Flybarless Control Gyro



Gyro Program Box

# **GPB-1**

# **INSTRUCTION MANUAL**

## **Software Update Functions**

### CGY760R/CGY755 Software Updating Procedure

#### GYRO UPDATE (Update mode of CGY760R/CGY755)

This menu is used to adjust the update mode of the CGY760R/CGY755. The mode selected will be determined by the model of the CIU selected and personal preference. For example, when using the CIU-3, the user may select either the high speed or the slow speed modes. If using the CIU-2, only the slow speed mode is available.

\* The following optional products are required for the update.

· CIU-2 or CIU-3

Cable for CGY760R/CGY755 / GY701 / GY520 or DSC cable for update

#### (1) Download CGY760R/CGY755 update file

Download the CGY760R/CGY755 update file from our website or your local distribtor's website.



**NOTE:** Updating can NOT be performed when the transmitter and the CGY760R/CGY755 communicate or when "Internal Rx" setting is INH. Turn on the power of the CGY760R/CGY755 with "Internal Rx" being ACT and transmitter power OFF.

**GPB-1 side** 

### **PC side**





#### (3) Preparation for update -2 Refer to the "GYRO UPDATE" screen from

the GPB-1 menu screen.

#### (4) Selection of CIU (Speed)

Use the [ $\blacktriangle/+$ ] or [ $\lor/-$ ] key to move the cursor to "LOW SPEED (CIU2/3)" or "HIGH SPEED CIU3" and press the [Enter] key. The "Are you sure?" indication will appear on-screen.

Press and hold the Enter key.

### (5) Perform update

Click on the update file downloaded to the PC to update the CGY760R/CGY755.

### 

○ Do not turn off the power or remove the battery while updating. CGY760R/CGY755 and GPB-1 may be damaged.

If the update is not performed normally, "FAILED !" will be displayed. In If the update has failed, please start the process once again from the beginning. Should it fail once more, it is likely that the update file has been corrupted when downloaded previously. Please download this file and restart the procedure.



### **PC side**

### **GPB-1 side**





### (6) Update complete

When the update has been successfully concluded, "Completed" appears on the screen of GPB-1.



### **GPB-1 Software Update Procedure**

#### **GPB-1** UPDATE

The GPB-1 can be updated from PC using CIU-2 or CIU-3.

- \* The following optional products are required for the update.  $\cdot$  CIU-2 or CIU-3
- Cable for CGY760R/CGY755 / GY701 / GY520 or DSC cable for update Receiver batterv
- 1. Download the CGY760R/CGY755 update file from our website or your local distributor's website.





### **PC side**

PC
4. Start an executable file by a PC.
CIU-3 🚜 Updater(Highspeed).exe
CIU-2 Updater(Lowspeed).exe
<u>C.r.</u> s
Double-
click
🛔 Update 🛛 🗙
WRITE
<b>V</b>
Lupdate X
WRITE
·
Click [WRITE]
WPITE
Update X
GDR1 will be undated Are you sure?
GIBT WINDE aplated. Are you sure.
OK Cancel
Click [OK]
ОК
🚠 Update 🛛 🗙
Now writing
WRITE

### **GPB-1 side**

### GPB-1

5. When using the CIU-3, hold down the [Enter] and [Esc/ Page] keys of the GPB-1 and turn on the power. Release the [Enter] and the [Esc / Page] keys when the backlight of the screen lights up.



the  $\lfloor \blacktriangle/+ \rfloor$  and  $\lfloor \bigtriangledown/- \rfloor$  keys of the GPB-1 and turn on the power. Release the  $\lfloor \checkmark/+ \rfloor$  and  $\lfloor \bigtriangledown/- \rfloor$  keys when the backlight of the screen lights up.



Don't turn on the power !



### **Update Functions Ver 4.1**

This software update adds or changes the following functions.

	Necessity of updating	
Functions Ver 4.1	GPB-1	CGY760R CGY755
Fixed a bug in the swash rotation settings on page 6/7 of the swash detail menu. When the swash type is H-1.	-	0

### **Update Functions Ver 4.0**

This software update adds or changes the following functions. In addition to the manual originally supplied with your system, please now refer to the following new instructions: (CGY760R/CGY755 and GPB-1 must be updated separately.)

