CSM⟲
ICG360 Piezo Gyro

OPERATING INSTRUCTIONS

SPECIFICATIONS
Weight: 40g
Dimensions: . . . . 42.5mm (1¹¹⁄₁₆″) High
. . . . 26.5mm (1¹⁄₁₆″) Wide
. . . . 6.5mm (⁹⁄₃₂″) Long
(excluding cables and mounting ears)
Power Supply: . . . . 3.5 to 7.2v

The new CSM ICG360 offers a unique new concept in gyro technology known as "Heading Lock Mode." This new "Heading Lock" feature works like no other gyro system ever produced, giving excellent stability in both backward and sideways flight, making many 3D maneuvers easier than ever.

The new ICG360 is also ideal for beginners. This new "Heading Lock" feature is designed to maintain a helicopter's position regardless of wind direction, etc. Another added bonus feature is its ability to hold heading without the use of a tail rotor pitch curve, which is also helpful for the beginner.

Features
- Yaw rate demand
- Two flight modes
- Heading Lock
- Built-in exponential
- Anti-drift temperature calibration
- Two-stage power supply regulation
- Flight mode tailoring via PC interface cable/software (optional)

Note: The CSM ICG360 Piezo Gyro is specifically designed for helicopter use only and is not recommended for installation in model airplanes.

INTRODUCTION

Even though you may be familiar with conventional Piezo or mechanical gyro systems and their operations, it is important to read these instructions carefully so you can fully understand the operation of the ICG360 and ultimately achieve the highest level of performance.

Conventional Gyro Systems

In a conventional gyro, the pilot applies a rudder command and, as the helicopter responds to the command, the gyro also opposes the pilot's command. The yaw rate achieved in such a system depends on the "gain" of the gyro. The more gain the gyro has, the lower the yaw (rotation) rate that can be achieved. It is common with such systems to have to reduce the gyro gain to achieve the required yaw (rotation) rate for some maneuvers (accomplished with the gyro gain switch).

The ICG360

The design of the ICG360 is based on a "Yaw Rate Demand" (rotation rate) philosophy, making the system a true yaw rate gyro. In this system, the rudder input given by the pilot is interpreted as a request to the gyro to establish the pilot specified yaw (rotation) rate. The ICG360 drives the tail rotor servo as needed to establish this yaw (rotation) rate. This feature

allows the ICG360 to make full yaw (rotation) rate available, regardless of the gain value. With the ICG360 you can now use the rudder travel volume (ATV), as well as the dual rate and exponential settings, to achieve the desired feel and full stick yaw (rotation) rate. The gyro gain switch can now be used as a "flight mode" switch to select between "Heading Lock" and "Standard Rate" modes. This feature eliminates the need for "stick priority" gyro gain mixing. In fact, it is not recommended that this type of mixing be used with the ICG360.

FLIGHT MODES

The ICG360 has two flight modes selectable by the transmitter gyro gain switch (or auxiliary channel switch).

Note: A rotary knob or slider is not recommended as it is not possible to accurately and repeatedly set the gain values with these.

Mode 0 (Standard Rate Mode)

This mode gives flying characteristics that are similar to conventional systems. ATS tail rotor mixing should be used.

Mode 1 (Heading Lock Mode)

This mode provides a much higher resistance to unwanted yawing movements that can be obtained with a conventional gyro system. This mode has great advantages in the following situations:

1. For the beginner, Heading Lock mode makes it possible for the pilot to almost ignore the tail rotor control in the initial hovering phases. Heading Lock mode also allows the tail rotor trim to be established before the model leaves the ground.

2. In Heading Lock mode, it is not necessary (nor recommended) to use and/or adjust revolution tail rotor mixing, making helicopter setup much easier for the beginner.

3. Heading Lock mode is highly effective for cross-wind hovering maneuvers, where the natural tendency of the helicopter to "weather vane" into the wind is not desired.

