



# **ACE RC<sup>®</sup>**

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## **Instruction Manual**

No.8418  
**SKY COMMANDER**  
**T4A**

No.8602  
**SKY COMMANDER**  
**T6H**

No.8603  
**SEA COMMANDER**  
**T6M**

## Introduction

Congratulations on your purchase of an ACE RC Sky Commander/Sea Commander radio system. The Commander series are designed by the state-of-the-art IT technology. With proper use and care, ACE Sky Commander/Sea Commander 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 owners manual thoroughly.

## Features

### Transmitter

- Stunning exterior design
- 4Ch/6Ch Digital proportional precise control
- Switch On & Low Battery Voltage Alarm
- Easy Access Crystal
- Simulator Port Included (For T4A & T6H)
- FM available in 27,35,36,40,41,72&75Mhz frequencies
- Mixing Function for V-Tail & ELEVON included of T4A
- LED Power Indicator
- Servo Reversing Switch
- Mechanical Trim Lever
- DC charging jack

### Receiver

- Super-Heterodyne for extra long range
- Crystal interchangeable for versatility
- Multi-signal intensified input jamming ratio
- Dual Conversion (For T4A & T6H)

### Servo

- Most reliable high torque motor
- Standard & micro size to fit most models
- Brand new fashion design
- Dual sleeve bearings support
- High impact material

## System Contents

Product Description	Sky Commander T4A	Sky Commander T6H	Sea Commander T6M
Item No	8418-C3 8418-S4	8602-C4	8603
Transmitter	T4A	T6H	T6M
Receiver	TR602 FD	TR602FD	TR601F
Servos	C1016x3 S1903x4	C1016x4	None
Battery Pack	9.6V 1100mAh NIMH Tx Battery Pack		
Charger	110mA Tx/Rx Charger		
Accessory	Switch hardness x 1, Receiver Battery holder x 1, Frequency flag x 1		

## Specifications

Transmitter	Sky Commander T4A	Sky Commander T6H	Sea Commander T6M
Item No	8418	8602	8603
Configuration	Dual Sticks		
Channel Encoder	4Ch	6Ch	6Ch
Frequency(MHz)	35/36/40/41/72	35/36/40/41/72	27/40/41/75
Modulation	FM(PPM)		
Current Drain	150mA@9.6V		
Band Width	+/-10KHz/-40db		
Power Requirement	9.6V		
Trainer/Simulator Port	Yes		No
Servo Reverse	CH1~CH4	CH1~CH6	
Mixing	V-Tail & Elevon	None	

Receiver	TR602FD	TR601F
Frequency(MHz)	35/36/40/41/72	27/40/41/75
Channel	6Ch	6Ch
BEC	NO	
Modulation	FM(PPM)	
Type	Dual Conversion	Single Conversion
Channel Spacing	10KHz	
Battery Power	4.8~6V	
Current Drain	35mA@6V	
Dimension-mm(in)	50x34x14.4 (1.72x1.12x0.68)	35.6x26x15 (1.40x1.02x0.59)
Weight(g/oz)	23g/0.74oz	10g/0.35oz

Servos	STD SERVO S1903	MICRO SERVO C1016
Item No.	8114	8117
Control	Plus width control	
Operating Range	+/- 45 degree	
Power Supply	4.8~6V	
Current Drain	10mA/Idel, 650mA/stall	5.0mA@4.8V
Torque(Kg-cm/oz-in)@4.8V	3Kg-cm/42.18oz-in	1.6Kg-cm/22.2oz-in
Speed(sec/60°)-4.8V	0.19sec/60°	0.1sec/60°
Weight(g/oz)	47.4g / 1.67oz	9g / 0.32oz
Dim-mm(in)/LxWxH	40.4x20.0x37.9 (1.6x0.8x1.48)	22.1x11.4x23.6 (0.87x0.45x0.93)

