Thank you for purchasing a GY430 gyro, a rate gyro for RC helicopters.
GY430 is a lightweight micro gyro developed for RC helicopter rudder (yaw axis) control. It can be used with minimum setup and includes an S.Bus/S.Bus2 port.

Before using your new gyro, please read this manual thoroughly and use the gyro properly and safely. After reading this manual, store it in a safe place.

1. No part of this manual may be reproduced in any form without prior permission.

- The contents of this manual are subject to change without prior notice.
- Futaba is not liable for any potential damage (accidental or otherwise) that may occur after installation.

- Failure to follow these safety precautions may result in severe injury to yourself and others.

- All the GY430 features are supplied with the GY430.

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Features of GY430
- Remote gain function and mode switching function
- You can adjust gain from the transmitter by using the remote gain function. Gain can also be adjusted with the trimmer on the GY430. The mode switching function allows AVCS/NORMAL gyro mode switching.
- Integrated, compact, and light weight
- Compact size (20.5x20.5x11mm) and light weight (3.5g) realized by high density mounting technology.
- Easy setup
- The GY430 can be used immediately with minimum setup.
- Supporting the S.Bus/S.Bus2 connection
- Only one wire connection to the receiver can operate the GY430.

GY430 Ratings:
- Integrated sensor type rate gyro
- Gyro sensor: MEMS vibrating structure gyro
- Operating voltage: DC4.0V to 8.4V
- Current drain: 30mA (excluding a servo)
- Gyro sensor: MEMS vibrating structure gyro
- Dimensions: 20.5 x 20.5 x 11.0mm (except protrusion)
- Weight: 3.5g
- Only one wire connection to the receiver can operate the GY430.
- The GY430 can be used immediately with minimum setup.
- Futaba is not liable for any potential damage (accidental or otherwise) that may occur after installation.

Set Contents

- The following items are supplied with the GY430:
  - Gyro gain CH/Receiver (AVCS/GY430)
  - Remote gain effective. Trimmer (GY430) becomes LIMIT.

- Gyro gain CH/Receiver (=it does not connect! =Part2(GY430))
- Remote gain is invalid. Trimmer (GY430) becomes GAIN.

Connecting the GY430 (S.Bus)

- Extension cord: (Black) Port 1, Port 2 is not connected
- S.Bus Receiver

Connecting the GY430

- Port 1
- Port 3
- S.Bus CH
- Rudder CH
- Gyro gain CH

Mounting to Fuselage

- Main rotor shaft
- Gyro mounted to the helicopter
- Sensor tape

Rudder Servo Linkage Check

- Perpendicular
- Control wire
- Set the servo horn length based on the helicopter manufacturer’s instructions.

In the NORMAL mode, make the following linkage checks:

- In the rudder neutral position, connect the linkage at the position at which the servo horn and control wire are perpendicular.

Make the initial linkage connections in the NORMAL mode. In this case, make adjustments mechanically and make minimum trimmer adjustments at the transmitter.

Move the rudder stick to the right and left and check the direction of operation of the tail rotor. If the tail rotor turns in the wrong direction, reverse the direction with the transmitter reverse function.
**Adjustments**

Please take a look at both the directions for the helicopter as well as the transmitter.

**Setup before a flight [Remote gain use]**

Adjusting gain with the transmitter.

1. Set the servo selection switch to the setting for your tail rotor servo. See chart below.

2. Set up your transmitter by following the directions in the manual. Gyro gain is set up to 50% by AVCS. Please refer to the graph, AVCS, NORMAL or when unclear. It judges by the LED on the GY430. AVCS: Red NORMAL: Green

3. Receiver ON → The GY430 requires 3-5 seconds to initialize. When the power is turned on, do not move the helicopter and do not move the rudder stick during this initialization or the gyro may not initialize properly. Once the initialization process has been completed the rudder servo will move several times indicating that the GY430 is now ready for flight. If the neutral has shifted, LED will blink orange. In that case, it reboots.

4. Move the rudder stick to the left and right and make adjustments with the limit trimmer. Adjust for maximum travel, making sure the servo horn does not hit the linkage.

**Flight Adjustments**

Adjust the transmitter and gyro while repeatedly taking off and landing and with the aircraft on the ground.

Transmitter adjustments must not be made while flying because it is dangerous.

