KO PROPO VFS-1 Variable Frequency System

Thank you for purchasing this product. Please read this manual to make the best use of the performance of the VFS-1 and enjoy RC. For your safety, please use it accordingly when there are displays of warning and attention, etc. Please keep these in mind after you have read the instructions. Please do not use this item if you do not understand the manual and inquire our service department for further help.

Features

Variable Frequency System (PAT.) KO PROPO

The popular variable frequency system VFS2000 gets an improved version installed. It is now possible to change from 900Hz to 12KHz, greatly expanding the frequency setting width further in the VFS-1. The parameter in the past 32×32 is now increased to 32×64 steps. The high accuracy of a setting that is demanded from the race that is eight minutes is now achievable.

※ The hand setting adaptor or PC software VFS-1 manager (Option) is necessary for the frequency change and the setting change.

Various parameters can be set by ICS (Interactive Communication System) besides the drive frequency.

① ***Neutral Brake:*** The amount of brake at a neutral position can be set. The 100 setting stages as the maximum value and is 50% of the amount of a full brake.

② ***Frequency of Brake:*** Initialization is about 3.5KHz. This is the simultaneous changeability of the brake in all areas, with 64 steps of frequencies ranging 0.9-12KHz.

③ ***The Power Save Voltage:*** The BEC output is set and the voltage in which the BEC keeps is set to four stages. A steady voltage to the last minute running is maintained. This is significantly effective to the category that uses four cells with low voltage.

④ ***Throttle Response:*** The throttle operation in the beginning of a grasp is mild. Combined with the punch function of the transmitter. This can have the car start like a rocket.This can also be used to limit the amount of power due to track conditions (i.e. slippery track)

⑤ ***Current Limiter:*** A large current overload can be suppressed. Setting this value to OFF is also possible.

Micro size and weight 18.8g (* Excluding wires and connectors.)

The demand of making a low center of gravity and space-saving ESC clears up room on the car.

The small slide switch is adopted in the power on/off switch.

Operation, durability, and reliability are achieved.

The setting adaptor for VFS-2000 cannot be used.
Please use a personal computer (Windows) to operate the optional ICS PC interface along with the PC software.
Please use the ICS-PC interface software to change settings.

For the safe usage of this unit

Please use caution when handling this equipment for your personal safety.

Explanation of displays and signs.Please pay close attention to the displayed instructions.

⚠ Warning! Warning displays. These displays and their content show the possibility of bodily injury and death that may occur due to disadvantageous accidents with high frequency are shown.

This product is manufactured and sold for the RC model ground use only. - Please do not use it for anything else. -Make sure the connector of the servo, speed controller, etc. is properly inserted into the receiver. - There is a possibility of driving recklessly when the connector(s) become disconnected due to the vibration during operation. - Always turn on your transmitter first before turning on the speed controller to make sure the band (frequency) is not being used. - Operating on a "in use" band (frequency) is dangerous and reckless. - Do not operate during thunder or electrical storms. - Lighting may strike the antenna of the transmitter. - Do not operate when it is raining or there is standing water. - If water enters the equipment, you will lose control and drive recklessly. - If you are tired, drinking alcohol, or are under medication, do not operate this equipment. - An unexpected accident is maybe caused by the lack of judgment. - After a run, disconnect and remove the battery. - When the switch is turned on by mistake, the model can drive recklessly and can catch on fire. - The transmitter, the battery, and the model, etc. should be kept in the place where children cannot reach. - The danger of poisoning, burn, and injury may occur by accidental ingestion.

⚠ Caution! Please pay attention to the following content. The following are things that are possible or may cause a disadvantageous accident that can result in injury.

- Do not make a mistake in the polarity connection of the battery. - The equipment will be damaged. - The transmitter, receiver, servo, and other option parts used should only be genuine KO PROPO products. - Our company cannot assume the responsibility of damage etc. that occur because of the combination of non-genuine KO PROPO products. - When turning on the power supply do it in this order (transmitter → speed controller). Turning off the power in this order (speed controller → transmitter). - When the order is reversed, the receiver will pick up noise and may go out of control. -For low turn modified motors (15 or lower) we recommend using the Ultimate Shotki [Double] (Optional Part) - After operation, do not touch hot surfaces such as the motor and the speed controller. - Caution combustible. - Please do not short-circuit the leads like the battery wire and the motor wire etc. of this product. - The equipment will be damaged. - Please remove or disconnect the motor when you set up this product. - Please do not operate this on the street or where people are present. - Please send this to our service department when there is damage or when this product gets wet. - It may cause corrosion and the breakdown of the product. - Please avoid high impacts to this product. - It may cause damage. - Please read the manual thoroughly before using this product and keep it handy for future references. Please inquire of our service depart when you cannot understand the manual.