## Transmitter Controls

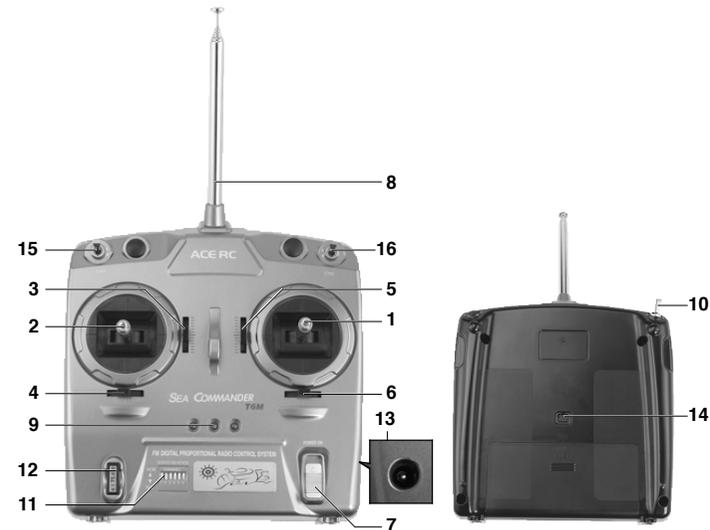
1. **Right Stick:** CH1 & CH2 control for Mode1 type. CH3&CH4 control for Mode 2 type.
2. **Left Stick:** CH3 & CH4 control for Mode1 type. CH1&CH2 control for Mode 2 type.
- 3~6. **Channel Trim TAB:** Using these functions to trim the control to neutral position of the relative servos of each channel.
7. **Power Switch:** Turn the transmitter on or off.
8. **Antenna:** Never operate the transmitter without extending this antenna or you may create interference to other modeler.
9. **Voltage Indicator:** These 3 LED lights will indicate the condition of the transmitter battery. There are "Green"(left), "Yellow"(middle) and "RED" (right) to show the battery condition is "Good", "Fair" and "Poor". When the middle "Yellow" LED light on, it means that the transmitter still work and remind you have to charge the battery pack. When the right "RED" LED light on, then you have to call back you model and stop the operating. Otherwise, you may loose control of your model due to loose the transmitter signal.
10. **Trainer Switch(Only available for T4A & T6H):** Trainer switch is function to change the model control right between the student and coach. A coach cable must be connected with the coach and student transmitter. And this switch is control by the coach\*s transmitter.
11. **Servo Reversing & Mixing Function :**
  - a) T4A The left 4 switches function to reverse the direction of the Ch1~Ch4 servos. When adopt the V-tail or Elevon mixing function, set the 6th switch on the \*ON position. The set the 5th mixing function you want to use.
  - b) T6H/T6M \* The 6 switch function to reverse the direction of the Ch1~Ch6 servos.
12. **Crystal:** The frequency could be changed by replacing the new crystal set. It is recommend to use the original manufactured crystal set and to change the transmitter and receiver crystal at same time.
13. **Charging Jack:** Recharge the transmitter battery only as using a rechargeable NiHM battery pack.



### NOTE

Set the Power Switch switch on OFF\* position before charging. And 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.

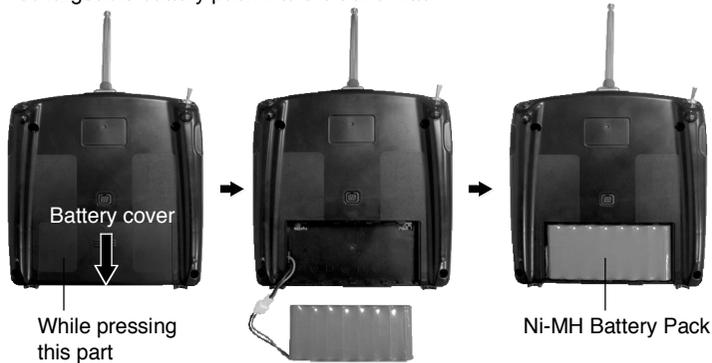
14. **Simulator/Trainer Port:** This port is designed to connect to the PC simulator or another transmitter to do the training with a suitable cable device. This trainer port is 9C connector type. So the cable you use, must have the same 9C connector type on the end. TT#2707 FSU Flying Simulator USB connector is recommended to connect to the FMS simulator. And the #AT0148 Trainer Cable is recommend to use for the flying training.
15. **5th Channel Control Switch:** Function only available for T6H & T6M. On T6H, this function is for the adjusting of Gyro Gain.
16. **6th Cannel Control Switch:** Function only available for T6H & T6M. On T6H, this function is for adjusting Flight Mode\*.