1. Set the sensitivity to the position at which hunting does not occur during hovering and flight.

2. Adjust the hovering and flight rudder effect using the transmitter’s D/R or AFR function.

[Pre-flight check]

Helicopter is turned to the Left ⇒ Rudder operates on the Right.

*This check is performed in the state where an engine (motor) never starting.

If you try to fly the helicopter while the gyro direction is incorrect, when the motor rotates clockwise, the helicopter nose will yaw to the Left and cause an extremely dangerous situation.

**[Remote gain not use]**

Adjusting gain with the GY430 trimmer.

When not using an S.BUS connection and port 2 is not connected. In this case, a limit trimmer is automatically changed by the gyro gain setting trimmer. A limit is fixed by 50 degrees of right and left.

Similarly the procedure of 1, 3, 5 is followed.

* A gain trimmer’s work

<p>| AVCS 50% | AVCS 100% |</p>
<table>
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**NORMAL 50% NORMAL 100%**

First, we suggest to start with AVCS set to 50%.

● A trimmer’s operation

* Since the trimmer is small and delicate, operate it by gently using the provided mini screwdriver.

**Operation in AVCS mode**

If the rudder stick is operated or the helicopter is moved when the helicopter was stopped during operation in the AVCS mode, the servo will not return to the neutral position even if the rudder stick is retracted to the neutral position, and when the rudder stick is moved, the rudder servo controls operation until the tail reaches the maximum point. This is caused by addition of an integration function as an AVCS mode operation and is not an abnormality. In actual flight, the gyro constantly monitors movement of the tail and controls the servo so that movement of the tail is stopped.

**AVCS mode servo neutral position check method**

If the rudder stick or the helicopter was moved in the AVCS mode, the servo will not return to its original neutral position. When the power is turned on, the servo will return to the neutral position. The servo neutral position can also be checked by the following method.

Neutral position

Move the rudder stick 3 times to its full stroke to the left and check position within 1 second later. The servo returns to the neutral position about 1 second later.

**Operation of NORMAL mode**

Basic operation is described by considering the case when the helicopter is hovering under cross-wind conditions. With a normal mode, when the helicopter encounters a cross-wind, the force of the cross-wind causes the tail of the helicopter to drift. When the tail drifts, the gyro generates a control signal that stops the drift. When the tail stops drifting, the control signal from the gyro becomes zero. If the cross-wind continues to cause the tail to drift in this state, the “stop” operation is repeated until the tail faces into the winds. This is called the “weatherwise” effect.

**Operation of AVCS mode**

Conversely, an AVCS mode, when the helicopter encounters a cross-wind and the tail drifts, a control signal from the gyro stops the drift. At the same time, the gyro computes the drift angle and constantly outputs a control signal that resists the cross-wind. Therefore, drifting of the tail can be stopped even if the cross-wind continues to effect the helicopter. In other words, the gyro itself automatically corrects (auto trim) changes in helicopter tail trim by cross-wind. Considering operation of an AVCS mode, when the tail of the helicopter rotates, the servo also rotates in accordance with the angle of rotation of the tail. When the tail stops rotating, the servo judges that it has stopped in that position. This is the auto trim function.

**What is S.BUS?**

Unlike conventional radio systems, the S.BUS system uses data communication to transmit control signals from a receiver to a servo, gyro, or other S.BUS compatible device. This data includes commands such as “move the channel 3 servo to 15 degrees, move the channel 5 servo to 30 degrees” to multiple devices. The S.BUS devices execute only those commands for their own set channel. For this reason, it can be used by connecting multiple servos to the same signal line.

* Set the channel at the S.BUS server by using an SBC-1 channel changer or a CIU-2 USB serial interface.
* Can also be used together with conventional servos. However, conventional servos cannot be used by the S.BUS output.
* When using servos with a remote battery pack, use S.BUS Hub with Cable (2-way/remote battery pack use).
* Please refer to the instruction manual of S.BUS Hub with Cable (2-way/remote battery pack use) for the connection method.
* When using S.BUS compatible device, power is supplied by connecting S.BUS to the S.BUS server. Please use it after it confirms the operation without fail. Otherwise, the S.BUS communication cannot be used and it is likely to malfunction.

* The setting of the S.BUS server is replaced at power supply OFF. If you replace the wiring in power supply ON, S.BUS communications cannot be judged, and it seems to malfunction.