it is AVCS mode and off for Normal mode.
- Refer to the following LCD Setting Adaptor guide for detailed setting.
- Connect the servo to the PG-800.
- In Normal mode perform mechanical adjustment of the servo horn and control linkages to achieve approximately 8 degree tail pitch.
- Adjust gyro gain for both Normal and AVCS modes via your transmitter.
- Perform final checks. Confirm correct relationship of rudder stick and gyro response to tail movement. Confirm that there is no mechanical binding.

Setting

LCD Configuration Steps :





Power On : Once power on, LCD will display HELLO. After 5 seconds, configuration card will display gyro settings and is ready for use.

Default Setting : When HELLO is display, press +10 and -1 buttons simultaneously. Configuration will return to default value.

System Reset : Reset button is located at the bottom of LCD configuration card.

Button Description:

Total 7 function keys: FUNC+, FUNC-, +10, -10, +1, -1, Reset

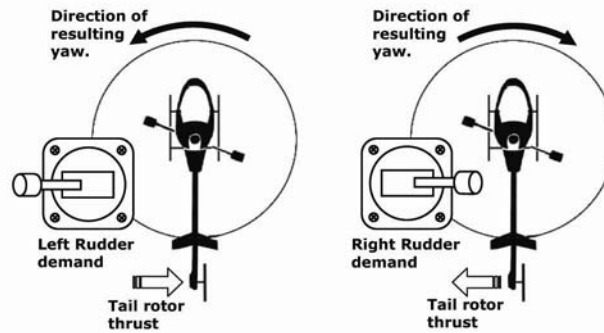
Description	Function
FUNC+, FUNC-	Scroll up/down function menu
+10, -10	Increase (+) or decrease (-) value by 10 units each time. Automatically change to 1 units if the maximum function value is less than 20.
+1, -1	Increase (+) or decrease (-) value by 1 unit each time.
Reset	System reset

Detailed settings of Function Menu:

1、SERVOTYP servo type selection	
Menu Items	Description
152-33 (Default)	Servo pulse width 1520us, working frequency 333Hz includes : Futaba : S9253、S9254、S9650、S9257、S3153 JR : 8900G、DS3405、DS3500 Hitec : HS-5084MG、HS-5925MG Align : DS510、DS520、DS610、DS620 LogicTech : 3100G Most digital servo without special marking should be in this category.
76-33	Servo pulse width 760us, working frequency 333Hz includes : Futaba : S9251、S9256、BLS251 LogicTech : 6100G
152-25	Servo pulse width 1520us, working frequency 250Hz includes : Futaba : S3154 JR : 8700G、2700G

2、GYDIRECT Gyro direction selection	
---	--

Attention: Check that the rudder direction matches the transmitter stick direction. Otherwise, please reverse the rubber servo direction in transmitter program.



Menu items	Description
NORM (Default)	Rotate the helicopter left (nose left). Rudder servo should compensate to the right automatically. Otherwise, change value to "REV". As shown in the diagram
REV	Rotate the helicopter left (nose right). Rudder servo should compensate to the right automatically. Otherwise, change value to "NORM". As shown in the diagram.

3、MID-TRIM

Rudder Servo Neutral Adjustment

Attention: Rudder SUB TRIM value of Transmitter should be set to zero. Install rudder servo horn to closest to 90 degree. Use MID-TRIM to fine tune the neutral point of servo horn to achieve exact 90 degree. Check the neutral position by switching the PG800 to the NOR mode, or by moving the rudder stick to the left and right at least three times at high speed and immediately returning the stick to the neutral position. This temporarily resets the rudder servo.

Menu items	Description
-100 ~ 0 ~ +100 (Default 0)	Fine tune rudder servo neutral point.

4、L-LIMIT

Rudder Left Pitch Travel Limit

Menu items	Description
0 ~ 240 (Default 160)	Adjust rudder servo travel at end limit.
Suggestion	Suggested setting between 160~230. If setting is higher than 230, please install ball link to the outer hole of servo horn or use longer horns. If setting is lower than 160, please install ball link to the inner hole of servo horn or use shorter horns. It is recommended to keep difference between L-LIMIT and R-LIMIT within ± 20 .

5、R-LIMIT

Rudder Right Pitch Travel Limit

Menu items	Description
0 ~ 240 (Default 160)	Adjust rudder servo travel at end limit.
Suggestion	Suggested setting between 160~230. If setting is higher than 230, please install ball link to the outer hole of servo horn or use longer horns. If setting is lower than 160, please install ball link to the inner hole of servo horn or use shorter horns. It is recommended to keep difference between R-LIMIT and

	L-LIMIT within ± 20 .
--	---------------------------

6、RPIRGAIN Right Piro Stop Gain	
Menu items	Description
50 ~ 200 (Default 100)	The higher the setting, the harder the braking effect in piro stops. The lower the setting, the softer the braking effect in piro stops.
Suggestion	If tail bounce back occurs, please lower the setting . Excess hard braking for piro stop will affect the service life of rudder servo!

7、LPIRGAIN Left Piro Stop Gain	
Menu items	Description
50 ~ 200 (Default 100)	The higher the setting, the harder the braking effect in piro stop . The lower the setting, the softer the braking effect in piro stop .
Suggestion	If tail bounce back occurs, please lower the setting . Excess hard braking for piro stop will affect the service life of rudder servo!

8、RUD-GAIN Rudder Stick Gain	
Menu items	Description
50 ~ 150 (Default 100)	Fine tune the stick response to the actual piro rate. The higher the setting, the more sensitive the stick movement.

9、ACC-EXP Acceleration Curve	
Menu items	Description
0 ~ 15 (Default 0)	The higher the value, the smoother and longer it takes to reach piro speed from static.

10、DEC-EXP Deceleration Curve	
Menu items	Description
0 ~ 15 (Default 0)	The higher the value, the longer it takes for the tail to slow down. Used to smoothen the deceleration of piro when coming to a stop.

11、DEADBAND	
Menu items	Description
5 ~ 100 (Default 5)	Rudder has no response if stick movement in deadband zone. Useful to prevent minor unintentional rudder stick commands.

12、N-RUDEXP Normal Rudder Curve	
Menu items	Description
-100 ~ +100 (Default -50)	Normal Gyro expo curve to the stick movement in non-head lock mode

13、 A-RUDEXP	
AVCS Rudder Curve	
Menu items	Description
-100 ~ +100 (Default -50)	AVCS Gyro expo curve to the stick movement in head lock mode

Gyro activation auto-check

When you power on the PG-800 it will immediately perform automatic calibration of the rudder stick and gyro natural points. During this time the helicopter must remain undisturbed and the rudder stick must be left at the neutral point. The calibration lasts approximately 3 seconds and upon completion the tail servo will move to the middle. The calibration will not start if the PG-800 is not receiving a valid rudder signal from the receiver or if the rudder stick is not centered. In both cases the LED will emit the Error flashing sequence (see Status LED section later in this instruction).

Status LED

During normal operation the LED provides simple status information for users.

On:	AVCS mode. Stick at neutral.
Short blink three times:	AVCS mode. Rudder input detected.
Off:	Normal mode.
repeating flash:	Error. Gyro not receiving valid signal from the receiver or unable to calibrate because the rudder stick is not centred.