	Necessity of updating	
Functions Ver 4.0	GPB-1	CGY760R CGY755
Added a PIT rate delay function when switching between conditions C1 to C5 on the gyro side.	0	0

#### PIT Condition Delay

Added a PIT rate delay function when switching between conditions C1 to C5 on the gyro side.

SWH.BASIC screen 6/6 PIT.Rate is same as page 3/6. This is the PIT rate delay setting when the gyro condition changes. The setting range is 0 to 27. The larger the number, the slower the operation.

GPB-1 is compatible with

Ver 4.2 or later

### **Update Functions Ver 3.0**

This software update adds or changes the following functions. In addition to the manual originally supplied with your system, please now refer to the following new instructions: (CGY760R and GPB-1 must be updated separately.)

Necessity of upd		of updating
Functions Ver 3.0	GPB-1	CGY760R
Added a servo type select function for using ELE2 ports other than swash.	0	0
Added the condition function to the "Base Gain" of the "FLT. tune" (aileron / elevator).	0	0
Added the condition function to the "Head Resp" of the "FLT. EXPERT".	0	0

### **Functions Ver 3.0**

### ELE2 (S.BUS connection) Additional Servo Type

Added a servo type select function for using ELE2 ports other than swash.



SBUS BASIC		37
Við Trðiner	#1	INH
	#2	INH
en en en como Cl	111	

	DG: 285Hz
RESET	RESET

#### (13) ELE2 channel Servo Type

(If you want to use the ELE2 port for purposes other than swash.) This selects the ELE2 servo types. There are three types of the servo driv-ing frequency selection, AN:70 Hz, DG285 Hz, and 760 µs. All Futaba digital servos can be operated with fastest DG:285 Hz mode but some of other burded for expedie are unare to C206 Hz mode but some of other Servos can be operated with lastest organization and the discrete bulk of the proper servos do not support DG:285 Hz mode. In this case, select the proper servo driving frequency per the manufacturer's specifications. Move the cursor to "Servo Type" by pressing the [ $\blacktriangle$ /+] or [ $\blacktriangledown$ /-] key and press the [Enter] key to enter the setting mode. Then select the servo type with the [ $\blacktriangle$ /+] or [ $\blacktriangledown$ /-] key. When "EXECUTE: Enter (1 sec)" is displayed, press the [Enter] key for about 1 second. This changes the selected type and exit the activing mode. and exits the setting mode. If you select H4-00 or H4-45 with 4 servo swashes, cannot set this ELE2

port servo type. In that case, select all swash servo types in SWH basic servo type.

Setting: AN:70 Hz/DG:760 µs/DG:285 Hz Initial setting: DG:285 Hz

#### **AWARNING**

The servo type parameter within the CGY must match the type of servo you are using. Incorrect setting may damage the CGY or the servo. Incorrect setting may also result in a loss of control during flight.

#### **Base Gain: Base Gain Condition**

Added the condition function to the "Base Gain" of the "FLT. tune" (aileron / elevator).



### HeadResp: Head Response Condition

Added the condition function to the "Head Resp" of the "FLT. EXPERT".



### **3D VIA TRAINER Screen FUNCTION LIST**



### **Update Functions Ver 2.0**

This software update adds or changes the following functions. In addition to the manual originally supplied with your system, please now refer to the following new instructions: (CGY760R and GPB-1 must be updated separately.)

		Necessity of updating	
Functions Ver 2.0	GPB-1	CGY760R	
Another receiver can be used	0	0	
ELE 2 can be operated when SWASH TYPE setting is "H1, H3 - XX"	0	0	
"L. Scale" is added to the choice of setup style (Large scale model default value)	0	_	
ELE. Comp can set condition and via trainer	0	0	
When Governor function is INH, change so that gear ratio and number of poles can be set	0	-	
When the setup style is "3D", the gyro gain of RUD is now adjustable in the RUD basic display.	0	-	
GPB-1 setting data can be written to CGY760R (Setting data can be copied from other CGY760R to CGY760R)	0	_	
S.BUS servo setting is possible with GPB-1	0	_	

### **Opening Screen**

When GPB-1 starts up with power on, the opening screen is displayed first.



