ACE RC®

COUGAR

2.4GHz Digital Radio System

2.4GHz Digital Radio System

COUGAR
2CH DIGITAL RADIO SYSTEM GP2
No.8228 iFHSS

COUGAR
3CH DIGITAL RADIO SYSTEM GP3
No.8311 iFHSS

⚠ Please read all instructions thoroughly before operating this device.

The contents are subject to change without prior notice due to product improvements and specification changes.

INSTRUCTION MANUAL

Thunder Tiger Corporation guarantees this model kit to be free from defects in both material and workmanship. The total monetary value under warranty will in no case exceed the cost of the original kit purchased. This warranty does not cover any components damaged by use or modification. Part or parts missing from this kit must be reported within 60 days of purchase. No part or parts will be sent under warranty without proof of purchase. To receive part or parts under warranty, the service center must receive a proof of purchase and/or the defective part or parts. Should you find a defective or missing part, contact the authorized Thunder Tiger Service/Distributor nearest you. Under no circumstances can a dealer or distributor accept return of a kit if assembly has started.

INTRODUCTION

Congratulations on your purchase of the ACE RC Cougar 2.4GHz digital radio system. The Cougar radio system was specially designed with the latest wireless and advanced-programming technology to meet driver's requirements. With spread spectrum and smart frequency-hopping system, the Cougar radio system delivers precision and smoothness of operation at the same time without any interference risks. Cougar pistol radios are configured for operating surface R/C models.
With proper use and care, ACE RC Cougar will make the control advanced and simple, and provide you with many years of enjoyment. Before operating your new radio system or installing into your model, please take a few minutes to familiarize with the various features of the system by reading this owner's manual thoroughly.

TABLE OF CONTENTS

ADVANCED TECHNICAL FEATURES

FHSS-Frequency hopping spread spectrum
Advanced frequency-hopping program on the spread spectrum base for added safety, reliability and virtually interference-free communication.

SIBL-Security ID binding link
A binding feature is included in the ACE RC 2.4 GHz spread spectrum system to ensure the transmitter and receiver only bind to each other and prevent interferences from other controllers.

FSPC-Failsafe programmable individual channel
In extremely rare circumstances where signal loss is encountered, the system features a failsafe program allowing individual channel to restore back to initial settings.

iFHss+ data mode
Improved data format and protocol, Cougar GP2 / GP3 provides a faster and less power consumtion data transmission. Such technology also reveals an extremely data reliability while data is on the air.

FEATURES

TRANSMITTER

- Advanced 2.4GHz frequency-hopping spread spectrum technology for TRS402SS & TRS403SS. (NOTE)
- Steering / Throttle trims
- Steering / Throttle servo reversing
- Throttle / Brake ATV–Adjustable Travel Volume
- Steering dual-rate adjustment
- LED battery voltage indicator
- Low battery alarm

RECEIVER

- The TRS403ss is the 2.4GHz 4CH receiver paired with the COUGAR GP2 / GP3 transmitter. Its compact and small size allows you to install it almost anywhere on your model.

NOTE: The TRS401ss receiver does not work with the 2.4GHz COUGAR GP2/GP3 iFHSS+ system. Use only with the TRS402ss or TRS403ss 2.4GHz iFHSS+ receivers. ACE RC iFHSS systems and iFHSS+ systems are not compatible with each other.

SYSTEM CONTENTS

Description	COUGAR GP2	COUGAR GP3
Item No	8228	8311
Transmitter	COUGAR GP2	COUGAR GP3
Receiver	TRS403ss	

SPECIFICATIONS

Transmitter	COUGAR GP2	COUGAR GP3
Item No.	8227	8311
Configuration	Pistol Grip	
Encoder	2Ch	3Ch
Current Drain	40mA@7.2V	60mA@7.2V
Servo Reverse	CH1~CH2	
Transmission System	FHSS	
Power Indicator	LED	
Antenna Type	Built-in	
Antenna Peak Gain	2dBi Typical	
Power Requirement	7.2V/6 cell AA Battery	