We cannot assume the responsibility of the results that the customer has with RC models with this product. Please acknowledge this beforehand.

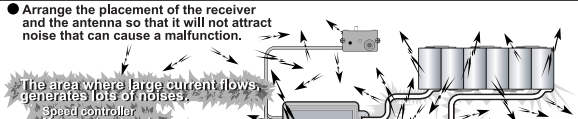
Technical specs.

- Control method: Changeable control
- The maximum peak current: 3120A (FET specs.)
- Continuous, maximum current: 780A (FET specs.)
- Accessory: Ultimate Shotki Diode, Ultimate Condenser, 12GA silicon wire (Pro Only), 15GA (J Only pre-wired).
- Size: 28.0×25.0×14.4mm (size of case)
- 18.8g in weight (The silicon wire excluded.)
- Proper power-supply voltage: 4.8-8.4V (4-7 cells)
- Suitable motor: All commercially available electric motors for R/C Cars. (No Limit)
- Output voltage for receiver: 6V (input 7.2v)
- Output current for receiver: 2A (maximum peak)
- Drive frequency: 0.9-12KHz (64 steps) initialization 4.0kHz

※ In VFS-1J, the battery connector and the motor connector are pre-wired. The Pro version requires wire assembly by the customer.
※ In VFS-1J and Pro, the set value of the power save voltage is different. (Pro: 2.5V, J: 3.5V)

Installing method

● Arrange the placement of the receiver and the antenna so that it will not attract noise that can cause a malfunction.



Moreover, a carbon chassis and a metallic chassis also pick up and transmit these noises.

Please think about the placement of wire for the battery for the speed controller, motor, the motor wire, the battery wire switch, and the switch. These large currents flow generates noises. This type of noise is an electric wave and it will radiate. (Moves in all directions.) Therefore, if you bring the antenna close to this source, it is likely to pick up the noise. The position of the high frequency speed controller to where the receiver is installed is very important. If the antenna is intersected with the silicon wire or the speed controller, the receiver will pick up noise easily. This will cause a malfunction, etc. Also, the noise can be transmitted to a carbon and a metallic chassis.

Antenna wire and receiver from noise source (Especially, crystal area) Please install it to be isolated.

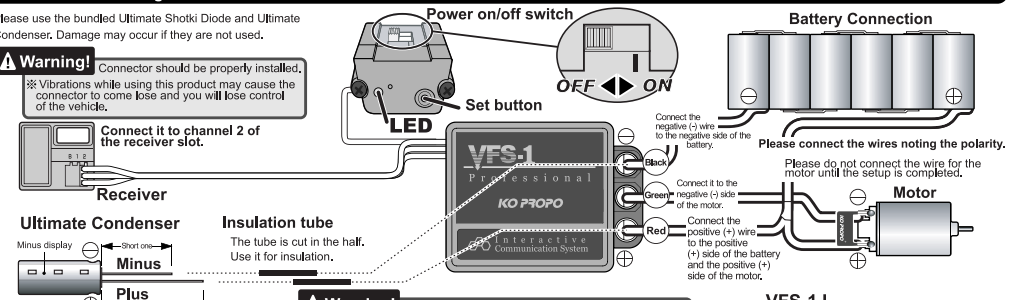
VFS-1 is fixed to the chassis plate with the double-sided tape. Install the switch in a position where it can be easily operated.

※ Please mount with double-sided tape in a location that will be free from dust, moisture, oil, etc.

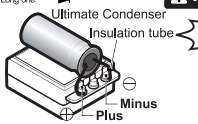
Part names and wiring

※ Please use the bundled Ultimate Shotki Diode and Ultimate Condenser. Damage may occur if they are not used.

⚠ Warning! Connector should be properly installed.
※ Vibrations while using this product may cause the connector to come lose and you will lose control of the vehicle.



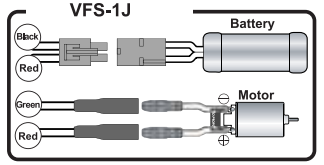
The Ultimate Condenser is polarity sensitive. Please use the insulation tube noting the polarity and install it.



⚠ Warning! Please note the polarity when you are installing this product.

⚠ Warning! **Always turn on the transmitter first, then turn on the speed controller's power.**
※After speed controller's power supply is turned off, then the power supply of the transmitter should be turned off.
※The receiver will pick up noise when the order is reversed. This may cause the car to go out of control and may cause an unexpected accident.

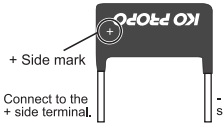
Noise killer capacitor (Optional part)
Noise killer capacitor No.45557
Please install it on the motor that uses the noise killer capacitor(s) to suppress the noise of high frequencies.



About the Schottky diode — Please install the Ultimate Shotki Diode that is included.