4. Heading Lock also provides exceptional "hands off" flying for both backward and general 3D style flying.

The Standard mode may be employed for basic forward flight where the natural tendency of the helicopter to weather vane can be helpful, especially to the less experienced pilot. The graph below (Figure 1) shows the way in which the gyro gain channel provides both mode switching and independent gain adjustment of the two modes. If the gyro gain channel pulse is longer than the center value (1.5ms), the gyro is in Standard mode, while with the gain channel pulse shorter than 1.5ms, the gyro is in Heading Lock mode. The Travel Volume (ATV) settings for the two switch positions provide a convenient way of adjusting the gyro gain for each mode from the transmitter. Increasing the ATV of the gyro gain channel increases the gain for that mode. If the ICG360 is to be used with a basic radio system without a suitable channel for controlling the gyro gain, then the gyro will run as a single rate unit with gain adjustable from the manual gain control on the unit itself. In this case, the gyro defaults to the Standard mode.
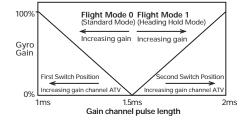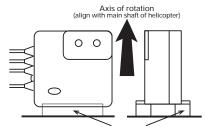

Figure 1. The Gyro gain channel acts as both gyro mode switch and gain control.

SECTION 1: INSTALLATION

Mounting the Gyro

Attach to the helicopter using two of the self-adhesive foam strips provided.

Axis of rotation
(align with main shaft of helicopter)

Attach to helicopter using two of the self-adhesive foam strips

Figure 2. Mounting the gyro

The ICG360 should be mounted in the helicopter with its axis of rotation (as marked on the gyro case) accurately parallel to the main shaft of the helicopter. The gyro sensor (together with the electronics of the gyro) is anti-vibration mounted inside the gyro case. However, to provide further vibration and shock resistance, it is important that the gyro be mounted to the airframe using two of the double-sided adhesive foam strips provided.

Do not use any other type of mounting foam as this will reduce the performance of your gyro. (Replacement mounting strips are available as a CSM replacement part.) The gyro case can be aligned along or transverse to the length of the helicopter. For good adhesion, make sure the surface to which the gyro is attached is smooth, hard and clean. As with all high performance solid state gyro systems, the ICG360 performs best if it's mounted at a point of low vibration in the helicopter airframe. For example, where possible avoid mounting the gyro at the extreme front of the radio tray as this area is often subject to high levels of main rotor generated vibration.

Note: Tests suggest that the X-Cell plastic radio tray may be too flexible and that better performance can be gained by mounting the gyro at the rear of the frames.

Connecting to Your Radio System

The ICG360 is designed to work with the following radio control systems: Futaba PPM (FM), Futaba PCM 1024, JR PPM (FM), JR ZPCM (512), JR SPCM (1024)

If you wish to use this gyro with other types of radio systems, please contact the Horizon Service Center for further information.

Connect the gyro to your receiver as indicated in the following table:

Radio Type	Gyro "Rx 1-4 IN" connect to	Gyro "AUX INPUT" connect to
Futaba PPM	Channel 4	Channel 5
Futaba PCM	Channel 4	Channel 5
JR PPM	"Rudd"	"Aux2" or "Aux3"
JR ZPCM (512)	"Rudd"	"Aux2" *
JR SPCM (1024)	"Rudd"	"Aux2" or "Aux3"

* JR ZPCM pulse timing prevents the use of Aux 3 as the gyro gain channel

Connect the "SERVO" output to the tail rotor servo.

Leave the "COMPUTER" connector unconnected. (This is for use with the optional PC interface cable/software). Do not connect any form of extension to this connector.

SECTION 2: GAIN ADJUSTMENT

2A: Conventional 4-Channel Aircraft System

If you are using a radio system (e.g., a 4-channel aircraft system) that doesn't have a channel that can be allocated to the gyro gain/mode, the "Aux" input to the gyro should be left unconnected. In this case, the gyro will default to the Standard mode with the gain adjusted by the rotary gain control (near to the "gyro set" light on the front panel of the gyro). Initially set the gain control to its mid position. Final adjustment will require flight testing.