Receiver	TRS403ss
Item No	AQ6396
Frequency (GHz)	2.4GHz
Channel	4CH
BEC	No
Type	PPM
Antenna Type	Single antenna w / gain
Battery Power	4.8~6V
Dimension (mm)	35.6 x 18.3 x 14.2
Weight (g/oz)	6.5 / 0.23

1. Transmitter Antenna
2. Battery Level Indicator
3. HI/LO Throttle ATV (Adjustable Travel Volume)
4. Servo reversing switches
5. Steering Trim
6. Throttle Trim
7. Steering D/R (Dual Rates)
8. AUX Ch Button (for GP3 only)
9. External Charging Jack
10. 2.4GHz binding SW / LED
11. Steering Wheel
12. Power Switch
13. Throttle Trigger
14. Battery Cover

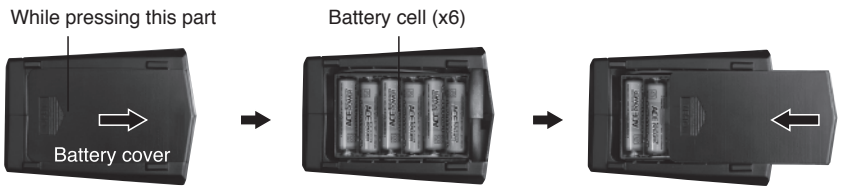
TRANSMITTER CONTROLS

1. **Transmitter Antenna:** Built-in antenna, it is not easy broken.
2. **Battery Level Indicator:** Green / Red LEDs indicate the battery voltage. If the Red LED flashes, please replace the batteries.
3. **HI/LO Throttle ATV (Adjustable Travel Volume):** Provide the function to let you independently preset the maximum travel of the throttle servo either side (high / low) of neutral.
4. **Servo reversing switches:** To reverse the servo's rotation direction at the flip of the switch. The reversing switches are recessed into the transmitter to prevent accidental operation.
5. **Steering Trim:** Adjusts the steering in small increments or decrements to run the model straight.
6. **Throttle Trim:** Adjusts the throttle in small increments or decrements to shift the neutral position.
7. **Steering D/R (Dual Rates):** Turn this knob left or right to adjust the amount of the steering dual rate. Right to increase dual rate amount and left to decrease the amount.
8. **AUX Ch Button:** Provides an extra function for the control of the model. (for Cougar GP3 only)
9. **External Charging Jack:** For rechargeable NiCd/NiHM battery pack on the transmitter only.
10. **2.4GHz binding SW / LED:** The Binding SW button is located on the top of the 2.4GHz transmitter. For additional details, please refer to the “Binding” setting procedure (Page 7). LED indicate the RF status. The Red LED means RF funtion is not work.
11. **Steering Wheel:** Control the steering of the model.
12. **Power Switch:** Slide to turn the transmitter on or off.
13. **Throttle Trigger:** Pull or push to control the movement of the model.
14. **Battery Cover:** Slide cover to install or remove batteries.

INSTALLATION

Transmitter batteries replacement / installation

1) Slide the battery cover in the direction as shown to remove the cover.
2) Install 6pcs alkaline or rechargeable “AA” size cells into the battery holder connected to the transmitter.
3) Slide on the battery cover and make sure it is closed securely.
4) Turn the power on to check. If the Power Indicator LED fails to light, check the batteries for insufficient contact or incorrect battery polarity.



CHECK:

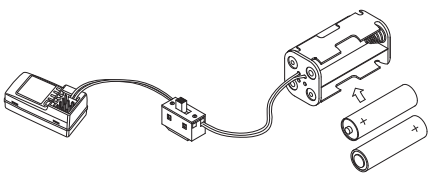
a) Use only fresh, alkaline cells, all of the same brand.
b) Make certain that the contacts in the battery holder stay clean by using a pencil eraser to gently remove any corrosion or dirt that may accumulate on them. It is recommended to do this each time you install fresh cells into your transmitter.
c) If using the rechargeable battery pack, simply remove the battery holder by pulling out the connector from the transmitter. Then plug-in the battery pack connector to the transmitter.
d) When the rechargeable battery is installed in the transmitter, it can be charged through the external charging jack located on the transmitter.