**Installation**

**Installation of the transmitter batteries:**

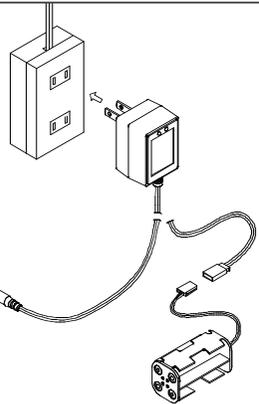
Use only 8cell/9.6V rechargeable battery pack in the Commander series transmitter. An 8cells NiMH rechargeable battery pack and wall charger are enclosed in the box. Please refer the following pictures to install the rechargeable battery pack into the transmitter.



**HELPFUL HINT**

You may also use the NiCd or NiMH rechargeable cells. They can be charged through the charge jack located on the side of the transmitter. The ACE 2946 Hi-MH battery pack / flat & 2970/2971/2972 Radio battery conversion kits are recommended.

Cord to transmitter external charging jack



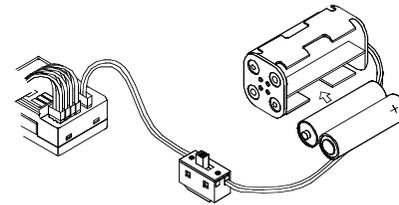
**CAUTION**

When the transmitter will not be used for any short or long period, always remove the batteries.

**Receiver battery replacement/installation**

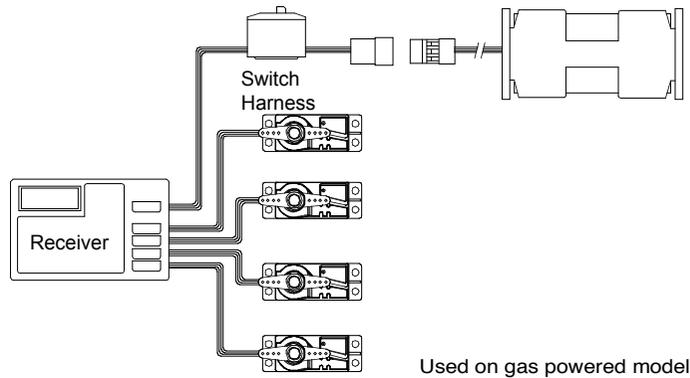
Insert 4 fresh AA cells into the receiver battery holder. Make sure the batteries are loaded in the correct polarity order. Maintain the battery contacts in the same way as described in previous section.

Insert the switch harness plug into the receiver socket marked "BATT"



### Radio installation

Before installing your radio into your model, connect the receiver, servos, and switch harness/battery pack as shown. In addition to checking for proper operation, this "bench test" will help you to become familiar with the operation of your radio. After connecting the model components, extend both the transmitter and receiver antennas to their full length. Begin by turning on the transmitter, and then turn on the receiver switch. Make sure that all servos and trims levers are operating, and take a few moments to "play" with your system. After completion of your bench testing, turn off the receiver, followed by the transmitter.



#### WARNING

Always follow the "transmitter on first, off last" procedure. A good way to remember this is to remind yourself to always have your receiver "listening" to the transmitter. If you turn the transmitter off prior to turning off the receiver, the receiver has nothing to "listen to", and this condition can sometimes damage the servo output gear train because of "jitters" or excessive servo travel beyond normal limits.

### Servos

Mount the servos as recommended in your model's instruction manual. Follow these general guidelines for servo mounting.