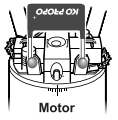
The Ultimate Shotki diode that is included must be installed. Generation of heat increases if this is excluded when in use. Without the use of this, excess heat will be produced and may cause damage to this product. For lower turn modified motors (15 or lower), we recommend using the Ultimate Schottky Diode [Double] (Optional Part)

⚠ Warning! **If the polarity of the schottky diode is connected incorrectly, repairing it might become impossible.**



Schottky diode should be installed on the motor side in theory. Even though it will work when installed on the VFS-1 terminals, the best effect of protection for the VFS-1 will not be demonstrated.

※A crack or damage to the Ultimate Schottky's package may occur due to an impact. However, this does not damper the performance because it is not an internal part of the VFS-1.



The Schottky Diode is polarity sensitive. Please install the sign on the positive (+) side. The positive (+) side terminal is a terminal that connects speed controller's red wire.

Setup

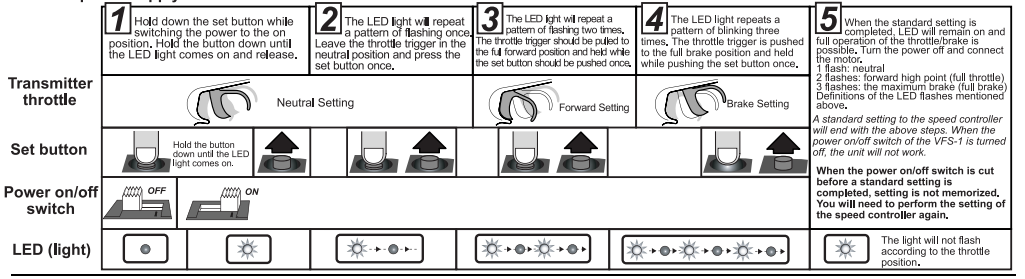
⚠ Caution!
- Please set-up the standard (Factory Default Setting) for the transmitter in the beginning. This will not operate properly if the standard is not set.
- Please do not connect the motor when you set the standard. (Please connect it after all settings are done.)

The standard is set.

●Before the setting

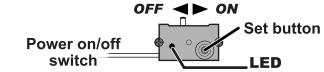
- The battery for the transmitter and the battery in the car should be charged before use.
- The speed controller should be connected referring to the preceding instructions.
- The switch of the transmitter should be turned on first.
- Factory setting of the throttle trigger on the transmitter should be assigned. (Original setting when it was shipped)
- When the KO transmitter is shipped, the setting is 100% for the brake and throttle trim is neutral.
- Please make it to turn off ABS and Acceleration functions that are provided in the transmitter.

The standard and its setting are memorized by the signal from the transmitter in VFS-1. The settings are memorizes and do not disappear even if the power supply is turned off.



A standard setting to the speed controller will end with the above steps. When the power on/off switch of the VFS-1 is turned off, the unit will not work.

When the power on/off switch is cut before a standard setting is completed, setting is not memorized. You will need to perform the setting of the speed controller again.



To enter the communication mode. First, hold the set button down and then turn the power switch to the on position. While holding the set button down, the LED light will come on. Keep holding the button down until the LED light goes off and then release the set button. You are now in the communication mode. This is the mode used for the hand setting adapter and the VFS-1 setting adaptor for personal computers.

When the VFS-1 doesn't operate normall

● In this case...

- Internal parts may be damaged by heat. Also the signs of transformation of the case by the excessive generation of heat displays possible damage. We would recommend sending it in for repairs and checking.
- Please do not use this product if the VFS-1 gets wet. Remove excess water at once and let it dry. After it dries, do not use this product. We recommend sending it to our repair department for inspection for possible water damage.
- The heat protection in the VFS-1 is activated by overload and operation will stop. Please perform your car's maintenance like motor (cutting the com and changing brushes) and drive train system, etc. and making sure that gearing is correct.
- When there is an abnormal generation of heat and there is a nasty smell coming from VFS-1, we would recommend discontinuing usage and sending it in to our service department.

● When you think that something is damaged...

Please inspect it and reread this manual again. If you still do not understand what has happened, please consult our service department. Please inform them of the situation with as much detail as possible.

※ What is being used. (battery and car for the transmitter, receiver, servo, and the number of turns of the motor.)
※ You should also have ready the symptom of usage conditions and the problems associated with it.
※ Customer's address, name, and contact phone number
※ Please send the information mentioned above in detail as possible when a repair is requested.
※ Please pre-pay the postage when the repair goods are forwarded to the service department.
※ Returned repairs will include repair fees, postal fees and a total.

KONDO KAGAKU CO.,LTD. 116-0014 Tokyo Japan 4-17-7 Higashinippori Arakawa-ku ***http://www.kopropo.co.jp***