2B: Gain Adjustment: JR PCM10S/10Sx/10SxII Radio Systems

Gain/flight mode adjustment can be achieved with these radios using either of the following 2 methods:

Gain Adjustment Through AUX 2 or AUX 3 Channels

If a two-position switched channel is available, the gain sensitivity can be adjusted in each position using the travel adjustment (ATV) function. When using a switched channel for gain control, the gain adjustment is achieved by adjusting the endpoints of that switched channel. See below:

Switch position # 0:   Gain is adjustable from 0% to 100%
 (Standard Rate mode)   using the travel volume.
                                  100% Travel volume = 100% gain
                                  0% Travel volume = 0% gain

Switch position # 1:   Gain is adjustable from 0% to 100%
 (Heading Lock mode)   using the travel volume.
                                  100% Travel volume = 100% gain
                                  0% Travel volume = 0% gain

Note: In switch position # 0, increasing the travel volume value increases the gain. In switch position # 1, increasing the travel volume value also increases the gain.

Note: Depending on the position of the AUX channel's reversing switch, the switch position #0 and #1 may work in reverse.

Initial Gain Value Suggestions: Switch position 0 (Standard Rate mode): 70%
                                               Switch position 1 (Heading Lock mode): 60%

Note: If the AUX 3 channel is being used, the Code 44 Gyro Gain Adjustment feature must be inhibited so that AUX 3 will be activated by the AUX 3 switch.

The gain adjustment function described above will allow the ICG360 to be changed from "Heading Lock mode" to "Standard Rate mode" independently by means of the selected AUX switch, regardless of the flight mode selected. If an "automatic" gain/mode change is desired, refer to the next section for further information.

Gain Adjustment Through Code 44 Auto Gyro Gain (10S/10Sx/10SxII)

Use of the Code 44 Gyro Gain Adjustment will give the user the ability to automatically change from "Heading Lock mode" to "Standard Rate mode" or vise versa by the use of the flight mode (idle up) switch as required. Since the gain control value of the ICG360 operates from the center position of the channel outward, a gain value of 50% is in reality 0% gain while in Code 44.

Therefore, if the gain value is increased above 50%, this will activate the Standard rate mode function, and the gain value will be increased.

If the gain value is decreased below 50%, this will activate the Heading Lock mode function, and the gain values will also be increased. Please refer to the chart below for clarification:

Code 44 Mode Selection / Gain Adjustment

	Code 44 value		Actual Gain value
Standard Rate Mode	100%	=	100%
	75%	=	50%
Off	50%	=	0% (off)
Heading Lock mode	25%	=	50%
	0%	=	100%

This feature allows the user to select which type of mode (Standard or Heading Lock) is to be used for each of the three gain values. In other words, you can select either two gain values for Heading Lock mode and one value for Standard rate mode, or vise versa.

Note: For proper operation, the rudder ATV (travel adjustment) values should be set to the factory default settings (100%). Initial gain value setting suggestions:

Example #1— 1 Standard Rate gain, 2 Heading Lock gain values

Gain Position 0	Gain Position 1	Gain Position 2
Standard rate mode 80%	Heading Lock mode 15% (hover)	Heading Lock mode 20% (forward flight)

Example #2 — 2 Standard Rate gains, 1 Heading Lock gain value

Gain Position 0	Gain Position 1	Gain Position 2
Standard rate mode 80%	Standard rate mode 70% (hover)	Heading Lock mode 20% (forward flight)

Values shown are initial starting values and should be fine tuned during test flights. Once all gain values have been entered, be sure to press "PAGE" on the touch screen to access the flight mode selection screen, then set the desired gain value for positions 0, 1, 2 for the desired flight mode. Please refer to the above setions (Code 44 Gyro Gain) for setup and adjustment information.

2C: Gain Adjustment: JR XP8103

The JR XP8103 offers two different types of gyro sensitivity adjustments, manual or automatic. This feature gives the user the choice of selecting gyro sensitivity manually through the rudder D/R switch or automatically through the flight mode switch.

When using this feature, plug the remote gain controller AUX connector (white) into the AUX 2 channel of the receiver. Next, select either the manual or automatic gyro sensitivity feature and adjust the gyro rate values as shown below:

```
【GYRO SENS】

▶AUTO              F MODE
 RATE              NORM: 0
 0: 80%            STNT: 1
 1: 20%
```

2D: Gain Adjustment: JR XF622, XP642, and XP783

The following is a chart of all JR radio systems denoting the switch type and appropriate channel number to be used.