### **Functions Ver 2.0**

### Used by another receiver

#### **RECEIVER** (Receiver system setting)

On the "RECEIVER" screen, make sure that the CGY760R setting matches the protocol that is selected/utilized in the transmitter. Display the "RECEIVER" screen from the GPB-1 menu screen.

#### Note:

To change the "Receiver System" type, first power off the transmitter and receiver, and re-power the CGY760R while the transmitter is still in the OFF position. The only way to change the re-ceiver type is by power cycling the gyro first.



Please turn off the power when connecting the receiver.

If the power is on and connected, the CGY760R or the receiver may be damaged. 

• If you do not turn off the power after changing "Internal Rx" setting to INH, the internal receiver is in operation. After changing the setting, please power cycle. If the power is not cycled, the receiver will not keep bind and the helicopter will crash.

#### ELE2 (S.BUS connection)

When SWASH TYPE setting is "H1 and H3 - XX", CH operation of ELE 2 is possible



S. BUS connection: ELE2 (Elevator) channel

Select "ELE 2 CH \*" in the same way as other S.BUS connection channels and use the [▲/+] or [▼/-] key to set the elevator 2 channels of the transmitter.

The "SWH BASIC" settings can be set only for H1 and H3-XX (When set to H4-XX, it is automatically set to ELE 's CH setting.) If you change the setting between H1 and H3, the CH will remain as it is.

#### Setup style "L.SCALE"

L.SCALE: Initial parameter mode corresponding to a large machine with a total length of 2.5 m or more.

DASIC MEN	BASIC MENU screen	
BASIC MENU		)
FLT.TUNE		
SWH.BASIC		
RUD.BASIC		
GOV.BASIC		
SBUS BASIC		J
4		
•		
	a /=	
JWH. DASICS	creen 1/5	
SWITHING	creen 1/5 1/5	1
SWINE STOR	Creen 1/5 1/5 L.SCALE	
Setup Style Gyro Set Dir	L.SCALE	
Setup Style Gyro Set Dir Servo Type	L.SCALE 1 DG: 285Hz	
SWH BESIC Setup Style Gyno Set Din Servo Type SWASH Type	Creen 1/5 1/5 L.SCALE 1 DG: 285Hz H3-120	
SWINSIBLE Setup Style Gyno Set Dir Servo Type SWASH Type Servo Dir #	1/5 L.SCALE 1 DG:285Hz H3-120 1	
SWIT DASICS	1/5 1/5 L.SCALE 1 DG: 285Hz H3-120 1	
SWIT DASICS	1/5 1/5 L.SCALE 1 DG: 285Hz H3-120 1	

3D mode contains a proven set of parameters which are good for not only 3D but also F3C flying. F3C Mode and L.SCALE (Large scale model) Mode are for unique or special tuning types only.

\*The changed menu is indicated on a map

\*When the style is changed, setting of AIL/ELE/RUD is re-initialized and defaults are changed.

Move the cursor to "Setup style" by pressing the [▲/+] or [▼/-] key and press the [Enter] key to enter the setting mode. Use the [ $\blacktriangle$ /+] or [ $\blacktriangledown$ /-] key to set the style. When "EXECUTE: Enter (1 sec)" is displayed. Press the [Enter] key for about 1 second to changes the selected style. The program will also exit the setting mode accordingly.

### ELE. Comp can set condition and via trainer



### Gyro base gain setting to RUD. BASIC



#### GY. Gain: Gyro base gain setting

This parameter sets the base gain of the gyro. This can be used to adjust the gain % if your actual transmitter gain does not match the gain on the CGY760R correctly. Use the [▲/+] or [▼/-] key to setting the gain. Setting ranges: 0 ~ 150% Initial value: 100%

### **Gear Ratio and Pole number**

When the Governor function is INH, gear ratio and pole number can be set.