### Receiver installation

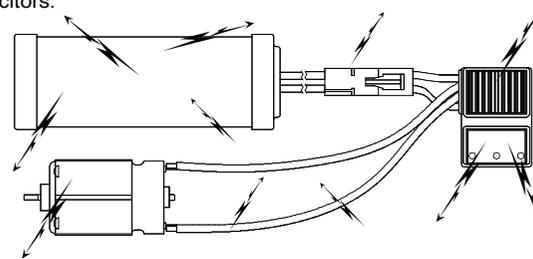
Note the location of the receiver in your model's instruction manual or building plans.

#### NOTE

We assume that all areas where large currents are flowing are generating noise, and noise is a type of radio wave. It is important to reduce the possibility of interference by locating a fine position for receiver and antenna.

#### HELPFUL HINT

Always install the receiver as far as possible from the motor, ESC, NiCd/NiMH batteries, motor wire or other noise sources. Especially, do not route the motor wire next to the receiver, crystal or receiver antenna. Noise suppression capacitors should be installed on almost all motors. If the proper capacitors are not installed, high frequency noise will reduce range and cause loss of control along with various other problems. Make sure your motor is equipped with noise suppression diodes or capacitors.



#### NOTE

FET servo wire (7.2V) can also generate noise, position them as far away as possible from the receiver and the antenna.

Position the crystal side at the top instead of the bottom side. Please refer to the following diagrams.



Space available in your model will determine how much padding can be placed around the receiver. When the receiver is in a good quality foam rubber, such as those available from Du-Bro, Carl Goldberg, Sig, and others. R/C foam is made from natural rubber, which eliminates vibration far better than synthetic foam, (such as the kind used for packing many consumer times).

**CAUTION**

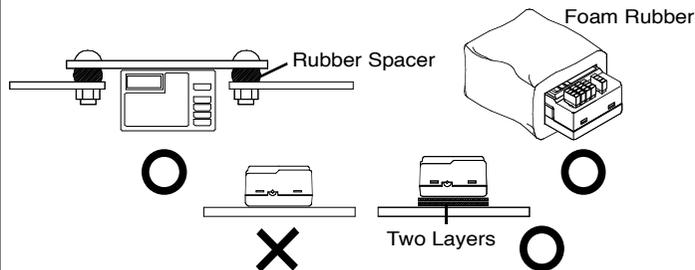
The receiver contains precision electronic parts. These parts are vulnerable to vibration and shock.

**NOTE**

When wrapping the receiver, keep in mind that you are trying to cushion a delicate piece of electronic equipment, so "wrap" the foam, don't "stretch" it around the receiver.

**HELPFUL HINT**

It is quite a simple way to isolate the receiver from vibration by attaching to the chassis or mounting plate with thick double-sided tape.



Many modelers prefer to install their receiver into the model at this point, with no further protection. Another sizeable group of modelers prefer to go a step further, and place the foam-wrapped receiver into a plastic bag, secured with a rubber band around the receiver case as well as the servo and battery wires.

The advantage of the plastic wrap is the protection against fuel or oil in the event of a major crash. The disadvantage of the plastic, especially if you run the model in very hot and humid conditions or wet days, is that moisture can accumulate inside the receiver.

**CAUTION**

Any contact with moisture i.e. water or condensation may cause malfunction and loss of control.

**HELPFUL HINT**

If you choose to wrap your receiver in both foam and a plastic bag, it is recommended to periodically remove the receiver from your model, remove the foam and bag to let the receiver "air out". This maintenance procedure will let you determine if any moisture is accumulating in the protective wrap. Small holes cut into the bag will allow airflow into the receiver, and eliminate the need for the periodic checks, although you will lose a certain amount of protection against fuel or oil with this step.

**Battery installation**

Always wrap the battery pack in foam, and mount it in the location specified in your model's instructions. It is also recommended to wrap the battery pack in a plastic bag, as its location (close to engine and fuel tank) makes fuel proofing vital.