Radio: Helicopter	Switch Type	Type	Channel #
XP642	(must use combined function feature)	Gear	5
XF622	(must use combined function feature)	Gear	5
XP783	2 Position	Aux 2	7

Please refer to Section 2A and 2B of these instructions for setup and gain adjustment information.

SECTION 3: SETUP AND ADJUSTMENT

Gyro Direction Reversing Link

As with any gyro, it is vital to make certain it compensates in the correct direction. Failure to do so will cause an uncontrollable pirouette on takeoff. Beginners who are in any doubt on this aspect of the setup should seek advice from an experienced modeler.

First establish that the direction of the transmitter control is correct (e.g., application of a right rudder command causes a change in tail pitch that will rotate the helicopter to the right). Once this has been done, check that turning the helicopter to the left makes the gyro apply a tail rotor command to the right. Should the gyro operate in the wrong direction, use the gyro "REVERSE" link to reverse the gyro compensation direction. The gyro is supplied with the reversing link already fitted; to remove it, simply pull on its protruding tab and store it safely. When replacing the reversing link, be sure it is fitted over both pins and pushed firmly into full engagement.

Initial Radio Setup

For initial flights, the following is suggested for radio system adjustments:

ATS revolution mixing:..OFF
Stick priority gyro gain mixing: ....OFF
(this should never be used with the ICG360)
Rudder channel ATV (both directions):...50%

Mechanical Setup

The ICG360 will work with any JR® or Futaba® servo, but as with any gyro system, a fast servo (e.g., JR2700G, etc.) will give the best results. To prevent damage due to excessive servo travel, the servo movement is limited by the gyro electronics. (Under no conditions will the servo travel past the electronic limit set by the gyro, regardless of any increase in the ATV value.) You should use the longest servo arm that allows full movement of the tail rotor pitch linkage without causing the linkage to bind or the servo to become stalled at either extreme of travel.

Attention to the tail control linkage is important for getting the best performance from this gyro. You should strive for an easy-moving (but slop-free) linkage between the tail servo and the tail blades. Inspect the bearings in the tail hub for smoothness of operation. Check the pitch slider and ball links for slop and replace if needed. Some helicopters that have noticeable "give" in the tail linkage may benefit from the addition of a rear-mounted tail servo and rigid pushrod.

Remember that, during aerobatic maneuvers, the combination of a high performance gyro and a fast tail servo can place very high loads on the tail rotor drive train. Regularly inspect tail rotor gears, belt tension, etc., to ensure that they are in good working condition.

Batteries, Power Consumption, and Wiring

Although the power consumption of the gyro unit itself is very modest, as with all high performance Solid State gyro systems, the speed of the gyro response will work the tail rotor servo harder than slower mechanical gyro systems. Especially where a high performance servo is being used, the battery drain from the tail rotor servo can be high. We recommend you use a high quality battery pack of at least 1100 mAh and check it carefully before each flight.

Your receiver battery is a vital part of your tail rotor system. Remember that a battery in a low state of charge or an old battery which has developed a high internal resistance will adversely affect servo performance and may even cause the tail to wag on an otherwise well setup helicopter. You may wish to consider maintaining the charge in your receiver battery between flights by the use of a quality Delta Peak type field charger.

When installing the gyro, please also note that voltage drops due to the use of long servo extension leads will also detract from servo performance. Where the installation requires extensions to be used (either between the receiver and gyro or between the gyro and the servo), avoid using ones that are unnecessarily long.

Trim Adjustment

Initially zero the rudder trim and any rudder sub-trim that your transmitter may have. Next, identify which gyro gain switch position gives you Standard mode and which gives you Heading Lock mode. This can be seen from the difference in the tail rotor servo behavior on the ground. In Standard mode, the rudder servo will return to the neutral position when any rudder command is released. In Heading Lock mode the servo will tend to remain at or near its travel limit when a full stick rudder command is applied and then removed. Now set the rudder trim or sub-trim such that with the gyro in Heading Lock mode, the servo, once centered, has no marked tendency to creep in either direction (though some slow residual creep of the servo is quite normal). Once this trim position has been found, no further adjustment of the transmitter trim should be needed. However, slight adjustment of the helicopter tail control linkage may be needed in order to remove any offsets when changing from the Heading Lock mode to the Standard mode. This can only be done after initial flight testing.