#### **GOV. BASIC screen** GOV.BASIC 1/6 INH Governor INH Gear Ratio 8.00 t Pole Num. 2 p

#### Gear Ratio:

Input the main rotor gear ratio by pushing the [  $\blacktriangle$  /+] or [  $\blacktriangledown$  /-] key to select the desired working mode.

Notes: If the gear ratio is not properly set, the set speed and actual engine speed will be different.

•The gear ratio should be given in

the helicopter instruction manual.

If the helicopter instruction manual does not give the gear ratio, calcu-late the gear ratio as follows:



#### Pole Num.: Pole number

This parameter is used when using a direct phase sensor attachment to a brushless motor lead. Input the motor pole count as specified by the brushless motor manufacturer. When using any revolution sensor other than a direct phase sensor type, set the pole number to 2 p. Note: For nitro use, set to 2 p.

Note: The input signal range of the CGY760R is 0.0 v - 3.0 v. Exceeding this voltage range may cause damage to the CGY760R.

Setting ranges: 2 ~ 24 P Initial value: 2 P

#### Writes data saved in GPB-1 to CGY760R

You can copy data when replacing the CGY760R in your machine.

- The data to be written is the "BASIC" menu and "EXPERT" menu. - With the exception, the setting of ACT / INH of "Internal" on the "RECEIV-ER" screen of the GPB-1 menu is written.

#### **WARNING**

After writing, if the setting is "INH", the internal receiver is operating without turning off the power supply once. If the receiver is connected while it is operating, the helicopter crashes with inoperable state.

- When copying from another CGY760R, connect the copy source CGY760R to the GPB-1 in advance and let the GPB-1 read the setting data.

#### **A** CAUTION

If you press [Ent] start from the opening screen and display the home screen, the setting data of the connected CGY760R will be saved in GPB-1. Please save the setting data to be written again to GPB-1.



#### **S.BUS SERVO SETTING**

An S.BUS servo can memorize the channel and various settings you input. Servo setting can be performed on the GPB-1 screen by wiring the servo as shown in the figure.

\*With some S.BUS(2) servos, there are some functions which cannot be used. If a function cannot be used, the display screen will change.



#### **ACAUTION**

Be sure to connect each servo and set it.

If multiple servos are connected at the same time, the servo may be damaged. Be sure to turn off the power when replacing the servo.

Servo may be damaged if servo is replaced while power is on.

Please match the voltage of the battery to be used with the specifications of the servo to be connected.

Servo will be damaged if voltage higher than specified is applied.

#### **WARNING**

Sever connect CGY760R and GPB1 when setting S.BUS servo. The helicopter becomes uncontrollable and crashes.

\* Even if the servo is operating on the bench, it could be damaged.

From the opening screen, hold down the  $[ \downarrow /+]$  key to display the SBUS servo screen.



#### S.BUS / S.BUS2 servo recall, writing, initialization





#### Change servo type

Changing the servo pulse width from 1520 to 760 is possible with the servo type function

#### Display of "servo type" when reading

\* When "RECALL" is executed, the servo type name is displayed on the left side of the screen, and the current 760 or 1520 type is displayed below it. The S.BUS servo not supporting servo type change displays "Unsupported"



\* A new S.BUS servo (example: HPS-H700) that can set both parameters for swash (SWH: 760) and Rudder (RUD: 760) is loaded first, the servo type name on the left side, DG: 1520, SWH: 760 is dis-played under "SELECT" on the right side. Changing the servo type from SWH: 760 to RUD: 760 will display RUD: 760 under the servo type name the next time you load it. However, if you change the parameter of RUD: 760, the subsequent reading will show SWH: 760. Please mark so that the set servo type can be determined.

Notes on servo set to 760 µs To connect the servo set to "DG: 760" or "SWH: 760" to AIL / ELE / PIT / ELE 2, set the servo type to "DG: 760".

To use the servo set to "DG: 760" or "RUD: 760" for RUD, set the servo type to "DG: 760". Please set the servo type to "DG: 285 Hz" for the AIL / ELE / PIT / ELE 2 servo set to "DG: 1520". For RUD servo, set the servo type to "DG: 1520".