⚠ CAUTION:

a) Do not attempt to charge alkaline batteries, they may explode!!
b) When charging the rechargeable battery, set the power switch on “OFF” position before charging. The charger plug must be correct type (“+” inside and “-” outside, type TAMIYA N-3U or equivalent). The wrong type may burst causing personal injury and damage.
c) Always be sure the batteries are loaded in the correct polarity order. If the batteries are loaded incorrectly, the transmitter may be damaged.
d) When the transmitter is not used for any short or long period of time, always remove the batteries from the transmitter.

Receiver battery replacement/installation

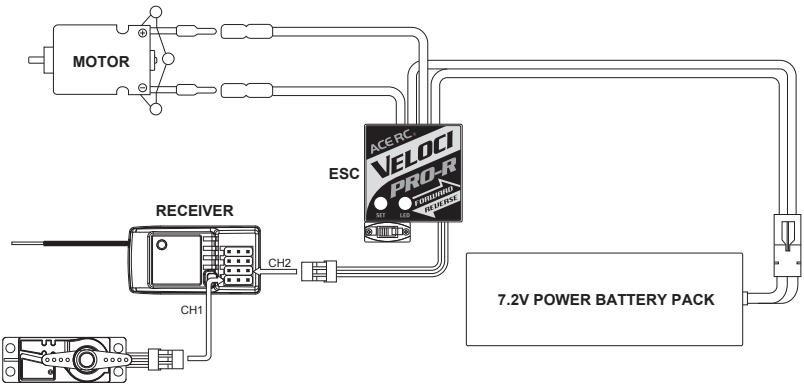
Insert 4 fresh AA cells into the receiver battery holder. Make sure the batteries are located in the correct polarity order. Maintain the battery contacts in the same way as described in previous section.
Insert the switch harness plug into the receiver socket marked “BATT”.



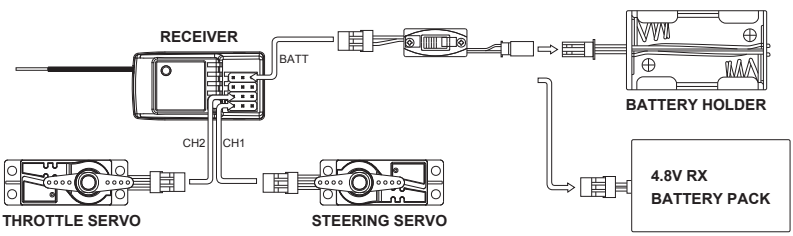
Radio installation

1) Connect the receiver, servos, and switch hardness/battery pack as shown.
2) If you are not familiar with all the control systems. Do the “bench test” before to install all the devices on the model.
3) Always follow the “**transmitter on first, off last**” procedure.
4) Always install the receiver as far as possible from the motor, ESC, power battery, motor wires.. or other noise sources. Especially, do not route the motor wires next to the receiver, crystal or receiver antenna.

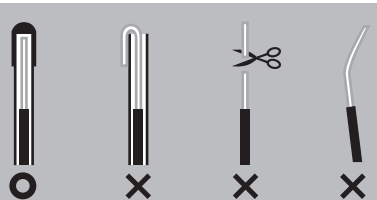
Electric Power Model Installation



Gas Power Model Installation



! To prevent loss of radio range do not kink or cut the gray wire, do not bend or cut the metal tip, and do not bend or cut the white wire at the end of the metal tip.