Behavior on the Ground

For those used to conventional gyro systems, the behavior of the ICG360 on the ground may seem unusual.

Unlike conventional systems, it is quite normal for the ICG360 in Standard mode to provide full tail rotor servo movement for rudder commands that are as little as 30% of the full stick movement. This is a consequence of the yaw demand feature.

Important Note: With the helicopter on the ground and the ICG360 set in Heading Lock mode, it is quite normal for the tail rotor servo to slowly creep, and it may, over the course of say 15 seconds, creep to full travel. Your transmitter rudder trim will affect the direction and speed of this creep, but even after the trim has been adjusted to minimize this, some slow movement is still to be expected. This apparently strange behavior is caused by the stationary helicopter not responding to the heading corrections requested by the gyro. In the absence of a response from the helicopter, the gyro continues to increase the servo command in an attempt to get the helicopter to move to the desired position. In flight, the helicopter will, of course, respond to the tail servo movements, and the system will act normally.

Troubleshooting

If the gyro does not respond as expected to any adjustment of the ATV, it may be helpful to plug a spare servo directly into the appropriate RX channel as a check to make sure that the radio is driving the channel as required and that no other switches, mixes or other functions are interfering with the operation of the channel.

SECTION 4: FLYING THE CSM ICG360 GYRO

Turn-On Sequence

1. Turn on your transmitter.
2. With the model stationary on the ground, turn on your receiver.
3. Wait for about 7.5 seconds, keeping the model still while the gyro goes through its self-test.

Note: It is important to make sure that the model is not moved during the 7.5 second system self-test procedure.

4. Before any rudder commands are given, check to be sure the ICG360 has completed the self-test function. This can be determined either by the gyro set light coming on or, if this light is not visible, by watching the tail rotor linkage until a quick "twitch" has occurred, indicating the system is now active. Your ICG360 is now ready for flight.

If the set light fails to come on or flashes, turn off the receiver power switch, wait several seconds, and repeat the turn-on sequence.

Initial Flight Tests and Setup

Important Note: Prior to initial engine power up and/or lift-off, it is important to first set the Heading Lock orientation position by moving the rudder stick to the left and right after the model has been placed in the lift-off position. If this procedure is not followed, it is highly probable that the Heading Lock function will have positioned the tail rotor blades to the extreme left or right, which in some models can cause improper engagement and slippage of the clutch assembly. If a separate AUX switch is utilized, switching from "Heading Lock mode" to "Standard Rate mode" then back again will also return the tail rotor to the neutral position.
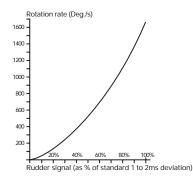
Test Flight

First select Flight Mode 1 (Heading Lock mode) and hover the helicopter. Use short small "stabs" of rudder control to disturb the helicopter in yaw and observe. If some tendency to oscillate is seen, slightly reduce the gyro gain. Conversely, if no tendency to oscillate is seen, try increasing the gain. You are looking at this stage for the highest gain that gives no sign of oscillation when the tail is disturbed by sudden changes in tail command. Observe any trim offset in the tail and correct this with the transmitter rudder trim.
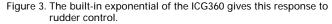
Now switch to Flight Mode 0 (Standard mode) and repeat the exercise. However, in this case any trim offset should be removed not by use of the transmitter trims, but by mechanical adjustment of the tail rotor linkage. Once this has been done, you may want to check for tail wagging in fast forward flight. Should this be observed, you may want to lower the gyro gain slightly. Caution should be exercised over the use of the Heading Lock mode in flying circuits or other general flying until you are familiar with the very special handling characteristics this mode gives.

Adjusting the Stick Response

After initially setting, use the rudder ATV, dual rates, and exponential features of the transmitter to tailor the control response as required. Beware that the maximum yaw rotation rate available (at any gain) is very high. If an increase in available yaw rotation rate is required, increase the rudder travel on your transmitter gradually until the desired response is obtained. Remember that increasing the ATV (travel adjustment) will not increase the overall tail throw (travel).