#### **∧** CAUTION

 Be sure to connect the servo and CGY760R with the same setting. If you connect a different setting servo with CGY760R, the servo may be damaged.

#### Servo type: 760 µs



#### When the CH setting is DG1 or DG2

If the CH setting is DG1 or DG2, the servo type can not be changed. Before changing to Servo type, you need to set it to CH 1 to 16 with CH setting and execute "WRITE".

SBUS SERVO 1/4	4
RECEIL WRITE INIT.	
сн DG1 го 051 – 00018	
_Servo Type	1
HPS-H700 SELECT	
DG:1520 ▶ SWH:760	

#### **▲** CAUTION

 $\otimes$  The servo of 760  $\mu s$  is not connected to ordinary CH, S.BUS / S.BUS 2 connector such as receiver not compatible.

The servo may be damaged.

O Do not set 760 μs servo parameters with transmitter unsupported to 760 µs and PC S-LINK software. Be sure to set parameters with GPB-1. The servo may be damaged.



### **Description of function of each parameter**

With some S.BUS(2) servos, there are some functions which cannot be used. If a function cannot be used, the display screen will change.





The changeable S. BUS servo of 760 µs and 1520 µs HPS-H700 / HPS-HC700

(As of May 2023)

### **VIA TRAINER FUNCTION**

When using "Via Trainer" which wirelessly transfers gyro setting data from the transmitter, connect the transmitter and the GPB-1 as shown below.



### 

Be sure to check the operation for all conditions 1 to 5 before flying.

Be sure to connect and disconnect the transmitter and GPB-1 connection cable with the power off.

### **3D VIA TRAINER Screen FUNCTION LIST**

ME DESING 1/18   (R1L/ELE) (1.309.4/5   (VC. R1 (1.309.4/5   Cont.RuthELE (1.409.4/5   ME DESING 2/18   (R1L/ELE) (40x   ME DESING 2/18   (R1L/ELE) (1.40x   ENFO. (1.40x   ENFO. (1.40x	-FLT. TUNE CYC. Rt: Cyclic rate setting Cnt. AuthAlL: Control Authority Aileron Cnt. AuthELE: Control Authority Elevator EXPO:: Exponential FLT. Styl: Flight style
All Frances 3/10 (AIL/ELE) ELE.COMP C1 0x	ELE. Comp: Elevator pre compensation
Via Trainer 4/10	-SWH. BASIC
(SWRSH) sws.sate C1 50 x PIT.sate C1 50 x sws.sing C1 130 x	SWS. Rate: Rate adjustment PIT. Rate: Rate adjustment SWS. Ring
Mia Inainen 5/10	- GOV. BASIC
GOVERNOR> GOV.Gein C1 40x L Lmt.L rpm C1 25x L Lmt.H rpm C1 45x	GOV Gain: Governor gain L Lmt. L rmp : Low limit hovering RPM L Lmt. H rmp: Low limit idling RPM
	-FLT. EXPERT
(FLT) HeadHid A C1 80% SteTune A C1 80% HeadResp 1	HeadHld A : Head hold aileron StopTune A : Stop tune aileron HeadResp: Head Response
Mia Instinen 7/10	
<flt> He∂dHid E C1 80% St⊨Tune E C1 80%</flt>	HeadHId E: Head hold elevator StopTune E : Stop tune elevator
Mistingings 8/10	
<rud> EXP. AVCS -20 x EXP. NORM -20 x</rud>	-KUD, EXPERT EXP. AVCS: Rudder exponential AVCS EXP. NORM: Rudder exponential NORMAL
Via Trainer 9/10	
<rud> CNT.DIIN 15n CNT.DIIN 15n CNT.DIOUT 12n CNT.DIOUT 12n</rud>	CNT. Diln: Control delay in CNT. DiOut: Control delay out
Via Trainer 10/10 (RUD) ANG 720 d Tail Resp. 1	ANG: Pirouette speed Tail Resp: Tail response