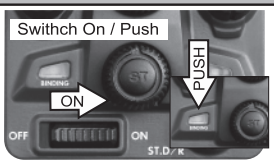
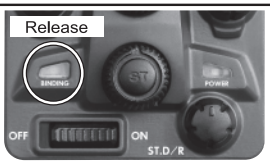
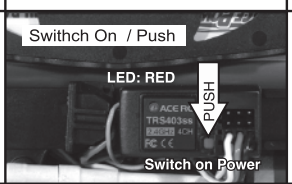
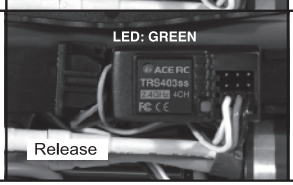


BINDING PROCESS

A binding feature is included in the ACE RC Cougar 2.4GHz spread spectrum system to ensure the transmitter and receiver bind properly and prevent interference from other controllers.
To manually bind Tx/Rx, please proceed as per the following steps:

a. Press and hold the “Binding SW” button on the top of the transmitter while turning on the transmitter.
b. Release the “Binding SW” button after the green / red LED flashes indicating the transmitter is binding.
c. Press and hold the bind button on the receiver while turning on the receiver. Binding process will then start automatically.The LED will turn green/red flash on the receiver.
d. Release the “Binding SW” button. Successful binding is confirmed by the binding LED changing from a Green / Red flashing and then remain solid on the transmitter. The LED will turn green on the receiver. Once binding is complete, the system will automatically connect.

Note: Binding process may take 2~4 seconds to execute. If binding fails, the LED on the receiver will turn red. Please turn off the power and repeat the steps from a) ~d).

Step	TX Action	RX Action	LED
a		No Action	_
b		No Action	TX LED：GREEN/RED FLASH
c	No Action		RX LED：GREEN/RED FLASH
d	No Action		TX LED： GREEN FLASH—>GREEN SOLID RX LED： RED SOLID—>GREEN SOLID

FAIL SAFE (F/S) FUNCTION SETTING

ACE RC COUGAR 2.4GHz R/C system features a built-in Failsafe function to automatically set a servo command if the receiver loses the signal from transmitter due to interference. For safety, we strongly recommend to active the FAILSAFE function on your Cougar R/C system.

Setting up the Failsafe (F/S) Function:

a. After binding the transmitter and receiver, you can continually set up the F/S function. Turn on the transmitter power and then receiver power.
b. Press and hold the “Binding SW” button on the receiver for 2~4 seconds. The LED will start flashing GREEN on the receiver.

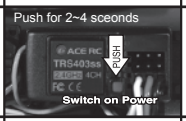
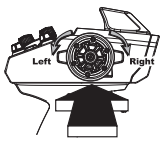
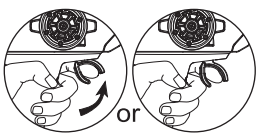
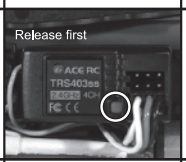
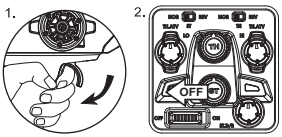
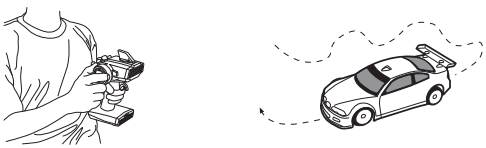
> ⚠ **CAUTION:** Do not release the “Binding SW” button on the receiver until STEP C is completed.

c. Move and hold the throttle trigger to the position you want the control to be in if a failsafe condition should occur. First, keep steering wheel at neutral position (steering servo at neutral position). To set up F/S function with the throttle servo position at "Brake", first push the trigger to the brake position and hold. To set up F/S function with servo position at "Neutral", keep the trigger at neutral position.