The ICG360 has built-in exponential. You may find the following graph (Figure 3) of yaw rate against rudder command useful in deciding on the setting of rudder rates and rudder ATV. Remember that the ATV and rate functions work together, so setting the rudder ATV to 80% in both directions and also setting a rudder dual rate of 60% will give a total rudder throw of 0.8 x 0.6 = 0.48 = 48%.

Figure 3. The built-in exponential of the ICG360 gives this response to rudder control.

Revolution Mixing

In Heading Lock mode, the ICG360 requires **no** revolution mixing. Use of revolution mixing in this mode will give unwanted heading changes. Similarly, no throttle-to-tail rotor mixing should be used in this mode. In Standard mode you may find very small amounts of ATS or throttle-to-tail rotor mixing useful.

Stick Priority Gain Mixing

This should not be used with the ICG360 gyro as the ICG360 offers full rotation rate adjustment via rudder ATV (travel adjustment).

Tail Rotor Dynamics

To realize the full benefit of the ICG360, it is important to have a basic understanding of the dynamics of the tail rotor system. It is a common misbelief that the higher the electronic gyro gain is, the better the system will work. While in general this is true, the electronic gain is only one part of the tail rotor system. Of equal importance is the amount of tail pitch range available and the tail rotor disk size. The disk size is also related to the tail rotor speed. Of course there are other influences on the tail system, but these are the most important and can be grouped together as mechanical gain.

If the mechanical gain is not correct, the gyro will not be able to function to its best ability. For this reason, it is important to select a servo arm of the correct size for giving maximum tail pitch movement without stalling the servo.

Note: Once this has been established, increasing the rudder channel ATV (travel adjustment) will not increase the servo throw as this is limited electronically by the gyro. The rudder ATV (travel adjustment) is used instead to adjust the rotation rate.

Tail Rotor Blade Size (Disc)

The correct length of tail blade can only be selected by flight testing. There are two types of tests to ascertain the correct size:

1. With the model in hover at its normal flight rpm, being certain the gyro is in Heading Lock mode, make a rapid vertical climb for 50 to 60 feet. There should be no discernible rotation of the model. If the tail does not maintain its position, this is a good indication that the diameter is too small.

Note: If the model is set with excessive main roter blade pitch and there is a noticeable drop in rotor rpm during the climb-out, this test would be invalid as the tail would probably not be able to cope with this situation regardless of the setup.

2. This test is only really necessary for those who wish to do advanced aerobatics/3D flying and should only be carried out by those who are confident to do so. With the model at a safe height, fly the model sideways, starting slowly and building up speed until it reaches its maximum possible speed:

   A) If the tail manages to hold its position, then the blade length is fine.
   B) If the tail starts to lag behind, then either more pitch is needed (if the mechanical limits haven't already been reached) or longer tail blades are required.
   C) If the tail swings (rotates) suddenly and cannot return to the correct position, then the tail rotor is stalling and longer tail blades are needed.

SECTION 5: MAXIMIZING PERFORMANCE FOR ADVANCED 3D/AEROBATIC FLIGHT— BY BOB JOHNSTON

To get the maximum performance from this or any Piezo gyro, it is essential to minimize the vibration reaching the gyro sensor. Apart from the obvious balance checks, make sure that the canopy, fins, tuned pipe or muffler are not too loosely mounted, especially if the gyro is being used with a fast servo, as it is possible for a resonance to build up which shows as a very fast shake, visible in the canopy and tail.

If you feel confident to do so, try slowly tumbling the model while checking for any visible vibration. A small amount is almost inevitable, but try to dampen any large vibrations present. Alternatively tumble or roll the model at a safe height. If the gyro can be made to wag through the maneuver, it is a good indication that a component is resonating.