**Switch installation**

Pick the most convenient location for your on/off switch as required by your particular model. Always mount the switch on the opposite side of the engine exhaust. After mounting the switch, carefully bundle any excess servo wires with cable ties, keeping them away from any moving item (pushrod, servo arm, etc.) that could catch and cut the wires. Any empty space in your fuselage radio compartment can be filled with excess foam.

## Receiver antenna

Refer to your model's instructions for the location desired for the receiver antenna to exit the Body or Fuselage. A general guideline is to exit the antenna from the Body / Fuselage at the closest possible point to the receiver, that is, have as much antenna as possible outside the model.

Use a strain relief (a knot will work) where the antenna exits the model, to avoid the antenna being ripped out of the receiver in the case of a mishap. A rubber band works well for this. **REMEMBER: THE ANTENNA WIRE IS YOUR MODELS "LINK" TO THE TRANSMITTER.** Take care to eliminate any chance of the antenna wire being caught or tangled in the prop, wheels, etc.

### NOTE

The receiver antenna may seem long. The length of the receiver antenna is critical to the proper operation of your radio. Do not cut or alter from the original length for any reason, or you might severely limit the range of the system, and the receiver would become considerably more susceptible to interference and high frequency noise that will result in loss of range and control.

## Functions

### 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.

### Final Checks

Once you have completed the radio installation to your satisfaction, then test the operation of the system before hooking up any push rods or control cables.

### Connecting

Check the receiver, servos, and battery connectors; to be sure they are firmly connected.

### CAUTION

If a connector is not fully inserted, vibration may cause the connector to work loose while the model is operating. This will result in loss of control.

### Battery power

Turn the power switch on to check. As the LED light begins to flash, it is time to change the cells.

### Linkages

Once satisfied with the pushrods, attach them to the servo arm/horn per your models instructions. Then operate each servo horn over its full stroke and check to see that the linkage does not bind or is not too loose.

### CAUTION

Before connecting the pushrods or control cables, make certain that there is no binding or unnecessary drag on the controls. Excessive force applied to the servo horn by binding or poor installation may lead to excessive power consumption by the servos and will quickly drain the receiver pack as well as make your model perform poorly.

Inspect all linkage installations and any point where metal could come in contact with other metal parts. Make sure these parts do not touch other metal parts under vibration.

### NOTE

The high frequency noise generated by this contact will cause interference and possible loss of control.

### Adjustments

With all transmitter trim levers set in their neutral position, turn on the radio system and reconfirm proper control directions. Adjust the pushrods mechanically to achieve neutral centered control with neutral transmitter trim.

The design, engineering, and production staffs at Ace R/C wish you might happy running with your new SkyMaster T4 FM radio system.

## Frequency List

Base on the difference countries regulation, you should choose the suitable frequency to match your countrys rule. The following table show difference band(crystal) available for each frequency of Commander series

27MHz	
Frequency	CH No.
26.995	4
27.045	9
27.095	14
27.145	19
27.195	24
27.255	30

35MHz	
Frequency	CH No.
35.010	61
35.020	62
35.030	63
35.040	64
35.050	65
35.060	66
35.070	67
35.130	73
35.140	74
35.170	77

36MHz	
Frequency	CH No.
36.050	605
36.330	633
36.370	637
36.410	641
36.450	645

40MHz	
Frequency	CH No.
40.665	50
40.675	51
40.685	52
40.695	53
40.715	54
40.775	58
40.825	82
40.885	86
40.965	90
40.985	92

41MHz	
Frequency	CH No.
41.120	412
41.140	414
41.160	416
41.180	418

72MHz	
Frequency	CH No.
72.010	11
72.050	13
72.090	15
72.130	17
72.150	18
72.170	19
72.190	20
72.210	21
72.690	45
72.730	47
72.770	49
72.810	51
72.850	53
72.890	55

75MHz	
Frequency	CH No.
75.410	61
75.450	63
75.630	72
75.670	74
75.890	85
75.930	87

## Fcc Rules And Regulations

You are responsible for the proper operation of your station (transmitter) at all times and are responsible for observations, servicing, and maintenance as often as may be necessary to ensure proper operation. Each internal

repair and each internal adjustment to an FCC type accepted R/C transmitter must be made in accordance with the technical regulations specified by the FCC. The internal adjustments should be performed by, or under the immediate supervision and responsibility of, a person certified as technically qualified to perform transmitter maintenance and repair duties in the private land mobile services and fixed services by an organization or committee representative of users in those services.