> **NOTE:**
> Always set the throttle trigger to neutral or full brake position and steering servo to neutral position in case of any unexpected control error!
> **Factory pre-settings for RC car F/S function are :**
> ■ Electric Car- Steering servo at neutral, throttle at neutral.
> ■ Nitro Car- Steering servo at neutral, throttle at idle.

d. After the Step C, release the “Binding SW” button on the receiver first and then the throttle trigger. The LED turns to solid “RED” and then back to solid “GREEN” indicating the F/S function has now been activated.
e. Test by turning off your transmitter and watching the servo failsafe position activate.
F/S at "Neutral": To check the fail safe is working properly, by moving the throttle trigger to the full forward (full brake), hold this position and then turn off the transmitter. The F/S function should move the throttle servo to “Neutral” position and the steering servo to “Neutral” position.
F/S at "Brake": To check the fail safe is working properly, by keeping the throttle trigger at neutral and then turn off the transmitter. The F/S function should move the throttle servo to “Brake” position and the steering servo to “Neutral” position.
f. If the F/S function fails or need to change the F/S hold position, repeat the steps a) ~e). After the F/S is completed, you can start normal operation.

> ⚠ **CAUTION:**
> FAILSAFE function will be reset after binding your transmitter & receiver.

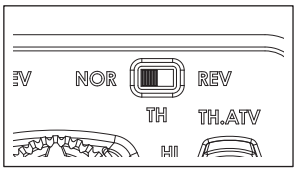
Step	TX Action	RX Action	Check
a	Binding Complete	Binding Complete	TX LED：GREEN SOLID RX LED：GREEN SOLID
b	No Action		RX LED：GREEN FLASH
c	**1.** Steering: Neutral  **2.** Keep brake or keep trigger at neutral 	No Action	**Pre-settings for F/S function:** ■EP Car : Steering at Neutral / ESC at Neutral ■GP Car : Steering at Neutral / Carb. at Iddle
d	Release later 		RX LED：RED SOLID-2s->GREEN SOLID
e	1. Keep full throttle 2. Swithch Off 	No Action	F/S function activates
f	OK! 		

BUZZER LED

	Status	Tone of buzzer	LED (close to Binding SW)
1	Boot-up	Bee-Bee-Bee	Green LED flashing
2	Bind	Bee	Red / Green LED flashing interactively
3	Binding OK	Bee-Bee-Bee	Green LED flashing
4	PWM abnormal	Beep	Red LED flashing
5	Range check	Beep	

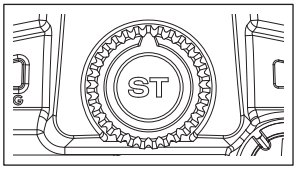
FUNCTIONS

1. Servo Reversing



It is sometimes necessary or convenient to reverse the output direction of the servo. The direction of the rotation for each individual servo can be changed by simply flipping the reversing switch that corresponds to the channel number on the receiver where the servo is plugged in. Under normal circumstances, Ch1 is steering, Ch2 is throttle. Using the reversing switches as needed.

2. Steering Trim



- **Neutral position trim**

  By turning the Steering Trim knob clockwise or counter-clockwise, the steering neutral can be adjusted as needed.

NOTE
Be sure the steering trim on the transmitter is at the neutral position before you are trying to make an adjustment.

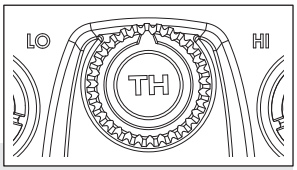
HELPFUL HINT
When you install a servo, always check to be sure the servo is at its neutral position.

- **Servo travel**

  Changing the trim can affect the overall settings. When adjustments are made with this trim, it is recommended to re-check your installation for maximum servo travel.

HELPFUL HINT
If it takes most of your trim movement to get a servo to the neutral position, re-position the servo horn or servo saver on the servo and inspect your linkage installation.

3. Throttle Trim



- **Neutral position trim**

  Once the neutral position of the throttle trigger is set, by turning the Throttle Trim knob clockwise or counter-clockwise, the throttle neutral can be adjusted as needed.

HELPFUL HINT
When using an ESC, set the throttle trim to neutral and make adjustments to the speed control.
On a gas powered model, set the trim to neutral and adjust the throttle linkage to the point where the carburetor is fully closed in accordance with your engine instruction manual.