To set the maximum gain permissible for aerobatic flight, either:

A) Fly the model as fast as possible in a straight line and twitch the rudder stick a small amount. If this causes the gyro to wag, lower the gain and repeat the test until the tail cannot be made to wag anymore. Obviously if the model cannot be made to wag initially, keep increasing the gain until it does, and then reduce the gain a few percent. Setting the gyro this way should prove sufficient for all flying except in very windy, turbulent conditions where the gain may have to be lowered by a few percent.

B) Alternatively, if you feel confident enough in your ability and your model's reliability, put the model in a vertical dive for 3 or 4 hundred feet (90 to 120 meters) with the main rotor pitch at zero. Once maximum forward speed has been reached, pull the model out in a smooth arc. If the model does not wag under these conditions, it is unlikely to do so under any conditions.

> **WARNING:** Only attempt to carry out these flight tests if you are 100% confident in your own flying ability and the structural integrity of your equipment.

Boom Supports

Tests have shown that the use of boom supports significantly increase the rigidity of the tail boom, therefore allowing a higher gyro gain to be used. In general, the longer the boom supports, the better they will work. Note: A loose/cracked boom support or a loose/cracked boom support clamp can have a significant effect on the gyro gain.

Temperature Stability

Although the gyro is temperature calibrated, it is possible for there to be a very small difference in temperature between the Piezo sensor and the temperature sensor, which can show a small trim change under conditions of rapid temperature change. It is best to avoid flying the model immediately after exposure to such conditions (i.e., when removed from a cool car to a very hot or humid flying site). Under certain conditions of extreme humidity, it is even possible for condensation to form in the gyro if it has been subjected to a rapid temperature increase. If this happens, either wait for approximately 20 minutes for the temperature to stabilize or leave the model standing for a few minutes with the radio switched on. When you are ready to fly, cycle the receiver power to reset the gyro.

SECTION 6: OPTIONAL PC INTERFACING

Your ICG360 is equipped with a "COMPUTER" port, which is provided for the experienced pilot who wishes to optimize the internal settings of the ICG360's two flight modes to their helicopter and flying style. An optional interface cable and software disk is available for use with this port. The interface/software is compatible with any IBM PC compatible computer with a parallel (printer) port and VGA graphics.

Comprehensive additional instructions on the use of the PC interface are supplied with the software. Connection to the "COMPUTER" port of the ICG360 must only be made via the correct optional interface cable. No other form of connection to this port should be made as misuse of this facility may damage the gyro unit.

SECTION 7: REPAIR INFORMATION

Repair Service Instruction:

In the event that your equipment needs to be serviced, please follow the instructions listed below:

1. Return your system components only. Do not return your system installed in a model helicopter, plane, etc.
2. Use the original carton/packaging (molded foam container), or equivalent, to ship you unit. Do not use the carton itself as a shipping carton; you should package the equipment carton within a sturdy shipping container and use additional packing material to safeguard against damage during transit. Include complete name and address information inside the carton, as well as clearly writing it on the outer label/return address area. Ship your equipment fully insured and prepaid. Horizon Service Center is not responsible for any damages incurred during shipping.
3. Include detailed information explaining your operation of the equipment and problem(s) encountered. Provide an itemized list of equipment enclosed and identify any particular area/function which may better assist our technicians in addressing your concerns. Date your correspondence, and include your name, mailing address and a phone number where you can be reached during the business day.

Warranty Repairs

To receive warranty service, you must include a legible photocopy of your original dated sales receipt to verify your proof-of-purchase date. Providing that warranty conditions have been met, your gyro will be repaired without charge.

Normal Non-Warranty Repairs

Should your repair cost exceed 50% of the retail purchase cost, you will be provided with an estimate advising you of your options.

Within your letter, advise us of the payment method you prefer to use. Horizon Service Center accepts VISA or MasterCard, or we can return the equipment C.O.D. cash-only. If you prefer to use a credit card, include your card number and expiration date.

Mail your system to:

Horizon Service Center
4105 Fieldstone Road
Champaign, Illinois 61821
(217)355-9511

Manufactured in the UK by:	Distributed worldwide by:
CSM Design Consultancy, Ltd.	J. Perkins Distribution, Ltd.
8 Littlebrook Close Hadfield Hyde	90-96 Greenwich High Road
Cheshire SK148AVV	London SE108JE