The FCC at this time does not require the modeler to obtain a special license for the operation of this unit. However, it is still the owner's responsibility to observe all FCC rules & regulations governing its use. For a copy of these rules write to:

Federal Communications Commission  
Washington, DC 20554

**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)

## Using Caution at the Flying Filed

- Always check if there is anyone operating on the same frequency. If so, make sure that you don't turn on at the same time.
- 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.
- Always keep your transmitter clean: wipe it with a mild detergent or window cleaner if there is any fuel, oil, dirt, or dust on the transmitter.
- 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.
- The servos will glitch at ±25° if there is any frequency at about 200~250 MHz nearby when using this radio.

**Commander accessories**



AQ418-35/36/40/41/72M1  
SKY COMMANDER T4A TRANSMITTER,  
35/36/40/41/72MHz MODE1  
AQ418-35/36/40/41/72M2  
SKY COMMANDER T4A TRANSMITTER,  
35/36/40/41/72MHz MODE2



AQ602-35/36/40/41/72M1  
SKY COMMANDER T6H TRANSMITTER,  
35/36/40/41/72MHz MODE1  
AQ602-35/36/40/41/72M2  
SKY COMMANDER T6H TRANSMITTER,  
35/36/40/41/72MHz MODE2



AQ603-27/40/41/75  
SEA COMMANDER T6M TRANSMITTER,  
27/40/41/75MHz



AQ0869-35/36/40/41/72  
TR602FD 6CH DUAL CONVERSION RECEIVER,  
35/36/40/41/72MHz



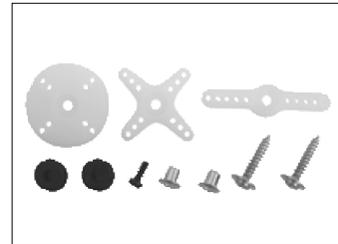
AQ1799-6-27/40/41/75  
TR601F 6CH RECEIVER, 27/40/41/75MHz



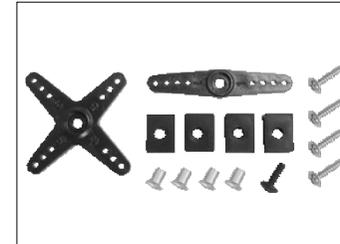
8114 ACE RC SERVO, S1903



8117 ACE RC MICRO SERVO, C1016



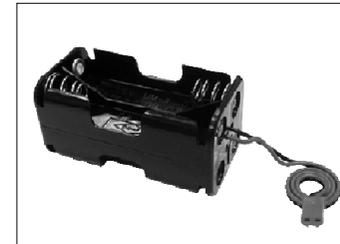
AQ1496 SERVO ACCESSORY  
PACKAGED FOR C1016



AQ1499 SERVO ACCESSORY  
PACKAGED FOR S1903



AG2050 AA BATTERY CASE



AG2059 AA BATTERY CASE  
W/BEC PLUG



AQ0089 AAA BATTERY CASE



AG2051 SWITCH HARDNESS W/O CHARGING CORD



AG2060 SWITCH HARDNESS W/O CHARGING CORD



AG2078 SWITCH HARDNESS W/O CHARGING CORD



AT2139 TX/Rx CHARGER, 110V  
AT2140 TX/Rx CHARGER, 230V/2P  
AT2141 TX/Rx CHARGER, 230/3P



2970 Ni-MH BATTERY KIT(12pcs),w/110V CHARGER  
2971 Ni-MH BATTERY KIT(12pcs),w/230V/2P CHARGER  
2972 Ni-MH BATTERY KIT(12pcs),w/230V/3P CHARGER