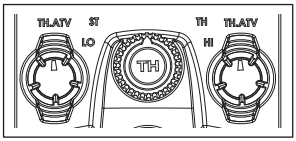
- **Servo travel**

  Trim adjustments will affect the overall servo travel; check the brake side (backward) movement when changes are made.

HELPFUL HINT
If you have used most of the trim movement to get the servo to the neutral position, re-center the servo horn closer to the neutral position and inspect your throttle linkage.

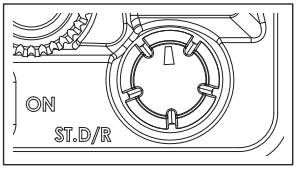
4. Throttle ATV

Throttle Adjustable Travel Volume/ATV provides the function to preset independently throttle travel of the servo either side of neutral. It offers easier adjustments to set the throttle operation at idle and maximum power.



5. Steering D/R

Steering D/R allows you to change the steering travel while running by turning the dual rate dial as shown to correct over-steering and under-steering problems by increasing or decreasing steering sensitivity. You can adjust sensitivity of your model to your own preferences with this function.



FCC INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC CAUTION

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices). This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that undesired operation.

FCC RADIATION EXPOSURE STATEMENT

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment.This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.
This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

USING CAUTION AT THE RACING TRACK

- Do not operate the model or use the radio in rain, lightning, or at night.
- Do not operate the model or use the radio if you have been drinking alcohol or under the influence of any other substance that will affect your skills.
- Always check battery power before you operate.
- Keep out of reach of children.
- Do not store the radio in temperatures below -10 ˚C (14˚F) or above 40˚C (104˚F) or in a humid, dusty, or high vibration environment. Keep the radio away from direct sunlight.
- To prevent corrosion, take out the batteries if you are going to store the radio for a long period.

ACCESSORIES

■ TX & RX

No.8228
COUGAR GP2 2.4GHz 2CH
Radio System

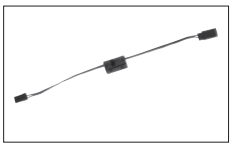
No.8311
COUGAR GP3 2.4GHz 3CH
Radio System

AQ6394
COUGAR GP2 Tx only

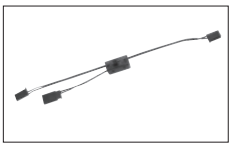
AQ6395
COUGAR GP3 Tx only

AQ6396
2.4GHz 4CH RX, TRS403ss

■ Switch Harness

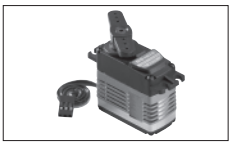


AG2051
Switch Harness, Futaba & JR



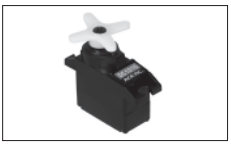
AG2078
Y Switch Harness, Futaba

■ Digital Servos

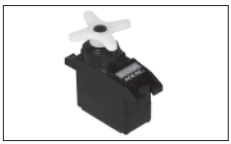


8127
Digital Torque Servo
14.5Kg-cm@6V,DS1015

8128
Digital Speed Servo
12.5Kg-cm@6V,DS1313



8160
Digital Micro Servo
1.6Kg-cm@4.8V,DC1016



8171
Digital Metal Gear Micro Servo
1.6Kg-cm@4.8V,DC1016MG

8175
Digital Standard Servo
3Kg-cm@4.8V,DS1903

8176
Digital Standard Servo
3Kg-cm@4.8V,DS1903MG

8177
Digital Toque Servo
7.8Kg-cm@4.8V,DS2008MG

Declaration of Conformity

Annex IV of the R&TTE Directive 1999/5/EC

For the following equipment:

Product	:	**Remote Controller for models**
Type Designation/Trademark	:	**TX: Cougar GP2(8228) 、 Cougar GP3(8311) / ACE RC**
		RX: TRS403ss(AQ6396) / ACE RC
Manufacturer's Name	:	**Thunder Tiger Corp. (Ningbo)**
Manufacturer's Address	:	**28 Jin-Feng Road, Liang Hui Industrial Park, Yuyao,**
		Zhejiang 315400 China

is herewith confirmed to comply with the requirements set out in R&TTE Directive 1999/5/EC of 9th March, 1999, Annex IV. For the evaluation of the compliance with this Directive, the following standards were applied.

EN 300 328 V1.7.1:2006-10

EN 301 489-1 V1.9.2:2011-09

EN 301 489-17 V2.1.1:2009-05

EN 60065:2002/A1:2006/A11:2008/A2:2010/A12:2011

Responsible for making this declaration is the :

Manufacturer ☒ **Authorized representative established within the EU** ☐

Authorized representative established within the EU (if applicable):

Company Name	:	
Company Address	:	

Person responsible for making this declaration

Name, Surname	:	**Royce Lin**
Position/Title	:	**Vice President**

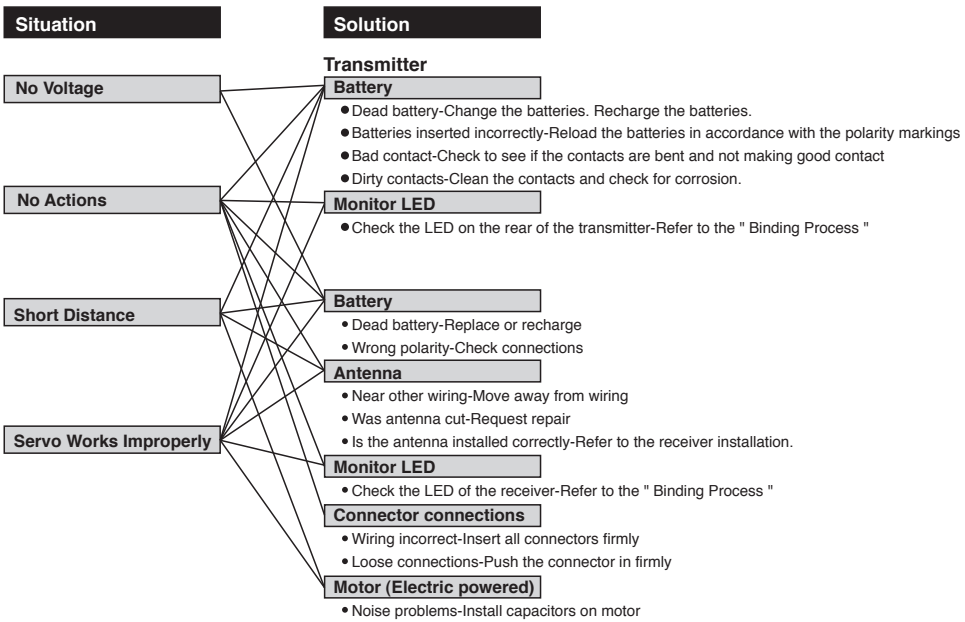
R.O.C (Place) **2012-07-30** (Date)

SERVICE

Thank you for purchasing of the ACE RC COUGAR Radio. Thunder Tiger strives to bring you the highest level of quality and service we can provide. We race and test our products around the world to bring you state-of-the-art items. Thunder Tiger guarantees that you should enjoy many hours of trouble free use from our R/C products. Thunder Tiger products have been sold worldwide through the authorized distributors that are supported directly and rapidly from Thunder Tiger. You may find that Thunder Tiger is always pursuing to explore new items creatively with highest quality. To update the latest product information and to get the best technical support, please feel free to contact your local hobby shops or Thunder Tiger authorized distributor.

TROUBLE SHOOTING

Do not try to operate your model if you find your radio is not working properly. Check out the radio as following steps. If you can not solve the problems then contact with the Thunder Tiger authorized distributor for service.



JC6314
FCC ID: VEJ-COUGARGP2 (for Cougar GP2)
FCC ID: VEJ-COUGARGP3 (for Cougar GP3)