2927 Ni-MH BATTERY PACK/FLAT,  
4.8V/1200mAh 2/3A



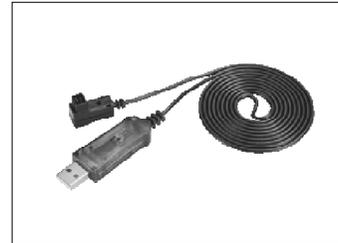
2939 Ni-MH BATTERY PACK/  
SQUARE, 4.8V/1200mAh 2/3A



2969-J/S Ni-MH BATTERY PACK/  
SQUARE, 4.8V/1100mAh AA



2946 Ni-MH BATTERY PACK/FLAT,  
9.6V/1100mAh AA



2707 FSU FLYING SIMULATOR  
USB INTERFACE, w/9C



2707-J FSU FLYING SIMULATOR  
USB INTERFACE, w/Phone Jack



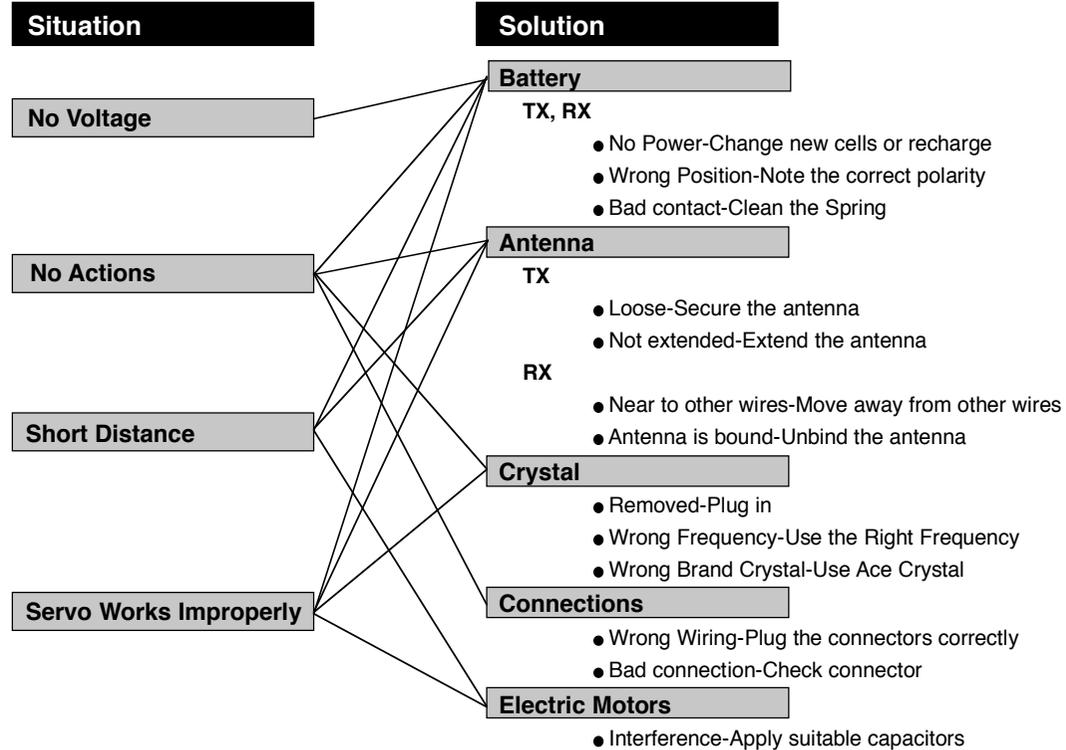
AT0148 9C TRAINER CABLE

## **Service**

Thank you for purchasing of the ACE RC COMMANDER SERIES Radio. Thunder Tiger strives to bring you the highest level of quality and service we can provide. We 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 authorized tech support for help. For customer in North America, please contact Ace R/C Tech Support for service.



Manufactured by  
**THUNDER TIGER CORP.**  
<http://www.thundertiger.com>